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Bioremediation Agent Effectiveness Test

Oil Spill Eater II

Oil Spill Eater International, Corp.

June 25, 2009

Prepared by: _____ 6/26/2009
Vice President **Date**

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EXECUTIVE SUMMARY

Bio-Aquatic Testing, Inc. located at 2501 Mayes Rd. Suite 100 Carrollton, Texas 75006 was contracted by Oil Spill Eater International, Corp. (OSEI) to test effectiveness of their bioremediation product, Oil Spill Eater II, using Environmental Protection Agency (EPA) protocol listed in 40 CFR Chapter 1 (7-1-99) Pt. 300 Appendix C, Item 4.0. The test protocol calls for application of products onto ANS 521 oil. The product was applied to test flasks according to manufacturer's specifications. Samples were sacrificed on Day 0, Day 7, and Day 28 of the test period. Day 0 and Day 7 samples were sampled for microbiological analysis and then frozen at –10˚ C until GC/MS results were known for the Day 28 samples. Each replicate of product and control were tested for continued microbiological viability over time, reduction in weight via gravimetric analysis, and reduction in alkane and/or aromatic constituents via Gas Chromatography/Mass Spectroscopy (GC/MS). The product was deemed effective if the data showed the GC/MS product results for Day 28 treatments to be statistically less than the Day 28 controls and Day 28 treatments to be statistically less than Day 0 treatments.

GC/MS data for Days 0, 7, and 28, were consolidated and analyzed with the Minitab Statistical program 13.3. Data was analyzed for a significant difference between controls and treatments (products) using a General Linear ANOVA Model with Dunnett's and/or Tukey's means comparison test. GC/MS analysis showed significant reduction of both alkane and aromatic constituents of the test oil as indicated by the statistically significant difference between the Day 28 controls and Day 28 treatments as well as between Day 0 control and Day 28 treatments. Day 7 results also showed a statistically significant reduction of treatments as compared to controls.

The surrogate compounds, d-10 phenanthrene and 5-α androstane showed recovery percentages which indicates the test meets acceptability criteria and is considered valid.

Microbiological results showed continued viability of the oil-eating microorganisms over time. Day 7 and Day 28 gravimetric analysis showed a statistically significant reduction from the controls to the treatments.

Based on the parameters of this test, the product should be included on the NCP list of approved bio-remediation products.

BIOREMEDIATION AGENT EFFECTIVENESS TEST USING OSEI CORP. PRODUCT "Oil Spill Eater II"

Introduction

The bioremediation agent effectiveness testing protocol is designed to determine a product's ability to biodegrade oil by quantifying changes in the oil composition resulting from biodegradation. The protocol quantifies the disappearance of saturated hydrocarbons and polynuclear aromatic hydrocarbons (PAHs) as well as weight loss. The protocol also tests for microbial activity over time to ascertain continued viability of oil degrading microorganisms.

Summary of Method

The protocol calls for gas chromatography/mass spectrophotometry and gravimetric analyses to quantify saturated hydrocarbons and PAHs, and determine weight loss respectively. The sample preparation procedure extracts the oil phase into dicloromethane (DCM), with a subsequent distillation to 1-3-mL using a K-D apparatus and Snyder column. To effectively accomplish the goals of the testing protocol, it is necessary to normalize the concentration of the various analytes in oil to a non-biodegradable marker, either C_2- or C_3 – phenanthrene, C_2 –chrysene, or hopane. The test method targets the relatively easy to degrade normal alkanes and the more resistant and toxic PAHs. It normalizes their concentrations to C_2 or C_3 phenanthrene, C_2 –chrysene, or $C_{30}17\alpha(H)$, 21β (H)-hopane on an oil weight basis (mg marker/kg oil, mg target analyte/kg). The analytical technique uses a high-resolution gas chromatography/mass spectrophotometer (GC/MS) because of its high degree of chemical separation and spectral resolution. GC/MS has long been used to study the weathering and fate of oil spilled into the environment. For quantitative analyses, the instrument is operated in the selective ion detection mode (SIM) at a scan rate of greater than 1.5 scans per second to maximize the linear quantitative range and precision of the instrument. The sample preparation method does not exclude analysis of selected samples by GC/MS in the full scanning mode of operation to qualitatively assess changes in the oil not accounted for by the SIM approach. Gravimetric analysis is used to support the GC/MS analysis by measuring weight loss of samples over time as compared to controls by drying the ~~ex~~tracted samples using nitrogen a blowdown technique.

Performed concurrently with the chemical analysis described above is a microbiological analysis. The microbiological analysis is performed to determine and monitor the viability of relative concentrations of the microbial cultures being studied. Using this method, continued viability is measured over time by comparing serial dilutions of microorganisms, to determine statistical significance between treatments and controls.

MATERIALS AND METHODS

The following methods* were obtained from 40 CFR Chapter 1 (7-1-99) Pt. 300 Appendix C, item 4.0 Bioremediation Effectiveness test, as submitted by the Environmental Protection Agency. Some modifications were made to these methods as discussed below.

The procedure consists of an experimental orbital shaker flask setup using 250-mL Erlenmeyer flasks labeled with unique identifiers using the following treatment design:

Table 1.
*Details from these methods can be found in the aforementioned 40 CFR Chapter 1 (7-1-99) Pt. 300 Appendix C, item 4.0. A copy is available upon request.

Treatment	Number of samples at sampling times			Total number of analytical determinations		
	Day 0	Day 7	Day 28	ANALYSES		
				Microbial counts	Gravimetric	GC/MS
Control	3	3	3	9	9	9
Nutrient	3	3	3	9	9	9
Oil Spill Eater II	3	3	3	9	9	9

Number of replicates per treatment or control per sampling event - 3
Number of replicates per treatment or control – 9
Total replicates - 27
Control - Oil + Seawater
Nutrient – Oil + Seawater + EPA Nutrient
Oil Spill Eater II – Oil + Seawater + Product

Using sterile technique, each appropriately labeled replicate flask has 100-mL of seawater added. The seawater obtained was from the Gulf of Mexico by faculty at LSU. Each flask is placed on a balance and the weight recorded. Approximately one half-gram (0.5 g) of artificially weathered oil (Alaska North Slope 521)* is then added to each flask while still on the balance and the weight recorded again.

*The ANS 521 oil was obtained from John Haines of the Environmental Protection Agency's Environmental Monitoring and Support Laboratory, Cincinnati, Ohio, 45268

The control flasks were prepared by adding oil to the natural seawater.

The nutrient flasks were prepared as instructed in 40 CFR Chapter 1 (7-1-99) Pt. 300 Appendix C.

The product mix was prepared according to the manufacturer's instructions. The product was applied to each oil + product flask at a ratio of 10:1 (V/V).

After preparing all treatments and controls, three replicates of each treatment and control were shaken on an orbital shaker at 190 – 200 rpm and incubated at 20° C until sacrificed for the Day 0, 7, and 28 analyses. At each sampling (sacrifice) day, a 0.5-mL aliquot was set aside for microbiological analysis and the remaining solution is prepared for chemical analysis.

A phosphate buffer solution was made from a recipe obtained from Jan Kurtz of the Microbial Ecology Branch of the Environmental Protection Agency's Gulf Breeze Ecology Division. A 0.5-mL aliquot from each replicate was added to a test tube containing 4.5-mL of a sterile phosphate buffer for the microbiological analysis. Aseptic technique was then used to make serial dilutions down to a 10^{-8} dilution. Microtiter plates were prepared by adding 1.75-mL of Bushnell-Haas broth into to each well. Six replicates per dilution are used per treatment or control giving a total of forty-eight wells, (48) per treatment or control. Each of the wells was inoculated with 0.1-mL of solution from each of the serial dilutions made from the original aliquot of 0.5-mL of sample. 20 µl of sterile No. 2 fuel oil was then carefully placed on top of the solution in each well. Each microtiter plate was then incubated for fourteen (14) days at 20° C. At the conclusion of the fourteen-day incubation period, 100 µl of p-iodotetrazolium violet dye was added to each well and the results were recorded after at least 45 minutes to 2 hours of reaction time. Appearance of a pink to purple color constituted a positive test (continued microbial viability).

Each replicate sacrificed was extracted with an initial volume of 50-mL dichloromethane (DCM) for the chemical analysis. The sample was first extracted three times with 10-mL aliquots of the DCM. The remaining 20-mL was used to rinse the separatory funnel and added to the first 30-mL of extract. Just prior to the initial extraction, each replicate is spiked with 100 µl of a surrogate-recovery standards stock solution. This stock solution was made up of 500 mg/L 5α-androstane and d_{10}-phenanthrene. The separatory funnel was then capped and shaken vigorously for approximately thirty seconds to insure good mixing between phases. After mixing, the separatory funnel was allowed to sit for up to three hours to insure the greatest amount of separation between phases. This was done because of the presence of thick emulsions caused by microbiological activity. After a period of up to three hours, a 10-mL aliquot of the extract is poured into a 40-mL amber vial with a Teflon™ lined cap, and taped with Teflon™ tape. The samples were then stored in a 4° C walk-in refrigerator until retrieval for gravimetric analysis. The extraction was completed by filtering the remaining 40ml of DCM through a glass filter containing 20 grams of anhydrous sodium sulfate (Na_2SO_4) and into a 250-ml flat-bottom distillation flask. The Na_2SO_4 was rinsed with DCM until all traces of oil were removed from the funnel. The 250-ml flat-bottom distillation flask was placed on a Rotovap distillation unit until a volume of 10-ml was attained. Approximately 50-ml of hexane was added to the DCM extract and distilled to a volume of 10-ml. Another 50-ml of hexane was added to the hexane extract and distilled down to a final volume of 10-ml. A 1-ml aliquot of the final extract was removed and prepared for analysis on the GC/MS.

The gravimetric analysis was accomplished by first weighing an empty 40-mL vial and recording the weight. The 10-mL aliquot of extract was then placed in the vial, weighed and concentrated to dryness using a nitrogen gas blowdown technique. The remaining sample was then weighed and subjected to nitrogen blowdown for another ten to fifteen minutes. This was repeated once more to insure that the weight had changed no more than 5% weight difference between the second and third blowdown. If there was greater than a 5% difference, the sample was subjected a final blowdown to insure complete dryness. Weights were recorded after each blowdown, and then subjected to statistical analysis discussed below.

*The GC/MS analysis was subcontracted to Louisiana State University-IES, 42 Atkinson Hall, Baton Rouge, Louisiana, 70803.

STATISTICAL METHODS

GC/MS Data

Surrogate-adjusted data or rank-transformed surrogate adjusted data were analyzed using the Minitab™ 13.3 program. The computer program, unlike many others, is powerful enough to analyze unbalanced sets (uneven replication) of data using a general linear multiple factor ANOVA model. The probability of a type I error (α) was set apriori to 0.05.

Data sets were first analyzed for normality using the Anderson-Darling Goodness of Fit test. This test compares plot points with the normal theoretical distribution. Minitab calculates the statistic, above which there is a danger of non-normality. This is then compared to the chosen (preset by program), alpha (α) level of 0.01. For least-squares estimation, Minitab calculates a Pearson correlation coefficient. If the distribution fits the data well, then the plot points on a probability plot will fall on a straight line. The correlation measures the strength of the linear relationship between the X and Y variables on a probability plot. The correlation will range between 0 and 1, with higher values indicating a better fitting distribution.

Data passing a formal test for normality may not, strictly speaking, come from a normal distribution. Data that has sufficient linearity as shown by the passing results of a formal test for normality, may have attributes that weaken the ANOVA and Dunnett's test's ability to detect statistically significant differences between treatments (Zar, 1984).

Routine transformations were not amenable to non-normal data so an acceptable procedure for multiple-comparison ANOVA was found by using the rank-transformation test (Helsel, 1993). This technique first rank transforms the data and subjects it to the same multiple factor ANOVA test. This allows for an acceptable multiple comparison non-parametric test. After the program calculated the "F" and "P" statistics, the data were automatically subjected to Dunnett's means comparison test for comparison between treatments and controls.

Tables below give the final adjusted P-Values. Values of less than 0.05 (chosen α) indicate statistical significance. The T-Value is a ratio of the Difference of Means and Standard Error of Difference and indicates the degree and direction of the difference.

Microbiological Data

Microbiological data was analyzed with the Environmental Protection Agency's Most Probable Number Calculator, designed by the Risk Reduction Engineering Laboratory, Cincinnati, Ohio. This program calculates the most probable number (mpn) per mL with Salama correction for bias, and a Spearman-Karber Estimate. The program is based on the number of positive reactions in each of six replicates per serial dilution made. Confidence limits are included in the output of the program.

Gravimetric Data

Gravimetric data were analyzed with a simple two sample t-test available on the Minitab™ 13.3 program which compares the Day 0, 7, or 28 control means with their respective treatment means for statistical significance. The calculated p-Value is then compared to the chosen alpha (α) level of 0.05, as in the ANOVA analysis above. If the calculated value exceeds the 0.05, there is no statistical significance.

RESULTS AND DISCUSSION

GC/MS Data

Results of the statistical analysis for the surrogate-adjusted data are reported and discussed below. Results for transformed data, if transformations were necessary, are discussed last, preceded by the non-transformed data. Actual data (raw followed by surrogate-adjusted) are presented in the Appendices. GC/MS spectra appear in APPENDIX I along with computer printouts of the Minitab™ ANOVA analysis discussed below, which appear in APPENDIX II.

OSEI CORP. "OIL SPILL EATER II" Product Solution

Surrogate-Adjusted Alkane Data

Preliminary analysis of surrogate-adjusted alkane data for normality (fig.1) showed the raw data to be non-normal with an Anderson-Darling P-statistic of 0.000. This is below the selected α-level of 0.01 and indicates the data are not normally distributed. Further visual evidence of the data's non-linearity can be seen in the probability plot for residuals of the data (fig.2). The data were rank-transformed and reanalyzed for normality (fig.3) giving an Anderson-Darling statistic of 0.585, well above the chosen α-level of 0.01. The probability plot for the residuals (fig. 4) of the data still show a small degree of non-linearity which can slightly lower the ANOVA and Dunnett's test ability to detect a statistical difference between treatments and controls. More on this subject is discussed in the conclusions.

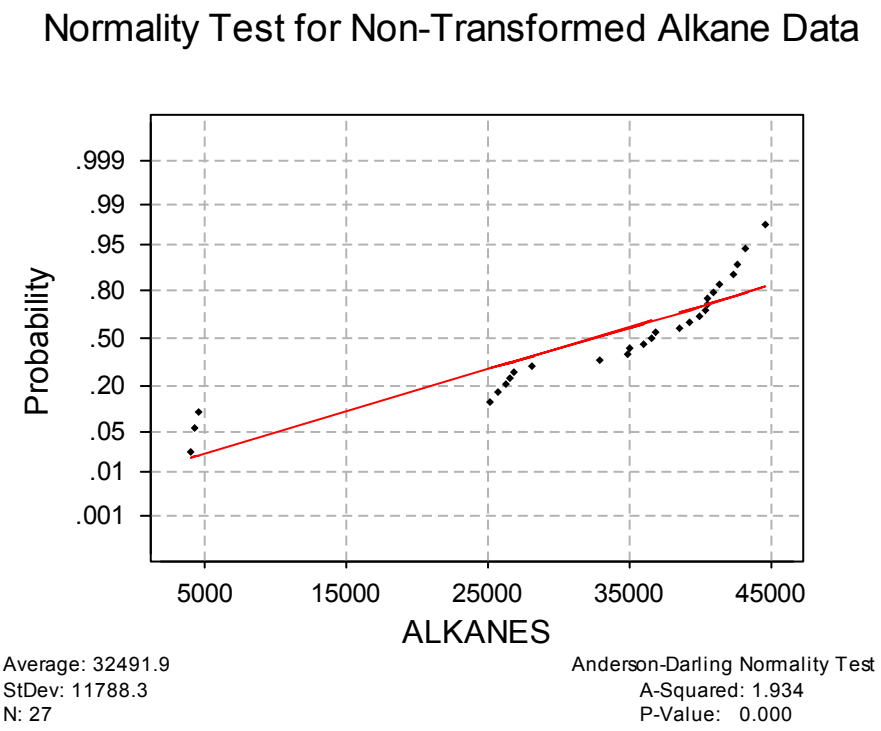

Figure 1. – Anderson-Darling test for normality showing non-linearity of surrogate adjusted alkane data.

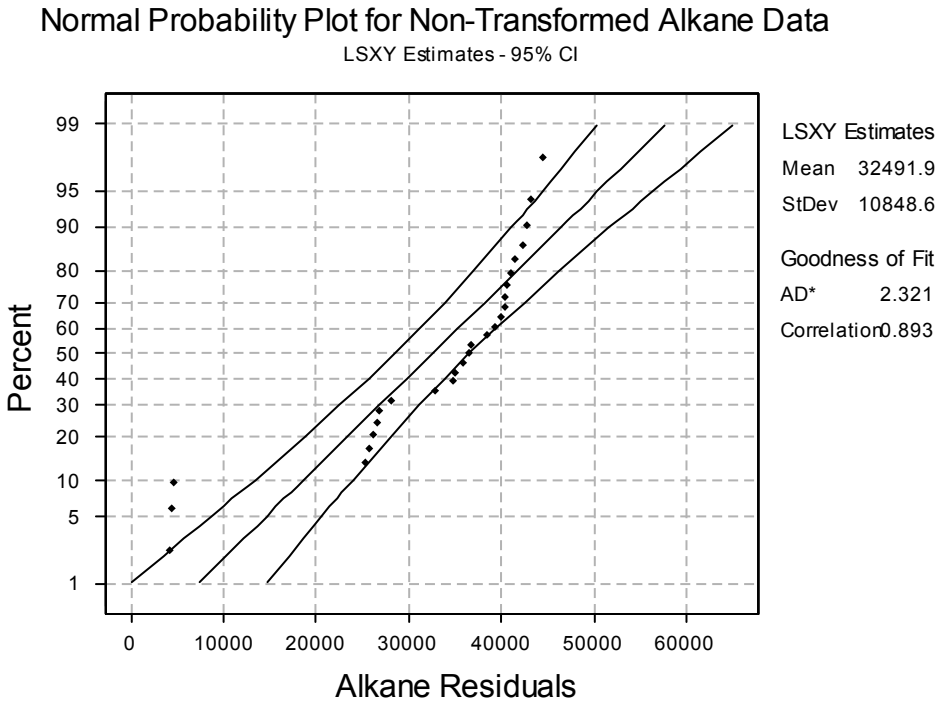

Figure 2. – Probability plot of the surrogate-adjusted alkane residuals showing further evidence of non-linearity.

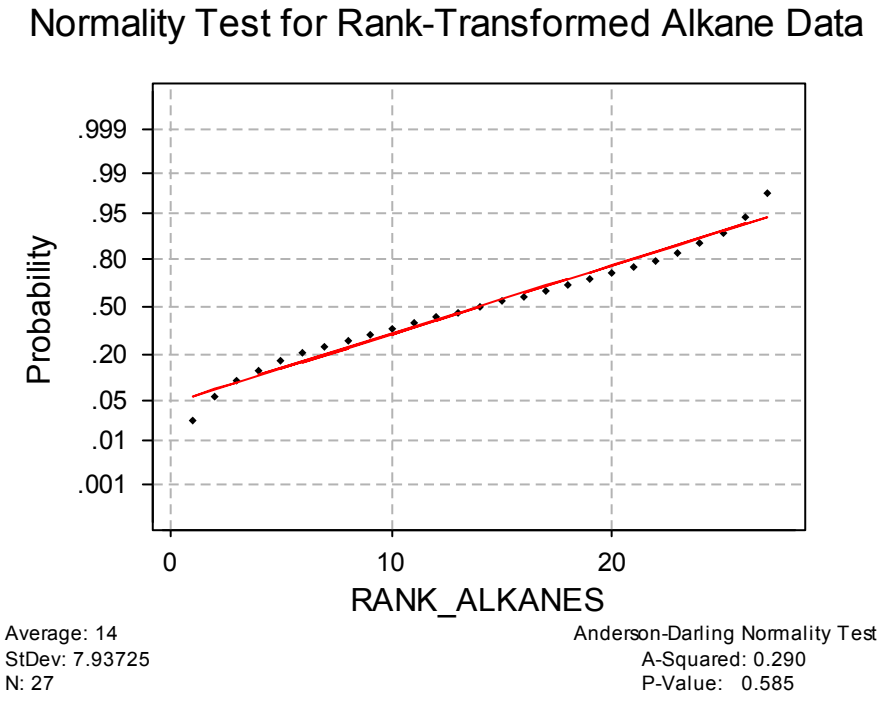

Figure 3. - Anderson-Darling test for normality showing improved linearity of the rank transformed surrogate-adjusted alkane data.

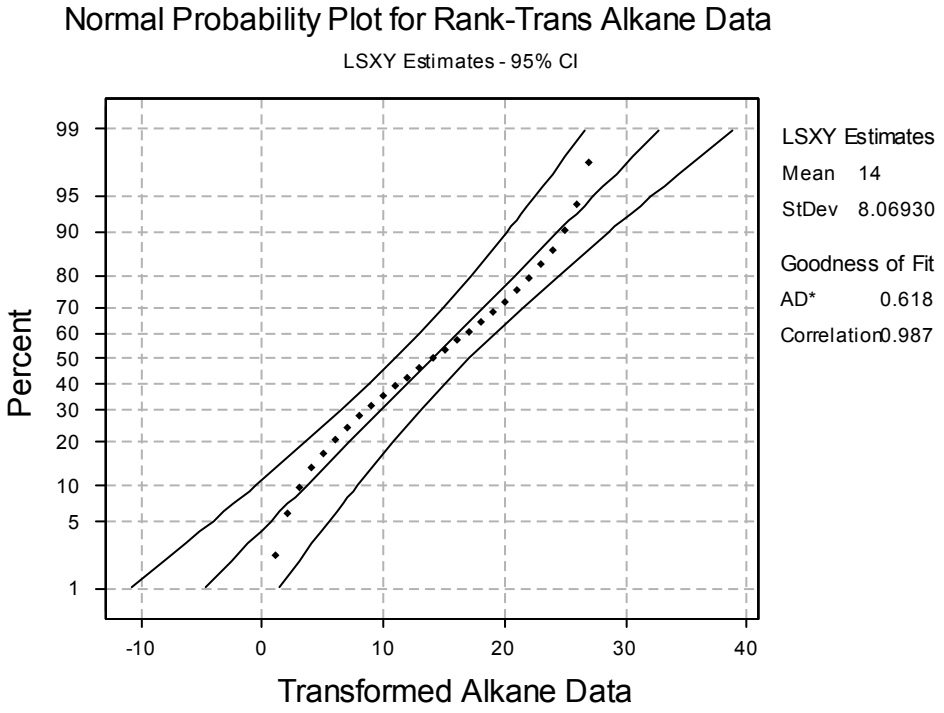

Figure 4. – Probability plot of the rank-transformed surrogate-adjusted alkane residuals showing improved linearity.

Non-transformed and rank-transformed surrogate-adjusted alkane data were analyzed with the General Linear ANOVA Model and Dunnett's multiple comparison tests between treatments and controls. P-statistics calculated for the F-test in the ANOVA table for non-transformed and transformed treatment main effects, and treatment/day interactions are all under the chosen alpha (α) level of 0.05 indicating at least one significant difference between one or more treatments over one or more days.

Adjusted P-values for non-transformed and transformed data Oil Spill Eater II Days 7 and 28 are shown to be significantly less than the Day 0 controls (Table 3). Adjusted P-values for non-transformed and transformed Oil Spill Eater II data, Days 7 and 28 are shown to be significantly less than the Day 7 controls (Table 4). Both transformed and non-transformed product data on Day 28 statistically demonstrated significantly more reduction than the Day 28 control (Table 5).

The Nutrient control behaved in the same manner as the product, showing the same significant differences between the Days 7 and 28 results from the Day 0, Day 7, and Day 28 controls. However, using Tukey's pairwise means comparison method on non-transformed data, the Day 28 Oil Spill Eater II product is also significantly less than the Nutrient alone (Table 6).

Table 2. ANOVA on non-transformed alkane Data

ANOVA non-transformed data

Source	DF	Seq SS	Adj SS	Adj MS	F	P
Day	2	1746813937	1746813937	873406968	697.73	0.000
Treatment	2	1082517417	1082517417	541258708	432.39	0.000
Treatment*Day	4	761225884	761225884	190306471	152.03	0.000
Error	18	22531957	22531957	1251775	----------	----------
Total	26	3613089194	----------	----------	----------	----------

ANOVA on rank transformed alkane data

Source	DF	Seq SS	Adj SS	Adj MS	F	P
Day	2	1178.00	1178.00	589.00	182.79	0.000
Treatment	2	298.67	298.67	149.33	46.34	0.000
Treatment*Day	4	103.33	103.33	25.83	8.02	0.001
Error	18	58.00	58.00	3.22	----------	----------
Total	26	1638.00	----------	----------	----------	----------

Table 3. Dunnett's test results using the Day 0 control as the control level vs. all other treatments and controls (all interactions). Note - non = non-transformed data, trans = transformed data

Treatment	Day	Difference of Means		T-Value		Adjusted P-Value	
		NON	TRANS	NON	TRANS	NON	TRANS
Nutrient	0	-2600	-5.00	-2.85	-3.41	0.0597	0.0094
Oil Spill Eater II	0	-1439	-2.00	-1.58	-1.36	0.5103	0.3439
Control	7	-3920	-8.33	-4.29	-5.69	0.0029	0.0001
Nutrient	7	-8354	-13.33	-9.15	-9.10	0.0000	0.0000
Oil Spill Eater II	7	-16854	-19.33	-18.45	-13.19	0.0000	0.0000
Control	28	-7373	-12.33	-8.07	-8.41	0.0000	0.0000
Nutrient	28	-16663	-18.33	-18.24	-12.51	0.0000	0.0000
Oil Spill Eater II	28	-38896	-23.33	-42.58	-15.92	0.0000	0.0000

Table 4. Dunnett's test results using the Day 7 control as the control level vs. all other treatments and controls (all interactions). Note - non = non-transformed data, trans = transformed data

Treatment	Day	Difference of Means		T-Value		Adjusted P-Value	
		NON	TRANS	NON	TRANS	NON	TRANS
Control	0	3920	8.33	4.26	5.69	0.0029	1.0000
Nutrient	0	1319	3.33	1.44	2.27	0.5977	0.9999
Oil Spill Eater II	0	2480	6.33	2.72	4.32	0.0772	1.0000
Nutrient	7	-4435	-5.00	-4.85	-3.41	0.0009	0.0094
Oil Spill Eater II	7	-12934	-11.00	-14.16	-7.51	0.0000	0.0000
Control	28	-3453	-4.00	-3.78	-2.73	0.0086	0.0376
Nutrient	28	-12743	-10.00	-13.95	-6.82	0.0000	0.0000
Oil Spill Eater II	28	-34977	-15.00	-38.29	-10.23	0.0000	0.0000

Table 5. Dunnett's test results using the Day 28 control as the control level vs. all other treatments and controls (all interactions). Note - non = non-transformed data, trans = transformed data

Treatment	Day	Difference of Means		T-Value		Adjusted P-Value	
		NON	TRANS	NON	TRANS	NON	TRANS
Control	0	7373	12.33	8.07	8.415	1.0000	1.0000
Nutrient	0	4773	7.33	5.22	5.003	1.0000	1.0000
Oil Spill Eater II	0	5934	10.33	6.50	7.050	1.0000	1.0000
Control	7	3453	4.00	3.78	2.729	1.0000	1.0000
Nutrient	7	-981	-1.00	-1.07	-0.682	0.4720	0.6528
Oil Spill Eater II	7	-9481	-7.00	-10.38	-4.776	0.0000	0.0005
Nutrient	28	-9290	-6.00	-10.17	-4.094	0.0000	0.0022
Oil Spill Eater II	28	-31523	-11.00	-34.51	-7.505	0.0000	0.0000

Table 6. Tukey's pairwise means comparison results between the Day 28 Nutrient and the Day 28 OIL SPILL EATER II non-transformed alkane data.

