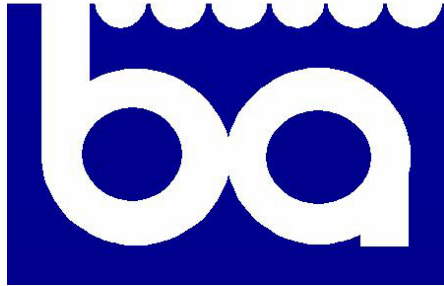




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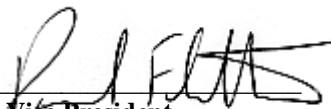
**Bioremediation Agent Effectiveness Test**

**SpillRemed (Marine)**

Sarva Bio Remed, LLC

September 11, 2006

Prepared by: \_\_\_\_\_

  
Vice President

9/11/2006

Date

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## **EXECUTIVE SUMMARY**

Bio-Aquatic Testing, Inc. located at 2501 Mayes Rd. Suite 100 Carrollton, Texas 75006 was contracted by Sarva Bio Remed, LLC to test effectiveness of their bioremediation product, SpillRemed (Marine), 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  $-10^{\circ}$  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 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 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- $\alpha$  androstane showed excellent recovery indicating the test to be 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 SARVA BIO REMED, LLC PRODUCT "SPILLREMEDI (MARINE)"

## 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 dichloromethane (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<sub>2</sub>- or C<sub>3</sub> - phenanthrene, C<sub>2</sub>-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<sub>2</sub> or C<sub>3</sub> phenanthrene, C<sub>2</sub>-chrysene, or C<sub>30</sub>17 $\alpha$ (H), 21 $\beta$  (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 extracted 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:

\*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
SpillRemed	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

SpilRemed – Oil + Seawater + Product + EPA Nutrient

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. This recipe is provided in Appendix 1. 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  $\mu$ l 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  $\mu$ l 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  $\mu$ l of a surrogate-recovery standards stock solution. This stock solution was made up of 500 mg/L 5 $\alpha$ -androstane and d<sub>10</sub>-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<sub>2</sub>SO<sub>4</sub>) and into a 250-ml flat-bottom distillation flask. The Na<sub>2</sub>SO<sub>4</sub> 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 ( $\alpha$ ) 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 ( $\alpha$ ) 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  $\alpha$ ) 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 ( $\alpha$ ) 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 first, followed 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.

### Sarva Bio Remed, LLC “SpillRemed” Marine Product & EPA Nutrient 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  $\alpha$ -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  $\alpha$ -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.

#### Normality Test of Non-Transformed Alkane Data

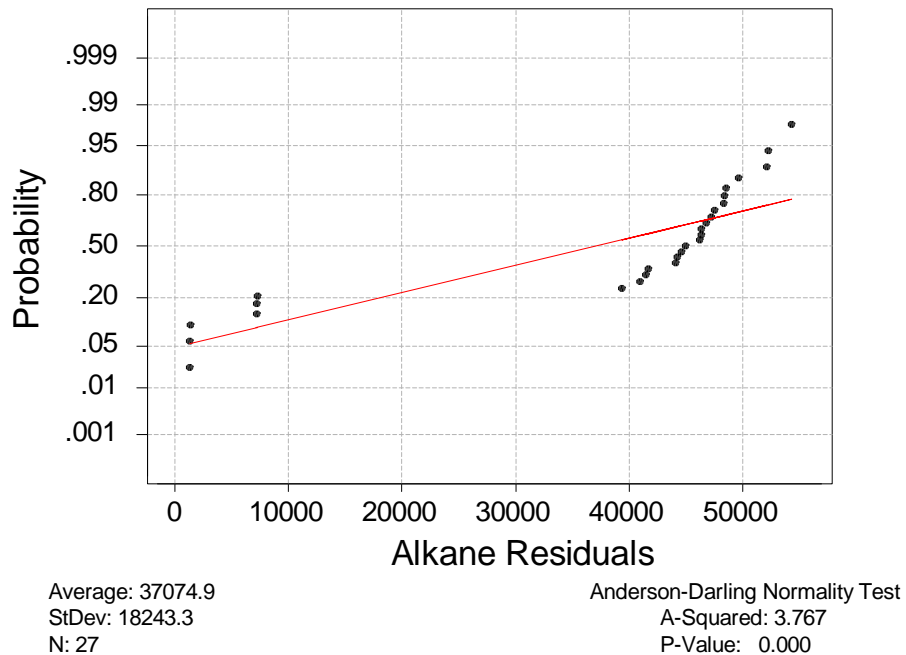


Figure 1. – Anderson-Darling test for normality showing non-linearity of surrogate adjusted alkane data.

# Normal Probability Plot for Non-Transformed Alkane Data

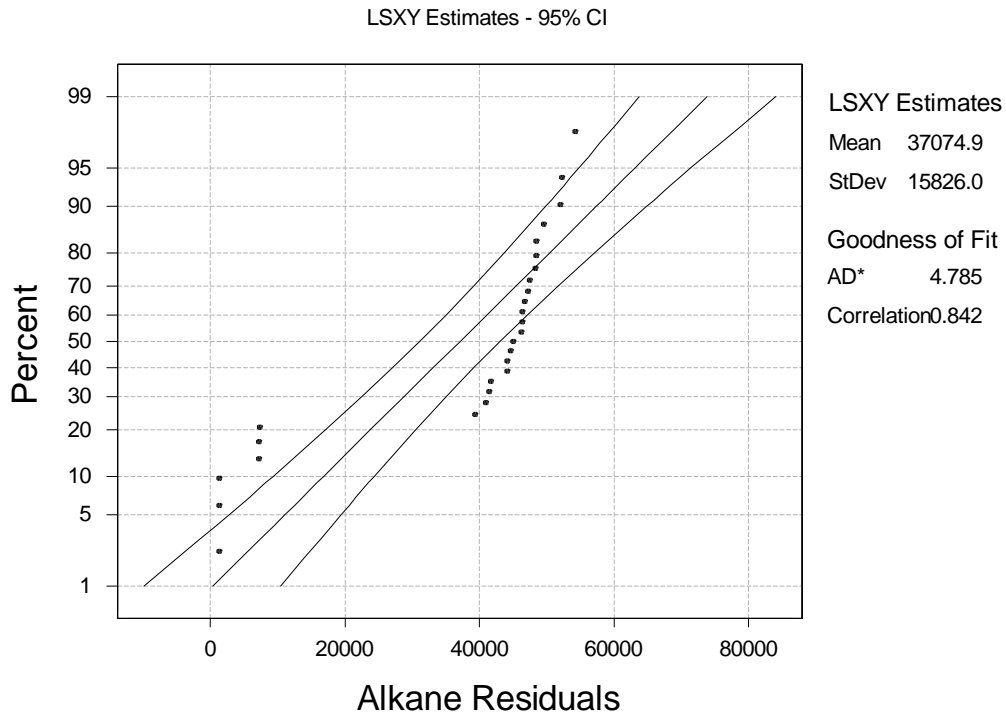
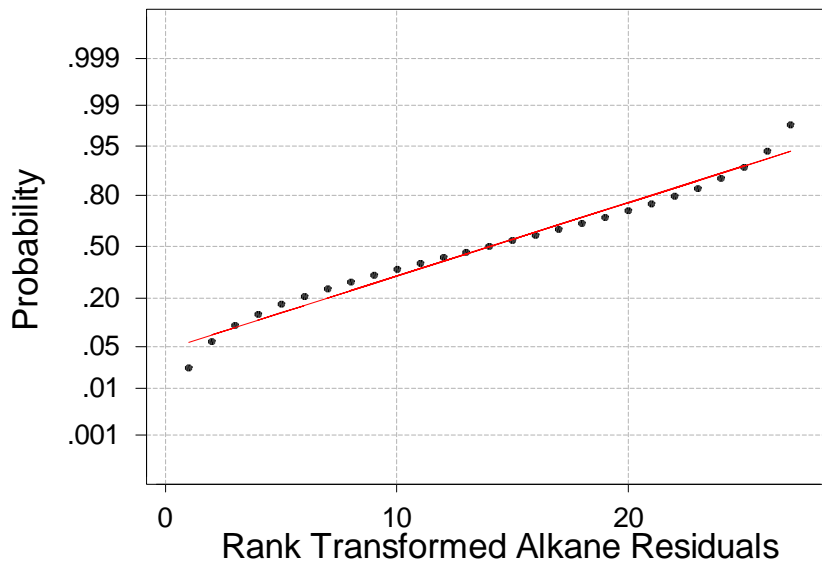


Figure 2. – Probability plot of the surrogate-adjusted alkane residuals showing further evidence of non-linearity.

# Normality Test of Rank-Transformed Alkane Data



Average: 14  
StDev: 7.93725  
N: 27

Anderson-Darling Normality Test  
A-Squared: 0.290  
P-Value: 0.585

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

## Normal Probability Plot for Rank-Trans Alkane Data

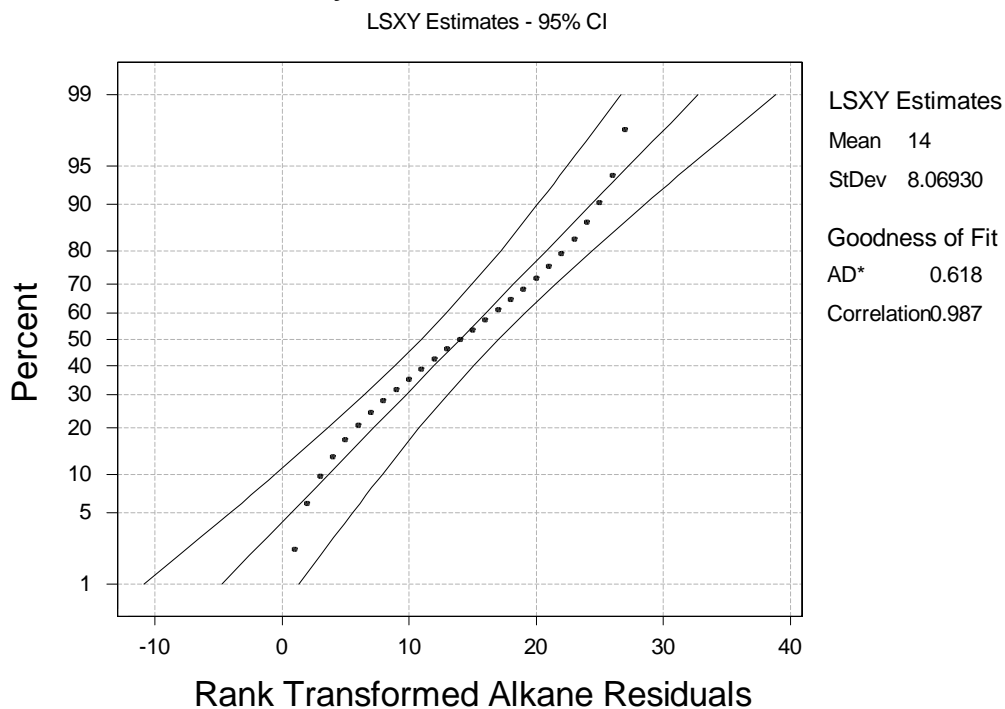


Figure 4. – Probability plot of the rank-transformed surrogate-adjusted alkane residuals showing improved linearity.

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 by the ANOVA table for non-transformed and transformed treatment main effects, and treatment/day interactions are all under the chosen alpha ( $\alpha$ ) level of 0.05 indicating a significant difference between one or more treatments over one or more days.

Adjusted P-values for non-transformed and transformed data SPILLREMED Days 7 and 28 are shown to be significantly less than the Day 0 controls (Table 3). Adjusted P-values for non-transformed data SPILLREMED Days 7 and 28 are shown to be significantly less than the Day 7 controls (Table 4). The adjusted P-value for transformed data SPILLREMED Days 7 and 28 is also shown to be significantly less than the Day 7 controls (Table 4). Both transformed and non-transformed data demonstrated statistically significant differences between the Day 28 controls and the SPILLREMED Day 28 results (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 both the Day 0, Day 7, and Day 28 controls. However, using Tukey's pairwise means comparison method on non-transformed data, the Day 28 SPILLREMED product is also significantly less than the Nutrient alone (Table 6).

Table 2. ANOVA on non-transformed

ANOVA non-transformed data						
Source	DF	Seq SS	Adj SS	Adj MS	F	P
Day	2	5046904846	5046904846	2523452423	945.67	0.000
Treatment	2	1425384113	1425384113	712692056	267.08	0.000
Treatment*Day	4	2132924217	2132924217	533231054	199.83	0.000
Error	18	48031825	48031825	2668435	-----	-----
Total	26	8653245001	-----	-----	-----	-----

ANOVA on rank transformed data

Source	DF	Seq SS	Adj SS	Adj MS	F	P
Day	2	904.22	904.22	452.11	68.97	0.000
Treatment	2	349.56	349.56	174.79	26.66	0.000
Treatment*Day	4	266.22	266.22	66.56	10.15	0.000
Error	18	118.00	118.00	6.56	-----	-----
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	-2000	-4.00	-150	-1.913	0.5604	0.3168
SPILLREMEDI	0	3100	4.33	2.32	2.073	0.1598	0.2457
Control	7	-1357	-1.00	-1.02	-4.78	0.8693	0.9979
Nutrient	7	-8110	-12.67	-6.08	-6.059	0.0001	0.0001
SPILLREMEDI	7	-5727	-10.67	-4.29	-5.102	0.0029	0.0005
Control	28	-3496	-6.33	-2.62	-3.030	0.0924	0.0413
Nutrient	28	-41753	-16.33	-31.30	-7.813	0.0000	0.0000
SPILLREMEDI	28	-47653	-19.33	-35.73	-9.248	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	1357	1.00	1.02	0.478	0.8693	0.9979
Nutrient	0	-643	-3.00	-.048	-1.435	0.9978	0.6039
SPILLREMEDI	0	4457	5.33	3.34	2.551	0.0218	0.1055
Nutrient	7	-6753	-11.67	-5.06	-5.581	0.0006	0.0002
SPILLREMEDI	7	-4370	-9.67	-3.28	-4.624	0.0249	0.0014
Control	28	-2139	-5.33	-1.60	-2.551	0.4921	0.1055
Nutrient	28	-40397	-15.33	-30.29	-7.335	0.0000	0.0000
SPILLREMEDI	28	-46297	-18.33	-34.71	-8.770	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	3496	6.33	2.62	3.030	0.0924	0.0413
Nutrient	0	1496	2.33	1.12	1.116	0.8110	0.8143
SPELLREMED	0	6596	10.67	4.95	5.102	0.0007	0.0005
Control	7	2139	5.33	1.60	2.551	0.4921	0.1055
Nutrient	7	-4614	-6.33	-3.46	-3.030	0.0170	0.0413
SPELLREMED	7	-2231	-4.33	-1.67	-2.073	0.4494	0.2457
Nutrient	28	-38257	-10.00	-28.68	-4.783	0.0000	0.0010
SPELLREMED	28	-44157	-13.00	-33.11	-6.218	0.0000	0.0001

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

Treatment	Day	Difference of Means	T-Value	Adjusted P-Value
SPELLREMED	28	-5900	-4.424	0.0078

### Surrogate-adjusted Aromatic Data

Preliminary statistical analysis for normality showed the raw data to be normal with an Anderson-Darling statistic of 0.033 (fig.5). This is above the selected alpha ( $\alpha$ ) level of 0.01 and indicates the data are marginally normal. Further visual inspection of data residuals reveals that the data residuals have fair linearity (fig.6). The data were then analyzed with the General Linear multiple-comparison ANOVA model and Dunnett's means comparison test using Day 0, 7, and 28 controls as control levels.

### Normal Probability Plot

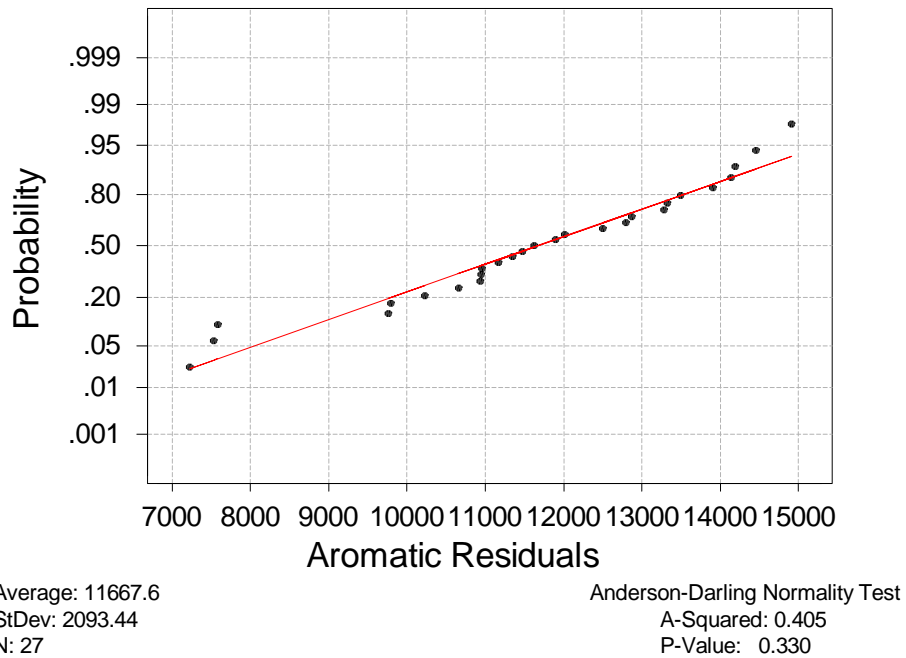


Figure 5. - Anderson-Darling test for normality showing linearity of the surrogate adjusted aromatic data.

# Normal Probability Plot for Aromatic Data

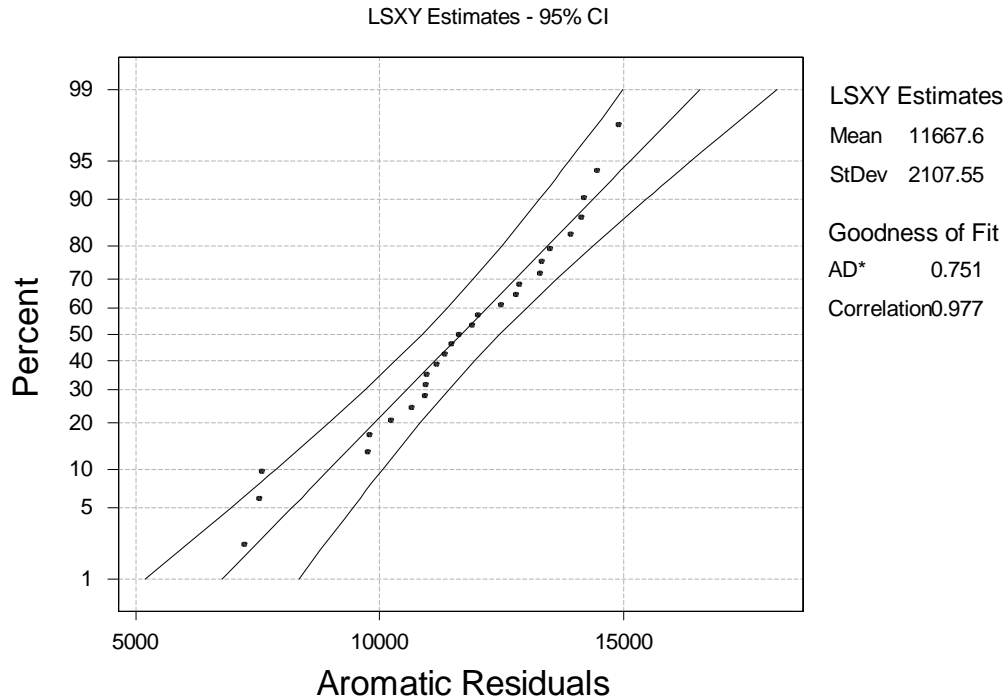


Figure 6. – Probability plot of the surrogate-adjusted aromatic residuals showing further evidence of linearity.

Surrogate-adjusted aromatic weight data were analyzed with the General Linear multiple-comparison ANOVA model and Dunnett’s means comparison test using Day 0, 7, and 28 control for control levels (Table’s 8, 9, and 10). P-statistics calculated by the ANOVA model on non-transformed data treatment main effects are under the chosen alpha ( $\alpha$ ) level of 0.05 indicating a significant difference between one or more treatments over one or more days.

Table 7. ANOVA on Surrogate-adjusted Aromatic Data

ANOVA						
Source	DF	Seq SS	Adj SS	Adj MS	F	P
Day	2	68510796	68510796	34255398	114.47	0.000
Treatment	2	10785102	10785102	5392551	18.02	0.000
Treatment*Day	4	29262580	29262580	7315645	24.45	0.000
Error	18	5386510	5386510	299251	-----	-----
Total	26	113944989	-----	-----	-----	-----

Analysis of the non-transformed data shows SPILLREMED Day 7 and Day 28 adjusted P-values to be significantly less than the Day 0 controls (Table 8). The data shows adjusted P-values for SPILLREMED Day 28 to be significantly less than Day 7 controls, but the Day 7 SPILLREMED p-value is not significantly different than the Day 7 control (Table 9). Adjusted P-values for SPILLREMED Day 28 are also significantly less than the Day 28 controls (Table 10).

The Nutrient alone behaved in the same manner as the product, showing the same significant differences between the Days 7 and 28 results from the Day 0 controls. The Nutrient at Day 28 was also significantly less than the Day 28 control, but not the Day 7 control. Also, using Tukey’s pairwise means comparison method on the non-transformed data, the Day 28 SPILLREMED product is also significantly less than the Nutrient alone (Table 11).



Table 8. Dunnett's test using Day 0 control as the control level vs. all other treatments and controls (all interactions). No transformation.

Treatment	Day	Difference of Means	T-Value	Adjusted P-Value
Nutrient	0	295	0.66	0.9843
SPILLREMEDI	0	659	1.48	0.5766
Control	7	-2221	-4.97	0.0007
Nutrient	7	-2155	-4.82	0.0009
SPILLREMEDI	7	-2407	-5.39	0.0003
Control	28	-924	-2.07	0.2474
Nutrient	28	-3556	-7.96	0.0000
SPILLREMEDI	28	-6041	-13.53	0.0000

Table 9. Dunnett's test using Day 7 Control as the control level vs. all other treatments and controls (all interactions). No transformation.

Treatment	Day	Difference of Means	T-Value	Adjusted P-Value
Control	0	2221	4.973	0.0007
Nutrient	0	2516	5.634	0.0002
SPILLREMEDI	0	2880	6.449	0.0000
Nutrient	7	66	0.149	1.0000
SPILLREMEDI	7	-186	-0.416	0.9992
Control	28	1297	2.905	0.0532
Nutrient	28	-1335	-2.989	0.0449
SPILLREMEDI	28	-3820	-8.552	0.0000

Table 10. Dunnett's test using Day 28 control as the control level vs. all other treatments and controls (all interactions). No transformation.

Treatment	Day	Difference of Means	T-Value	Adjusted P-Value
Control	0	924	2.07	0.2474
Nutrient	0	1219	2.73	0.0751
SPILLREMEDI	0	1583	3.54	0.0142
Control	7	-1297	-2.90	0.0532
Nutrient	7	-1231	-2.76	0.0713
SPILLREMEDI	7	-1483	-3.32	0.0227
Nutrient	28	-2632	-5.89	0.0001
SPILLREMEDI	28	-5117	-11.46	0.0000

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

Treatment	Day	Difference of Means	T-Value	Adjusted P-Value
SPILLREMEDI	28	-2485	-5.564	0.0008

### 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 in the product and to a lesser extent, the controls. Print outs appear in APPENDIX III

Table 12. Micro Results, MPN (per mL)

<b>Treatments</b>	<b>Day 0</b>	<b>Day 7</b>	<b>Day 28</b>
<b>Control Rep# 1</b>	6794	7129	9549
<b>Control Rep #2</b>	6195	6956	8724
<b>Control Rep #3</b>	6330	7647	9279
<b>Nutrient Rep #1</b>	6014	28,566	7,068,457
<b>Nutrient Rep #2</b>	6474	29,933	7,235,388
<b>Nutrient Rep #3</b>	6330	27,514	7,250,977
<b>SPILLREMEDI Rep# 1</b>	15,565	1,535,074	1.38E+08
<b>SPILLREMEDI Rep# 2</b>	15,685	1,399,693	1.55E+08
<b>SPILLREMEDI Rep# 3</b>	16,966	1,488,635	1.57E+08

### 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 ( $\alpha$ ) level of 0.05 and therefore indicate statistical significance. A computer printout of the analyses can be seen in APPENDIX IV. 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 (SPILLREMED) and the controls

Treatments	Day	Treatment Weight Means (mg)	T-test Scores	p-value
Controls	0	0.101	-2.79	0.068
SPILLREMED	0	0.108		
Controls	7	0.098	1.04	0.373
SPILLREMED	7	0.096		
Controls	28	0.095	42.25	0.001
SPILLREMED	28	0.016		

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	0.101	1.36	0.308
NUTRIENT	0	0.098		
Controls	7	0.098	10.07	0.001
NUTRIENT	7	0.085		
Controls	28	0.095	33.84	0.000
NUTRIENT	28	0.024		

## **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***

#### **SarvaBio Remed, LLC Product (SpillRemed)& EPA Nutrient mix (NUT)**

##### ***Surrogate-adjusted Alkane Data***

Surrogate-adjusted alkane SpillRemed 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 to be significantly less than the respective Day 0 and 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 28 nutrient 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 also showed a significant difference between the Day 28 SpillRemed results and Day 28 Nutrient results, indicating that the product seems to be more effective than nutrient treatment alone.

##### ***Surrogate-adjusted Aromatic Data***

Surrogate-adjusted aromatic SpillRemed data were normally distributed based on the Anderson Darling normality test and needed no transformation to attain linearity. Residuals of the data were also fairly linear. The data showed the product at Day 28 to be significantly less than Day 0, 7, and 28 controls. Based on this parameter, the product should be deemed effective.

Surrogate-adjusted aromatic nutrient data were normally distributed based on the Anderson Darling normality test and needed no transformation to attain linearity. Residuals of the data were also fairly linear. The data showed the nutrient at Day 28 to be significantly less than Day 0, 7, and 28 controls. Based on this parameter, the nutrient treatment should be deemed effective.

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

## Microbiological Results

### Sarva Bio Remed, LLC Product (SpillRemed)& EPA Nutrient (NUT)

The microbiological results speak for themselves. They show a definite continued microbiological viability over time for the product treatments.

Similar to the product treatment and the nutrient treatments show a definite continued microbiological viability over time.

