Final Preassessment Data Report
M/T ATHOS I Oil Spill, Delaware River

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U.S. Department of Commerce
National Oceanic and Atmospheric Administration

State of New Jersey
Department of Environmental Protection

Commonwealth of Pennsylvania
Department of Conservation and Natural Resources
Department of Environmental Protection
Fish and Boat Commission
Game Commission

State of Delaware
Department of Natural Resources and Environmental Control

U.S. Department of the Interior
U.S. Fish and Wildlife Service

TABLE OF CONTENTS

List of Figures

List of Tables

List of Appendices

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1.0 INTRODUCTION

On 26 November 2004, the *M/T ATHOS I (Athos)* struck a large, submerged anchor while preparing to dock at a refinery in Paulsboro, New Jersey. The anchor punctured the vessel's bottom, resulting in the discharge of nearly 265,000 gallons of crude oil into the Delaware River and nearby tributaries.

Federal, state, and local agencies responded to the incident to supervise and assist in clean-up and begin assessing the impact of the spill on natural resources. The U.S. Coast Guard (USCG), States of New Jersey and Delaware, and Commonwealth of Pennsylvania created a Unified Command for directing clean-up efforts. The National Oceanic and Atmospheric Administration (NOAA), U.S. Fish and Wildlife Service (USFWS), and natural resource agencies within Delaware, New Jersey, and Pennsylvania (collectively referred to as the natural resource trustees) began collecting "preassessment" data to determine whether natural resource damage assessment (NRDA) actions under the Oil Pollution Act of 1990 (OPA) (33 U.S.C. §2706(b)) were justified and make preliminary determinations regarding the type of injury assessment and restoration actions that might be pursued.

This preassessment data report presents the preliminary information and data collected by the natural resource trustees as part of the preassessment efforts. The trustees will use this information to determine the type of injury assessment efforts required to quantify the nature and extent of injuries and scale of appropriate restoration actions.

2.0 OVERVIEW OF THE INCIDENT AND PREASSESSMENT ACTIVITIES

The *Athos* is a 750-foot, single bottom, double-sided tanker that was built in 1983. At the time of the incident, the vessel was registered under the flag of Cyprus, owned by Frescati Shipping Company, Ltd., and operated by Tsakos Shipping & Trading, S.A.

The *Athos* departed Venezuela for the Citgo Asphalt Refinery in Paulsboro, New Jersey (Figure 1) on 20 November 2004, carrying approximately 13 million gallons of crude oil. At approximately 9:30 pm on 26 November 2004, tug operators assisting the *Athos* with docking at the refinery notified the USCG that the tanker was leaking oil. The vessel had struck several submerged objects (Figure 2) while maneuvering through Anchorage #9 to its berth. Within minutes, the ship lost power and listed approximately eight degrees to the vessel's port side (Figure 3).

Surveys of the river bottom following the incident found several submerged objects in the area, including an 18,000 pound anchor, large concrete block, and pump casing. The USCG's investigation of the incident determined that the anchor punctured the vessel's number seven center cargo and port ballast tanks (USCG 2006). The bulkhead between the cargo and ballast tanks was also damaged, allowing product to migrate into the ballast tank and then into the river (USCG 2005).

Figure 1. Approximate location of the *Athos* oil spill incident on the Delaware River. East of the River, Camden, Gloucester, and Salem counties are in New Jersey. West of the River, Philadelphia and Delaware counties are in Pennsylvania; New Castle County is in Delaware.

Figure 2. Submerged objects recovered from the vicinity of the *Athos* grounding location.

Figure 3. Aerial view of the *Athos* listing to the port side following grounding incident.

The Unified Command initially estimated that 30,000 gallons of oil spilled into the River. This estimate was revised to 473,500 gallons based on "worst-case" assumptions once the vessel was stabilized several days after the incident. Following a more comprehensive analysis after lightering of the remaining oil, the USCG provided a final estimate of 264,335 gallons that spilled into the Delaware River.

At the time of the incident, the tide was incoming, and the current was approximately one and a half to two knots (USCG 2005). Within the first few hours, thick oil covered the River and moved upriver with the flood tide to about the Walt Whitman Bridge, approximately six miles north (Figure 1). Over the following weeks and months, oil from the ruptured tanker spread downriver, exposing natural resources over 115 river miles of the Delaware River (280 miles of shoreline), as well as its tributaries, from the Tacony-Palmyra Bridge to south of the Smyrna River in Delaware. Key resources exposed to the spilled oil include shorelines (marshes, sandy beaches, tidal flats, etc.), aquatic organisms (fish, shellfish, etc.), birds and other wildlife that use the Delaware River and Bay (Figure 4), and recreational use. The incident also forced the USCG to close the Delaware River to commercial traffic for over a week, and submerged oil resulted in contamination of water intakes and the closure of the Salem Nuclear Power Plant.

a.

b.

c.

d.

Figure 4. Key resources exposed to *Athos* oil. a. Heavy oil stranded in the intertidal area, south side of Tinicum Island. b. Heavily oiled rip-rap shoreline at Fort Miflin, near Philadelphia, PA. c. Heavily oiled coarse substrate beach. d. Oiled waterfowl.

Under OPA, state and federal agencies are designated as natural resource trustees, responsible for assessing natural resource losses and restoring those losses to baseline conditions, that is, the conditions that would have existed had the incident not occurred. Regulations promulgated under OPA provide a framework for conducting a natural resource damage assessment (NRDA), including preassessment, restoration planning, and restoration implementation (15 C.F.R. Part 990). Funds to assess losses and to plan and implement appropriate restoration are provided by either the responsible party (RP) or, if an RP does not exist or exceeds its limit of liability, the Oil Spill Liability Trust Fund established under OPA.[1]

The trustees and representatives of the ship owner and ship operator initiated preassessment activities under OPA on 27 November 2004. A "cooperative" work group was formed,

[1] Under OPA, the limit of liability is established by the gross tonnage (GT) of the vessel. The GT of the *Athos* is 37,895 GT. Accordingly, the limit of liability is $47,474,000 ($1,200 per GT) (USCG 2005).

consisting of ship owner/ ship operator representatives (Entrix, Inc. and Polaris Applied Sciences, Inc.), the U.S. Department of Commerce, NOAA; U.S. Department of the Interior, USFWS; Pennsylvania Department of Conservation and Natural Resources, Department of Environmental Protection, Game Commission, and Fish and Boat Commission; New Jersey Department of Environmental Protection (NJDEP); and Delaware Department of Natural Resources and Environmental Control (DNREC). While the work group was a cooperative process, the trustees maintained formal decision-making authority

Specific preassessment activities included shoreline (aerial and ground) and resource (*e.g.*, bird and wildlife, horseshoe crab) surveys and ephemeral data collection (*e.g.*, water, sediment, and fish and shellfish tissue samples). This report describes these preassessment data collection efforts, and provides laboratory results and supporting documentation in Appendices A through I. The full laboratory reports, including quality control and quality assurance documentation (*e.g.*, matrix spike, surrogate recovery), are also available upon request.[2]

The preassessment data presented in this report are used by the trustees to make an initial determination as to whether natural resources or services have been injured or are likely to be injured by the release. If preassessment efforts indicate natural resources may have been injured, the trustees have authority to pursue more detailed studies to quantify the nature and extent of losses and implement appropriate restoration to compensate for those losses.

3.0 CHARACTERISTICS OF THE SPILLED PRODUCT

The *Athos* was carrying a heavy Venezuelan crude oil (Bachaquero), a slightly buoyant, very viscous, and sticky cargo that is heated during transport. This oil weathers slowly, has high asphalt content, and readily forms tar balls (Figure 5). The general physical properties of Venezuelan crude oil are provided in Meyers (2004) and summarized in Table 1.

Several source oil samples were taken from the *Athos* for analyses to identify the exact composition of the oil and allow for comparison of chemical "fingerprints" to oil collected in the Delaware River environment. The USCG collected source oil samples on 28 November 2004 and 3 December 2004, both from tank center seven, the compromised compartment. The 28 November samples were sent to:

(1) Geochemical and Environmental Research Group (GERG) at Texas A&M University for analysis of polycyclic aromatic hydrocarbons (PAHs) and biomarkers (*e.g.,* steranes, diterpanes, and triterpanes);

(2) B&B Laboratories (an affiliate of TDI-Brooks International, Inc.) in College Station, TX, for analysis of PAHs and trace metals; and

(3) Lancaster Laboratories in Lancaster, PA, for analysis of aromatics.

The 3 December 2004 samples were archived at B&B Laboratories.

[2] Documents will be available on-line at http://www.darrp.noaa.gov/northeast/athos/admin.html.

a. b.

Figure 5. Example of asphalt tar mats (a) and tar balls (b) that washed up on the shorelines following the *Athos* incident.

Results of the analyses of the 28 November 2004 sample are presented in Appendix A. In general, the data and analyses indicate that the *Athos* oil is composed of large amounts of asphaltenes and other high molecular weight compounds. The PAH content is low (0.5 percent), and the oil has a very low dissolved fraction. The significant oil-fingerprinting biomarker compounds, hopanes and steranes, were detected, but at naturally occurring very low levels.

Additional source oil samples were collected by NOAA on 6 December 2004 and 9 December 2004. These samples were sent to Louisiana State University (LSU) for fingerprinting analysis, as well as a determination of density, viscosity, evaporative weathering, and standard distillation curve analysis.

Table 1. Characteristics of Venezuelan crude oil (Table 14.1.1 in Meyers (2004)).

Crude oil parameters:	
Density (^{o}API)	33.3
Sulfur (% by weight)	1.2
Nitrogen (% by weight)	0.12
Vacuum residuum characteristics: (1000^{o} F + [538^{o} C +])	
Yield (LV %)	21.2
Density (^{o}API)	10.9
Sulfur (% by weight)	2.8
Nitrogen (% by weight)	0.56
Asphaltenes (% by weight)	16.0
Nickel + Vanadium (ppm)	666
Iron (ppm)	5

Analytical results of the LSU source oil samples are also presented in Appendix A. In general, these samples displayed a fingerprint pattern similar to heavy crude oil (normal alkane ranges from nC-10 to nC-26), with the 9 December sample exhibiting a higher degree of weathering. The normal alkane distribution in oil contained few individual peaks and a large amount of unresolved hydrocarbons. The oil density of the samples was 0.943, 0.973, and 0.978 grams per milliliter (g/mL), lighter than both fresh water (1.00 g/mL), and oceanic seawater (1.025 g/mL). The viscosity was greater than 5,000 centistokes (cSt) at 100°F and at ambient water temperature greater than 50,000 cSt, meaning that the oil was very viscous and poured only at high temperature.

The fresh source oil was "evaporatively weathered" by heating it to 90°C under vacuum and less than three percent was lost by evaporation after four hours. Therefore, the weathered oil after evaporation was still expected to float (Appendix A).

On a wet weight mass basis, specific PAHs in the source oil represented 0.5 percent of the total oil mass (*i.e.,* average total PAH in source oil Tank 7 = 4596.2 ng/mg = 0.0046 g PAH/g neat ≈ 0.5 percent). In other words, 99.5 percent of the source oil, on a mass basis, was something other than specific target PAHs. Presumably, this material was composed of asphaltenes and other high molecular weight refractory organics. These compounds have limited aqueous solubility and, therefore, toxicity, especially during cooler temperatures. Despite their limited solubility and aqueous toxicity, these compounds can be and apparently were present as a non-aqueous phase liquid that became dynamically attached to the bottom. When this happens, oxygen transfer to the bottom is inhibited and benthic aquatic life can smother and die.

Despite the low percentage of specific PAH compounds in the source oil, the PAHs in the oil were nevertheless inherently toxic and capable of causing harm to aquatic life. The estimated potency of the PAH mixture was 41.9 acute toxicity units and 213 chronic toxicity units (Appendix A).[3] About 33 percent of this toxicity was due to naphthalenes, another 37 percent was due to fluorenes and phenanthrenes, 17 percent was due to dibenzothiophenes, and the balance was due to other specific PAHs (Appendix A).

4.0 PREASSESSMENT DATA COLLECTION METHODS AND RESULTS

The cooperative work group focused preassessment data collection efforts on four groups of resources: aquatic (including water column and benthic), shorelines, birds and wildlife, and recreation. Each of the resource categories was subject to a variety of sampling efforts and field surveys to characterize and document potential impacts resulting from the *Athos* incident. These efforts included:

[3] The acute and chronic toxicity units (TUs) measure narcotic toxicity to benthic aquatic organisms exposed in sediment porewater. Using partition coefficients, the dissolved phase concentration of each PAH is calculated from the sorbed phase concentration. The acute TUs for each compounds are calculated as the ratio of the dissolved phase concentration to the acute narcotic toxicity. These are summed to give the overall acute TUs, and a chronic:acute ration applied to calculate overall chronic TUs. A TU greater than 1 indicates that the PAH exposure concentration in the sediment pore water exceeds the narcotic toxicity threshold for benthic aquatic organisms. A complete discussion of the equilibrium partitioning and narcotic toxicity approach can be found in DiToro *et al*., 1991 and DiToro *et al*. 2000.

- Collection and analysis of water (surface and bottom) and sediment (intertidal and subtidal) samples;
- Observations of submerged oil;
- Collection and analysis of fish and shellfish tissue samples;
- Assessment of sediment toxicity;
- Surveys of shorelines;
- Surveys of birds and wildlife; and
- Interviews and surveys of recreation resources (*e.g.*, marina operators).

This section describes these preassessment data collection efforts.

4.1 Aquatic Resources

Numerous natural resources, including aquatic habitat and animals and the recreational uses they support, were exposed to the toxic and smothering effects of the oil discharged from the *M/T Athos*. Aquatic resources of concern include water column and benthic resources, ranging from interstitial sediment dwellers to larger mobile predators. Numerous adult and larval fish and shellfish are supported by the River, including the federally-endangered shortnose sturgeon (*Acipenser brevirostrum*) that winter in certain areas of the Delaware River. The waters around Little Tinicum Island are also known to contain high numbers of pre-spawn and spawning striped bass (*Morone saxatilis*) in April and May. The Bay supports commercial and natural oyster beds (*Crassostrea virginica*), commercial blue crab (*Callinectes sapidus*), horseshoe crab (*Limulus polyphemus*), and whelk (*Busycon* sp) fisheries, as well as a variety of recreational fisheries. Other important aquatic resources include red-bellied turtles *(Pseudemys rubriventris)* and eastern painted turtles (*Chrysemu picta picta*). Several rare tidal marsh plants are also found in the region, including wild rice (*Zizania aquatica*), waterhemp ragweed (*Amaranthus cannabinus*), Walter's barnyard grass (*Echinochloa walteri*), swamp-beggar-ticks (*Bidens bidentoides*), and marsh fleabane (*Pluchea odorata*). Bird and wildlife resources at risk include migrating marsh birds, egret and heron rookeries, eagles and osprey, and migratory shorebirds. The federally-threatened piping plover inhabits the Lower Delaware Bay. A variety of mink, otter, turtles, and terrestrial fauna use the affected area. Many types of recreation are also popular along the Delaware River in the areas affected by the spill, including waterfowl hunting, boating, fishing, and crabbing, as well as beach and other shoreline use.

4.1.1 Water Quality

In the first two weeks following the incident, 66 surface water and 13 bottom water samples were collected to characterize PAH concentrations. Surface water samples were collected on 27,

28, and 30 November: (1) at the Commodore Barry Bridge; (2) near Marcus Hook and in the Schuylkill River, PA; and (3) in and at the mouths of Big Timber, Woodbury, and Mantua Creeks, NJ. Surface and subsurface water samples were collected on 7 and 8 December: (1) upstream of the Tacony-Palmyra Bridge; (2) in the vicinity of Tinicum Island, PA; (3) in and at the mouths of Big Timber, Woodbury and Mantua Creeks, NJ; (4) Liston Point, DE, (5) the entrance to the Chesapeake and Delaware Canal; (6) the mouth of the Christina River, DE; and (7) at Marcus Hook, PA.

Surface water samples were collected by inserting a capped, one liter amber glass bottle immediately below the water's surface to avoid collecting whole oil on the surface layer. The bottle cap was removed underwater, the bottle allowed to fill and the cap replaced. Subsurface water samples were collected using a two and a half liter Go-Flo bottle with messenger. The bottle was lowered below the water's surface in a closed position and opened at approximately one meter off the bottom and 30 ft depth. Two one liter amber bottles were filled with the water from the Go-Flo bottle. The Go-Flo bottle was washed with Citra-Solv cleaner between samples and rinsed five times with distilled water. All water column samples were stored on ice, packed into a field cooler, and sent to B&B Laboratories for analysis under proper chain of custody. All samples were analyzed for total and individual PAHs. Lists of components included in the total PAH measurement for each lab are in Appendix A. Additional analyses included total suspended solids (TSS) for the samples collected on 7 and 8 December 2004, and volatile monocyclic compounds (VOC) in samples collected on 27 November 2004.

Figures 6a-c show the locations and total PAH results for surface and subsurface water samples collected in the Delaware River from 27 November to 8 December 2004.[4] Laboratory data for concentrations of total and individual PAHs in the water samples are found in Appendix B. Total PAH in the samples ranged from 25 to 26,634 ng/L (parts per trillion) total PAHs.[5] Using chronic toxicity thresholds (Neff *et al*. 2005), only two samples (at Marcus Hook and downstream of the mouth of the Schuylkill) had exceedances, both for alkylated chrysenes and alkylated phenanthrene/anthracenes.[6] No volatile organics were detected within the reporting limits. Results of the TSS and VOC analyses are also presented in Appendix B. Because background levels of PAHs are found in many bays and estuaries, further analysis of these data would be necessary to determine the nature and extent of *Athos* oil in these water samples.

[4] Coordinates were not reported for six samples: W-DER-01, W-DER-02, W-MAN-01, W-MAN-02, W-MAN-03, and W-MAN-04. Site descriptions and values for these samples were included in the sample log in Appendix B. Additionally, the reported coordinates for sample W-WOOD-05 place it in Big Timber Creek, while other WOOD samples are in Woodbury Creek.

[5] Two values are given in the laboratory data for sample WMH #1-S (also listed as WMH #1-5). The two values are 26,634 ng/L and 293 ng/L, and only one sample is listed in the collection log with no explanation for the duplicate values. The remaining water samples were all below 5,000 ng/L total PAHs.

[6] Analysis did not evaluate whether the PAHs in the water samples were in the dissolved phase or were associated with particulates. Aqueous toxicity thresholds are based on dissolved phase concentrations.

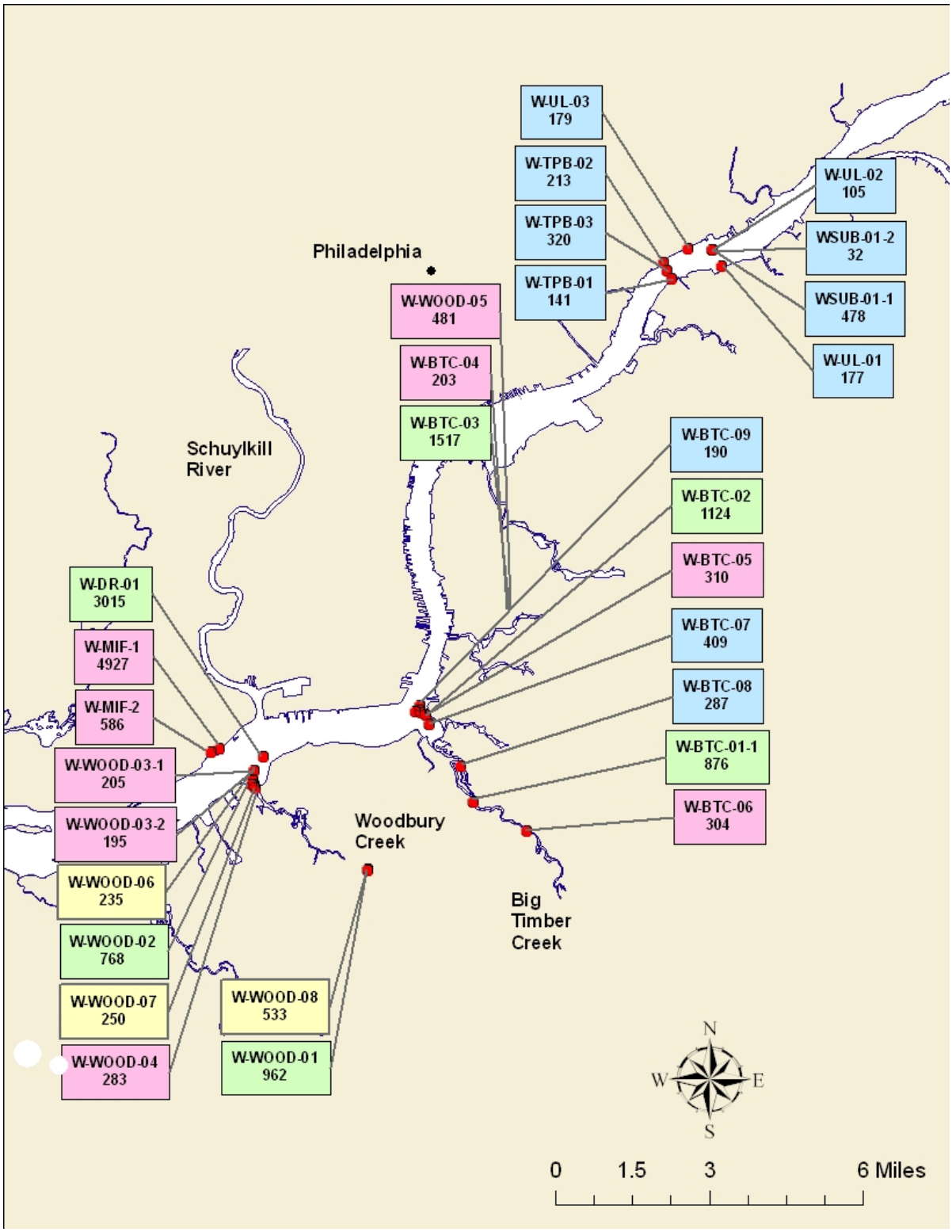

Figure 6a. **Water sample locations in the upper Delaware River. Total PAH values (ng/L) are presented in boxes below sample identification code. Box color represents sample collection date: 28 November 2004 (green); 30 November 2004 (red); 7 December 2004 (blue); 8 December 2004 (yellow).**

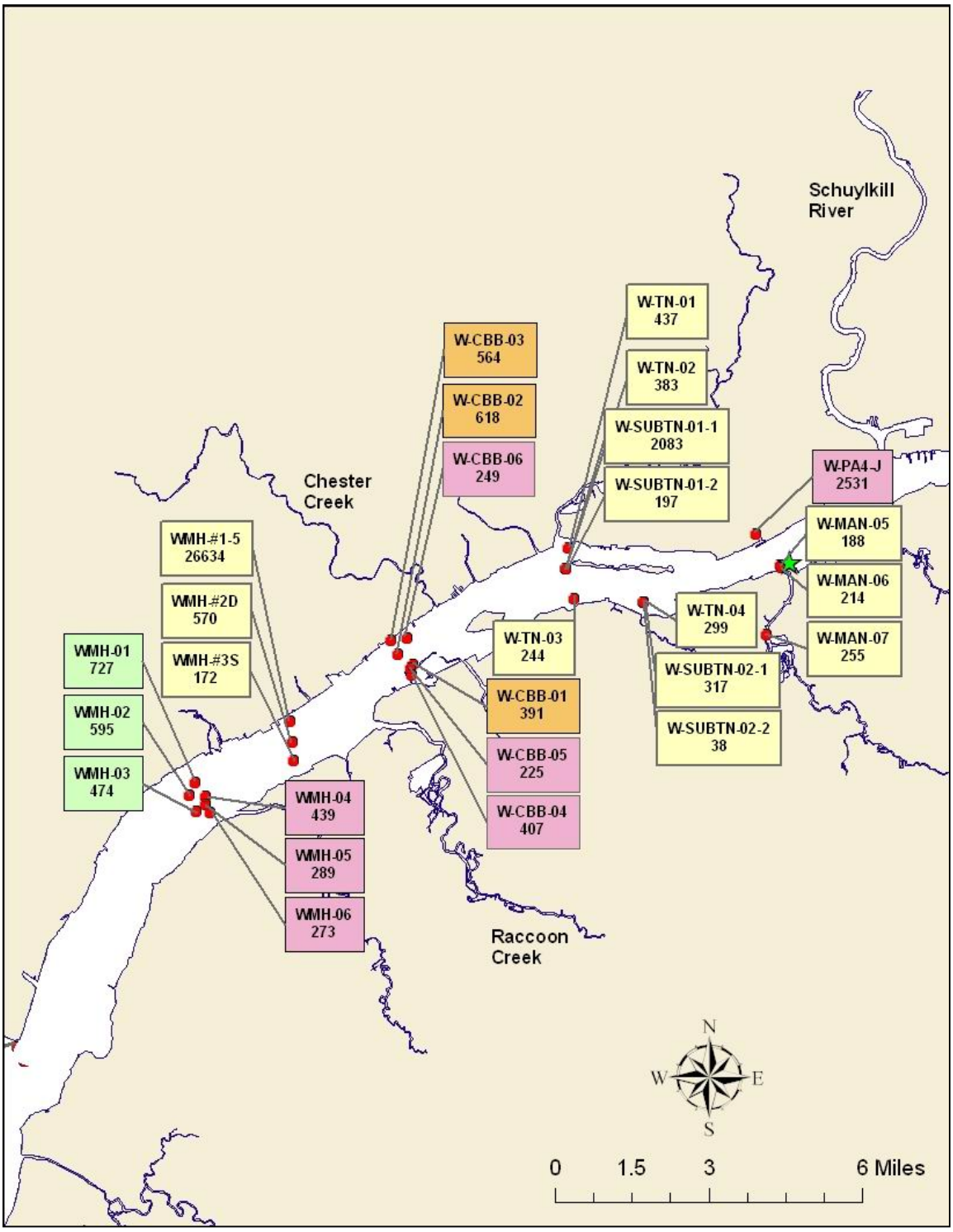

Figure 6b. Water sample locations in the middle Delaware River. Total PAH values (ng/L) are presented in boxes below sample identification code. Box color represents sample collection date: 27 November 2004 (orange), 28 November 2004 (green); 30 November 2004 (red); 8 December 2004 (yellow). The green star is the approximate spill location.

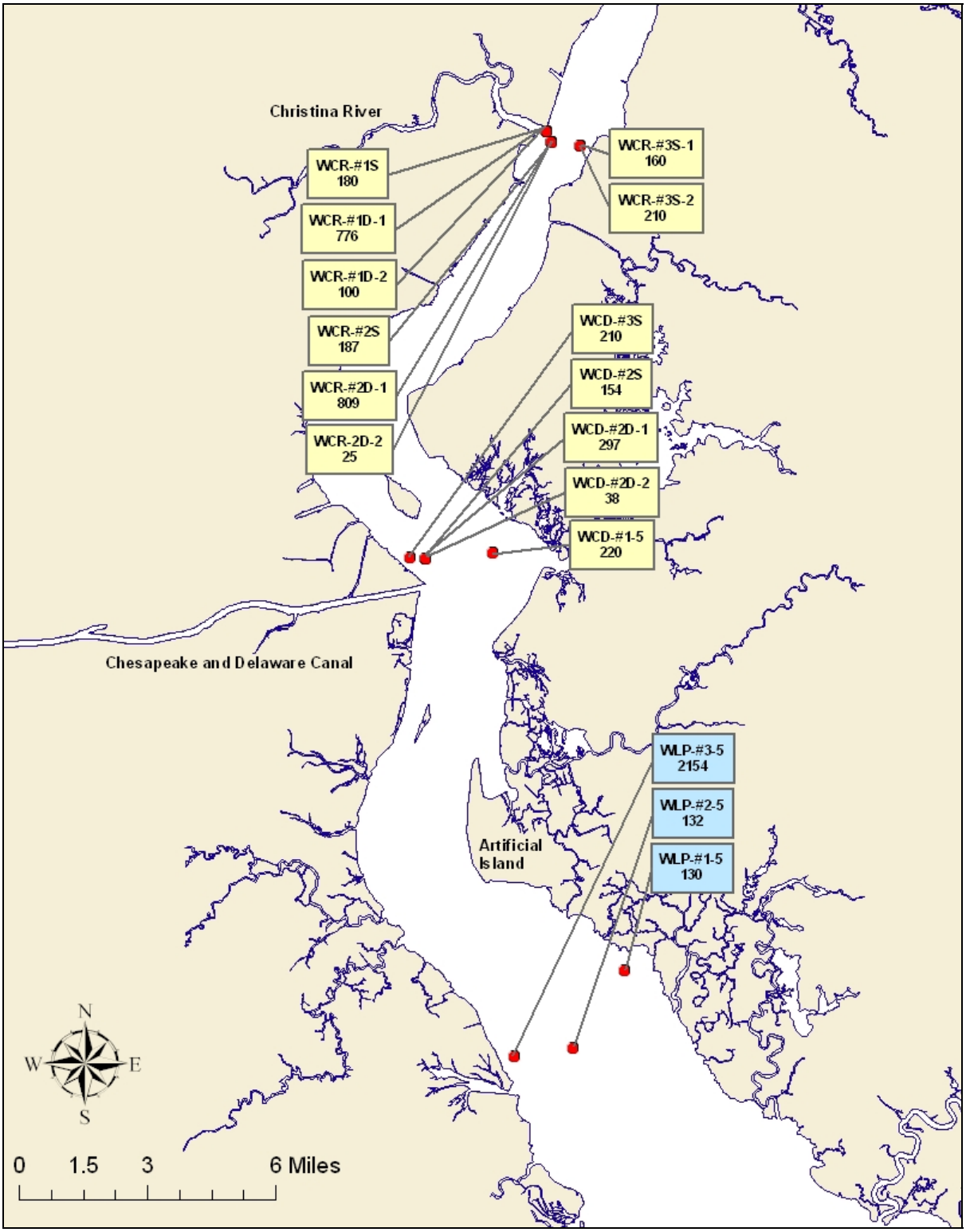

Figure 6c. Water sample locations in the lower Delaware River. Total PAH values (ng/L) are presented in boxes below sample identification code. Box color represents sample collection date: 7 December 2004 (blue) and 8 December 2004 (yellow).

4.1.2 Sediment Quality

While analyses of the *Athos* oil (see Section 3.0) indicated that the oil would float, oil was observed suspended throughout the water column and on the river bottom, and some shorelines were periodically re-oiled following cleanup activities. Response and preassessment strategies, therefore, included locating subsurface oil and collecting subtidal and intertidal sediment samples for analyses.

4.1.2.1 Subsurface Oil Observations

Subsurface oil was observed as pooled stranded oil and mobile suspended oil. Pooled stranded oil settled into natural depressions and was trapped due to the cohesive forces. Mobile suspended oil was negatively buoyant oil that was observed moving within the water column and/or rolling along the river bottom. Distinct assessment strategies were developed for the different types of subsurface oil.

Sonar, coring, sorbent probes, and the Vessel-Submerged Oil Recovery System (V-SORS) were used to search for pooled stranded oil in likely accumulation areas using US Army Corps of Engineers bathymetric maps of the channel and adjacent areas. The locations that were searched for stranded oil included:

- The shallow bay north of Tinicum Island, including two deep depressions,
- Four depressions on the south side of the channel across from Tinicum Island,
- Tinicum Range channel, and
- Shallows around Tinicum and Chester Islands.

Pooled stranded oil was found only at the collision site, in a trench six to eight feet wide, two feet deep, and 41 feet long. On 9 December 2004, a diver surveyed the trench area and measured the oil thickness as between one and a half and two feet deep. A second trench was also detected and estimated to be two feet wide by two feet deep by 15 feet long.

A sample of the oil from the trench floated in fresh water (density of 0.943 g/ml). It was tested for cohesiveness and found to adhere to sediments and did not refloat, even though it should based on density. It is believed the oil in the trench at the collision site was "injected" into the sediment under the pressure of the release and became immobile due to highly cohesive forces exerted by the viscous oil. Divers used viscous oil pumps to recover pooled oil from these two trenches on 12-16 December 2005.

The vertical distribution and the geographical extent of mobile suspended oil were tracked using a "snare sampler" device, consisting of an anchor, 50 feet of oleophilic snare on a rope, and a float (Appendix C), and crab pots with oil adsorbents attached. Snare samplers were deployed at various locations within the River and visually inspected for the presence of oil with depth, and the amount of oil on the snare (estimated as percent coverage).

The location of the snare samplers and results are presented in Appendix C. In general, most of the subsurface, mobile oil occurred several feet off the bottom, though small amounts of oil were present on the snares suspended in the middle and upper water column. Highest amounts of oil were detected around Tinicum Island. There were several stations with high oil coverage observed over the period 3-8 December. Many of the other snare samplers in the upper River were not oiled. The subsurface oil in the upper spill zone decreased significantly by 10 December 2004. The distribution of the subsurface oil in samples in the middle spill zone area was intermittent. No, or less than one percent, oil was observed on any of the snare samplers in the upper Delaware Bay. It appears that little to no subsurface oil had entered the upper Bay as of 11 December 2005.

Eight crab pots with oil adsorbents attached were deployed on 6 December 2004 by staff from New Jersey Bureau of Shellfisheries and Bureau of Marine Water Monitoring. The crab pots were generally located along the edge/slope of the shipping channel in water depths ranging from 12 to 30+ feet. No oil was observed on the pots either visually or through olfaction.

The submerged oil assessment report included in Appendix C provides additional details and findings of the initial efforts to assess the nature and extent of submerged oil.

4.1.2.2 Subtidal and Intertidal Sediment Sampling

The trustees and RP collected sediment samples to assess the potential injuries to benthic organisms. Benthic organisms may be injured due to smothering effects from oil or from toxicity due to PAH contamination in the oil.

Twenty-eight subtidal sediment samples were collected throughout the River and analyzed to characterize PAH concentrations. Subtidal sediment samples were collected on 9, 10, and 11 December at: (1) Liston Point, DE, (2) the entrance to the Chesapeake and Delaware Canal, (3) the mouth of the Christina River, DE, and (4) at Marcus Hook, PA (figures 7 a-b).

Subtidal sediments were collected with a petite Ponar sampling device. The Ponar descends through the water column and lands on the river bottom in an open position. Pulling up on the line attached to the Ponar closes the Ponar "jaws" collecting approximately one liter of sediment from the top few centimeters. The Ponar was opened in a stainless steel tray and the sediment scooped into a one liter bottle using a stainless steel spoon. All sampling equipment used during sampling was washed with Citra-Solv cleaner and rinsed with distilled water in between samples. All samples were stored on ice, packed into a field cooler, and sent to B&B Laboratories under proper chain of custody. All samples were analyzed for total and individual PAHs (modified USEPA Method 8270) (Appendix D).

Additional subtidal sediment samples were collected from three Delaware River Estuary sites included in NOAA's National Status and Trends (NS&T) Program Mussel Watch Project to compare post spill and historical data. On 2 January 2005 samples were collected from Hope Creek, Arnolds Point Shoal, and Ben Davis Point Shoal.

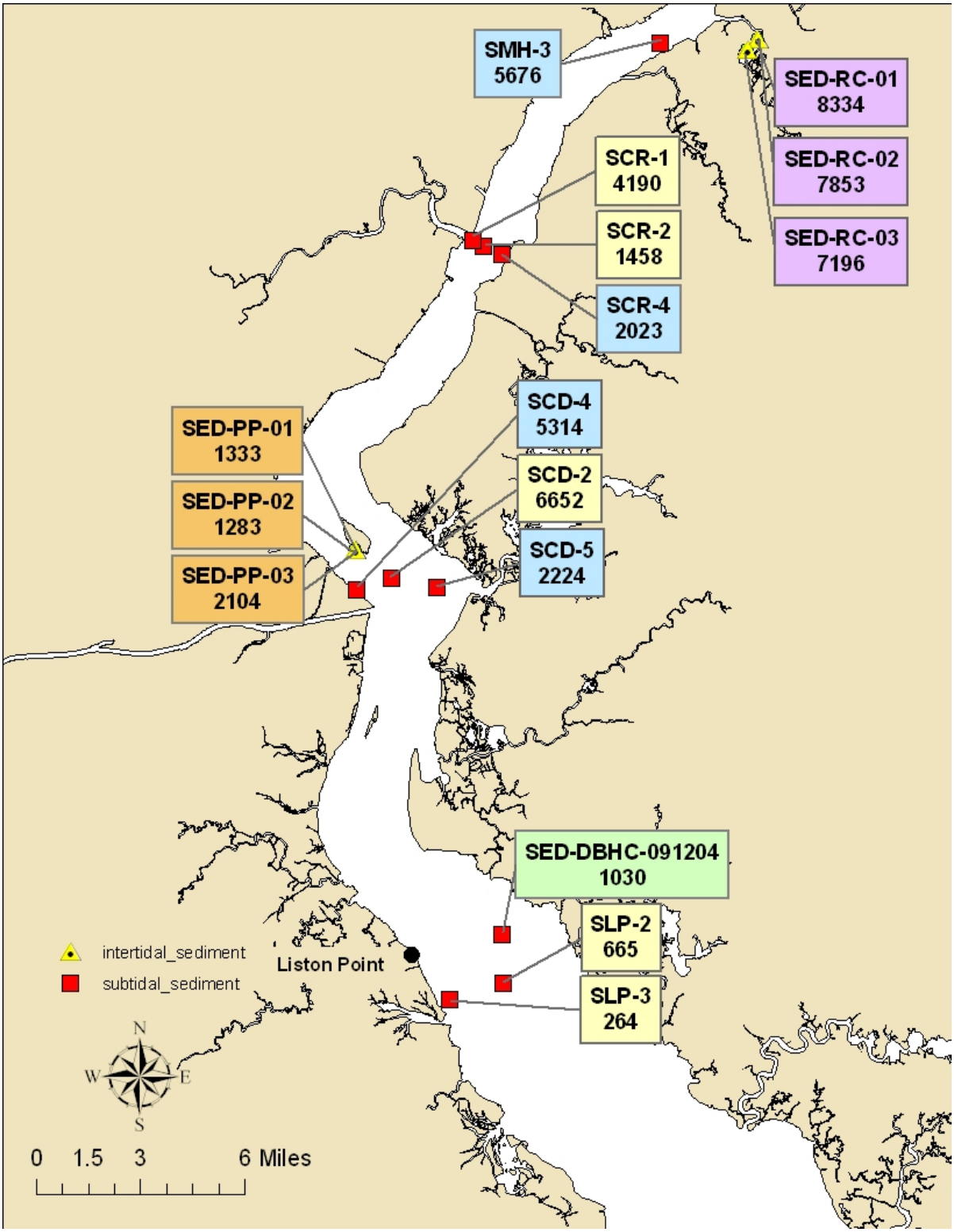

Figure 7a. **Sediment samples and total PAHs (ng/g) in the lower Delaware River. Total PAH values (ng/g) are presented in boxes below sample identification code. Box color represents sample collection date: 9 December 2004 (green); 10 December 2004 (blue); 11 December 2004 (yellow); 14 December 2004 (purple); and 17 December 2004 (orange).**

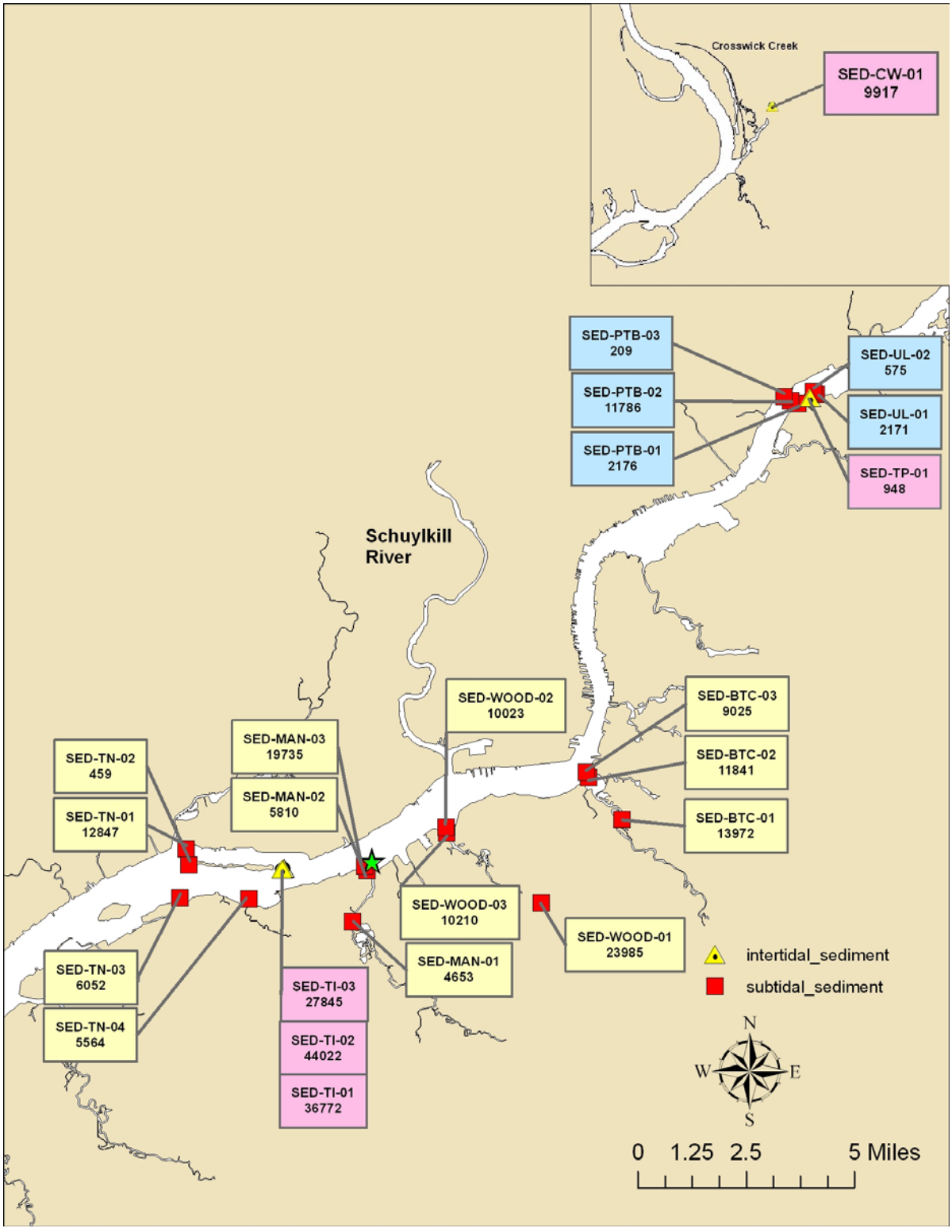

Figure 7b. Sediment samples and total PAHs (ng/g) in the upper Delaware River. Total PAH values (ng/g) are presented in boxes below sample identification code. Box color represents sample collection date: 10 December 2004 (blue); 11 December 2004 (yellow); and 15 December 2004 (pink). Green star represents approximate spill location.

Eleven intertidal sediment samples were collected from Crosswicks Creek, NJ, at the Tacony-Palmyra Bridge, in Raccoon Creek, NJ, and on Tinicum Island, PA intertidal areas of the Delaware River on 14, 15, and 17 December 2004 (Figures 7a-b). Samples were collected by scraping the top centimeter of sediment at sample sites with a stainless steel spoon and placing into a stainless steel mixing bowl. Once 500 ml of sediment had been collected, it was thoroughly mixed in the bowl and transferred to a one liter bottle. All samples were stored on ice, packed into a field cooler, and sent to GERG under proper chain of custody. All samples were analyzed for PAHs (modified USEPA Method 8270), alkanes, total organic carbon, and biomarkers to enable evaluation of the source of the PAHs in the sediments (Appendix E).

The locations and total PAH levels of subtidal and intertidal sediment samples collected in the Delaware River are shown in Figures 7a and 7b and presented in Appendices D (subtidal) and E (intertidal). Total PAH in subtidal samples ranged from 209 to 23,985 ng/g dry (ppb). Total PAH in samples from intertidal samples ranged from 948 to 44,022 ng/g dry. Because background levels of PAHs are found in many bays and estuaries, further analysis of these data would be necessary to determine the nature and extent of *Athos* oil in the samples.

4.1.2.3 Sediment Toxicity Triad

To assess potential injury to sediment-dwelling organisms, DNREC collected whole-sediment samples from the vicinity of Tinicum Island, Claymont/Oldmans Point, and Pea Patch Island (Table 2). Surficial (0-2") sediment grabs were collected with a Ponar IV sampling device and analyzed with a sediment quality triad approach that included measuring PAHs and total organic carbon (TOC) concentrations, evaluating the toxicity of whole sediment samples to the amphipod *Leptocheirus plumulosus* in 10 day toxicity tests, and assessing benthic invertebrate community structure (EA Engineering 2005a, *ibid.* 2005b, *ibid.* 2005c).

The results of the toxicity tests indicate that the samples collected in the vicinity of Tinicum Island were toxic to amphipods on 15 December 2004 and 17 February 2005 (based on control adjusted survival of 39 and 62 percent at Tinicum Island (Figure 8). None of the other sediment samples was found to be toxic to this species. Given background levels of PAHs found throughout the Delaware watershed, determination of the extent to which the measured concentrations of PAHs or the measured toxicity was directly associated with the *Athos* incident would require further assessment.

Table 2. Sediment toxicity sample locations and dates.

			Sample Date		
Sample Location	Latitude	Longitude	11/29/04	12/15/04	2/17/05
Tinicum Island	39 51.007 N	75 16.381 W		X	X
Claymont/Oldmans Point	39 47.816 N	75 26.873 W	X	X	X
Pea Patch Island	39 35.941 N	75 34.961 W	X	X	X

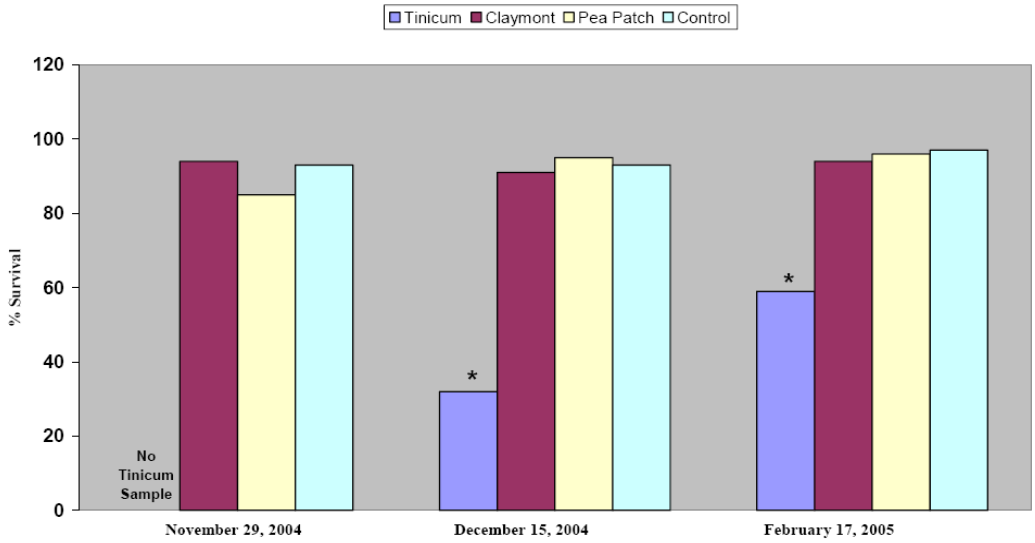

Figure 8. Ten day percent survival of *Leptocheirus plumulosus* (from Rick Greene, Delaware DNREC).

4.1.3 Oysters

Oysters are bioindicators of pollution because they filter seawater and accumulate PAHs in their tissues. The trustees and RPs collected oyster samples to determine potential risks to (1) human health from consumption, (2) oysters based on contaminant body burden, and (3) piscivorous animals that might consume tainted oysters.

Samples were collected for tissue analyses at 12 locations between approximately Liston Point, DE, and Egg Island Point, NJ on 7 and 9 December 2004, and at four locations in the Bay on 24 February 2005 (Delaware Bay False Egg, Delaware Bay Ben Davis, Delaware Bay Arnolds Pt., Delaware Bay Hope Creek) (Figure 9).

At each sample location, approximately 10-12 oysters were dredged from the oyster beds, wrapped in two layers of aluminum foil, and placed in a plastic bag. All samples were stored on ice and sent to GERG under proper chain of custody, where animals were removed from their shells, homogenized, and analyzed for PAHs (modified USEPA Method 8270). Additional analyses included biomarker analyses of the 12 samples collected on 7 and 9 December and trace metal analyses of the samples collected on 9 December 2004.

Sample locations and total PAH concentrations found in the 16 oyster tissue samples are shown on Figure 9. Laboratory data in the tissue samples are found in Appendix F. Oyster tissue PAH ranged from 13.2 to 28.9 ng/g wet weight (ppb). Further analysis of these data are necessary to determine whether *Athos* oil is present in the samples. Oyster tissue PAH levels (specifically benzo[a]pyrene) were below thresholds of concern for human health and bioaccumulation in piscivorous mammals (Sample *et al*. 1996).[7]

[7] In a conservative risk analysis, the total PAH concentration was compared to the benzo[a]pyrene threshold to compensate for the B[a]P toxicity equivalents from other PAHs.

NOAA's National Status and Trends (NS&T) Program Mussel Watch Project maintains several sampling sites in the Delaware River Estuary. On 2 January 2005, oysters were collected from three sites in the Delaware River Estuary (Hope Creek, Arnolds Point Shoal and Ben Davis Point Shoal) to compare post spill and historical data. A stainless steel oyster dredge was used to collect samples from the three sites and the oyster tissues were analyzed for PAHs. The NS&T PAH concentrations at Hope Creek, Arnolds Point Shoal and Ben Davis Point were 1041 ng/g dry weight (ppb), 951 ng/g dry weight and 459 ng/g dry weight, respectively (Appendix F). Further analyses of these and historical data are needed to assess potential impacts associated with the *Athos* incident.

4.1.4 Fish

Search teams surveying oiled shorelines recovered 25 dead fish, including two bullhead catfish (*Ameiurus nebulosus)*, two striped bass (*M. saxatilis*), fifteen white perch (*M. americana)*, and one gizzard shad (*Dorosoma cepadianum*), that were oiled to varying degrees (E. Marek, written communication[8]). Necropsies or other cause of death analysis would be required to determine the cause of mortality of these fish and, importantly, when these fish were exposed to oil (*e.g.*, pre- or post- mortality).

The trustees and RPs collected perch, catfish, and gizzard shad from the River for tissue analysis (fillet and whole-body) to determine potential risks to (1) human health from consumption, (2) fish based on contaminant body burden, and (3) piscivorous animals that might consume the tainted fish (*e.g.,* aquatic mammals such as river otters, as well as birds such as ospreys, eagles, belted kingfishers, and great blue herons). Tissue samples were collected on 9 and 16 December 2004. Sampling location were: (1) near the mouth of Mad Horse Creek, NJ, (2) north of the Tacony-Palmyra Bridge, (3) south of Tinicum Island, PA, (4) at Marcus Hook, PA, (5) off the mouth of the Christina River, DE, and (6) north of Pea Patch Island, DE (Figure 10).

Fish samples were collected with a tow net. Fish that were large enough for analysis were removed from the net and wrapped in several layers of aluminum foil, then placed in a plastic bag. All samples were stored on ice, sent to GERG under proper chain of custody, and analyzed for PAHs (modified USEPA Method 8270). The catfish were homogenized as whole body samples. The perch and shad were filleted and the skin removed (and included in the remaining carcass).

[8] Eric W. Marek, Special Agent, USFWS, Office of Law Enforcement, Elizabeth, NJ, by email April 26, 2006.

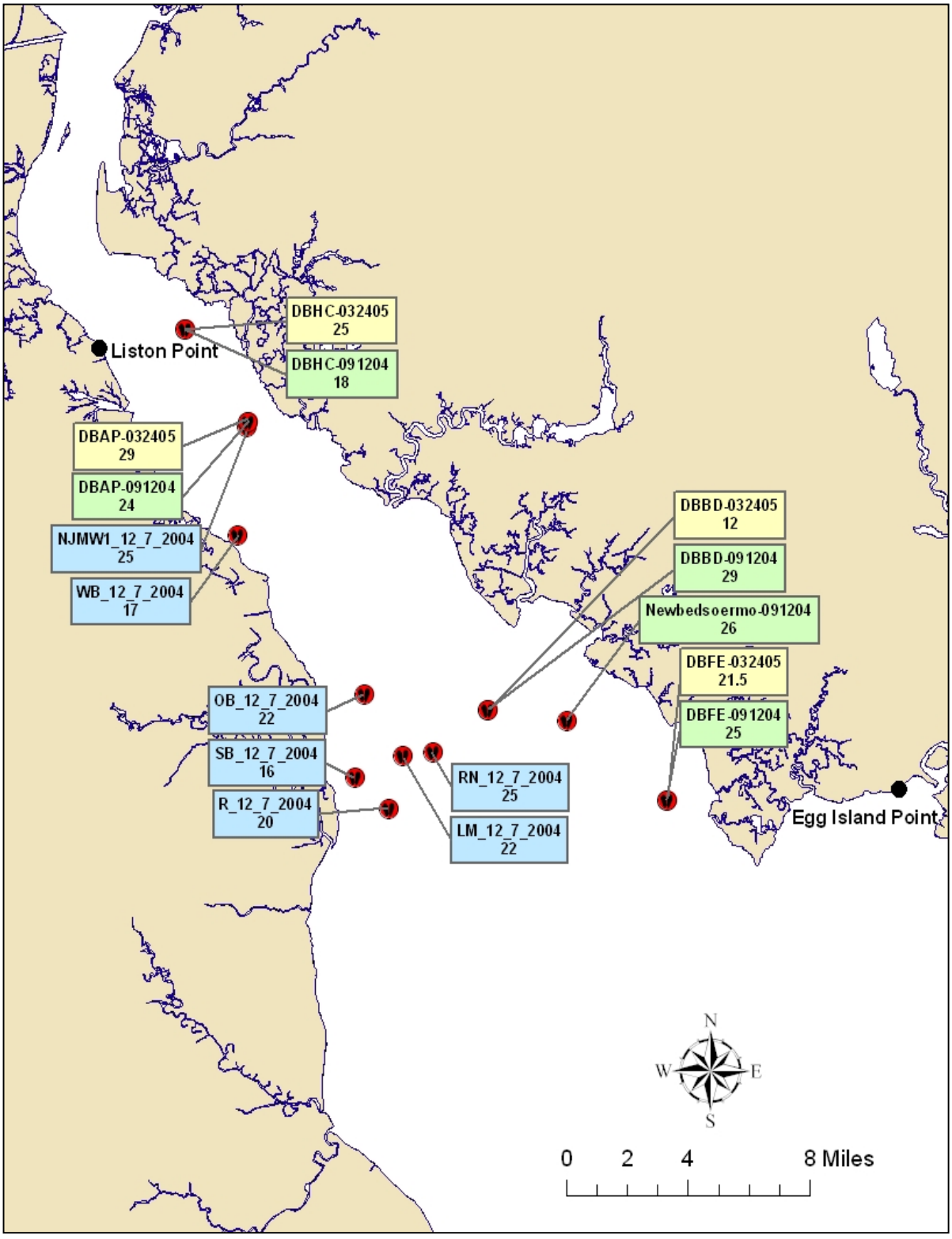

Figure 9. **Oyster sample locations and total PAHs (ng/g) in the Delaware Bay. Total PAH values (ng/g) are presented in boxes below sample identification code. Box color represents sample collection date: 7 December 2004 (blue), 9 December 2004 (green), and 24 February 2005 (yellow).**

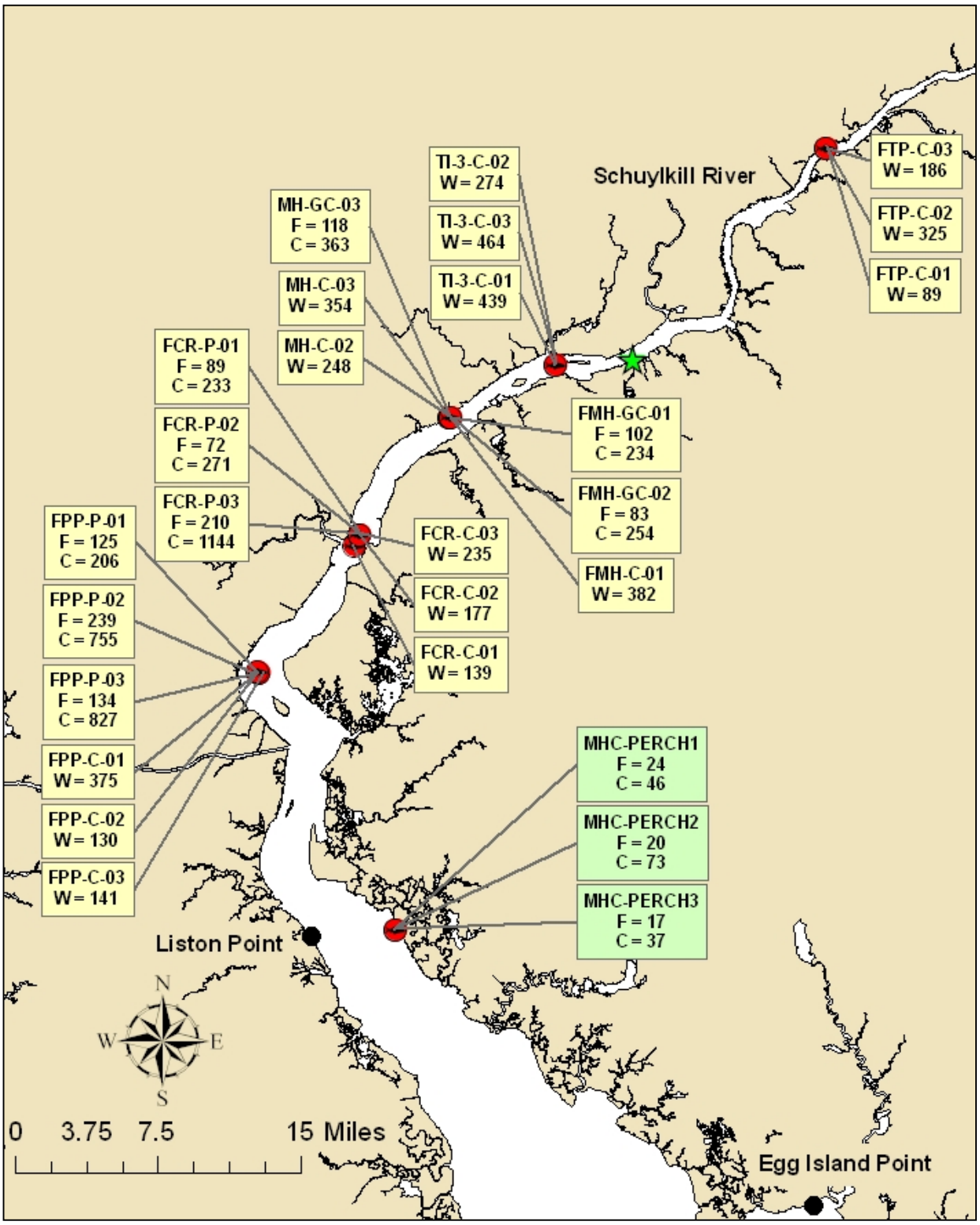

Figure 10. Fish trawl sampling locations and total PAHs (ng/g) in the Delaware River. Box color represents sample collection date: 9 December 2004 (green), 16 December 2004 (yellow). "F" indicates fillet samples; "C" indicates carcass samples. Green star is approximate spill location.

Sample location and total PAH values for the 9 and 16 December 2004 samples are presented in Figure 10. Results of the more detailed PAH analyses are presented in Appendix G. In summary, samples ranged from 88.9 to 464.3 ng/g wet weight (whole body, catfish); 72.1-238.9 ng/g wet weight (fillet, perch and shad); and 205.6 to 1143.6 ng/g wet weight (carcass, perch and shad). Lipid-normalized concentrations of PAHs are below the threshold for PAH-induced narcosis in fish (Di Toro *et al*. 2000). While further analysis of these data is necessary to determine the nature and extent of *Athos* oil in the samples, total PAH concentrations in samples were below a benzo[a]pyrene threshold of concern for bioaccumulation in piscivorous mammals (Sample *et al*. 1996). All data, including individual PAHs, are presented in Appendix G.

The trustees also collected adult striped bass on 3, 10, 11, 27, and 31 May and 5 July 2005 from the Delaware Bay and the Delaware River near Tinicum Island and north of the Schuylkill River. Fifteen fish were collected, with fillets and carcasses subsequently analyzed for total and individual PAHs. The average total PAH concentrations ranged from 9.7 to 130.6 ng/g wet weight for fillets and 11.5 to 291.5 ng/g wet weight for carcasses. Lipid-normalized concentrations of PAHs are below the threshold for PAH-induced narcosis in fish (Di Toro *et al*. 2000). A preliminary evaluation indicates these values for striped bass would not trigger a fish advisory when using EPA guidance numbers (cancer health endpoint). All data are presented in Appendix G.

The trustees also monitored DNREC's juvenile and adult fish trawl surveys. Juvenile surveys were conducted at 39 stations throughout the Delaware Estuary between April and October 2005. Adult surveys were conducted at nine stations between March and December 2005. As of September 2005, 234 juvenile surveys (39 stations x 6 months) and 63 adult surveys (9 stations x 7 months) were made and no oil was observed.

Striped bass young of year surveys conducted by NJDEP were also monitored. As part of an annual effort in the Delaware River since 1980, thirty-two fixed stations are sampled twice a month from June through November. During the 2005 seining surveys, some type of oil was observed at most stations from Raccoon Creek to Eagle Point. During warm and hot days, small (dime-sized or smaller) oil globules were observed in the shallow waters. These globules would dissipate to a sheen and eventually completely dissociate when disturbed (T. Baum, personal communication[9]). Samples were not collected to evaluate the nature and extent of *Athos* oil.

4.1.5 Horseshoe Crabs and Whelks

Twenty-three dredge tows were made in the upper Delaware Bay on 18 March 2005 by DNREC to collect and observe horseshoe crab and knobbed whelks. Sampling was conducted by removing all live horseshoe crabs and whelks from half of the dredge contents. Live horseshoe crabs and whelks in the samples were counted and examined for the presence of oil.

Table 3 summarizes observation from the 23 tows. A total of 136 horseshoe crabs and 477 knobbed whelks were examined. No oil was observed.

[9] Mr. Tom Baum, NJDEP.

Table 3. Incidence of oiled horseshoe crabs and whelks.

Location	# tows sampled	# horseshoe crabs examined	# oiled horseshoe crab observed	# whelk examined	# oiled whelk observed
A	11	70	0	325	0
B	12	66	0	152	0
Total	23	136	0	477	0

Horseshoe crab spawning surveys were also conducted by DNREC and NJDEP between May and June 2005. Thirteen beaches in Delaware and 11 beaches in New Jersey were surveyed, covered approximately 130 km and 80 km, respectively, of shoreline. Preliminary indications are that no oil was observed on the beaches or the horseshoe crabs during the surveys.

The United States Geological Survey, in conjunction with DNREC and NJDEP, conducts an annual horseshoe crab tagging survey in the Delaware Bay between March and May. In 2005, horseshoe crabs collected from these surveys were monitored for the presence/absence of oil on the exoskeleton. No oil was detected on the approximately 8,700 horseshoe crabs that were observed during these surveys.

4.2 Shorelines

Fresh to saltwater wetland areas, wild rice marshes, sand beaches, mud flats, and tidal creeks are among the environmentally important shorelines affected by the spill. A variety of shoreline habitats were exposed to oil, including seawalls, marshes, and sand and mud habitats. Potential injuries include toxicity of the oil and smothering, which both may result in a loss of habitat and production.

4.2.1 Shoreline Cleanup Assessment

The shorelines within and adjacent to the spill zone were surveyed by Shoreline Cleanup Assessment Teams (SCAT) on a near continuous basis from 29 November 2004 to 13 February 2005. Standard SCAT procedures were used to document the extent and magnitude of oiling (NOAA, 2000), including length and width of oiling, percent of oil coverage, oil character, and thickness, as well as habitat conditions including length and width of shoreline, habitat type, substrata type, and wave exposure.

SCAT surveys were conducted over approximately 550 miles of shoreline along the mainstem of the Delaware River. For each designated segments, the nature, extent and severity of shoreline oiling was assessed as either Heavy, Moderate, Light, Very Light, or No Oiling based on the shoreline oiling width and thickness (Appendix H).

Table 4 presents the length of shoreline oiling by shoreline type and degree of oiling. Figure 11 graphically depicts shoreline oiling as of 10 May 2005. Of the approximately 550 miles

surveyed, almost 280 miles of shoreline were oiled to varying degrees.[10] Substantial shoreline oiling also occurred within the tributaries. Predominant shoreline types exposed to oil include seawalls, sand beaches, coarse substrate, mud flats, and marshes (Figure 11).

Table 4. Approximate length in miles of shoreline habitat by oiling degree. These numbers do not include the length of oiled shoreline in tributary creeks. See Appendix H for definition of oiling categories.

Habitat	Very Light	Light	Moderate	Heavy	Total
Seawalls	13	24	37	4	78
Sand/Mud Substrate	18	11	10	6	44
Coarse Substrate	37	18	9	5	69
Marsh	70	20	4	2	96
Total	138	73	60	17	287

In addition to the SCAT surveys, the PA Bureau of Forestry contacted Dr. Ann Rhoads at the Morris Arboretum of the University of Pennsylvania to request that she survey the plants around Tinicum Island. Dr. Rhoads reported that plants visible on the tidal flats included dormant leaves of spatterdock (*Acorus calamus*), arrowhead (*Sagittaria rigida*), arrow-arum (*Peltandra virginica*), and dwarf spike-rush (*Eleocharis parvula*). Black oil was noted on the leaves of many, but not all, of these plants. The full report prepared by Dr. Rhoads is included in Appendix H.

[10] The length in Table 4 (287 miles) is greater than the total length of oiled shoreline because some segments have two habitat types present.

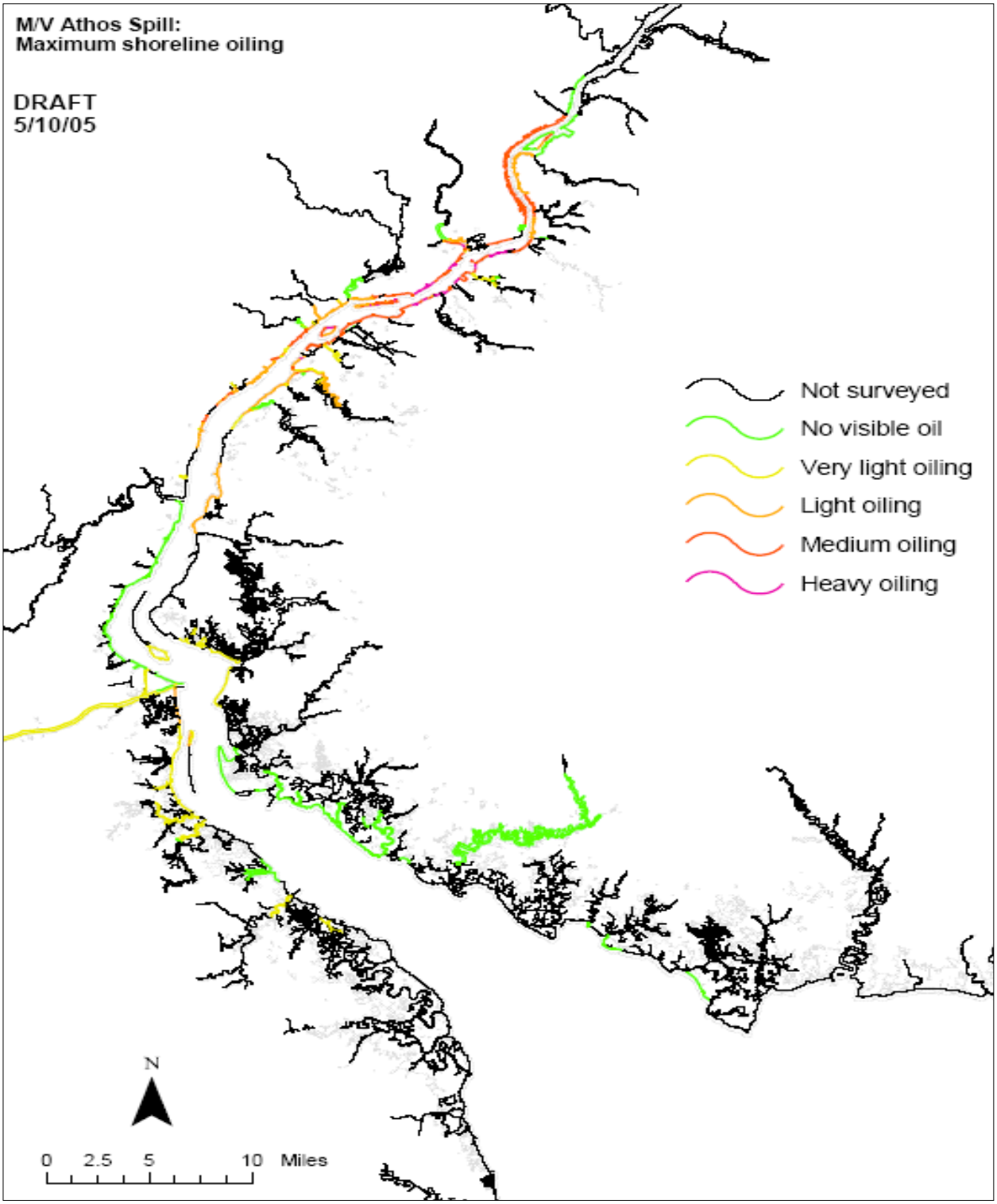

Figure 11. Maximum shoreline oiling, as reported in May 2005.

a. Oiled seawall

b. Oiled sand beach.

c. Oiled coarse substrate beach

d. Oiled intertidal mud flat

e. Oiled marsh.

Figure 12a-e. Representative examples of shoreline oiling observation; (a) seawalls, (b) oiled sand beach, (c) oiled coarse substrate beach, (d) oiled intertidal mud flat, and (e) oiled marsh.

4.3 Birds and Wildlife

Bird and wildlife resources at risk include migrating marsh birds, egret and heron rookeries, eagles and osprey, and migratory shorebirds. The federally-threatened piping plover (*Charadrius melodus)* inhabits the Lower Delaware Bay. There are also a variety of mink, otter, turtles, and terrestrial fauna that use the affected area. Major pathways of exposure are ingestion and fouling of fur and feathers.

4.3.1 Wildlife Response and Rescue Operations

Immediately following the spill, search teams began patrolling oiled shoreline areas and coordinating observations of dead and oiled wildlife with response/ cleanup crews, bird ground survey crews, and Tri-State Bird Research and Rescue in Delaware. Wildlife rehabilitation occurred at the Frink Center for Wildlife in Newark, DE and the John Heinz Wildlife Refuge in Philadelphia, PA. By May 2005, a number of oiled birds were observed (Figure 13); 206 wild birds were collected dead, died at the rehabilitation center, or were unable to be released to the wild, and 337 birds were rehabilitated and released alive (E. Marek, written communication[11]) (Table 5). Recovered wildlife that were collected dead or died at the rehabilitation center included three turtles, one squirrel, one opossum, one red fox, and one woodchuck (E. Marek, written communication[12]). Two turtles were unable to be released to the wild and were placed domestically.

Figure 13. Observed oiled birds.

4.3.2 Wildlife Ground Surveys

The trustee and RP representatives conducted ground surveys to estimate the extent and degree of oiling of non-recovered wildlife. More than 3,400 surveys were conducted between 30 November 2004 and 10 January 2005 (Appendix I), typically at fixed points accessible via foot, vehicle, or boat. Site locations were selected based upon review of oil distribution maps and trajectory models produced as part of the response, as well as aerial survey results described below. Between one and three observers were present at each site visit. All visible birds in open water, adjacent wetlands, spoil banks, and adjacent upland habitats were counted. Additional observations included date, time, duration on site, behavior, and oiling descriptor (trace, <6 percent body surface oiled; light, 6-20 percent body surface oiled; moderate, 21-40 percent body surface oiled, or heavy, >40 percent body surface oiled).

Data on the total number of birds observed by species, most observed in one day, most observed oiled in one day, and degree of observed oiling are provided in Appendix I. Nearly 157,500

[11] Eric W. Marek, Special Agent, USFWS, Office of Law Enforcement, Elizabeth, NJ, by email April 26, 2006.
[12] Eric W. Marek, Special Agent, USFWS, Office of Law Enforcement, Elizabeth, NJ, by email April 26, 2006.

birds were counted, with about 16,500 (10 percent) having some degree of oiling. About 72 percent of all oiled birds observed had trace or light oiling; 19 percent of oiled birds were moderately oiled; and nine percent of oiled birds were heavily oiled.

The most common species observed are reported in Table 6. Nearly half of all oiled birds observed were geese. Canada geese, mallards, and gulls made up 91 percent of observed oiled birds. These species also composed the majority of all birds observed (Appendix I).

Table 5. Summary of data on recovered birds from the rehabilitation center.

Species	Rehabilitated/Released	Dead
American black duck	2	1
Blue-winged teal	-	1
Duck sp.	0	2
Mallard	11	25
American coot	-	1
Bufflehead	3	1
Canvasback	-	1
Long-tailed duck	-	1
Ruddy duck	-	1
Black Scoter	-	1
Double-crested cormorant	-	9
Northern gannet	-	1
Great black-backed gull	-	2
Gull sp.	-	22
Herring gull	7	26
Ring-billed gull	25	17
Belted kingfisher	-	3
Canada goose	287	80
Mute swan	-	1
Snow goose	2	6
Great blue heron	-	2
Unidentified	0	2
Total Wild	**337**	**206**
Domestic geese[2]	32	1
Domestic ducks[2]	4	0
Total Domestic	**36**	**1**

1. This number includes birds that survived at the rescue center, but were unable to be rehabilitated sufficiently for successful release to their natural habitat. Eleven mallards and six Canada geese were placed in domestic situations.
2. For domestic birds, successful rehabilitation resulted in return to a domestic situation.

Table 6. Most common birds observed oiled during ground surveys. Data analysis as of May 2005.

Species name	Total Oiled Bird Observations	Percent of all Oiled Birds
Canada Goose	8041	49
Great black-backed gull	469	3
Herring Gull	915	6
Mallard	447	3
Ring-billed Gull	5422	33
Total		91
Note: Percentages do not sum to total due to rounding.		

4.3.3 Aerial Bird Surveys

The trustee and RP representatives conducted 11 aerial surveys between 28 November 2004 and 28 December 2004 to assess the species composition and abundance of birds in the spill area. In New Jersey and Pennsylvania, aerial surveys covered main-stem shorelines and all tributaries upstream to the point where overhanging tree canopies obscured visibility of birds below. Aerial surveys in Delaware covered approximately 50 percent of the Bay's shoreline below the Delaware Memorial Bridge and much smaller portions of tributaries and adjacent marsh complexes. In these estuarine marsh complexes, birds were counted to 250 meters on each side of the aircraft, but at least 50 meters of each side of the aircraft is obscured below the aircraft. Aerial surveys were conducted using Bell 206 helicopters or Cessna 206 fixed-wing aircraft. Bird surveys were performed with one or two observers. All visible birds in open water, adjacent wetlands, spoil banks, and adjacent upland habitats (*e.g.*, farm fields, parks, and corporate lawns) were counted. Observations were recorded on a hand-held tape recorder and transcribed after the flight. Most helicopter surveys were performed at altitudes of 30-120 meters and airspeeds of 40 knots, depending on flight conditions, proximity of obstructions, and other factors. Fixed-wing aircraft surveys were typically flown at higher altitudes and airspeeds. The route of the aircraft on any given survey was adjusted for the number of observers, wind speed and direction, sun angle and tide level.

Birds were identified to the highest taxonomic level (typically species) possible. Some species were difficult to differentiate from the air (*e.g.*, greater and lesser scaup; ring-billed, herring, and greater black-backed gulls; and shorebirds). The aerial surveys were best able to detect species that are large, brightly colored, abundant, and widely distributed in area. As an example, observers were more likely to see tundra swans (large and bright) and Canada geese (large) than green-winged teal (small) or shorebirds (very small). Less abundant birds mixed with flocks of more abundant birds are also often missed in surveys.

The number of birds observed during each of the 11 aerial surveys, along with the general location of the flight is presented in Table 7 and Appendix I. Total observed birds ranged from about 2,600 on 3 December 2004 to nearly 100,000 on 5 December 2004. While these counts do not reflect a standard flight time or area covered, in general, more birds moved into the area as it became colder and later in December 2004. Observation conditions were excellent on 2 December, fair on 5 and 7 December and poor on 15 December due to high winds. Available

daylight and time were a factor on all days in that several marshes along the central NJ coast were not flown in order to get to Alloway Creek and Salem River, where most of the oil was located, before dark. On 15 December, much of the Delaware marshes were frozen in the morning resulting in lower numbers of birds observed in the marshes. Tides and winds affect the number of birds in the shores of the Bay where most of the black ducks and mallards are observed. On 2 December, high tides and winds blowing from the west resulted in New Jersey marshes being flooded and many black ducks and mallards being concentrated on the coast.

Table 7. Aerial Bird Survey Summary for Delaware River segments. Counts by species are presented in Appendix I.

Date	Number of Birds observed	Predominant Species Observed	Area surveyed
28-Nov	3,392	Black ducks, mallards, buffleheads, gulls, Canada geese	Portion of north NJ shoreline
29-Nov	7,555	Black ducks, gulls, Canada geese	Portion of north NJ shoreline
30-Nov	5,030	Black ducks, mallards, ruddy ducks, buffleheads, gulls, Canada geese	NJ and PA shorelines
2-Dec	59,123	Black ducks, green-winged teal, mallards, ruddy ducks, buffleheads, gulls, Canada geese, snow geese	DE and NY shorelines
3-Dec	2,577	Mallards, gulls, Canada geese	PA shoreline
5-Dec	98,245	Black ducks, gadwall, green-winged teal, mallards, pintails, buffleheads, ruddy ducks, scaup, gulls, gannet, Canada geese, snow geese, swans	NJ, PA, and DE shorelines
9-Dec	12,716	Black ducks, green-winged teal, mallards, pintails, ruddy ducks, gulls, Canada geese	Portions of NJ and PA shoreline
13-Dec	17,825	Black ducks, green-winged teal, mallards, pintails, gulls, Canada geese	North NJ and PA shoreline
15-Dec	70,209	Black ducks, green-winged teal, mallards, gulls, Canada geese, swans, snow geese	DE and south NJ shorelines
16-Dec	51,096	Black ducks, green-winged teal, mallards, pintails, gulls, Canada geese, greater white-fronted geese	DE and south NJ shorelines
21-Dec	19,516	Black ducks, mallards, pintails, canvasback, merganser, gulls, Canada geese	North NJ and PA shorelines

4.4 Lost recreational use

Many types of recreation are popular along the Delaware River in the areas affected by the incident. The River and its tributaries support numerous marshes that are popular for waterfowl hunting. Boating, fishing, crabbing, as well as beach and other shoreline use, are also popular recreational activities throughout the region.

Following the spill, hunting and boating advisories were issued in Delaware and New Jersey, closing certain areas. In Delaware, state lands were closed to hunting as far south as Cedar Swamp Wildlife Area. In New Jersey, the hunting advisory included most areas within five miles of the River from the Tacony-Palmyra Bridge to the nuclear power facility in Salem, NJ. The advisories were in effect for about two weeks.

As part of the preassessment efforts, the trustees collected data to begin determining the potential for loss of the human uses, including hunting , boating, fishing, crabbing, and beach and other shoreline use. Shoreline use (*e.g.,* fishing, boating, walking) was documented during several overflights. Interviews with marina owners were also conducted to determine the potential impacts to recreational boating.

In general, the level of recreational boating at the time of the incident appeared low, although some boat-based fishing typically continues throughout the year. Sporadic problems with oil were also reported at marinas in the area.

Additional information necessary to quantify the injury for each of the recreational resource use categories will be collected as needed.

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APPENDIX A

Source Oil Analyses

A.1. PAH analyses, analyte histogram and biomarker analyses of November 28, 2004 source oil sample (GERG Laboratory analyses).

A.2. PAH analyses, analyte histogram and trace metals analysis of November 28, 2004 source oil sample (B&B Laboratory analysis).

A.3. Analysis of source oil aromatics (Lancaster Laboratories).

A.4. December 7, 2004 LSU source oil report.

A.5. December 9, 2004 LSU source oil report.

A.6. Narcotic potency of the PAH mixture in the source oil.

A.7. PAH Analyte List by Laboratory.

A.1. PAH analyses, analyte histogram, and biomarker analyses of November 28, 2004 source oil sample taken by USCG from the *M/T Athos*. Analysis by GERG. GERG ID numbers C45279, W44253, W44254, W55259, and W442260 are replicates of the same source oil sample. The analyte histogram is the average of the five replicates.

GERG Analyses

Client Sample ID	Sample 1	Sample 1	Sample 1
Sample Descriptor	Tank Center 7	Tank Center 7	Tank Center 7
Original Sample			
GERG ID	C45279	W44253	W44254
Sample Type	SAMP	SAMP	SAMP
SDG	EC174	EC174	
Wet Weight	0.558	0.558	0.558
Sample Size Units	Milligrams	Milligrams	Milligrams
Matrix	Oil	Oil	Oil
% solid			
% Lipid			
Reporting Units	ng/mg	ng/mL	ng/mL
Calculation Basis (dry/wet)	Wet	Wet	Wet
QC Batch ID		T1465	T1465
Method	GCMS	GCMS	GCMS
Collection Date	11/28/04	11/28/04	11/28/04
Receive Date	12/15/04	12/15/04	12/15/04
Extraction Date			
Analysis Date	12/14/04	01/14/05	01/14/05
Surrogate Compounds	**%Recovery**	**%Recovery**	**%Recovery**
d8-Naphthalene	109.7	80.3	72.7
d10-Acenaphthene	107.5	85.5	74.3
d10-Phenanthrene	111.5	78.0	63.4
d12-Chrysene	97.7	73.8	57.3
d12-Perylene	92.7	83.8	79.7
Total PAHs	**Concentration**	**Concentration**	**Concentration**
Total PAHs with Perylene	4410.4	4427.0	4615.7
Total PAHs without Perylene	4401.5	4408.9	4603.1
Total NS&T PAHs	681.7	648.8	688.2

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

Client Sample ID	Sample 1		Sample 1		Sample 1	
Sample Descriptor	Tank Center 7		Tank Center 7		Tank Center 7	
Original Sample						
GERG ID	C45279		W44253		W44254	
Sample Type	SAMP		SAMP		SAMP	
SDG	EC174		EC174			
PAH Compounds	**Concentration**	**MDL**	**Concentration**	**MDL**	**Concentration**	**MDL**
Naphthalene	60.24	10.0	58.3	10.0	61.3	10.0
C1-Naphthalenes	129.62	10.0	132.8	10.0	137.8	10.0
C2-Naphthalenes	254.17	10.0	264.6	10.0	271.9	10.0
C3-Naphthalenes	263.56	10.0	296.2	10.0	299.3	10.0
C4-Naphthalenes	188.07	10.0	212.3	10.0	201.9	10.0
Biphenyl	13.27	10.0	13.1	10.0	13.7	10.0
Acenaphthylene	8.64	10.0 J	7.8	10.0 J	8.9	10.0 J
Acenaphthene	21.45	10.0	17.9	10.0	18.9	10.0
Fluorene	50.78	10.0	46.6	10.0	46.7	10.0
C1-Fluorenes	120.08	10.0	119.5	10.0	127.9	10.0
C2-Fluorenes	227.34	10.0	219.0	10.0	220.8	10.0
C3-Fluorenes	271.21	10.0	287.7	10.0	287.9	10.0
Phenanthrene	87.19	10.0	86.0	10.0	91.6	10.0
Anthracene	8.86	10.0 J	6.7	10.0 J	7.2	10.0 J
C1-Phenanthrenes/Anthracenes	228.96	10.0	222.4	10.0	246.3	10.0
C2-Phenanthrenes/Anthracenes	338.85	10.0	314.7	10.0	333.7	10.0
C3-Phenanthrenes/Anthracenes	282.08	10.0	275.8	10.0	287.8	10.0
C4-Phenanthrenes/Anthracenes	208.45	10.0	240.5	10.0	230.5	10.0
Dibenzothiophene	40.98	10.0	36.4	10.0	42.6	10.0
C1-Dibenzothiophenes	162.97	10.0	127.3	10.0	138.0	10.0
C2-Dibenzothiophenes	367.72	10.0	348.6	10.0	369.4	10.0
C3-Dibenzothiophenes	373.04	10.0	346.5	10.0	373.2	10.0
Fluoranthene	3.95	10.0 J	3.1	10.0 J	4.1	10.0 J
Pyrene	16.44	10.0	14.3	10.0	17.5	10.0
C1-Fluoranthenes/Pyrenes	84.53	10.0	78.1	10.0	79.8	10.0
C2-Fluoranthenes/Pyrenes	123.87	10.0	124.0	10.0	137.3	10.0
C3-Fluoranthenes/Pyrenes	139.00	10.0	173.4	10.0	168.5	10.0
Benzo(a)anthracene	10.40	10.0	5.3	10.0 J	6.3	10.0 J
Chrysene	36.91	10.0	32.8	10.0	38.8	10.0
C1-Chrysenes	79.65	10.0	82.8	10.0	94.1	10.0
C2-Chrysenes	90.14	10.0	123.4	10.0	144.6	10.0
C3-Chrysenes	47.12	10.0	36.8	10.0	48.1	10.0
C4-Chrysenes	9.84	10.0 J	11.2	10.0	5.7	10.0 J
Benzo(b)fluoranthene	7.86	10.0 J	8.0	10.0 J	8.3	10.0 J
Benzo(k)fluoranthene	2.07	10.0 J	1.1	10.0 J	1.2	10.0 J
Benzo(e)pyrene	14.92	10.0	12.9	10.0	15.5	10.0
Benzo(a)pyrene	6.82	10.0 J	5.5	10.0 J	3.4	10.0 J
Perylene	8.90	10.0 J	18.1	10.0	12.6	10.0
Indeno(1,2,3-c,d)pyrene	4.99	10.0 J	4.4	10.0 J	2.7	10.0 J
Dibenz(a,h)anthracene	7.27	10.0 J	5.2	10.0 J	5.2	10.0 J
Benzo(g,h,i)perylene	8.25	10.0 J	6.2	10.0 J	4.9	10.0 J
2-Methylnaphthalene	70.02	10.0	71.8	10.0	74.4	10.0
1-Methylnaphthalene	59.60	10.0	60.9	10.0	63.4	10.0
2,6-Dimethylnaphthalene	139.18	10.0	132.1	10.0	140.7	10.0
1,6,7-Trimethylnaphthalene	101.52	10.0	95.5	10.0	100.7	10.0
1-Methylphenanthrene	65.53	10.0	58.2	10.0	66.9	10.0

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

Client Sample ID	Sample 1	Sample 1
Sample Descriptor	Tank Center 7	Tank Center 7
Original Sample		
GERG ID	W44259	W44260
Sample Type	SAMP	SAMP
SDG		
Wet Weight	0.558	0.558
Sample Size Units	Milligrams	Milligrams
Matrix	Oil	Oil
% solid		
% Lipid		
Reporting Units	ng/mL	ng/mL
Calculation Basis (dry/wet)	Wet	Wet
QC Batch ID	T1466	T1466
Method	GCMS	GCMS
Collection Date	11/28/04	11/28/04
Receive Date	12/15/04	12/15/04
Extraction Date		
Analysis Date	01/15/05	01/15/05
Surrogate Compounds	**%Recovery**	**%Recovery**
d8-Naphthalene	101.8	117.3
d10-Acenaphthene	110.4	119.3
d10-Phenanthrene	99.7	108.0
d12-Chrysene	94.7	109.6
d12-Perylene	89.7	82.9
Total PAHs	**Concentration**	**Concentration**
Total PAHs with Perylene	4563.5	4964.3
Total PAHs without Perylene	4547.0	4947.9
Total NS&T PAHs	652.4	705.5

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

Client Sample ID	Sample 1		Sample 1	
Sample Descriptor	Tank Center 7		Tank Center 7	
Original Sample				
GERG ID	W44259		W44260	
Sample Type	SAMP		SAMP	
SDG				

PAH Compounds	Concentration	MDL		Concentration	MDL	
Naphthalene	61.3	10.0		63.7	10.0	
C1-Naphthalenes	130.8	10.0		135.5	10.0	
C2-Naphthalenes	266.3	10.0		274.7	10.0	
C3-Naphthalenes	301.7	10.0		309.1	10.0	
C4-Naphthalenes	206.2	10.0		216.0	10.0	
Biphenyl	11.2	10.0		12.6	10.0	
Acenaphthylene	7.7	10.0	J	8.7	10.0	J
Acenaphthene	18.4	10.0		18.6	10.0	
Fluorene	46.2	10.0		49.3	10.0	
C1-Fluorenes	116.3	10.0		131.1	10.0	
C2-Fluorenes	216.7	10.0		238.4	10.0	
C3-Fluorenes	288.4	10.0		336.5	10.0	
Phenanthrene	84.2	10.0		94.4	10.0	
Anthracene	7.6	10.0	J	8.6	10.0	J
C1-Phenanthrenes/Anthracenes	225.1	10.0		260.5	10.0	
C2-Phenanthrenes/Anthracenes	328.2	10.0		358.1	10.0	
C3-Phenanthrenes/Anthracenes	290.0	10.0		316.3	10.0	
C4-Phenanthrenes/Anthracenes	255.0	10.0		258.5	10.0	
Dibenzothiophene	38.3	10.0		42.1	10.0	
C1-Dibenzothiophenes	125.5	10.0		146.4	10.0	
C2-Dibenzothiophenes	365.9	10.0		408.4	10.0	
C3-Dibenzothiophenes	369.2	10.0		406.8	10.0	
Fluoranthene	3.0	10.0	J	4.7	10.0	J
Pyrene	16.0	10.0		18.6	10.0	
C1-Fluoranthenes/Pyrenes	83.7	10.0		87.8	10.0	
C2-Fluoranthenes/Pyrenes	131.1	10.0		152.0	10.0	
C3-Fluoranthenes/Pyrenes	184.6	10.0		207.6	10.0	
Benzo(a)anthracene	7.1	10.0	J	6.0	10.0	J
Chrysene	38.7	10.0		41.0	10.0	
C1-Chrysenes	90.5	10.0		95.5	10.0	
C2-Chrysenes	135.4	10.0		141.8	10.0	
C3-Chrysenes	45.8	10.0		45.4	10.0	
C4-Chrysenes	10.8	10.0		14.4	10.0	
Benzo(b)fluoranthene	8.1	10.0	J	8.6	10.0	J
Benzo(k)fluoranthene	1.0	10.0	J	0.3	10.0	J
Benzo(e)pyrene	13.1	10.0		14.7	10.0	
Benzo(a)pyrene	5.3	10.0	J	3.8	10.0	J
Perylene	16.6	10.0		16.4	10.0	
Indeno(1,2,3-c,d)pyrene	3.3	10.0	J	2.7	10.0	J
Dibenz(a,h)anthracene	3.7	10.0	J	4.2	10.0	J
Benzo(g,h,i)perylene	5.9	10.0	J	4.5	10.0	J
2-Methylnaphthalene	70.3	10.0		73.8	10.0	
1-Methylnaphthalene	60.4	10.0		61.7	10.0	
2,6-Dimethylnaphthalene	129.2	10.0		143.8	10.0	
1,6,7-Trimethylnaphthalene	94.7	10.0		107.5	10.0	
1-Methylphenanthrene	60.2	10.0		69.7	10.0	

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

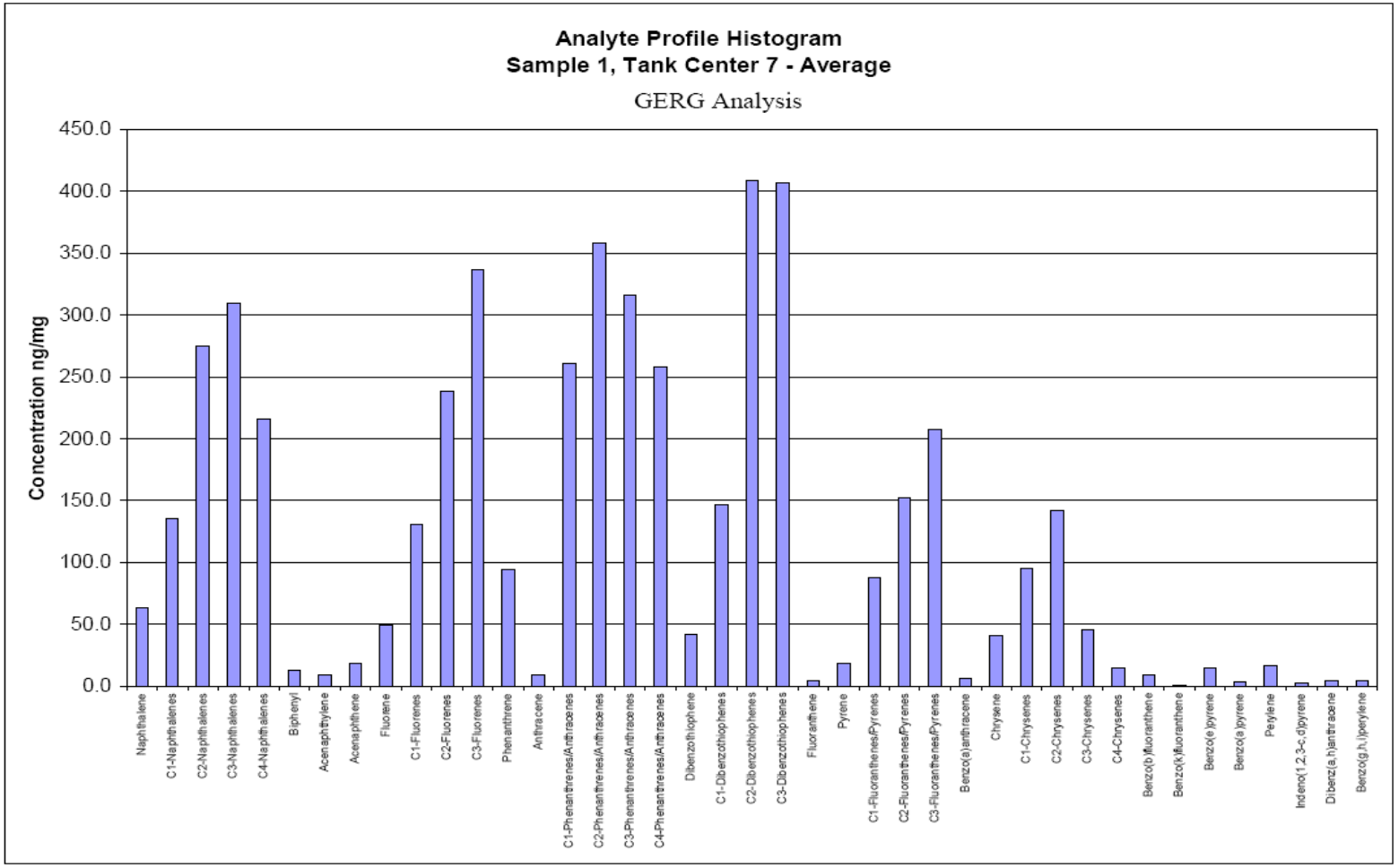
Client Sample ID					
Sample Descriptor	Tank Center 7			GERG REF OIL	
Original Sample					
GERG ID				W44231	
Sample Type	Average of 5 Injections			REF	
SDG					
Wet Weight				1.00	
Sample Size Units				Milliliter	
Matrix				Oil Solution	
% solid					
% Lipid					
Reporting Units				ng/mL	
Calculation Basis (dry/wet)				Wet	
QC Batch ID				T1463	
Method				GCMS	
Collection Date					
Receive Date					
Extraction Date					
Analysis Date				12/14/04	
Surrogate Compounds				**%Recovery**	
d8-Naphthalene					NA
d10-Acenaphthene					NA
d10-Phenanthrene					NA
d12-Chrysene	Average	Std Dev	Coef of Var		NA
d12-Perylene					NA
Total PAHs				**Concentration**	
Total PAHs with Perylene	4596.2	223.6	4.9	10591.3	
Total PAHs without Perylene	4581.7	222.5	4.9	10575.4	
Total NS&T PAHs	675.3	24.2	3.6	4268.6	

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

Client Sample ID			
Sample Descriptor	Tank Center 7		GERG REF OIL
Original Sample			
GERG ID			W44231
Sample Type	Average of 5 Injections		REF
SDG			

PAH Compounds				Concentration	MDL	
Naphthalene	61.0	2.0	3.2	753.5	20.0	
C1-Naphthalenes	133.3	3.4	2.5	2291.9	20.0	
C2-Naphthalenes	266.3	8.0	3.0	2042.0	20.0	
C3-Naphthalenes	294.0	17.7	6.0	1666.1	20.0	
C4-Naphthalenes	204.9	10.9	5.3	904.6	20.0	
Biphenyl	12.8	1.0	7.6	58.0	20.0	
Acenaphthylene	8.4	0.6	6.8	29.2	20.0	
Acenaphthene	19.0	1.4	7.3	9.3	20.0	
Fluorene	47.9	2.0	4.2	91.1	20.0	
C1-Fluorenes	123.0	6.2	5.1	264.0	20.0	
C2-Fluorenes	224.4	8.7	3.9	344.4	20.0	
C3-Fluorenes	294.3	24.6	8.4	294.2	20.0	
Phenanthrene	88.7	4.2	4.7	142.5	20.0	
Anthracene	7.8	0.9	11.5	15.4	20.0	
C1-Phenanthrenes/Anthracenes	236.6	16.3	6.9	321.6	20.0	
C2-Phenanthrenes/Anthracenes	334.7	15.9	4.7	378.1	20.0	
C3-Phenanthrenes/Anthracenes	290.4	15.5	5.3	259.2	20.0	
C4-Phenanthrenes/Anthracenes	238.6	20.3	8.5	143.7	20.0	
Dibenzothiophene	40.1	2.6	6.5	21.7	20.0	
C1-Dibenzothiophenes	140.0	15.4	11.0	82.4	20.0	
C2-Dibenzothiophenes	372.0	22.0	5.9	75.9	20.0	
C3-Dibenzothiophenes	373.7	21.5	5.8	55.6	20.0	
Fluoranthene	3.8	0.7	19.7	6.1	20.0	
Pyrene	16.6	1.6	9.8	6.5	20.0	
C1-Fluoranthenes/Pyrenes	82.8	3.9	4.7	66.1	20.0	
C2-Fluoranthenes/Pyrenes	133.7	11.7	8.7	69.4	20.0	
C3-Fluoranthenes/Pyrenes	174.6	25.0	14.3	72.2	20.0	
Benzo(a)anthracene	7.0	2.0	28.3	7.3	20.0	
Chrysene	37.6	3.1	8.2	11.3	20.0	
C1-Chrysenes	88.5	7.0	7.9	27.3	20.0	
C2-Chrysenes	127.1	22.2	17.5	38.7	20.0	
C3-Chrysenes	44.6	4.5	10.1	13.6	20.0	
C4-Chrysenes	10.4	3.1	30.3	3.0	20.0	J
Benzo(b)fluoranthene	8.2	0.3	3.5	2.6	20.0	J
Benzo(k)fluoranthene	1.1	0.6	57.7	2.4	20.0	J
Benzo(e)pyrene	14.2	1.2	8.3	2.2	20.0	J
Benzo(a)pyrene	5.0	1.4	27.8	1.1	20.0	J
Perylene	14.5	3.7	25.6	15.9	20.0	
Indeno(1,2,3-c,d)pyrene	3.6	1.0	28.9	0.3	20.0	J
Dibenz(a,h)anthracene	5.1	1.4	26.8	0.4	20.0	J
Benzo(g,h,i)perylene	5.9	1.5	24.8	0.9	20.0	J
2-Methylnaphthalene	72.1	2.0	2.8	1382.5	20.0	
1-Methylnaphthalene	61.2	1.5	2.4	909.4	20.0	
2,6-Dimethylnaphthalene	137.0	6.1	4.4	751.6	20.0	
1,6,7-Trimethylnaphthalene	100.0	5.2	5.2	521.5	20.0	
1-Methylphenanthrene	64.1	4.8	7.4	104.8	20.0	

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution


Analyte Profile Histogram
Sample 1, Tank Center 7 - Average
GERG Analysis
Concentration ng/mg
450.0
400.0
350.0
300.0
250.0
200.0
150.0
100.0
50.0
0.0
Naphthalene
C1-Naphthalenes
C2-Naphthalenes
C3-Naphthalenes
C4-Naphthalenes
Biphenyl
Acenaphthylene
Acenaphthene
Fluorene
C1-Fluorenes
C2-Fluorenes
C3-Fluorenes
Phenanthrene
Anthracene
C1-Phenanthrenes/Anthracenes
C2-Phenanthrenes/Anthracenes
C3-Phenanthrenes/Anthracenes
C4-Phenanthrenes/Anthracenes
Dibenzothiophene
C1-Dibenzothiophenes
C2-Dibenzothiophenes
C3-Dibenzothiophenes
Fluoranthene
Pyrene
C1-Fluoranthenes/Pyrenes
C2-Fluoranthenes/Pyrenes
C3-Fluoranthenes/Pyrenes
Benzo(a)anthracene
Chrysene
C1-Chrysenes
C2-Chrysenes
C3-Chrysenes
C4-Chrysenes
Benzo(b)fluoranthene
Benzo(k)fluoranthene
Benzo(e)pyrene
Benzo(a)pyrene
Perylene
Indeno(1,2,3-c,d)pyrene
Dibenz(a,h)anthracene
Benzo(g,h,i)perylene

STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill
Lab Sample ID: C45279
Sample Descriptor: Sample 1, Tank Center 7
Analysis Date: 12/20/2004

PARAMETERS

A:LEVEL OF MATURITY

Steranes		Terpanes	
% 20S C29 STERANES	55.8	% 22S C31 HOMOHOPANE	60.7
% C29 ISOSTERANES (abb)	54.6	% C30 HOPANE	82.7
% REGULAR STERANES	13.9	% TS/TS+TM (C27)	41.6
% ISOSTERANES	15.7	TS/TM (C27)	0.71
% DIASTERANES	25.2	% C30 MORETANE	17.3
% SHORT-CHAIN STERANES	45.2	% C29 NORMORETANE	21.6
		DIAHOPANE INDEX (%)	9.2
		% TRICYCLIC TERPANES	45.2

B:ORGANIC FACIES AND DEPOSITIONAL ENVIRONMENT

% TOTAL C20+C21	45.2	OLEANANE INDEX (%)	14.9
% TOTAL C27	14.3	GAMMACERANE INDEX (%)	21.7
% TOTAL C28	19.6	BISNORHOPANE INDEX (%)	24.8
% TOTAL C29	16.4	25-NORHOPANE INDEX (%)	48.9
% TOTAL C30	4.5	DIAHOPANE INDEX (%)	9.2
HOPANES/STERANES	1.5	% TRICYCLIC TERPANES	45.2
% DIASTERANES	25.2	% C24 TETRACYCLIC TERPANE	24.8
TOTAL STERANES (ppm)	283	% MORETANES	19.5
		% TOTAL C31 PENTACYCLICS	41.2
Other Biological Markers		% TOTAL C32 PENTACYCLICS	24.0
		% TOTAL C33 PENTACYCLICS	15.9
b-Carotane (ppm)	0.6	% TOTAL C34 PENTACYCLICS	9.7
		% TOTAL C35 PENTACYCLICS	9.2
		C35/C34 HOMOHOPANES	0.95
		29/30 HOPANES	0.97
		TOTAL TRITERPANES (ppm)	418.2

All ratios based on concentrations

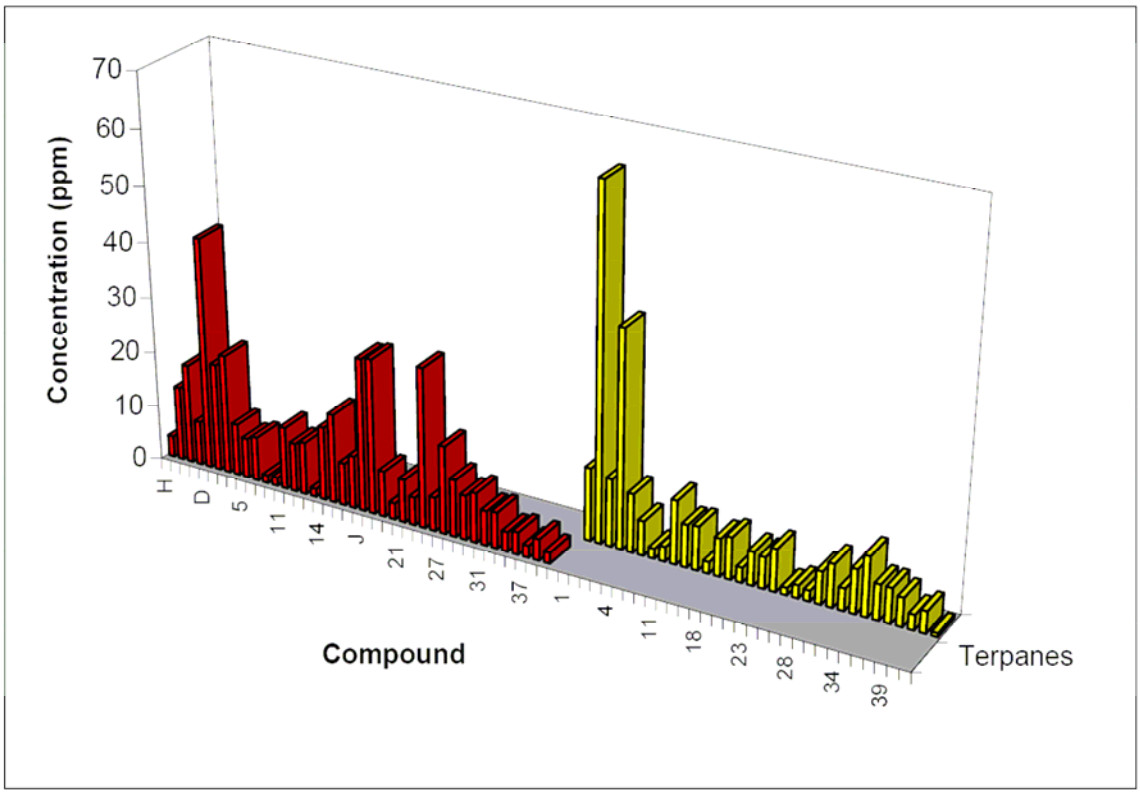
STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill

Lab Sample ID: C45279

Sample Descriptor: Sample 1, Tank Center 7

Analysis Date: 12/20/2004



A.2. PAH analyses, analyte histogram and trace metals analysis of November 28, 2004 source oil sample (B&B Laboratory analysis).