Treatment	Day	Difference of Means	T-Value	Adjusted P-Value
Oil Spill Eater II	28	-22234	-24.34	0.0000

Surrogate-adjusted Aromatic Data

Preliminary analysis of surrogate-adjusted aromatic data for normality (fig.5) showed the raw data to be non-normal with an Anderson-Darling P-statistic of 0.000. This is below the selected α-level of 0.01 and indicates the data are not normally distributed. Further visual evidence of the data's non-linearity can be seen in the probability plot for residuals of the data (fig.6). The data were rank-transformed and reanalyzed for normality (fig.7) giving an Anderson-Darling statistic of 0.585, well above the chosen α-level of 0.01. The probability plot for the residuals (fig. 6) of the data still show a small degree of non-linearity which can slightly lower the ANOVA and Dunnett's test ability to detect a statistical difference between treatments and controls. More on this subject is discussed in the conclusions.

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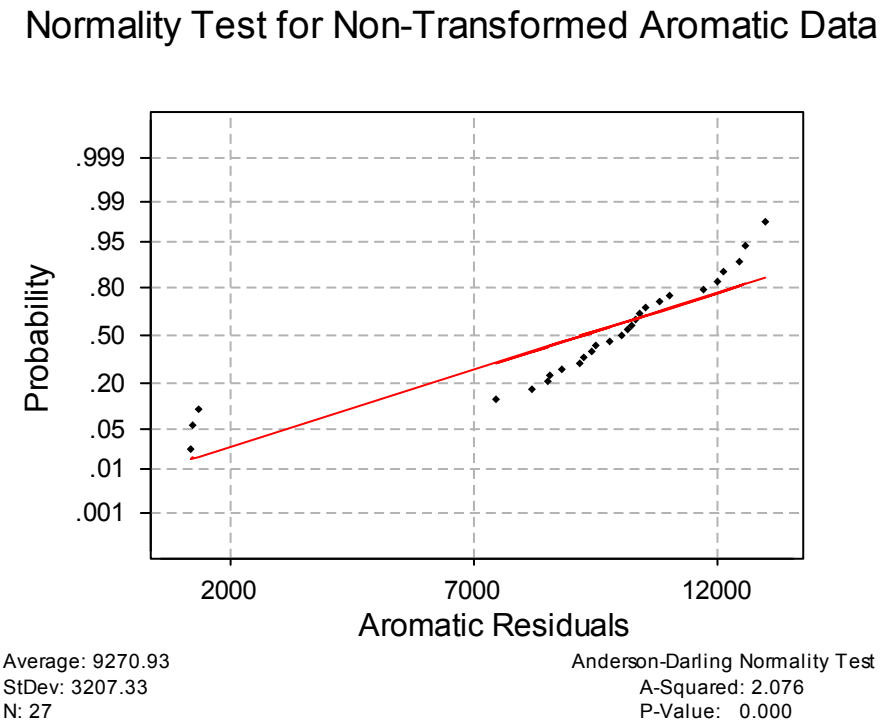

Figure 5. - Anderson-Darling test for normality showing non-linearity of the surrogate adjusted aromatic data.

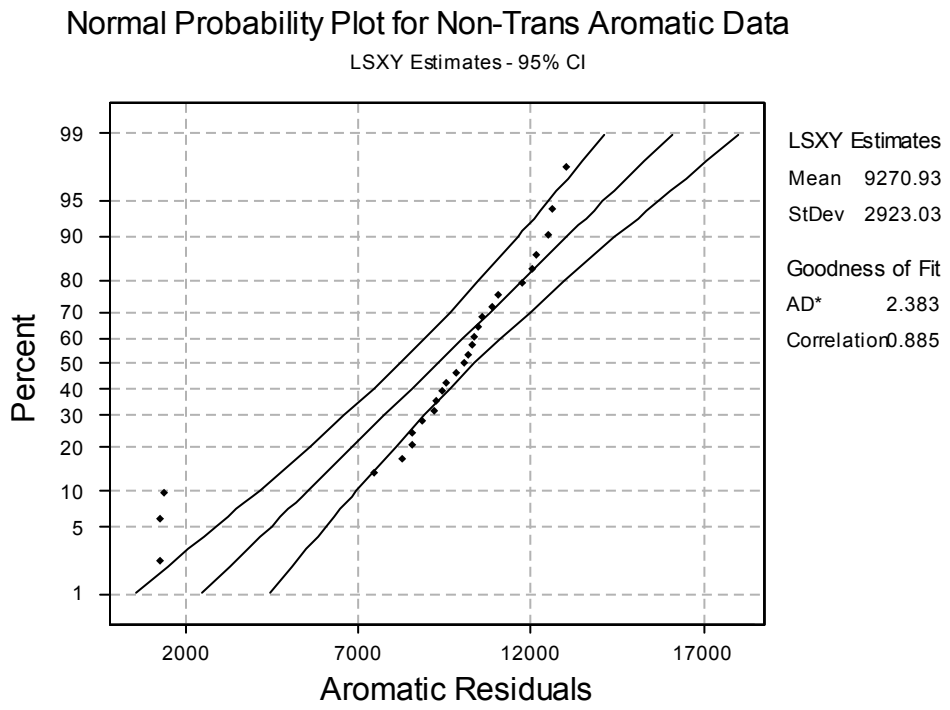

Figure 6. – Probability plot of the surrogate-adjusted aromatic residuals showing further evidence of non-linearity.

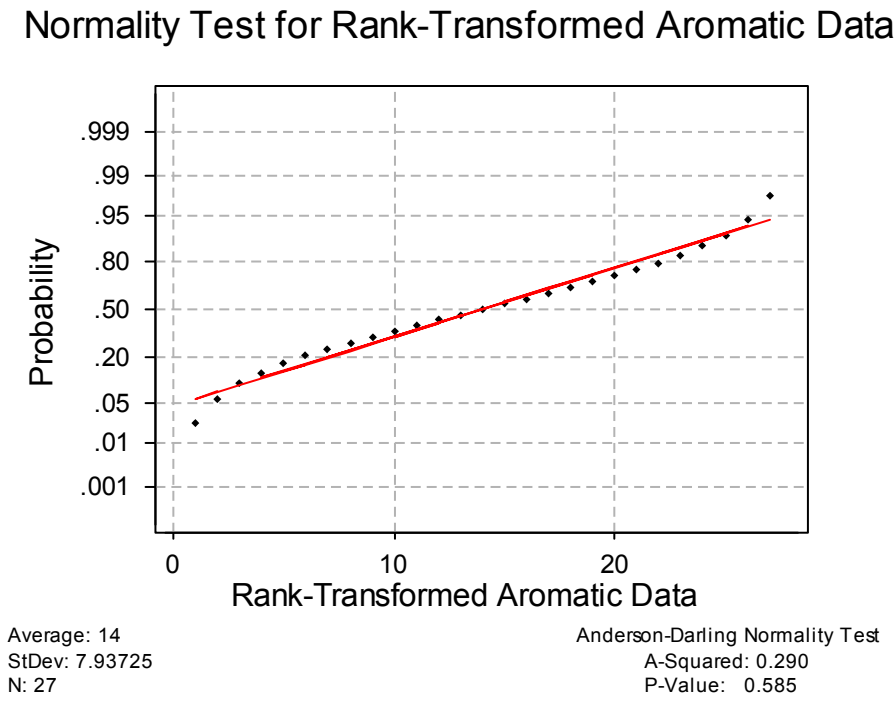

Figure 7. - Anderson-Darling test for normality showing improved linearity of the rank transformed surrogate-adjusted aromatic data.

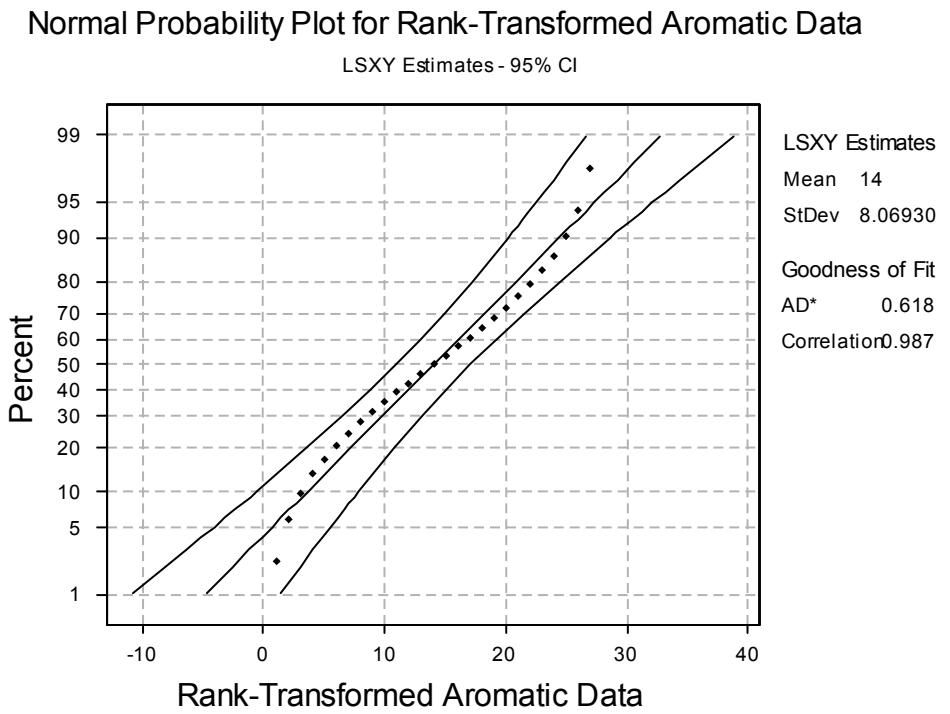

Figure 8. – Probability plot of the rank-transformed surrogate-adjusted aromatic residuals showing improved linearity.

Non-transformed and rank-transformed surrogate-adjusted aromatic data were analyzed with the General Linear ANOVA Model and Dunnett's multiple comparison tests between treatments and controls. P-statistics calculated for the F-test in the ANOVA table for non-transformed and transformed treatment main effects, and treatment/day interactions are all under the chosen alpha (α) level of 0.05 indicating at least one significant difference between one or more treatments over one or more days.

Adjusted P-values for non-transformed and transformed data Oil Spill Eater II Days 7 and 28 are shown to be significantly less than the Day 0 controls (Table 8). Adjusted P-values for non-transformed and transformed product data, Days 7 and 28 are shown to be significantly less than the Day 7 controls (Table 9). Both transformed and non-transformed product data on Day 28 statistically demonstrated significantly more reduction than the Day 28 control (Table 10).

The Nutrient control behaved in a similar manner as the product up to Day 28, showing the same significant differences between the Day 7 and 28 results from Day 0 and Day 7, but not the Day 28 controls. This indicates that nutrient alone is not as effective as the product in reducing aromatics. Using Tukey's pairwise means comparison method on non-transformed data; the Day 28 Oil Spill Eater II product is also significantly less than the Nutrient alone, reinforcing the previous statement (Table 11).

Table 7. ANOVA on Surrogate-adjusted Aromatic Data

ANOVA

Source	DF	Seq SS	Adj SS	Adj MS	F	P
Day	2	122630081	122630081	61315041	142.02	0.000
Treatment	2	60150172	60150172	30075086	69.66	0.000
Treatment*Day	4	76909629	76909629	19227407	44.54	0.000
Error	18	7770989	7770989	431722	----------	----------
Total	26	267460872	----------	----------	----------	----------

ANOVA on rank transformed aromatic data

Source	DF	Seq SS	Adj SS	Adj MS	F	P
Day	2	1102.89	1102.89	551.44	67.37	0.000
Treatment	2	194.00	194.00	97.00	11.85	0.001
Treatment*Day	4	193.78	193.78	48.44	5.92	0.003
Error	18	147.33	58.00	3.22	----------	----------
Total	26	1638.00	----------	----------	----------	----------

Table 8. Dunnett's test using Day 0 control as the control level vs. all other treatments and controls (all interactions). Note - non = non-transformed data, trans = transformed data

Treatment	Day	Difference of Means		T-Value		Adjusted P-Value	
		NON	TRANS	NON	TRANS	NON	TRANS
Nutrient	0	350	1.33	0.65	0.571	0.9772	0.9716
Oil Spill Eater II	0	719	2.67	1.34	1.142	0.9971	0.9974
Control	7	-1080	-4.33	-2.01	-1.855	0.1364	0.1753
Nutrient	7	-1537	-7.67	-2.87	-3.282	0.2880	0.0123
Oil Spill Eater II	7	-3364	-16.33	-6.27	-6.992	0.0000	0.0000
Control	28	-1902	-9.67	-3.54	-4.138	0.0071	0.0020
Nutrient	28	-2497	-12.67	-4.66	-5.422	0.0007	0.0001
Oil Spill Eater II	28	-10168	-19.33	-18.95	-8.276	0.0000	0.0000

Table 9. Dunnett's test using Day 7 Control as the control level vs. all other treatments and controls (all interactions). Note - non = non-transformed data, trans = transformed data

Treatment	Day	Difference of Means		T-Value		Adjusted P-Value	
		NON	TRANS	NON	TRANS	NON	TRANS
Control	0	1080	4.33	2.01	1.855	0.9997	0.9995
Nutrient	0	1430	5.67	2.67	2.426	1.0000	0.9999
Oil Spill Eater II	0	1799	7.00	3.35	2.997	1.0000	1.0000
Nutrient	7	-457	-3.33	-0.85	-1.427	0.5756	0.3186
Oil Spill Eater II	7	-2283	-12.00	-4.26	-5.137	0.0016	0.0002
Control	28	-821	-5.33	-1.53	-2.283	0.2788	0.0862
Nutrient	28	-1417	-8.33	-2.64	-3.567	0.0445	0.0068
Oil Spill Eater II	28	-9088	-15.00	-16.94	-6.421	0.0000	0.0000

Table 10. Dunnett's test using Day 28 control as the control level vs. all other treatments and controls (all interactions). Note - non = non-transformed data, trans = transformed data

Treatment	Day	Difference of Means		T-Value		Adjusted P-Value	
		NON	TRANS	NON	TRANS	NON	TRANS
Control	0	1902	9.67	3.54	4.138	1.0000	1.0000
Nutrient	0	2251	11.00	4.20	4.709	1.0000	1.0000
Oil Spill Eater II	0	2651	12.33	4.88	5.280	1.0000	1.0000
Control	7	821	5.33	4.53	2.283	0.9985	0.9999
Nutrient	7	364	2.00	0.68	0.856	0.9788	0.9872
Oil Spill Eater II	7	-1462	-6.67	-2.73	-2.854	0.0379	0.0294
Nutrient	28	-596	-3.00	-1.11	-1.284	0.4554	0.3778
Oil Spill Eater II	28	-8266	-9.67	-15.41	-4.138	0.0000	0.0020

Table 11. Tukey's pairwise means comparison results between the Day 28 Nutrient and the Day 28 OIL SPILL EATER II non-transformed aromatic data.

Treatment	Day	Difference of Means	T-Value	Adjusted P-Value
Oil Spill Eater II	28	-7671	-14.30	0.0000

Microbiological Analysis Data

The following tables show the most probable number calculated by EPA's most probable number calculator Version 4.04. The data show the continued viability of the organisms through 28 days.

Table 12. Micro Results, MPN (per mL)

Treatments	**Day 0**	**Day 7**	**Day 28**
Control Rep# 1	7,968	8,406	9,843
Control Rep #2	8,179	8,072	10,136
Control Rep #3	7,647	8,724	9,549
Nutrient Rep #1	8,493	1,832,536	7,274,655
Nutrient Rep #2	7,647	2,015,665	7,967,738
Nutrient Rep #3	7,852	2,115,255	7,646,602
Oil Spill Eater II Rep# 1	8,724	7,274,655	182,054,230
Oil Spill Eater II Rep# 2	8,406	7,967,738	175,038,856
Oil Spill Eater II Rep# 3	8,972	7,646,602	197,910,169

Gravimetric Data

The following tables show the P-Values calculated by the two-sample t-test of the Minitab™ program. Table 13 shows the calculated values for Day 28 controls the Day 28 product, and the p-value of the comparison is lower than the chosen alpha (α) level of 0.05 and therefore indicate statistical significance. A computer printout of the analyses can be seen in APPENDIX III. Table 14 shows that the calculated values for the Day 28 controls and both the Day 7 and Day 28 nutrient are both statistically significant.

Table 13. P-Values calculated by the two-sample t-test for product (OIL SPILL EATER II) and the controls

Treatments	Day	Treatment Weight Means (mg)	T-test Scores	p-value
Controls	0	0.099	-2.79	0.966
Oil Spill Eater II	0	0.100		
Controls	7	0.093	1.04	0.187
Oil Spill Eater II	7	0.077		
Controls	28	0.082	42.25	0.000
Oil Spill Eater II	28	0.015		

Table 14. P-Values calculated by the two-sample t-test for the nutrient and the controls

Treatments	Day	Treatment Weight Means (mg)	T-test Scores	p-value
Controls	0	0.099	1.36	0.154
NUTRIENT	0	0.101		
Controls	7	0.093	10.07	0.005
NUTRIENT	7	0.079		
Controls	28	0.082	33.84	0.000
NUTRIENT	28	0.048		

Conclusions

Our conclusions will begin with a discussion of the GC/MS due to its relative importance in judging the tested product effective. A discussion of the microbiological results and gravimetric results will follow.

GC/MS Data

OSEI Corp.Product (Oil Spill Eater II)

Surrogate-adjusted Alkane Data

Surrogate-adjusted alkane Oil Spill Eater II data was shown to be non-normal and had to be rank-transformed to attain an acceptable degree of linearity. Analysis of the surrogate-adjusted data with ANOVA and Dunnett's test did however show the product treatments at Day 7 and 28 to be significantly less than Day 0, 7, and 28 controls. The extreme non-linearity of the non-transformed data makes the results of the ANOVA and Dunnett's test less reliable. The data, upon rank-transformation, achieved the desired linearity showing Day 7 and 28 product results to be significantly less that the respective Day 0, Day 7 and Day 28 controls. Based on this parameter the product appears to be effective.

Surrogate-adjusted alkane nutrient data was shown to be non-normal and had to be rank-transformed to attain an acceptable degree of linearity. Analysis of the surrogate-adjusted data with ANOVA and Dunnett's test did however show the nutrient treatments at Day 7 and 28 to be significantly less than their respective controls. The non-linearity of the non-transformed data may make the results of the ANOVA and Dunnett's test less reliable, however. The data, upon rank-transformation, achieved the desired linearity showing Day 7 and Day 28 nutrient results to be significantly less than the respective Day 0, 7, and 28 controls. Based on this parameter the nutrient treatment alone appears to be effective.

Tukey's test on untransformed alkane data showed a significant difference between the Day 28 Oil Spill Eater II results and Day 28 Nutrient results, indicating that the product seems more effective than nutrient treatment by itself.

Surrogate-adjusted Aromatic Data

Surrogate-adjusted aromatic Oil Spill Eater II data was shown to be non-normal and had to be rank-transformed to attain an acceptable degree of linearity. Analysis of the surrogate-adjusted data with ANOVA and Dunnett's test did however show the product treatments at Day 7 and 28 to be significantly less than Day 0, 7, and 28 controls. The extreme non-linearity of the non-transformed data makes the results of the ANOVA and Dunnett's test less reliable. The data, upon rank-transformation, achieved the desired linearity showing Day 7 and 28 product results to be significantly less that the respective Day 0, Day 7 and Day 28 controls. Based on this parameter the product appears to be effective.

Surrogate-adjusted aromatic nutrient data was shown to be non-normal and had to be rank-transformed to attain an acceptable degree of linearity. Analysis of the surrogate-adjusted data with ANOVA and Dunnett's test did however show the nutrient treatments at Day 7 to be significantly less than the Day 0 and Day 7 controls. The non-linearity of the non-transformed data may make the results of the ANOVA and Dunnett's test less reliable, however. The data, upon rank-transformation, achieved the desired linearity showing Day 7 nutrient results to be significantly less than the respective Day 0, and Day 7, but not the Day 28 controls. Based on this parameter the nutrient treatment alone is not as effective as the product after 28 days and is not significantly than the control alone.

Tukey's test on the aromatic data also showed a significant difference between the Day 28 Oil Spill Eater II results and Day 28 Nutrient results, indicating that the product seems to be more effective than nutrient treatment.

Microbiological Results

OSEI Corp. Product (Oil Spill Eater II)

The microbiological results speak for themselves. They show a definite continued microbiological viability over time for the product treatments. Similar to the product treatment, the nutrient treatments show a definite continued microbiological viability over time also.

Gravimetric Results

OSEI Corp.Product (Oil Spill Eater II)

Gravimetric results showed statistical significance between products and controls by Day 28. This tends to support the bulk of the data seen in both GC/MS analysis and microbiological analysis. Gravimetric results showed statistical significance between the Nutrient and the control on Day 7 and Day 28. This data tends to support the bulk of the data in both GC/MS analysis and microbiological analysis.

Discussion on Surrogate Recovery – QA/QC

The purpose of incorporating surrogate recovery percentages into the raw data is to check the efficiency of extraction techniques and in most cases is a valid quality control check. The acceptable range of surrogate recovery percentages is given in the cited Federal Register document titled Environmental Protection Agency, (EPA) Pt. 300, Appendix C, page 237, as 70%-120%. Percentage recoveries for product and controls for Day 0, Day 7 and Day 28 are given in Table 15 below.

Table 15. Surrogate recovery percentages.

Treatment		Day 0	Day 7	Day 28
Control Rep #1	5-Alpha Andorstane	0.90	0.82	0.82
	Phenanthrene-d10	0.94	0.77	0.79
Control Rep #2	5-Alpha Andorstane	0.86	0.90	0.76
	Phenanthrene-d10	0.81	0.94	0.77
Control Rep #3	5-Alpha Andorstane	0.78	0.87	0.87
	Phenanthrene-d10	0.78	0.90	0.83
NUT Rep #1	5-Alpha Andorstane	0.86	0.99	0.85
	Phenanthrene-d10	0.88	0.74	0.96
NUT Rep# 2	5-Alpha Andorstane	0.90	0.96	0.77
	Phenanthrene-d10	0.94	0.71	0.95
NUT Rep# 3	5-Alpha Andorstane	0.88	0.89	0.84
	Phenanthrene-d10	0.96	0.72	0.95
Oil Spill Eater II Rep #1	5-Alpha Andorstane	0.85	0.90	0.90
	Phenanthrene-d10	0.89	0.77	0.71
Oil Spill Eater II Rep# 2	5-Alpha Andorstane	0.83	0.87	0.92
	Phenanthrene-d10	0.85	0.76	0.73
Oil Spill Eater II Rep# 3	5-Alpha Andorstane	0.91	0.86	0.90
	Phenanthrene-d10	0.94	0.79	0.71

Statistical Analysis

Lastly, we feel that the nature of the data may reduce the ANOVA and Dunnett's means comparison test to detect a legitimate statistical effect between treatments and controls. Before the data can be subjected to the ANOVA analysis, it must pass a "normality" test where a calculated P-value is compared to a chosen alpha (α) level (usually 0.01). ANOVA has reduced power to detect a significant statistical difference when analyzing non-normal data (Zar, 1984). However, data that passes a formal test for normality is not necessarily from a "normal distribution" strictly speaking. A test for normality looks for linearity, which is only one aspect of the assumptions of normality. The data may also be skewed to the left or right as indicated by measurement of the median, may have 'heavy tails" in the distribution or may contain outliers. Normality after all, is usually a matter of degrees and not just whether the data are, or are not normally distributed. If data are not normal in the strictest sense, we feel the test's ability to detect subtle but significant statistical differences may be compromised to some degree.