## Gravimetric Results

### SarvaBio Remed, LLC Product (SpillRemed)& EPA Nutrient (NUT)

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 a 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	0.97	0.90	0.97
	Phenanthrene-d10	0.97	0.94	0.88
Control Rep #2	5-Alpha Andorstane	0.98	0.91	0.97
	Phenanthrene-d10	0.98	0.96	0.90
Control Rep #3	5-Alpha Andorstane	0.99	0.92	0.96
	Phenanthrene-d10	0.99	0.93	0.89
NUT Rep #1	5-Alpha Andorstane	1.00	0.79	0.99
	Phenanthrene-d10	1.00	0.82	0.74
NUT Rep# 2	5-Alpha Andorstane	0.99	0.86	1.00
	Phenanthrene-d10	0.99	0.93	0.77
NUT Rep# 3	5-Alpha Andorstane	0.99	0.92	1.00
	Phenanthrene-d10	1.00	0.97	0.75
SpillRemed Rep #1	5-Alpha Andorstane	0.98	0.81	0.83
	Phenanthrene-d10	0.98	0.82	0.75
SpillRemed Rep# 2	5-Alpha Andorstane	0.99	0.91	0.78
	Phenanthrene-d10	0.99	0.97	0.71
SpillRemed Rep# 3	5-Alpha Andorstane	1.00	0.88	0.79
	Phenanthrene-d10	1.00	0.89	0.71

As Table 15 shows, the bulk of surrogate recovery percentages decline over time. However, all surrogate recoveries were within specifications of the protocol.

### 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 ( $\alpha$ ) 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.

## Literature References

- Helsel, D.R. and R.M Hirsh, 1992. Statistical Methods in Water Resources, (1<sup>st</sup> Edition). Elsevier Science B.V., SaraBurgerhartstraat 25, 1000 AE Amsterdam, The Netherlands
- Klein, David, PhD., 2001. Personal Communication, Texas Parks and Wildlife, 505 Staples Road, San Marcos, Texas 78666.
- Miles, Scott, Louisiana State University-EIS, 2001. Personal Communication., 42 Atkinson Hall, Baton Rouge Louisiana, 70803
- U.S.E.P.A., Bioremediation Effectiveness Test, 1999. 40 CFR Chapter 1. Pt. 300 Appendix C, page 230, item 4.0
- Zar, Jerrold, H., 1984. Biostatistical Analysis, (2<sup>nd</sup> Edition). Prentice-Hall, Inc. – Englewood Cliffs, N.J.

## APPENDIX I



CONTROL REPLICATES 1		CONTROL REPLICATES 2		CONTROL REPLICATES 3	
Testing Date: Day 0 Initial Oil Weight: 510 mg Final Extracted Volume: 10 mL		Testing Date: Day 0 Initial Oil Weight: 500 mg Final Extracted Volume: 10 mL		Testing Date: Day 0 Initial Oil Weight: 490 mg Final Extracted Volume: 10 mL	
Concentration (ng/ml)	Surrogate Corrected (ng/ml)	Concentration (ng/ml)	Surrogate Corrected (ng/ml)	Concentration (ng/ml)	Surrogate Corrected (ng/ml)
Alkane Analyte:		Alkane Analyte:		Alkane Analyte:	
nC-10 Decane	1400	nC-10 Decane	1400	nC-10 Decane	1400
nC-11 Undecane	2400	nC-11 Undecane	2400	nC-11 Undecane	2200
nC-12 Dodecane	2500	nC-12 Dodecane	2500	nC-12 Dodecane	2100
nC-13 Tridecane	2600	nC-13 Tridecane	2600	nC-13 Tridecane	2100
nC-14 Tetradecane	2500	nC-14 Tetradecane	2700	nC-14 Tetradecane	2300
nC-15 Pentadecane	2500	nC-15 Pentadecane	2600	nC-15 Pentadecane	2300
nC-16 Hexadecane	2300	nC-16 Hexadecane	2400	nC-16 Hexadecane	2000
nC-17 Heptadecane	2300	nC-17 Heptadecane	2400	nC-17 Heptadecane	2100
nC-18 Octadecane	2200	nC-18 Octadecane	2500	nC-18 Octadecane	2400
nC-19 Nonadecane	1400	nC-19 Nonadecane	1500	nC-19 Nonadecane	1300
nC-20 Eicosane	2000	nC-20 Eicosane	2200	nC-20 Eicosane	2000
nC-21 Heneicosane	1900	nC-21 Heneicosane	2100	nC-21 Heneicosane	1900
nC-22 Docosane	1700	nC-22 Docosane	1800	nC-22 Docosane	1700
nC-23 Tricosane	1500	nC-23 Tricosane	1700	nC-23 Tricosane	1500
nC-24 Tetracosane	1400	nC-24 Tetracosane	1500	nC-24 Tetracosane	1500
nC-25 Pentacosane	2000	nC-25 Pentacosane	2200	nC-25 Pentacosane	1900
nC-26 Hexacosane	2100	nC-26 Hexacosane	2300	nC-26 Hexacosane	1900
nC-27 Heptacosane	1500	nC-27 Heptacosane	1600	nC-27 Heptacosane	1400
nC-28 Octacosane	1200	nC-28 Octacosane	1200	nC-28 Octacosane	1200
nC-29 Nonacosane	1200	nC-29 Nonacosane	1200	nC-29 Nonacosane	1200
nC-30triacontane	1100	nC-30triacontane	1100	nC-30triacontane	1100
nC-31heptacosane	800	nC-31heptacosane	800	nC-31heptacosane	800
nC-32dovicosane	900	nC-32dovicosane	900	nC-32dovicosane	900
nC-33triacontane	940	nC-33triacontane	1000	nC-33triacontane	870
nC-34tetracontane	740	nC-34tetracontane	780	nC-34tetracontane	740
nC-35pentacosane	1100	nC-35pentacosane	1200	nC-35pentacosane	1100
<b>Total Alkanes</b>	<b>47060</b>	<b>Total Alkanes</b>	<b>50760</b>	<b>Total Alkanes</b>	<b>46330</b>
Aromatic Analyte:		Aromatic Analyte:		Aromatic Analyte:	
Naphthalene	590	Naphthalene	630	Naphthalene	550
1-Methyl-naphthalene	1600	1-Methyl-naphthalene	1700	1-Methyl-naphthalene	1500
2-Methyl-naphthalene	2100	2-Methyl-naphthalene	2400	2-Methyl-naphthalene	2000
Acenaphthylene	780	Acenaphthylene	880	Acenaphthylene	820
Fluorene	110	Fluorene	120	Fluorene	100
1-Fluorene	260	1-Fluorene	290	1-Fluorene	260
2-Fluorene	300	2-Fluorene	410	2-Fluorene	350
3-Fluorene	330	3-Fluorene	360	3-Fluorene	330
Dibenzofluorene	240	Dibenzofluorene	270	Dibenzofluorene	240
1,2,3,4-Tetrahydronaphthalene	440	1,2,3,4-Tetrahydronaphthalene	500	1,2,3,4-Tetrahydronaphthalene	420
1,2,3,4,5,6-Hexahydronaphthalene	540	1,2,3,4,5,6-Hexahydronaphthalene	600	1,2,3,4,5,6-Hexahydronaphthalene	500
1,2,3,4,5,6,7-Heptahydronaphthalene	310	1,2,3,4,5,6,7-Heptahydronaphthalene	340	1,2,3,4,5,6,7-Heptahydronaphthalene	300
1,2,3,4,5,6,7,8-Octahydronaphthalene	430	1,2,3,4,5,6,7,8-Octahydronaphthalene	500	1,2,3,4,5,6,7,8-Octahydronaphthalene	420
1,2,3,4,5,6,7,8,9-Nonahydronaphthalene	610	1,2,3,4,5,6,7,8,9-Nonahydronaphthalene	700	1,2,3,4,5,6,7,8,9-Nonahydronaphthalene	590
1,2,3,4,5,6,7,8,9,10-Decahydronaphthalene	420	1,2,3,4,5,6,7,8,9,10-Decahydronaphthalene	490	1,2,3,4,5,6,7,8,9,10-Decahydronaphthalene	420
1,2,3,4,5,6,7,8,9,10,11-Undecahydronaphthalene	130	1,2,3,4,5,6,7,8,9,10,11-Undecahydronaphthalene	130	1,2,3,4,5,6,7,8,9,10,11-Undecahydronaphthalene	130
1,2,3,4,5,6,7,8,9,10,11,12-Dodecahydronaphthalene	2.7	1,2,3,4,5,6,7,8,9,10,11,12-Dodecahydronaphthalene	2.4	1,2,3,4,5,6,7,8,9,10,11,12-Dodecahydronaphthalene	2.4
Fluoranthene	2.9	Fluoranthene	2.9	Fluoranthene	3.0
Pyrene	8.2	Pyrene	8.7	Pyrene	8.5
1-Methyl-pyrene	110	1-Methyl-pyrene	110	1-Methyl-pyrene	110
2-Methyl-pyrene	160	2-Methyl-pyrene	170	2-Methyl-pyrene	150
3-Methyl-pyrene	150	3-Methyl-pyrene	170	3-Methyl-pyrene	150
4-Methyl-pyrene	92	4-Methyl-pyrene	100	4-Methyl-pyrene	80
5-Methyl-pyrene	82	5-Methyl-pyrene	100	5-Methyl-pyrene	80
6-Methyl-pyrene	54	6-Methyl-pyrene	59	6-Methyl-pyrene	50
1,2,3,4-Tetrahydronaphthalene	190	1,2,3,4-Tetrahydronaphthalene	210	1,2,3,4-Tetrahydronaphthalene	180
1,2,3,4,5,6-Hexahydronaphthalene	180	1,2,3,4,5,6-Hexahydronaphthalene	210	1,2,3,4,5,6-Hexahydronaphthalene	180
1,2,3,4,5,6,7-Heptahydronaphthalene	150	1,2,3,4,5,6,7-Heptahydronaphthalene	150	1,2,3,4,5,6,7-Heptahydronaphthalene	140
1,2,3,4,5,6,7,8-Octahydronaphthalene	8.4	1,2,3,4,5,6,7,8-Octahydronaphthalene	8.8	1,2,3,4,5,6,7,8-Octahydronaphthalene	8.1
1,2,3,4,5,6,7,8,9-Nonahydronaphthalene	5.9	1,2,3,4,5,6,7,8,9-Nonahydronaphthalene	6.6	1,2,3,4,5,6,7,8,9-Nonahydronaphthalene	5.6
1,2,3,4,5,6,7,8,9,10-Decahydronaphthalene	89	1,2,3,4,5,6,7,8,9,10-Decahydronaphthalene	94	1,2,3,4,5,6,7,8,9,10-Decahydronaphthalene	94
1,2,3,4,5,6,7,8,9,10,11-Undecahydronaphthalene	80	1,2,3,4,5,6,7,8,9,10,11-Undecahydronaphthalene	80	1,2,3,4,5,6,7,8,9,10,11-Undecahydronaphthalene	110
1,2,3,4,5,6,7,8,9,10,11,12-Dodecahydronaphthalene	87	1,2,3,4,5,6,7,8,9,10,11,12-Dodecahydronaphthalene	92	1,2,3,4,5,6,7,8,9,10,11,12-Dodecahydronaphthalene	88
1,2,3,4,5,6,7,8,9,10,11,12,13-Tridecahydronaphthalene	49	1,2,3,4,5,6,7,8,9,10,11,12,13-Tridecahydronaphthalene	47	1,2,3,4,5,6,7,8,9,10,11,12,13-Tridecahydronaphthalene	48
1,2,3,4,5,6,7,8,9,10,11,12,13,14-Tetradecahydronaphthalene	46	1,2,3,4,5,6,7,8,9,10,11,12,13,14-Tetradecahydronaphthalene	47	1,2,3,4,5,6,7,8,9,10,11,12,13,14-Tetradecahydronaphthalene	46
Benzo (b) Fluoranthene	3.9	Benzo (b) Fluoranthene	3.7	Benzo (b) Fluoranthene	3.5
Benzo (k) Fluoranthene	3.2	Benzo (k) Fluoranthene	3.0	Benzo (k) Fluoranthene	3.4
Benzo (e) Pyrene	7.9	Benzo (e) Pyrene	8.8	Benzo (e) Pyrene	7.6
Benzo (a) Pyrene	1.2	Benzo (a) Pyrene	1.2	Benzo (a) Pyrene	1.1
Phenylene	0.68	Phenylene	0.66	Phenylene	0.64
Indeno (1,2,3-cd) Pyrene	0.00	Indeno (1,2,3-cd) Pyrene	0.00	Indeno (1,2,3-cd) Pyrene	0.00
Dibenz (a,h) Anthracene	0.00	Dibenz (a,h) Anthracene	0.00	Dibenz (a,h) Anthracene	0.00
Benzo (ghi) Perylene	1.6	Benzo (ghi) Perylene	1.6	Benzo (ghi) Perylene	1.6
<b>Total Aromatics</b>	<b>12912</b>	<b>Total Aromatics</b>	<b>14307</b>	<b>Total Aromatics</b>	<b>12417</b>
<b>% Surrogate Recovery</b>		<b>% Surrogate Recovery</b>		<b>% Surrogate Recovery</b>	
5-Alpha Androstane	0.97	5-Alpha Androstane	0.88	5-Alpha Androstane	0.99
Phenanthrene d-9	0.07	Phenanthrene d-9	0.08	Phenanthrene d-9	0.09
5-Alpha Androstane	1.00	5-Alpha Androstane	1.00	5-Alpha Androstane	1.00
Phenanthrene d-10	0.07	Phenanthrene d-10	0.08	Phenanthrene d-10	0.09

NUTRIENT REPLICATES 1		NUTRIENT REPLICATES 2		NUTRIENT REPLICATES 3	
Testing Date: Day 0		Testing Date: Day 0		Testing Date: Day 0	
Initial Oil Weight: 510 mg		Initial Oil Weight: 510 mg		Initial Oil Weight: 510 mg	
Final Extracted Volume: 10 mL		Final Extracted Volume: 10 mL		Final Extracted Volume: 10 mL	
Concentration (ng/ml)	Surrogate Corrected (ng/ml)	Concentration (ng/ml)	Surrogate Corrected (ng/ml)	Concentration (ng/ml)	Surrogate Corrected (ng/ml)
Alkane Analyte:		Alkane Analyte:		Alkane Analyte:	
nC-10 Decane	730	nC-10 Decane	700	nC-10 Decane	728
nC-11 Undecane	1600	nC-11 Undecane	1700	nC-11 Undecane	1800
nC-12 Dodecane	1800	nC-12 Dodecane	1800	nC-12 Dodecane	1800
nC-13 Tridecane	1800	nC-13 Tridecane	1800	nC-13 Tridecane	1900
nC-14 Tetradecane	2200	nC-14 Tetradecane	2000	nC-14 Tetradecane	2200
nC-15 Pentadecane	2000	nC-15 Pentadecane	1800	nC-15 Pentadecane	1900
nC-16 Hexadecane	1800	nC-16 Hexadecane	1800	nC-16 Hexadecane	1800
nC-17 Heptadecane	1900	nC-17 Heptadecane	1900	nC-17 Heptadecane	2000
nC-18 Octadecane	1600	nC-18 Octadecane	2100	nC-18 Octadecane	1600
nC-19 Nonadecane	1500	nC-19 Nonadecane	1600	nC-19 Nonadecane	1600
nC-20 Eicosane	1800	nC-20 Eicosane	1800	nC-20 Eicosane	1900
nC-21 Heneicosane	1800	nC-21 Heneicosane	1800	nC-21 Heneicosane	2000
nC-22 Docosane	1600	nC-22 Docosane	1700	nC-22 Docosane	1800
nC-23 Tricosane	1600	nC-23 Tricosane	1600	nC-23 Tricosane	1800
nC-24 Tetracosane	1700	nC-24 Tetracosane	1800	nC-24 Tetracosane	1800
nC-25 Pentacosane	2100	nC-25 Pentacosane	2200	nC-25 Pentacosane	2300
nC-26 Hexacosane	2200	nC-26 Hexacosane	2200	nC-26 Hexacosane	2300
nC-27 Heptacosane	1900	nC-27 Heptacosane	2000	nC-27 Heptacosane	2100
nC-28 Octacosane	1700	nC-28 Octacosane	1900	nC-28 Octacosane	1700
nC-29 Nonacosane	1800	nC-29 Nonacosane	1800	nC-29 Nonacosane	1700
nC-30triacontane	1200	nC-30triacontane	1200	nC-30triacontane	1300
nC-31heptacosane	1200	nC-31heptacosane	1300	nC-31heptacosane	1300
nC-32dovicosane	1100	nC-32dovicosane	1100	nC-32dovicosane	1100
nC-33triacontane	1100	nC-33triacontane	1000	nC-33triacontane	1200
nC-34tetracontane	980	nC-34tetracontane	970	nC-34tetracontane	1100
nC-35pentacosane	1000	nC-35pentacosane	950	nC-35pentacosane	1100
<b>Total Alkanes</b>	<b>46370</b>	<b>Total Alkanes</b>	<b>46320</b>	<b>Total Alkanes</b>	<b>48320</b>
Aromatic Analyte:		Aromatic Analyte:		Aromatic Analyte:	
Naphthalene	440	Naphthalene	480	Naphthalene	510
1-Methylnaphthalene	1600	1-Methylnaphthalene	1800	1-Methylnaphthalene	1700
2-Methylnaphthalene	2200	2-Methylnaphthalene	2400	2-Methylnaphthalene	2300
3-Methylnaphthalene	880	3-Methylnaphthalene	940	3-Methylnaphthalene	840
Fluorene	110	Fluorene	110	Fluorene	110
1-Fluorene	250	1-Fluorene	250	1-Fluorene	250
2-Fluorene	300	2-Fluorene	370	2-Fluorene	360
3-Fluorene	330	3-Fluorene	330	3-Fluorene	330
Dibenzofluorene	240	Dibenzofluorene	250	Dibenzofluorene	250
1,2-Dibenzofluorene	450	1,2-Dibenzofluorene	470	1,2-Dibenzofluorene	450
2,3-Dibenzofluorene	580	2,3-Dibenzofluorene	590	2,3-Dibenzofluorene	570
3,4-Dibenzofluorene	320	3,4-Dibenzofluorene	330	3,4-Dibenzofluorene	320
1,2,3,4-Tetrafluorene	580	1,2,3,4-Tetrafluorene	600	1,2,3,4-Tetrafluorene	600
Phenanthrene	620	Phenanthrene	680	Phenanthrene	670
1-Phenanthrene	420	1-Phenanthrene	470	1-Phenanthrene	470
2-Phenanthrene	130	2-Phenanthrene	130	2-Phenanthrene	140
3-Phenanthrene	2.0	3-Phenanthrene	2.2	3-Phenanthrene	2.1
Fluoranthene	2.5	Fluoranthene	2.8	Fluoranthene	2.5
Pyrene	5.3	Pyrene	5.9	Pyrene	6.1
1-Pyrene	110	1-Pyrene	120	1-Pyrene	120
2-Pyrene	140	2-Pyrene	150	2-Pyrene	150
3-Pyrene	140	3-Pyrene	150	3-Pyrene	150
4-Pyrene	84	4-Pyrene	87	4-Pyrene	91
1-Methylpyrene	55	1-Methylpyrene	57	1-Methylpyrene	56
2-Methylpyrene	170	2-Methylpyrene	180	2-Methylpyrene	190
3-Methylpyrene	180	3-Methylpyrene	190	3-Methylpyrene	200
4-Methylpyrene	150	4-Methylpyrene	150	4-Methylpyrene	150
1,2,3,4-Tetra-methylpyrene	14	1,2,3,4-Tetra-methylpyrene	14	1,2,3,4-Tetra-methylpyrene	15
Chrysene	83	Chrysene	85	Chrysene	90
1-Chrysene	120	1-Chrysene	130	1-Chrysene	140
2-Chrysene	130	2-Chrysene	130	2-Chrysene	140
3-Chrysene	74	3-Chrysene	70	3-Chrysene	75
4-Chrysene	75	4-Chrysene	70	4-Chrysene	75
Benzo (b) Fluoranthene	2.9	Benzo (b) Fluoranthene	2.7	Benzo (b) Fluoranthene	2.7
Benzo (k) Fluoranthene	3.1	Benzo (k) Fluoranthene	3.4	Benzo (k) Fluoranthene	2.5
Benzo (e) Pyrene	9.9	Benzo (e) Pyrene	10	Benzo (e) Pyrene	9.3
Benzo (a) Pyrene	1.3	Benzo (a) Pyrene	1.4	Benzo (a) Pyrene	1.3
Pyrene	0.67	Pyrene	0.71	Pyrene	0.72
Indeno (1,2,3-cd) Pyrene	0.00	Indeno (1,2,3-cd) Pyrene	0.00	Indeno (1,2,3-cd) Pyrene	0.00
Dibenz (a,h) anthracene	0.00	Dibenz (a,h) anthracene	0.00	Dibenz (a,h) anthracene	0.00
Benzo (ghi) perylene	1.6	Benzo (ghi) perylene	1.7	Benzo (ghi) perylene	1.6
<b>Total Aromatics</b>	<b>13287</b>	<b>Total Aromatics</b>	<b>14144</b>	<b>Total Aromatics</b>	<b>13916</b>
% Surrogate Recovery	1.00	% Surrogate Recovery	1.00	% Surrogate Recovery	1.00
5 Alpha Androstane	1.00	5 Alpha Androstane	0.96	5 Alpha Androstane	0.99
Phenanthrene d-10	1.00	Phenanthrene d-10	1.00	Phenanthrene d-10	1.00

SARVA PRODUCT, REPLICATE 1			SARVA PRODUCT, REPLICATE 2			SARVA PRODUCT, REPLICATE 3		
Testing Date: Day 0			Testing Date: Day 0			Testing Date: Day 0		
Initial Oil Weight: 510 mg			Initial Oil Weight: 510 mg			Initial Oil Weight: 510 mg		
Final Extracted Volume: 10 mL			Final Extracted Volume: 10 mL			Final Extracted Volume: 10 mL		
Alkane Analyte	Concentration (ng/ml)	Surrogate Corrected (ng/ml)	Alkane Analyte	Concentration (ng/ml)	Surrogate Corrected (ng/ml)	Alkane Analyte	Concentration (ng/ml)	Surrogate Corrected (ng/ml)
nC-10 Decane	1100	1100	nC-10 Decane	1200	1200	nC-10 Decane	1200	1200
nC-11 Undecane	2100	2100	nC-11 Undecane	2100	2100	nC-11 Undecane	2100	2100
nC-12 Dodecane	2100	2100	nC-12 Dodecane	2300	2300	nC-12 Dodecane	2300	2300
nC-13 Tridecane	2000	2000	nC-13 Tridecane	2300	2300	nC-13 Tridecane	2300	2300
nC-14 Tetradecane	2200	2200	nC-14 Tetradecane	2500	2500	nC-14 Tetradecane	2400	2400
nC-15 Pentadecane	2100	2100	nC-15 Pentadecane	2400	2400	nC-15 Pentadecane	2400	2400
nC-16 Hexadecane	2300	2300	nC-16 Hexadecane	2600	2600	nC-16 Hexadecane	2500	2500
nC-17 Heptadecane	2400	2400	nC-17 Heptadecane	2600	2600	nC-17 Heptadecane	2400	2400
nC-18 Octadecane	2200	2200	nC-18 Octadecane	2500	2500	nC-18 Octadecane	2500	2500
nC-19 Nonadecane	1900	1900	nC-19 Nonadecane	1700	1700	nC-19 Nonadecane	1600	1600
nC-20 Eicosane	1900	1900	nC-20 Eicosane	2200	2200	nC-20 Eicosane	2200	2200
nC-21 Heneicosane	2000	2000	nC-21 Heneicosane	2300	2300	nC-21 Heneicosane	2200	2200
nC-22 Docosane	1900	1900	nC-22 Docosane	2100	2100	nC-22 Docosane	2000	2000
nC-23 Tricosane	1800	1800	nC-23 Tricosane	2000	2000	nC-23 Tricosane	2000	2000
nC-24 Tetracosane	2000	2000	nC-24 Tetracosane	2400	2400	nC-24 Tetracosane	1900	1900
nC-25 Pentacosane	2200	2200	nC-25 Pentacosane	2400	2400	nC-25 Pentacosane	2300	2300
nC-26 Hexacosane	1900	1900	nC-26 Hexacosane	2500	2500	nC-26 Hexacosane	2200	2200
nC-27 Heptacosane	1700	1700	nC-27 Heptacosane	2100	2100	nC-27 Heptacosane	1900	1900
nC-28 Octacosane	1800	1800	nC-28 Octacosane	1900	1900	nC-28 Octacosane	1700	1700
nC-29 Nonacosane	1800	1800	nC-29 Nonacosane	1900	1900	nC-29 Nonacosane	1700	1700
nC-30triacontane	1100	1100	nC-30triacontane	1300	1300	nC-30triacontane	1100	1100
nC-31heptacosane	1100	1100	nC-31heptacosane	1300	1300	nC-31heptacosane	1100	1100
nC-32dovicosane	1000	1000	nC-32dovicosane	1100	1100	nC-32dovicosane	1100	1100
nC-33triacontane	970	970	nC-33triacontane	920	920	nC-33triacontane	920	920
nC-34tetracosane	1100	1100	nC-34tetracosane	1100	1100	nC-34tetracosane	1000	1000
nC-35pentacosane	920	920	nC-35pentacosane	950	950	nC-35pentacosane	930	930
<b>Total Alkanes</b>	<b>49550</b>	<b>49630</b>	<b>Total Alkanes</b>	<b>54270</b>	<b>54290</b>	<b>Total Alkanes</b>	<b>52250</b>	<b>52270</b>
<b>Aromatic Analyte</b>			<b>Aromatic Analyte</b>			<b>Aromatic Analyte</b>		
Naphthalene	570	580	Naphthalene	570	580	Naphthalene	570	570
1-Methylnaphthalene	1700	1700	1-Methylnaphthalene	1800	1800	1-Methylnaphthalene	1800	1800
2-Methylnaphthalene	2300	2300	2-Methylnaphthalene	2400	2400	2-Methylnaphthalene	2100	2100
3-Methylnaphthalene	800	810	3-Methylnaphthalene	850	860	3-Methylnaphthalene	780	790
4-Methylnaphthalene	800	810	4-Methylnaphthalene	850	860	4-Methylnaphthalene	780	790
Fluorene	110	110	Fluorene	110	110	Fluorene	110	110
1-Fluorene	260	260	1-Fluorene	280	280	1-Fluorene	260	260
2-Fluorene	300	370	2-Fluorene	410	420	2-Fluorene	300	300
3-Fluorene	360	370	3-Fluorene	380	380	3-Fluorene	340	340
Dibenzofluorene	270	280	Dibenzofluorene	290	290	Dibenzofluorene	260	260
1,2-Dibenzofluorene	400	490	1,2-Dibenzofluorene	510	520	1,2-Dibenzofluorene	480	480
1,3-Dibenzofluorene	600	610	1,3-Dibenzofluorene	660	670	1,3-Dibenzofluorene	580	580
1,4-Dibenzofluorene	360	360	1,4-Dibenzofluorene	360	360	1,4-Dibenzofluorene	330	330
1,5-Dibenzofluorene	360	360	1,5-Dibenzofluorene	360	360	1,5-Dibenzofluorene	330	330
1,6-Dibenzofluorene	640	650	1,6-Dibenzofluorene	700	710	1,6-Dibenzofluorene	610	610
Phenanthrene	750	760	Phenanthrene	800	810	Phenanthrene	700	700
1-Phenanthrene	480	490	1-Phenanthrene	510	520	1-Phenanthrene	450	450
2-Phenanthrene	150	150	2-Phenanthrene	150	150	2-Phenanthrene	150	150
3-Phenanthrene	2.1	2.1	3-Phenanthrene	1.9	1.8	3-Phenanthrene	2.0	2.0
Fluoranthene	2.4	2.4	Fluoranthene	2.5	2.5	Fluoranthene	2.5	2.5
Pyrene	7.1	7.2	Pyrene	7.0	7.1	Pyrene	6.3	6.3
1-Pyrene	110	110	1-Pyrene	110	110	1-Pyrene	120	120
2-Pyrene	140	140	2-Pyrene	140	140	2-Pyrene	130	130
3-Pyrene	140	140	3-Pyrene	140	140	3-Pyrene	130	130
4-Pyrene	76	77	4-Pyrene	81	82	4-Pyrene	70	70
1-Methylpyrene	52	53	1-Methylpyrene	58	60	1-Methylpyrene	53	53
2-Methylpyrene	180	180	2-Methylpyrene	200	200	2-Methylpyrene	180	180
3-Methylpyrene	190	190	3-Methylpyrene	200	200	3-Methylpyrene	170	170
4-Methylpyrene	150	150	4-Methylpyrene	160	160	4-Methylpyrene	150	150
1,2-Dimethylpyrene	15	15	1,2-Dimethylpyrene	15	15	1,2-Dimethylpyrene	14	14
1,3-Dimethylpyrene	76	78	1,3-Dimethylpyrene	82	83	1,3-Dimethylpyrene	76	76
1,4-Dimethylpyrene	120	120	1,4-Dimethylpyrene	130	130	1,4-Dimethylpyrene	120	120
1,5-Dimethylpyrene	120	120	1,5-Dimethylpyrene	110	110	1,5-Dimethylpyrene	110	110
1,6-Dimethylpyrene	87	88	1,6-Dimethylpyrene	74	75	1,6-Dimethylpyrene	68	68
1,7-Dimethylpyrene	3.8	3.9	1,7-Dimethylpyrene	3.8	3.8	1,7-Dimethylpyrene	3.4	3.4
1,8-Dimethylpyrene	3.9	4.0	1,8-Dimethylpyrene	4.2	4.3	1,8-Dimethylpyrene	3.6	3.6
1,9-Dimethylpyrene	1.2	1.2	1,9-Dimethylpyrene	1.3	1.3	1,9-Dimethylpyrene	1.2	1.2
1,10-Dimethylpyrene	1.5	1.5	1,10-Dimethylpyrene	1.4	1.5	1,10-Dimethylpyrene	1.3	1.3
1,11-Dimethylpyrene	0.61	0.62	1,11-Dimethylpyrene	0.62	0.63	1,11-Dimethylpyrene	0.60	0.60
1,12-Dimethylpyrene	0.00	0.00	1,12-Dimethylpyrene	0.00	0.00	1,12-Dimethylpyrene	0.00	0.00
1,13-Dimethylpyrene	0.00	0.00	1,13-Dimethylpyrene	0.00	0.00	1,13-Dimethylpyrene	0.00	0.00
1,14-Dimethylpyrene	1.6	1.6	1,14-Dimethylpyrene	1.6	1.6	1,14-Dimethylpyrene	1.5	1.5
<b>Total Aromatics</b>	<b>14072</b>	<b>14187</b>	<b>Total Aromatics</b>	<b>14797</b>	<b>14911</b>	<b>Total Aromatics</b>	<b>13325</b>	<b>13322</b>
<b>% Surrogate Recovery</b>			<b>% Surrogate Recovery</b>			<b>% Surrogate Recovery</b>		
5-Alpha Androstane	0.98	1.00	5-Alpha Androstane	0.96	1.00	5-Alpha Androstane	0.99	1.00
Phenanthrene d-10	0.98	1.00	Phenanthrene d-10	0.92	1.00	Phenanthrene d-10	1.00	1.00