B&B Laboratories
Project J04447
Report 04-1353

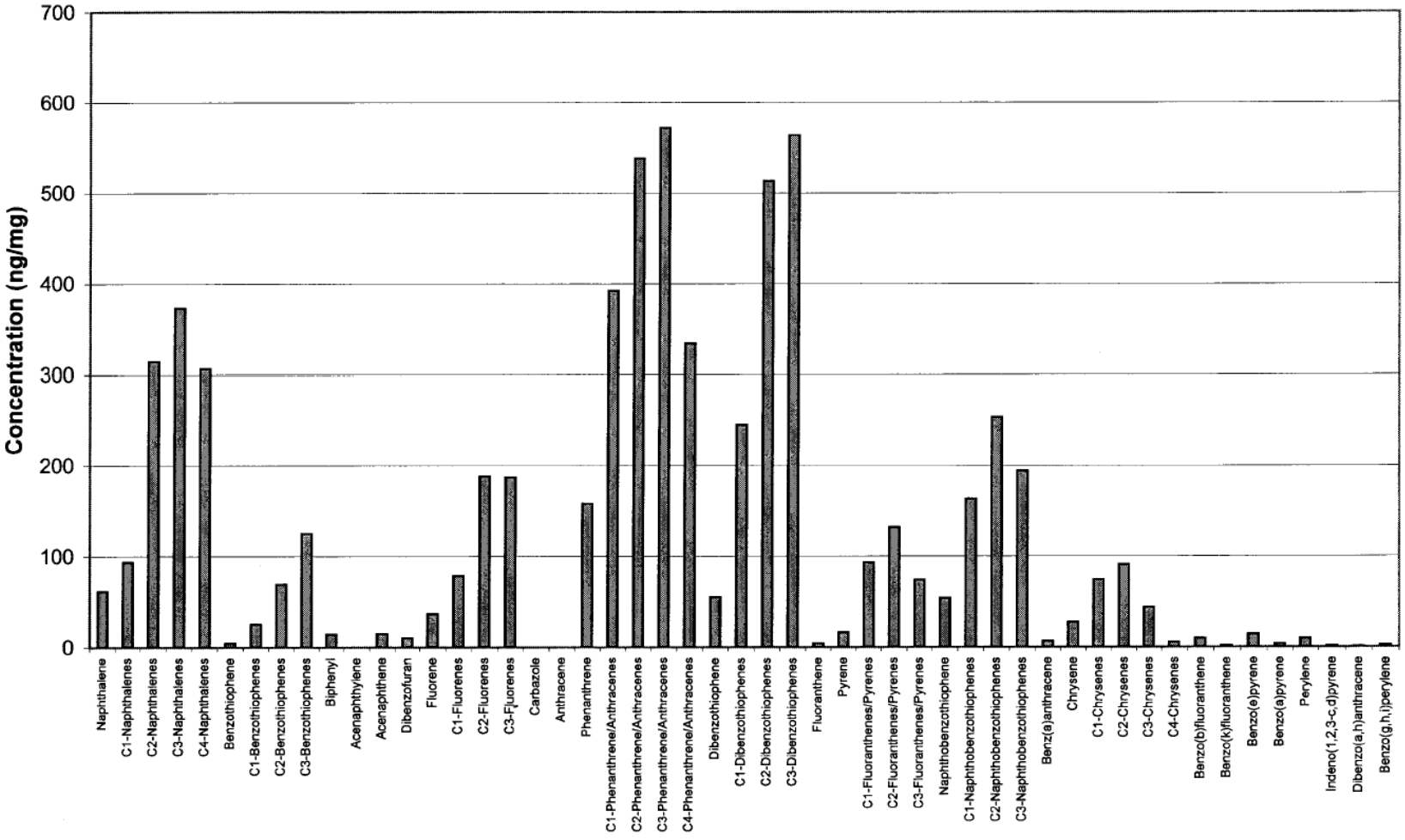
Polaris Applied Sciences, Inc.
TV Athos I Oil Spill Project
Polycyclic Aromatic Hydrocarbon Data
Client Submitted Samples

Client Project # 1146

Sample Name	ETX3872.D		ETX3872D.D	
Client Name	Sample 1 Tank Center 7		Dupl. (Sample 1 Tank Center 7)	
Matrix	Product		Product	
Collection Date	11/28/04		11/28/04	
Received Date	12/04/04		12/04/04	
Extraction Date	12/04/04		12/04/04	
Extraction Batch	ENV 1057		ENV 1057	
Date Acquired	12/04/04		12/04/04	
Method	PAH-2002		PAH-2002	
Sample Weight (mg)	11.9		11.9	
Dilution	NA		NA	
Target Compounds	Su Corrected Conc. (ng/mg)	Q	Su Corrected Conc. (ng/mg)	Q
Naphthalene	61.3		63.1	
C1-Naphthalenes	93.5		96.1	
C2-Naphthalenes	314		343	
C3-Naphthalenes	373		401	
C4-Naphthalenes	306		331	
Benzothiophene	4.1	J	4.4	J
C1-Benzothiophenes	25.4		27.7	
C2-Benzothiophenes	69.2		74.0	
C3-Benzothiophenes	125		122	
Biphenyl	14.5		16.3	
Acenaphthylene	<10	U	<10	U
Acenaphthene	14.7		16.2	
Dibenzofuran	10.3		9.5	J
Fluorene	36.6		37.9	
C1-Fluorenes	78.5		81.0	
C2-Fluorenes	188		204	
C3-Fluorenes	187		197	
Carbazole	<10	U	<10	U
Anthracene	<10	U	<10	U
Phenanthrene	158		147	
C1-Phenanthrene/Anthracenes	392		370	
C2-Phenanthrene/Anthracenes	538		499	
C3-Phenanthrene/Anthracenes	572		535	
C4-Phenanthrene/Anthracenes	334		316	
Dibenzothiophene	54.9		50.8	
C1-Dibenzothiophenes	245		225	
C2-Dibenzothiophenes	513		474	
C3-Dibenzothiophenes	564		562	
Fluoranthene	4.1	J	4.5	J
Pyrene	16.0		16.4	
C1-Fluoranthenes/Pyrenes	93.3		84.7	
C2-Fluoranthenes/Pyrenes	132		122	
C3-Fluoranthenes/Pyrenes	73.8		74.6	
Naphthobenzothiophene	54.0		55.8	
C1-Naphthobenzothiophenes	163		155	
C2-Naphthobenzothiophenes	253		254	
C3-Naphthobenzothiophenes	194		184	
Benz(a)anthracene	6.8	J	6.8	J
Chrysene	27.4		27.5	
C1-Chrysenes	74.4		75.6	
C2-Chrysenes	91.0		93	
C3-Chrysenes	43.5		43.8	
C4-Chrysenes	5.6	J	5.4	J
Benzo(b)fluoranthene	9.6	J	10.0	
Benzo(k)fluoranthene	1.3	J	1.2	J
Benzo(e)pyrene	14.1		15.1	
Benzo(a)pyrene	3.5	J	3.7	J
Perylene	9.8	J	10.2	
Indeno(1,2,3-c,d)pyrene	1.2	J	1.1	J
Dibenzo(a,h)anthracene	0.8	J	0.7	J
Benzo(g,h,i)perylene	2.0	J	2.1	J
Total PAHs	6548		6460	
Individual Alkyl Isomers and Hopanes				
2-Methylnaphthalene	76.2		79.0	
1-Methylnaphthalene	69.5		70.8	
2,6-Dimethylnaphthalene	160		174	
1,6,7-Trimethylnaphthalene	47.5		51.6	
1-Methylphenanthrene	72.1		66.8	
C29-Hopane	72.4		67.3	
18a-Oleanane	12.8		12.3	
C30-Hopane	74.0		73.4	
Surrogate (Su)	Su Recovery (%)		Su Recovery (%)	
Naphthalene-d8	91		93	
Acenaphthene-d10	95		92	
Phenanthrene-d10	90		90	
Chrysene-d12	90		85	
Perylene-d12	94		92	

Qualifiers (Q): J=Below the MDL, U=Not detected, B=In procedural blank > 3x MDL, I=Interference, D=Diluted value, NA=Not Applicable, *=Outside QA limits, refer to narrative

Sample 1 Tank Center 7 (Product)
ETX3872



Columbia Analytical Services

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

Client: B&B Laboratories, Inc.
Project No.: NA
Project Name: TV Athos I
Matrix: OIL

Service Request: K2409956
Date Collected: 11/28/04
Date Received: 12/16/04
Units MG/KG
Basis Wet

Sample Name: ETX3872

Lab Code: K2409956-001

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Aluminum	6010B	5.0	1	12/30/04	1/6/05	8.6		
Antimony	6010B	5.0	1	12/30/04	1/6/05	5.0	U	
Arsenic	7060A	1.0	5	1/10/05	1/14/05	1.0	U	
Barium	6010B	0.5	1	12/30/04	1/6/05	1.3		
Beryllium	6010B	0.5	1	12/30/04	1/6/05	0.5	U	
Cadmium	6010B	0.5	1	12/30/04	1/6/05	0.5	U	
Calcium	6010B	5.0	1	12/30/04	1/6/05	41.8		
Chromium	6010B	1.0	1	12/30/04	1/6/05	1.5		
Cobalt	6010B	1.0	1	12/30/04	1/6/05	1.0	U	
Copper	6010B	1.0	1	12/30/04	1/6/05	1.7		
Iron	6010B	2.0	1	12/30/04	1/6/05	43.0		
Lead	6010B	10	1	12/30/04	1/6/05	10	U	
Magnesium	6010B	4.0	1	12/30/04	1/6/05	18.4		
Manganese	6010B	0.5	1	12/30/04	1/6/05	1.1		
Mercury	7471A	0.04	1	12/22/04	12/23/04	0.04	U	
Nickel	6010B	2.0	1	12/30/04	1/6/05	54.8		
Potassium	6010B	200	1	12/30/04	1/6/05	200	U	
Selenium	7740	1.0	5	1/10/05	1/12/05	1.0	U	
Silicon	6010B	50	1	12/30/04	1/6/05	50	U	
Silver	6010B	1.0	1	12/30/04	1/6/05	1.0	U	
Sodium	6010B	10	1	12/30/04	1/6/05	34.7		
Thallium	7841	0.4	2	1/10/05	1/17/05	0.4	U	
Tin	6010B	10	1	12/30/04	1/6/05	10	U	
Vanadium	6010B	1.0	1	12/30/04	1/6/05	440		
Zinc	6010B	1.0	1	12/30/04	1/6/05	3.8		

% Solids: NA

Comments:

00011

A.3. Analysis of source oil aromatics.

Analysis Report

Lancaster Laboratories

Lancaster Laboratories Sample No. G5 4419595

Sample 1 Tank Center 7 Grab Oil Sample
Delaware River Sample

Collected:11/28/2004 by SD

Account Number: 11623

Submitted: 12/03/2004 17:30
Reported: 12/17/2004 at 12:40
Discard: 01/01/2005

Entrix
10 Corporate Circle
Suite 300
New Castle DE 19720

TANK7 SDG#: DRS01-01*

CAT No.	Analysis Name	CAS Number	As Received Result		As Received Method Detection Limit	Units	Dilution Factor
03761	Naphthalene	91-20-3	40,000.	J	20,000.	ug/kg	10
03765	Acenaphthylene	208-96-8	N.D.		20,000.	ug/kg	10
03768	Fluorene	86-73-7	28,000.	J	20,000.	ug/kg	10
03775	Phenanthrene	85-01-8	78,000.	J	20,000.	ug/kg	10
03776	Anthracene	120-12-7	N.D.		20,000.	ug/kg	10
03778	Fluoranthene	206-44-0	N.D.		20,000.	ug/kg	10
03781	Benzo(a)anthracene	56-55-3	31,000.	J	20,000.	ug/kg	10
03782	Chrysene	218-01-9	N.D.		20,000.	ug/kg	10
03786	Benzo(b)fluoranthene	205-99-2	N.D.		20,000.	ug/kg	10
03787	Benzo(k)fluoranthene	207-08-9	N.D.		20,000.	ug/kg	10
03788	Benzo(a)pyrene	50-32-8	N.D.		20,000.	ug/kg	10
03789	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.		20,000.	ug/kg	10
03790	Dibenz(a,h)anthracene	53-70-3	N.D.		20,000.	ug/kg	10
03791	Benzo(g,h,i)perylene	191-24-2	N.D.		20,000.	ug/kg	10

Due to sample matrix interferences observed during the extraction, the normal reporting limits could not be obtained.

Due to the sample matrix an initial dilution was necessary to perform the analysis. Therefore, the reporting limits for the GC/MS semivolatile compounds were raised.

Commonwealth of Pennsylvania Lab Certification No. 36-037

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08432	STARS Petroleum Contaminants S	SW-846 8021B	1	12/06/2004 18:09	Michael F Barrow	5000
07804	PAHs in Soil by GC/MS	SW-846 8270C	1	12/07/2004 12:48	Jeffrey B Smith	10
01132	GC VOA Soil Prep	SW-846 5035	1	12/06/2004 15:05	Michael F Barrow	n.a.
07806	BNA Soil Extraction	SW-846 3550B	1	12/05/2004 12:30	Olivia Arosemena	1

Lancaster Laboratories

Lancaster Laboratories Sample No. G5 4419595

Sample 1 Tank Center 7 Grab Oil Sample
Delaware River Sample

Collected:11/28/2004 by SD

Account Number: 11623

Submitted: 12/03/2004 17:30
Reported: 12/17/2004 at 12:40
Discard: 01/01/2005

Entrix
10 Corporate Circle
Suite 300
New Castle DE 19720

TANK7 SDG#: DRS01-01*

CAT No.	Analysis Name	CAS Number	As Received Result		As Received Method Detection Limit	Units	Dilution Factor
03761	Naphthalene	91-20-3	40,000.	J	20,000.	ug/kg	10
03765	Acenaphthylene	208-96-8	N.D.		20,000.	ug/kg	10
03768	Fluorene	86-73-7	28,000.	J	20,000.	ug/kg	10
03775	Phenanthrene	85-01-8	78,000.	J	20,000.	ug/kg	10
03776	Anthracene	120-12-7	N.D.		20,000.	ug/kg	10
03778	Fluoranthene	206-44-0	N.D.		20,000.	ug/kg	10
03781	Benzo(a)anthracene	56-55-3	31,000.	J	20,000.	ug/kg	10
03782	Chrysene	218-01-9	N.D.		20,000.	ug/kg	10
03786	Benzo(b)fluoranthene	205-99-2	N.D.		20,000.	ug/kg	10
03787	Benzo(k)fluoranthene	207-08-9	N.D.		20,000.	ug/kg	10
03788	Benzo(a)pyrene	50-32-8	N.D.		20,000.	ug/kg	10
03789	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.		20,000.	ug/kg	10
03790	Dibenz(a,h)anthracene	53-70-3	N.D.		20,000.	ug/kg	10
03791	Benzo(g,h,i)perylene	191-24-2	N.D.		20,000.	ug/kg	10

Due to sample matrix interferences observed during the extraction, the normal reporting limits could not be obtained.

Due to the sample matrix an initial dilution was necessary to perform the analysis. Therefore, the reporting limits for the GC/MS semivolatile compounds were raised.

Commonwealth of Pennsylvania Lab Certification No. 36-037

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08432	STARS Petroleum Contaminants S	SW-846 8021B	1	12/06/2004 18:09	Michael F Barrow	5000
07804	PAHs in Soil by GC/MS	SW-846 8270C	1	12/07/2004 12:48	Jeffrey B Smith	10
01132	GC VOA Soil Prep	SW-846 5035	1	12/06/2004 15:05	Michael F Barrow	n.a.
07806	BNA Soil Extraction	SW-846 3550B	1	12/05/2004 12:30	Olivia Arosemena	1

A.4. December 7, 2004 LSU source oil report.

Department of Environmental Studies, Louisiana State University
1285 Energy, Coast & Environment Building, Baton Rouge, LA 70803
(225) 578-4295

IES/RCAT04-26 07 December, 2004

To: Ed Levine
NOAA SSC

From: Scott Miles
Chemistry Support Team
Louisiana State University

Re: Delaware River Oil Spill

Executive Summary

Two (2) reference oil samples (Table 1) collected from the Athos I by David Wesley (NOAA HAZMAT) were received at the Louisiana State University Response laboratory on 06 December 2004. The samples were diluted and fingerprinted upon arrival and logged-in at DES/RCAT. In addition to oil fingerprinting, density, viscosity, evaporative weathering, and standard distillation curve analysis was performed on the samples. The samples displayed a fingerprinting pattern similar to a heavy crude oil with normal alkane ranges from nC-10 to nC-26. The samples contained high concentrations of asphaltenes and other unresolved high molecular weight compounds. Initial density analyses suggest the oil samples will float if spilled in fresh water. Results from the evaporative weathering experiment indicated that it is unlikely the sample oils would sink due to natural evaporative processes. It should be noted the sample oils loss <3% (by weight) when placed under vacuum and 90 degree Celsius conditions for four (4) hours.

Table 1. Sample Identifications and LSU Identifications

NOAA	Collection Site	Time	LSU ID#	Instrument ID
Sample #1	Delaware River/Philadelphia	12/03/2004 0955	2N4341-01	GRM4341D
Sample #2	Delaware River/Philadelphia	12/03/2004 0955	2N4341-02	GRM4341E

METHODOLOGY

Once the samples were received at the LSU laboratory, they were transferred with a metal spatula into 40-milliliter (ml) extraction vials. The samples were then mixed and covered with dichloromethane (DCM). Sodium sulfate Na_2SO_4 was added to each sample, which was then shaken. The samples were then transferred, using separate disposable pipettes, into a 2 mL autosampler vial and capped with a PTFE/Aluminum crimp cap. A reference oil standard (North Slope Crude) was analyzed prior to the sample oil analyses. The extracted oil sample and reference oils were analyzed on a Hewlett Packard 5890 Series II Gas Chromatograph coupled with a Hewlett Packard 5971 Series Mass Selective Detector operated in selected ion monitoring mode.

Oil density was determined by filling a pre-weighed calibrated Teflon tube with a known volume of sample oil. The Teflon tube and oil were weighed on an analytical balance and weight recorded. Density was expressed as g/ml.

Viscosity was determined using a calibrated EZ viscosity cup and stopwatch as specified in ASTM D 4212 standards. Viscosity was expressed in cSt.

Evaporative weathering was performed by placing approximately 10 ml of each oil sample into a pre-weighed 100 ml round bottom flask followed by attachment to a rotary evaporative device. The flasks were then submersed in a 90 degree Celsius hot water bath. The flasks were removed at set time intervals (10, 30, 60, 120, 240 minutes) and weighed. The weight loss was noted and the % evaporation was calculated. After 240 minutes the flasks were removed from the rotovap and allowed to cool to room temperature. A small aliquot of oil from each flask was removed and placed in 100 ml beakers containing 50 ml of tap water. Observations were noted and recorded in laboratory notebook.

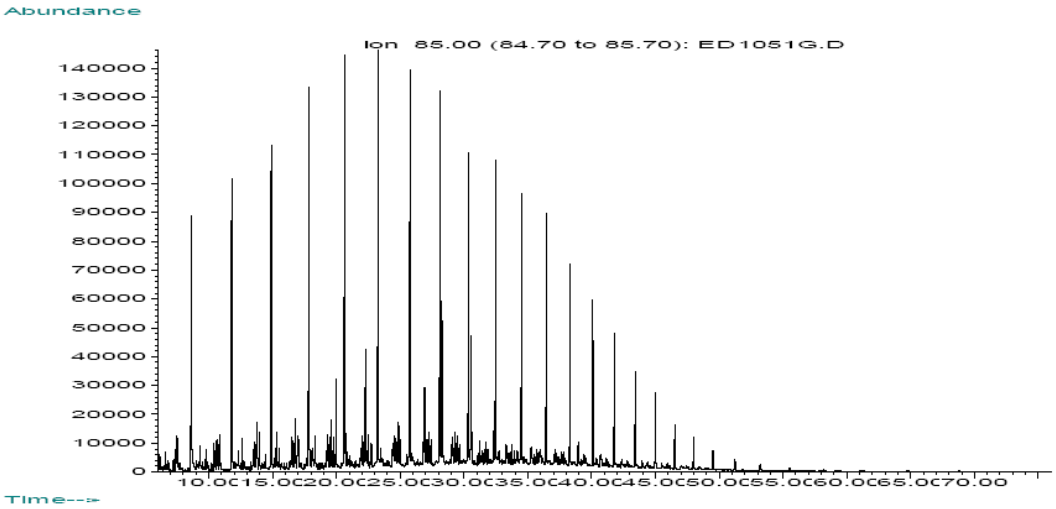
Results from the physical analyses are displayed in the results and discussion section, Table 2.

RESULTS AND DISCUSSION

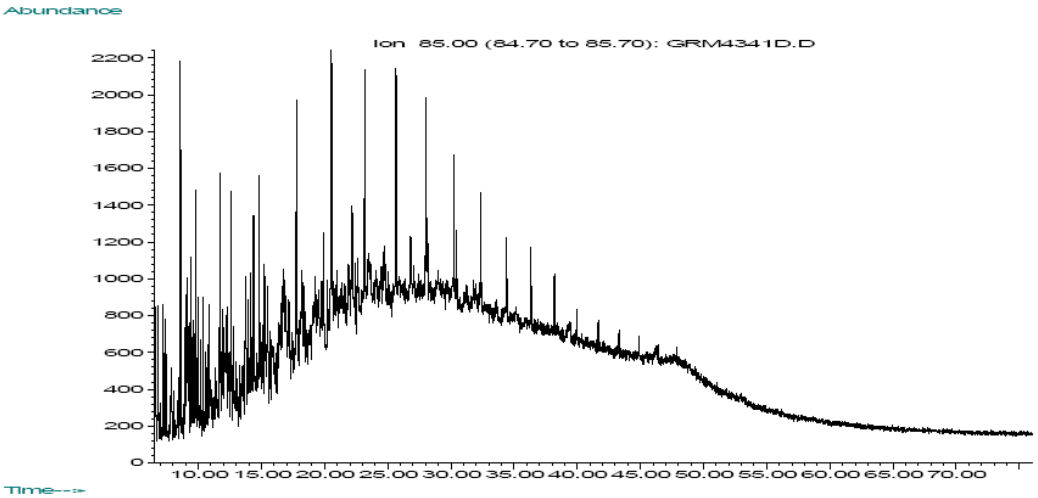
Results from the fingerprinting analysis indicate the samples originated from a heavy crude oil with normal alkanes ranging from C-10 to C-26. The samples contained low concentrations of aromatic compounds and were slightly weathered. The significant oil-fingerprinting biomarker compounds, hopanes and steranes, were detected at very low concentrations. The samples did contain a high concentration of asphaltenes and other unresolved high molecular weight compounds. The normal alkane profile for the two oil samples and North Slope Crude reference oil are displayed below.

Table 2. Results from Physical Testing

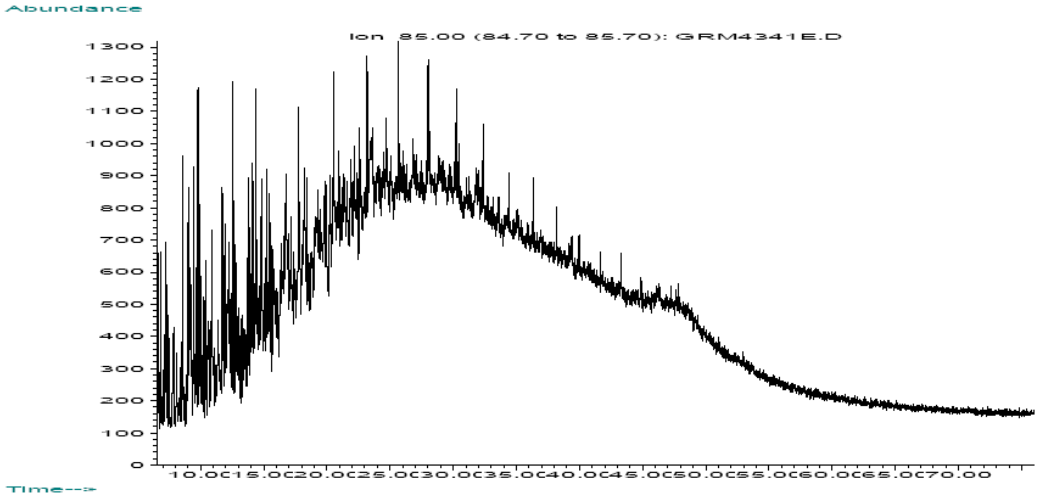
Test	Sample	Results	Comments
Density	Sample #1	0.978 g/ml	
	Sample #2	0.973 g/ml	
Viscosity	Sample #1	>5000cSt	Beyond testing range
	Sample #2	>5000cSt	Beyond testing range
Evaporative Weathering	Sample #1	< 3%	Oil floated and spread
	Sample #2	< 3%	Oil floated and spread



Normal Alkane Profile of Reference Oil: North Slope Crude



Normal Alkane Profile of Oil Sample #1 from Athos I Spill



Normal Alkane Profile of Oil Sample #2 from Athos I Spill

A.5. December 9, 2004 LSU source oil report.

Department of Environmental Studies, Louisiana State University

1285 Energy, Coast & Environment Building, Baton Rouge, LA 70803
(225) 578-4295

IES/RCAT04-28 09 December, 2004

To: Ed Levine
NOAA SSC

From: Scott Miles
Chemistry Support Team
Louisiana State University

Re: Delaware River Oil Spill

Executive Summary

One (1) oil sample (Table 1) collected from the Athos I spill by Steve Lehmann (NOAA SSC) was received at the Louisiana State University Response laboratory on 09 December 2004. The sample was diluted and fingerprinted upon arrival and logged-in at DES/RCAT. In addition to oil fingerprinting, density, viscosity, and oil cohesiveness test was performed on the sample. The sample displayed a fingerprinting pattern similar to a heavy crude oil with normal alkane ranges from nC-10 to nC-26. The sample displayed a fingerprinting pattern similar to previous samples retrieved from the M/V Athos spill, but with a higher degree of weathering. The samples contained high concentrations of asphaltenes and other unresolved high molecular weight compounds. The presence of aromatic and biomarker compounds was detected, but at very low levels. Initial density analyses suggest the oil samples will float if spilled in fresh water. **Results from the oil cohesiveness jar test demonstrate the oil may adhere to the river bottom sediments if the oil was released with sufficient mass and velocity to strike the river bottom. During the jar test, large quantities (>50%) of oil was retained on the silt/sand test bed and remained submerged during the entire testing period. We are speculating the outer boundary layer of the pooled oil mass may be adhering to the bottom sediments/detritus material. The remainder of the oil, not contacting the river bottom, is being held immobile by the high cohesive forces exerted by the highly viscous oil.**

Table 1. Sample Identifications and LSU Identifications

NOAA	Collection Site	Time	LSU ID#	Instrument ID
Pooled Oil	Delaware River/Philadelphia	12/08/2004	2N4344-01	GRM4344A

METHODOLOGY

Once the sample was received at the LSU laboratory, it was transferred with a metal spatula into 40-milliliter (ml) extraction vial. The sample was then mixed and covered with dichloromethane (DCM). Sodium sulfate Na_2SO_4 was added to each sample, which was then shaken. The sample was then transferred, using a disposable pipette, into a 2 mL autosampler vial and capped with a PTFE/Aluminum crimp cap. A reference oil standard (North Slope Crude) was analyzed prior to the sample oil analysis. The extracted oil sample and reference oils were analyzed on a Hewlett Packard 5890 Series II Gas Chromatograph coupled with a Hewlett Packard 5971 Series Mass Selective Detector operated in selected ion monitoring mode.

Oil density was determined by filling a pre-weighed calibrated Teflon tube with a known volume of sample oil. The Teflon tube and oil was weighed on an analytical balance and weight recorded. Density was expressed as g/ml.

Viscosity was determined using a calibrated EZ viscosity cup and stopwatch as specified in ASTM D 4212 standards. Viscosity was expressed in cSt.

The oil cohesiveness jar test was performed by placing approximately 10 ml of sample oil into a Teflon tube and forcefully injecting the oil into 125 ml Pyrex beaker. The beaker contained approximately 60 ml of Mississippi River water and a ¼" thick sand/silt bed material. The experiment was allowed to equilibrate for three (3) hours and visual observations were noted..

Results from the physical analyses are displayed in the results and discussion section, Table 2.

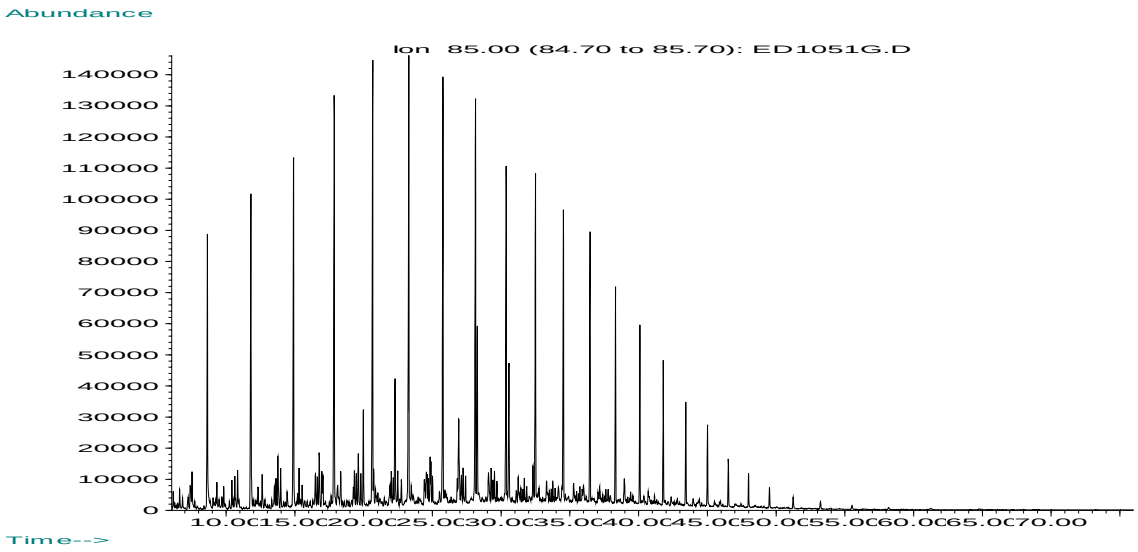
RESULTS AND DISCUSSION

Results from the fingerprinting analysis indicate the samples originated from a heavy crude oil with normal alkanes ranging from C-10 to C-26. The samples contained low concentrations of aromatic compounds and was moderately weathered. The significant oil-fingerprinting biomarker compounds, hopanes and steranes, were detected at very low concentrations. The samples did contain a high concentration of asphaltenes and other unresolved high molecular weight compounds**.** Results from the oil cohesiveness jar test demonstrate the oil may adhere to the river bottom sediments if the oil was released with sufficient mass and velocity to strike the river bottom. The normal alkane profiles for the pooled oil sample and North Slope Crude reference oil are displayed below.

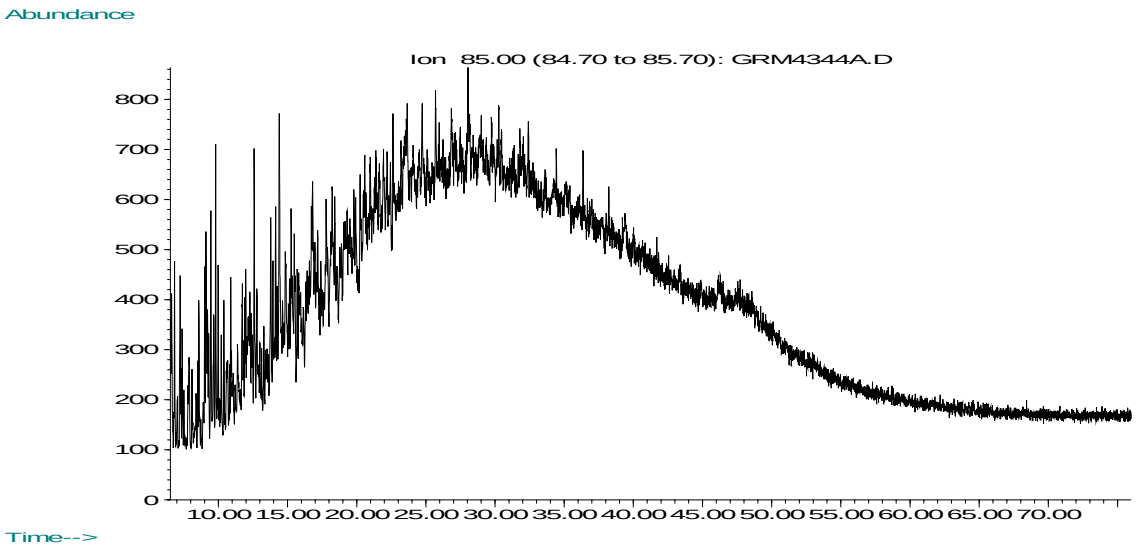
Table 2. Results from Physical Testing

Test	Sample	Results	Comments
Density	2N4344-01	0.943 g/ml	
Viscosity	2N4344-01	>5000cSt	Beyond testing range
Oil cohesiveness jar test	2N4344-01	Positive	Oil may adhere to bottom sediments

NA – Not Applicable



Normal Alkane Profile of Reference Oil: North Slope Crude



Normal Alkane Profile of Pooled Oil from *M/V Athos* I Spill

A.6. Narcotic potency of the PAH mixture in the source oil.

Sample ID	Average Athos I Oil	
Collection Date	11/28/04	
Location	Tank Center 7	
Acute PAH Narcosis	12.20	umol/g octanol
Acute:Chronic Ratio	5.09	
Chronic PAH Narcosis	2.40	umol/g octanol

	MW (g/mol)	log Kow	Subcooled Solub. (mol/L)	Athos Oil Ave. (ng/mg)	Moles PAH_i	Mole Fraction x_i	$LC50_i$ (mol/L)	$TU_{W,max}$ (S_L/LC50)	TUa ($TU_{W,max}$ * X_i)	% Contribution $TU_{W,max}$
Naphthalene	128.2	3.33	7.03E-04	61.0	2.65E-10	2.06E-02	8.70E-06	80.81	1.67	3.97
C1-Naphthalenes	142.2	3.80	2.14E-04	133.3	5.23E-10	4.06E-02	3.13E-06	68.33	2.78	6.62
C2-Naphthalenes	156.2	4.30	6.03E-05	266.3	9.51E-10	7.39E-02	1.05E-06	57.17	4.22	10.08
C3-Naphthalenes	170.3	4.80	1.70E-05	294.0	9.64E-10	7.48E-02	3.55E-07	47.82	3.58	8.54
C4-Naphthalenes	184.3	5.30	4.79E-06	204.9	6.20E-10	4.82E-02	1.20E-07	40.01	1.93	4.60
Biphenyl	154.2	3.80	2.14E-04	12.8	4.61E-11	3.58E-03	3.13E-06	68.33	0.24	0.58
Acenaphthylene	152.2	4.00	1.29E-04	8.4	3.06E-11	2.38E-03	2.02E-06	63.63	0.15	0.36
Acenaphthene	154.2	4.20	7.76E-05	19.0	6.89E-11	5.35E-03	1.31E-06	59.24	0.32	0.76
Fluorene	166.2	4.32	5.73E-05	47.9	1.61E-10	1.25E-02	1.01E-06	56.76	0.71	1.69
C1-Fluorenes	180.3	4.72	2.08E-05	123.0	3.81E-10	2.96E-02	4.23E-07	49.21	1.45	3.47
C2-Fluorenes	194.3	5.20	6.17E-06	224.4	6.45E-10	5.01E-02	1.49E-07	41.46	2.08	4.95
C3-Fluorenes	208.3	5.70	1.74E-06	294.3	7.88E-10	6.12E-02	5.01E-08	34.68	2.12	5.07
Phenanthrene	178.2	4.57	3.03E-05	88.7	2.78E-10	2.16E-02	5.84E-07	51.90	1.12	2.67
Anthracene	178.2	4.68	2.30E-05	7.8	2.44E-11	1.89E-03	4.61E-07	49.92	0.09	0.23
C1-Phenanthrenes	192.3	5.04	9.25E-06	236.6	6.87E-10	5.33E-02	2.11E-07	43.90	2.34	5.59
C2-Phenanthrenes	206.3	5.46	3.19E-06	334.7	9.05E-10	7.03E-02	8.45E-08	37.79	2.66	6.34
C3-Phenanthrenes	220.3	5.92	9.95E-07	290.4	7.35E-10	5.71E-02	3.10E-08	32.07	1.83	4.37
C4-Phenanthrenes	234.3	6.32	3.61E-07	238.6	5.68E-10	4.41E-02	1.30E-08	27.80	1.23	2.93
Dibenzothiophene	184.2	4.53	3.37E-05	40.1	1.21E-10	9.43E-03	6.39E-07	52.66	0.50	1.18
C1-Dibenzothiophene	198.3	4.96	1.13E-05	140.0	3.94E-10	3.06E-02	2.51E-07	45.17	1.38	3.30

C2-Dibenzothiophene	212.3	5.42	3.53E-06	372.0	9.78E-10	7.59E-02	9.21E-08	38.33	2.91	6.95
C3-Dibenzothiophene	226.3	5.89	1.07E-06	373.7	9.22E-10	7.16E-02	3.31E-08	32.41	2.32	5.53
Fluoranthene	202.3	5.23	5.71E-06	3.8	1.04E-11	8.08E-04	1.39E-07	41.02	0.03	0.08
Pyrene	202.3	5.13	7.36E-06	16.6	4.57E-11	3.55E-03	1.73E-07	42.51	0.15	0.36
C1-Fluoranthenes	216.3	5.48	3.00E-06	82.8	2.14E-10	1.66E-02	8.02E-08	37.46	0.62	1.48
C2-Fluoranthenes	230.3	5.88	1.10E-06	133.7	3.24E-10	2.51E-02	3.39E-08	32.53	0.82	1.95
C3-Fluoranthenes	244.3	6.28	4.00E-07	174.6	3.99E-10	3.10E-02	1.42E-08	28.20	0.87	2.08
Benzo(a)anthracene	195.0	5.91	1.02E-06	7.0	2.01E-11	1.56E-03	3.17E-08	32.18	0.05	0.12
Chyrsene	228.3	5.81	1.32E-06	37.6	9.20E-11	7.14E-03	3.94E-08	33.35	0.24	0.57
C1-Chyrsenes	242.3	6.14	5.70E-07	88.5	2.04E-10	1.58E-02	1.92E-08	29.64	0.47	1.12
C2-Chyrsenes	256.3	6.43	2.74E-07	127.1	2.77E-10	2.15E-02	1.03E-08	26.74	0.57	1.37
C3-Chyrsenes	270.4	6.94	7.52E-08	44.6	9.21E-11	7.15E-03	3.37E-09	22.28	0.16	0.38
C4-Chyrsenes	284.4	7.36	2.59E-08	10.4	2.04E-11	1.58E-03	1.35E-09	19.18	0.03	0.07
Benzo(b)fluoranthene	252.3	6.27	4.14E-07	8.2	1.81E-11	1.40E-03	1.46E-08	28.34	0.04	0.10
Benzo(k)fluoranthene	252.3	6.29	3.89E-07	1.1	2.47E-12	1.92E-04	1.38E-08	28.09	0.01	0.01
Benzo(e)pyrene	252.3	6.44	2.67E-07	14.2	3.14E-11	2.44E-03	1.00E-08	26.63	0.07	0.16
Benzo(a)pyrene	252.3	6.13	5.85E-07	5.0	1.10E-11	8.53E-04	1.97E-08	29.75	0.03	0.06
Perylene	252.3	6.25	4.32E-07	14.5	3.21E-11	2.49E-03	1.51E-08	28.50	0.07	0.17
Indeno(1,2,3-cd)pyrene	276.3	6.72	1.31E-07	3.6	7.30E-12	5.67E-04	5.42E-09	24.08	0.01	0.03
Dibenz(a,h)anthracene	278.4	6.71	1.34E-07	5.1	1.02E-11	7.95E-04	5.53E-09	24.16	0.02	0.05
Benzo(ghi)perylene	276.3	6.51	2.25E-07	5.9	1.20E-11	9.31E-04	8.65E-09	26.00	0.02	0.06

Total Moles of Specific PAHs =	1.29E-08	Acute Narcotic Potency of Ave Athos I Oil =	41.90
		Chronic Narcotic Potency of Ave Athos I Oil =	213.28

100.00

A.7.a PAH Analyte List by Laboratory
Compounds Included in Total PAH Measurement
Compounds in **Bold** are the National Status and Trends PAHs (NS&T Total PAHs)

B&B Laboratory	***GERG***	***Lancaster Laboratories***
Naphthalene	**Naphthalene**	**Naphthalene**
C1-Naphthalenes	C1-Naphthalenes	
C2-Naphthalenes	C2-Naphthalenes	
C3-Naphthalenes	C3-Naphthalenes	
C4-Naphthalenes	C4-Naphthalenes	
Benzothiophene		
C1-Benzothiophenes		
C2-Benzothiophenes		
C3-Benzothiophenes		
Biphenyl	**Biphenyl**	
Acenaphthylene	Acenaphthylene	Acenaphthylene
Acenaphthene	**Acenaphthene**	**Acenaphthene**
Dibenzofuran		
Fluorene	**Fluorene**	**Fluorene**
C1-Fluorenes	C1-Fluorenes	
C2-Fluorenes	C2-Fluorenes	
C3-Fluorenes	C3-Fluorenes	
Carbazole		
Anthracene	**Anthracene**	**Anthracene**
Phenanthrene	**Phenanthrene**	**Phenanthrene**
C1-Phenanthrene/Anthracenes	C1-Phenanthrenes/Anthracenes	
C2-Phenanthrene/Anthracenes	C2-Phenanthrenes/Anthracenes	
C3-Phenanthrene/Anthracenes	C3-Phenanthrenes/Anthracenes	
C4-Phenanthrene/Anthracenes	C4-Phenanthrenes/Anthracenes	
Dibenzothiophene	Dibenzothiophene	
C1-Dibenzothiophene	C1-Dibenzothiophenes	
C2-Dibenzothiophene	C2-Dibenzothiophenes	
C3-Dibenzothiophene	C3-Dibenzothiophenes	
Fluoranthene	**Fluoranthene**	**Fluoranthene**
Pyrene	**Pyrene**	**Pyrene**
C1-Fluoranthenes/Pyrenes	C1-Fluoranthenes/Pyrenes	
C2-Fluoranthenes/Pyrenes	C2-Fluoranthenes/Pyrenes	
C3-Fluoranthenes/Pyrenes	C3-Fluoranthenes/Pyrenes	
Naphthobenzothiophene		
C1-Naphthobenzothiophenes		

B&B Laboratory	***GERG***	***Lancaster Laboratories***
C2-Naphthobenzothiophenes		
C3-Naphthobenzothiophenes		
Benz(a)anthracene	**Benzo(a)anthracene**	**Benzo(a)anthracene**
Chrysene	**Chrysene**	**Chrysene**
C1-Chrysenes	C1-Chrysenes	
C2-Chrysenes	C2-Chrysenes	
C3-Chrysenes	C3-Chrysenes	
C4-Chrysenes	C4-Chrysenes	
Benzo(b)fluoranthene	Benzo(b)fluoranthene	Benzo(b)fluoranthene
Benzo(k)fluoranthene	Benzo(k)fluoranthene	Benzo(k)fluoranthene
Benzo(e)pyrene	**Benzo(e)pyrene**	
Benzo(a)pyrene	**Benzo(a)pyrene**	**Benzo(a)pyrene**
Perylene	**Perylene**	
Indeno(1,2,3-c,d)pyrene	Indeno(1,2,3-c,d)pyrene	Indeno(1,2,3-cd)pyrene
Dibenz(a,h)anthracene	**Dibenz(a,h)anthracene**	**Dibenz(a,h)anthracene**
Benzo(g,h,i)perylene	Benzo(g,h,i)perylene	Benzo(g,h,i)perylene

A.7.b PAH Analyte List by Laboratory
Additional Analytes Not Included as Total PAHs
Compounds in **Bold** are the National Status and Trends PAHs (NS&T Total PAHs)

B&B Laboratory	***GERG***	***Lancaster Laboratories***
2-Methylnaphthalene	**2-Methylnaphthalene**	Methyl t-Butyl Ether
1-Methylnaphthalene	**1-Methylnaphthalene**	Benzene
2,6-Dimethylnaphthalene	**2,6-Dimethylnaphthalene**	Toluene
1,6,7-Trimethylnaphthalene	1,6,7-Trimethylnaphthalene	Ethylbenzene
1-Methylphenanthrene	**1-Methylphenanthrene**	m,p-Xylene
C29-Hopane		o-Xylene
18a-Oleanane		Isopropylbenzene (Cumene)
C30-Hopane		n-Propylbenzene
		1,3,5-Trimethylbenzene
		tert-Butylbenzene
		1,2,4-Trimethylbenzene
		sec-Butylbenzene
		p-Isopropyltoluene
		n-Butylbenzene

APPENDIX B

Water Sample Analytical Results

B.1. Water sample log.

B.2. PAH analyses of water samples collected during preassessment efforts

B.3. Total suspended solids (TSS) analyses of water samples collected on December 7-8, 2004.

B.4. Volatile organic analyses of water samples collected on November 27, 2004, near the Commodore Barry Bridge.

B.1. Water sample log. All samples are surface samples unless noted otherwise in the comments column.

Sample ID	Latitude	Longitude	Date	Total PAHs (ng/L)	Comments
W-CBB-01	39.82586	-75.36619	27-Nov-04	391	Comm. Barry Br.
W-CBB-02	39.82.895	-75.37180	27-Nov-04	618	Comm. Barry Br.
W-CBB-03	39.83286	-75.37460	27-Nov-04	564	Comm. Barry Br.
W-WOOD-01	39.84204	-75.15443	28-Nov-04	962	Woodbury Creek
W-WOOD-02	39.86600	-75.19727	28-Nov-04	768	Woodbury Creek
W-DR-01	39.87383	-75.19268	28-Nov-04	3015	NJ side, just upstream of Woodbury Creek
W-DER-01			28-Nov-04	457	DE River on NJ side of where Athos moored
W-MAN-01			28-Nov-04	1122	Upstream of first bridge, Mantua Creek
W-MAN-02			28-Nov-04	585	Mouth of Mantua Creek
W-BTC-01-1	39.86117	-75.11560	28-Nov-04	876	Big Timber Creek
W-BTC-01-2	39.86117	-75.11560	28-Nov-04	787	Big Timber Creek (field duplicate)
W-BTC-02	39.88633	-75.13495	28-Nov-04	1124	Big Timber Creek
W-BTC-03	39.88685	-75.13690	28-Nov-04	1517	Big Timber Creek
WMH-01	39.79208	-75.44603	28-Nov-04	727	Marcus Hook
WMH-02	39.78860	-75.44796	28-Nov-04	595	Marcus Hook
WMH-03	39.78389	-75.44540	28-Nov-04	474	Marcus Hook
W-BTC-04	39.88840	-75.13528	30-Nov-04	203	Big Timber Creek
W-BTC-05	39.88582	-75.13320	30-Nov-04	310	Big Timber Creek
W-BTC-06	39.85307	-75.09625	30-Nov-04	304	Big Timber Creek
W-WOOD-03-1	39.86990	-75.19633	30-Nov-04	205	Woodbury Creek
W-WOOD-03-2	39.86990	-75.19633	30-Nov-04	195	Woodbury Creek
W-WOOD-04	39.86517	-75.19558	30-Nov-04	283	Woodbury Creek
W-WOOD-05	39.88840	-75.13528	30-Nov-04	481	Woodbury Creek
WMH-04	39.78833	-75.44200	30-Nov-04	439	Marcus Hook
WMH-05	39.78600	-75.44233	30-Nov-04	289	Marcus Hook
WMH-06	39.78350	-75.44033	30-Nov-04	273	Marcus Hook
W-CBB-04	39.82300	-75.36667	30-Nov-04	407	Comm. Barry Br.
W-CBB-05	39.82500	-75.36700	30-Nov-04	225	Comm. Barry Br.
W-CBB-06	39.83333	-75.36867	30-Nov-04	249	Comm. Barry Br.
W-DER-02			30-Nov-04	646	160 m East of Athos I bow
W-MAN-03			30-Nov-04	729	Mouth of Mantua Creek
W-MAN-04			30-Nov-04	403	1/4 mi up Mantua Creek
WPA4-J	39.86318	-75.2407	30-Nov-05	2531	PA, Across from Mantua Creek
WMIF-1	39.87612	-75.20883	30-Nov-05	4927	Mouth of Schuylkill River
WMIF-2	39.87522	-75.21192	30-Nov-05	586	Mouth of Schuylkill River
W-UL-01	40.01288	-75.02488	7-Dec-04	177	Upstream of Tacony Palmyra Bridge, East Bank
W-UL-02	40.01740	-75.02817	7-Dec-04	105	Upstream of Tacony Palmyra Bridge, Center Channel
WSUB-01-1	40.01740	-75.02817	7-Dec-04	478	Upstream of Tacony Palmyra Bridge, Center Channel (Bottom sample)

Sample ID	Latitude	Longitude	Date	Total PAHs (ng/L)	Comments
WSUB-01-2	40.01740	-75.02817	7-Dec-04	32	Upstream of Tacony Palmyra Bridge, Center Channel (Bottom sample)
W-UL-03	40.01770	-75.03710	7-Dec-04	179	Upstream of Tacony Palmyra Bridge, West Bank
W-TPB-01	40.00922	-75.04285	7-Dec-04	141	East Bank
W-TPB-02	40.01132	-75.04483	7-Dec-04	213	Center Channel
W-TPB-03	40.01370	-75.04610	7-Dec-04	320	West Bank
W-BTC-07	39.88330	-75.13205	7-Dec-04	409	Big Timber Creek
W-Dup-01	39.88330	-75.13205	7-Dec-04	378	Big Timber Creek, duplicate
W-BTC-08	39.87150	-75.12043	7-Dec-04	287	Big Timber Creek
W-BTC-09	39.88698	-75.13533	7-Dec-04	190	Big Timber Creek, river side of boom at mouth
WLP-#1-5	39.43060	-75.47412	7-Dec-04	130	Liston Pt. Left Descending Bank
WLP-#2-5	39.40397	-75.49662	7-Dec-04	132	Liston Pt. Center Channel
WLP-#3-5	39.40127	-75.52187	7-Dec-04	2154	Liston Pt. Right Descending Bank
W-WOOD-07	39.86608	-75.19635	8-Dec-04	250	Woodbury Creek, inside boom creekside, eastside
W-WOOD-08	39.84190	-75.15450	8-Dec-04	533	Woodbury Creek, otherside of bridge, by baseball field
W-WOOD-06	39.86717	-75.19670	8-Dec-04	235	Woodbury Creek, riverside of boom
W-MAN-07	39.83477	-75.23668	8-Dec-04	255	Mantua Creek, downriver
W-MAN-06	39.85383	-75.23105	8-Dec-04	214	Mantua Creek, inside boom, creekside at mouth
W-MAN-05	39.85445	-75.23135	8-Dec-04	188	Mantua Creek, outside boom, riverside at mouth
W-TN-01	39.85915	-75.30923	8-Dec-04	437	Tinicum Island, west coast outside boom, riverside
W-TN-02	39.85327	-75.31020	8-Dec-04	383	Tinicum Island, in front of island to the NJ side
W-SUBTN-01-1	39.85327	-75.31020	8-Dec-04	2083	Tinicum Island, in front of island to the NJ side (Bottom sample)
W-SUBTN-01-2	39.85327	-75.31020	8-Dec-04	197	Tinicum Island, in front of island to the NJ side (Bottom sample)
W-TN-03	39.84487	-75.30710	8-Dec-04	244	NJ side of river shoreline area
W-TN-04	39.84393	-75.28160	8-Dec-04	299	Off cove on island NJ side at Greenwich
W-SUBTN-02-1	39.84393	-75.28160	8-Dec-04	317	Off cove on island NJ side at Greenwich (Bottom sample)
W-SUBTN-02-2	39.84393	-75.28160	8-Dec-04	38	Off cove on island NJ side at Greenwich (Bottom sample)
WCD-#1S	39.57283	-75.53270	8-Dec-04	220	C & D Canal, Left Descending Bank
WCD-#2S	39.57093	-75.56238	8-Dec-04	154	C & D Canal, Center Channel
WCD-#2D-1	39.57093	-75.56238	8-Dec-04	297	C & D Canal, Center Channel (Bottom sample)
WCD-#2D-2	39.57093	-75.56238	8-Dec-04	38	C & D Canal, Center Channel (Bottom sample)
WCD-#3S (ETX3924D)	39.57097	-75.56923	8-Dec-04	210	C & D Canal, Right Descending Bank
WCR-#1S	39.71685	-75.51042	8-Dec-04	180	Christina River, Right Descending Bank
WCR-#1D-1	39.71685	-75.51042	8-Dec-04	776	Christina River, Right Descending Bank (Bottom sample)
WCR-#1D-2	39.71685	-75.51042	8-Dec-04	100	Christina River, Right Descending Bank (Bottom sample)

Sample ID	Latitude	Longitude	Date	Total PAHs (ng/L)	Comments
WCR-#2S	39.71297	-75.50800	8-Dec-04	187	Christina River, Center Channel
WCR-#2D-1	39.71297	-75.50800	8-Dec-04	809	Christina River, Center Channel (Bottom sample)
WCR-#2D-2	39.71297	-75.50800	8-Dec-04	25	Christina River, Center Channel (Bottom sample)
WCR-#3S (ETX3918.D)	39.71183	-75.49560	8-Dec-04	160	Christina River, Left Descending Bank
WCR-#3S (ETX3924.D)			8-Dec-04	210	Christina River
WMH-#1-5	39.80968	-75.41132	8-Dec-04	26634	Marcus Hook, Right Descending Bank
WMH-#1S			8-Dec-04	293	Marcus Hook
WMH-#2D	39.80370	-75.41062	8-Dec-04	570	Marcus Hook, Center Channel (Bottom sample)
WMH-#3S	39.79850	-75.40993	8-Dec-04	172	Marcus Hook, Left Descending Bank

B.2. PAH analyses of water samples collected during preassessment efforts.

Sample Name	ETX3798.D	ETX3800.D	ETX3802.D	ETX3804.D	ETX3806.D	ETX3808.D
Client Name	W-BTC-01 (1 of 2)	W-BTC-02 (1 of 2)	W-BTC-03 (1 of 2)	W-WOOD-01 (1 of 2)	W-WOOD-02 (1 of 2)	W-DER-01 (1 of 2)
Matrix	Water	Water	Water	Water	Water	Water
Collection Date	11/28/04	11/28/04	11/28/04	11/28/04	11/28/04	11/28/04
Received Date	11/30/04	11/30/04	11/30/04	11/30/04	11/30/04	11/30/04
Extraction Date	12/01/04	12/01/04	12/01/04	12/01/04	12/01/04	12/01/04
Extraction Batch	ENV 1054	ENV 1054	ENV 1054	ENV 1054	ENV 1054	ENV 1054
Date Acquired	12/07/04	12/07/04	12/08/04	12/08/04	12/08/04	12/08/04
Method	PAH-2002	PAH-2002	PAH-2002	PAH-2002	PAH-2002	PAH-2002
Sample Volume (L)	1.0	1.0	1.0	1.0	1.0	1.0
Dilution	NA	NA	NA	NA	NA	NA
Target Compounds	Su Corrected Conc. (ng/L) Q	Su Corrected Conc. (ng/L) Q	Su Corrected Conc. (ng/L) Q	Su Corrected Conc. (ng/L) Q	Su Corrected Conc. (ng/L) Q	Su Corrected Conc. (ng/L) Q
Naphthalene	93.3	130	78.2	62.8	39.9	48.6
C1-Naphthalenes	93.4	129	59.2	39.9	32.4	31.2
C2-Naphthalenes	68.6	90.2	64.0	38.1	32.0	25.7
C3-Naphthalenes	49.0	69.2	71.8	28.4	26.2	17.2
C4-Naphthalenes	41.1	45.4	77.3	27.3	30.8	18.9
Benzothiophene	<1.7 U	1.9	1.5 J	<1.7 U	<1.7 U	<1.6 U
C1-Benzothiophenes	<3.3 U	7.8	<3.3 U	<3.3 U	<3.3 U	<3.3 U
C2-Benzothiophenes	<3.3 U	9.2	<3.3 U	<3.3 U	<3.3 U	<3.3 U
C3-Benzothiophenes	<3.3 U	12.6	<3.3 U	<3.3 U	<3.3 U	<3.3 U
Biphenyl	3.7	4.7	5.3	3.4	2.6	3.0
Acenaphthylene	3.2	1.7	1.6	4.0	2.4	1.5
Acenaphthene	6.1	6.1	5.5	20.6	4.4	<1.3 U
Dibenzofuran	4.7	4.8	3.6	11.6	4.0	3.3
Fluorene	6.2	7.1	6.5	13.9	5.1	2.8
C1-Fluorenes	10.3	17.5	20.5	10.1	11.0	5.8
C2-Fluorenes	23.0	28.0	51.5	<1.2 U	26.9	13.1
C3-Fluorenes	32.8	36.3	66.2	<1.2 U	30.0	18.7
Carbazole	<1.9 U	1.2 J	6.6	14.8	<1.9 U	<1.8 U
Anthracene	2.8	1.7	1.8	4.4	3.3	1.5
Phenanthrene	13.7	14.9	15.7	47.1	15.0	7.5
C1-Phenanthrene/Anthracenes	24.3	35.8	48.5	25.6	26.5	12.4
C2-Phenanthrene/Anthracenes	38.2	53.8	103.0	25.2	46.3	25.6
C3-Phenanthrene/Anthracenes	35.8	48.0	95.8	20.7	42.7	23.1
C4-Phenanthrene/Anthracenes	19.1	28.6	68.3	8	27.7	13.7
Dibenzothiophene	1.7	2.4	3.5	3.2	3.3	1.0
C1-Dibenzothiophenes	13.1	20.2	35.3	5.0	15.8	8.0
C2-Dibenzothiophenes	25.1	33.9	82.6	4.6	28.8	13.4
C3-Dibenzothiophenes	29.1	43.9	110	7.5	40.8	20.6
Fluoranthene	17.1	10.6	8.3	112	16.4	8.1
Pyrene	22.2	16.7	15.7	71.7	24.1	14.4
C1-Fluoranthenes/Pyrenes	15.2	16.8	23.6	21.5	15.7	9.5
C2-Fluoranthenes/Pyrenes	10.7	14.5	27.1	13.5	14.0	6.7
C3-Fluoranthenes/Pyrenes	7.5	13.3	36.9	4.2	11.8	4.0
Naphthobenzothiophene	6.5	6.8	14.8	13.8	8.2	3.9
C1-Naphthobenzothiophenes	12.8	21.4	56.0	8.0	21.2	10.3
C2-Naphthobenzothiophenes	21.2	35.0	84.8	9.8	32.4	15.5
C3-Naphthobenzothiophenes	15.1	23.5	47.7	<2.3 U	24.2	12.5
Benz(a)anthracene	8.8	5.6	5.8	19.4	9.4	4.9
Chrysene	13.2	7.9	11.1	43.9	11.5	5.5
C1-Chrysenes	10.6	10.2	21.0	9.5	10.8	7.0
C2-Chrysenes	7.4	12.9	29.3	<1.6 U	9.7	5.7
C3-Chrysenes	<1.6 U	5.9	15.7	<1.6 U	<1.6 U	<1.6 U
C4-Chrysenes	<1.6 U	<1.6 U	<1.6 U	<1.6 U	<1.6 U	<1.6 U
Benzo(b)fluoranthene	18.2	9.8	8.3	60.2	15.2	8.3
Benzo(k)fluoranthene	6.2	3.2	2.2 J	19.4	5.3	2.9
Benzo(e)pyrene	11.5	6.9	8.1	33.3	9.3	5.4
Benzo(a)pyrene	11.9	5.6	4.9	25.6	9.7	4.9
Perylene	4.5	3.0	4.5	6.1	5.4	3.2
Indeno(1,2,3-c,d)pyrene	8.2	3.6	3.5	30.1	7.0	3.9
Dibenzo(a,h)anthracene	<1.5 U	<1.5 U	<1.5 U	4.3	1.3 J	<1.5 U
Benzo(g,h,i)perylene	9.3	4.4	3.7	29.1	7.3	4.1
Total PAHs	876	1124	1517	962	768	457
Individual Alkyl Isomers and Hopanes						
2-Methylnaphthalene	96.2	126	63.3	37.0	33.2	33.4
1-Methylnaphthalene	53.4	80.5	31.5	26.9	18.6	16.6
2,6-Dimethylnaphthalene	26.8	34.3	26.3	13.5	12.1	10.0
1,6,7-Trimethylnaphthalene	5.9	7.0	8.9	3.5	3.5	2.5
1-Methylphenanthrene	4.3	6.4	9.9	4.4	5.1	2.7
C29-Hopane	24.7	15.7	32.5	44.1	26.4	12.7
18a-Oleanane	<10 U	<9.7 U	<9.9 U	<9.9 U	<10 U	<9.8 U
C30-Hopane	27.1	24.2	41.4	44.1	31.5	17.1
Surrogate (Su)	Su Recovery (%)	Su Recovery (%)	Su Recovery (%)	Su Recovery (%)	Su Recovery (%)	Su Recovery (%)
Naphthalene-d8	74	78	78	57	76	80
Acenaphthene-d10	79	82	81	56	80	80
Phenanthrene-d10	75	77	78	57	77	75
Chrysene-d12	68	75	78	56	80	73
Perylene-d12	80	82	84	62	81	80

Qualifiers (Q): J=Below the MDL, U=Not detected, B=In procedural blank > 3x MDL, I=Interference, D=Diluted value, NA=Not Applicable, *=Outside QA limits, refer to narrative

Sample Name	ETX3810.D	ETX3812.D	ETX3814.D	ETX3820.D	ETX3822.D	ETX3824.D
Client Name	W-MAN-01 (1 of 2)	W-MAN-02 (1 of 2)	W-CBB-01 (1 of 6)	W-CBB-02 (1 of 2)	W-CBB-03 (1 of 2)	WMH-1 (1 of 2)
Matrix	Water	Water	Water	Water	Water	Water
Collection Date	11/28/04	11/28/04	11/27/04	11/27/04	11/27/04	11/28/04
Received Date	11/30/04	11/30/04	11/30/04	11/30/04	11/30/04	11/30/04
Extraction Date	12/01/04	12/01/04	12/01/04	12/01/04	12/01/04	12/01/04
Extraction Batch	ENV 1054	ENV 1054	ENV 1054	ENV 1054	ENV 1054	ENV 1054
Date Acquired	12/08/04	12/08/04	12/08/04	12/08/04	12/08/04	12/08/04
Method	PAH-2002	PAH-2002	PAH-2002	PAH-2002	PAH-2002	PAH-2002
Sample Volume (L)	1.0	1.0	1.0	1.0	1.0	1.0
Dilution	NA	NA	NA	NA	NA	NA

Target Compounds	Su Corrected Conc. (ng/L)	Q	Su Corrected Conc. (ng/L)	Q	Su Corrected Conc. (ng/L)	Q	Su Corrected Conc. (ng/L)	Q	Su Corrected Conc. (ng/L)	Q	Su Corrected Conc. (ng/L)	Q
Naphthalene	90.1		91.8		45.4		84.9		61.2		63.3	
C1-Naphthalenes	66.0		51.3		33.4		57.4		37.5		67.6	
C2-Naphthalenes	69.0		34.6		28.9		31.8		22.4		76.3	
C3-Naphthalenes	55.1		24.1		16.2		18.9		13.1		42.7	
C4-Naphthalenes	52.5		23.8		<6.1	U	14.3		10.9		21.1	
Benzothiophene	<1.6	U	<1.6	U	<1.6	U	<1.6	U	<1.6	U	<1.7	U
C1-Benzothiophenes	<3.3	U	<3.3	U	<3.2	U	<3.2	U	<3.2	U	<3.4	U
C2-Benzothiophenes	<3.3	U	<3.3	U	<3.2	U	<3.2	U	<3.2	U	<3.4	U
C3-Benzothiophenes	<3.3	U	<3.3	U	<3.2	U	<3.2	U	<3.2	U	<3.4	U
Biphenyl	6.5		3.1		2.9		4.3		3.1		5.1	
Acenaphthylene	4.0		<1.1	U	2.9		4.2		3.4		4.5	
Acenaphthene	12.1		4.4		4.7		4.7		4.2		5.8	
Dibenzofuran	9.1		4.4		3.5		5.4		4.4		5.4	
Fluorene	8.8		4.3		3.6		4.2		3.5		5.6	
C1-Fluorenes	23.3		8.5		4.7		7.2		<1.2	U	7.0	
C2-Fluorenes	39.6		15.9		<1.2	U	<1.2	U	<1.2	U	9.8	
C3-Fluorenes	55.4		<1.2	U	<1.2	U	<1.2	U	<1.2	U	<1.3	U
Carbazole	16.9		8.3		5.9		8.2		8.5		2.1	
Anthracene	4.3		1.3		3.1		5.6		5.7		7.7	
Phenanthrene	22.4		8.4		8.7		17.7		20.5		25.1	
C1-Phenanthrene/Anthracenes	33.9		15.9		8.3		12.8		13.9		20.5	
C2-Phenanthrene/Anthracenes	58.5		25.4		9.6		18.3		20.1		27.3	
C3-Phenanthrene/Anthracenes	46.6		26.2		8.6		13.6		19.5		21.3	
C4-Phenanthrene/Anthracenes	32.3		15.5		3.7		8.9		13.1		11.0	
Dibenzothiophene	4.4		1.1		0.8	J	1.0		1.2		1.8	
C1-Dibenzothiophenes	18.7		11.7		5.7		4.3		4.7		4.3	
C2-Dibenzothiophenes	35.2		16.2		<1.7	U	<1.7	U	7.1		4.5	
C3-Dibenzothiophenes	48.3		23.4		<1.7	U	<1.7	U	13.4		<1.8	U
Fluoranthene	28.2		10.8		19.0		32.7		32.0		34.9	
Pyrene	37.3		15.5		25.4		39.3		36.9		38.2	
C1-Fluoranthenes/Pyrenes	19.6		10.2		12.1		20.6		19.3		22.9	
C2-Fluoranthenes/Pyrenes	16.7		8.8		5.7		10.6		9.9		10.6	
C3-Fluoranthenes/Pyrenes	9.6		7.2		3.7		4.8		8.4		6.7	
Naphthobenzothiophene	9.3		5.0		4.0		6.9		7.4		7.6	
C1-Naphthobenzothiophenes	21.9		9.6		<2.2	U	4.9		8.1		6.5	
C2-Naphthobenzothiophenes	34.0		18.0		<2.2	U	<2.2	U	11.4		<2.4	U
C3-Naphthobenzothiophenes	27.7		13.8		<2.2	U	<2.2	U	<2.2	U	<2.4	U
Benz(a)anthracene	8.9		6.2		11.2		15.6		12.9		15.3	
Chrysene	12.3		7.5		12.4		19.6		16.4		18.3	
C1-Chrysenes	11.1		6.4		7.5		11.4		9.4		10.0	
C2-Chrysenes	8.2		5.8		4.1		5.5		5.1		5.3	
C3-Chrysenes	<1.6	U	<1.6	U	<1.6	U	<1.6	U	<1.6	U	<1.7	U
C4-Chrysenes	<1.6	U	<1.6	U	<1.6	U	<1.6	U	<1.6	U	<1.7	U
Benzo(b)fluoranthene	16.3		10.3		22.1		28.4		24.5		26.3	
Benzo(k)fluoranthene	5.7		3.7		8.5		10.5		8.4		8.4	
Benzo(e)pyrene	10.7		7.4		11.8		17.9		14.2		14.6	
Benzo(a)pyrene	10.5		6.2		13.4		17.4		14.4		17.2	
Perylene	5.1		3.3		6.8		13.6		10.0		16.0	
Indeno(1,2,3-c,d)pyrene	7.0		4.8		10.0		13.8		11.6		13.5	
Dibenzo(a,h)anthracene	1.6		<1.5	U	2.4		3.1		2.1		2.2	
Benzo(g,h,i)perylene	7.1		4.6		10.6		13.4		10.4		12.5	
Total PAHs	1122		585		391		618		564		727	
Individual Alkyl Isomers and Hopanes												
2-Methylnaphthalene	67.7		57.0		34.5		64.4		39.7		67.5	
1-Methylnaphthalene	37.9		25.1		19.0		27.4		20.2		40.8	
2,6-Dimethylnaphthalene	24.3		14.2		8.7		14.6		10.1		31.9	
1,6,7-Trimethylnaphthalene	6.5		1.5		0.9	J	1.6		1.4		4.9	
1-Methylphenanthrene	5.9		2.9		1.3		2.6		2.8		4.5	
C29-Hopane	35.4		13.6		21.8		31.6		24.4		27.7	
18a-Oleanane	<9.8	U	<9.8	U	<9.6	U	<9.6	U	<9.6	U	<10.1	U
C30-Hopane	37.2		18.1		24.0		45.8		34.1		29.3	

Surrogate (Su)	Su Recovery (%)	Su Recovery (%)	Su Recovery (%)	Su Recovery (%)	Su Recovery (%)	Su Recovery (%)
Naphthalene-d8	43	86	70	68	82	87
Acenaphthene-d10	40	84	77	69	80	87
Phenanthrene-d10	40	77	76	69	71	72
Chrysene-d12	52	70	66	69	81	82
Perylene-d12	52	80	77	72	77	66

Qualifiers (Q): J=Below the MDL, U=Not detected, B=In procedural blank > 3x MDL, I=Interference, D=Diluted value, NA=Not Applicable, *=Outside QA limits, refer to narrative

Sample Name	ETX3826.D		ETX3828.D		ETX3830.D	
Client Name	WMH-2 (1 of 2)		WMH-3 (1 of 2)		W-DR-01 (1 of	
1) **Matrix**	Water		Water		Water	
Collection Date	11/28/04		11/28/04		11/28/04	
Received Date	11/30/04		11/30/04		11/30/04	
Extraction Date	12/01/04		12/01/04		12/01/04	
Extraction Batch	ENV 1054		ENV 1054		ENV 1054	
Date Acquired	12/08/04		12/08/04		12/08/04	
Method	PAH-2002		PAH-2002		PAH-2002	
Sample Volume (L)	1.0		1.0		1.0	
Dilution	NA		NA		NA	
Target Compounds	Su Corrected Q Conc. (ng/L)	Q	Su Corrected Conc. (ng/L)	Q	Su Corrected Conc. (ng/L)	
Naphthalene	65.0		79.3		97.4	
C1-Naphthalenes	64.5		40.4		65.1	
C2-Naphthalenes	67.8		24.5		122	
C3-Naphthalenes	34.4		16.8		138	
C4-Naphthalenes	19.9		<6.4	U	124	
Benzothiophene	<1.7	U	<1.7	U	1.3	J
C1-Benzothiophenes	<3.4	U	<3.4	U	<3.3	U
C2-Benzothiophenes	<3.4	U	<3.4	U	<3.3	U
C3-Benzothiophenes	<3.4	U	<3.4	U	<3.3	U
Biphenyl	2.6		2.3		5.9	
Acenaphthylene	2.8		3.0		5.2	
Acenaphthene	5.7		4.2		7.2	
Dibenzofuran	5.1		4.1		7.7	
Fluorene	4.8		3.0		13.8	
C1-Fluorenes	7.4		<1.3	U	46.3	
C2-Fluorenes	<1.3	U	<1.3	U	110.0	
C3-Fluorenes	<1.3	U	<1.3	U	132	
Carbazole	1.8	J	7.0		<1.9	U
Anthracene	4.5		4.4		4.2	
Phenanthrene	19.4		18.9		41.6	
C1-Phenanthrene/Anthracenes	16.0		10.5		117	
C2-Phenanthrene/Anthracenes	22.6		13.9		214	
C3-Phenanthrene/Anthracenes	17.3		11.6		204	
C4-Phenanthrene/Anthracenes	9.9		8.1		136	
Dibenzothiophene	1.4		1.4		11.7	
C1-Dibenzothiophenes	5.6		<1.8	U	71.2	
C2-Dibenzothiophenes	4.0		<1.8	U	164	
C3-Dibenzothiophenes	<1.8	U	<1.8	U	229	
Fluoranthene	24.4		25.1		23.0	
Pyrene	28.1		27.2		33.1	
C1-Fluoranthenes/Pyrenes	15.6		13.0		49.5	
C2-Fluoranthenes/Pyrenes	7.0		7.6		60.1	
C3-Fluoranthenes/Pyrenes	<1.4	U	<1.4	U	36.9	
Naphthobenzothiophene	6.7		3.7		28.0	
C1-Naphthobenzothiophenes	6.7		4.3		112	
C2-Naphthobenzothiophenes	<2.4	U	<2.4	U	190	
C3-Naphthobenzothiophenes	<2.4	U	<2.4	U	156	
Benz(a)anthracene	11.3		12.2		17.0	
Chrysene	13.4		13.6		24.2	
C1-Chrysenes	7.4		8.0		45.3	
C2-Chrysenes	<1.7	U	4.7		57.9	
C3-Chrysenes	<1.7	U	<1.7	U	21.8	
C4-Chrysenes	<1.7	U	<1.7	U	<1.6	U
Benzo(b)fluoranthene	26.9		30.8		20.6	
Benzo(k)fluoranthene	3.8		4.4		6.3	
Benzo(e)pyrene	13.1		13.9		18.2	
Benzo(a)pyrene	14.2		14.8		13.2	
Perylene	11.6		11.6		10.0	
Indeno(1,2,3-c,d)pyrene	9.7		11.9		9.3	
Dibenzo(a,h)anthracene	1.9		2.2		2.5	
Benzo(g,h,i)perylene	10.6		11.8		11.1	
Total PAHs	595		474		3015	
Individual Isomers						
2-Methylnaphthalene	64.5		46.1		66.4	
1-Methylnaphthalene	38.8		18.4		37.9	
2,6-Dimethylnaphthalene	26.3		10.7		49.2	
1,6,7-Trimethylnaphthalene	4.2		1.4		18.3	
1-Methylphenanthrene	3.6		2.3		22.5	
C29-Hopane	20.9		23.3		54.3	
18a-Oleanane	<10.1	U	<10.1	U	<10	U
C30-Hopane	30.7		28.6		68.0	

Surrogate (Su)	Su Recovery (%)	Su Recovery (%)	Su Recovery (%)
Naphthalene-d8	89	82	80
Acenaphthene-d10	93	85	83
Phenanthrene-d10	68	69	76
Chrysene-d12	78	67	77
Perylene-d12	75	75	77

Qualifiers (Q): J=Below the MDL, U=Not detected, B=In procedural blank > 3x MDL, I=Interference, D=Diluted value, NA=Not Applicable, *=Outside QA limits, refer to narrative

Sample Name	ETX3837.D	ETX3838.D	ETX3839.D	ETX3841.D	ETX3843.D	ETX3845.D
Client Name	W-WOOD-03 (1 of 2)	W-WOOD-03 (2 of 2)	W-WOOD-04 (1 of 2)	W-BTC-04 (1 of 2)	W-BTC-05 (1 of 2)	W-BTC-06 (1 of 1)
Matrix	Water	Water	Water	Water	Water	Water
Collection Date	11/30/04	11/30/04	11/30/04	11/30/04	11/30/04	11/30/04
Received Date	12/04/04	12/04/04	12/04/04	12/04/04	12/04/04	12/04/04
Extraction Date	12/06/04	12/06/04	12/06/04	12/06/04	12/06/04	12/06/04
Extraction Batch	ENV 1058	ENV 1058	ENV 1058	ENV 1058	ENV 1058	ENV 1058
Date Acquired	12/14/04	12/14/04	12/14/04	12/14/04	12/14/04	12/14/04
Method	PAH-2002	PAH-2002	PAH-2002	PAH-2002	PAH-2002	PAH-2002
Sample Volume (L)	0.9	0.9	1.0	0.9	0.9	0.9
Dilution	NA	NA	NA	NA	NA	NA

Target Compounds	Su Corrected Conc. (ng/L)	Q	Su Corrected Conc. (ng/L)	Q	Su Corrected Conc. (ng/L)	Q	Su Corrected Conc. (ng/L)	Q	Su Corrected Conc. (ng/L)	Q	Su Corrected Conc. (ng/L)	Q
Naphthalene	42.1		36.9		51.3		45.6		49.5		45.1	
C1-Naphthalenes	28.9		23.3		40.0		33.6		39.0		32.1	
C2-Naphthalenes	17.1		16.3		20.4		14.2		23.1		14.9	
C3-Naphthalenes	8.9		9.2		12.6		8.8		16.6		11.0	
C4-Naphthalenes	<6.5	U	<6.5	U	8.9		<6.6	U	9.9		5.8	J
Benzothiophene	<1.7	U	<1.7	U	<1.6	U	<1.7	U	3.7		<1.7	U
C1-Benzothiophenes	<3.5	U	<3.5	U	<3.2	U	<3.5	U	<3.4	U	<3.4	U
C2-Benzothiophenes	<3.5	U	<3.5	U	<3.2	U	<3.5	U	<3.4	U	<3.4	U
C3-Benzothiophenes	<3.5	U	<3.5	U	<3.2	U	<3.5	U	<3.4	U	<3.4	U
Biphenyl	2.1	J	2.5		2.1	J	2.0	J	2.3		2.5	
Acenaphthylene	1.1	J	0.8	J	1.2		0.9	J	<1.1	U	1.3	
Acenaphthene	3.3		<1.4	U	4.7		2.7		4.8		3.3	
Dibenzofuran	2.8		<1.2	U	3.5		2.8		4.3		3.0	
Fluorene	2.1		2.3		3.6		1.7		2.6		2.5	
C1-Fluorenes	<1.3	U	<1.3	U	3.8		<1.3	U	3.6		<1.3	U
C2-Fluorenes	<1.3	U	<1.3	U	5.8		<1.3	U	<1.3	U	<1.3	U
C3-Fluorenes	<1.3	U	<1.3	U	<1.2	U	<1.3	U	<1.3	U	<1.3	U
Carbazole	0.6	J	<1.9	U	0.9	J	<2	U	1.3	J	0.9	J
Anthracene	1.0		1.0		1.0		0.7	J	1.1		1.1	
Phenanthrene	6.7		6.6		7.3		5.7		8.6		10.4	
C1-Phenanthrene/Anthracenes	12.6		12.0		13.6		10.8		14.9		15.2	
C2-Phenanthrene/Anthracenes	<2.9	U	<2.9	U	<2.7	U	<2.9	U	8.1		7.8	
C3-Phenanthrene/Anthracenes	<2.9	U	<2.9	U	<2.7	U	<2.9	U	7.2		6.5	
C4-Phenanthrene/Anthracenes	<2.9	U	<2.9	U	<2.7	U	<2.9	U	<2.9	U	<2.9	U
Dibenzothiophene	<0.9	U	<0.9	U	1.3		0.4	J	1.0		0.8	J
C1-Dibenzothiophenes	<1.8	U	<1.8	U	1.9		<1.8	U	4.5		2.6	
C2-Dibenzothiophenes	<1.8	U	<1.8	U	6.3		<1.8	U	<1.8	U	5.7	
C3-Dibenzothiophenes	<1.8	U	<1.8	U	5.3		<1.8	U	<1.8	U	4.7	
Fluoranthene	10.3		11.7		10.9		9.7		12.4		15.9	
Pyrene	14.0		15.4		15.6		12.6		20.5		23.3	
C1-Fluoranthenes/Pyrenes	3.7		4.2		6.1		4.4		7.2		7.9	
C2-Fluoranthenes/Pyrenes	2.0		2.3		2.7		<1.5	U	4.2		3.4	
C3-Fluoranthenes/Pyrenes	<1.5	U	<1.5	U	1.1	J	<1.5	U	<1.4	U	<1.4	U
Naphthobenzothiophene	1.8		2.0		1.9		<1.2	U	2.1		2.4	
C1-Naphthobenzothiophenes	<2.4	U	<2.4	U	2.3		<2.4	U	<2.4	U	2.7	
C2-Naphthobenzothiophenes	<2.4	U	<2.4	U	<2.2	U	<2.4	U	<2.4	U	<2.4	U
C3-Naphthobenzothiophenes	<2.4	U	<2.4	U	<2.2	U	<2.4	U	<2.4	U	<2.4	U
Benz(a)anthracene	4.4		5.4		5.5		5.0		5.0		7.4	
Chrysene	7.2		7.8		8.8		6.6		9.2		12.5	
C1-Chrysenes	4.3		4.1		<1.6	U	3.4		4.6		4.8	
C2-Chrysenes	<1.7	U	<1.7	U	<1.6	U	<1.7	U	<1.7	U	<1.7	U
C3-Chrysenes	<1.7	U	<1.7	U	<1.6	U	<1.7	U	<1.7	U	<1.7	U
C4-Chrysenes	<1.7	U	<1.7	U	<1.6	U	<1.7	U	<1.7	U	<1.7	U
Benzo(b)fluoranthene	7.5		8.9		7.8		8.3		9.8		12.3	
Benzo(k)fluoranthene	3.4		4.3		3.6		3.9		4.9		5.4	
Benzo(e)pyrene	4.7		5.4		4.9		4.9		6.4		7.0	
Benzo(a)pyrene	4.6		4.5		5.1		5.0		6.5		7.9	
Perylene	1.3		1.0		2.2		1.8		1.8		2.8	
Indeno(1,2,3-c,d)pyrene	3.4		3.4		3.7		3.4		3.9		5.2	
Dibenzo(a,h)anthracene	<1.6	U	0.6	J	0.7	J	<1.6	U	<1.6	U	<1.6	U
Benzo(g,h,i)perylene	2.8		3.5		4.1		3.9		4.9		5.7	
Total PAHs	205		195		283		203		310		304	
Individual Alkyl Isomers and Hopanes												
2-Methylnaphthalene	30.3		23.9		43.2		34.7		40.9		33.5	
1-Methylnaphthalene	16.3		13.8		21.2		19.7		22.1		18.3	
2,6-Dimethylnaphthalene	6.5		5.2		10.3		6.8		9.4		6.8	
1,6,7-Trimethylnaphthalene	0.5	J	0.3	J	1.0		0.9	J	1.4		1.3	
1-Methylphenanthrene	10.6		8.3		9.8		9.0		11.9		12.4	
C29-Hopane	<10.3	U	<10.3	U	<9.6	U	<10.4	U	<10.2	U	<10.2	U
18a-Oleanane	<10.3	U	<10.3	U	<9.6	U	<10.4	U	<10.2	U	<10.2	U
C30-Hopane	<10.3	U	<10.3	U	<9.6	U	<10.4	U	<10.2	U	<10.2	U

Surrogate (Su)	Su Recovery (%)	Su Recovery (%)	Su Recovery (%)	Su Recovery (%)	Su Recovery (%)	Su Recovery (%)
Naphthalene-d8	74	68	73	69	44	66
Acenaphthene-d10	81	78	81	81	49	74
Phenanthrene-d10	87	93	91	89	59	79
Chrysene-d12	79	85	85	77	50	75
Perylene-d12	80	81	87	80	50	79

Qualifiers (Q): J=Below the MDL, U=Not detected, B=In procedural blank > 3x MDL, I=Interference, D=Diluted value, NA=Not Applicable, *=Outside QA limits, refer to narrative

Sample Name	ETX3846.D	ETX3848.D	ETX3850.D	ETX3852.D	ETX3854.D	ETX3856.D
Client Name	W-WOOD-05 (1 of 2)	WPA4-J (1 of 2)	WMIF-1 (1 of 2)	WMIF-2 (1 of 2)	W-CBB-04 (1 of 2)	W-CBB-05 (1 of 2)
Matrix	Water	Water	Water	Water	Water	Water
Collection Date	11/30/04	11/30/04	11/30/04	11/30/04	11/30/04	11/30/04
Received Date	12/04/04	12/04/04	12/04/04	12/04/04	12/04/04	12/04/04
Extraction Date	12/06/04	12/06/04	12/06/04	12/06/04	12/06/04	12/06/04
Extraction Batch	ENV 1058	ENV 1058	ENV 1058	ENV 1058	ENV 1058	ENV 1058
Date Acquired	12/14/04	12/14/04	12/14/04	12/14/04	12/14/04	12/14/04
Method	PAH-2002	PAH-2002	PAH-2002	PAH-2002	PAH-2002	PAH-2002
Sample Volume (L)	0.9	0.9	1.0	1.0	1.0	1.0
Dilution	NA	NA	NA	NA	NA	NA

Target Compounds	Su Corrected Conc. (ng/L)	Q	Su Corrected Conc. (ng/L)	Q	Su Corrected Conc. (ng/L)	Q	Su Corrected Conc. (ng/L)	Q	Su Corrected Conc. (ng/L)	Q	Su Corrected Conc. (ng/L)	Q
Naphthalene	37.2		120		195		77.4		32.1		51.8	
C1-Naphthalenes	23.6		85.6		149		52.9		20.0		28.5	
C2-Naphthalenes	19.4		134		192		29.6		15.8		14.3	
C3-Naphthalenes	15.9		129		257		16.8		11.0		7.6	
C4-Naphthalenes	12.8		90.3		228		5.9	J	7.8		8.6	
Benzothiophene	<1.7	U	2.1		2.5		<1.7	U	<1.6	U	<1.6	U
C1-Benzothiophenes	<3.5	U	13.9		11.3		<3.3	U	<3.2	U	<3.2	U
C2-Benzothiophenes	<3.5	U	29.1		33.8		<3.3	U	<3.2	U	<3.2	U
C3-Benzothiophenes	<3.5	U	22.3		41.7		<3.3	U	<3.2	U	<3.2	U
Biphenyl	4.1		12.6		9.9		3.3		1.8	J	2.0	J
Acenaphthylene	1.8		7.2		8.9		4.7		1.2		0.8	J
Acenaphthene	4.2		45.5		27.7		4.9		4.3		2.3	
Dibenzofuran	4.7		18.9		18.2		5.1		4.2		2.5	
Fluorene	4.6		39.7		37.0		5.3		3.0		1.4	
C1-Fluorenes	4.8		55.1		88.3		4.0		<1.2	U	<1.2	U
C2-Fluorenes	13.6		74.8		188		<1.2	U	<1.2	U	<1.2	U
C3-Fluorenes	<1.3	U	80.3		223		<1.2	U	<1.2	U	<1.2	U
Carbazole	<1.9	U	9.1		<1.9	U	1.5	J	<1.8	U	<1.8	U
Anthracene	2.3		9.3		6.4		4.3		1.4		1.0	
Phenanthrene	16.7		89.6		92.1		17.7		10.1		5.1	
C1-Phenanthrene/Anthracenes	23.0		107		208		22.9		20.8		9.7	
C2-Phenanthrene/Anthracenes	17.0		145		347		11.0		21.4		4.4	
C3-Phenanthrene/Anthracenes	19.2		95.9		325		9.2		29.9		4.9	
C4-Phenanthrene/Anthracenes	<2.9	U	46.9		186		<2.8	U	11.7		<2.7	U
Dibenzothiophene	1.9		20.2		23.8		1.4		<0.8	U	0.3	J
C1-Dibenzothiophenes	6.4		49.0		115		3.5		<1.7	U	<1.7	U
C2-Dibenzothiophenes	13.6		90.1		281		4.7		<1.7	U	<1.7	U
C3-Dibenzothiophenes	9.8		97.1		365		6.7		<1.7	U	<1.7	U
Fluoranthene	24.8		69.0		48.7		29.9		16.8		10.0	
Pyrene	36.9		97.3		66.6		33.0		28.3		16.6	
C1-Fluoranthenes/Pyrenes	14.5		54.3		73.7		14.6		12.0		5.2	
C2-Fluoranthenes/Pyrenes	10.1		35.0		100		7.1		8.3		3.1	
C3-Fluoranthenes/Pyrenes	3.5		15.1		61.3		<1.4	U	5.1		<1.4	U
Naphthobenzothiophene	3.8		19.6		44.7		5.8		4.9		0.8	J
C1-Naphthobenzothiophenes	6.3		34.7		118		5.4		12.8		1.4	J
C2-Naphthobenzothiophenes	<2.4	U	48.9		183		<2.3	U	15.0		<2.2	U
C3-Naphthobenzothiophenes	<2.4	U	33.6		159		<2.3	U	12.2		<2.2	U
Benz(a)anthracene	11.7		37.4		28.2		20.3		9.2		4.7	
Chrysene	20.5		59.0		66.8		28.9		14.7		7.6	
C1-Chrysenes	11.4		44.7		89.3		15.3		12.3		3.8	
C2-Chrysenes	7.2		32.4		56.9		<1.6	U	7.6		<1.6	U
C3-Chrysenes	<1.7	U	14.1		42.9		<1.6	U	<1.6	U	<1.6	U
C4-Chrysenes	<1.7	U	<1.7	U	7.0		<1.6	U	<1.6	U	<1.6	U
Benzo(b)fluoranthene	20.5		55.0		27.3		34.9		12.7		6.9	
Benzo(k)fluoranthene	7.1		20.0		9.4		14.9		5.4		3.2	
Benzo(e)pyrene	11.1		30.1		21.2		19.9		8.8		4.7	
Benzo(a)pyrene	13.6		41.3		18.6		24.4		9.2		4.6	
Perylene	4.5		13.8		12.4		5.5		4.5		1.7	
Indeno(1,2,3-c,d)pyrene	8.6		25.9		15.4		16.7		5.7		2.7	
Dibenzo(a,h)anthracene	1	J	4.0		3.1		2.7		0.8	J	<1.5	U
Benzo(g,h,i)perylene	7.7		26.5		12.7		14.1		4.3		2.9	
Total PAHs	481		2531		4927		586		407		225	
Individual Alkyl Isomers and Hopanes												
2-Methylnaphthalene	24.1		76.2		145		54.8		20.9		30.8	
1-Methylnaphthalene	14.1		63.3		96.3		30.8		11.4		15.2	
2,6-Dimethylnaphthalene	8.0		58.2		90		12.9		5.4		5.1	
1,6,7-Trimethylnaphthalene	2.6		21.8		39.1		1.2		1.1		0.6	J
1-Methylphenanthrene	15.1		37.8		61		12.6		12.4		8.6	
C29-Hopane	19.8		60.5		75.4		16.1		16.6		<9.6	U
18a-Oleanane	<10.3	U	<10.4	U	12.3		<10	U	<9.6	U	<9.6	U
C30-Hopane	25.5		66.4		68.7		9.7	J	18.2		<9.6	U

Surrogate (Su)	Su Recovery (%)	Su Recovery (%)	Su Recovery (%)	Su Recovery (%)	Su Recovery (%)	Su Recovery (%)
Naphthalene-d8	66	68	65	70	64	66
Acenaphthene-d10	73	79	80	84	76	80
Phenanthrene-d10	73	75	90	88	87	92
Chrysene-d12	80	80	94	80	90	83
Perylene-d12	76	77	73	74	66	69

Qualifiers (Q): J=Below the MDL, U=Not detected, B=In procedural blank > 3x MDL, I=Interference, D=Diluted value, NA=Not Applicable, *=Outside QA limits, refer to narrative

Sample Name	ETX3858.D	ETX3860.D	ETX3862.D	ETX3864.D	ETX3866.D	ETX3868.D
Client Name	W-CBB-06 (1 of 2)	W-DER-2 (1 of 2)	M-MAN-04 (1 of 2)	M-MAN-03 (1 of 2)	WMH-04 (1 of 2)	WMH-05 (1 of 2)
Matrix	Water	Water	Water	Water	Water	Water
Collection Date	11/30/04	11/30/04	11/30/04	11/30/04	11/30/04	11/30/04
Received Date	12/04/04	12/04/04	12/04/04	12/04/04	12/04/04	12/04/04
Extraction Date	12/06/04	12/06/04	12/06/04	12/06/04	12/06/04	12/06/04
Extraction Batch	ENV 1058	ENV 1058	ENV 1058	ENV 1058	ENV 1058	ENV 1058
Date Acquired	12/14/04	12/14/04	12/14/04	12/14/04	12/14/04	12/14/04
Method	PAH-2002	PAH-2002	PAH-2002	PAH-2002	PAH-2002	PAH-2002
Sample Volume (L)	1.0	0.9	0.9	0.9	1.0	1.0
Dilution	NA	NA	NA	NA	NA	NA

Target Compounds	Su Corrected Conc. (ng/L)	Q	Su Corrected Conc. (ng/L)	Q	Su Corrected Conc. (ng/L)	Q	Su Corrected Conc. (ng/L)	Q	Su Corrected Conc. (ng/L)	Q	Su Corrected Conc. (ng/L)	Q
Naphthalene	46.1		222		51.0		56.6		42.4		56.5	
C1-Naphthalenes	24.8		131		36.6		39.1		29.5		35.8	
C2-Naphthalenes	13.9		42.3		22.2		31.2		17.6		16.9	
C3-Naphthalenes	9.5		18.1		17.4		27.5		11.6		10.8	
C4-Naphthalenes	7.0		7.7		13.7		21.6		10.2		7.1	
Benzothiophene	<1.6	U	<1.7	U	<1.7	U	<1.7	U	<1.6	U	<1.6	U
C1-Benzothiophenes	<3.2	U	<3.5	U	<3.5	U	<3.5	U	<3.2	U	<3.2	U
C2-Benzothiophenes	<3.2	U	<3.5	U	<3.5	U	<3.5	U	<3.2	U	<3.2	U
C3-Benzothiophenes	<3.2	U	<3.5	U	<3.5	U	<3.5	U	<3.2	U	<3.2	U
Biphenyl	2.4		4.0		3.3		3.2		2.1	J	2.9	
Acenaphthylene	1.1		4.8		3.3		3.6		1.4		<1	U
Acenaphthene	4.5		7.2		5.0		4.2		5.0		4.5	
Dibenzofuran	4.5		6.8		5.0		5.0		5.0		4.2	
Fluorene	2.7		6.6		3.5		5.0		3.2		2.8	
C1-Fluorenes	<1.2	U	4.9		4.6		7.6		<1.2	U	<1.2	U
C2-Fluorenes	<1.2	U	<1.3	U	<1.3	U	19.4		<1.2	U	<1.2	U
C3-Fluorenes	<1.2	U	<1.3	U	<1.3	U	39.4		<1.2	U	<1.2	U
Carbazole	<1.8	U	1.6	J	<2	U	<1.9	U	<1.8	U	<1.8	U
Anthracene	1.3		2.4		2.0		1.8		1.9		1.4	
Phenanthrene	8.0		13.6		11.4		16.1		11.8		7.2	
C1-Phenanthrene/Anthracenes	12.1		18		19.3		32.8		17.4		12.7	
C2-Phenanthrene/Anthracenes	<2.7	U	6.9		12.1		31.9		12.0		8.4	
C3-Phenanthrene/Anthracenes	<2.7	U	5.4		11.3		36.8		17.0		8.3	
C4-Phenanthrene/Anthracenes	<2.7	U	3.9		2.7	J	22.2		7.1		4.3	
Dibenzothiophene	0.6	J	1.0		1.1		2.4		0.7	J	0.7	J
C1-Dibenzothiophenes	<1.7	U	1.8	J	5.0		11.1		3.5		2.0	
C2-Dibenzothiophenes	<1.7	U	<1.8	U	7.3		29.3		9.1		<1.7	U
C3-Dibenzothiophenes	<1.7	U	<1.8	U	11.2		39.2		15.6		<1.7	U
Fluoranthene	14.1		21.4		15.6		20.5		20.6		12.9	
Pyrene	23.2		24.5		22.4		25.2		31.8		22.7	
C1-Fluoranthenes/Pyrenes	7.6		7.6		7.6		15.6		12.1		6.4	
C2-Fluoranthenes/Pyrenes	3.4		2.7		6.5		13.1		7.9		3.2	
C3-Fluoranthenes/Pyrenes	<1.4	U	<1.5	U	<1.5	U	6.3		3.7		<1.4	U
Naphthobenzothiophene	1.8		2.1		3.2		7.6		4.9		1.8	
C1-Naphthobenzothiophenes	1.8	J	2.4	J	5.1		14.1		9.2		<2.2	U
C2-Naphthobenzothiophenes	<2.2	U	<2.4	U	5.9		20.0		10.8		<2.2	U
C3-Naphthobenzothiophenes	<2.2	U	<2.4	U	4.5		14.5		7.9		<2.2	U
Benz(a)anthracene	6.7		8.7		7.9		10.4		10.5		6.0	
Chrysene	10.1		11.9		12.9		17.2		16.0		9.9	
C1-Chrysenes	3.8		4.8		6.9		12.6		9.6		4.3	
C2-Chrysenes	<1.6	U	<1.7	U	<1.7	U	9.0		6.1		<1.6	U
C3-Chrysenes	<1.6	U	<1.7	U	<1.7	U	<1.7	U	<1.6	U	<1.6	U
C4-Chrysenes	<1.6	U	<1.7	U	<1.7	U	<1.7	U	<1.6	U	<1.6	U
Benzo(b)fluoranthene	10.2		13.4		14.0		13.9		15.7		9.9	
Benzo(k)fluoranthene	4.2		5.8		5.6		6.0		6.7		4.4	
Benzo(e)pyrene	6.2		8.3		8.4		9.3		10.6		5.6	
Benzo(a)pyrene	6.9		8.7		9.3		10.4		11.2		5.8	
Perylene	2.4		2.8		3.7		3.8		4.1		1.9	
Indeno(1,2,3-c,d)pyrene	3.7		5.0		5.8		5.2		8.1		3.3	
Dibenzo(a,h)anthracene	<1.5	U	<1.6	U	1.5	J	1.1	J	1.1	J	<1.5	U
Benzo(g,h,i)perylene	4.0		5.3		6.8		6.6		6.6		4.4	
Total PAHs	249		646		403		729		439		289	
Individual Isomers												
2-Methylnaphthalene	26.6		134		38.5		39.5		31.4		38.1	
1-Methylnaphthalene	13.3		78.4		20.6		23.8		16.2		19.7	
2,6-Dimethylnaphthalene	5.1		19.6		9.6		12.2		6.4		7.7	
1,6,7-Trimethylnaphthalene	0.7	J	1.6		2.1		2.9		0.8	J	1.0	
1-Methylphenanthrene	10.0		12.2		11.8		16.3		11.1		10.2	
C29-Hopane	<9.6	U	12.1		15.2		21.9		14.3		<9.6	U
18a-Oleanane	<9.6	U	<10.4	U	<10.4	U	<10.3	U	<9.6	U	<9.6	U
C30-Hopane	<9.6	U	14.4		16.6		19.1		22.0		<9.6	U