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APPENDIX I

CONTROL, REPLICATE 1
Testing Date: Day 0
Initial Oil Weight: 520 mg
Final Extracted Volume: 10 mL

Alkane Analyte:	Concentration (ng/mg)	Surrogate Corrected (ng/mg)
nC-10 Decane	ND	ND
nC-11 Undecane	ND	ND
nC-12 Dodecane	ND	ND
nC-13 Tridecane	ND	ND
nC-14 Tetradecane	13.4	15
nC-15 Pentadecane	91	101
nC-16 Hexadecane	424	471
nC-17 Heptadecane	1175	1305
Pristane	746	829
nC-18 Octadecane	1692	1880
Phytane	969	1076
nC-19 Nonadecane	2112	2347
nC-20 Eicosane	2487	2764
nC-21 Heneicosane	2296	2552
nC-22 Docosane	2561	2845
nC-23 Tricosane	2522	2802
nC-24 Tetracosane	2478	2753
nC-25 Pentacosane	2044	2271
nC-26 Hexacosane	2112	2347
nC-27 Heptacosane	1833	2037
nC-28 Octacosane	1579	1755
nC-29 Nonacosane	1633	1815
nC-30 Triacontane	2126	2363
nC-31 Hentriacontane	2445	2717
nC-32 Dotriacontane	2148	2387
nC-33 Tritriacontane	1301	1445
nC-34 Tetratriacontane	1005	1116
nC-35 Pentatriacontane	621	690
Total Alkanes	***38415***	***42683***
Aromatic Analyte:		
Naphthalene	ND	ND
C1-Naphthalenes	4.8	5.1
C2-Naphthalenes	46	49
C3-Naphthalenes	179	191
C4-Naphthalenes	323	344
Fluorene	17	18
C1-Fluorenes	174	186
C2-Fluorenes	441	469
C3- Fluorenes	521	554
Dibenzothiophene	199	212
C1-Dibenzothiophenes	626	666
C2-Dibenzothiophenes	1218	1296
C3- Dibenzothiophenes	996	1059
Phenanthrene	359	381
C1-Phenanthrenes	1073	1142
C2-Phenanthrenes	1630	1735
C3-Phenanthrenes	1120	1191
C4-Phenanthrenes	496	528
Anthracene	ND	ND
Fluoranthene	9.4	10.0
Pyrene	6.9	7.4
C1- Pyrenes	174	185
C2- Pyrenes	239	254
C3- Pyrenes	217	231
C4- Pyrenes	134	143
Naphthobenzothiophene	92	98
C-1 Naphthobenzothiophenes	319	339
C-2 Naphthobenzothiophenes	372	395
C-3 Naphthobenzothiophenes	290	309
Benzo (a) Anthracene	9.5	10.1
Chrysene	106	113
C1- Chrysenes	171	182
C2- Chrysenes	234	249
C3- Chrysenes	228	242
C4- Chrysenes	144	153
Benzo (b) Fluoranthene	15	16
Benzo (k) Fluoranthene	ND	ND
Benzo (e) Pyrene	32	34
Benzo (a) Pyrene	ND	ND
Perylene	ND	ND
Indeno (1,2,3 - cd) Pyrene	ND	ND
Dibenzo (a,h) anthracene	ND	ND
Benzo (g,h,i) perylene	ND	ND
Total Aromatics	***12216***	***12995***
% Surrogate Recovery		
5 Alpha Androstane	0.90	1.00
Phenanthrene d-10	0.94	1.00

CONTROL, REPLICATE 2
Testing Date: Day 0
Initial Oil Weight: 530 mg
Final Extracted Volume: 10 mL

Alkane Analyte:	Concentration (ng/mg)	Surrogate Corrected (ng/mg)
nC-10 Decane	ND	ND
nC-11 Undecane	ND	ND
nC-12 Dodecane	ND	ND
nC-13 Tridecane	ND	ND
nC-14 Tetradecane	10.0	11.6
nC-15 Pentadecane	95	110
nC-16 Hexadecane	459	533
nC-17 Heptadecane	1216	1413
Pristane	722	840
nC-18 Octadecane	1736	2018
Phytane	946	1101
nC-19 Nonadecane	2103	2446
nC-20 Eicosane	2405	2796
nC-21 Heneicosane	2512	2921
nC-22 Docosane	2602	3025
nC-23 Tricosane	2638	3067
nC-24 Tetracosane	2628	3056
nC-25 Pentacosane	2263	2631
nC-26 Hexacosane	2309	2685
nC-27 Heptacosane	1946	2263
nC-28 Octacosane	1803	2096
nC-29 Nonacosane	1324	1540
nC-30 Triacontane	2066	2402
nC-31 Hentriacontane	2580	3000
nC-32 Dotriacontane	1681	1955
nC-33 Tritriacontane	1076	1252
nC-34 Tetratriacontane	1006	1170
nC-35 Pentatriacontane	430	500
Total Alkanes	***38304***	***44539***
Aromatic Analyte:		
Naphthalene	ND	ND
C1-Naphthalenes	4.8	5.9
C2-Naphthalenes	29	36
C3-Naphthalenes	165	204
C4-Naphthalenes	254	313
Fluorene	15	19
C1-Fluorenes	133	164
C2-Fluorenes	308	380
C3- Fluorenes	349	431
Dibenzothiophene	144	178
C1-Dibenzothiophenes	408	504
C2-Dibenzothiophenes	822	1015
C3- Dibenzothiophenes	672	830
Phenanthrene	257	317
C1-Phenanthrenes	822	1015
C2-Phenanthrenes	1121	1384
C3-Phenanthrenes	925	1142
C4-Phenanthrenes	355	438
Anthracene	ND	ND
Fluoranthene	7.3	9.0
Pyrene	5.6	6.9
C1- Pyrenes	138	170
C2- Pyrenes	183	226
C3- Pyrenes	170	210
C4- Pyrenes	96	119
Naphthobenzothiophene	70	87
C-1 Naphthobenzothiophenes	239	295
C-2 Naphthobenzothiophenes	281	347
C-3 Naphthobenzothiophenes	206	254
Benzo (a) Anthracene	8.2	10.2
Chrysene	88	108
C1- Chrysenes	144	178
C2- Chrysenes	194	239
C3- Chrysenes	176	217
C4- Chrysenes	101	125
Benzo (b) Fluoranthene	13	16
Benzo (k) Fluoranthene	ND	ND
Benzo (e) Pyrene	29	36
Benzo (a) Pyrene	ND	ND
Perylene	ND	ND
Indeno (1,2,3 - cd) Pyrene	ND	ND
Dibenzo (a,h) anthracene	ND	ND
Benzo (g,h,i) perylene	ND	ND
Total Aromatics	***8933***	***11029***
% Surrogate Recovery		
5 Alpha Androstane	0.86	1.00
Phenanthrene d-10	0.81	1.00

CONTROL, REPLICATE 3
Testing Date: Day 0
Initial Oil Weight: 540 mg
Final Extracted Volume: 10 mL

Alkane Analyte:	Concentration (ng/mg)	Surrogate Corrected (ng/mg)
nC-10 Decane	ND	ND
nC-11 Undecane	ND	ND
nC-12 Dodecane	ND	ND
nC-13 Tridecane	ND	ND
nC-14 Tetradecane	9.7	12
nC-15 Pentadecane	84	108
nC-16 Hexadecane	407	522
nC-17 Heptadecane	1146	1469
Pristane	631	809
nC-18 Octadecane	1660	2128
Phytane	880	1128
nC-19 Nonadecane	2018	2587
nC-20 Eicosane	2245	2879
nC-21 Heneicosane	2177	2791
nC-22 Docosane	2337	2996
nC-23 Tricosane	2391	3066
nC-24 Tetracosane	2259	2896
nC-25 Pentacosane	1811	2321
nC-26 Hexacosane	1829	2345
nC-27 Heptacosane	1518	1947
nC-28 Octacosane	1271	1630
nC-29 Nonacosane	1243	1593
nC-30 Triacontane	1595	2045
nC-31 Hentriacontane	1904	2441
nC-32 Dotriacontane	1425	1827
nC-33 Tritriacontane	1139	1461
nC-34 Tetratriacontane	789	1012
nC-35 Pentatriacontane	466	598
Total Alkanes	***33236***	***42610***
Aromatic Analyte:		
Naphthalene	ND	ND
C1-Naphthalenes	3.8	4.8
C2-Naphthalenes	32	41
C3-Naphthalenes	158	203
C4-Naphthalenes	238	306
Fluorene	13	17
C1-Fluorenes	116	149
C2-Fluorenes	263	337
C3- Fluorenes	338	434
Dibenzothiophene	118	152
C1-Dibenzothiophenes	423	542
C2-Dibenzothiophenes	789	1011
C3- Dibenzothiophenes	635	814
Phenanthrene	231	296
C1-Phenanthrenes	745	955
C2-Phenanthrenes	1017	1304
C3-Phenanthrenes	706	905
C4-Phenanthrenes	327	419
Anthracene	ND	ND
Fluoranthene	6.0	7.7
Pyrene	4.8	6.2
C1- Pyrenes	136	174
C2- Pyrenes	159	204
C3- Pyrenes	141	180
C4- Pyrenes	89	114
Naphthobenzothiophene	58	74
C-1 Naphthobenzothiophenes	208	267
C-2 Naphthobenzothiophenes	230	295
C-3 Naphthobenzothiophenes	200	257
Benzo (a) Anthracene	6.3	8.1
Chrysene	68	87
C1- Chrysenes	113	145
C2- Chrysenes	169	217
C3- Chrysenes	144	185
C4- Chrysenes	101	129
Benzo (b) Fluoranthene	10.9	14
Benzo (k) Fluoranthene	ND	ND
Benzo (e) Pyrene	23	30
Benzo (a) Pyrene	ND	ND
Perylene	ND	ND
Indeno (1,2,3 - cd) Pyrene	ND	ND
Dibenzo (a,h) anthracene	ND	ND
Benzo (g,h,i) perylene	ND	ND
Total Aromatics	***8020***	***10282***
% Surrogate Recovery		
5 Alpha Androstane	0.78	1.00
Phenanthrene d-10	0.78	1.00

CONTROL
STATISTICS FOR SURROGATE CORRECTED DATA
Testing Date: Day 0

Alkane Analyte:	Replicate #1 Conc (ng/mg)	Replicate #2 Conc (ng/mg)	Replicate #3 Conc (ng/mg)	Average	Stdev	%RSD
nC-10 Decane	ND	ND	ND	ND	ND	ND
nC-11 Undecane	ND	ND	ND	ND	ND	ND
nC-12 Dodecane	ND	ND	ND	ND	ND	ND
nC-13 Tridecane	ND	ND	ND	ND	ND	ND
nC-14 Tetradecane	15	12	12	13	1.7	13
nC-15 Pentadecane	101	110	108	106	5.0	4.7
nC-16 Hexadecane	471	533	522	509	33	6.4
nC-17 Heptadecane	1305	1413	1146	1288	134	10
Pristane	829	840	809	826	16	1.9
nC-18 Octadecane	1880	2018	2128	2009	124	6.2
Phytane	1076	1101	1128	1102	26	2.4
nC-19 Nonadecane	2347	2446	2587	2460	121	4.9
nC-20 Eicosane	2764	2796	2879	2813	59	2.1
nC-21 Heneicosane	2552	2921	2791	2755	188	6.8
nC-22 Docosane	2845	3025	2996	2955	96	3.3
nC-23 Tricosane	2802	3067	3066	2978	153	5.1
nC-24 Tetracosane	2753	3056	2896	2901	151	5.2
nC-25 Pentacosane	2271	2631	2321	2408	195	8.1
nC-26 Hexacosane	2347	2685	2345	2459	196	8.0
nC-27 Heptacosane	2037	2263	1947	2082	163	7.8
nC-28 Octacosane	1755	1803	1630	1729	89	5.2
nC-29 Nonacosane	1815	1540	1593	1649	146	8.8
nC-30 Triacontane	2363	2402	2045	2270	196	8.6
nC-31 Hentriacontane	2717	3000	2441	2719	280	10
nC-32 Dotriacontane	2387	1955	1827	2056	293	14
nC-33 Tritriacontane	1445	1252	1461	1386	117	8.4
nC-34 Tetratriacontane	1116	1170	1012	1099	81	7.3
nC-35 Pentatriacontane	690	500	598	596	95	16
Total Alkanes	***42683***	***44539***	***42287***	***43170***	***1202***	***2.8***
Aromatic Analyte:	**Conc (ng/mg)**	**Conc (ng/mg)**	**Conc (ng/mg)**	**Average**	**Stdev**	**%RSD**
Naphthalene	ND	ND	ND	ND	ND	ND
C1-Naphthalenes	5.1	5.9	4.8	5.3	0.6	11
C2-Naphthalenes	49	36	41	42	6.5	16
C3-Naphthalenes	191	204	203	199	7	3.6
C4-Naphthalenes	344	313	306	321	20	6.3
Fluorene	18	19	17	18	1.1	6.1
C1-Fluorenes	186	164	149	166	18	11
C2-Fluorenes	469	380	337	395	67	17
C3- Fluorenes	554	431	434	473	70	15
Dibenzothiophene	212	178	152	180	30	17
C1-Dibenzothiophenes	666	504	542	571	85	15
C2-Dibenzothiophenes	1296	1015	1011	1107	163	15
C3- Dibenzothiophenes	1059	830	814	901	137	15
Phenanthrene	381	317	296	331	45	13
C1-Phenanthrenes	1142	1015	955	1037	95	9.2
C2-Phenanthrenes	1735	1384	1304	1474	229	16
C3-Phenanthrenes	1191	1142	905	1080	153	14
C4-Phenanthrenes	528	438	419	462	58	13
Anthracene	ND	ND	ND	ND	ND	ND
Fluoranthene	10.0	9.0	7.7	8.9	1.2	13
Pyrene	7.4	6.9	6.2	6.8	0.6	8.6
C1- Pyrenes	185	170	174	176	7.5	4.3
C2- Pyrenes	254	226	204	228	25	11
C3- Pyrenes	231	210	180	207	25	12
C4- Pyrenes	143	119	114	125	15.5	12
Naphthobenzothiophene	98	87	74	86	12.1	14
C-1 Naphthobenzothiophenes	339	295	267	300	36	12
C-2 Naphthobenzothiophenes	395	347	295	345	50	15
C-3 Naphthobenzothiophenes	309	254	257	273	31	11
Benzo (a) Anthracene	10.1	10.2	8.1	9.5	1.2	12
Chrysene	113	108	87	103	14	14
C1- Chrysenes	182	178	145	168	20	12
C2- Chrysenes	249	239	217	235	16	7.0
C3- Chrysenes	242	217	185	215	29	13
C4- Chrysenes	153	125	129	136	15.0	11
Benzo (b) Fluoranthene	16.4	16.0	14.0	15	1.3	8.2
Benzo (k) Fluoranthene	ND	ND	ND	ND	ND	ND
Benzo (e) Pyrene	33.6	35.6	30.1	33	2.8	8.4
Benzo (a) Pyrene	ND	ND	ND	ND	ND	ND
Perylene	ND	ND	ND	ND	ND	ND
Indeno (1,2,3 - cd) Pyrene	ND	ND	ND	ND	ND	ND
Dibenzo (a,h) anthracene	ND	ND	ND	ND	ND	ND
Benzo (g,h,i) perylene	ND	ND	ND	ND	ND	ND
Total Aromatics	***12995***	***11029***	***10282***	***11435***	***1401***	***12***

NUTRIENT, REPLICATE 1
Testing Date: Day 0
Initial Oil Weight: 520 mg
Final Extracted Volume: 10 mL

Alkane Analyte:	Concentration (ng/mg)	Surrogate Corrected (ng/mg)
nC-10 Decane	ND	ND
nC-11 Undecane	ND	ND
nC-12 Dodecane	ND	ND
nC-13 Tridecane	ND	ND
nC-14 Tetradecane	14.65	17
nC-15 Pentadecane	86	100
nC-16 Hexadecane	428	497
nC-17 Heptadecane	1194	1389
Pristane	554	644
nC-18 Octadecane	1579	1837
Phytane	1007	1171
nC-19 Nonadecane	1988	2311
nC-20 Eicosane	2299	2673
nC-21 Heneicosane	2032	2363
nC-22 Docosane	2478	2882
nC-23 Tricosane	2660	3093
nC-24 Tetracosane	2672	3107
nC-25 Pentacosane	2220	2582
nC-26 Hexacosane	2239	2604
nC-27 Heptacosane	1416	1647
nC-28 Octacosane	1751	2036
nC-29 Nonacosane	1359	1580
nC-30 Triacontane	1807	2101
nC-31 Hentriacontane	1576	1832
nC-32 Dotriacontane	1185	1377
nC-33 Tritriacontane	1120	1303
nC-34 Tetratriacontane	466	542
nC-35 Pentatriacontane	564	656
Total Alkanes	***34695***	***40344***
Aromatic Analyte:		
Naphthalene	ND	ND
C1-Naphthalenes	6.2	7.1
C2-Naphthalenes	39	44
C3-Naphthalenes	177	202
C4-Naphthalenes	330	375
Fluorene	14	16
C1-Fluorenes	158	179
C2-Fluorenes	315	358
C3- Fluorenes	423	481
Dibenzothiophene	141	160
C1-Dibenzothiophenes	505	574
C2-Dibenzothiophenes	819	930
C3- Dibenzothiophenes	791	899
Phenanthrene	258	293
C1-Phenanthrenes	843	958
C2-Phenanthrenes	1238	1406
C3-Phenanthrenes	924	1050
C4-Phenanthrenes	404	459
Anthracene	ND	ND
Fluoranthene	7.7	8.8
Pyrene	7.9	8.9
C1- Pyrenes	128	145
C2- Pyrenes	180	205
C3- Pyrenes	166	188
C4- Pyrenes	125	142
Naphthobenzothiophene	73	83
C-1 Naphthobenzothiophenes	248	282
C-2 Naphthobenzothiophenes	281	319
C-3 Naphthobenzothiophenes	207	235
Benzo (a) Anthracene	5.6	6.3
Chrysene	83	94
C1- Chrysenes	155	176
C2- Chrysenes	188	213
C3- Chrysenes	148	168
C4- Chrysenes	122	139
Benzo (b) Fluoranthene	15	17
Benzo (k) Fluoranthene	ND	ND
Benzo (e) Pyrene	26	30
Benzo (a) Pyrene	ND	ND
Perylene	ND	ND
Indeno (1,2,3 - cd) Pyrene	ND	ND
Dibenzo (a,h) anthracene	ND	ND
Benzo (g,h,i) perylene	ND	ND
Total Aromatics	***9549***	***10852***
% Surrogate Recovery		
5 Alpha Androstane	0.86	1.00
Phenanthrene d-10	0.88	1.00

NUTRIENT, REPLICATE 2
Testing Date: Day 0
Initial Oil Weight: 540 mg
Final Extracted Volume: 10 mL

Alkane Analyte:	Concentration (ng/mg)	Surrogate Corrected (ng/mg)
nC-10 Decane	ND	ND
nC-11 Undecane	ND	ND
nC-12 Dodecane	ND	ND
nC-13 Tridecane	ND	ND
nC-14 Tetradecane	16	18
nC-15 Pentadecane	81	90
nC-16 Hexadecane	464	516
nC-17 Heptadecane	1124	1249
Pristane	674	748
nC-18 Octadecane	1680	1867
Phytane	932	1035
nC-19 Nonadecane	2075	2306
nC-20 Eicosane	2363	2625
nC-21 Heneicosane	2425	2694
nC-22 Docosane	2754	3059
nC-23 Tricosane	2781	3090
nC-24 Tetracosane	2873	3193
nC-25 Pentacosane	2126	2363
nC-26 Hexacosane	2188	2431
nC-27 Heptacosane	1563	1737
nC-28 Octacosane	1771	1968
nC-29 Nonacosane	1453	1614
nC-30 Triacontane	1861	2068
nC-31 Hentriacontane	1521	1690
nC-32 Dotriacontane	1421	1579
nC-33 Tritriacontane	1153	1281
nC-34 Tetratriacontane	493	548
nC-35 Pentatriacontane	602	669
Total Alkanes	***36394***	***40438***
Aromatic Analyte:		
Naphthalene	ND	ND
C1-Naphthalenes	7.9	8.4
C2-Naphthalenes	49	52
C3-Naphthalenes	226	241
C4-Naphthalenes	411	438
Fluorene	18	19
C1-Fluorenes	178	190
C2-Fluorenes	394	419
C3- Fluorenes	461	490
Dibenzothiophene	163	173
C1-Dibenzothiophenes	613	652
C2-Dibenzothiophenes	1013	1077
C3- Dibenzothiophenes	965	1027
Phenanthrene	308	327
C1-Phenanthrenes	1012	1076
C2-Phenanthrenes	1299	1382
C3-Phenanthrenes	1022	1087
C4-Phenanthrenes	497	528
Anthracene	ND	ND
Fluoranthene	7.7	8.1
Pyrene	8.1	8.6
C1- Pyrenes	155	165
C2- Pyrenes	220	234
C3- Pyrenes	205	218
C4- Pyrenes	140	149
Naphthobenzothiophene	82	87
C-1 Naphthobenzothiophenes	308	327
C-2 Naphthobenzothiophenes	346	368
C-3 Naphthobenzothiophenes	271	288
Benzo (a) Anthracene	5.3	5.6
Chrysene	102	108
C1- Chrysenes	175	186
C2- Chrysenes	246	261
C3- Chrysenes	194	207
C4- Chrysenes	146	155
Benzo (b) Fluoranthene	16	18
Benzo (k) Fluoranthene	ND	ND
Benzo (e) Pyrene	30	32
Benzo (a) Pyrene	ND	ND
Perylene	ND	ND
Indeno (1,2,3 - cd) Pyrene	ND	ND
Dibenzo (a,h) anthracene	ND	ND
Benzo (g,h,i) perylene	ND	ND
Total Aromatics	***11290***	***12011***
% Surrogate Recovery		
5 Alpha Androstane	0.90	1.00
Phenanthrene d-10	0.94	1.00

NUTRIENT, REPLICATE 3
Testing Date: Day 0
Initial Oil Weight: 510 mg
Final Extracted Volume: 10 mL

Alkane Analyte:	Concentration (ng/mg)	Surrogate Corrected (ng/mg)
nC-10 Decane	ND	ND
nC-11 Undecane	ND	ND
nC-12 Dodecane	ND	ND
nC-13 Tridecane	ND	ND
nC-14 Tetradecane	14	16
nC-15 Pentadecane	84	96
nC-16 Hexadecane	449	510
nC-17 Heptadecane	1202	1366
Pristane	632	718
nC-18 Octadecane	1609	1828
Phytane	976	1109
nC-19 Nonadecane	1990	2262
nC-20 Eicosane	2308	2622
nC-21 Heneicosane	2513	2855
nC-22 Docosane	2657	3020
nC-23 Tricosane	2699	3067
nC-24 Tetracosane	2695	3063
nC-25 Pentacosane	2132	2422
nC-26 Hexacosane	2104	2391
nC-27 Heptacosane	1439	1635
nC-28 Octacosane	1656	1882
nC-29 Nonacosane	1577	1793
nC-30 Triacontane	1915	2176
nC-31 Hentriacontane	1725	1961
nC-32 Dotriacontane	1251	1421
nC-33 Tritriacontane	1263	1435
nC-34 Tetratriacontane	525	597
nC-35 Pentatriacontane	601	683
Total Alkanes	***36015***	***40926***
Aromatic Analyte:		
Naphthalene	ND	ND
C1-Naphthalenes	8.1	8.4
C2-Naphthalenes	46	48
C3-Naphthalenes	234	244
C4-Naphthalenes	473	493
Fluorene	18	19
C1-Fluorenes	189	197
C2-Fluorenes	389	405
C3- Fluorenes	576	600
Dibenzothiophene	176	184
C1-Dibenzothiophenes	634	661
C2-Dibenzothiophenes	1039	1082
C3- Dibenzothiophenes	970	1010
Phenanthrene	322	335
C1-Phenanthrenes	1062	1106
C2-Phenanthrenes	1398	1456
C3-Phenanthrenes	1127	1174
C4-Phenanthrenes	561	584
Anthracene	ND	ND
Fluoranthene	8.7	9.0
Pyrene	9.0	9.4
C1- Pyrenes	178	185
C2- Pyrenes	244	254
C3- Pyrenes	203	211
C4- Pyrenes	149	156
Naphthobenzothiophene	75	78
C-1 Naphthobenzothiophenes	317	331
C-2 Naphthobenzothiophenes	380	396
C-3 Naphthobenzothiophenes	270	281
Benzo (a) Anthracene	5.9	6.1
Chrysene	87	91
C1- Chrysenes	214	223
C2- Chrysenes	254	265
C3- Chrysenes	174	181
C4- Chrysenes	151	158
Benzo (b) Fluoranthene	20	21
Benzo (k) Fluoranthene	ND	ND
Benzo (e) Pyrene	30	31
Benzo (a) Pyrene	ND	ND
Perylene	ND	ND
Indeno (1,2,3 - cd) Pyrene	ND	ND
Dibenzo (a,h) anthracene	ND	ND
Benzo (g,h,i) perylene	ND	ND
Total Aromatics	***11993***	***12492***
% Surrogate Recovery		
5 Alpha Androstane	0.88	1.00
Phenanthrene d-10	0.96	1.00

NUTRIENT
STATISTICS FOR SURROGATE CORRECTED DATA
Testing Date: Day 0

Alkane Analyte:	Replicate #1 Conc (ng/mg)	Replicate #2 Conc (ng/mg)	Replicate #3 Conc (ng/mg)	Average	Stdev	%RSD
nC-10 Decane	ND	ND	ND	ND	ND	ND
nC-11 Undecane	ND	ND	ND	ND	ND	ND
nC-12 Dodecane	ND	ND	ND	ND	ND	ND
nC-13 Tridecane	ND	ND	ND	ND	ND	ND
nC-14 Tetradecane	17	18	16	17	0.8	4.6
nC-15 Pentadecane	100	90	96	95	5.4	5.6
nC-16 Hexadecane	497	516	510	508	9	1.9
nC-17 Heptadecane	1389	1249	1366	1335	75	5.6
Pristane	644	748	718	704	53	7.6
nC-18 Octadecane	1837	1867	1828	1844	20	1.1
Phytane	1171	1035	1109	1105	68	6.1
nC-19 Nonadecane	2311	2306	2262	2293	27	1.2
nC-20 Eicosane	2673	2625	2622	2640	28	1.1
nC-21 Heneicosane	2363	2694	2855	2637	251	9.5
nC-22 Docosane	2882	3059	3020	2987	93	3.1
nC-23 Tricosane	3093	3090	3067	3084	14	0.5
nC-24 Tetracosane	3107	3193	3063	3121	66	2.1
nC-25 Pentacosane	2582	2363	2422	2456	113	4.6
nC-26 Hexacosane	2604	2431	2391	2475	113	4.6
nC-27 Heptacosane	1647	1737	1635	1673	56	3.3
nC-28 Octacosane	2036	1968	1882	1962	77	3.9
nC-29 Nonacosane	1580	1614	1793	1662	114	6.9
nC-30 Triacontane	2101	2068	2176	2115	55	2.6
nC-31 Hentriacontane	1832	1690	1961	1828	135	7.4
nC-32 Dotriacontane	1377	1579	1421	1459	106	7.2
nC-33 Tritriacontane	1303	1281	1435	1340	83	6.2
nC-34 Tetratriacontane	542	548	597	562	30	5.4
nC-35 Pentatriacontane	656	669	683	669	13	2.0
Total Alkanes	***40344***	***40438***	***40926***	***40569***	***313***	***0.8***
Aromatic Analyte:	**Conc (ng/mg)**	**Conc (ng/mg)**	**Conc (ng/mg)**	**Average**	**Stdev**	**%RSD**
Naphthalene	ND	ND	ND	ND	ND	ND
C1-Naphthalenes	7.1	8.4	8.4	8.0	0.8	10
C2-Naphthalenes	44	52	48	48	4	7.9
C3-Naphthalenes	202	241	244	229	24	10
C4-Naphthalenes	375	438	493	435	59	14
Fluorene	16	19	19	18	1.8	10
C1-Fluorenes	179	190	197	188	9	4.7
C2-Fluorenes	358	419	405	394	32	8.1
C3- Fluorenes	481	490	600	524	66	13
Dibenzothiophene	160	173	184	172	12	7.0
C1-Dibenzothiophenes	574	652	661	629	47	7.5
C2-Dibenzothiophenes	930	1077	1082	1030	86	8.4
C3- Dibenzothiophenes	899	1027	1010	979	69	7.1
Phenanthrene	293	327	335	319	22	7.0
C1-Phenanthrenes	958	1076	1106	1047	78	7.5
C2-Phenanthrenes	1406	1382	1456	1415	38	2.7
C3-Phenanthrenes	1050	1087	1174	1104	64	5.8
C4-Phenanthrenes	459	528	584	524	63	12
Anthracene	ND	ND	ND	ND	ND	ND
Fluoranthene	8.8	8.1	9.0	8.7	0.5	5.3
Pyrene	8.9	8.6	9.4	9.0	0.4	4.6
C1- Pyrenes	145	165	185	165	20	12
C2- Pyrenes	205	234	254	231	25	11
C3- Pyrenes	188	218	211	206	16	7.6
C4- Pyrenes	142	149	156	149	6.7	4.5
Naphthobenzothiophene	83	87	78	83	4.7	5.6
C-1 Naphthobenzothiophenes	282	327	331	313	27	8.7
C-2 Naphthobenzothiophenes	319	368	396	361	39	11
C-3 Naphthobenzothiophenes	235	288	281	268	29	11
Benzo (a) Anthracene	6.3	5.6	6.1	6.0	0.4	5.9
Chrysene	94	108	91	98	9.3	9.5
C1- Chrysenes	176	186	223	195	25	13
C2- Chrysenes	213	261	265	246	29	12
C3- Chrysenes	168	207	181	185	20	11
C4- Chrysenes	139	155	158	151	10	6.8
Benzo (b) Fluoranthene	17.4	17.5	20.6	19	1.8	10
Benzo (k) Fluoranthene	ND	ND	ND	ND	ND	ND
Benzo (e) Pyrene	30	32	31	31	1.0	3.3
Benzo (a) Pyrene	ND	ND	ND	ND	ND	ND
Perylene	ND	ND	ND	ND	ND	ND
Indeno (1,2,3 - cd) Pyrene	ND	ND	ND	ND	ND	ND
Dibenzo (a,h) anthracene	ND	ND	ND	ND	ND	ND
Benzo (g,h,i) perylene	ND	ND	ND	ND	ND	ND
Total Aromatics	***10852***	***12011***	***12492***	***11785***	***843***	***7.2***