## Sarva Bio Remed, LLC

Day 0, Final

CONTROL STATISTICS FOR SURROGATE CORRECTED DATA Testing Date: Day 0						
Alkane Analyte:	Replicate #1	Replicate #2	Replicate #3	Average	Stdev	%RSD
	Conc (ng/mg)	Conc (ng/mg)	Conc (ng/mg)			
nC-10 Decane	1400	1400	1400	1400	0.00	0.00
nC-11 Undecane	2400	2400	2200	2333	115	4.9
nC-12 Dodecane	2700	2700	2300	2567	231	9.0
nC-13 Tridecane	2500	2700	2400	2533	153	6.0
nC-14 Tetradecane	2500	2700	2300	2500	200	8.0
nC-15 Pentadecane	2400	2600	2300	2433	153	6.3
nC-16 Hexadecane	2300	2400	2000	2233	208	9.3
nC-17 Heptadecane	2300	2400	2100	2267	153	6.7
Pristane	1500	1600	1500	1533	58	3.8
nC-18 Octadecane	2200	2600	2400	2400	200	8.3
Phytane	1400	1600	1300	1400	100	7.1
nC-19 Nonadecane	2000	2300	2000	2100	173	8.2
nC-20 Eicosane	2100	2400	2000	2167	208	9.6
nC-21 Heneicosane	2000	2200	1900	2033	153	7.5
nC-22 Docosane	1700	1900	1700	1767	115	6.5
nC-23 Tricosane	1500	1700	1500	1667	115	7.4
nC-24 Tetracosane	1400	1500	1500	1467	58	3.9
nC-25 Pentacosane	2100	2300	1900	2100	200	9.5
nC-26 Hexacosane	2100	2300	1900	2100	200	9.5
nC-27 Heptacosane	1500	1600	1400	1500	100	6.7
nC-28 Octacosane	1200	1200	1200	1200	0.00	0.00
nC-29 Nonacosane	1200	1200	1200	1200	0.00	0.00
nC-30 Triacontane	1200	1300	1200	1233	58	4.7
nC-31 Hentriacontane	1100	1200	1100	1133	58	5.1
nC-32 Dotriacontane	900	1000	930	943	51	5.4
nC-33 Tritriacontane	970	1000	880	950	62	6.6
nC-34 Tetratriacontane	760	800	750	770	26	3.4
nC-35 Pentatriacontane	1100	1200	1100	1133	58	5.1
<b>Total Alkanes</b>	<b>48430</b>	<b>52100</b>	<b>46360</b>	<b>48963</b>	<b>2907</b>	<b>5.9</b>
Aromatic Analyte:	Conc (ng/mg)	Conc (ng/mg)	Conc (ng/mg)	Average	Stdev	%RSD
Naphthalene	610	640	550	600	46	7.6
C1-Naphthalenes	1700	1700	1500	1633	115	7.1
C2-Naphthalenes	2200	2400	2000	2200	200	9.1
C3-Naphthalenes	1800	1900	1600	1767	153	8.6
C4-Naphthalenes	810	900	820	843	49	5.8
Fluorene	110	120	100	110	10	9.1
C1-Fluorenes	270	290	250	273	15	5.6
C2-Fluorenes	370	420	350	380	36	9.5
C3-Fluorenes	340	370	330	347	21	6.0
Dibenzothiophene	250	280	240	257	21	8.1
C1-Dibenzothiophenes	460	510	420	463	45	9.7
C2-Dibenzothiophenes	560	610	500	557	55	9.9
C3-Dibenzothiophenes	360	410	340	370	36	9.7
Phenanthrene	320	330	300	317	15	4.8
C1-Phenanthrenes	550	600	530	560	36	6.5
C2-Phenanthrenes	630	710	590	643	61	9.5
C3-Phenanthrenes	440	500	420	453	42	9.2
C4-Phenanthrenes	140	130	130	133	5.8	4.3
Anthracene	2.8	2.5	2.4	2.6	0.19	0.00
Fluoranthene	3.1	3.0	3.0	3.0	0.04	1.4
Pyrene	8.5	8.9	8.9	9	0.23	2.6
C1-Pyrenes	110	110	110	110	0.00	0.00
C2-Pyrenes	150	160	140	150	10	6.7
C3-Pyrenes	160	170	150	160	10	6.3
C4-Pyrenes	96	100	88	95	6.1	6.5
Naphthobenzothiophene	56	60	50	56	5.0	9.0
C-1 Naphthobenzothiophenes	200	210	180	197	15	7.8
C-2 Naphthobenzothiophenes	190	210	180	193	15	7.9
C-3 Naphthobenzothiophenes	160	150	140	150	10	6.7
Benzo (a) Anthracene	8.7	9.0	8.1	8.6	0.42	4.9
Chrysene	61	66	57	61	4.7	7.6
C1-Chrysenes	92	95	94	94	1.5	1.6
C2-Chrysenes	120	120	110	117	5.8	4.9
C3-Chrysenes	90	92	83	88	4.9	5.6
C4-Chrysenes	51	47	48	49	1.8	3.8
Benzo (b) Fluoranthene	4.0	3.8	3.5	3.8	0.27	7.1
Benzo (k) Fluoranthene	3.3	3.6	3.4	3.4	0.18	5.3
Benzo (e) Pyrene	8.2	8.9	7.6	8	0.67	8.2
Benzo (a) Pyrene	1.2	1.2	1.1	1.2	0.05	4.7
Perylene	0.69	0.67	0.65	0.7	0.02	3.1
Indeno (1,2,3 - cd) Pyrene	0.00	0.00	0.00	0.00	0.00	0.00
Dibenzo (a,h) anthracene	0.00	0.0	0.00	0.00	0.00	0.00
Benzo (g,h,i) perylene	1.9	1.9	1.6	1.8	0.15	0.00
<b>Total Aromatics</b>	<b>13499</b>	<b>14455</b>	<b>12449</b>	<b>13468</b>	<b>1003</b>	<b>7.4</b>

## Sarva Bio Remed, LLC

Day 0, Final

NUTRIENT STATISTICS FOR SURROGATE CORRECTED DATA Testing Date: Day 0						
Alkane Analyte:	Replicate #1	Replicate #2	Replicate #3	Average	Stdev	%RSD
	Conc (ng/mg)	Conc (ng/mg)	Conc (ng/mg)			
nC-10 Decane	730	710	730	723	12	1.6
nC-11 Undecane	1800	1700	1800	1767	58	3.3
nC-12 Dodecane	2100	1900	2000	2000	100	5.0
nC-13 Tridecane	1800	1800	1900	1833	58	3.1
nC-14 Tetradecane	2200	2000	2200	2133	115	5.4
nC-15 Pentadecane	2000	1900	1900	1933	58	3.0
nC-16 Hexadecane	1800	1800	1800	1800	0.00	0.00
nC-17 Heptadecane	1900	1900	2000	1933	58	3.0
Pristane	1600	1700	1600	1633	58	3.5
nC-18 Octadecane	2100	2100	2400	2200	173	7.9
Phytane	1600	1600	1600	1667	58	3.7
nC-19 Nonadecane	1800	1800	1900	1833	58	3.1
nC-20 Eicosane	2000	2000	2000	2000	0.00	0.00
nC-21 Heneicosane	1800	1800	2000	1867	115	6.2
nC-22 Docosane	1600	1700	1800	1700	100	5.9
nC-23 Tricosane	1600	1600	1800	1667	115	6.9
nC-24 Tetracosane	1600	1800	1800	1733	115	6.7
nC-25 Pentacosane	2100	2200	2300	2200	100	4.5
nC-26 Hexacosane	2200	2200	2300	2233	58	2.6
nC-27 Heptacosane	1900	2000	2100	2000	100	5.0
nC-28 Octacosane	1700	1900	1700	1767	115	6.5
nC-29 Nonacosane	1800	1800	1700	1767	58	3.3
nC-30 Triacontane	1200	1200	1200	1200	0.00	0.00
nC-31 Hentriacontane	1200	1200	1300	1233	58	4.7
nC-32 Dotriacontane	1100	1100	1100	1100	0.00	0.00
nC-33 Tritriacontane	1100	1000	1200	1100	100	9.1
nC-34 Tetraatriacontane	980	980	1100	1020	69	6.8
nC-35 Pentaatriacontane	1000	960	1100	1020	72	7.1
<b>Total Alkanes</b>	<b>46210</b>	<b>46350</b>	<b>48330</b>	<b>46963</b>	<b>1186</b>	<b>2.5</b>
Aromatic Analyte:	Conc (ng/mg)	Conc (ng/mg)	Conc (ng/mg)	Average	Stdev	%RSD
Naphthalene	440	480	510	477	35	7.4
C1-Naphthalenes	1600	1800	1700	1700	100	5.9
C2-Naphthalenes	2200	2400	2300	2300	100	4.3
C3-Naphthalenes	1800	1900	1900	1867	58	3.1
C4-Naphthalenes	860	940	840	880	53	6.0
Fluorene	110	110	110	110	0.42	0.38
C1-Fluorenes	250	250	250	250	0.16	0.07
C2-Fluorenes	360	370	360	363	5.5	1.5
C3-Fluorenes	330	330	330	330	0.22	0.07
Dibenzothiophene	240	250	250	247	5.7	2.3
C1-Dibenzothiophenes	450	470	450	457	12	2.5
C2-Dibenzothiophenes	560	590	570	573	15	2.7
C3-Dibenzothiophenes	380	360	370	370	10.2	2.8
Phenanthrene	320	330	330	327	5.7	1.7
C1-Phenanthrenes	590	600	600	597	5.8	1.0
C2-Phenanthrenes	620	680	670	657	32	4.9
C3-Phenanthrenes	420	470	470	453	29	6.4
C4-Phenanthrenes	130	130	140	133	5.7	4.2
Anthracene	2.0	2.2	2.1	2.1	0.10	4.8
Fluoranthene	2.5	2.8	2.9	2.7	0.22	8.2
Pyrene	5.3	5.9	6.1	5.8	0.44	7.7
C1-Pyrenes	110	120	120	116	5.9	5.1
C2-Pyrenes	140	150	150	146	5.6	3.8
C3-Pyrenes	140	150	150	150	10	6.5
C4-Pyrenes	84	87	91	87	3.8	4.3
Naphthobenzothiophene	55	57	56	56	1.3	2.3
C-1 Naphthobenzothiophenes	170	180	190	180	10	5.6
C-2 Naphthobenzothiophenes	180	190	200	190	10	5.1
C-3 Naphthobenzothiophenes	150	150	150	150	0.10	0.07
Benzo (a) Anthracene	14	14	13	14	0.50	3.7
Chrysene	83	85	89	85	3.3	3.9
C1-Chrysenes	120	130	140	130	10	7.8
C2-Chrysenes	150	160	170	160	10	6.1
C3-Chrysenes	130	110	130	123	12	9.4
C4-Chrysenes	74	70	75	73	2.5	3.5
Benzo (b) Fluoranthene	2.9	2.7	2.7	2.8	0.15	5.3
Benzo (k) Fluoranthene	3.1	3.4	2.9	3.2	0.25	8.0
Benzo (e) Pyrene	10	10	9	10	0.56	5.7
Benzo (a) Pyrene	1.3	1.4	1.3	1.3	0.05	3.6
Perylene	0.66	0.71	0.72	0.70	0.03	4.5
Indeno (1,2,3 - cd) Pyrene	0.00	0.00	0.00	0.00	0.00	0.00
Dibenzo (a,h) anthracene	0.00	0.00	0.00	0.00	0.00	0.00
Benzo (g,h,i) perylene	1.6	1.7	1.6	1.7	0.07	4.0
<b>Total Aromatics</b>	<b>13287</b>	<b>14140</b>	<b>13911</b>	<b>13779</b>	<b>441</b>	<b>3.2</b>

## Sarva Bio Remed, LLC

Day 0, Final

SARVA PRODUCT STATISTICS FOR SURROGATE CORRECTED DATA Testing Date: Day 0						
Alkane Analyte:	Replicate #1	Replicate #2	Replicate #3	Average	Stdev	%RSD
	Conc (ng/mg)	Conc (ng/mg)	Conc (ng/mg)			
nC-10 Decane	1100	1200	1200	1167	58	4.9
nC-11 Undecane	2100	2100	2100	2100	0.00	0.00
nC-12 Dodecane	2100	2400	2400	2300	173	7.5
nC-13 Tridecane	2000	2200	2300	2167	153	7.1
nC-14 Tetradecane	2200	2500	2400	2367	153	6.5
nC-15 Pentadecane	2100	2400	2400	2300	173	7.5
nC-16 Hexadecane	2300	2600	2500	2467	153	6.2
nC-17 Heptadecane	2400	2600	2400	2467	115	4.7
Pristane	1700	1800	1700	1733	58	3.3
nC-18 Octadecane	2200	2500	2500	2400	173	7.2
Phytane	1600	1700	1600	1633	58	3.5
nC-19 Nonadecane	1900	2200	2200	2100	173	8.2
nC-20 Eicosane	2200	2400	2500	2367	153	6.5
nC-21 Heneicosane	2000	2300	2200	2167	153	7.1
nC-22 Docosane	1900	2100	2000	2000	100	5.0
nC-23 Tricosane	1800	2000	2000	1933	115	6.0
nC-24 Tetracosane	2000	2000	1900	1967	58	2.9
nC-25 Pentacosane	2200	2400	2300	2300	100	4.3
nC-26 Hexacosane	2200	2500	2200	2300	173	7.5
nC-27 Heptacosane	1900	2100	1900	1967	115	5.9
nC-28 Octacosane	1700	1900	1700	1767	115	6.5
nC-29 Nonacosane	1800	1900	1700	1800	100	5.6
nC-30 Triacontane	1100	1100	1100	1100	0.00	0.00
nC-31 Hentriacontane	1100	1300	1100	1167	115	9.9
nC-32 Dotriacontane	1000	1100	1100	1067	58	5.4
nC-33 Tritriacontane	990	930	930	950	35	3.6
nC-34 Tetraatriacontane	1100	1100	1000	1067	58	5.4
nC-35 Pentaatriacontane	940	960	940	947	11	1.2
<b>Total Alkanes</b>	<b>49630</b>	<b>54290</b>	<b>52270</b>	<b>52063</b>	<b>2337</b>	<b>4.5</b>
Aromatic Analyte:	Conc (ng/mg)	Conc (ng/mg)	Conc (ng/mg)	Average	Stdev	%RSD
Naphthalene	580	580	570	577	5.8	1.0
C1-Naphthalenes	1700	1800	1600	1700	100	5.9
C2-Naphthalenes	2300	2400	2100	2267	153	6.7
C3-Naphthalenes	1900	1900	1700	1833	115	6.3
C4-Naphthalenes	810	860	790	820	36	4.4
Fluorene	110	110	110	110	0.06	0.05
C1-Fluorenes	250	280	250	267	12	4.4
C2-Fluorenes	370	420	350	383	32	8.4
C3-Fluorenes	370	390	340	367	25	6.9
Dibenzothiophene	280	290	260	277	15	5.6
C1-Dibenzothiophenes	490	520	490	500	17	3.5
C2-Dibenzothiophenes	610	670	590	623	42	6.7
C3-Dibenzothiophenes	390	410	350	383	31	8.0
Phenanthrene	360	390	330	360	30	8.4
C1-Phenanthrenes	650	710	610	657	50	7.7
C2-Phenanthrenes	760	810	700	757	55	7.3
C3-Phenanthrenes	490	520	450	487	35	7.3
C4-Phenanthrenes	150	150	150	150	0.15	0.10
Anthracene	2.1	1.9	2.0	2.0	0.12	5.8
Fluoranthene	2.4	2.5	2.5	2.5	0.07	2.8
Pyrene	7.2	7.1	6.3	6.9	0.48	7.0
C1-Pyrenes	110	110	120	113	5.7	5.0
C2-Pyrenes	140	150	130	140	10	7.2
C3-Pyrenes	140	140	130	137	5.8	4.3
C4-Pyrenes	77	82	70	76	6.0	7.9
Naphthobenzothiophene	53	60	53	55	3.7	6.6
C-1 Naphthobenzothiophenes	180	200	180	187	12	6.2
C-2 Naphthobenzothiophenes	190	200	170	187	15	8.2
C-3 Naphthobenzothiophenes	150	160	150	153	5.8	3.8
Benzo (a) Anthracene	15	15	14	15	1.0	6.9
Chrysene	78	83	76	79	3.6	4.5
C1-Chrysenes	120	130	120	123	5.8	4.7
C2-Chrysenes	140	150	140	143	5.8	4.1
C3-Chrysenes	120	110	110	113	5.8	5.1
C4-Chrysenes	68	75	69	70	3.5	4.9
Benzo (b) Fluoranthene	3.9	3.9	3.4	3.7	0.25	6.6
Benzo (k) Fluoranthene	4.0	4.3	3.6	4.0	0.32	8.1
Benzo (e) Pyrene	12	13	12	12	0.72	5.7
Benzo (a) Pyrene	1.5	1.5	1.3	1.4	0.06	4.5
Perylene	0.62	0.63	0.60	0.62	0.02	2.9
Indeno (1,2,3 - cd) Pyrene	0.00	0.00	0.00	0.00	0.00	0.00
Dibenzo (a,h) anthracene	0.00	0.00	0.00	0.00	0.00	0.00
Benzo (g,h,i) perylene	1.6	1.6	1.5	1.6	0.07	4.4
<b>Total Aromatics</b>	<b>14197</b>	<b>14911</b>	<b>13322</b>	<b>14143</b>	<b>796</b>	<b>5.6</b>

CONTROL REPLICATE 1		CONTROL REPLICATE 2		CONTROL REPLICATE 3	
Testing Date: 05/7/2008 Inlet On Weight: 300 mg Final Extracted Volume: 10 mL		Testing Date: 05/7/2008 Inlet On Weight: 300 mg Final Extracted Volume: 10 mL		Testing Date: 05/7/2008 Inlet On Weight: 300 mg Final Extracted Volume: 10 mL	
Concentration (ng/ml)	Surrogate Corrected (ng/ml)	Concentration (ng/ml)	Surrogate Corrected (ng/ml)	Concentration (ng/ml)	Surrogate Corrected (ng/ml)
<b>Alkane Analyte:</b>					
nC-10 Undecane	440	nC-10 Undecane	440	nC-10 Undecane	470
nC-11 Dodecane	1800	nC-11 Dodecane	1800	nC-11 Undecane	1600
nC-12 Tridecane	2000	nC-12 Dodecane	2100	nC-12 Dodecane	2000
nC-13 Tetradecane	2000	nC-13 Tridecane	2000	nC-13 Tridecane	2000
nC-14 Pentadecane	2000	nC-14 Tetradecane	1900	nC-14 Tetradecane	2000
nC-15 Hexadecane	2000	nC-15 Pentadecane	2100	nC-15 Hexadecane	2000
nC-16 Heptadecane	2000	nC-16 Hexadecane	2000	nC-16 Heptadecane	2000
nC-17 Octadecane	2000	nC-17 Heptadecane	2100	nC-17 Octadecane	2000
nC-18 Octadecane	1400	nC-18 Octadecane	1400	nC-18 Octadecane	1400
nC-19 Nonadecane	1300	nC-19 Nonadecane	1300	nC-19 Nonadecane	1300
nC-20 Eicosane	2100	nC-20 Eicosane	2100	nC-20 Eicosane	2000
nC-21 Heneicosane	1900	nC-21 Heneicosane	1900	nC-21 Heneicosane	2000
nC-22 Docosane	1800	nC-22 Docosane	1800	nC-22 Docosane	1700
nC-23 Tricosane	1800	nC-23 Tricosane	1700	nC-23 Tricosane	1400
nC-24 Tetracosane	1700	nC-24 Tetracosane	1700	nC-24 Tetracosane	1500
nC-25 Pentacosane	2000	nC-25 Pentacosane	2000	nC-25 Pentacosane	2000
nC-26 Hexacosane	2000	nC-26 Hexacosane	2000	nC-26 Hexacosane	2200
nC-27 Heptacosane	1600	nC-27 Heptacosane	1700	nC-27 Heptacosane	1500
nC-28 Octacosane	1300	nC-28 Octacosane	1400	nC-28 Octacosane	1400
nC-29 Nonacosane	1200	nC-29 Nonacosane	1400	nC-29 Nonacosane	1300
nC-30 Triacontane	1100	nC-30 Triacontane	1200	nC-30 Triacontane	1200
nC-31 Hentriacontane	1100	nC-31 Hentriacontane	1200	nC-31 Hentriacontane	1100
nC-32 Dotriacontane	800	nC-32 Dotriacontane	800	nC-32 Dotriacontane	800
nC-33 Triacontane	900	nC-33 Triacontane	1100	nC-33 Triacontane	1000
nC-34 Tetracontane	1000	nC-34 Tetracontane	1100	nC-34 Tetracontane	1100
nC-35 Pentatriacontane	1200	nC-35 Pentatriacontane	1400	nC-35 Pentatriacontane	1300
<b>Total Alkanes</b>	<b>47510</b>	<b>Total Alkanes</b>	<b>44110</b>	<b>Total Alkanes</b>	<b>42870</b>
<b>Aromatic Analyte:</b>					
Naphthalene	300	Naphthalene	290	Naphthalene	290
C1-Naphthalenes	950	C1-Naphthalenes	1000	C1-Naphthalenes	1100
C2-Naphthalenes	1800	C2-Naphthalenes	1700	C2-Naphthalenes	1700
C3-Naphthalenes	1300	C3-Naphthalenes	1200	C3-Naphthalenes	1200
C4-Naphthalenes	740	C4-Naphthalenes	650	C4-Naphthalenes	610
Fluorene	97	Fluorene	97	Fluorene	110
C1-Fluorenes	250	C1-Fluorenes	240	C1-Fluorenes	270
C2-Fluorenes	310	C2-Fluorenes	310	C2-Fluorenes	250
C3-Fluorenes	280	C3-Fluorenes	310	C3-Fluorenes	290
Dibenzofuran	280	Dibenzofuran	230	Dibenzofuran	240
C1-Dibenzofuran	110	C1-Dibenzofuran	360	C1-Dibenzofuran	350
C2-Dibenzofuran	550	C2-Dibenzofuran	490	C2-Dibenzofuran	460
C3-Dibenzofuran	360	C3-Dibenzofuran	310	C3-Dibenzofuran	300
Phenanthrene	330	Phenanthrene	290	Phenanthrene	280
C1-Phenanthrenes	620	C1-Phenanthrenes	590	C1-Phenanthrenes	510
C2-Phenanthrenes	660	C2-Phenanthrenes	630	C2-Phenanthrenes	550
C3-Phenanthrenes	380	C3-Phenanthrenes	370	C3-Phenanthrenes	340
C4-Phenanthrenes	150	C4-Phenanthrenes	140	C4-Phenanthrenes	140
fluoranthene	3.3	fluoranthene	1.6	fluoranthene	1.6
Pyrene	10	Pyrene	3.3	Pyrene	3.2
C1-Pyrenes	120	C1-Pyrenes	0.0	C1-Pyrenes	0.0
C2-Pyrenes	160	C2-Pyrenes	110	C2-Pyrenes	100
C3-Pyrenes	130	C3-Pyrenes	130	C3-Pyrenes	130
C4-Pyrenes	70	C4-Pyrenes	05	C4-Pyrenes	07
Naphthobenzothiazophene	52	Naphthobenzothiazophene	46	Naphthobenzothiazophene	48
C1-Naphthobenzothiazophenes	170	C1-Naphthobenzothiazophenes	160	C1-Naphthobenzothiazophenes	150
C2-Naphthobenzothiazophenes	100	C2-Naphthobenzothiazophenes	170	C2-Naphthobenzothiazophenes	160
C3-Naphthobenzothiazophenes	130	C3-Naphthobenzothiazophenes	110	C3-Naphthobenzothiazophenes	110
Benzo (a) Anthracene	10	Benzo (a) Anthracene	8.5	Benzo (a) Anthracene	9.5
Chrysene	60	Chrysene	54	Chrysene	51
C1-Chrysenes	90	C1-Chrysenes	88	C1-Chrysenes	70
C2-Chrysenes	110	C2-Chrysenes	100	C2-Chrysenes	94
C3-Chrysenes	60	C3-Chrysenes	59	C3-Chrysenes	62
C4-Chrysenes	40	C4-Chrysenes	39	C4-Chrysenes	47
Benzo (b) Fluoranthene	1.9	Benzo (b) Fluoranthene	1.6	Benzo (b) Fluoranthene	1.9
Benzo (k) Fluoranthene	1.2	Benzo (k) Fluoranthene	1.9	Benzo (k) Fluoranthene	1.5
Benzo (g,h,i) Perylene	1.6	Benzo (g,h,i) Perylene	1.5	Benzo (g,h,i) Perylene	1.4
Benzo (j) Pyrene	1.5	Benzo (j) Pyrene	1.5	Benzo (j) Pyrene	1.5
Pyrene	1.1	Pyrene	1.1	Pyrene	1.0
Indeno (1,2,3-cd) Pyrene	0.00	Indeno (1,2,3-cd) Pyrene	0.00	Indeno (1,2,3-cd) Pyrene	0.00
Dibenz (a,h) anthracene	0.00	Dibenz (a,h) anthracene	0.00	Dibenz (a,h) anthracene	0.00
Benzo (g,h,i) perylene	1.3	Benzo (g,h,i) perylene	1.2	Benzo (g,h,i) perylene	1.4
<b>Total Aromatics</b>	<b>11171</b>	<b>Total Aromatics</b>	<b>10420</b>	<b>Total Aromatics</b>	<b>10192</b>
<b>% Surrogate Recovery</b>					
5-Alpha Androstane	0.90	5-Alpha Androstane	0.91	5-Alpha Androstane	0.93
Phenanthrene C-10	0.94	Phenanthrene C-10	0.96	Phenanthrene C-10	0.93
<b>Total Aromatics</b>					
<b>10957</b>					