Surrogate (Su)	Su Recovery (%)	Su Recovery (%)	Su Recovery (%)	Su Recovery (%)	Su Recovery (%)	Su Recovery (%)
Naphthalene-d8	65	66	68	66	61	64
Acenaphthene-d10	77	80	77	81	76	73
Phenanthrene-d10	86	86	88	87	77	83
Chrysene-d12	82	81	82	86	76	77
Perylene-d12	71	72	77	72	67	72

Qualifiers (Q): J=Below the MDL, U=Not detected, B=In procedural blank > 3x MDL, I=Interference, D=Diluted value, NA=Not Applicable, *=Outside QA limits, refer to narrative

Sample Name	ETX3870.D
Client Name	WMH-06 (1 of
2) **Matrix**	Water
Collection Date	11/30/04
Received Date	12/04/04
Extraction Date	12/06/04
Extraction Batch	ENV 1058
Date Acquired	12/15/04
Method	PAH-2002
Sample Volume (L)	1.0
Dilution	NA

Target Compounds	Su Corrected Q Conc. (ng/L)
Naphthalene	31.0
C1-Naphthalenes	20.1
C2-Naphthalenes	16.3
C3-Naphthalenes	12.5
C4-Naphthalenes	11.5
Benzothiophene	<1.6 U
C1-Benzothiophenes	<3.2 U
C2-Benzothiophenes	<3.2 U
C3-Benzothiophenes	<3.2 U
Biphenyl	2.5
Acenaphthylene	1.7
Acenaphthene	5.2
Dibenzofuran	4.2
Fluorene	3.5
C1-Fluorenes	<1.2 U
C2-Fluorenes	<1.2 U
C3-Fluorenes	<1.2 U
Carbazole	<1.8 U
Anthracene	1.5
Phenanthrene	7.9
C1-Phenanthrene/Anthracenes	12.9
C2-Phenanthrene/Anthracenes	8.8
C3-Phenanthrene/Anthracenes	7.4
C4-Phenanthrene/Anthracenes	3.2
Dibenzothiophene	0.6 J
C1-Dibenzothiophenes	2.5
C2-Dibenzothiophenes	4.3
C3-Dibenzothiophenes	6.4
Fluoranthene	12.9
Pyrene	22.6
C1-Fluoranthenes/Pyrenes	6.6
C2-Fluoranthenes/Pyrenes	3.5
C3-Fluoranthenes/Pyrenes	<1.4 U
Naphthobenzothiophene	2.3
C1-Naphthobenzothiophenes	2.2 J
C2-Naphthobenzothiophenes	<2.2 U
C3-Naphthobenzothiophenes	<2.2 U
Benz(a)anthracene	6.3
Chrysene	10.4
C1-Chrysenes	4.7
C2-Chrysenes	<1.6 U
C3-Chrysenes	<1.6 U
C4-Chrysenes	<1.6 U
Benzo(b)fluoranthene	10.8
Benzo(k)fluoranthene	4.1
Benzo(e)pyrene	6.4
Benzo(a)pyrene	6.3
Perylene	2.3
Indeno(1,2,3-c,d)pyrene	3.7
Dibenzo(a,h)anthracene	<1.5 U
Benzo(g,h,i)perylene	4.1
Total PAHs	273
Individual Isomers	
2-Methylnaphthalene	20.6
1-Methylnaphthalene	11.9
2,6-Dimethylnaphthalene	6.2
1,6,7-Trimethylnaphthalene	1.1
1-Methylphenanthrene	9.8
C29-Hopane	<9.6 U
18a-Oleanane	<9.6 U
C30-Hopane	<9.6 U

Surrogate (Su)	Su Recovery (%)
Naphthalene-d8	69
Acenaphthene-d10	65
Phenanthrene-d10	90
Chrysene-d12	79
Perylene-d12	70

Qualifiers (Q): J=Below the MDL, U=Not detected, B=In procedural blank > 3x MDL, I=Interference, D=Diluted value, NA=Not Applicable, *=Outside QA limits, refer to narrative

Sample Name	ETX3885.D	ETX3886.D	ETX3887.D	ETX3895.D	ETX3896.D	ETX3897.D
Client Name	W-WOOD-06	W-WOOD-07	W-WOOD-08	W-UL-01	W-UL-02	W-UL-03
Matrix	Water	Water	Water	Water	Water	Water
Collection Date	12/08/04	12/08/04	12/08/04	12/07/04	12/07/04	12/07/04
Received Date	12/10/04	12/10/04	12/10/04	12/10/04	12/10/04	12/10/04
Extraction Date	12/13/04	12/13/04	12/13/04	12/13/04	12/13/04	12/13/04
Extraction Batch	ENV 1063	ENV 1063	ENV 1063	ENV 1063	ENV 1063	ENV 1063
Date Acquired	12/15/04	12/15/04	12/16/04	12/16/04	12/16/04	12/16/04
Method	PAH-2002	PAH-2002	PAH-2002	PAH-2002	PAH-2002	PAH-2002
Sample Volume (L)	0.9	0.9	0.9	0.9	0.9	0.9
Dilution	NA	NA	NA	NA	NA	NA

Target Compounds	Su Corrected Conc. (ng/L)	Q	Su Corrected Conc. (ng/L)	Q	Su Corrected Conc. (ng/L)	Q	Su Corrected Conc. (ng/L)	Q	Su Corrected Conc. (ng/L)	Q	Su Corrected Conc. (ng/L)	Q
Naphthalene	15.0		16.1		18.3		15.6		13.3		13.6	
C1-Naphthalenes	9.5		10.7		11.4		10.3		6.9		6.0	
C2-Naphthalenes	10.3		11.8		12.5		8.5		5.4	J	6.4	J
C3-Naphthalenes	16.1		15.8		15.4		<6.9	U	<6.9	U	<6.6	U
C4-Naphthalenes	12		14.5		<6.7	U	<6.9	U	<6.9	U	<6.6	U
Benzothiophene	1.9		1.5	J	1.8		<1.8	U	<1.8	U	1.7	J
C1-Benzothiophenes	<3.6	U	<3.6	U	<3.6	U	<3.6	U	<3.6	U	<3.5	U
C2-Benzothiophenes	<3.6	U	<3.6	U	<3.6	U	<3.6	U	<3.6	U	<3.5	U
C3-Benzothiophenes	<3.6	U	<3.6	U	<3.6	U	<3.6	U	<3.6	U	<3.5	U
Biphenyl	1.6	J	2.7		2.6		2.0	J	1.7	J	1.2	J
Acenaphthylene	2.6		2.8		3.7		2.5		1.8		2.4	
Acenaphthene	2.4		2.6		9.4		1.7		1.1	J	1.8	
Dibenzofuran	2.1		2.9		3.6		2.2		2.3		2.0	
Fluorene	2.5		2.5		7.6		2.1		2.1		1.9	
C1-Fluorenes	<1.3	U	<1.3	U	<1.3	U	<1.4	U	<1.4	U	<1.3	U
C2-Fluorenes	<1.3	U	<1.3	U	<1.3	U	<1.4	U	<1.4	U	<1.3	U
C3-Fluorenes	<1.3	U	<1.3	U	<1.3	U	<1.4	U	<1.4	U	<1.3	U
Carbazole	<2	U	1.4	J	10.6		<2.1	U	<2.1	U	<2	U
Anthracene	3.3		3.2		6.6		2.6		1.7		2.4	
Phenanthrene	8.7		8.4		29.3		8.2		5.4		8.1	
C1-Phenanthrene/Anthracenes	7.1		6.4		14.3		4.6		4.1		4.6	
C2-Phenanthrene/Anthracenes	10.2		10.3		15.8		<3.1	U	<3.1	U	4.3	
C3-Phenanthrene/Anthracenes	10.0		11.2		<3	U	<3.1	U	<3.1	U	<2.9	U
C4-Phenanthrene/Anthracenes	<3	U	<3	U	<3	U	<3.1	U	<3.1	U	<2.9	U
Dibenzothiophene	2.0		2.3		6.2		1.0		<1	U	0.9	J
C1-Dibenzothiophenes	3.5		3.6		7.2		<1.9	U	<1.9	U	<1.8	U
C2-Dibenzothiophenes	4.8		6.0		9.2		<1.9	U	<1.9	U	<1.8	U
C3-Dibenzothiophenes	<1.9	U	<1.9	U	<1.9	U	<1.9	U	<1.9	U	<1.8	U
Fluoranthene	18.0		13.3		56.2		16.4		7.7		16.3	
Pyrene	17.1		14.0		44.9		15.7		7.7		13.5	
C1-Fluoranthenes/Pyrenes	9.4		9.9		17.2		7.7		5.1		6.8	
C2-Fluoranthenes/Pyrenes	6.3		6.2		15.0		<1.5	U	<1.5	U	2.7	
C3-Fluoranthenes/Pyrenes	<1.5	U	<1.5	U	<1.5	U	<1.5	U	<1.5	U	<1.5	U
Naphthobenzothiophene	3.1		<1.3	U	12.0		3.1		<1.3	U	2.9	
C1-Naphthobenzothiophenes	<2.5	U	<2.5	U	8.6		<2.5	U	<2.5	U	<2.4	U
C2-Naphthobenzothiophenes	<2.5	U	<2.5	U	8.9		<2.5	U	<2.5	U	<2.4	U
C3-Naphthobenzothiophenes	<2.5	U	<2.5	U	<2.5	U	<2.5	U	<2.5	U	<2.4	U
Benz(a)anthracene	4.9		4.9		10.5		5.3		2.8		6.1	
Chrysene	10.6		9.1		31.2		10.1		5.6		11.8	
C1-Chrysenes	<1.7	U	8.0		14.1		<1.8	U	<1.8	U	<1.7	U
C2-Chrysenes	<1.7	U	<1.8	U	<1.7	U	<1.8	U	<1.8	U	<1.7	U
C3-Chrysenes	<1.7	U	<1.8	U	<1.7	U	<1.8	U	<1.8	U	<1.7	U
C4-Chrysenes	<1.7	U	<1.8	U	<1.7	U	<1.8	U	<1.8	U	<1.7	U
Benzo(b)fluoranthene	12.2		12.0		38.7		14.5		8.7		17.4	
Benzo(k)fluoranthene	3.6		3.8		9.8		5.0		3.4		6.5	
Benzo(e)pyrene	6.5		7.8		20.4		8.9		4.3		9.3	
Benzo(a)pyrene	7.2		8.9		16.3		10.3		5.3		9.1	
Perylene	2.5		2.5		5.2		4.1		2.1		2.8	
Indeno(1,2,3-c,d)pyrene	3.7		6.2		17.4		6.5		3.5		9.0	
Dibenzo(a,h)anthracene	2	J	2		3.0		<1.7	U	<1.7	U	<1.6	U
Benzo(g,h,i)perylene	2.6		4.8		17.7		7.8		2.9		7.0	
Total PAHs	235		250		533		177		105		179	
Individual Alkyl Isomers and Hopanes												
2-Methylnaphthalene	9.3		9.8		8.3		10.3		6.4		5.1	
1-Methylnaphthalene	6.4		7.9		10.7		6.8		5.1		4.8	
2,6-Dimethylnaphthalene	2.8		4.9		3.8		3.0		1.9		2.3	
1,6,7-Trimethylnaphthalene	1.4		1.0	J	1.2		<1.1	U	<1.1	U	<1.1	U
1-Methylphenanthrene	2.0		2.1		3.8		1.4		1.1	J	1.1	J
C29-Hopane	<10.6	U	<10.8	U	44.8		<10.9	U	<10.9	U	<10.4	U
18a-Oleanane	<10.6	U	<10.8	U	<10.6	U	<10.9	U	<10.9	U	<10.4	U
C30-Hopane	<10.6	U	<10.8	U	40.7		<10.9	U	<10.9	U	<10.4	U

Surrogate (Su)	Su Recovery (%)	Su Recovery (%)	Su Recovery (%)	Su Recovery (%)	Su Recovery (%)	Su Recovery (%)
Naphthalene-d8	88	86	82	82	90	92
Acenaphthene-d10	88	87	86	85	91	96
Phenanthrene-d10	88	86	85	88	94	97
Chrysene-d12	75	76	88	78	72	69
Perylene-d12	86	98	88	85	98	95

Qualifiers (Q): J=Below the MDL, U=Not detected, B=In procedural blank > 3x MDL, I=Interference, D=Diluted value, NA=Not Applicable, *=Outside QA limits, refer to narrative

Sample Name	ETX3898.D	ETX3899.D	ETX3900.D	ETX3901.D	ETX3902.D	ETX3903.D
Client Name	W-TPB-01	W-TPB-02	W-TPB-03	W-BTC-07	W-BTC-08	W-BTC-09
Matrix	Water	Water	Water	Water	Water	Water
Collection Date	12/07/04	12/07/04	12/07/04	12/07/04	12/07/04	12/07/04
Received Date	12/10/04	12/10/04	12/10/04	12/10/04	12/10/04	12/10/04
Extraction Date	12/13/04	12/13/04	12/13/04	12/13/04	12/13/04	12/13/04
Extraction Batch	ENV 1063	ENV 1063	ENV 1063	ENV 1063	ENV 1063	ENV 1063
Date Acquired	12/16/04	12/16/04	12/16/04	12/16/04	12/16/04	12/16/04
Method	PAH-2002	PAH-2002	PAH-2002	PAH-2002	PAH-2002	PAH-2002
Sample Volume (L)	0.9	0.9	0.9	0.9	0.9	0.9
Dilution	NA	NA	NA	NA	NA	NA

Target Compounds	Su Corrected Conc. (ng/L)	Q	Su Corrected Conc. (ng/L)	Q	Su Corrected Conc. (ng/L)	Q	Su Corrected Conc. (ng/L)	Q	Su Corrected Conc. (ng/L)	Q	Su Corrected Conc. (ng/L)	Q
Naphthalene	11.4		19.5		20.2		12.4		13.2		12.1	
C1-Naphthalenes	5.9		8.3		11.1		9.2		8.4		7.3	
C2-Naphthalenes	8.4		7.2		9.8		9.7		7.7		8.7	
C3-Naphthalenes	<6.8	U	<7	U	<6.8	U	11.9		<6.7	U	11.7	
C4-Naphthalenes	<6.8	U	<7	U	<6.8	U	10.0		<6.7	U	<6.9	U
Benzothiophene	<1.8	U	<1.8	U	2.3		1.7	J	2.1		1.3	J
C1-Benzothiophenes	<3.6	U	<3.7	U	<3.6	U	<3.5	U	<3.5	U	<3.6	U
C2-Benzothiophenes	<3.6	U	<3.7	U	<3.6	U	<3.5	U	<3.5	U	<3.6	U
C3-Benzothiophenes	<3.6	U	<3.7	U	<3.6	U	<3.5	U	<3.5	U	<3.6	U
Biphenyl	1.8	J	1.6	J	1.4	J	1.5	J	1.2	J	1.9	J
Acenaphthylene	1.9		3.7		2.8		4.3		3.9		2.2	
Acenaphthene	1.7		2.0		2.4		4.9		4.5		1.9	
Dibenzofuran	2.0		2.3		2.4		2.8		2.1		1.8	
Fluorene	1.6		2.3		3.0		4.7		3.6		2.7	
C1-Fluorenes	<1.3	U	<1.4	U	<1.3	U	<1.3	U	<1.3	U	<1.4	U
C2-Fluorenes	<1.3	U	<1.4	U	<1.3	U	<1.3	U	<1.3	U	<1.4	U
C3-Fluorenes	<1.3	U	<1.4	U	<1.3	U	<1.3	U	<1.3	U	<1.4	U
Carbazole	<2	U	<2.1	U	2.3		3.0		3.8		1.0	J
Anthracene	2.0		4.1		3.2		5.7		5.3		2.9	
Phenanthrene	7.6		10.5		14.3		16.4		14.7		9.1	
C1-Phenanthrene/Anthracenes	3.8		6.7		6.8		10.4		8.5		6.5	
C2-Phenanthrene/Anthracenes	<3	U	<3.1	U	7.9		12.4		10.4		10.7	
C3-Phenanthrene/Anthracenes	<3	U	<3.1	U	5.9		13.6		<3	U	8.9	
C4-Phenanthrene/Anthracenes	<3	U	<3.1	U	<3	U	<3	U	<3	U	<3.1	U
Dibenzothiophene	<0.9	U	1.1		2.1		3.3		3.2		1.6	
C1-Dibenzothiophenes	<1.9	U	<1.9	U	2.1		4.5		3.1		2.2	
C2-Dibenzothiophenes	<1.9	U	<1.9	U	<1.9	U	7.4		4.9		5.4	
C3-Dibenzothiophenes	<1.9	U	<1.9	U	<1.9	U	8.8		<1.9	U	<1.9	U
Fluoranthene	14.2		20.0		27.3		32.1		27.1		12.9	
Pyrene	12.6		17.0		24.7		32.9		26.4		13.1	
C1-Fluoranthenes/Pyrenes	5.7		7.4		10.2		15.1		10.2		7.7	
C2-Fluoranthenes/Pyrenes	<1.5	U	<1.6	U	6.8		9.2		6.8		<1.5	U
C3-Fluoranthenes/Pyrenes	<1.5	U	<1.6	U	<1.5	U	<1.5	U	<1.5	U	<1.5	U
Naphthobenzothiophene	2.8		<1.3	U	6.2		7.1		4.1		2.2	
C1-Naphthobenzothiophenes	<2.5	U	<2.6	U	4.1		4.5		<2.5	U	<2.5	U
C2-Naphthobenzothiophenes	<2.5	U	<2.6	U	<2.5	U	6.3		<2.5	U	<2.5	U
C3-Naphthobenzothiophenes	<2.5	U	<2.6	U	<2.5	U	<2.5	U	<2.5	U	<2.5	U
Benz(a)anthracene	3.8		8.3		10.4		10.6		8.3		5.6	
Chrysene	7.1		14.2		18.0		21.8		18.4		9.5	
C1-Chrysenes	<1.8	U	<1.8	U	10.9		14.8		7.5		<1.8	U
C2-Chrysenes	<1.8	U	<1.8	U	<1.8	U	<1.7	U	<1.7	U	<1.8	U
C3-Chrysenes	<1.8	U	<1.8	U	<1.8	U	<1.7	U	<1.7	U	<1.8	U
C4-Chrysenes	<1.8	U	<1.8	U	<1.8	U	<1.7	U	<1.7	U	<1.8	U
Benzo(b)fluoranthene	13.0		22.3		26.9		27.6		23.6		11.7	
Benzo(k)fluoranthene	4.6		7.6		8.3		6.7		5.3		2.7	J
Benzo(e)pyrene	7.2		13.3		14.3		14.9		11.1		5.5	
Benzo(a)pyrene	6.7		13.0		15.8		14.0		11.5		5.8	
Perylene	2.8		4.0		5.0		5.4		5.0		2.1	
Indeno(1,2,3-c,d)pyrene	6.0		6.9		14.3		12.4		11.2		4.9	
Dibenzo(a,h)anthracene	<1.7	U	<1.7	U	1.9		1.9		<1.6	U	<1.7	U
Benzo(g,h,i)perylene	6.4		9.3		14.5		12.6		9.5		6.0	
Total PAHs	141		213		320		409		287		190	
Individual Alkyl Isomers and Hopanes												
2-Methylnaphthalene	5.2		7.5		9.0		7.6		6.2		6.6	
1-Methylnaphthalene	4.6		6.4		9.4		7.7		7.9		5.5	
2,6-Dimethylnaphthalene	1.7	J	2.5		3.9		4.0		1.9		3.7	
1,6,7-Trimethylnaphthalene	<1.1	U	<1.1	U	<1.1	U	0.9	J	<1.1	U	0.7	J
1-Methylphenanthrene	0.9	J	1.8		1.5		2.6		2.6		1.9	
C29-Hopane	<10.8	U	<11	U	<10.8	U	26.6		22.8		<10.9	U
18a-Oleanane	<10.8	U	<11	U	<10.8	U	<10.5	U	<10.5	U	<10.9	U
C30-Hopane	<10.8	U	<11	U	<10.8	U	27.9		23.2		<10.9	U

Surrogate (Su)	Su Recovery (%)	Su Recovery (%)	Su Recovery (%)	Su Recovery (%)	Su Recovery (%)	Su Recovery (%)
Naphthalene-d8	91	66	96	90	92	98
Acenaphthene-d10	90	70	97	94	96	94
Phenanthrene-d10	94	71	94	95	95	99
Chrysene-d12	82	52	86	96	91	87
Perylene-d12	98	63	94	94	90	90

Qualifiers (Q): J=Below the MDL, U=Not detected, B=In procedural blank > 3x MDL, I=Interference, D=Diluted value, NA=Not Applicable, *=Outside QA limits, refer to narrative

Sample Name	ETX3904.D	ETX3905.D	ETX3906.D	ETX3907.D	ETX3910.D	ETX3911.D
Client Name	W-DUP-01	WLP #1-5	WLP #2-5	WLP #3-5	WSUB-01 (1 of 2)	WSUB-01 (2 of 2)
Matrix	Water	Water	Water	Water	Water	Water
Collection Date	12/07/04	12/07/04	12/07/04	12/07/04	12/07/04	12/07/04
Received Date	12/10/04	12/10/04	12/10/04	12/10/04	12/10/04	12/10/04
Extraction Date	12/13/04	12/13/04	12/13/04	12/13/04	12/13/04	12/13/04
Extraction Batch	ENV 1063	ENV 1063	ENV 1063	ENV 1063	ENV 1063	ENV 1063
Date Acquired	12/16/04	12/16/04	12/16/04	12/16/04	12/16/04	12/16/04
Method	PAH-2002	PAH-2002	PAH-2002	PAH-2002	PAH-2002	PAH-2002
Sample Volume (L)	0.9	0.9	1.0	0.9	0.9	0.9
Dilution	NA	NA	NA	NA	NA	NA

Target Compounds	Su Corrected Conc. (ng/L)	Q	Su Corrected Conc. (ng/L)	Q	Su Corrected Conc. (ng/L)	Q	Su Corrected Conc. (ng/L)	Q	Su Corrected Conc. (ng/L)	Q	Su Corrected Conc. (ng/L)	Q
Naphthalene	12.8		15.7		11.4		20.0		15.1		12.3	
C1-Naphthalenes	9.4		8.7		6.9		12.7		9.5		6.5	
C2-Naphthalenes	10.4		7.7		7.0		49.9		7.8		<6.9	U
C3-Naphthalenes	11.6		<6.5	U	<6.3	U	97.0		<6.9	U	<6.9	U
C4-Naphthalenes	9.9		<6.5	U	<6.3	U	76.3		<6.9	U	<6.9	U
Benzothiophene	2.0		<1.7	U	<1.7	U	<1.8	U	<1.8	U	<1.8	U
C1-Benzothiophenes	<3.6	U	<3.5	U	<3.3	U	<3.6	U	<3.6	U	<3.6	U
C2-Benzothiophenes	<3.6	U	<3.5	U	<3.3	U	<3.6	U	<3.6	U	<3.6	U
C3-Benzothiophenes	<3.6	U	<3.5	U	<3.3	U	<3.6	U	<3.6	U	<3.6	U
Biphenyl	2.0	J	1.5	J	1.8	J	2.8		2.2	J	1.6	J
Acenaphthylene	4.1		1.9		2.0		8.4		6.5		<1.2	U
Acenaphthene	5.0		<1.4	U	<1.4	U	4.1		<1.5	U	<1.5	U
Dibenzofuran	2.6		1.5		1.1	J	5.8		2.8		1.4	
Fluorene	4.8		1.8		1.4		11.1		2.9		1.2	
C1-Fluorenes	<1.3	U	<1.3	U	<1.2	U	28.5		<1.4	U	<1.4	U
C2-Fluorenes	<1.3	U	<1.3	U	<1.2	U	110		<1.4	U	<1.4	U
C3-Fluorenes	<1.3	U	<1.3	U	<1.2	U	80.1		<1.4	U	<1.4	U
Carbazole	2.6		<1.9	U	<1.9	U	<2	U	2.3		<2.1	U
Anthracene	5.3		2.8		3.4		11.9		8.7		0.9	
Phenanthrene	15.1		6.5		7.6		51.0		25.7		2.6	
C1-Phenanthrene/Anthracenes	9.7		4.6		5.2		79.7		13.7		<3.1	U
C2-Phenanthrene/Anthracenes	14.2		<2.9	U	<2.8	U	127		11.0		<3.1	U
C3-Phenanthrene/Anthracenes	12.4		<2.9	U	<2.8	U	104		<3.1	U	<3.1	U
C4-Phenanthrene/Anthracenes	<3	U	<2.9	U	<2.8	U	56.1		<3.1	U	<3.1	U
Dibenzothiophene	3.2		1.4		1.9		10.7		1.7		<1	U
C1-Dibenzothiophenes	4.2		<1.8	U	2.2		53.8		3.1		<1.9	U
C2-Dibenzothiophenes	6.8		<1.8	U	<1.8	U	114		<1.9	U	<1.9	U
C3-Dibenzothiophenes	10.2		<1.8	U	<1.8	U	131		<1.9	U	<1.9	U
Fluoranthene	28.5		9.1		9.8		43.1		49.4		2.3	
Pyrene	30.1		10.3		12.6		48.8		47.5		2.8	
C1-Fluoranthenes/Pyrenes	13.6		7.1		6.3		54.1		20.9		<1.5	U
C2-Fluoranthenes/Pyrenes	7.7		<1.5	U	<1.4	U	60.4		13.1		<1.5	U
C3-Fluoranthenes/Pyrenes	<1.5	U	<1.5	U	<1.4	U	41.1		<1.5	U	<1.5	U
Naphthobenzothiophene	6.6		<1.2	U	<1.2	U	25.9		8.0		<1.3	U
C1-Naphthobenzothiophenes	<2.5	U	<2.4	U	<2.3	U	54.5		<2.5	U	<2.5	U
C2-Naphthobenzothiophenes	<2.5	U	<2.4	U	<2.3	U	92.2		<2.5	U	<2.5	U
C3-Naphthobenzothiophenes	<2.5	U	<2.4	U	<2.3	U	70.1		<2.5	U	<2.5	U
Benz(a)anthracene	10.3		3.3		3.7		21.1		21.9		<1	U
Chrysene	22.1		6.2		7.1		50.9		31.3		<0.9	U
C1-Chrysenes	13.7		<1.7	U	<1.6	U	68.8		16.6		<1.8	U
C2-Chrysenes	<1.7	U	<1.7	U	<1.6	U	58.6		<1.8	U	<1.8	U
C3-Chrysenes	<1.7	U	<1.7	U	<1.6	U	34.9		<1.8	U	<1.8	U
C4-Chrysenes	<1.7	U	<1.7	U	<1.6	U	<1.7	U	<1.8	U	<1.8	U
Benzo(b)fluoranthene	26.4		9.5		10.0		43.2		45.7		<3	U
Benzo(k)fluoranthene	6.4		3.1		3.4		10.1		10.1		<3.1	U
Benzo(e)pyrene	14.7		5.3		6.5		30.3		24.1		<3.2	U
Benzo(a)pyrene	14.3		6.4		6.5		25.0		25.6		<1.9	U
Perylene	5.0		5.9		6.2		33.6		7.9		<0.8	U
Indeno(1,2,3-c,d)pyrene	9.3		4.7		3.6		18.9		19.7		<2.2	U
Dibenzo(a,h)anthracene	<1.7	U	<1.6	U	<1.5	U	3.0		4.4		<1.7	U
Benzo(g,h,i)perylene	11.0		5.0		4.6		19.3		18.7		<2.5	U
Total PAHs	378		130		132		2154		478		31.6	
Individual Isomers												
2-Methylnaphthalene	8.6		8.8		6.4		11.8		9.0		6.2	
1-Methylnaphthalene	7.1		5.7		5.1		9.4		6.8		4.6	
2,6-Dimethylnaphthalene	3.3		2.6		2.8		28.6		3.8		<1.8	U
1,6,7-Trimethylnaphthalene	0.9	J	<1	U	<1	U	9.9		<1.1	U	<1.1	U
1-Methylphenanthrene	2.8		1.1	J	1.7		23.7		3.6		<1.2	U
C29-Hopane	28.4		<10.3	U	<10	U	55.9		22.2		<10.9	U
18a-Oleanane	<10.6	U	<10.3	U	<10	U	<10.6	U	<10.9	U	<10.9	U
C30-Hopane	30.7		<10.3	U	<10	U	69.1		37.9		<10.9	U

Surrogate (Su)	Su Recovery (%)	Su Recovery (%)	Su Recovery (%)	Su Recovery (%)	Su Recovery (%)	Su Recovery (%)
Naphthalene-d8	96	92	95	93	93	93
Acenaphthene-d10	96	92	96	94	94	89
Phenanthrene-d10	99	99	99	93	97	98
Chrysene-d12	92	85	90	91	94	82
Perylene-d12	97	98	94	93	97	91

Qualifiers (Q): J=Below the MDL, U=Not detected, B=In procedural blank > 3x MDL, I=Interference, D=Diluted value, NA=Not Applicable, *=Outside QA limits, refer to narrative

Sample Name	ETX3888.D	ETX3889.D	ETX3890.D	ETX3891.D	ETX3892.D	ETX3893.D
Client Name	W-MAN-05	W-MAN-06	W-MAN-07	W-TN-01	W-TN-02	W-TN-03
Matrix	Water	Water	Water	Water	Water	Water
Collection Date	12/08/04	12/08/04	12/08/04	12/08/04	12/08/04	12/08/04
Received Date	12/10/04	12/10/04	12/10/04	12/10/04	12/10/04	12/10/04
Extraction Date	12/14/04	12/14/04	12/14/04	12/14/04	12/14/04	12/14/04
Extraction Batch	ENV 1064	ENV 1064	ENV 1064	ENV 1064	ENV 1064	ENV 1064
Date Acquired	12/18/04	12/18/04	12/18/04	12/19/04	12/19/04	12/19/04
Method	PAH-2002	PAH-2002	PAH-2002	PAH-2002	PAH-2002	PAH-2002
Sample Volume (L)	0.9	0.9	0.9	0.9	0.9	0.9
Dilution	NA	NA	NA	NA	NA	NA

Target Compounds	Su Corrected Conc. (ng/L)	Q	Su Corrected Conc. (ng/L)	Q	Su Corrected Conc. (ng/L)	Q	Su Corrected Conc. (ng/L)	Q	Su Corrected Conc. (ng/L)	Q	Su Corrected Conc. (ng/L)	Q
Naphthalene	8.8		7.0		7.3		11.5		12.2		9.2	
C1-Naphthalenes	9.6		8.4		6.2		13.2		13.2		7.1	
C2-Naphthalenes	9.2		9.4		7.3		20.1		14.1		10.1	
C3-Naphthalenes	10.7		10.9		<6.7	U	29.8		19.7		<6.7	U
C4-Naphthalenes	14.8		<6.7	U	<6.7	U	21.1		13.6		<6.7	U
Benzothiophene	2.6		2.6		2.5		4.0		3.1		3.9	
C1-Benzothiophenes	<3.5	U	<3.6	U	<3.5	U	<3.5	U	<3.5	U	<3.5	U
C2-Benzothiophenes	<3.5	U	<3.6	U	<3.5	U	<3.5	U	<3.5	U	<3.5	U
C3-Benzothiophenes	<3.5	U	<3.6	U	<3.5	U	<3.5	U	<3.5	U	<3.5	U
Biphenyl	1.7	J	1.9	J	2.2	J	2.9		2.6		2.9	
Acenaphthylene	3.0		2.5		2.3		3.9		3.4		2.9	
Acenaphthene	1.6		1.7		<1.4	U	3.8		2.7		2.4	
Dibenzofuran	2.0		1.7		1.9		3.4		2.8		2.3	
Fluorene	3.0		2.5		<0.7	U	5.2		4.6		2.6	
C1-Fluorenes	<1.3	U	<1.3	U	<1.3	U	9.9		<1.3	U	<1.3	U
C2-Fluorenes	<1.3	U	<1.3	U	<1.3	U	<1.3	U	<1.3	U	<1.3	U
C3-Fluorenes	<1.3	U	<1.3	U	<1.3	U	<1.3	U	<1.3	U	<1.3	U
Carbazole	<2	U	<2	U	2.1		3.0		1.4	J	<2	U
Anthracene	2.4		2.7		4.3		5.5		6.2		3.9	
Phenanthrene	6.3		6.2		11.7		10.2		12.1		7.6	
C1-Phenanthrene/Anthracenes	5.5		7.4		7.4		12.3		11.6		9.2	
C2-Phenanthrene/Anthracenes	9.4		10.1		10.1		17.0		14.8		12.7	
C3-Phenanthrene/Anthracenes	9.0		10.9		8.5		13		12.0		<3	U
C4-Phenanthrene/Anthracenes	<3	U	<3	U	<3	U	12.1		<3	U	<3	U
Dibenzothiophene	1.3		1.4		1.9		3.1		2.3		2.4	
C1-Dibenzothiophenes	<1.9	U	4.1		<1.9	U	6.2		5.2		2.5	
C2-Dibenzothiophenes	<1.9	U	7.4		<1.9	U	8.3		7.1		<1.9	U
C3-Dibenzothiophenes	<1.9	U	9.8		<1.9	U	11.9		<1.9	U	<1.9	U
Fluoranthene	11.8		12.6		22.3		23.5		25.3		14.2	
Pyrene	13.5		14.4		22.1		28.5		30.4		19.7	
C1-Fluoranthenes/Pyrenes	9.4		8.3		12.8		17.3		14.4		12.8	
C2-Fluoranthenes/Pyrenes	<1.5	U	6.0		8.8		8.3		8.5		10.4	
C3-Fluoranthenes/Pyrenes	<1.5	U	<1.5	U	<1.5	U	<1.5	U	<1.5	U	<1.5	U
Naphthobenzothiophene	<1.2	U	<1.2	U	6.7		8.3		10.2		4.1	
C1-Naphthobenzothiophenes	<2.5	U	<2.5	U	4.5		9.3		5.9		8.4	
C2-Naphthobenzothiophenes	<2.5	U	<2.5	U	<2.5	U	<2.5	U	8.0		<2.5	U
C3-Naphthobenzothiophenes	<2.5	U	<2.5	U	<2.5	U	<2.5	U	<2.5	U	<2.5	U
Benz(a)anthracene	6.5		8.4		16.1		12.7		13.7		9.2	
Chrysene	7.3		7.9		8.6		15.9		14.6		10.8	
C1-Chrysenes	<1.7	U	7.7		8.1		10.7		9.4		10.0	
C2-Chrysenes	<1.7	U	<1.7	U	6.8		<1.7	U	<1.7	U	6.5	
C3-Chrysenes	<1.7	U	<1.7	U	<1.7	U	<1.7	U	<1.7	U	<1.7	U
C4-Chrysenes	<1.7	U	<1.7	U	<1.7	U	<1.7	U	<1.7	U	<1.7	U
Benzo(b)fluoranthene	9.9		9.9		16.4		22.3		23.6		15.3	
Benzo(k)fluoranthene	3.5		3.5		5.3		5.0		5.8		4.2	
Benzo(e)pyrene	6.6		7.1		10.7		10.5		11.5		10.2	
Benzo(a)pyrene	6.8		6.8		11.0		10.8		12.4		8.9	
Perylene	2.2		2.3		3.4		5.0		4.9		3.0	
Indeno(1,2,3-c,d)pyrene	4.5		5.1		6.9		8.6		9.5		7.6	
Dibenzo(a,h)anthracene	<1.6	U	<1.7	U	1.8		<1.6	U	2.1		<1.6	U
Benzo(g,h,i)perylene	5.3		4.9		6.5		8.4		8.3		6.8	
Total PAHs	188		214		255		437		383		244	
Individual Alkyl Isomers and Hopanes												
2-Methylnaphthalene	8.8		6.9		5.2		10.6		12.2		6.7	
1-Methylnaphthalene	6.0		6.2		4.4		9.9		8.2		4.3	
2,6-Dimethylnaphthalene	3.5		3.6		2.4		5.6		5.2		3.1	
1,6,7-Trimethylnaphthalene	0.7	J	0.7	J	<1.1	U	3.8		1.4		<1.1	U
1-Methylphenanthrene	2.0		2.7		2.0		3.7		3.4		3.3	
C29-Hopane	<10.5	U	<10.6	U	21.9		<10.5	U	<10.5	U	32.2	
18a-Oleanane	<10.5	U	<10.6	U	<10.5	U	<10.5	U	<10.5	U	<10.5	U
C30-Hopane	<10.5	U	<10.6	U	20.9		<10.5	U	<10.5	U	19.8	

Surrogate (Su)	Su Recovery (%)	Su Recovery (%)	Su Recovery (%)	Su Recovery (%)	Su Recovery (%)	Su Recovery (%)
Naphthalene-d8	81	85	88	77	88	86
Acenaphthene-d10	83	91	97	85	98	90
Phenanthrene-d10	90	89	91	82	85	86
Chrysene-d12	89	89	94	100	105	92
Perylene-d12	86	89	94	78	90	87

Qualifiers (Q): J=Below the MDL, U=Not detected, B=In procedural blank > 3x MDL, I=Interference, D=Diluted value, NA=Not Applicable, *=Outside QA limits, refer to narrative

Sample Name	ETX3894.D	ETX3908.D	ETX3909.D	ETX3913.D	ETX3914.D	ETX3916.D
Client Name	W-TN-04	WMH #1-5	AG SAMPLE BL	WCR #2S	WCR #20 (1 of 2)	WCR #1D (1 of 2)
Matrix	Water	Water	Water	Water	Water	Water
Collection Date	12/08/04	12/08/04	12/08/04	12/08/04	12/08/04	12/08/04
Received Date	12/10/04	12/10/04	12/10/04	12/10/04	12/10/04	12/10/04
Extraction Date	12/14/04	12/14/04	12/14/04	12/14/04	12/14/04	12/14/04
Extraction Batch	ENV 1064	ENV 1064	ENV 1064	ENV 1064	ENV 1064	ENV 1064
Date Acquired	12/19/04	12/19/04	12/19/04	12/19/04	12/19/04	12/19/04
Method	PAH-2002	PAH-2002	PAH-2002	PAH-2002	PAH-2002	PAH-2002
Sample Volume (L)	0.9	0.9	1.0	0.9	0.9	0.9
Dilution	NA	NA	NA	NA	NA	NA

Target Compounds	Su Corrected Conc. (ng/L)	Q	Su Corrected Conc. (ng/L)	Q	Su Corrected Conc. (ng/L)	Q	Su Corrected Conc. (ng/L)	Q	Su Corrected Conc. (ng/L)	Q	Su Corrected Conc. (ng/L)	Q
Naphthalene	8.7		32.6		20.5		6.7		9.5		5.3	
C1-Naphthalenes	7.2		140		4.8		5.0		7.2		5.7	
C2-Naphthalenes	8.9		792		<6.3	U	<6.7	U	10.7		13.2	
C3-Naphthalenes	11.4		1340		<6.3	U	<6.7	U	<6.7	U	29.8	
C4-Naphthalenes	14.9		1170		<6.3	U	<6.7	U	<6.7	U	18.9	
Benzothiophene	2.2		11.2		<1.7	U	2.2		2.5		1.7	J
C1-Benzothiophenes	<3.6	U	44.9		<3.3	U	<3.6	U	<3.5	U	<3.6	U
C2-Benzothiophenes	<3.6	U	185		<3.3	U	<3.6	U	<3.5	U	<3.6	U
C3-Benzothiophenes	<3.6	U	325		<3.3	U	<3.6	U	<3.5	U	<3.6	U
Biphenyl	1.9	J	20.3		1.3	J	2.1	J	2.4		2.2	J
Acenaphthylene	2.2		<1.2	U	<1.1	U	3.2		10.6		5.9	
Acenaphthene	1.7		44.1		<1.4	U	<1.4	U	<1.4	U	2.5	
Dibenzofuran	2.0		34.1		<1.2	U	1.2	J	4.5		2.8	
Fluorene	3.0		112		<0.6	U	2.0		6.2		4.6	
C1-Fluorenes	<1.3	U	354		<1.2	U	<1.3	U	<1.3	U	9.6	
C2-Fluorenes	<1.3	U	888		<1.2	U	<1.3	U	<1.3	U	<1.3	U
C3-Fluorenes	<1.3	U	939		<1.2	U	<1.3	U	<1.3	U	<1.3	U
Carbazole	<2	U	43.0		<1.9	U	1.2	J	1.8	J	1.9	J
Anthracene	4.4		<0.9	U	<0.8	U	5.4		12.4		9.3	
Phenanthrene	8.9		378		<1.4	U	10.8		30.8		22.1	
C1-Phenanthrene/Anthracenes	9.6		1010		<2.8	U	6.5		16.6		20.7	
C2-Phenanthrene/Anthracenes	14.2		1740		<2.8	U	<3	U	27.4		34.1	
C3-Phenanthrene/Anthracenes	12.5		1600		<2.8	U	<3	U	26.9		29.2	
C4-Phenanthrene/Anthracenes	<3	U	1160		<2.8	U	<3	U	18.1		16.5	
Dibenzothiophene	1.6		146		<0.9	U	1.9		4.2		3.9	
C1-Dibenzothiophenes	3.9		743		<1.8	U	<1.9	U	6.3		10.5	
C2-Dibenzothiophenes	9.7		1790		<1.8	U	<1.9	U	16.4		26.6	
C3-Dibenzothiophenes	<1.9	U	1950		<1.8	U	<1.9	U	25.3		31.2	
Fluoranthene	17.6		79.9		<0.7	U	18.7		55.6		38.1	
Pyrene	20.4		135		<1	U	21.4		58.1		44.1	
C1-Fluoranthenes/Pyrenes	12.5		452		<1.4	U	14.2		36.7		27.0	
C2-Fluoranthenes/Pyrenes	9.2		661		<1.4	U	7.2		21.3		23.2	
C3-Fluoranthenes/Pyrenes	<1.5	U	620		<1.4	U	<1.5	U	14.7		12.7	
Naphthobenzothiophene	5.1		343		<1.2	U	4.0		21.3		16.2	
C1-Naphthobenzothiophenes	9.7		1130		<2.3	U	<2.5	U	17.0		25.2	
C2-Naphthobenzothiophenes	11.0		2090		<2.3	U	<2.5	U	28.6		31.5	
C3-Naphthobenzothiophenes	<2.5	U	1340		<2.3	U	<2.5	U	24.2		27.9	
Benz(a)anthracene	10.1		90.3		<0.9	U	13.9		28.1		21.9	
Chrysene	10.3		267		<0.8	U	5.7		33.5		26.1	
C1-Chrysenes	9.8		734		<1.6	U	<1.7	U	24.3		21.9	
C2-Chrysenes	<1.7	U	921		<1.6	U	<1.7	U	19.4		16.7	
C3-Chrysenes	<1.7	U	314		<1.6	U	<1.7	U	<1.7	U	<1.7	U
C4-Chrysenes	<1.7	U	113.0		<1.6	U	<1.7	U	<1.7	U	<1.7	U
Benzo(b)fluoranthene	15.9		73.4		<2.8	U	13.0		48.6		37.0	
Benzo(k)fluoranthene	5.2		15.4		<2.9	U	4.2		15.4		11.3	
Benzo(e)pyrene	7.7		91.1		<3	U	7.7		26.6		18.9	
Benzo(a)pyrene	9.6		46.6		<1.8	U	8.9		29.0		19.2	
Perylene	3.5		56.6		<0.8	U	6.2		20.0		14.1	
Indeno(1,2,3-c,d)pyrene	5.8		23.2		<2.1	U	6.2		20.8		17.0	
Dibenzo(a,h)anthracene	<1.7	U	11.2		<1.5	U	<1.7	U	4.7		3.3	
Benzo(g,h,i)perylene	6.6		34.5		<2.3	U	7.0		20.8		14.3	
Total PAHs	299		26634		26.6		187		809		776	
Individual Alkyl Isomers and Hopanes												
2-Methylnaphthalene	6.0		96.7		5.0		3.6		6.2		5.4	
1-Methylnaphthalene	5.2		123		2.3		4.2		5.0		3.4	
2,6-Dimethylnaphthalene	2.8		388		<1.7	U	<1.8	U	4.0		4.2	
1,6,7-Trimethylnaphthalene	0.7	J	205		<1	U	<1.1	U	<1.1	U	1.3	
1-Methylphenanthrene	3.1		323		<1.1	U	2.1		6.8		6.5	
C29-Hopane	26.1		369		<10	U	<10.6	U	64.9		93.2	
18a-Oleanane	<10.6	U	66.2		<10	U	<10.6	U	<10.5	U	22.1	
C30-Hopane	26.1		412		<10	U	<10.6	U	93.4		126	

Surrogate (Su)	Su Recovery (%)	Su Recovery (%)	Su Recovery (%)	Su Recovery (%)	Su Recovery (%)	Su Recovery (%)
Naphthalene-d8	87	71	85	87	93	90
Acenaphthene-d10	90	87	90	90	89	88
Phenanthrene-d10	86	85	86	89	81	83
Chrysene-d12	98	82	95	93	94	98
Perylene-d12	86	81	99	83	83	84

Qualifiers (Q): J=Below the MDL, U=Not detected, B=In procedural blank > 3x MDL, I=Interference, D=Diluted value, NA=Not Applicable, *=Outside QA limits, refer to narrative

Sample Name	ETX3918.D	ETX3919.D	ETX3920.D	ETX3922.D	ETX3923.D	ETX3924.D
Client Name	WCR #3S	WCR #1S	WCD #2D (1 of 2)	WCD #1S	WCD #2S	WCR #3S
Matrix	Water	Water	Water	Water	Water	Water
Collection Date	12/08/04	12/08/04	12/08/04	12/08/04	12/08/04	12/08/04
Received Date	12/10/04	12/10/04	12/10/04	12/10/04	12/10/04	12/10/04
Extraction Date	12/14/04	12/14/04	12/14/04	12/14/04	12/14/04	12/14/04
Extraction Batch	ENV 1064	ENV 1064	ENV 1064	ENV 1064	ENV 1064	ENV 1064
Date Acquired	12/19/04	12/19/04	12/19/04	12/20/04	12/20/04	12/20/04
Method	PAH-2002	PAH-2002	PAH-2002	PAH-2002	PAH-2002	PAH-2002
Sample Volume (L)	0.9	0.9	0.9	0.9	0.9	0.9
Dilution	NA	NA	NA	NA	NA	NA

Target Compounds	Su Corrected Conc. (ng/L)	Q	Su Corrected Conc. (ng/L)	Q	Su Corrected Conc. (ng/L)	Q	Su Corrected Conc. (ng/L)	Q	Su Corrected Conc. (ng/L)	Q	Su Corrected Conc. (ng/L)	Q
Naphthalene	5.6		7.2		8.1		6.6		6.5		9.6	
C1-Naphthalenes	5.2		5.0		4.6		4.7		5.1		5.8	
C2-Naphthalenes	<6.7	U	<6.7	U	<6.8	U	6.6	J	<6.7	U	<6.7	U
C3-Naphthalenes	<6.7	U	<6.7	U	<6.8	U	<6.7	U	<6.7	U	<6.7	U
C4-Naphthalenes	<6.7	U	<6.7	U	<6.8	U	<6.7	U	<6.7	U	<6.7	U
Benzothiophene	1.1	J	2.3		2.1		1.9		<1.8	U	2.5	
C1-Benzothiophenes	<3.6	U	<3.6	U	<3.6	U	<3.6	U	<3.6	U	<3.5	U
C2-Benzothiophenes	<3.6	U	<3.6	U	<3.6	U	<3.6	U	<3.6	U	<3.5	U
C3-Benzothiophenes	<3.6	U	<3.6	U	<3.6	U	<3.6	U	<3.6	U	<3.5	U
Biphenyl	2.2	J	1.7	J	2.5		1.9	J	1.8	J	<2.3	U
Acenaphthylene	2.4		2.4		2.9		2.6		2.5		<1.1	U
Acenaphthene	<1.4	U	<1.4	U	<1.5	U	<1.4	U	<1.4	U	<1.4	U
Dibenzofuran	1.5		1.8		1.8		1.6		1.5		1.7	
Fluorene	2.6		1.2		3.0		1.9		2.4		2.2	
C1-Fluorenes	<1.3	U	<1.3	U	<1.3	U	<1.3	U	<1.3	U	<1.3	U
C2-Fluorenes	<1.3	U	<1.3	U	<1.3	U	<1.3	U	<1.3	U	<1.3	U
C3-Fluorenes	<1.3	U	<1.3	U	<1.3	U	<1.3	U	<1.3	U	<1.3	U
Carbazole	1.1	J	<2	U	1.2	J	<2	U	<2	U	1.2	J
Anthracene	4.4		4.1		5.6		3.9		3.4		4.0	
Phenanthrene	7.3		7.1		10.4		9.4		6.8		8.0	
C1-Phenanthrene/Anthracenes	6.0		3.9		8.0		6.5		4.8		5.9	
C2-Phenanthrene/Anthracenes	8.2		9.2		14.3		<3	U	<3	U	10.1	
C3-Phenanthrene/Anthracenes	<3	U	8.1		14.5		<3	U	<3	U	9.1	
C4-Phenanthrene/Anthracenes	<3	U	<3	U	7.4		<3	U	<3	U	<3	U
Dibenzothiophene	2.6		2.2		2.8		2.0		1.8		3.1	
C1-Dibenzothiophenes	2.8		3.2		4.7		1.9		<1.9	U	3.4	
C2-Dibenzothiophenes	<1.9	U	<1.9	U	<1.9	U	<1.9	U	<1.9	U	<1.9	U
C3-Dibenzothiophenes	<1.9	U	<1.9	U	<1.9	U	<1.9	U	<1.9	U	<1.9	U
Fluoranthene	12.4		11.8		18.8		16.7		12.4		17.6	
Pyrene	15.5		16.1		22.8		20.2		14.8		21.0	
C1-Fluoranthenes/Pyrenes	10.0		11.7		14.7		12.8		9.6		12.2	
C2-Fluoranthenes/Pyrenes	5.9		7.4		11.5		7.0		7.1		4.9	
C3-Fluoranthenes/Pyrenes	<1.5	U	<1.5	U	<1.5	U	<1.5	U	<1.5	U	<1.5	U
Naphthobenzothiophene	4.9		3.7		6.6		4.1		2.8		4.3	
C1-Naphthobenzothiophenes	<2.5	U	<2.5	U	11.3		<2.5	U	<2.5	U	<2.5	U
C2-Naphthobenzothiophenes	<2.5	U	<2.5	U	11.7		<2.5	U	<2.5	U	<2.5	U
C3-Naphthobenzothiophenes	<2.5	U	<2.5	U	<2.5	U	<2.5	U	<2.5	U	<2.5	U
Benz(a)anthracene	6.4		6.3		10.2		11.0		7.9		9.1	
Chrysene	8.0		8.2		12.6		10.2		8.0		11.9	
C1-Chrysenes	<1.7	U	8.4		12.2		7.0		<1.7	U	<1.7	U
C2-Chrysenes	<1.7	U	<1.7	U	<1.8	U	5.0		<1.7	U	<1.7	U
C3-Chrysenes	<1.7	U	<1.7	U	<1.8	U	<1.7	U	<1.7	U	<1.7	U
C4-Chrysenes	<1.7	U	<1.7	U	<1.8	U	<1.7	U	<1.7	U	<1.7	U
Benzo(b)fluoranthene	11.7		13.8		18.2		19.2		13.6		17.6	
Benzo(k)fluoranthene	3.5		4.1		6.3		7.3		5.0		5.2	
Benzo(e)pyrene	6.5		6.8		10.5		11.0		8.6		10.8	
Benzo(a)pyrene	6.4		7.6		10.7		11.0		8.3		9.7	
Perylene	6.8		5.3		9.2		7.7		6.9		4.6	
Indeno(1,2,3-c,d)pyrene	4.3		4.5		7.2		8.7		6.3		6.7	
Dibenzo(a,h)anthracene	<1.7	U	<1.7	U	<1.7	U	<1.7	U	<1.7	U	<1.6	U
Benzo(g,h,i)perylene	5.0		4.8		8.3		9.3		5.8		8.2	
Total PAHs	160		180		297		220		154		210	
Individual Isomers												
2-Methylnaphthalene	3.7		4.0		3.3		4.1		4.0		4.4	
1-Methylnaphthalene	4.4		3.7		4.0		3.3		3.9		4.6	
2,6-Dimethylnaphthalene	<1.8	U	<1.8	U	<1.8	U	2.6		<1.8	U	<1.8	U
1,6,7-Trimethylnaphthalene	<1.1	U	<1.1	U	<1.1	U	<1.1	U	<1.1	U	<1.1	U
1-Methylphenanthrene	1.7		1.5		3.3		2.1		1.6		1.7	
C29-Hopane	<10.6	U	<10.6	U	46.4		12.5		<10.6	U	<10.5	U
18a-Oleanane	<10.6	U	<10.6	U	<10.8	U	<10.6	U	<10.6	U	<10.5	U
C30-Hopane	<10.6	U	<10.6	U	54.3		17.3		<10.6	U	<10.5	U

Surrogate (Su)	Su Recovery (%)	Su Recovery (%)	Su Recovery (%)	Su Recovery (%)	Su Recovery (%)	Su Recovery (%)
Naphthalene-d8	91	83	94	92	92	81
Acenaphthene-d10	93	90	96	94	96	90
Phenanthrene-d10	85	85	84	85	94	97
Chrysene-d12	100	96	93	83	84	85
Perylene-d12	89	93	83	88	91	97

Qualifiers (Q): J=Below the MDL, U=Not detected, B=In procedural blank > 3x MDL, I=Interference, D=Diluted value, NA=Not Applicable, *=Outside QA limits, refer to narrative

Sample Name	ETX3927.D	ETX3928.D	ETX3929.D	ETX3930.D	ETX3931.D	ETX3932.D
Client Name	WMH #2D	WMH #3S	WSUB-TN-01 (1 of 2)	WSUB-TN-01 (2 of 2)	WSUB-TN-02 (1 of 2)	WSUB-TN-02 (2 of 2)
Matrix	Water	Water	Water	Water	Water	Water
Collection Date	12/08/04	12/08/04	12/08/04	12/08/04	12/08/04	12/08/04
Received Date	12/10/04	12/10/04	12/10/04	12/10/04	12/10/04	12/10/04
Extraction Date	12/14/04	12/14/04	12/14/04	12/14/04	12/14/04	12/14/04
Extraction Batch	ENV 1065	ENV 1065	ENV 1065	ENV 1065	ENV 1065	ENV 1065
Date Acquired	12/24/04	12/24/04	12/24/04	12/24/04	12/24/04	12/24/04
Method	PAH-2002	PAH-2002	PAH-2002	PAH-2002	PAH-2002	PAH-2002
Sample Volume (L)	0.9	0.9	0.9	1.0	0.9	1.0
Dilution	NA	NA	NA	NA	NA	NA

Target Compounds	Su Corrected Conc. (ng/L)	Q	Su Corrected Conc. (ng/L)	Q	Su Corrected Conc. (ng/L)	Q	Su Corrected Conc. (ng/L)	Q	Su Corrected Conc. (ng/L)	Q	Su Corrected Conc. (ng/L)	Q
Naphthalene	5.1		4.8		12.0		13.2		8.2		3.1	J
C1-Naphthalenes	5.8		4.3		13.1		15.5		6.7		3.1	J
C2-Naphthalenes	7.3		7.7		34.2		17.4		8.7		<8.2	U
C3-Naphthalenes	<6.9	U	<7	U	94.7		19.9		<6.8	U	<8.2	U
C4-Naphthalenes	<6.9	U	<7	U	89.4		22.1		<6.8	U	<8.2	U
Benzothiophene	1.3	J	1.2	J	1.9		2.5		2.7		1.4	J
C1-Benzothiophenes	<3.6	U	<3.7	U	4.5		<3.2	U	<3.6	U	<3.3	U
C2-Benzothiophenes	<3.6	U	<3.7	U	<3.6	U	<3.2	U	<3.6	U	<3.3	U
C3-Benzothiophenes	<3.6	U	<3.7	U	<3.6	U	<3.2	U	<3.6	U	<3.3	U
Biphenyl	1.7	J	1.4	J	1.6	J	2.2		1.2	J	0.7	J
Acenaphthylene	3.8		0.8	J	2.8		0.8	J	1.6		<1.1	U
Acenaphthene	1.0	J	0.5	J	3.1		2.6		1.6		0.7	J
Dibenzofuran	1.7		1.1	J	3.5		2.3		1.5		0.6	J
Fluorene	2.3		1.7		5.1		2.9		2.3		1.2	
C1-Fluorenes	<1.4	U	<1.4	U	20.5		5.5		4.6		<1.2	U
C2-Fluorenes	<1.4	U	<1.4	U	134		<1.2	U	<1.3	U	<1.2	U
C3-Fluorenes	<1.4	U	<1.4	U	89.4		<1.2	U	<1.3	U	<1.2	U
Carbazole	1.0	J	1.5	J	<2.1	U	<1.8	U	<2	U	<1.9	U
Anthracene	3.7		2.2		5.0		0.9		3.0		0.9	
Phenanthrene	15.6		7.9		36.2		4.9		9.7		1.8	
C1-Phenanthrene/Anthracenes	14.6		4.0		65.0		5.0		7.6		1.5	J
C2-Phenanthrene/Anthracenes	26.5		9.3		131		7.4		14.9		<2.8	U
C3-Phenanthrene/Anthracenes	29.1		7.6		140		<2.7	U	14.7		<2.8	U
C4-Phenanthrene/Anthracenes	15.9		<3.1	U	97.2		<2.7	U	9.5		<2.8	U
Dibenzothiophene	2.1		1.4		6.5		1.4		1.5		0.8	J
C1-Dibenzothiophenes	5.3		2.3		41.7		3.1		3.4		2.0	
C2-Dibenzothiophenes	18.9		<1.9	U	122		5.4		9.5		<1.7	U
C3-Dibenzothiophenes	25.3		<1.9	U	163		5.0		15.5		<1.7	U
Fluoranthene	40.3		13.7		54.3		7.8		20.1		2.3	
Pyrene	42.4		16.7		53.3		11.3		23.0		5.2	
C1-Fluoranthenes/Pyrenes	27.8		10.2		57.9		5.6		14.7		4.2	
C2-Fluoranthenes/Pyrenes	16.5		6.7		56.2		<1.4	U	10.2		<1.4	U
C3-Fluoranthenes/Pyrenes	6.7		2.8		35.0		<1.4	U	8.5		<1.4	U
Naphthobenzothiophene	11.6		2.9		23.5		2.0		4.2		<1.2	U
C1-Naphthobenzothiophenes	14.4		4.2		61.7		<2.2	U	6.1		<2.3	U
C2-Naphthobenzothiophenes	21.8		<2.6	U	82.3		<2.2	U	7.3		<2.3	U
C3-Naphthobenzothiophenes	16.3		<2.6	U	80.8		<2.2	U	7.3		<2.3	U
Benz(a)anthracene	17.8		5.5		21.7		2.8		8.1		0.8	J
Chrysene	25.0		7.9		32.2		4.2		10.4		1.6	
C1-Chrysenes	12.8		3.7		32.8		<1.6	U	7.3		<1.6	U
C2-Chrysenes	8.9		<1.8	U	34.3		<1.6	U	5.2		<1.6	U
C3-Chrysenes	<1.8	U	<1.8	U	18.8		<1.6	U	<1.8	U	<1.6	U
C4-Chrysenes	<1.8	U	<1.8	U	<1.8	U	<1.6	U	<1.8	U	<1.6	U
Benzo(b)fluoranthene	32.9		10.8		32.2		6.4		15.8		1.4	J
Benzo(k)fluoranthene	9.5		2.9	J	10.7		2.3	J	4.9		0.4	J
Benzo(e)pyrene	18.2		6.5		19.7		4.0		9.1		1.6	J
Benzo(a)pyrene	21.0		5.8		20.9		3.7		9.5		1.2	J
Perylene	6.7		2.5		7.6		1.0		2.7		<0.8	U
Indeno(1,2,3-c,d)pyrene	16.4		4.1		15.2		2.6		6.8		0.6	J
Dibenzo(a,h)anthracene	1.7		0.8	J	2.9		0.8	J	0.9	J	<1.5	U
Benzo(g,h,i)perylene	13.7		4.3		12.0		2.6		6.2		0.7	J
Total PAHs	570		172		2083		197		317		37.8	
Individual Alkyl Isomers and Hopanes												
2-Methylnaphthalene	4.9		2.9		8.6		11.3		4.8		2.2	J
1-Methylnaphthalene	3.1		3.2		9.7		10.3		4.5		2.1	
2,6-Dimethylnaphthalene	1.9		1.3	J	10.9		3.5		2.1		<1.7	U
1,6,7-Trimethylnaphthalene	<1.1	U	<1.1	U	8.4		1.2		<1.1	U	<1	U
1-Methylphenanthrene	3.6		1.2	J	15.6		1.3		2.4		0.5	J
C29-Hopane	51.2		14.0		73.0		<9.6	U	42.0		<9.9	U
18a-Oleanane	<10.9	U	<11	U	<10.9	U	<9.6	U	<10.6	U	<9.9	U
C30-Hopane	64.3		15.0		80.6		<9.6	U	38.7		<9.9	U

Surrogate (Su)	Su Recovery (%)	Su Recovery (%)	Su Recovery (%)	Su Recovery (%)	Su Recovery (%)	Su Recovery (%)
Naphthalene-d8	79	74	78	58	69	81
Acenaphthene-d10	82	85	89	56	76	84
Phenanthrene-d10	69	75	72	63	66	76
Chrysene-d12	86	80	92	61	76	68
Perylene-d12	84	87	90	81	87	90

Qualifiers (Q): J=Below the MDL, U=Not detected, B=In procedural blank > 3x MDL, I=Interference, D=Diluted value, NA=Not Applicable, *=Outside QA limits, refer to narrative

Polaris Applied Sciences, Inc.
TV Athos I Oil Spill Project
Polycyclic Aromatic Hydrocarbon Data
Client Submitted Samples

Sample Name	ETX3921.D		ETX3926.D	
Client Name	WCD #2D (2 of 2)		WMH #1S	
Matrix	Water		Water	
Collection Date	12/08/04		12/08/04	
Received Date	12/10/04		12/10/04	
Extraction Date	12/14/04		12/14/04	
Extraction Batch	ENV 1065		ENV 1064	
Date Acquired	12/23/04		12/20/04	
Method	PAH-2002		PAH-2002	
Sample Volume (L)	1.0		0.9	
Dilution	NA		NA	
Target Compounds	Su Corrected Conc. (ng/L)	Q	Su Corrected Conc. (ng/L)	Q
Naphthalene	3.5		8.7	
C1-Naphthalenes	3.6	J	7.3	
C2-Naphthalenes	<6.1	U	<7	U
C3-Naphthalenes	<6.1	U	<7	U
C4-Naphthalenes	<6.1	U	<7	U
Benzothiophene	0.8	J	3.8	
C1-Benzothiophenes	<3.2	U	<3.7	U
C2-Benzothiophenes	<3.2	U	<3.7	U
C3-Benzothiophenes	<3.2	U	<3.7	U
Biphenyl	1.8	J	3.2	
Acenaphthylene	<1	U	3.1	
Acenaphthene	<1.3	U	<1.5	U
Dibenzofuran	0.8	J	2.8	
Fluorene	0.7		3.8	
C1-Fluorenes	<1.2	U	<1.4	U
C2-Fluorenes	<1.2	U	<1.4	U
C3-Fluorenes	<1.2	U	<1.4	U
Carbazole	<1.8	U	10.9	
Anthracene	<0.8	U	3.4	
Phenanthrene	2.4		9.2	
C1-Phenanthrene/Anthracenes	1.3	J	12.5	
C2-Phenanthrene/Anthracenes	<2.7	U	17.9	
C3-Phenanthrene/Anthracenes	<2.7	U	15.3	
C4-Phenanthrene/Anthracenes	<2.7	U	<3.1	U
Dibenzothiophene	0.9		3.0	
C1-Dibenzothiophenes	2.1		6.2	
C2-Dibenzothiophenes	<1.7	U	17.7	
C3-Dibenzothiophenes	<1.7	U	17.2	
Fluoranthene	2.3		16.6	
Pyrene	5.4		22.5	
C1-Fluoranthenes/Pyrenes	3.3		12.7	
C2-Fluoranthenes/Pyrenes	<1.4	U	8.0	
C3-Fluoranthenes/Pyrenes	<1.4	U	<1.6	U
Naphthobenzothiophene	<1.1	U	<1.3	U
C1-Naphthobenzothiophenes	<2.3	U	<2.6	U
C2-Naphthobenzothiophenes	<2.3	U	<2.6	U
C3-Naphthobenzothiophenes	<2.3	U	<2.6	U
Benz(a)anthracene	1.2		9.1	
Chrysene	1.4		10.9	
C1-Chrysenes	<1.6	U	10.6	
C2-Chrysenes	<1.6	U	8.2	
C3-Chrysenes	<1.6	U	<1.8	U
C4-Chrysenes	<1.6	U	<1.8	U
Benzo(b)fluoranthene	2.1	J	13.5	
Benzo(k)fluoranthene	0.9	J	4.3	
Benzo(e)pyrene	1.2	J	8.0	
Benzo(a)pyrene	0.9	J	6.9	
Perylene	0.5	J	3.6	
Indeno(1,2,3-c,d)pyrene	0.7	J	6.6	
Dibenzo(a,h)anthracene	<1.5	U	<1.7	U
Benzo(g,h,i)perylene	0.6	J	5.1	
Total PAHs	38.4		293	
Individual Alkyl Isomers and Hopanes				
2-Methylnaphthalene	2.5		6.3	
1-Methylnaphthalene	2.5		5.1	
2,6-Dimethylnaphthalene	<1.6	U	<1.9	U
1,6,7-Trimethylnaphthalene	<1	U	<1.1	U
1-Methylphenanthrene	0.4	J	2.9	
C29-Hopane	<9.7	U	<11	U
18a-Oleanane	<9.7	U	<11	U
C30-Hopane	<9.7	U	<11	U
Surrogate (Su)	Su Recovery (%)		Su Recovery (%)	
Naphthalene-d8	76		57	
Acenaphthene-d10	85		64	
Phenanthrene-d10	82		64	
Chrysene-d12	75		64	
Perylene-d12	87		60	

Qualifiers (Q): J=Below the MDL, U=Not detected, B=In procedural blank > 3x MDL, I=Interference, D=Diluted value, NA=Not Applicable, *=Outside QA limits, refer to narrative

Sample Name	ETX3915.D		ETX3917.D	
Client Name	WCR #2D (2 of 2)		CR #1D (2 of 2)	
Matrix	Water		Water	
Collection Date	12/08/04		12/08/04	
Received Date	12/10/04		12/10/04	
Extraction Date	12/14/04		12/14/04	
Extraction Batch	ENV 1065		ENV 1065	
Date Acquired	12/23/04		12/23/04	
Method	PAH-2002		PAH-2002	
Sample Volume (L)	1.0		1.0	
Dilution	NA		NA	
Target Compounds	Su Corrected Conc. (ng/L)	Q	Su Corrected Conc. (ng/L)	Q
Naphthalene	3.3		4.0	
C1-Naphthalenes	2.9	J	5.1	
C2-Naphthalenes	<6.1	U	6.9	
C3-Naphthalenes	<6.1	U	<6.1	U
C4-Naphthalenes	<6.1	U	<6.1	U
Benzothiophene	1.1	J	1.2	J
C1-Benzothiophenes	<3.2	U	<3.2	U
C2-Benzothiophenes	<3.2	U	<3.2	U
C3-Benzothiophenes	<3.2	U	<3.2	U
Biphenyl	1.3	J	1.6	J
Acenaphthylene	<1	U	0.9	J
Acenaphthene	<1.3	U	<1.3	U
Dibenzofuran	0.6	J	1.1	J
Fluorene	0.9		1.0	
C1-Fluorenes	<1.2	U	<1.2	U
C2-Fluorenes	<1.2	U	<1.2	U
C3-Fluorenes	<1.2	U	<1.2	U
Carbazole	<1.8	U	0.8	J
Anthracene	<0.8	U	1.4	
Phenanthrene	1.5		4.1	
C1-Phenanthrene/Anthracenes	<2.7	U	2.8	
C2-Phenanthrene/Anthracenes	<2.7	U	5.5	
C3-Phenanthrene/Anthracenes	<2.7	U	6.3	
C4-Phenanthrene/Anthracenes	<2.7	U	<2.7	U
Dibenzothiophene	<0.8	U	<0.9	U
C1-Dibenzothiophenes	<1.7	U	<1.7	U
C2-Dibenzothiophenes	<1.7	U	<1.7	U
C3-Dibenzothiophenes	<1.7	U	<1.7	U
Fluoranthene	1.8		8.4	
Pyrene	5.5		11.6	
C1-Fluoranthenes/Pyrenes	<1.4	U	6.0	
C2-Fluoranthenes/Pyrenes	<1.4	U	<1.4	U
C3-Fluoranthenes/Pyrenes	<1.4	U	<1.4	U
Naphthobenzothiophene	<1.1	U	2.0	
C1-Naphthobenzothiophenes	<2.2	U	<2.3	U
C2-Naphthobenzothiophenes	<2.2	U	<2.3	U
C3-Naphthobenzothiophenes	<2.2	U	<2.3	U
Benz(a)anthracene	<0.9	U	2.9	
Chrysene	<0.8	U	4.0	
C1-Chrysenes	<1.6	U	2.3	
C2-Chrysenes	<1.6	U	<1.6	U
C3-Chrysenes	<1.6	U	<1.6	U
C4-Chrysenes	<1.6	U	<1.6	U
Benzo(b)fluoranthene	1.3	J	5.2	
Benzo(k)fluoranthene	0.6	J	2.2	J
Benzo(e)pyrene	0.9	J	3.8	
Benzo(a)pyrene	1.1	J	3.6	
Perylene	0.7	J	1.6	
Indeno(1,2,3-c,d)pyrene	0.8	J	2.1	
Dibenzo(a,h)anthracene	<1.5	U	<1.5	U
Benzo(g,h,i)perylene	0.8	J	1.9	J
Total PAHs	25.1		100.3	
Individual Alkyl Isomers and Hopanes				
2-Methylnaphthalene	2.3		3.2	
1-Methylnaphthalene	1.7		3.8	
2,6-Dimethylnaphthalene	<1.6	U	1.2	J
1,6,7-Trimethylnaphthalene	<1	U	<1	U
1-Methylphenanthrene	<1.1	U	0.6	J
C29-Hopane	<9.6	U	<9.7	U
18a-Oleanane	<9.6	U	<9.7	U
C30-Hopane	<9.6	U	<9.7	U
Surrogate (Su)	Su Recovery (%)		Su Recovery (%)	
Naphthalene-d8	72		66	
Acenaphthene-d10	84		80	
Phenanthrene-d10	85		83	
Chrysene-d12	88		86	
Perylene-d12	95		93	

B.3. Total suspended solids (TSS) of water samples collected on December 7-8, 2004.

Sample Name	ETX3885	ETX3886	ETX3887	ETX3888	ETX3889
Client Name	W-Wood-06	W-Wood-07	W-Wood-08	W-Man-05	W-Man-06
Matrix	Filter	Filter	Filter	Filter	Filter
Received Date	12/10/04	12/10/04	12/10/04	12/10/04	12/10/04
Batch	TS-050	TS-050	TS-050	TS-050	TS-050
Method	EMAP-TSS	EMAP-TSS	EMAP-TSS	EMAP-TSS	EMAP-TSS
Analysis	mg/L	mg/L	mg/L	mg/L	mg/L
TSS	8.5	7.0	12.0	10.0	28.0

Qualifiers (Q): NA=Not applicable, *=Outside QA limits, refer to narrative

Sample Name	ETX3890	ETX3891	ETX3892	ETX3893	ETX3894
Client Name	W-Man-07	W-TN-01	W-TN-02	W-TN-03	W-TN-04
Matrix	Filter	Filter	Filter	Filter	Filter
Received Date	12/10/04	12/10/04	12/10/04	12/10/04	12/10/04
Batch	TS-050	TS-050	TS-050	TS-050	TS-050
Method	EMAP-TSS	EMAP-TSS	EMAP-TSS	EMAP-TSS	EMAP-TSS
Analysis	mg/L	mg/L	mg/L	mg/L	mg/L
TSS	27.0	39.5	37.5	35.0	28.5

Qualifiers (Q): NA=Not applicable, *=Outside QA limits, refer to narrative

Sample Name	ETX3895	ETX3896	ETX3897	ETX3898	ETX3899
Client Name	W-UR-01	W-UR-02	W-UR-03	W-TPB-01	W-TPB-02
Matrix	Filter	Filter	Filter	Filter	Filter
Received Date	12/10/04	12/10/04	12/10/04	12/10/04	12/10/04
Batch	TS-050	TS-050	TS-050	TS-050	TS-050
Method	EMAP-TSS	EMAP-TSS	EMAP-TSS	EMAP-TSS	EMAP-TSS
Analysis	mg/L	mg/L	mg/L	mg/L	mg/L
TSS	14.5	9.0	38.0	8.5	32.0

Qualifiers (Q): NA=Not applicable, *=Outside QA limits, refer to narrative

Sample Name	ETX3900F	ETX3901	ETX3902	ETX3903	ETX3904
Client Name	W-TPB-03	W-BTC-07	W-BTC-08	W-BTC-09	W-Dup-01
Matrix	Filter	Filter	Filter	Filter	Filter
Received Date	12/10/04	12/10/04	12/10/04	12/10/04	12/10/04
Batch	TS-050	TS-050	TS-050	TS-050	TS-050
Method	EMAP-TSS	EMAP-TSS	EMAP-TSS	EMAP-TSS	EMAP-TSS
Analysis	mg/L	mg/L	mg/L	mg/L	mg/L
TSS	20.5	34.5	7.5	21.0	30.0

Qualifiers (Q): NA=Not applicable, *=Outside QA limits, refer to narrative

Sample Name	ETX3905	ETX3906	ETX3907	ETX3908
Client Name	WLP#1-5	WLP#2-5	WLP#3-5	WMP#1-5
Matrix	Filter	Filter	Filter	Filter
Received Date	12/10/04	12/10/04	12/10/04	12/10/04
Batch	TS-050	TS-050	TS-051	TS-051
Method	EMAP-TSS	EMAP-TSS	EMAP-TSS	EMAP-TSS
Analysis	mg/L	mg/L	mg/L	mg/L
TSS	4.5	20.0	183.0	57.0

Qualifiers (Q): NA=Not applicable, *=Outside QA limits, refer to narrative

Sample Name	ETX3910	ETX3913	ETX3914	ETX3916
Client Name	WSUB-01(1 of 2)	WCR#25	WCR#2D (1 of 2)	WCR#1D (1 of 2)
Matrix	Filter	Filter	Filter	Filter
Received Date	12/10/04	08/21/03	08/21/03	08/21/03
Batch	TS-051	TS-051	TS-051	TS-051
Method	EMAP-TSS	EMAP-TSS	EMAP-TSS	EMAP-TSS
Analysis	mg/L	mg/L	mg/L	mg/L
TSS	35.0	46.5	118.5	102.0

Qualifiers (Q): NA=Not applicable, *=Outside QA limits, refer to narrative

Sample Name	ETX3918	ETX3919	ETX3920	ETX3922	ETX3923
Client Name	WCR#3S	WCR#1S	WCD#2D (1 of 2)	WCD#1S	WCD#2S
Matrix	Filter	Filter	Filter	Filter	Filter
Received Date	08/21/03	08/21/03	08/21/03	08/21/03	08/21/03
Batch	TS-051	TS-051	TS-051	TS-051	TS-051
Method	EMAP-TSS	EMAP-TSS	EMAP-TSS	EMAP-TSS	EMAP-TSS
Analysis	mg/L	mg/L	mg/L	mg/L	mg/L
TSS	18.0	27.5	46.0	39.0	63.0

Qualifiers (Q): NA=Not applicable, *=Outside QA limits, refer to narrative

Sample Name	ETX3924	ETX3925	ETX3926	ETX3927	ETX3928
Client Name	WCR#3S	Methhod Blank	WMH#1S	WMH#2D	WMH#3S
Matrix	Filter	Filter	Filter	Filter	Filter
Received Date	08/21/03	08/21/03	08/21/03	08/21/03	08/21/03
Batch	TS-051	TS-051	TS-051	TS-051	TS-051
Method	EMAP-TSS	EMAP-TSS	EMAP-TSS	EMAP-TSS	EMAP-TSS
Analysis	mg/L	mg/L	mg/L	mg/L	mg/L
TSS	43.0	2.5	14.5	42.0	32.0

Qualifiers (Q): NA=Not applicable, *=Outside QA limits, refer to narrative

Sample Name	ETX3929	ETX3931
Client Name	WSUB-TN-01 (1 of 2)	WSUB-TN-0 (1 of 2)
Matrix	Filter	Filter
Received Date	08/21/03	08/21/03
Batch	TS-051	TS-051
Method	EMAP-TSS	EMAP-TSS
Analysis	mg/L	mg/L
TSS	66.5	32.5

Qualifiers (Q): NA=Not applicable, *=Outside QA limits, refer to narrative

B.4. Volatile organic analyses. Water sample collected on November 27, 2004 near the Commodore Barry Bridge.

SEVERN TRENT STL

LABORATORY TEST RESULTS

Job Number: 228205 Date: 12/29/2004

CUSTOMER: B&B Laboratories PROJECT: TV ATHOS ATTN: Tommy McDonald

Customer Sample ID: VOA-1
Date Sampled.....: 11/27/2004
Time Sampled.....: 15:55
Sample Matrix.....: Water

Laboratory Sample ID: 228205-1
Date Received.....: 12/16/2004
Time Received.....: 09:20

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	REPORTING LIMIT	UNITS	DATE	TECH
SW-846 8260B	Volatile Organics					
	Acetone	ND	100	ug/L	12/20/04	rjt
	Acetonitrile	ND	50	ug/L	12/20/04	rjt
	Acrolein	ND	50	ug/L	12/20/04	rjt
	Acrylonitrile	ND	50	ug/L	12/20/04	rjt
	Benzene	ND	5	ug/L	12/20/04	rjt
	Bromodichloromethane	ND	5	ug/L	12/20/04	rjt
	Bromoform (Tribromomethane)	ND	5	ug/L	12/20/04	rjt
	Bromomethane (methyl bromide)	ND	5	ug/L	12/20/04	rjt
	Carbon Disulfide	ND	5	ug/L	12/20/04	rjt
	Carbon Tetrachloride	ND	5	ug/L	12/20/04	rjt
	Chlorobenzene	ND	5	ug/L	12/20/04	rjt
	Chloroethane (Ethyl chloride)	ND	5	ug/L	12/20/04	rjt
	Chloroform	ND	5	ug/L	12/20/04	rjt
	Chloromethane (methyl chloride)	ND	5	ug/L	12/20/04	rjt
	Dibromochloromethane	ND	5	ug/L	12/20/04	rjt
	Dibromomethane	ND	5	ug/L	12/20/04	rjt
	1,2-Dibromoethane (EDB)	ND	5	ug/L	12/20/04	rjt
	Dichlorodifluoromethane	ND	5	ug/L	12/20/04	rjt
	1,1-Dichloroethane	ND	5	ug/L	12/20/04	rjt
	1,2-Dichloroethane (EDC)	ND	5	ug/L	12/20/04	rjt
	1,1-Dichloroethene (Vinylidene chloride)	ND	5	ug/L	12/20/04	rjt
	cis-1,2-Dichloroethene	ND	5	ug/L	12/20/04	rjt
	trans-1,2-Dichloroethene	ND	5	ug/L	12/20/04	rjt
	1,2-Dichloropropane	ND	5	ug/L	12/20/04	rjt
	1,3-Dichloropropane	ND	5	ug/L	12/20/04	rjt
	2,2-Dichloropropane	ND	5	ug/L	12/20/04	rjt
	1,1-Dichloropropene	ND	5	ug/L	12/20/04	rjt
	cis-1,3-Dichloropropene	ND	5	ug/L	12/20/04	rjt
	trans-1,3-Dichloropropene	ND	5	ug/L	12/20/04	rjt
	1,4-Dioxane	ND	100	ug/L	12/20/04	rjt
	Ethyl Acetate	ND	5	ug/L	12/20/04	rjt
	Ethylbenzene	ND	5	ug/L	12/20/04	rjt
	Ethyl Ether (Diethyl Ether)	ND	5	ug/L	12/20/04	rjt
	Ethyl Methacrylate	ND	5	ug/L	12/20/04	rjt
	2-Hexanone	ND	5	ug/L	12/20/04	rjt
	Iodomethane (Methyl Iodide)	ND	5	ug/L	12/20/04	rjt
	Methylene Chloride (Dichloromethane)	ND	50	ug/L	12/20/04	rjt
	Methyl Ethyl Ketone (2-Butanone)	ND	10	ug/L	12/20/04	rjt
	4-Methyl-2-Pentanone (MIBK)	ND	5	ug/L	12/20/04	rjt
	Methyl Methacrylate	ND	5	ug/L	12/20/04	rjt
	tert-Butyl Methyl Ether (MTBE)	ND	5	ug/L	12/20/04	rjt
	2-Nitropropane	ND	5	ug/L	12/20/04	rjt
	Styrene	ND	5	ug/L	12/20/04	rjt
	1,1,2,2-Tetrachloroethane	ND	5	ug/L	12/20/04	rjt
	Tetrachloroethene	ND	5	ug/L	12/20/04	rjt
	Toluene	ND	5	ug/L	12/20/04	rjt
	1,2,3-Trichlorobenzene	ND	5	ug/L	12/20/04	rjt
	1,1,1-Trichloroethane	ND	5	ug/L	12/20/04	rjt

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SEVERN TRENT STL

LABORATORY TEST RESULTS

Job Number: 228205 Date: 12/29/2004

CUSTOMER: B&B Laboratories PROJECT: TV ATHOS ATTN: Tommy McDonald

Customer Sample ID: VOA-1
Date Sampled.....: 11/27/2004
Time Sampled.....: 15:55
Sample Matrix.....: Water

Laboratory Sample ID: 228205-1
Date Received.....: 12/16/2004
Time Received.....: 09:20

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	REPORTING LIMIT	UNITS	DATE	TECH
	1,1,2-Trichloroethane	ND	5	ug/L	12/20/04	rjt
	Trichloroethene	ND	5	ug/L	12/20/04	rjt
	Trichlorofluoromethane	ND	5	ug/L	12/20/04	rjt
	1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	50	ug/L	12/20/04	rjt
	1,2,4-Trimethylbenzene	ND	5	ug/L	12/20/04	rjt
	1,3,5-Trimethylbenzene	ND	5	ug/L	12/20/04	rjt
	1,2,3-Trichloropropane	ND	5	ug/L	12/20/04	rjt
	Vinyl Acetate	ND	5	ug/L	12/20/04	rjt
	Vinyl Chloride (Chloroethene)	ND	5	ug/L	12/20/04	rjt
	Xylenes (total)	ND	15	ug/L	12/20/04	rjt

000008

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APPENDIX C

Submerged Oil Report

SUBMERGED OIL ASSESSMENT – *ATHOS 1* OIL SPILL

Submerged Oil Assessment Unit
Planning Section
***Athos 1* Oil Spill Unified Command**

11 December 2004

TABLE OF CONTENTS

SUBMERGED OIL ASSESSMENT – ATHOS 1 OIL SPILL

I. INTRODUCTION

At 9:30 pm on 26 November, the *T/V Athos* 1 struck a submerged object while preparing to dock at the Citgo facilities, resulting in two holes in the No. 7 port and center tanks. It was carrying a heavy Venezuelan crude oil. The initial report was that 30,000 gallons were released; on 30 November, the volume was increased to a maximum potential of 473,500 gallons. The final estimate will be available once the oil from the holed tanks has been offloaded from the tanker.

There was concern that some of the heavy oil would mix with sediment and not float. Pooled oil was reported on the bottom at the collision site, and shoreline assessment teams reported that oil stranded on the intertidal zone had started to become submerged during the rising tide. Therefore, a special team was assigned to assess the extent and degree of submerged oil and develop recovery options. The Salem Nuclear Power Plant started shut-down procedures for the No. 2 unit on 3 December and No. 1 unit on 4 December because of the threat of oil contamination of the circulation and service water intake systems. The Logan Power Plant in New Jersey stopped using water from the river for a day. Other utility and industrial water intakes along the river have been concerned about the impacts on the oil on their water intakes and water use within the facility, though none have reported shut-downs. The submerged oil also posed risks to shellfish resources in Delaware Bay.

II. CHARACTERISTICS OF THE SPILLED OIL

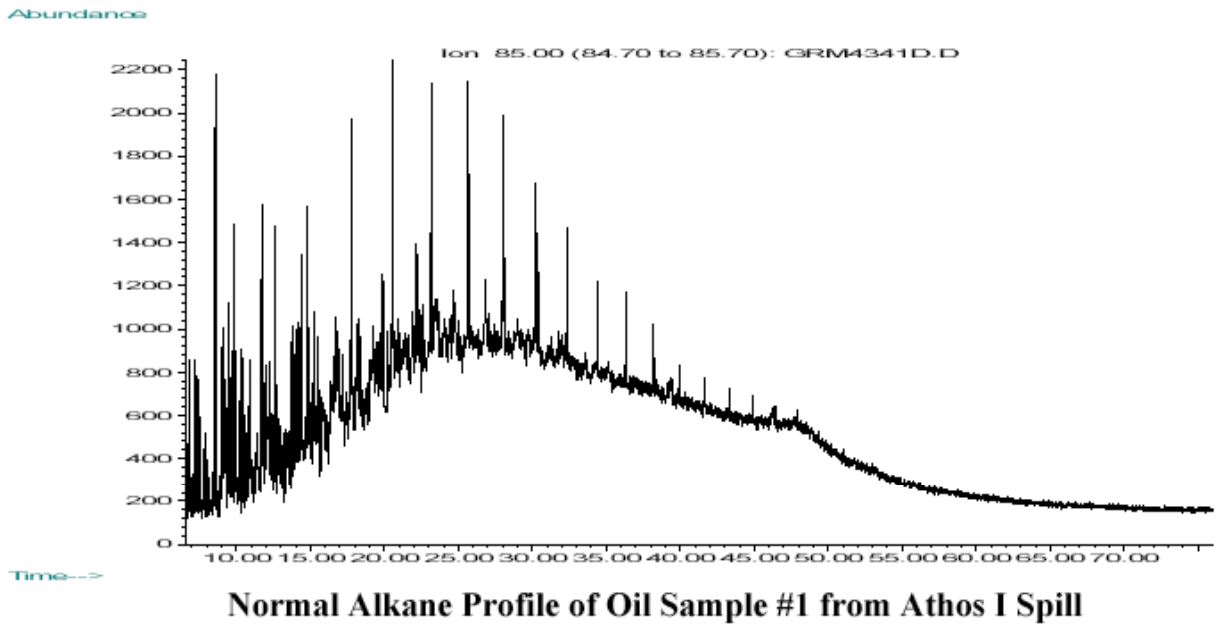
Physical Properties of Source Oil

Two samples of the oil from hold No. 7 center (the source oil) were analyzed for physical properties and chemical characteristics, with the following results:

Density: 0.973 and 0.978 grams per milliliter; fresh water is 1.00 and oceanic sea water is 1.025 g/ml. Therefore, the oil is lighter than both fresh water and sea water.

Viscosity: greater than 5,000 centiStokes (cSt) at 100°F and at ambient water temperature greater than 50,000 cSt, meaning that the oil's viscosity is similar to cold honey;

Composition: the oil is composed of a large amount of asphaltenes and other high molecular weight compounds. The aromatic hydrocarbon content is very low (0.06%), and the oil has a very low dissolved fraction. Figure 1 is the normal alkane distribution in the fresh oil. Note that there are few individual peaks and a large "hump" of unresolved hydrocarbons. This oil can be characterized as a heavy, degraded crude oil.



Normal Alkane Profile of Oil Sample #1 from Athos I Spill

Figure 1. Normal alkane profiles of the source oil from hold No. 7 center. Note there are few identifiable peaks and a large "hump" of unresolved compounds.

Behavior of the Spilled Oil

One of the key concerns was whether the oil would not float after release to the environment and loss of the light fractions due to evaporation. The fresh source oil was "evaporatively weathered" by heating it to 90°C under vacuum and less than 3 % was lost by evaporation after 4 hours. Therefore, the weathered oil (after evaporation) is still expected to float. Using the National Oceanic and Atmospheric Administration (NOAA) oil weathering model ADIOS, up to 13% of the oil could have evaporated within 5 days of the release. Based on the chemical analysis and model results, the amount of oil lost via evaporation is likely 3-13%.

With only 0.06% aromatic hydrocarbons (which are the primary compounds in the oil that dissolve), lost via dissolution was estimated as less than 1%. The oil is very viscous and did not form a stable emulsion even when exposed to high wave energy. The model ADIOS estimated less than 1% of the fresh oil dispersed into the water column. The Delaware River contains a high suspended load, but due to the viscous nature of the oil, very little of the oil (less than 1%) adhered to particles in the water column (as opposed to sandy sediments on the shoreline).

While the exact amount released is unknown, the amount lost to oil weathering processes (evaporation, dissolution, emulsification, dispersion, and adsorption to suspended particulate matter) is likely tens of thousands of gallons (Table 1).

The shoreline cleanup assessment teams provide some indication of the length of shoreline oiled. However, the technology does not exist to accurately measure shoreline thickness. This information is needed to calculate oil volume. The amount of oil recovered from the shoreline is mixed with debris and sediments, and the oil content of the oily waste is unknown.

As discussed later, some of the oil that stranded on the shoreline picked up sediment. Samples collected from the oil stranded on the shoreline and recovered from the water column had a few % sand. Even 2-3 % of sand is enough to make the oil slightly heavier than fresh water.

A preliminary mass balance of the spilled oil is shown in Table 1.

Table 1. Preliminary mass balance of the spilled oil.

Physical Process	Estimates
Evaporation	3 – 13% of total volume spilled minus volume of oil in trench #1 and #2
Dissolution	< 1% of total volume spilled
Emulsification	0%
Dispersion	1% total volume spilled
Sedimentation (due to river load)	Unknown but likely < 1%
Oil on shoreline	~ 100 miles
Oil recovered from shoreline	Unknown
Oil floated off shoreline	Unknown
Oil with sediment mobilized off shoreline	Unknown
Tarballs in water column	Unknown
Tarballs on bottom	Unknown
Pooled oil (located in Trench #1 and #2)	~ 4000 gallons

PHYSICAL PROCESSES AND TRANSPORT

A. Oil Trajectory and Physical Processes during the Spill

The primary forcing function for currents in both the Delaware River and Bay are the semidiurnal tides. Near the spill site, maximum currents are about 2 knots with a tidal excursion of about 8 miles. In the middle of Delaware Bay, maximum currents are about1 knot with a tidal excursion about 4 miles. The river inflow into the system results in a net displacement down river over each 12 hour cycle. The currents from the river outflow are small compared to the tidal currents but it is the major factor in any net down river displacement of subsurface oil.

Water levels in the River and Bay rise and fall as function of onshore/offshore winds. This can raise the water levels in the river 1 – 2 feet above or below predicted tide levels. Severe storm events, much stronger than reported during the spill event and more intense than the usual storm, could have a significant effect on the currents and oil transport.

In the Chesapeake – Delaware Canal, the tide wave moves from the Chesapeake into the canal towards Reedy Island in the Delaware River. Water level differences between Chesapeake Bay and Delaware River due to meteorological events and river discharge can result in water flowing from the Delaware into the Chesapeake.

For the most part, the River and Bay are well mixed vertically. The U.S. Environmental Protection Agency collected salinity measurements from the spill site to Raccoon River entrance and reported values of 1 to 2 ppt. In addition, NOAA measured salinity and conductivity near the Commodore Barry Bridge, which indicated the river, was well mixed. There is a broad salinity gradient or mixing zone in the lower river and in the bay. The gradient of mixing in winter and spring is largest near Ship John Lighthouse (39° 19'N, 75° 23'W). The gradient moves seaward with increases freshwater. The interface between the freshwater and saline water may be a collection area for floating oil. Since the mobile subsurface oil contains sediment, the density differences along the saltwater – freshwater mixing zone are less likely to cause submerged oil to refloat.

Outside the Bay, the circulation on the inner continental shelf is primarily controlled by winds and water density differences. Off the northeast coast, freshwater input from rivers such as the Hudson and Delaware result in a near shore density flow from the north to south. Currents due to density differences in the water will be within 10 miles of the shoreline, follow the shoreline and typically move to the south at speeds between 0.1 and 1 knot. Superimposed are the regional winds, which will generate a coastal current to the north with southerly winds and southward with northerly winds. At the Bay entrance, there is a net flow of fresh water along the south side and net inflow along the bottom of the north side.

Initially, the spill formed a thick film and moved upriver with the flood tide. A southeast wind moved oil to the Pennsylvania side of the river. With the second flood tide, the oil was transported as far north as the Petty Island area. Several days later, stronger winds transported oil to the New Jersey side. After the storm, the oil weathered and formed tarballs. By 28 November, oil extended down river to the Delaware Memorial Bridge. Overflight observations of the floating oil have consistently been within the uncertainties of the NOAA trajectory model predictions. The 24-48 hour forecasts of the floating oil will continue until the overflight observer is no longer able to detect the leading edge of the spill.

B. Long-term Transport

With the type and quantity of oil spilled, tarballs are expected to persist for several months in the Delaware River system. Over the next few weeks, scattered tarball are expected to contact shoreline anywhere along Delaware Bay. There is a possibility of oil movement through the Chesapeake – Delaware Canal into upper Chesapeake Bay. The exact location and amount of oil depends on the wind, oil fate, and amount of oil mobilizing upstream. Within several weeks of the initial spill, tarball contact is anticipated along the outer coast. The mean current along the outer coast is southward and anticipate most of the contacts south of Delaware Bay. Local wind events could push tarballs to the north up to 50 miles north of Cape May and as far south as the entrance to Chesapeake Bay. While the general trend for the number of tarballs contacting the outer coast is expected to decrease within a month or two, the amount of subsurface oil in the Delaware River remains unknown. Thus, there remains a possibility that a strong meteorological event or vessel movement could mobilize oil resulting in an episodic increase of tarballs.

IV. SPILL INFORMATION

A. Floating Oil

Weather permitting, overflights of the spill area have shown a general decline in floating oil. Observer have reported mostly scattered sheens with tarballs ranging from < 0.5 cm (pea size) to about 20 cm (dinner plate). The few exceptions occurred when the on-scene winds were calm or at slack tide. Without any waves or strong tidal mixing to disperse the sheening tarballs, large areas of continuous sheens were reported from the observers. Any increase in the wind generated waves dispersing the sheens. Without associated sheens, it is extremely difficult to track the tarballs. A decrease in the wind speed or at slack tide would allow the observer to once again see the sheens. This pattern repeated itself several times during the spill event. Finally, observers indicated that some of the tarballs had weathered to the point of not sheening.

For the long term, tarballs are very persistent in the environment and can travel hundreds of miles. They are expected to move out of Delaware Bay and through the C&D Canal into the upper Chesapeake Bay. Natural collection areas, such as the surface interface between the freshwater and saltwater and convergence zones on ebb tides, are good locations for finding the tarballs. If tarballs appear on the shoreline, it is likely they were nearshore, difficult to detect and onshore winds brought them ashore.

B. Non-floating Oil

a. Pooled Oil

i. Survey Methods

Pooled oil is defined as oil that has accumulated in depressions and is not readily mobilized by normal riverine and tidal currents. Both NOAA and EPA used different sonar systems to detect areas of pooled oil. Experts from NOAA, EPA, and Navy Supervisor of Salvage reviewed these data and determined the systems could not identify pooled oil. Therefore, coring and sorbent probes were used to search for pooled oil in likely accumulation areas. The US Army Corps of Engineers bathymetric maps of the channel and adjacent areas (generated from data obtained on 5 December 2004) were used to identify targets for the pooled oil survey teams. Divers were also used to observe areas where pooled oil was found. The locations that were searched for pooled oil included:

- The shallow bay north of Tinicum Island, including two deep depressions
- Four depressions on the south side of the channel across from Tinicum Island (Tinicum Range channel)
- Tinicum Range channel
- Shallows around Chester Island

ii. Locations

Pooled oil was found only at the collision site, in a trench described as 6-8 ft wide, 2 ft deep, and 41 ft long. On 9 December, a diver surveyed the trench area and measured the oil thickness as between 1.5-2 ft deep. A second trench was also detected and estimated to be 2 ft wide by 2 ft deep by 15 ft long.

iii. Volumes

The volume of pooled oil in the trenches at the collision site was estimated to be approximately 3,390-3,610 gallons, depending on the assumed oil thickness in the second trench (Table 2).

A sample of the oil from the trench (density of 0.943 g/ml) floated in fresh water. It was tested for cohesiveness and found to adhere to sediments. Based all the information available, the oil in the trench at the collision site was "injected" into the sediment under the pressure of the release, creating it's own trench. The viscous oil adhered to the sediments and not refloated, even though it should based on density. The oil is immobile due to highly cohesive forces exerted by the viscous oil.

Table 2. Estimated volume of oil on the bottom at the collision site.

Length	Trench Width (feet)	Depth of Trench (feet)	Depth of Oil (feet)	Amount of Oil (gallons)
Trench 1				
0+00	6	2	1.5	910
0+10	8	3	2	310
0+13	6	2.67	2	890
0+23	6	2.5	1.5	610
0+33	5	2.5	1.5	450
0+41	0	0	0	3,170
Trench 2				
15	2	2	If assume 1	220
			If assume 2	440

iv. Pooled Oil Recovery Methods

Several methods were evaluated for recovery of the pooled oil in the trench. The viscous oil is expected to float when disturbed, therefore special containment systems are needed. Options include:

- Diver-directed pumping systems with positive displacement pumps that can move viscous oils
- Dredging systems of different sizes
- Subsurface recovery using sorbents, either by divers or remote techniques

Divers using viscous oil pumps will begin oil recovery on 12 December. Booms and sorbents will be used to recover any floating oil; a submerged bottom filter fence will recover any oil transported in the water column downcurrent from the recovery site. The oil recovery is estimated to be completed in four days.

b. Mobile Oil

i. Survey Methods

Mobile oil is defined as oil that is negatively buoyant and subject to transport by riverine and tidal currents. It is present throughout the water column, though it appears most of the mobile oil is within a few feet of the bottom. To track the vertical distribution of the oil and the geographical extent over time, two survey methods were used:

- Snare Samplers: These samplers consist of an anchor, 50 ft of snare on a rope, and a float (shown in Fig. 2). The snares are composed of thin sheets of polypropylene, and viscous oils readily adhere to them, even under water. They are visually inspected for the presence of oil with depth, and the amount of oil is estimated as a percent coverage. The snare/rope is replaced when oiled, and they are monitored over time, weather permitting.

- V-SORS: The Vessel-Submerged Oil Recovery System (V-SORS) consists of a pipe with attached chains and snare (Fig. 3). The V-SORS is towed behind a vessel on the bottom at slow speeds. It is pulled up regularly and inspected for oil. Five V-SORS were used to both identify areas of submerged oil (including in the navigation channels where it was not possible to place the snare samplers) and to recover oil in all potential accumulation areas.

ii. Locations

Figures 4-6 shows all the locations where snare samplers were deployed at any time. The spill area was divided into three monitoring zones: MA extends from the Tacony-Palmyra Bridge to the Delaware Memorial Bridge; MB extends from the Delaware Memorial Bridge to just below the Salem Nuclear Power Plant; MC extends from the Salem Nuclear Power Plant to mid-Delaware Bay. Appendix 1 includes the results plotted for each monitoring division for the different deployment and retrieval periods. Weather and logistics prevented inspection of all snare samplers every day. In areas with strong currents, the snares would often be lost between inspections. Existing samplers in areas with strong currents are being replaced with heavier anchors, more visible buoys, and better attachment methods.

Figure 2. The snare sampler system consists of an anchor, a 50 ft string of snare on a rope, and a float. The samplers are inspected regularly and the percent oil coverage at different intervals is recorded. Most of the time, the heaviest oiling is on the bottom several feet.

Figure 3. The Vessel-Submerged Oil Recovery System (V-SORS) that is being used to search for and recover submerged mobile oil on the river bottom. The chains keep the sorbents along the bottom. The oil readily adheres to the snares underwater.