PRODUCT, REPLICATE 1 Testing Date: Day 0 Initial Oil Weight: 510 mg Final Extracted Volume: 10 mL		
	Concentration (ng/mg)	Surrogate Corrected (ng/mg)
Alkane Analyte:		
nC-10 Decane	ND	ND
nC-11 Undecane	ND	ND
nC-12 Dodecane	ND	ND
nC-13 Tridecane	ND	ND
nC-14 Tetradecane	12.50	14.7
nC-15 Pentadecane	84	99
nC-16 Hexadecane	432	509
nC-17 Heptadecane	1364	1605
Pristane	695	818
nC-18 Octadecane	1916	2254
Phytane	914	1076
nC-19 Nonadecane	2347	2761
nC-20 Eicosane	2918	3433
nC-21 Heneicosane	2926	3442
nC-22 Docosane	3122	3673
nC-23 Tricosane	3127	3679
nC-24 Tetracosane	2906	3419
nC-25 Pentacosane	2272	2673
nC-26 Hexacosane	2192	2579
nC-27 Heptacosane	1883	2215
nC-28 Octacosane	1331	1566
nC-29 Nonacosane	1369	1611
nC-30 Triacontane	1262	1485
nC-31 Hentriacontane	1336	1572
nC-32 Dotriacontane	799	941
nC-33 Tritriacontane	715	841
nC-34 Tetratriacontane	329	387
nC-35 Pentatriacontane	497	585
Total Alkanes	***36751***	***43237***
Aromatic Analyte:		
Naphthalene	ND	ND
C1-Naphthalenes	ND	ND
C2-Naphthalenes	47	53
C3-Naphthalenes	172	193
C4-Naphthalenes	344	386
Fluorene	18.7	21.0
C1-Fluorenes	146	164
C2-Fluorenes	342	385
C3- Fluorenes	528	594
Dibenzothiophene	160	179
C1-Dibenzothiophenes	467	525
C2-Dibenzothiophenes	1011	1136
C3- Dibenzothiophenes	892	1002
Phenanthrene	278	312
C1-Phenanthrenes	847	952
C2-Phenanthrenes	1252	1406
C3-Phenanthrenes	1040	1169
C4-Phenanthrenes	446	501
Anthracene	ND	ND
Fluoranthene	6.8	7.6
Pyrene	5.7	6.4
C1- Pyrenes	159	179
C2- Pyrenes	252	283
C3- Pyrenes	198	222
C4- Pyrenes	116	130
Naphthobenzothiophene	76	85
C-1 Naphthobenzothiophenes	271	305
C-2 Naphthobenzothiophenes	300	337
C-3 Naphthobenzothiophenes	224	251
Benzo (a) Anthracene	10.1	11.3
Chrysene	82	92
C1- Chrysenes	180	203
C2- Chrysenes	211	237
C3- Chrysenes	189	213
C4- Chrysenes	137	154
Benzo (b) Fluoranthene	13.6	15.2
Benzo (k) Fluoranthene	ND	ND
Benzo (e) Pyrene	23.9	26.9
Benzo (a) Pyrene	ND	ND
Perylene	ND	ND
Indeno (1,2,3 - cd) Pyrene	ND	ND
Dibenzo (a,h) anthracene	ND	ND
Benzo (g,h,i) perylene	ND	ND
Total Aromatics	***10445***	***11735***
% Surrogate Recovery		
5 Alpha Androstane	0.85	1.00
Phenanthrene d-10	0.89	1.00

PRODUCT, REPLICATE 2 Testing Date: Day 0 Initial Oil Weight: 510 mg Final Extracted Volume: 10 mL		
	Concentration (ng/mg)	Surrogate Corrected (ng/mg)
Alkane Analyte:		
nC-10 Decane	ND	ND
nC-11 Undecane	ND	ND
nC-12 Dodecane	ND	ND
nC-13 Tridecane	ND	ND
nC-14 Tetradecane	10.2	12.3
nC-15 Pentadecane	75	91
nC-16 Hexadecane	402	484
nC-17 Heptadecane	1166	1405
Pristane	584	704
nC-18 Octadecane	1686	2032
Phytane	898	1082
nC-19 Nonadecane	2088	2515
nC-20 Eicosane	2706	3260
nC-21 Heneicosane	2492	3002
nC-22 Docosane	3013	3630
nC-23 Tricosane	3078	3708
nC-24 Tetracosane	3139	3782
nC-25 Pentacosane	1966	2369
nC-26 Hexacosane	1925	2320
nC-27 Heptacosane	1842	2219
nC-28 Octacosane	1566	1887
nC-29 Nonacosane	1190	1434
nC-30 Triacontane	1187	1430
nC-31 Hentriacontane	1166	1405
nC-32 Dotriacontane	712	858
nC-33 Tritriacontane	663	798
nC-34 Tetratriacontane	314	378
nC-35 Pentatriacontane	494	595
Total Alkanes	***34363***	***41401***
Aromatic Analyte:		
Naphthalene	ND	ND
C1-Naphthalenes	ND	ND
C2-Naphthalenes	48	57
C3-Naphthalenes	182	214
C4-Naphthalenes	351	413
Fluorene	16.3	19.1
C1-Fluorenes	151	177
C2-Fluorenes	404	475
C3- Fluorenes	592	696
Dibenzothiophene	145	170
C1-Dibenzothiophenes	482	567
C2-Dibenzothiophenes	1049	1234
C3- Dibenzothiophenes	872	1026
Phenanthrene	269	316
C1-Phenanthrenes	921	1083
C2-Phenanthrenes	1359	1599
C3-Phenanthrenes	1087	1278
C4-Phenanthrenes	455	535
Anthracene	ND	ND
Fluoranthene	6.1	7.2
Pyrene	5.3	6.3
C1- Pyrenes	147	173
C2- Pyrenes	216	254
C3- Pyrenes	195	229
C4- Pyrenes	108	127
Naphthobenzothiophene	66	78
C-1 Naphthobenzothiophenes	242	284
C-2 Naphthobenzothiophenes	306	360
C-3 Naphthobenzothiophenes	247	290
Benzo (a) Anthracene	8.9	10.5
Chrysene	70	83
C1- Chrysenes	149	176
C2- Chrysenes	192	226
C3- Chrysenes	192	226
C4- Chrysenes	133	157
Benzo (b) Fluoranthene	15.4	18.2
Benzo (k) Fluoranthene	ND	ND
Benzo (e) Pyrene	23.7	28
Benzo (a) Pyrene	ND	ND
Perylene	ND	ND
Indeno (1,2,3 - cd) Pyrene	ND	ND
Dibenzo (a,h) anthracene	ND	ND
Benzo (g,h,i) perylene	ND	ND
Total Aromatics	***10704***	***12592***
% Surrogate Recovery		
5 Alpha Androstane	0.83	1.00
Phenanthrene d-10	0.85	1.00

PRODUCT, REPLICATE 3 Testing Date: Day 0 Initial Oil Weight: 510 mg Final Extracted Volume: 10 mL		
	Concentration (ng/mg)	Surrogate Corrected (ng/mg)
Alkane Analyte:		
nC-10 Decane	ND	ND
nC-11 Undecane	ND	ND
nC-12 Dodecane	ND	ND
nC-13 Tridecane	ND	ND
nC-14 Tetradecane	11.4	12.5
nC-15 Pentadecane	79	87
nC-16 Hexadecane	424	466
nC-17 Heptadecane	1214	1334
Pristane	693	761
nC-18 Octadecane	1952	2145
Phytane	1046	1150
nC-19 Nonadecane	2147	2360
nC-20 Eicosane	3105	3412
nC-21 Heneicosane	2923	3212
nC-22 Docosane	3311	3639
nC-23 Tricosane	3458	3800
nC-24 Tetracosane	3207	3525
nC-25 Pentacosane	1968	2162
nC-26 Hexacosane	2025	2226
nC-27 Heptacosane	1688	1855
nC-28 Octacosane	1577	1733
nC-29 Nonacosane	1362	1497
nC-30 Triacontane	1220	1340
nC-31 Hentriacontane	1305	1434
nC-32 Dotriacontane	814	894
nC-33 Tritriacontane	629	692
nC-34 Tetratriacontane	295	324
nC-35 Pentatriacontane	449	494
Total Alkanes	***36903***	***40553***
Aromatic Analyte:		
Naphthalene	ND	ND
C1-Naphthalenes	ND	ND
C2-Naphthalenes	47	50
C3-Naphthalenes	196	209
C4-Naphthalenes	332	353
Fluorene	19.1	20.3
C1-Fluorenes	171	182
C2-Fluorenes	412	438
C3- Fluorenes	631	671
Dibenzothiophene	166	177
C1-Dibenzothiophenes	465	494
C2-Dibenzothiophenes	1179	1254
C3- Dibenzothiophenes	986	1049
Phenanthrene	321	341
C1-Phenanthrenes	1003	1067
C2-Phenanthrenes	1499	1595
C3-Phenanthrenes	1083	1152
C4-Phenanthrenes	487	518
Anthracene	ND	ND
Fluoranthene	6.9	7.4
Pyrene	5.5	5.8
C1- Pyrenes	143	152
C2- Pyrenes	214	227
C3- Pyrenes	178	190
C4- Pyrenes	117	124
Naphthobenzothiophene	74	79
C-1 Naphthobenzothiophenes	270	287
C-2 Naphthobenzothiophenes	329	350
C-3 Naphthobenzothiophenes	246	262
Benzo (a) Anthracene	9.3	9.9
Chrysene	77	82
C1- Chrysenes	160	170
C2- Chrysenes	211	225
C3- Chrysenes	173	184
C4- Chrysenes	159	169
Benzo (b) Fluoranthene	15.2	16.2
Benzo (k) Fluoranthene	ND	ND
Benzo (e) Pyrene	23.8	25
Benzo (a) Pyrene	ND	ND
Perylene	ND	ND
Indeno (1,2,3 - cd) Pyrene	ND	ND
Dibenzo (a,h) anthracene	ND	ND
Benzo (g,h,i) perylene	ND	ND
Total Aromatics	***11408***	***12136***
% Surrogate Recovery		
5 Alpha Androstane	0.91	1.00
Phenanthrene d-10	0.94	1.00

PRODUCT STATISTICS FOR SURROGATE CORRECTED DATA Testing Date: Day 0						
	Replicate #1	Replicate #2	Replicate #3			
Alkane Analyte:	**Conc (ng/mg)**	**Conc (ng/mg)**	**Conc (ng/mg)**	**Average**	**Stdev**	**%RSD**
nC-10 Decane	ND	ND	ND	ND	ND	ND
nC-11 Undecane	ND	ND	ND	ND	ND	ND
nC-12 Dodecane	ND	ND	ND	ND	ND	ND
nC-13 Tridecane	ND	ND	ND	ND	ND	ND
nC-14 Tetradecane	14.7	12.3	12.5	13.2	1.3	10
nC-15 Pentadecane	99	91	87	92	6.4	6.9
nC-16 Hexadecane	509	484	466	486	21	4.4
nC-17 Heptadecane	1605	1405	1334	1448	140	10
Pristane	818	704	761	761	57	7.5
nC-18 Octadecane	2254	2032	2145	2144	111	5.2
Phytane	1076	1082	1150	1102	41	3.7
nC-19 Nonadecane	2761	2515	2360	2545	202	7.9
nC-20 Eicosane	3433	3260	3412	3368	94	2.8
nC-21 Heneicosane	3442	3002	3212	3219	220	6.8
nC-22 Docosane	3673	3630	3639	3647	23	0.6
nC-23 Tricosane	3679	3708	3800	3729	63	1.7
nC-24 Tetracosane	3419	3782	3525	3575	187	5.2
nC-25 Pentacosane	2673	2369	2162	2401	257	11
nC-26 Hexacosane	2579	2320	2226	2375	183	7.7
nC-27 Heptacosane	2215	2219	1855	2097	209	10
nC-28 Octacosane	1566	1887	1733	1728	160	9.3
nC-29 Nonacosane	1611	1434	1497	1514	90	5.9
nC-30 Triacontane	1485	1430	1340	1419	73	5.2
nC-31 Hentriacontane	1572	1405	1434	1470	89	6.1
nC-32 Dotriacontane	941	858	894	898	41	4.6
nC-33 Tritriacontane	841	798	692	777	77	10
nC-34 Tetratriacontane	387	378	324	363	34	9.5
nC-35 Pentatriacontane	585	595	494	558	56	10
Total Alkanes	***43237***	***41401***	***40553***	***41730***	***1372***	***3.3***
Aromatic Analyte:	**Conc (ng/mg)**	**Conc (ng/mg)**	**Conc (ng/mg)**	**Average**	**Stdev**	**%RSD**
Naphthalene	ND	ND	ND	ND	ND	ND
C1-Naphthalenes	ND	ND	ND	ND	ND	ND
C2-Naphthalenes	53	57	50	53	3.3	6.1
C3-Naphthalenes	193	214	209	205	10.7	5.2
C4-Naphthalenes	386	413	353	384	29.8	7.8
Fluorene	21	19	20	20.2	0.9	4.6
C1-Fluorenes	164	177	182	175	9.4	5.4
C2-Fluorenes	385	475	438	433	45	10
C3- Fluorenes	594	696	671	654	53	8.2
Dibenzothiophene	179	170	177	175	4.7	2.7
C1-Dibenzothiophenes	525	567	494	529	36	6.9
C2-Dibenzothiophenes	1136	1234	1254	1208	63	5.2
C3- Dibenzothiophenes	1002	1026	1049	1026	24	2.3
Phenanthrene	312	316	341	323	16	4.9
C1-Phenanthrenes	952	1083	1067	1034	72	6.9
C2-Phenanthrenes	1406	1599	1595	1533	110	7.2
C3-Phenanthrenes	1169	1278	1152	1200	69	5.7
C4-Phenanthrenes	501	535	518	518	17.2	3.3
Anthracene	ND	ND	ND	ND	ND	ND
Fluoranthene	7.6	7.2	7.4	7.4	0.2	2.8
Pyrene	6.4	6.3	5.8	6.2	0.3	5.0
C1- Pyrenes	179	173	152	168	13.7	8.2
C2- Pyrenes	283	254	227	255	28	11
C3- Pyrenes	222	229	190	214	20.8	9.8
C4- Pyrenes	130	127	124	127	2.9	2.3
Naphthobenzothiophene	85	78	79	80	3.9	4.8
C-1 Naphthobenzothiophenes	305	284	287	292	11	3.8
C-2 Naphthobenzothiophenes	337	360	350	349	11.5	3.3
C-3 Naphthobenzothiophenes	251	290	262	268	20.2	7.6
Benzo (a) Anthracene	11.3	10.5	9.9	10.6	0.7	7.0
Chrysene	92	83	82	86	5.7	6.7
C1- Chrysenes	203	176	170	183	17	10
C2- Chrysenes	237	226	225	229	6.7	2.9
C3- Chrysenes	213	226	184	207	21.5	10
C4- Chrysenes	154	157	169	160	7.8	4.9
Benzo (b) Fluoranthene	15.2	18.2	16.2	16.5	1.5	9.1
Benzo (k) Fluoranthene	ND	ND	ND	ND	ND	ND
Benzo (e) Pyrene	26.9	27.9	25.3	27	1.3	4.9
Benzo (a) Pyrene	ND	ND	ND	ND	ND	ND
Perylene	ND	ND	ND	ND	ND	ND
Indeno (1,2,3 - cd) Pyrene	ND	ND	ND	ND	ND	ND
Dibenzo (a,h) anthracene	ND	ND	ND	ND	ND	ND
Benzo (g,h,i) perylene	ND	ND	ND	ND	ND	ND
Total Aromatics	***11735***	***12592***	***12136***	***12155***	***429***	***3.5***

CONTROL, REPLICATE 1
Testing Date: Day 7
Initial Oil Weight: 530 mg
Final Extracted Volume: 10 mL

Alkane Analyte:	Concentration (ng/mg)	Surrogate Corrected (ng/mg)
nC-10 Decane	ND	ND
nC-11 Undecane	ND	ND
nC-12 Dodecane	ND	ND
nC-13 Tridecane	ND	ND
nC-14 Tetradecane	10.0	12.2
nC-15 Pentadecane	71	86
nC-16 Hexadecane	367	447
nC-17 Heptadecane	1058	1291
Pristane	574	699
nC-18 Octadecane	1549	1889
Phytane	836	1019
nC-19 Nonadecane	1813	2211
nC-20 Eicosane	2149	2621
nC-21 Heneicosane	2182	2660
nC-22 Docosane	2333	2845
nC-23 Tricosane	2309	2816
nC-24 Tetracosane	2264	2761
nC-25 Pentacosane	1950	2378
nC-26 Hexacosane	1969	2401
nC-27 Heptacosane	1655	2018
nC-28 Octacosane	1431	1745
nC-29 Nonacosane	1504	1835
nC-30 Triacontane	1241	1514
nC-31 Hentriacontane	1647	2009
nC-32 Dotriacontane	987	1203
nC-33 Tritriacontane	1004	1224
nC-34 Tetratriacontane	397	485
nC-35 Pentatriacontane	258	315
Total Alkanes	***31557***	***38484***
Aromatic Analyte:		
Naphthalene	ND	ND
C1-Naphthalenes	ND	ND
C2-Naphthalenes	22	28
C3-Naphthalenes	132	171
C4-Naphthalenes	195	253
Fluorene	12.0	15.6
C1-Fluorenes	111	144
C2-Fluorenes	274	356
C3- Fluorenes	351	455
Dibenzothiophene	110	142
C1-Dibenzothiophenes	357	463
C2-Dibenzothiophenes	711	924
C3- Dibenzothiophenes	678	881
Phenanthrene	250	325
C1-Phenanthrenes	738	959
C2-Phenanthrenes	1060	1376
C3-Phenanthrenes	751	976
C4-Phenanthrenes	336	436
Anthracene	ND	ND
Fluoranthene	5.4	7.0
Pyrene	5.8	7.5
C1- Pyrenes	94	122
C2- Pyrenes	149	194
C3- Pyrenes	134	174
C4- Pyrenes	83	108
Naphthobenzothiophene	56	73
C-1 Naphthobenzothiophenes	199	259
C-2 Naphthobenzothiophenes	215	279
C-3 Naphthobenzothiophenes	175	227
Benzo (a) Anthracene	13.9	18.0
Chrysene	73	94
C1- Chrysenes	118	153
C2- Chrysenes	167	217
C3- Chrysenes	133	172
C4- Chrysenes	99	128
Benzo (b) Fluoranthene	9	12
Benzo (k) Fluoranthene	ND	ND
Benzo (e) Pyrene	22	29
Benzo (a) Pyrene	ND	ND
Perylene	ND	ND
Indeno (1,2,3 - cd) Pyrene	ND	ND
Dibenzo (a,h) anthracene	ND	ND
Benzo (g,h,i) perylene	ND	ND
Total Aromatics	***7838***	***10179***
% Surrogate Recovery		
5 Alpha Androstane	0.82	1.00
Phenanthrene d-10	0.77	1.00

CONTROL, REPLICATE 2
Testing Date: Day 7
Initial Oil Weight: 530 mg
Final Extracted Volume: 10 mL

Alkane Analyte:	Concentration (ng/mg)	Surrogate Corrected (ng/mg)
nC-10 Decane	ND	ND
nC-11 Undecane	ND	ND
nC-12 Dodecane	ND	ND
nC-13 Tridecane	ND	ND
nC-14 Tetradecane	11.3	12.5
nC-15 Pentadecane	79	88
nC-16 Hexadecane	331	368
nC-17 Heptadecane	1194	1326
Pristane	724	804
nC-18 Octadecane	1710	1900
Phytane	1025	1138
nC-19 Nonadecane	2444	2716
nC-20 Eicosane	2753	3059
nC-21 Heneicosane	2916	3240
nC-22 Docosane	3147	3497
nC-23 Tricosane	2929	3255
nC-24 Tetracosane	2858	3175
nC-25 Pentacosane	2030	2256
nC-26 Hexacosane	2173	2414
nC-27 Heptacosane	1807	2007
nC-28 Octacosane	1521	1690
nC-29 Nonacosane	1458	1620
nC-30 Triacontane	1117	1242
nC-31 Hentriacontane	1460	1622
nC-32 Dotriacontane	863	959
nC-33 Tritriacontane	876	973
nC-34 Tetratriacontane	333	370
nC-35 Pentatriacontane	239	266
Total Alkanes	***35998***	***39998***
Aromatic Analyte:		
Naphthalene	ND	ND
C1-Naphthalenes	ND	ND
C2-Naphthalenes	27	28
C3-Naphthalenes	169	180
C4-Naphthalenes	236	251
Fluorene	14.1	15.0
C1-Fluorenes	145	155
C2-Fluorenes	358	381
C3- Fluorenes	466	496
Dibenzothiophene	146	155
C1-Dibenzothiophenes	502	534
C2-Dibenzothiophenes	962	1023
C3- Dibenzothiophenes	826	878
Phenanthrene	315	335
C1-Phenanthrenes	944	1005
C2-Phenanthrenes	1373	1460
C3-Phenanthrenes	953	1014
C4-Phenanthrenes	369	393
Anthracene	ND	ND
Fluoranthene	5.9	6.3
Pyrene	5.5	5.9
C1- Pyrenes	112	119
C2- Pyrenes	171	182
C3- Pyrenes	147	156
C4- Pyrenes	94	100
Naphthobenzothiophene	60	64
C-1 Naphthobenzothiophenes	224	238
C-2 Naphthobenzothiophenes	243	258
C-3 Naphthobenzothiophenes	200	213
Benzo (a) Anthracene	13.1	13.9
Chrysene	70	74
C1- Chrysenes	131	139
C2- Chrysenes	166	177
C3- Chrysenes	146	155
C4- Chrysenes	91	97
Benzo (b) Fluoranthene	9	9
Benzo (k) Fluoranthene	ND	ND
Benzo (e) Pyrene	21	23
Benzo (a) Pyrene	ND	ND
Perylene	ND	ND
Indeno (1,2,3 - cd) Pyrene	ND	ND
Dibenzo (a,h) anthracene	ND	ND
Benzo (g,h,i) perylene	ND	ND
Total Aromatics	***9713***	***10333***
% Surrogate Recovery		
5 Alpha Androstane	0.90	1.00
Phenanthrene d-10	0.94	1.00

CONTROL, REPLICATE 3
Testing Date: Day 7
Initial Oil Weight: 530 mg
Final Extracted Volume: 10 mL

Alkane Analyte:	Concentration (ng/mg)	Surrogate Corrected (ng/mg)
nC-10 Decane	ND	ND
nC-11 Undecane	ND	ND
nC-12 Dodecane	ND	ND
nC-13 Tridecane	ND	ND
nC-14 Tetradecane	11.4	13.0
nC-15 Pentadecane	75	86
nC-16 Hexadecane	371	426
nC-17 Heptadecane	1064	1223
Pristane	607	698
nC-18 Octadecane	1660	1908
Phytane	976	1121
nC-19 Nonadecane	2117	2433
nC-20 Eicosane	2569	2953
nC-21 Heneicosane	2606	2995
nC-22 Docosane	2945	3386
nC-23 Tricosane	3003	3452
nC-24 Tetracosane	3029	3482
nC-25 Pentacosane	1814	2085
nC-26 Hexacosane	1913	2199
nC-27 Heptacosane	1567	1801
nC-28 Octacosane	1306	1501
nC-29 Nonacosane	1382	1589
nC-30 Triacontane	1231	1415
nC-31 Hentriacontane	1528	1756
nC-32 Dotriacontane	892	1025
nC-33 Tritriacontane	920	1058
nC-34 Tetratriacontane	450	518
nC-35 Pentatriacontane	264	304
Total Alkanes	***34301***	***39427***
Aromatic Analyte:		
Naphthalene	ND	ND
C1-Naphthalenes	ND	ND
C2-Naphthalenes	24	27
C3-Naphthalenes	156	173
C4-Naphthalenes	246	273
Fluorene	12.4	13.8
C1-Fluorenes	127	141
C2-Fluorenes	298	331
C3- Fluorenes	462	513
Dibenzothiophene	139	154
C1-Dibenzothiophenes	502	558
C2-Dibenzothiophenes	1034	1149
C3- Dibenzothiophenes	780	867
Phenanthrene	255	284
C1-Phenanthrenes	798	887
C2-Phenanthrenes	1204	1338
C3-Phenanthrenes	890	989
C4-Phenanthrenes	462	514
Anthracene	ND	ND
Fluoranthene	6.7	7.4
Pyrene	5.6	6.2
C1- Pyrenes	117	130
C2- Pyrenes	181	201
C3- Pyrenes	156	173
C4- Pyrenes	122	135
Naphthobenzothiophene	65	72
C-1 Naphthobenzothiophenes	229	254
C-2 Naphthobenzothiophenes	278	309
C-3 Naphthobenzothiophenes	223	248
Benzo (a) Anthracene	16.8	18.7
Chrysene	63	70
C1- Chrysenes	143	159
C2- Chrysenes	187	207
C3- Chrysenes	179	199
C4- Chrysenes	103	115
Benzo (b) Fluoranthene	9.3	10
Benzo (k) Fluoranthene	ND	ND
Benzo (e) Pyrene	22	24
Benzo (a) Pyrene	ND	ND
Perylene	ND	ND
Indeno (1,2,3 - cd) Pyrene	ND	ND
Dibenzo (a,h) anthracene	ND	ND
Benzo (g,h,i) perylene	ND	ND
Total Aromatics	***9498***	***10553***
% Surrogate Recovery		
5 Alpha Androstane	0.87	1.00
Phenanthrene d-10	0.90	1.00