NORMENT, REPLICATE 1 Testing Date: 05/7 Initial Volume: 310 mL Final Extracted Volume: 10 mL		NORMENT, REPLICATE 2 Testing Date: 05/7 Initial Volume: 310 mL Final Extracted Volume: 10 mL		NORMENT, REPLICATE 3 Testing Date: 05/7 Initial Volume: 310 mL Final Extracted Volume: 10 mL	
Alkane Analyte	Concentration (ng/mL)	Surrogate Corrected (ng/mL)	Alkane Analyte	Concentration (ng/mL)	Surrogate Corrected (ng/mL)
<b>Total Alkanes</b>	<b>32880</b>	<b>41680</b>	<b>Total Alkanes</b>	<b>35440</b>	<b>41500</b>
Aromatic Analyte			Aromatic Analyte		
Naphthalene	290	350	Naphthalene	370	320
C1-Naphthalenes	1100	1300	C1-Naphthalenes	1100	900
C2-Naphthalenes	1500	1800	C2-Naphthalenes	1900	1800
C3-Naphthalenes	1100	1300	C3-Naphthalenes	1400	1400
C4-Naphthalenes	650	790	C4-Naphthalenes	760	810
Fluorene	76	93	Fluorene	74	89
C1-Fluorenes	180	220	C1-Fluorenes	200	210
C2-Fluorenes	230	280	C2-Fluorenes	260	280
C3-Fluorenes	180	220	C3-Fluorenes	210	200
Dibenzofuran	180	220	Dibenzofuran	200	210
C1-Dibenzofuran	320	390	C1-Dibenzofuran	340	360
C2-Dibenzofuran	400	490	C2-Dibenzofuran	430	460
C3-Dibenzofuran	260	320	C3-Dibenzofuran	270	290
Phenanthrene	240	290	Phenanthrene	260	280
C1-Phenanthrenes	480	590	C1-Phenanthrenes	480	510
C2-Phenanthrenes	500	610	C2-Phenanthrenes	590	600
C3-Phenanthrenes	290	350	C3-Phenanthrenes	350	370
C4-Phenanthrenes	93	110	C4-Phenanthrenes	110	110
Fluoranthene	21	25	Fluoranthene	20	23
Pyrene	6.4	7.0	Pyrene	6.1	6.7
C1-Pyrenes	100	120	C1-Pyrenes	110	120
C2-Pyrenes	110	130	C2-Pyrenes	130	140
C3-Pyrenes	97	120	C3-Pyrenes	110	120
C4-Pyrenes	60	73	C4-Pyrenes	67	70
Naphthobenzothiazophene	40	49	Naphthobenzothiazophene	45	48
C1-Naphthobenzothiazophene	130	160	C1-Naphthobenzothiazophene	150	160
C2-Naphthobenzothiazophene	190	230	C2-Naphthobenzothiazophene	210	230
C3-Naphthobenzothiazophene	98	120	C3-Naphthobenzothiazophene	110	120
Benzo (a) Anthracene	11	13	Benzo (a) Anthracene	11	12
Chrysene	65	79	Chrysene	70	75
C1-Chrysenes	100	120	C1-Chrysenes	110	120
C2-Chrysenes	130	160	C2-Chrysenes	140	140
C3-Chrysenes	87	110	C3-Chrysenes	89	95
C4-Chrysenes	54	66	C4-Chrysenes	60	64
Benzo (b) Fluoranthene	1.0	1.2	Benzo (b) Fluoranthene	1.2	1.3
Benzo (k) Fluoranthene	2.1	2.6	Benzo (k) Fluoranthene	1.8	2.0
Benzo (g,h,i) Perylene	1.9	2.4	Benzo (g,h,i) Perylene	2.1	2.3
Pyrene	0.31	0.38	Pyrene	0.40	0.43
Indeno (1,2,3-cd) Pyrene	0.00	0.00	Indeno (1,2,3-cd) Pyrene	0.00	0.00
Dibenz (a,h) Anthracene	0.00	0.00	Dibenz (a,h) Anthracene	0.00	0.00
Benzo (g,h,i) Perylene	1.1	1.4	Benzo (g,h,i) Perylene	1.0	1.4
<b>Total Aromatics</b>	<b>9393</b>	<b>11344</b>	<b>Total Aromatics</b>	<b>10732</b>	<b>11473</b>
% Surrogate Recovery	0.75	1.00	% Surrogate Recovery	0.85	1.00
Surrogate Anthracene	0.82	1.00	Surrogate Anthracene	0.85	1.00
Surrogate Fluorene			Surrogate Fluorene		
Surrogate Phenanthrene			Surrogate Phenanthrene		
Surrogate Pyrene			Surrogate Pyrene		
Surrogate Benzo (a) Anthracene			Surrogate Benzo (a) Anthracene		
Surrogate Chrysene			Surrogate Chrysene		
Surrogate Benzo (b) Fluoranthene			Surrogate Benzo (b) Fluoranthene		
Surrogate Benzo (k) Fluoranthene			Surrogate Benzo (k) Fluoranthene		
Surrogate Benzo (g,h,i) Perylene			Surrogate Benzo (g,h,i) Perylene		
<b>Total Alkanes</b>	<b>36279</b>	<b>39380</b>	<b>Total Alkanes</b>	<b>36279</b>	<b>39380</b>
Aromatic Analyte			Aromatic Analyte		
Naphthalene	320	330	Naphthalene	320	330
C1-Naphthalenes	900	900	C1-Naphthalenes	900	900
C2-Naphthalenes	1800	1800	C2-Naphthalenes	1800	1800
C3-Naphthalenes	1400	1500	C3-Naphthalenes	1400	1500
C4-Naphthalenes	760	790	C4-Naphthalenes	760	790
Fluorene	89	92	Fluorene	89	92
C1-Fluorenes	220	220	C1-Fluorenes	220	220
C2-Fluorenes	260	260	C2-Fluorenes	260	260
C3-Fluorenes	200	200	C3-Fluorenes	200	200
Dibenzofuran	210	220	Dibenzofuran	210	220
C1-Dibenzofuran	360	360	C1-Dibenzofuran	360	360
C2-Dibenzofuran	460	460	C2-Dibenzofuran	460	460
C3-Dibenzofuran	310	320	C3-Dibenzofuran	310	320
Phenanthrene	280	280	Phenanthrene	280	280
C1-Phenanthrenes	520	540	C1-Phenanthrenes	520	540
C2-Phenanthrenes	600	620	C2-Phenanthrenes	600	620
C3-Phenanthrenes	370	380	C3-Phenanthrenes	370	380
C4-Phenanthrenes	110	110	C4-Phenanthrenes	110	110
Fluoranthene	1.0	1.0	Fluoranthene	1.0	1.0
Pyrene	2.3	2.4	Pyrene	2.3	2.4
C1-Pyrenes	6.7	6.9	C1-Pyrenes	6.7	6.9
C2-Pyrenes	110	110	C2-Pyrenes	110	110
C3-Pyrenes	130	130	C3-Pyrenes	130	130
C4-Pyrenes	110	110	C4-Pyrenes	110	110
Naphthobenzothiazophene	48	50	Naphthobenzothiazophene	48	50
C1-Naphthobenzothiazophene	150	150	C1-Naphthobenzothiazophene	150	150
C2-Naphthobenzothiazophene	210	210	C2-Naphthobenzothiazophene	210	210
C3-Naphthobenzothiazophene	110	110	C3-Naphthobenzothiazophene	110	110
Benzo (a) Anthracene	12	13	Benzo (a) Anthracene	12	13
Chrysene	73	75	Chrysene	73	75
C1-Chrysenes	110	110	C1-Chrysenes	110	110
C2-Chrysenes	140	140	C2-Chrysenes	140	140
C3-Chrysenes	100	100	C3-Chrysenes	100	100
C4-Chrysenes	57	59	C4-Chrysenes	57	59
Benzo (b) Fluoranthene	1.2	1.3	Benzo (b) Fluoranthene	1.2	1.3
Benzo (k) Fluoranthene	1.5	1.9	Benzo (k) Fluoranthene	1.5	1.9
Benzo (g,h,i) Perylene	2.1	2.6	Benzo (g,h,i) Perylene	2.1	2.6
Pyrene	0.39	0.40	Pyrene	0.39	0.40
Indeno (1,2,3-cd) Pyrene	0.00	0.00	Indeno (1,2,3-cd) Pyrene	0.00	0.00
Dibenz (a,h) Anthracene	0.00	0.00	Dibenz (a,h) Anthracene	0.00	0.00
Benzo (g,h,i) Perylene	1.2	1.4	Benzo (g,h,i) Perylene	1.2	1.4
<b>Total Aromatics</b>	<b>10718</b>	<b>11171</b>	<b>Total Aromatics</b>	<b>10718</b>	<b>11171</b>
% Surrogate Recovery	0.83	1.00	% Surrogate Recovery	0.83	1.00
Surrogate Anthracene	0.87	1.00	Surrogate Anthracene	0.87	1.00
Surrogate Fluorene			Surrogate Fluorene		
Surrogate Phenanthrene			Surrogate Phenanthrene		
Surrogate Pyrene			Surrogate Pyrene		
Surrogate Benzo (a) Anthracene			Surrogate Benzo (a) Anthracene		
Surrogate Chrysene			Surrogate Chrysene		
Surrogate Benzo (b) Fluoranthene			Surrogate Benzo (b) Fluoranthene		
Surrogate Benzo (k) Fluoranthene			Surrogate Benzo (k) Fluoranthene		
Surrogate Benzo (g,h,i) Perylene			Surrogate Benzo (g,h,i) Perylene		



SARVA PRODUCT, REPLICATE 1		SARVA PRODUCT, REPLICATE 2		SARVA PRODUCT, REPLICATE 3	
Testing Date: 05/7/2010		Testing Date: 05/7/2010		Testing Date: 05/7/2010	
Injection Volume: 50 µl		Injection Volume: 50 µl		Injection Volume: 50 µl	
Final Extracted Volume: 10 mL		Final Extracted Volume: 10 mL		Final Extracted Volume: 10 mL	
Concentration (ng/ml)	Surrogate Corrected (ng/ml)	Concentration (ng/ml)	Surrogate Corrected (ng/ml)	Concentration (ng/ml)	Surrogate Corrected (ng/ml)
<b>Alkane Analyte:</b>					
nC-10 Undecane	1100	nC-10 Undecane	1000	nC-10 Undecane	1000
nC-11 Dodecane	1600	nC-11 Dodecane	1400	nC-11 Dodecane	1400
nC-12 Tridecane	1700	nC-12 Dodecane	1500	nC-12 Dodecane	1400
nC-13 Tetradecane	1600	nC-13 Tetradecane	1600	nC-13 Tetradecane	1600
nC-14 Pentadecane	2100	nC-14 Tetradecane	1700	nC-14 Tetradecane	1700
nC-15 Hexadecane	1700	nC-15 Hexadecane	1700	nC-15 Hexadecane	1400
nC-16 Heptadecane	1700	nC-16 Heptadecane	1800	nC-16 Heptadecane	1400
nC-17 Octadecane	2000	nC-17 Heptadecane	2000	nC-17 Heptadecane	1800
nC-18 Octadecane	1700	nC-18 Octadecane	1500	nC-18 Octadecane	1800
nC-19 Nonadecane	1800	nC-19 Nonadecane	2000	nC-19 Nonadecane	1700
nC-20 Eicosane	1600	nC-20 Eicosane	1500	nC-20 Eicosane	1400
nC-21 Heneicosane	1700	nC-21 Heneicosane	1600	nC-21 Heneicosane	1500
nC-22 Docosane	1700	nC-22 Docosane	1800	nC-22 Docosane	1600
nC-23 Tricosane	1800	nC-23 Tricosane	1700	nC-23 Tricosane	1500
nC-24 Tetracosane	1800	nC-24 Tetracosane	1800	nC-24 Tetracosane	1600
nC-25 Pentacosane	1800	nC-25 Pentacosane	1800	nC-25 Pentacosane	1800
nC-26 Hexacosane	1800	nC-26 Hexacosane	1800	nC-26 Hexacosane	1800
nC-27 Heptacosane	1700	nC-27 Heptacosane	1800	nC-27 Heptacosane	1600
nC-28 Octacosane	1400	nC-28 Octacosane	1600	nC-28 Octacosane	1400
nC-29 Nonacosane	1500	nC-29 Nonacosane	1800	nC-29 Nonacosane	1600
nC-30 Triacontane	900	nC-30 Triacontane	850	nC-30 Triacontane	970
nC-31 Hentriacontane	870	nC-31 Hentriacontane	860	nC-31 Hentriacontane	880
nC-32 Dotriacontane	820	nC-32 Dotriacontane	940	nC-32 Dotriacontane	900
nC-33 Triacontane	720	nC-33 Triacontane	790	nC-33 Triacontane	790
nC-34 Tetracontane	700	nC-34 Tetracontane	790	nC-34 Tetracontane	900
nC-35 Pentatriacontane	570	nC-35 Pentatriacontane	1100	nC-35 Pentatriacontane	1100
<b>Total Alkanes</b>	<b>44110</b>	<b>Total Alkanes</b>	<b>40150</b>	<b>Total Alkanes</b>	<b>36020</b>
<b>Aromatic Analyte:</b>					
Naphthalene	270	Naphthalene	290	Naphthalene	330
C1-Naphthalenes	1100	C1-Naphthalenes	1200	C1-Naphthalenes	1200
C2-Naphthalenes	1800	C2-Naphthalenes	1800	C2-Naphthalenes	1700
C3-Naphthalenes	1100	C3-Naphthalenes	1400	C3-Naphthalenes	1300
C4-Naphthalenes	610	C4-Naphthalenes	680	C4-Naphthalenes	660
Fluorene	65	Fluorene	60	Fluorene	76
C1-Fluorenes	200	C1-Fluorenes	210	C1-Fluorenes	200
C2-Fluorenes	220	C2-Fluorenes	220	C2-Fluorenes	200
C3-Fluorenes	230	C3-Fluorenes	250	C3-Fluorenes	240
Dibenzofluorene	180	Dibenzofluorene	200	Dibenzofluorene	200
C1-Dibenzofluorenes	390	C1-Dibenzofluorenes	310	C1-Dibenzofluorenes	350
C2-Dibenzofluorenes	390	C2-Dibenzofluorenes	460	C2-Dibenzofluorenes	350
C3-Dibenzofluorenes	271	C3-Dibenzofluorenes	290	C3-Dibenzofluorenes	260
Phenanthrene	250	Phenanthrene	270	Phenanthrene	240
C1-Phenanthrenes	460	C1-Phenanthrenes	530	C1-Phenanthrenes	440
C2-Phenanthrenes	520	C2-Phenanthrenes	570	C2-Phenanthrenes	560
C3-Phenanthrenes	320	C3-Phenanthrenes	360	C3-Phenanthrenes	320
C4-Phenanthrenes	120	C4-Phenanthrenes	140	C4-Phenanthrenes	110
Anthracene	14	Anthracene	13	Anthracene	15
Fluoranthene	1.9	Fluoranthene	2.2	Fluoranthene	2.4
Pyrene	7.2	Pyrene	0.6	Pyrene	0.9
C1-Pyrenes	91	C1-Pyrenes	97	C1-Pyrenes	84
C2-Pyrenes	110	C2-Pyrenes	170	C2-Pyrenes	110
C3-Pyrenes	90	C3-Pyrenes	110	C3-Pyrenes	93
C4-Pyrenes	50	C4-Pyrenes	57	C4-Pyrenes	50
1-Naphthol	39	1-Naphthol	45	1-Naphthol	41
2-Naphthol	150	2-Naphthol	160	2-Naphthol	140
3-Naphthol	100	3-Naphthol	150	3-Naphthol	140
4-Naphthol	100	4-Naphthol	100	4-Naphthol	95
Benzo (a) Anthracene	13	Benzo (a) Anthracene	14	Benzo (a) Anthracene	13
Chrysene	66	Chrysene	67	Chrysene	61
C1-Chrysenes	100	C1-Chrysenes	100	C1-Chrysenes	100
C2-Chrysenes	119	C2-Chrysenes	130	C2-Chrysenes	120
C3-Chrysenes	84	C3-Chrysenes	93	C3-Chrysenes	78
C4-Chrysenes	50	C4-Chrysenes	56	C4-Chrysenes	64
Benzo (b) Fluoranthene	1.4	Benzo (b) Fluoranthene	1.5	Benzo (b) Fluoranthene	1.3
Benzo (k) Fluoranthene	1.0	Benzo (k) Fluoranthene	1.3	Benzo (k) Fluoranthene	1.3
Benzo (g,h,i) Perylene	1.5	Benzo (g,h,i) Perylene	1.5	Benzo (g,h,i) Perylene	1.4
Benzo (a) Pyrene	1.5	Benzo (a) Pyrene	1.5	Benzo (a) Pyrene	1.8
Indeno (1,2,3-cd) Pyrene	0.25	Indeno (1,2,3-cd) Pyrene	0.27	Indeno (1,2,3-cd) Pyrene	0.31
Pyrene	0.00	Pyrene	0.00	Pyrene	0.00
1,2,3,4-Dibenzofluoranthene	0.00	1,2,3,4-Dibenzofluoranthene	0.00	1,2,3,4-Dibenzofluoranthene	0.00
1,2,3,4,6,7-Hexabenzofluoranthene	0.00	1,2,3,4,6,7-Hexabenzofluoranthene	0.00	1,2,3,4,6,7-Hexabenzofluoranthene	0.00
1,2,3,4,6,7,8-Heptabenzofluoranthene	1.5	1,2,3,4,6,7,8-Heptabenzofluoranthene	1.7	1,2,3,4,6,7,8-Heptabenzofluoranthene	1.7
<b>Total Aromatics</b>	<b>9628</b>	<b>Total Aromatics</b>	<b>10642</b>	<b>Total Aromatics</b>	<b>9565</b>
<b>% Surrogate Recovery</b>					
1,2,3,4-Dibenzofluoranthene	0.81	1,2,3,4-Dibenzofluoranthene	0.81	1,2,3,4-Dibenzofluoranthene	0.83
1,2,3,4,6,7,8-Heptabenzofluoranthene	0.82	1,2,3,4,6,7,8-Heptabenzofluoranthene	0.87	1,2,3,4,6,7,8-Heptabenzofluoranthene	0.89
<b>Total Aromatics</b>	<b>11626</b>	<b>Total Aromatics</b>	<b>10949</b>	<b>Total Aromatics</b>	<b>10657</b>
<b>% Surrogate Recovery</b>					
1,2,3,4-Dibenzofluoranthene	1.00	1,2,3,4-Dibenzofluoranthene	1.00	1,2,3,4-Dibenzofluoranthene	1.00
1,2,3,4,6,7,8-Heptabenzofluoranthene	1.00	1,2,3,4,6,7,8-Heptabenzofluoranthene	1.00	1,2,3,4,6,7,8-Heptabenzofluoranthene	1.00

## Sarva Bio Remed, LLC

Day 7, Final

CONTROL STATISTICS FOR SURROGATE CORRECTED DATA Testing Date: Day 7						
Alkane Analyte:	Replicate #1	Replicate #2	Replicate #3	Average	Stdev	%RSD
	Conc (ng/mg)	Conc (ng/mg)	Conc (ng/mg)			
nC-10 Decane	490	480	510	493	15	3.1
nC-11 Undecane	1800	2000	1700	1833	153	8.3
nC-12 Dodecane	2200	2300	2200	2233	58	2.6
nC-13 Tridecane	2200	2200	2200	2200	0.00	0.00
nC-14 Tetradecane	2000	2100	2200	2100	100	4.8
nC-15 Pentadecane	2400	2300	2200	2300	100	4.3
nC-16 Hexadecane	2400	2200	2200	2267	115	5.1
nC-17 Heptadecane	2100	2300	2200	2200	100	4.5
Pristane	1600	1600	1600	1533	58	3.8
nC-18 Octadecane	2400	2300	2300	2333	58	2.5
Phytane	1300	1400	1300	1333	58	4.3
nC-19 Nonadecane	2100	2100	2000	2067	58	2.8
nC-20 Eicosane	2300	2300	2200	2267	58	2.5
nC-21 Heneicosane	2100	2100	2000	2067	58	2.8
nC-22 Docosane	1900	1800	1700	1800	100	5.6
nC-23 Tricosane	1800	1700	1500	1667	153	9.2
nC-24 Tetracosane	1700	1700	1500	1633	115	7.1
nC-25 Pentacosane	2100	2200	2200	2167	58	2.7
nC-26 Hexacosane	2000	2200	2200	2133	115	5.4
nC-27 Heptacosane	1600	1700	1500	1600	100	6.3
nC-28 Octacosane	1300	1400	1400	1367	58	4.2
nC-29 Nonacosane	1200	1400	1300	1300	100	7.7
nC-30 Triacontane	1200	1200	1200	1200	0.00	0.00
nC-31 Hentriacontane	1100	1200	1200	1167	58	4.9
nC-32 Dotriacontane	830	940	880	883	55	6.2
nC-33 Tritriacontane	990	1100	1100	1063	64	6.0
nC-34 Tetratriacontane	1100	1000	1100	1067	58	5.4
nC-35 Pentatriacontane	1300	1400	1300	1333	58	4.3
<b>Total Alkanes</b>	<b>47510</b>	<b>48520</b>	<b>46790</b>	<b>47607</b>	<b>869</b>	<b>1.8</b>
Aromatic Analyte:	Conc (ng/mg)	Conc (ng/mg)	Conc (ng/mg)	Average	Stdev	%RSD
Naphthalene	320	290	300	303	15	5.0
C1-Naphthalenes	1000	1000	1200	1067	115	11
C2-Naphthalenes	1900	1800	1800	1833	58	3.1
C3-Naphthalenes	1400	1300	1300	1333	58	4.3
C4-Naphthalenes	790	680	650	707	74	10
Fluorene	100	100	120	107	12	11
C1-Fluorenes	270	250	270	263	11	4.3
C2-Fluorenes	330	310	290	310	20	6.5
C3-Fluorenes	310	320	310	313	5.8	1.8
Dibenzothiophene	280	240	240	253	23	9.1
C1-Dibenzothiophenes	440	380	380	400	35	8.7
C2-Dibenzothiophenes	590	510	490	530	53	10
C3-Dibenzothiophenes	380	320	320	340	35	10
Phenanthrene	350	300	300	317	29	9.1
C1-Phenanthrenes	660	590	550	600	56	9.3
C2-Phenanthrenes	700	660	590	650	56	8.6
C3-Phenanthrenes	410	390	370	390	20	5.1
C4-Phenanthrenes	140	140	130	137	5.8	4.2
Anthracene	1.6	1.6	1.7	1.6	0.09	0.00
Fluoranthene	3.6	3.4	3.5	3.5	0.07	2.1
Pyrene	11	9	9	10	0.82	8.4
C1-Pyrenes	130	120	110	120	10	8.3
C2-Pyrenes	170	140	140	150	17	12
C3-Pyrenes	140	120	130	130	10	7.7
C4-Pyrenes	78	68	72	73	4.9	6.8
Naphthobenzothiophene	56	48	52	52	3.8	7.3
C-1 Naphthobenzothiophenes	180	160	150	163	15	9.3
C-2 Naphthobenzothiophenes	200	180	170	183	15	8.3
C-3 Naphthobenzothiophenes	140	120	120	127	12	9.1
Benzo (a) Anthracene	10.8	8.9	10.2	9.9	0.98	9.8
Chrysene	64	57	55	59	4.7	8.0
C1-Chrysenes	96	90	84	90	5.8	6.4
C2-Chrysenes	120	100	100	107	12	11
C3-Chrysenes	64	62	66	64	2.1	3.3
C4-Chrysenes	43	40	50	44	5.0	11
Benzo (b) Fluoranthene	2.0	1.7	2.1	1.9	0.20	10
Benzo (k) Fluoranthene	4.5	4.1	4.2	4.3	0.18	4.2
Benzo (e) Pyrene	14	13	13	13	0.82	6.3
Benzo (a) Pyrene	1.7	1.6	1.5	1.6	0.09	5.5
Perylene	1.20	1.08	1.06	1.1	0.08	7.0
Indeno (1,2,3 - cd) Pyrene	0.00	0.00	0.00	0.00	0.00	0.00
Dibenzo (a,h) anthracene	0.00	0.0	0.00	0.00	0.00	0.00
Benzo (g,h,i) perylene	1.4	1.3	1.5	1.4	0.15	0.00
<b>Total Aromatics</b>	<b>11901</b>	<b>10931</b>	<b>10957</b>	<b>11263</b>	<b>553</b>	<b>4.9</b>