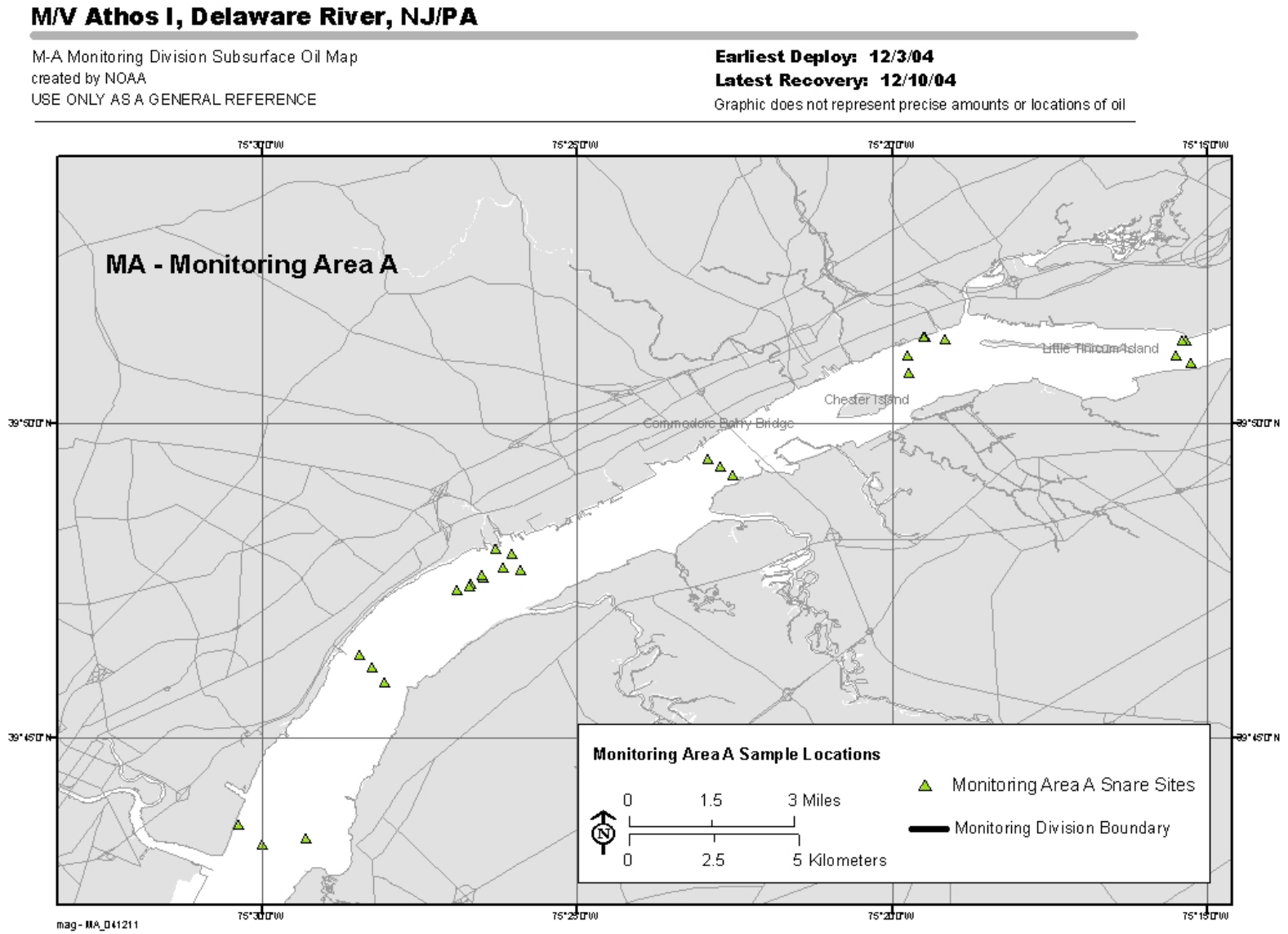


Figure 4. Location map showing the distribution of the snare sampling locations in the upper part of the spill zone (Division A).

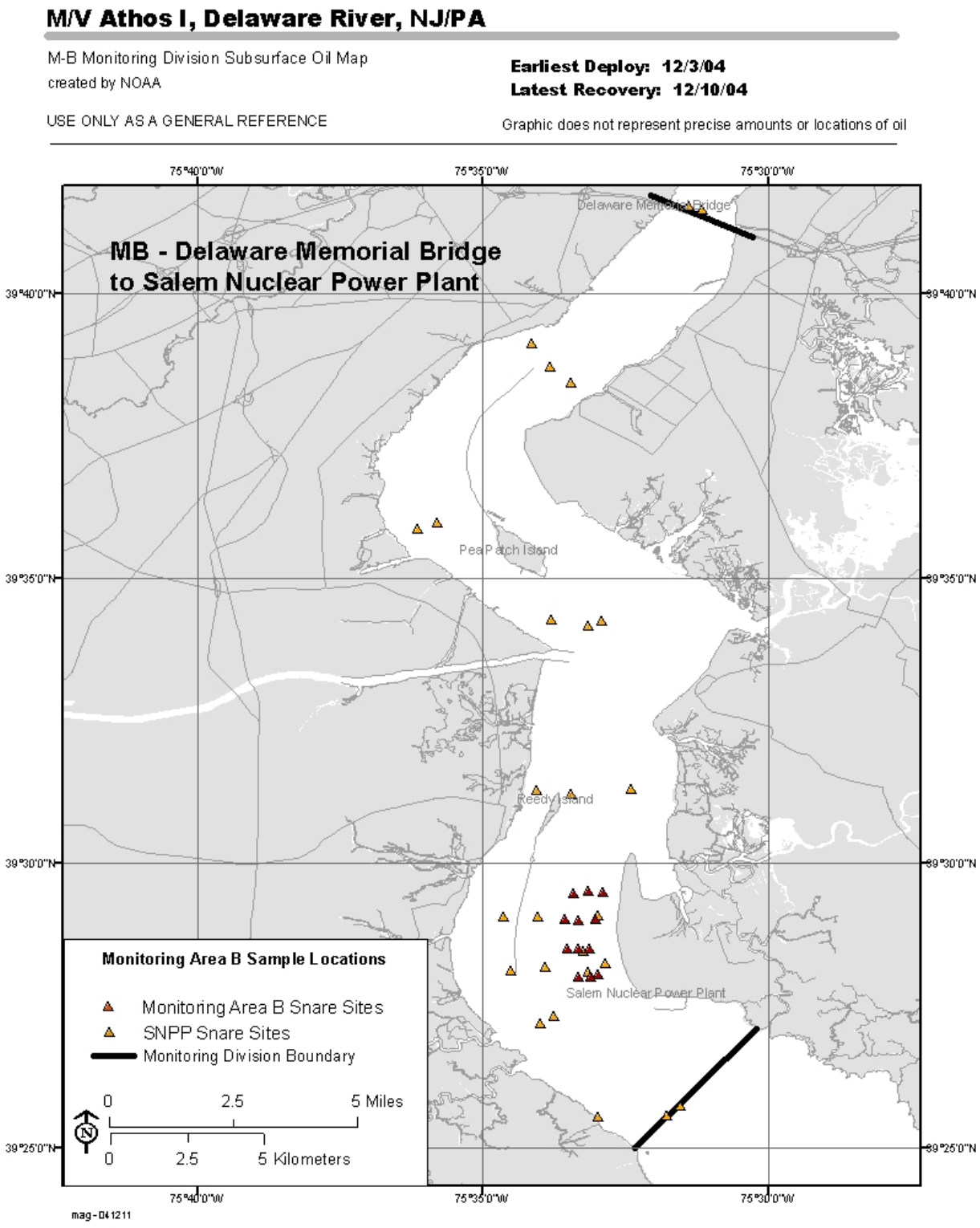


Figure 5. Location map showing the distribution of the snare sampling locations in the middle part of the spill zone (Division B).

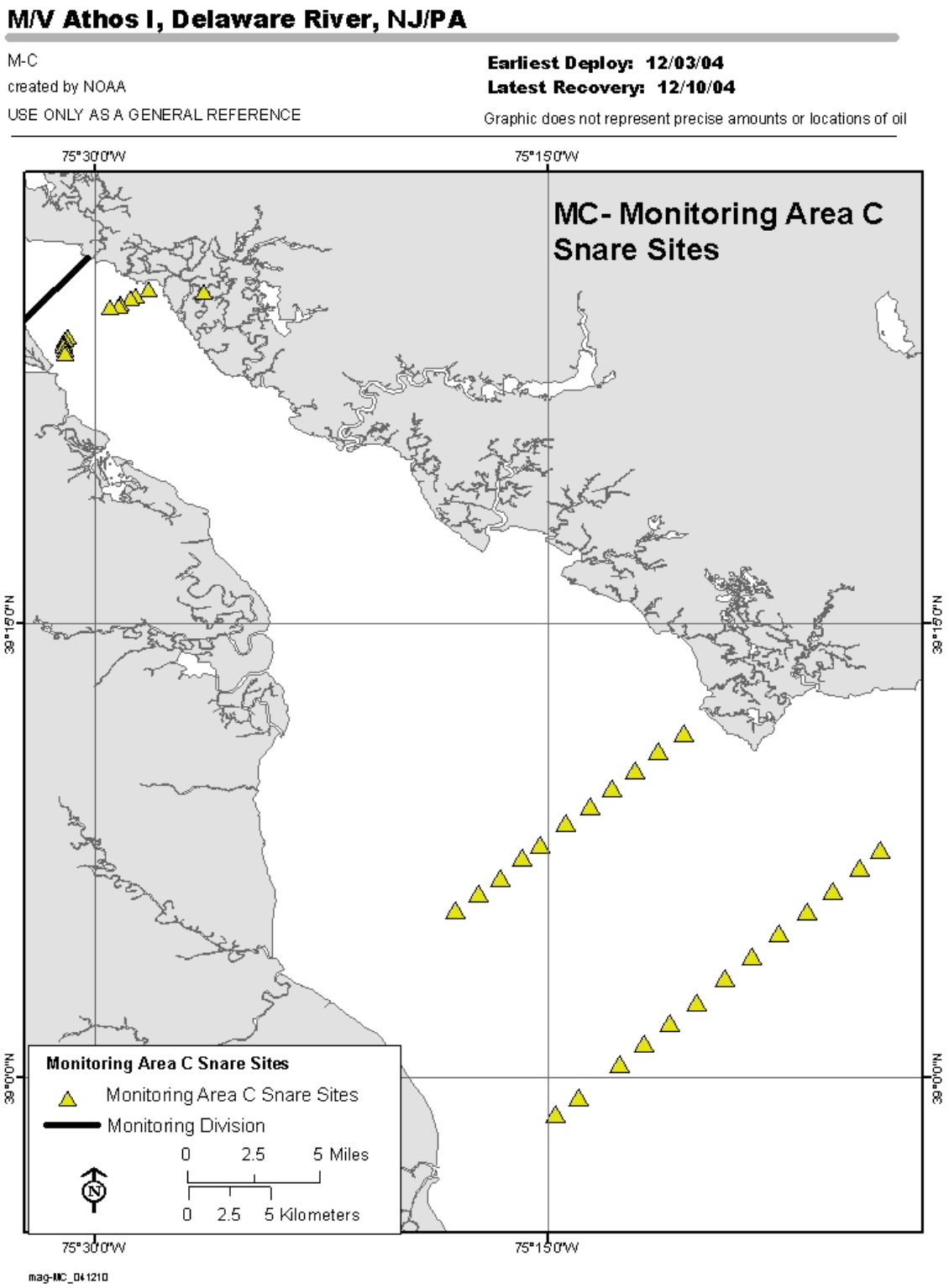


Figure 6. Location map showing the distribution of the snare sampling locations in the lower part of the spill zone (Division C).

iii. Results

Most of the submerged, mobile oil occurred several feet off the bottom, though small amounts of oil were present on the snares suspended in the middle and upper water column. Highest amounts of oil were detected around Tinicum Island. Refer to the maps in Appendix 1 for detailed data presentation for all monitoring sites. Figure 7 shows the temporal trend for station MA-1A that is located just north of Tinicum Island and consistently had the highest amount of oil on the snare. The snare was first deployed on 4 December and recovered on 5 December, and there was 50% oil coverage of the lower snares. The next day, the oil coverage was 30%. The snare was inspected two days later, on 8 December, and the coverage was 65%. For the next three days, the oil coverage was less than 15%. The steady decline for the last three days is consistent with the V-SORS tows, which also show decreasing amounts of oil recovery around Tinicum Island over the same period. There were scattered stations with high oil coverage observed on one day over the period 3-8 December. Many of the other snare samplers in the upper river never were oiled. Since 9 December, the maximum oil coverage on snares in this area was 10-15% (near Tinicum Island). It appears that the submerged oil in this upper spill zone has decreased significantly.

Figure 8 shows the temporal trend for station MB-3B, which is west of Pea Patch Island, and the detailed maps are included in Appendix 1. The distribution of the submerged oil in this area is difficult to assess because of the spotty data.

No oil or less than 1% was observed on any of the snare samplers in Division MC, which covers the upper Delaware Bay. Again, the data are spotty because many of the original stations were lost due to the strong currents in this area. However, it appears that little to no submerged oil has entered the upper bay as of 11 December.

iv. Mobile Oil Recovery Methods and Results

The V-SORS were towed in a wide range of locations that were identified as likely areas of submerged oil. The highest oil recovery was in the vicinity of Tinicum Island. Figure 9 shows the track lines of the V-SORS tows near Tinicum Island, color-coded with the amount of oil observed on the snares for each tow track. A large amount of oil stranded on the sandy tidal flat on the southern side of Tinicum Island. Oil stranded on many other shoreline areas but the shoreline types upstream of Tinicum Island are mostly seawalls, riprap, and mixed sand and gravel beaches. Tinicum Island is the main area with a largely sandy substrate. The oil is very sticky and would pick up sand, and only 2-4 % sand by weight would be enough to make the oil slightly negatively buoyant. By 30 November, oil on Tinicum Island did not re-float with the rising tide, and pieces of oil were being eroded from the shoreline by wave action. This area is thought to be the major source of the oil that became submerged and moved with the currents along the bottom of the river. Most of the oil recovered by the V-SORS was from the subtidal areas south of Tinicum Island. Very little oil was detected in the shallow area north of the island, both by the V-SORS tows and the pooled oil surveys.

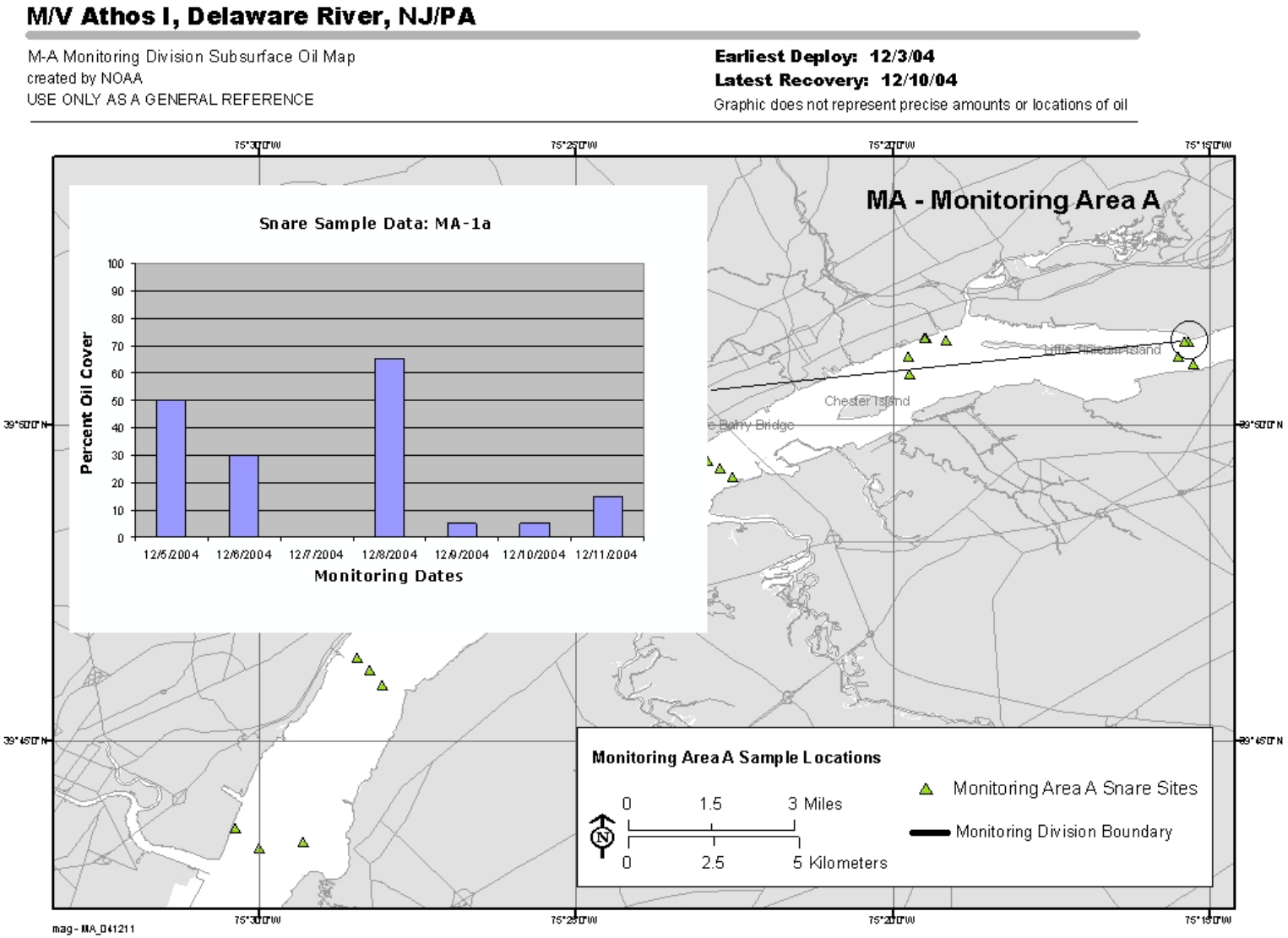


Figure 7. The oil coverage on the snare sampler just north of Tinicum Island (the location with the highest amount of oil consistently) over time. The oil coverage on 8 December represents two days of deployment, compared to the one-day deployment of the other dates. The amount of oil has been below 15% for the last three dates.

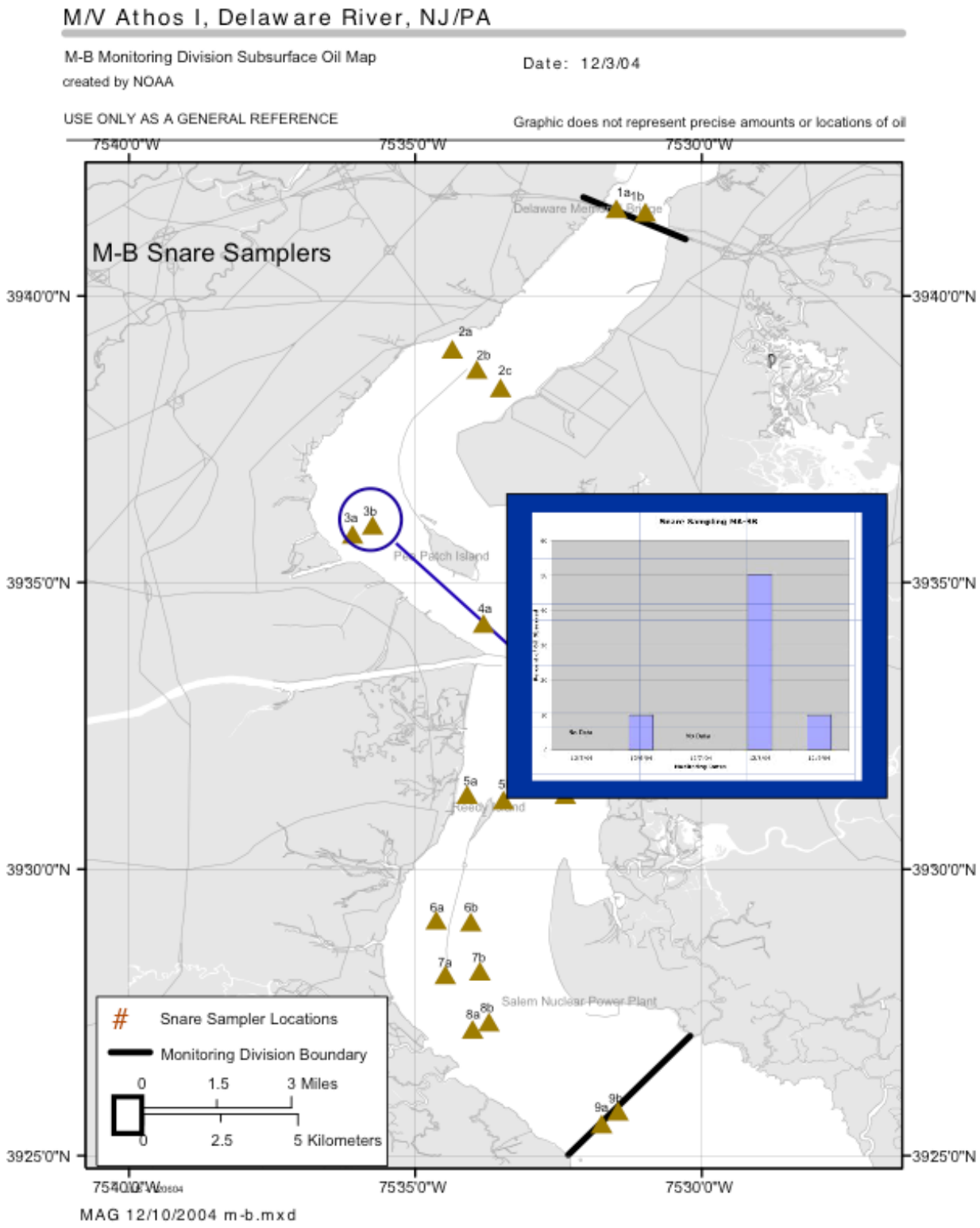


Figure 8. The oil coverage on the snare sampler west of Pea Patch Island. There was a peak on 8 December, representing two days of deployment.

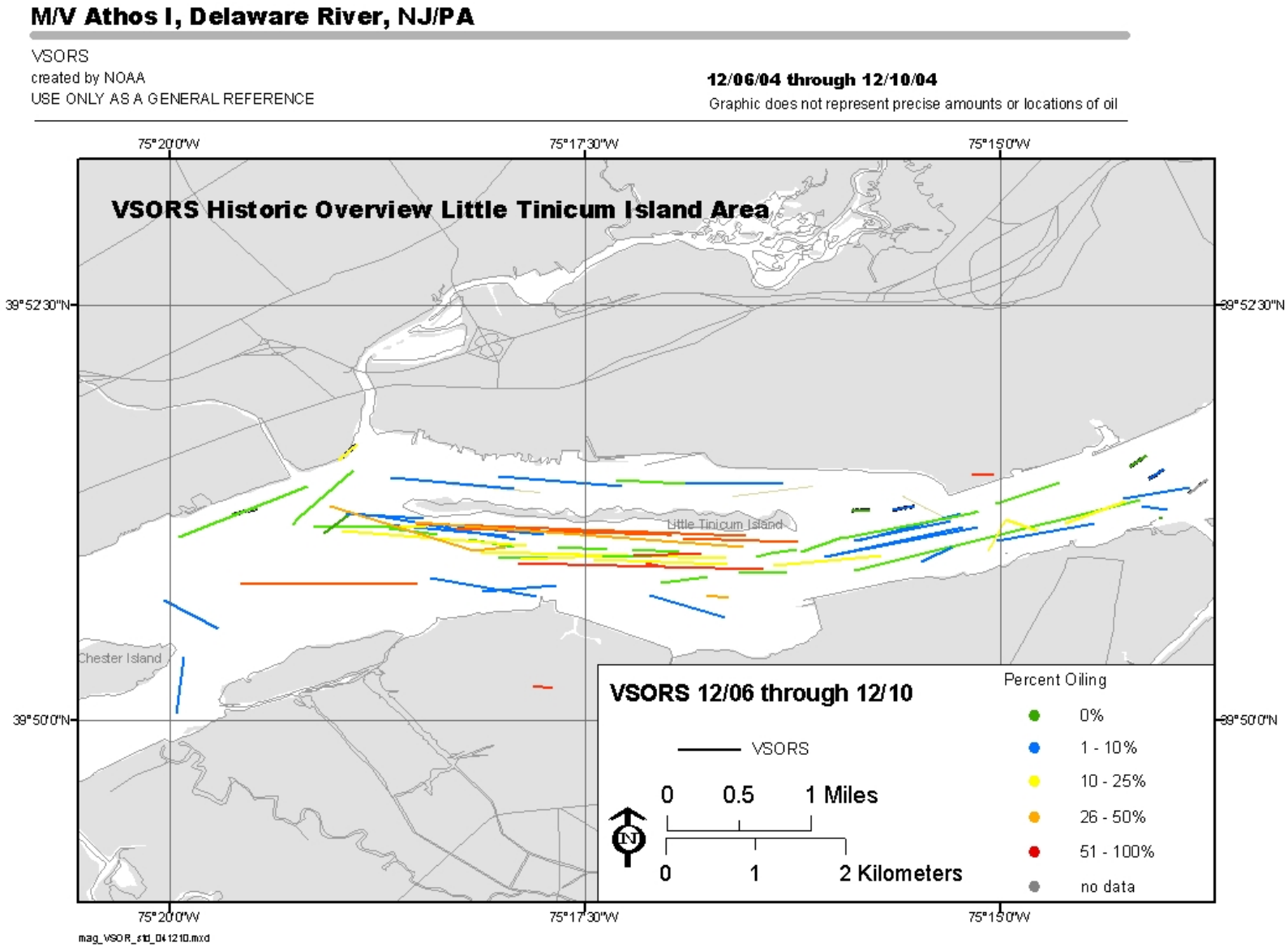


Figure 9. Track lines for the V-SORS coded according to the percent of visual oil coverage on the snares.

Additional V-SORS tows were conducted off the Salem Nuclear Power Plant on 8 December, with no oil detected. Small amounts of oil (~10%) were detected in Division MA, between the Commodore Barry Bridge and the Delaware Memorial Bridge on 8 December. Little to no oil was detected in the main shipping channel.

On 11 December, the V-SORS were directed to search for and recover oil in seventeen potential accumulation areas. Table 3 is a summary of these results. Oil was detected in the Marcus Hook Anchorage 7; a trace amount was found near Penns Grove, New Jersey (Cherry Flats).

Table 3. V-SORS results for potential submerged oil accumulation sites on 11 December 2004.

Potential Oil Accumulation Site	Percent Oil on Snares
Camden	0
Pier slip in Philadelphia	0
Pier slip in Philadelphia	0
Philadelphia airport 1	0
Philadelphia airport 2	0
Philadelphia airport 3	0
Marcus Hook Anchorage 7	50
Cherry Flats DE side	0
Cherry Flats NJ side	2
DE Memorial bridge	0
Travis Cove	0
Pea Patch Island NJ side	0
Pea Patch Island anchorage	0
Delaware City	0
Reedy Island NJ side	0
Reedy Island DE side	0
Hope Creek jetty	low tide-did not survey

V. SUMMARY

A significant but unknown amount of oil from the *Athos 1* oil spill did not float. The oil itself is buoyant, even after weathering, however two different mechanisms caused the oil to become submerged:

1. During the initial release, the oil was released under high pressure, cutting it's own trench in to the bottom. The highly viscous oil was held in the trench by cohesive forces. This is the only location where "pooled" oil was found.

2. The rest of the released oil initially floated and formed thick slicks. Most of the heavy oil stranded on man-made shorelines (seawalls and riprap), coating the intertidal zone. However, some thick slicks stranded on sandy shorelines (e.g., the wide intertidal sand flats on Tinicum Island) where the sticky oil picked up enough sandy sediments to make the oil slightly negatively buoyant. When this oil was eroded from the shoreline, it moved

along the bottom with the tidal currents. The mobile oil has not accumulated in significant amounts in depressions along the upper river.

The recovery of the oil in the trench will remove the only known area of pooled oil. There have been significant efforts to remove as much of the mobile oil as possible through shoreline cleanup of the re-floatable oil stranded on the intertidal zone and recovery of mobile, submerged oil using the V-SORS. Data from both the snare samplers and the V-SORS tows indicate that the amount of submerged oil has decreased over time.

For more technical information, please contact:

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APPENDIX D

Subtidal Sediment Analytical Results

D.1. Subtidal sediment log.

D.2. PAH data for subtidal sediment samples

D.3. NOAA Mussel Watch sediment samples collected at Hope Creek (DBHC), Arnolds Point (DBAP), and Ben Davis Point Shoal (DBBD).

D.1. Subtidal sediment log.

Sample ID	Latitude	Longitude	Date	Total PAHs (ng/g dry)	Comments
SED-DBHC-091204	39.42607	-75.49257	9-Dec-04	1030	
SMH-3	39.79850	-75.40993	10-Dec-04	5676	Marcus Hook, Left Descending Bank
SCR-4	39.70970	-75.49478	10-Dec-04	2023	Christina River, Left Descending Bank, closer to shore than CR#3
SCD-4	39.56947	-75.57192	10-Dec-04	5314	C & D Canal, Right Descending Bank, closer to shore than CD#3
SCD-5	39.57078	-75.52857	10-Dec-04	2224	C & D Canal, Left Descending Bank, closer to shore than CD#1
SED-UL-01	40.01215	-75.03547	10-Dec-04	2171	
SED-UL-02	40.01277	-75.03668	10-Dec-04	575	
SED-PTB-01	40.00893	-75.04340	10-Dec-04	2176	
SED-PTB-02	40.00977	-75.04660	10-Dec-04	11786	
SED-PTB-03	40.01125	-75.04950	10-Dec-04	209	
SLP-3	39.39867	-75.52060	11-Dec-04	264	Liston Point, RDB, closer to shore than WLP-3
SLP-2	39.40548	-75.49155	11-Dec-04	665	Liston Point, 200m towards LDB of channel
SCD-2	39.57440	-75.55315	11-Dec-04	6652	C & D Canal, center, directly below Pea Patch Is.
SCR-2	39.71293	-75.50470	11-Dec-04	1458	Christina River, center channel
SCR-1	39.71572	-75.51003	11-Dec-04	4190	Christina River, RDB, 50m downstream of red bouy
SED-WOOD-01	39.84177	-75.15462	11-Dec-04	23985	
SED-WOOD-02	39.86520	-75.19585	11-Dec-04	10023	
SED-WOOD-03	39.86695	-75.19590	11-Dec-04	10210	
SED-MAN-01	39.83533	-75.23647	11-Dec-04	4653	
SED-MAN-02	39.85245	-75.23018	11-Dec-04	5810	
SED-MAN-03	39.85383	-75.23115	11-Dec-04	19735	
SED-TN-01	39.85957	-75.30862	11-Dec-04	12847	
SED-TN-02	39.85412	-75.30743	11-Dec-04	459	
SED-TN-03	39.84313	-75.31132	11-Dec-04	6052	
SED-TN-04	39.84282	-75.28133	11-Dec-04	5564	
SED-BTC-01	39.86962	-75.11958	11-Dec-04	13972	
SED-BTC-02	39.88358	-75.13423	11-Dec-04	11841	
SED-BTC-03	39.88542	-75.13513	11-Dec-04	9025	
Supplemental Samples from NOAA Mussel Watch Program (reported as NS&T PAHs ng/g dry))					
Sample ID	**Latitude**	**Longitude**	**Date**	**Total PAHs (ng/g dry)**	**Comments**
DBAP	39.2300	-75.2700	1-Jan-05	2509	Arnolds Point
DBHC	39.25604	-75.2560	1-Jan-05	2728	Hope Creek
DBBD	39.1514	-75.1817	1-Jan-05	384	Ben Davis Point Shoal

D.2. PAH data for subtidal sediment samples.

Sample Name	ETX3934.D	ETX3935.D	ETX3936.D	ETX3937.D	ETX3938.D	ETX3939.D
Client Name	SED-WOOD-01	SED-WOOD-02	SED-WOOD-03	SED-MAN-01	SED-MAN-02	SED-MAN-03
Matrix	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment
Collection Date	12/11/04	12/11/04	12/11/04	12/11/04	12/11/04	12/11/04
Received Date	12/14/04	12/14/04	12/14/04	12/14/04	12/14/04	12/14/04
Extraction Date	12/20/04	12/20/04	12/20/04	12/20/04	12/20/04	12/20/04
Extraction Batch	ENV 1071	ENV 1071	ENV 1071	ENV 1071	ENV 1071	ENV 1071
Date Acquired	12/25/04	12/25/04	12/25/04	12/25/04	12/25/04	01/03/05
Method	PAH-2002	PAH-2002	PAH-2002	PAH-2002	PAH-2002	PAH-2002
Sample Dry Weight (g)	15.0	15.0	15.0	15.0	15.0	15.0
% Moisture	72	58	64	34	45	57
% Dry	28	42	36	66	55	43
Dilution	NA	NA	NA	NA	NA	NA

Target Compounds	Su Corrected Conc. (ng/dry g)	Q	Su Corrected Conc. (ng/dry g)	Q	Su Corrected Conc. (ng/dry g)	Q	Su Corrected Conc. (ng/dry g)	Q	Su Corrected Conc. (ng/dry g)	Q	Su Corrected Conc. (ng/dry g)	Q
Naphthalene	306		279		378		239		129		675	
C1-Naphthalenes	222		167		229		168		75.0		154	
C2-Naphthalenes	268		150		246		196		67.4		230	
C3-Naphthalenes	212		107		185		128		56.8		356	
C4-Naphthalenes	176		85.1		142		64.9		45.4		586	
Benzothiophene	14.5		9.1		15.2		10.8		4.4		20.7	
C1-Benzothiophenes	52.6		17.8		40.8		11.8		7.9		53.2	
C2-Benzothiophenes	39.9		13.5		23.7		13.8		7.6		63.9	
C3-Benzothiophenes	25.0		10.4		15.4		12.3		6.3		102	
Biphenyl	53		31.0		50.3		37.1		13.1		53.6	
Acenaphthylene	153		78.5		127		67.1		43.8		51.1	
Acenaphthene	94		39.8		57.3		26.4		18.8		29.4	
Dibenzofuran	135		80.2		119		95.1		34.4		56.0	
Fluorene	194		86.5		136		60.3		42.4		61.4	
C1-Fluorenes	115		42.4		79.4		23.6		23.6		135	
C2-Fluorenes	138		83.6		127		45.5		43.4		383	
C3-Fluorenes	163		132		205		68.0		62.6		625	
Carbazole	113		38.0		32.3		15.5		16.1		11.4	
Anthracene	287		139		147		80.4		87.0		75.2	
Phenanthrene	1160		421		417		216		165		142	
C1-Phenanthrene/Anthracenes	467		281		282		137		144		209	
C2-Phenanthrene/Anthracenes	427		245		255		114		142		587	
C3-Phenanthrene/Anthracenes	341		195		217		88.6		123		956	
C4-Phenanthrene/Anthracenes	221		121		93.3		45.4		69.4		761	
Dibenzothiophene	58		30.6		30.0		22.4		13.9		50.8	
C1-Dibenzothiophene	74		43.2		45.3		26.6		24.8		225	
C2-Dibenzothiophene	112		69.2		73.9		43.4		47.3		870	
C3-Dibenzothiophene	155		80.7		87.1		40.5		64.7		1220	
Fluoranthene	2590		711		651		253		493		289	
Pyrene	2320		680		650		229		438		309	
C1-Fluoranthenes/Pyrenes	850		444		449		160		260		594	
C2-Fluoranthenes/Pyrenes	643		333		325		149		210		810	
C3-Fluoranthenes/Pyrenes	252		133		148		50.1		111		520	
Naphthobenzothiophene	368		141		160		61.4		88.2		561	
C1-Naphthobenzothiophenes	180		110		140		50.8		67.7		1370	
C2-Naphthobenzothiophenes	207		119		139		44.7		83.1		1460	
C3-Naphthobenzothiophenes	148		82.8		100		29.7		76.2		965	
Benz(a)anthracene	1130		476		442		202		267		292	
Chrysene	1580		526		522		192		328		271	
C1-Chrysenes	1000		383		340		146		218		589	
C2-Chrysenes	268		184		184		64.9		106		502	
C3-Chrysenes	101.0		71.8		78.8		26.1		64.9		218	
C4-Chrysenes	56.2		39.0		39.4		14.5		21.4		251	
Benzo(b)fluoranthene	2280		729		579		268		464		398	
Benzo(k)fluoranthene	601		248		198		87.0		135		142	
Benzo(e)pyrene	995		361		300		131		208		301	
Benzo(a)pyrene	1140		436		342		142		224		292	
Perylene	381		318		226		96.0		150		374	
Indeno(1,2,3-c,d)pyrene	543		217		168		78.6		111		203	
Dibenzo(a,h)anthracene	144		41.7		36.1		17.2		23.8		65	
Benzo(g,h,i)perylene	432		162		137		60.7		82.5		216	
Total PAHs	23985		10023		10210		4653		5810		19735	
Individual Alkyl Isomers and Hopanes												
2-Methylnaphthalene	220		169		233		172		77.5		183	
1-Methylnaphthalene	100		70.8		96.3		69.1		30.2		69.8	
2,6-Dimethylnaphthalene	149		84.4		138		120		37.7		166	
1,6,7-Trimethylnaphthalene	26.5		13.1		24.1		15.5		7.1		20.0	
1-Methylphenanthrene	103.0		44.0		43.9		16.5		28.0		46.0	
C29-Hopane	534		271		319		76.2		163		959	
18a-Oleanane	60.2		35.1		39.8		15.2		50.7		107	
C30-Hopane	552		321		344		96.9		187		1140	

Surrogate (Su)	Su Recovery (%)	Su Recovery (%)	Su Recovery (%)	Su Recovery (%)	Su Recovery (%)	Su Recovery (%)
Naphthalene-d8	66	78	90	88	76	98
Acenaphthene-d10	61	91	87	80	90	91
Phenanthrene-d10	76	90	89	88	92	84
Chrysene-d12	62	82	90	90	83	84
Perylene-d12	78	81	98	76	82	91

Qualifiers (Q): J=Below the MDL, U=Not detected, B=In procedural blank > 3x MDL, I=Interference, D=Diluted value, NA=Not Applicable, *=Outside QA limits, refer to narrative

Sample Name	ETX3940.D	ETX3941.D	ETX3942.D	ETX3943.D	ETX3944.D	ETX3945.D
Client Name	SED-TN-01	SED-TN-02	SED-TN-03	SED-TN-04	SED-BTC-01	SED-BTC-02
Matrix	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment
Collection Date	12/11/04	12/11/04	12/11/04	12/11/04	12/11/04	12/11/04
Received Date	12/14/04	12/14/04	12/14/04	12/14/04	12/14/04	12/14/04
Extraction Date	12/20/04	12/20/04	12/20/04	12/20/04	12/20/04	12/20/04
Extraction Batch	ENV 1071	ENV 1071	ENV 1071	ENV 1071	ENV 1071	ENV 1071
Date Acquired	12/25/04	12/25/04	12/25/04	12/25/04	12/25/04	12/25/04
Method	PAH-2002	PAH-2002	PAH-2002	PAH-2002	PAH-2002	PAH-2002
Sample Dry Weight (g)	15.1	15.0	15.0	15.0	15.0	15.0
% Moisture	55	48	52	46	64	62
% Dry	45	52	48	54	36	38
Dilution	NA	NA	NA	NA	NA	NA

Target Compounds	Su Corrected Conc. (ng/dry g)	Q	Su Corrected Conc. (ng/dry g)	Q	Su Corrected Conc. (ng/dry g)	Q	Su Corrected Conc. (ng/dry g)	Q	Su Corrected Conc. (ng/dry g)	Q	Su Corrected Conc. (ng/dry g)	Q
Naphthalene	253		14.2		172		149		354		468	
C1-Naphthalenes	180		6.9		98.2		84.7		197		264	
C2-Naphthalenes	255		8.5		82.5		75.8		202		249	
C3-Naphthalenes	246		8.4		59.4		59.1		157		182	
C4-Naphthalenes	203		8.8		47.4		45.0		142		137	
Benzothiophene	10.6		0.7		5.4		4.7		13.3		16.0	
C1-Benzothiophenes	28.0		<0.3	U	12.5		9.4		30.5		32.5	
C2-Benzothiophenes	20.6		<0.3	U	7.5		6.6		20.6		28.3	
C3-Benzothiophenes	18.3		<0.3	U	5.1		5.1		17.3		19.8	
Biphenyl	42.5		4.4		19.1		16.0		41.4		51.5	
Acenaphthylene	113		1.8		47.2		45.4		107		142	
Acenaphthene	52.0		3.2		17.4		16.5		48.6		51.2	
Dibenzofuran	96.9		9.8		38.2		35.3		98.5		115	
Fluorene	120		13.3		45.3		40.4		121		133	
C1-Fluorenes	85.6		5.1		32.9		25.2		75.8		81.0	
C2-Fluorenes	165		6.1		42.2		35.7		116		123	
C3-Fluorenes	284		7.8		55.1		55.7		211		174	
Carbazole	44.1		1.4		14.3		17.8		54.7		32.5	
Anthracene	159		3.0		91.8		75.4		245		188	
Phenanthrene	477		18.3		232		226		607		392	
C1-Phenanthrene/Anthracenes	335		11.6		201		156		348		298	
C2-Phenanthrene/Anthracenes	385		12.4		164		134		420		311	
C3-Phenanthrene/Anthracenes	349		9.3		118		110		498		256	
C4-Phenanthrene/Anthracenes	187		8.9		55.1		52.3		358		159	
Dibenzothiophene	32.9		0.8		16.6		16.2		45.8		31.5	
C1-Dibenzothiophene	68.7		1.5		25.1		21.7		61.6		53.8	
C2-Dibenzothiophene	124		1.8		36.8		37.2		168		95.1	
C3-Dibenzothiophene	166		<0.3	U	30.8		41.7		292		120	
Fluoranthene	912		13.9		463		361		1080		762	
Pyrene	936		11.3		422		366		999		748	
C1-Fluoranthenes/Pyrenes	573		11.3		326		248		600		515	
C2-Fluoranthenes/Pyrenes	482		7.1		226		179		517		410	
C3-Fluoranthenes/Pyrenes	180		<0.4	U	76.2		74.3		292		230	
Naphthobenzothiophene	172		2.6		93.9		82.0		201		171	
C1-Naphthobenzothiophenes	168		3.5		60.9		68.1		245		146	
C2-Naphthobenzothiophenes	160		<0.4	U	61.8		68.2		360		159	
C3-Naphthobenzothiophenes	93.3		<0.4	U	42.2		48.3		245		128.0	
Benz(a)anthracene	592		5.5		306		267		465		521	
Chrysene	627		8.1		332		251		606		474	
C1-Chrysenes	427		4.9		220		189		422		422	
C2-Chrysenes	188		<0.3	U	102		91.6		258		226	
C3-Chrysenes	79.0		<0.3	U	44.3		36.3		136		112	
C4-Chrysenes	36.4		<0.3	U	20.5		21.1		37.7		37.7	
Benzo(b)fluoranthene	828		9.8		436		449		847		802	
Benzo(k)fluoranthene	283		1.5		139		161		173		244	
Benzo(e)pyrene	415		2.7		202		230		342		392	
Benzo(a)pyrene	496		2.9		256		284		404		425	
Perylene	240		197		210		217		296		284	
Indeno(1,2,3-c,d)pyrene	225		1.9		118		134		195		212	
Dibenzo(a,h)anthracene	56.3		6.0		32.8		33.4		49.0		47.4	
Benzo(g,h,i)perylene	177		1.4		88.1		107		150		169	
Total PAHs	12847		459		6052		5564		13972		11841	
Individual Alkyl Isomers and Hopanes												
2-Methylnaphthalene	180		6.3		102		86.0		200		270	
1-Methylnaphthalene	79.7		3.7		39.3		35.8		83.5		110	
2,6-Dimethylnaphthalene	136		3.2		45.7		41.4		116		143	
1,6,7-Trimethylnaphthalene	32.0		1.3		8.9		7.4		19.0		20.8	
1-Methylphenanthrene	79.6		3.8		31.0		23.3		69.2		62.1	
C29-Hopane	300		<1.1	U	166		203		480		474	
18a-Oleanane	32.8		<1.1	U	19.7		36.6		59.9		71.9	
C30-Hopane	319		<1.1	U	187		238		515		521	

Surrogate (Su)	Su Recovery (%)	Su Recovery (%)	Su Recovery (%)	Su Recovery (%)	Su Recovery (%)	Su Recovery (%)
Naphthalene-d8	83	82	77	80	81	87
Acenaphthene-d10	75	80	93	94	85	96
Phenanthrene-d10	76	99	93	93	74	91
Chrysene-d12	77	83	93	95	83	93
Perylene-d12	84	93	84	91	77	92

Qualifiers (Q): J=Below the MDL, U=Not detected, B=In procedural blank > 3x MDL, I=Interference, D=Diluted value, NA=Not Applicable, *=Outside QA limits, refer to narrative

Sample Name	ETX3946.D	ETX3947.D	ETX3948.D	ETX3949.D	ETX3950.D	ETX3952.D
Client Name	SED-BTC-03	SED-UL-01	SED-UL-02	SED-PTB-01	SED-PTB-02	SLP-3
Matrix	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment
Collection Date	12/11/04	12/10/04	12/10/04	12/10/04	12/10/04	12/11/04
Received Date	12/14/04	12/14/04	12/14/04	12/14/04	12/14/04	12/14/04
Extraction Date	12/20/04	12/20/04	01/03/05	01/03/05	01/03/05	01/03/05
Extraction Batch	ENV 1071	ENV 1071	ENV 1074	ENV 1074	ENV 1074	ENV 1074
Date Acquired	12/25/04	12/25/04	01/07/05	01/07/05	01/07/05	01/07/05
Method	PAH-2002	PAH-2002	PAH-2002	PAH-2002	PAH-2002	PAH-2002
Sample Dry Weight (g)	15.0	15.0	15.1	15.0	15.0	15.0
% Moisture	47	43	26	33	28	26
% Dry	53	57	74	67	72	74
Dilution	NA	NA	NA	NA	NA	NA

Target Compounds	Su Corrected Conc. (ng/dry g)	Q	Su Corrected Conc. (ng/dry g)	Q	Su Corrected Conc. (ng/dry g)	Q	Su Corrected Conc. (ng/dry g)	Q	Su Corrected Conc. (ng/dry g)	Q	Su Corrected Conc. (ng/dry g)	Q
Naphthalene	349		48.2		20.3		60.6		224		6.6	
C1-Naphthalenes	141		22.2		5.7		20.0		109		3.4	
C2-Naphthalenes	116		22.2		5.0		19.5		62.1		4.3	
C3-Naphthalenes	79.5		18.0		4.2		14.7		41.2		3.6	
C4-Naphthalenes	50.4		14.2		4.5		11.3		19.0		1.9	
Benzothiophene	9.2		1.8		0.6		2.0		6.2		0.3	
C1-Benzothiophenes	9.7		4.1		0.9		2.5		3.8		0.9	
C2-Benzothiophenes	9.1		1.8		0.6		1.6		3.4		<0.3	U
C3-Benzothiophenes	6.0		1.1		<0.3	U	1.3		2.9		<0.3	U
Biphenyl	25.8		5.4		1.7		4.8		14.2		1.2	
Acenaphthylene	70.4		26.8		4.6		17.5		41.1		2.3	
Acenaphthene	37.6		8.4		2.4		8.3		130		0.7	
Dibenzofuran	55.5		15.2		4.6		13.7		93.6		1.8	
Fluorene	66.4		18.4		4.1		14.1		129		1.8	
C1-Fluorenes	41.8		10.2		1.8		7.1		32.6		1.4	
C2-Fluorenes	54.0		17.0		3.5		10.2		21.5		2.0	
C3-Fluorenes	78.1		24.3		<0.4	U	27.9		20		<0.4	U
Carbazole	28.4		8.2		2.3		11.0		216		0.7	
Anthracene	144		31.5		8.3		28.2		195		3.0	
Phenanthrene	361		91.0		29.1		101		1180		8.6	
C1-Phenanthrene/Anthracenes	247		55.7		13.8		44.9		301		5.6	
C2-Phenanthrene/Anthracenes	199		49.1		11.8		41.5		153		6.1	
C3-Phenanthrene/Anthracenes	146		36.3		9.5		32.6		75.0		4.8	
C4-Phenanthrene/Anthracenes	105		17.7		6.0		21.0		35.4		3.2	
Dibenzothiophene	23.2		5.6		2.2		5.8		65.7		0.8	
C1-Dibenzothiophene	34.4		7.2		2.7		6.4		31.0		1.0	
C2-Dibenzothiophene	46.9		11.0		3.2		9.0		17.3		1.7	
C3-Dibenzothiophene	54.0		13.1		2.5		10.3		10.8		2.1	
Fluoranthene	836		177		54.6		215		1360		14.6	
Pyrene	764		171		47.6		154		1280		12.1	
C1-Fluoranthenes/Pyrenes	373		97.0		30.1		111		545		12.8	
C2-Fluoranthenes/Pyrenes	252		69.5		19.8		84.9		468		8.8	
C3-Fluoranthenes/Pyrenes	116		26.1		10.5		32.1		150		4.1	
Naphthobenzothiophene	121		36.9		8.6		44.2		215		3.9	
C1-Naphthobenzothiophenes	73.0		21.5		6.8		31.0		78.7		4.1	
C2-Naphthobenzothiophenes	78.7		21.7		8.5		33.6		36.8		5.1	
C3-Naphthobenzothiophenes	58.4		16.1		9.2		27.4		20.6		3.7	
Benz(a)anthracene	436		114		28.4		123		901		12.4	
Chrysene	509		120		27.7		107		469		11.2	
C1-Chrysenes	289		74.0		15.7		53.8		186		7.5	
C2-Chrysenes	125		29.6		8.7		27.0		82.4		5.0	
C3-Chrysenes	53.5		13.2		4.7		17.6		42.4		2.5	
C4-Chrysenes	29.2		9.0		3.9		14.6		54.5		1.7	
Benzo(b)fluoranthene	794		175		32.5		147		704		13.5	
Benzo(k)fluoranthene	234		60.9		10.9		23.6		176		4.6	
Benzo(e)pyrene	323		86.0		13.0		52.3		229		6.7	
Benzo(a)pyrene	399		101.0		19.0		82.9		574		8.9	
Perylene	195		60.6		19.6		74.9		161		32.9	
Indeno(1,2,3-c,d)pyrene	192		51.7		19.8		85.2		432		9.0	
Dibenzo(a,h)anthracene	45.0		12.8		5.4		20.4		92.8		2.2	
Benzo(g,h,i)perylene	139		40.7		14.1		64.3		294		7.0	
Total PAHs	9025		2171		575		2176		11786		264	
Individual Alkyl Isomers and Hopanes												
2-Methylnaphthalene	146		21.7		6.2		20.7		92.7		3.5	
1-Methylnaphthalene	56.7		10.3		2.2		9.1		71.8		1.5	
2,6-Dimethylnaphthalene	63.7		11.6		2.6		9.2		21.6		2.2	
1,6,7-Trimethylnaphthalene	9.9		2.3		0.4		1.7		5.1		0.2	
1-Methylphenanthrene	53.1		10.8		3.3		10.2		67.3		1.4	
C29-Hopane	173		85.6		16.8		42.4		18.2		12.9	
18a-Oleanane	25.8		7.9		3.4		4.9		2.8		2.4	
C30-Hopane	193		94.9		23.4		52.3		25.8		18.0	

Surrogate (Su)	Su Recovery (%)	Su Recovery (%)	Su Recovery (%)	Su Recovery (%)	Su Recovery (%)	Su Recovery (%)
Naphthalene-d8	89	93	82	76	79	89
Acenaphthene-d10	94	93	85	75	87	77
Phenanthrene-d10	91	99	86	77	70	81
Chrysene-d12	80	99	79	94	91	80
Perylene-d12	78	93	71	63	76	35

Qualifiers (Q): J=Below the MDL, U=Not detected, B=In procedural blank > 3x MDL, I=Interference, D=Diluted value, NA=Not Applicable, *=Outside QA limits, refer to narrative

Sample Name	ETX3953.D	ETX3954.D	ETX3955.D	ETX3956.D	ETX3957.D	ETX3958.D
Client Name	SLP-2	SCD-2	SCR-2	SCR-1	SMH-3	SCR-4
Matrix	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment
Collection Date	12/11/04	12/11/04	12/11/04	12/11/04	12/10/04	12/10/04
Received Date	12/14/04	12/14/04	12/14/04	12/14/04	12/14/04	12/14/04
Extraction Date	01/03/05	01/03/05	01/03/05	01/03/05	01/03/05	01/03/05
Extraction Batch	ENV 1074	ENV 1074	ENV 1074	ENV 1074	ENV 1074	ENV 1074
Date Acquired	01/07/05	01/07/05	01/07/05	01/07/05	01/07/05	01/07/05
Method	PAH-2002	PAH-2002	PAH-2002	PAH-2002	PAH-2002	PAH-2002
Sample Dry Weight (g)	15.0	15.0	15.0	15.0	15.0	15.0
% Moisture	48	72	47	66	66	30
% Dry	52	28	53	34	34	70
Dilution	NA	NA	NA	NA	NA	NA

Target Compounds	Su Corrected Conc. (ng/dry g)	Q	Su Corrected Conc. (ng/dry g)	Q	Su Corrected Conc. (ng/dry g)	Q	Su Corrected Conc. (ng/dry g)	Q	Su Corrected Conc. (ng/dry g)	Q	Su Corrected Conc. (ng/dry g)	Q
Naphthalene	7.8		145		5.0		150		134		52.7	
C1-Naphthalenes	2.6		86.2		2.5		82.0		77.5		30.9	
C2-Naphthalenes	2.6		85.8		4.5		70.8		80.9		27.0	
C3-Naphthalenes	2.2		84.0		5.8		54.7		64.2		23.1	
C4-Naphthalenes	1.2		75.3		2.4		32.7		41.2		13.6	
Benzothiophene	0.4		5.0		0.2		4.9		5.2		2.0	
C1-Benzothiophenes	1.6		13.5		2.5		11.8		13.2		3.3	
C2-Benzothiophenes	0.5		10.7		1.2		6.9		7.3		3.6	
C3-Benzothiophenes	<0.3	U	9.7		<0.3	U	5.2		4.2		2.7	
Biphenyl	2.1		20.1		2.1		21.5		19.9		11.5	
Acenaphthylene	0.9		45.5		8.8		27.9		48.8		12.8	
Acenaphthene	0.4		15.6		0.7		14.0		21.9		6.2	
Dibenzofuran	4.5		33.1		3.8		29.5		36.7		11.0	
Fluorene	2.7		36.6		4.8		41.3		46.0		9.1	
C1-Fluorenes	2.6		34.6		5.5		29.3		28.5		10.9	
C2-Fluorenes	<0.4	U	87.6		7.6		32.9		36.5		20.4	
C3-Fluorenes	<0.4	U	121		9.3		59.5		57.4		30.3	
Carbazole	1.0		13.4		1.3		12.9		20.2		7.0	
Anthracene	2.3		62.1		7.2		71.3		88.3		28.0	
Phenanthrene	8.1		139		7.2		160		232		63.1	
C1-Phenanthrene/Anthracenes	5.7		165		22.1		111		147		47.8	
C2-Phenanthrene/Anthracenes	4.1		210		25.3		113		142		54.2	
C3-Phenanthrene/Anthracenes	4.1		240		13.1		90.7		114		60.1	
C4-Phenanthrene/Anthracenes	2.5		175		4.0		64.9		60.3		50.9	
Dibenzothiophene	0.4		12.4		1.5		14.9		16.3		6.8	
C1-Dibenzothiophene	0.5		39.3		4.4		21.2		21.8		10.4	
C2-Dibenzothiophene	0.4		119		7.0		29.9		30.7		19.1	
C3-Dibenzothiophene	<0.3	U	192		4.5		40.7		38.7		23.8	
Fluoranthene	11.3		305		26.4		214		511		124	
Pyrene	7.0		278		30.6		174		362		114	
C1-Fluoranthenes/Pyrenes	9.6		269		50.4		198		334		114	
C2-Fluoranthenes/Pyrenes	5.5		228		22.8		167		219		92.9	
C3-Fluoranthenes/Pyrenes	2.4		134		5.7		96.6		113		48.1	
Naphthobenzothiophene	2.4		97.2		8.6		63.6		111		32.1	
C1-Naphthobenzothiophenes	<0.4	U	160		8.1		69.3		93.8		37.0	
C2-Naphthobenzothiophenes	<0.4	U	237		4.7		88.3		98.7		46.7	
C3-Naphthobenzothiophenes	<0.4	U	201		2.2		67.1		57.2		36.6	
Benz(a)anthracene	6.9		220		20.1		156		321		93.5	
Chrysene	6.2		177		21.0		114		221		86.3	
C1-Chrysenes	4.0		140		16.8		106		146		61.7	
C2-Chrysenes	2.9		90.8		7.2		71.4		85.9		40.0	
C3-Chrysenes	<0.3	U	66.4		<0.3	U	39.7		50.6		22.2	
C4-Chrysenes	<0.3	U	24.0		<0.3	U	18.8		28.0		11.9	
Benzo(b)fluoranthene	6.8		340		12.2		168		285		81.6	
Benzo(k)fluoranthene	2.1		160		1.2		42.8		72.5		26.3	
Benzo(e)pyrene	2.5		192		4.9		70.3		112		38.2	
Benzo(a)pyrene	3.7		265		6.8		117		189		55.7	
Perylene	522		395		1030		553		311		114	
Indeno(1,2,3-c,d)pyrene	3.8		209		4.8		94.1		164		51.3	
Dibenzo(a,h)anthracene	2.1		55.3		4.7		26.1		40.9		12.9	
Benzo(g,h,i)perylene	2.9		132		4.0		69.2		115		39.2	
Total PAHs	665		6652		1458		4190		5676		2023	
Individual Alkyl Isomers and Hopanes												
2-Methylnaphthalene	2.8		87.8		2.4		83.6		81.6		31.7	
1-Methylnaphthalene	1.1		40.8		1.4		38.8		33.5		14.4	
2,6-Dimethylnaphthalene	1.4		44.9		1.7		40.3		43.5		15.2	
1,6,7-Trimethylnaphthalene	0.1		11.3		0.4		5.2		7.1		2.4	
1-Methylphenanthrene	1.8		26.0		3.6		24.0		31.6		10.5	
C29-Hopane	<1.1	U	297		17.9		218		149		65.5	
18a-Oleanane	<1.1	U	44.2		10.1		42.6		25.5		12.0	
C30-Hopane	<1.1	U	366		24.8		284		185		92.1	

Surrogate (Su)	Su Recovery (%)	Su Recovery (%)	Su Recovery (%)	Su Recovery (%)	Su Recovery (%)	Su Recovery (%)
Naphthalene-d8	79	77	80	76	91	83
Acenaphthene-d10	71	91	78	88	92	91
Phenanthrene-d10	74	71	79	71	72	80
Chrysene-d12	77	84	84	85	93	84
Perylene-d12	60	82	46	80	62	67

Qualifiers (Q): J=Below the MDL, U=Not detected, B=In procedural blank > 3x MDL, I=Interference, D=Diluted value, NA=Not Applicable, *=Outside QA limits, refer to narrative

Sample Name	ETX3959.D	ETX3960.D	ETX3961.D
Client Name	SCD-4	SCD-5	SED-DBHC-091204
Matrix	Sediment	Sediment	Sediment
Collection Date	12/10/04	12/10/04	12/09/04
Received Date	12/14/04	12/14/04	12/14/04
Extraction Date	01/03/05	01/03/05	01/03/05
Extraction Batch	ENV 1074	ENV 1074	ENV 1074
Date Acquired	01/07/05	01/07/05	01/07/05
Method	PAH-2002	PAH-2002	PAH-2002
Sample Dry Weight (g)	15.0	15.0	15.0
% Moisture	55	49	47
% Dry	45	51	53
Dilution	NA	NA	NA

Target Compounds	Su Corrected Conc. (ng/dry g)	Q	Su Corrected Conc. (ng/dry g)	Q	Su Corrected Conc. (ng/dry g)	Q
Naphthalene	222		61.5		27.9	
C1-Naphthalenes	78.6		34.5		16.6	
C2-Naphthalenes	57.5		34.6		17.0	
C3-Naphthalenes	37.8		27.4		12.6	
C4-Naphthalenes	21.7		17.4		7.7	
Benzothiophene	9.8		2.4		1.1	
C1-Benzothiophenes	10.1		7.0		3.4	
C2-Benzothiophenes	4.4		3.3		1.5	
C3-Benzothiophenes	2.2		2.8		1.2	
Biphenyl	31.0		9.2		4.6	
Acenaphthylene	31.9		18.9		8.1	
Acenaphthene	24.0		7.0		2.6	
Dibenzofuran	70.5		15.7		7.0	
Fluorene	60.9		19.5		9.0	
C1-Fluorenes	26.4		14.3		5.7	
C2-Fluorenes	21.6		17.7		9.0	
C3-Fluorenes	56.5		28.4		17.3	
Carbazole	17.7		9.1		3.6	
Anthracene	102		29.3		14.5	
Phenanthrene	257		81.1		36.6	
C1-Phenanthrene/Anthracenes	130		51.9		24.4	
C2-Phenanthrene/Anthracenes	118		49.1		24.0	
C3-Phenanthrene/Anthracenes	102		46.4		21.2	
C4-Phenanthrene/Anthracenes	73.3		26.1		14.4	
Dibenzothiophene	17.6		6.7		3.3	
C1-Dibenzothiophene	13.0		9.0		4.6	
C2-Dibenzothiophene	14.7		13.6		7.3	
C3-Dibenzothiophene	16.2		15.3		8.2	
Fluoranthene	346		148		61.2	
Pyrene	230		130		48.6	
C1-Fluoranthenes/Pyrenes	284		112		49.1	
C2-Fluoranthenes/Pyrenes	180		88.2		39.0	
C3-Fluoranthenes/Pyrenes	90		48.7		17.8	
Naphthobenzothiophene	77.6		39.7		16.1	
C1-Naphthobenzothiophenes	64.8		33.6		17.4	
C2-Naphthobenzothiophenes	68.2		40.1		21.3	
C3-Naphthobenzothiophenes	35.3		31.3		16.0	
Benz(a)anthracene	252		101		39.3	
Chrysene	148		79.3		36.0	
C1-Chrysenes	154		54.1		24.7	
C2-Chrysenes	99.0		33.6		16.9	
C3-Chrysenes	50.3		18.4		10.4	
C4-Chrysenes	17.1		9.3		5.8	
Benzo(b)fluoranthene	215		107		48.9	
Benzo(k)fluoranthene	60.2		44.1		16.2	
Benzo(e)pyrene	88.1		49.0		21.4	
Benzo(a)pyrene	147		71.8		29.8	
Perylene	856		192		119	
Indeno(1,2,3-c,d)pyrene	113		68.3		29.7	
Dibenzo(a,h)anthracene	32.6		17.2		8.1	
Benzo(g,h,i)perylene	77.8		47.6		22.4	
Total PAHs	5314		2224		1030	
Individual Alkyl Isomers and Hopanes						
2-Methylnaphthalene	87.4		35.1		17.0	
1-Methylnaphthalene	29.0		16.4		7.7	
2,6-Dimethylnaphthalene	32.4		18.8		9.8	
1,6,7-Trimethylnaphthalene	4.4		1.3		1.2	
1-Methylphenanthrene	28.2		10.5		5.9	
C29-Hopane	21.0		93.4		56.0	
18a-Oleanane	<1.1	U	15.1		8.3	
C30-Hopane	33.6		117		72.0	

Surrogate (Su)	Su Recovery (%)	Su Recovery (%)	Su Recovery (%)
Naphthalene-d8	87	77	78
Acenaphthene-d10	94	81	81
Phenanthrene-d10	74	73	75
Chrysene-d12	97	86	84
Perylene-d12	60	70	65

Qualifiers (Q): J=Below the MDL, U=Not detected, B=In procedural blank > 3x MDL, I=Interference, D=Diluted value, NA=Not Applicable, *=Outside QA limits, refer to narrative

Sample Name	ETX3951.D
Client Name	SED-PTB-03
Matrix	Rocks
Collection Date	12/10/04
Received Date	12/14/04
Extraction Date	12/20/04
Extraction Batch	ENV 1071
Date Acquired	01/03/05
Method	PAH-2002
Sample Weight (mg)	15.0
% Moisture	43
% Dry	57
Dilution	NA

Target Compounds	Su Corrected Conc. (ng/mg)	Q
Naphthalene	3.4	
C1-Naphthalenes	2.0	
C2-Naphthalenes	3.0	
C3-Naphthalenes	1.8	
C4-Naphthalenes	1.2	
Benzothiophene	<0.2	U
C1-Benzothiophenes	<0.3	U
C2-Benzothiophenes	<0.3	U
C3-Benzothiophenes	<0.3	U
Biphenyl	0.5	
Acenaphthylene	2.1	
Acenaphthene	0.5	
Dibenzofuran	0.9	
Fluorene	1.0	
C1-Fluorenes	<0.4	U
C2-Fluorenes	<0.4	U
C3-Fluorenes	<0.4	U
Carbazole	0.7	
Anthracene	2.6	
Phenanthrene	4.1	
C1-Phenanthrene/Anthracenes	3	
C2-Phenanthrene/Anthracenes	5	
C3-Phenanthrene/Anthracenes	11	
C4-Phenanthrene/Anthracenes	8	
Dibenzothiophene	0.5	
C1-Dibenzothiophene	1.2	
C2-Dibenzothiophene	3.0	
C3-Dibenzothiophene	5.4	
Fluoranthene	9.9	
Pyrene	13.4	
C1-Fluoranthenes/Pyrenes	11.2	
C2-Fluoranthenes/Pyrenes	11.4	
C3-Fluoranthenes/Pyrenes	4.4	
Naphthobenzothiophene	3.2	
C1-Naphthobenzothiophenes	5.6	
C2-Naphthobenzothiophenes	12.3	
C3-Naphthobenzothiophenes	15.3	
Benz(a)anthracene	5.6	
Chrysene	6.9	
C1-Chrysenes	4.9	
C2-Chrysenes	5.3	
C3-Chrysenes	4.2	
C4-Chrysenes	2.9	
Benzo(b)fluoranthene	7.5	
Benzo(k)fluoranthene	2.5	
Benzo(e)pyrene	6.1	
Benzo(a)pyrene	4.9	
Perylene	2.7	
Indeno(1,2,3-c,d)pyrene	3.2	
Dibenzo(a,h)anthracene	1.1	
Benzo(g,h,i)perylene	3.6	
Total PAHs	209	
Individual Alkyl Isomers and Hopanes		
2-Methylnaphthalene	2.3	
1-Methylnaphthalene	1.0	
2,6-Dimethylnaphthalene	3.1	
1,6,7-Trimethylnaphthalene	0.2	
1-Methylphenanthrene	1	
C29-Hopane	32.3	
18a-Oleanane	4.9	
C30-Hopane	39.8	

Surrogate (Su)	Su Recovery (%)
Naphthalene-d8	80
Acenaphthene-d10	89
Phenanthrene-d10	75
Chrysene-d12	85
Perylene-d12	81

Qualifiers (Q): J=Below the MDL, U=Not detected, B=In procedural blank > 3x MDL, I=Interference, D=Diluted value, NA=Not Applicable, *=Outside QA limits, refer to narrative

D.3. NOAA Mussel Watch sediment samples collected at Hope Creek (DBHC), Arnolds Point (DBAP), and Ben Davis Point Shoal (DBBD).

Sample Name	NST1367.D	NST1368.D	NST1369.D
Client Name	DBAP	DBBD	DBHC
Matrix	Sediment	Sediment	Sediment
Collection Date	01/02/05	01/02/05	01/02/05
Received Date	01/05/05	01/05/05	01/05/05
Extraction Date	06/15/05	06/15/05	06/15/05
Extraction Batch	ENV1190	ENV1190	ENV1190
Date Acquired	06/22/05	06/22/05	06/22/05
Method	PAH-2002	PAH-2002	PAH-2002
Sample Wet Weight (g)	43.1	25.1	44.0
Sample Dry Weight (g)	15.1	15.1	15.0
% Moisture	65	40	66
% Dry	35	60	34
Dilution	NA	NA	NA

Target Compounds	Su Corrected Conc. (ng/dry g)	Q1	Q2	Q3	Su Corrected Conc. (ng/dry g)	Q1	Q2	Q3	Su Corrected Conc. (ng/dry g)	Q1	Q2	Q3
Decalin	0.0	U			0.0	U			0.0	U		
C1-Decalins	0.0	U			0.0	U			0.0	U		
C2-Decalins	0.0	U			0.0	U			0.0	U		
C3-Decalins	0.0	U			0.0	U			0.0	U		
C4-Decalins	0.0	U			0.0	U			0.0	U		
Naphthalene	59.1				9.0				67.0			
C1-Naphthalenes	37.2				5.3				42.8			
C2-Naphthalenes	39.9				6.8				45.4			
C3-Naphthalenes	31.1				5.4				35.7			
C4-Naphthalenes	18.9				3.4				20.5			
Benzothiophene	2.3				0.3				2.6			
C1-Benzothiophenes	5.9				0.0	U			6.2			
C2-Benzothiophenes	3.0				0.0	U			3.4			
C3-Benzothiophenes	2.8				0.0	U			2.9			
Biphenyl	12.1				2.4				13.9			
Acenaphthylene	12.3				2.2				14.0			
Acenaphthene	8.7				1.5				10.4			
Dibenzofuran	18.7				3.3				21.7			
Fluorene	21.1				3.7				24.8			
C1-Fluorenes	12.8				2.2				14.3			
C2-Fluorenes	20.7				4.4				20.8			
C3-Fluorenes	14.4				0.0	U			18.0			
Carbazole	10.2				0.9				10.9			
Anthracene	38.7				5.8				42.3			
Phenanthrene	96.8				13.0				109			
C1-Phenanthrene/Anthracenes	76.6				12.9				80.4			
C2-Phenanthrene/Anthracenes	63.1				11.3				66.4			
C3-Phenanthrene/Anthracenes	54.7				6.9				50.5			
C4-Phenanthrene/Anthracenes	40.4				5.4				34.1			
Dibenzothiophene	9.3				1.3				10.2			
C1-Dibenzothiophenes	13.9				1.8				14.5			
C2-Dibenzothiophenes	22.5				2.5				21.2			
C3-Dibenzothiophenes	28.6				2.6				23.8			
Fluoranthene	159				26.0				173			
Pyrene	159				22.4				170			
C1-Fluoranthenes/Pyrenes	111				19.9				124			
C2-Fluoranthenes/Pyrenes	76.6				9.0				79.4			
C3-Fluoranthenes/Pyrenes	34.1				3.7				34.6			
Naphthobenzothiophene	35.3				5.0				37.0			
C1-Naphthobenzothiophenes	36.6				3.8				33.8			

C2-Naphthobenzothiophenes	30.2		2.8		27.6	
C3-Naphthobenzothiophenes	24.1		1.4		20.3	
Benz(a)anthracene	93.4		14.6		106	
Chrysene	123		16.9		135	
C1-Chrysenes	103		14.0		110	
C2-Chrysenes	61.7		7.8		65.7	
C3-Chrysenes	29.8		3.6		28.5	
C4-Chrysenes	13.6		0.0	U	14.4	
Benzo(b)fluoranthene	104		20.1		126	
Benzo(k)fluoranthene	40.1		6.5		48.3	
Benzo(e)pyrene	59.3		10.1		68.3	
Benzo(a)pyrene	81.7		15.5		98.2	
Perylene	232		44.0		259	
Indeno(1,2,3-c,d)pyrene	58.8		10.4		65.6	
Dibenzo(a,h)anthracene	12.9		2.4		15.0	
C1-Dibenzo(a,h)anthracenes	0.0	U	0.0	U	0.0	U
C2-Dibenzo(a,h)anthracenes	0.0	U	0.0	U	0.0	U
C3-Dibenzo(a,h)anthracenes	0.0	U	0.0	U	0.0	U
Benzo(g,h,i)perylene	53.6		9.3		60.1	
Total PAHs	2509		384		2728	
Individual Isomers						
2-Methylnaphthalene	41.5		5.8		47.5	
1-Methylnaphthalene	16.5		2.5		19.3	
2,6-Dimethylnaphthalene	25.9		4.4		29.4	
1,6,7-Trimethylnaphthalene	3.7		0.6		4.5	
1-Methylphenanthrene	14.0		2.4		15.7	

Surrogate (Su)	Su Recovery (%)	Su Recovery (%)	Su Recovery (%)
Naphthalene-d8	94	93	91
Acenaphthene-d10	94	81	91
Phenanthrene-d10	85	81	82
Chrysene-d12	82	81	78
Perylene-d12	67	72	67

Qualifiers (Q): J=Below the MDL, U=Not detected, B=In procedural blank > 3x MDL, I=Interference, D=Diluted value, NA=Not Applicable, *=Outside QA limits, refer to narrative

APPENDIX E

Intertidal Sediment Analyses

E.1. Intertidal sediment sample log and summary PAH data.

E.2. PAH data for intertidal sediment samples.

E.3. Alkane analyses of intertidal sediment samples.

E.4. Total organic carbon analysis of intertidal sediment samples.

E.5. Biomarker analyses.

E.1. Intertidal sediment sample log and summary PAH data.

Sample ID	Latitude	Longitude	Date	Total PAHs (ng/g dry)	Comments
SED-RC-01	39.79985	-75.35778	14-Dec-04	8334	Raccoon Creek, top 1 cm of sediment in rice grass mud flats
SED-RC-02	39.80010	-75.35738	14-Dec-04	7853	Raccoon Creek, top 1 cm of sediment in rice grass mud flats
SED-RC-03	39.79570	-75.36352	14-Dec-04	7196	Raccoon Creek, top 1 cm of sediment in rice grass mud flats
SED-TI-01	39.85308	-75.26673	15-Dec-04	36772	Tinicum Island, top 1 cm of sediment in perennial mud flats
SED-TI-02	39.85298	-75.26677	15-Dec-04	44022	Tinicum Island, top 1 cm of sediment in perennial mud flats
SED-TI-03	39.85277	-75.26732	15-Dec-04	27845	Tinicum Island, top 1 cm of sediment in perennial mud flats
SED-TP-01	40.01073	-75.03833	15-Dec-04	948	Tacony-Palmyra bridge, top 1 cm, perennial mud flat control
SED-CW-01	40.16643	-75.70443	15-Dec-04	9917	Crosswick Creek, top 1 cm, rice grass mud flat control
SED-PP-01	39.58608	-75.57310	17-Dec-04	1333	Pea Patch Island, top 1 cm,
SED-PP-02	39.58609	-75.57319	17-Dec-04	1283	Pea Patch Island, top 1 cm,
SED-PP-03	39.58607	-75.57305	17-Dec-04	2104	Pea Patch Island, top 1 cm,

E.2. PAH data for intertidal sediment samples

Client Sample ID	SED-RC-01	SED-RC-02
Sample Descriptor	1020	1036
Original Sample		
GERG ID	C45280	C45281
Sample Type	SAMP	SAMP
SDG	EC176	EC176
Dry Weight	4.37	4.63
Wet Weight	18.32	19.99
Sample Size Units	Grams	Grams
Matrix	Sediment	Sediment
% solid	23.9	23.2
% Lipid		
Reporting Units	ng/g	ng/g
Calculation Basis (dry/wet)	Dry	Dry
QC Batch ID	M3324	M3324
Method	GCMS	GCMS
Collection Date	12/14/04	12/14/04
Receive Date	12/16/04	12/16/04
Extraction Date	12/20/04	12/20/04
Analysis Date	01/06/05	01/06/05
Surrogate Compounds	**%Recovery**	**%Recovery**
d8-Naphthalene	69.3	70.0
d10-Acenaphthene	98.7	87.0
d10-Phenanthrene	102.5	88.5
d12-Chrysene	106.8	86.4
d12-Perylene	61.0	47.1
Total PAHs	**Concentration**	**Concentration**
Total PAHs with Perylene	8333.8	7852.7
Total PAHs without Perylene	7996.5	7488.4
Total NS&T PAHs	3648.5	3871.0

Client Sample ID	SED-RC-01		SED-RC-02	
Sample Descriptor	1020		1036	
Original Sample GERG ID	C45280		C45281	
Sample Type	SAMP		SAMP	
SDG	EC176		EC176	
PAH Compounds	**Concentration**	**MDL**	**Concentration**	**MDL**
Naphthalene	214.04	1.21	201.56	1.14
C1-Naphthalenes	192.50	3.86	175.37	3.65
C2-Naphthalenes	128.83	1.00	114.49	0.94
C3-Naphthalenes	103.72	2.10	85.98	1.98
C4-Naphthalenes	75.52	2.10	53.47	1.98
Biphenyl	32.73	0.82	31.44	0.77
Acenaphthylene	51.71	1.16	55.03	1.10
Acenaphthene	36.61	2.02	50.02	1.91
Fluorene	79.66	1.03	79.59	0.97
C1-Fluorenes	81.27	2.06	70.20	1.95
C2-Fluorenes	125.83	2.06	95.63	1.95
C3-Fluorenes	196.09	2.06	138.34	1.95
Phenanthrene	273.98	1.00	286.68	0.94
Anthracene	183.40	1.11	189.38	1.05
C1-Phenanthrenes/Anthracenes	218.38	1.99	207.51	1.87
C2-Phenanthrenes/Anthracenes	277.22	1.99	206.70	1.87
C3-Phenanthrenes/Anthracenes	269.04	1.99	178.68	1.87
C4-Phenanthrenes/Anthracenes	277.69	1.99	191.34	1.87
Dibenzothiophene	27.45	0.67	26.67	0.63
C1-Dibenzothiophenes	63.71	1.33	45.68	1.26
C2-Dibenzothiophenes	193.53	1.33	102.44	1.26
C3-Dibenzothiophenes	274.90	1.33	121.42	1.26
Fluoranthene	472.32	1.82	502.28	1.72
Pyrene	478.02	2.08	505.03	1.96
C1-Fluoranthenes/Pyrenes	334.12	3.89	328.02	3.68
C2-Fluoranthenes/Pyrenes	292.95	3.89	266.34	3.68
C3-Fluoranthenes/Pyrenes	227.77	3.89	159.12	3.68
Benzo(a)anthracene	288.34	1.06	333.82	1.00
Chrysene	300.94	1.26	336.54	1.19
C1-Chrysenes	260.85	2.51	246.55	2.37
C2-Chrysenes	186.04	2.51	122.48	2.37
C3-Chrysenes	78.86	2.51	57.83	2.37
C4-Chrysenes	11.74	2.51	6.77	2.37
Benzo(b)fluoranthene	436.82	1.16	516.45	1.09
Benzo(k)fluoranthene	119.05	1.01	131.14	0.95
Benzo(e)pyrene	241.34	1.07	271.33	1.01
Benzo(a)pyrene	342.22	1.79	363.59	1.69
Perylene	337.32	2.53	364.37	2.39
Indeno(1,2,3-c,d)pyrene	262.36	1.47	309.62	1.39
Dibenz(a,h)anthracene	52.74	0.73	60.56	0.69
Benzo(g,h,i)perylene	232.22	1.38	263.28	1.30
2-Methylnaphthalene	138.31	2.19	124.70	2.07
1-Methylnaphthalene	54.19	1.67	50.67	1.58
2,6-Dimethylnaphthalene	64.75	0.50	64.11	0.47
1,6,7-Trimethylnaphthalene	29.66	1.05	26.93	0.99
1-Methylphenanthrene	57.56	0.99	55.33	0.94

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

Client Sample ID	SED-RC-03	SED-TI-01	
Sample Descriptor	1107	Diluted 1:50	
Original Sample			
GERG ID	C45282	C45283	
Sample Type	SAMP	SAMP	
SDG	EC176	EC176	
Dry Weight	3.36	13.15	
Wet Weight	20.14	18.64	
Sample Size Units	Grams	Grams	
Matrix	Sediment	Sediment	
% solid	16.7	70.5	
% Lipid	ng/g	ng/g	
Reporting Units	Dry	Dry	
Calculation Basis (dry/wet)			
QC Batch ID	M3324	M3324	
Method	GCMS	GCMS	
Collection Date	12/14/04	12/15/04	
Receive Date	12/16/04	12/16/04	
Extraction Date	12/20/04	12/20/04	
Analysis Date	01/06/05	01/07/05	
Surrogate Compounds	**%Recovery**	**%Recovery**	
d8-Naphthalene	70.5		D
d10-Acenaphthene	94.8		D
d10-Phenanthrene	103.7		D
d12-Chrysene	108.9		D
d12-Perylene	61.1		D
Total PAHs	**Concentration**	**Concentration**	
Total PAHs with Perylene	7195.6	36771.8	
Total PAHs without Perylene	6850.5	36245.7	
Total NS&T PAHs	3620.0	20250.6	

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

Client Sample ID	SED-RC-03		SED-TI-01		
Sample Descriptor	1107		Diluted 1:50		
Original Sample					
GERG ID	C45282		C45283		
Sample Type	SAMP		SAMP		
SDG	EC176		EC176		
PAH Compounds	**Concentration**	**MDL**	**Concentration**	**MDL**	
Naphthalene	223.16	1.57	575.84	20.08	
C1-Naphthalenes	212.32	5.03	291.51	64.23	
C2-Naphthalenes	138.03	1.30	188.57	16.59	
C3-Naphthalenes	101.56	2.74	221.02	34.92	
C4-Naphthalenes	61.57	2.74	115.73	34.92	
Biphenyl	34.77	1.06	50.90	13.57	
Acenaphthylene	58.27	1.51	285.11	19.33	
Acenaphthene	38.60	2.63	240.72	33.57	
Fluorene	101.63	1.34	351.65	17.15	
C1-Fluorenes	89.30	2.69	283.41	34.30	
C2-Fluorenes	112.97	2.69	287.44	34.30	
C3-Fluorenes	142.99	2.69	224.66	34.30	
Phenanthrene	295.54	1.30	1537.25	16.57	
Anthracene	200.15	1.45	1067.53	18.48	
C1-Phenanthrenes/Anthracenes	200.69	2.59	1406.50	33.01	
C2-Phenanthrenes/Anthracenes	174.08	2.59	950.67	33.01	
C3-Phenanthrenes/Anthracenes	156.94	2.59	454.03	33.01	
C4-Phenanthrenes/Anthracenes	182.48	2.59	209.96	33.01	
Dibenzothiophene	28.93	0.87	99.03	11.06	
C1-Dibenzothiophenes	44.81	1.73	139.45	22.12	
C2-Dibenzothiophenes	84.13	1.73	172.02	22.12	
C3-Dibenzothiophenes	101.25	1.73	128.53	22.12	
Fluoranthene	512.46	2.37	3433.23	30.23	
Pyrene	466.49	2.70	2876.93	34.51	
C1-Fluoranthenes/Pyrenes	296.78	5.07	2664.89	64.74	
C2-Fluoranthenes/Pyrenes	250.23	5.07	1287.78	64.74	
C3-Fluoranthenes/Pyrenes	153.62	5.07	505.05	64.74	
Benzo(a)anthracene	231.35	1.38	2543.06	17.61	
Chrysene	280.28	1.64	1880.11	20.90	
C1-Chrysenes	200.56	3.27	1388.11	41.80	
C2-Chrysenes	106.74	3.27	470.88	41.80	
C3-Chrysenes	52.77	3.27	109.52	41.80	
C4-Chrysenes	5.74	3.27	7.17	41.80	J
Benzo(b)fluoranthene	414.35	1.50	2427.27	19.21	
Benzo(k)fluoranthene	102.69	1.31	908.53	16.75	
Benzo(e)pyrene	213.96	1.40	1188.72	17.84	
Benzo(a)pyrene	291.94	2.33	2863.49	29.77	
Perylene	345.11	3.30	526.09	42.13	
Indeno(1,2,3-c,d)pyrene	239.80	1.92	1257.65	24.52	
Dibenz(a,h)anthracene	46.67	0.95	304.67	12.11	
Benzo(g,h,i)perylene	199.89	1.80	847.14	22.96	
2-Methylnaphthalene	151.93	2.86	213.88	36.48	
1-Methylnaphthalene	60.39	2.17	77.63	27.75	
2,6-Dimethylnaphthalene	73.13	0.65	108.63	8.29	
1,6,7-Trimethylnaphthalene	31.54	1.37	85.88	17.46	
1-Methylphenanthrene	52.47	1.29	410.27	16.51	

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

Client Sample ID	SED-TI-02	SED-TI-03
Sample Descriptor	Diluted 1:50	Diluted 1:25
Original Sample		
GERG ID	C45284	C45285
Sample Type	SAMP	SAMP
SDG	EC176	EC176
Dry Weight	13.28	12.82
Wet Weight	20.22	19.85
Sample Size Units	Grams	Grams
Matrix	Sediment	Sediment
% solid	65.7	64.6
% Lipid	ng/g	ng/g
Reporting Units	Dry	Dry
Calculation Basis (dry/wet)		
QC Batch ID	M3324	M3324
Method	GCMS	GCMS
Collection Date	12/15/04	12/15/04
Receive Date	12/16/04	12/16/04
Extraction Date	12/20/04	12/20/04
Analysis Date	01/07/05	01/07/05
Surrogate Compounds	**%Recovery**	**%Recovery** D
d8-Naphthalene		D D
d10-Acenaphthene		D D
d10-Phenanthrene		D D
d12-Chrysene		D D
d12-Perylene		D
Total PAHs	**Concentration**	**Concentration**
Total PAHs with Perylene	44021.9	27844.6
Total PAHs without Perylene	43429.6	27415.5
Total NS&T PAHs	24350.0	14988.6

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

Client Sample ID	SED-TI-02			SED-TI-03		
Sample Descriptor	Diluted 1:50			Diluted 1:25		
Original Sample						
GERG ID	C45284			C45285		
Sample Type	SAMP			SAMP		
SDG	EC176			EC176		
PAH Compounds	**Concentration**	**MDL**		**Concentration**	**MDL**	
Naphthalene	508.68	19.87		310.20	10.29	
C1-Naphthalenes	281.63	63.57		169.35	32.94	
C2-Naphthalenes	190.87	16.41		113.54	8.50	
C3-Naphthalenes	248.58	34.56		166.63	17.90	
C4-Naphthalenes	152.82	34.56		103.13	17.90	
Biphenyl	44.87	13.42		27.85	6.96	
Acenaphthylene	313.72	19.13		233.28	9.91	
Acenaphthene	201.62	33.22		102.49	17.21	
Fluorene	344.61	16.97		196.24	8.79	
C1-Fluorenes	445.35	33.94		287.91	17.59	
C2-Fluorenes	321.46	33.94		234.58	17.59	
C3-Fluorenes	307.71	33.94		163.30	17.59	
Phenanthrene	1953.35	16.39		940.19	8.49	
Anthracene	1346.79	18.29		790.74	9.47	
C1-Phenanthrenes/Anthracenes	1751.93	32.67		1097.68	16.93	
C2-Phenanthrenes/Anthracenes	1166.52	32.67		770.29	16.93	
C3-Phenanthrenes/Anthracenes	577.86	32.67		363.82	16.93	
C4-Phenanthrenes/Anthracenes	571.99	32.67		173.64	16.93	
Dibenzothiophene	111.09	10.95		60.57	5.67	
C1-Dibenzothiophenes	152.56	21.90		101.43	11.34	
C2-Dibenzothiophenes	168.54	21.90		109.88	11.34	
C3-Dibenzothiophenes	120.96	21.90		97.01	11.34	
Fluoranthene	4627.73	29.92		2814.49	15.50	
Pyrene	3858.95	34.15		2343.64	17.70	
C1-Fluoranthenes/Pyrenes	3313.93	64.07		2251.22	33.20	
C2-Fluoranthenes/Pyrenes	1481.04	64.07		1059.36	33.20	
C3-Fluoranthenes/Pyrenes	610.49	64.07		390.41	33.20	
Benzo(a)anthracene	2952.90	17.42		1883.55	9.03	
Chrysene	2182.81	20.68		1421.02	10.72	
C1-Chrysenes	1524.03	41.37		1018.23	21.43	
C2-Chrysenes	475.75	41.37		383.30	21.43	
C3-Chrysenes	81.16	41.37		55.67	21.43	
C4-Chrysenes	6.67	41.37	J	3.85	21.43	J
Benzo(b)fluoranthene	2801.12	19.01		1807.37	9.85	
Benzo(k)fluoranthene	1041.49	16.58		669.19	8.59	
Benzo(e)pyrene	1296.06	17.65		849.38	9.15	
Benzo(a)pyrene	3199.44	29.46		2094.81	15.26	
Perylene	592.29	41.70		429.14	21.60	
Indeno(1,2,3-c,d)pyrene	1392.72	24.27		913.14	12.57	
Dibenz(a,h)anthracene	336.92	11.99		219.50	6.21	
Benzo(g,h,i)perylene	962.91	22.72		623.58	11.77	
2-Methylnaphthalene	196.52	36.10		126.66	18.71	
1-Methylnaphthalene	85.11	27.47		42.69	14.23	
2,6-Dimethylnaphthalene	95.15	8.21		60.49	4.25	
1,6,7-Trimethylnaphthalene	93.47	17.28		60.63	8.95	
1-Methylphenanthrene	526.18	16.33		335.51	8.46	

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

Client Sample ID	SED-TP-01		SED-CW-01
Sample Descriptor	1206		1315
Original Sample			
GERG ID	C45286		C45287
Sample Type	SAMP		SAMP
SDG	EC176		EC176
Dry Weight	11.16		6.04
Wet Weight	19.74		19.28
Sample Size Units	Grams		Grams
Matrix	Sediment		Sediment
% solid	56.5		31.3
% Lipid	ng/g		ng/g
Reporting Units	Dry		Dry
Calculation Basis (dry/wet)			
QC Batch ID	M3324		M3324
Method	GCMS		GCMS
Collection Date	12/15/04		12/15/04
Receive Date	12/16/04		12/16/04
Extraction Date	12/20/04		12/20/04
Analysis Date	01/06/05		01/06/05
Surrogate Compounds	**%Recovery**		**%Recovery**
d8-Naphthalene	93.3		91.5
d10-Acenaphthene	98.1		117.0
d10-Phenanthrene	101.2		115.5
d12-Chrysene	112.1		102.7
d12-Perylene	10.4	Q	55.7
Total PAHs	**Concentration**		**Concentration**
Total PAHs with Perylene	948.4		9916.6
Total PAHs without Perylene	737.8		9540.8
Total NS&T PAHs	595.4		5309.6

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

Client Sample ID	SED-TP-01			SED-CW-01	
Sample Descriptor	1206			1315	
Original Sample					
GERG ID	C45286			C45287	
Sample Type	SAMP			SAMP	
SDG	EC176			EC176	
PAH Compounds	**Concentration**	**MDL**		**Concentration**	**MDL**
Naphthalene	42.05	0.47		91.35	0.87
C1-Naphthalenes	15.35	1.51		92.10	2.80
C2-Naphthalenes	8.34	0.39		64.14	0.72
C3-Naphthalenes	6.45	0.82		54.60	1.52
C4-Naphthalenes	4.93	0.82		35.14	1.52
Biphenyl	3.99	0.32		15.32	0.59
Acenaphthylene	5.00	0.46		88.37	0.84
Acenaphthene	4.68	0.79		24.62	1.46
Fluorene	12.19	0.40		53.44	0.75
C1-Fluorenes	12.16	0.81		61.09	1.49
C2-Fluorenes	12.60	0.81		63.98	1.49
C3-Fluorenes	15.36	0.81		112.91	1.49
Phenanthrene	39.93	0.39		328.81	0.72
Anthracene	20.55	0.44		234.93	0.80
C1-Phenanthrenes/Anthracenes	22.20	0.78		222.39	1.44
C2-Phenanthrenes/Anthracenes	19.32	0.78		178.36	1.44
C3-Phenanthrenes/Anthracenes	15.91	0.78		114.55	1.44
C4-Phenanthrenes/Anthracenes	19.07	0.78		53.55	1.44
Dibenzothiophene	3.03	0.26		22.80	0.48
C1-Dibenzothiophenes	3.40	0.52		30.09	0.96
C2-Dibenzothiophenes	5.48	0.52		43.96	0.96
C3-Dibenzothiophenes	5.02	0.52		42.78	0.96
Fluoranthene	61.85	0.71		857.55	1.32
Pyrene	56.52	0.81		762.64	1.50
C1-Fluoranthenes/Pyrenes	34.10	1.53		426.43	2.82
C2-Fluoranthenes/Pyrenes	24.85	1.53		286.03	2.82
C3-Fluoranthenes/Pyrenes	12.86	1.53		130.97	2.82
Benzo(a)anthracene	30.01	0.41		571.56	0.77
Chrysene	32.55	0.49		559.09	0.91
C1-Chrysenes	21.04	0.98		350.05	1.82
C2-Chrysenes	9.52	0.98		141.13	1.82
C3-Chrysenes	3.20	0.98		39.49	1.82
C4-Chrysenes	0.95	0.98	J	6.29	1.82
Benzo(b)fluoranthene	47.51	0.45		872.54	0.84
Benzo(k)fluoranthene	11.00	0.39		244.34	0.73
Benzo(e)pyrene	21.45	0.42		432.26	0.78
Benzo(a)pyrene	26.49	0.70		705.41	1.30
Perylene	210.61	0.99		375.86	1.84
Indeno(1,2,3-c,d)pyrene	23.71	0.58		567.69	1.07
Dibenz(a,h)anthracene	4.84	0.29		117.44	0.53
Benzo(g,h,i)perylene	18.35	0.54		440.56	1.00
2-Methylnaphthalene	10.99	0.86		58.34	1.59
1-Methylnaphthalene	4.36	0.65		33.76	1.21
2,6-Dimethylnaphthalene	4.98	0.20		28.16	0.36
1,6,7-Trimethylnaphthalene	2.76	0.41		17.98	0.76
1-Methylphenanthrene	7.32	0.39		59.04	0.72

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

Client Sample ID	SED-PP-01	SED-PP-02
Sample Descriptor	10:41	10:49
Original Sample		
GERG ID	C45291	C45292
Sample Type	SAMP	SAMP
SDG	F1178	F1178
Dry Weight	14.49	13.48
Wet Weight	20.67	21.75
Sample Size Units	Grams	Grams
Matrix	Sediment	Sediment
% solid	70.1	62.0
% Lipid	ng/g	ng/g
Reporting Units	Dry	Dry
Calculation Basis (dry/wet)		
QC Batch ID	M3324	M3324
Method	GCMS	GCMS
Collection Date	12/17/04	12/17/04
Receive Date	12/18/04	12/18/04
Extraction Date	12/20/04	12/20/04
Analysis Date	01/06/05	01/06/05
Surrogate Compounds	**%Recovery**	**%Recovery**
d8-Naphthalene	84.7	90.7
d10-Acenaphthene	103.6	109.1
d10-Phenanthrene	108.5	114.7
d12-Chrysene	116.4	119.0
d12-Perylene	64.7	64.9
Total PAHs	**Concentration**	**Concentration**
Total PAHs with Perylene	1333.4	1283.3
Total PAHs without Perylene	1220.8	1167.9
Total NS&T PAHs	665.5	678.1

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

Client Sample ID	SED-PP-01		SED-PP-02	
Sample Descriptor	10:41		10:49	
Original Sample GERG ID	C45291		C45292	
Sample Type	SAMP		SAMP	
SDG	F1178		F1178	
PAH Compounds	**Concentration**	**MDL**	**Concentration**	**MDL**
Naphthalene	39.44	0.36	33.89	0.39
C1-Naphthalenes	31.54	1.17	27.32	1.25
C2-Naphthalenes	17.30	0.30	15.67	0.32
C3-Naphthalenes	13.56	0.63	12.10	0.68
C4-Naphthalenes	9.62	0.63	8.14	0.68
Biphenyl	6.28	0.25	5.34	0.26
Acenaphthylene	10.03	0.35	9.55	0.38
Acenaphthene	5.66	0.61	5.20	0.65
Fluorene	15.65	0.31	14.44	0.33
C1-Fluorenes	11.92	0.62	11.77	0.67
C2-Fluorenes	17.20	0.62	15.88	0.67
C3-Fluorenes	24.85	0.62	17.07	0.67
Phenanthrene	42.56	0.30	41.92	0.32
Anthracene	34.74	0.34	33.21	0.36
C1-Phenanthrenes/Anthracenes	34.55	0.60	33.26	0.64
C2-Phenanthrenes/Anthracenes	34.17	0.60	29.45	0.64
C3-Phenanthrenes/Anthracenes	27.06	0.60	24.61	0.64
C4-Phenanthrenes/Anthracenes	18.37	0.60	29.10	0.64
Dibenzothiophene	4.31	0.20	4.00	0.22
C1-Dibenzothiophenes	7.15	0.40	6.12	0.43
C2-Dibenzothiophenes	12.85	0.40	10.80	0.43
C3-Dibenzothiophenes	15.35	0.40	13.86	0.43
Fluoranthene	77.57	0.55	76.97	0.59
Pyrene	73.74	0.63	71.40	0.67
C1-Fluoranthenes/Pyrenes	61.50	1.17	57.86	1.26
C2-Fluoranthenes/Pyrenes	55.27	1.17	43.38	1.26
C3-Fluoranthenes/Pyrenes	52.14	1.17	24.92	1.26
Benzo(a)anthracene	48.07	0.32	56.53	0.34
Chrysene	49.29	0.38	53.54	0.41
C1-Chrysenes	46.69	0.76	48.58	0.82
C2-Chrysenes	29.53	0.76	22.31	0.82
C3-Chrysenes	19.14	0.76	8.79	0.82
C4-Chrysenes	2.21	0.76	1.28	0.82
Benzo(b)fluoranthene	66.96	0.35	79.63	0.37
Benzo(k)fluoranthene	20.15	0.30	21.48	0.33
Benzo(e)pyrene	38.11	0.32	40.39	0.35
Benzo(a)pyrene	62.75	0.54	74.20	0.58
Perylene	112.55	0.76	115.34	0.82
Indeno(1,2,3-c,d)pyrene	39.89	0.44	41.68	0.48
Dibenz(a,h)anthracene	9.07	0.22	9.34	0.24
Benzo(g,h,i)perylene	34.60	0.42	32.95	0.45
2-Methylnaphthalene	23.05	0.66	19.83	0.71
1-Methylnaphthalene	8.49	0.50	7.49	0.54
2,6-Dimethylnaphthalene	9.89	0.15	8.93	0.16
1,6,7-Trimethylnaphthalene	4.52	0.32	4.12	0.34
1-Methylphenanthrene	8.56	0.30	10.09	0.32

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

Client Sample ID	SED-PP-03
Sample Descriptor	10:58
Original Sample	
GERG ID	C45293
Sample Type	SAMP
SDG	F1178

Dry Weight	15.04
Wet Weight	22.92
Sample Size Units	Grams
Matrix	Sediment
% solid	65.6
% Lipid	ng/g
Reporting Units	Dry
Calculation Basis (dry/wet)	

QC Batch ID	M3324
Method	GCMS
Collection Date	12/17/04
Receive Date	12/18/04
Extraction Date	12/20/04
Analysis Date	01/06/05

Surrogate Compounds	**%Recovery**
d8-Naphthalene	76.6
d10-Acenaphthene	88.0
d10-Phenanthrene	104.4
d12-Chrysene	104.0
d12-Perylene	46.8

Total PAHs	**Concentration**
Total PAHs with Perylene	2104.3
Total PAHs without Perylene	1965.1
Total NS&T PAHs	1063.0

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

Client Sample ID	SED-PP-03
Sample Descriptor	10:58
Original Sample	
GERG ID	C45293
Sample Type	SAMP
SDG	F1178

PAH Compounds	Concentration	MDL
Naphthalene	59.02	0.35
C1-Naphthalenes	49.79	1.12
C2-Naphthalenes	30.01	0.29
C3-Naphthalenes	22.67	0.61
C4-Naphthalenes	16.62	0.61
Biphenyl	11.71	0.24
Acenaphthylene	17.26	0.34
Acenaphthene	7.61	0.59
Fluorene	26.80	0.30
C1-Fluorenes	19.65	0.60
C2-Fluorenes	27.87	0.60
C3-Fluorenes	45.45	0.60
Phenanthrene	74.13	0.29
Anthracene	48.56	0.32
C1-Phenanthrenes/Anthracenes	53.96	0.58
C2-Phenanthrenes/Anthracenes	51.68	0.58
C3-Phenanthrenes/Anthracenes	49.12	0.58
C4-Phenanthrenes/Anthracenes	53.38	0.58
Dibenzothiophene	7.59	0.19
C1-Dibenzothiophenes	11.04	0.39
C2-Dibenzothiophenes	21.80	0.39
C3-Dibenzothiophenes	27.01	0.39
Fluoranthene	129.45	0.53
Pyrene	120.57	0.60
C1-Fluoranthenes/Pyrenes	98.28	1.13
C2-Fluoranthenes/Pyrenes	72.30	1.13
C3-Fluoranthenes/Pyrenes	48.55	1.13
Benzo(a)anthracene	100.57	0.31
Chrysene	76.94	0.37
C1-Chrysenes	73.85	0.73
C2-Chrysenes	36.19	0.73
C3-Chrysenes	15.78	0.73
C4-Chrysenes	1.43	0.73
Benzo(b)fluoranthene	113.55	0.34
Benzo(k)fluoranthene	36.54	0.29
Benzo(e)pyrene	62.70	0.31
Benzo(a)pyrene	104.52	0.52
Perylene	139.18	0.74
Indeno(1,2,3-c,d)pyrene	69.57	0.43
Dibenz(a,h)anthracene	15.64	0.21
Benzo(g,h,i)perylene	55.92	0.40
2-Methylnaphthalene	36.61	0.64
1-Methylnaphthalene	13.18	0.49
2,6-Dimethylnaphthalene	19.31	0.14
1,6,7-Trimethylnaphthalene	7.73	0.31
1-Methylphenanthrene	16.45	0.29

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

E.3. Alkane Anayses of Intertidal Sediment Samples

Client Sample ID	MDL	SED-RC-01		SED-RC-02		SED-RC-03	
Dry Weight	15.1	4.37		4.63		3.36	
Wet Weight		18.32		19.99		20.14	
Sample Size Units	Grams	Grams		Grams		Grams	
Matrix	Sediment	Sediment		Sediment		Sediment	
% solid		23.9		23.2		16.7	
Reporting Units	ng/g	ng/g		ng/g		ng/g	
Calculation Basis (dry/wet)	Dry	Dry		Dry		Dry	
QC Batch ID		M3324		M3324		M3324	
Method		GCFID		GCFID		GCFID	
Collection Date		12/14/04		12/14/04		12/14/04	
Receive Date		12/16/04		12/16/04		12/16/04	
Extraction Date		12/20/04		12/20/04		12/20/04	
Analysis Date		01/08/05		01/08/05		01/08/05	
Surrogate Compounds		**%Recovery**		**%Recovery**		**%Recovery**	
d26-C12		63.0		75.0		72.0	
d42-C20		75.0		77.0		87.0	
d50-C24		44.0		62.0		67.0	
d62-C30		225.0		55.0		74.0	
Alkanes		**Concentration**	**MDL**	**Concentration**	**MDL**	**Concentration**	**MDL**
n-C10	5.7	118.3	19.7	167.9	18.6	161.1	25.7
n-C11	10.5	142.1	36.3	178.4	34.3	191.3	47.3
n-C12	18.4	271.2	63.5	111.6	60.0	126.3	82.7
n-C13	5.3	185.0	18.3	236.7	17.3	255.0	23.9
n-C14	7.0	111.8	24.2	159.9	22.8	153.8	31.5
n-C15	23.9	1069.8	82.2	2879.4	77.6	610.9	107.1
n-C16	34.5	154.5	119.0	167.3	112.4	189.0	155.0
n-C17	24.9	3201.3	85.9	1763.1	81.1	2209.4	111.8
Pristane	20.1	228.3	69.1	213.1	65.3	212.8	90.1
n-C18	34.0	367.7	117.3	421.6	110.8	333.0	152.8
Phytane	7.2	206.3	24.9	302.0	23.5	334.7	32.4
n-C19	21.8	244.8	75.2	300.5	71.0	343.1	97.9
n-C20	25.7	409.7	88.5	443.5	83.5	569.5	115.2
n-C21	25.6	521.6	88.2	745.6	83.3	693.2	114.9
n-C22	18.8	389.3	64.7	574.8	61.2	555.4	84.3
n-C23	14.8	2035.7	51.0	1804.4	48.2	2325.7	66.4
n-C24	25.0	450.0	86.2	505.0	81.4	537.9	112.3
n-C25	9.4	2827.2	32.5	2616.7	30.7	3474.9	42.3
n-C26	8.6	908.7	29.5	800.9	27.9	1053.8	38.5
n-C27	6.5	4497.4	22.5	4069.8	21.2	5336.8	29.3
n-C28	19.9	1098.9	68.5	1260.5	64.7	1237.5	89.2
n-C29	8.7	8356.1	29.9	7150.6	28.2	8323.8	38.9
n-C30	25.9	1291.0	89.1	1223.3	84.2	1415.6	116.1
n-C31	10.1	6191.8	34.8	5372.8	32.9	5997.9	45.3
n-C32	21.3	883.1	73.5	767.4	69.5	803.8	95.8
n-C33	4.8	1652.3	16.6	1874.7	15.7	1745.3	21.6
n-C34	26.3	308.3	90.6	801.4	85.6	1148.3	118.0
n-C35	7.5	436.5	25.7	791.1	24.3	496.1	33.5
Total Alkanes		38558.6		37703.9		40835.8	
Reporting Units	ug/g	ug/g		ug/g		ug/g	
Total Resolved	0.5	137.2	1.7	132.5	1.6	154.9	2.2
Total UCM	10.0	819.1	34.5	669.6	32.6	669.6	44.9
Total TPH	10.0	956.2	34.5	802.1	32.6	824.4	44.9

Client Sample ID	MDL	SED-TI-01		SED-TI-02		SED-TI-03	
Sample Descriptor							
Original Sample							
GERG ID		C45283		C45284		C45285	
Sample Type	MDL	SAMP		SAMP		SAMP	
SDG		EC176		EC176		EC176	
Dry Weight	15.1	13.15		13.28		12.82	
Wet Weight		18.64		20.22		19.85	
Sample Size Units	Grams	Grams		Grams		Grams	
Matrix	Sediment	Sediment		Sediment		Sediment	
% solid		70.5		65.7		64.6	
% Lipid							
Reporting Units	ng/g	ng/g		ng/g		ng/g	
Calculation Basis (dry/wet)	Dry	Dry		Dry		Dry	
QC Batch ID		M3324		M3324		M3324	
Method		GCFID		GCFID		GCFID	
Collection Date		12/15/04		12/15/04		12/15/04	
Receive Date		12/16/04		12/16/04		12/16/04	
Extraction Date		12/20/04		12/20/04		12/20/04	
Analysis Date		01/08/05		01/08/05		01/08/05	
Surrogate Compounds		**%Recovery**		**%Recovery**		**%Recovery**	
d26-C12		75.0		75.0		55.0	
d42-C20		76.0		75.0		80.0	
d50-C24		81.0		77.0		109.0	
d62-C30		60.0		77.0		83.0	
Alkanes		**Concentration**	**MDL**	**Concentration**	**MDL**	**Concentration**	**MDL**
n-C10	5.7	146.5	6.6	126.5	6.5	95.0	6.7
n-C11	10.5	110.4	12.1	93.9	12.0	71.5	12.4
n-C12	18.4	110.7	21.1	105.6	20.9	68.0	21.6
n-C13	5.3	413.9	6.1	341.8	6.0	210.8	6.3
n-C14	7.0	100.7	8.0	105.6	8.0	67.3	8.3
n-C15	23.9	115.0	27.3	117.7	27.1	88.7	28.0
n-C16	34.5	139.5	39.6	147.4	39.2	97.4	40.6
n-C17	24.9	104.9	28.6	148.7	28.3	113.3	29.3
Pristane	20.1	123.9	23.0	65.2	22.8	90.9	23.6
n-C18	34.0	63.4	39.0	35.7	38.6	27.3	40.0
Phytane	7.2	32.5	8.3	41.1	8.2	40.2	8.5
n-C19	21.8	692.2	25.0	746.4	24.7	435.4	25.6
n-C20	25.7	46.6	29.4	76.8	29.1	51.3	30.2
n-C21	25.6	292.7	29.3	425.7	29.0	245.9	30.1
n-C22	18.8	174.5	21.5	227.4	21.3	148.5	22.1
n-C23	14.8	34.7	17.0	116.0	16.8	157.0	17.4
n-C24	25.0	1005.2	28.7	1195.4	28.4	738.6	29.4
n-C25	9.4	192.6	10.8	271.8	10.7	264.0	11.1
n-C26	8.6	659.9	9.8	663.5	9.7	457.5	10.1
n-C27	6.5	171.2	7.5	269.4	7.4	315.7	7.7
n-C28	19.9	1624.8	22.8	2727.5	22.6	2252.2	23.4
n-C29	8.7	192.0	9.9	333.3	9.8	479.1	10.2
n-C30	25.9	7.4	29.6	17.4	29.3	1.1	30.4
n-C31	10.1	129.4	11.6	342.0	11.5	328.1	11.9
n-C32	21.3	122.7	24.5	128.3	24.2	149.0	25.1
n-C33	4.8	247.9	5.5	317.9	5.5	314.1	5.7
n-C34	26.3	163.9	30.1	129.9	29.8	475.2	30.9
n-C35	7.5	134.3	8.5	104.1	8.5	115.2	8.8
Total Alkanes		7353.1		9421.7		7898.1	
Reporting Units	ug/g	ug/g		ug/g		ug/g	
Total Resolved	0.5	66.6	0.6	71.2	0.6	45.5	0.6
Total UCM	10.0	218.2	11.5	218.2	11.3	191.0	11.8
Total TPH	10.0	284.9	11.5	289.4	11.3	236.5	11.8

Client Sample ID	MDL	SED-TP-01		SED-CW-01		SED-PP-01	
Sample Descriptor							
Original Sample							
GERG ID		C45286		C45287		C45291	
Sample Type	MDL	SAMP		SAMP		SAMP	
SDG		EC176		EC176		EC178	
Dry Weight	15.1	11.16		6.04		14.49	
Wet Weight		19.74		19.28		20.67	
Sample Size Units	Grams	Grams		Grams		Grams	
Matrix	Sediment	Sediment		Sediment		Sediment	
% solid		56.5		31.3		70.1	
% Lipid							
Reporting Units	ng/g	ng/g		ng/g		ng/g	
Calculation Basis (dry/wet)	Dry	Dry		Dry		Dry	
QC Batch ID		M3324		M3324		M3324	
Method		GCFID		GCFID		GCFID	
Collection Date		12/15/04		12/15/04		12/17/04	
Receive Date		12/16/04		12/16/04		12/18/04	
Extraction Date		12/20/04		12/20/04		12/20/04	
Analysis Date		01/08/05		01/08/05		01/08/05	
Surrogate Compounds		**%Recovery**		**%Recovery**		**%Recovery**	
d26-C12		81.0		77.0		82.0	
d42-C20		101.0		104.0		90.0	
d50-C24		85.0		83.0		86.0	
d62-C30		64.0		497.0		86.0	
Alkanes		**Concentration**	**MDL**	**Concentration**	**MDL**	**Concentration**	**MDL**
n-C10	5.7	25.8	7.7	48.9	14.3	146.1	6.0
n-C11	10.5	37.5	14.2	51.1	26.3	155.1	11.0
n-C12	18.4	23.5	24.9	168.5	46.0	82.4	19.2
n-C13	5.3	11.0	7.2	43.8	13.3	52.2	5.5
n-C14	7.0	14.2	9.5	64.2	17.5	26.2	7.3
n-C15	23.9	23.0	32.2	237.8	59.5	26.0	24.8
n-C16	34.5	13.4	46.6	104.9	86.2	34.3	35.9
n-C17	24.9	52.9	33.6	650.7	62.2	65.4	25.9
Pristane	20.1	2.2	27.1	117.0	50.1	23.2	20.9
n-C18	34.0	27.8	45.9	223.2	85.0	39.4	35.4
Phytane	7.2	23.0	9.7	153.7	18.0	29.0	7.5
n-C19	21.8	53.5	29.4	213.2	54.4	45.7	22.7
n-C20	25.7	58.0	34.6	310.5	64.1	25.3	26.7
n-C21	25.6	146.1	34.5	506.9	63.9	63.7	26.6
n-C22	18.8	92.3	25.4	245.0	46.9	29.4	19.5
n-C23	14.8	541.5	20.0	982.1	36.9	155.3	15.4
n-C24	25.0	185.5	33.8	488.5	62.4	58.2	26.0
n-C25	9.4	736.0	12.7	1868.1	23.5	238.5	9.8
n-C26	8.6	206.6	11.6	562.5	21.4	103.7	8.9
n-C27	6.5	1082.0	8.8	3997.0	16.3	363.0	6.8
n-C28	19.9	322.3	26.8	1019.7	49.6	131.6	20.7
n-C29	8.7	1655.1	11.7	9598.2	21.6	591.6	9.0
n-C30	25.9	238.7	34.9	1140.2	64.5	155.2	26.9
n-C31	10.1	1373.9	13.6	7976.1	25.2	548.5	10.5
n-C32	21.3	229.9	28.8	596.5	53.3	223.6	22.2
n-C33	4.8	544.5	6.5	2862.9	12.0	262.8	5.0
n-C34	26.3	89.4	35.5	813.6	65.6	65.7	27.3
n-C35	7.5	200.3	10.1	729.0	18.6	111.4	7.8
Total Alkanes		8009.9		35773.5		3852.4	
Reporting Units	ug/g	ug/g		ug/g		ug/g	
Total Resolved	0.5	20.5	0.7	120.4	1.2	11.6	0.5
Total UCM	10.0	36.1	13.5	318.4	25.0	83.3	10.4
Total TPH	10.0	56.6	13.5	438.9	25.0	94.9	10.4

Client Sample ID	MDL	SED-PP-02		SED-PP-03	
Sample Descriptor					
Original Sample					
GERG ID		C45292		C45293	
Sample Type	MDL	SAMP		SAMP	
SDG		EC178		EC178	
Dry Weight	15.1	13.48		15.04	
Wet Weight		21.75		22.92	
Sample Size Units	Grams	Grams		Grams	
Matrix	Sediment	Sediment		Sediment	
% solid		62.0		65.6	
% Lipid					
Reporting Units	ng/g	ng/g		ng/g	
Calculation Basis (dry/wet)	Dry	Dry		Dry	
QC Batch ID		M3324		M3324	
Method		GCFID		GCFID	
Collection Date		12/17/04		12/17/04	
Receive Date		12/18/04		12/18/04	
Extraction Date		12/20/04		12/20/04	
Analysis Date		01/08/05		01/08/05	
Surrogate Compounds		**%Recovery**		**%Recovery**	
d26-C12		87.0		83.0	
d42-C20		94.0		95.0	
d50-C24		90.0		85.0	
d62-C30		84.0		83.0	
Alkanes		**Concentration**	**MDL**	**Concentration**	**MDL**
n-C10	5.7	65.3	6.4	53.6	5.7
n-C11	10.5	66.2	11.8	59.1	10.6
n-C12	18.4	47.3	20.6	45.4	18.5
n-C13	5.3	15.2	5.9	48.8	5.3
n-C14	7.0	19.6	7.8	24.2	7.0
n-C15	23.9	20.1	26.7	26.0	23.9
n-C16	34.5	14.6	38.6	19.4	34.6
n-C17	24.9	59.4	27.9	58.5	25.0
Pristane	20.1	20.2	22.4	33.1	20.1
n-C18	34.0	58.6	38.1	29.9	34.1
Phytane	7.2	25.5	8.1	35.0	7.2
n-C19	21.8	48.3	24.4	65.3	21.8
n-C20	25.7	27.0	28.7	30.2	25.7
n-C21	25.6	66.9	28.6	80.8	25.6
n-C22	18.8	36.0	21.0	31.2	18.8
n-C23	14.8	196.6	16.5	151.6	14.8
n-C24	25.0	108.5	28.0	82.6	25.1
n-C25	9.4	311.9	10.5	294.7	9.4
n-C26	8.6	125.9	9.6	116.3	8.6
n-C27	6.5	468.2	7.3	429.0	6.5
n-C28	19.9	166.5	22.2	160.3	19.9
n-C29	8.7	672.0	9.7	692.3	8.7
n-C30	25.9	141.2	28.9	184.4	25.9
n-C31	10.1	606.7	11.3	639.6	10.1
n-C32	21.3	311.0	23.9	242.6	21.4
n-C33	4.8	263.3	5.4	283.2	4.8
n-C34	26.3	47.9	29.4	8.6	26.3
n-C35	7.5	144.1	8.3	147.4	7.5
Total Alkanes		4153.7		4073.1	
Reporting Units	ug/g	ug/g		ug/g	
Total Resolved	0.5	15.2	0.6	10.9	0.5
Total UCM	10.0	63.3	11.2	104.2	10.0
Total TPH	10.0	78.5	11.2	115.1	10.0

E.4. Total organic carbon analyses of intertidal sediment samples.