CONTROL
STATISTICS FOR SURROGATE CORRECTED DATA
Testing Date: Day 7

Alkane Analyte:	Replicate #1 Conc (ng/mg)	Replicate #2 Conc (ng/mg)	Replicate #3 Conc (ng/mg)	Average	Stdev	%RSD
nC-10 Decane	ND	ND	ND	ND	ND	ND
nC-11 Undecane	ND	ND	ND	ND	ND	ND
nC-12 Dodecane	ND	ND	ND	ND	ND	ND
nC-13 Tridecane	ND	ND	ND	ND	ND	ND
nC-14 Tetradecane	12	13	13	12.6	0.4	3.4
nC-15 Pentadecane	86	88	86	87	1.0	1.2
nC-16 Hexadecane	447	368	426	414	41	10
nC-17 Heptadecane	1291	1326	1064	1227	142	12
Pristane	699	804	698	734	61	8.3
nC-18 Octadecane	1889	1900	1908	1899	9	0.5
Phytane	1019	1138	1121	1093	64	5.9
nC-19 Nonadecane	2211	2716	2433	2453	253	10
nC-20 Eicosane	2621	3059	2953	2878	228	7.9
nC-21 Heneicosane	2660	3240	2995	2965	291	10
nC-22 Docosane	2845	3497	3386	3242	349	11
nC-23 Tricosane	2816	3255	3452	3174	325	10
nC-24 Tetracosane	2761	3175	3482	3139	362	12
nC-25 Pentacosane	2378	2256	2085	2239	147	6.6
nC-26 Hexacosane	2401	2414	2199	2338	120	5.2
nC-27 Heptacosane	2018	2007	1801	1942	122	6.3
nC-28 Octacosane	1745	1690	1501	1645	128	7.8
nC-29 Nonacosane	1835	1620	1589	1681	134	8.0
nC-30 Triacontane	1514	1242	1415	1390	138	10
nC-31 Hentriacontane	2009	1622	1756	1796	196	11
nC-32 Dotriacontane	1203	959	1025	1063	126	12
nC-33 Tritriacontane	1224	973	1058	1085	128	12
nC-34 Tetratriacontane	485	370	518	457	78	17
nC-35 Pentatriacontane	315	266	304	295	25	8.6
Total Alkanes	***38484***	***39998***	***39268***	***39250***	***757***	***1.9***
Aromatic Analyte:	**Conc (ng/mg)**	**Conc (ng/mg)**	**Conc (ng/mg)**	**Average**	**Stdev**	**%RSD**
Naphthalene	ND	ND	ND	ND	ND	ND
C1-Naphthalenes	ND	ND	ND	ND	ND	ND
C2-Naphthalenes	28	28	27	28	0.7	2.4
C3-Naphthalenes	171	180	173	175	4.5	2.6
C4-Naphthalenes	253	251	273	259	13	4.8
Fluorene	16	15	14	14.8	0.9	6.2
C1-Fluorenes	144	155	141	147	7.1	4.8
C2-Fluorenes	356	381	331	356	25	7.0
C3- Fluorenes	455	496	513	488	30	6.1
Dibenzothiophene	142	155	154	151	7.2	4.8
C1-Dibenzothiophenes	463	534	558	518	49	10
C2-Dibenzothiophenes	924	1023	1149	1032	113	11
C3- Dibenzothiophenes	881	878	867	875	7	0.8
Phenanthrene	325	335	284	314	27	8.6
C1-Phenanthrenes	959	1005	887	950	59	6.3
C2-Phenanthrenes	1376	1460	1338	1392	62	4.5
C3-Phenanthrenes	976	1014	989	993	20	2.0
C4-Phenanthrenes	436	393	514	448	61	14
Anthracene	ND	ND	ND	ND	ND	ND
Fluoranthene	7.0	6.3	7.4	6.9	0.6	8.3
Pyrene	7	6	6	6.5	0.8	13
C1- Pyrenes	122	119	130	124	5.8	4.7
C2- Pyrenes	194	182	201	192	9.6	5.0
C3- Pyrenes	174	156	173	168	10.2	6.1
C4- Pyrenes	108	100	135	115	18.5	16
Naphthobenzothiophene	73	64	72	70	4.8	6.9
C-1 Naphthobenzothiophenes	259	238	254	250	10.8	4.3
C-2 Naphthobenzothiophenes	279	258	309	282	26	9.1
C-3 Naphthobenzothiophenes	227	213	248	229	17.7	7.7
Benzo (a) Anthracene	18.0	13.9	18.7	17	2.6	15
Chrysene	94	74	70	80	12.8	16
C1- Chrysenes	153	139	159	150	9.8	6.5
C2- Chrysenes	217	177	207	200	20.8	10
C3- Chrysenes	172	155	199	176	22	13
C4- Chrysenes	128	97	115	113	15.4	14
Benzo (b) Fluoranthene	11.7	9.4	10.4	10.5	1.2	11
Benzo (k) Fluoranthene	ND	ND	ND	ND	ND	ND
Benzo (e) Pyrene	29	23	24	25	3.1	12
Benzo (a) Pyrene	ND	ND	ND	ND	ND	ND
Perylene	ND	ND	ND	ND	ND	ND
Indeno (1,2,3 - cd) Pyrene	ND	ND	ND	ND	ND	ND
Dibenzo (a,h) anthracene	ND	ND	ND	ND	ND	ND
Benzo (g,h,i) perylene	ND	ND	ND	ND	ND	ND
Total Aromatics	***10179***	***10333***	***10553***	***10355***	***188***	***1.8***

NUTRIENT, REPLICATE 1
Testing Date: Day 7
Initial Oil Weight: 510 mg
Final Extracted Volume: 10 mL

Alkane Analyte:	Concentration (ng/mg)	Surrogate Corrected (ng/mg)
nC-10 Decane	ND	ND
nC-11 Undecane	ND	ND
nC-12 Dodecane	ND	ND
nC-13 Tridecane	ND	ND
nC-14 Tetradecane	12	12
nC-15 Pentadecane	87	87
nC-16 Hexadecane	430	434
nC-17 Heptadecane	1237	1250
Pristane	617	624
nC-18 Octadecane	1804	1822
Phytane	917	926
nC-19 Nonadecane	2005	2025
nC-20 Eicosane	2351	2375
nC-21 Heneicosane	2476	2501
nC-22 Docosane	2607	2633
nC-23 Tricosane	2574	2600
nC-24 Tetracosane	2578	2604
nC-25 Pentacosane	2105	2127
nC-26 Hexacosane	2180	2202
nC-27 Heptacosane	1838	1857
nC-28 Octacosane	1640	1657
nC-29 Nonacosane	1590	1606
nC-30 Triacontane	1639	1655
nC-31 Hentriacontane	1676	1693
nC-32 Dotriacontane	1286	1299
nC-33 Tritriacontane	1070	1081
nC-34 Tetratriacontane	466	470
nC-35 Pentatriacontane	1241	1253
Total Alkanes	***36427***	***36795***
Aromatic Analyte:		
Naphthalene	ND	ND
C1-Naphthalenes	ND	ND
C2-Naphthalenes	41	55
C3-Naphthalenes	139	188
C4-Naphthalenes	289	391
Fluorene	14	19
C1-Fluorenes	123	166
C2-Fluorenes	259	350
C3- Fluorenes	351	474
Dibenzothiophene	131	176
C1-Dibenzothiophenes	460	622
C2-Dibenzothiophenes	742	1002
C3- Dibenzothiophenes	618	836
Phenanthrene	246	333
C1-Phenanthrenes	679	918
C2-Phenanthrenes	994	1343
C3-Phenanthrenes	719	972
C4-Phenanthrenes	267	361
Anthracene	271	366
Fluoranthene	6.2	8.4
Pyrene	6.2	8.4
C1- Pyrenes	81	109
C2- Pyrenes	142	192
C3- Pyrenes	16	22
C4- Pyrenes	4.3	5.8
Naphthobenzothiophene	66	89
C-1 Naphthobenzothiophenes	201	271
C-2 Naphthobenzothiophenes	158	213
C-3 Naphthobenzothiophenes	2.1	2.8
Benzo (a) Anthracene	79	107.3
Chrysene	44	59
C1- Chrysenes	119	161
C2- Chrysenes	138	187
C3- Chrysenes	2.1	2.8
C4- Chrysenes	ND	ND
Benzo (b) Fluoranthene	10.7	14
Benzo (k) Fluoranthene	3.2	4.4
Benzo (e) Pyrene	21	28
Benzo (a) Pyrene	4.4	5.9
Perylene	1.3	1.8
Indeno (1,2,3 - cd) Pyrene	ND	ND
Dibenzo (a,h) anthracene	ND	ND
Benzo (g,h,i) perylene	ND	ND
Total Aromatics	***7450***	***10067***
% Surrogate Recovery		
5 Alpha Androstane	0.99	1.00
Phenanthrene d-10	0.74	1.00

NUTRIENT, REPLICATE 2
Testing Date: Day 7
Initial Oil Weight: 520 mg
Final Extracted Volume: 10 mL

Alkane Analyte:	Concentration (ng/mg)	Surrogate Corrected (ng/mg)
nC-10 Decane	ND	ND
nC-11 Undecane	ND	ND
nC-12 Dodecane	ND	ND
nC-13 Tridecane	ND	ND
nC-14 Tetradecane	10.1	11
nC-15 Pentadecane	70	73
nC-16 Hexadecane	361	376
nC-17 Heptadecane	909	947
Pristane	474	493
nC-18 Octadecane	1522	1585
Phytane	768	800
nC-19 Nonadecane	1796	1870
nC-20 Eicosane	1935	2015
nC-21 Heneicosane	1966	2048
nC-22 Docosane	2105	2193
nC-23 Tricosane	2030	2115
nC-24 Tetracosane	1985	2068
nC-25 Pentacosane	1821	1897
nC-26 Hexacosane	1906	1986
nC-27 Heptacosane	1629	1696
nC-28 Octacosane	1527	1590
nC-29 Nonacosane	1397	1456
nC-30 Triacontane	1555	1620
nC-31 Hentriacontane	1753	1826
nC-32 Dotriacontane	1225	1276
nC-33 Tritriacontane	1215	1266
nC-34 Tetratriacontane	550	572
nC-35 Pentatriacontane	1012	1054
Total Alkanes	***31520***	***32833***
Aromatic Analyte:		
Naphthalene	ND	ND
C1-Naphthalenes	ND	ND
C2-Naphthalenes	45	63
C3-Naphthalenes	137	193
C4-Naphthalenes	264	372
Fluorene	11.1	16
C1-Fluorenes	99	140
C2-Fluorenes	238	336
C3- Fluorenes	293	413
Dibenzothiophene	113	160
C1-Dibenzothiophenes	339	478
C2-Dibenzothiophenes	643	905
C3- Dibenzothiophenes	565	796
Phenanthrene	203	286
C1-Phenanthrenes	627	884
C2-Phenanthrenes	867	1221
C3-Phenanthrenes	564	794
C4-Phenanthrenes	242	341
Anthracene	231	325
Fluoranthene	5.4	7.6
Pyrene	5.7	8.0
C1- Pyrenes	80	113
C2- Pyrenes	118	167
C3- Pyrenes	17	24
C4- Pyrenes	3.8	5.3
Naphthobenzothiophene	55	78
C-1 Naphthobenzothiophenes	169	237
C-2 Naphthobenzothiophenes	180	253
C-3 Naphthobenzothiophenes	2.8	4.0
Benzo (a) Anthracene	87.0	122.5
Chrysene	33	46
C1- Chrysenes	103	144
C2- Chrysenes	137	193
C3- Chrysenes	2.4	3.4
C4- Chrysenes	ND	ND
Benzo (b) Fluoranthene	13	18
Benzo (k) Fluoranthene	3.6	5.1
Benzo (e) Pyrene	23	32
Benzo (a) Pyrene	4.7	6.6
Perylene	1.5	2.1
Indeno (1,2,3 - cd) Pyrene	ND	ND
Dibenzo (a,h) anthracene	ND	ND
Benzo (g,h,i) perylene	ND	ND
Total Aromatics	***6527***	***9193***
% Surrogate Recovery		
5 Alpha Androstane	0.96	1.00
Phenanthrene d-10	0.71	1.00

NUTRIENT, REPLICATE 3
Testing Date: Day 7
Initial Oil Weight: 510 mg
Final Extracted Volume: 10 mL

Alkane Analyte:	Concentration (ng/mg)	Surrogate Corrected (ng/mg)
nC-10 Decane	ND	ND
nC-11 Undecane	ND	ND
nC-12 Dodecane	ND	ND
nC-13 Tridecane	ND	ND
nC-14 Tetradecane	12	13
nC-15 Pentadecane	67	75
nC-16 Hexadecane	336	377
nC-17 Heptadecane	994	1117
Pristane	494	555
nC-18 Octadecane	1442	1620
Phytane	780	876
nC-19 Nonadecane	1750	1967
nC-20 Eicosane	1940	2179
nC-21 Heneicosane	2001	2248
nC-22 Docosane	2287	2570
nC-23 Tricosane	2368	2660
nC-24 Tetracosane	2385	2680
nC-25 Pentacosane	1498	1684
nC-26 Hexacosane	1733	1948
nC-27 Heptacosane	1526	1715
nC-28 Octacosane	1369	1538
nC-29 Nonacosane	1183	1330
nC-30 Triacontane	1491	1675
nC-31 Hentriacontane	1856	2086
nC-32 Dotriacontane	1147	1288
nC-33 Tritriacontane	942	1058
nC-34 Tetratriacontane	488	549
nC-35 Pentatriacontane	899	1010
Total Alkanes	***30988***	***34818***
Aromatic Analyte:		
Naphthalene	ND	ND
C1-Naphthalenes	ND	ND
C2-Naphthalenes	54	75
C3-Naphthalenes	156	217
C4-Naphthalenes	343	476
Fluorene	12	17
C1-Fluorenes	118	163
C2-Fluorenes	276	383
C3- Fluorenes	352	489
Dibenzothiophene	130	181
C1-Dibenzothiophenes	422	586
C2-Dibenzothiophenes	641	890
C3- Dibenzothiophenes	700	972
Phenanthrene	231	320
C1-Phenanthrenes	728	1011
C2-Phenanthrenes	986	1370
C3-Phenanthrenes	706	981
C4-Phenanthrenes	285	396
Anthracene	273	379
Fluoranthene	4.8	6.6
Pyrene	5.5	7.7
C1- Pyrenes	79	110
C2- Pyrenes	137	191
C3- Pyrenes	18	25
C4- Pyrenes	3.8	5.3
Naphthobenzothiophene	61	84
C-1 Naphthobenzothiophenes	182	253
C-2 Naphthobenzothiophenes	178	247
C-3 Naphthobenzothiophenes	2.6	3.6
Benzo (a) Anthracene	83.7	116.2
Chrysene	34	47
C1- Chrysenes	121	168
C2- Chrysenes	142	197
C3- Chrysenes	2.6	3.6
C4- Chrysenes	ND	ND
Benzo (b) Fluoranthene	12	17
Benzo (k) Fluoranthene	3.7	5.1
Benzo (e) Pyrene	19	26
Benzo (a) Pyrene	4.8	6.7
Perylene	1.6	2.2
Indeno (1,2,3 - cd) Pyrene	ND	ND
Dibenzo (a,h) anthracene	ND	ND
Benzo (g,h,i) perylene	ND	ND
Total Aromatics	***7512***	***10434***
% Surrogate Recovery		
5 Alpha Androstane	0.89	1.00
Phenanthrene d-10	0.72	1.00

NUTRIENT
STATISTICS FOR SURROGATE CORRECTED DATA
Testing Date: Day 7

Alkane Analyte:	Replicate #1 Conc (ng/mg)	Replicate #2 Conc (ng/mg)	Replicate #3 Conc (ng/mg)	Average	Stdev	%RSD
nC-10 Decane	0	ND	ND	ND	ND	ND
nC-11 Undecane	0	ND	ND	ND	ND	ND
nC-12 Dodecane	0	ND	ND	ND	ND	ND
nC-13 Tridecane	0	ND	ND	ND	ND	ND
nC-14 Tetradecane	12	11	13	12	1.2	10
nC-15 Pentadecane	87	73	75	78	8.0	10
nC-16 Hexadecane	434	376	377	396	33	8.4
nC-17 Heptadecane	1250	947	1117	1105	152	14
Pristane	624	493	555	557	65	12
nC-18 Octadecane	1822	1585	1620	1676	128	7.6
Phytane	926	800	876	867	64	7.3
nC-19 Nonadecane	2025	1870	1967	1954	78	4.0
nC-20 Eicosane	2375	2015	2179	2190	180	8.2
nC-21 Heneicosane	2501	2048	2248	2266	227	10
nC-22 Docosane	2633	2193	2570	2465	238	9.6
nC-23 Tricosane	2600	2115	2660	2459	299	12
nC-24 Tetracosane	2604	2068	2680	2451	334	14
nC-25 Pentacosane	2127	1897	1684	1902	222	12
nC-26 Hexacosane	2202	1986	1948	2045	137	6.7
nC-27 Heptacosane	1857	1696	1715	1756	88	5.0
nC-28 Octacosane	1657	1590	1538	1595	60	3.7
nC-29 Nonacosane	1606	1456	1330	1464	139	9.5
nC-30 Triacontane	1655	1620	1675	1650	28	1.7
nC-31 Hentriacontane	1693	1826	2086	1868	200	11
nC-32 Dotriacontane	1299	1276	1288	1288	12	0.9
nC-33 Tritriacontane	1081	1266	1058	1135	114	10
nC-34 Tetratriacontane	470	572	549	530	53	10
nC-35 Pentatriacontane	1253	1054	1010	1106	129	12
Total Alkanes	***36795***	***32833***	***34818***	***34815***	***1981***	***5.7***
Aromatic Analyte:	**Conc (ng/mg)**	**Conc (ng/mg)**	**Conc (ng/mg)**	**Average**	**Stdev**	**%RSD**
Naphthalene	ND	ND	ND	ND	ND	ND
C1-Naphthalenes	ND	ND	ND	ND	ND	ND
C2-Naphthalenes	55	63	75	65	9.9	15
C3-Naphthalenes	188	193	217	199	16	7.9
C4-Naphthalenes	391	372	476	413	56	13
Fluorene	19	16	17	17	1.5	8.6
C1-Fluorenes	166	140	163	157	14.4	9.2
C2-Fluorenes	350	336	383	356	24	6.8
C3- Fluorenes	474	413	489	459	40	8.8
Dibenzothiophene	176	160	181	172	11	6.5
C1-Dibenzothiophenes	622	478	586	562	75	13
C2-Dibenzothiophenes	1002	905	890	933	61	6.5
C3- Dibenzothiophenes	836	796	972	868	92	11
Phenanthrene	333	286	320	313	24.3	7.8
C1-Phenanthrenes	918	884	1011	938	66	7.0
C2-Phenanthrenes	1343	1221	1370	1311	80	6.1
C3-Phenanthrenes	972	794	981	916	106	12
C4-Phenanthrenes	361	341	396	366	28	7.7
Anthracene	366.01	325.30	379.27	357	28	7.9
Fluoranthene	8.4	7.6	6.6	7.5	0.9	12
Pyrene	8	8	8	8.0	0.4	4.6
C1- Pyrenes	109	113	110	111	1.9	1.7
C2- Pyrenes	192	167	191	183	14.1	7.7
C3- Pyrenes	22	24	25	24	1.8	7.5
C4- Pyrenes	6	5	5	5	0.3	5.1
Naphthobenzothiophene	89	78	84	84	5.9	7.0
C-1 Naphthobenzothiophenes	271	237	253	254	17.0	6.7
C-2 Naphthobenzothiophenes	213	253	247	238	21	9.0
C-3 Naphthobenzothiophenes	3	4	4	3.5	0.6	18
Benzo (a) Anthracene	107.3	122.5	116.2	115	7.6	6.6
Chrysene	59	46	47	51	7.3	14
C1- Chrysenes	161	144	168	158	12.3	7.8
C2- Chrysenes	187	193	197	193	5.2	2.7
C3- Chrysenes	3	3	4	3	0.4	13
C4- Chrysenes	ND	ND	ND	ND	ND	ND
Benzo (b) Fluoranthene	14.5	18.1	17.3	17	1.9	12
Benzo (k) Fluoranthene	4.4	5.1	5.1	4.8	0.4	8.6
Benzo (e) Pyrene	28	32	26	29	3.2	11
Benzo (a) Pyrene	5.9	6.6	6.7	6.4	0.4	6.4
Perylene	1.8	2.1	2.2	2.0	0.2	10
Indeno (1,2,3 - cd) Pyrene	ND	ND	ND	ND	ND	ND
Dibenzo (a,h) anthracene	ND	ND	ND	ND	ND	ND
Benzo (g,h,i) perylene	ND	ND	ND	ND	ND	ND
Total Aromatics	***10067***	***9193***	***10434***	***9898***	***638***	***6.4***

PRODUCT, REPLICATE 1
Testing Date: Day 7
Initial Oil Weight: 510 mg
Final Extracted Volume: 10 mL

Alkane Analyte:	Concentration (ng/mg)	Surrogate Corrected (ng/mg)
nC-10 Decane	ND	ND
nC-11 Undecane	ND	ND
nC-12 Dodecane	ND	ND
nC-13 Tridecane	ND	ND
nC-14 Tetradecane	6.9	7.7
nC-15 Pentadecane	61	68
nC-16 Hexadecane	320	355
nC-17 Heptadecane	870	967
Pristane	487	541
nC-18 Octadecane	1286	1428
Phytane	673	748
nC-19 Nonadecane	1514	1682
nC-20 Eicosane	1672	1858
nC-21 Heneicosane	1690	1878
nC-22 Docosane	1756	1951
nC-23 Tricosane	1723	1914
nC-24 Tetracosane	1732	1924
nC-25 Pentacosane	1465	1628
nC-26 Hexacosane	1535	1705
nC-27 Heptacosane	1290	1433
nC-28 Octacosane	842	935
nC-29 Nonacosane	657	730
nC-30 Triacontane	723	803
nC-31 Hentriacontane	967	1074
nC-32 Dotriacontane	583	648
nC-33 Tritriacontane	591	656
nC-34 Tetratriacontane	305	339
nC-35 Pentatriacontane	314	349
Total Alkanes	***23061***	***25623***
Aromatic Analyte:		
Naphthalene	ND	ND
C1-Naphthalenes	ND	ND
C2-Naphthalenes	2.2	2.8
C3-Naphthalenes	109	141.5
C4-Naphthalenes	136	176.9
Fluorene	13	17.5
C1-Fluorenes	110	142.8
C2-Fluorenes	256	332.0
C3- Fluorenes	272	353.5
Dibenzothiophene	141	183.2
C1-Dibenzothiophenes	368	478.4
C2-Dibenzothiophenes	685	889.9
C3- Dibenzothiophenes	573	744.1
Phenanthrene	259	336.5
C1-Phenanthrenes	729	946.1
C2-Phenanthrenes	950	1234.1
C3-Phenanthrenes	437	567.5
C4-Phenanthrenes	216	280.4
Anthracene	266	345.1
Fluoranthene	6.6	8.5
Pyrene	6.1	7.9
C1- Pyrenes	81	105.5
C2- Pyrenes	101	131.7
C3- Pyrenes	2.7	3.5
C4- Pyrenes	1.9	2.5
Naphthobenzothiophene	73	95.2
C-1 Naphthobenzothiophenes	187	242.6
C-2 Naphthobenzothiophenes	10.0	13.0
C-3 Naphthobenzothiophenes	1.1	1.4
Benzo (a) Anthracene	45	58.0
Chrysene	25	33.0
C1- Chrysenes	100	130.0
C2- Chrysenes	128	165.8
C3- Chrysenes	5.5	7.1
C4- Chrysenes	ND	ND
Benzo (b) Fluoranthene	14	18.2
Benzo (k) Fluoranthene	ND	ND
Benzo (e) Pyrene	20	25.6
Benzo (a) Pyrene	ND	ND
Perylene	3.4	4.4
Indeno (1,2,3 - cd) Pyrene	ND	ND
Dibenzo (a,h) anthracene	ND	ND
Benzo (g,h,i) perylene	ND	ND
Total Aromatics	***6334***	***8226***
% Surrogate Recovery		
5 Alpha Androstane	0.90	1.00
Phenanthrene d-10	0.77	1.00

PRODUCT, REPLICATE 2
Testing Date: Day 7
Initial Oil Weight: 510 mg
Final Extracted Volume: 10 mL

Alkane Analyte:	Concentration (ng/mg)	Surrogate Corrected (ng/mg)
nC-10 Decane	ND	ND
nC-11 Undecane	ND	ND
nC-12 Dodecane	ND	ND
nC-13 Tridecane	ND	ND
nC-14 Tetradecane	7.6	8.8
nC-15 Pentadecane	64	73
nC-16 Hexadecane	313	360
nC-17 Heptadecane	872	1002
Pristane	502	577
nC-18 Octadecane	1331	1530
Phytane	672	773
nC-19 Nonadecane	1441	1657
nC-20 Eicosane	1676	1926
nC-21 Heneicosane	1796	2064
nC-22 Docosane	1928	2216
nC-23 Tricosane	1917	2204
nC-24 Tetracosane	1887	2169
nC-25 Pentacosane	1590	1828
nC-26 Hexacosane	1581	1817
nC-27 Heptacosane	1342	1543
nC-28 Octacosane	1035	1189
nC-29 Nonacosane	652	750
nC-30 Triacontane	879	1011
nC-31 Hentriacontane	976	1122
nC-32 Dotriacontane	789	907
nC-33 Tritriacontane	551	633
nC-34 Tetratriacontane	369	424
nC-35 Pentatriacontane	321	369
Total Alkanes	***24493***	***28153***
Aromatic Analyte:		
Naphthalene	ND	ND
C1-Naphthalenes	ND	ND
C2-Naphthalenes	2.8	3.7
C3-Naphthalenes	84	110.0
C4-Naphthalenes	141	185.4
Fluorene	14.0	18.4
C1-Fluorenes	89	116.7
C2-Fluorenes	234	307.8
C3- Fluorenes	311	408.8
Dibenzothiophene	129	169.8
C1-Dibenzothiophenes	435	572.4
C2-Dibenzothiophenes	644	846.8
C3- Dibenzothiophenes	606	798.0
Phenanthrene	263	346.1
C1-Phenanthrenes	730	961.2
C2-Phenanthrenes	981	1290.7
C3-Phenanthrenes	456	599.6
C4-Phenanthrenes	253	333.3
Anthracene	279	367.4
Fluoranthene	6.0	7.8
Pyrene	6.0	7.9
C1- Pyrenes	86	113.0
C2- Pyrenes	96	126.8
C3- Pyrenes	3.9	5.1
C4- Pyrenes	1.9	2.6
Naphthobenzothiophene	75	98.1
C-1 Naphthobenzothiophenes	189	249.1
C-2 Naphthobenzothiophenes	13	16.9
C-3 Naphthobenzothiophenes	1.2	1.6
Benzo (a) Anthracene	51.1	67.2
Chrysene	31	40.9
C1- Chrysenes	119	156.1
C2- Chrysenes	115	150.7
C3- Chrysenes	4.0	5.3
C4- Chrysenes	ND	ND
Benzo (b) Fluoranthene	12.3	16.2
Benzo (k) Fluoranthene	ND	ND
Benzo (e) Pyrene	18	23.8
Benzo (a) Pyrene	ND	ND
Perylene	3.1	4.0
Indeno (1,2,3 - cd) Pyrene	ND	ND
Dibenzo (a,h) anthracene	ND	ND
Benzo (g,h,i) perylene	ND	ND
Total Aromatics	***6482***	***8529***
% Surrogate Recovery		
5 Alpha Androstane	0.87	1.00
Phenanthrene d-10	0.76	1.00

PRODUCT, REPLICATE 3
Testing Date: Day 7
Initial Oil Weight: 510 mg
Final Extracted Volume: 10 mL

Alkane Analyte:	Concentration (ng/mg)	Surrogate Corrected (ng/mg)
nC-10 Decane	ND	ND
nC-11 Undecane	ND	ND
nC-12 Dodecane	ND	ND
nC-13 Tridecane	ND	ND
nC-14 Tetradecane	5.6	6.5
nC-15 Pentadecane	53	62
nC-16 Hexadecane	278	324
nC-17 Heptadecane	782	909
Pristane	438	510
nC-18 Octadecane	1138	1323
Phytane	607	705
nC-19 Nonadecane	1389	1615
nC-20 Eicosane	1540	1791
nC-21 Heneicosane	1574	1831
nC-22 Docosane	1774	2062
nC-23 Tricosane	1725	2006
nC-24 Tetracosane	1671	1943
nC-25 Pentacosane	1314	1528
nC-26 Hexacosane	1360	1581
nC-27 Heptacosane	1171	1362
nC-28 Octacosane	802	932
nC-29 Nonacosane	654	760
nC-30 Triacontane	703	817
nC-31 Hentriacontane	855	995
nC-32 Dotriacontane	636	739
nC-33 Tritriacontane	498	579
nC-34 Tetratriacontane	321	373
nC-35 Pentatriacontane	359	418
Total Alkanes	***21647***	***25171***
Aromatic Analyte:		
Naphthalene	ND	ND
C1-Naphthalenes	ND	ND
C2-Naphthalenes	2.3	2.9
C3-Naphthalenes	98	124.2
C4-Naphthalenes	108	136.3
Fluorene	13.0	16.4
C1-Fluorenes	93	118.3
C2-Fluorenes	214	270.9
C3- Fluorenes	271	342.6
Dibenzothiophene	118	148.9
C1-Dibenzothiophenes	365	461.5
C2-Dibenzothiophenes	639	809.2
C3- Dibenzothiophenes	558	706.4
Phenanthrene	236	298.3
C1-Phenanthrenes	614	777.5
C2-Phenanthrenes	876	1108.5
C3-Phenanthrenes	411	519.8
C4-Phenanthrenes	249	314.7
Anthracene	256	324.7
Fluoranthene	5.9	7.5
Pyrene	5.0	6.3
C1- Pyrenes	76	95.7
C2- Pyrenes	102	129.4
C3- Pyrenes	3.4	4.3
C4- Pyrenes	1.8	2.3
Naphthobenzothiophene	66	83.5
C-1 Naphthobenzothiophenes	157	199.2
C-2 Naphthobenzothiophenes	12.2	15.5
C-3 Naphthobenzothiophenes	1.2	1.5
Benzo (a) Anthracene	49	62.0
Chrysene	31	39.4
C1- Chrysenes	108	136.1
C2- Chrysenes	113	143.2
C3- Chrysenes	4.5	5.6
C4- Chrysenes	ND	ND
Benzo (b) Fluoranthene	14	17.4
Benzo (k) Fluoranthene	ND	ND
Benzo (e) Pyrene	20	25.9
Benzo (a) Pyrene	ND	ND
Perylene	2.8	3.5
Indeno (1,2,3 - cd) Pyrene	ND	ND
Dibenzo (a,h) anthracene	ND	ND
Benzo (g,h,i) perylene	ND	ND
Total Aromatics	***5893***	***7460***
% Surrogate Recovery		
5 Alpha Androstane	0.86	1.00
Phenanthrene d-10	0.79	1.00