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NUTRIENT STATISTICS FOR SURROGATE CORRECTED DATA Testing Date: Day 7						
Alkane Analyte:	Replicate #1	Replicate #2	Replicate #3	Average	Stdev	%RSD
	Conc (ng/mg)	Conc (ng/mg)	Conc (ng/mg)			
nC-10 Decane	680	630	590	633	45	7.1
nC-11 Undecane	900	850	910	887	32	3.6
nC-12 Dodecane	1300	1400	1200	1300	100	7.7
nC-13 Tridecane	1400	1500	1300	1400	100	7.1
nC-14 Tetradecane	1500	1400	1300	1400	100.0	7.1
nC-15 Pentadecane	2000	1900	2000	1967	58	2.9
nC-16 Hexadecane	1800	1800	1600	1733	115	6.7
nC-17 Heptadecane	1700	1600	1500	1600	100	6.3
Pristane	1800	1800	1600	1733	115	6.7
nC-18 Octadecane	1700	1500	1500	1567	115	7.4
Phytane	1500	1400	1400	1433	58	4.0
nC-19 Nonadecane	1300	1300	1200	1267	58	4.6
nC-20 Eicosane	1700	1500	1600	1600	100	6.3
nC-21 Heneicosane	1500	1400	1400	1433	58	4.0
nC-22 Docosane	1500	1600	1400	1500	100	6.7
nC-23 Tricosane	1500	1400	1300	1400	100	7.1
nC-24 Tetracosane	1500	1800	1600	1633	153	9.4
nC-25 Pentacosane	2500	2500	2400	2467	58	2.3
nC-26 Hexacosane	2400	2600	2200	2400	200	8.3
nC-27 Heptacosane	2000	2100	2000	2033	58	2.8
nC-28 Octacosane	1400	1600	1400	1467	115	7.9
nC-29 Nonacosane	1500	1500	1500	1500	0.0	0.00
nC-30 Triacontane	1000	1000	1100	1033	58	5.6
nC-31 Hentriacontane	1300	1200	1200	1233	58	4.7
nC-32 Dotriacontane	1100	1200	1100	1133	58	5.1
nC-33 Tritriacontane	1100	920	990	1003	91	9.0
nC-34 Tetratriacontane	1000	1000	890	963	64	6.6
nC-35 Pentatriacontane	1100	1100	1200	1133	58	5.1
<b>Total Alkanes</b>	<b>41680</b>	<b>41500</b>	<b>39380</b>	<b>40853</b>	<b>1279</b>	<b>3.1</b>
Aromatic Analyte:	Conc (ng/mg)	Conc (ng/mg)	Conc (ng/mg)	Average	Stdev	%RSD
Naphthalene	350	370	330	350	20	0.00
C1-Naphthalenes	1300	1200	930	1143	191	0.00
C2-Naphthalenes	1800	2000	1900	1900	100	5.3
C3-Naphthalenes	1300	1500	1500	1433	115	8.1
C4-Naphthalenes	790	810	790	797	12	1.4
Fluorene	93	79	92	88	7.5	8.5
C1-Fluorenes	220	230	220	223	5.8	2.6
C2-Fluorenes	270	270	270	270	0.00	0.00
C3-Fluorenes	280	280	300	287	11	4.0
Dibenzothiophene	220	210	220	217	5.7	2.6
C1-Dibenzothiophenes	390	360	390	380	17	4.6
C2-Dibenzothiophenes	490	460	480	477	15	3.2
C3-Dibenzothiophenes	320	290	320	310	17	5.6
Phenanthrene	290	280	290	287	5.8	2.0
C1-Phenanthrenes	590	510	540	547	40	7.4
C2-Phenanthrenes	610	630	620	620	10	1.6
C3-Phenanthrenes	350	370	380	367	15	4.2
C4-Phenanthrenes	160	150	160	157	5.9	3.8
Anthracene	1.1	1.1	1.0	1.1	0.07	0.00
Fluoranthene	2.5	2.1	2.4	2.3	0.19	8.1
Pyrene	7.8	6.6	6.9	7.1	0.65	9.1
C1-Pyrenes	120	120	110	117	5.8	4.9
C2-Pyrenes	130	140	130	133	5.8	4.3
C3-Pyrenes	120	120	110	117	5.8	4.9
C4-Pyrenes	73	67	70	70	2.7	3.9
Naphthobenzothiophene	49	48	50	49	0.88	1.8
C-1 Naphthobenzothiophenes	160	150	150	153	5.8	3.8
C-2 Naphthobenzothiophenes	170	170	180	173	5.8	3.3
C-3 Naphthobenzothiophenes	120	120	110	117	5.8	4.9
Benzo (a) Anthracene	13	12	13	13	0.42	3.3
Chrysene	79	75	75	76	2.0	2.6
C1-Chrysenes	120	120	110	117	5.8	4.9
C2-Chrysenes	160	140	140	147	12	7.9
C3-Chrysenes	110	95	100	102	7.4	7.3
C4-Chrysenes	66	64	59	63	3.6	5.8
Benzo (b) Fluoranthene	1.2	1.3	1.3	1.3	0.04	3.2
Benzo (k) Fluoranthene	2.9	3.0	2.9	2.9	0.02	0.72
Benzo (e) Pyrene	12	13	13	13	0.40	3.2
Benzo (a) Pyrene	2.4	2.3	2.1	2.2	0.13	5.6
Perylene	0.38	0.43	0.40	0.40	0.03	7.0
Indeno (1,2,3 - cd) Pyrene	0.00	0.00	0.00	0.00	0.00	0.00
Dibenzo (a,h) anthracene	0.00	0.00	0.00	0.00	0.00	0.00
Benzo (g,h,i) perylene	1.4	1.4	1.4	1.4	0.02	0.00
<b>Total Aromatics</b>	<b>11344</b>	<b>11473</b>	<b>11171</b>	<b>11329</b>	<b>152</b>	<b>1.3</b>

## Sarva Bio Remed, LLC

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SARVA PRODUCT STATISTICS FOR SURROGATE CORRECTED DATA Testing Date: Day 7						
Alkane Analyte:	Replicate #1	Replicate #2	Replicate #3	Average	Stdev	%RSD
	Conc (ng/mg)	Conc (ng/mg)	Conc (ng/mg)			
nC-10 Decane	1100	1000	1000	1033	58	5.6
nC-11 Undecane	1600	1500	1400	1500	100	6.7
nC-12 Dodecane	1700	1500	1600	1600	100	6.3
nC-13 Tridecane	1800	1800	1600	1733	115	6.7
nC-14 Tetradecane	2100	1900	1900	1967	115	5.9
nC-15 Pentadecane	1700	1900	1600	1733	153	8.8
nC-16 Hexadecane	1800	2000	1800	1867	115	6.2
nC-17 Heptadecane	2100	2000	1800	1967	153	7.8
Pristane	1700	1700	1600	1667	58	3.5
nC-18 Octadecane	1800	2000	1700	1833	153	8.3
Phytane	1600	1500	1400	1500	100	6.7
nC-19 Nonadecane	1600	1800	1500	1633	153	9.4
nC-20 Eicosane	1800	1900	1700	1800	100	5.6
nC-21 Heneicosane	1700	1800	1600	1700	100	5.9
nC-22 Docosane	1700	1800	1500	1667	153	9.2
nC-23 Tricosane	1800	1900	1600	1767	153	8.6
nC-24 Tetracosane	1500	1700	1500	1567	115	7.4
nC-25 Pentacosane	1800	1800	1800	1800	0.00	0.00
nC-26 Hexacosane	1800	1800	1800	1800	0.00	0.00
nC-27 Heptacosane	1700	1800	1600	1700	100	5.9
nC-28 Octacosane	1700	1800	1600	1700	100	5.9
nC-29 Nonacosane	1800	1800	1600	1733	115	6.7
nC-30 Triacontane	1100	940	970	1003	85	8.5
nC-31 Hentriacontane	1100	950	1000	1017	76	7.5
nC-32 Dotriacontane	1000	1000	980	993	12	1.2
nC-33 Tritriacontane	880	870	900	883	15	1.7
nC-34 Tetatriacontane	930	950	840	907	59	6.5
nC-35 Pentatriacontane	1200	1200	1100	1167	58	4.9
<b>Total Alkanes</b>	<b>44110</b>	<b>44610</b>	<b>40990</b>	<b>43237</b>	<b>1962</b>	<b>4.5</b>
Aromatic Analyte:	Conc (ng/mg)	Conc (ng/mg)	Conc (ng/mg)	Average	Stdev	%RSD
Naphthalene	330	290	330	317	23	7.3
C1-Naphthalenes	1300	1200	1200	1233	58	4.7
C2-Naphthalenes	2200	1900	1900	2000	173	8.7
C3-Naphthalenes	1300	1400	1300	1333	58	4.3
C4-Naphthalenes	740	700	660	700	40	5.7
Fluorene	79	83	78	80	2.4	3.0
C1-Fluorenes	240	220	200	220	20	9.1
C2-Fluorenes	290	270	250	270	20	7.4
C3-Fluorenes	270	260	270	267	5.7	2.1
Dibenzothiophene	220	220	200	213	12	5.4
C1-Dibenzothiophenes	350	350	350	350	0.00	0.00
C2-Dibenzothiophenes	480	480	440	467	23	4.9
C3-Dibenzothiophenes	330	300	290	307	21	6.8
Phenanthrene	300	280	270	283	15	5.4
C1-Phenanthrenes	560	550	490	533	38	7.1
C2-Phenanthrenes	630	590	560	593	35	5.9
C3-Phenanthrenes	390	370	360	373	15	4.1
C4-Phenanthrenes	130	130	140	133	5.8	4.3
Anthracene	1.4	1.3	1.5	1.4	0.07	5.0
Fluoranthene	2.3	2.2	2.4	2.3	0.09	4.1
Pyrene	8.8	8.8	8.9	8.8	0.08	0.91
C1-Pyrenes	110	100	94	101	7.9	7.8
C2-Pyrenes	130	120	120	123	5.8	4.7
C3-Pyrenes	110	110	100	107	5.8	5.4
C4-Pyrenes	65	59	63	62	3.1	5.0
Naphthobenzothiophene	47	49	46	48	1.4	2.9
C-1 Naphthobenzothiophenes	180	160	160	167	12	6.9
C-2 Naphthobenzothiophenes	170	160	160	163	6.1	3.7
C-3 Naphthobenzothiophenes	120	100	110	110	10	9.1
Benzo (a) Anthracene	15.3	14.3	13.0	14	1.1	8.0
Chrysene	80	69	68	72	6.6	9.1
C1-Chrysenes	120	100	110	110	10	9.1
C2-Chrysenes	145	130	140	138	7.7	5.5
C3-Chrysenes	100	96	87	94	6.5	6.9
C4-Chrysenes	61	57	64	61	3.4	5.7
Benzo (b) Fluoranthene	1.7	1.5	1.5	1.6	0.08	5.1
Benzo (k) Fluoranthene	2.3	2.3	2.3	2.3	0.04	1.9
Benzo (e) Pyrene	12	11	12	12	0.46	3.9
Benzo (a) Pyrene	2.2	1.8	2.1	2.1	0.19	9.2
Perylene	0.31	0.28	0.31	0.30	0.02	6.4
Indeno (1,2,3 - cd) Pyrene	0.00	0.00	0.00	0.00	0.00	0.00
Dibenzo (a,h) anthracene	0.00	0.00	0.00	0.00	0.00	0.00
Benzo (g,h,i) perylene	1.8	1.8	1.9	1.8	0.04	2.1
<b>Total Aromatics</b>	<b>11626</b>	<b>10949</b>	<b>10657</b>	<b>11077</b>	<b>497</b>	<b>4.5</b>

CONTROL, REPLICATES 1 & 2 Initial Oil Volume: 500 mL Final Extracted Volume: 15 mL		CONTROL, REPLICATES 3 & 4 Initial Oil Volume: 500 mL Final Extracted Volume: 15 mL		CONTROL, REPLICATES 5 & 6 Initial Oil Volume: 500 mL Final Extracted Volume: 15 mL		CONTROL, REPLICATES 7 & 8 Initial Oil Volume: 500 mL Final Extracted Volume: 15 mL			
Alkane Analyte	Concentration (ng/mL)	Surrogate Corrected (ng/mL)	Alkane Analyte	Concentration (ng/mL)	Surrogate Corrected (ng/mL)	Alkane Analyte	Concentration (ng/mL)	Surrogate Corrected (ng/mL)	
nC-10 Decane	101	104	nC-10 Decane	107	110	nC-10 Decane	102	105	
nC-11 Undecane	1042	1074	nC-11 Undecane	1068	1101	nC-11 Undecane	1041	1084	
nC-12 Dodecane	2084	2149	nC-12 Dodecane	2229	2288	nC-12 Dodecane	1951	2033	
nC-13 Tridecane	2336	2328	nC-13 Tridecane	2493	2570	nC-13 Tridecane	2491	2595	
nC-14 Tetradecane	2410	2428	nC-14 Tetradecane	2333	2428	nC-14 Tetradecane	2225	2278	
nC-15 Pentadecane	2466	2466	nC-15 Pentadecane	2481	2481	nC-15 Pentadecane	2304	2400	
nC-16 Hexadecane	2545	2545	nC-16 Hexadecane	2481	2481	nC-16 Hexadecane	2160	2240	
nC-17 Heptadecane	2325	2397	nC-17 Heptadecane	2355	2427	nC-17 Heptadecane	2160	2240	
Phytane	1373	1445	Phytane	1542	1590	Phytane	1488	1550	
nC-18 Octadecane	2396	2470	nC-18 Octadecane	2556	2635	nC-18 Octadecane	2261	2355	
Phytane	1326	1368	Phytane	1311	1351	Phytane	1230	1281	
nC-19 Nonadecane	1052	2012	nC-19 Nonadecane	2321	2320	nC-19 Nonadecane	2032	2117	
nC-20 Eicosane	2045	2100	nC-20 Eicosane	2185	2252	nC-20 Eicosane	2069	2069	
nC-21 Heneicosane	2033	2096	nC-21 Heneicosane	2032	2095	nC-21 Heneicosane	1828	1984	
nC-22 Docosane	1652	1912	nC-22 Docosane	1928	1928	nC-22 Docosane	1671	1640	
nC-23 Tricosane	1652	1705	nC-23 Tricosane	1724	1724	nC-23 Tricosane	1662	1662	
nC-24 Tetracosane	1656	1706	nC-24 Tetracosane	1724	1724	nC-24 Tetracosane	1481	1543	
nC-25 Pentacosane	1626	1677	nC-25 Pentacosane	1761	1815	nC-25 Pentacosane	1730	1811	
nC-26 Hexacosane	1565	1614	nC-26 Hexacosane	1764	1819	nC-26 Hexacosane	1704	1775	
nC-27 Heptacosane	1264	1300	nC-27 Heptacosane	1307	1340	nC-27 Heptacosane	1220	1277	
nC-28 Octacosane	1110	1145	nC-28 Octacosane	1165	1201	nC-28 Octacosane	1010	1052	
nC-29 Nonacosane	1140	1175	nC-29 Nonacosane	1195	1232	nC-29 Nonacosane	1090	1136	
nC-30 Triacosane	1037	1069	nC-30 Triacosane	1030	1062	nC-30 Triacosane	989	1021	
nC-31 Hexatriacontane	964	994	nC-31 Hexatriacontane	967	997	nC-31 Hexatriacontane	870	905	
nC-32 Dotriacontane	778	802	nC-32 Dotriacontane	805	830	nC-32 Dotriacontane	789	801	
nC-33 Pentatriacontane	745	775	nC-33 Pentatriacontane	810	844	nC-33 Pentatriacontane	761	784	
nC-34 Hexatriacontane	745	775	nC-34 Hexatriacontane	810	844	nC-34 Hexatriacontane	666	687	
nC-35 Pentatriacontane	1102	1136	nC-35 Pentatriacontane	1308	1349	nC-35 Pentatriacontane	1303	1357	
<b>Total Alkanes</b>	<b>43613</b>	<b>44962</b>	<b>Total Alkanes</b>	<b>45808</b>	<b>47725</b>	<b>Total Alkanes</b>	<b>42446</b>	<b>44215</b>	
Aromatic Analyte		Aromatic Analyte		Aromatic Analyte		Aromatic Analyte		Aromatic Analyte	
Naphtalene	252	287	Naphtalene	247	275	Naphtalene	245	275	
C1-Naphthalenes	892	1127	C1-Naphthalenes	992	1102	C1-Naphthalenes	973	1083	
C2-Naphthalenes	1634	1857	C2-Naphthalenes	1706	1895	C2-Naphthalenes	1437	1614	
C3-Naphthalenes	1374	1581	C3-Naphthalenes	1421	1579	C3-Naphthalenes	1360	1528	
Fluoroc	692	786	Fluoroc	682	758	Fluoroc	716	805	
C1-Fluoroc	34	397	C1-Fluoroc	35	397	C1-Fluoroc	32	383	
C2-Fluoroc	357	408	C2-Fluoroc	346	392	C2-Fluoroc	32	383	
C3-Fluoroc	287	326	C3-Fluoroc	314	416	C3-Fluoroc	345	398	
Dibenzofluorene	219	249	Dibenzofluorene	336	373	Dibenzofluorene	335	377	
C1-Fluoranthene	496	486	C1-Fluoranthene	238	264	C1-Fluoranthene	203	228	
C2-Dibenzofluorenes	635	721	C2-Dibenzofluorenes	445	465	C2-Dibenzofluorenes	403	453	
C3-Dibenzofluorenes	391	442	C3-Dibenzofluorenes	634	705	C3-Dibenzofluorenes	573	644	
Phenanthrene	285	324	Phenanthrene	302	322	Phenanthrene	351	385	
C1-Phenanthrenes	657	747	C1-Phenanthrenes	669	740	C1-Phenanthrenes	585	688	
C2-Phenanthrenes	976	1100	C2-Phenanthrenes	691	808	C2-Phenanthrenes	619	695	
C3-Phenanthrenes	180	204	C3-Phenanthrenes	150	183	C3-Phenanthrenes	150	183	
Anthracene	12	13	Anthracene	175	193	Anthracene	184	207	
Fluoranthene	2.9	3.2	Fluoranthene	1.93	2.1	Fluoranthene	1.3	1	
Pyrene	6.8	11.2	Pyrene	2.6	3.1	Pyrene	2.6	3	
C1-Pyrenes	98	112	C1-Pyrenes	12.0	13.3	C1-Pyrenes	11.9	13	
C2-Pyrenes	128	145	C2-Pyrenes	107	119	C2-Pyrenes	105	118	
C3-Pyrenes	115	131	C3-Pyrenes	129	140	C3-Pyrenes	122	137	
C1-Pyrene	75	88	C1-Pyrene	74	82	C1-Pyrene	74	80	
C2-Pyrene	95	104	C2-Pyrene	95	105	C2-Pyrene	95	106	
C3-Pyrene	174	196	C3-Pyrene	197	219	C3-Pyrene	195	200	
Naphthobenzofluorene	184	220	Naphthobenzofluorene	187	219	Naphthobenzofluorene	178	200	
C-1 Naphthobenzofluorenes	194	220	C-1 Naphthobenzofluorenes	197	219	C-1 Naphthobenzofluorenes	178	200	
C-2 Naphthobenzofluorenes	128	146	C-2 Naphthobenzofluorenes	134	154	C-2 Naphthobenzofluorenes	119	134	
C-3 Naphthobenzofluorenes	7.9	8.9	C-3 Naphthobenzofluorenes	9.8	10.5	C-3 Naphthobenzofluorenes	9.0	10	
Benzo (a) Anthracene	52	59	Benzo (a) Anthracene	58	67	Benzo (a) Anthracene	48	56	
Chrysene	80	101	Chrysene	88	105	Chrysene	80	90	
C1-Chyrenes	102	116	C1-Chyrenes	103	114	C1-Chyrenes	95	107	
C2-Chyrenes	81	92	C2-Chyrenes	96	96	C2-Chyrenes	76	86	
C3-Chyrenes	52	59	C3-Chyrenes	50	55	C3-Chyrenes	48	54	
Benzo (b) fluoranthene	4.7	5.1	Benzo (b) fluoranthene	4.9	5.1	Benzo (b) fluoranthene	4.2	4.6	
Phenanthrene	11	13	Phenanthrene	12	13	Phenanthrene	11	13	
Benzo (a) Pyrene	2.2	2.5	Benzo (a) Pyrene	2.2	2.4	Benzo (a) Pyrene	2.2	2.5	
Pyrene	0.72	0.8	Pyrene	0.80	0.8	Pyrene	0.86	1.0	
Indeno (1,2,3-cd) Pyrene	0.22	0.25	Indeno (1,2,3-cd) Pyrene	0.25	0.28	Indeno (1,2,3-cd) Pyrene	0.23	0.3	
Dibenz (a,h) anthracene	0.59	0.67	Dibenz (a,h) anthracene	0.8	0.84	Dibenz (a,h) anthracene	0.68	0.8	
Benzo (g,h,i) perylene	3.3	3.6	Benzo (g,h,i) perylene	2.5	2.7	Benzo (g,h,i) perylene	2.4	2.7	
<b>Total Aromatics</b>	<b>11264</b>	<b>12800</b>	<b>Total Aromatics</b>	<b>11584</b>	<b>12871</b>	<b>Total Aromatics</b>	<b>10689</b>	<b>12010</b>	
% Surrogate Recovery		% Surrogate Recovery		% Surrogate Recovery		% Surrogate Recovery		% Surrogate Recovery	
5-Alkyl Acceptor	0.97	1.00	5-Alkyl Acceptor	0.97	1.00	5-Alkyl Acceptor	0.96	1.00	
Phenanthrene d-10	0.88	1.00	Phenanthrene d-10	0.90	1.00	Phenanthrene d-10	0.89	1.00	