GERG ID	Sample Description	Matrix	Sample Type	Collection Date	Collection Time	SDG	Receipt Date	QC Batch	Preparation Date	Analysis Date	% Dry Wt	Dry Wt	% TOC	DL	Qual	RPD	% Recov
Samples																	
C45280	SED-RC-01	Sediment	SAMP	12/14/2004	1020	EC176	12/16/2004	TOC517	6/20/2005	6/23/2005	23.9	0.101	5.34	0.12			
C45281	SED-RC-02	Sediment	SAMP	12/14/2004	1036	EC176	12/16/2004	TOC517	6/20/2005	6/23/2005	23.2	0.104	4.88	0.12			
C45282	SED-RC-03	Sediment	SAMP	12/14/2004	1107	EC176	12/16/2004	TOC517	6/20/2005	6/23/2005	16.7	0.100	7.66	0.12			
C45283	SED-TI-01	Sediment	SAMP	12/15/2004	1022	EC176	12/16/2004	TOC517	6/20/2005	6/23/2005	70.5	0.102	4.00	0.12			
C45284	SED-TI-02	Sediment	SAMP	12/15/2004	1026	EC176	12/16/2004	TOC517	6/20/2005	6/23/2005	65.7	0.101	2.71	0.12			
C45285	SED-TI-03	Sediment	SAMP	12/15/2004	1030	EC176	12/16/2004	TOC517	6/20/2005	6/23/2005	64.6	0.102	2.37	0.12			
C45286	SED-TP-01	Sediment	SAMP	12/15/2004	1206	EC176	12/16/2004	TOC517	6/20/2005	6/23/2005	56.5	0.101	1.53	0.12			
C45287	SED-CW-01	Sediment	SAMP	12/15/2004	1315	EC176	12/16/2004	TOC517	6/20/2005	6/23/2005	31.3	0.101	5.24	0.12			
C45291	SED-PP-01	Sediment	SAMP	12/17/2004	1041	F1178	12/18/2004	TOC517	6/20/2005	6/23/2005	70.1	0.102	0.81	0.12			
C45292	SED-PP-02	Sediment	SAMP	12/17/2004	1049	F1178	12/18/2004	TOC517	6/20/2005	6/23/2005	62.0	0.102	1.11	0.12			
C45293	SED-PP-03	Sediment	SAMP	12/17/2004	1058	F1178	12/18/2004	TOC517	6/20/2005	6/23/2005	65.6	0.101	1.24	0.12			
QA																	
Proc Blanks																	
PB062305E	Preparation Blank	Sediment	BLANK					TOC517	6/20/2005	6/23/2005		0.300	0.04	0.04	J		
Duplicates																	
C45280	SED-RC-01	Sediment	SAMP	12/14/2004	1020	EC176	12/16/2004	TOC517	6/20/2005	6/23/2005	23.9	0.101	5.34	0.12			
C45280D	SED-RC-01	Sediment	DUP	12/14/2004	1020	EC176	12/16/2004	TOC517	6/20/2005	6/23/2005	23.9	0.100	5.91	0.12		10.2%	
SRM	(Certified value 4.4%)																
SRM062305	NIST 1944	Sediment	SRM					TOC517	6/20/2005	6/23/2005		0.103	3.89	0.12			88.4%
SRM062305D	NIST 1944	Sediment	SRM					TOC517	6/20/2005	6/23/2005		0.100	3.39	0.12		13.7%	77.0%

E.5. Biomarker Analyses

STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill
Lab Sample ID: C45280
Sample Descriptor: SED-RC-01
Analysis Date: 1/7/2005

No.	COMPOUND NAME	RT	ION	AREA	CONC	%
	TERPANES				(ng/g)	
H	C19 TRICYCLIC TERPANE	28.94	191	1271	12.67	0.5
A	C20 TRICYCLIC TERPANE	30.71	191	13714	136.66	5.5
B	C21 TRICYCLIC TERPANE	32.57	191	8137	81.09	3.3
C	C22 TRICYCLIC TERPANE	34.42	191	3023	30.12	1.2
D	C23 TRICYCLIC TERPANE	36.73	191	18654	185.89	7.5
E	C24 TRICYCLIC TERPANE	37.98	191	10001	99.66	4.0
1	C25 TRICYCLIC TERPANE	40.64	191	11477	114.37	4.6
4	C24 TETRACYCLIC TERPANE	42.57	191	7376	73.50	3.0
5	C26 TRICYCLIC TERPANE (22R)	42.64	191	2987	29.77	1.2
6	C26 TRICYCLIC TERPANE (22S)	42.78	191	4202	41.87	1.7
9	C28 TRICYCLIC TERPANE (22R)	44.32	191	1637	16.31	0.7
10	C28 TRICYCLIC TERPANE (22S)	45.11	191	556	5.54	0.2
11	C29 TRICYCLIC TERPANE (22R)	47.25	191	6004	59.83	2.4
12	C29 TRICYCLIC TERPANE (22S)	47.52	191	3064	30.53	1.2
13	C27 18a-22,29,30-TRISNORNEOHOPANE (Ts)	49.86	191	9353	93.20	3.8
I	C27 PENTACYCLIC TERPANE (Y)	50.52	191	233	2.32	0.1
14	C27 17a-22,29,30-TRISNORHOPANE (Tm)	50.79	191	10511	104.74	4.2
15	C30 TRICYCLIC TERPANE (22R)	51.08	191	3714	37.01	1.5
16	C30 TRICYCLIC TERPANE (22S)	51.34	191	1610	16.04	0.6
17	C28 17a,21b-28,30-BISNORHOPANE	52.87	191	4476	44.60	1.8
J	C29 17a,21b-25-NORHOPANE	52.97	191	314	3.13	0.1
19	C29 17a,21b-30-NORHOPANE	53.61	191	26165	260.74	10.5
20	C29 18a-NORNEOHOPANE (29Ts)	53.69	191	4429	44.14	1.8
F	C30 DIAHOPANE	54.04	191	2005	19.98	0.8
21	C29 17b,21a-30-NORMORETANE	54.70	191	4836	48.19	1.9
22	C30 18a-OLEANANE	55.03	191	3784	37.71	1.5
23	C30 17a,21b-HOPANE	55.36	191	28847	287.46	11.6
24	C30 17b,21a-MORETANE	56.20	191	5149	51.31	2.1
27	C31 17a,21b-HOMOHOPANE (22S)	57.40	191	9460	94.27	3.8
28	C31 17a,21b-HOMOHOPANE(22R)	57.64	191	7361	73.35	3.0
G	C30 GAMMACERANE	58.04	191	2519	25.10	1.0
30	C32 17a,21b-HOMOHOPANE (22S)	58.94	191	3356	33.44	1.4
31	C32 17a,21b-HOMOHOPANE (22R)	59.33	191	3525	35.13	1.4
34	C33 17a,21b-HOMOHOPANE (22S)	60.92	191	3552	35.40	1.4
35	C33 17a,21b-HOMOHOPANE (22R)	61.35	191	2516	25.07	1.0
36	C34 17a,21b-HOMOHOPANE (22S)	62.61	191	7021	69.96	2.8
37	C34 17a,21b-HOMOHOPANE (22R)	63.33	191	8712	86.82	3.5
38	C35 17a,21b-HOMOHOPANE (22S)	64.93	191	1975	19.68	0.8
39	C35 17a,21b-HOMOHOPANE (22R)	65.67	191	844	8.41	0.3

STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill
Lab Sample ID: C45280
Sample Descriptor: SED-RC-01
Analysis Date: 1/7/2005

No.	COMPOUND NAME	RT	ION	AREA	CONC	%
	STERANES				(ng/mg)	
A	C21 DIAPREGNANE	0.00	217	0	0.00	0.0
1	C21 PREGNANE	34.81	217	4724	71.45	7.9
B	C22 DIAHOMOPREGNANE	34.94	217	2399	36.28	4.0
2	C22 HOMOPREGNANE	37.36	217	3160	47.80	5.3
3	C27 13b,17a DIASTERANE (20S)	44.98	217	3943	60.34	6.6
4	C27 13b,17a DIASTERANE (20R)	45.70	217	2306	35.29	3.9
8	C27 13a,17b DIASTERANE (20S)	46.32	217	1249	19.12	2.1
9	C27 13a,17b DIASTERANE (20R)	46.67	217	1597	24.44	2.7
10	C28 13b,17a DIASTERANE (20S) (24R/24S ?)	47.60	217	215	3.29	0.4
11	C28 13b,17a DIASTERANE (20S) (24R/24S ?)	47.80	217	1566	23.97	2.6
14+15	C28 13b,17a DIASTERANE (20R) (24R/24S ?)	48.17	217	637	9.75	1.1
16	C28 13a,17b DIASTERANE (20S)	48.34	217	626	9.70	1.1
17	C27 5a,14a,17a STERANE (20S)	48.42	217	2862	44.33	4.9
18	C27 5a,14b,17b ISOSTERANE (20R) + C29 13b,17a DIASTERANE (20S)	48.61	217	2451	37.96	4.2
19	C27 5a,14b,17b ISOSTERANE (20S)	48.83	217	2502	38.75	4.3
20	C28 13a,17b DIASTERANE (20R)	49.02	217	385	5.96	0.7
22	C27 5a,14a,17a STERANE (20R)	49.24	217	1711	26.50	2.9
23	C29 13b,17a DIASTERANE (20R)	49.51	217	3105	48.09	5.3
24	C29 13a,17b DIASTERANE (20S)	49.94	217	1650	25.56	2.8
26	C28 5a,14a,17a STERANE (20S)	50.48	217	883	14.58	1.6
27	C29 13a,17b DIASTERANE (20R)	50.60	217	1458	24.07	2.7
28	C28 5a,14b,17b ISOSTERANE (20R)	50.79	217	2324	38.37	4.2
29	C28 5a,14b,17b ISOSTERANE (20S)	50.99	217	2142	35.36	3.9
31	C28 5a,14a,17a STERANE (20R)	51.55	217	1036	17.10	1.9
33	C29 5a,14a,17a STERANE (20S)	52.35	217	72	1.27	0.1
34	C29 5a,14b,17b ISOSTERANE (20R)	52.56	217	2899	51.24	5.6
35	C29 5a,14b,17b ISOSTERANE (20S)	52.74	217	2325	41.10	4.5
37	C29 5a,14a,17a STERANE (20R)	53.42	217	1983	35.05	3.9
38	C30 5a,14a,17a STERANE (20S)	53.61	217	1263	22.33	2.5
39	C30 5a,14b,17b ISOSTERANE (20R)	54.04	217	215	3.80	0.4
40	C30 5a,14b,17b ISOSTERANE (20S)	54.23	217	1292	22.84	2.5
41	C30 5a,14a,17a STERANE (20R)	54.95	217	1826	32.28	3.6

Percent composition data for saturated biomarkers are based on concentration data

STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill
Lab Sample ID: C45280
Sample Descriptor: SED-RC-01
Analysis Date: 1/7/2005

PARAMETERS

A:LEVEL OF MATURITY

Steranes		Terpanes	
% 20S C29 STERANES	3.5	% 22S C31 HOMOHOPANE	56.2
% C29 ISOSTERANES (abb)	71.8	% C30 HOPANE	84.9
% REGULAR STERANES	21.3	% TS/TS+TM (C27)	47.1
% ISOSTERANES	27.6	TS/TM (C27)	0.89
% DIASTERANES	34.0	% C30 MORETANE	15.1
% SHORT-CHAIN STERANES	17.1	% C29 NORMORETANE	15.6
		DIAHOPANE INDEX (%)	6.5
		% TRICYCLIC TERPANES	36.3

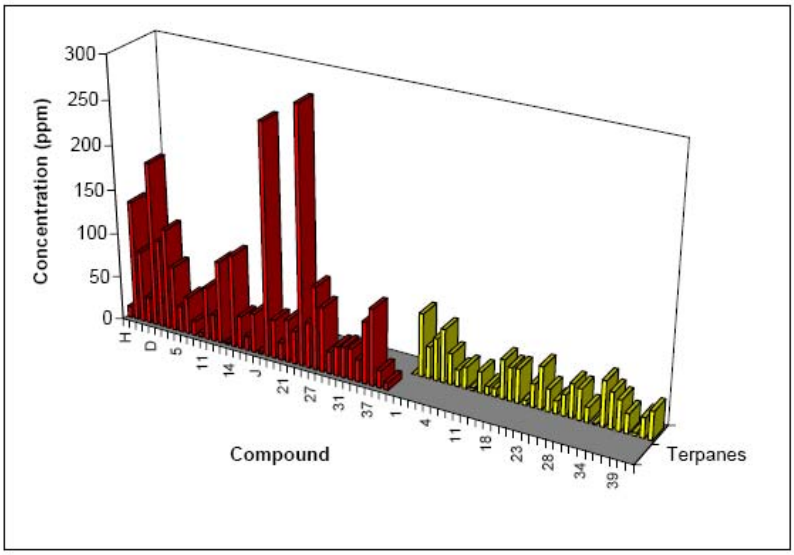
B:ORGANIC FACIES AND DEPOSITIONAL ENVIRONMENT

% TOTAL C20+C21	17.1	OLEANANE INDEX (%)	11.6
% TOTAL C27	29.5	GAMMACERANE INDEX (%)	8.0
% TOTAL C28	17.4	BISNORHOPANE INDEX (%)	13.4
% TOTAL C29	27.0	25-NORHOPANE INDEX (%)	1.1
% TOTAL C30	8.9	DIAHOPANE INDEX (%)	6.5
HOPANES/STERANES	2.7	% TRICYCLIC TERPANES	36.3
% DIASTERANES	34.0	% C24 TETRACYCLIC TERPANE	20.4
TOTAL STERANES (ppm)	908	% MORETANES	15.4
		% TOTAL C31 PENTACYCLICS	34.8
Other Biological Markers		% TOTAL C32 PENTACYCLICS	14.2
		% TOTAL C33 PENTACYCLICS	12.6
b-Carotane (ppm)	3.0	% TOTAL C34 PENTACYCLICS	32.6
		% TOTAL C35 PENTACYCLICS	5.8
		C35/C34 HOMOHOPANES	0.18
		29/30 HOPANES	0.91
		TOTAL TRITERPANES (ppm)	2475.0

All ratios based on concentrations

STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill
Lab Sample ID: C45280
Sample Descriptor: SED-RC-01
Analysis Date: 1/7/2005



STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill
Lab Sample ID: C45281
Sample Descriptor: SED-RC-02
Analysis Date: 1/8/2005

No.	COMPOUND NAME	RT	ION	AREA	CONC	%
	TERPANES				(ng/g)	
H	C19 TRICYCLIC TERPANE	28.96	191	1062	8.95	0.5
A	C20 TRICYCLIC TERPANE	30.71	191	9620	81.05	4.1
B	C21 TRICYCLIC TERPANE	32.57	191	4124	34.74	1.8
C	C22 TRICYCLIC TERPANE	34.42	191	2169	18.27	0.9
D	C23 TRICYCLIC TERPANE	36.72	191	11482	96.73	4.9
E	C24 TRICYCLIC TERPANE	37.98	191	6526	54.98	2.8
1	C25 TRICYCLIC TERPANE	40.64	191	7702	64.89	3.3
4	C24 TETRACYCLIC TERPANE	42.57	191	6009	50.62	2.6
5	C26 TRICYCLIC TERPANE (22R)	42.63	191	1933	16.28	0.8
6	C26 TRICYCLIC TERPANE (22S)	42.78	191	2816	23.72	1.2
9	C28 TRICYCLIC TERPANE (22R)	44.34	191	1671	14.08	0.7
10	C28 TRICYCLIC TERPANE (22S)	45.12	191	868	7.31	0.4
11	C29 TRICYCLIC TERPANE (22R)	47.25	191	3921	33.03	1.7
12	C29 TRICYCLIC TERPANE (22S)	47.51	191	2275	19.17	1.0
13	C27 18a-22,29,30-TRISNORNEOHOPANE (Ts)	49.86	191	9293	78.29	4.0
I	C27 PENTACYCLIC TERPANE (Y)	50.50	191	138	1.16	0.1
14	C27 17a-22,29,30-TRISNORHOPANE (Tm)	50.79	191	10255	86.40	4.4
15	C30 TRICYCLIC TERPANE (22R)	51.08	191	3101	26.12	1.3
16	C30 TRICYCLIC TERPANE (22S)	51.34	191	1376	11.59	0.6
17	C28 17a,21b-28,30-BISNORHOPANE	52.87	191	3594	30.28	1.5
J	C29 17a,21b-25-NORHOPANE	52.95	191	104	0.88	0.0
19	C29 17a,21b-30-NORHOPANE	53.61	191	28600	240.95	12.2
20	C29 18a-NORNEOHOPANE (29Ts)	53.69	191	5011	42.22	2.1
F	C30 DIAHOPANE	54.02	191	1788	15.06	0.8
21	C29 17b,21a-30-NORMORETANE	54.68	191	6126	51.61	2.6
22	C30 18a-OLEANANE	55.03	191	4820	40.61	2.1
23	C30 17a,21b-HOPANE	55.36	191	31441	264.88	13.5
24	C30 17b,21a-MORETANE	56.20	191	6747	56.84	2.9
27	C31 17a,21b-HOMOHOPANE (22S)	57.40	191	10199	85.92	4.4
28	C31 17a,21b-HOMOHOPANE(22R)	57.64	191	8503	71.64	3.6
G	C30 GAMMACERANE	58.05	191	2495	21.02	1.1
30	C32 17a,21b-HOMOHOPANE (22S)	58.94	191	3390	28.56	1.5
31	C32 17a,21b-HOMOHOPANE (22R)	59.35	191	4039	34.03	1.7
34	C33 17a,21b-HOMOHOPANE (22S)	60.92	191	4796	40.40	2.1
35	C33 17a,21b-HOMOHOPANE (22R)	61.35	191	4118	34.69	1.8
36	C34 17a,21b-HOMOHOPANE (22S)	62.61	191	7313	61.61	3.1
37	C34 17a,21b-HOMOHOPANE (22R)	63.33	191	11222	94.54	4.8
38	C35 17a,21b-HOMOHOPANE (22S)	64.93	191	1675	14.11	0.7
39	C35 17a,21b-HOMOHOPANE (22R)	65.67	191	1271	10.71	0.5

STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill
Lab Sample ID: C45281
Sample Descriptor: SED-RC-02
Analysis Date: 1/8/2005

No.	COMPOUND NAME	RT	ION	AREA	CONC	%
	STERANES				(ng/mg)	
A	C21 DIAPREGNANE	33.06	217	1550	19.82	2.8
1	C21 PREGNANE	34.79	217	2819	36.05	5.2
B	C22 DIAHOMOPREGNANE	34.91	217	1266	16.19	2.3
2	C22 HOMOPREGNANE	37.36	217	1856	23.73	3.4
3	C27 13b,17a DIASTERANE (20S)	44.98	217	3492	45.18	6.5
4	C27 13b,17a DIASTERANE (20R)	45.70	217	2062	26.68	3.8
8	C27 13a,17b DIASTERANE (20S)	46.34	217	1125	14.56	2.1
9	C27 13a,17b DIASTERANE (20R)	46.69	217	857	11.09	1.6
10	C28 13b,17a DIASTERANE (20S) (24R/24S ?)	47.62	217	58	0.75	0.1
11	C28 13b,17a DIASTERANE (20S) (24R/24S ?)	47.78	217	1716	22.20	3.2
14+15	C28 13b,17a DIASTERANE (20R) (24R/24S ?)	48.17	217	548	7.09	1.0
16	C28 13a,17b DIASTERANE (20S)	48.34	217	650	8.51	1.2
17	C27 5a,14a,17a STERANE (20S)	48.42	217	2693	35.26	5.1
18	C27 5a,14b,17b ISOSTERANE (20R) + C29 13b,17a DIASTERANE (20S)	48.60	217	2293	30.02	4.3
19	C27 5a,14b,17b ISOSTERANE (20S)	48.83	217	2279	29.84	4.3
20	C28 13a,17b DIASTERANE (20R)	49.00	217	345	4.52	0.6
22	C27 5a,14a,17a STERANE (20R)	49.24	217	1333	17.45	2.5
23	C29 13b,17a DIASTERANE (20R)	49.49	217	2665	34.90	5.0
24	C29 13a,17b DIASTERANE (20S)	49.96	217	1216	15.92	2.3
26	C28 5a,14a,17a STERANE (20S)	50.50	217	587	8.19	1.2
27	C29 13a,17b DIASTERANE (20R)	50.62	217	1907	26.62	3.8
28	C28 5a,14b,17b ISOSTERANE (20R)	50.77	217	2304	32.16	4.6
29	C28 5a,14b,17b ISOSTERANE (20S)	51.01	217	1952	27.25	3.9
31	C28 5a,14a,17a STERANE (20R)	51.55	217	1140	15.91	2.3
33	C29 5a,14a,17a STERANE (20S)	52.37	217	14	0.21	0.0
34	C29 5a,14b,17b ISOSTERANE (20R)	52.56	217	2944	43.99	6.3
35	C29 5a,14b,17b ISOSTERANE (20S)	52.76	217	2020	30.19	4.3
37	C29 5a,14a,17a STERANE (20R)	53.40	217	2174	32.49	4.7
38	C30 5a,14a,17a STERANE (20S)	53.63	217	945	14.12	2.0
39	C30 5a,14b,17b ISOSTERANE (20R)	54.04	217	447	6.68	1.0
40	C30 5a,14b,17b ISOSTERANE (20S)	54.23	217	1314	19.64	2.8
41	C30 5a,14a,17a STERANE (20R)	54.95	217	2586	38.64	5.6

Percent composition data for saturated biomarkers are based on concentration data

STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill
Lab Sample ID: C45281
Sample Descriptor: SED-RC-02
Analysis Date: 1/8/2005

PARAMETERS

A:LEVEL OF MATURITY

Steranes		Terpanes	
% 20S C29 STERANES	0.6	% 22S C31 HOMOHOPANE	54.5
% C29 ISOSTERANES (abb)	69.4	% C30 HOPANE	82.3
% REGULAR STERANES	23.3	% TS/TS+TM (C27)	47.5
% ISOSTERANES	29.4	TS/TM (C27)	0.91
% DIASTERANES	33.5	% C30 MORETANE	17.7
% SHORT-CHAIN STERANES	13.8	% C29 NORMORETANE	17.6
		DIAHOPANE INDEX (%)	5.4
		% TRICYCLIC TERPANES	26.0

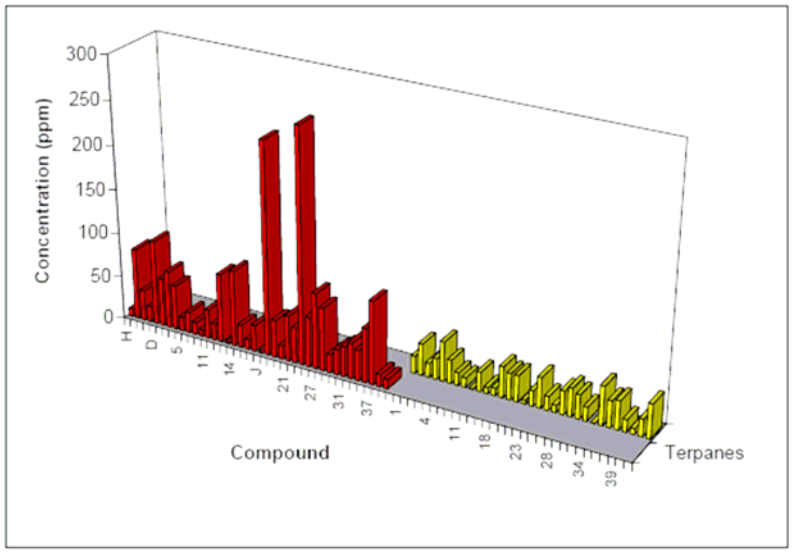
B:ORGANIC FACIES AND DEPOSITIONAL ENVIRONMENT

% TOTAL C20+C21	13.8	OLEANANE INDEX (%)	13.3
% TOTAL C27	28.0	GAMMACERANE INDEX (%)	7.4
% TOTAL C28	18.2	BISNORHOPANE INDEX (%)	10.3
% TOTAL C29	28.6	25-NORHOPANE INDEX (%)	0.3
% TOTAL C30	11.4	DIAHOPANE INDEX (%)	5.4
HOPANES/STERANES	2.8	% TRICYCLIC TERPANES	26.0
% DIASTERANES	33.5	% C24 TETRACYCLIC TERPANE	16.0
TOTAL STERANES (ppm)	696	% MORETANES	17.7
		% TOTAL C31 PENTACYCLICS	33.1
Other Biological Markers		% TOTAL C32 PENTACYCLICS	13.1
		% TOTAL C33 PENTACYCLICS	15.8
b-Carotane (ppm)	2.0	% TOTAL C34 PENTACYCLICS	32.8
		% TOTAL C35 PENTACYCLICS	5.2
		C35/C34 HOMOHOPANES	0.16
		29/30 HOPANES	0.91
		TOTAL TRITERPANES (ppm)	1967.9

All ratios based on concentrations

STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill
Lab Sample ID: C45281
Sample Descriptor: SED-RC-02
Analysis Date: 1/8/2005



STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill
Lab Sample ID: C45282
Sample Descriptor: SED-RC-03
Analysis Date: 1/8/2005

No.	COMPOUND NAME	RT	ION	AREA	CONC	%
	TERPANES				(ng/g)	
H	C19 TRICYCLIC TERPANE	28.94	191	777	11.42	0.5
A	C20 TRICYCLIC TERPANE	30.71	191	5131	75.42	3.2
B	C21 TRICYCLIC TERPANE	32.57	191	2964	43.57	1.8
C	C22 TRICYCLIC TERPANE	34.42	191	1093	16.07	0.7
D	C23 TRICYCLIC TERPANE	36.72	191	7203	105.88	4.5
E	C24 TRICYCLIC TERPANE	37.98	191	4166	61.24	2.6
1	C25 TRICYCLIC TERPANE	40.64	191	4516	66.38	2.8
4	C24 TETRACYCLIC TERPANE	42.55	191	4129	60.69	2.6
5	C26 TRICYCLIC TERPANE (22R)	42.63	191	1002	14.73	0.6
6	C26 TRICYCLIC TERPANE (22S)	42.78	191	1621	23.83	1.0
9	C28 TRICYCLIC TERPANE (22R)	44.32	191	1062	15.61	0.7
10	C28 TRICYCLIC TERPANE (22S)	45.10	191	599	8.80	0.4
11	C29 TRICYCLIC TERPANE (22R)	47.25	191	2724	40.04	1.7
12	C29 TRICYCLIC TERPANE (22S)	47.51	191	1426	20.96	0.9
13	C27 18a-22,29,30-TRISNORNEOHOPANE (Ts)	49.86	191	6422	94.40	4.0
I	C27 PENTACYCLIC TERPANE (Y)	50.50	191	158	2.32	0.1
14	C27 17a-22,29,30-TRISNORHOPANE (Tm)	50.79	191	7023	103.23	4.4
15	C30 TRICYCLIC TERPANE (22R)	51.05	191	1922	28.25	1.2
16	C30 TRICYCLIC TERPANE (22S)	51.34	191	875	12.86	0.5
17	C28 17a,21b-28,30-BISNORHOPANE	52.85	191	2340	34.40	1.5
J	C29 17a,21b-25-NORHOPANE	52.95	191	104	1.53	0.1
19	C29 17a,21b-30-NORHOPANE	53.61	191	18339	269.57	11.4
20	C29 18a-NORNEOHOPANE (29Ts)	53.67	191	2962	43.54	1.8
F	C30 DIAHOPANE	54.02	191	1608	23.64	1.0
21	C29 17b,21a-30-NORMORETANE	54.68	191	3335	49.02	2.1
22	C30 18a-OLEANANE	55.03	191	3301	48.52	2.1
23	C30 17a,21b-HOPANE	55.34	191	23206	341.11	14.5
24	C30 17b,21a-MORETANE	56.18	191	6529	95.97	4.1
27	C31 17a,21b-HOMOHOPANE (22S)	57.38	191	6889	101.26	4.3
28	C31 17a,21b-HOMOHOPANE(22R)	57.62	191	6195	91.06	3.9
G	C30 GAMMACERANE	58.05	191	2064	30.34	1.3
30	C32 17a,21b-HOMOHOPANE (22S)	58.92	191	2331	34.26	1.5
31	C32 17a,21b-HOMOHOPANE (22R)	59.33	191	2734	40.19	1.7
34	C33 17a,21b-HOMOHOPANE (22S)	60.90	191	3497	51.40	2.2
35	C33 17a,21b-HOMOHOPANE (22R)	61.35	191	2641	38.82	1.6
36	C34 17a,21b-HOMOHOPANE (22S)	62.60	191	4684	68.85	2.9
37	C34 17a,21b-HOMOHOPANE (22R)	63.33	191	10812	158.93	6.7
38	C35 17a,21b-HOMOHOPANE (22S)	64.91	191	1193	17.54	0.7
39	C35 17a,21b-HOMOHOPANE (22R)	65.67	191	908	13.35	0.6

STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill
Lab Sample ID: C45282
Sample Descriptor: SED-RC-03
Analysis Date: 1/8/2005

No.	COMPOUND NAME	RT	ION	AREA	CONC	%
	STERANES				(ng/mg)	
A	C21 DIAPREGNANE	33.08	217	1170	26.10	3.1
1	C21 PREGNANE	34.81	217	1827	40.76	4.8
B	C22 DIAHOMOPREGNANE	34.91	217	903	20.15	2.4
2	C22 HOMOPREGNANE	37.36	217	1097	24.47	2.9
3	C27 13b,17a DIASTERANE (20S)	44.98	217	2324	52.46	6.2
4	C27 13b,17a DIASTERANE (20R)	45.68	217	1282	28.94	3.4
8	C27 13a,17b DIASTERANE (20S)	46.32	217	649	14.65	1.7
9	C27 13a,17b DIASTERANE (20R)	46.67	217	590	13.32	1.6
10	C28 13b,17a DIASTERANE (20S) (24R/24S ?)	47.60	217	68	1.54	0.2
11	C28 13b,17a DIASTERANE (20S) (24R/24S ?)	47.78	217	899	20.30	2.4
14+15	C28 13b,17a DIASTERANE (20R) (24R/24S ?)	48.15	217	384	8.67	1.0
16	C28 13a,17b DIASTERANE (20S)	48.34	217	499	11.40	1.3
17	C27 5a,14a,17a STERANE (20S)	48.40	217	1607	36.71	4.3
18	C27 5a,14b,17b ISOSTERANE (20R) + C29 13b,17a DIASTERANE (20S)	48.58	217	1507	34.43	4.1
19	C27 5a,14b,17b ISOSTERANE (20S)	48.83	217	1752	40.03	4.7
20	C28 13a,17b DIASTERANE (20R)	48.97	217	168	3.84	0.5
22	C27 5a,14a,17a STERANE (20R)	49.22	217	1032	23.58	2.8
23	C29 13b,17a DIASTERANE (20R)	49.51	217	2555	58.37	6.9
24	C29 13a,17b DIASTERANE (20S)	49.96	217	1007	23.01	2.7
26	C28 5a,14a,17a STERANE (20S)	50.48	217	273	6.65	0.8
27	C29 13a,17b DIASTERANE (20R)	50.60	217	1115	27.15	3.2
28	C28 5a,14b,17b ISOSTERANE (20R)	50.79	217	1970	47.98	5.6
29	C28 5a,14b,17b ISOSTERANE (20S)	50.99	217	1483	36.12	4.3
31	C28 5a,14a,17a STERANE (20R)	51.53	217	714	17.39	2.0
33	C29 5a,14a,17a STERANE (20S)	0.00	217	0	0.00	0.0
34	C29 5a,14b,17b ISOSTERANE (20R)	52.56	217	2004	52.25	6.2
35	C29 5a,14b,17b ISOSTERANE (20S)	52.74	217	1330	34.68	4.1
37	C29 5a,14a,17a STERANE (20R)	53.40	217	1087	28.34	3.3
38	C30 5a,14a,17a STERANE (20S)	53.61	217	1280	33.37	3.9
39	C30 5a,14b,17b ISOSTERANE (20R)	54.00	217	172	4.48	0.5
40	C30 5a,14b,17b ISOSTERANE (20S)	54.23	217	962	25.08	3.0
41	C30 5a,14a,17a STERANE (20R)	54.95	217	2037	53.11	6.3

Percent composition data for saturated biomarkers are based on concentration data

STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill
Lab Sample ID: C45282
Sample Descriptor: SED-RC-03
Analysis Date: 1/8/2005

PARAMETERS

A:LEVEL OF MATURITY

Steranes		Terpanes	
% 20S C29 STERANES	0.0	% 22S C31 HOMOHOPANE	52.7
% C29 ISOSTERANES (abb)	75.4	% C30 HOPANE	78.0
% REGULAR STERANES	23.4	% TS/TS+TM (C27)	47.8
% ISOSTERANES	30.4	TS/TM (C27)	0.91
% DIASTERANES	33.1	% C30 MORETANE	22.0
% SHORT-CHAIN STERANES	13.1	% C29 NORMORETANE	15.4
		DIAHOPANE INDEX (%)	6.5
		% TRICYCLIC TERPANES	23.1

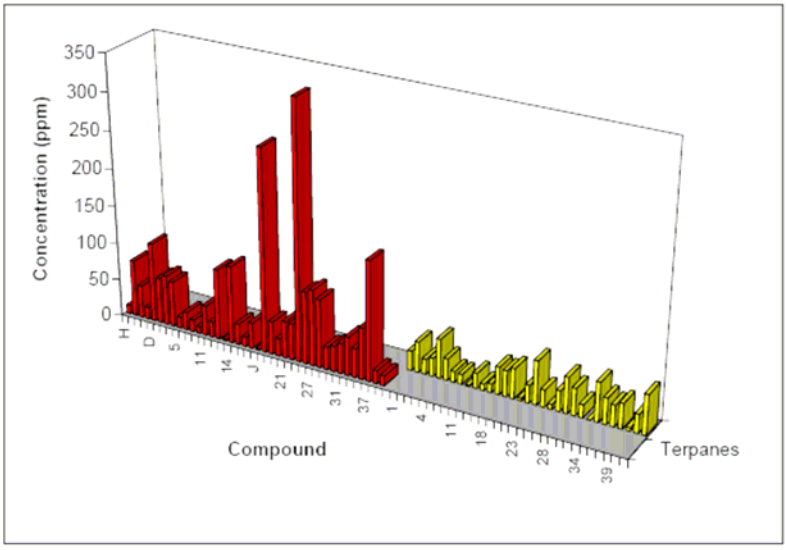
B:ORGANIC FACIES AND DEPOSITIONAL ENVIRONMENT

% TOTAL C20+C21	13.1	OLEANANE INDEX (%)	12.5
% TOTAL C27	26.7	GAMMACERANE INDEX (%)	8.2
% TOTAL C28	18.1	BISNORHOPANE INDEX (%)	9.2
% TOTAL C29	28.4	25-NORHOPANE INDEX (%)	0.4
% TOTAL C30	13.7	DIAHOPANE INDEX (%)	6.5
HOPANES/STERANES	2.7	% TRICYCLIC TERPANES	23.1
% DIASTERANES	33.1	% C24 TETRACYCLIC TERPANE	15.1
TOTAL STERANES (ppm)	849	% MORETANES	19.2
		% TOTAL C31 PENTACYCLICS	31.2
Other Biological Markers		% TOTAL C32 PENTACYCLICS	12.1
		% TOTAL C33 PENTACYCLICS	14.7
b-Carotane (ppm)	3.7	% TOTAL C34 PENTACYCLICS	37.0
		% TOTAL C35 PENTACYCLICS	5.0
		C35/C34 HOMOHOPANES	0.14
		29/30 HOPANES	0.79
		TOTAL TRITERPANES (ppm)	2359.0

All ratios based on concentrations

STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill
Lab Sample ID: C45282
Sample Descriptor: SED-RC-03
Analysis Date: 1/8/2005



STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill
Lab Sample ID: C45283
Sample Descriptor: SED-TI-01
Analysis Date: 1/8/2005

No.	COMPOUND NAME	RT	ION	AREA	CONC	%
	TERPANES				(ng/g)	
H	C19 TRICYCLIC TERPANE	28.96	191	14494	37.41	4.0
A	C20 TRICYCLIC TERPANE	30.71	191	218363	563.54	60.3
B	C21 TRICYCLIC TERPANE	32.59	191	11438	29.52	3.2
C	C22 TRICYCLIC TERPANE	34.44	191	4713	12.16	1.3
D	C23 TRICYCLIC TERPANE	36.72	191	6900	17.81	1.9
E	C24 TRICYCLIC TERPANE	37.98	191	4466	11.53	1.2
1	C25 TRICYCLIC TERPANE	40.68	191	4172	10.77	1.2
4	C24 TETRACYCLIC TERPANE	42.57	191	4104	10.59	1.1
5	C26 TRICYCLIC TERPANE (22R)	42.63	191	1375	3.55	0.4
6	C26 TRICYCLIC TERPANE (22S)	42.78	191	1648	4.25	0.5
9	C28 TRICYCLIC TERPANE (22R)	44.34	191	857	2.21	0.2
10	C28 TRICYCLIC TERPANE (22S)	45.12	191	574	1.48	0.2
11	C29 TRICYCLIC TERPANE (22R)	47.25	191	2274	5.87	0.6
12	C29 TRICYCLIC TERPANE (22S)	47.51	191	1438	3.71	0.4
13	C27 18a-22,29,30-TRISNORNEOHOPANE (Ts)	49.86	191	5848	15.09	1.6
I	C27 PENTACYCLIC TERPANE (Y)	50.48	191	279	0.72	0.1
14	C27 17a-22,29,30-TRISNORHOPANE (Tm)	50.79	191	6793	17.53	1.9
15	C30 TRICYCLIC TERPANE (22R)	51.10	191	1701	4.39	0.5
16	C30 TRICYCLIC TERPANE (22S)	51.34	191	652	1.68	0.2
17	C28 17a,21b-28,30-BISNORHOPANE	52.85	191	2100	5.42	0.6
J	C29 17a,21b-25-NORHOPANE	52.99	191	172	0.44	0.0
19	C29 17a,21b-30-NORHOPANE	53.61	191	15896	41.02	4.4
20	C29 18a-NORNEOHOPANE (29Ts)	53.67	191	2595	6.70	0.7
F	C30 DIAHOPANE	54.02	191	1547	3.99	0.4
21	C29 17b,21a-30-NORMORETANE	54.68	191	3311	8.54	0.9
22	C30 18a-OLEANANE	55.01	191	3218	8.30	0.9
23	C30 17a,21b-HOPANE	55.34	191	19584	50.54	5.4
24	C30 17b,21a-MORETANE	56.20	191	3503	9.04	1.0
27	C31 17a,21b-HOMOHOPANE (22S)	57.40	191	5259	13.57	1.5
28	C31 17a,21b-HOMOHOPANE(22R)	57.62	191	3926	10.13	1.1
G	C30 GAMMACERANE	58.05	191	1159	2.99	0.3
30	C32 17a,21b-HOMOHOPANE (22S)	58.94	191	306	0.79	0.1
31	C32 17a,21b-HOMOHOPANE (22R)	59.33	191	2048	5.29	0.6
34	C33 17a,21b-HOMOHOPANE (22S)	60.90	191	1454	3.75	0.4
35	C33 17a,21b-HOMOHOPANE (22R)	61.35	191	867	2.24	0.2
36	C34 17a,21b-HOMOHOPANE (22S)	62.58	191	337	0.87	0.1
37	C34 17a,21b-HOMOHOPANE (22R)	63.33	191	1597	4.12	0.4
38	C35 17a,21b-HOMOHOPANE (22S)	64.93	191	603	1.56	0.2
39	C35 17a,21b-HOMOHOPANE (22R)	65.65	191	378	0.98	0.1

STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill
Lab Sample ID: C45283
Sample Descriptor: SED-TI-01
Analysis Date: 1/8/2005

No.	COMPOUND NAME	RT	ION	AREA	CONC	%
	STERANES				(ng/mg)	
A	C21 DIAPREGNANE	33.04	217	3830	15.00	7.6
1	C21 PREGNANE	34.81	217	8789	34.43	17.4
B	C22 DIAHOMOPREGNANE	34.87	217	7029	27.53	13.9
2	C22 HOMOPREGNANE	37.36	217	5687	22.28	11.2
3	C27 13b,17a DIASTERANE (20S)	44.98	217	1553	6.16	3.1
4	C27 13b,17a DIASTERANE (20R)	45.70	217	784	3.11	1.6
8	C27 13a,17b DIASTERANE (20S)	46.34	217	430	1.70	0.9
9	C27 13a,17b DIASTERANE (20R)	46.69	217	535	2.12	1.1
10	C28 13b,17a DIASTERANE (20S) (24R/24S ?)	47.60	217	72	0.29	0.1
11	C28 13b,17a DIASTERANE (20S) (24R/24S ?)	47.80	217	1102	4.37	2.2
14+15	C28 13b,17a DIASTERANE (20R) (24R/24S ?)	48.17	217	110	0.44	0.2
16	C28 13a,17b DIASTERANE (20S)	48.34	217	929	3.73	1.9
17	C27 5a,14a,17a STERANE (20S)	48.42	217	1103	4.42	2.2
18	C27 5a,14b,17b ISOSTERANE (20R) + C29 13b,17a DIASTERANE (20S)	48.62	217	828	3.32	1.7
19	C27 5a,14b,17b ISOSTERANE (20S)	48.83	217	1349	5.41	2.7
20	C28 13a,17b DIASTERANE (20R)	49.00	217	138	0.55	0.3
22	C27 5a,14a,17a STERANE (20R)	49.24	217	696	2.79	1.4
23	C29 13b,17a DIASTERANE (20R)	49.51	217	2183	8.76	4.4
24	C29 13a,17b DIASTERANE (20S)	49.96	217	676	2.71	1.4
26	C28 5a,14a,17a STERANE (20S)	50.50	217	560	2.39	1.2
27	C29 13a,17b DIASTERANE (20R)	50.60	217	949	4.06	2.0
28	C28 5a,14b,17b ISOSTERANE (20R)	50.77	217	1222	5.22	2.6
29	C28 5a,14b,17b ISOSTERANE (20S)	50.99	217	985	4.21	2.1
31	C28 5a,14a,17a STERANE (20R)	51.53	217	658	2.81	1.4
33	C29 5a,14a,17a STERANE (20S)	52.35	217	28	0.13	0.1
34	C29 5a,14b,17b ISOSTERANE (20R)	52.56	217	1883	8.62	4.4
35	C29 5a,14b,17b ISOSTERANE (20S)	52.74	217	1568	7.18	3.6
37	C29 5a,14a,17a STERANE (20R)	53.40	217	1401	6.41	3.2
38	C30 5a,14a,17a STERANE (20S)	53.63	217	421	1.93	1.0
39	C30 5a,14b,17b ISOSTERANE (20R)	54.06	217	138	0.63	0.3
40	C30 5a,14b,17b ISOSTERANE (20S)	54.23	217	624	2.86	1.4
41	C30 5a,14a,17a STERANE (20R)	54.95	217	541	2.48	1.3

Percent composition data for saturated biomarkers are based on concentration data

STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill
Lab Sample ID: C45283
Sample Descriptor: SED-TI-01
Analysis Date: 1/8/2005

PARAMETERS

A:LEVEL OF MATURITY

Steranes		Terpanes	
% 20S C29 STERANES	2.0	% 22S C31 HOMOHOPANE	57.3
% C29 ISOSTERANES (abb)	70.7	% C30 HOPANE	84.8
% REGULAR STERANES	11.8	% TS/TS+TM (C27)	46.3
% ISOSTERANES	18.1	TS/TM (C27)	0.86
% DIASTERANES	20.0	% C30 MORETANE	15.2
% SHORT-CHAIN STERANES	50.1	% C29 NORMORETANE	17.2
		DIAHOPANE INDEX (%)	7.3
		% TRICYCLIC TERPANES	76.0

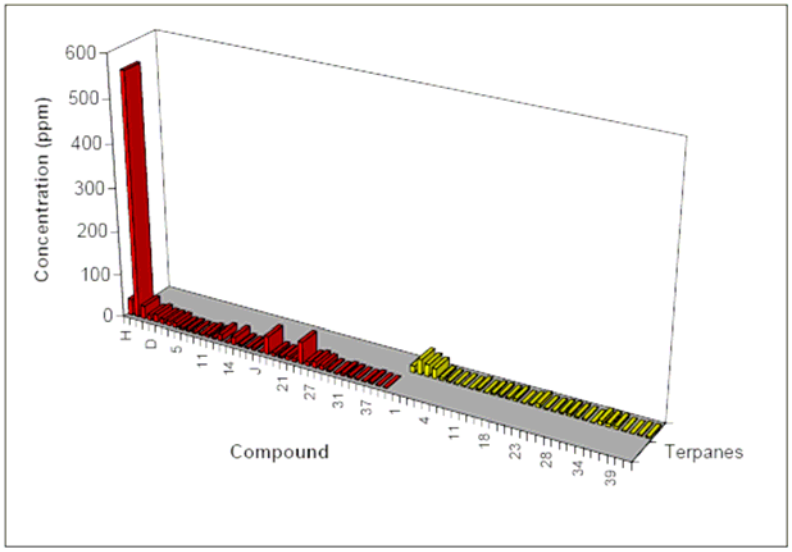
B:ORGANIC FACIES AND DEPOSITIONAL ENVIRONMENT

% TOTAL C20+C21	50.1	OLEANANE INDEX (%)	14.1
% TOTAL C27	13.8	GAMMACERANE INDEX (%)	5.6
% TOTAL C28	12.1	BISNORHOPANE INDEX (%)	9.7
% TOTAL C29	20.0	25-NORHOPANE INDEX (%)	0.9
% TOTAL C30	4.0	DIAHOPANE INDEX (%)	7.3
HOPANES/STERANES	4.7	% TRICYCLIC TERPANES	76.0
% DIASTERANES	20.0	% C24 TETRACYCLIC TERPANE	17.3
TOTAL STERANES (ppm)	198	% MORETANES	16.1
		% TOTAL C31 PENTACYCLICS	54.8
Other Biological Markers		% TOTAL C32 PENTACYCLICS	14.0
		% TOTAL C33 PENTACYCLICS	13.8
b-Carotane (ppm)	0.4	% TOTAL C34 PENTACYCLICS	11.5
		% TOTAL C35 PENTACYCLICS	5.8
		C35/C34 HOMOHOPANES	0.51
		29/30 HOPANES	0.81
		TOTAL TRITERPANES (ppm)	934.1

All ratios based on concentrations

STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill
Lab Sample ID: C45283
Sample Descriptor: SED-TI-01
Analysis Date: 1/8/2005



STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill
Lab Sample ID: C45284
Sample Descriptor: SED-TI-02
Analysis Date: 1/8/2005

No.	COMPOUND NAME	RT	ION	AREA	CONC	%
	TERPANES				(ng/g)	
H	C19 TRICYCLIC TERPANE	28.96	191	7225	20.53	2.5
A	C20 TRICYCLIC TERPANE	30.71	191	118459	336.54	41.4
B	C21 TRICYCLIC TERPANE	32.57	191	9836	27.94	3.4
C	C22 TRICYCLIC TERPANE	34.44	191	3786	10.76	1.3
D	C23 TRICYCLIC TERPANE	36.73	191	8589	24.40	3.0
E	C24 TRICYCLIC TERPANE	37.98	191	5002	14.21	1.7
1	C25 TRICYCLIC TERPANE	40.64	191	2512	7.14	0.9
4	C24 TETRACYCLIC TERPANE	42.55	191	4852	13.78	1.7
5	C26 TRICYCLIC TERPANE (22R)	42.63	191	1387	3.94	0.5
6	C26 TRICYCLIC TERPANE (22S)	42.78	191	1869	5.31	0.7
9	C28 TRICYCLIC TERPANE (22R)	44.32	191	1390	3.95	0.5
10	C28 TRICYCLIC TERPANE (22S)	45.11	191	542	1.54	0.2
11	C29 TRICYCLIC TERPANE (22R)	47.25	191	2565	7.29	0.9
12	C29 TRICYCLIC TERPANE (22S)	47.51	191	946	2.69	0.3
13	C27 18a-22,29,30-TRISNORNEOHOPANE (Ts)	49.86	191	7248	20.59	2.5
I	C27 PENTACYCLIC TERPANE (Y)	50.48	191	240	0.68	0.1
14	C27 17a-22,29,30-TRISNORHOPANE (Tm)	50.79	191	8788	24.97	3.1
15	C30 TRICYCLIC TERPANE (22R)	51.08	191	1838	5.22	0.6
16	C30 TRICYCLIC TERPANE (22S)	51.34	191	877	2.49	0.3
17	C28 17a,21b-28,30-BISNORHOPANE	52.87	191	2330	6.62	0.8
J	C29 17a,21b-25-NORHOPANE	52.95	191	209	0.59	0.1
19	C29 17a,21b-30-NORHOPANE	53.59	191	21157	60.11	7.4
20	C29 18a-NORNEOHOPANE (29Ts)	53.65	191	5291	15.03	1.8
F	C30 DIAHOPANE	54.02	191	1844	5.24	0.6
21	C29 17b,21a-30-NORMORETANE	54.68	191	4384	12.45	1.5
22	C30 18a-OLEANANE	55.03	191	3741	10.63	1.3
23	C30 17a,21b-HOPANE	55.34	191	26547	75.42	9.3
24	C30 17b,21a-MORETANE	56.20	191	4536	12.89	1.6
27	C31 17a,21b-HOMOHOPANE (22S)	57.40	191	8120	23.07	2.8
28	C31 17a,21b-HOMOHOPANE(22R)	57.62	191	5651	16.05	2.0
G	C30 GAMMACERANE	58.04	191	1391	3.95	0.5
30	C32 17a,21b-HOMOHOPANE (22S)	58.92	191	392	1.11	0.1
31	C32 17a,21b-HOMOHOPANE (22R)	59.33	191	3223	9.16	1.1
34	C33 17a,21b-HOMOHOPANE (22S)	60.90	191	2671	7.59	0.9
35	C33 17a,21b-HOMOHOPANE (22R)	61.33	191	1495	4.25	0.5
36	C34 17a,21b-HOMOHOPANE (22S)	62.59	191	633	1.80	0.2
37	C34 17a,21b-HOMOHOPANE (22R)	63.33	191	2745	7.80	1.0
38	C35 17a,21b-HOMOHOPANE (22S)	64.93	191	985	2.80	0.3
39	C35 17a,21b-HOMOHOPANE (22R)	65.63	191	746	2.12	0.3

STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill
Lab Sample ID: C45284
Sample Descriptor: SED-TI-02
Analysis Date: 1/8/2005

No.	COMPOUND NAME	RT	ION	AREA	CONC	%
	STERANES				(ng/mg)	
A	C21 DIAPREGNANE	33.06	217	1143	4.93	2.2
1	C21 PREGNANE	34.79	217	5236	22.58	10.2
B	C22 DIAHOMOPREGNANE	34.95	217	4867	20.99	9.5
2	C22 HOMOPREGNANE	37.36	217	4551	19.62	8.9
3	C27 13b,17a DIASTERANE (20S)	44.98	217	2115	9.23	4.2
4	C27 13b,17a DIASTERANE (20R)	45.68	217	1328	5.79	2.6
8	C27 13a,17b DIASTERANE (20S)	46.30	217	679	2.96	1.3
9	C27 13a,17b DIASTERANE (20R)	46.67	217	421	1.84	0.8
10	C28 13b,17a DIASTERANE (20S) (24R/24S ?)	47.58	217	206	0.90	0.4
11	C28 13b,17a DIASTERANE (20S) (24R/24S ?)	47.78	217	1489	6.50	2.9
14+15	C28 13b,17a DIASTERANE (20R) (24R/24S ?)	48.17	217	552	2.41	1.1
16	C28 13a,17b DIASTERANE (20S)	48.36	217	783	3.46	1.6
17	C27 5a,14a,17a STERANE (20S)	48.42	217	1573	6.95	3.2
18	C27 5a,14b,17b ISOSTERANE (20R) + C29 13b,17a DIASTERANE (20S)	48.61	217	702	3.10	1.4
19	C27 5a,14b,17b ISOSTERANE (20S)	48.83	217	1684	7.44	3.4
20	C28 13a,17b DIASTERANE (20R)	49.02	217	332	1.47	0.7
22	C27 5a,14a,17a STERANE (20R)	49.24	217	930	4.11	1.9
23	C29 13b,17a DIASTERANE (20R)	49.49	217	2712	11.98	5.4
24	C29 13a,17b DIASTERANE (20S)	49.96	217	1401	6.19	2.8
26	C28 5a,14a,17a STERANE (20S)	50.50	217	646	3.04	1.4
27	C29 13a,17b DIASTERANE (20R)	50.60	217	831	3.91	1.8
28	C28 5a,14b,17b ISOSTERANE (20R)	50.77	217	2101	9.89	4.5
29	C28 5a,14b,17b ISOSTERANE (20S)	50.99	217	1722	8.11	3.7
31	C28 5a,14a,17a STERANE (20R)	51.53	217	1117	5.26	2.4
33	C29 5a,14a,17a STERANE (20S)	52.33	217	210	1.06	0.5
34	C29 5a,14b,17b ISOSTERANE (20R)	52.56	217	2531	12.75	5.8
35	C29 5a,14b,17b ISOSTERANE (20S)	52.74	217	1927	9.71	4.4
37	C29 5a,14a,17a STERANE (20R)	53.40	217	1811	9.13	4.1
38	C30 5a,14a,17a STERANE (20S)	53.61	217	799	4.03	1.8
39	C30 5a,14b,17b ISOSTERANE (20R)	54.04	217	394	1.99	0.9
40	C30 5a,14b,17b ISOSTERANE (20S)	54.23	217	861	4.34	2.0
41	C30 5a,14a,17a STERANE (20R)	54.97	217	950	4.79	2.2

Percent composition data for saturated biomarkers are based on concentration data

STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill
Lab Sample ID: C45284
Sample Descriptor: SED-TI-02
Analysis Date: 1/8/2005

PARAMETERS

A:LEVEL OF MATURITY

Steranes		Terpanes	
% 20S C29 STERANES	10.4	% 22S C31 HOMOHOPANE	59.0
% C29 ISOSTERANES (abb)	68.8	% C30 HOPANE	85.4
% REGULAR STERANES	17.4	% TS/TS+TM (C27)	45.2
% ISOSTERANES	25.3	TS/TM (C27)	0.82
% DIASTERANES	26.4	% C30 MORETANE	14.6
% SHORT-CHAIN STERANES	30.9	% C29 NORMORETANE	17.2
		DIAHOPANE INDEX (%)	6.5
		% TRICYCLIC TERPANES	58.3

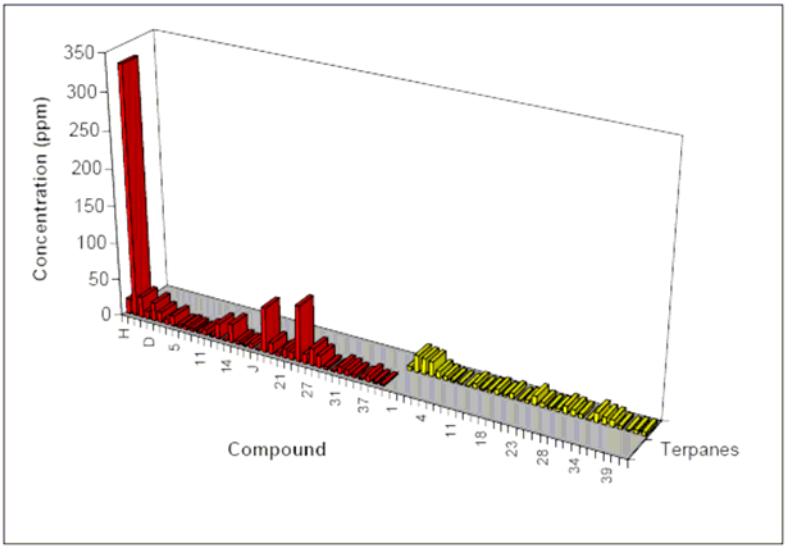
B:ORGANIC FACIES AND DEPOSITIONAL ENVIRONMENT

% TOTAL C20+C21	30.9	OLEANANE INDEX (%)	12.4
% TOTAL C27	18.1	GAMMACERANE INDEX (%)	5.0
% TOTAL C28	18.6	BISNORHOPANE INDEX (%)	8.1
% TOTAL C29	25.5	25-NORHOPANE INDEX (%)	0.8
% TOTAL C30	6.9	DIAHOPANE INDEX (%)	6.5
HOPANES/STERANES	3.6	% TRICYCLIC TERPANES	58.3
% DIASTERANES	26.4	% C24 TETRACYCLIC TERPANE	15.5
TOTAL STERANES (ppm)	220	% MORETANES	15.8
		% TOTAL C31 PENTACYCLICS	51.7
Other Biological Markers		% TOTAL C32 PENTACYCLICS	13.6
		% TOTAL C33 PENTACYCLICS	15.6
b-Carotane (ppm)	0.7	% TOTAL C34 PENTACYCLICS	12.7
		% TOTAL C35 PENTACYCLICS	6.5
		C35/C34 HOMOHOPANES	0.51
		29/30 HOPANES	0.80
		TOTAL TRITERPANES (ppm)	812.6

All ratios based on concentrations

STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill
Lab Sample ID: C45284
Sample Descriptor: SED-TI-02
Analysis Date: 1/8/2005



STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill
Lab Sample ID: C45285
Sample Descriptor: SED-TI-03
Analysis Date: 1/8/2005

No.	COMPOUND NAME	RT	ION	AREA	CONC	%
	TERPANES				(ng/g)	
H	C19 TRICYCLIC TERPANE	28.96	191	3642	10.87	1.7
A	C20 TRICYCLIC TERPANE	30.69	191	53038	158.27	25.0
B	C21 TRICYCLIC TERPANE	32.56	191	5709	17.04	2.7
C	C22 TRICYCLIC TERPANE	34.42	191	2432	7.26	1.1
D	C23 TRICYCLIC TERPANE	36.70	191	7277	21.72	3.4
E	C24 TRICYCLIC TERPANE	37.96	191	4216	12.58	2.0
1	C25 TRICYCLIC TERPANE	40.64	191	3151	9.40	1.5
4	C24 TETRACYCLIC TERPANE	42.55	191	4610	13.76	2.2
5	C26 TRICYCLIC TERPANE (22R)	42.63	191	1337	3.99	0.6
6	C26 TRICYCLIC TERPANE (22S)	42.78	191	1865	5.57	0.9
9	C28 TRICYCLIC TERPANE (22R)	44.32	191	965	2.88	0.5
10	C28 TRICYCLIC TERPANE (22S)	45.10	191	384	1.15	0.2
11	C29 TRICYCLIC TERPANE (22R)	47.24	191	2623	7.83	1.2
12	C29 TRICYCLIC TERPANE (22S)	47.51	191	1221	3.64	0.6
13	C27 18a-22,29,30-TRISNORNEOHOPANE (Ts)	49.86	191	7466	22.28	3.5
I	C27 PENTACYCLIC TERPANE (Y)	50.50	191	170	0.51	0.1
14	C27 17a-22,29,30-TRISNORHOPANE (Tm)	50.79	191	8439	25.18	4.0
15	C30 TRICYCLIC TERPANE (22R)	51.07	191	2020	6.03	1.0
16	C30 TRICYCLIC TERPANE (22S)	51.32	191	923	2.75	0.4
17	C28 17a,21b-28,30-BISNORHOPANE	52.85	191	2409	7.19	1.1
J	C29 17a,21b-25-NORHOPANE	52.97	191	264	0.79	0.1
19	C29 17a,21b-30-NORHOPANE	53.59	191	22059	65.83	10.4
20	C29 18a-NORNEOHOPANE (29Ts)	53.65	191	4861	14.51	2.3
F	C30 DIAHOPANE	54.02	191	2140	6.39	1.0
21	C29 17b,21a-30-NORMORETANE	54.68	191	3862	11.52	1.8
22	C30 18a-OLEANANE	55.01	191	4673	13.94	2.2
23	C30 17a,21b-HOPANE	55.34	191	25910	77.32	12.2
24	C30 17b,21a-MORETANE	56.20	191	5214	15.56	2.5
27	C31 17a,21b-HOMOHOPANE (22S)	57.40	191	7689	22.95	3.6
28	C31 17a,21b-HOMOHOPANE(22R)	57.62	191	5910	17.64	2.8
G	C30 GAMMACERANE	58.03	191	1308	3.90	0.6
30	C32 17a,21b-HOMOHOPANE (22S)	58.94	191	471	1.41	0.2
31	C32 17a,21b-HOMOHOPANE (22R)	59.33	191	3055	9.12	1.4
34	C33 17a,21b-HOMOHOPANE (22S)	60.92	191	2566	7.66	1.2
35	C33 17a,21b-HOMOHOPANE (22R)	61.33	191	1597	4.77	0.8
36	C34 17a,21b-HOMOHOPANE (22S)	62.58	191	629	1.88	0.3
37	C34 17a,21b-HOMOHOPANE (22R)	63.33	191	3433	10.24	1.6
38	C35 17a,21b-HOMOHOPANE (22S)	64.93	191	1704	5.08	0.8
39	C35 17a,21b-HOMOHOPANE (22R)	65.67	191	719	2.15	0.3

STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill
Lab Sample ID: C45285
Sample Descriptor: SED-TI-03
Analysis Date: 1/8/2005

No.	COMPOUND NAME	RT	ION	AREA	CONC	%
	STERANES				(ng/mg)	
A	C21 DIAPREGNANE	33.06	217	1502	6.80	3.0
1	C21 PREGNANE	34.79	217	6457	29.25	12.9
B	C22 DIAHOMOPREGNANE	34.93	217	3669	16.62	7.3
2	C22 HOMOPREGNANE	37.36	217	2952	13.37	5.9
3	C27 13b,17a DIASTERANE (20S)	44.98	217	2390	10.95	4.8
4	C27 13b,17a DIASTERANE (20R)	45.68	217	1363	6.25	2.8
8	C27 13a,17b DIASTERANE (20S)	46.32	217	705	3.23	1.4
9	C27 13a,17b DIASTERANE (20R)	46.67	217	807	3.70	1.6
10	C28 13b,17a DIASTERANE (20S) (24R/24S ?)	47.59	217	70	0.32	0.1
11	C28 13b,17a DIASTERANE (20S) (24R/24S ?)	47.78	217	1371	6.28	2.8
14+15	C28 13b,17a DIASTERANE (20R) (24R/24S ?)	48.17	217	526	2.41	1.1
16	C28 13a,17b DIASTERANE (20S)	48.32	217	918	4.26	1.9
17	C27 5a,14a,17a STERANE (20S)	48.42	217	1862	8.64	3.8
18	C27 5a,14b,17b ISOSTERANE (20R) + C29 13b,17a DIASTERANE (20S)	48.58	217	993	4.61	2.0
19	C27 5a,14b,17b ISOSTERANE (20S)	48.81	217	1475	6.84	3.0
20	C28 13a,17b DIASTERANE (20R)	48.97	217	366	1.70	0.7
22	C27 5a,14a,17a STERANE (20R)	49.22	217	959	4.45	2.0
23	C29 13b,17a DIASTERANE (20R)	49.49	217	2541	11.79	5.2
24	C29 13a,17b DIASTERANE (20S)	49.94	217	973	4.51	2.0
26	C28 5a,14a,17a STERANE (20S)	50.48	217	574	2.84	1.2
27	C29 13a,17b DIASTERANE (20R)	50.60	217	1387	6.86	3.0
28	C28 5a,14b,17b ISOSTERANE (20R)	50.79	217	1765	8.73	3.8
29	C28 5a,14b,17b ISOSTERANE (20S)	50.99	217	1566	7.74	3.4
31	C28 5a,14a,17a STERANE (20R)	51.51	217	957	4.73	2.1
33	C29 5a,14a,17a STERANE (20S)	52.31	217	103	0.55	0.2
34	C29 5a,14b,17b ISOSTERANE (20R)	52.56	217	2597	13.75	6.1
35	C29 5a,14b,17b ISOSTERANE (20S)	52.74	217	1673	8.86	3.9
37	C29 5a,14a,17a STERANE (20R)	53.40	217	1881	9.96	4.4
38	C30 5a,14a,17a STERANE (20S)	53.59	217	1172	6.20	2.7
39	C30 5a,14b,17b ISOSTERANE (20R)	54.04	217	259	1.37	0.6
40	C30 5a,14b,17b ISOSTERANE (20S)	54.20	217	1018	5.39	2.4
41	C30 5a,14a,17a STERANE (20R)	54.95	217	792	4.19	1.8

Percent composition data for saturated biomarkers are based on concentration data

STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill
Lab Sample ID: C45285
Sample Descriptor: SED-TI-03
Analysis Date: 1/8/2005

PARAMETERS

A:LEVEL OF MATURITY

Steranes		Terpanes	
% 20S C29 STERANES	5.2	% 22S C31 HOMOHOPANE	56.5
% C29 ISOSTERANES (abb)	68.3	% C30 HOPANE	83.2
% REGULAR STERANES	18.3	% TS/TS+TM (C27)	46.9
% ISOSTERANES	24.2	TS/TM (C27)	0.88
% DIASTERANES	28.4	% C30 MORETANE	16.8
% SHORT-CHAIN STERANES	29.1	% C29 NORMORETANE	14.9
		DIAHOPANE INDEX (%)	7.6
		% TRICYCLIC TERPANES	42.8

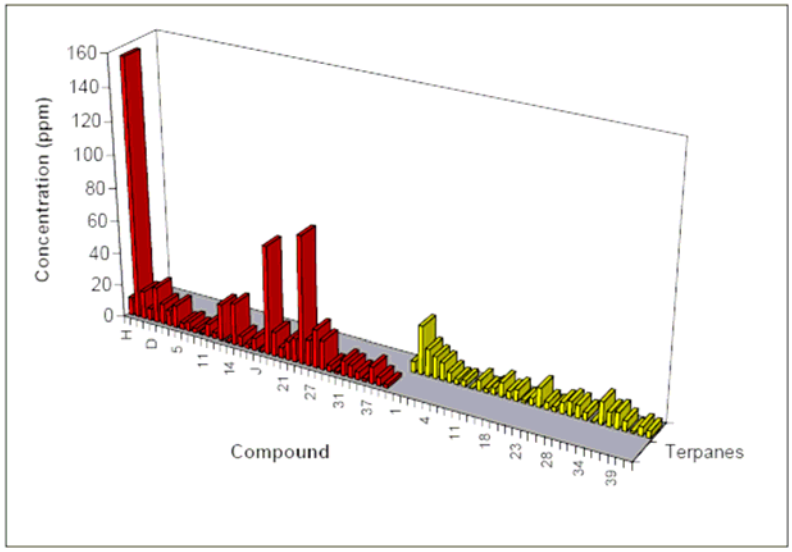
B:ORGANIC FACIES AND DEPOSITIONAL ENVIRONMENT

% TOTAL C20+C21	29.1	OLEANANE INDEX (%)	15.3
% TOTAL C27	20.4	GAMMACERANE INDEX (%)	4.8
% TOTAL C28	17.2	BISNORHOPANE INDEX (%)	8.5
% TOTAL C29	25.8	25-NORHOPANE INDEX (%)	1.0
% TOTAL C30	7.6	DIAHOPANE INDEX (%)	7.6
HOPANES/STERANES	2.7	% TRICYCLIC TERPANES	42.8
% DIASTERANES	28.4	% C24 TETRACYCLIC TERPANE	15.1
TOTAL STERANES (ppm)	227	% MORETANES	15.9
		% TOTAL C31 PENTACYCLICS	49.0
Other Biological Markers		% TOTAL C32 PENTACYCLICS	12.7
		% TOTAL C33 PENTACYCLICS	15.0
b-Carotane (ppm)	0.6	% TOTAL C34 PENTACYCLICS	14.6
		% TOTAL C35 PENTACYCLICS	8.7
		C35/C34 HOMOHOPANES	0.60
		29/30 HOPANES	0.85
		TOTAL TRITERPANES (ppm)	632.5

All ratios based on concentrations

STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill
Lab Sample ID: C45285
Sample Descriptor: SED-TI-03
Analysis Date: 1/8/2005



STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill
Lab Sample ID: C45286
Sample Descriptor: SED-TP-01
Analysis Date: 1/8/2005

No.	COMPOUND NAME	RT	ION	AREA	CONC	%
	TERPANES				(ng/g)	
H	C19 TRICYCLIC TERPANE	28.94	191	337	1.30	1.1
A	C20 TRICYCLIC TERPANE	30.69	191	1168	4.51	3.9
B	C21 TRICYCLIC TERPANE	32.57	191	490	1.89	1.6
C	C22 TRICYCLIC TERPANE	34.40	191	208	0.80	0.7
D	C23 TRICYCLIC TERPANE	36.71	191	883	3.41	2.9
E	C24 TRICYCLIC TERPANE	37.94	191	762	2.94	2.5
1	C25 TRICYCLIC TERPANE	40.60	191	565	2.18	1.9
4	C24 TETRACYCLIC TERPANE	42.55	191	434	1.67	1.4
5	C26 TRICYCLIC TERPANE (22R)	42.63	191	172	0.66	0.6
6	C26 TRICYCLIC TERPANE (22S)	42.76	191	211	0.81	0.7
9	C28 TRICYCLIC TERPANE (22R)	44.30	191	336	1.30	1.1
10	C28 TRICYCLIC TERPANE (22S)	45.08	191	70	0.27	0.2
11	C29 TRICYCLIC TERPANE (22R)	47.23	191	481	1.86	1.6
12	C29 TRICYCLIC TERPANE (22S)	47.49	191	145	0.56	0.5
13	C27 18a-22,29,30-TRISNORNEOHOPANE (Ts)	49.84	191	972	3.75	3.2
I	C27 PENTACYCLIC TERPANE (Y)	50.48	191	31	0.12	0.1
14	C27 17a-22,29,30-TRISNORHOPANE (Tm)	50.77	191	1306	5.04	4.3
15	C30 TRICYCLIC TERPANE (22R)	51.04	191	324	1.25	1.1
16	C30 TRICYCLIC TERPANE (22S)	51.32	191	231	0.89	0.8
17	C28 17a,21b-28,30-BISNORHOPANE	52.85	191	198	0.76	0.7
J	C29 17a,21b-25-NORHOPANE	52.97	191	105	0.41	0.3
19	C29 17a,21b-30-NORHOPANE	53.59	191	3700	14.28	12.2
20	C29 18a-NORNEOHOPANE (29Ts)	53.69	191	728	2.81	2.4
F	C30 DIAHOPANE	54.02	191	91	0.35	0.3
21	C29 17b,21a-30-NORMORETANE	54.68	191	1400	5.40	4.6
22	C30 18a-OLEANANE	55.01	191	483	1.86	1.6
23	C30 17a,21b-HOPANE	55.34	191	3756	14.49	12.4
24	C30 17b,21a-MORETANE	0.00	191	0	0.00	0.0
27	C31 17a,21b-HOMOHOPANE (22S)	57.38	191	1629	6.29	5.4
28	C31 17a,21b-HOMOHOPANE(22R)	57.62	191	3069	11.84	10.1
G	C30 GAMMACERANE	57.99	191	358	1.38	1.2
30	C32 17a,21b-HOMOHOPANE (22S)	58.90	191	1372	5.29	4.5
31	C32 17a,21b-HOMOHOPANE (22R)	59.33	191	882	3.40	2.9
34	C33 17a,21b-HOMOHOPANE (22S)	60.92	191	653	2.52	2.2
35	C33 17a,21b-HOMOHOPANE (22R)	61.33	191	429	1.66	1.4
36	C34 17a,21b-HOMOHOPANE (22S)	0.00	191	0	0.00	0.0
37	C34 17a,21b-HOMOHOPANE (22R)	63.33	191	1705	6.58	5.6
38	C35 17a,21b-HOMOHOPANE (22S)	64.91	191	210	0.81	0.7
39	C35 17a,21b-HOMOHOPANE (22R)	65.67	191	394	1.52	1.3

STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill
Lab Sample ID: C45286
Sample Descriptor: SED-TP-01
Analysis Date: 1/8/2005

No.	COMPOUND NAME	RT	ION	AREA	CONC	%
	STERANES				(ng/mg)	
A	C21 DIAPREGNANE	33.04	217	164	0.96	3.3
1	C21 PREGNANE	34.79	217	256	1.50	5.1
B	C22 DIAHOMOPREGNANE	34.91	217	122	0.71	2.4
2	C22 HOMOPREGNANE	37.36	217	163	0.95	3.3
3	C27 13b,17a DIASTERANE (20S)	44.96	217	276	1.64	5.6
4	C27 13b,17a DIASTERANE (20R)	45.66	217	221	1.31	4.5
8	C27 13a,17b DIASTERANE (20S)	46.28	217	151	0.89	3.1
9	C27 13a,17b DIASTERANE (20R)	46.67	217	135	0.80	2.7
10	C28 13b,17a DIASTERANE (20S) (24R/24S ?)	47.60	217	78	0.46	1.6
11	C28 13b,17a DIASTERANE (20S) (24R/24S ?)	47.76	217	126	0.75	2.6
14+15	C28 13b,17a DIASTERANE (20R) (24R/24S ?)	48.13	217	49	0.29	1.0
16	C28 13a,17b DIASTERANE (20S)	48.30	217	152	0.91	3.1
17	C27 5a,14a,17a STERANE (20S)	48.36	217	126	0.76	2.6
18	C27 5a,14b,17b ISOSTERANE (20R) + C29 13b,17a DIASTERANE (20S)	48.61	217	140	0.84	2.9
19	C27 5a,14b,17b ISOSTERANE (20S)	48.83	217	83	0.50	1.7
20	C28 13a,17b DIASTERANE (20R)	49.00	217	23	0.14	0.5
22	C27 5a,14a,17a STERANE (20R)	49.20	217	201	1.21	4.1
23	C29 13b,17a DIASTERANE (20R)	49.49	217	238	1.43	4.9
24	C29 13a,17b DIASTERANE (20S)	49.96	217	161	0.97	3.3
26	C28 5a,14a,17a STERANE (20S)	50.46	217	44	0.28	1.0
27	C29 13a,17b DIASTERANE (20R)	50.60	217	238	1.52	5.2
28	C28 5a,14b,17b ISOSTERANE (20R)	50.75	217	315	2.01	6.9
29	C28 5a,14b,17b ISOSTERANE (20S)	50.97	217	124	0.79	2.7
31	C28 5a,14a,17a STERANE (20R)	0.00	217	0	0.00	0.0
33	C29 5a,14a,17a STERANE (20S)	52.33	217	15	0.10	0.4
34	C29 5a,14b,17b ISOSTERANE (20R)	52.54	217	295	2.02	6.9
35	C29 5a,14b,17b ISOSTERANE (20S)	52.74	217	320	2.19	7.5
37	C29 5a,14a,17a STERANE (20R)	53.42	217	121	0.83	2.8
38	C30 5a,14a,17a STERANE (20S)	0.00	217	0	0.00	0.0
39	C30 5a,14b,17b ISOSTERANE (20R)	54.02	217	51	0.35	1.2
40	C30 5a,14b,17b ISOSTERANE (20S)	54.25	217	185	1.27	4.3
41	C30 5a,14a,17a STERANE (20R)	54.93	217	128	0.88	3.0

Percent composition data for saturated biomarkers are based on concentration data

STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill
Lab Sample ID: C45286
Sample Descriptor: SED-TP-01
Analysis Date: 1/8/2005

PARAMETERS

A:LEVEL OF MATURITY

Steranes		Terpanes	
% 20S C29 STERANES	11.0	% 22S C31 HOMOHOPANE	34.7
% C29 ISOSTERANES (abb)	81.9	% C30 HOPANE	100.0
% REGULAR STERANES	13.8	% TS/TS+TM (C27)	42.7
% ISOSTERANES	32.6	TS/TM (C27)	0.74
% DIASTERANES	39.4	% C30 MORETANE	0.0
% SHORT-CHAIN STERANES	14.1	% C29 NORMORETANE	27.5
		DIAHOPANE INDEX (%)	2.4
		% TRICYCLIC TERPANES	21.1

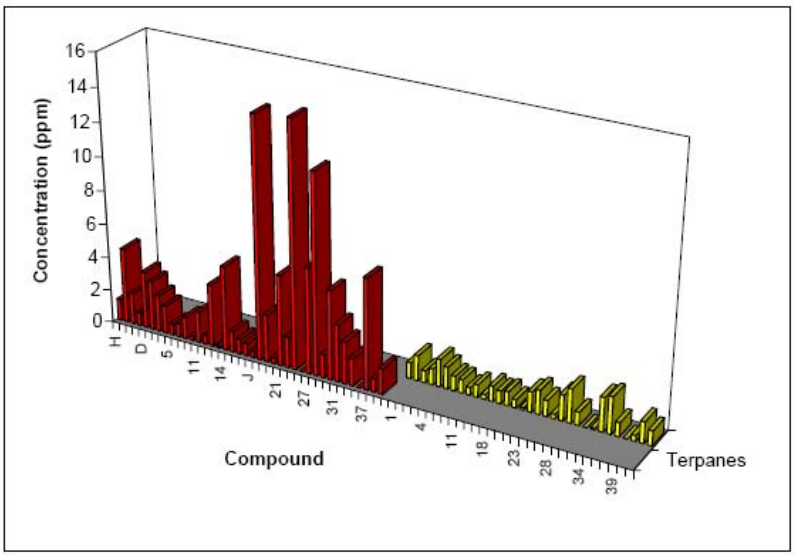
B:ORGANIC FACIES AND DEPOSITIONAL ENVIRONMENT

% TOTAL C20+C21	14.1	OLEANANE INDEX (%)	11.4
% TOTAL C27	25.7	GAMMACERANE INDEX (%)	8.7
% TOTAL C28	19.3	BISNORHOPANE INDEX (%)	5.0
% TOTAL C29	32.4	25-NORHOPANE INDEX (%)	2.7
% TOTAL C30	8.5	DIAHOPANE INDEX (%)	2.4
HOPANES/STERANES	3.9	% TRICYCLIC TERPANES	21.1
% DIASTERANES	39.4	% C24 TETRACYCLIC TERPANE	10.4
TOTAL STERANES (ppm)	29	% MORETANES	15.8
		% TOTAL C31 PENTACYCLICS	45.4
Other Biological Markers		% TOTAL C32 PENTACYCLICS	21.8
		% TOTAL C33 PENTACYCLICS	10.5
b-Carotane (ppm)	1.0	% TOTAL C34 PENTACYCLICS	16.5
		% TOTAL C35 PENTACYCLICS	5.8
		C35/C34 HOMOHOPANES	0.35
		29/30 HOPANES	0.99
		TOTAL TRITERPANES (ppm)	116.9

All ratios based on concentrations

STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill
Lab Sample ID: C45286
Sample Descriptor: SED-TP-01
Analysis Date: 1/8/2005



STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill
Lab Sample ID: C45287
Sample Descriptor: SED-CW-01
Analysis Date: 1/8/2005

No.	COMPOUND NAME	RT	ION	AREA	CONC	%
	TERPANES				(ng/g)	
H	C19 TRICYCLIC TERPANE	28.96	191	1032	6.74	0.6
A	C20 TRICYCLIC TERPANE	30.69	191	8357	54.58	4.5
B	C21 TRICYCLIC TERPANE	32.57	191	2226	14.54	1.2
C	C22 TRICYCLIC TERPANE	34.42	191	1248	8.15	0.7
D	C23 TRICYCLIC TERPANE	36.70	191	7354	48.03	3.9
E	C24 TRICYCLIC TERPANE	37.96	191	4197	27.41	2.3
1	C25 TRICYCLIC TERPANE	40.64	191	3507	22.91	1.9
4	C24 TETRACYCLIC TERPANE	42.55	191	4971	32.47	2.7
5	C26 TRICYCLIC TERPANE (22R)	42.63	191	1272	8.31	0.7
6	C26 TRICYCLIC TERPANE (22S)	42.78	191	2119	13.84	1.1
9	C28 TRICYCLIC TERPANE (22R)	44.32	191	1223	7.99	0.7
10	C28 TRICYCLIC TERPANE (22S)	45.10	191	482	3.15	0.3
11	C29 TRICYCLIC TERPANE (22R)	47.25	191	3195	20.87	1.7
12	C29 TRICYCLIC TERPANE (22S)	47.49	191	1854	12.11	1.0
13	C27 18a-22,29,30-TRISNORNEOHOPANE (Ts)	49.86	191	7248	47.34	3.9
I	C27 PENTACYCLIC TERPANE (Y)	50.50	191	177	1.16	0.1
14	C27 17a-22,29,30-TRISNORHOPANE (Tm)	50.79	191	7905	51.63	4.2
15	C30 TRICYCLIC TERPANE (22R)	51.07	191	2571	16.79	1.4
16	C30 TRICYCLIC TERPANE (22S)	51.32	191	1658	10.83	0.9
17	C28 17a,21b-28,30-BISNORHOPANE	52.85	191	2373	15.50	1.3
J	C29 17a,21b-25-NORHOPANE	52.97	191	1037	6.77	0.6
19	C29 17a,21b-30-NORHOPANE	53.59	191	26086	170.38	14.0
20	C29 18a-NORNEOHOPANE (29Ts)	53.69	191	4091	26.72	2.2
F	C30 DIAHOPANE	54.02	191	1536	10.03	0.8
21	C29 17b,21a-30-NORMORETANE	54.68	191	4247	27.74	2.3
22	C30 18a-OLEANANE	55.01	191	2388	15.60	1.3
23	C30 17a,21b-HOPANE	55.34	191	25924	169.32	13.9
24	C30 17b,21a-MORETANE	56.20	191	4418	28.86	2.4
27	C31 17a,21b-HOMOHOPANE (22S)	57.40	191	9681	63.23	5.2
28	C31 17a,21b-HOMOHOPANE(22R)	57.62	191	7618	49.76	4.1
G	C30 GAMMACERANE	58.03	191	2817	18.40	1.5
30	C32 17a,21b-HOMOHOPANE (22S)	58.94	191	4194	27.39	2.3
31	C32 17a,21b-HOMOHOPANE (22R)	59.33	191	4396	28.71	2.4
34	C33 17a,21b-HOMOHOPANE (22S)	60.92	191	4489	29.32	2.4
35	C33 17a,21b-HOMOHOPANE (22R)	61.33	191	4203	27.45	2.3
36	C34 17a,21b-HOMOHOPANE (22S)	62.60	191	3984	26.02	2.1
37	C34 17a,21b-HOMOHOPANE (22R)	63.33	191	6680	43.63	3.6
38	C35 17a,21b-HOMOHOPANE (22S)	64.91	191	2288	14.94	1.2
39	C35 17a,21b-HOMOHOPANE (22R)	65.65	191	1153	7.53	0.6

STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill
Lab Sample ID: C45287
Sample Descriptor: SED-CW-01
Analysis Date: 1/8/2005

No.	COMPOUND NAME	RT	ION	AREA	CONC	%
	STERANES				(ng/mg)	
A	C21 DIAPREGNANE	33.06	217	1030	10.21	2.1
1	C21 PREGNANE	34.79	217	1989	19.72	4.0
B	C22 DIAHOMOPREGNANE	34.91	217	1051	10.42	2.1
2	C22 HOMOPREGNANE	37.36	217	1240	12.29	2.5
3	C27 13b,17a DIASTERANE (20S)	44.98	217	2861	28.70	5.9
4	C27 13b,17a DIASTERANE (20R)	45.68	217	1898	19.04	3.9
8	C27 13a,17b DIASTERANE (20S)	46.30	217	1027	10.30	2.1
9	C27 13a,17b DIASTERANE (20R)	46.67	217	1159	11.63	2.4
10	C28 13b,17a DIASTERANE (20S) (24R/24S ?)	47.60	217	104	1.04	0.2
11	C28 13b,17a DIASTERANE (20S) (24R/24S ?)	47.78	217	1340	13.44	2.8
14+15	C28 13b,17a DIASTERANE (20R) (24R/24S ?)	48.15	217	476	4.77	1.0
16	C28 13a,17b DIASTERANE (20S)	48.30	217	460	4.67	1.0
17	C27 5a,14a,17a STERANE (20S)	48.40	217	2473	25.10	5.1
18	C27 5a,14b,17b ISOSTERANE (20R) + C29 13b,17a DIASTERANE (20S)	48.58	217	1536	15.59	3.2
19	C27 5a,14b,17b ISOSTERANE (20S)	48.81	217	2649	26.89	5.5
20	C28 13a,17b DIASTERANE (20R)	49.00	217	149	1.51	0.3
22	C27 5a,14a,17a STERANE (20R)	49.22	217	1437	14.59	3.0
23	C29 13b,17a DIASTERANE (20R)	49.49	217	2635	26.75	5.5
24	C29 13a,17b DIASTERANE (20S)	49.92	217	615	6.24	1.3
26	C28 5a,14a,17a STERANE (20S)	50.48	217	870	9.41	1.9
27	C29 13a,17b DIASTERANE (20R)	50.60	217	1400	15.15	3.1
28	C28 5a,14b,17b ISOSTERANE (20R)	50.77	217	2235	24.19	5.0
29	C28 5a,14b,17b ISOSTERANE (20S)	51.01	217	1744	18.87	3.9
31	C28 5a,14a,17a STERANE (20R)	51.53	217	1282	13.87	2.8
33	C29 5a,14a,17a STERANE (20S)	52.33	217	48	0.56	0.1
34	C29 5a,14b,17b ISOSTERANE (20R)	52.56	217	3165	36.67	7.5
35	C29 5a,14b,17b ISOSTERANE (20S)	52.74	217	2162	25.05	5.1
37	C29 5a,14a,17a STERANE (20R)	53.40	217	1959	22.70	4.7
38	C30 5a,14a,17a STERANE (20S)	53.63	217	1453	16.83	3.5
39	C30 5a,14b,17b ISOSTERANE (20R)	54.04	217	420	4.87	1.0
40	C30 5a,14b,17b ISOSTERANE (20S)	54.22	217	1018	11.79	2.4
41	C30 5a,14a,17a STERANE (20R)	54.95	217	2156	24.98	5.1

Percent composition data for saturated biomarkers are based on concentration data

STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill
Lab Sample ID: C45287
Sample Descriptor: SED-CW-01
Analysis Date: 1/8/2005

PARAMETERS

A:LEVEL OF MATURITY

Steranes		Terpanes	
% 20S C29 STERANES	2.4	% 22S C31 HOMOHOPANE	56.0
% C29 ISOSTERANES (abb)	72.6	% C30 HOPANE	85.4
% REGULAR STERANES	26.2	% TS/TS+TM (C27)	47.8
% ISOSTERANES	32.0	TS/TM (C27)	0.92
% DIASTERANES	31.0	% C30 MORETANE	14.6
% SHORT-CHAIN STERANES	10.8	% C29 NORMORETANE	14.0
		DIAHOPANE INDEX (%)	5.6
		% TRICYCLIC TERPANES	22.7

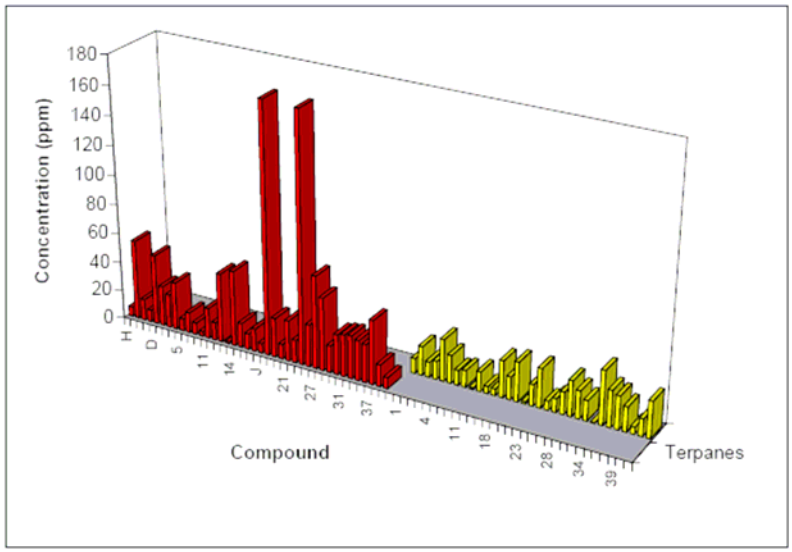
B:ORGANIC FACIES AND DEPOSITIONAL ENVIRONMENT

% TOTAL C20+C21	10.8	OLEANANE INDEX (%)	8.4
% TOTAL C27	29.5	GAMMACERANE INDEX (%)	9.8
% TOTAL C28	18.8	BISNORHOPANE INDEX (%)	8.4
% TOTAL C29	28.9	25-NORHOPANE INDEX (%)	3.8
% TOTAL C30	12.0	DIAHOPANE INDEX (%)	5.6
HOPANES/STERANES	2.5	% TRICYCLIC TERPANES	22.7
% DIASTERANES	31.0	% C24 TETRACYCLIC TERPANE	16.1
TOTAL STERANES (ppm)	488	% MORETANES	14.3
		% TOTAL C31 PENTACYCLICS	35.5
Other Biological Markers		% TOTAL C32 PENTACYCLICS	17.6
		% TOTAL C33 PENTACYCLICS	17.9
b-Carotane (ppm)	3.4	% TOTAL C34 PENTACYCLICS	21.9
		% TOTAL C35 PENTACYCLICS	7.1
		C35/C34 HOMOHOPANES	0.32
		29/30 HOPANES	1.01
		TOTAL TRITERPANES (ppm)	1216.2