PRODUCT
STATISTICS FOR SURROGATE CORRECTED DATA
Testing Date: Day 7

Alkane Analyte:	Replicate #1 Conc (ng/mg)	Replicate #2 Conc (ng/mg)	Replicate #3 Conc (ng/mg)	Average	Stdev	%RSD
nC-10 Decane	ND	ND	ND	ND	ND	ND
nC-11 Undecane	ND	ND	ND	ND	ND	ND
nC-12 Dodecane	ND	ND	ND	ND	ND	ND
nC-13 Tridecane	ND	ND	ND	ND	ND	ND
nC-14 Tetradecane	8	9	7	7.7	1.1	15
nC-15 Pentadecane	68	73	62	68	5.5	8.1
nC-16 Hexadecane	355	360	324	346	19.8	5.7
nC-17 Heptadecane	967	1002	909	959	47	4.9
Pristane	541	577	510	543	33.8	6.2
nC-18 Octadecane	1428	1530	1323	1427	103	7.2
Phytane	748	773	705	742	34	4.6
nC-19 Nonadecane	1682	1657	1615	1651	34	2.1
nC-20 Eicosane	1858	1926	1791	1858	68	3.7
nC-21 Heneicosane	1878	2064	1831	1924	124	6.4
nC-22 Docosane	1951	2216	2062	2077	133	6.4
nC-23 Tricosane	1914	2204	2006	2041	148	7.2
nC-24 Tetracosane	1924	2169	1943	2012	136	6.8
nC-25 Pentacosane	1628	1828	1528	1661	153	9.2
nC-26 Hexacosane	1705	1817	1581	1701	118	6.9
nC-27 Heptacosane	1433	1543	1362	1446	91	6.3
nC-28 Octacosane	935	1189	932	1019	147	14
nC-29 Nonacosane	730	750	760	747	15	2.0
nC-30 Triacontane	803	1011	817	877	116	13
nC-31 Hentriacontane	1074	1122	995	1064	64	6.1
nC-32 Dotriacontane	648	907	739	765	131	17
nC-33 Tritriacontane	656	633	579	623	40	6.4
nC-34 Tetratriacontane	339	424	373	378	43	11
nC-35 Pentatriacontane	349	369	418	379	36	9.4
Total Alkanes	***25623***	***28153***	***25171***	***26316***	***1607***	***6.1***
Aromatic Analyte:	**Conc (ng/mg)**	**Conc (ng/mg)**	**Conc (ng/mg)**	**Average**	**Stdev**	**%RSD**
Naphthalene	ND	ND	ND	ND	ND	ND
C1-Naphthalenes	ND	ND	ND	ND	ND	ND
C2-Naphthalenes	3	4	3	3.2	0.5	15
C3-Naphthalenes	142	110	124	125	16	13
C4-Naphthalenes	177	185	136	166	26	16
Fluorene	17	18	16	17	1.0	5.6
C1-Fluorenes	143	117	118	126	15	12
C2-Fluorenes	332	308	271	304	31	10
C3- Fluorenes	354	409	343	368	35	10
Dibenzothiophene	183	170	149	167	17.3	10
C1-Dibenzothiophenes	478	572	462	504	60	11.9
C2-Dibenzothiophenes	890	847	809	849	40	4.8
C3- Dibenzothiophenes	744	798	706	749	46.0	6.1
Phenanthrene	336	346	298	327	25.3	7.7
C1-Phenanthrenes	946	961	778	895	102	11
C2-Phenanthrenes	1234	1291	1109	1211	93	7.7
C3-Phenanthrenes	568	600	520	562	40	7.1
C4-Phenanthrenes	280	333	315	309	27	8.7
Anthracene	345	367	325	346	21	6.2
Fluoranthene	8.5	7.8	7.5	8.0	0.5	6.7
Pyrene	8	8	6	7.4	0.9	12
C1- Pyrenes	106	113	96	105	8.7	8.3
C2- Pyrenes	132	127	129	129	2.4	1.9
C3- Pyrenes	4	5	4	4.3	0.8	18
C4- Pyrenes	3	3	2	2.4	0.1	5.5
Naphthobenzothiophene	95	98	84	92	7.7	8.3
C-1 Naphthobenzothiophenes	243	249	199	230	27.1	12
C-2 Naphthobenzothiophenes	13	17	15	15	2.0	13
C-3 Naphthobenzothiophenes	1	2	2	1.5	0.1	6.0
Benzo (a) Anthracene	58	67	62	62	4.6	7.4
Chrysene	33	41	39	38	4.2	11
C1- Chrysenes	130	156	136	141	13.7	9.7
C2- Chrysenes	166	151	143	153	11.5	7.5
C3- Chrysenes	7	5	6	6.0	1.0	16
C4- Chrysenes	ND	ND	ND	ND	ND	ND
Benzo (b) Fluoranthene	18.2	16.2	17.4	17	1.0	5.7
Benzo (k) Fluoranthene	ND	ND	ND	ND	ND	ND
Benzo (e) Pyrene	25.6	23.8	25.9	25	1.2	4.7
Benzo (a) Pyrene	ND	ND	ND	ND	ND	ND
Perylene	4.4	4.0	3.5	4.0	0.4	11
Indeno (1,2,3 - cd) Pyrene	ND	ND	ND	ND	ND	ND
Dibenzo (a,h) anthracene	ND	ND	ND	ND	ND	ND
Benzo (g,h,i) perylene	ND	ND	ND	ND	ND	ND
Total Aromatics	***8226***	***8529***	***7460***	***8072***	***551***	***6.8***

CONTROL, REPLICATE 1
Testing Date: Day 28
Initial Oil Weight: 530 mg
Final Extracted Volume: 10 mL

Alkane Analyte:	Concentration (ng/mg)	Surrogate Corrected (ng/mg)
nC-10 Decane	ND	ND
nC-11 Undecane	ND	ND
nC-12 Dodecane	ND	ND
nC-13 Tridecane	ND	ND
nC-14 Tetradecane	11.3	14
nC-15 Pentadecane	78	95
nC-16 Hexadecane	420	512
nC-17 Heptadecane	1086	1324
Pristane	610	744
nC-18 Octadecane	1659	2023
Phytane	863	1053
nC-19 Nonadecane	1929	2353
nC-20 Eicosane	1925	2348
nC-21 Heneicosane	2111	2575
nC-22 Docosane	2351	2867
nC-23 Tricosane	2176	2654
nC-24 Tetracosane	2375	2896
nC-25 Pentacosane	1674	2041
nC-26 Hexacosane	1817	2216
nC-27 Heptacosane	1575	1921
nC-28 Octacosane	1278	1558
nC-29 Nonacosane	1244	1517
nC-30 Triacontane	1012	1234
nC-31 Hentriacontane	1202	1466
nC-32 Dotriacontane	877	1069
nC-33 Tritriacontane	533	650
nC-34 Tetratriacontane	296	362
nC-35 Pentatriacontane	362	442
Total Alkanes	***29466***	***35934***

Aromatic Analyte:		
Naphthalene	ND	ND
C1-Naphthalenes	ND	ND
C2-Naphthalenes	36	46
C3-Naphthalenes	135	171
C4-Naphthalenes	271	343
Fluorene	15	19
C1-Fluorenes	137	174
C2-Fluorenes	290	367
C3- Fluorenes	338	428
Dibenzothiophene	120	151
C1-Dibenzothiophenes	463	586
C2-Dibenzothiophenes	639	808
C3- Dibenzothiophenes	653	826
Phenanthrene	220	279
C1-Phenanthrenes	681	862
C2-Phenanthrenes	1001	1267
C3-Phenanthrenes	581	735
C4-Phenanthrenes	416	526
Anthracene	302	382.5
Fluoranthene	6	7.0
Pyrene	5	5.9
C1- Pyrenes	96	122
C2- Pyrenes	135	171
C3- Pyrenes	5	6
C4- Pyrenes	3	3
Naphthobenzothiophene	63	80
C-1 Naphthobenzothiophenes	189	239
C-2 Naphthobenzothiophenes	162	205
C-3 Naphthobenzothiophenes	5	6
Benzo (a) Anthracene	61	76.8
Chrysene	44	56
C1- Chrysenes	124	157
C2- Chrysenes	145	183
C3- Chrysenes	81	102
C4- Chrysenes	102	129
Benzo (b) Fluoranthene	10	13
Benzo (k) Fluoranthene	ND	ND
Benzo (e) Pyrene	3	3
Benzo (a) Pyrene	ND	ND
Perylene	ND	ND
Indeno (1,2,3 - cd) Pyrene	ND	ND
Dibenzo (a,h) anthracene	ND	ND
Benzo (g,h,i) perylene	ND	ND
Total Aromatics	***7533***	***9536***

% Surrogate Recovery		
5 Alpha Androstane	0.82	1.00
Phenanthrene d-10	0.79	1.00

CONTROL, REPLICATE 2
Testing Date: Day 28
Initial Oil Weight: 530 mg
Final Extracted Volume: 10 mL

Alkane Analyte:	Concentration (ng/mg)	Surrogate Corrected (ng/mg)
nC-10 Decane	ND	ND
nC-11 Undecane	ND	ND
nC-12 Dodecane	ND	ND
nC-13 Tridecane	ND	ND
nC-14 Tetradecane	8.65	11.4
nC-15 Pentadecane	74	97
nC-16 Hexadecane	351	461.9
nC-17 Heptadecane	938	1234
Pristane	533	701
nC-18 Octadecane	1422	1871
Phytane	688	905
nC-19 Nonadecane	1481	1948
nC-20 Eicosane	1678	2208
nC-21 Heneicosane	1663	2188
nC-22 Docosane	1826	2402
nC-23 Tricosane	1923	2530
nC-24 Tetracosane	1933	2544
nC-25 Pentacosane	1702	2240
nC-26 Hexacosane	1713	2254
nC-27 Heptacosane	1468	1932
nC-28 Octacosane	1245	1638
nC-29 Nonacosane	1314	1729
nC-30 Triacontane	1200	1578
nC-31 Hentriacontane	1201	1580
nC-32 Dotriacontane	942	1239
nC-33 Tritriacontane	565	743
nC-34 Tetratriacontane	299	394
nC-35 Pentatriacontane	405	533
Total Alkanes	***26571***	***34962***

Aromatic Analyte:		
Naphthalene	ND	ND
C1-Naphthalenes	ND	ND
C2-Naphthalenes	37	49
C3-Naphthalenes	116	151
C4-Naphthalenes	270	351
Fluorene	11	14
C1-Fluorenes	140	182
C2-Fluorenes	245	319
C3- Fluorenes	324	421
Dibenzothiophene	107	139
C1-Dibenzothiophenes	387	503
C2-Dibenzothiophenes	695	903
C3- Dibenzothiophenes	542	704
Phenanthrene	189	246
C1-Phenanthrenes	677	879
C2-Phenanthrenes	965	1253
C3-Phenanthrenes	519	674
C4-Phenanthrenes	401	521
Anthracene	249.06	323
Fluoranthene	5.1	6.7
Pyrene	5.2	6.8
C1- Pyrenes	90	117
C2- Pyrenes	136	177
C3- Pyrenes	6	8
C4- Pyrenes	3	3
Naphthobenzothiophene	57	74
C-1 Naphthobenzothiophenes	186	242
C-2 Naphthobenzothiophenes	190	247
C-3 Naphthobenzothiophenes	4	5
Benzo (a) Anthracene	55.0	71.4
Chrysene	37	48
C1- Chrysenes	109	141
C2- Chrysenes	132	171
C3- Chrysenes	102	132
C4- Chrysenes	121	158
Benzo (b) Fluoranthene	13	16
Benzo (k) Fluoranthene	ND	ND
Benzo (e) Pyrene	3	4
Benzo (a) Pyrene	ND	ND
Perylene	ND	ND
Indeno (1,2,3 - cd) Pyrene	ND	ND
Dibenzo (a,h) anthracene	ND	ND
Benzo (g,h,i) perylene	ND	ND
Total Aromatics	***7130***	***9260***

% Surrogate Recovery		
5 Alpha Androstane	0.76	1.00
Phenanthrene d-10	0.77	1.00

CONTROL, REPLICATE 3
Testing Date: Day 28
Initial Oil Weight: 530 mg
Final Extracted Volume: 10 mL

Alkane Analyte:	Concentration (ng/mg)	Surrogate Corrected (ng/mg)
nC-10 Decane	ND	ND
nC-11 Undecane	ND	ND
nC-12 Dodecane	ND	ND
nC-13 Tridecane	ND	ND
nC-14 Tetradecane	9.93	11
nC-15 Pentadecane	84	97
nC-16 Hexadecane	390	447.7
nC-17 Heptadecane	1155	1328
Pristane	609	700
nC-18 Octadecane	1639	1884
Phytane	843	969
nC-19 Nonadecane	1890	2172
nC-20 Eicosane	2346	2697
nC-21 Heneicosane	2217	2548
nC-22 Docosane	2355	2707
nC-23 Tricosane	2345	2695
nC-24 Tetracosane	2367	2721
nC-25 Pentacosane	1947	2238
nC-26 Hexacosane	1905	2189
nC-27 Heptacosane	1707	1962
nC-28 Octacosane	1561	1794
nC-29 Nonacosane	1463	1681
nC-30 Triacontane	1238	1423
nC-31 Hentriacontane	1395	1604
nC-32 Dotriacontane	948	1090
nC-33 Tritriacontane	715	821
nC-34 Tetratriacontane	382	439
nC-35 Pentatriacontane	389	447
Total Alkanes	***31900***	***36667***

Aromatic Analyte:		
Naphthalene	ND	ND
C1-Naphthalenes	ND	ND
C2-Naphthalenes	45	54
C3-Naphthalenes	135	163
C4-Naphthalenes	218	263
Fluorene	13	15
C1-Fluorenes	119	143
C2-Fluorenes	291	351
C3- Fluorenes	380	458
Dibenzothiophene	124	150
C1-Dibenzothiophenes	379	457
C2-Dibenzothiophenes	801	965
C3- Dibenzothiophenes	620	747
Phenanthrene	231	279
C1-Phenanthrenes	831	1001
C2-Phenanthrenes	1253	1509
C3-Phenanthrenes	686	826
C4-Phenanthrenes	371	447
Anthracene	295.37	356
Fluoranthene	6.4	7.7
Pyrene	5.7	6.8
C1- Pyrenes	100	120
C2- Pyrenes	160	193
C3- Pyrenes	5	6
C4- Pyrenes	2	3
Naphthobenzothiophene	63	76
C-1 Naphthobenzothiophenes	207	249
C-2 Naphthobenzothiophenes	157	189
C-3 Naphthobenzothiophenes	4	5
Benzo (a) Anthracene	56.5	68.1
Chrysene	36	44
C1- Chrysenes	136	164
C2- Chrysenes	165	199
C3- Chrysenes	100	121
C4- Chrysenes	124	149
Benzo (b) Fluoranthene	13.3	16
Benzo (k) Fluoranthene	ND	ND
Benzo (e) Pyrene	3	3
Benzo (a) Pyrene	ND	ND
Perylene	ND	ND
Indeno (1,2,3 - cd) Pyrene	ND	ND
Dibenzo (a,h) anthracene	ND	ND
Benzo (g,h,i) perylene	ND	ND
Total Aromatics	***8138***	***9805***

% Surrogate Recovery		
5 Alpha Androstane	0.87	1.00
Phenanthrene d-10	0.83	1.00

CONTROL
STATISTICS FOR SURROGATE CORRECTED DATA
Testing Date: Day 28

Alkane Analyte:	Replicate #1 Conc (ng/mg)	Replicate #2 Conc (ng/mg)	Replicate #3 Conc (ng/mg)	Average	Stdev	%RSD
nC-10 Decane	ND	ND	ND	ND	ND	ND
nC-11 Undecane	ND	ND	ND	ND	ND	ND
nC-12 Dodecane	ND	ND	ND	ND	ND	ND
nC-13 Tridecane	ND	ND	ND	ND	ND	ND
nC-14 Tetradecane	14	11	11	12	1	11
nC-15 Pentadecane	95	97	97	96	1	1.1
nC-16 Hexadecane	512	462	448	474	34	7.2
nC-17 Heptadecane	1324	1234	1155	1238	84	6.8
Pristane	744	701	700	715	25	3.6
nC-18 Octadecane	2023	1871	1884	1926	84.34	4.4
Phytane	1053	905	969	976	74	7.6
nC-19 Nonadecane	2353	1948	2172	2158	203	9.4
nC-20 Eicosane	2348	2208	2697	2417	252	10
nC-21 Heneicosane	2575	2188	2548	2437	216	8.8
nC-22 Docosane	2867	2402	2707	2659	236	8.9
nC-23 Tricosane	2654	2530	2695	2626	86	3.3
nC-24 Tetracosane	2896	2544	2721	2720	175.98	6.5
nC-25 Pentacosane	2041	2240	2238	2173	114	5.3
nC-26 Hexacosane	2216	2254	2189	2220	32.56	1.5
nC-27 Heptacosane	1921	1932	1962	1939	21.30	1.1
nC-28 Octacosane	1558	1638	1794	1663	120	7.2
nC-29 Nonacosane	1517	1729	1681	1642	111	6.8
nC-30 Triacontane	1234	1578	1423	1412	172	12
nC-31 Hentriacontane	1466	1580	1604	1550	74	4.7
nC-32 Dotriacontane	1069	1239	1090	1133	93	8.2
nC-33 Tritriacontane	650	743	821	738	86	12
nC-34 Tetratriacontane	362	394	439	398	39	10
nC-35 Pentatriacontane	442	533	447	474	51	11
Total Alkanes	***35934***	***34962***	***36494***	***35797***	***775***	***2.2***

Aromatic Analyte:	Conc (ng/mg)	Conc (ng/mg)	Conc (ng/mg)	Average	Stdev	%RSD
Naphthalene	ND	ND	ND	ND	ND	ND
C1-Naphthalenes	ND	ND	ND	ND	ND	ND
C2-Naphthalenes	46	49	54	49	4	8.9
C3-Naphthalenes	171	151	163	162	10	6.3
C4-Naphthalenes	343	351	263	319	49	15
Fluorene	19	14	15	16	2.5	16
C1-Fluorenes	174	182	143	166	20	12
C2-Fluorenes	367	319	351	345	24	7.1
C3- Fluorenes	428	421	458	436	20	4.5
Dibenzothiophene	151	139	150	147	7	4.6
C1-Dibenzothiophenes	586	503	457	515	66	12.7
C2-Dibenzothiophenes	808	903	965	892	79	8.8
C3- Dibenzothiophenes	826	704	747	759	62	8.2
Phenanthrene	279	246	279	268	19	7.1
C1-Phenanthrenes	862	879	1001	914	76	8.3
C2-Phenanthrenes	1267	1253	1509	1343	144	11
C3-Phenanthrenes	735	674	826	745	77	10
C4-Phenanthrenes	526	521	447	498	44	8.9
Anthracene	382.5	323.5	355.9	354	30	0.0
Fluoranthene	7.0	6.7	7.7	7.1	0.53	7.4
Pyrene	6	7	7	7	0.5	8.3
C1- Pyrenes	122	117	120	120	2.6	2.2
C2- Pyrenes	171	177	193	180	11.7	6.5
C3- Pyrenes	6	8	6	7	1	16
C4- Pyrenes	3	3	3	3	0.3	11
Naphthobenzothiophene	80	74	76	77	2.6	3.4
C-1 Naphthobenzothiophenes	239	242	249	243	5.5	2.3
C-2 Naphthobenzothiophenes	205	247	189	214	30	14
C-3 Naphthobenzothiophenes	6	5	5	6	0.7	12
Benzo (a) Anthracene	76.8	71.4	68.1	72	4.4	6.1
Chrysene	56	48	44	49	6.1	12
C1- Chrysenes	157	141	164	154	11.9	7.7
C2- Chrysenes	183	171	199	184	13.65	7.4
C3- Chrysenes	102	132	121	118	15.2	13
C4- Chrysenes	129	158	149	145	15.0	10
Benzo (b) Fluoranthene	13.3	16.4	16.1	15.2	1.74	11
Benzo (k) Fluoranthene	ND	ND	ND	ND	ND	ND
Benzo (e) Pyrene	3.3	3.7	3.4	3.4	0.18	5.3
Benzo (a) Pyrene	ND	ND	ND	ND	ND	ND
Perylene	ND	ND	ND	ND	ND	ND
Indeno (1,2,3 - cd) Pyrene	ND	ND	ND	ND	ND	ND
Dibenzo (a,h) anthracene	ND	ND	ND	ND	ND	ND
Benzo (g,h,i) perylene	ND	ND	ND	ND	ND	ND
Total Aromatics	***9536***	***9260***	***9805***	***9534***	***272***	***2.9***

NUTRIENT, REPLICATE 1
Testing Date: Day 28
Initial Oil Weight: 510 mg
Final Extracted Volume: 10 mL

	Concentration (ng/mg)	Surrogate Corrected (ng/mg)
Alkane Analyte:		
nC-10 Decane	ND	ND
nC-11 Undecane	ND	ND
nC-12 Dodecane	ND	ND
nC-13 Tridecane	ND	ND
nC-14 Tetradecane	6.99	8
nC-15 Pentadecane	57	67
nC-16 Hexadecane	429	505
nC-17 Heptadecane	865	1018
Pristane	533	627
nC-18 Octadecane	1123	1321
Phytane	790	930
nC-19 Nonadecane	1270	1494
nC-20 Eicosane	1531	1801
nC-21 Heneicosane	1591	1871
nC-22 Docosane	1689	1987
nC-23 Tricosane	1651	1942
nC-24 Tetracosane	1644	1935
nC-25 Pentacosane	1391	1637
nC-26 Hexacosane	1328	1563
nC-27 Heptacosane	1140	1341
nC-28 Octacosane	1126	1324
nC-29 Nonacosane	1076	1266
nC-30 Triacontane	920	1083
nC-31 Hentriacontane	933	1098
nC-32 Dotriacontane	609	716
nC-33 Tritriacontane	71	84
nC-34 Tetratriacontane	301	354
nC-35 Pentatriacontane	197	231
Total Alkanes	***22272***	***26202***
Aromatic Analyte:		
Naphthalene	ND	ND
C1-Naphthalenes	ND	ND
C2-Naphthalenes	55	57
C3-Naphthalenes	136	142
C4-Naphthalenes	343	357
Fluorene	14	15
C1-Fluorenes	132	138
C2-Fluorenes	278	290
C3- Fluorenes	337	351
Dibenzothiophene	139	145
C1-Dibenzothiophenes	380	396
C2-Dibenzothiophenes	913	951
C3- Dibenzothiophenes	741	772
Phenanthrene	198	206
C1-Phenanthrenes	677	705
C2-Phenanthrenes	1090	1135
C3-Phenanthrenes	851	886
C4-Phenanthrenes	377	393
Anthracene	352	366
Fluoranthene	5	5.0
Pyrene	5	4.8
C1- Pyrenes	102	107
C2- Pyrenes	232	241
C3- Pyrenes	3	3
C4- Pyrenes	3	3
Naphthobenzothiophene	61	64
C-1 Naphthobenzothiophenes	180	187
C-2 Naphthobenzothiophenes	196	204
C-3 Naphthobenzothiophenes	0	0
Benzo (a) Anthracene	81	84.0
Chrysene	39	41
C1- Chrysenes	143	149
C2- Chrysenes	147	153
C3- Chrysenes	2	2
C4- Chrysenes	ND	ND
Benzo (b) Fluoranthene	ND	ND
Benzo (k) Fluoranthene	ND	ND
Benzo (e) Pyrene	2	2
Benzo (a) Pyrene	2	2
Perylene	2	2
Indeno (1,2,3 - cd) Pyrene	ND	ND
Dibenzo (a,h) anthracene	ND	ND
Benzo (g,h,i) perylene	ND	ND
Total Aromatics	***8218***	***8560***
% Surrogate Recovery		
5 Alpha Androstane	0.85	1.00
Phenanthrene d-10	0.96	1.00

NUTRIENT, REPLICATE 2
Testing Date: Day 28
Initial Oil Weight: 520 mg
Final Extracted Volume: 10 mL

	Concentration (ng/mg)	Surrogate Corrected (ng/mg)
Alkane Analyte:		
nC-10 Decane	ND	ND
nC-11 Undecane	ND	ND
nC-12 Dodecane	ND	ND
nC-13 Tridecane	ND	ND
nC-14 Tetradecane	6	8
nC-15 Pentadecane	53	69
nC-16 Hexadecane	357	463
nC-17 Heptadecane	756	982
Pristane	445	579
nC-18 Octadecane	1055	1370
Phytane	594	771
nC-19 Nonadecane	1319	1713
nC-20 Eicosane	1464	1901
nC-21 Heneicosane	1402	1821
nC-22 Docosane	1605	2084
nC-23 Tricosane	1501	1949
nC-24 Tetracosane	1391	1806
nC-25 Pentacosane	1313	1705
nC-26 Hexacosane	1478	1919
nC-27 Heptacosane	1033	1341
nC-28 Octacosane	1093	1419
nC-29 Nonacosane	887	1152
nC-30 Triacontane	827	1074
nC-31 Hentriacontane	812	1055
nC-32 Dotriacontane	645	838
nC-33 Tritriacontane	69	89
nC-34 Tetratriacontane	289	376
nC-35 Pentatriacontane	208	271
Total Alkanes	***20602***	***26756***
Aromatic Analyte:		
Naphthalene	ND	ND
C1-Naphthalenes	ND	ND
C2-Naphthalenes	66	70
C3-Naphthalenes	118	124
C4-Naphthalenes	242	255
Fluorene	13	14
C1-Fluorenes	160	168
C2-Fluorenes	348	367
C3- Fluorenes	446	470
Dibenzothiophene	162	171
C1-Dibenzothiophenes	420	442
C2-Dibenzothiophenes	997	1050
C3- Dibenzothiophenes	752	792
Phenanthrene	186	196
C1-Phenanthrenes	769	809
C2-Phenanthrenes	1309	1378
C3-Phenanthrenes	973	1025
C4-Phenanthrenes	344	362
Anthracene	369.39	389
Fluoranthene	5.0	5.3
Pyrene	4.5	4.8
C1- Pyrenes	129	136
C2- Pyrenes	218	230
C3- Pyrenes	3	3
C4- Pyrenes	3	3
Naphthobenzothiophene	58	61
C-1 Naphthobenzothiophenes	181	191
C-2 Naphthobenzothiophenes	248	261
C-3 Naphthobenzothiophenes	0	0
Benzo (a) Anthracene	86.3	90.8
Chrysene	34	36
C1- Chrysenes	153	162
C2- Chrysenes	153	161
C3- Chrysenes	2	2
C4- Chrysenes	ND	ND
Benzo (b) Fluoranthene	ND	ND
Benzo (k) Fluoranthene	ND	ND
Benzo (e) Pyrene	3	3
Benzo (a) Pyrene	2.49	3
Perylene	2.72	3
Indeno (1,2,3 - cd) Pyrene	ND	ND
Dibenzo (a,h) anthracene	ND	ND
Benzo (g,h,i) perylene	ND	ND
Total Aromatics	***8962***	***9434***
% Surrogate Recovery		
5 Alpha Androstane	0.77	1.00
Phenanthrene d-10	0.95	1.00