Sarva Bio Remed, LLC  
Day 28, Final

NUTRIENT REPLICATE 1			NUTRIENT REPLICATE 2			NUTRIENT REPLICATE 3		
Testing Date: Day 28 Initial Oil Weight: 500 mg Final Extracted Volume: 15 mL			Testing Date: Day 28 Initial Oil Weight: 500 mg Final Extracted Volume: 15 mL			Testing Date: Day 28 Initial Oil Weight: 500 mg Final Extracted Volume: 15 mL		
Alkane Analyte	Concentration (ng/ml)	Surrogate Corrected (ng/ml)	Alkane Analyte	Concentration (ng/ml)	Surrogate Corrected (ng/ml)	Alkane Analyte	Concentration (ng/ml)	Surrogate Corrected (ng/ml)
nC-10 Decane	0.00	0	nC-10 Decane	0.00	0	nC-10 Decane	0.00	0
nC-11 Undecane	71.0	0	nC-11 Undecane	132.00	132	nC-11 Undecane	132.00	132
nC-12 Dodecane	115.00	116	nC-12 Dodecane	132.00	132	nC-12 Dodecane	132.00	132
nC-13 Tridecane	139.00	140	nC-13 Tridecane	145.00	145	nC-13 Tridecane	145.00	145
nC-14 Tetradecane	148.00	146	nC-14 Tetradecane	158.00	158	nC-14 Tetradecane	178.00	178
nC-15 Pentadecane	169.00	171	nC-15 Pentadecane	179.00	179	nC-15 Pentadecane	192.00	192
nC-16 Hexadecane	205.00	207	nC-16 Hexadecane	221.00	221	nC-16 Hexadecane	235.00	235
nC-17 Heptadecane	248	251	nC-17 Heptadecane	236	236	nC-17 Heptadecane	241	241
Phasane	1631	1644	Phasane	1624	1624	Phasane	1621	1621
nC-18 Octadecane	198	200	nC-18 Octadecane	192	192	nC-18 Octadecane	189	189
nC-19 Nonadecane	174	176	nC-19 Nonadecane	1728	1728	nC-19 Nonadecane	1728	1728
nC-20 Eicosane	229	232	nC-20 Eicosane	215	215	nC-20 Eicosane	215	215
nC-21 Heneicosane	119.0	121	nC-21 Heneicosane	125.0	125	nC-21 Heneicosane	142	142
nC-22 Docosane	135	136	nC-22 Docosane	142	142	nC-22 Docosane	140	140
nC-23 Tricosane	116.0	117	nC-23 Tricosane	149.0	149	nC-23 Tricosane	153.0	153
nC-24 Tetracosane	128	129	nC-24 Tetracosane	122	122	nC-24 Tetracosane	125	125
nC-25 Pentacosane	228	230	nC-25 Pentacosane	229	229	nC-25 Pentacosane	227	227
nC-26 Hexacosane	198	198	nC-26 Hexacosane	188	188	nC-26 Hexacosane	178	178
nC-27 Heptacosane	142	143	nC-27 Heptacosane	140	140	nC-27 Heptacosane	144	144
nC-28 Octacosane	146	147	nC-28 Octacosane	144	144	nC-28 Octacosane	148	148
nC-29 Nonacosane	117	117	nC-29 Nonacosane	146	146	nC-29 Nonacosane	152	152
nC-30triacontane	112	113	nC-30triacontane	121	121	nC-30triacontane	135	135
nC-31 Hentriacontane	112	113	nC-31 Hentriacontane	121	121	nC-31 Hentriacontane	111	111
nC-32 Dotriacontane	112	112	nC-32 Dotriacontane	135	135	nC-32 Dotriacontane	130	130
nC-33 Triacontane	50.00	51	nC-33 Triacontane	100	100	nC-33 Triacontane	93.6	93.6
nC-34 Tetracontane	50.00	51	nC-34 Tetracontane	62.00	62	nC-34 Tetracontane	49.00	49
nC-35 Pentacosantane	41.00	41	nC-35 Pentacosantane	45.90	45	nC-35 Pentacosantane	39.00	39
<b>Total Alkanes</b>	<b>7091</b>	<b>7162</b>	<b>Total Alkanes</b>	<b>7188</b>	<b>7188</b>	<b>Total Alkanes</b>	<b>7267</b>	<b>7267</b>
Aromatic Analyte	Concentration (ng/ml)	Surrogate Corrected (ng/ml)	Aromatic Analyte	Concentration (ng/ml)	Surrogate Corrected (ng/ml)	Aromatic Analyte	Concentration (ng/ml)	Surrogate Corrected (ng/ml)
Naphthalene	0.00	0	Naphthalene	0.00	0	Naphthalene	0.00	0
1-Methyl-naphthalene	70	65	1-Methyl-naphthalene	1024	1024	1-Methyl-naphthalene	895	1023
2-Methyl-naphthalene	844	1140	2-Methyl-naphthalene	702	1131	2-Methyl-naphthalene	856	1141
3-Methyl-naphthalene	701	946	3-Methyl-naphthalene	702	912	3-Methyl-naphthalene	949	949
Fluorene	21.0	28	Fluorene	22.0	29	Fluorene	26.0	35
1-Fluorene	338	322	1-Fluorene	266	346	1-Fluorene	237	318
2-Fluorene	301	407	2-Fluorene	312	405	2-Fluorene	315	420
3-Fluorene	234	316	3-Fluorene	285	344	3-Fluorene	265	353
Dibenzofluorene	73	99	Dibenzofluorene	69	90	Dibenzofluorene	73	97
1-Dibenzofluorene	225	305	1-Dibenzofluorene	264	340	1-Dibenzofluorene	249	332
2-Dibenzofluorene	503	680	2-Dibenzofluorene	482	639	2-Dibenzofluorene	498	684
3-Dibenzofluorene	149	197	3-Dibenzofluorene	146	196	3-Dibenzofluorene	152	200
Phenanthrene	59	68	Phenanthrene	55	71	Phenanthrene	61	81
1-Phenanthrene	327	441	1-Phenanthrene	325	422	1-Phenanthrene	325	433
2-Phenanthrene	363	491	2-Phenanthrene	522	678	2-Phenanthrene	547	729
3-Phenanthrene	418	565	3-Phenanthrene	437	588	3-Phenanthrene	439	585
4-Phenanthrene	162	219	4-Phenanthrene	171	222	4-Phenanthrene	179	239
Anthracene	77	100	Anthracene	74	101	Anthracene	71	98
Fluoranthene	1.6	2.2	Fluoranthene	1.6	2.1	Fluoranthene	1.5	2.1
Pyrene	5.0	7.0	Pyrene	7	10	Pyrene	7.6	10.1
1-Pyrene	90	121	1-Pyrene	19	25	1-Pyrene	89	116
2-Pyrene	161	213	2-Pyrene	138	181	2-Pyrene	138	181
3-Pyrene	113	153	3-Pyrene	136	175	3-Pyrene	146	195
4-Pyrene	67	91	4-Pyrene	71	92	4-Pyrene	85	113
Naphthobenzofluorene	74	100	Naphthobenzofluorene	71	92	Naphthobenzofluorene	73	97
1-Naphthobenzofluorene	165	223	1-Naphthobenzofluorene	176	229	1-Naphthobenzofluorene	178	237
2-Naphthobenzofluorene	128	173	2-Naphthobenzofluorene	136	180	2-Naphthobenzofluorene	136	180
3-Naphthobenzofluorene	128	173	3-Naphthobenzofluorene	136	180	3-Naphthobenzofluorene	145	193
Benzo (a) Anthracene	7	9.3	Benzo (a) Anthracene	6	7.5	Benzo (a) Anthracene	5	7.2
Chrysene	42	57	Chrysene	43	56	Chrysene	47	63
1-Chrysene	13	18	1-Chrysene	116	150	1-Chrysene	128	168
2-Chrysene	13	18	2-Chrysene	116	150	2-Chrysene	128	168
3-Chrysene	105	142	3-Chrysene	116	150	3-Chrysene	122	163
4-Chrysene	79	107	4-Chrysene	69	90	4-Chrysene	91	121
Benzo (b) Fluoranthene	0.63	0.9	Benzo (b) Fluoranthene	0.75	1.0	Benzo (b) Fluoranthene	0.68	0.9
Benzo (k) Fluoranthene	3.1	4.2	Benzo (k) Fluoranthene	3.9	5.0	Benzo (k) Fluoranthene	3.7	4.9
Benzo (e) Pyrene	7	9	Benzo (e) Pyrene	8	10	Benzo (e) Pyrene	9	12
Benzo (a) Pyrene	1.5	2.0	Benzo (a) Pyrene	1.8	2.3	Benzo (a) Pyrene	1.6	2.2
Pyrene	0.26	0.3	Pyrene	0.21	0.3	Pyrene	0.23	0.3
Indeno (1,2,3-cd) Pyrene	0.16	0.22	Indeno (1,2,3-cd) Pyrene	0.13	0.17	Indeno (1,2,3-cd) Pyrene	0.12	0.16
Dibenz (a,h) Anthracene	0.2	0.26	Dibenz (a,h) Anthracene	0.23	0.29	Dibenz (a,h) Anthracene	0.21	0.28
Benzo (ghi) Perylene	0.2	0.2	Benzo (ghi) Perylene	0.2	0.2	Benzo (ghi) Perylene	0.3	0.4
<b>Total Aromatics</b>	<b>7225</b>	<b>9764</b>	<b>Total Aromatics</b>	<b>7540</b>	<b>9783</b>	<b>Total Aromatics</b>	<b>7670</b>	<b>10227</b>
% Surrogate Recovery	0.99	1.00	% Surrogate Recovery	1.00	1.00	% Surrogate Recovery	1.00	1.00
5 Alpha Androstane	0.74	1.00	5 Alpha Androstane	0.71	1.00	5 Alpha Androstane	0.75	1.00
Phenanthrene d-10			Phenanthrene d-10			Phenanthrene d-10		

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SARVA PRODUCT, REPLICATE 1			SARVA PRODUCT, REPLICATE 2			SARVA PRODUCT, REPLICATE 3		
Testing Date: Day 28			Testing Date: Day 28			Testing Date: Day 28		
Initial Oil Weight: 500 mg			Initial Oil Weight: 500 mg			Initial Oil Weight: 500 mg		
Final Extracted Volume: 15 mL			Final Extracted Volume: 15 mL			Final Extracted Volume: 15 mL		
Alkane Analyte	Concentration (ng/ml)	Surrogate Corrected (ng/ml)	Alkane Analyte	Concentration (ng/ml)	Surrogate Corrected (ng/ml)	Alkane Analyte	Concentration (ng/ml)	Surrogate Corrected (ng/ml)
nC-10 Decane	0.00	0	nC-10 Decane	0.00	0	nC-10 Decane	0.00	0
nC-11 Undecane	0.00	0	nC-11 Undecane	0.00	0	nC-11 Undecane	0.00	0
nC-12 Dodecane	0.00	0	nC-12 Dodecane	0.00	0	nC-12 Dodecane	0.00	0
nC-13 Tridecane	0.00	0	nC-13 Tridecane	0.00	0	nC-13 Tridecane	0.00	0
nC-14 Tetradecane	0.00	0	nC-14 Tetradecane	0.00	0	nC-14 Tetradecane	0.00	0
nC-15 Pentadecane	0.00	0	nC-15 Pentadecane	0.00	0	nC-15 Pentadecane	0.00	0
nC-16 Hexadecane	0.00	0	nC-16 Hexadecane	0.00	0	nC-16 Hexadecane	0.00	0
nC-17 Heptadecane	26	31	nC-17 Heptadecane	25	32	nC-17 Heptadecane	25	32
Phasane	324	391	Phasane	330	423	Phasane	349	431
nC-18 Octadecane	11	13	nC-18 Octadecane	12	15	nC-18 Octadecane	13	16
nC-19 Nonadecane	315	390	nC-19 Nonadecane	297	390	nC-19 Nonadecane	286	362
nC-20 Eicosane	1	3	nC-20 Eicosane	0	2	nC-20 Eicosane	1	1
nC-21 Heneicosane	7	9	nC-21 Heneicosane	6	8	nC-21 Heneicosane	6	8
nC-22 Docosane	11	13	nC-22 Docosane	10	13	nC-22 Docosane	10	13
nC-23 Tricosane	12	14	nC-23 Tricosane	11	14	nC-23 Tricosane	10	13
nC-24 Tetracosane	18	21	nC-24 Tetracosane	16	21	nC-24 Tetracosane	16	20
nC-25 Pentacosane	107	129	nC-25 Pentacosane	95	122	nC-25 Pentacosane	89	112
nC-26 Hexacosane	81	98	nC-26 Hexacosane	78	100	nC-26 Hexacosane	73	93
nC-27 Heptacosane	35	42	nC-27 Heptacosane	30	38	nC-27 Heptacosane	28	35
nC-28 Octacosane	24	30	nC-28 Octacosane	20	30	nC-28 Octacosane	23	29
nC-29 Nonacosane	26	35	nC-29 Nonacosane	25	35	nC-29 Nonacosane	23	29
nC-30triacontane	26	32	nC-30triacontane	25	32	nC-30triacontane	23	29
nC-31 Hentriacontane	13	15	nC-31 Hentriacontane	12	16	nC-31 Hentriacontane	13	16
nC-32 Dotriacontane	6.3	8	nC-32 Dotriacontane	6.9	9	nC-32 Dotriacontane	7.6	10
nC-33 Triacontane	8	10	nC-33 Triacontane	8	11	nC-33 Triacontane	8	10
nC-34 Tetracontane	0.00	0	nC-34 Tetracontane	0.00	0	nC-34 Tetracontane	0.00	0
nC-35 Pentacosane	0.00	0	nC-35 Pentacosane	0.00	0	nC-35 Pentacosane	0.00	0
<b>Total Alkanes</b>	<b>1086</b>	<b>1308</b>	<b>Total Alkanes</b>	<b>1040</b>	<b>1333</b>	<b>Total Alkanes</b>	<b>1018</b>	<b>1289</b>
Aromatic Analyte	Concentration (ng/ml)	Surrogate Corrected (ng/ml)	Aromatic Analyte	Concentration (ng/ml)	Surrogate Corrected (ng/ml)	Aromatic Analyte	Concentration (ng/ml)	Surrogate Corrected (ng/ml)
Naphthalene	0.00	0.00	Naphthalene	0.00	0.00	Naphthalene	0.00	0.00
1-Methyl-naphthalene	5.00	5.00	1-Methyl-naphthalene	5.00	5.00	1-Methyl-naphthalene	5.00	5.00
2-Methyl-naphthalene	819	1092	2-Methyl-naphthalene	744	1047	2-Methyl-naphthalene	692	975
3-Methyl-naphthalene	560	747	3-Methyl-naphthalene	567	798	3-Methyl-naphthalene	582	820
Fluorene	12	16.5	Fluorene	11	16	Fluorene	10	14.4
C1-Fluorene	99	131	C1-Fluorene	66	133	C1-Fluorene	93	131
C2-Fluorene	228	304	C2-Fluorene	253	357	C2-Fluorene	279	393
C3-Fluorene	187	249	C3-Fluorene	203	286	C3-Fluorene	221	311
Dibenzothophene	14	18.3	Dibenzothophene	13	18	Dibenzothophene	12	16.9
C1-Dibenzothophene	185	246	C1-Dibenzothophene	165	230	C1-Dibenzothophene	152	214
C2-Dibenzothophene	415	553	C2-Dibenzothophene	415	565	C2-Dibenzothophene	423	595
C3-Dibenzothophene	142	190	C3-Dibenzothophene	142	190	C3-Dibenzothophene	142	200
Phenanthrene	14	18	Phenanthrene	13	18	Phenanthrene	11	16
C1-Phenanthrene	263	350	C1-Phenanthrene	245	345	C1-Phenanthrene	233	328
C2-Phenanthrene	455	606	C2-Phenanthrene	464	691	C2-Phenanthrene	511	726
C3-Phenanthrene	344	458	C3-Phenanthrene	362	510	C3-Phenanthrene	365	542
C4-Phenanthrene	139	185	C4-Phenanthrene	144	203	C4-Phenanthrene	151	213
Anthracene	1.5	2.0	Anthracene	1.5	2.1	Anthracene	1.4	2.0
Fluoranthene	1.4	1.8	Fluoranthene	1.3	1.8	Fluoranthene	1.3	1.8
Pyrene	0.2	0.2	Pyrene	7	9.2	Pyrene	7.0	9.0
C1-Pyrene	12	17	C1-Pyrene	15	20	C1-Pyrene	14	19
C2-Pyrene	102	136	C2-Pyrene	85	115	C2-Pyrene	94	128
C3-Pyrene	102	136	C3-Pyrene	85	115	C3-Pyrene	86	121
C4-Pyrene	82	109	C4-Pyrene	53	74	C4-Pyrene	46	65
Naphthobenzothophene	41	55	Naphthobenzothophene	44	62	Naphthobenzothophene	47	66
C-1 Naphthobenzothophene	142	189	C-1 Naphthobenzothophene	141	198	C-1 Naphthobenzothophene	142	200
C-2 Naphthobenzothophene	175	233	C-2 Naphthobenzothophene	138	223	C-2 Naphthobenzothophene	147	207
C-3 Naphthobenzothophene	100	133	C-3 Naphthobenzothophene	95	134	C-3 Naphthobenzothophene	93	131
Benzo (a) Anthracene	8.2	11.0	Benzo (a) Anthracene	8	10.8	Benzo (a) Anthracene	7	10.3
Chrysene	48	64	Chrysene	50	70	Chrysene	52	73
C1-Chrysene	65	88	C1-Chrysene	50	70	C1-Chrysene	52	73
C2-Chrysene	66	90	C2-Chrysene	40	55	C2-Chrysene	36	50
C3-Chrysene	84	112	C3-Chrysene	89	125	C3-Chrysene	94	130
C4-Chrysene	51	69	C4-Chrysene	53	74	C4-Chrysene	55	77
Benzo (b) Fluoranthene	0.71	0.9	Benzo (b) Fluoranthene	0.62	0.8	Benzo (b) Fluoranthene	0.6	0.8
Benzo (k) Fluoranthene	3.0	4.0	Benzo (k) Fluoranthene	2.8	3.8	Benzo (k) Fluoranthene	2.7	3.7
Benzo (e) Pyrene	8.1	11	Benzo (e) Pyrene	8	12	Benzo (e) Pyrene	8	12
Benzo (a) Pyrene	1.5	2.0	Benzo (a) Pyrene	1.4	2.0	Benzo (a) Pyrene	1.4	2.0
Pyrene	0.66	0.73	Pyrene	0.6	0.77	Pyrene	0.65	0.78
Indeno (1,2,3-cd) Pyrene	0.00	0.00	Indeno (1,2,3-cd) Pyrene	0.00	0.00	Indeno (1,2,3-cd) Pyrene	0.00	0.00
Dibenz (a,h) Anthracene	1.00	1.3	Dibenz (a,h) Anthracene	1.00	1.3	Dibenz (a,h) Anthracene	1.00	1.3
Benzo (ghi) perylene	1.0	2.4	Benzo (ghi) perylene	2.2	3.65	Benzo (ghi) perylene	2.5	3.97
<b>Total Aromatics</b>	<b>5416</b>	<b>7222</b>	<b>Total Aromatics</b>	<b>5347</b>	<b>7531</b>	<b>Total Aromatics</b>	<b>5379</b>	<b>7576</b>
% Surrogate Recovery	0.83	1.00	% Surrogate Recovery	0.78	1.00	% Surrogate Recovery	0.79	1.00
5-Alpha Androstane	0.75	1.00	5-Alpha Androstane	0.71	1.00	5-Alpha Androstane	0.71	1.00
Phenanthrene d-10			Phenanthrene d-10			Phenanthrene d-10		

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CONTROL STATISTICS FOR SURROGATE CORRECTED DATA Testing Date: Day 28						
Alkane Analyte:	Replicate #1	Replicate #2	Replicate #3	Average	Stdev	%RSD
	Conc (ng/mg)	Conc (ng/mg)	Conc (ng/mg)			
nC-10 Decane	104	110	106	107	3.3	3
nC-11 Undecane	1074	1101	1084	1087	14	1
nC-12 Dodecane	2149	2298	2033	2160	133	6
nC-13 Tridecane	2326	2570	2595	2497	149	6
nC-14 Tetradecane	2410	2428	2318	2386	59	2
nC-15 Pentadecane	2556	2629	2377	2520	129	5
nC-16 Hexadecane	2545	2481	2400	2475	72.7	3
nC-17 Heptadecane	2397	2427	2250	2358	95	4
Pristane	1415	1590	1550	1519	92	6
nC-18 Octadecane	2470	2635	2355	2487	141	6
Phytane	1368	1351	1281	1333	45.86	3
nC-19 Nonadecane	2012	2290	2117	2140	110	7
nC-20 Eicosane	2108	2252	2069	2143	97	5
nC-21 Heneicosane	2096	2095	1904	2032	110	5
nC-22 Docosane	1912	1938	1740	1864	107	6
nC-23 Tricosane	1762	1755	1604	1727	54	3
nC-24 Tetracosane	1709	1777	1543	1676	121	7
nC-25 Pentacosane	1677	1815	1811	1768	79	4
nC-26 Hexacosane	1614	1819	1775	1736	108	6
nC-27 Heptacosane	1303	1348	1277	1309	36	3
nC-28 Octacosane	1145	1201	1052	1133	75	7
nC-29 Nonacosane	1175	1232	1136	1181	48	4
nC-30 Triacontane	1069	1062	1021	1050	26	2
nC-31 Hentriacontane	994	997	906	966	52	5
nC-32 Dotriacontane	832	830	801	811	16	2
nC-33 Trtriacontane	859	903	795	853	54	6
nC-34 Tetraatriacontane	776	941	897	871	86	10
nC-35 Pentaatriacontane	1136	1349	1357	1281	126	10
<b>Total Alkanes</b>	<b>44962</b>	<b>47225</b>	<b>44215</b>	<b>45467</b>	<b>1568</b>	<b>3</b>
Aromatic Analyte:	Conc (ng/mg)	Conc (ng/mg)	Conc (ng/mg)	Average	Stdev	%RSD
Naphthalene	287	275	275	279	7.0	3
C1-Naphthalenes	1127	1102	1093	1108	18	2
C2-Naphthalenes	1857	1895	1614	1789	152	9
C3-Naphthalenes	1561	1579	1528	1556	26	2
C4-Naphthalenes	786	758	805	783	24	3
Fluorene	107	114	103	108	5.68	5
C1-Fluorenes	285	287	260	271	15	5
C2-Fluorenes	406	416	388	403	14	3
C3-Fluorenes	326	373	377	359	28	8
Dibenzothiophene	249	264	228	247	18.3	7
C1-Dibenzothiophenes	495	495	453	461	24	5
C2-Dibenzothiophenes	721	705	644	690	41	6
C3-Dibenzothiophenes	445	425	395	421	25	6
Phenanthrene	324	322	286	311	21	7
C1-Phenanthrenes	747	743	688	719	44	6
C2-Phenanthrenes	770	768	695	745	43	6
C3-Phenanthrenes	542	535	486	521	31	6
C4-Phenanthrenes	204	194	207	202	6.7	3
Anthracene	1.3	2.1	1.4	1.6	0.4	0
Fluoranthene	3.2	3.1	3.2	3.2	0.06	2
Pyrene	11.2	13.3	13.4	12.6	1.25	10
C1-Pyrenes	112	119	118	116	4.0	3
C2-Pyrenes	145	152	143	146	4.5	3
C3-Pyrenes	131	143	137	137	6.3	5
C4-Pyrenes	86	82	83	83	2.1	2
Naphtholbenzothiophene	64	65	59	63	3.4	5
C-1 Naphthobenzothiophenes	199	203	185	196	9	5
C-2 Naphthobenzothiophenes	220	219	200	213	11	5
C-3 Naphthobenzothiophenes	146	154	134	144	10	7
Benzo (a) Anthracene	8.9	10.5	10.1	9.8	0.81	8
Chrysene	59	65	56	60	4.6	8
C1-Chrysenes	101	97	90	96	5.4	6
C2-Chrysenes	116	114	107	112	5	4
C3-Chrysenes	92	95	85	91	5	6
C4-Chrysenes	59	55	54	56	3	5
Benzo (b) Fluoranthene	1.9	2.1	2.1	2.0	0.11	6
Benzo (k) Fluoranthene	5.5	5.0	5.1	5.2	0.26	5
Benzo (e) Pyrene	13	13	13	13	0.3	2
Benzo (a) Pyrene	2.5	2.4	2.5	2.5	0.07	3
Perylene	0.8	0.9	1.0	0.9	0.07	8
Indeno (1,2,3 - cd) Pyrene	0.25	0.28	0.26	0.26	0.01	6
Dibenzo (a,h) anthracene	0.67	0.84	0.76	0.76	0.09	11
Benzo (g,h,i) perylene	2.6	2.7	2.7	2.7	0.05	2
<b>Total Aromatics</b>	<b>12800</b>	<b>12871</b>	<b>12010</b>	<b>12560</b>	<b>478</b>	<b>4</b>



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NUTRIENT STATISTICS FOR SURROGATE CORRECTED DATA Testing Date: Day 28						
Alkane Analyte:	Replicate #1	Replicate #2	Replicate #3	Average	Stdev	%RSD
	Conc (ng/mg)	Conc (ng/mg)	Conc (ng/mg)			
nC-10 Decane	0	0	0	0	0.0	0
nC-11 Undecane	65	65	68	66	1.7	3
nC-12 Dodecane	132	132	128	131	2.3	2
nC-13 Tridecane	145	145	155	148	5.8	4
nC-14 Tetradecane	149	158	178	162	14.6	9
nC-15 Pentadecane	171	179	192	181	11	6
nC-16 Hexadecane	207	221	235	221	14	6
nC-17 Heptadecane	251	236	241	243	7	3
Pristane	1648	1624	1621	1631	15	1
nC-18 Octadecane	200	192	189	194	6	3
Phytane	1760	1728	1728	1739	19	1
nC-19 Nonadecane	292	315	340	316	24.0	8
nC-20 Eicosane	227	215	215	219	7	3
nC-21 Heneicosane	151	125	142	139	13	9
nC-22 Docosane	136	142	140	139	3	2
nC-23 Tricosane	117	149	153	140	20	14
nC-24 Tetracosane	129	122	125	125	4	3
nC-25 Pentacosane	230	229	227	229	2	1
nC-26 Hexacosane	198	188	178	188	10	5
nC-27 Heptacosane	143	143	144	143	1	0
nC-28 Octacosane	147	144	140	144	4	3
nC-29 Nonacosane	148	146	154	149	4	3
nC-30 Triacontane	118	127	152	132	18	13
nC-31 Hentriacontane	113	121	111	115	5	5
nC-32 Dotriacontane	113	135	130	126	11	9
nC-33 Tritriacontane	91	100	93	95	5	5
nC-34 Tetratriacontane	51	62	49	54	7	13
nC-35 Pentatriacontane	41	45	39	42	3	7
<b>Total Alkanes</b>	<b>7175</b>	<b>7188</b>	<b>7267</b>	<b>7210</b>	<b>50</b>	<b>1</b>
Aromatic Analyte:	Conc (ng/mg)	Conc (ng/mg)	Conc (ng/mg)	Average	Stdev	%RSD
Naphthalene	0	0	0	0	0.0	0
C1-Naphthalenes	115	99	109	108	8	0
C2-Naphthalenes	959	1031	1073	1022	58	6
C3-Naphthalenes	1140	1131	1141	1138	6	0
C4-Naphthalenes	948	912	949	936	21	2
Fluorene	28	29	35	31	4	12
C1-Fluorenes	322	345	316	328	16	5
C2-Fluorenes	407	405	420	411	8	2
C3-Fluorenes	316	344	353	338	19	6
Dibenzothiophene	99	90	97	95	5	5
C1-Dibenzothiophenes	305	343	332	327	20	6
C2-Dibenzothiophenes	680	639	664	661	20	3
C3-Dibenzothiophenes	431	453	461	448	16	4
Phenanthrene	68	71	81	73	7	10
C1-Phenanthrenes	441	422	433	432	10	2
C2-Phenanthrenes	731	678	729	723	42	6
C3-Phenanthrenes	585	568	585	572	11	2
C4-Phenanthrenes	219	222	239	226	11	5
Anthracene	3.0	3.1	2.8	3.0	0.16	0
Fluoranthene	2.2	2.1	2.1	2.1	0.06	3
Pyrene	7.8	8.4	10.1	8.8	1.19	14
C1-Pyrenes	121	155	145	140	17.1	12
C2-Pyrenes	167	181	184	177	9	5
C3-Pyrenes	153	175	195	174	21	12
C4-Pyrenes	91	92	113	99	12.7	13
Naphtholbenzothiophene	100	92	97	97	4.0	4
C-1 Naphthobenzothiophenes	223	229	237	229	7	3
C-2 Naphthobenzothiophenes	251	255	264	257	7	3
C-3 Naphthobenzothiophenes	173	177	193	181	11	6
Benzo (a) Anthracene	9.3	7.5	7.2	8.0	1.14	14
Chrysene	57	56	63	59	4	6
C1-Chrysenes	153	132	185	157	27	17
C2-Chrysenes	182	184	203	190	11	6
C3-Chrysenes	142	150	163	152	10.2	7
C4-Chrysenes	107	90	121	106	16	15
Benzo (b) Fluoranthene	0.9	1.0	0.9	0.9	0.06	6
Benzo (k) Fluoranthene	4.2	5.0	4.9	4.7	0.45	10
Benzo (e) Pyrene	9	10	12	11	1.29	12
Benzo (a) Pyrene	2.0	2.3	2.2	2.2	0.13	6
Perylene	0.3	0.3	0.3	0.3	0.03	11
Indeno (1,2,3 - cd) Pyrene	0.22	0.17	0.16	0.18	0.03	0
Dibenzo (a,h) anthracene	0.26	0.26	0.28	0.27	0.01	0
Benzo (g,h,i) perylene	0.2	0.3	0.4	0.3	0.07	0
<b>Total Aromatics</b>	<b>9764</b>	<b>9793</b>	<b>10227</b>	<b>9928</b>	<b>260</b>	<b>3</b>