All ratios based on concentrations

STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill
Lab Sample ID: C45287
Sample Descriptor: SED-CW-01
Analysis Date: 1/8/2005



STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill
Lab Sample ID: C45291
Sample Descriptor: SED-PP-01
Analysis Date: 1/8/2005

No.	COMPOUND NAME	RT	ION	AREA	CONC	%
	TERPANES				(ng/g)	
H	C19 TRICYCLIC TERPANE	28.94	191	1139	1.51	0.7
A	C20 TRICYCLIC TERPANE	30.69	191	13265	17.60	7.6
B	C21 TRICYCLIC TERPANE	32.56	191	3715	4.93	2.1
C	C22 TRICYCLIC TERPANE	34.40	191	1616	2.14	0.9
D	C23 TRICYCLIC TERPANE	36.70	191	8599	11.41	4.9
E	C24 TRICYCLIC TERPANE	37.96	191	4991	6.62	2.9
1	C25 TRICYCLIC TERPANE	40.62	191	3794	5.03	2.2
4	C24 TETRACYCLIC TERPANE	42.55	191	4578	6.07	2.6
5	C26 TRICYCLIC TERPANE (22R)	42.61	191	1750	2.32	1.0
6	C26 TRICYCLIC TERPANE (22S)	42.78	191	2240	2.97	1.3
9	C28 TRICYCLIC TERPANE (22R)	44.32	191	1129	1.50	0.6
10	C28 TRICYCLIC TERPANE (22S)	45.10	191	380	0.50	0.2
11	C29 TRICYCLIC TERPANE (22R)	47.22	191	3306	4.39	1.9
12	C29 TRICYCLIC TERPANE (22S)	47.51	191	1738	2.31	1.0
13	C27 18a-22,29,30-TRISNORNEOHOPANE (Ts)	49.86	191	7981	10.59	4.6
I	C27 PENTACYCLIC TERPANE (Y)	50.48	191	384	0.51	0.2
14	C27 17a-22,29,30-TRISNORHOPANE (Tm)	50.79	191	8291	11.00	4.7
15	C30 TRICYCLIC TERPANE (22R)	51.07	191	1908	2.53	1.1
16	C30 TRICYCLIC TERPANE (22S)	51.32	191	880	1.17	0.5
17	C28 17a,21b-28,30-BISNORHOPANE	52.85	191	2515	3.34	1.4
J	C29 17a,21b-25-NORHOPANE	52.95	191	485	0.64	0.3
19	C29 17a,21b-30-NORHOPANE	53.59	191	20441	27.11	11.7
20	C29 18a-NORNEOHOPANE (29Ts)	53.69	191	2979	3.95	1.7
F	C30 DIAHOPANE	54.02	191	1906	2.53	1.1
21	C29 17b,21a-30-NORMORETANE	54.68	191	6285	8.34	3.6
22	C30 18a-OLEANANE	55.01	191	4801	6.37	2.7
23	C30 17a,21b-HOPANE	55.34	191	24747	32.83	14.1
24	C30 17b,21a-MORETANE	56.20	191	5338	7.08	3.0
27	C31 17a,21b-HOMOHOPANE (22S)	57.37	191	7315	9.70	4.2
28	C31 17a,21b-HOMOHOPANE(22R)	57.62	191	6305	8.36	3.6
G	C30 GAMMACERANE	58.01	191	1480	1.96	0.8
30	C32 17a,21b-HOMOHOPANE (22S)	58.96	191	1901	2.52	1.1
31	C32 17a,21b-HOMOHOPANE (22R)	59.33	191	2966	3.93	1.7
34	C33 17a,21b-HOMOHOPANE (22S)	60.90	191	2987	3.96	1.7
35	C33 17a,21b-HOMOHOPANE (22R)	61.35	191	1788	2.37	1.0
36	C34 17a,21b-HOMOHOPANE (22S)	62.60	191	2313	3.07	1.3
37	C34 17a,21b-HOMOHOPANE (22R)	63.33	191	4749	6.30	2.7
38	C35 17a,21b-HOMOHOPANE (22S)	64.93	191	1361	1.81	0.8
39	C35 17a,21b-HOMOHOPANE (22R)	65.67	191	733	0.97	0.4

STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill
Lab Sample ID: C45291
Sample Descriptor: SED-PP-01
Analysis Date: 1/8/2005

No.	COMPOUND NAME	RT	ION	AREA	CONC	%
	STERANES				(ng/mg)	
A	C21 DIAPREGNANE	33.06	217	1588	3.20	3.8
1	C21 PREGNANE	34.79	217	2969	5.98	7.0
B	C22 DIAHOMOPREGNANE	34.91	217	1488	3.00	3.5
2	C22 HOMOPREGNANE	37.36	217	1481	2.98	3.5
3	C27 13b,17a DIASTERANE (20S)	44.98	217	2524	5.14	6.0
4	C27 13b,17a DIASTERANE (20R)	45.68	217	1587	3.23	3.8
8	C27 13a,17b DIASTERANE (20S)	46.32	217	998	2.03	2.4
9	C27 13a,17b DIASTERANE (20R)	46.65	217	744	1.52	1.8
10	C28 13b,17a DIASTERANE (20S) (24R/24S ?)	47.60	217	141	0.29	0.3
11	C28 13b,17a DIASTERANE (20S) (24R/24S ?)	47.78	217	1207	2.46	2.9
14+15	C28 13b,17a DIASTERANE (20R) (24R/24S ?)	48.17	217	446	0.91	1.1
16	C28 13a,17b DIASTERANE (20S)	48.34	217	614	1.27	1.5
17	C27 5a,14a,17a STERANE (20S)	48.40	217	1518	3.13	3.7
18	C27 5a,14b,17b ISOSTERANE (20R) + C29 13b,17a DIASTERANE (20S)	48.60	217	1059	2.18	2.6
19	C27 5a,14b,17b ISOSTERANE (20S)	48.81	217	1498	3.09	3.6
20	C28 13a,17b DIASTERANE (20R)	49.02	217	117	0.24	0.3
22	C27 5a,14a,17a STERANE (20R)	49.24	217	971	2.00	2.4
23	C29 13b,17a DIASTERANE (20R)	49.49	217	3323	6.85	8.0
24	C29 13a,17b DIASTERANE (20S)	49.94	217	876	1.81	2.1
26	C28 5a,14a,17a STERANE (20S)	50.50	217	419	0.92	1.1
27	C29 13a,17b DIASTERANE (20R)	50.60	217	1907	4.19	4.9
28	C28 5a,14b,17b ISOSTERANE (20R)	50.77	217	2381	5.23	6.1
29	C28 5a,14b,17b ISOSTERANE (20S)	50.99	217	1848	4.06	4.8
31	C28 5a,14a,17a STERANE (20R)	51.51	217	1129	2.48	2.9
33	C29 5a,14a,17a STERANE (20S)	52.31	217	93	0.22	0.3
34	C29 5a,14b,17b ISOSTERANE (20R)	52.56	217	2035	4.79	5.6
35	C29 5a,14b,17b ISOSTERANE (20S)	52.74	217	1355	3.19	3.7
37	C29 5a,14a,17a STERANE (20R)	53.40	217	1418	3.34	3.9
38	C30 5a,14a,17a STERANE (20S)	53.61	217	714	1.68	2.0
39	C30 5a,14b,17b ISOSTERANE (20R)	0.00	217	0	0.00	0.0
40	C30 5a,14b,17b ISOSTERANE (20S)	54.20	217	681	1.60	1.9
41	C30 5a,14a,17a STERANE (20R)	54.95	217	909	2.14	2.5

Percent composition data for saturated biomarkers are based on concentration data

STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill
Lab Sample ID: C45291
Sample Descriptor: SED-PP-01
Analysis Date: 1/8/2005

PARAMETERS

A:LEVEL OF MATURITY

Steranes		Terpanes	
% 20S C29 STERANES	6.2	% 22S C31 HOMOHOPANE	53.7
% C29 ISOSTERANES (abb)	69.2	% C30 HOPANE	82.3
% REGULAR STERANES	18.7	% TS/TS+TM (C27)	49.0
% ISOSTERANES	27.1	TS/TM (C27)	0.96
% DIASTERANES	36.4	% C30 MORETANE	17.7
% SHORT-CHAIN STERANES	17.8	% C29 NORMORETANE	23.5
		DIAHOPANE INDEX (%)	7.2
		% TRICYCLIC TERPANES	28.8

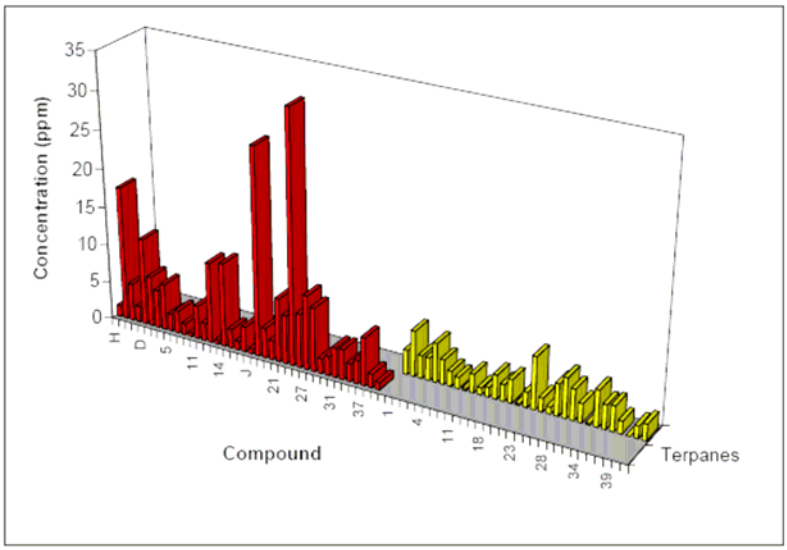
B:ORGANIC FACIES AND DEPOSITIONAL ENVIRONMENT

% TOTAL C20+C21	17.8	OLEANANE INDEX (%)	16.2
% TOTAL C27	24.9	GAMMACERANE INDEX (%)	5.6
% TOTAL C28	21.0	BISNORHOPANE INDEX (%)	9.2
% TOTAL C29	29.9	25-NORHOPANE INDEX (%)	1.9
% TOTAL C30	6.4	DIAHOPANE INDEX (%)	7.2
HOPANES/STERANES	2.7	% TRICYCLIC TERPANES	28.8
% DIASTERANES	36.4	% C24 TETRACYCLIC TERPANE	15.6
TOTAL STERANES (ppm)	85	% MORETANES	20.5
		% TOTAL C31 PENTACYCLICS	42.0
Other Biological Markers		% TOTAL C32 PENTACYCLICS	15.0
		% TOTAL C33 PENTACYCLICS	14.7
b-Carotane (ppm)	0.3	% TOTAL C34 PENTACYCLICS	21.8
		% TOTAL C35 PENTACYCLICS	6.5
		C35/C34 HOMOHOPANES	0.30
		29/30 HOPANES	0.83
		TOTAL TRITERPANES (ppm)	232.2

All ratios based on concentrations

STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill
Lab Sample ID: C45291
Sample Descriptor: SED-PP-01
Analysis Date: 1/8/2005



STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill
Lab Sample ID: C45292
Sample Descriptor: SED-PP-02
Analysis Date: 1/8/2005

No.	COMPOUND NAME	RT	ION	AREA	CONC	%
	TERPANES				(ng/g)	
H	C19 TRICYCLIC TERPANE	28.94	191	730	1.14	0.5
A	C20 TRICYCLIC TERPANE	30.71	191	5649	8.84	4.0
B	C21 TRICYCLIC TERPANE	32.57	191	2618	4.10	1.9
C	C22 TRICYCLIC TERPANE	34.42	191	945	1.48	0.7
D	C23 TRICYCLIC TERPANE	36.70	191	6720	10.52	4.8
E	C24 TRICYCLIC TERPANE	37.96	191	4144	6.49	2.9
1	C25 TRICYCLIC TERPANE	40.62	191	5795	9.07	4.1
4	C24 TETRACYCLIC TERPANE	42.55	191	3608	5.65	2.6
5	C26 TRICYCLIC TERPANE (22R)	42.61	191	1502	2.35	1.1
6	C26 TRICYCLIC TERPANE (22S)	42.76	191	1510	2.36	1.1
9	C28 TRICYCLIC TERPANE (22R)	44.32	191	1114	1.74	0.8
10	C28 TRICYCLIC TERPANE (22S)	45.10	191	378	0.59	0.3
11	C29 TRICYCLIC TERPANE (22R)	47.22	191	2241	3.51	1.6
12	C29 TRICYCLIC TERPANE (22S)	47.49	191	1338	2.09	0.9
13	C27 18a-22,29,30-TRISNORNEOHOPANE (Ts)	49.86	191	5681	8.89	4.0
I	C27 PENTACYCLIC TERPANE (Y)	50.52	191	225	0.35	0.2
14	C27 17a-22,29,30-TRISNORHOPANE (Tm)	50.79	191	6713	10.51	4.8
15	C30 TRICYCLIC TERPANE (22R)	51.07	191	1658	2.60	1.2
16	C30 TRICYCLIC TERPANE (22S)	51.32	191	877	1.37	0.6
17	C28 17a,21b-28,30-BISNORHOPANE	52.85	191	2609	4.08	1.9
J	C29 17a,21b-25-NORHOPANE	0.00	191	0	0.00	0.0
19	C29 17a,21b-30-NORHOPANE	53.59	191	16261	25.46	11.5
20	C29 18a-NORNEOHOPANE (29Ts)	53.65	191	3814	5.97	2.7
F	C30 DIAHOPANE	54.00	191	1681	2.63	1.2
21	C29 17b,21a-30-NORMORETANE	54.68	191	4025	6.30	2.9
22	C30 18a-OLEANANE	55.01	191	2900	4.54	2.1
23	C30 17a,21b-HOPANE	55.34	191	19967	31.26	14.2
24	C30 17b,21a-MORETANE	56.20	191	5084	7.96	3.6
27	C31 17a,21b-HOMOHOPANE (22S)	57.38	191	6225	9.75	4.4
28	C31 17a,21b-HOMOHOPANE(22R)	57.62	191	5900	9.24	4.2
G	C30 GAMMACERANE	58.01	191	1594	2.50	1.1
30	C32 17a,21b-HOMOHOPANE (22S)	58.92	191	1613	2.53	1.1
31	C32 17a,21b-HOMOHOPANE (22R)	59.33	191	2040	3.19	1.4
34	C33 17a,21b-HOMOHOPANE (22S)	60.92	191	2325	3.64	1.6
35	C33 17a,21b-HOMOHOPANE (22R)	61.31	191	1859	2.91	1.3
36	C34 17a,21b-HOMOHOPANE (22S)	62.60	191	2634	4.12	1.9
37	C34 17a,21b-HOMOHOPANE (22R)	63.33	191	5455	8.54	3.9
38	C35 17a,21b-HOMOHOPANE (22S)	64.93	191	1242	1.94	0.9
39	C35 17a,21b-HOMOHOPANE (22R)	65.65	191	252	0.39	0.2

STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill
Lab Sample ID: C45292
Sample Descriptor: SED-PP-02
Analysis Date: 1/8/2005

No.	COMPOUND NAME	RT	ION	AREA	CONC	%
	STERANES				(ng/mg)	
A	C21 DIAPREGNANE	33.06	217	1268	3.01	4.0
1	C21 PREGNANE	34.79	217	1876	4.46	5.9
B	C22 DIAHOMOPREGNANE	34.91	217	1429	3.40	4.5
2	C22 HOMOPREGNANE	37.36	217	1293	3.07	4.1
3	C27 13b,17a DIASTERANE (20S)	44.96	217	1975	4.75	6.3
4	C27 13b,17a DIASTERANE (20R)	45.68	217	1130	2.72	3.6
8	C27 13a,17b DIASTERANE (20S)	46.30	217	621	1.49	2.0
9	C27 13a,17b DIASTERANE (20R)	46.69	217	615	1.48	2.0
10	C28 13b,17a DIASTERANE (20S) (24R/24S ?)	47.57	217	62	0.15	0.2
11	C28 13b,17a DIASTERANE (20S) (24R/24S ?)	47.78	217	1166	2.80	3.7
14+15	C28 13b,17a DIASTERANE (20R) (24R/24S ?)	48.15	217	191	0.46	0.6
16	C28 13a,17b DIASTERANE (20S)	48.32	217	438	1.07	1.4
17	C27 5a,14a,17a STERANE (20S)	48.40	217	1142	2.78	3.7
18	C27 5a,14b,17b ISOSTERANE (20R) + C29 13b,17a DIASTERANE (20S)	48.58	217	558	1.36	1.8
19	C27 5a,14b,17b ISOSTERANE (20S)	48.81	217	1329	3.23	4.3
20	C28 13a,17b DIASTERANE (20R)	49.00	217	261	0.64	0.8
22	C27 5a,14a,17a STERANE (20R)	49.22	217	734	1.79	2.4
23	C29 13b,17a DIASTERANE (20R)	49.49	217	1935	4.71	6.3
24	C29 13a,17b DIASTERANE (20S)	49.92	217	439	1.07	1.4
26	C28 5a,14a,17a STERANE (20S)	50.48	217	314	0.81	1.1
27	C29 13a,17b DIASTERANE (20R)	50.58	217	1374	3.56	4.7
28	C28 5a,14b,17b ISOSTERANE (20R)	50.77	217	1536	3.98	5.3
29	C28 5a,14b,17b ISOSTERANE (20S)	50.99	217	1129	2.93	3.9
31	C28 5a,14a,17a STERANE (20R)	51.51	217	750	1.95	2.6
33	C29 5a,14a,17a STERANE (20S)	52.33	217	16	0.04	0.1
34	C29 5a,14b,17b ISOSTERANE (20R)	52.56	217	1799	5.00	6.7
35	C29 5a,14b,17b ISOSTERANE (20S)	52.74	217	1340	3.72	5.0
37	C29 5a,14a,17a STERANE (20R)	53.40	217	1150	3.19	4.3
38	C30 5a,14a,17a STERANE (20S)	53.81	217	250	0.69	0.9
39	C30 5a,14b,17b ISOSTERANE (20R)	54.02	217	225	0.62	0.8
40	C30 5a,14b,17b ISOSTERANE (20S)	54.20	217	609	1.69	2.3
41	C30 5a,14a,17a STERANE (20R)	54.95	217	881	2.45	3.3

Percent composition data for saturated biomarkers are based on concentration data

STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill
Lab Sample ID: C45292
Sample Descriptor: SED-PP-02
Analysis Date: 1/8/2005

PARAMETERS

A:LEVEL OF MATURITY

Steranes		Terpanes	
% 20S C29 STERANES	1.4	% 22S C31 HOMOHOPANE	51.3
% C29 ISOSTERANES (abb)	72.9	% C30 HOPANE	79.7
% REGULAR STERANES	18.3	% TS/TS+TM (C27)	45.8
% ISOSTERANES	29.1	TS/TM (C27)	0.85
% DIASTERANES	34.1	% C30 MORETANE	20.3
% SHORT-CHAIN STERANES	18.6	% C29 NORMORETANE	19.8
		DIAHOPANE INDEX (%)	7.8
		% TRICYCLIC TERPANES	26.4

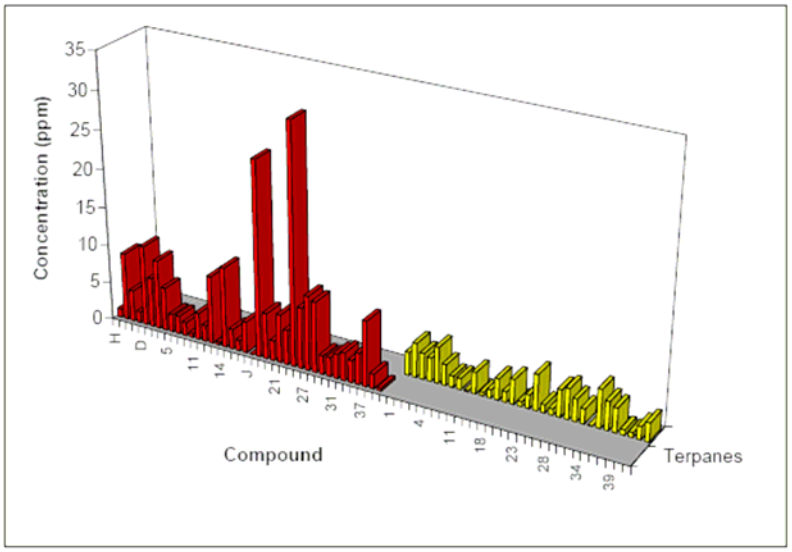
B:ORGANIC FACIES AND DEPOSITIONAL ENVIRONMENT

% TOTAL C20+C21	18.6	OLEANANE INDEX (%)	12.7
% TOTAL C27	25.2	GAMMACERANE INDEX (%)	7.4
% TOTAL C28	19.7	BISNORHOPANE INDEX (%)	11.6
% TOTAL C29	29.3	25-NORHOPANE INDEX (%)	0.0
% TOTAL C30	7.3	DIAHOPANE INDEX (%)	7.8
HOPANES/STERANES	2.9	% TRICYCLIC TERPANES	26.4
% DIASTERANES	34.1	% C24 TETRACYCLIC TERPANE	15.3
TOTAL STERANES (ppm)	75	% MORETANES	20.1
		% TOTAL C31 PENTACYCLICS	41.0
Other Biological Markers		% TOTAL C32 PENTACYCLICS	12.4
		% TOTAL C33 PENTACYCLICS	14.2
b-Carotane (ppm)	0.1	% TOTAL C34 PENTACYCLICS	27.4
		% TOTAL C35 PENTACYCLICS	5.1
		C35/C34 HOMOHOPANES	0.18
		29/30 HOPANES	0.81
		TOTAL TRITERPANES (ppm)	220.6

All ratios based on concentrations

STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill
Lab Sample ID: C45292
Sample Descriptor: SED-PP-02
Analysis Date: 1/8/2005



STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill
Lab Sample ID: C45293
Sample Descriptor: SED-PP-03
Analysis Date: 1/8/2005

No.	COMPOUND NAME	RT	ION	AREA	CONC	%
	TERPANES				(ng/g)	
H	C19 TRICYCLIC TERPANE	28.94	191	1432	3.48	0.8
A	C20 TRICYCLIC TERPANE	30.69	191	11648	28.34	6.1
B	C21 TRICYCLIC TERPANE	32.57	191	3986	9.70	2.1
C	C22 TRICYCLIC TERPANE	34.42	191	1458	3.55	0.8
D	C23 TRICYCLIC TERPANE	36.72	191	9229	22.46	4.9
E	C24 TRICYCLIC TERPANE	37.96	191	5944	14.46	3.1
1	C25 TRICYCLIC TERPANE	40.64	191	3856	9.38	2.0
4	C24 TETRACYCLIC TERPANE	42.55	191	5752	14.00	3.0
5	C26 TRICYCLIC TERPANE (22R)	42.63	191	1448	3.52	0.8
6	C26 TRICYCLIC TERPANE (22S)	42.78	191	2603	6.33	1.4
9	C28 TRICYCLIC TERPANE (22R)	44.32	191	1812	4.41	1.0
10	C28 TRICYCLIC TERPANE (22S)	45.12	191	640	1.56	0.3
11	C29 TRICYCLIC TERPANE (22R)	47.25	191	3509	8.54	1.8
12	C29 TRICYCLIC TERPANE (22S)	47.51	191	2006	4.88	1.1
13	C27 18a-22,29,30-TRISNORNEOHOPANE (Ts)	49.86	191	8679	21.12	4.6
I	C27 PENTACYCLIC TERPANE (Y)	50.52	191	133	0.32	0.1
14	C27 17a-22,29,30-TRISNORHOPANE (Tm)	50.79	191	10224	24.88	5.4
15	C30 TRICYCLIC TERPANE (22R)	51.07	191	2120	5.16	1.1
16	C30 TRICYCLIC TERPANE (22S)	51.32	191	1124	2.74	0.6
17	C28 17a,21b-28,30-BISNORHOPANE	52.85	191	2907	7.07	1.5
J	C29 17a,21b-25-NORHOPANE	52.97	191	268	0.65	0.1
19	C29 17a,21b-30-NORHOPANE	53.59	191	25148	61.19	13.3
20	C29 18a-NORNEOHOPANE (29Ts)	53.65	191	5754	14.00	3.0
F	C30 DIAHOPANE	54.02	191	2010	4.89	1.1
21	C29 17b,21a-30-NORMORETANE	54.68	191	4860	11.83	2.6
22	C30 18a-OLEANANE	55.01	191	4481	10.90	2.4
23	C30 17a,21b-HOPANE	55.34	191	30889	75.16	16.3
24	C30 17b,21a-MORETANE	56.20	191	6410	15.60	3.4
27	C31 17a,21b-HOMOHOPANE (22S)	57.38	191	8396	20.43	4.4
28	C31 17a,21b-HOMOHOPANE(22R)	57.62	191	6548	15.93	3.5
G	C30 GAMMACERANE	58.01	191	1170	2.85	0.6
30	C32 17a,21b-HOMOHOPANE (22S)	58.92	191	481	1.17	0.3
31	C32 17a,21b-HOMOHOPANE (22R)	59.33	191	3351	8.15	1.8
34	C33 17a,21b-HOMOHOPANE (22S)	60.90	191	2759	6.71	1.5
35	C33 17a,21b-HOMOHOPANE (22R)	61.35	191	1855	4.51	1.0
36	C34 17a,21b-HOMOHOPANE (22S)	62.60	191	694	1.69	0.4
37	C34 17a,21b-HOMOHOPANE (22R)	63.33	191	2605	6.34	1.4
38	C35 17a,21b-HOMOHOPANE (22S)	64.91	191	1022	2.49	0.5
39	C35 17a,21b-HOMOHOPANE (22R)	65.65	191	514	1.25	0.3

STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill
Lab Sample ID: C45293
Sample Descriptor: SED-PP-03
Analysis Date: 1/8/2005

No.	COMPOUND NAME	RT	ION	AREA	CONC	%
	STERANES				(ng/mg)	
A	C21 DIAPREGNANE	33.06	217	1638	6.05	3.5
1	C21 PREGNANE	34.79	217	3435	12.69	7.3
B	C22 DIAHOMOPREGNANE	34.91	217	2331	8.61	5.0
2	C22 HOMOPREGNANE	37.36	217	1704	6.29	3.6
3	C27 13b,17a DIASTERANE (20S)	44.98	217	3311	12.37	7.1
4	C27 13b,17a DIASTERANE (20R)	45.68	217	1850	6.91	4.0
8	C27 13a,17b DIASTERANE (20S)	46.32	217	844	3.15	1.8
9	C27 13a,17b DIASTERANE (20R)	46.67	217	1067	3.99	2.3
10	C28 13b,17a DIASTERANE (20S) (24R/24S ?)	47.60	217	179	0.67	0.4
11	C28 13b,17a DIASTERANE (20S) (24R/24S ?)	47.78	217	1462	5.46	3.2
14+15	C28 13b,17a DIASTERANE (20R) (24R/24S ?)	48.15	217	419	1.57	0.9
16	C28 13a,17b DIASTERANE (20S)	48.32	217	754	2.85	1.6
17	C27 5a,14a,17a STERANE (20S)	48.40	217	2561	9.69	5.6
18	C27 5a,14b,17b ISOSTERANE (20R) + C29 13b,17a DIASTERANE (20S)	48.58	217	1412	5.34	3.1
19	C27 5a,14b,17b ISOSTERANE (20S)	48.81	217	1601	6.05	3.5
20	C28 13a,17b DIASTERANE (20R)	49.00	217	208	0.79	0.5
22	C27 5a,14a,17a STERANE (20R)	49.22	217	1160	4.39	2.5
23	C29 13b,17a DIASTERANE (20R)	49.49	217	2615	9.89	5.7
24	C29 13a,17b DIASTERANE (20S)	49.94	217	613	2.32	1.3
26	C28 5a,14a,17a STERANE (20S)	50.46	217	677	2.73	1.6
27	C29 13a,17b DIASTERANE (20R)	50.60	217	1782	7.18	4.2
28	C28 5a,14b,17b ISOSTERANE (20R)	50.77	217	1905	7.68	4.4
29	C28 5a,14b,17b ISOSTERANE (20S)	50.99	217	1664	6.71	3.9
31	C28 5a,14a,17a STERANE (20R)	51.51	217	1164	4.69	2.7
33	C29 5a,14a,17a STERANE (20S)	52.31	217	105	0.45	0.3
34	C29 5a,14b,17b ISOSTERANE (20R)	52.56	217	2380	10.27	5.9
35	C29 5a,14b,17b ISOSTERANE (20S)	52.74	217	1449	6.25	3.6
37	C29 5a,14a,17a STERANE (20R)	53.40	217	1697	7.32	4.2
38	C30 5a,14a,17a STERANE (20S)	53.61	217	988	4.26	2.5
39	C30 5a,14b,17b ISOSTERANE (20R)	54.02	217	275	1.19	0.7
40	C30 5a,14b,17b ISOSTERANE (20S)	54.20	217	595	2.57	1.5
41	C30 5a,14a,17a STERANE (20R)	54.95	217	621	2.68	1.5

Percent composition data for saturated biomarkers are based on concentration data

STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill
Lab Sample ID: C45293
Sample Descriptor: SED-PP-03
Analysis Date: 1/8/2005

PARAMETERS

A:LEVEL OF MATURITY

Steranes		Terpanes	
% 20S C29 STERANES	5.8	% 22S C31 HOMOHOPANE	56.2
% C29 ISOSTERANES (abb)	68.0	% C30 HOPANE	82.8
% REGULAR STERANES	20.9	% TS/TS+TM (C27)	45.9
% ISOSTERANES	25.1	TS/TM (C27)	0.85
% DIASTERANES	34.6	% C30 MORETANE	17.2
% SHORT-CHAIN STERANES	19.4	% C29 NORMORETANE	16.2
		DIAHOPANE INDEX (%)	6.1
		% TRICYCLIC TERPANES	27.8

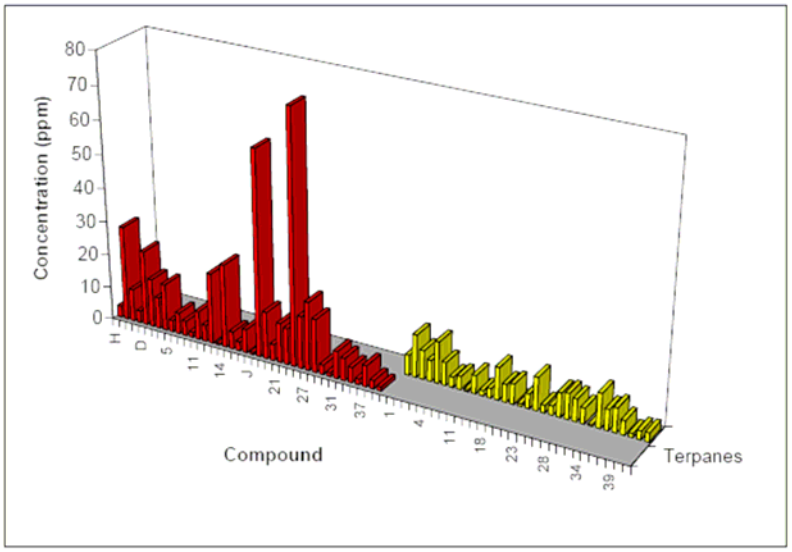
B:ORGANIC FACIES AND DEPOSITIONAL ENVIRONMENT

% TOTAL C20+C21	19.4	OLEANANE INDEX (%)	12.7
% TOTAL C27	28.4	GAMMACERANE INDEX (%)	3.6
% TOTAL C28	19.2	BISNORHOPANE INDEX (%)	8.6
% TOTAL C29	26.8	25-NORHOPANE INDEX (%)	0.9
% TOTAL C30	6.2	DIAHOPANE INDEX (%)	6.1
HOPANES/STERANES	2.6	% TRICYCLIC TERPANES	27.8
% DIASTERANES	34.6	% C24 TETRACYCLIC TERPANE	15.7
TOTAL STERANES (ppm)	173	% MORETANES	16.7
		% TOTAL C31 PENTACYCLICS	52.9
Other Biological Markers		% TOTAL C32 PENTACYCLICS	13.6
		% TOTAL C33 PENTACYCLICS	16.3
b-Carotane (ppm)	0.4	% TOTAL C34 PENTACYCLICS	11.7
		% TOTAL C35 PENTACYCLICS	5.4
		C35/C34 HOMOHOPANES	0.47
		29/30 HOPANES	0.81
		TOTAL TRITERPANES (ppm)	461.7

All ratios based on concentrations

STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill
Lab Sample ID: C45293
Sample Descriptor: SED-PP-03
Analysis Date: 1/8/2005



APPENDIX F

Oyster Tissue Analytical Results

F.1. Sample log with summary PAH data

F.2. PAH analyses results

F.3. Trace metal data for five samples collected on December 9, 2004.

F.4. Biomarker reports on 12 samples collected on December 7 and 9, 2004.

F.5. NOAA Mussel Watch samples collected at Hope Creek (DBHC), Arnolds Point (DBAP), and Ben Davis Point Shoal (DBBD).

F.1. Sample log with summary PAH data.

Sample ID	Latitude	Longitude	Date	Total PAHs (ng/g wet)	Comments
R_12_7_2004	39.20567	-75.36167	7-Dec-04	19.8	Ridge
SB_12_7_2004	39.22012	-75.38298	7-Dec-04	15.7	Silver Bed
LM_12_7_2004	39.23002	-75.35343	7-Dec-04	21.8	Lower Middle
RN_12_7_2004	39.23193	-75.33495	7-Dec-04	24.5	Red Nun
OB_12_7_2004	39.25822	-75.37707	7-Dec-04	22.3	Over the Bar
WB_12_7_2004	39.33165	-75.45527	7-Dec-04	17.1	Woodland Beach
NJMW1_12_7_2004	39.38125	-75.44997	7-Dec-04	24.5	NJ Mussel Watch Site
DBFE-091204	39.2100	-75.19148	9-Dec-04	25.4	DE Bay, False Egg
Newbedsoermo-091204	39.2468	-75.25307	9-Dec-04	26.1	
DBBD-091204	39.25138	-75.30147	9-Dec-04	28.5	De Bay, Ben Davis
DBAP-091204	39.38332	-75.44895	9-Dec-04	24.1	De Bay, Arnolds Point
DBHC-091204	39.42627	-75.48827	9-Dec-04	17.6	De Bay, Hope Creek
DBFE-032405	39.21000	-75.19150	24-Feb-05	21.5	De Bay, False Egg
DBBD-032405	39.25138	-75.30150	24-Feb-05	13.2	De Bay, Ben Davis
DBAP-032405	39.38332	-75.44900	24-Feb-05	28.9	De Bay, Arnolds Point
DBHC-032405	39.42627	-75.48830	24-Feb-05	25.3	De Bay, Hope Creek
Supplemental samples from the NOAA Mussel Watch program					
Sample ID	**Latitude**	**Longitude**	**Date**	**Total NS&T PAHs (ng/g dry)**	**Comments**
DBAP	39.2300	-75.2700	1-Jan-05	951	Arnolds Point
DBHC	39.25604	-75.2560	1-Jan-05	1041	Hope Creek
DBBD	39.1514	-75.1817	1-Jan-05	459	Ben Davis Point Shoal

F.2. PAH analyses results

Client Sample ID	R-12-7-2004	SB-12-7-2004
Sample Descriptor	10 Oysters	16 Oysters
Original Sample		
GERG ID	C45246	C45247
Sample Type	SAMP	SAMP
SDG	EC170	EC170
Dry Weight	1.14	1.18
Wet Weight	11.45	13.93
Sample Size Units	Grams	Grams
Matrix	Tissue	Tissue
% solid	10.0	8.5
% Lipid	6.0	4.5
Reporting Units	ng/g	ng/g
Calculation Basis (dry/wet)	Wet	Wet
QC Batch ID	T1463	T1463
Method	GCMS	GCMS
Collection Date	12/07/04	12/07/04
Receive Date	12/11/04	12/11/04
Extraction Date	12/14/04	12/14/04
Analysis Date	12/14/04	12/14/04
Surrogate Compounds	**%Recovery**	**%Recovery**
d8-Naphthalene	86.3	85.8
d10-Acenaphthene	99.2	101.9
d10-Phenanthrene	108.0	114.1
d12-Chrysene	88.0	87.9
d12-Perylene	74.0	77.1
Total PAHs	**Concentration**	**Concentration**
Total PAHs with Perylene	19.8	15.7
Total PAHs without Perylene	19.1	15.3
Total NS&T PAHs	7.1	5.7

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

Client Sample ID	R-12-7-2004			SB-12-7-2004		
Sample Descriptor	10 Oysters			16 Oysters		
Original Sample						
GERG ID	C45246			C45247		
Sample Type	SAMP			SAMP		
SDG	EC170			EC170		
PAH Compounds	**Concentration**	**MDL**		**Concentration**	**MDL**	
Naphthalene	0.56	0.47		0.48	0.38	
C1-Naphthalenes	0.37	0.80	J	0.33	0.66	J
C2-Naphthalenes	0.28	0.46	J	0.22	0.38	J
C3-Naphthalenes	0.55	0.70	J	0.47	0.58	J
C4-Naphthalenes	0.76	0.70		0.58	0.58	
Biphenyl	0.19	0.38	J	0.16	0.32	J
Acenaphthylene	0.45	0.24		0.29	0.20	
Acenaphthene	0.16	0.24	J	0.11	0.20	J
Fluorene	0.30	0.36	J	0.21	0.30	J
C1-Fluorenes	0.92	0.73		1.31	0.60	
C2-Fluorenes	1.59	0.73		0.90	0.60	
C3-Fluorenes	2.55	0.73		1.97	0.60	
Phenanthrene	0.73	0.34		0.48	0.28	
Anthracene	1.25	0.29		0.78	0.24	
C1-Phenanthrenes/Anthracenes	0.72	0.30		0.44	0.25	
C2-Phenanthrenes/Anthracenes	0.68	0.30		0.47	0.25	
C3-Phenanthrenes/Anthracenes	0.78	0.30		0.41	0.25	
C4-Phenanthrenes/Anthracenes	0.52	0.30		0.61	0.25	
Dibenzothiophene	0.09	0.12	J	0.06	0.10	J
C1-Dibenzothiophenes	0.52	0.25		0.21	0.21	
C2-Dibenzothiophenes	0.60	0.25		0.41	0.21	
C3-Dibenzothiophenes	0.61	0.25		0.41	0.21	
Fluoranthene	0.97	0.31		0.59	0.25	
Pyrene	1.36	0.33		0.79	0.27	
C1-Fluoranthenes/Pyrenes	0.83	0.64		0.56	0.53	
C2-Fluoranthenes/Pyrenes	0.58	0.64	J	0.33	0.53	J
C3-Fluoranthenes/Pyrenes	0.26	0.64	J	0.00	0.53	ND
Benzo(a)anthracene	0.25	0.32	J	0.17	0.26	J
Chrysene	0.89	0.25		0.52	0.21	
C1-Chrysenes	0.30	0.50	J	0.19	0.41	J
C2-Chrysenes	0.29	0.50	J	0.24	0.41	J
C3-Chrysenes	0.00	0.50	ND	0.00	0.41	ND
C4-Chrysenes	0.00	0.50	ND	0.00	0.41	ND
Benzo(b)fluoranthene	0.44	0.58	J	0.25	0.48	J
Benzo(k)fluoranthene	0.09	0.40	J	0.08	0.33	J
Benzo(e)pyrene	0.47	0.32		0.28	0.26	
Benzo(a)pyrene	0.18	0.63	J	0.11	0.51	J
Perylene	0.73	0.14		0.43	0.12	
Indeno(1,2,3-c,d)pyrene	0.10	0.59	J	0.02	0.49	J
Dibenz(a,h)anthracene	0.04	0.31	J	0.03	0.26	J
Benzo(g,h,i)perylene	0.16	0.49	J	0.11	0.40	J
2-Methylnaphthalene	0.21	0.36	J	0.19	0.29	J
1-Methylnaphthalene	0.16	0.44	J	0.14	0.36	J
2,6-Dimethylnaphthalene	0.12	0.23	J	0.09	0.19	J
1,6,7-Trimethylnaphthalene	0.14	0.35	J	0.10	0.29	J
1-Methylphenanthrene	0.16	0.15		0.10	0.12	J

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

Client Sample ID	LM-12-7-2004	RN-12-7-2004
Sample Descriptor	13 Oysters	12 Oysters
Original Sample		
GERG ID	C45248	C45249
Sample Type	SAMP	SAMP
SDG	EC170	EC170
Dry Weight	1.00	1.46
Wet Weight	10.41	13.29
Sample Size Units	Grams	Grams
Matrix	Tissue	Tissue
% solid	9.6	11.0
% Lipid	5.2	6.9
Reporting Units	ng/g	ng/g
Calculation Basis (dry/wet)	Wet	Wet
QC Batch ID	T1463	T1463
Method	GCMS	GCMS
Collection Date	12/07/04	12/07/04
Receive Date	12/11/04	12/11/04
Extraction Date	12/14/04	12/14/04
Analysis Date	12/14/04	12/15/04
Surrogate Compounds	**%Recovery**	**%Recovery**
d8-Naphthalene	69.4	77.8
d10-Acenaphthene	83.6	92.3
d10-Phenanthrene	94.5	101.5
d12-Chrysene	76.7	82.9
d12-Perylene	67.1	71.0
Total PAHs	**Concentration**	**Concentration**
Total PAHs with Perylene	21.8	24.5
Total PAHs without Perylene	21.0	23.9
Total NS&T PAHs	7.8	9.2

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

Client Sample ID	LM-12-7-2004			RN-12-7-2004		
Sample Descriptor	13 Oysters			12 Oysters		
Original Sample						
GERG ID	C45248			C45249		
Sample Type	SAMP			SAMP		
SDG	EC170			EC170		
PAH Compounds	**Concentration**	**MDL**		**Concentration**	**MDL**	
Naphthalene	0.58	0.51		0.63	0.40	
C1-Naphthalenes	0.42	0.88	J	0.43	0.69	J
C2-Naphthalenes	0.29	0.51	J	0.31	0.40	J
C3-Naphthalenes	0.64	0.77	J	0.55	0.60	J
C4-Naphthalenes	0.86	0.77		0.78	0.60	
Biphenyl	0.21	0.42	J	0.20	0.33	J
Acenaphthylene	0.43	0.27		0.51	0.21	
Acenaphthene	0.16	0.27	J	0.18	0.21	J
Fluorene	0.20	0.40	J	0.29	0.31	J
C1-Fluorenes	1.78	0.80		1.92	0.63	
C2-Fluorenes	1.40	0.80		1.55	0.63	
C3-Fluorenes	2.35	0.80		2.79	0.63	
Phenanthrene	0.56	0.37		0.67	0.29	
Anthracene	1.11	0.32		1.45	0.25	
C1-Phenanthrenes/Anthracenes	0.55	0.33		0.71	0.26	
C2-Phenanthrenes/Anthracenes	0.56	0.33		0.86	0.26	
C3-Phenanthrenes/Anthracenes	0.73	0.33		0.85	0.26	
C4-Phenanthrenes/Anthracenes	0.87	0.33		0.67	0.26	
Dibenzothiophene	0.07	0.14	J	0.11	0.11	
C1-Dibenzothiophenes	0.35	0.27		0.35	0.21	
C2-Dibenzothiophenes	0.59	0.27		0.78	0.21	
C3-Dibenzothiophenes	0.49	0.27		0.68	0.21	
Fluoranthene	0.71	0.34		1.03	0.27	
Pyrene	1.12	0.37		1.35	0.29	
C1-Fluoranthenes/Pyrenes	0.81	0.71		0.93	0.56	
C2-Fluoranthenes/Pyrenes	0.42	0.71	J	0.48	0.56	J
C3-Fluoranthenes/Pyrenes	0.27	0.71	J	0.17	0.56	J
Benzo(a)anthracene	0.25	0.35	J	0.34	0.28	
Chrysene	0.80	0.28		0.94	0.22	
C1-Chrysenes	0.38	0.55	J	0.31	0.43	J
C2-Chrysenes	0.36	0.55	J	0.27	0.43	J
C3-Chrysenes	0.00	0.55	ND	0.00	0.43	ND
C4-Chrysenes	0.00	0.55	ND	0.00	0.43	ND
Benzo(b)fluoranthene	0.43	0.64	J	0.41	0.50	J
Benzo(k)fluoranthene	0.10	0.44	J	0.07	0.34	J
Benzo(e)pyrene	0.42	0.35		0.42	0.27	
Benzo(a)pyrene	0.16	0.69	J	0.28	0.54	J
Perylene	0.85	0.16		0.56	0.12	
Indeno(1,2,3-c,d)pyrene	0.09	0.65	J	0.13	0.51	J
Dibenz(a,h)anthracene	0.03	0.34	J	0.04	0.27	J
Benzo(g,h,i)perylene	0.12	0.54	J	0.15	0.42	J
2-Methylnaphthalene	0.23	0.39	J	0.22	0.31	J
1-Methylnaphthalene	0.19	0.49	J	0.21	0.38	J
2,6-Dimethylnaphthalene	0.12	0.25	J	0.13	0.20	J
1,6,7-Trimethylnaphthalene	0.09	0.39	J	0.13	0.30	J
1-Methylphenanthrene	0.14	0.17	J	0.24	0.13	

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

Client Sample ID	OB-12-7-2004	WB-12-7-2004
Sample Descriptor	16 Oysters	13 Oysters
Original Sample		
GERG ID	C45250	C45251
Sample Type	SAMP	SAMP
SDG	EC170	EC170
Dry Weight	1.35	0.64
Wet Weight	13.49	11.67
Sample Size Units	Grams	Grams
Matrix	Tissue	Tissue
% solid	10.0	5.5
% Lipid	5.0	3.5
Reporting Units	ng/g	ng/g
Calculation Basis (dry/wet)	Wet	Wet
QC Batch ID	T1463	T1463
Method	GCMS	GCMS
Collection Date	12/07/04	12/07/04
Receive Date	12/11/04	12/11/04
Extraction Date	12/14/04	12/14/04
Analysis Date	12/15/04	12/15/04
Surrogate Compounds	**%Recovery**	**%Recovery**
d8-Naphthalene	80.4	76.2
d10-Acenaphthene	96.7	90.9
d10-Phenanthrene	94.1	104.5
d12-Chrysene	82.5	78.4
d12-Perylene	73.0	72.9
Total PAHs	**Concentration**	**Concentration**
Total PAHs with Perylene	22.3	17.1
Total PAHs without Perylene	21.4	16.4
Total NS&T PAHs	9.2	6.7

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

Client Sample ID	OB-12-7-2004			WB-12-7-2004		
Sample Descriptor	16 Oysters			13 Oysters		
Original Sample						
GERG ID	C45250			C45251		
Sample Type	SAMP			SAMP		
SDG	EC170			EC170		
PAH Compounds	**Concentration**	**MDL**		**Concentration**	**MDL**	
Naphthalene	0.75	0.39		0.58	0.46	
C1-Naphthalenes	0.54	0.68	J	0.45	0.78	J
C2-Naphthalenes	0.24	0.39	J	0.23	0.45	J
C3-Naphthalenes	0.44	0.59	J	0.53	0.69	J
C4-Naphthalenes	0.45	0.59	J	0.42	0.69	J
Biphenyl	0.17	0.33	J	0.21	0.38	J
Acenaphthylene	0.52	0.21		0.45	0.24	
Acenaphthene	0.14	0.21	J	0.16	0.24	J
Fluorene	0.22	0.31	J	0.26	0.36	J
C1-Fluorenes	0.46	0.62	J	0.51	0.71	J
C2-Fluorenes	1.02	0.62		1.01	0.71	
C3-Fluorenes	1.88	0.62		2.15	0.71	
Phenanthrene	0.59	0.29		0.42	0.33	
Anthracene	1.17	0.24		0.81	0.28	
C1-Phenanthrenes/Anthracenes	0.70	0.26		0.43	0.30	
C2-Phenanthrenes/Anthracenes	0.67	0.26		0.41	0.30	
C3-Phenanthrenes/Anthracenes	0.72	0.26		0.40	0.30	
C4-Phenanthrenes/Anthracenes	1.05	0.26		0.70	0.30	
Dibenzothiophene	0.08	0.11	J	0.05	0.12	J
C1-Dibenzothiophenes	0.29	0.21		0.31	0.24	
C2-Dibenzothiophenes	0.65	0.21		0.38	0.24	
C3-Dibenzothiophenes	0.76	0.21		0.59	0.24	
Fluoranthene	0.81	0.26		0.58	0.30	
Pyrene	1.38	0.28		0.90	0.33	
C1-Fluoranthenes/Pyrenes	1.16	0.55		0.75	0.63	
C2-Fluoranthenes/Pyrenes	0.68	0.55		0.59	0.63	J
C3-Fluoranthenes/Pyrenes	0.30	0.55	J	0.25	0.63	J
Benzo(a)anthracene	0.40	0.27		0.26	0.31	J
Chrysene	1.02	0.21		0.60	0.25	
C1-Chrysenes	0.42	0.43	J	0.37	0.49	J
C2-Chrysenes	0.44	0.43		0.29	0.49	J
C3-Chrysenes	0.11	0.43	J	0.00	0.49	ND
C4-Chrysenes	0.00	0.43	ND	0.00	0.49	ND
Benzo(b)fluoranthene	0.64	0.49		0.38	0.57	J
Benzo(k)fluoranthene	0.19	0.34	J	0.07	0.39	J
Benzo(e)pyrene	0.53	0.27		0.39	0.31	
Benzo(a)pyrene	0.32	0.53	J	0.16	0.61	J
Perylene	0.87	0.12		0.68	0.14	
Indeno(1,2,3-c,d)pyrene	0.22	0.50	J	0.08	0.58	J
Dibenz(a,h)anthracene	0.05	0.27	J	0.02	0.31	J
Benzo(g,h,i)perylene	0.22	0.42	J	0.10	0.48	J
2-Methylnaphthalene	0.29	0.30	J	0.25	0.35	J
1-Methylnaphthalene	0.25	0.38	J	0.20	0.43	J
2,6-Dimethylnaphthalene	0.10	0.20	J	0.08	0.23	J
1,6,7-Trimethylnaphthalene	0.11	0.30	J	0.10	0.34	J
1-Methylphenanthrene	0.15	0.13		0.11	0.15	J

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

Client Sample ID	NJMW1-12-7-2004	DBFE-091204
Sample Descriptor	37 Oysters	10 Oysters
Original Sample		
GERG ID	C45252	C45253
Sample Type	SAMP	SAMP
SDG	EC170	EC170
Dry Weight	0.78	2.28
Wet Weight	13.23	16.63
Sample Size Units	Grams	Grams
Matrix	Tissue	Tissue
% solid	5.9	13.7
% Lipid	2.8	9.1
Reporting Units	ng/g	ng/g
Calculation Basis (dry/wet)	Wet	Wet
QC Batch ID	T1463	T1463
Method	GCMS	GCMS
Collection Date	12/07/04	12/09/04
Receive Date	12/11/04	12/11/04
Extraction Date	12/14/04	12/14/04
Analysis Date	12/15/04	12/15/04
Surrogate Compounds	**%Recovery**	**%Recovery**
d8-Naphthalene	74.1	83.5
d10-Acenaphthene	87.5	98.6
d10-Phenanthrene	80.8	119.3
d12-Chrysene	70.7	96.5
d12-Perylene	60.2	75.5
Total PAHs	**Concentration**	**Concentration**
Total PAHs with Perylene	24.5	25.4
Total PAHs without Perylene	23.5	24.6
Total NS&T PAHs	10.4	10.8

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

Client Sample ID	NJMW1-12-7-2004			DBFE-091204		
Sample Descriptor	37 Oysters			10 Oysters		
Original Sample						
GERG ID	C45252			C45253		
Sample Type	SAMP			SAMP		
SDG	EC170			EC170		
PAH Compounds	**Concentration**	**MDL**		**Concentration**	**MDL**	
Naphthalene	0.68	0.40		0.56	0.32	
C1-Naphthalenes	0.62	0.69	J	0.68	0.55	
C2-Naphthalenes	0.31	0.40	J	0.48	0.32	
C3-Naphthalenes	0.56	0.61	J	0.69	0.48	
C4-Naphthalenes	0.52	0.61	J	0.84	0.48	
Biphenyl	0.19	0.33	J	0.27	0.26	
Acenaphthylene	0.30	0.21		0.46	0.17	
Acenaphthene	0.19	0.21	J	0.23	0.17	
Fluorene	0.20	0.31	J	0.40	0.25	
C1-Fluorenes	0.47	0.63	J	0.74	0.50	
C2-Fluorenes	0.86	0.63		1.93	0.50	
C3-Fluorenes	2.44	0.63		2.76	0.50	
Phenanthrene	0.55	0.29		0.76	0.23	
Anthracene	0.62	0.25		1.53	0.20	
C1-Phenanthrenes/Anthracenes	0.63	0.26		0.99	0.21	
C2-Phenanthrenes/Anthracenes	0.73	0.26		0.92	0.21	
C3-Phenanthrenes/Anthracenes	0.92	0.26		0.87	0.21	
C4-Phenanthrenes/Anthracenes	0.81	0.26		0.47	0.21	
Dibenzothiophene	0.06	0.11	J	0.12	0.09	
C1-Dibenzothiophenes	0.40	0.22		0.30	0.17	
C2-Dibenzothiophenes	0.70	0.22		0.60	0.17	
C3-Dibenzothiophenes	0.51	0.22		0.54	0.17	
Fluoranthene	1.11	0.27		1.26	0.21	
Pyrene	1.87	0.29		1.41	0.23	
C1-Fluoranthenes/Pyrenes	1.21	0.56		0.84	0.44	
C2-Fluoranthenes/Pyrenes	0.91	0.56		0.39	0.44	J
C3-Fluoranthenes/Pyrenes	0.41	0.56	J	0.00	0.44	ND
Benzo(a)anthracene	0.56	0.28		0.31	0.22	
Chrysene	0.97	0.22		1.00	0.17	
C1-Chrysenes	0.81	0.44		0.36	0.35	
C2-Chrysenes	0.40	0.44	J	0.47	0.35	
C3-Chrysenes	0.00	0.44	ND	0.00	0.35	ND
C4-Chrysenes	0.00	0.44	ND	0.00	0.35	ND
Benzo(b)fluoranthene	0.88	0.50		0.53	0.40	
Benzo(k)fluoranthene	0.33	0.34	J	0.14	0.27	J
Benzo(e)pyrene	0.64	0.27		0.54	0.22	
Benzo(a)pyrene	0.65	0.54		0.32	0.43	J
Perylene	1.04	0.13		0.80	0.10	
Indeno(1,2,3-c,d)pyrene	0.35	0.51	J	0.10	0.41	J
Dibenz(a,h)anthracene	0.07	0.27	J	0.03	0.22	J
Benzo(g,h,i)perylene	0.36	0.43	J	0.18	0.34	J
2-Methylnaphthalene	0.33	0.31		0.39	0.25	
1-Methylnaphthalene	0.29	0.38	J	0.29	0.30	J
2,6-Dimethylnaphthalene	0.12	0.20	J	0.18	0.16	
1,6,7-Trimethylnaphthalene	0.09	0.30	J	0.17	0.24	J
1-Methylphenanthrene	0.28	0.13		0.47	0.10	

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

Client Sample ID	Newbedsoermo-091204	DBBD-091204
Sample Descriptor	18 Oysters	18 Oysters
Original Sample		
GERG ID	C45254	C45255
Sample Type	SAMP	SAMP
SDG	EC170	EC170
Dry Weight	1.81	1.51
Wet Weight	14.53	13.28
Sample Size Units	Grams	Grams
Matrix	Tissue	Tissue
% solid	12.5	11.4
% Lipid	7.6	7.8
Reporting Units	ng/g	ng/g
Calculation Basis (dry/wet)	Wet	Wet
QC Batch ID	T1463	T1463
Method	GCMS	GCMS
Collection Date	12/09/04	12/09/04
Receive Date	12/11/04	12/11/04
Extraction Date	12/14/04	12/14/04
Analysis Date	12/15/04	12/15/04
Surrogate Compounds	**%Recovery**	**%Recovery**
d8-Naphthalene	91.9	87.4
d10-Acenaphthene	103.5	103.4
d10-Phenanthrene	119.3	111.6
d12-Chrysene	90.2	90.7
d12-Perylene	77.1	78.5
Total PAHs	**Concentration**	**Concentration**
Total PAHs with Perylene	26.1	28.5
Total PAHs without Perylene	25.4	27.5
Total NS&T PAHs	10.8	11.2

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

Client Sample ID	Newbedsoermo-091204			DBBD-091204		
Sample Descriptor	18 Oysters			18 Oysters		
Original Sample						
GERG ID	C45254			C45255		
Sample Type	SAMP			SAMP		
SDG	EC170			EC170		
PAH Compounds	**Concentration**	**MDL**		**Concentration**	**MDL**	
Naphthalene	0.58	0.37		0.63	0.40	
C1-Naphthalenes	0.53	0.63	J	0.43	0.69	J
C2-Naphthalenes	0.33	0.37	J	0.30	0.40	J
C3-Naphthalenes	0.59	0.55		0.65	0.60	
C4-Naphthalenes	0.79	0.55		0.83	0.60	
Biphenyl	0.18	0.30	J	0.19	0.33	J
Acenaphthylene	0.46	0.19		0.58	0.21	
Acenaphthene	0.20	0.19		0.20	0.21	J
Fluorene	0.36	0.29		0.29	0.31	J
C1-Fluorenes	0.67	0.57		1.13	0.63	
C2-Fluorenes	1.91	0.57		1.96	0.63	
C3-Fluorenes	3.33	0.57		2.92	0.63	
Phenanthrene	0.72	0.27		0.68	0.29	
Anthracene	1.46	0.23		1.58	0.25	
C1-Phenanthrenes/Anthracenes	0.91	0.24		0.92	0.26	
C2-Phenanthrenes/Anthracenes	0.89	0.24		1.03	0.26	
C3-Phenanthrenes/Anthracenes	0.95	0.24		1.07	0.26	
C4-Phenanthrenes/Anthracenes	0.66	0.24		0.92	0.26	
Dibenzothiophene	0.10	0.10		0.10	0.11	J
C1-Dibenzothiophenes	0.32	0.20		0.44	0.22	
C2-Dibenzothiophenes	0.63	0.20		0.74	0.22	
C3-Dibenzothiophenes	0.42	0.20		0.75	0.22	
Fluoranthene	1.39	0.24		1.19	0.27	
Pyrene	1.78	0.26		2.14	0.29	
C1-Fluoranthenes/Pyrenes	1.00	0.51		1.14	0.56	
C2-Fluoranthenes/Pyrenes	0.61	0.51		0.73	0.56	
C3-Fluoranthenes/Pyrenes	0.25	0.51	J	0.45	0.56	J
Benzo(a)anthracene	0.37	0.25		0.37	0.28	
Chrysene	1.12	0.20		1.22	0.22	
C1-Chrysenes	0.44	0.40		0.48	0.43	
C2-Chrysenes	0.32	0.40	J	0.46	0.43	
C3-Chrysenes	0.00	0.40	ND	0.14	0.43	J
C4-Chrysenes	0.00	0.40	ND	0.00	0.43	ND
Benzo(b)fluoranthene	0.53	0.46		0.57	0.50	
Benzo(k)fluoranthene	0.13	0.31	J	0.13	0.34	J
Benzo(e)pyrene	0.47	0.25		0.59	0.27	
Benzo(a)pyrene	0.36	0.49	J	0.31	0.54	J
Perylene	0.71	0.11		1.00	0.12	
Indeno(1,2,3-c,d)pyrene	0.20	0.47	J	0.15	0.51	J
Dibenz(a,h)anthracene	0.10	0.25	J	0.06	0.27	J
Benzo(g,h,i)perylene	0.23	0.39	J	0.17	0.42	J
2-Methylnaphthalene	0.32	0.28		0.24	0.31	J
1-Methylnaphthalene	0.21	0.35	J	0.19	0.38	J
2,6-Dimethylnaphthalene	0.15	0.18	J	0.15	0.20	J
1,6,7-Trimethylnaphthalene	0.15	0.28	J	0.14	0.30	J
1-Methylphenanthrene	0.33	0.12		0.20	0.13	

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

Client Sample ID	DBAP-091204	DBHC-091204
Sample Descriptor	17 Oysters	16 Oysters
Original Sample		
GERG ID	C45256	C45257
Sample Type	SAMP	SAMP
SDG	EC170	EC170
Dry Weight	0.64	0.64
Wet Weight	11.20	13.48
Sample Size Units	Grams	Grams
Matrix	Tissue	Tissue
% solid	5.7	4.8
% Lipid	29.3	5.1
Reporting Units	ng/g	ng/g
Calculation Basis (dry/wet)	Wet	Wet
QC Batch ID	T1463	T1463
Method	GCMS	GCMS
Collection Date	12/09/04	12/09/04
Receive Date	12/11/04	12/11/04
Extraction Date	12/14/04	12/14/04
Analysis Date	12/15/04	12/15/04
Surrogate Compounds	**%Recovery**	**%Recovery**
d8-Naphthalene	78.1	81.8
d10-Acenaphthene	88.5	96.6
d10-Phenanthrene	101.4	105.3
d12-Chrysene	78.7	81.0
d12-Perylene	67.8	69.0
Total PAHs	**Concentration**	**Concentration**
Total PAHs with Perylene	24.1	17.6
Total PAHs without Perylene	22.9	16.7
Total NS&T PAHs	10.1	6.7

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

Client Sample ID	DBAP-091204			DBHC-091204		
Sample Descriptor	17 Oysters			16 Oysters		
Original Sample						
GERG ID	C45256			C45257		
Sample Type	SAMP			SAMP		
SDG	EC170			EC170		
PAH Compounds	**Concentration**	**MDL**		**Concentration**	**MDL**	
Naphthalene	0.63	0.48		0.51	0.39	
C1-Naphthalenes	0.51	0.82	J	0.36	0.68	J
C2-Naphthalenes	0.29	0.47	J	0.22	0.39	J
C3-Naphthalenes	0.49	0.72	J	0.39	0.60	J
C4-Naphthalenes	0.74	0.72		0.73	0.60	
Biphenyl	0.19	0.39	J	0.15	0.33	J
Acenaphthylene	0.37	0.25		0.39	0.21	
Acenaphthene	0.18	0.25	J	0.17	0.21	J
Fluorene	0.18	0.37	J	0.19	0.31	J
C1-Fluorenes	0.65	0.74	J	0.54	0.62	J
C2-Fluorenes	0.97	0.74		0.83	0.62	
C3-Fluorenes	2.42	0.74		2.06	0.62	
Phenanthrene	0.47	0.35		0.31	0.29	
Anthracene	1.28	0.29		0.59	0.24	
C1-Phenanthrenes/Anthracenes	0.55	0.31		0.38	0.26	
C2-Phenanthrenes/Anthracenes	0.71	0.31		0.48	0.26	
C3-Phenanthrenes/Anthracenes	0.82	0.31		0.56	0.26	
C4-Phenanthrenes/Anthracenes	0.85	0.31		0.56	0.26	
Dibenzothiophene	0.06	0.13	J	0.06	0.11	J
C1-Dibenzothiophenes	0.51	0.26		0.36	0.21	
C2-Dibenzothiophenes	0.55	0.26		0.51	0.21	
C3-Dibenzothiophenes	0.78	0.26		0.44	0.21	
Fluoranthene	0.84	0.32		0.48	0.26	
Pyrene	1.70	0.34		1.19	0.28	
C1-Fluoranthenes/Pyrenes	1.06	0.66		0.75	0.55	
C2-Fluoranthenes/Pyrenes	0.84	0.66		0.61	0.55	
C3-Fluoranthenes/Pyrenes	0.37	0.66	J	0.23	0.55	J
Benzo(a)anthracene	0.43	0.33		0.27	0.27	J
Chrysene	1.03	0.26		0.72	0.21	
C1-Chrysenes	0.69	0.52		0.72	0.43	
C2-Chrysenes	0.37	0.52	J	0.26	0.43	J
C3-Chrysenes	0.00	0.52	ND	0.00	0.43	ND
C4-Chrysenes	0.00	0.52	ND	0.00	0.43	ND
Benzo(b)fluoranthene	0.71	0.59		0.45	0.49	J
Benzo(k)fluoranthene	0.21	0.41	J	0.13	0.34	J
Benzo(e)pyrene	0.61	0.32		0.43	0.27	
Benzo(a)pyrene	0.45	0.64	J	0.21	0.53	J
Perylene	1.26	0.15		0.90	0.12	
Indeno(1,2,3-c,d)pyrene	0.24	0.61	J	0.11	0.50	J
Dibenz(a,h)anthracene	0.06	0.32	J	0.04	0.27	J
Benzo(g,h,i)perylene	0.28	0.50	J	0.17	0.42	J
2-Methylnaphthalene	0.31	0.37	J	0.21	0.30	J
1-Methylnaphthalene	0.20	0.45	J	0.15	0.38	J
2,6-Dimethylnaphthalene	0.11	0.24	J	0.07	0.20	J
1,6,7-Trimethylnaphthalene	0.08	0.36	J	0.07	0.30	J
1-Methylphenanthrene	0.17	0.16		0.11	0.13	J

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

Client Sample ID	OS0002	OS0003
Sample Descriptor	DBFE	DBBD
Original Sample		
GERG ID	C45770	C45771
Sample Type	SAMP	SAMP
SDG	F2193	F2193
Dry Weight	0.36	0.45
Wet Weight	10.51	10.37
Sample Size Units	Grams	Grams
Matrix	Tissue	Tissue
% solid	3.4	4.4
% Lipid	4.2	2.1
Reporting Units	ng/g	ng/g
Calculation Basis (dry/wet)	Wet	Wet
QC Batch ID	T1477	T1477
Method	GCMS	GCMS
Collection Date	02/25/05	02/25/05
Receive Date	02/25/05	02/25/05
Extraction Date	03/03/05	03/03/05
Analysis Date	03/24/05	03/24/05
Surrogate Compounds	**%Recovery**	**%Recovery**
d8-Naphthalene	62.5	71.0
d10-Acenaphthene	66.5	75.8
d10-Phenanthrene	70.9	84.6
d12-Chrysene	68.1	81.7
d12-Perylene	55.8	63.8
Total PAHs	**Concentration**	**Concentration**
Total PAHs with Perylene	21.5	13.2
Total PAHs without Perylene	20.5	12.7
Total NS&T PAHs	7.6	5.0

ND	Not Detected
J	<MDL
NA	Not Applicable
Q	Results Outside QC
I	Interference
B	Blank Contamination >3xMDL
D	Dilution

Client Sample ID	OS0002			OS0003		
Sample Descriptor	DBFE			DBBD		
GERG ID						
Sample Type	C45770			C45771		
SDG	SAMP			SAMP		
PAH Compounds	**Concentration**	**MDL**		**Concentration**	**MDL**	
Naphthalene	0.74	0.51		0.46	0.51	J
C1-Naphthalenes	0.46	0.87	J	0.69	0.88	J
C2-Naphthalenes	0.75	0.51		0.45	0.51	J
C3-Naphthalenes	0.44	0.76	J	0.16	0.77	J
C4-Naphthalenes	0.36	0.76	J	0.27	0.77	J
Biphenyl	0.23	0.42	J	0.14	0.42	J
Acenaphthylene	0.37	0.27		0.27	0.27	J
Acenaphthene	0.30	0.27	J	0.20	0.27	J
Fluorene	0.17	0.40	J	0.10	0.40	J
C1-Fluorenes	0.56	0.79	J	0.35	0.80	J
C2-Fluorenes	0.81	0.79		0.33	0.80	J
C3-Fluorenes	1.24	0.79		1.01	0.80	
Phenanthrene	0.30	0.37	J	0.19	0.38	J
Anthracene	0.64	0.31		0.37	0.32	
C1-Phenanthrenes/Anthracenes	0.59	0.33		0.26	0.34	J
C2-Phenanthrenes/Anthracenes	0.74	0.33		0.45	0.34	
C3-Phenanthrenes/Anthracenes	0.97	0.33		0.46	0.34	
C4-Phenanthrenes/Anthracenes	0.73	0.33		0.34	0.34	
Dibenzothiophene	0.11	0.14	J	0.07	0.14	J
C1-Dibenzothiophenes	0.42	0.27		0.21	0.28	J
C2-Dibenzothiophenes	1.23	0.27		0.43	0.28	
C3-Dibenzothiophenes	1.16	0.27		0.50	0.28	
Fluoranthene	0.42	0.34		0.29	0.34	J
Pyrene	1.32	0.36		0.79	0.37	
C1-Fluoranthenes/Pyrenes	0.77	0.70		0.59	0.71	J
C2-Fluoranthenes/Pyrenes	0.67	0.70	J	0.39	0.71	J
C3-Fluoranthenes/Pyrenes	0.27	0.70	J	0.46	0.71	J
Benzo(a)anthracene	0.22	0.35	J	0.16	0.35	J
Chrysene	0.81	0.27		0.52	0.28	
C1-Chrysenes	0.62	0.55		0.36	0.56	J
C2-Chrysenes	0.17	0.55	J	0.24	0.56	J
C3-Chrysenes	0.19	0.55	J	0.19	0.56	J
C4-Chrysenes	0.27	0.55	J	0.00	0.56	ND
Benzo(b)fluoranthene	0.57	0.63	J	0.29	0.64	J
Benzo(k)fluoranthene	0.14	0.43	J	0.14	0.44	J
Benzo(e)pyrene	0.48	0.34		0.30	0.35	J
Benzo(a)pyrene	0.20	0.68	J	0.10	0.69	J
Perylene	0.97	0.16		0.56	0.16	
Indeno(1,2,3-c,d)pyrene	0.02	0.65	J	0.03	0.65	J
Dibenz(a,h)anthracene	0.02	0.34	J	0.01	0.35	J
Benzo(g,h,i)perylene	0.01	0.54	J	0.11	0.54	J
2-Methylnaphthalene	0.33	0.39	J	0.34	0.40	J
1-Methylnaphthalene	0.13	0.48	J	0.36	0.49	J
2,6-Dimethylnaphthalene	0.09	0.25	J	0.08	0.26	J
1,6,7-Trimethylnaphthalene	0.03	0.38	J	0.07	0.39	J
1-Methylphenanthrene	0.18	0.17		0.07	0.17	J

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

Client Sample ID	OS0005	OS0007
Sample Descriptor	DBAP	DBHC
Original Sample		
GERG ID	C45773	C45775
Sample Type	SAMP	SAMP
SDG	F2193	F2193
Dry Weight	1.32	1.49
Wet Weight	9.84	9.89
Sample Size Units	Grams	Grams
Matrix	Tissue	Tissue
% solid	13.4	15.1
% Lipid	6.6	8.8
Reporting Units	ng/g	ng/g
Calculation Basis (dry/wet)	Wet	Wet
QC Batch ID	T1477	T1477
Method	GCMS	GCMS
Collection Date	02/25/05	02/25/05
Receive Date	02/25/05	02/25/05
Extraction Date	03/03/05	03/03/05
Analysis Date	03/24/05	03/24/05
Surrogate Compounds	**%Recovery**	**%Recovery**
d8-Naphthalene	69.8	81.7
d10-Acenaphthene	74.3	81.9
d10-Phenanthrene	80.4	83.1
d12-Chrysene	70.8	77.3
d12-Perylene	62.0	67.0
Total PAHs	**Concentration**	**Concentration**
Total PAHs with Perylene	28.9	25.3
Total PAHs without Perylene	28.2	24.6
Total NS&T PAHs	11.4	10.6

ND	Not Detected
J	<MDL
NA	Not Applicable
Q	Results Outside QC
I	Interference
B	Blank Contamination >3xMDL
D	Dilution

F.3. Trace metal data for five samples collected on December 9, 2004.

Client Sample ID	DBFE-091204			Newbedsoermo-091204		
Sample Descriptor	10 Oysters			18 Oysters		
GERG Sample ID	C45253			C45254		
Sample Type	SAMP			SAMP		
GERG SDG	EC170			EC170		
Collection Date	12/9/2004			12/9/2004		
Receipt Date	12/11/2004			12/11/2004		
Matrix	Tissue			Tissue		
Acid Digest QC Batch	TS-306			TS-306		
Acid Digestion Wt	0.1084			0.1086		
Acid Digestion Date	12/14/2004			12/14/2004		
Hg Digest QC Batch	HG-1155			HG-1155		
Hg Digestion Wt	0.159			0.146		
Hg Digestion Date	12/15/2004			12/15/2004		
Wt Units	Grams			Grams		
Unit Qual	Dry			Dry		
% Moisture	86.3			87.5		
% Solid	13.7			12.5		
Conc Units	ug/g			ug/g		
	Conc	**DL**	**QUAL**	**Conc**	**DL**	**QUAL**
GFAA/ICP						
Antimony	0.00	0.92	J	0.00	0.92	J
Aluminum	169.79	6.46		105.90	6.45	
Arsenic	9.44	0.18		8.09	0.18	
Cadmium	3.34	0.09		4.31	0.09	
Chromium	0.09	0.09	J	0.16	0.09	
Copper	90.58	0.46		276.95	0.46	
Iron	370.78	4.61		536.55	4.60	
Manganese	14.13	4.61		10.73	4.60	
Nickel	3.27	0.46		4.49	0.46	
Lead	0.41	0.09		0.63	0.09	
Selenium	2.16	0.92		2.91	0.92	
Silver	3.02	0.01		1.17	0.01	
Tin	0.10	0.04		-0.02	0.04	J
Thallium	0.00	0.02	J	0.00	0.02	J
Zinc	4029.01	36.90		4413.85	36.83	
CVAA						
Mercury	0.096	0.01		0.111	0.01	

ND Not Detected
J <DL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3*DL
D Dilution
EL Exceeds Linear Range

Client Sample ID	DBBD-091204			DBAP-091204		
Sample Descriptor	18 Oysters			17 Oysters		
GERG Sample ID	C45255			C45256		
Sample Type	SAMP			SAMP		
GERG SDG	EC170			EC170		
Collection Date	12/9/2004			12/9/2004		
Receipt Date	12/11/2004			12/11/2004		
Matrix	Tissue			Tissue		
Acid Digest QC Batch	TS-306			TS-306		
Acid Digestion Wt	0.1028			0.1092		
Acid Digestion Date	12/14/2004			12/14/2004		
Hg Digest QC Batch	HG-1155			HG-1155		
Hg Digestion Wt	0.165			0.126		
Hg Digestion Date	12/15/2004			12/15/2004		
Wt Units	Grams			Grams		
Unit Qual	Dry			Dry		
% Moisture	88.6			94.3		
% Solid	11.4			5.7		
Conc Units	ug/g			ug/g		
	Conc	**DL**	**QUAL**	**Conc**	**DL**	**QUAL**
GFAA/ICP						
Antimony	0.00	0.97	J	0.01	0.92	J
Aluminum	138.93	6.81		895.21	6.41	
Arsenic	7.78	0.19		7.58	0.18	
Cadmium	4.99	0.10		9.88	0.09	
Chromium	0.53	0.10		1.33	0.09	
Copper	348.67	0.49		1646.09	0.46	
Iron	216.26	4.86		2325.71	4.58	
Manganese	11.83	4.86		53.97	4.58	
Nickel	4.26	0.49		8.07	0.46	
Lead	0.90	0.10		1.35	0.09	
Selenium	2.94	0.97		6.47	0.92	
Silver	0.86	0.01		4.25	0.01	
Tin	0.62	0.04		0.23	0.04	
Thallium	0.00	0.02	J	0.01	0.02	J
Zinc	8899.47	38.91		28262.30	36.63	
CVAA						
Mercury	0.117	0.01		0.210	0.01	

ND Not Detected
J <DL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3*DL
D Dilution
EL Exceeds Linear Range

Client Sample ID	DBHC-091204		
Sample Descriptor	16 Oysters		
GERG Sample ID	C45257		
Sample Type	SAMP		
GERG SDG	EC170		
Collection Date	12/9/2004		
Receipt Date	12/11/2004		
Matrix	Tissue		
Acid Digest QC Batch	TS-306		
Acid Digestion Wt	0.0946		
Acid Digestion Date	12/14/2004		
Hg Digest QC Batch	HG-1155		
Hg Digestion Wt	0.093		
Hg Digestion Date	12/15/2004		
Wt Units	Grams		
Unit Qual	Dry		
% Moisture	95.2		
% Solid	4.8		
Conc Units	ug/g		
	Conc	**DL**	**QUAL**
GFAA/ICP			
Antimony	0.01	1.06	J
Aluminum	827.62	7.40	
Arsenic	6.61	0.21	
Cadmium	16.35	0.11	
Chromium	0.88	0.11	
Copper	1753.11	0.53	
Iron	1808.62	5.29	
Manganese	35.63	5.29	
Nickel	7.44	0.53	
Lead	1.38	0.11	
Selenium	6.33	1.06	
Silver	1.77	0.01	
Tin	0.16	0.04	
Thallium	0.05	0.02	B
Zinc	33700.35	42.28	
CVAA			
Mercury	0.048	0.01	

ND Not Detected
J <DL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3*DL
D Dilution
EL Exceeds Linear Range

F.4. Biomarker reports on 12 samples collected on December 7 and 9, 2004.

STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill
Lab Sample ID: C45246
Sample Descriptor: R-12-7-2004
Analysis Date: 12/17/2004

No.	COMPOUND NAME	RT	ION	AREA	CONC	%
	TERPANES				(ng/g)	
H	C19 TRICYCLIC TERPANE	0.00	191	0	0.00	0.0
A	C20 TRICYCLIC TERPANE	0.00	191	0	0.00	0.0
B	C21 TRICYCLIC TERPANE	0.00	191	0	0.00	0.0
C	C22 TRICYCLIC TERPANE	0.00	191	0	0.00	0.0
D	C23 TRICYCLIC TERPANE	0.00	191	0	0.00	0.0
E	C24 TRICYCLIC TERPANE	0.00	191	0	0.00	0.0
1	C25 TRICYCLIC TERPANE	0.00	191	0	0.00	0.0
4	C24 TETRACYCLIC TERPANE	0.00	191	0	0.00	0.0
5	C26 TRICYCLIC TERPANE (22R)	0.00	191	0	0.00	0.0
6	C26 TRICYCLIC TERPANE (22S)	0.00	191	0	0.00	0.0
9	C28 TRICYCLIC TERPANE (22R)	0.00	191	0	0.00	0.0
10	C28 TRICYCLIC TERPANE (22S)	0.00	191	0	0.00	0.0
11	C29 TRICYCLIC TERPANE (22R)	0.00	191	0	0.00	0.0
12	C29 TRICYCLIC TERPANE (22S)	0.00	191	0	0.00	0.0
13	C27 18a-22,29,30-TRISNORNEOHOPANE (Ts)	50.15	191	666	0.68	36.5
I	C27 PENTACYCLIC TERPANE (Y)	0.00	191	0	0.00	0.0
14	C27 17a-22,29,30-TRISNORHOPANE (Tm)	51.03	191	531	0.54	29.1
15	C30 TRICYCLIC TERPANE (22R)	0.00	191	0	0.00	0.0
16	C30 TRICYCLIC TERPANE (22S)	0.00	191	0	0.00	0.0
17	C28 17a,21b-28,30-BISNORHOPANE	0.00	191	0	0.00	0.0
J	C29 17a,21b-25-NORHOPANE	0.00	191	0	0.00	0.0
19	C29 17a,21b-30-NORHOPANE	0.00	191	0	0.00	0.0
20	C29 18a-NORNEOHOPANE (29Ts)	0.00	191	0	0.00	0.0
F	C30 DIAHOPANE	0.00	191	0	0.00	0.0
21	C29 17b,21a-30-NORMORETANE	0.00	191	0	0.00	0.0
22	C30 18a-OLEANANE	0.00	191	0	0.00	0.0
23	C30 17a,21b-HOPANE	0.00	191	0	0.00	0.0
24	C30 17b,21a-MORETANE	0.00	191	0	0.00	0.0
27	C31 17a,21b-HOMOHOPANE (22S)	57.64	191	630	0.64	34.5
28	C31 17a,21b-HOMOHOPANE(22R)	0.00	191	0	0.00	0.0
G	C30 GAMMACERANE	0.00	191	0	0.00	0.0
30	C32 17a,21b-HOMOHOPANE (22S)	0.00	191	0	0.00	0.0
31	C32 17a,21b-HOMOHOPANE (22R)	0.00	191	0	0.00	0.0
34	C33 17a,21b-HOMOHOPANE (22S)	0.00	191	0	0.00	0.0
35	C33 17a,21b-HOMOHOPANE (22R)	0.00	191	0	0.00	0.0
36	C34 17a,21b-HOMOHOPANE (22S)	0.00	191	0	0.00	0.0
37	C34 17a,21b-HOMOHOPANE (22R)	0.00	191	0	0.00	0.0
38	C35 17a,21b-HOMOHOPANE (22S)	0.00	191	0	0.00	0.0
39	C35 17a,21b-HOMOHOPANE (22R)	0.00	191	0	0.00	0.0

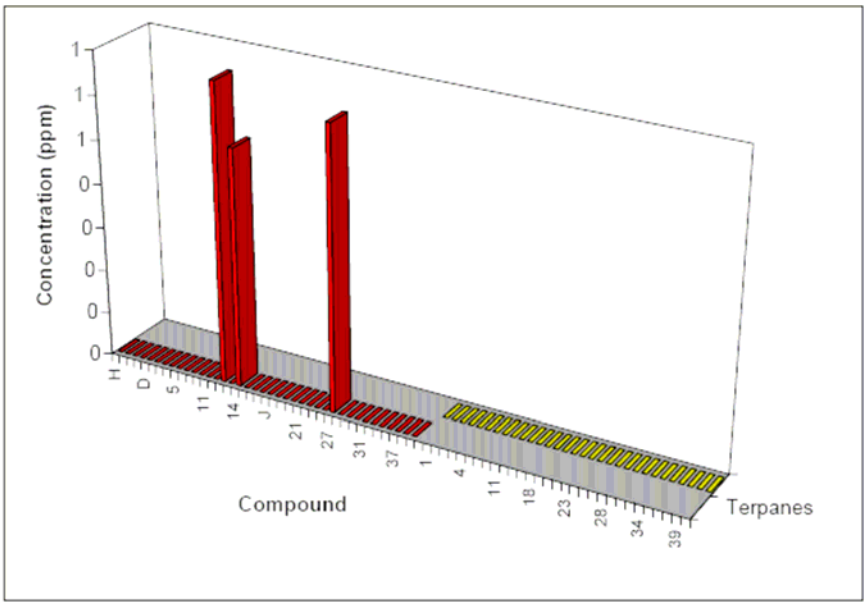
STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill

Lab Sample ID: C45246

Sample Descriptor: R-12-7-2004

Analysis Date: 12/17/2004



STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill
Lab Sample ID: C45247
Sample Descriptor: SB-12-7-2004
Analysis Date: 12/17/2004

No.	COMPOUND NAME	RT	ION	AREA	CONC	%
	TERPANES				(ng/g)	
H	C19 TRICYCLIC TERPANE	0.00	191	0	0.00	0.0
A	C20 TRICYCLIC TERPANE	0.00	191	0	0.00	0.0
B	C21 TRICYCLIC TERPANE	0.00	191	0	0.00	0.0
C	C22 TRICYCLIC TERPANE	0.00	191	0	0.00	0.0
D	C23 TRICYCLIC TERPANE	0.00	191	0	0.00	0.0
E	C24 TRICYCLIC TERPANE	0.00	191	0	0.00	0.0
1	C25 TRICYCLIC TERPANE	0.00	191	0	0.00	0.0
4	C24 TETRACYCLIC TERPANE	0.00	191	0	0.00	0.0
5	C26 TRICYCLIC TERPANE (22R)	0.00	191	0	0.00	0.0
6	C26 TRICYCLIC TERPANE (22S)	0.00	191	0	0.00	0.0
9	C28 TRICYCLIC TERPANE (22R)	0.00	191	0	0.00	0.0
10	C28 TRICYCLIC TERPANE (22S)	0.00	191	0	0.00	0.0
11	C29 TRICYCLIC TERPANE (22R)	0.00	191	0	0.00	0.0
12	C29 TRICYCLIC TERPANE (22S)	0.00	191	0	0.00	0.0
13	C27 18a-22,29,30-TRISNORNEOHOPANE (Ts)	50.15	191	744	0.77	38.2
I	C27 PENTACYCLIC TERPANE (Y)	50.58	191	322	0.33	16.5
14	C27 17a-22,29,30-TRISNORHOPANE (Tm)	51.03	191	309	0.32	15.9
15	C30 TRICYCLIC TERPANE (22R)	0.00	191	0	0.00	0.0
16	C30 TRICYCLIC TERPANE (22S)	0.00	191	0	0.00	0.0
17	C28 17a,21b-28,30-BISNORHOPANE	0.00	191	0	0.00	0.0
J	C29 17a,21b-25-NORHOPANE	0.00	191	0	0.00	0.0
19	C29 17a,21b-30-NORHOPANE	0.00	191	0	0.00	0.0
20	C29 18a-NORNEOHOPANE (29Ts)	0.00	191	0	0.00	0.0
F	C30 DIAHOPANE	0.00	191	0	0.00	0.0
21	C29 17b,21a-30-NORMORETANE	0.00	191	0	0.00	0.0
22	C30 18a-OLEANANE	0.00	191	0	0.00	0.0
23	C30 17a,21b-HOPANE	0.00	191	0	0.00	0.0
24	C30 17b,21a-MORETANE	0.00	191	0	0.00	0.0
27	C31 17a,21b-HOMOHOPANE (22S)	57.62	191	572	0.59	29.4
28	C31 17a,21b-HOMOHOPANE(22R)	0.00	191	0	0.00	0.0
G	C30 GAMMACERANE	0.00	191	0	0.00	0.0
30	C32 17a,21b-HOMOHOPANE (22S)	0.00	191	0	0.00	0.0
31	C32 17a,21b-HOMOHOPANE (22R)	0.00	191	0	0.00	0.0
34	C33 17a,21b-HOMOHOPANE (22S)	0.00	191	0	0.00	0.0
35	C33 17a,21b-HOMOHOPANE (22R)	0.00	191	0	0.00	0.0
36	C34 17a,21b-HOMOHOPANE (22S)	0.00	191	0	0.00	0.0
37	C34 17a,21b-HOMOHOPANE (22R)	0.00	191	0	0.00	0.0
38	C35 17a,21b-HOMOHOPANE (22S)	0.00	191	0	0.00	0.0
39	C35 17a,21b-HOMOHOPANE (22R)	0.00	191	0	0.00	0.0

STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill

Lab Sample ID: C45247

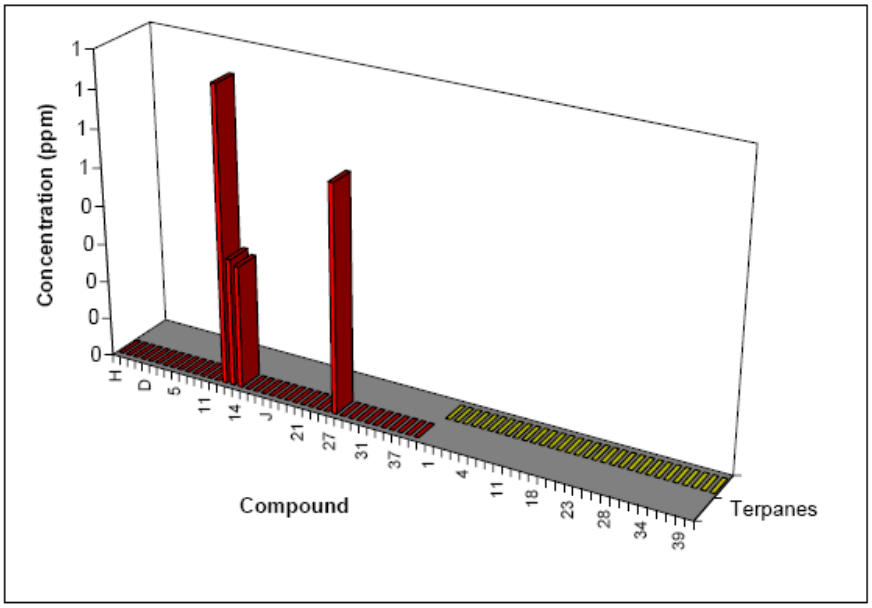
Sample Descriptor: SB-12-7-2004

Analysis Date: 12/17/2004

No.	COMPOUND NAME	RT	ION	AREA	CONC	%
	STERANES				(ng/g)	
A	C21 DIAPREGNANE	0.00	217	0	0.00	n.d.
1	C21 PREGNANE	0.00	217	0	0.00	n.d.
B	C22 DIAHOMOPREGNANE	0.00	217	0	0.00	n.d.
2	C22 HOMOPREGNANE	0.00	217	0	0.00	n.d.
3	C27 13b,17a DIASTERANE (20S)	0.00	217	0	0.00	n.d.
4	C27 13b,17a DIASTERANE (20R)	0.00	217	0	0.00	n.d.
8	C27 13a,17b DIASTERANE (20S)	0.00	217	0	0.00	n.d.
9	C27 13a,17b DIASTERANE (20R)	0.00	217	0	0.00	n.d.
10	C28 13b,17a DIASTERANE (20S) (24R/24S ?)	0.00	217	0	0.00	n.d.
11	C28 13b,17a DIASTERANE (20S) (24R/24S ?)	0.00	217	0	0.00	n.d.
14+15	C28 13b,17a DIASTERANE (20R) (24R/24S ?)	0.00	217	0	0.00	n.d.
16	C28 13a,17b DIASTERANE (20S)	0.00	217	0	0.00	n.d.
17	C27 5a,14a,17a STERANE (20S)	0.00	217	0	0.00	n.d.
18	C27 5a,14b,17b ISOSTERANE (20R) + C29 13b,17a DIASTERANE (20S)	0.00	217	0	0.00	n.d.
19	C27 5a,14b,17b ISOSTERANE (20S)	0.00	217	0	0.00	n.d.
20	C28 13a,17b DIASTERANE (20R)	0.00	217	0	0.00	n.d.
22	C27 5a,14a,17a STERANE (20R)	0.00	217	0	0.00	n.d.
23	C29 13b,17a DIASTERANE (20R)	0.00	217	0	0.00	n.d.
24	C29 13a,17b DIASTERANE (20S)	0.00	217	0	0.00	n.d.
26	C28 5a,14a,17a STERANE (20S)	0.00	217	0	0.00	n.d.
27	C29 13a,17b DIASTERANE (20R)	0.00	217	0	0.00	n.d.
28	C28 5a,14b,17b ISOSTERANE (20R)	0.00	217	0	0.00	n.d.
29	C28 5a,14b,17b ISOSTERANE (20S)	0.00	217	0	0.00	n.d.
31	C28 5a,14a,17a STERANE (20R)	0.00	217	0	0.00	n.d.
33	C29 5a,14a,17a STERANE (20S)	0.00	217	0	0.00	n.d.
34	C29 5a,14b,17b ISOSTERANE (20R)	0.00	217	0	0.00	n.d.
35	C29 5a,14b,17b ISOSTERANE (20S)	0.00	217	0	0.00	n.d.
37	C29 5a,14a,17a STERANE (20R)	0.00	217	0	0.00	n.d.
38	C30 5a,14a,17a STERANE (20S)	0.00	217	0	0.00	n.d.
39	C30 5a,14b,17b ISOSTERANE (20R)	0.00	217	0	0.00	n.d.
40	C30 5a,14b,17b ISOSTERANE (20S)	0.00	217	0	0.00	n.d.
41	C30 5a,14a,17a STERANE (20R)	0.00	217	0	0.00	n.d.

STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill
Lab Sample ID: C45247
Sample Descriptor: SB-12-7-2004
Analysis Date: 12/17/2004



STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill
Lab Sample ID: C45248
Sample Descriptor: LM-12-7-2004
Analysis Date: 12/17/2004

No.	COMPOUND NAME	RT	ION	AREA	CONC	%
	TERPANES				(ng/g)	
H	C19 TRICYCLIC TERPANE	0.00	191	0	0.00	0.0
A	C20 TRICYCLIC TERPANE	0.00	191	0	0.00	0.0
B	C21 TRICYCLIC TERPANE	0.00	191	0	0.00	0.0
C	C22 TRICYCLIC TERPANE	0.00	191	0	0.00	0.0
D	C23 TRICYCLIC TERPANE	0.00	191	0	0.00	0.0
E	C24 TRICYCLIC TERPANE	0.00	191	0	0.00	0.0
1	C25 TRICYCLIC TERPANE	0.00	191	0	0.00	0.0
4	C24 TETRACYCLIC TERPANE	0.00	191	0	0.00	0.0
5	C26 TRICYCLIC TERPANE (22R)	0.00	191	0	0.00	0.0
6	C26 TRICYCLIC TERPANE (22S)	0.00	191	0	0.00	0.0
9	C28 TRICYCLIC TERPANE (22R)	0.00	191	0	0.00	0.0
10	C28 TRICYCLIC TERPANE (22S)	0.00	191	0	0.00	0.0
11	C29 TRICYCLIC TERPANE (22R)	0.00	191	0	0.00	0.0
12	C29 TRICYCLIC TERPANE (22S)	0.00	191	0	0.00	0.0
13	C27 18a-22,29,30-TRISNORNEOHOPANE (Ts)	50.15	191	582	0.75	63.4
I	C27 PENTACYCLIC TERPANE (Y)	0.00	191	0	0.00	0.0
14	C27 17a-22,29,30-TRISNORHOPANE (Tm)	51.06	191	336	0.43	36.6
15	C30 TRICYCLIC TERPANE (22R)	0.00	191	0	0.00	0.0
16	C30 TRICYCLIC TERPANE (22S)	0.00	191	0	0.00	0.0
17	C28 17a,21b-28,30-BISNORHOPANE	0.00	191	0	0.00	0.0
J	C29 17a,21b-25-NORHOPANE	0.00	191	0	0.00	0.0
19	C29 17a,21b-30-NORHOPANE	0.00	191	0	0.00	0.0
20	C29 18a-NORNEOHOPANE (29Ts)	0.00	191	0	0.00	0.0
F	C30 DIAHOPANE	0.00	191	0	0.00	0.0
21	C29 17b,21a-30-NORMORETANE	0.00	191	0	0.00	0.0
22	C30 18a-OLEANANE	0.00	191	0	0.00	0.0
23	C30 17a,21b-HOPANE	0.00	191	0	0.00	0.0
24	C30 17b,21a-MORETANE	0.00	191	0	0.00	0.0
27	C31 17a,21b-HOMOHOPANE (22S)	0.00	191	0	0.00	0.0
28	C31 17a,21b-HOMOHOPANE(22R)	0.00	191	0	0.00	0.0
G	C30 GAMMACERANE	0.00	191	0	0.00	0.0
30	C32 17a,21b-HOMOHOPANE (22S)	0.00	191	0	0.00	0.0
31	C32 17a,21b-HOMOHOPANE (22R)	0.00	191	0	0.00	0.0
34	C33 17a,21b-HOMOHOPANE (22S)	0.00	191	0	0.00	0.0
35	C33 17a,21b-HOMOHOPANE (22R)	0.00	191	0	0.00	0.0
36	C34 17a,21b-HOMOHOPANE (22S)	0.00	191	0	0.00	0.0
37	C34 17a,21b-HOMOHOPANE (22R)	0.00	191	0	0.00	0.0
38	C35 17a,21b-HOMOHOPANE (22S)	0.00	191	0	0.00	0.0
39	C35 17a,21b-HOMOHOPANE (22R)	0.00	191	0	0.00	0.0

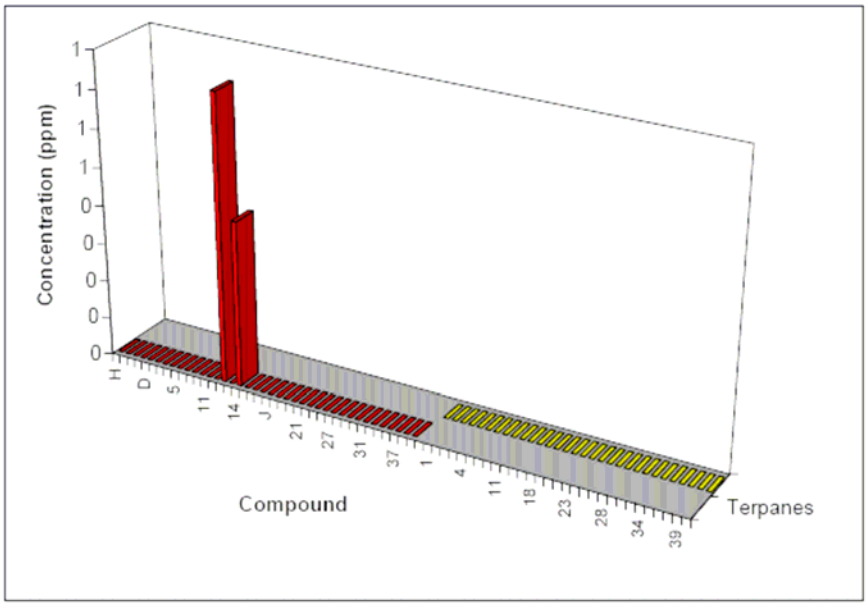
STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill
Lab Sample ID: C45248
Sample Descriptor: LM-12-7-2004
Analysis Date: 12/17/2004

No.	COMPOUND NAME	RT	ION	AREA	CONC	%
	STERANES				(ng/g)	
A	C21 DIAPREGNANE	0.00	217	0	0.00	n.d.
1	C21 PREGNANE	0.00	217	0	0.00	n.d.
B	C22 DIAHOMOPREGNANE	0.00	217	0	0.00	n.d.
2	C22 HOMOPREGNANE	0.00	217	0	0.00	n.d.
3	C27 13b,17a DIASTERANE (20S)	0.00	217	0	0.00	n.d.
4	C27 13b,17a DIASTERANE (20R)	0.00	217	0	0.00	n.d.
8	C27 13a,17b DIASTERANE (20S)	0.00	217	0	0.00	n.d.
9	C27 13a,17b DIASTERANE (20R)	0.00	217	0	0.00	n.d.
10	C28 13b,17a DIASTERANE (20S) (24R/24S ?)	0.00	217	0	0.00	n.d.
11	C28 13b,17a DIASTERANE (20S) (24R/24S ?)	0.00	217	0	0.00	n.d.
14+15	C28 13b,17a DIASTERANE (20R) (24R/24S ?)	0.00	217	0	0.00	n.d.
16	C28 13a,17b DIASTERANE (20S)	0.00	217	0	0.00	n.d.
17	C27 5a,14a,17a STERANE (20S)	0.00	217	0	0.00	n.d.
18	C27 5a,14b,17b ISOSTERANE (20R) + C29 13b,17a DIASTERANE (20S)	0.00	217	0	0.00	n.d.
19	C27 5a,14b,17b ISOSTERANE (20S)	0.00	217	0	0.00	n.d.
20	C28 13a,17b DIASTERANE (20R)	0.00	217	0	0.00	n.d.
22	C27 5a,14a,17a STERANE (20R)	0.00	217	0	0.00	n.d.
23	C29 13b,17a DIASTERANE (20R)	0.00	217	0	0.00	n.d.
24	C29 13a,17b DIASTERANE (20S)	0.00	217	0	0.00	n.d.
26	C28 5a,14a,17a STERANE (20S)	0.00	217	0	0.00	n.d.
27	C29 13a,17b DIASTERANE (20R)	0.00	217	0	0.00	n.d.
28	C28 5a,14b,17b ISOSTERANE (20R)	0.00	217	0	0.00	n.d.
29	C28 5a,14b,17b ISOSTERANE (20S)	0.00	217	0	0.00	n.d.
31	C28 5a,14a,17a STERANE (20R)	0.00	217	0	0.00	n.d.
33	C29 5a,14a,17a STERANE (20S)	0.00	217	0	0.00	n.d.
34	C29 5a,14b,17b ISOSTERANE (20R)	0.00	217	0	0.00	n.d.
35	C29 5a,14b,17b ISOSTERANE (20S)	0.00	217	0	0.00	n.d.
37	C29 5a,14a,17a STERANE (20R)	0.00	217	0	0.00	n.d.
38	C30 5a,14a,17a STERANE (20S)	0.00	217	0	0.00	n.d.
39	C30 5a,14b,17b ISOSTERANE (20R)	0.00	217	0	0.00	n.d.
40	C30 5a,14b,17b ISOSTERANE (20S)	0.00	217	0	0.00	n.d.
41	C30 5a,14a,17a STERANE (20R)	0.00	217	0	0.00	n.d.

STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill
Lab Sample ID: C45248
Sample Descriptor: LM-12-7-2004
Analysis Date: 12/17/2004



STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill
Lab Sample ID: C45249
Sample Descriptor: RN-12-7-2004
Analysis Date: 12/17/2004

No.	COMPOUND NAME	RT	ION	AREA	CONC	%
	TERPANES				(ng/g)	
H	C19 TRICYCLIC TERPANE	0.00	191	0	0.00	0.0
A	C20 TRICYCLIC TERPANE	0.00	191	0	0.00	0.0
B	C21 TRICYCLIC TERPANE	0.00	191	0	0.00	0.0
C	C22 TRICYCLIC TERPANE	0.00	191	0	0.00	0.0
D	C23 TRICYCLIC TERPANE	0.00	191	0	0.00	0.0
E	C24 TRICYCLIC TERPANE	0.00	191	0	0.00	0.0
1	C25 TRICYCLIC TERPANE	0.00	191	0	0.00	0.0
4	C24 TETRACYCLIC TERPANE	0.00	191	0	0.00	0.0
5	C26 TRICYCLIC TERPANE (22R)	0.00	191	0	0.00	0.0
6	C26 TRICYCLIC TERPANE (22S)	0.00	191	0	0.00	0.0
9	C28 TRICYCLIC TERPANE (22R)	0.00	191	0	0.00	0.0
10	C28 TRICYCLIC TERPANE (22S)	0.00	191	0	0.00	0.0
11	C29 TRICYCLIC TERPANE (22R)	0.00	191	0	0.00	0.0
12	C29 TRICYCLIC TERPANE (22S)	0.00	191	0	0.00	0.0
13	C27 18a-22,29,30-TRISNORNEOHOPANE (Ts)	50.15	191	658	0.47	46.9
I	C27 PENTACYCLIC TERPANE (Y)	0.00	191	0	0.00	0.0
14	C27 17a-22,29,30-TRISNORHOPANE (Tm)	51.03	191	746	0.54	53.1
15	C30 TRICYCLIC TERPANE (22R)	0.00	191	0	0.00	0.0
16	C30 TRICYCLIC TERPANE (22S)	0.00	191	0	0.00	0.0
17	C28 17a,21b-28,30-BISNORHOPANE	0.00	191	0	0.00	0.0
J	C29 17a,21b-25-NORHOPANE	0.00	191	0	0.00	0.0
19	C29 17a,21b-30-NORHOPANE	0.00	191	0	0.00	0.0
20	C29 18a-NORNEOHOPANE (29Ts)	0.00	191	0	0.00	0.0
F	C30 DIAHOPANE	0.00	191	0	0.00	0.0
21	C29 17b,21a-30-NORMORETANE	0.00	191	0	0.00	0.0
22	C30 18a-OLEANANE	0.00	191	0	0.00	0.0
23	C30 17a,21b-HOPANE	0.00	191	0	0.00	0.0
24	C30 17b,21a-MORETANE	0.00	191	0	0.00	0.0
27	C31 17a,21b-HOMOHOPANE (22S)	0.00	191	0	0.00	0.0
28	C31 17a,21b-HOMOHOPANE(22R)	0.00	191	0	0.00	0.0
G	C30 GAMMACERANE	0.00	191	0	0.00	0.0
30	C32 17a,21b-HOMOHOPANE (22S)	0.00	191	0	0.00	0.0
31	C32 17a,21b-HOMOHOPANE (22R)	0.00	191	0	0.00	0.0
34	C33 17a,21b-HOMOHOPANE (22S)	0.00	191	0	0.00	0.0
35	C33 17a,21b-HOMOHOPANE (22R)	0.00	191	0	0.00	0.0
36	C34 17a,21b-HOMOHOPANE (22S)	0.00	191	0	0.00	0.0
37	C34 17a,21b-HOMOHOPANE (22R)	0.00	191	0	0.00	0.0
38	C35 17a,21b-HOMOHOPANE (22S)	0.00	191	0	0.00	0.0
39	C35 17a,21b-HOMOHOPANE (22R)	0.00	191	0	0.00	0.0

STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill

Lab Sample ID: C45249

Sample Descriptor: RN-12-7-2004

Analysis Date: 12/17/2004

No.	COMPOUND NAME	RT	ION	AREA	CONC	%
	STERANES				(ng/g)	
A	C21 DIAPREGNANE	0.00	217	0	0.00	n.d.
1	C21 PREGNANE	0.00	217	0	0.00	n.d.
B	C22 DIAHOMOPREGNANE	0.00	217	0	0.00	n.d.
2	C22 HOMOPREGNANE	0.00	217	0	0.00	n.d.
3	C27 13b,17a DIASTERANE (20S)	0.00	217	0	0.00	n.d.
4	C27 13b,17a DIASTERANE (20R)	0.00	217	0	0.00	n.d.
8	C27 13a,17b DIASTERANE (20S)	0.00	217	0	0.00	n.d.
9	C27 13a,17b DIASTERANE (20R)	0.00	217	0	0.00	n.d.
10	C28 13b,17a DIASTERANE (20S) (24R/24S ?)	0.00	217	0	0.00	n.d.
11	C28 13b,17a DIASTERANE (20S) (24R/24S ?)	0.00	217	0	0.00	n.d.
14+15	C28 13b,17a DIASTERANE (20R) (24R/24S ?)	0.00	217	0	0.00	n.d.
16	C28 13a,17b DIASTERANE (20S)	0.00	217	0	0.00	n.d.
17	C27 5a,14a,17a STERANE (20S)	0.00	217	0	0.00	n.d.
18	C27 5a,14b,17b ISOSTERANE (20R) + C29 13b,17a DIASTERANE (20S)	0.00	217	0	0.00	n.d.
19	C27 5a,14b,17b ISOSTERANE (20S)	0.00	217	0	0.00	n.d.
20	C28 13a,17b DIASTERANE (20R)	0.00	217	0	0.00	n.d.
22	C27 5a,14a,17a STERANE (20R)	0.00	217	0	0.00	n.d.
23	C29 13b,17a DIASTERANE (20R)	0.00	217	0	0.00	n.d.
24	C29 13a,17b DIASTERANE (20S)	0.00	217	0	0.00	n.d.
26	C28 5a,14a,17a STERANE (20S)	0.00	217	0	0.00	n.d.
27	C29 13a,17b DIASTERANE (20R)	0.00	217	0	0.00	n.d.
28	C28 5a,14b,17b ISOSTERANE (20R)	0.00	217	0	0.00	n.d.
29	C28 5a,14b,17b ISOSTERANE (20S)	0.00	217	0	0.00	n.d.
31	C28 5a,14a,17a STERANE (20R)	0.00	217	0	0.00	n.d.
33	C29 5a,14a,17a STERANE (20S)	0.00	217	0	0.00	n.d.
34	C29 5a,14b,17b ISOSTERANE (20R)	0.00	217	0	0.00	n.d.
35	C29 5a,14b,17b ISOSTERANE (20S)	0.00	217	0	0.00	n.d.
37	C29 5a,14a,17a STERANE (20R)	0.00	217	0	0.00	n.d.
38	C30 5a,14a,17a STERANE (20S)	0.00	217	0	0.00	n.d.
39	C30 5a,14b,17b ISOSTERANE (20R)	0.00	217	0	0.00	n.d.
40	C30 5a,14b,17b ISOSTERANE (20S)	0.00	217	0	0.00	n.d.
41	C30 5a,14a,17a STERANE (20R)	0.00	217	0	0.00	n.d.

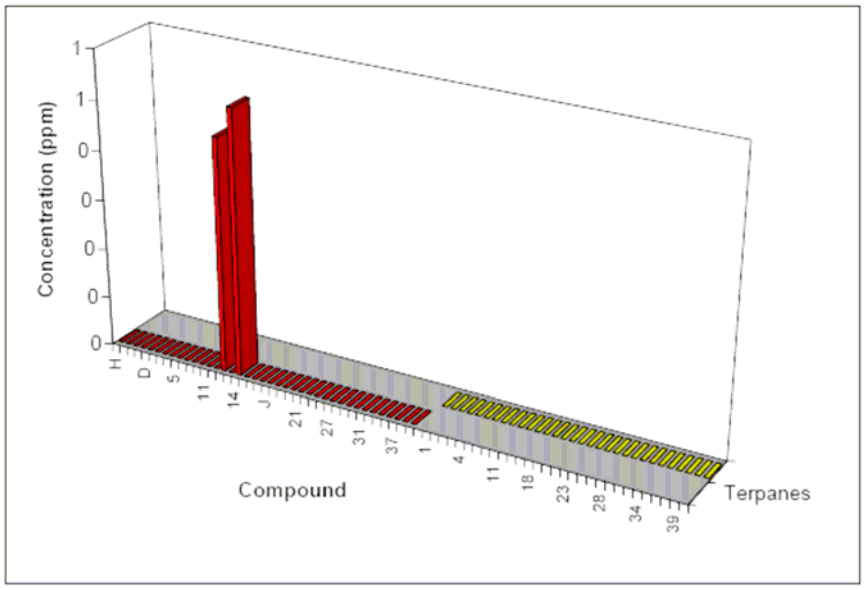
STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill

Lab Sample ID: C45249

Sample Descriptor: RN-12-7-2004

Analysis Date: 12/17/2004



STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill
Lab Sample ID: C45250
Sample Descriptor: OB-12-7-2004
Analysis Date: 12/17/2004

No.	COMPOUND NAME	RT	ION	AREA	CONC	%
	TERPANES				(ng/g)	
H	C19 TRICYCLIC TERPANE	0.00	191	0	0.00	0.0
A	C20 TRICYCLIC TERPANE	0.00	191	0	0.00	0.0
B	C21 TRICYCLIC TERPANE	0.00	191	0	0.00	0.0
C	C22 TRICYCLIC TERPANE	0.00	191	0	0.00	0.0
D	C23 TRICYCLIC TERPANE	0.00	191	0	0.00	0.0
E	C24 TRICYCLIC TERPANE	0.00	191	0	0.00	0.0
1	C25 TRICYCLIC TERPANE	0.00	191	0	0.00	0.0
4	C24 TETRACYCLIC TERPANE	0.00	191	0	0.00	0.0
5	C26 TRICYCLIC TERPANE (22R)	0.00	191	0	0.00	0.0
6	C26 TRICYCLIC TERPANE (22S)	0.00	191	0	0.00	0.0
9	C28 TRICYCLIC TERPANE (22R)	0.00	191	0	0.00	0.0
10	C28 TRICYCLIC TERPANE (22S)	0.00	191	0	0.00	0.0
11	C29 TRICYCLIC TERPANE (22R)	0.00	191	0	0.00	0.0
12	C29 TRICYCLIC TERPANE (22S)	0.00	191	0	0.00	0.0
13	C27 18a-22,29,30-TRISNORNEOHOPANE (Ts)	50.15	191	721	0.60	24.4
I	C27 PENTACYCLIC TERPANE (Y)	0.00	191	0	0.00	0.0
14	C27 17a-22,29,30-TRISNORHOPANE (Tm)	51.05	191	519	0.43	17.5
15	C30 TRICYCLIC TERPANE (22R)	0.00	191	0	0.00	0.0
16	C30 TRICYCLIC TERPANE (22S)	0.00	191	0	0.00	0.0
17	C28 17a,21b-28,30-BISNORHOPANE	0.00	191	0	0.00	0.0
J	C29 17a,21b-25-NORHOPANE	0.00	191	0	0.00	0.0
19	C29 17a,21b-30-NORHOPANE	0.00	191	0	0.00	0.0
20	C29 18a-NORNEOHOPANE (29Ts)	0.00	191	0	0.00	0.0
F	C30 DIAHOPANE	0.00	191	0	0.00	0.0
21	C29 17b,21a-30-NORMORETANE	0.00	191	0	0.00	0.0
22	C30 18a-OLEANANE	0.00	191	0	0.00	0.0
23	C30 17a,21b-HOPANE	0.00	191	0	0.00	0.0
24	C30 17b,21a-MORETANE	0.00	191	0	0.00	0.0
27	C31 17a,21b-HOMOHOPANE (22S)	57.64	191	1403	1.16	47.4
28	C31 17a,21b-HOMOHOPANE(22R)	57.87	191	316	0.26	10.7
G	C30 GAMMACERANE	0.00	191	0	0.00	0.0
30	C32 17a,21b-HOMOHOPANE (22S)	0.00	191	0	0.00	0.0
31	C32 17a,21b-HOMOHOPANE (22R)	0.00	191	0	0.00	0.0
34	C33 17a,21b-HOMOHOPANE (22S)	0.00	191	0	0.00	0.0
35	C33 17a,21b-HOMOHOPANE (22R)	0.00	191	0	0.00	0.0
36	C34 17a,21b-HOMOHOPANE (22S)	0.00	191	0	0.00	0.0
37	C34 17a,21b-HOMOHOPANE (22R)	0.00	191	0	0.00	0.0
38	C35 17a,21b-HOMOHOPANE (22S)	0.00	191	0	0.00	0.0
39	C35 17a,21b-HOMOHOPANE (22R)	0.00	191	0	0.00	0.0

STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill

Lab Sample ID: C45250

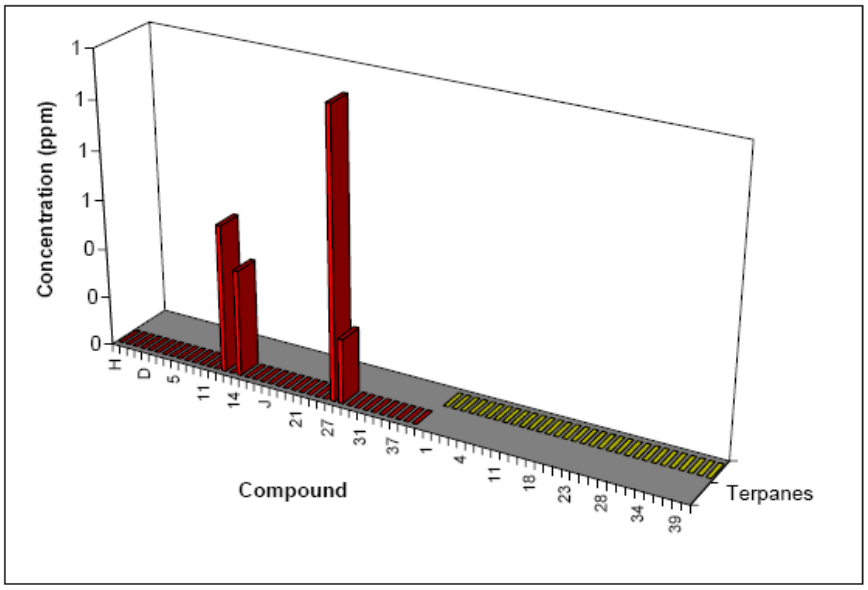
Sample Descriptor: OB-12-7-2004

Analysis Date: 12/17/2004

No.	COMPOUND NAME	RT	ION	AREA	CONC	%
	STERANES				(ng/g)	
A	C21 DIAPREGNANE	0.00	217	0	0.00	n.d.
1	C21 PREGNANE	0.00	217	0	0.00	n.d.
B	C22 DIAHOMOPREGNANE	0.00	217	0	0.00	n.d.
2	C22 HOMOPREGNANE	0.00	217	0	0.00	n.d.
3	C27 13b,17a DIASTERANE (20S)	0.00	217	0	0.00	n.d.
4	C27 13b,17a DIASTERANE (20R)	0.00	217	0	0.00	n.d.
8	C27 13a,17b DIASTERANE (20S)	0.00	217	0	0.00	n.d.
9	C27 13a,17b DIASTERANE (20R)	0.00	217	0	0.00	n.d.
10	C28 13b,17a DIASTERANE (20S) (24R/24S ?)	0.00	217	0	0.00	n.d.
11	C28 13b,17a DIASTERANE (20S) (24R/24S ?)	0.00	217	0	0.00	n.d.
14+15	C28 13b,17a DIASTERANE (20R) (24R/24S ?)	0.00	217	0	0.00	n.d.
16	C28 13a,17b DIASTERANE (20S)	0.00	217	0	0.00	n.d.
17	C27 5a,14a,17a STERANE (20S)	0.00	217	0	0.00	n.d.
18	C27 5a,14b,17b ISOSTERANE (20R) + C29 13b,17a DIASTERANE (20S)	0.00	217	0	0.00	n.d.
19	C27 5a,14b,17b ISOSTERANE (20S)	0.00	217	0	0.00	n.d.
20	C28 13a,17b DIASTERANE (20R)	0.00	217	0	0.00	n.d.
22	C27 5a,14a,17a STERANE (20R)	0.00	217	0	0.00	n.d.
23	C29 13b,17a DIASTERANE (20R)	0.00	217	0	0.00	n.d.
24	C29 13a,17b DIASTERANE (20S)	0.00	217	0	0.00	n.d.
26	C28 5a,14a,17a STERANE (20S)	0.00	217	0	0.00	n.d.
27	C29 13a,17b DIASTERANE (20R)	0.00	217	0	0.00	n.d.
28	C28 5a,14b,17b ISOSTERANE (20R)	0.00	217	0	0.00	n.d.
29	C28 5a,14b,17b ISOSTERANE (20S)	0.00	217	0	0.00	n.d.
31	C28 5a,14a,17a STERANE (20R)	0.00	217	0	0.00	n.d.
33	C29 5a,14a,17a STERANE (20S)	0.00	217	0	0.00	n.d.
34	C29 5a,14b,17b ISOSTERANE (20R)	0.00	217	0	0.00	n.d.
35	C29 5a,14b,17b ISOSTERANE (20S)	0.00	217	0	0.00	n.d.
37	C29 5a,14a,17a STERANE (20R)	0.00	217	0	0.00	n.d.
38	C30 5a,14a,17a STERANE (20S)	0.00	217	0	0.00	n.d.
39	C30 5a,14b,17b ISOSTERANE (20R)	0.00	217	0	0.00	n.d.
40	C30 5a,14b,17b ISOSTERANE (20S)	0.00	217	0	0.00	n.d.
41	C30 5a,14a,17a STERANE (20R)	0.00	217	0	0.00	n.d.

STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill
Lab Sample ID: C45250
Sample Descriptor: OB-12-7-2004
Analysis Date: 12/17/2004



STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill
Lab Sample ID: C45251
Sample Descriptor: WB-12-7-2004
Analysis Date: 12/17/2004

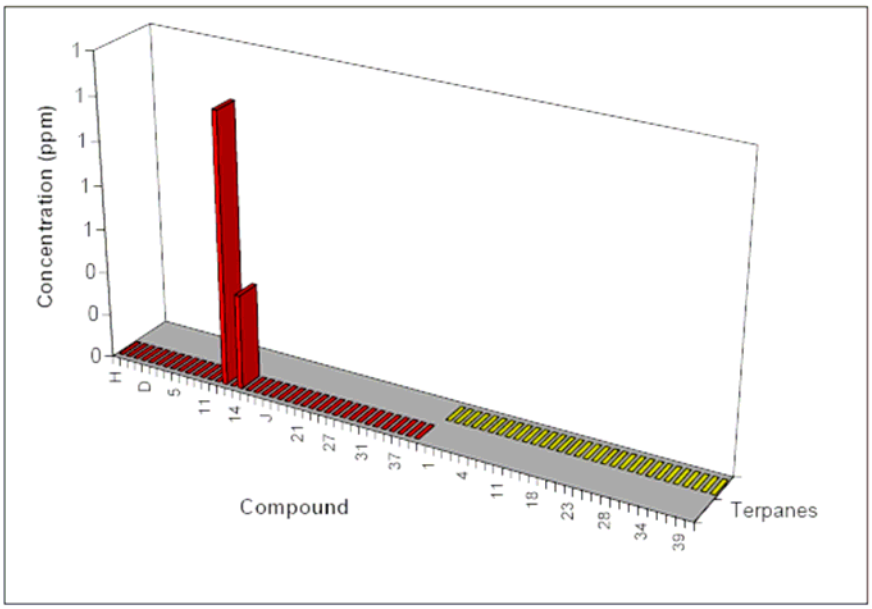
No.	COMPOUND NAME	RT	ION	AREA	CONC	%
	TERPANES				(ng/g)	
H	C19 TRICYCLIC TERPANE	0.00	191	0	0.00	0.0
A	C20 TRICYCLIC TERPANE	0.00	191	0	0.00	0.0
B	C21 TRICYCLIC TERPANE	0.00	191	0	0.00	0.0
C	C22 TRICYCLIC TERPANE	0.00	191	0	0.00	0.0
D	C23 TRICYCLIC TERPANE	0.00	191	0	0.00	0.0
E	C24 TRICYCLIC TERPANE	0.00	191	0	0.00	0.0
1	C25 TRICYCLIC TERPANE	0.00	191	0	0.00	0.0
4	C24 TETRACYCLIC TERPANE	0.00	191	0	0.00	0.0
5	C26 TRICYCLIC TERPANE (22R)	0.00	191	0	0.00	0.0
6	C26 TRICYCLIC TERPANE (22S)	0.00	191	0	0.00	0.0
9	C28 TRICYCLIC TERPANE (22R)	0.00	191	0	0.00	0.0
10	C28 TRICYCLIC TERPANE (22S)	0.00	191	0	0.00	0.0
11	C29 TRICYCLIC TERPANE (22R)	0.00	191	0	0.00	0.0
12	C29 TRICYCLIC TERPANE (22S)	0.00	191	0	0.00	0.0
13	C27 18a-22,29,30-TRISNORNEOHOPANE (Ts)	50.15	191	951	1.24	74.1
I	C27 PENTACYCLIC TERPANE (Y)	0.00	191	0	0.00	0.0
14	C27 17a-22,29,30-TRISNORHOPANE (Tm)	51.05	191	332	0.43	25.9
15	C30 TRICYCLIC TERPANE (22R)	0.00	191	0	0.00	0.0
16	C30 TRICYCLIC TERPANE (22S)	0.00	191	0	0.00	0.0
17	C28 17a,21b-28,30-BISNORHOPANE	0.00	191	0	0.00	0.0
J	C29 17a,21b-25-NORHOPANE	0.00	191	0	0.00	0.0
19	C29 17a,21b-30-NORHOPANE	0.00	191	0	0.00	0.0
20	C29 18a-NORNEOHOPANE (29Ts)	0.00	191	0	0.00	0.0
F	C30 DIAHOPANE	0.00	191	0	0.00	0.0
21	C29 17b,21a-30-NORMORETANE	0.00	191	0	0.00	0.0
22	C30 18a-OLEANANE	0.00	191	0	0.00	0.0
23	C30 17a,21b-HOPANE	0.00	191	0	0.00	0.0
24	C30 17b,21a-MORETANE	0.00	191	0	0.00	0.0
27	C31 17a,21b-HOMOHOPANE (22S)	0.00	191	0	0.00	0.0
28	C31 17a,21b-HOMOHOPANE(22R)	0.00	191	0	0.00	0.0
G	C30 GAMMACERANE	0.00	191	0	0.00	0.0
30	C32 17a,21b-HOMOHOPANE (22S)	0.00	191	0	0.00	0.0
31	C32 17a,21b-HOMOHOPANE (22R)	0.00	191	0	0.00	0.0
34	C33 17a,21b-HOMOHOPANE (22S)	0.00	191	0	0.00	0.0
35	C33 17a,21b-HOMOHOPANE (22R)	0.00	191	0	0.00	0.0
36	C34 17a,21b-HOMOHOPANE (22S)	0.00	191	0	0.00	0.0
37	C34 17a,21b-HOMOHOPANE (22R)	0.00	191	0	0.00	0.0
38	C35 17a,21b-HOMOHOPANE (22S)	0.00	191	0	0.00	0.0
39	C35 17a,21b-HOMOHOPANE (22R)	0.00	191	0	0.00	0.0

Project: ATHOS I Oil Spill
Lab Sample ID: C45251
Sample Descriptor: WB-12-7-2004
Analysis Date: 12/17/2004

No.	COMPOUND NAME	RT	ION	AREA	CONC	%
	STERANES				(ng/g)	
A	C21 DIAPREGNANE	0.00	217	0	0.00	n.d.
1	C21 PREGNANE	0.00	217	0	0.00	n.d.
B	C22 DIAHOMOPREGNANE	0.00	217	0	0.00	n.d.
2	C22 HOMOPREGNANE	0.00	217	0	0.00	n.d.
3	C27 13b,17a DIASTERANE (20S)	0.00	217	0	0.00	n.d.
4	C27 13b,17a DIASTERANE (20R)	0.00	217	0	0.00	n.d.
8	C27 13a,17b DIASTERANE (20S)	0.00	217	0	0.00	n.d.
9	C27 13a,17b DIASTERANE (20R)	0.00	217	0	0.00	n.d.
10	C28 13b,17a DIASTERANE (20S) (24R/24S ?)	0.00	217	0	0.00	n.d.
11	C28 13b,17a DIASTERANE (20S) (24R/24S ?)	0.00	217	0	0.00	n.d.
14+15	C28 13b,17a DIASTERANE (20R) (24R/24S ?)	0.00	217	0	0.00	n.d.
16	C28 13a,17b DIASTERANE (20S)	0.00	217	0	0.00	n.d.
17	C27 5a,14a,17a STERANE (20S)	0.00	217	0	0.00	n.d.
18	C27 5a,14b,17b ISOSTERANE (20R) + C29 13b,17a DIASTERANE (20S)	0.00	217	0	0.00	n.d.
19	C27 5a,14b,17b ISOSTERANE (20S)	0.00	217	0	0.00	n.d.
20	C28 13a,17b DIASTERANE (20R)	0.00	217	0	0.00	n.d.
22	C27 5a,14a,17a STERANE (20R)	0.00	217	0	0.00	n.d.
23	C29 13b,17a DIASTERANE (20R)	0.00	217	0	0.00	n.d.
24	C29 13a,17b DIASTERANE (20S)	0.00	217	0	0.00	n.d.
26	C28 5a,14a,17a STERANE (20S)	0.00	217	0	0.00	n.d.
27	C29 13a,17b DIASTERANE (20R)	0.00	217	0	0.00	n.d.
28	C28 5a,14b,17b ISOSTERANE (20R)	0.00	217	0	0.00	n.d.
29	C28 5a,14b,17b ISOSTERANE (20S)	0.00	217	0	0.00	n.d.
31	C28 5a,14a,17a STERANE (20R)	0.00	217	0	0.00	n.d.
33	C29 5a,14a,17a STERANE (20S)	0.00	217	0	0.00	n.d.
34	C29 5a,14b,17b ISOSTERANE (20R)	0.00	217	0	0.00	n.d.
35	C29 5a,14b,17b ISOSTERANE (20S)	0.00	217	0	0.00	n.d.
37	C29 5a,14a,17a STERANE (20R)	0.00	217	0	0.00	n.d.
38	C30 5a,14a,17a STERANE (20S)	0.00	217	0	0.00	n.d.
39	C30 5a,14b,17b ISOSTERANE (20R)	0.00	217	0	0.00	n.d.
40	C30 5a,14b,17b ISOSTERANE (20S)	0.00	217	0	0.00	n.d.
41	C30 5a,14a,17a STERANE (20R)	0.00	217	0	0.00	n.d.

STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill
Lab Sample ID: C45251
Sample Descriptor: WB-12-7-2004
Analysis Date: 12/17/2004



STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill
Lab Sample ID: C45252
Sample Descriptor: NJMW1-12-7-2004
Analysis Date: 12/17/2004

No.	COMPOUND NAME	RT	ION	AREA	CONC	%
	TERPANES				(ng/g)	
H	C19 TRICYCLIC TERPANE	0.00	191	0	0.00	0.0
A	C20 TRICYCLIC TERPANE	0.00	191	0	0.00	0.0
B	C21 TRICYCLIC TERPANE	0.00	191	0	0.00	0.0
C	C22 TRICYCLIC TERPANE	0.00	191	0	0.00	0.0
D	C23 TRICYCLIC TERPANE	0.00	191	0	0.00	0.0
E	C24 TRICYCLIC TERPANE	0.00	191	0	0.00	0.0
1	C25 TRICYCLIC TERPANE	0.00	191	0	0.00	0.0
4	C24 TETRACYCLIC TERPANE	0.00	191	0	0.00	0.0
5	C26 TRICYCLIC TERPANE (22R)	0.00	191	0	0.00	0.0
6	C26 TRICYCLIC TERPANE (22S)	0.00	191	0	0.00	0.0
9	C28 TRICYCLIC TERPANE (22R)	0.00	191	0	0.00	0.0
10	C28 TRICYCLIC TERPANE (22S)	0.00	191	0	0.00	0.0
11	C29 TRICYCLIC TERPANE (22R)	0.00	191	0	0.00	0.0
12	C29 TRICYCLIC TERPANE (22S)	0.00	191	0	0.00	0.0
13	C27 18a-22,29,30-TRISNORNEOHOPANE (Ts)	50.15	191	615	0.73	62.6
I	C27 PENTACYCLIC TERPANE (Y)	0.00	191	0	0.00	0.0
14	C27 17a-22,29,30-TRISNORHOPANE (Tm)	51.06	191	367	0.43	37.4
15	C30 TRICYCLIC TERPANE (22R)	0.00	191	0	0.00	0.0
16	C30 TRICYCLIC TERPANE (22S)	0.00	191	0	0.00	0.0
17	C28 17a,21b-28,30-BISNORHOPANE	0.00	191	0	0.00	0.0
J	C29 17a,21b-25-NORHOPANE	0.00	191	0	0.00	0.0
19	C29 17a,21b-30-NORHOPANE	0.00	191	0	0.00	0.0
20	C29 18a-NORNEOHOPANE (29Ts)	0.00	191	0	0.00	0.0
F	C30 DIAHOPANE	0.00	191	0	0.00	0.0
21	C29 17b,21a-30-NORMORETANE	0.00	191	0	0.00	0.0
22	C30 18a-OLEANANE	0.00	191	0	0.00	0.0
23	C30 17a,21b-HOPANE	0.00	191	0	0.00	0.0
24	C30 17b,21a-MORETANE	0.00	191	0	0.00	0.0
27	C31 17a,21b-HOMOHOPANE (22S)	0.00	191	0	0.00	0.0
28	C31 17a,21b-HOMOHOPANE(22R)	0.00	191	0	0.00	0.0
G	C30 GAMMACERANE	0.00	191	0	0.00	0.0
30	C32 17a,21b-HOMOHOPANE (22S)	0.00	191	0	0.00	0.0
31	C32 17a,21b-HOMOHOPANE (22R)	0.00	191	0	0.00	0.0
34	C33 17a,21b-HOMOHOPANE (22S)	0.00	191	0	0.00	0.0
35	C33 17a,21b-HOMOHOPANE (22R)	0.00	191	0	0.00	0.0
36	C34 17a,21b-HOMOHOPANE (22S)	0.00	191	0	0.00	0.0
37	C34 17a,21b-HOMOHOPANE (22R)	0.00	191	0	0.00	0.0
38	C35 17a,21b-HOMOHOPANE (22S)	0.00	191	0	0.00	0.0
39	C35 17a,21b-HOMOHOPANE (22R)	0.00	191	0	0.00	0.0

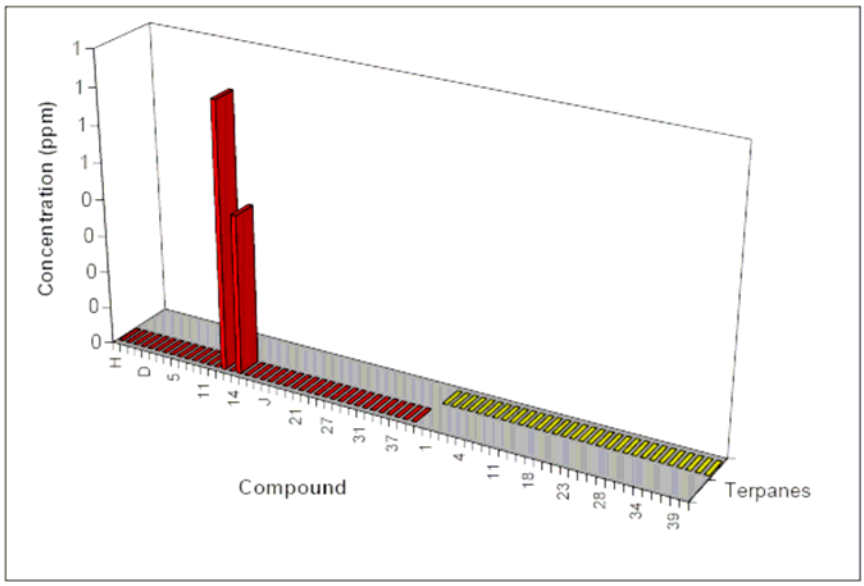
STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill
Lab Sample ID: C45252
Sample Descriptor: NJMW1-12-7-2004
Analysis Date: 12/17/2004

No.	COMPOUND NAME	RT	ION	AREA	CONC	%
	STERANES				(ng/g)	
A	C21 DIAPREGNANE	0.00	217	0	0.00	n.d.
1	C21 PREGNANE	0.00	217	0	0.00	n.d.
B	C22 DIAHOMOPREGNANE	0.00	217	0	0.00	n.d.
2	C22 HOMOPREGNANE	0.00	217	0	0.00	n.d.
3	C27 13b,17a DIASTERANE (20S)	0.00	217	0	0.00	n.d.
4	C27 13b,17a DIASTERANE (20R)	0.00	217	0	0.00	n.d.
8	C27 13a,17b DIASTERANE (20S)	0.00	217	0	0.00	n.d.
9	C27 13a,17b DIASTERANE (20R)	0.00	217	0	0.00	n.d.
10	C28 13b,17a DIASTERANE (20S) (24R/24S ?)	0.00	217	0	0.00	n.d.
11	C28 13b,17a DIASTERANE (20S) (24R/24S ?)	0.00	217	0	0.00	n.d.
14+15	C28 13b,17a DIASTERANE (20R) (24R/24S ?)	0.00	217	0	0.00	n.d.
16	C28 13a,17b DIASTERANE (20S)	0.00	217	0	0.00	n.d.
17	C27 5a,14a,17a STERANE (20S)	0.00	217	0	0.00	n.d.
18	C27 5a,14b,17b ISOSTERANE (20R) + C29 13b,17a DIASTERANE (20S)	0.00	217	0	0.00	n.d.
19	C27 5a,14b,17b ISOSTERANE (20S)	0.00	217	0	0.00	n.d.
20	C28 13a,17b DIASTERANE (20R)	0.00	217	0	0.00	n.d.
22	C27 5a,14a,17a STERANE (20R)	0.00	217	0	0.00	n.d.
23	C29 13b,17a DIASTERANE (20R)	0.00	217	0	0.00	n.d.
24	C29 13a,17b DIASTERANE (20S)	0.00	217	0	0.00	n.d.
26	C28 5a,14a,17a STERANE (20S)	0.00	217	0	0.00	n.d.
27	C29 13a,17b DIASTERANE (20R)	0.00	217	0	0.00	n.d.
28	C28 5a,14b,17b ISOSTERANE (20R)	0.00	217	0	0.00	n.d.
29	C28 5a,14b,17b ISOSTERANE (20S)	0.00	217	0	0.00	n.d.
31	C28 5a,14a,17a STERANE (20R)	0.00	217	0	0.00	n.d.
33	C29 5a,14a,17a STERANE (20S)	0.00	217	0	0.00	n.d.
34	C29 5a,14b,17b ISOSTERANE (20R)	0.00	217	0	0.00	n.d.
35	C29 5a,14b,17b ISOSTERANE (20S)	0.00	217	0	0.00	n.d.
37	C29 5a,14a,17a STERANE (20R)	0.00	217	0	0.00	n.d.
38	C30 5a,14a,17a STERANE (20S)	0.00	217	0	0.00	n.d.
39	C30 5a,14b,17b ISOSTERANE (20R)	0.00	217	0	0.00	n.d.
40	C30 5a,14b,17b ISOSTERANE (20S)	0.00	217	0	0.00	n.d.
41	C30 5a,14a,17a STERANE (20R)	0.00	217	0	0.00	n.d.

STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill
Lab Sample ID: C45252
Sample Descriptor: NJMW1-12-7-2004
Analysis Date: 12/17/2004



STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill
Lab Sample ID: C45253
Sample Descriptor: DBFE-091204
Analysis Date: 12/17/2004

No.	COMPOUND NAME	RT	ION	AREA	CONC	%
	TERPANES				(ng/g)	
H	C19 TRICYCLIC TERPANE	0.00	191	0	0.00	0.0
A	C20 TRICYCLIC TERPANE	0.00	191	0	0.00	0.0
B	C21 TRICYCLIC TERPANE	0.00	191	0	0.00	0.0
C	C22 TRICYCLIC TERPANE	0.00	191	0	0.00	0.0
D	C23 TRICYCLIC TERPANE	36.93	191	1228	0.35	25.3
E	C24 TRICYCLIC TERPANE	0.00	191	0	0.00	0.0
1	C25 TRICYCLIC TERPANE	0.00	191	0	0.00	0.0
4	C24 TETRACYCLIC TERPANE	42.76	191	450	0.13	9.3
5	C26 TRICYCLIC TERPANE (22R)	42.86	191	74	0.02	1.5
6	C26 TRICYCLIC TERPANE (22S)	42.98	191	84	0.02	1.7
9	C28 TRICYCLIC TERPANE (22R)	0.00	191	0	0.00	0.0
10	C28 TRICYCLIC TERPANE (22S)	0.00	191	0	0.00	0.0
11	C29 TRICYCLIC TERPANE (22R)	0.00	191	0	0.00	0.0
12	C29 TRICYCLIC TERPANE (22S)	0.00	191	0	0.00	0.0
13	C27 18a-22,29,30-TRISNORNEOHOPANE (Ts)	50.15	191	1783	0.51	36.7
I	C27 PENTACYCLIC TERPANE (Y)	0.00	191	0	0.00	0.0
14	C27 17a-22,29,30-TRISNORHOPANE (Tm)	51.03	191	1004	0.29	20.7
15	C30 TRICYCLIC TERPANE (22R)	0.00	191	0	0.00	0.0
16	C30 TRICYCLIC TERPANE (22S)	0.00	191	0	0.00	0.0
17	C28 17a,21b-28,30-BISNORHOPANE	0.00	191	0	0.00	0.0
J	C29 17a,21b-25-NORHOPANE	0.00	191	0	0.00	0.0
19	C29 17a,21b-30-NORHOPANE	0.00	191	0	0.00	0.0
20	C29 18a-NORNEOHOPANE (29Ts)	0.00	191	0	0.00	0.0
F	C30 DIAHOPANE	0.00	191	0	0.00	0.0
21	C29 17b,21a-30-NORMORETANE	0.00	191	0	0.00	0.0
22	C30 18a-OLEANANE	0.00	191	0	0.00	0.0
23	C30 17a,21b-HOPANE	55.62	191	233	0.07	4.8
24	C30 17b,21a-MORETANE	0.00	191	0	0.00	0.0
27	C31 17a,21b-HOMOHOPANE (22S)	0.00	191	0	0.00	0.0
28	C31 17a,21b-HOMOHOPANE(22R)	0.00	191	0	0.00	0.0
G	C30 GAMMACERANE	0.00	191	0	0.00	0.0
30	C32 17a,21b-HOMOHOPANE (22S)	0.00	191	0	0.00	0.0
31	C32 17a,21b-HOMOHOPANE (22R)	0.00	191	0	0.00	0.0
34	C33 17a,21b-HOMOHOPANE (22S)	0.00	191	0	0.00	0.0
35	C33 17a,21b-HOMOHOPANE (22R)	0.00	191	0	0.00	0.0
36	C34 17a,21b-HOMOHOPANE (22S)	0.00	191	0	0.00	0.0
37	C34 17a,21b-HOMOHOPANE (22R)	0.00	191	0	0.00	0.0
38	C35 17a,21b-HOMOHOPANE (22S)	0.00	191	0	0.00	0.0
39	C35 17a,21b-HOMOHOPANE (22R)	0.00	191	0	0.00	0.0

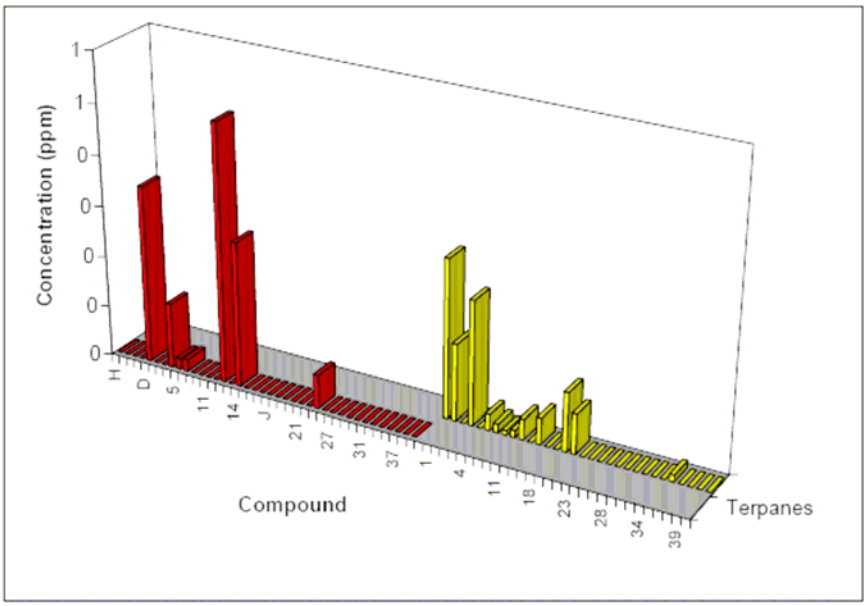
STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill
Lab Sample ID: C45253
Sample Descriptor: DBFE-091204
Analysis Date: 12/17/2004

No.	COMPOUND NAME	RT	ION	AREA	CONC	%
	STERANES				(ng/g)	
A	C21 DIAPREGNANE	33.08	217	194	0.31	29.0
1	C21 PREGNANE	35.04	217	94	0.15	14.0
B	C22 DIAHOMOPREGNANE	0.00	217	0	0.00	0.0
2	C22 HOMOPREGNANE	37.67	217	152	0.24	22.7
3	C27 13b,17a DIASTERANE (20S)	0.00	217	0	0.00	0.0
4	C27 13b,17a DIASTERANE (20R)	45.93	217	38	0.03	2.9
8	C27 13a,17b DIASTERANE (20S)	46.54	217	21	0.02	1.6
9	C27 13a,17b DIASTERANE (20R)	47.12	217	11	0.01	0.8
10	C28 13b,17a DIASTERANE (20S) (24R/24S ?)	47.16	217	17	0.01	1.3
11	C28 13b,17a DIASTERANE (20S) (24R/24S ?)	47.35	217	49	0.04	3.7
14+15	C28 13b,17a DIASTERANE (20R) (24R/24S ?)	0.00	217	0	0.00	0.0
16	C28 13a,17b DIASTERANE (20S)	48.40	217	94	0.05	4.8
17	C27 5a,14a,17a STERANE (20S)	0.00	217	0	0.00	0.0
18	C27 5a,14b,17b ISOSTERANE (20R) + C29 13b,17a DIASTERANE (20S)	0.00	217	0	0.00	0.0
19	C27 5a,14b,17b ISOSTERANE (20S)	49.12	217	209	0.11	10.7
20	C28 13a,17b DIASTERANE (20R)	49.12	217	142	0.08	7.2
22	C27 5a,14a,17a STERANE (20R)	0.00	217	0	0.00	0.0
23	C29 13b,17a DIASTERANE (20R)	0.00	217	0	0.00	0.0
24	C29 13a,17b DIASTERANE (20S)	0.00	217	0	0.00	0.0
26	C28 5a,14a,17a STERANE (20S)	0.00	217	0	0.00	0.0
27	C29 13a,17b DIASTERANE (20R)	0.00	217	0	0.00	0.0
28	C28 5a,14b,17b ISOSTERANE (20R)	0.00	217	0	0.00	0.0
29	C28 5a,14b,17b ISOSTERANE (20S)	0.00	217	0	0.00	0.0
31	C28 5a,14a,17a STERANE (20R)	0.00	217	0	0.00	0.0
33	C29 5a,14a,17a STERANE (20S)	0.00	217	0	0.00	0.0
34	C29 5a,14b,17b ISOSTERANE (20R)	0.00	217	0	0.00	0.0
35	C29 5a,14b,17b ISOSTERANE (20S)	53.03	217	28	0.01	1.3
37	C29 5a,14a,17a STERANE (20R)	0.00	217	0	0.00	0.0
38	C30 5a,14a,17a STERANE (20S)	0.00	217	0	0.00	0.0
39	C30 5a,14b,17b ISOSTERANE (20R)	0.00	217	0	0.00	0.0
40	C30 5a,14b,17b ISOSTERANE (20S)	0.00	217	0	0.00	0.0
41	C30 5a,14a,17a STERANE (20R)	0.00	217	0	0.00	0.0

STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill
Lab Sample ID: C45253
Sample Descriptor: DBFE-091204
Analysis Date: 12/17/2004



STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill
Lab Sample ID: C45254
Sample Descriptor: Newbedsoermo-091204
Analysis Date: 12/17/2004

No.	COMPOUND NAME	RT	ION	AREA	CONC	%
	TERPANES				(ng/g)	
H	C19 TRICYCLIC TERPANE	0.00	191	0	0.00	0.0
A	C20 TRICYCLIC TERPANE	0.00	191	0	0.00	0.0
B	C21 TRICYCLIC TERPANE	0.00	191	0	0.00	0.0
C	C22 TRICYCLIC TERPANE	0.00	191	0	0.00	0.0
D	C23 TRICYCLIC TERPANE	36.93	191	183	0.07	8.0
E	C24 TRICYCLIC TERPANE	0.00	191	0	0.00	0.0
1	C25 TRICYCLIC TERPANE	0.00	191	0	0.00	0.0
4	C24 TETRACYCLIC TERPANE	42.80	191	99	0.04	4.3
5	C26 TRICYCLIC TERPANE (22R)	0.00	191	0	0.00	0.0
6	C26 TRICYCLIC TERPANE (22S)	0.00	191	0	0.00	0.0
9	C28 TRICYCLIC TERPANE (22R)	0.00	191	0	0.00	0.0
10	C28 TRICYCLIC TERPANE (22S)	0.00	191	0	0.00	0.0
11	C29 TRICYCLIC TERPANE (22R)	0.00	191	0	0.00	0.0
12	C29 TRICYCLIC TERPANE (22S)	0.00	191	0	0.00	0.0
13	C27 18a-22,29,30-TRISNORNEOHOPANE (Ts)	50.15	191	1348	0.50	58.8
I	C27 PENTACYCLIC TERPANE (Y)	0.00	191	0	0.00	0.0
14	C27 17a-22,29,30-TRISNORHOPANE (Tm)	51.05	191	662	0.25	28.9
15	C30 TRICYCLIC TERPANE (22R)	0.00	191	0	0.00	0.0
16	C30 TRICYCLIC TERPANE (22S)	0.00	191	0	0.00	0.0
17	C28 17a,21b-28,30-BISNORHOPANE	0.00	191	0	0.00	0.0
J	C29 17a,21b-25-NORHOPANE	0.00	191	0	0.00	0.0
19	C29 17a,21b-30-NORHOPANE	0.00	191	0	0.00	0.0
20	C29 18a-NORNEOHOPANE (29Ts)	0.00	191	0	0.00	0.0
F	C30 DIAHOPANE	0.00	191	0	0.00	0.0
21	C29 17b,21a-30-NORMORETANE	0.00	191	0	0.00	0.0
22	C30 18a-OLEANANE	0.00	191	0	0.00	0.0
23	C30 17a,21b-HOPANE	0.00	191	0	0.00	0.0
24	C30 17b,21a-MORETANE	0.00	191	0	0.00	0.0
27	C31 17a,21b-HOMOHOPANE (22S)	0.00	191	0	0.00	0.0
28	C31 17a,21b-HOMOHOPANE(22R)	0.00	191	0	0.00	0.0
G	C30 GAMMACERANE	0.00	191	0	0.00	0.0
30	C32 17a,21b-HOMOHOPANE (22S)	0.00	191	0	0.00	0.0
31	C32 17a,21b-HOMOHOPANE (22R)	0.00	191	0	0.00	0.0
34	C33 17a,21b-HOMOHOPANE (22S)	0.00	191	0	0.00	0.0
35	C33 17a,21b-HOMOHOPANE (22R)	0.00	191	0	0.00	0.0
36	C34 17a,21b-HOMOHOPANE (22S)	0.00	191	0	0.00	0.0
37	C34 17a,21b-HOMOHOPANE (22R)	0.00	191	0	0.00	0.0
38	C35 17a,21b-HOMOHOPANE (22S)	0.00	191	0	0.00	0.0
39	C35 17a,21b-HOMOHOPANE (22R)	0.00	191	0	0.00	0.0

STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill

Lab Sample ID: C45254

Sample Descriptor: Newbedsoermo-091204

Analysis Date: 12/17/2004

No.	COMPOUND NAME	RT	ION	AREA	CONC	%
	STERANES				(ng/g)	
A	C21 DIAPREGNANE	0.00	217	0	0.00	0.0
1	C21 PREGNANE	0.00	217	0	0.00	0.0
B	C22 DIAHOMOPREGNANE	35.16	217	37	0.08	100.0
2	C22 HOMOPREGNANE	0.00	217	0	0.00	0.0
3	C27 13b,17a DIASTERANE (20S)	0.00	217	0	0.00	0.0
4	C27 13b,17a DIASTERANE (20R)	0.00	217	0	0.00	0.0
8	C27 13a,17b DIASTERANE (20S)	0.00	217	0	0.00	0.0
9	C27 13a,17b DIASTERANE (20R)	0.00	217	0	0.00	0.0
10	C28 13b,17a DIASTERANE (20S) (24R/24S ?)	0.00	217	0	0.00	0.0
11	C28 13b,17a DIASTERANE (20S) (24R/24S ?)	0.00	217	0	0.00	0.0
14+15	C28 13b,17a DIASTERANE (20R) (24R/24S ?)	0.00	217	0	0.00	0.0
16	C28 13a,17b DIASTERANE (20S)	0.00	217	0	0.00	0.0
17	C27 5a,14a,17a STERANE (20S)	0.00	217	0	0.00	0.0
18	C27 5a,14b,17b ISOSTERANE (20R) + C29 13b,17a DIASTERANE (20S)	0.00	217	0	0.00	0.0
19	C27 5a,14b,17b ISOSTERANE (20S)	0.00	217	0	0.00	0.0
20	C28 13a,17b DIASTERANE (20R)	0.00	217	0	0.00	0.0
22	C27 5a,14a,17a STERANE (20R)	0.00	217	0	0.00	0.0
23	C29 13b,17a DIASTERANE (20R)	0.00	217	0	0.00	0.0
24	C29 13a,17b DIASTERANE (20S)	0.00	217	0	0.00	0.0
26	C28 5a,14a,17a STERANE (20S)	0.00	217	0	0.00	0.0
27	C29 13a,17b DIASTERANE (20R)	0.00	217	0	0.00	0.0
28	C28 5a,14b,17b ISOSTERANE (20R)	0.00	217	0	0.00	0.0
29	C28 5a,14b,17b ISOSTERANE (20S)	0.00	217	0	0.00	0.0
31	C28 5a,14a,17a STERANE (20R)	0.00	217	0	0.00	0.0
33	C29 5a,14a,17a STERANE (20S)	0.00	217	0	0.00	0.0
34	C29 5a,14b,17b ISOSTERANE (20R)	0.00	217	0	0.00	0.0
35	C29 5a,14b,17b ISOSTERANE (20S)	0.00	217	0	0.00	0.0
37	C29 5a,14a,17a STERANE (20R)	0.00	217	0	0.00	0.0
38	C30 5a,14a,17a STERANE (20S)	0.00	217	0	0.00	0.0
39	C30 5a,14b,17b ISOSTERANE (20R)	0.00	217	0	0.00	0.0
40	C30 5a,14b,17b ISOSTERANE (20S)	0.00	217	0	0.00	0.0
41	C30 5a,14a,17a STERANE (20R)	0.00	217	0	0.00	0.0

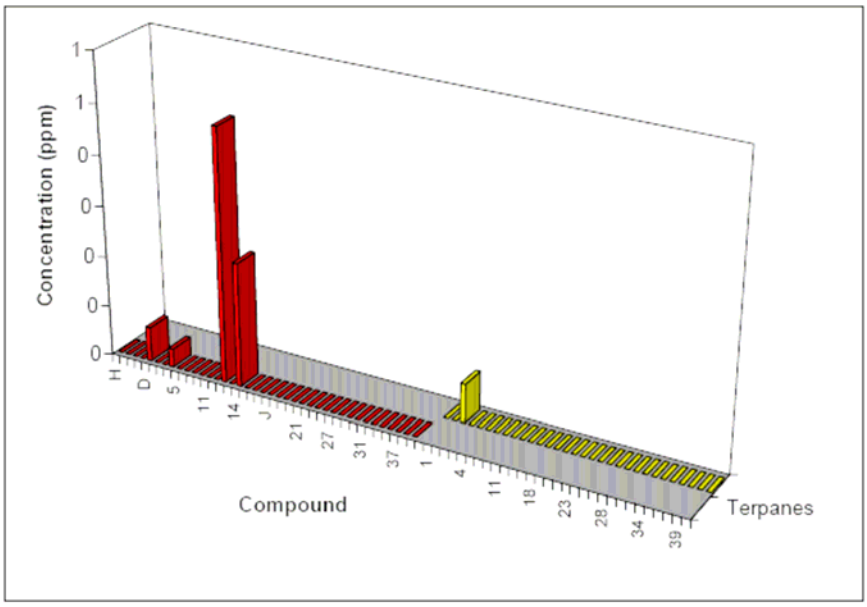
STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill

Lab Sample ID: C45254

Sample Descriptor: Newbedsoermo-091204

Analysis Date: 12/17/2004



STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill
Lab Sample ID: C45255
Sample Descriptor: DBBD-091204
Analysis Date: 12/17/2004

No.	COMPOUND NAME	RT	ION	AREA	CONC	%
	TERPANES				(ng/g)	
H	C19 TRICYCLIC TERPANE	0.00	191	0	0.00	0.0
A	C20 TRICYCLIC TERPANE	0.00	191	0	0.00	0.0
B	C21 TRICYCLIC TERPANE	0.00	191	0	0.00	0.0
C	C22 TRICYCLIC TERPANE	0.00	191	0	0.00	0.0
D	C23 TRICYCLIC TERPANE	0.00	191	0	0.00	0.0
E	C24 TRICYCLIC TERPANE	0.00	191	0	0.00	0.0
1	C25 TRICYCLIC TERPANE	0.00	191	0	0.00	0.0
4	C24 TETRACYCLIC TERPANE	0.00	191	0	0.00	0.0
5	C26 TRICYCLIC TERPANE (22R)	0.00	191	0	0.00	0.0
6	C26 TRICYCLIC TERPANE (22S)	0.00	191	0	0.00	0.0
9	C28 TRICYCLIC TERPANE (22R)	0.00	191	0	0.00	0.0
10	C28 TRICYCLIC TERPANE (22S)	0.00	191	0	0.00	0.0
11	C29 TRICYCLIC TERPANE (22R)	0.00	191	0	0.00	0.0
12	C29 TRICYCLIC TERPANE (22S)	0.00	191	0	0.00	0.0
13	C27 18a-22,29,30-TRISNORNEOHOPANE (Ts)	50.17	191	1223	0.55	38.9
I	C27 PENTACYCLIC TERPANE (Y)	50.62	191	347	0.16	11.0
14	C27 17a-22,29,30-TRISNORHOPANE (Tm)	51.03	191	592	0.27	18.8
15	C30 TRICYCLIC TERPANE (22R)	0.00	191	0	0.00	0.0
16	C30 TRICYCLIC TERPANE (22S)	0.00	191	0	0.00	0.0
17	C28 17a,21b-28,30-BISNORHOPANE	0.00	191	0	0.00	0.0
J	C29 17a,21b-25-NORHOPANE	0.00	191	0	0.00	0.0
19	C29 17a,21b-30-NORHOPANE	0.00	191	0	0.00	0.0
20	C29 18a-NORNEOHOPANE (29Ts)	0.00	191	0	0.00	0.0
F	C30 DIAHOPANE	0.00	191	0	0.00	0.0
21	C29 17b,21a-30-NORMORETANE	0.00	191	0	0.00	0.0
22	C30 18a-OLEANANE	0.00	191	0	0.00	0.0
23	C30 17a,21b-HOPANE	0.00	191	0	0.00	0.0
24	C30 17b,21a-MORETANE	0.00	191	0	0.00	0.0
27	C31 17a,21b-HOMOHOPANE (22S)	0.00	191	0	0.00	0.0
28	C31 17a,21b-HOMOHOPANE(22R)	0.00	191	0	0.00	0.0
G	C30 GAMMACERANE	0.00	191	0	0.00	0.0
30	C32 17a,21b-HOMOHOPANE (22S)	0.00	191	0	0.00	0.0
31	C32 17a,21b-HOMOHOPANE (22R)	59.58	191	980	0.44	31.2
34	C33 17a,21b-HOMOHOPANE (22S)	0.00	191	0	0.00	0.0
35	C33 17a,21b-HOMOHOPANE (22R)	0.00	191	0	0.00	0.0
36	C34 17a,21b-HOMOHOPANE (22S)	0.00	191	0	0.00	0.0
37	C34 17a,21b-HOMOHOPANE (22R)	0.00	191	0	0.00	0.0
38	C35 17a,21b-HOMOHOPANE (22S)	0.00	191	0	0.00	0.0
39	C35 17a,21b-HOMOHOPANE (22R)	0.00	191	0	0.00	0.0

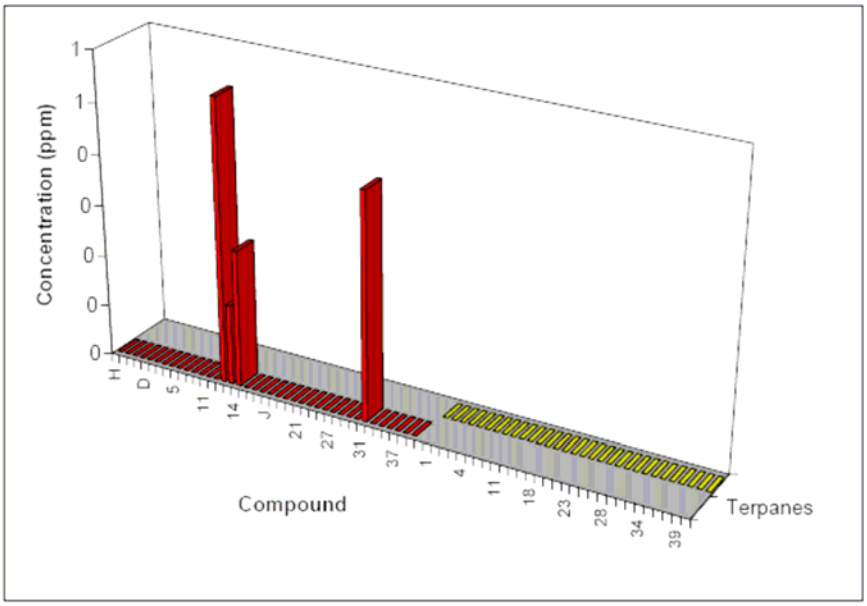
STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill
Lab Sample ID: C45255
Sample Descriptor: DBBD-091204
Analysis Date: 12/17/2004

No.	COMPOUND NAME	RT	ION	AREA	CONC	%
	STERANES				(ng/g)	
A	C21 DIAPREGNANE	0.00	217	0	0.00	n.d.
1	C21 PREGNANE	0.00	217	0	0.00	n.d.
B	C22 DIAHOMOPREGNANE	0.00	217	0	0.00	n.d.
2	C22 HOMOPREGNANE	0.00	217	0	0.00	n.d.
3	C27 13b,17a DIASTERANE (20S)	0.00	217	0	0.00	n.d.
4	C27 13b,17a DIASTERANE (20R)	0.00	217	0	0.00	n.d.
8	C27 13a,17b DIASTERANE (20S)	0.00	217	0	0.00	n.d.
9	C27 13a,17b DIASTERANE (20R)	0.00	217	0	0.00	n.d.
10	C28 13b,17a DIASTERANE (20S) (24R/24S ?)	0.00	217	0	0.00	n.d.
11	C28 13b,17a DIASTERANE (20S) (24R/24S ?)	0.00	217	0	0.00	n.d.
14+15	C28 13b,17a DIASTERANE (20R) (24R/24S ?)	0.00	217	0	0.00	n.d.
16	C28 13a,17b DIASTERANE (20S)	0.00	217	0	0.00	n.d.
17	C27 5a,14a,17a STERANE (20S)	0.00	217	0	0.00	n.d.
18	C27 5a,14b,17b ISOSTERANE (20R) + C29 13b,17a DIASTERANE (20S)	0.00	217	0	0.00	n.d.
19	C27 5a,14b,17b ISOSTERANE (20S)	0.00	217	0	0.00	n.d.
20	C28 13a,17b DIASTERANE (20R)	0.00	217	0	0.00	n.d.
22	C27 5a,14a,17a STERANE (20R)	0.00	217	0	0.00	n.d.
23	C29 13b,17a DIASTERANE (20R)	0.00	217	0	0.00	n.d.
24	C29 13a,17b DIASTERANE (20S)	0.00	217	0	0.00	n.d.
26	C28 5a,14a,17a STERANE (20S)	0.00	217	0	0.00	n.d.
27	C29 13a,17b DIASTERANE (20R)	0.00	217	0	0.00	n.d.
28	C28 5a,14b,17b ISOSTERANE (20R)	0.00	217	0	0.00	n.d.
29	C28 5a,14b,17b ISOSTERANE (20S)	0.00	217	0	0.00	n.d.
31	C28 5a,14a,17a STERANE (20R)	0.00	217	0	0.00	n.d.
33	C29 5a,14a,17a STERANE (20S)	0.00	217	0	0.00	n.d.
34	C29 5a,14b,17b ISOSTERANE (20R)	0.00	217	0	0.00	n.d.
35	C29 5a,14b,17b ISOSTERANE (20S)	0.00	217	0	0.00	n.d.
37	C29 5a,14a,17a STERANE (20R)	0.00	217	0	0.00	n.d.
38	C30 5a,14a,17a STERANE (20S)	0.00	217	0	0.00	n.d.
39	C30 5a,14b,17b ISOSTERANE (20R)	0.00	217	0	0.00	n.d.
40	C30 5a,14b,17b ISOSTERANE (20S)	0.00	217	0	0.00	n.d.
41	C30 5a,14a,17a STERANE (20R)	0.00	217	0	0.00	n.d.

STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill
Lab Sample ID: C45255
Sample Descriptor: DBBD-091204
Analysis Date: 12/17/2004



STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill
Lab Sample ID: C45256
Sample Descriptor: DBAP-091204
Analysis Date: 12/17/2004

No.	COMPOUND NAME	RT	ION	AREA	CONC	%
	TERPANES				(ng/g)	
H	C19 TRICYCLIC TERPANE	0.00	191	0	0.00	0.0
A	C20 TRICYCLIC TERPANE	0.00	191	0	0.00	0.0
B	C21 TRICYCLIC TERPANE	0.00	191	0	0.00	0.0
C	C22 TRICYCLIC TERPANE	0.00	191	0	0.00	0.0
D	C23 TRICYCLIC TERPANE	0.00	191	0	0.00	0.0
E	C24 TRICYCLIC TERPANE	0.00	191	0	0.00	0.0
1	C25 TRICYCLIC TERPANE	0.00	191	0	0.00	0.0
4	C24 TETRACYCLIC TERPANE	0.00	191	0	0.00	0.0
5	C26 TRICYCLIC TERPANE (22R)	0.00	191	0	0.00	0.0
6	C26 TRICYCLIC TERPANE (22S)	0.00	191	0	0.00	0.0
9	C28 TRICYCLIC TERPANE (22R)	0.00	191	0	0.00	0.0
10	C28 TRICYCLIC TERPANE (22S)	0.00	191	0	0.00	0.0
11	C29 TRICYCLIC TERPANE (22R)	0.00	191	0	0.00	0.0
12	C29 TRICYCLIC TERPANE (22S)	0.00	191	0	0.00	0.0
13	C27 18a-22,29,30-TRISNORNEOHOPANE (Ts)	50.17	191	668	0.47	14.0
I	C27 PENTACYCLIC TERPANE (Y)	0.00	191	0	0.00	0.0
14	C27 17a-22,29,30-TRISNORHOPANE (Tm)	51.08	191	573	0.41	12.0
15	C30 TRICYCLIC TERPANE (22R)	0.00	191	0	0.00	0.0
16	C30 TRICYCLIC TERPANE (22S)	0.00	191	0	0.00	0.0
17	C28 17a,21b-28,30-BISNORHOPANE	0.00	191	0	0.00	0.0
J	C29 17a,21b-25-NORHOPANE	0.00	191	0	0.00	0.0
19	C29 17a,21b-30-NORHOPANE	0.00	191	0	0.00	0.0
20	C29 18a-NORNEOHOPANE (29Ts)	0.00	191	0	0.00	0.0
F	C30 DIAHOPANE	0.00	191	0	0.00	0.0
21	C29 17b,21a-30-NORMORETANE	0.00	191	0	0.00	0.0
22	C30 18a-OLEANANE	55.36	191	2688	1.91	56.5
23	C30 17a,21b-HOPANE	55.63	191	96	0.07	2.0
24	C30 17b,21a-MORETANE	56.45	191	75	0.05	1.6
27	C31 17a,21b-HOMOHOPANE (22S)	57.64	191	658	0.47	13.8
28	C31 17a,21b-HOMOHOPANE(22R)	0.00	191	0	0.00	0.0
G	C30 GAMMACERANE	0.00	191	0	0.00	0.0
30	C32 17a,21b-HOMOHOPANE (22S)	0.00	191	0	0.00	0.0
31	C32 17a,21b-HOMOHOPANE (22R)	0.00	191	0	0.00	0.0
34	C33 17a,21b-HOMOHOPANE (22S)	0.00	191	0	0.00	0.0
35	C33 17a,21b-HOMOHOPANE (22R)	0.00	191	0	0.00	0.0
36	C34 17a,21b-HOMOHOPANE (22S)	0.00	191	0	0.00	0.0
37	C34 17a,21b-HOMOHOPANE (22R)	0.00	191	0	0.00	0.0
38	C35 17a,21b-HOMOHOPANE (22S)	0.00	191	0	0.00	0.0
39	C35 17a,21b-HOMOHOPANE (22R)	0.00	191	0	0.00	0.0

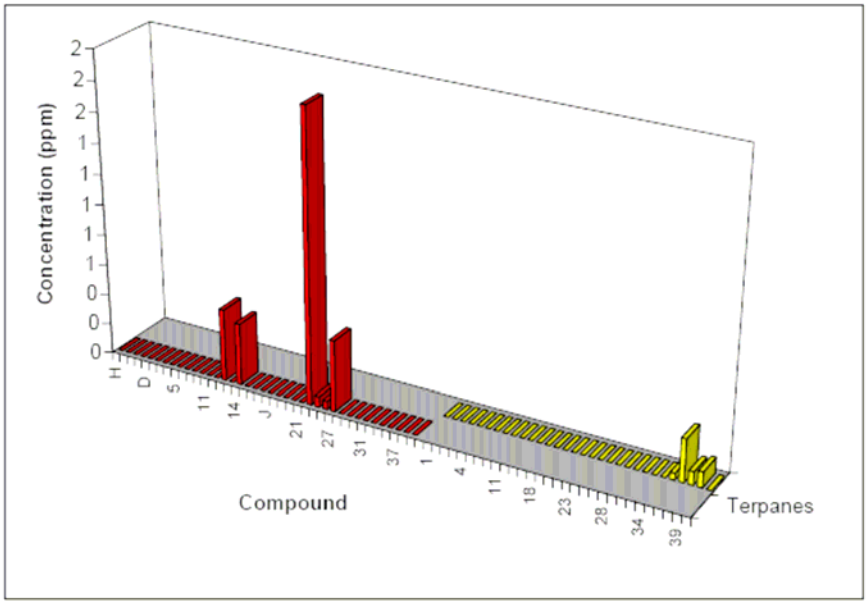
STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill
Lab Sample ID: C45256
Sample Descriptor: DBAP-091204
Analysis Date: 12/17/2004

No.	COMPOUND NAME	RT	ION	AREA	CONC	%
	STERANES				(ng/g)	
A	C21 DIAPREGNANE	0.00	217	0	0.00	0.0
1	C21 PREGNANE	0.00	217	0	0.00	0.0
B	C22 DIAHOMOPREGNANE	0.00	217	0	0.00	0.0
2	C22 HOMOPREGNANE	0.00	217	0	0.00	0.0
3	C27 13b,17a DIASTERANE (20S)	0.00	217	0	0.00	0.0
4	C27 13b,17a DIASTERANE (20R)	0.00	217	0	0.00	0.0
8	C27 13a,17b DIASTERANE (20S)	0.00	217	0	0.00	0.0
9	C27 13a,17b DIASTERANE (20R)	0.00	217	0	0.00	0.0
10	C28 13b,17a DIASTERANE (20S) (24R/24S ?)	0.00	217	0	0.00	0.0
11	C28 13b,17a DIASTERANE (20S) (24R/24S ?)	0.00	217	0	0.00	0.0
14+15	C28 13b,17a DIASTERANE (20R) (24R/24S ?)	0.00	217	0	0.00	0.0
16	C28 13a,17b DIASTERANE (20S)	0.00	217	0	0.00	0.0
17	C27 5a,14a,17a STERANE (20S)	0.00	217	0	0.00	0.0
18	C27 5a,14b,17b ISOSTERANE (20R) + C29 13b,17a DIASTERANE (20S)	0.00	217	0	0.00	0.0
19	C27 5a,14b,17b ISOSTERANE (20S)	0.00	217	0	0.00	0.0
20	C28 13a,17b DIASTERANE (20R)	0.00	217	0	0.00	0.0
22	C27 5a,14a,17a STERANE (20R)	0.00	217	0	0.00	0.0
23	C29 13b,17a DIASTERANE (20R)	0.00	217	0	0.00	0.0
24	C29 13a,17b DIASTERANE (20S)	0.00	217	0	0.00	0.0
26	C28 5a,14a,17a STERANE (20S)	0.00	217	0	0.00	0.0
27	C29 13a,17b DIASTERANE (20R)	0.00	217	0	0.00	0.0
28	C28 5a,14b,17b ISOSTERANE (20R)	0.00	217	0	0.00	0.0
29	C28 5a,14b,17b ISOSTERANE (20S)	0.00	217	0	0.00	0.0
31	C28 5a,14a,17a STERANE (20R)	0.00	217	0	0.00	0.0
33	C29 5a,14a,17a STERANE (20S)	0.00	217	0	0.00	0.0
34	C29 5a,14b,17b ISOSTERANE (20R)	0.00	217	0	0.00	0.0
35	C29 5a,14b,17b ISOSTERANE (20S)	53.03	217	37	0.05	8.7
37	C29 5a,14a,17a STERANE (20R)	53.69	217	231	0.28	54.4
38	C30 5a,14a,17a STERANE (20S)	53.88	217	72	0.09	16.9
39	C30 5a,14b,17b ISOSTERANE (20R)	54.33	217	85	0.10	20.0
40	C30 5a,14b,17b ISOSTERANE (20S)	0.00	217	0	0.00	0.0
41	C30 5a,14a,17a STERANE (20R)	0.00	217	0	0.00	0.0

STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill
Lab Sample ID: C45256
Sample Descriptor: DBAP-091204
Analysis Date: 12/17/2004



STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill
Lab Sample ID: C45257
Sample Descriptor: DBHC-091204
Analysis Date: 12/17/2004

No.	COMPOUND NAME	RT	ION	AREA	CONC	%
	TERPANES				(ng/g)	
H	C19 TRICYCLIC TERPANE	0.00	191	0	0.00	0.0
A	C20 TRICYCLIC TERPANE	0.00	191	0	0.00	0.0
B	C21 TRICYCLIC TERPANE	0.00	191	0	0.00	0.0
C	C22 TRICYCLIC TERPANE	0.00	191	0	0.00	0.0
D	C23 TRICYCLIC TERPANE	0.00	191	0	0.00	0.0
E	C24 TRICYCLIC TERPANE	0.00	191	0	0.00	0.0
1	C25 TRICYCLIC TERPANE	0.00	191	0	0.00	0.0
4	C24 TETRACYCLIC TERPANE	0.00	191	0	0.00	0.0
5	C26 TRICYCLIC TERPANE (22R)	0.00	191	0	0.00	0.0
6	C26 TRICYCLIC TERPANE (22S)	0.00	191	0	0.00	0.0
9	C28 TRICYCLIC TERPANE (22R)	0.00	191	0	0.00	0.0
10	C28 TRICYCLIC TERPANE (22S)	0.00	191	0	0.00	0.0
11	C29 TRICYCLIC TERPANE (22R)	0.00	191	0	0.00	0.0
12	C29 TRICYCLIC TERPANE (22S)	0.00	191	0	0.00	0.0
13	C27 18a-22,29,30-TRISNORNEOHOPANE (Ts)	50.15	191	840	0.55	32.8
I	C27 PENTACYCLIC TERPANE (Y)	0.00	191	0	0.00	0.0
14	C27 17a-22,29,30-TRISNORHOPANE (Tm)	51.04	191	815	0.53	31.8
15	C30 TRICYCLIC TERPANE (22R)	0.00	191	0	0.00	0.0
16	C30 TRICYCLIC TERPANE (22S)	0.00	191	0	0.00	0.0
17	C28 17a,21b-28,30-BISNORHOPANE	0.00	191	0	0.00	0.0
J	C29 17a,21b-25-NORHOPANE	0.00	191	0	0.00	0.0
19	C29 17a,21b-30-NORHOPANE	0.00	191	0	0.00	0.0
20	C29 18a-NORNEOHOPANE (29Ts)	0.00	191	0	0.00	0.0
F	C30 DIAHOPANE	0.00	191	0	0.00	0.0
21	C29 17b,21a-30-NORMORETANE	0.00	191	0	0.00	0.0
22	C30 18a-OLEANANE	55.36	191	904	0.59	35.3
23	C30 17a,21b-HOPANE	0.00	191	0	0.00	0.0
24	C30 17b,21a-MORETANE	0.00	191	0	0.00	0.0
27	C31 17a,21b-HOMOHOPANE (22S)	0.00	191	0	0.00	0.0
28	C31 17a,21b-HOMOHOPANE(22R)	0.00	191	0	0.00	0.0
G	C30 GAMMACERANE	0.00	191	0	0.00	0.0
30	C32 17a,21b-HOMOHOPANE (22S)	0.00	191	0	0.00	0.0
31	C32 17a,21b-HOMOHOPANE (22R)	0.00	191	0	0.00	0.0
34	C33 17a,21b-HOMOHOPANE (22S)	0.00	191	0	0.00	0.0
35	C33 17a,21b-HOMOHOPANE (22R)	0.00	191	0	0.00	0.0
36	C34 17a,21b-HOMOHOPANE (22S)	0.00	191	0	0.00	0.0
37	C34 17a,21b-HOMOHOPANE (22R)	0.00	191	0	0.00	0.0
38	C35 17a,21b-HOMOHOPANE (22S)	0.00	191	0	0.00	0.0
39	C35 17a,21b-HOMOHOPANE (22R)	0.00	191	0	0.00	0.0

STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill
Lab Sample ID: C45257
Sample Descriptor: DBHC-091204
Analysis Date: 12/17/2004

No.	COMPOUND NAME	RT	ION	AREA	CONC	%
	STERANES				(ng/g)	
A	C21 DIAPREGNANE	0.00	217	0	0.00	n.d.
1	C21 PREGNANE	0.00	217	0	0.00	n.d.
B	C22 DIAHOMOPREGNANE	0.00	217	0	0.00	n.d.
2	C22 HOMOPREGNANE	0.00	217	0	0.00	n.d.
3	C27 13b,17a DIASTERANE (20S)	0.00	217	0	0.00	n.d.
4	C27 13b,17a DIASTERANE (20R)	0.00	217	0	0.00	n.d.
8	C27 13a,17b DIASTERANE (20S)	0.00	217	0	0.00	n.d.
9	C27 13a,17b DIASTERANE (20R)	0.00	217	0	0.00	n.d.
10	C28 13b,17a DIASTERANE (20S) (24R/24S ?)	0.00	217	0	0.00	n.d.
11	C28 13b,17a DIASTERANE (20S) (24R/24S ?)	0.00	217	0	0.00	n.d.
14+15	C28 13b,17a DIASTERANE (20R) (24R/24S ?)	0.00	217	0	0.00	n.d.
16	C28 13a,17b DIASTERANE (20S)	0.00	217	0	0.00	n.d.
17	C27 5a,14a,17a STERANE (20S)	0.00	217	0	0.00	n.d.
18	C27 5a,14b,17b ISOSTERANE (20R) + C29 13b,17a DIASTERANE (20S)	0.00	217	0	0.00	n.d.
19	C27 5a,14b,17b ISOSTERANE (20S)	0.00	217	0	0.00	n.d.
20	C28 13a,17b DIASTERANE (20R)	0.00	217	0	0.00	n.d.
22	C27 5a,14a,17a STERANE (20R)	0.00	217	0	0.00	n.d.
23	C29 13b,17a DIASTERANE (20R)	0.00	217	0	0.00	n.d.
24	C29 13a,17b DIASTERANE (20S)	0.00	217	0	0.00	n.d.
26	C28 5a,14a,17a STERANE (20S)	0.00	217	0	0.00	n.d.
27	C29 13a,17b DIASTERANE (20R)	0.00	217	0	0.00	n.d.
28	C28 5a,14b,17b ISOSTERANE (20R)	0.00	217	0	0.00	n.d.
29	C28 5a,14b,17b ISOSTERANE (20S)	0.00	217	0	0.00	n.d.
31	C28 5a,14a,17a STERANE (20R)	0.00	217	0	0.00	n.d.
33	C29 5a,14a,17a STERANE (20S)	0.00	217	0	0.00	n.d.
34	C29 5a,14b,17b ISOSTERANE (20R)	0.00	217	0	0.00	n.d.
35	C29 5a,14b,17b ISOSTERANE (20S)	0.00	217	0	0.00	n.d.
37	C29 5a,14a,17a STERANE (20R)	0.00	217	0	0.00	n.d.
38	C30 5a,14a,17a STERANE (20S)	0.00	217	0	0.00	n.d.
39	C30 5a,14b,17b ISOSTERANE (20R)	0.00	217	0	0.00	n.d.
40	C30 5a,14b,17b ISOSTERANE (20S)	0.00	217	0	0.00	n.d.
41	C30 5a,14a,17a STERANE (20R)	0.00	217	0	0.00	n.d.

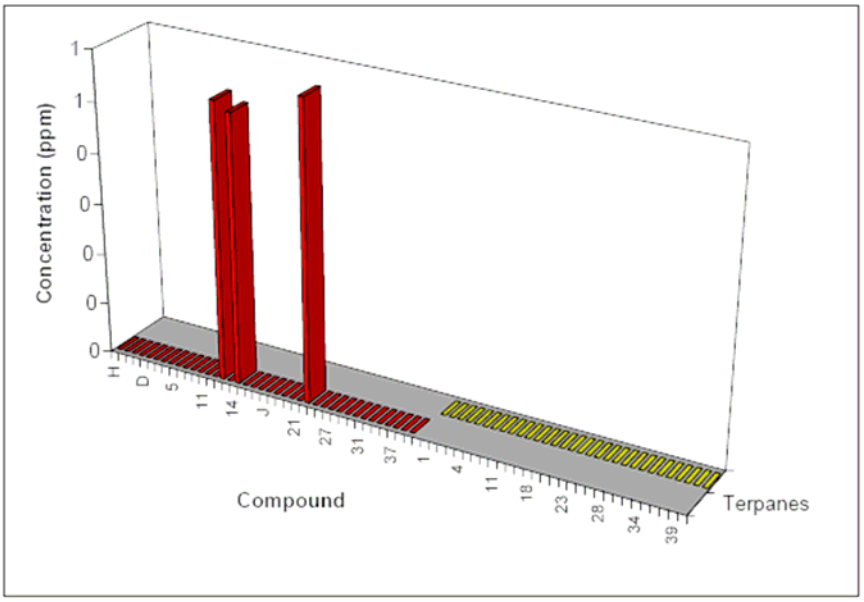
STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill

Lab Sample ID: C45257

Sample Descriptor: DBHC-091204

Analysis Date: 12/17/2004



F.5. NOAA Mussel Watch samples collected at Hope Creek (DBHC), Arnolds Point (DBAP), and Ben Davis Point Shoal (DBBD).

Sample Name	NST1363.D	NST1365.D	NST1366.D
Client Name	DBAP	DBBD	DBHC
Matrix	Tissue	Tissue	Tissue
Species	Bivalves	Bivalves	Bivalves
Collection Date	01/02/05	01/02/05	01/02/05
Received Date	01/05/05	01/05/05	01/05/05
Extraction Date	06/15/05	06/15/05	06/15/05
Extraction Batch	ENV 1189	ENV 1189	ENV 1189
Date Acquired	07/14/05	07/14/05	07/14/05
Method	PAH-2002	PAH-2002	PAH-2002
Sample Wet Weight (g)	12.2	12.2	12.6
Sample Dry Weight (g)	0.7	1.6	0.6
% Moisture	94	87	95
% Dry	6	13	5
% Lipid (wet)	0.6	1.4	0.6
% Lipid (dry)	10.6	11.6	13.0
Dilution	NA	NA	NA

Target Compounds	Su Corrected Conc. (ng/dry g)	Q1	Q2	Q3	Su Corrected Conc. (ng/dry g)	Q1	Q2	Q3	Su Corrected Conc. (ng/dry g)	Q1	Q2	Q3
Decalin	0.0	U			0.0	U			0.0	U		
C1-Decalin	0.0	U			0.0	U			0.0	U		
C2-Decalin	0.0	U			0.0	U			0.0	U		
C3-Decalin	0.0	U			0.0	U			0.0	U		
C4-Decalin	0.0	U			0.0	U			0.0	U		
Naphthalene	31.3				44.7				37.5			
C1-Naphthalenes	52.3				60.1				56.7			
C2-Naphthalenes	42.6				36.6				41.8			
C3-Naphthalenes	37.8				28.2				38.9			
C4-Naphthalenes	19.9	J			14.7				23.3	J		
Benzothiophene	0.0	U			0.0	U			0.0	U		
C1-Benzothiophene	0.0	U			0.0	U			0.0	U		
C2-Benzothiophene	0.0	U			0.0	U			0.0	U		
C3-Benzothiophene	0.0	U			0.0	U			0.0	U		
Biphenyl	30.2				18.8				40.6			
Acenaphthylene	13.8				8.1				14.4			
Acenaphthene	6.7				5.9				7.5			
Dibenzofuran	17.9				10.3				22.6			
Fluorene	9.6				6.9				11.9			
C1-Fluorenes	11.9				6.7				15.6			
C2-Fluorenes	28.2				13.4				23.9			
C3-Fluorenes	0.0	U			0.0	U			0.0	U		
Anthracene	10.6				7.8				17.6			
Phenanthrene	19.1				12.4				26.0			
C1-Phenanthrenes/Anthracenes	26.3				13.0				30.7			
C2-Phenanthrenes/Anthracenes	36.2				17.0				42.7			
C3-Phenanthrenes/Anthracenes	54.4				20.8				53.5			
C4-Phenanthrenes/Anthracenes	35.9				13.0				45.6			
Dibenzothiophene	2.4	J			1.4	J			4.0	J		
C1-Dibenzothiophenes	14.8				5.4				17.2			
C2-Dibenzothiophenes	26.3				11.5				37.9			
C3-Dibenzothiophenes	42.6				14.0				47.4			
Fluoranthene	17.9	J			10.4	J			23.7	J		
Pyrene	50.2				17.8				60.6			
C1-Fluoranthenes/Pyrenes	28.5				8.5	J			31.1			
C2-Fluoranthenes/Pyrenes	18.9	J			5.8	J			20.7	J		
C3-Fluoranthenes/Pyrenes	0.0	U			0.0	U			15.1	J		
Naphthobenzothiophene	6.9	J			0.0	U			5.9	J		
C1-Naphthobenzothiophene	9.8				0.0	U			10.2			

C2-Naphthobenzothiophene	8.7		0.0	U	12.7	
C3-Naphthobenzothiophene	0.0	U	0.0	U	6.5	J
Benz(a)anthracene	13.3		3.4	J	10.0	J
Chrysene	29		10.5		29	
C1-Chrysenes	21.8		4.7	J	15.9	J
C2-Chrysenes	13.2	J	4.6	J	12.5	J
C3-Chrysenes	8.0	J	0.0	U	10.3	J
C4-Chrysenes	0.0	U	0.0	U	0.0	U
Benzo(b)fluoranthene	34.3		6.2		29.4	
Benzo(k)fluoranthene	8.4		1.2	J	6.5	J
Benzo(e)pyrene	34.9		7.0		28.1	
Benzo(a)pyrene	8.0		0.6	J	5.2	J
Perylene	48.1		5.5	J	39.4	
Indeno(1,2,3-c,d)pyrene	7.0	J	0.8	J	4.3	J
Dibenzo(a,h)anthracene	2.0	J	0.0	U	0.0	U
C1-Dibenzo(a,h)anthracene	0.0	U	0.0	U	0.0	U
C2-Dibenzo(a,h)anthracene	0.0	U	0.0	U	0.0	U
C3-Dibenzo(a,h)anthracene	0.0	U	0.0	U	0.0	U
Benzo(g,h,i)perylene	11.2		1.4	J	7.0	J
Total PAHs	951		459		1041	
Individual Isomers						
2-Methylnaphthalene	50.8		59.8		55.8	
1-Methylnaphthalene	32.7		36.0		34.7	
2,6-Dimethylnaphthalene	21.0		18.1		21.8	
1,6,7-Trimethylnaphthalene	3.8		2.4		4.4	
1-Methylphenanthrene	3.4	J	2.6		7.4	

Surrogate (Su)	Su Recovery (%)	Su Recovery (%)	Su Recovery (%)
Naphthalene-d8	55	62	53
Acenaphthene-d10	74	77	75
Phenanthrene-d10	82	86	78
Chrysene-d12	59	66	70
Perylene-d12	76	51	54

Qualifiers (Q): J=Below the MDL, U=Not detected, B=In procedural blank > 3x MDL, I=Interference, D=Diluted value, NA=Not Applicable,*=Outside QA limits, refer to narrative

APPENDIX G

Fish Tissue Analytical Results

G.1. Fish tissue sample log and summary PAH results.

G.2. Fish tissue PAH data.

G.3. Striped Bass tissue data.

G.1. Fish tissue sample log and summary PAH results.

Sample ID	Species	Date	Latitude	Longitude	Whole Body Wt. (g)	Fillet Wt (g)	Carcass Wt (g)	Tissue	Total PAHs (ng/g wet)	Comments
MHC-PERCH1	perch	9-Dec-04	39.4227	-75.4585	90.06	16.55	73.51	Fillet	23.5	
								Carcass	45.7	
MHC-PERCH2	perch	9-Dec-04	39.4227	-75.4585	119.58	32.45	87.13	Fillet	20.2	
								Carcass	73.2	
MHC-PERCH3	perch	9-Dec-04	39.4227	-75.4585	155.86	28.86	181.72	Fillet	17.0	
								Carcass	36.5	
FTP-C-01	catfish	16-Dec-04						Whole body	88.9	North of Tacony Palmyra bridge
FTP-C-02	catfish	16-Dec-04						Whole body	324.5	North of Tacony Palmyra bridge
FTP-C-03	catfish	16-Dec-04						Whole body	185.6	North of Tacony Palmyra bridge
TI-3-C-01	catfish	16-Dec-04						Whole body	439.3	South of Tinicum Island
TI-3-C-02	catfish	16-Dec-04						Whole body	273.8	South of Tinicum Island
TI-3-C-03	catfish	16-Dec-04						Whole body	464.3	South of Tinicum Island
FMH-GC-01	gizzard shad	16-Dec-04						Fillet	101.7	Marcus Hook
								Carcass	233.7	
FMH-GC-02	gizzard shad	16-Dec-04						Fillet	82.8	Marcus Hook
								Carcass	254.4	
FMH-C-01	catfish	16-Dec-04						Whole body	381.7	Marcus Hook
MH-GC-03	gizzard shad	16-Dec-04						Fillet	117.5	Marcus Hook
								Carcass	362.5	
MH-C-02	catfish	16-Dec-04						Whole body	247.7	Marcus Hook
MH-C-03	catfish	16-Dec-04						Whole body	353.5	Marcus Hook
FCR-C-01	catfish	16-Dec-04						Whole body	139.1	Christina River
FCR-P-01	white perch	16-Dec-04						Fillet	89.4	Christina River
								Carcass	233.1	
FCR-P-02	white perch	16-Dec-04						Fillet	72.1	Christina River
								Carcass	270.8	
FCR-P-03	white perch	16-Dec-04						Fillet	209.5	Christina River
								Carcass	1143.6	
FCR-C-02	catfish	16-Dec-04						Whole body	176.7	Christina River

Sample ID	Species	Date	Latitude	Longitude	Whole Body Wt. (g)	Fillet Wt (g)	Carcass Wt (g)	Tissue	Total PAHs (ng/g wet)	Comments
FCR-C-03	catfish	16-Dec-04						Whole body	235.4	Christina River
FPP-C-01	catfish	16-Dec-04						Whole body	374.8	North of Pea Patch Island
FPP-C-02	catfish	16-Dec-04						Whole body	129.6	North of Pea Patch Island
FPP-C-03	catfish	16-Dec-04						Whole body	140.9	North of Pea Patch Island
FPP-P-01	white perch	16-Dec-04						Fillet	124.6	North of Pea Patch Island
								Carcass	205.6	
FPP-P-02	white perch	16-Dec-04						Fillet	238.6	North of Pea Patch Island
								Carcass	755.0	
FPP-P-03	white perch	16-Dec-04						Fillet	134.3	North of Pea Patch Island
								Carcass	827.0	
NJDB-01	striped bass	3-May-05	39.0300	74.5658	2448.59	153.09	2295.50	Fillet	10.4	
								Carcass	14.0	
								Carcass (dup)	11.5	
NJDB-02	striped bass	3-May-05	39.0248	74.5717	2538.99	121.19	2417.80	Fillet	10.2	
								Carcass	27.8	
NJDB-03	striped bass	10-May-05	39.0785	74.5511	3311.63	190.23	3121.40	Fillet	11.1	
								Carcass	26.2	
NJDB-04	striped bass	10-May-05	39.0793	74.5531	2442.97	184.97	2258.00	Fillet	7.2	
								Carcass	53.2	
NJDB-05	striped bass	11-May-05	39.0964	74.5809	5039.86	309.66	4730.20	Fillet	13.5	
								Carcass	43.4	
UPTPBFT-A	striped bass	6-Jul-05			1454.22	171.48	1282.74	Fillet	47.8	Upstream of Tacomy Palmyra Bridge
								Fillet (dup)	15.7	
								Carcass	21.9	
UPTPBFT-B	striped bass	6-Jul-05			1749.84	224.7	1525.14	Fillet	21.1	Upstream of Tacomy Palmyra Bridge
								Carcass	41.7	
UPTPBFT-C	striped bass	6-Jul-05			1521.46	167.19	1354.27	Fillet	130.6	Upstream of Tacomy Palmyra Bridge
								Carcass	291.5	
UPTPBFT-D	striped bass	6-Jul-05			1467.00	166.95	1300.05	Fillet	13.7	Upstream of Tacomy Palmyra Bridge
								Carcass	60.3	

Sample ID	Species	Date	Latitude	Longitude	Whole Body Wt. (g)	Fillet Wt (g)	Carcass Wt (g)	Tissue	Total PAHs (ng/g wet)	Comments
UPTPBFT-E	striped bass	6-Jul-05			1742.31	268.26	1474.05	Fillet	16.6	Upstream of Tacomy Palmyra Bridge
								Carcass	62.3	
Fish # 1	striped bass	27-May-05			2107.85	122.44	1985.41	Fillet	50.8	Lower end of Tinicum Island
								Carcass	60.1	
Fish # 2	striped bass	27-May-05			1475.69	141.81	1333.88	Fillet	9.7	Lower end of Tinicum Island
								Carcass	70.4	
Fish # 3	striped bass	27-May-05			1233.40	123.54	1109.86	Fillet	66.7	Lower end of Tinicum Island
								Carcass	89.3	
Fish # 4	striped bass	31-May-05			1533.05	157.48	1375.57	Fillet	98.4	Lower end of Tinicum Island
								Carcass	26.8	
Fish # 5	striped bass	31-May-05			1440.87	164.92	1275.95	Fillet	46.2	Lower end of Tinicum Island
								Carcass	25.6	

G.2. Fish tissue PAH data.