NUTRIENT, REPLICATE 3
Testing Date: Day 28
Initial Oil Weight: 510 mg
Final Extracted Volume: 10 mL

	Concentration (ng/mg)	Surrogate Corrected (ng/mg)
Alkane Analyte:		
nC-10 Decane	ND	ND
nC-11 Undecane	ND	ND
nC-12 Dodecane	ND	ND
nC-13 Tridecane	ND	ND
nC-14 Tetradecane	7	8
nC-15 Pentadecane	48	57
nC-16 Hexadecane	347	413
nC-17 Heptadecane	691	823
Pristane	435	518
nC-18 Octadecane	1043	1241
Phytane	692	824
nC-19 Nonadecane	1288	1534
nC-20 Eicosane	1514	1802
nC-21 Heneicosane	1563	1861
nC-22 Docosane	1720	2047
nC-23 Tricosane	1702	2027
nC-24 Tetracosane	1848	2200
nC-25 Pentacosane	1494	1779
nC-26 Hexacosane	1779	2118
nC-27 Heptacosane	1092	1300
nC-28 Octacosane	1147	1365
nC-29 Nonacosane	1029	1226
nC-30 Triacontane	799	951
nC-31 Hentriacontane	1018	1212
nC-32 Dotriacontane	532	633
nC-33 Tritriacontane	76	91
nC-34 Tetratriacontane	250	298
nC-35 Pentatriacontane	199	237
Total Alkanes	***22313***	***26563***
Aromatic Analyte:		
Naphthalene	ND	ND
C1-Naphthalenes	ND	ND
C2-Naphthalenes	64	67
C3-Naphthalenes	151	159
C4-Naphthalenes	324	341
Fluorene	12	12
C1-Fluorenes	115	121
C2-Fluorenes	279	294
C3- Fluorenes	371	390
Dibenzothiophene	115	121
C1-Dibenzothiophenes	420	442
C2-Dibenzothiophenes	846	890
C3- Dibenzothiophenes	732	771
Phenanthrene	216	227
C1-Phenanthrenes	756	796
C2-Phenanthrenes	1095	1153
C3-Phenanthrenes	1004	1057
C4-Phenanthrenes	377	397
Anthracene	304.80	321
Fluoranthene	4.9	5.2
Pyrene	5.4	5.7
C1- Pyrenes	104	110
C2- Pyrenes	171	180
C3- Pyrenes	3	4
C4- Pyrenes	3	3
Naphthobenzothiophene	66	69
C-1 Naphthobenzothiophenes	201	212
C-2 Naphthobenzothiophenes	229	241
C-3 Naphthobenzothiophenes	0	0
Benzo (a) Anthracene	66.3	69.8
Chrysene	30	32
C1- Chrysenes	143	150
C2- Chrysenes	162	170
C3- Chrysenes	2	2
C4- Chrysenes	ND	ND
Benzo (b) Fluoranthene	ND	ND
Benzo (k) Fluoranthene	ND	ND
Benzo (e) Pyrene	2	3
Benzo (a) Pyrene	2.41	3
Perylene	2.13	2
Indeno (1,2,3 - cd) Pyrene	ND	ND
Dibenzo (a,h) anthracene	ND	ND
Benzo (g,h,i) perylene	ND	ND
Total Aromatics	***8379***	***8820***
% Surrogate Recovery		
5 Alpha Androstane	0.84	1.00
Phenanthrene d-10	0.95	1.00

NUTRIENT
STATISTICS FOR SURROGATE CORRECTED DATA
Testing Date: Day 28

	Replicate #1	Replicate #2	Replicate #3			
Alkane Analyte:	**Conc (ng/mg)**	**Conc (ng/mg)**	**Conc (ng/mg)**	**Average**	**Stdev**	**%RSD**
nC-10 Decane	ND	ND	ND	ND	ND	ND
nC-11 Undecane	ND	ND	ND	ND	ND	ND
nC-12 Dodecane	ND	ND	ND	ND	ND	ND
nC-13 Tridecane	ND	ND	ND	ND	ND	ND
nC-14 Tetradecane	8	8	8	8	0	0.4
nC-15 Pentadecane	67	69	57	64	7	11
nC-16 Hexadecane	505	463	413	460	46	10
nC-17 Heptadecane	1018	982	823	941	104	11
Pristane	627	579	518	574	55	9.5
nC-18 Octadecane	1321	1370	1241	1311	65	5.0
Phytane	930	771	824	841	81	10
nC-19 Nonadecane	1494	1713	1534	1581	117	7.4
nC-20 Eicosane	1801	1901	1802	1835	58	3.1
nC-21 Heneicosane	1871	1821	1861	1851	27	1.4
nC-22 Docosane	1987	2084	2047	2039	49	2.4
nC-23 Tricosane	1942	1949	2027	1973	47	2.4
nC-24 Tetracosane	1935	1806	2200	1980	201	10
nC-25 Pentacosane	1637	1705	1779	1707	71	4.2
nC-26 Hexacosane	1563	1919	2118	1867	281	15
nC-27 Heptacosane	1341	1341	1300	1327	24	1.8
nC-28 Octacosane	1324	1419	1365	1370	48	3.5
nC-29 Nonacosane	1266	1152	1226	1215	58	4.8
nC-30 Triacontane	1083	1074	951	1036	74	7.1
nC-31 Hentriacontane	1098	1055	1212	1121	81	7.2
nC-32 Dotriacontane	716	838	633	729	103	14
nC-33 Tritriacontane	84	89	91	88	4	4.1
nC-34 Tetratriacontane	354	376	298	343	40.10	12
nC-35 Pentatriacontane	231	271	237	246	21	8.7
Total Alkanes	***26202***	***26756***	***26563***	***26507***	***281***	***1.1***
Aromatic Analyte:	**Conc (ng/mg)**	**Conc (ng/mg)**	**Conc (ng/mg)**	**Average**	**Stdev**	**%RSD**
Naphthalene	ND	ND	ND	ND	ND	ND
C1-Naphthalenes	ND	ND	ND	ND	ND	ND
C2-Naphthalenes	57	70	67	65	7	10
C3-Naphthalenes	142	124	159	142	18	12
C4-Naphthalenes	357	255	341	318	55	17
Fluorene	15	14	12	13	1	9
C1-Fluorenes	138	168	121	142	24	17
C2-Fluorenes	290	367	294	317	43	14
C3- Fluorenes	351	470	390	404	60	15
Dibenzothiophene	145	171	121	145	25	17
C1-Dibenzothiophenes	396	442	442	427	26	6.2
C2-Dibenzothiophenes	951	1050	890	964	81	8.4
C3- Dibenzothiophenes	772	792	771	778	12	1.5
Phenanthrene	206	196	227	210	16	7.5
C1-Phenanthrenes	705	809	796	770	57	7.3
C2-Phenanthrenes	1135	1378	1153	1222	136	11
C3-Phenanthrenes	886	1025	1057	989	90.6	9.2
C4-Phenanthrenes	393	362	397	384	19	5.0
Anthracene	366.44	388.83	320.84	358.70	34.65	10
Fluoranthene	5.0	5.3	5.2	5.2	0.14	2.7
Pyrene	5	5	6	5	0.51	10
C1- Pyrenes	107	136	110	118	16.2	14
C2- Pyrenes	241	230	180	217	33	15
C3- Pyrenes	3	3	4	3	0.3	8.6
C4- Pyrenes	3	3	3	3	0.2	8.1
Naphthobenzothiophene	64	61	69	65	3.9	6.0
C-1 Naphthobenzothiophenes	187	191	212	197	13.1	6.7
C-2 Naphthobenzothiophenes	204	261	241	235	29	12
C-3 Naphthobenzothiophenes	0	0	0	ND	ND	ND
Benzo (a) Anthracene	84.0	90.8	69.8	81.5	10.70	13
Chrysene	41	36	32	36	4.6	13
C1- Chrysenes	149	162	150	153	7.04	4.6
C2- Chrysenes	153	161	170	161	9	5.4
C3- Chrysenes	2	2	2	2	0.1	6.1
C4- Chrysenes	ND	ND	ND	ND	ND	ND
Benzo (b) Fluoranthene	ND	ND	ND	ND	ND	ND
Benzo (k) Fluoranthene	ND	ND	ND	ND	ND	ND
Benzo (e) Pyrene	2	3	3	3	0.29	11.0
Benzo (a) Pyrene	2.3	2.6	2.5	2.5	0.19	7.7
Perylene	2.4	2.9	2.2	2.5	0.32	13
Indeno (1,2,3 - cd) Pyrene	ND	ND	ND	ND	ND	ND
Dibenzo (a,h) anthracene	ND	ND	ND	ND	ND	ND
Benzo (g,h,i) perylene	ND	ND	ND	ND	ND	ND
Total Aromatics	***8560***	***9434***	***8820***	***8938***	***449***	***5.0***

PRODUCT, REPLICATE 1
Testing Date: Day 28
Initial Oil Weight: 510 mg
Final Extracted Volume: 10 mL

Alkane Analyte:	Concentration (ng/mg)	Surrogate Corrected (ng/mg)
nC-10 Decane	ND	ND
nC-11 Undecane	ND	ND
nC-12 Dodecane	ND	ND
nC-13 Tridecane	ND	ND
nC-14 Tetradecane	0.23	0.3
nC-15 Pentadecane	4	4
nC-16 Hexadecane	36	40
nC-17 Heptadecane	124	138
Pristane	100	112
nC-18 Octadecane	184	204
Phytane	151	168
nC-19 Nonadecane	226	251
nC-20 Eicosane	280	312
nC-21 Heneicosane	282	314
nC-22 Docosane	314	348
nC-23 Tricosane	317	352
nC-24 Tetracosane	290	322
nC-25 Pentacosane	193	215
nC-26 Hexacosane	204	227
nC-27 Heptacosane	165	184
nC-28 Octacosane	172	192
nC-29 Nonacosane	146	162
nC-30 Triacontane	107	119
nC-31 Hentriacontane	115	128
nC-32 Dotriacontane	63	70
nC-33 Tritriacontane	49	55
nC-34 Tetratriacontane	29	32
nC-35 Pentatriacontane	28	31
Total Alkanes	***3581***	***3979***

Aromatic Analyte:		
Naphthalene	ND	ND
C1-Naphthalenes	ND	ND
C2-Naphthalenes	ND	ND
C3-Naphthalenes	7	10
C4-Naphthalenes	21	30
Fluorene	1	1.7
C1-Fluorenes	12	17
C2-Fluorenes	38	54
C3- Fluorenes	41	57
Dibenzothiophene	23	32
C1-Dibenzothiophenes	67	95
C2-Dibenzothiophenes	118	167
C3- Dibenzothiophenes	65	92
Phenanthrene	51	72
C1-Phenanthrenes	118	166
C2-Phenanthrenes	127	179
C3-Phenanthrenes	104	147
C4-Phenanthrenes	25	35
Anthracene	41	57.44
Fluoranthene	1	1.5
Pyrene	1	1.1
C1- Pyrenes	7	10
C2- Pyrenes	10	14
C3- Pyrenes	1	1
C4- Pyrenes	0	1
Naphthobenzothiophene	9	13
C-1 Naphthobenzothiophenes	29	42
C-2 Naphthobenzothiophenes	1	1
C-3 Naphthobenzothiophenes	0	0
Benzo (a) Anthracene	6	8.5
Chrysene	4	6
C1- Chrysenes	16	22
C2- Chrysenes	12	17
C3- Chrysenes	ND	ND
C4- Chrysenes	ND	ND
Benzo (b) Fluoranthene	2.6	3.7
Benzo (k) Fluoranthene	ND	ND
Benzo (e) Pyrene	ND	ND
Benzo (a) Pyrene	ND	ND
Perylene	ND	ND
Indeno (1,2,3 - cd) Pyrene	ND	ND
Dibenzo (a,h) anthracene	ND	ND
Benzo (g,h,i) perylene	ND	ND
Total Aromatics	***960***	***1352***

% Surrogate Recovery		
5 Alpha Androstane	0.90	1.00
Phenanthrene d-10	0.71	1.00

PRODUCT, REPLICATE 2
Testing Date: Day 28
Initial Oil Weight: 510 mg
Final Extracted Volume: 10 mL

Alkane Analyte:	Concentration (ng/mg)	Surrogate Corrected (ng/mg)
nC-10 Decane	ND	ND
nC-11 Undecane	ND	ND
nC-12 Dodecane	ND	ND
nC-13 Tridecane	ND	ND
nC-14 Tetradecane	0.2	0.2
nC-15 Pentadecane	5	5
nC-16 Hexadecane	42	45
nC-17 Heptadecane	134	146
Pristane	101	110
nC-18 Octadecane	207	225
Phytane	136	148
nC-19 Nonadecane	250	272
nC-20 Eicosane	296	322
nC-21 Heneicosane	316	344
nC-22 Docosane	335	365
nC-23 Tricosane	346	376
nC-24 Tetracosane	352	382
nC-25 Pentacosane	249	271
nC-26 Hexacosane	260	282
nC-27 Heptacosane	210	228
nC-28 Octacosane	184	200
nC-29 Nonacosane	130	142
nC-30 Triacontane	92	100
nC-31 Hentriacontane	133	144
nC-32 Dotriacontane	73	79
nC-33 Tritriacontane	40	43
nC-34 Tetratriacontane	35	38
nC-35 Pentatriacontane	28	31
Total Alkanes	***3954***	***4298***

Aromatic Analyte:		
Naphthalene	ND	ND
C1-Naphthalenes	ND	ND
C2-Naphthalenes	ND	ND
C3-Naphthalenes	6	8
C4-Naphthalenes	20	28
Fluorene	1.2	1.7
C1-Fluorenes	13	17
C2-Fluorenes	34	47
C3- Fluorenes	38	52
Dibenzothiophene	21	28
C1-Dibenzothiophenes	64	88
C2-Dibenzothiophenes	96	132
C3- Dibenzothiophenes	69	94
Phenanthrene	44	60
C1-Phenanthrenes	105	144
C2-Phenanthrenes	108	149
C3-Phenanthrenes	94	129
C4-Phenanthrenes	24	33
Anthracene	41.03	56
Fluoranthene	0.9	1.2
Pyrene	1.0	1.4
C1- Pyrenes	8	10
C2- Pyrenes	14	19
C3- Pyrenes	0	1
C4- Pyrenes	0	0
Naphthobenzothiophene	9	13
C-1 Naphthobenzothiophenes	22	30
C-2 Naphthobenzothiophenes	1	1
C-3 Naphthobenzothiophenes	0	0
Benzo (a) Anthracene	4.9	6.7
Chrysene	3	5
C1- Chrysenes	16	22
C2- Chrysenes	15	20
C3- Chrysenes	ND	ND
C4- Chrysenes	ND	ND
Benzo (b) Fluoranthene	2.3	3.1
Benzo (k) Fluoranthene	ND	ND
Benzo (e) Pyrene	ND	ND
Benzo (a) Pyrene	ND	ND
Perylene	ND	ND
Indeno (1,2,3 - cd) Pyrene	ND	ND
Dibenzo (a,h) anthracene	ND	ND
Benzo (g,h,i) perylene	ND	ND
Total Aromatics	***876***	***1200***

% Surrogate Recovery		
5 Alpha Androstane	0.92	1.00
Phenanthrene d-10	0.73	1.00

PRODUCT, REPLICATE 3
Testing Date: Day 28
Initial Oil Weight: 510 mg
Final Extracted Volume: 10 mL

Alkane Analyte:	Concentration (ng/mg)	Surrogate Corrected (ng/mg)
nC-10 Decane	ND	ND
nC-11 Undecane	ND	ND
nC-12 Dodecane	ND	ND
nC-13 Tridecane	ND	ND
nC-14 Tetradecane	0.2	0.2
nC-15 Pentadecane	5	6
nC-16 Hexadecane	47	52
nC-17 Heptadecane	160	178
Pristane	108	120
nC-18 Octadecane	230	256
Phytane	148	164
nC-19 Nonadecane	270	301
nC-20 Eicosane	322	358
nC-21 Heneicosane	332	369
nC-22 Docosane	361	401
nC-23 Tricosane	351	390
nC-24 Tetracosane	369	409
nC-25 Pentacosane	264	294
nC-26 Hexacosane	234	260
nC-27 Heptacosane	220	245
nC-28 Octacosane	175	194
nC-29 Nonacosane	142	158
nC-30 Triacontane	93	104
nC-31 Hentriacontane	97	108
nC-32 Dotriacontane	64	71
nC-33 Tritriacontane	35	39
nC-34 Tetratriacontane	27	30
nC-35 Pentatriacontane	33	37
Total Alkanes	***4089***	***4543***

Aromatic Analyte:		
Naphthalene	ND	ND
C1-Naphthalenes	ND	ND
C2-Naphthalenes	ND	ND
C3-Naphthalenes	7	10
C4-Naphthalenes	19	27
Fluorene	1.3	1.8
C1-Fluorenes	13	18
C2-Fluorenes	30	42
C3- Fluorenes	41	58
Dibenzothiophene	20	28
C1-Dibenzothiophenes	68	96
C2-Dibenzothiophenes	98	139
C3- Dibenzothiophenes	65	91
Phenanthrene	47	66
C1-Phenanthrenes	114	161
C2-Phenanthrenes	117	165
C3-Phenanthrenes	81	114
C4-Phenanthrenes	24	34
Anthracene	40.55	57
Fluoranthene	1.0	1.5
Pyrene	0.8	1.1
C1- Pyrenes	8	11
C2- Pyrenes	13	19
C3- Pyrenes	1	1
C4- Pyrenes	0	1
Naphthobenzothiophene	10	13
C-1 Naphthobenzothiophenes	22	31
C-2 Naphthobenzothiophenes	1	1
C-3 Naphthobenzothiophenes	0	1
Benzo (a) Anthracene	6.5	9.1
Chrysene	5	6
C1- Chrysenes	18	26
C2- Chrysenes	14	19
C3- Chrysenes	ND	ND
C4- Chrysenes	ND	ND
Benzo (b) Fluoranthene	1.9	2.7
Benzo (k) Fluoranthene	ND	ND
Benzo (e) Pyrene	ND	ND
Benzo (a) Pyrene	ND	ND
Perylene	ND	ND
Indeno (1,2,3 - cd) Pyrene	ND	ND
Dibenzo (a,h) anthracene	ND	ND
Benzo (g,h,i) perylene	ND	ND
Total Aromatics	***888***	***1250***

% Surrogate Recovery		
5 Alpha Androstane	0.90	1.00
Phenanthrene d-10	0.71	1.00

PRODUCT
STATISTICS FOR SURROGATE CORRECTED DATA
Testing Date: Day 28

Alkane Analyte:	Replicate #1 Conc (ng/mg)	Replicate #2 Conc (ng/mg)	Replicate #3 Conc (ng/mg)	Average	Stdev	%RSD
nC-10 Decane	ND	ND	ND	ND	ND	ND
nC-11 Undecane	ND	ND	ND	ND	ND	ND
nC-12 Dodecane	ND	ND	ND	ND	ND	ND
nC-13 Tridecane	ND	ND	ND	ND	ND	ND
nC-14 Tetradecane	0	0	0	0	0	14
nC-15 Pentadecane	4	5	6	5	1	15
nC-16 Hexadecane	40	45	52	46	6	13
nC-17 Heptadecane	138	146	178	154	21	14
Pristane	112	110	120	114	5	5
nC-18 Octadecane	204	225	256	228	26	11
Phytane	168	148	164	160	11	6.6
nC-19 Nonadecane	251	272	301	275	25	9.1
nC-20 Eicosane	312	322	358	330	24	7.3
nC-21 Heneicosane	314	344	369	342	27	8.0
nC-22 Docosane	348	365	401	371	27	7.3
nC-23 Tricosane	352	376	390	373	19	5.2
nC-24 Tetracosane	322	382	409	371	45	12
nC-25 Pentacosane	215	271	294	260	41	16
nC-26 Hexacosane	227	282	260	257	28	11
nC-27 Heptacosane	184	228	245	219	31	14
nC-28 Octacosane	192	200	194	195	4	2.2
nC-29 Nonacosane	162	142	158	154	11	7.0
nC-30 Triacontane	119	100	104	107	10	9.4
nC-31 Hentriacontane	128	144	108	127	18	14
nC-32 Dotriacontane	70	79	71	73	5	7.1
nC-33 Tritriacontane	55	43	39	46	8	18
nC-34 Tetratriacontane	32	38	30	34	4	13
nC-35 Pentatriacontane	31	31	37	33	3	10
Total Alkanes	***3979***	***4298***	***4543***	***4273***	***283***	***6.6***

Aromatic Analyte:	Conc (ng/mg)	Conc (ng/mg)	Conc (ng/mg)	Average	Stdev	%RSD
Naphthalene	ND	ND	ND	ND	ND	ND
C1-Naphthalenes	ND	ND	ND	ND	ND	ND
C2-Naphthalenes	ND	ND	ND	ND	ND	ND
C3-Naphthalenes	10	8	10	9	1	15
C4-Naphthalenes	30	28	27	28	2	5.8
Fluorene	2	2	2	2	0.1	3.2
C1-Fluorenes	17	17	18	17	0.9	5.1
C2-Fluorenes	54	47	42	47	6	12.4
C3- Fluorenes	57	52	58	56	3	5.3
Dibenzothiophene	32	28	28	30	2	7.7
C1-Dibenzothiophenes	95	88	96	93	4	4.8
C2-Dibenzothiophenes	167	132	139	146	18	13
C3- Dibenzothiophenes	92	94	91	92	1.4	1.5
Phenanthrene	72	60	66	66	5.9	9.0
C1-Phenanthrenes	166	144	161	157	11	7.2
C2-Phenanthrenes	179	149	165	164	15	9.3
C3-Phenanthrenes	147	129	114	130	16	13
C4-Phenanthrenes	35	33	34	34	1.1	3.4
Anthracene	57.44	56.21	57.11	56.92	0.64	1.1
Fluoranthene	1.5	1.2	1.5	1.4	0.17	12
Pyrene	1	1	1	1	0.15	12
C1- Pyrenes	10	10	11	10	0.6	5
C2- Pyrenes	14	19	19	17	2.98	17
C3- Pyrenes	1	1	1	1	0.1	14
C4- Pyrenes	1	0	1	1	0.1	17
Naphthobenzothiophene	13	13	13	13	0.40	3.0
C-1 Naphthobenzothiophenes	42	30	31	34	6	19
C-2 Naphthobenzothiophenes	1	1	1	1	0	13
C-3 Naphthobenzothiophenes	0	0	1	0	0.1	15
Benzo (a) Anthracene	8.49	6.67	9.09	8.08	1.26	16
Chrysene	6	5	6	6	0.97	17
C1- Chrysenes	22	22	26	23	2.1	8.9
C2- Chrysenes	17	20	19	19	1.6	8.6
C3- Chrysenes	ND	ND	ND	ND	ND	ND
C4- Chrysenes	ND	ND	ND	ND	ND	ND
Benzo (b) Fluoranthene	3.7	3.1	2.7	3.2	0.52	16
Benzo (k) Fluoranthene	ND	ND	ND	ND	ND	ND
Benzo (e) Pyrene	ND	ND	ND	ND	ND	ND
Benzo (a) Pyrene	ND	ND	ND	ND	ND	ND
Perylene	ND	ND	ND	ND	ND	ND
Indeno (1,2,3 - cd) Pyrene	ND	ND	ND	ND	ND	ND
Dibenzo (a,h) anthracene	ND	ND	ND	ND	ND	ND
Benzo (g,h,i) perylene	ND	ND	ND	ND	ND	ND
Total Aromatics	***1352***	***1200***	***1250***	***1268***	***78***	***6.1***

	Day 0 (g)	Day 7 (g)	Day 28 (g)	% Reduction	Avg % Red.
Ctrl. #1	0.097	0.093	0.082	15.5	
Ctrl. #2	0.099	0.093	0.084	15.2	16.5
Ctrl. #3	0.100	0.094	0.081	19.0	
Mean	0.099	0.093	0.082		
Nutrient #1	0.097	0.081	0.044	54.6	
Nutrient #2	0.101	0.077	0.049	51.5	52.0
Nutrient #3	0.104	0.079	0.052	50.0	
Mean	0.101	0.079	0.048		
Product #1	0.099	0.077	0.018	81.8	
Product #2	0.101	0.078	0.014	86.1	85.4
Product #3	0.101	0.075	0.012	88.1	
Mean	0.100	0.077	0.015		

	Vial wt. (g)	Vial + DCM + Oil (g)	Vial + Oil (g)	Oil (g)
D0-C-1	13.473	26.985	13.570	0.097
D0-C-2	14.015	27.530	14.114	0.099
D0-C-3	13.865	26.751	13.965	0.100
D0-N-1	14.249	27.189	14.346	0.097
D0-N-2	13.785	27.087	13.886	0.101
D0-N-3	13.591	27.025	13.695	0.104
D0-P-1	13.687	27.176	13.786	0.099
D0-P-2	13.798	27.115	13.899	0.101
D0-P-3	13.981	27.125	14.082	0.101
D7-C-1	13.976	27.043	14.069	0.093
D7-C-2	14.151	27.148	14.244	0.093
D7-C-3	13.591	26.887	13.689	0.098
D7-N-1	13.687	26.964	13.768	0.081
D7-N-2	13.798	27.195	13.875	0.077
D7-N-3	13.981	27.045	14.060	0.079
D7-P-1	14.211	27.193	14.288	0.077
D7-P-2	14.323	27.187	14.401	0.078
D7-P-3	14.063	27.131	14.138	0.075
D28-C-1	13.976	26.864	14.058	0.082
D28-C-2	14.151	27.112	14.235	0.084
D28-C-3	13.591	27.058	13.672	0.081
D28-N-1	13.687	27.283	13.731	0.044
D28-N-2	14.111	27.217	14.160	0.049
D28-N-3	13.981	27.156	14.033	0.052
D28-P-1	14.211	26.947	14.229	0.018
D28-P-2	14.323	26.852	14.337	0.014
D28-P-3	14.063	27.099	14.075	0.012

	Day 0 (MPN, per ml)	Day 7 (MPN, per ml)	Day 28 (MPN, per ml)
Ctrl. #1	7,968	8,406	9,843
Ctrl. #2	8,179	8,072	10,136
Ctrl. #3	7,647	8,724	9,549
Nutrient #1	8,493	1,832,536	7,274,655
Nutrient #2	7,647	2,015,665	7,967,738
Nutrient #3	7,852	2,115,255	7,646,602
Product #1	8,724	7,274,655	182,054,230
Product #2	8,406	7,967,738	175,038,856
Product #3	8,972	7,646,602	197,910,169