## Sarva Bio Remed, LLC

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SARVA PRODUCT STATISTICS FOR SURROGATE CORRECTED DATA Testing Date: Day 28						
Alkane Analyte:	Replicate #1	Replicate #2	Replicate #3	Average	Stdev	%RSD
	Conc (ng/mg)	Conc (ng/mg)	Conc (ng/mg)			
nC-10 Decane	0	0	0	0	0.0	0
nC-11 Undecane	0	0	0	0	0.0	0
nC-12 Dodecane	0	0	0	0	0.0	0
nC-13 Tridecane	0	0	0	0	0.0	0
nC-14 Tetradecane	0	0	0	0	0.00	0
nC-15 Pentadecane	0	0	0	0	0	0
nC-16 Hexadecane	0	0	0	0	0.0	0
nC-17 Heptadecane	31	32	32	32	1	2
Pristane	391	423	431	415	21	5
nC-18 Octadecane	13	15	16	15	1.2	8
Phytane	380	380	392	374	10	3
nC-19 Nonadecane	13	12	11	12	1.0	8
nC-20 Eicosane	9	9	8	9	0.5	6
nC-21 Heneicosane	13	13	12	13	0.3	2
nC-22 Docosane	14	14	13	14	0.6	4
nC-23 Tricosane	14	15	15	14	0.4	3
nC-24 Tetracosane	21	21	20	21	0.7	4
nC-25 Pentacosane	129	122	112	121	8.66	7
nC-26 Hexacosane	98	100	93	97	4.0	4
nC-27 Heptacosane	42	38	35	38	3.3	9
nC-28 Octacosane	30	30	29	30	0.6	2
nC-29 Nonacosane	46	45	42	44	2.0	5
nC-30 Triacontane	32	27	22	27	4.8	18
nC-31 Hentriacontane	15	16	16	16	0.5	3
nC-32 Dotriacontane	8	9	10	9	1.0	12
nC-33 Tritriacontane	10	11	10	10	0.2	2
nC-34 Tetraatriacontane	0	0	0	0	0.0	0
nC-35 Pentaatriacontane	0.00	0.00	0.00	0.00	0.00	0
<b>Total Alkanes</b>	<b>1308</b>	<b>1333</b>	<b>1289</b>	<b>1310</b>	<b>22</b>	<b>2</b>
Aromatic Analyte:	Conc (ng/mg)	Conc (ng/mg)	Conc (ng/mg)	Average	Stdev	%RSD
Naphthalene	0.00	0.00	0.00	0.00	0.00	0
C1-Naphthalenes	0.00	0.00	0.00	0.00	0.00	0
C2-Naphthalenes	288	293	287	289	2.8	1
C3-Naphthalenes	1092	1047	975	1038	59	6
C4-Naphthalenes	747	798	820	788	37	5
Fluorene	16.5	16	14.4	15.5	1.1	7
C1-Fluorenes	131	133	131	132	1	1
C2-Fluorenes	304	357	393	352	45	13
C3-Fluorenes	249	286	311	282	31	11
Dibenzothiophene	18.3	18	16.9	18	0.7	4
C1-Dibenzothiophenes	246	233	214	231	16	7
C2-Dibenzothiophenes	553	585	595	578	22	4
C3-Dibenzothiophenes	350	367	372	363	12	3
Phenanthrene	18	18	16	17	1.4	8
C1-Phenanthrenes	350	345	328	341	12	3
C2-Phenanthrenes	606	681	728	672	62	9
C3-Phenanthrenes	458	510	542	503	42	8
C4-Phenanthrenes	185	203	213	200	13.79	7
Anthracene	2.0	2.1	2.0	2.0	0.02	1
Fluoranthene	1.8	1.8	1.8	1.8	0.02	1
Pyrene	8.2	9.2	9.8	9.1	0.81	9
C1-Pyrenes	97	95	91	94	3.0	3
C2-Pyrenes	136	134	129	133	3.7	3
C3-Pyrenes	136	130	121	129	7.3	6
C4-Pyrenes	82	74	65	74	8.4	11
Naphtholbenzothiophene	55	62	66	61	5.7	9
C-1 Naphthobenzothiophenes	189	198	200	196	6	3
C-2 Naphthobenzothiophenes	233	223	207	221	13	6
C-3 Naphthobenzothiophenes	133	134	131	133	1.5	1
Benzo (a) Anthracene	11.0	10.8	10.3	10.7	0.36	3
Chrysene	64	70	73	69	4.4	6
C1-Chrysenes	118	132	140	130	11.2	9
C2-Chrysenes	141	142	139	141	2	1
C3-Chrysenes	112	125	133	123	10.3	8
C4-Chrysenes	69	74	77	73	4.4	6
Benzo (b) Fluoranthene	0.9	0.9	0.8	0.9	0.08	9
Benzo (k) Fluoranthene	4.0	3.9	3.7	3.9	0.13	3
Benzo (e) Pyrene	11	12	12	11	0.5	5
Benzo (a) Pyrene	2.0	2.0	2.0	2.0	0.02	1
Perylene	0.73	0.77	0.78	0.76	0.02	3
Indeno (1,2,3 - cd) Pyrene	0.00	0.00	0.00	0.00	0.00	0
Dibenzo (a,h) anthracene	0.00	0.00	0.00	0.00	0.00	0
Benzo (g,h,i) perylene	2.40	3.05	3.57	3.01	0.59	19
<b>Total Aromatics</b>	<b>7222</b>	<b>7531</b>	<b>7576</b>	<b>7443</b>	<b>193</b>	<b>3</b>

## APPENDIX II

## General Linear Model: Alkanes versus Day, Treatment

Factor      Type Levels Values  
 Day        fixed        3   0   7 28  
 Treatmen fixed        3 Control Nutrient Sarva

Analysis of Variance for Alkanes, using Adjusted SS for Tests

Source	DF	Seq SS	Adj SS	Adj MS	F	P
Day	2	5046904846	5046904846	2523452423	945.67	0.000
Treatmen	2	1425384113	1425384113	712692056	267.08	0.000
Day*Treatmen	4	2132924217	2132924217	533231054	199.83	0.000
Error	18	48031825	48031825	2668435		
Total	26	8653245001				

Dunnett Simultaneous Tests

Response Variable Alkanes

Comparisons with Control Level

Day = 0

Treatmen = Control subtracted from:

Level	Difference of Means	SE of Difference	T-Value	Adjusted P-Value
Day*Treatmen				
0 Nutrient	-2000	1334	-1.50	0.5604
0 Sarva	3100	1334	2.32	0.1598
7 Control	-1357	1334	-1.02	0.8693
7 Nutrient	-8110	1334	-6.08	0.0001
7 Sarva	-5727	1334	-4.29	0.0029
28 Control	-3496	1334	-2.62	0.0924
28 Nutrient	-41753	1334	-31.30	0.0000
28 Sarva	-47653	1334	-35.73	0.0000

## General Linear Model: Alkanes versus Day, Treatment

Factor      Type Levels Values  
 Day        fixed        3   0   7 28  
 Treatmen fixed        3 Control Nutrient Sarva

Analysis of Variance for Alkanes, using Adjusted SS for Tests

Source	DF	Seq SS	Adj SS	Adj MS	F	P
Day	2	5046904846	5046904846	2523452423	945.67	0.000
Treatmen	2	1425384113	1425384113	712692056	267.08	0.000
Day*Treatmen	4	2132924217	2132924217	533231054	199.83	0.000
Error	18	48031825	48031825	2668435		
Total	26	8653245001				

Dunnett Simultaneous Tests

Response Variable Alkanes

Comparisons with Control Level

Day = 7

Treatmen = Control subtracted from:

Level	Difference of Means	SE of Difference	T-Value	Adjusted P-Value
Day*Treatmen				
0 Control	1357	1334	1.02	0.8693
0 Nutrient	-643	1334	-0.48	0.9978
0 Sarva	4457	1334	3.34	0.0218
7 Nutrient	-6753	1334	-5.06	0.0006
7 Sarva	-4370	1334	-3.28	0.0249
28 Control	-2139	1334	-1.60	0.4921
28 Nutrient	-40397	1334	-30.29	0.0000
28 Sarva	-46297	1334	-34.71	0.0000

## General Linear Model: Alkanes versus Day, Treatment

Factor      Type Levels Values  
 Day        fixed        3 0 7 28  
 Treatmen fixed        3 Control Nutrient Sarva

Analysis of Variance for Alkanes, using Adjusted SS for Tests

Source	DF	Seq SS	Adj SS	Adj MS	F	P
Day	2	5046904846	5046904846	2523452423	945.67	0.000
Treatmen	2	1425384113	1425384113	712692056	267.08	0.000
Day*Treatmen	4	2132924217	2132924217	533231054	199.83	0.000
Error	18	48031825	48031825	2668435		
Total	26	8653245001				

Dunnett Simultaneous Tests

Response Variable Alkanes

Comparisons with Control Level

Day = 28

Treatmen = Control subtracted from:

Level	Difference of Means	SE of Difference	T-Value	Adjusted P-Value
Day*Treatmen				
0 Control	3496	1334	2.62	0.0924
0 Nutrient	1496	1334	1.12	0.8110
0 Sarva	6596	1334	4.95	0.0007
7 Control	2139	1334	1.60	0.4921
7 Nutrient	-4614	1334	-3.46	0.0170
7 Sarva	-2231	1334	-1.67	0.4494
28 Nutrient	-38257	1334	-28.68	0.0000
28 Sarva	-44157	1334	-33.11	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 Sarva

Analysis of Variance for Rank\_Alk, using Adjusted SS for Tests

Source	DF	Seq SS	Adj SS	Adj MS	F	P
Day	2	904.22	904.22	452.11	68.97	0.000
Treatmen	2	349.56	349.56	174.78	26.66	0.000
Day*Treatmen	4	266.22	266.22	66.56	10.15	0.000
Error	18	118.00	118.00	6.56		
Total	26	1638.00				

Dunnett Simultaneous Tests

Response Variable Rank\_Alk

Comparisons with Control Level

Day = 0

Treatmen = Control subtracted from:

Level	Difference of Means	SE of Difference	T-Value	Adjusted P-Value
Day*Treatmen				
0 Nutrient	-4.00	2.091	-1.913	0.3168
0 Sarva	4.33	2.091	2.073	0.2457
7 Control	-1.00	2.091	-0.478	0.9979
7 Nutrient	-12.67	2.091	-6.059	0.0001
7 Sarva	-10.67	2.091	-5.102	0.0005
28 Control	-6.33	2.091	-3.030	0.0413
28 Nutrient	-16.33	2.091	-7.813	0.0000
28 Sarva	-19.33	2.091	-9.248	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 Sarva

Analysis of Variance for Rank\_Alk, using Adjusted SS for Tests

Source	DF	Seq SS	Adj SS	Adj MS	F	P
Day	2	904.22	904.22	452.11	68.97	0.000
Treatmen	2	349.56	349.56	174.78	26.66	0.000
Day*Treatmen	4	266.22	266.22	66.56	10.15	0.000
Error	18	118.00	118.00	6.56		
Total	26	1638.00				

Dunnett Simultaneous Tests  
 Response Variable Rank\_Alk  
 Comparisons with Control Level  
 Day = 7

Treatmen = Control subtracted from:

Level	Difference of Means	SE of Difference	T-Value	Adjusted P-Value
Day*Treatmen				
0 Control	1.00	2.091	0.478	0.9979
0 Nutrient	-3.00	2.091	-1.435	0.6039
0 Sarva	5.33	2.091	2.551	0.1055
7 Nutrient	-11.67	2.091	-5.581	0.0002
7 Sarva	-9.67	2.091	-4.624	0.0014
28 Control	-5.33	2.091	-2.551	0.1055
28 Nutrient	-15.33	2.091	-7.335	0.0000
28 Sarva	-18.33	2.091	-8.770	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 Sarva

Analysis of Variance for Rank\_Alk, using Adjusted SS for Tests

Source	DF	Seq SS	Adj SS	Adj MS	F	P
Day	2	904.22	904.22	452.11	68.97	0.000
Treatmen	2	349.56	349.56	174.78	26.66	0.000
Day*Treatmen	4	266.22	266.22	66.56	10.15	0.000
Error	18	118.00	118.00	6.56		
Total	26	1638.00				

Dunnett Simultaneous Tests  
 Response Variable Rank\_Alk  
 Comparisons with Control Level  
 Day = 28

Treatmen = Control subtracted from:

Level	Difference of Means	SE of Difference	T-Value	Adjusted P-Value
Day*Treatmen				
0 Control	6.33	2.091	3.030	0.0413
0 Nutrient	2.33	2.091	1.116	0.8143
0 Sarva	10.67	2.091	5.102	0.0005
7 Control	5.33	2.091	2.551	0.1055
7 Nutrient	-6.33	2.091	-3.030	0.0413
7 Sarva	-4.33	2.091	-2.073	0.2457
28 Nutrient	-10.00	2.091	-4.783	0.0010
28 Sarva	-13.00	2.091	-6.218	0.0001

## General Linear Model: Aromatics versus Day, Treatment

Factor      Type Levels Values  
 Day        fixed        3 0 7 28  
 Treatmen fixed        3 Control Nutrient Sarva

Analysis of Variance for Aromatic, using Adjusted SS for Tests

Source	DF	Seq SS	Adj SS	Adj MS	F	P
Day	2	68510796	68510796	34255398	114.47	0.000
Treatmen	2	10785102	10785102	5392551	18.02	0.000
Day*Treatmen	4	29262580	29262580	7315645	24.45	0.000
Error	18	5386510	5386510	299251		
Total	26	113944989				

Dunnett Simultaneous Tests  
 Response Variable Aromatic  
 Comparisons with Control Level  
 Day = 0

Treatmen = Control subtracted from:

Level	Difference of Means	SE of Difference	T-Value	Adjusted P-Value
Day*Treatmen				
0 Nutrient	295	446.7	0.66	0.9843
0 Sarva	659	446.7	1.48	0.5766
7 Control	-2221	446.7	-4.97	0.0007
7 Nutrient	-2155	446.7	-4.82	0.0009
7 Sarva	-2407	446.7	-5.39	0.0003
28 Control	-924	446.7	-2.07	0.2474
28 Nutrient	-3556	446.7	-7.96	0.0000
28 Sarva	-6041	446.7	-13.53	0.0000

## General Linear Model: Aromatics versus Day, Treatment

Factor      Type Levels Values  
 Day        fixed        3 0 7 28  
 Treatmen fixed        3 Control Nutrient Sarva

Analysis of Variance for Aromatic, using Adjusted SS for Tests

Source	DF	Seq SS	Adj SS	Adj MS	F	P
Day	2	68510796	68510796	34255398	114.47	0.000
Treatmen	2	10785102	10785102	5392551	18.02	0.000
Day*Treatmen	4	29262580	29262580	7315645	24.45	0.000
Error	18	5386510	5386510	299251		
Total	26	113944989				

Dunnett Simultaneous Tests  
 Response Variable Aromatic  
 Comparisons with Control Level  
 Day = 7

Treatmen = Control subtracted from:

Level	Difference of Means	SE of Difference	T-Value	Adjusted P-Value
Day*Treatmen				
0 Control	2221	446.7	4.973	0.0007
0 Nutrient	2516	446.7	5.634	0.0002
0 Sarva	2880	446.7	6.449	0.0000
7 Nutrient	66	446.7	0.149	1.0000
7 Sarva	-186	446.7	-0.416	0.9992
28 Control	1297	446.7	2.905	0.0532
28 Nutrient	-1335	446.7	-2.989	0.0449
28 Sarva	-3820	446.7	-8.552	0.0000

## General Linear Model: Aromatics versus Day, Treatment

Factor      Type Levels Values  
 Day        fixed        3   0   7 28  
 Treatmen   fixed        3 Control Nutrient Sarva

Analysis of Variance for Aromatic, using Adjusted SS for Tests

Source	DF	Seq SS	Adj SS	Adj MS	F	P
Day	2	68510796	68510796	34255398	114.47	0.000
Treatmen	2	10785102	10785102	5392551	18.02	0.000
Day*Treatmen	4	29262580	29262580	7315645	24.45	0.000
Error	18	5386510	5386510	299251		
Total	26	113944989				

Dunnnett 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	P-Value
0 Control	924	446.7	0.2474
0 Nutrient	1219	446.7	0.0751
0 Sarva	1583	446.7	0.0142
7 Control	-1297	446.7	0.0532
7 Nutrient	-1231	446.7	0.0713
7 Sarva	-1483	446.7	0.0227
28 Nutrient	-2632	446.7	0.0001
28 Sarva	-5117	446.7	0.0000



## General Linear Model: Aromatics versus Day, Treatment

Factor	Type	Levels	Values
Day	fixed	3	0 7 28
Treatmen	fixed	3	Control Nutrient Sarva

Analysis of Variance for Aromatic, using Adjusted SS for Tests

Source	DF	Seq SS	Adj SS	Adj MS	F	P
Day	2	68510796	68510796	34255398	114.47	0.000
Treatmen	2	10785102	10785102	5392551	18.02	0.000
Day*Treatmen	4	29262580	29262580	7315645	24.45	0.000
Error	18	5386510	5386510	299251		
Total	26	113944989				

Tukey Simultaneous Tests

Response Variable Aromatic

All Pairwise Comparisons among Levels of Day\*Treatmen

Day = 0

Treatmen = Control subtracted from:

Level	Difference of Means	SE of Difference	T-Value	Adjusted P-Value
Day*Treatmen 0 Nutrient	295	446.7	0.66	0.9988
0 Sarva	659	446.7	1.48	0.8527
7 Control	-2221	446.7	-4.97	0.0025
7 Nutrient	-2155	446.7	-4.82	0.0034
7 Sarva	-2407	446.7	-5.39	0.0011
28 Control	-924	446.7	-2.07	0.5207
28 Nutrient	-3556	446.7	-7.96	0.0000
28 Sarva	-6041	446.7	-13.53	0.0000

Day = 0

Treatmen = Nutrient subtracted from:

Level	Difference of Means	SE of Difference	T-Value	Adjusted P-Value
Day*Treatmen 0 Sarva	364	446.7	0.81	0.9948
7 Control	-2516	446.7	-5.63	0.0007
7 Nutrient	-2450	446.7	-5.49	0.0009
7 Sarva	-2702	446.7	-6.05	0.0003
28 Control	-1219	446.7	-2.73	0.2049
28 Nutrient	-3851	446.7	-8.62	0.0000
28 Sarva	-6336	446.7	-14.19	0.0000

Day = 0

Treatmen = Sarva subtracted from:

Level	Difference of Means	SE of Difference	T-Value	Adjusted P-Value
Day*Treatmen 7 Control	-2880	446.7	-6.45	0.0001
7 Nutrient	-2814	446.7	-6.30	0.0002
7 Sarva	-3066	446.7	-6.86	0.0001
28 Control	-1583	446.7	-3.54	0.0462
28 Nutrient	-4215	446.7	-9.44	0.0000
28 Sarva	-6700	446.7	-15.00	0.0000

Day = 7

Treatmen = Control subtracted from:

Level	Difference of Means	SE of Difference	T-Value	Adjusted P-Value
Day*Treatmen 7 Nutrient	66	446.7	0.149	1.0000
7 Sarva	-186	446.7	-0.416	1.0000

28 Control	1297	446.7	2.905	0.1523
28 Nutrient	-1335	446.7	-2.989	0.1313
28 Sarva	-3820	446.7	-8.552	0.0000

Day = 7

Treatmen = Nutrient subtracted from:

Level	Difference	SE of		Adjusted
Day*Treatmen	of Means	Difference	T-Value	P-Value
7 Sarva	-252	446.7	-0.564	0.9996
28 Control	1231	446.7	2.756	0.1960
28 Nutrient	-1401	446.7	-3.137	0.1004
28 Sarva	-3886	446.7	-8.701	0.0000

Day = 7

Treatmen = Sarva subtracted from:

Level	Difference	SE of		Adjusted
Day*Treatmen	of Means	Difference	T-Value	P-Value
28 Control	1483	446.7	3.320	0.0713
28 Nutrient	-1149	446.7	-2.573	0.2629
28 Sarva	-3634	446.7	-8.137	0.0000

Day = 28

Treatmen = Control subtracted from:

Level	Difference	SE of		Adjusted
Day*Treatmen	of Means	Difference	T-Value	P-Value
28 Nutrient	-2632	446.7	-5.89	0.0004
28 Sarva	-5117	446.7	-11.46	0.0000

Day = 28

Treatmen = Nutrient subtracted from:

Level	Difference	SE of		Adjusted
Day*Treatmen	of Means	Difference	T-Value	P-Value
28 Sarva	-2485	446.7	-5.564	0.0008

## General Linear Model: Alkanes versus Day, Treatment

Factor	Type	Levels	Values
Day	fixed	3	0 7 28
Treatmen	fixed	3	Control Nutrient Sarva

Analysis of Variance for Alkanes, using Adjusted SS for Tests

Source	DF	Seq SS	Adj SS	Adj MS	F	P
Day	2	5046904846	5046904846	2523452423	945.67	0.000
Treatmen	2	1425384113	1425384113	712692056	267.08	0.000
Day*Treatmen	4	2132924217	2132924217	533231054	199.83	0.000
Error	18	48031825	48031825	2668435		
Total	26	8653245001				

Tukey Simultaneous Tests

Response Variable Alkanes

All Pairwise Comparisons among Levels of Day\*Treatmen

Day = 0

Treatmen = Control subtracted from:

Level	Difference of Means	SE of Difference	T-Value	Adjusted P-Value
Day*Treatmen 0 Nutrient	-2000	1334	-1.50	0.8419
0 Sarva	3100	1334	2.32	0.3780
7 Control	-1357	1334	-1.02	0.9790
7 Nutrient	-8110	1334	-6.08	0.0003
7 Sarva	-5727	1334	-4.29	0.0101
28 Control	-3496	1334	-2.62	0.2439
28 Nutrient	-41753	1334	-31.30	0.0000
28 Sarva	-47653	1334	-35.73	0.0000

Day = 0

Treatmen = Nutrient subtracted from:

Level	Difference of Means	SE of Difference	T-Value	Adjusted P-Value
Day*Treatmen 0 Sarva	5100	1334	3.82	0.0265
7 Control	643	1334	0.48	0.9999
7 Nutrient	-6110	1334	-4.58	0.0056
7 Sarva	-3727	1334	-2.79	0.1840
28 Control	-1496	1334	-1.12	0.9629
28 Nutrient	-39753	1334	-29.81	0.0000
28 Sarva	-45653	1334	-34.23	0.0000

Day = 0

Treatmen = Sarva subtracted from:

Level	Difference of Means	SE of Difference	T-Value	Adjusted P-Value
Day*Treatmen 7 Control	-4457	1334	-3.34	0.0685
7 Nutrient	-11210	1334	-8.40	0.0000
7 Sarva	-8827	1334	-6.62	0.0001
28 Control	-6596	1334	-4.95	0.0026
28 Nutrient	-44853	1334	-33.63	0.0000
28 Sarva	-50753	1334	-38.05	0.0000

Day = 7

Treatmen = Control subtracted from:

Level	Difference of Means	SE of Difference	T-Value	Adjusted P-Value
Day*Treatmen 7 Nutrient	-6753	1334	-5.06	0.0021
7 Sarva	-4370	1334	-3.28	0.0775

28 Control	-2139	1334	-1.60	0.7911
28 Nutrient	-40397	1334	-30.29	0.0000
28 Sarva	-46297	1334	-34.71	0.0000

Day = 7

Treatmen = Nutrient subtracted from:

Level	Difference	SE of		Adjusted
Day*Treatmen	of Means	Difference	T-Value	P-Value
7 Sarva	2383	1334	1.79	0.6895
28 Control	4614	1334	3.46	0.0546
28 Nutrient	-33643	1334	-25.22	0.0000
28 Sarva	-39543	1334	-29.65	0.0000

Day = 7

Treatmen = Sarva subtracted from:

Level	Difference	SE of		Adjusted
Day*Treatmen	of Means	Difference	T-Value	P-Value
28 Control	2231	1334	1.67	0.7547
28 Nutrient	-36027	1334	-27.01	0.0000
28 Sarva	-41927	1334	-31.43	0.0000

Day = 28

Treatmen = Control subtracted from:

Level	Difference	SE of		Adjusted
Day*Treatmen	of Means	Difference	T-Value	P-Value
28 Nutrient	-38257	1334	-28.68	0.0000
28 Sarva	-44157	1334	-33.11	0.0000

Day = 28

Treatmen = Nutrient subtracted from:

Level	Difference	SE of		Adjusted
Day*Treatmen	of Means	Difference	T-Value	P-Value
28 Sarva	-5900	1334	-4.424	0.0078

## General Linear Model: Rank\_Alkanes versus Day, Treatment

Factor      Type Levels Values  
 Day        fixed        3 0 7 28  
 Treatmen fixed        3 Control Nutrient Sarva

Analysis of Variance for Rank\_Alk, using Adjusted SS for Tests

Source	DF	Seq SS	Adj SS	Adj MS	F	P
Day	2	904.22	904.22	452.11	68.97	0.000
Treatmen	2	349.56	349.56	174.78	26.66	0.000
Day*Treatmen	4	266.22	266.22	66.56	10.15	0.000
Error	18	118.00	118.00	6.56		
Total	26	1638.00				

Tukey Simultaneous Tests  
 Response Variable Rank\_Alk  
 All Pairwise Comparisons among Levels of Day\*Treatmen

Day = 0  
 Treatmen = Control subtracted from:

Level	Difference of Means	SE of Difference	T-Value	Adjusted P-Value
Day*Treatmen				
0 Nutrient	-4.00	2.091	-1.913	0.6140
0 Sarva	4.33	2.091	2.073	0.5183
7 Control	-1.00	2.091	-0.478	0.9999
7 Nutrient	-12.67	2.091	-6.059	0.0003
7 Sarva	-10.67	2.091	-5.102	0.0019
28 Control	-6.33	2.091	-3.030	0.1221
28 Nutrient	-16.33	2.091	-7.813	0.0000
28 Sarva	-19.33	2.091	-9.248	0.0000

Day = 0  
 Treatmen = Nutrient subtracted from:

Level	Difference of Means	SE of Difference	T-Value	Adjusted P-Value
Day*Treatmen				
0 Sarva	8.33	2.091	3.986	0.0191
7 Control	3.00	2.091	1.435	0.8699
7 Nutrient	-8.67	2.091	-4.146	0.0138
7 Sarva	-6.67	2.091	-3.189	0.0912
28 Control	-2.33	2.091	-1.116	0.9639
28 Nutrient	-12.33	2.091	-5.900	0.0004
28 Sarva	-15.33	2.091	-7.335	0.0000

Day = 0  
 Treatmen = Sarva subtracted from:

Level	Difference of Means	SE of Difference	T-Value	Adjusted P-Value
Day*Treatmen				
7 Control	-5.33	2.091	-2.55	0.2719
7 Nutrient	-17.00	2.091	-8.13	0.0000
7 Sarva	-15.00	2.091	-7.18	0.0001
28 Control	-10.67	2.091	-5.10	0.0019
28 Nutrient	-20.67	2.091	-9.89	0.0000
28 Sarva	-23.67	2.091	-11.32	0.0000

Day = 7  
 Treatmen = Control subtracted from:

Level	Difference of Means	SE of Difference	T-Value	Adjusted P-Value
Day*Treatmen				
7 Nutrient	-11.67	2.091	-5.581	0.0007
7 Sarva	-9.67	2.091	-4.624	0.0051

28	Control	-5.33	2.091	-2.551	0.2719
28	Nutrient	-15.33	2.091	-7.335	0.0000
28	Sarva	-18.33	2.091	-8.770	0.0000

Day = 7

Treatmen = Nutrient subtracted from:

Level		Difference	SE of		Adjusted
Day*Treatmen		of Means	Difference	T-Value	P-Value
7	Sarva	2.000	2.091	0.957	0.9855
28	Control	6.333	2.091	3.030	0.1221
28	Nutrient	-3.667	2.091	-1.754	0.7087
28	Sarva	-6.667	2.091	-3.189	0.0912

Day = 7

Treatmen = Sarva subtracted from:

Level		Difference	SE of		Adjusted
Day*Treatmen		of Means	Difference	T-Value	P-Value
28	Control	4.333	2.091	2.073	0.5183
28	Nutrient	-5.667	2.091	-2.711	0.2112
28	Sarva	-8.667	2.091	-4.146	0.0138

Day = 28

Treatmen = Control subtracted from:

Level		Difference	SE of		Adjusted
Day*Treatmen		of Means	Difference	T-Value	P-Value
28	Nutrient	-10.00	2.091	-4.783	0.0037
28	Sarva	-13.00	2.091	-6.218	0.0002

Day = 28

Treatmen = Nutrient subtracted from:

Level		Difference	SE of		Adjusted
Day*Treatmen		of Means	Difference	T-Value	P-Value
28	Sarva	-3.000	2.091	-1.435	0.8699

## APPENDIX III

```

*****
*           MOST PROBABLE NUMBER CALCULATOR           *
*                   Version 4.04                       *
* UNITED STATES ENVIRONMENTAL PROTECTION AGENCY *
*           RISK REDUCTION ENGINEERING LABORATORY     *
*                   CINCINNATI, OHIO                  *
*****

```

```

DATA SET   SARVA Control 1, Day 0
NUMBER OF DILUTIONS = 10
VOLUME, ml      # TUBES      # POSITIVE TUBES
-----
.1              24           24
.01             24           24
.001            24           24
.0001           24           10
.00001          24            4
.10000E-05      24            0
.10000E-06      24            0
.10000E-07      24            0
.10000E-08      24            0
.10000E-09      24            0

```

```

MOST PROBABLE NUMBER, ,MPN (per ml) = 6,794
MPN CORRECTED FOR BIAS (Salama)      = 6,526
SPEARMAN-KARBER ESTIMATE             = 12,115
-----

```

```

LOWER 95% CONFIDENCE LIMIT (Cornish & Fisher) = 3,958
UPPER 95% CONFIDENCE LIMIT (Cornish & Fisher) = 10,808

```

```

DATA SET   SARVA Control 2, Day 0
NUMBER OF DILUTIONS = 10
VOLUME, ml      # TUBES      # POSITIVE TUBES
-----
.1              24           24
.01             24           24
.001            24           24
.0001           24            9
.00001          24            4
.10000E-05      24            0
.10000E-06      24            0
.10000E-07      24            0
.10000E-08      24            0
.10000E-09      24            0

```

```

MOST PROBABLE NUMBER, ,MPN (per ml) = 6,195
MPN CORRECTED FOR BIAS (Salama)      = 5,912
SPEARMAN-KARBER ESTIMATE             = 11,007
-----

```

```

LOWER 95% CONFIDENCE LIMIT (Cornish & Fisher) = 3,648
UPPER 95% CONFIDENCE LIMIT (Cornish & Fisher) = 9,955

```



DATA SET 1 SARVA Control 3, Day 0  
NUMBER OF DILUTIONS = 10  
VOLUME, ml # TUBES # POSITIVE TUBES  
-----

.1	24	24
.01	24	24
.001	24	24
.0001	24	10
.00001	24	3
.10000E-05	24	0
.10000E-06	24	0
.10000E-07	24	0
.10000E-08	24	0
.10000E-09	24	0

MOST PROBABLE NUMBER, ,MPN (per ml) = 6,330  
MPN CORRECTED FOR BIAS (Salama) = 6,051  
SPEARMAN-KARBER ESTIMATE = 11,007

-----  
LOWER 95% CONFIDENCE LIMIT (Cornish & Fisher) = 3,718  
UPPER 95% CONFIDENCE LIMIT (Cornish & Fisher) = 10,149

DATA SET SARVA Control 1, Day 7  
NUMBER OF DILUTIONS = 10  
VOLUME, ml # TUBES # POSITIVE TUBES  
-----

.1	24	24
.01	24	24
.001	24	24
.0001	24	12
.00001	24	2
.10000E-05	24	0
.10000E-06	24	0
.10000E-07	24	0
.10000E-08	24	0
.10000E-09	24	0

MOST PROBABLE NUMBER, ,MPN (per ml) = 7,129  
MPN CORRECTED FOR BIAS (Salama) = 6,868  
SPEARMAN-KARBER ESTIMATE = 12,115

-----  
LOWER 95% CONFIDENCE LIMIT (Cornish & Fisher) = 4,132  
UPPER 95% CONFIDENCE LIMIT (Cornish & Fisher) = 11,282

DATA SET SARVA Control 2, Day 7

NUMBER OF DILUTIONS = 10

VOLUME, ml	# TUBES	# POSITIVE TUBES
.1	24	24
.01	24	24
.001	24	24
.0001	24	11
.00001	24	3
.10000E-05	24	0
.10000E-06	24	0
.10000E-07	24	0
.10000E-08	24	0
.10000E-09	24	0

MOST PROBABLE NUMBER, ,MPN (per ml) = 6,956  
MPN CORRECTED FOR BIAS (Salama) = 6,692  
SPEARMAN-KARBER ESTIMATE = 12,115

-----  
LOWER 95% CONFIDENCE LIMIT (Cornish & Fisher) = 4,042  
UPPER 95% CONFIDENCE LIMIT (Cornish & Fisher) = 11,038

DATA SET SARVA Control 3, Day 7

NUMBER OF DILUTIONS = 10

VOLUME, ml	# TUBES	# POSITIVE TUBES
.1	24	24
.01	24	24
.001	24	24
.0001	24	12
.00001	24	3
.10000E-05	24	0
.10000E-06	24	0
.10000E-07	24	0
.10000E-08	24	0
.10000E-09	24	0

MOST PROBABLE NUMBER, ,MPN (per ml) = 7,647  
MPN CORRECTED FOR BIAS (Salama) = 7,393  
SPEARMAN-KARBER ESTIMATE = 13,335

-----  
LOWER 95% CONFIDENCE LIMIT (Cornish & Fisher) = 4,405  
UPPER 95% CONFIDENCE LIMIT (Cornish & Fisher) = 12,015

DATA SET SARVA Control 1, Day 28

NUMBER OF DILUTIONS = 10

VOLUME, ml	# TUBES	# POSITIVE TUBES
.1	24	24
.01	24	24
.001	24	24
.0001	24	13
.00001	24	5
.10000E-05	24	0
.10000E-06	24	0
.10000E-07	24	0
.10000E-08	24	0
.10000E-09	24	0

MOST PROBABLE NUMBER, ,MPN (per ml) = 9,549  
MPN CORRECTED FOR BIAS (Salama) = 9,282  
SPEARMAN-KARBER ESTIMATE = 17,783

-----  
LOWER 95% CONFIDENCE LIMIT (Cornish & Fisher) = 5,472  
UPPER 95% CONFIDENCE LIMIT (Cornish & Fisher) = 14,711

DATA SET SARVA Control 2, Day 28

NUMBER OF DILUTIONS = 10

VOLUME, ml	# TUBES	# POSITIVE TUBES
.1	24	24
.01	24	24
.001	24	24
.0001	24	12
.00001	24	5
.10000E-05	24	0
.10000E-06	24	0
.10000E-07	24	0
.10000E-08	24	0
.10000E-09	24	0

MOST PROBABLE NUMBER, ,MPN (per ml) = 8,724  
MPN CORRECTED FOR BIAS (Salama) = 8,470  
SPEARMAN-KARBER ESTIMATE = 16,156

-----  
LOWER 95% CONFIDENCE LIMIT (Cornish & Fisher) = 4,993  
UPPER 95% CONFIDENCE LIMIT (Cornish & Fisher) = 13,539

DATA SET SARVA Control 3, Day 28

NUMBER OF DILUTIONS = 10

VOLUME, ml # TUBES # POSITIVE TUBES

VOLUME, ml	# TUBES	# POSITIVE TUBES
.1	24	24
.01	24	24
.001	24	24
.0001	24	12
.00001	24	6
.10000E-05	24	0
.10000E-06	24	0
.10000E-07	24	0
.10000E-08	24	0
.10000E-09	24	0

MOST PROBABLE NUMBER, ,MPN (per ml) = 9,279

MPN CORRECTED FOR BIAS (Salama) = 9,018

SPEARMAN-KARBER ESTIMATE = 17,783

-----  
LOWER 95% CONFIDENCE LIMIT (Cornish & Fisher) = 5,312

UPPER 95% CONFIDENCE LIMIT (Cornish & Fisher) = 14,327

```

*****
*           MOST PROBABLE NUMBER CALCULATOR           *
*                   Version 4.04                       *
* UNITED STATES ENVIRONMENTAL PROTECTION AGENCY *
*           RISK REDUCTION ENGINEERING LABORATORY     *
*                   CINCINNATI, OHIO                  *
*****

```

```

DATA SET   SARVA Product 1, Day 0
NUMBER OF DILUTIONS = 10
VOLUME, ml      # TUBES      # POSITIVE TUBES
-----
.1              24           24
.01             24           24
.001            24           24
.0001           24           15
.00001          24           11
.10000E-05     24           0
.10000E-06     24           0
.10000E-07     24           0
.10000E-08     24           0
.10000E-09     24           0

```

```

MOST PROBABLE NUMBER, ,MPN (per ml) = 15,565
MPN CORRECTED FOR BIAS (Salama)     = 15,051
SPEARMAN-KARBER ESTIMATE            = 38,312

```

```

-----
LOWER 95% CONFIDENCE LIMIT (Cornish & Fisher) = 9,482
UPPER 95% CONFIDENCE LIMIT (Cornish & Fisher) = 23,556

```

```

DATA SET   SARVA Product 2, Day 0
NUMBER OF DILUTIONS = 10
VOLUME, ml      # TUBES      # POSITIVE TUBES
-----
.1              24           24
.01             24           24
.001            24           24
.0001           24           14
.00001          24           13
.10000E-05     24           0
.10000E-06     24           0
.10000E-07     24           0
.10000E-08     24           0
.10000E-09     24           0

```

```

MOST PROBABLE NUMBER, ,MPN (per ml) = 15,685
MPN CORRECTED FOR BIAS (Salama)     = 15,165
SPEARMAN-KARBER ESTIMATE            = 42,170

```

```

-----
LOWER 95% CONFIDENCE LIMIT (Cornish & Fisher) = 9,564
UPPER 95% CONFIDENCE LIMIT (Cornish & Fisher) = 23,740

```

DATA SET SARVA Product 3, Day 0  
NUMBER OF DILUTIONS = 10  
VOLUME, ml # TUBES # POSITIVE TUBES  
-----

.1	24	24
.01	24	24
.001	24	24
.0001	24	16
.00001	24	11
.10000E-05	24	0
.10000E-06	24	0
.10000E-07	24	0
.10000E-08	24	0
.10000E-09	24	0

MOST PROBABLE NUMBER, ,MPN (per ml) = 16,966  
MPN CORRECTED FOR BIAS (Salama) = 16,374  
SPEARMAN-KARBER ESTIMATE = 42,170

-----  
LOWER 95% CONFIDENCE LIMIT (Cornish & Fisher) = 10,433  
UPPER 95% CONFIDENCE LIMIT (Cornish & Fisher) = 25,724

DATA SET SARVA Product 1, Day 7  
NUMBER OF DILUTIONS = 10  
VOLUME, ml # TUBES # POSITIVE TUBES  
-----

.1	24	24
.01	24	24
.001	24	24
.0001	24	24
.00001	24	24
.10000E-05	24	15
.10000E-06	24	7
.10000E-07	24	4
.10000E-08	24	0
.10000E-09	24	0

MOST PROBABLE NUMBER, ,MPN (per ml) = 1,535,074  
MPN CORRECTED FOR BIAS (Salama) = 1,485,041  
SPEARMAN-KARBER ESTIMATE = 3,831,187

-----  
LOWER 95% CONFIDENCE LIMIT (Cornish & Fisher) = 933,971  
UPPER 95% CONFIDENCE LIMIT (Cornish & Fisher) = 2,322,000

DATA SET SARVA Product 2, Day 7  
NUMBER OF DILUTIONS = 10  
VOLUME, ml # TUBES # POSITIVE TUBES  
-----

.1	24	24
.01	24	24
.001	24	24
.0001	24	24
.00001	24	24
.10000E-05	24	15
.10000E-06	24	6
.10000E-07	24	3
.10000E-08	24	0
.10000E-09	24	0

MOST PROBABLE NUMBER, ,MPN (per ml) = 1,399,693  
MPN CORRECTED FOR BIAS (Salama) = 1,356,483  
SPEARMAN-KARBER ESTIMATE = 3,162,278

-----  
LOWER 95% CONFIDENCE LIMIT (Cornish & Fisher) = 841,174  
UPPER 95% CONFIDENCE LIMIT (Cornish & Fisher) = 2,117,809

DATA SET SARVA Product 3, Day 7  
NUMBER OF DILUTIONS = 10  
VOLUME, ml # TUBES # POSITIVE TUBES  
-----

.1	24	24
.01	24	24
.001	24	24
.0001	24	24
.00001	24	24
.10000E-05	24	14
.10000E-06	24	10
.10000E-07	24	2
.10000E-08	24	0
.10000E-09	24	0

MOST PROBABLE NUMBER, ,MPN (per ml) = 1,488,635  
MPN CORRECTED FOR BIAS (Salama) = 1,441,015  
SPEARMAN-KARBER ESTIMATE = 3,831,187

-----  
LOWER 95% CONFIDENCE LIMIT (Cornish & Fisher) = 902,196  
UPPER 95% CONFIDENCE LIMIT (Cornish & Fisher) = 2,251,501

DATA SET SARVA Product 1, Day 28

NUMBER OF DILUTIONS = 10

VOLUME, ml	# TUBES	# POSITIVE TUBES
.1	24	24
.01	24	24
.001	24	24
.0001	24	24
.00001	24	24
.10000E-05	24	24
.10000E-06	24	24
.10000E-07	24	12
.10000E-08	24	9
.10000E-09	24	5

MOST PROBABLE NUMBER, ,MPN (per ml) = 138,190,440

MPN CORRECTED FOR BIAS (Salama) = 133,939,339

SPEARMAN-KARBER ESTIMATE = 383,118,679

-----  
LOWER 95% CONFIDENCE LIMIT (Cornish & Fisher) = 82,858,045

UPPER 95% CONFIDENCE LIMIT (Cornish & Fisher) = 209,202,324

DATA SET SARVA Product 2, Day 28

NUMBER OF DILUTIONS = 10

VOLUME, ml	# TUBES	# POSITIVE TUBES
.1	24	24
.01	24	24
.001	24	24
.0001	24	24
.00001	24	24
.10000E-05	24	24
.10000E-06	24	24
.10000E-07	24	13
.10000E-08	24	8
.10000E-09	24	7

MOST PROBABLE NUMBER, ,MPN (per ml) = 154,866,275

MPN CORRECTED FOR BIAS (Salama) = 149,771,570

SPEARMAN-KARBER ESTIMATE = 464,158,876

-----  
LOWER 95% CONFIDENCE LIMIT (Cornish & Fisher) = 94,282,566

UPPER 95% CONFIDENCE LIMIT (Cornish & Fisher) = 234,367,731



DATA SET SARVA Product 3, Day 28  
NUMBER OF DILUTIONS = 10  
VOLUME, ml # TUBES # POSITIVE TUBES  
-----  
.1 24 24  
.01 24 24  
.001 24 24  
.0001 24 24  
.00001 24 24  
.10000E-05 24 24  
.10000E-06 24 24  
.10000E-07 24 12  
.10000E-08 24 11  
.10000E-09 24 6

MOST PROBABLE NUMBER, ,MPN (per ml) = 156,404,684  
MPN CORRECTED FOR BIAS (Salama) = 151,227,253  
SPEARMAN-KARBER ESTIMATE = 510,896,970

-----  
LOWER 95% CONFIDENCE LIMIT (Cornish & Fisher) = 95,332,383  
UPPER 95% CONFIDENCE LIMIT (Cornish & Fisher) = 236,720,299

```

*****
*           MOST PROBABLE NUMBER CALCULATOR           *
*                   Version 4.04                       *
* UNITED STATES ENVIRONMENTAL PROTECTION AGENCY *
*           RISK REDUCTION ENGINEERING LABORATORY     *
*                   CINCINNATI, OHIO                  *
*****

```

```

DATA SET   SARVA Nutrient 1, Day 0
NUMBER OF DILUTIONS = 10
VOLUME, ml      # TUBES      # POSITIVE TUBES
-----
.1              24           24
.01             24           24
.001            24           24
.0001           24           11
.00001          24            1
.10000E-05      24            0
.10000E-06      24            0
.10000E-07      24            0
.10000E-08      24            0
.10000E-09      24            0

```

```

MOST PROBABLE NUMBER, ,MPN (per ml) = 6,014
MPN CORRECTED FOR BIAS (Salama)      = 5,727
SPEARMAN-KARBER ESTIMATE             = 10,000

```

```

-----
LOWER 95% CONFIDENCE LIMIT (Cornish & Fisher) = 3,554
UPPER 95% CONFIDENCE LIMIT (Cornish & Fisher) = 9,696

```

```

DATA SET   SARVA Nutrient 2, Day 0
NUMBER OF DILUTIONS = 10
VOLUME, ml      # TUBES      # POSITIVE TUBES
-----
.1              24           24
.01             24           24
.001            24           24
.0001           24           11
.00001          24            2
.10000E-05      24            0
.10000E-06      24            0
.10000E-07      24            0
.10000E-08      24            0
.10000E-09      24            0

```

```

MOST PROBABLE NUMBER, ,MPN (per ml) = 6,474
MPN CORRECTED FOR BIAS (Salama)      = 6,199
SPEARMAN-KARBER ESTIMATE             = 11,007

```

```

-----
LOWER 95% CONFIDENCE LIMIT (Cornish & Fisher) = 3,792
UPPER 95% CONFIDENCE LIMIT (Cornish & Fisher) = 10,354

```

DATA SET SARVA Nutrient 3, Day 0

NUMBER OF DILUTIONS = 10

VOLUME, ml	# TUBES	# POSITIVE TUBES
.1	24	24
.01	24	24
.001	24	24
.0001	24	10
.00001	24	3
.10000E-05	24	0
.10000E-06	24	0
.10000E-07	24	0
.10000E-08	24	0
.10000E-09	24	0

MOST PROBABLE NUMBER, ,MPN (per ml) = 6,330  
MPN CORRECTED FOR BIAS (Salama) = 6,051  
SPEARMAN-KARBER ESTIMATE = 11,007

-----  
LOWER 95% CONFIDENCE LIMIT (Cornish & Fisher) = 3,718  
UPPER 95% CONFIDENCE LIMIT (Cornish & Fisher) = 10,149

DATA SET SARVA Nutrient 1, Day 7

NUMBER OF DILUTIONS = 10

VOLUME, ml	# TUBES	# POSITIVE TUBES
.1	24	24
.01	24	24
.001	24	24
.0001	24	20
.00001	24	10
.10000E-05	24	4
.10000E-06	24	0
.10000E-07	24	0
.10000E-08	24	0
.10000E-09	24	0

MOST PROBABLE NUMBER, ,MPN (per ml) = 28,566  
MPN CORRECTED FOR BIAS (Salama) = 27,089  
SPEARMAN-KARBER ESTIMATE = 82,540

-----  
LOWER 95% CONFIDENCE LIMIT (Cornish & Fisher) = 17,954  
UPPER 95% CONFIDENCE LIMIT (Cornish & Fisher) = 45,820

DATA SET SARVA Nutrient 2, Day 7

NUMBER OF DILUTIONS = 10

VOLUME, ml	# TUBES	# POSITIVE TUBES
.1	24	24
.01	24	24
.001	24	24
.0001	24	20
.00001	24	11
.10000E-05	24	4
.10000E-06	24	0
.10000E-07	24	0
.10000E-08	24	0
.10000E-09	24	0

MOST PROBABLE NUMBER, ,MPN (per ml) = 29,933

MPN CORRECTED FOR BIAS (Salama) = 28,330

SPEARMAN-KARBER ESTIMATE = 90,852

-----  
LOWER 95% CONFIDENCE LIMIT (Cornish & Fisher) = 18,795

UPPER 95% CONFIDENCE LIMIT (Cornish & Fisher) = 48,388

DATA SET SARVA Nutrient 3, Day 7

NUMBER OF DILUTIONS = 10

VOLUME, ml	# TUBES	# POSITIVE TUBES
.1	24	24
.01	24	24
.001	24	24
.0001	24	19
.00001	24	10
.10000E-05	24	4
.10000E-06	24	0
.10000E-07	24	0
.10000E-08	24	0
.10000E-09	24	0

MOST PROBABLE NUMBER, ,MPN (per ml) = 25,440

MPN CORRECTED FOR BIAS (Salama) = 24,239

SPEARMAN-KARBER ESTIMATE = 74,989

-----  
LOWER 95% CONFIDENCE LIMIT (Cornish & Fisher) = 15,994

UPPER 95% CONFIDENCE LIMIT (Cornish & Fisher) = 40,031

DATA SET SARVA Nutrient 1, Day 28

NUMBER OF DILUTIONS = 10

VOLUME, ml	# TUBES	# POSITIVE TUBES
.1	24	24
.01	24	24
.001	24	24
.0001	24	24
.00001	24	24
.10000E-05	24	24
.10000E-06	24	9
.10000E-07	24	4
.10000E-08	24	2
.10000E-09	24	0

MOST PROBABLE NUMBER, ,MPN (per ml) = 7,068,457  
MPN CORRECTED FOR BIAS (Salama) = 6,806,931  
SPEARMAN-KARBER ESTIMATE = 13,335,214

-----  
LOWER 95% CONFIDENCE LIMIT (Cornish & Fisher) = 4,101,489  
UPPER 95% CONFIDENCE LIMIT (Cornish & Fisher) = 11,194,367

DATA SET SARVA Nutrient 2, Day 28

NUMBER OF DILUTIONS = 10

VOLUME, ml	# TUBES	# POSITIVE TUBES
.1	24	24
.01	24	24
.001	24	24
.0001	24	24
.00001	24	24
.10000E-05	24	24
.10000E-06	24	10
.10000E-07	24	3
.10000E-08	24	2
.10000E-09	24	0

MOST PROBABLE NUMBER, ,MPN (per ml) = 7,235,388  
MPN CORRECTED FOR BIAS (Salama) = 6,976,899  
SPEARMAN-KARBER ESTIMATE = 13,335,214

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LOWER 95% CONFIDENCE LIMIT (Cornish & Fisher) = 4,188,784  
UPPER 95% CONFIDENCE LIMIT (Cornish & Fisher) = 11,430,493

DATA SET SARVA Nutrient 3, Day 28

NUMBER OF DILUTIONS = 10

VOLUME, ml # TUBES # POSITIVE TUBES

VOLUME, ml	# TUBES	# POSITIVE TUBES
.1	24	24
.01	24	24
.001	24	24
.0001	24	24
.00001	24	24
.10000E-05	24	24
.10000E-06	24	10
.10000E-07	24	4
.10000E-08	24	1
.10000E-09	24	0

MOST PROBABLE NUMBER, ,MPN (per ml) = 7,250,977  
MPN CORRECTED FOR BIAS (Salama) = 6,992,750  
SPEARMAN-KARBER ESTIMATE = 13,335,214

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LOWER 95% CONFIDENCE LIMIT (Cornish & Fisher) = 4,196,945  
UPPER 95% CONFIDENCE LIMIT (Cornish & Fisher) = 11,452,549

## APPENDIX IV

## Two-Sample T-Test and CI: Con\_0, Sarva\_0

Two-sample T for Con\_0 vs Sarva\_0

	N	Mean	StDev	SE Mean
Con_0	3	0.10067	0.00379	0.0022
Sarva_0	3	0.10833	0.00289	0.0017

Difference = mu Con\_0 - mu Sarva\_0  
Estimate for difference: -0.00767  
95% CI for difference: (-0.01641, 0.00108)  
T-Test of difference = 0 (vs not =): T-Value = -2.79 P-Value = 0.068 DF = 3

## Two-Sample T-Test and CI: Con\_7, Sarva\_7

Two-sample T for Con\_7 vs Sarva\_7

	N	Mean	StDev	SE Mean
Con_7	3	0.09800	0.00200	0.0012
Sarva_7	3	0.09600	0.00265	0.0015

Difference = mu Con\_7 - mu Sarva\_7  
Estimate for difference: 0.00200  
95% CI for difference: (-0.00409, 0.00809)  
T-Test of difference = 0 (vs not =): T-Value = 1.04 P-Value = 0.373 DF = 3

## Two-Sample T-Test and CI: Con\_28, Sarva\_28

Two-sample T for Con\_28 vs Sarva\_28

	N	Mean	StDev	SE Mean
Con_28	3	0.09533	0.00321	0.0019
Sarva_28	3	0.015667	0.000577	0.00033

Difference = mu Con\_28 - mu Sarva\_28  
Estimate for difference: 0.07967  
95% CI for difference: (0.07155, 0.08778)  
T-Test of difference = 0 (vs not =): T-Value = 42.25 P-Value = 0.001 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% CI for difference: (-0.00651, 0.01251)  
T-Test of difference = 0 (vs not =): T-Value = 1.36 P-Value = 0.308 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
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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% CI for difference: (0.00745, 0.01855)

T-Test of difference = 0 (vs not =): T-Value = 10.07 P-Value = 0.010 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% CI for difference: (0.06462, 0.07804)

T-Test of difference = 0 (vs not =): T-Value = 33.84 P-Value = 0.000 DF = 3

### Two-Sample T-Test and CI: Nutr\_28, Sarva\_28

Two-sample T for Nutr\_28 vs Sarva\_28

	N	Mean	StDev	SE Mean
Nutr_28	3	0.02400	0.00173	0.0010
Sarva_28	3	0.015667	0.000577	0.00033

Difference =  $\mu$  Nutr\_28 -  $\mu$  Sarva\_28  
Estimate for difference: 0.00833  
95% CI for difference: (0.00380, 0.01287)

T-Test of difference = 0 (vs not =): T-Value = 7.91 P-Value = 0.016 DF = 2

## APPENDIX V