APPENDIX II

General Linear Model: ALKANES versus DAY, TREATMENT

```
Factor     Type Levels Values
DAY       fixed      3  0  7 28
TREATMEN  fixed      3 Control  Nutrient OSI

Analysis of Variance for ALKANES, using Adjusted SS for Tests

Source          DF     Seq SS     Adj SS     Adj MS       F      P
DAY              2 1746813937 1746813937  873406968  697.73  0.000
TREATMEN         2 1082517417 1082517417  541258708  432.39  0.000
DAY*TREATMEN     4  761225884  761225884  190306471  152.03  0.000
Error           18   22531957   22531957    1251775
Total           26 3613089194

Dunnett Simultaneous Tests
Response Variable ALKANES
Comparisons with Control Level
DAY      = 0
TREATMEN = Control subtracted from:

Level            Difference       SE of             Adjusted
DAY*TREATMEN       of Means  Difference   T-Value    P-Value
 0  Nutrient          -2600       913.5     -2.85     0.0597
 0  OSI               -1439       913.5     -1.58     0.5103
 7  Control           -3920       913.5     -4.29     0.0029
 7  Nutrient          -8354       913.5     -9.15     0.0000
 7  OSI              -16854       913.5    -18.45     0.0000
28  Control           -7373       913.5     -8.07     0.0000
28  Nutrient         -16663       913.5    -18.24     0.0000
28  OSI              -38896       913.5    -42.58     0.0000
```

General Linear Model: ALKANES versus DAY, TREATMENT

```
Factor     Type Levels Values
DAY       fixed      3  0  7 28
TREATMEN  fixed      3 Control  Nutrient OSI

Analysis of Variance for ALKANES, using Adjusted SS for Tests

Source          DF     Seq SS     Adj SS     Adj MS       F      P
DAY              2 1746813937 1746813937  873406968  697.73  0.000
TREATMEN         2 1082517417 1082517417  541258708  432.39  0.000
DAY*TREATMEN     4  761225884  761225884  190306471  152.03  0.000
Error           18   22531957   22531957    1251775
Total           26 3613089194

Dunnett Simultaneous Tests
Response Variable ALKANES
Comparisons with Control Level
DAY      = 7
TREATMEN = Control subtracted from:

Level            Difference       SE of             Adjusted
DAY*TREATMEN       of Means  Difference   T-Value    P-Value
 0  Control           3920       913.5      4.29     0.0029
 0  Nutrient          1319       913.5      1.44     0.5977
 0  OSI               2480       913.5      2.72     0.0772
 7  Nutrient         -4435       913.5     -4.85     0.0009
 7  OSI             -12934       913.5    -14.16     0.0000
28  Control          -3453       913.5     -3.78     0.0086
28  Nutrient        -12743       913.5    -13.95     0.0000
28  OSI             -34977       913.5    -38.29     0.0000
```

General Linear Model: ALKANES versus DAY, TREATMENT

```
Factor     Type Levels Values
DAY       fixed      3  0  7 28
TREATMEN  fixed      3 Control  Nutrient OSI

Analysis of Variance for ALKANES, using Adjusted SS for Tests

Source         DF     Seq SS     Adj SS     Adj MS       F      P
DAY             2 1746813937 1746813937  873406968  697.73  0.000
TREATMEN        2 1082517417 1082517417  541258708  432.39  0.000
DAY*TREATMEN    4  761225884  761225884  190306471  152.03  0.000
Error          18   22531957   22531957    1251775
Total          26 3613089194

Dunnett Simultaneous Tests
Response Variable ALKANES
Comparisons with Control Level
DAY      = 28
TREATMEN = Control subtracted from:

Level            Difference       SE of             Adjusted
DAY*TREATMEN       of Means  Difference   T-Value    P-Value
 0  Control           7373       913.5      8.07     1.0000
 0  Nutrient          4773       913.5      5.22     1.0000
 0  OSI               5934       913.5      6.50     1.0000
 7  Control           3453       913.5      3.78     1.0000
 7  Nutrient          -981       913.5     -1.07     0.4720
 7  OSI              -9481       913.5    -10.38     0.0000
28  Nutrient         -9290       913.5    -10.17     0.0000
28  OSI             -31523       913.5    -34.51     0.0000
```

General Linear Model: RANK_ALKANES versus DAY, TREATMENT

```
Factor     Type Levels Values
DAY       fixed      3  0  7 28
TREATMEN  fixed      3 Control  Nutrient OSI

Analysis of Variance for RANK_ALK, using Adjusted SS for Tests

Source         DF     Seq SS     Adj SS     Adj MS       F      P
DAY             2    1178.00    1178.00     589.00  182.79  0.000
TREATMEN        2     298.67     298.67     149.33   46.34  0.000
DAY*TREATMEN    4     103.33     103.33      25.83    8.02  0.001
Error          18      58.00      58.00       3.22
Total          26    1638.00

Dunnett Simultaneous Tests
Response Variable RANK_ALK
Comparisons with Control Level
DAY      = 0
TREATMEN = Control subtracted from:

Level            Difference       SE of             Adjusted
DAY*TREATMEN       of Means  Difference   T-Value    P-Value
 0  Nutrient          -5.00      1.466     -3.41     0.0094
 0  OSI               -2.00      1.466     -1.36     0.3439
 7  Control           -8.33      1.466     -5.69     0.0001
 7  Nutrient         -13.33      1.466     -9.10     0.0000
 7  OSI              -19.33      1.466    -13.19     0.0000
28  Control          -12.33      1.466     -8.41     0.0000
28  Nutrient         -18.33      1.466    -12.51     0.0000
28  OSI              -23.33      1.466    -15.92     0.0000
```

General Linear Model: RANK_ALKANES versus DAY, TREATMENT

```
Factor     Type Levels Values
DAY        fixed      3  0  7 28
TREATMEN   fixed      3 Control  Nutrient OSI

Analysis of Variance for RANK_ALK, using Adjusted SS for Tests

Source          DF     Seq SS     Adj SS     Adj MS       F      P
DAY              2    1178.00    1178.00     589.00  182.79  0.000
TREATMEN         2     298.67     298.67     149.33   46.34  0.000
DAY*TREATMEN     4     103.33     103.33      25.83    8.02  0.001
Error           18      58.00      58.00       3.22
Total           26    1638.00

Dunnett Simultaneous Tests
Response Variable RANK_ALK
Comparisons with Control Level
DAY      = 7
TREATMEN = Control subtracted from:

Level            Difference       SE of             Adjusted
DAY*TREATMEN       of Means  Difference   T-Value    P-Value
 0  Control           8.33       1.466      5.69     1.0000
 0  Nutrient          3.33       1.466      2.27     0.9999
 0  OSI               6.33       1.466      4.32     1.0000
 7  Nutrient         -5.00       1.466     -3.41     0.0094
 7  OSI             -11.00       1.466     -7.51     0.0000
28  Control          -4.00       1.466     -2.73     0.0376
28  Nutrient        -10.00       1.466     -6.82     0.0000
28  OSI             -15.00       1.466    -10.23     0.0000
```

General Linear Model: RANK_ALKANES versus DAY, TREATMENT

```
Factor     Type Levels Values
DAY        fixed      3  0  7 28
TREATMEN   fixed      3 Control  Nutrient OSI

Analysis of Variance for RANK_ALK, using Adjusted SS for Tests

Source          DF     Seq SS     Adj SS     Adj MS       F      P
DAY              2    1178.00    1178.00     589.00  182.79  0.000
TREATMEN         2     298.67     298.67     149.33   46.34  0.000
DAY*TREATMEN     4     103.33     103.33      25.83    8.02  0.001
Error           18      58.00      58.00       3.22
Total           26    1638.00

Dunnett Simultaneous Tests
Response Variable RANK_ALK
Comparisons with Control Level
DAY      = 28
TREATMEN = Control subtracted from:

Level            Difference       SE of             Adjusted
DAY*TREATMEN       of Means  Difference   T-Value    P-Value
 0  Control          12.33       1.466     8.415     1.0000
 0  Nutrient          7.33       1.466     5.003     1.0000
 0  OSI              10.33       1.466     7.050     1.0000
 7  Control           4.00       1.466     2.729     1.0000
 7  Nutrient         -1.00       1.466    -0.682     0.6528
 7  OSI              -7.00       1.466    -4.776     0.0005
28  Nutrient         -6.00       1.466    -4.094     0.0022
28  OSI             -11.00       1.466    -7.505     0.0000
```

General Linear Model: AROMATICS versus DAY, TREATMENT

```
Factor     Type Levels Values
DAY       fixed      3  0  7 28
TREATMEN  fixed      3 Control  Nutrient OSI

Analysis of Variance for AROMATIC, using Adjusted SS for Tests

Source          DF     Seq SS     Adj SS     Adj MS       F      P
DAY              2  122630081  122630081   61315041  142.02  0.000
TREATMEN         2   60150172   60150172   30075086   69.66  0.000
DAY*TREATMEN     4   76909629   76909629   19227407   44.54  0.000
Error           18    7770989    7770989     431722
Total           26  267460872

Dunnett Simultaneous Tests
Response Variable AROMATIC
Comparisons with Control Level
DAY      = 0
TREATMEN = Control subtracted from:

Level            Difference       SE of             Adjusted
DAY*TREATMEN       of Means  Difference   T-Value    P-Value
 0  Nutrient            350       536.5      0.65     0.9772
 0  OSI                 719       536.5      1.34     0.9971
 7  Control           -1080       536.5     -2.01     0.1364
 7  Nutrient          -1537       536.5     -2.87     0.0288
 7  OSI               -3364       536.5     -6.27     0.0000
28  Control           -1902       536.5     -3.54     0.0071
28  Nutrient          -2497       536.5     -4.66     0.0007
28  OSI              -10168       536.5    -18.95     0.0000
```

General Linear Model: AROMATICS versus DAY, TREATMENT

```
Factor     Type Levels Values
DAY       fixed      3  0  7 28
TREATMEN  fixed      3 Control  Nutrient OSI

Analysis of Variance for AROMATIC, using Adjusted SS for Tests

Source          DF     Seq SS     Adj SS     Adj MS       F      P
DAY              2  122630081  122630081   61315041  142.02  0.000
TREATMEN         2   60150172   60150172   30075086   69.66  0.000
DAY*TREATMEN     4   76909629   76909629   19227407   44.54  0.000
Error           18    7770989    7770989     431722
Total           26  267460872

Dunnett Simultaneous Tests
Response Variable AROMATIC
Comparisons with Control Level
DAY      = 7
TREATMEN = Control subtracted from:

Level            Difference       SE of             Adjusted
DAY*TREATMEN       of Means  Difference   T-Value    P-Value
 0  Control             1080       536.5      2.01     0.9997
 0  Nutrient            1430       536.5      2.67     1.0000
 0  OSI                 1799       536.5      3.35     1.0000
 7  Nutrient            -457       536.5     -0.85     0.5756
 7  OSI               -2283        536.5     -4.26     0.0016
28  Control            -821        536.5     -1.53     0.2788
28  Nutrient          -1417        536.5     -2.64     0.0445
28  OSI               -9088        536.5    -16.94     0.0000
```

General Linear Model: AROMATICS versus DAY, TREATMENT

```
Factor     Type Levels Values
DAY       fixed      3  0  7 28
TREATMEN  fixed      3 Control  Nutrient OSI

Analysis of Variance for AROMATIC, using Adjusted SS for Tests

Source          DF     Seq SS     Adj SS     Adj MS       F      P
DAY              2  122630081  122630081   61315041  142.02  0.000
TREATMEN         2   60150172   60150172   30075086   69.66  0.000
DAY*TREATMEN     4   76909629   76909629   19227407   44.54  0.000
Error           18    7770989    7770989     431722
Total           26  267460872

Dunnett Simultaneous Tests
Response Variable AROMATIC
Comparisons with Control Level
DAY      = 28
TREATMEN = Control subtracted from:

Level            Difference       SE of             Adjusted
DAY*TREATMEN       of Means  Difference   T-Value    P-Value
 0  Control            1902       536.5      3.54     1.0000
 0  Nutrient           2251       536.5      4.20     1.0000
 0  OSI                2621       536.5      4.88     1.0000
 7  Control             821       536.5      1.53     0.9985
 7  Nutrient            364       536.5      0.68     0.9788
 7  OSI               -1462       536.5     -2.73     0.0379
28  Nutrient           -596       536.5     -1.11     0.4554
28  OSI               -8266       536.5    -15.41     0.0000
```

General Linear Model: Rank_aromatics versus DAY, TREATMENT

```
Factor     Type Levels Values
DAY       fixed      3  0  7 28
TREATMEN  fixed      3 Control  Nutrient OSI

Analysis of Variance for Rank_aro, using Adjusted SS for Tests

Source          DF     Seq SS     Adj SS     Adj MS       F      P
DAY              2    1102.89    1102.89     551.44   67.37  0.000
TREATMEN         2     194.00     194.00      97.00   11.85  0.001
DAY*TREATMEN     4     193.78     193.78      48.44    5.92  0.003
Error           18     147.33     147.33       8.19
Total           26    1638.00

Dunnett Simultaneous Tests
Response Variable Rank_aro
Comparisons with Control Level
DAY      = 0
TREATMEN = Control subtracted from:

Level            Difference       SE of             Adjusted
DAY*TREATMEN       of Means  Difference   T-Value    P-Value
 0  Nutrient           1.33      2.336     0.571     0.9716
 0  OSI                2.67      2.336     1.142     0.9946
 7  Control           -4.33      2.336    -1.855     0.1753
 7  Nutrient          -7.67      2.336    -3.282     0.0123
 7  OSI              -16.33      2.336    -6.992     0.0000
28  Control           -9.67      2.336    -4.138     0.0020
28  Nutrient         -12.67      2.336    -5.422     0.0001
28  OSI              -19.33      2.336    -8.276     0.0000
```

General Linear Model: Rank_aromatics versus DAY, TREATMENT

```
Factor     Type Levels Values
DAY       fixed      3  0  7 28
TREATMEN  fixed      3 Control  Nutrient OSI

Analysis of Variance for Rank_aro, using Adjusted SS for Tests

Source          DF     Seq SS     Adj SS     Adj MS       F      P
DAY              2    1102.89    1102.89     551.44   67.37  0.000
TREATMEN         2     194.00     194.00      97.00   11.85  0.001
DAY*TREATMEN     4     193.78     193.78      48.44    5.92  0.003
Error           18     147.33     147.33       8.19
Total           26    1638.00

Dunnett Simultaneous Tests
Response Variable Rank_aro
Comparisons with Control Level
DAY      = 7
TREATMEN = Control subtracted from:

Level            Difference       SE of             Adjusted
DAY*TREATMEN       of Means  Difference   T-Value    P-Value
 0  Control           4.33       2.336     1.855     0.9995
 0  Nutrient          5.67       2.336     2.426     0.9999
 0  OSI               7.00       2.336     2.997     1.0000
 7  Nutrient         -3.33       2.336    -1.427     0.3186
 7  OSI             -12.00       2.336    -5.137     0.0002
28  Control          -5.33       2.336    -2.283     0.0862
28  Nutrient         -8.33       2.336    -3.567     0.0068
28  OSI             -15.00       2.336    -6.421     0.0000
```

General Linear Model: Rank_aromatics versus DAY, TREATMENT

```
Factor     Type Levels Values
DAY       fixed      3  0  7 28
TREATMEN  fixed      3 Control  Nutrient OSI

Analysis of Variance for Rank_aro, using Adjusted SS for Tests

Source          DF     Seq SS     Adj SS     Adj MS       F      P
DAY              2    1102.89    1102.89     551.44   67.37  0.000
TREATMEN         2     194.00     194.00      97.00   11.85  0.001
DAY*TREATMEN     4     193.78     193.78      48.44    5.92  0.003
Error           18     147.33     147.33       8.19
Total           26    1638.00

Dunnett Simultaneous Tests
Response Variable Rank_aro
Comparisons with Control Level
DAY      = 28
TREATMEN = Control subtracted from:

Level            Difference       SE of             Adjusted
DAY*TREATMEN       of Means  Difference   T-Value    P-Value
 0  Control           9.667      2.336     4.138     1.0000
 0  Nutrient         11.000      2.336     4.709     1.0000
 0  OSI              12.333      2.336     5.280     1.0000
 7  Control           5.333      2.336     2.283     0.9999
 7  Nutrient          2.000      2.336     0.856     0.9872
 7  OSI              -6.667      2.336    -2.854     0.0294
28  Nutrient         -3.000      2.336    -1.284     0.3778
28  OSI              -9.667      2.336    -4.138     0.0020
```

General Linear Model: ALKANES versus DAY, TREATMENT

```
Factor     Type Levels Values
DAY       fixed      3  0  7 28
TREATMEN  fixed      3 Control  Nutrient OSI

Analysis of Variance for ALKANES, using Adjusted SS for Tests

Source         DF     Seq SS     Adj SS     Adj MS       F      P
DAY             2 1746813937 1746813937  873406968  697.73  0.000
TREATMEN        2 1082517417 1082517417  541258708  432.39  0.000
DAY*TREATMEN    4  761225884  761225884  190306471  152.03  0.000
Error          18   22531957   22531957    1251775
Total          26 3613089194

Tukey Simultaneous Tests
Response Variable ALKANES
All Pairwise Comparisons among Levels of DAY*TREATMEN

DAY      = 0
TREATMEN = Control subtracted from:

Level            Difference       SE of             Adjusted
DAY*TREATMEN       of Means  Difference   T-Value    P-Value
 0  Nutrient          -2600       913.5     -2.85     0.1683
 0  OSI               -1439       913.5     -1.58     0.8056
 7  Control           -3920       913.5     -4.29     0.0102
 7  Nutrient          -8354       913.5     -9.15     0.0000
 7  OSI              -16854       913.5    -18.45     0.0000
28  Control           -7373       913.5     -8.07     0.0000
28  Nutrient         -16663       913.5    -18.24     0.0000
28  OSI              -38896       913.5    -42.58     0.0000

DAY      = 0
TREATMEN = Nutrient subtracted from:

Level            Difference       SE of             Adjusted
DAY*TREATMEN       of Means  Difference   T-Value    P-Value
 0  OSI                1161       913.5      1.27     0.9275
 7  Control           -1319       913.5     -1.44     0.8661
 7  Nutrient          -5754       913.5     -6.30     0.0002
 7  OSI              -14254       913.5    -15.60     0.0000
28  Control           -4773       913.5     -5.22     0.0015
28  Nutrient         -14062       913.5    -15.39     0.0000
28  OSI              -36296       913.5    -39.73     0.0000

DAY      = 0
TREATMEN = OSI subtracted from:

Level            Difference       SE of             Adjusted
DAY*TREATMEN       of Means  Difference   T-Value    P-Value
 7  Control           -2480       913.5     -2.72     0.2097
 7  Nutrient          -6915       913.5     -7.57     0.0000
 7  OSI              -15415       913.5    -16.87     0.0000
28  Control           -5934       913.5     -6.50     0.0001
28  Nutrient         -15223       913.5    -16.66     0.0000
28  OSI              -37457       913.5    -41.00     0.0000

DAY      = 7
TREATMEN = Control subtracted from:

Level            Difference       SE of             Adjusted
DAY*TREATMEN       of Means  Difference   T-Value    P-Value
 7  Nutrient          -4435       913.5     -4.85     0.0032
 7  OSI              -12934       913.5    -14.16     0.0000
```

28	Control	-3453	913.5	-3.78	0.0289
28	Nutrient	-12743	913.5	-13.95	0.0000
28	OSI	-34977	913.5	-38.29	0.0000

DAY = 7
TREATMEN = Nutrient subtracted from:

Level DAY*TREATMEN		Difference of Means	SE of Difference	T-Value	Adjusted P-Value
7	OSI	-8500	913.5	-9.30	0.0000
28	Control	981	913.5	1.07	0.9710
28	Nutrient	-8308	913.5	-9.09	0.0000
28	OSI	-30542	913.5	-33.43	0.0000

DAY = 7
TREATMEN = OSI subtracted from:

Level DAY*TREATMEN		Difference of Means	SE of Difference	T-Value	Adjusted P-Value
28	Control	9481	913.5	10.38	0.0000
28	Nutrient	191	913.5	0.21	1.0000
28	OSI	-22042	913.5	-24.13	0.0000

DAY = 28
TREATMEN = Control subtracted from:

Level DAY*TREATMEN		Difference of Means	SE of Difference	T-Value	Adjusted P-Value
28	Nutrient	-9290	913.5	-10.17	0.0000
28	OSI	-31523	913.5	-34.51	0.0000

DAY = 28
TREATMEN = Nutrient subtracted from:

Level DAY*TREATMEN		Difference of Means	SE of Difference	T-Value	Adjusted P-Value
28	OSI	-22234	913.5	-24.34	0.0000

General Linear Model: AROMATICS versus DAY, TREATMENT

```
Factor     Type Levels Values
DAY       fixed      3  0  7 28
TREATMEN  fixed      3 Control  Nutrient OSI

Analysis of Variance for AROMATIC, using Adjusted SS for Tests

Source         DF     Seq SS     Adj SS     Adj MS       F      P
DAY             2  122630081  122630081   61315041  142.02  0.000
TREATMEN        2   60150172   60150172   30075086   69.66  0.000
DAY*TREATMEN    4   76909629   76909629   19227407   44.54  0.000
Error          18    7770989    7770989     431722
Total          26  267460872

Tukey Simultaneous Tests
Response Variable AROMATIC
All Pairwise Comparisons among Levels of DAY*TREATMEN

DAY      = 0
TREATMEN = Control subtracted from:

Level            Difference       SE of             Adjusted
DAY*TREATMEN       of Means  Difference   T-Value    P-Value
 0  Nutrient            350       536.5      0.65     0.9989
 0  OSI                 719       536.5      1.34     0.9056
 7  Control           -1080       536.5     -2.01     0.5535
 7  Nutrient          -1537       536.5     -2.87     0.1629
 7  OSI               -3364       536.5     -6.27     0.0002
28  Control           -1902       536.5     -3.54     0.0462
28  Nutrient          -2497       536.5     -4.66     0.0048
28  OSI              -10168       536.5    -18.95     0.0000

DAY      = 0
TREATMEN = Nutrient subtracted from:

Level            Difference       SE of             Adjusted
DAY*TREATMEN       of Means  Difference   T-Value    P-Value
 0  OSI                 369       536.5      0.69     0.9984
 7  Control           -1430       536.5     -2.67     0.2273
 7  Nutrient          -1887       536.5     -3.52     0.0487
 7  OSI               -3713       536.5     -6.92     0.0001
28  Control           -2251       536.5     -4.20     0.0124
28  Nutrient          -2847       536.5     -5.31     0.0013
28  OSI              -10518       536.5    -19.60     0.0000

DAY      = 0
TREATMEN = OSI subtracted from:

Level            Difference       SE of             Adjusted
DAY*TREATMEN       of Means  Difference   T-Value    P-Value
 7  Control           -1799       536.5     -3.35     0.0668
 7  Nutrient          -2256       536.5     -4.21     0.0122
 7  OSI               -4083       536.5     -7.61     0.0000
28  Control           -2621       536.5     -4.88     0.0030
28  Nutrient          -3216       536.5     -6.00     0.0003
28  OSI              -10887       536.5    -20.29     0.0000

DAY      = 7
TREATMEN = Control subtracted from:

Level            Difference       SE of             Adjusted
DAY*TREATMEN       of Means  Difference   T-Value    P-Value
 7  Nutrient            -457       536.5     -0.85     0.9931
 7  OSI                 -2283      536.5     -4.26     0.0110
```

28	Control	-821	536.5	-1.53	0.8273
28	Nutrient	-1417	536.5	-2.64	0.2362
28	OSI	-9088	536.5	-16.94	0.0000

DAY = 7
TREATMEN = Nutrient subtracted from:

Level DAY	TREATMEN	Difference of Means	SE of Difference	T-Value	Adjusted P-Value
7	OSI	-1826	536.5	-3.40	0.0607
28	Control	-364	536.5	-0.68	0.9985
28	Nutrient	-960	536.5	-1.79	0.6881
28	OSI	-8631	536.5	-16.09	0.0000

DAY = 7
TREATMEN = OSI subtracted from:

Level DAY	TREATMEN	Difference of Means	SE of Difference	T-Value	Adjusted P-Value
28	Control	1462	536.5	2.73	0.2063
28	Nutrient	866	536.5	1.61	0.7855
28	OSI	-6804	536.5	-12.68	0.0000

DAY = 28
TREATMEN = Control subtracted from:

Level DAY	TREATMEN	Difference of Means	SE of Difference	T-Value	Adjusted P-Value
28	Nutrient	-596	536.5	-1.11	0.9650
28	OSI	-8266	536.5	-15.41	0.0000

DAY = 28
TREATMEN = Nutrient subtracted from:

Level DAY	TREATMEN	Difference of Means	SE of Difference	T-Value	Adjusted P-Value
28	OSI	-7671	536.5	-14.30	0.0000

APPENDIX III

Two-Sample T-Test and CI: Con_0, OSEI_0

```
Two-sample T for Con_0 vs OSEI_0

        N      Mean     StDev   SE Mean
Con_0   3   0.10067   0.00379    0.0022
OSEI_0  3   0.10833   0.00289    0.0017

Difference = mu Con_0 - mu OSEI_0
Estimate for difference:  -0.00767
95% lower bound for difference: -0.01414
T-Test of difference = 0 (vs >): T-Value = -2.79  P-Value = 0.966  DF = 3
```

Two-Sample T-Test and CI: Con_7, OSEI_7

```
Two-sample T for Con_7 vs OSEI_7

        N      Mean     StDev   SE Mean
Con_7   3   0.09800   0.00200    0.0012
OSEI_7  3   0.09600   0.00265    0.0015

Difference = mu Con_7 - mu OSEI_7
Estimate for difference:  0.00200
95% lower bound for difference: -0.00251
T-Test of difference = 0 (vs >): T-Value = 1.04  P-Value = 0.187  DF = 3
```

Two-Sample T-Test and CI: Con_28, OSEI_28

```
Two-sample T for Con_28 vs OSEI_28

         N      Mean     StDev   SE Mean
Con_28   3   0.09533   0.00321    0.0019
OSEI_28  3  0.015667  0.000577   0.00033

Difference = mu Con_28 - mu OSEI_28
Estimate for difference:  0.07967
95% lower bound for difference: 0.07416
T-Test of difference = 0 (vs >): T-Value = 42.25  P-Value = 0.000  DF = 2
```

Two-Sample T-Test and CI: Con_0, Nutr_0

```
Two-sample T for Con_0 vs Nutr_0

        N      Mean     StDev   SE Mean
Con_0   3   0.10067   0.00379    0.0022
Nutr_0  3  0.097667  0.000577   0.00033

Difference = mu Con_0 - mu Nutr_0
Estimate for difference:  0.00300
95% lower bound for difference: -0.00346
T-Test of difference = 0 (vs >): T-Value = 1.36  P-Value = 0.154  DF = 2
```

Two-Sample T-Test and CI: Con_7, Nutr_7

```
Two-sample T for Con_7 vs Nutr_7

        N      Mean     StDev   SE Mean
Con_7   3   0.09800   0.00200    0.0012
Nutr_7  3   0.08500   0.00100   0.00058

Difference = mu Con_7 - mu Nutr_7
Estimate for difference:  0.01300
95% lower bound for difference: 0.00923
T-Test of difference = 0 (vs >): T-Value = 10.07  P-Value = 0.005  DF = 2
```

Two-Sample T-Test and CI: Con_28, Nutr_28

```
Two-sample T for Con_28 vs Nutr_28

         N      Mean     StDev   SE Mean
Con_28   3   0.09533   0.00321    0.0019
Nutr_28  3   0.02400   0.00173    0.0010

Difference = mu Con_28 - mu Nutr_28
Estimate for difference:  0.07133
95% lower bound for difference: 0.06637
T-Test of difference = 0 (vs >): T-Value = 33.84  P-Value = 0.000  DF = 3
```