Client Sample ID	MHC-PERCH1 Fillet	MHC-PERCH1 Carcass
Sample Descriptor	Fillet	Carcass
Original Sample		
GERG ID	C45258	C45259
Sample Type	SAMP	SAMP
SDG	EC170	EC170
Dry Weight	1.34	1.84
Wet Weight	6.28	6.58
Sample Size Units	Grams	Grams
Matrix	Tissue	Tissue
% solid	21.4	28.0
% Lipid	4.2	10.8
Reporting Units	ng/g	ng/g
Calculation Basis (dry/wet)	Wet	Wet
QC Batch ID	T1463	T1463
Method	GCMS	GCMS
Collection Date	12/09/04	12/09/04
Receive Date	12/11/04	12/11/04
Extraction Date	12/14/04	12/14/04
Analysis Date	12/15/04	12/15/04
Surrogate Compounds	**%Recovery**	**%Recovery**
d8-Naphthalene	73.7	75.5
d10-Acenaphthene	86.4	104.5
d10-Phenanthrene	106.7	108.2
d12-Chrysene	84.8	99.0
d12-Perylene	71.7	80.4
Total PAHs	**Concentration**	**Concentration**
Total PAHs with Perylene	23.5	45.7
Total PAHs without Perylene	23.5	45.7
Total NS&T PAHs	7.1	18.6

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

Client Sample ID	MHC-PERCH1 Fillet			MHC-PERCH1 Carcass		
Sample Descriptor	Fillet			Carcass		
Original Sample						
GERG ID	C45258			C45259		
Sample Type	SAMP			SAMP		
SDG	EC170			EC170		
PAH Compounds	**Concentration**	**MDL**		**Concentration**	**MDL**	
Naphthalene	1.31	0.85		1.78	0.81	
C1-Naphthalenes	1.01	1.46	J	1.73	1.39	
C2-Naphthalenes	0.46	0.84	J	1.41	0.81	
C3-Naphthalenes	1.19	1.28	J	1.43	1.22	
C4-Naphthalenes	1.08	1.28	J	1.69	1.22	
Biphenyl	0.42	0.70	J	0.50	0.67	J
Acenaphthylene	0.88	0.45		3.60	0.43	
Acenaphthene	0.30	0.45	J	0.37	0.43	J
Fluorene	0.39	0.66	J	1.04	0.63	
C1-Fluorenes	1.63	1.32		3.83	1.27	
C2-Fluorenes	3.45	1.32		3.93	1.27	
C3-Fluorenes	5.47	1.32		4.92	1.27	
Phenanthrene	0.48	0.62	J	0.90	0.59	
Anthracene	2.12	0.52		9.73	0.50	
C1-Phenanthrenes/Anthracenes	0.81	0.55		2.53	0.53	
C2-Phenanthrenes/Anthracenes	0.29	0.55	J	0.82	0.53	
C3-Phenanthrenes/Anthracenes	0.47	0.55	J	1.81	0.53	
C4-Phenanthrenes/Anthracenes	0.27	0.55	J	0.66	0.53	
Dibenzothiophene	0.08	0.23	J	0.25	0.22	
C1-Dibenzothiophenes	0.65	0.45		0.40	0.43	J
C2-Dibenzothiophenes	0.00	0.45	ND	0.00	0.43	ND
C3-Dibenzothiophenes	0.00	0.45	ND	0.00	0.43	ND
Fluoranthene	0.21	0.56	J	0.51	0.54	J
Pyrene	0.20	0.61	J	0.38	0.58	J
C1-Fluoranthenes/Pyrenes	0.00	1.17	ND	0.00	1.12	ND
C2-Fluoranthenes/Pyrenes	0.00	1.17	ND	0.00	1.12	ND
C3-Fluoranthenes/Pyrenes	0.00	1.17	ND	0.00	1.12	ND
Benzo(a)anthracene	0.10	0.58	J	0.27	0.56	J
Chrysene	0.06	0.46	J	0.15	0.44	J
C1-Chrysenes	0.00	0.92	ND	0.21	0.88	J
C2-Chrysenes	0.00	0.92	ND	0.26	0.88	J
C3-Chrysenes	0.00	0.92	ND	0.00	0.88	ND
C4-Chrysenes	0.00	0.92	ND	0.00	0.88	ND
Benzo(b)fluoranthene	0.04	1.06	J	0.07	1.01	J
Benzo(k)fluoranthene	0.09	0.72	J	0.32	0.69	J
Benzo(e)pyrene	0.02	0.57	J	0.04	0.55	J
Benzo(a)pyrene	0.00	1.14	ND	0.11	1.09	J
Perylene	0.00	0.26	ND	0.00	0.25	ND
Indeno(1,2,3-c,d)pyrene	0.00	1.08	ND	0.00	1.03	ND
Dibenz(a,h)anthracene	0.00	0.57	ND	0.00	0.54	ND
Benzo(g,h,i)perylene	0.00	0.89	ND	0.00	0.85	ND
2-Methylnaphthalene	0.63	0.65	J	1.05	0.62	
1-Methylnaphthalene	0.38	0.81	J	0.68	0.77	J
2,6-Dimethylnaphthalene	0.15	0.42	J	0.35	0.40	J
1,6,7-Trimethylnaphthalene	0.18	0.64	J	0.29	0.61	J
1-Methylphenanthrene	0.30	0.28		0.78	0.26	

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

Client Sample ID	MHC-PERCH2 Fillet	MHC-PERCH2 Carcass
Sample Descriptor	Fillet	Carcass
Original Sample		
GERG ID	C45260	C45261
Sample Type	SAMP	SAMP
SDG	EC170	EC170
Dry Weight	1.23	1.59
Wet Weight	5.81	5.21
Sample Size Units	Grams	Grams
Matrix	Tissue	Tissue
% solid	21.2	30.5
% Lipid	5.1	26.1
Reporting Units	ng/g	ng/g
Calculation Basis (dry/wet)	Wet	Wet
QC Batch ID	T1463	T1463
Method	GCMS	GCMS
Collection Date	12/09/04	12/09/04
Receive Date	12/11/04	12/11/04
Extraction Date	12/14/04	12/14/04
Analysis Date	12/15/04	12/15/04
Surrogate Compounds	**%Recovery**	**%Recovery**
d8-Naphthalene	59.5	91.6
d10-Acenaphthene	63.0	111.1
d10-Phenanthrene	74.4	106.8
d12-Chrysene	54.7	95.6
d12-Perylene	46.6	77.2
Total PAHs	**Concentration**	**Concentration**
Total PAHs with Perylene	20.2	73.2
Total PAHs without Perylene	20.2	73.2
Total NS&T PAHs	8.1	32.1

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

Client Sample ID	MHC-PERCH2 Fillet			MHC-PERCH2 Carcass		
Sample Descriptor	Fillet			Carcass		
Original Sample						
GERG ID	C45260			C45261		
Sample Type	SAMP			SAMP		
SDG	EC170			EC170		
PAH Compounds	**Concentration**	**MDL**		**Concentration**	**MDL**	
Naphthalene	1.57	0.92		3.07	1.02	
C1-Naphthalenes	1.49	1.58	J	5.56	1.76	
C2-Naphthalenes	0.98	0.91		4.74	1.02	
C3-Naphthalenes	1.34	1.38	J	3.64	1.54	
C4-Naphthalenes	1.20	1.38	J	2.53	1.54	
Biphenyl	0.52	0.76	J	1.49	0.84	
Acenaphthylene	0.49	0.48		3.64	0.54	
Acenaphthene	0.41	0.48	J	1.50	0.54	
Fluorene	0.61	0.72	J	2.64	0.80	
C1-Fluorenes	1.39	1.43	J	3.98	1.60	
C2-Fluorenes	1.13	1.43	J	4.20	1.60	
C3-Fluorenes	3.49	1.43		5.16	1.60	
Phenanthrene	0.69	0.67		2.33	0.75	
Anthracene	1.22	0.57		9.48	0.63	
C1-Phenanthrenes/Anthracenes	0.48	0.60	J	5.00	0.67	
C2-Phenanthrenes/Anthracenes	0.37	0.60	J	1.01	0.67	
C3-Phenanthrenes/Anthracenes	0.76	0.60		5.42	0.67	
C4-Phenanthrenes/Anthracenes	0.00	0.60	ND	0.98	0.67	
Dibenzothiophene	0.13	0.25	J	0.56	0.27	
C1-Dibenzothiophenes	0.43	0.49	J	3.29	0.55	
C2-Dibenzothiophenes	0.16	0.49	J	0.00	0.55	ND
C3-Dibenzothiophenes	0.00	0.49	ND	0.00	0.55	ND
Fluoranthene	0.33	0.61	J	0.62	0.68	J
Pyrene	0.30	0.66	J	0.44	0.73	J
C1-Fluoranthenes/Pyrenes	0.00	1.27	ND	0.00	1.42	ND
C2-Fluoranthenes/Pyrenes	0.00	1.27	ND	0.00	1.42	ND
C3-Fluoranthenes/Pyrenes	0.00	1.27	ND	0.00	1.42	ND
Benzo(a)anthracene	0.13	0.63	J	0.30	0.70	J
Chrysene	0.12	0.50	J	0.19	0.55	J
C1-Chrysenes	0.00	0.99	ND	0.17	1.11	J
C2-Chrysenes	0.00	0.99	ND	0.41	1.11	J
C3-Chrysenes	0.00	0.99	ND	0.00	1.11	ND
C4-Chrysenes	0.00	0.99	ND	0.00	1.11	ND
Benzo(b)fluoranthene	0.07	1.15	J	0.05	1.28	J
Benzo(k)fluoranthene	0.13	0.78	J	0.56	0.87	J
Benzo(e)pyrene	0.07	0.62	J	0.03	0.69	J
Benzo(a)pyrene	0.14	1.23	J	0.22	1.37	J
Perylene	0.00	0.29	ND	0.00	0.32	ND
Indeno(1,2,3-c,d)pyrene	0.00	1.17	ND	0.00	1.30	ND
Dibenz(a,h)anthracene	0.00	0.62	ND	0.00	0.69	ND
Benzo(g,h,i)perylene	0.00	0.97	ND	0.00	1.08	ND
2-Methylnaphthalene	0.93	0.71		3.45	0.79	
1-Methylnaphthalene	0.56	0.87	J	2.11	0.97	
2,6-Dimethylnaphthalene	0.32	0.46	J	1.58	0.51	
1,6,7-Trimethylnaphthalene	0.23	0.69	J	1.05	0.77	
1-Methylphenanthrene	0.20	0.30	J	2.64	0.33	

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

Client Sample ID	MHC-PERCH3 Fillet	MHC-PERCH3 Carcass
Sample Descriptor	Fillet	Carcass
Original Sample		
GERG ID	C45262	C45263
Sample Type	SAMP	SAMP
SDG	EC170	EC170
Dry Weight	1.26	1.95
Wet Weight	6.13	7.29
Sample Size Units	Grams	Grams
Matrix	Tissue	Tissue
% solid	20.6	26.8
% Lipid	3.6	12.3
Reporting Units	ng/g	ng/g
Calculation Basis (dry/wet)	Wet	Wet
QC Batch ID	T1463	T1463
Method	GCMS	GCMS
Collection Date	12/09/04	12/09/04
Receive Date	12/11/04	12/11/04
Extraction Date	12/14/04	12/14/04
Analysis Date	12/15/04	12/15/04
Surrogate Compounds	**%Recovery**	**%Recovery**
d8-Naphthalene	81.6	85.6
d10-Acenaphthene	89.1	98.0
d10-Phenanthrene	101.8	103.3
d12-Chrysene	79.0	89.2
d12-Perylene	68.7	72.7
Total PAHs	**Concentration**	**Concentration**
Total PAHs with Perylene	17.0	36.5
Total PAHs without Perylene	17.0	36.5
Total NS&T PAHs	5.7	13.5

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

Client Sample ID	MHC-PERCH3 Fillet			MHC-PERCH3 Carcass		
Sample Descriptor	Fillet			Carcass		
Original Sample						
GERG ID	C45262			C45263		
Sample Type	SAMP			SAMP		
SDG	EC170			EC170		
PAH Compounds	**Concentration**	**MDL**		**Concentration**	**MDL**	
Naphthalene	1.12	0.87		1.60	0.73	
C1-Naphthalenes	0.96	1.50	J	1.90	1.26	
C2-Naphthalenes	0.55	0.87	J	1.37	0.73	
C3-Naphthalenes	0.82	1.31	J	1.57	1.10	
C4-Naphthalenes	1.23	1.31	J	1.08	1.10	J
Biphenyl	0.35	0.72	J	0.50	0.60	J
Acenaphthylene	0.44	0.46	J	1.71	0.38	
Acenaphthene	0.28	0.46	J	0.54	0.38	
Fluorene	0.39	0.68	J	0.90	0.57	
C1-Fluorenes	1.32	1.36	J	2.48	1.14	
C2-Fluorenes	1.03	1.36	J	2.72	1.14	
C3-Fluorenes	3.67	1.36		5.61	1.14	
Phenanthrene	0.47	0.64	J	0.84	0.53	
Anthracene	1.01	0.54		4.76	0.45	
C1-Phenanthrenes/Anthracenes	0.69	0.57		2.29	0.48	
C2-Phenanthrenes/Anthracenes	0.27	0.57	J	0.65	0.48	
C3-Phenanthrenes/Anthracenes	0.69	0.57		1.78	0.48	
C4-Phenanthrenes/Anthracenes	0.22	0.57	J	0.00	0.48	ND
Dibenzothiophene	0.07	0.23	J	0.21	0.20	
C1-Dibenzothiophenes	0.57	0.47		2.39	0.39	
C2-Dibenzothiophenes	0.23	0.47	J	0.00	0.39	ND
C3-Dibenzothiophenes	0.00	0.47	ND	0.00	0.39	ND
Fluoranthene	0.18	0.58	J	0.32	0.49	J
Pyrene	0.17	0.63	J	0.30	0.53	J
C1-Fluoranthenes/Pyrenes	0.00	1.20	ND	0.00	1.01	ND
C2-Fluoranthenes/Pyrenes	0.00	1.20	ND	0.00	1.01	ND
C3-Fluoranthenes/Pyrenes	0.00	1.20	ND	0.00	1.01	ND
Benzo(a)anthracene	0.06	0.60	J	0.12	0.50	J
Chrysene	0.07	0.47	J	0.13	0.40	J
C1-Chrysenes	0.00	0.94	ND	0.13	0.79	J
C2-Chrysenes	0.00	0.94	ND	0.00	0.79	ND
C3-Chrysenes	0.00	0.94	ND	0.00	0.79	ND
C4-Chrysenes	0.00	0.94	ND	0.00	0.79	ND
Benzo(b)fluoranthene	0.04	1.09	J	0.07	0.91	J
Benzo(k)fluoranthene	0.07	0.74	J	0.29	0.62	J
Benzo(e)pyrene	0.03	0.59	J	0.05	0.49	J
Benzo(a)pyrene	0.00	1.17	ND	0.16	0.98	J
Perylene	0.00	0.27	ND	0.00	0.23	ND
Indeno(1,2,3-c,d)pyrene	0.00	1.11	ND	0.00	0.93	ND
Dibenz(a,h)anthracene	0.00	0.59	ND	0.00	0.49	ND
Benzo(g,h,i)perylene	0.00	0.92	ND	0.00	0.77	ND
2-Methylnaphthalene	0.63	0.67	J	1.15	0.56	
1-Methylnaphthalene	0.33	0.83	J	0.75	0.69	
2,6-Dimethylnaphthalene	0.18	0.43	J	0.45	0.36	
1,6,7-Trimethylnaphthalene	0.15	0.65	J	0.46	0.55	J
1-Methylphenanthrene	0.42	0.28		0.96	0.24	

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

Client Sample ID	FCR-P-01 Fillet	FCR-P-01 Carcass
Sample Descriptor		
Original Sample		
GERG ID	C45355	C45356
Sample Type	SAMP	SAMP
SDG	F1179	F1179
Dry Weight	1.19	3.31
Wet Weight	5.37	13.28
Sample Size Units	Grams	Grams
Matrix	Tissue	Tissue
% solid	22.2	24.9
% Lipid	ng/g	ng/g
Reporting Units	Wet	Wet
Calculation Basis (dry/wet)		
QC Batch ID	T1466	T1466
Method	GCMS	GCMS
Collection Date	12/16/04	12/16/04
Receive Date	12/18/04	12/18/04
Extraction Date	01/10/05	01/10/05
Analysis Date	01/15/05	01/15/05
Surrogate Compounds	**%Recovery**	**%Recovery**
d8-Naphthalene	57.4	86.4
d10-Acenaphthene	67.4	93.2
d10-Phenanthrene	69.1	98.0
d12-Chrysene	52.0	60.6
d12-Perylene	69.0	75.2
Total PAHs	**Concentration**	**Concentration**
Total PAHs with Perylene	89.4	233.1
Total PAHs without Perylene	89.4	232.9
Total NS&T PAHs	20.5	65.5

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

Client Sample ID	FCR-P-01 Fillet			FCR-P-01 Carcass		
Sample Descriptor						
Original Sample						
GERG ID	C45355			C45356		
Sample Type	SAMP			SAMP		
SDG	F1179			F1179		
PAH Compounds	**Concentration**	**MDL**		**Concentration**	**MDL**	
Naphthalene	2.67	0.99		4.71	0.40	
C1-Naphthalenes	3.95	1.71		7.68	0.69	
C2-Naphthalenes	7.10	0.99		18.13	0.40	
C3-Naphthalenes	8.36	1.49		18.18	0.60	
C4-Naphthalenes	11.10	1.49		24.81	0.60	
Biphenyl	1.23	0.82		1.47	0.33	
Acenaphthylene	2.65	0.52		5.37	0.21	
Acenaphthene	0.25	0.52	J	2.69	0.21	
Fluorene	1.44	0.78		3.85	0.31	
C1-Fluorenes	2.32	1.55		8.31	0.63	
C2-Fluorenes	5.39	1.55		14.95	0.63	
C3-Fluorenes	8.22	1.55		15.11	0.63	
Phenanthrene	1.16	0.73		8.51	0.29	
Anthracene	5.58	0.61		15.39	0.25	
C1-Phenanthrenes/Anthracenes	3.27	0.65		11.46	0.26	
C2-Phenanthrenes/Anthracenes	2.82	0.65		6.42	0.26	
C3-Phenanthrenes/Anthracenes	4.23	0.65		10.15	0.26	
C4-Phenanthrenes/Anthracenes	1.20	0.65		3.68	0.26	
Dibenzothiophene	0.57	0.27		2.26	0.11	
C1-Dibenzothiophenes	1.26	0.53		7.48	0.22	
C2-Dibenzothiophenes	2.12	0.53		7.90	0.22	
C3-Dibenzothiophenes	2.59	0.53		4.30	0.22	
Fluoranthene	0.92	0.66		4.02	0.27	
Pyrene	0.53	0.71	J	4.99	0.29	
C1-Fluoranthenes/Pyrenes	2.32	1.37		6.43	0.56	
C2-Fluoranthenes/Pyrenes	1.86	1.37		4.76	0.56	
C3-Fluoranthenes/Pyrenes	1.47	1.37		1.82	0.56	
Benzo(a)anthracene	0.34	0.68	J	1.23	0.28	
Chrysene	0.41	0.54	J	2.38	0.22	
C1-Chrysenes	0.77	1.07		1.47	0.43	
C2-Chrysenes	0.86	1.07		1.13	0.43	
C3-Chrysenes	0.00	1.07	ND	0.77	0.43	
C4-Chrysenes	0.00	1.07	ND	0.00	0.43	ND
Benzo(b)fluoranthene	0.11	1.24	J	0.17	0.50	J
Benzo(k)fluoranthene	0.00	0.85	ND	0.00	0.34	ND
Benzo(e)pyrene	0.28	0.67	J	0.46	0.27	
Benzo(a)pyrene	0.00	1.33	ND	0.34	0.54	J
Perylene	0.00	0.31	ND	0.20	0.12	
Indeno(1,2,3-c,d)pyrene	0.00	1.26	ND	0.00	0.51	ND
Dibenz(a,h)anthracene	0.00	0.67	ND	0.00	0.27	ND
Benzo(g,h,i)perylene	0.00	1.05	ND	0.14	0.42	J
2-Methylnaphthalene	2.15	0.76		4.53	0.31	
1-Methylnaphthalene	1.80	0.94		3.15	0.38	
2,6-Dimethylnaphthalene	1.34	0.49		5.24	0.20	
1,6,7-Trimethylnaphthalene	1.46	0.75		5.25	0.30	
1-Methylphenanthrene	0.42	0.32		2.29	0.13	

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

Client Sample ID	FCR-P-02 Fillet	FCR-P-02 Carcass
Sample Descriptor		
Original Sample		
GERG ID	C45357	C45358
Sample Type	SAMP	SAMP
SDG	F1179	F1179
Dry Weight	1.03	3.19
Wet Weight	5.07	11.46
Sample Size Units	Grams	Grams
Matrix	Tissue	Tissue
% solid	20.4	27.8
% Lipid	ng/g	ng/g
Reporting Units	Wet	Wet
Calculation Basis (dry/wet)		
QC Batch ID	T1466	T1466
Method	GCMS	GCMS
Collection Date	12/16/04	12/16/04
Receive Date	12/18/04	12/18/04
Extraction Date	01/10/05	01/10/05
Analysis Date	01/15/05	01/15/05
Surrogate Compounds	**%Recovery**	**%Recovery**
d8-Naphthalene	81.3	72.1
d10-Acenaphthene	85.1	84.4
d10-Phenanthrene	89.8	96.7
d12-Chrysene	64.0	68.0
d12-Perylene	80.7	73.6
Total PAHs	**Concentration**	**Concentration**
Total PAHs with Perylene	72.1	270.8
Total PAHs without Perylene	72.1	270.0
Total NS&T PAHs	21.8	74.1

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

Client Sample ID	FCR-P-02 Fillet			FCR-P-02 Carcass		
Sample Descriptor						
Original Sample						
GERG ID	C45357			C45358		
Sample Type	SAMP			SAMP		
SDG	F1179			F1179		
PAH Compounds	**Concentration**	**MDL**		**Concentration**	**MDL**	
Naphthalene	2.38	1.05		4.26	0.46	
C1-Naphthalenes	3.86	1.81		8.84	0.80	
C2-Naphthalenes	4.74	1.05		15.34	0.46	
C3-Naphthalenes	5.32	1.58		16.37	0.70	
C4-Naphthalenes	4.73	1.58		16.68	0.70	
Biphenyl	1.06	0.87		1.36	0.38	
Acenaphthylene	1.81	0.55		6.37	0.24	
Acenaphthene	1.36	0.55		4.45	0.24	
Fluorene	1.52	0.82		4.45	0.36	
C1-Fluorenes	3.29	1.64		6.95	0.73	
C2-Fluorenes	6.13	1.64		21.48	0.73	
C3-Fluorenes	6.91	1.64		17.40	0.73	
Phenanthrene	3.09	0.77		10.95	0.34	
Anthracene	5.63	0.65		20.13	0.29	
C1-Phenanthrenes/Anthracenes	1.80	0.69		10.88	0.30	
C2-Phenanthrenes/Anthracenes	1.54	0.69		11.33	0.30	
C3-Phenanthrenes/Anthracenes	3.29	0.69		14.82	0.30	
C4-Phenanthrenes/Anthracenes	1.36	0.69		6.17	0.30	
Dibenzothiophene	0.58	0.28		1.80	0.12	
C1-Dibenzothiophenes	1.40	0.56		5.07	0.25	
C2-Dibenzothiophenes	1.22	0.56		10.84	0.25	
C3-Dibenzothiophenes	1.51	0.56		11.34	0.25	
Fluoranthene	0.49	0.70	J	2.73	0.31	
Pyrene	0.24	0.76	J	3.73	0.33	
C1-Fluoranthenes/Pyrenes	2.26	1.46		6.02	0.64	
C2-Fluoranthenes/Pyrenes	1.85	1.46		7.67	0.64	
C3-Fluoranthenes/Pyrenes	0.57	1.46	J	5.25	0.64	
Benzo(a)anthracene	0.21	0.72	J	1.45	0.32	
Chrysene	0.20	0.57	J	4.03	0.25	
C1-Chrysenes	0.67	1.14	J	3.27	0.50	
C2-Chrysenes	0.86	1.14	J	3.76	0.50	
C3-Chrysenes	0.00	1.14	ND	0.97	0.50	
C4-Chrysenes	0.00	1.14	ND	0.00	0.50	ND
Benzo(b)fluoranthene	0.08	1.31	J	0.97	0.58	
Benzo(k)fluoranthene	0.00	0.90	ND	0.27	0.40	J
Benzo(e)pyrene	0.14	0.71	J	1.76	0.31	
Benzo(a)pyrene	0.00	1.41	ND	0.00	0.62	ND
Perylene	0.00	0.33	ND	0.83	0.14	
Indeno(1,2,3-c,d)pyrene	0.00	1.34	ND	0.20	0.59	J
Dibenz(a,h)anthracene	0.00	0.71	ND	0.10	0.31	J
Benzo(g,h,i)perylene	0.00	1.11	ND	0.52	0.49	
2-Methylnaphthalene	2.34	0.81		5.33	0.36	
1-Methylnaphthalene	1.52	1.00		3.51	0.44	
2,6-Dimethylnaphthalene	1.17	0.52		3.64	0.23	
1,6,7-Trimethylnaphthalene	1.10	0.79		3.90	0.35	
1-Methylphenanthrene	0.45	0.34		1.42	0.15	

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

Client Sample ID	FCR-P-03 Fillet	FCR-P-03 Carcass
Sample Descriptor		
Original Sample		
GERG ID	C45359	C45360
Sample Type	SAMP	SAMP
SDG	F1179	F1179
Dry Weight	1.02	2.85
Wet Weight	5.09	11.83
Sample Size Units	Grams	Grams
Matrix	Tissue	Tissue
% solid	20.1	24.1
% Lipid	ng/g	ng/g
Reporting Units	Wet	Wet
Calculation Basis (dry/wet)		
QC Batch ID	T1466	T1466
Method	GCMS	GCMS
Collection Date	12/16/04	12/16/04
Receive Date	12/18/04	12/18/04
Extraction Date	01/10/05	01/10/05
Analysis Date	01/15/05	01/15/05
Surrogate Compounds	**%Recovery**	**%Recovery**
d8-Naphthalene	56.9	56.9
d10-Acenaphthene	61.1	69.5
d10-Phenanthrene	51.1	77.3
d12-Chrysene	42.8	67.1
d12-Perylene	59.0	62.2
Total PAHs	**Concentration**	**Concentration**
Total PAHs with Perylene	209.5	1143.6
Total PAHs without Perylene	209.5	1141.8
Total NS&T PAHs	41.1	140.5

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

Client Sample ID	FCR-P-03 Fillet			FCR-P-03 Carcass		
Sample Descriptor						
Original Sample						
GERG ID	C45359			C45360		
Sample Type	SAMP			SAMP		
SDG	F1179			F1179		
PAH Compounds	**Concentration**	**MDL**		**Concentration**	**MDL**	
Naphthalene	4.68	1.05		6.24	0.45	
C1-Naphthalenes	7.03	1.80		17.60	0.77	
C2-Naphthalenes	17.26	1.04		71.07	0.45	
C3-Naphthalenes	20.32	1.58		92.31	0.68	
C4-Naphthalenes	13.92	1.58		85.60	0.68	
Biphenyl	1.79	0.86		2.09	0.37	
Acenaphthylene	1.01	0.55		3.80	0.24	
Acenaphthene	2.24	0.55		4.43	0.24	
Fluorene	3.17	0.82		11.03	0.35	
C1-Fluorenes	6.29	1.64		27.78	0.70	
C2-Fluorenes	8.93	1.64		59.04	0.70	
C3-Fluorenes	11.42	1.64		77.48	0.70	
Phenanthrene	6.08	0.76		20.81	0.33	
Anthracene	2.58	0.65		8.67	0.28	
C1-Phenanthrenes/Anthracenes	11.42	0.68		57.04	0.29	
C2-Phenanthrenes/Anthracenes	11.44	0.68		48.78	0.29	
C3-Phenanthrenes/Anthracenes	11.21	0.68		69.00	0.29	
C4-Phenanthrenes/Anthracenes	4.46	0.68		45.00	0.29	
Dibenzothiophene	3.47	0.28		34.60	0.12	
C1-Dibenzothiophenes	10.93	0.56		42.97	0.24	
C2-Dibenzothiophenes	13.41	0.56		91.61	0.24	
C3-Dibenzothiophenes	9.02	0.56		75.02	0.24	
Fluoranthene	0.59	0.70	J	2.22	0.30	
Pyrene	0.71	0.75	J	4.73	0.32	
C1-Fluoranthenes/Pyrenes	4.60	1.45		20.60	0.62	
C2-Fluoranthenes/Pyrenes	4.84	1.45		37.84	0.62	
C3-Fluoranthenes/Pyrenes	3.90	1.45		39.13	0.62	
Benzo(a)anthracene	0.32	0.72	J	2.94	0.31	
Chrysene	1.48	0.57		10.60	0.24	
C1-Chrysenes	2.87	1.13		17.73	0.49	
C2-Chrysenes	5.15	1.13		30.84	0.49	
C3-Chrysenes	1.40	1.13		10.37	0.49	
C4-Chrysenes	0.00	1.13	ND	3.36	0.49	
Benzo(b)fluoranthene	0.41	1.31	J	2.16	0.56	
Benzo(k)fluoranthene	0.28	0.89	J	0.73	0.38	
Benzo(e)pyrene	0.49	0.71	J	3.73	0.31	
Benzo(a)pyrene	0.22	1.41	J	1.34	0.61	
Perylene	0.00	0.33	ND	1.87	0.14	
Indeno(1,2,3-c,d)pyrene	0.08	1.33	J	0.00	0.57	ND
Dibenz(a,h)anthracene	0.00	0.70	ND	0.52	0.30	
Benzo(g,h,i)perylene	0.03	1.10	J	0.96	0.48	
2-Methylnaphthalene	4.06	0.80		9.53	0.35	
1-Methylnaphthalene	2.97	1.00		8.07	0.43	
2,6-Dimethylnaphthalene	6.85	0.52		26.16	0.22	
1,6,7-Trimethylnaphthalene	5.43	0.79		23.94	0.34	
1-Methylphenanthrene	2.84	0.34		15.49	0.15	

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

Client Sample ID	FPP-P-01 Fillet	FPP-P-01 Carcass	
Sample Descriptor			
Original Sample			
GERG ID	C45361	C45362	
Sample Type	SAMP	SAMP	
SDG	F1179	F1179	
Dry Weight	1.37	3.39	
Wet Weight	6.20	11.55	
Sample Size Units	Grams	Grams	
Matrix	Tissue	Tissue	
% solid	22.1	29.3	
% Lipid	ng/g	ng/g	
Reporting Units	Wet	Wet	
Calculation Basis (dry/wet)			
QC Batch ID	T1466	T1466	
Method	GCMS	GCMS	
Collection Date	12/16/04	12/16/04	
Receive Date	12/18/04	12/18/04	
Extraction Date	01/10/05	01/10/05	
Analysis Date	01/15/05	01/16/05	
Surrogate Compounds	**%Recovery**	**%Recovery**	
d8-Naphthalene	71.7	51.0	
d10-Acenaphthene	81.1	75.6	
d10-Phenanthrene	83.1	60.7	
d12-Chrysene	45.9	39.7	Q
d12-Perylene	72.3	54.8	
Total PAHs	**Concentration**	**Concentration**	
Total PAHs with Perylene	124.6	205.6	
Total PAHs without Perylene	124.2	205.0	
Total NS&T PAHs	34.4	50.4	

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

Client Sample ID	FPP-P-01 Fillet			FPP-P-01 Carcass		
Sample Descriptor						
Original Sample						
GERG ID	C45361			C45362		
Sample Type	SAMP			SAMP		
SDG	F1179			F1179		
PAH Compounds	**Concentration**	**MDL**		**Concentration**	**MDL**	
Naphthalene	2.51	0.86		2.41	0.46	
C1-Naphthalenes	3.43	1.48		4.11	0.79	
C2-Naphthalenes	9.65	0.86		16.52	0.46	
C3-Naphthalenes	10.80	1.29		19.68	0.69	
C4-Naphthalenes	12.80	1.29		24.00	0.69	
Biphenyl	1.37	0.71		0.91	0.38	
Acenaphthylene	2.57	0.45		4.50	0.24	
Acenaphthene	4.43	0.45		1.00	0.24	
Fluorene	1.75	0.67		2.37	0.36	
C1-Fluorenes	5.45	1.34		6.29	0.72	
C2-Fluorenes	9.21	1.34		11.25	0.72	
C3-Fluorenes	7.01	1.34		8.19	0.72	
Phenanthrene	4.57	0.63		4.53	0.34	
Anthracene	8.67	0.53		19.60	0.29	
C1-Phenanthrenes/Anthracenes	5.52	0.56		10.41	0.30	
C2-Phenanthrenes/Anthracenes	3.00	0.56		6.19	0.30	
C3-Phenanthrenes/Anthracenes	7.08	0.56		13.31	0.30	
C4-Phenanthrenes/Anthracenes	1.20	0.56		3.82	0.30	
Dibenzothiophene	1.29	0.23		2.25	0.12	
C1-Dibenzothiophenes	3.65	0.46		7.03	0.25	
C2-Dibenzothiophenes	3.82	0.46		6.54	0.25	
C3-Dibenzothiophenes	1.44	0.46		3.44	0.25	
Fluoranthene	0.59	0.57		2.44	0.31	
Pyrene	0.39	0.62	J	1.53	0.33	
C1-Fluoranthenes/Pyrenes	2.78	1.19		4.39	0.64	
C2-Fluoranthenes/Pyrenes	1.98	1.19		4.70	0.64	
C3-Fluoranthenes/Pyrenes	0.00	1.19	ND	1.63	0.64	ND
Benzo(a)anthracene	0.41	0.59	J	1.57	0.32	
Chrysene	1.00	0.47		0.82	0.25	
C1-Chrysenes	0.93	0.93	J	1.95	0.50	
C2-Chrysenes	1.11	0.93		1.63	0.50	
C3-Chrysenes	0.00	0.93	ND	0.00	0.50	ND
C4-Chrysenes	-0.22	0.93	J	0.00	0.50	ND
Benzo(b)fluoranthene	0.24	1.07	J	1.13	0.58	
Benzo(k)fluoranthene	1.34	0.73		2.21	0.39	
Benzo(e)pyrene	0.43	0.58	J	0.78	0.31	
Benzo(a)pyrene	0.00	1.15	ND	0.51	0.62	J
Perylene	0.32	0.27		0.61	0.14	
Indeno(1,2,3-c,d)pyrene	0.79	1.09	J	0.57	0.59	J
Dibenz(a,h)anthracene	0.67	0.58		0.17	0.31	J
Benzo(g,h,i)perylene	0.57	0.91	J	0.58	0.49	
2-Methylnaphthalene	1.99	0.66		2.29	0.35	
1-Methylnaphthalene	1.44	0.82		1.82	0.44	
2,6-Dimethylnaphthalene	3.11	0.43		4.42	0.23	
1,6,7-Trimethylnaphthalene	2.61	0.65		3.72	0.35	
1-Methylphenanthrene	0.78	0.28		2.62	0.15	

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

Client Sample ID	FPP-P-02 Fillet		FPP-P-02 Carcass
Sample Descriptor			
Original Sample			
GERG ID	C45363		C45364
Sample Type	SAMP		SAMP
SDG	F1179		F1179
Dry Weight	0.35		1.43
Wet Weight	1.75		5.14
Sample Size Units	Grams		Grams
Matrix	Tissue		Tissue
% solid	20.1		27.8
% Lipid	ng/g		ng/g
Reporting Units	Wet		Wet
Calculation Basis (dry/wet)			
QC Batch ID	T1466		T1466
Method	GCMS		GCMS
Collection Date	12/16/04		12/16/04
Receive Date	12/18/04		12/18/04
Extraction Date	01/10/05		01/10/05
Analysis Date	01/16/05		01/16/05
Surrogate Compounds	**%Recovery**		**%Recovery**
d8-Naphthalene	62.2		67.4
d10-Acenaphthene	59.2		70.7
d10-Phenanthrene	60.2		77.9
d12-Chrysene	39.3	Q	65.2
d12-Perylene	65.2		74.4
Total PAHs	**Concentration**		**Concentration**
Total PAHs with Perylene	238.6		755.0
Total PAHs without Perylene	238.6		754.0
Total NS&T PAHs	81.3		144.4

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

Client Sample ID	FPP-P-02 Fillet			FPP-P-02 Carcass		
Sample Descriptor						
Original Sample						
GERG ID	C45363			C45364		
Sample Type	SAMP			SAMP		
SDG	F1179			F1179		
PAH Compounds	**Concentration**	**MDL**		**Concentration**	**MDL**	
Naphthalene	8.68	3.04		10.72	1.04	
C1-Naphthalenes	13.25	5.24		27.82	1.78	
C2-Naphthalenes	28.98	3.03		82.40	1.03	
C3-Naphthalenes	29.72	4.59		81.70	1.56	
C4-Naphthalenes	17.71	4.59		71.88	1.56	
Biphenyl	3.21	2.52		4.64	0.86	
Acenaphthylene	3.62	1.60		7.68	0.55	
Acenaphthene	6.76	1.60		3.71	0.55	
Fluorene	5.42	2.38		13.64	0.81	
C1-Fluorenes	9.27	4.76		24.51	1.62	
C2-Fluorenes	11.36	4.76		37.57	1.62	
C3-Fluorenes	15.50	4.76		38.94	1.62	
Phenanthrene	6.23	2.23		9.63	0.76	
Anthracene	4.43	1.89		16.72	0.64	
C1-Phenanthrenes/Anthracenes	9.77	1.99		37.03	0.68	
C2-Phenanthrenes/Anthracenes	5.42	1.99		38.65	0.68	
C3-Phenanthrenes/Anthracenes	6.74	1.99		32.52	0.68	
C4-Phenanthrenes/Anthracenes	0.00	1.99	ND	14.85	0.68	
Dibenzothiophene	3.86	0.82		10.24	0.28	
C1-Dibenzothiophenes	9.44	1.63		28.14	0.56	
C2-Dibenzothiophenes	10.20	1.63		40.10	0.56	
C3-Dibenzothiophenes	5.71	1.63		32.06	0.56	
Fluoranthene	0.88	2.03	J	1.62	0.69	
Pyrene	0.55	2.19	J	2.70	0.75	
C1-Fluoranthenes/Pyrenes	3.00	4.22	J	9.99	1.44	
C2-Fluoranthenes/Pyrenes	4.87	4.22		15.07	1.44	
C3-Fluoranthenes/Pyrenes	2.82	4.22	ND	16.79	1.44	
Benzo(a)anthracene	3.95	2.10		1.43	0.71	
Chrysene	3.30	1.65		6.49	0.56	
C1-Chrysenes	2.08	3.30	J	8.72	1.12	
C2-Chrysenes	1.68	3.30	J	13.58	1.12	
C3-Chrysenes	0.00	3.30	ND	5.65	1.12	
C4-Chrysenes	0.00	3.30	ND	0.53	1.12	J
Benzo(b)fluoranthene	0.00	3.81	ND	1.04	1.30	J
Benzo(k)fluoranthene	0.17	2.60	J	1.47	0.88	
Benzo(e)pyrene	0.00	2.06	ND	2.05	0.70	
Benzo(a)pyrene	0.00	4.09	ND	0.89	1.39	J
Perylene	0.00	0.95	ND	0.98	0.32	
Indeno(1,2,3-c,d)pyrene	0.00	3.88	ND	0.00	1.32	ND
Dibenz(a,h)anthracene	0.00	2.05	ND	0.31	0.70	J
Benzo(g,h,i)perylene	0.00	3.22	ND	0.52	1.09	J
2-Methylnaphthalene	7.89	2.34		15.99	0.80	
1-Methylnaphthalene	5.36	2.90		11.83	0.99	
2,6-Dimethylnaphthalene	18.69	1.52		32.89	0.52	
1,6,7-Trimethylnaphthalene	7.85	2.29		23.51	0.78	
1-Methylphenanthrene	5.92	0.99		8.18	0.34	

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

Client Sample ID	FPP-P-03 Fillet	FPP-P-03 Carcass
Sample Descriptor		
Original Sample		
GERG ID	C45365	C45366
Sample Type	SAMP	SAMP
SDG	F1179	F1179
Dry Weight	0.23	1.48
Wet Weight	1.16	5.78
Sample Size Units	Grams	Grams
Matrix	Tissue	Tissue
% solid	19.5	25.6
% Lipid	ng/g	ng/g
Reporting Units	Wet	Wet
Calculation Basis (dry/wet)		
QC Batch ID	T1466	T1466
Method	GCMS	GCMS
Collection Date	12/16/04	12/16/04
Receive Date	12/18/04	12/18/04
Extraction Date	01/10/05	01/10/05
Analysis Date	01/16/05	01/16/05
Surrogate Compounds	**%Recovery**	**%Recovery**
d8-Naphthalene	108.0	46.5
d10-Acenaphthene	102.0	59.1
d10-Phenanthrene	97.9	58.1
d12-Chrysene	72.3	46.0
d12-Perylene	99.1	57.5
Total PAHs	**Concentration**	**Concentration**
Total PAHs with Perylene	134.3	827.0
Total PAHs without Perylene	134.3	825.4
Total NS&T PAHs	39.6	102.8

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

Client Sample ID	FPP-P-03 Fillet		FPP-P-03 Carcass		
Sample Descriptor					
Original Sample					
GERG ID	C45365		C45366		
Sample Type	SAMP		SAMP		
SDG	F1179		F1179		
PAH Compounds	**Concentration**		**Concentration**	**MDL**	
Naphthalene	7.96		4.43	0.92	
C1-Naphthalenes	6.07	J	10.26	1.59	
C2-Naphthalenes	12.81		47.93	0.92	
C3-Naphthalenes	20.24		68.53	1.39	
C4-Naphthalenes	14.19		63.96	1.39	
Biphenyl	2.90	J	1.76	0.76	
Acenaphthylene	0.88	J	2.69	0.48	
Acenaphthene	7.09		3.52	0.48	
Fluorene	1.97	J	6.58	0.72	
C1-Fluorenes	4.92		18.50	1.44	
C2-Fluorenes	6.77	J	36.55	1.44	
C3-Fluorenes	4.11		46.95	1.44	
Phenanthrene	1.26	J	15.10	0.67	
Anthracene	2.30	J	10.69	0.57	
C1-Phenanthrenes/Anthracenes	5.83		43.57	0.60	
C2-Phenanthrenes/Anthracenes	4.01		64.29	0.60	
C3-Phenanthrenes/Anthracenes	4.77		55.18	0.60	
C4-Phenanthrenes/Anthracenes	0.00	ND	29.07	0.60	
Dibenzothiophene	1.66		6.75	0.25	
C1-Dibenzothiophenes	3.98		31.37	0.49	
C2-Dibenzothiophenes	6.48		58.61	0.49	
C3-Dibenzothiophenes	4.22		54.51	0.49	
Fluoranthene	0.54	J	1.41	0.61	
Pyrene	0.54	J	4.27	0.66	
C1-Fluoranthenes/Pyrenes	1.52	J	16.08	1.28	
C2-Fluoranthenes/Pyrenes	0.93	J	24.65	1.28	
C3-Fluoranthenes/Pyrenes	0.00	ND	26.08	1.28	
Benzo(a)anthracene	1.81	J	2.78	0.63	
Chrysene	1.51	J	7.70	0.50	
C1-Chrysenes	2.29	J	16.23	1.00	
C2-Chrysenes	0.00	ND	23.29	1.00	
C3-Chrysenes	0.00	ND	13.97	1.00	
C4-Chrysenes	0.00	ND	0.00	1.00	ND
Benzo(b)fluoranthene	0.00	ND	1.69	1.15	
Benzo(k)fluoranthene	0.71	J	0.85	0.79	
Benzo(e)pyrene	0.00	ND	3.88	0.62	
Benzo(a)pyrene	0.00	ND	0.82	1.24	J
Perylene	0.00	ND	1.58	0.29	
Indeno(1,2,3-c,d)pyrene	0.00	ND	0.00	1.17	ND
Dibenz(a,h)anthracene	0.00	ND	0.00	0.62	ND
Benzo(g,h,i)perylene	0.00	ND	0.89	0.97	J
2-Methylnaphthalene	3.46	J	5.52	0.71	
1-Methylnaphthalene	2.61	J	4.74	0.88	
2,6-Dimethylnaphthalene	4.14		17.43	0.46	
1,6,7-Trimethylnaphthalene	3.91		17.22	0.69	
1-Methylphenanthrene	1.50		10.62	0.30	

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

Client Sample ID	FMH-GC-01 Fillet	FMH-GC-01 Carcass
Sample Descriptor		
Original Sample		
GERG ID	C45367	C45368
Sample Type	SAMP	SAMP
SDG	F1179	F1179
Dry Weight	1.13	2.49
Wet Weight	5.69	10.04
Sample Size Units	Grams	Grams
Matrix	Tissue	Tissue
% solid	19.9	24.9
% Lipid	ng/g	ng/g
Reporting Units	Wet	Wet
Calculation Basis (dry/wet)		
QC Batch ID	T1466	T1466
Method	GCMS	GCMS
Collection Date	12/16/04	12/16/04
Receive Date	12/18/04	12/18/04
Extraction Date	01/10/05	01/10/05
Analysis Date	01/16/05	01/16/05
Surrogate Compounds	**%Recovery**	**%Recovery**
d8-Naphthalene	76.6	52.8
d10-Acenaphthene	77.1	73.3
d10-Phenanthrene	68.5	80.1
d12-Chrysene	47.8	42.8
d12-Perylene	81.2	68.5
Total PAHs	**Concentration**	**Concentration**
Total PAHs with Perylene	101.7	233.7
Total PAHs without Perylene	101.7	233.6
Total NS&T PAHs	36.6	81.8

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

Client Sample ID	FMH-GC-01 Fillet			FMH-GC-01 Carcass		
Sample Descriptor						
Original Sample						
GERG ID	C45367			C45368		
Sample Type	SAMP			SAMP		
SDG	F1179			F1179		
PAH Compounds	**Concentration**	**MDL**		**Concentration**	**MDL**	
Naphthalene	5.62	0.94		12.59	0.53	
C1-Naphthalenes	10.42	1.61		27.32	0.91	
C2-Naphthalenes	10.76	0.93		30.48	0.53	
C3-Naphthalenes	11.51	1.41		30.48	0.80	
C4-Naphthalenes	26.92	1.41		58.60	0.80	
Biphenyl	1.12	0.77		1.49	0.44	
Acenaphthylene	1.65	0.49		3.97	0.28	
Acenaphthene	2.55	0.49		4.81	0.28	
Fluorene	3.38	0.73		6.67	0.41	
C1-Fluorenes	1.76	1.46		5.03	0.83	
C2-Fluorenes	2.75	1.46		5.39	0.83	
C3-Fluorenes	3.81	1.46		5.37	0.83	
Phenanthrene	2.80	0.68		5.46	0.39	
Anthracene	5.17	0.58		10.69	0.33	
C1-Phenanthrenes/Anthracenes	1.74	0.61		3.52	0.35	
C2-Phenanthrenes/Anthracenes	1.14	0.61		1.33	0.35	
C3-Phenanthrenes/Anthracenes	1.39	0.61		2.39	0.35	
C4-Phenanthrenes/Anthracenes	0.00	0.61	ND	0.64	0.35	
Dibenzothiophene	1.03	0.25		2.18	0.14	
C1-Dibenzothiophenes	1.07	0.50		1.80	0.28	
C2-Dibenzothiophenes	1.01	0.50		1.67	0.28	
C3-Dibenzothiophenes	0.50	0.50	J	1.11	0.28	
Fluoranthene	0.88	0.62		2.04	0.35	
Pyrene	0.79	0.67		1.47	0.38	
C1-Fluoranthenes/Pyrenes	0.43	1.30	J	1.08	0.73	
C2-Fluoranthenes/Pyrenes	1.19	1.30	J	1.52	0.73	
C3-Fluoranthenes/Pyrenes	0.26	1.30	J	0.53	0.73	J
Benzo(a)anthracene	0.00	0.64	ND	0.41	0.37	
Chrysene	0.26	0.51	J	0.54	0.29	
C1-Chrysenes	0.00	1.01	ND	0.69	0.57	
C2-Chrysenes	0.00	1.01	ND	0.70	0.57	
C3-Chrysenes	0.00	1.01	ND	0.00	0.57	ND
C4-Chrysenes	-0.35	1.01	J	0.00	0.57	ND
Benzo(b)fluoranthene	0.00	1.17	ND	0.44	0.66	J
Benzo(k)fluoranthene	0.17	0.80	J	0.30	0.45	J
Benzo(e)pyrene	0.00	0.63	ND	0.25	0.36	J
Benzo(a)pyrene	0.00	1.26	ND	0.32	0.71	J
Perylene	0.00	0.29	ND	0.14	0.17	J
Indeno(1,2,3-c,d)pyrene	0.00	1.19	ND	0.08	0.68	J
Dibenz(a,h)anthracene	0.00	0.63	ND	0.00	0.36	ND
Benzo(g,h,i)perylene	0.00	0.99	ND	0.22	0.56	J
2-Methylnaphthalene	6.03	0.72		15.00	0.41	
1-Methylnaphthalene	4.39	0.89		12.32	0.50	
2,6-Dimethylnaphthalene	3.34	0.47		6.82	0.26	
1,6,7-Trimethylnaphthalene	2.69	0.71		5.69	0.40	
1-Methylphenanthrene	0.23	0.31	J	0.74	0.17	

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

Client Sample ID	FMH-GC-02 Fillet	FMH-GC-02 Carcass
Sample Descriptor		
Original Sample		
GERG ID	C45369	C45370
Sample Type	SAMP	SAMP
SDG	F1179	F1179
Dry Weight	2.20	3.08
Wet Weight	10.30	11.19
Sample Size Units	Grams	Grams
Matrix	Tissue	Tissue
% solid	21.4	27.5
% Lipid	ng/g	ng/g
Reporting Units	Wet	Wet
Calculation Basis (dry/wet)		
QC Batch ID	T1466	T1466
Method	GCMS	GCMS
Collection Date	12/16/04	12/16/04
Receive Date	12/18/04	12/18/04
Extraction Date	01/10/05	01/10/05
Analysis Date	01/16/05	01/16/05
Surrogate Compounds	**%Recovery**	**%Recovery**
d8-Naphthalene	51.5	45.7
d10-Acenaphthene	60.5	85.7
d10-Phenanthrene	64.0	74.5
d12-Chrysene	42.9	41.5
d12-Perylene	67.3	66.7
Total PAHs	**Concentration**	**Concentration**
Total PAHs with Perylene	82.8	254.4
Total PAHs without Perylene	82.8	254.4
Total NS&T PAHs	34.4	107.8

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

Client Sample ID	FMH-GC-02 Fillet			FMH-GC-02 Carcass		
Sample Descriptor						
Original Sample						
GERG ID	C45369			C45370		
Sample Type	SAMP			SAMP		
SDG	F1179			F1179		
PAH Compounds	**Concentration**	**MDL**		**Concentration**	**MDL**	
Naphthalene	5.47	0.52		16.53	0.48	
C1-Naphthalenes	10.35	0.89		34.41	0.82	
C2-Naphthalenes	10.76	0.52		38.07	0.47	
C3-Naphthalenes	11.69	0.78		37.26	0.72	
C4-Naphthalenes	11.20	0.78		33.71	0.72	
Biphenyl	0.92	0.43		1.59	0.39	
Acenaphthylene	0.90	0.27		2.42	0.25	
Acenaphthene	1.67	0.27		12.20	0.25	
Fluorene	4.51	0.40		10.47	0.37	
C1-Fluorenes	2.69	0.81		6.67	0.74	
C2-Fluorenes	2.33	0.81		6.36	0.74	
C3-Fluorenes	3.04	0.81		4.88	0.74	
Phenanthrene	3.34	0.38		10.56	0.35	
Anthracene	2.45	0.32		6.53	0.29	
C1-Phenanthrenes/Anthracenes	1.51	0.34		6.35	0.31	
C2-Phenanthrenes/Anthracenes	0.80	0.34		1.86	0.31	
C3-Phenanthrenes/Anthracenes	0.84	0.34		1.59	0.31	
C4-Phenanthrenes/Anthracenes	0.44	0.34		0.46	0.31	
Dibenzothiophene	1.11	0.14		3.14	0.13	
C1-Dibenzothiophenes	0.90	0.28		3.72	0.26	
C2-Dibenzothiophenes	0.75	0.28		2.43	0.26	
C3-Dibenzothiophenes	0.54	0.28		0.97	0.26	
Fluoranthene	1.13	0.34		3.32	0.32	
Pyrene	1.01	0.37		2.84	0.34	
C1-Fluoranthenes/Pyrenes	0.60	0.72	J	1.17	0.66	
C2-Fluoranthenes/Pyrenes	1.16	0.72		2.39	0.66	
C3-Fluoranthenes/Pyrenes	0.41	0.72	J	0.68	0.66	
Benzo(a)anthracene	0.07	0.36	J	0.15	0.33	J
Chrysene	0.17	0.28	J	0.71	0.26	
C1-Chrysenes	0.00	0.56	ND	0.30	0.52	J
C2-Chrysenes	0.00	0.56	ND	0.51	0.52	J
C3-Chrysenes	-0.04	0.56	J	0.00	0.52	ND
C4-Chrysenes	0.00	0.56	ND	0.00	0.52	ND
Benzo(b)fluoranthene	0.00	0.65	ND	0.06	0.59	J
Benzo(k)fluoranthene	0.08	0.44	J	0.11	0.41	J
Benzo(e)pyrene	0.00	0.35	ND	0.00	0.32	ND
Benzo(a)pyrene	0.00	0.70	ND	0.00	0.64	ND
Perylene	0.00	0.16	ND	0.00	0.15	ND
Indeno(1,2,3-c,d)pyrene	0.00	0.66	ND	0.00	0.61	ND
Dibenz(a,h)anthracene	0.00	0.35	ND	0.00	0.32	ND
Benzo(g,h,i)perylene	0.00	0.55	ND	0.00	0.50	ND
2-Methylnaphthalene	6.00	0.40		19.65	0.37	
1-Methylnaphthalene	4.35	0.49		14.76	0.45	
2,6-Dimethylnaphthalene	2.94	0.26		6.45	0.24	
1,6,7-Trimethylnaphthalene	2.51	0.39		5.89	0.36	
1-Methylphenanthrene	0.41	0.17		2.03	0.16	

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

Client Sample ID	MH-GC-03 Fillet	MH-GC-03 Carcass	
Sample Descriptor			
Original Sample			
GERG ID	C45371	C45372	
Sample Type	SAMP	SAMP	
SDG	F1179	F1179	
Dry Weight	1.18	3.79	
Wet Weight	5.71	12.55	
Sample Size Units	Grams	Grams	
Matrix	Tissue	Tissue	
% solid	20.7	30.2	
% Lipid	ng/g	ng/g	
Reporting Units	Wet	Wet	
Calculation Basis (dry/wet)			
QC Batch ID	T1466	T1466	
Method	GCMS	GCMS	
Collection Date	12/16/04	12/16/04	
Receive Date	12/18/04	12/18/04	
Extraction Date	01/10/05	01/10/05	
Analysis Date	01/16/05	01/16/05	
Surrogate Compounds	**%Recovery**	**%Recovery**	
d8-Naphthalene	73.6	61.2	
d10-Acenaphthene	79.7	143.7	Q
d10-Phenanthrene	90.1	102.1	
d12-Chrysene	57.2	73.6	
d12-Perylene	86.9	89.6	
Total PAHs	**Concentration**	**Concentration**	
Total PAHs with Perylene	117.5	362.5	
Total PAHs without Perylene	117.5	362.5	
Total NS&T PAHs	49.7	140.9	

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

Client Sample ID	MH-GC-03 Fillet			MH-GC-03 Carcass		
Sample Descriptor						
Original Sample						
GERG ID	C45371			C45372		
Sample Type	SAMP			SAMP		
SDG	F1179			F1179		
PAH Compounds	**Concentration**	**MDL**		**Concentration**	**MDL**	
Naphthalene	5.36	0.93		17.82	0.42	
C1-Naphthalenes	10.88	1.61		41.24	0.73	
C2-Naphthalenes	12.10	0.93		53.17	0.42	
C3-Naphthalenes	11.51	1.41		48.75	0.64	
C4-Naphthalenes	16.95	1.41		53.53	0.64	
Biphenyl	1.42	0.77		1.48	0.35	
Acenaphthylene	3.74	0.49		7.38	0.22	
Acenaphthene	8.95	0.49		18.00	0.22	
Fluorene	3.49	0.73		6.28	0.33	
C1-Fluorenes	3.45	1.46		6.69	0.66	
C2-Fluorenes	4.06	1.46		8.40	0.66	
C3-Fluorenes	5.61	1.46		7.25	0.66	
Phenanthrene	4.63	0.68		7.35	0.31	
Anthracene	8.24	0.58		30.56	0.26	
C1-Phenanthrenes/Anthracenes	2.53	0.61		10.43	0.28	
C2-Phenanthrenes/Anthracenes	1.41	0.61		4.65	0.28	
C3-Phenanthrenes/Anthracenes	1.73	0.61		6.29	0.28	
C4-Phenanthrenes/Anthracenes	0.96	0.61		2.49	0.28	
Dibenzothiophene	1.00	0.25		3.39	0.11	
C1-Dibenzothiophenes	0.92	0.50		3.71	0.23	
C2-Dibenzothiophenes	1.43	0.50		3.60	0.23	
C3-Dibenzothiophenes	0.78	0.50		2.31	0.23	
Fluoranthene	0.93	0.62		3.41	0.28	
Pyrene	0.94	0.67		3.66	0.31	
C1-Fluoranthenes/Pyrenes	1.01	1.29	J	2.72	0.59	
C2-Fluoranthenes/Pyrenes	1.12	1.29	J	2.90	0.59	
C3-Fluoranthenes/Pyrenes	0.61	1.29	J	1.65	0.59	
Benzo(a)anthracene	0.47	0.64	J	0.80	0.29	
Chrysene	0.53	0.51		1.50	0.23	
C1-Chrysenes	0.38	1.01	J	0.45	0.46	J
C2-Chrysenes	0.27	1.01	J	0.21	0.46	J
C3-Chrysenes	0.00	1.01	ND	0.00	0.46	ND
C4-Chrysenes	0.00	1.01	ND	0.00	0.46	ND
Benzo(b)fluoranthene	0.07	1.17	J	0.10	0.53	J
Benzo(k)fluoranthene	0.00	0.80	ND	0.23	0.36	J
Benzo(e)pyrene	0.00	0.63	ND	0.07	0.29	J
Benzo(a)pyrene	0.00	1.25	ND	0.00	0.57	ND
Perylene	0.00	0.29	ND	0.00	0.13	ND
Indeno(1,2,3-c,d)pyrene	0.00	1.19	ND	0.00	0.54	ND
Dibenz(a,h)anthracene	0.00	0.63	ND	0.00	0.29	ND
Benzo(g,h,i)perylene	0.00	0.99	ND	0.00	0.45	ND
2-Methylnaphthalene	6.20	0.72		22.80	0.33	
1-Methylnaphthalene	4.68	0.89		18.44	0.40	
2,6-Dimethylnaphthalene	3.52	0.46		7.50	0.21	
1,6,7-Trimethylnaphthalene	2.99	0.70		6.02	0.32	
1-Methylphenanthrene	0.34	0.31		1.20	0.14	

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

Client Sample ID	FTP-C-01	FTP-C-02
Sample Descriptor	0822	0822
Original Sample		
GERG ID	C45321	C45322
Sample Type	FTP-C-01	FTP-C-02
SDG	F1179	F1179
Dry Weight	2.50	4.24
Wet Weight	10.74	13.88
Sample Size Units	Grams	Grams
Matrix	Tissue	Tissue
% solid	23.2	30.5
% Lipid	13.7	25.3
Reporting Units	ng/g	ng/g
Calculation Basis (dry/wet)	Wet	Wet
QC Batch ID	T1465	T1465
Method	GCMS	GCMS
Collection Date	12/16/04	12/16/04
Receive Date	12/18/04	12/18/04
Extraction Date	01/06/05	01/06/05
Analysis Date	01/14/05	01/14/05
Surrogate Compounds	**%Recovery**	**%Recovery**
d8-Naphthalene	65.8	63.5
d10-Acenaphthene	70.6	100.3
d10-Phenanthrene	70.5	86.3
d12-Chrysene	70.0	79.6
d12-Perylene	63.2	59.2
Total PAHs	**Concentration**	**Concentration**
Total PAHs with Perylene	88.9	324.5
Total PAHs without Perylene	88.9	324.5
Total NS&T PAHs	43.6	159.3

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

Client Sample ID	FTP-C-01			FTP-C-02		
Sample Descriptor	0822			0822		
Original Sample						
GERG ID	C45321			C45322		
Sample Type	FTP-C-01			FTP-C-02		
SDG	F1179			F1179		
PAH Compounds	**Concentration**	**MDL**		**Concentration**	**MDL**	
Naphthalene	3.67	0.50		19.01	0.38	
C1-Naphthalenes	6.07	0.85		55.14	0.66	
C2-Naphthalenes	5.45	0.49		38.37	0.38	
C3-Naphthalenes	5.19	0.75		24.97	0.58	
C4-Naphthalenes	3.61	0.75		15.99	0.58	
Biphenyl	1.12	0.41		4.64	0.32	
Acenaphthylene	4.93	0.26		10.00	0.20	
Acenaphthene	3.59	0.26		19.78	0.20	
Fluorene	2.21	0.39		12.01	0.30	
C1-Fluorenes	1.73	0.78		18.64	0.60	
C2-Fluorenes	2.62	0.78		16.69	0.60	
C3-Fluorenes	4.41	0.78		5.73	0.60	
Phenanthrene	6.90	0.36		7.64	0.28	
Anthracene	12.62	0.31		25.92	0.24	
C1-Phenanthrenes/Anthracenes	2.18	0.32		5.58	0.25	
C2-Phenanthrenes/Anthracenes	1.38	0.32		4.83	0.25	
C3-Phenanthrenes/Anthracenes	4.26	0.32		9.78	0.25	
C4-Phenanthrenes/Anthracenes	0.80	0.32		2.07	0.25	
Dibenzothiophene	0.43	0.13		1.85	0.10	
C1-Dibenzothiophenes	1.21	0.27		3.49	0.21	
C2-Dibenzothiophenes	0.83	0.27		3.98	0.21	
C3-Dibenzothiophenes	1.07	0.27		2.64	0.21	
Fluoranthene	1.85	0.33		4.21	0.26	
Pyrene	1.13	0.36		1.48	0.28	
C1-Fluoranthenes/Pyrenes	1.63	0.69		2.43	0.53	
C2-Fluoranthenes/Pyrenes	1.31	0.69		2.20	0.53	
C3-Fluoranthenes/Pyrenes	0.56	0.69		1.11	0.53	
Benzo(a)anthracene	0.92	0.34		0.96	0.26	
Chrysene	0.94	0.27		0.72	0.21	
C1-Chrysenes	0.89	0.54		0.99	0.42	
C2-Chrysenes	0.69	0.54		0.65	0.42	
C3-Chrysenes	0.00	0.54	ND	0.00	0.42	ND
C4-Chrysenes	0.00	0.54	ND	0.00	0.42	ND
Benzo(b)fluoranthene	0.51	0.62	J	0.25	0.48	J
Benzo(k)fluoranthene	0.80	0.42		0.58	0.33	
Benzo(e)pyrene	0.31	0.34	J	0.14	0.26	J
Benzo(a)pyrene	0.51	0.67	J	0.00	0.52	ND
Perylene	0.00	0.15	ND	0.00	0.12	ND
Indeno(1,2,3-c,d)pyrene	0.24	0.63	J	0.00	0.49	ND
Dibenz(a,h)anthracene	0.09	0.33	J	0.00	0.26	ND
Benzo(g,h,i)perylene	0.28	0.52	J	0.00	0.41	ND
2-Methylnaphthalene	3.32	0.38		32.96	0.30	
1-Methylnaphthalene	2.75	0.47		22.18	0.36	
2,6-Dimethylnaphthalene	1.35	0.25		7.13	0.19	
1,6,7-Trimethylnaphthalene	1.39	0.37		5.24	0.29	
1-Methylphenanthrene	0.35	0.16		0.52	0.13	

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

Client Sample ID	FTP-C-03	FCR-C-01
Sample Descriptor	0822	1232
Original Sample		
GERG ID	C45323	C45324
Sample Type	FTP-C-03	FCR-C-01
SDG	F1179	F1179
Dry Weight	2.62	2.45
Wet Weight	11.39	10.40
Sample Size Units	Grams	Grams
Matrix	Tissue	Tissue
% solid	23.0	23.6
% Lipid	14.5	16.8
Reporting Units	ng/g	ng/g
Calculation Basis (dry/wet)	Wet	Wet
QC Batch ID	T1465	T1465
Method	GCMS	GCMS
Collection Date	12/16/04	12/16/04
Receive Date	12/18/04	12/18/04
Extraction Date	01/06/05	01/06/05
Analysis Date	01/15/05	01/15/05
Surrogate Compounds	**%Recovery**	**%Recovery**
d8-Naphthalene	67.8	64.1
d10-Acenaphthene	87.1	92.8
d10-Phenanthrene	87.0	76.8
d12-Chrysene	72.2	78.8
d12-Perylene	71.2	76.6
Total PAHs	**Concentration**	**Concentration**
Total PAHs with Perylene	185.6	139.1
Total PAHs without Perylene	185.6	139.1
Total NS&T PAHs	61.2	49.2

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

Client Sample ID	FTP-C-03			FCR-C-01		
Sample Descriptor	0822			1232		
Original Sample						
GERG ID	C45323			C45324		
Sample Type	FTP-C-03			FCR-C-01		
SDG	F1179			F1179		
PAH Compounds	**Concentration**	**MDL**		**Concentration**	**MDL**	
Naphthalene	5.31	0.47		3.60	0.51	
C1-Naphthalenes	12.10	0.80		7.37	0.88	
C2-Naphthalenes	19.00	0.47		13.13	0.51	
C3-Naphthalenes	26.76	0.70		12.38	0.77	
C4-Naphthalenes	16.31	0.70		12.40	0.77	
Biphenyl	1.20	0.39		2.57	0.42	
Acenaphthylene	7.12	0.25		4.91	0.27	
Acenaphthene	3.69	0.25		2.88	0.27	
Fluorene	4.25	0.37		1.75	0.40	
C1-Fluorenes	5.83	0.73		3.39	0.80	
C2-Fluorenes	8.50	0.73		7.64	0.80	
C3-Fluorenes	8.62	0.73		6.53	0.80	
Phenanthrene	4.25	0.34		8.13	0.37	
Anthracene	16.76	0.29		14.91	0.32	
C1-Phenanthrenes/Anthracenes	4.95	0.31		4.13	0.33	
C2-Phenanthrenes/Anthracenes	5.17	0.31		3.13	0.33	
C3-Phenanthrenes/Anthracenes	4.35	0.31		3.56	0.33	
C4-Phenanthrenes/Anthracenes	3.32	0.31		1.73	0.33	
Dibenzothiophene	0.84	0.13		0.75	0.14	
C1-Dibenzothiophenes	4.18	0.25		1.08	0.27	
C2-Dibenzothiophenes	2.46	0.25		3.87	0.27	
C3-Dibenzothiophenes	3.02	0.25		2.43	0.27	
Fluoranthene	3.16	0.31		1.76	0.34	
Pyrene	1.58	0.34		1.50	0.37	
C1-Fluoranthenes/Pyrenes	3.78	0.65		3.93	0.71	
C2-Fluoranthenes/Pyrenes	1.71	0.65		2.92	0.71	
C3-Fluoranthenes/Pyrenes	0.55	0.65		1.15	0.71	
Benzo(a)anthracene	0.99	0.32		0.68	0.35	
Chrysene	1.21	0.25		1.44	0.28	
C1-Chrysenes	1.44	0.51		1.11	0.56	
C2-Chrysenes	0.84	0.51		1.21	0.56	
C3-Chrysenes	0.00	0.51	ND	0.00	0.56	ND
C4-Chrysenes	0.00	0.51	ND	0.00	0.56	ND
Benzo(b)fluoranthene	0.65	0.58		0.24	0.64	J
Benzo(k)fluoranthene	0.13	0.40	J	0.12	0.44	J
Benzo(e)pyrene	0.41	0.32		0.35	0.35	
Benzo(a)pyrene	0.52	0.63	J	0.27	0.69	J
Perylene	0.00	0.15	ND	0.00	0.16	ND
Indeno(1,2,3-c,d)pyrene	0.31	0.60	J	0.01	0.65	J
Dibenz(a,h)anthracene	0.00	0.31	ND	0.00	0.34	ND
Benzo(g,h,i)perylene	0.35	0.49	J	0.18	0.54	J
2-Methylnaphthalene	6.81	0.36		3.99	0.39	
1-Methylnaphthalene	5.29	0.44		3.38	0.49	
2,6-Dimethylnaphthalene	4.76	0.23		1.52	0.26	
1,6,7-Trimethylnaphthalene	6.93	0.35		2.08	0.39	
1-Methylphenanthrene	0.96	0.15		0.45	0.17	

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

Client Sample ID	FCR-C-02	FCR-C-03
Sample Descriptor	1303	1303
Original Sample		
GERG ID	C45325	C45326
Sample Type	FCR-C-02	FCR-C-03
SDG	F1179	F1179
Dry Weight	3.20	3.84
Wet Weight	11.81	12.94
Sample Size Units	Grams	Grams
Matrix	Tissue	Tissue
% solid	27.1	29.7
% Lipid	20.9	28.2
Reporting Units	ng/g	ng/g
Calculation Basis (dry/wet)	Wet	Wet
QC Batch ID	T1465	T1465
Method	GCMS	GCMS
Collection Date	12/16/04	12/16/04
Receive Date	12/18/04	12/18/04
Extraction Date	01/06/05	01/06/05
Analysis Date	01/15/05	01/15/05
Surrogate Compounds	**%Recovery**	**%Recovery**
d8-Naphthalene	59.6	48.6
d10-Acenaphthene	94.4	69.9
d10-Phenanthrene	75.5	63.9
d12-Chrysene	72.4	75.3
d12-Perylene	76.5	65.4
Total PAHs	**Concentration**	**Concentration**
Total PAHs with Perylene	176.7	235.4
Total PAHs without Perylene	176.7	235.4
Total NS&T PAHs	62.5	87.6

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

Client Sample ID	FCR-C-02			FCR-C-03		
Sample Descriptor	1303			1303		
Original Sample						
GERG ID	C45325			C45326		
Sample Type	FCR-C-02			FCR-C-03		
SDG	F1179			F1179		
PAH Compounds	**Concentration**	**MDL**		**Concentration**	**MDL**	
Naphthalene	5.45	0.45		7.55	0.41	
C1-Naphthalenes	12.46	0.78		17.11	0.71	
C2-Naphthalenes	19.61	0.45		26.32	0.41	
C3-Naphthalenes	20.80	0.68		27.84	0.62	
C4-Naphthalenes	20.36	0.68		22.35	0.62	
Biphenyl	1.07	0.37		2.54	0.34	
Acenaphthylene	5.59	0.24		5.79	0.22	
Acenaphthene	5.01	0.24		6.33	0.22	
Fluorene	3.83	0.35		5.52	0.32	
C1-Fluorenes	5.47	0.71		6.47	0.64	
C2-Fluorenes	6.69	0.71		11.20	0.64	
C3-Fluorenes	4.11	0.71		7.65	0.64	
Phenanthrene	8.27	0.33		10.70	0.30	
Anthracene	15.18	0.28		20.68	0.25	
C1-Phenanthrenes/Anthracenes	4.20	0.29		8.09	0.27	
C2-Phenanthrenes/Anthracenes	3.74	0.29		5.13	0.27	
C3-Phenanthrenes/Anthracenes	5.13	0.29		6.64	0.27	
C4-Phenanthrenes/Anthracenes	1.37	0.29		2.01	0.27	
Dibenzothiophene	1.41	0.12		2.07	0.11	
C1-Dibenzothiophenes	2.92	0.24		3.83	0.22	
C2-Dibenzothiophenes	4.60	0.24		6.26	0.22	
C3-Dibenzothiophenes	2.93	0.24		2.84	0.22	
Fluoranthene	2.71	0.30		3.49	0.27	
Pyrene	2.47	0.32		3.38	0.30	
C1-Fluoranthenes/Pyrenes	2.23	0.62		3.07	0.57	
C2-Fluoranthenes/Pyrenes	2.30	0.62		3.11	0.57	
C3-Fluoranthenes/Pyrenes	1.09	0.62	ND	1.29	0.57	
Benzo(a)anthracene	0.70	0.31		0.58	0.28	
Chrysene	0.56	0.24		2.27	0.22	
C1-Chrysenes	0.54	0.49		0.68	0.45	
C2-Chrysenes	1.87	0.49		0.52	0.45	
C3-Chrysenes	0.00	0.49	ND	0.00	0.45	ND
C4-Chrysenes	0.00	0.49	ND	0.00	0.45	ND
Benzo(b)fluoranthene	0.22	0.56	J	0.18	0.51	J
Benzo(k)fluoranthene	1.29	0.39		1.51	0.35	
Benzo(e)pyrene	0.27	0.31	J	0.23	0.28	J
Benzo(a)pyrene	0.09	0.61	J	0.06	0.55	J
Perylene	0.00	0.14	ND	0.00	0.13	ND
Indeno(1,2,3-c,d)pyrene	0.04	0.57	J	0.00	0.52	ND
Dibenz(a,h)anthracene	0.00	0.30	ND	0.00	0.28	ND
Benzo(g,h,i)perylene	0.13	0.48	J	0.11	0.43	J
2-Methylnaphthalene	6.89	0.35		9.32	0.32	
1-Methylnaphthalene	5.57	0.43		7.79	0.39	
2,6-Dimethylnaphthalene	3.43	0.22		5.81	0.20	
1,6,7-Trimethylnaphthalene	3.85	0.34		5.95	0.31	
1-Methylphenanthrene	1.02	0.15		1.33	0.13	

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

Client Sample ID	FPP-C-01	FPP-C-02
Sample Descriptor	1354	1354
Original Sample		
GERG ID	C45330	C45331
Sample Type	FPP-C-01	FPP-C-02
SDG	F1179	F1179
Dry Weight	2.73	2.21
Wet Weight	10.89	10.75
Sample Size Units	Grams	Grams
Matrix	Tissue	Tissue
% solid	25.1	20.5
% Lipid	21.5	14.1
Reporting Units	ng/g	ng/g
Calculation Basis (dry/wet)	Wet	Wet
QC Batch ID	T1465	T1465
Method	GCMS	GCMS
Collection Date	12/16/04	12/16/04
Receive Date	12/18/04	12/18/04
Extraction Date	01/06/05	01/06/05
Analysis Date	01/15/05	01/15/05
Surrogate Compounds	**%Recovery**	**%Recovery**
d8-Naphthalene	60.0	67.3
d10-Acenaphthene	89.6	89.9
d10-Phenanthrene	90.9	83.0
d12-Chrysene	98.3	82.6
d12-Perylene	68.3	67.4
Total PAHs	**Concentration**	**Concentration**
Total PAHs with Perylene	374.8	129.6
Total PAHs without Perylene	373.7	128.6
Total NS&T PAHs	85.0	37.2

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

Client Sample ID	FPP-C-01			FPP-C-02		
Sample Descriptor	1354			1354		
Original Sample						
GERG ID	C45330			C45331		
Sample Type	FPP-C-01			FPP-C-02		
SDG	F1179			F1179		
PAH Compounds	**Concentration**	**MDL**		**Concentration**	**MDL**	
Naphthalene	3.21	0.49		1.44	0.50	
C1-Naphthalenes	6.63	0.84		1.12	0.85	
C2-Naphthalenes	18.85	0.49		2.67	0.49	
C3-Naphthalenes	27.32	0.74		4.43	0.75	
C4-Naphthalenes	33.95	0.74		6.40	0.75	
Biphenyl	3.04	0.40		1.60	0.41	
Acenaphthylene	7.72	0.26		4.21	0.26	
Acenaphthene	2.23	0.26		0.46	0.26	
Fluorene	3.14	0.38		0.61	0.39	
C1-Fluorenes	8.77	0.76		2.56	0.77	
C2-Fluorenes	22.59	0.76		5.92	0.77	
C3-Fluorenes	23.40	0.76		8.65	0.77	
Phenanthrene	14.51	0.36		9.00	0.36	
Anthracene	25.67	0.30		14.65	0.31	
C1-Phenanthrenes/Anthracenes	19.46	0.32		6.14	0.32	
C2-Phenanthrenes/Anthracenes	16.87	0.32		2.31	0.32	
C3-Phenanthrenes/Anthracenes	16.51	0.32		7.36	0.32	
C4-Phenanthrenes/Anthracenes	10.69	0.32		5.16	0.32	
Dibenzothiophene	2.11	0.13		0.35	0.13	
C1-Dibenzothiophenes	9.12	0.26		1.34	0.27	
C2-Dibenzothiophenes	17.16	0.26		3.05	0.27	
C3-Dibenzothiophenes	15.16	0.26		2.26	0.27	
Fluoranthene	2.82	0.33		0.87	0.33	
Pyrene	4.97	0.35		1.65	0.36	
C1-Fluoranthenes/Pyrenes	7.40	0.68		1.54	0.69	
C2-Fluoranthenes/Pyrenes	11.22	0.68		2.62	0.69	
C3-Fluoranthenes/Pyrenes	8.76	0.68		1.95	0.69	
Benzo(a)anthracene	1.90	0.34		0.96	0.34	
Chrysene	3.96	0.26		1.53	0.27	
C1-Chrysenes	6.95	0.53		1.39	0.54	
C2-Chrysenes	8.21	0.53		22.16	0.54	
C3-Chrysenes	2.85	0.53		0.00	0.54	ND
C4-Chrysenes	0.00	0.53	ND	0.00	0.54	ND
Benzo(b)fluoranthene	1.42	0.61		0.46	0.62	J
Benzo(k)fluoranthene	0.29	0.42	J	0.12	0.42	J
Benzo(e)pyrene	1.76	0.33		0.43	0.34	
Benzo(a)pyrene	1.19	0.66		0.40	0.67	J
Perylene	1.11	0.15		0.92	0.15	
Indeno(1,2,3-c,d)pyrene	0.58	0.62	J	0.25	0.63	J
Dibenz(a,h)anthracene	0.36	0.33		0.16	0.33	J
Benzo(g,h,i)perylene	0.90	0.52		0.45	0.52	J
2-Methylnaphthalene	3.37	0.38		0.58	0.38	
1-Methylnaphthalene	3.26	0.47		0.54	0.47	
2,6-Dimethylnaphthalene	5.37	0.24		0.46	0.25	
1,6,7-Trimethylnaphthalene	5.30	0.37		0.73	0.37	
1-Methylphenanthrene	3.12	0.16		0.90	0.16	

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

Client Sample ID	FPP-C-03	FMH-C-01
Sample Descriptor	1354	1121
Original Sample		
GERG ID	C45332	C45339
Sample Type	FPP-C-03	FMH-C-01
SDG	F1179	F1179
Dry Weight	2.93	2.70
Wet Weight	11.52	9.14
Sample Size Units	Grams	Grams
Matrix	Tissue	Tissue
% solid	25.5	29.5
% Lipid	22.6	18.4
Reporting Units	ng/g	ng/g
Calculation Basis (dry/wet)	Wet	Wet
QC Batch ID	T1465	T1465
Method	GCMS	GCMS
Collection Date	12/16/04	12/16/04
Receive Date	12/18/04	12/18/04
Extraction Date	01/06/05	01/06/05
Analysis Date	01/15/05	01/15/05
Surrogate Compounds	**%Recovery**	**%Recovery**
d8-Naphthalene	70.9	49.9
d10-Acenaphthene	84.8	109.0
d10-Phenanthrene	80.2	85.1
d12-Chrysene	73.9	77.7
d12-Perylene	83.1	86.1
Total PAHs	**Concentration**	**Concentration**
Total PAHs with Perylene	140.9	381.7
Total PAHs without Perylene	140.7	381.7
Total NS&T PAHs	38.3	143.6

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

Client Sample ID	FPP-C-03			FMH-C-01		
Sample Descriptor	1354			1121		
Original Sample						
GERG ID	C45332			C45339		
Sample Type	FPP-C-03			FMH-C-01		
SDG	F1179			F1179		
PAH Compounds	**Concentration**	**MDL**		**Concentration**	**MDL**	
Naphthalene	1.80	0.46		19.32	0.58	
C1-Naphthalenes	2.83	0.80		54.60	1.00	
C2-Naphthalenes	11.06	0.46		60.03	0.58	
C3-Naphthalenes	13.42	0.70		48.83	0.88	
C4-Naphthalenes	14.94	0.70		40.36	0.88	
Biphenyl	1.18	0.38		1.93	0.48	
Acenaphthylene	5.56	0.24		9.31	0.31	
Acenaphthene	1.22	0.24		8.58	0.31	
Fluorene	1.31	0.36		5.39	0.46	
C1-Fluorenes	3.36	0.72		5.47	0.91	
C2-Fluorenes	6.96	0.72		10.95	0.91	
C3-Fluorenes	6.92	0.72		7.49	0.91	
Phenanthrene	1.40	0.34		4.57	0.43	
Anthracene	18.26	0.29		32.49	0.36	
C1-Phenanthrenes/Anthracenes	5.77	0.30		8.63	0.38	
C2-Phenanthrenes/Anthracenes	4.74	0.30		6.84	0.38	
C3-Phenanthrenes/Anthracenes	6.31	0.30		10.63	0.38	
C4-Phenanthrenes/Anthracenes	2.33	0.30		5.75	0.38	
Dibenzothiophene	0.73	0.12		2.34	0.16	
C1-Dibenzothiophenes	3.24	0.25		5.47	0.31	
C2-Dibenzothiophenes	5.30	0.25		7.37	0.31	
C3-Dibenzothiophenes	4.03	0.25		4.74	0.31	
Fluoranthene	1.40	0.31		3.28	0.39	
Pyrene	2.16	0.33		2.23	0.42	
C1-Fluoranthenes/Pyrenes	3.08	0.64		4.37	0.81	
C2-Fluoranthenes/Pyrenes	3.24	0.64		4.32	0.81	
C3-Fluoranthenes/Pyrenes	1.39	0.64		1.58	0.81	ND
Benzo(a)anthracene	0.93	0.32		1.20	0.40	
Chrysene	1.45	0.25		1.47	0.32	
C1-Chrysenes	1.12	0.50		0.53	0.63	
C2-Chrysenes	1.37	0.50		0.70	0.63	
C3-Chrysenes	0.00	0.50	ND	0.00	0.63	ND
C4-Chrysenes	0.00	0.50	ND	0.00	0.63	ND
Benzo(b)fluoranthene	0.21	0.58	J	0.35	0.73	J
Benzo(k)fluoranthene	0.14	0.39	J	0.06	0.50	J
Benzo(e)pyrene	0.59	0.31		0.30	0.39	J
Benzo(a)pyrene	0.33	0.62	J	0.00	0.78	ND
Perylene	0.26	0.14		0.00	0.18	ND
Indeno(1,2,3-c,d)pyrene	0.20	0.59	J	0.00	0.74	ND
Dibenz(a,h)anthracene	0.10	0.31	J	0.00	0.39	ND
Benzo(g,h,i)perylene	0.29	0.49	J	0.17	0.62	J
2-Methylnaphthalene	1.54	0.36		31.80	0.45	
1-Methylnaphthalene	1.29	0.44		22.80	0.55	
2,6-Dimethylnaphthalene	2.27	0.23		6.95	0.29	
1,6,7-Trimethylnaphthalene	3.03	0.35		6.41	0.44	
1-Methylphenanthrene	0.85	0.15		1.28	0.19	

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

Client Sample ID	MH-C-02	MH-C-03
Sample Descriptor	1145	1145
Original Sample		
GERG ID	C45340	C45341
Sample Type	MH-C-02	MH-C-03
SDG	F1179	F1179
Dry Weight	2.87	2.88
Wet Weight	12.46	11.68
Sample Size Units	Grams	Grams
Matrix	Tissue	Tissue
% solid	23.0	24.7
% Lipid	12.9	14.9
Reporting Units	ng/g	ng/g
Calculation Basis (dry/wet)	Wet	Wet
QC Batch ID	T1465	T1465
Method	GCMS	GCMS
Collection Date	12/16/04	12/16/04
Receive Date	12/18/04	12/18/04
Extraction Date	01/06/05	01/06/05
Analysis Date	01/15/05	01/15/05
Surrogate Compounds	**%Recovery**	**%Recovery**
d8-Naphthalene	78.6	77.0
d10-Acenaphthene	76.2	106.5
d10-Phenanthrene	78.2	109.4
d12-Chrysene	59.7	83.2
d12-Perylene	83.1	93.6
Total PAHs	**Concentration**	**Concentration**
Total PAHs with Perylene	247.7	353.5
Total PAHs without Perylene	247.7	353.5
Total NS&T PAHs	72.5	113.7

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

Client Sample ID	MH-C-02			MH-C-03		
Sample Descriptor	1145			1145		
Original Sample						
GERG ID	C45340			C45341		
Sample Type	MH-C-02			MH-C-03		
SDG	F1179			F1179		
PAH Compounds	**Concentration**	**MDL**		**Concentration**	**MDL**	
Naphthalene	7.37	0.43		10.66	0.46	
C1-Naphthalenes	23.84	0.74		33.55	0.78	
C2-Naphthalenes	43.80	0.43		60.25	0.45	
C3-Naphthalenes	32.17	0.64		50.59	0.69	
C4-Naphthalenes	22.18	0.64		28.04	0.69	
Biphenyl	1.97	0.35		1.94	0.38	
Acenaphthylene	7.19	0.22		10.97	0.24	
Acenaphthene	7.45	0.22		10.07	0.24	
Fluorene	4.35	0.33		6.61	0.36	
C1-Fluorenes	7.91	0.67		8.84	0.71	
C2-Fluorenes	7.95	0.67		12.33	0.71	
C3-Fluorenes	9.52	0.67		11.95	0.71	
Phenanthrene	4.25	0.31		5.27	0.33	
Anthracene	7.86	0.26		22.98	0.28	
C1-Phenanthrenes/Anthracenes	6.79	0.28		12.80	0.30	
C2-Phenanthrenes/Anthracenes	9.36	0.28		7.92	0.30	
C3-Phenanthrenes/Anthracenes	5.58	0.28		7.71	0.30	
C4-Phenanthrenes/Anthracenes	2.22	0.28		3.15	0.30	
Dibenzothiophene	1.25	0.11		2.81	0.12	
C1-Dibenzothiophenes	3.05	0.23		6.71	0.24	
C2-Dibenzothiophenes	5.95	0.23		8.96	0.24	
C3-Dibenzothiophenes	4.90	0.23		6.31	0.24	
Fluoranthene	1.41	0.28		2.92	0.30	
Pyrene	0.99	0.31		1.87	0.33	
C1-Fluoranthenes/Pyrenes	2.36	0.59		3.94	0.63	
C2-Fluoranthenes/Pyrenes	2.62	0.59		2.81	0.63	
C3-Fluoranthenes/Pyrenes	2.16	0.59		1.73	0.63	
Benzo(a)anthracene	0.47	0.29		1.48	0.31	
Chrysene	1.75	0.23		2.31	0.25	
C1-Chrysenes	1.39	0.46		1.51	0.49	
C2-Chrysenes	2.11	0.46		0.92	0.49	
C3-Chrysenes	0.64	0.46		0.46	0.49	J
C4-Chrysenes	0.00	0.46	ND	0.00	0.49	ND
Benzo(b)fluoranthene	0.57	0.53		0.27	0.57	J
Benzo(k)fluoranthene	3.54	0.36		2.07	0.39	
Benzo(e)pyrene	0.49	0.29		0.63	0.31	
Benzo(a)pyrene	0.00	0.57	ND	0.00	0.61	ND
Perylene	0.00	0.13	ND	0.00	0.14	ND
Indeno(1,2,3-c,d)pyrene	0.11	0.54	J	0.00	0.58	ND
Dibenz(a,h)anthracene	0.00	0.29	ND	0.00	0.31	ND
Benzo(g,h,i)perylene	0.16	0.45	J	0.17	0.48	J
2-Methylnaphthalene	13.37	0.33		19.00	0.35	
1-Methylnaphthalene	10.47	0.41		14.55	0.43	
2,6-Dimethylnaphthalene	8.57	0.21		12.08	0.23	
1,6,7-Trimethylnaphthalene	9.09	0.32		11.55	0.34	
1-Methylphenanthrene	1.76	0.14		1.31	0.15	

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

Client Sample ID	TI3-C-01		TI3-C-02
Sample Descriptor	1022		1022
Original Sample			
GERG ID	C45342		C45343
Sample Type	TI3-C-01		TI3-C-02
SDG	F1179		F1179
Dry Weight	3.94		3.19
Wet Weight	11.40		11.59
Sample Size Units	Grams		Grams
Matrix	Tissue		Tissue
% solid	34.6		27.5
% Lipid	31.7		21.6
Reporting Units	ng/g		ng/g
Calculation Basis (dry/wet)	Wet		Wet
QC Batch ID	T1465		T1465
Method	GCMS		GCMS
Collection Date	12/16/04		12/16/04
Receive Date	12/18/04		12/18/04
Extraction Date	01/06/05		01/06/05
Analysis Date	01/15/05		01/15/05
Surrogate Compounds	**%Recovery**		**%Recovery**
d8-Naphthalene	68.5		61.9
d10-Acenaphthene	173.1	Q	96.1
d10-Phenanthrene	99.6		72.9
d12-Chrysene	86.7		67.5
d12-Perylene	80.8		73.0
Total PAHs	**Concentration**		**Concentration**
Total PAHs with Perylene	439.3		273.8
Total PAHs without Perylene	439.3		273.8
Total NS&T PAHs	172.9		121.8

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

Client Sample ID	TI3-C-01			TI3-C-02		
Sample Descriptor	1022			1022		
Original Sample						
GERG ID	C45342			C45343		
Sample Type	TI3-C-01			TI3-C-02		
SDG	F1179			F1179		
PAH Compounds	**Concentration**	**MDL**		**Concentration**	**MDL**	
Naphthalene	23.33	0.47		14.81	0.46	
C1-Naphthalenes	45.42	0.80		36.68	0.79	
C2-Naphthalenes	50.40	0.47		39.50	0.46	
C3-Naphthalenes	50.70	0.70		30.09	0.69	
C4-Naphthalenes	41.64	0.70		20.29	0.69	
Biphenyl	1.41	0.39		2.26	0.38	
Acenaphthylene	10.81	0.25		6.47	0.24	
Acenaphthene	7.28	0.25		10.55	0.24	
Fluorene	5.82	0.37		6.04	0.36	
C1-Fluorenes	7.30	0.73		4.93	0.72	
C2-Fluorenes	12.64	0.73		7.37	0.72	
C3-Fluorenes	8.66	0.73		5.74	0.72	
Phenanthrene	10.25	0.34		12.44	0.34	
Anthracene	54.61	0.29		22.39	0.28	
C1-Phenanthrenes/Anthracenes	14.01	0.31		7.68	0.30	
C2-Phenanthrenes/Anthracenes	9.80	0.31		4.86	0.30	
C3-Phenanthrenes/Anthracenes	14.86	0.31		6.78	0.30	
C4-Phenanthrenes/Anthracenes	5.11	0.31		1.48	0.30	
Dibenzothiophene	3.74	0.13		1.88	0.12	
C1-Dibenzothiophenes	7.80	0.25		4.16	0.25	
C2-Dibenzothiophenes	9.78	0.25		5.37	0.25	
C3-Dibenzothiophenes	8.50	0.25		3.30	0.25	
Fluoranthene	5.87	0.31		3.54	0.31	
Pyrene	3.24	0.34		2.21	0.33	
C1-Fluoranthenes/Pyrenes	7.80	0.65		2.80	0.64	
C2-Fluoranthenes/Pyrenes	5.87	0.65		2.52	0.64	
C3-Fluoranthenes/Pyrenes	2.11	0.65	ND	0.00	0.64	ND
Benzo(a)anthracene	1.72	0.32		1.12	0.32	
Chrysene	4.52	0.25		1.81	0.25	
C1-Chrysenes	1.74	0.51		0.77	0.50	
C2-Chrysenes	1.62	0.51		1.33	0.50	
C3-Chrysenes	0.00	0.51	ND	0.00	0.50	ND
C4-Chrysenes	0.00	0.51	ND	0.00	0.50	ND
Benzo(b)fluoranthene	0.37	0.58	J	0.26	0.57	J
Benzo(k)fluoranthene	0.07	0.40	J	2.04	0.39	
Benzo(e)pyrene	0.35	0.32		0.26	0.31	J
Benzo(a)pyrene	0.00	0.63	ND	0.00	0.62	ND
Perylene	0.00	0.15	ND	0.00	0.14	ND
Indeno(1,2,3-c,d)pyrene	0.00	0.59	ND	0.00	0.58	ND
Dibenz(a,h)anthracene	0.00	0.31	ND	0.00	0.31	ND
Benzo(g,h,i)perylene	0.13	0.49	J	0.10	0.49	J
2-Methylnaphthalene	25.56	0.36		21.00	0.35	
1-Methylnaphthalene	19.86	0.44		15.68	0.44	
2,6-Dimethylnaphthalene	6.76	0.23		6.69	0.23	
1,6,7-Trimethylnaphthalene	5.88	0.35		6.36	0.35	
1-Methylphenanthrene	2.34	0.15		0.97	0.15	

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

Client Sample ID	TI3-C-03
Sample Descriptor	1022
Original Sample	
GERG ID	C45344
Sample Type	TI3-C-03
SDG	F1179

Dry Weight	3.32
Wet Weight	10.55
Sample Size Units	Grams
Matrix	Tissue
% solid	31.5
% Lipid	27.5
Reporting Units	ng/g
Calculation Basis (dry/wet)	Wet

QC Batch ID	T1465
Method	GCMS
Collection Date	12/16/04
Receive Date	12/18/04
Extraction Date	01/06/05
Analysis Date	01/15/05

Surrogate Compounds	**%Recovery**
d8-Naphthalene	72.7
d10-Acenaphthene	97.2
d10-Phenanthrene	64.7
d12-Chrysene	59.3
d12-Perylene	75.7

Total PAHs	**Concentration**
Total PAHs with Perylene	464.3
Total PAHs without Perylene	464.3
Total NS&T PAHs	186.6

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

Client Sample ID	TI3-C-03
Sample Descriptor	1022
Original Sample	
GERG ID	C45344
Sample Type	TI3-C-03
SDG	F1179

PAH Compounds	Concentration	MDL	
Naphthalene	21.00	0.50	
C1-Naphthalenes	42.69	0.87	
C2-Naphthalenes	70.73	0.50	
C3-Naphthalenes	61.84	0.76	
C4-Naphthalenes	42.45	0.76	
Biphenyl	3.25	0.42	
Acenaphthylene	11.79	0.27	
Acenaphthene	28.87	0.27	
Fluorene	11.08	0.39	
C1-Fluorenes	10.47	0.79	
C2-Fluorenes	12.29	0.79	
C3-Fluorenes	8.76	0.79	
Phenanthrene	13.17	0.37	
Anthracene	37.89	0.31	
C1-Phenanthrenes/Anthracenes	15.89	0.33	
C2-Phenanthrenes/Anthracenes	6.64	0.33	
C3-Phenanthrenes/Anthracenes	11.37	0.33	
C4-Phenanthrenes/Anthracenes	3.52	0.33	
Dibenzothiophene	4.56	0.14	
C1-Dibenzothiophenes	6.72	0.27	
C2-Dibenzothiophenes	5.87	0.27	
C3-Dibenzothiophenes	3.76	0.27	
Fluoranthene	7.10	0.34	
Pyrene	4.61	0.36	
C1-Fluoranthenes/Pyrenes	5.45	0.70	
C2-Fluoranthenes/Pyrenes	5.07	0.70	
C3-Fluoranthenes/Pyrenes	0.00	0.70	ND
Benzo(a)anthracene	1.72	0.35	
Chrysene	2.32	0.27	
C1-Chrysenes	1.59	0.55	
C2-Chrysenes	0.58	0.55	
C3-Chrysenes	0.00	0.55	ND
C4-Chrysenes	0.00	0.55	ND
Benzo(b)fluoranthene	0.35	0.63	J
Benzo(k)fluoranthene	0.46	0.43	
Benzo(e)pyrene	0.28	0.34	J
Benzo(a)pyrene	0.00	0.68	ND
Perylene	0.00	0.16	ND
Indeno(1,2,3-c,d)pyrene	0.00	0.64	ND
Dibenz(a,h)anthracene	0.00	0.34	ND
Benzo(g,h,i)perylene	0.14	0.53	J
2-Methylnaphthalene	24.75	0.39	
1-Methylnaphthalene	17.94	0.48	
2,6-Dimethylnaphthalene	10.87	0.25	
1,6,7-Trimethylnaphthalene	13.50	0.38	
1-Methylphenanthrene	1.72	0.16	

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

Appendix G.3. Striped Bass tissue data.

ATHOS I Oil Spill

Source	NJ DEP	NJ DEP
Client Sample ID	NJDB-01	NJDB-02
Sample Descriptor	Fillet	Fillet
Original Sample		
GERG ID	C46568	C46570
Sample Type	SAMP	SAMP
SDG	F7234	F7234
Dry Weight	2.13	2.39
Wet Weight	10.04	10.27
Sample Size Units	Grams	Grams
Matrix	tissue	tissue
% solid	21.3	23.3
% Lipid	3.7	7.2
Reporting Units	ng/g	ng/g
Calculation Basis (dry/wet)	Wet	Wet
QC Batch ID	T1499	T1499
Method	GCMS	GCMS
Collection Date	05/03/05	05/03/05
Receive Date	07/21/05	07/21/05
Extraction Date	08/30/05	08/30/05
Analysis Date	09/10/05	09/10/05
Surrogate Compounds	**%Recovery**	**%Recovery**
d8-Naphthalene	49.5	46.3
d10-Acenaphthene	64.3	68.1
d10-Phenanthrene	70.2	75.6
d12-Chrysene	62.8	64.5
d12-Perylene	66.6	69.6
Total PAHs	**Concentration**	**Concentration**
Total PAHs with Perylene	10.4	10.2
Total PAHs without Perylene	10.3	10.1
Total NS&T PAHs	5.2	7.1

ND	Not Detected
J	<MDL
NA	Not Applicable
Q	Results Outside QC
I	Interference
B	Blank Contamination >3xMDL
D	Dilution

ATHOS I Oil Spill

Client Sample ID	NJDB-01			NJDB-02		
Sample Descriptor	Fillet			Fillet		
Original Sample						
GERG ID	C46568			C46570		
Sample Type	SAMP			SAMP		
SDG	F7234			F7234		
PAH Compounds	**Concentration**	**MDL**		**Concentration**	**MDL**	
Naphthalene	1.13	0.53		1.21	0.52	
C1-Naphthalenes	1.11	0.91		1.49	0.89	
C2-Naphthalenes	0.00	0.53	ND	1.17	0.52	
C3-Naphthalenes	0.00	0.80	ND	0.00	0.78	ND
C4-Naphthalenes	4.12	0.80		0.00	0.78	ND
Biphenyl	0.41	0.44	J	0.45	0.43	
Acenaphthylene	0.41	0.28		1.05	0.27	
Acenaphthene	0.23	0.28	J	0.32	0.27	
Fluorene	0.54	0.41		0.59	0.41	
C1-Fluorenes	0.00	0.83	ND	0.00	0.81	ND
C2-Fluorenes	0.00	0.83	ND	0.00	0.81	ND
C3-Fluorenes	0.00	0.83	ND	0.00	0.81	ND
Phenanthrene	0.37	0.39	J	0.56	0.38	
Anthracene	0.65	0.33		1.61	0.32	
C1-Phenanthrenes/Anthracenes	0.46	0.35		0.59	0.34	
C2-Phenanthrenes/Anthracenes	0.00	0.35	ND	0.00	0.34	ND
C3-Phenanthrenes/Anthracenes	0.00	0.35	ND	0.00	0.34	ND
C4-Phenanthrenes/Anthracenes	0.00	0.35	ND	0.00	0.34	ND
Dibenzothiophene	0.12	0.14	J	0.15	0.14	
C1-Dibenzothiophenes	0.00	0.28	ND	0.00	0.28	ND
C2-Dibenzothiophenes	0.00	0.28	ND	0.00	0.28	ND
C3-Dibenzothiophenes	0.00	0.28	ND	0.00	0.28	ND
Fluoranthene	0.13	0.35	J	0.13	0.35	J
Pyrene	0.11	0.38	J	0.25	0.37	J
C1-Fluoranthenes/Pyrenes	0.00	0.73	ND	0.00	0.72	ND
C2-Fluoranthenes/Pyrenes	0.00	0.73	ND	0.00	0.72	ND
C3-Fluoranthenes/Pyrenes	0.00	0.73	ND	0.00	0.72	ND
Benzo(a)anthracene	0.06	0.37	J	0.20	0.36	J
Chrysene	0.00	0.29	ND	0.00	0.28	ND
C1-Chrysenes	0.00	0.57	ND	0.00	0.56	ND
C2-Chrysenes	0.00	0.57	ND	0.00	0.56	ND
C3-Chrysenes	0.00	0.57	ND	0.00	0.56	ND
C4-Chrysenes	0.00	0.57	ND	0.00	0.56	ND
Benzo(b)fluoranthene	0.07	0.66	J	0.00	0.65	ND
Benzo(k)fluoranthene	0.14	0.45	J	0.10	0.44	J
Benzo(e)pyrene	0.05	0.36	J	0.05	0.35	J
Benzo(a)pyrene	0.07	0.71	J	0.05	0.70	J
Perylene	0.10	0.16	J	0.08	0.16	J
Indeno(1,2,3-c,d)pyrene	0.04	0.68	J	0.06	0.66	J
Dibenz(a,h)anthracene	0.01	0.36	J	0.04	0.35	J
Benzo(g,h,i)perylene	0.03	0.56	J	0.03	0.55	J
2-Methylnaphthalene	0.69	0.41		0.91	0.40	
1-Methylnaphthalene	0.42	0.50	J	0.58	0.49	
2,6-Dimethylnaphthalene	0.17	0.26	J	0.11	0.26	J
1,6,7-Trimethylnaphthalene	0.09	0.40	J	0.11	0.39	J
1-Methylphenanthrene	0.08	0.17	J	0.00	0.17	ND

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

ATHOS I Oil Spill

Source	NJ DEP	NJ DEP
Client Sample ID	NJDB-03	NJDB-04
Sample Descriptor	Fillet	Fillet
Original Sample		
GERG ID	C46572	C46574
Sample Type	SAMP	SAMP
SDG	F7234	F7234
Dry Weight	2.29	2.11
Wet Weight	10.00	10.32
Sample Size Units	Grams	Grams
Matrix	tissue	tissue
% solid	22.9	20.5
% Lipid	2.2	4.4
Reporting Units	ng/g	ng/g
Calculation Basis (dry/wet)	Wet	Wet
QC Batch ID	T1499	T1499
Method	GCMS	GCMS
Collection Date	05/10/05	05/10/05
Receive Date	07/21/05	07/21/05
Extraction Date	08/30/05	08/30/05
Analysis Date	09/10/05	09/10/05
Surrogate Compounds	**%Recovery**	**%Recovery**
d8-Naphthalene	68.4	51.4
d10-Acenaphthene	75.7	66.8
d10-Phenanthrene	79.2	74.9
d12-Chrysene	72.3	66.0
d12-Perylene	75.0	66.2
Total PAHs	**Concentration**	**Concentration**
Total PAHs with Perylene	11.1	7.2
Total PAHs without Perylene	11.1	7.2
Total NS&T PAHs	5.7	5.8

ND	Not Detected
J	<MDL
NA	Not Applicable
Q	Results Outside QC
I	Interference
B	Blank Contamination >3xMDL
D	Dilution

Client Sample ID	NJDB-03			NJDB-04		
Sample Descriptor	Fillet			Fillet		
Original Sample						
GERG ID	C46572			C46574		
Sample Type	SAMP			SAMP		
SDG	F7234			F7234		
PAH Compounds	**Concentration**	**MDL**		**Concentration**	**MDL**	
Naphthalene	1.70	0.53		1.33	0.52	
C1-Naphthalenes	1.96	0.92		1.32	0.89	
C2-Naphthalenes	0.70	0.53		1.07	0.51	
C3-Naphthalenes	0.00	0.80	ND	0.00	0.78	ND
C4-Naphthalenes	4.32	0.80		0.00	0.78	ND
Biphenyl	0.36	0.44	J	0.39	0.43	J
Acenaphthylene	0.18	0.28	J	0.25	0.27	J
Acenaphthene	0.12	0.28	J	0.17	0.27	J
Fluorene	0.30	0.42	J	0.42	0.40	
C1-Fluorenes	0.00	0.83	ND	0.00	0.81	ND
C2-Fluorenes	0.00	0.83	ND	0.00	0.81	ND
C3-Fluorenes	0.00	0.83	ND	0.00	0.81	ND
Phenanthrene	0.39	0.39		0.37	0.38	J
Anthracene	0.30	0.33	J	0.48	0.32	
C1-Phenanthrenes/Anthracenes	0.22	0.35		0.64	0.34	
C2-Phenanthrenes/Anthracenes	0.00	0.35	ND	0.00	0.34	ND
C3-Phenanthrenes/Anthracenes	0.00	0.35	ND	0.00	0.34	ND
C4-Phenanthrenes/Anthracenes	0.00	0.35	ND	0.00	0.34	ND
Dibenzothiophene	0.10	0.14	J	0.11	0.14	J
C1-Dibenzothiophenes	0.00	0.29	ND	0.00	0.28	ND
C2-Dibenzothiophenes	0.00	0.29	ND	0.00	0.28	ND
C3-Dibenzothiophenes	0.00	0.29	ND	0.00	0.28	ND
Fluoranthene	0.11	0.35	J	0.13	0.34	J
Pyrene	0.09	0.38	J	0.21	0.37	J
C1-Fluoranthenes/Pyrenes	0.00	0.74	ND	0.00	0.71	ND
C2-Fluoranthenes/Pyrenes	0.00	0.74	ND	0.00	0.71	ND
C3-Fluoranthenes/Pyrenes	0.00	0.74	ND	0.00	0.71	ND
Benzo(a)anthracene	0.00	0.37	ND	0.00	0.36	ND
Chrysene	0.00	0.29	ND	0.00	0.28	ND
C1-Chrysenes	0.00	0.58	ND	0.00	0.56	ND
C2-Chrysenes	0.00	0.58	ND	0.00	0.56	ND
C3-Chrysenes	0.00	0.58	ND	0.00	0.56	ND
C4-Chrysenes	0.00	0.58	ND	0.00	0.56	ND
Benzo(b)fluoranthene	0.01	0.67	J	0.01	0.65	J
Benzo(k)fluoranthene	0.10	0.45	J	0.11	0.44	J
Benzo(e)pyrene	0.03	0.36	J	0.04	0.35	J
Benzo(a)pyrene	0.00	0.72	ND	0.05	0.69	J
Perylene	0.03	0.17	J	0.08	0.16	J
Indeno(1,2,3-c,d)pyrene	0.03	0.68	J	0.02	0.66	J
Dibenz(a,h)anthracene	0.02	0.36	J	0.02	0.35	J
Benzo(g,h,i)perylene	0.01	0.56	J	0.01	0.54	J
2-Methylnaphthalene	1.27	0.41		0.78	0.40	
1-Methylnaphthalene	0.69	0.51		0.54	0.49	
2,6-Dimethylnaphthalene	0.16	0.27	J	0.12	0.26	J
1,6,7-Trimethylnaphthalene	0.07	0.40	J	0.14	0.39	J
1-Methylphenanthrene	0.09	0.17	J	0.69	0.17	

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

ATHOS I Oil Spill

Source	NJ DEP	NJ DEP
Client Sample ID	NJDB-05	NJDB-05
Sample Descriptor	Fillet	Filet
Original Sample		C46576
GERG ID	C46576	Q22251
Sample Type	SAMP	DUP
SDG	F7234	F7234
Dry Weight	2.39	2.35
Wet Weight	10.05	10.09
Sample Size Units	Grams	Grams
Matrix	tissue	
% solid	23.7	23.3
% Lipid	8.9	9.5
Reporting Units	ng/g	ng/g
Calculation Basis (dry/wet)	Wet	Wet
QC Batch ID	T1499	T1499
Method	GCMS	GCMS
Collection Date	05/11/05	05/11/05
Receive Date	07/21/05	07/21/05
Extraction Date	08/30/05	08/30/05
Analysis Date	09/10/05	09/10/05
Surrogate Compounds	**%Recovery**	**% Recovery**
d8-Naphthalene	49.7	54.3
d10-Acenaphthene	68.4	70.6
d10-Phenanthrene	69.9	79.1
d12-Chrysene	63.8	68.3
d12-Perylene	66.9	73.0
Total PAHs	**Concentration**	**Concentration**
Total PAHs with Perylene	13.5	15.7
Total PAHs without Perylene	13.4	15.6
Total NS&T PAHs	8.4	9.1

ND	Not Detected
J	<MDL
NA	Not Applicable
Q	Results Outside QC
I	Interference
B	Blank Contamination >3xMDL
D	Dilution

Client Sample ID	NJDB-05			NJDB-05		
Sample Descriptor	Fillet			Filet		
Original Sample				C46576		
GERG ID	C46576			Q22251		
Sample Type	SAMP			DUP		
SDG	F7234			F7234		
PAH Compounds	**Concentration**	**MDL**		**Concentration**	**MDL**	
Naphthalene	2.01	0.53		2.17	0.53	
C1-Naphthalenes	2.53	0.91		2.78	0.91	
C2-Naphthalenes	1.61	0.53		1.64	0.53	
C3-Naphthalenes	0.00	0.80	ND	0.00	0.80	ND
C4-Naphthalenes	0.00	0.80	ND	0.00	0.80	ND
Biphenyl	0.44	0.44		0.52	0.44	
Acenaphthylene	0.42	0.28		0.57	0.28	
Acenaphthene	0.27	0.28	J	0.29	0.28	
Fluorene	0.60	0.41		0.72	0.41	
C1-Fluorenes	2.66	0.83		2.86	0.83	
C2-Fluorenes	0.00	0.83	ND	0.00	0.83	ND
C3-Fluorenes	0.00	0.83	ND	0.00	0.83	ND
Phenanthrene	0.60	0.39		0.65	0.39	
Anthracene	1.14	0.33		1.05	0.33	
C1-Phenanthrenes/Anthracenes	0.30	0.35	J	1.15	0.34	
C2-Phenanthrenes/Anthracenes	0.00	0.35	ND	0.00	0.34	ND
C3-Phenanthrenes/Anthracenes	0.00	0.35	ND	0.00	0.34	ND
C4-Phenanthrenes/Anthracenes	0.00	0.35	ND	0.00	0.34	ND
Dibenzothiophene	0.20	0.14		0.18	0.14	
C1-Dibenzothiophenes	0.00	0.28	ND	0.00	0.28	ND
C2-Dibenzothiophenes	0.00	0.28	ND	0.00	0.28	ND
C3-Dibenzothiophenes	0.00	0.28	ND	0.00	0.28	ND
Fluoranthene	0.17	0.35	J	0.19	0.35	J
Pyrene	0.12	0.38	J	0.23	0.38	J
C1-Fluoranthenes/Pyrenes	0.00	0.73	ND	0.00	0.73	ND
C2-Fluoranthenes/Pyrenes	0.00	0.73	ND		0.73	ND
C3-Fluoranthenes/Pyrenes	0.00	0.73	ND		0.73	ND
Benzo(a)anthracene	0.13	0.36	J	0.10	0.36	J
Chrysene	0.00	0.29	ND	0.00	0.29	ND
C1-Chrysenes	0.00	0.57	ND	0.00	0.57	ND
C2-Chrysenes	0.00	0.57	ND	0.00	0.57	ND
C3-Chrysenes	0.00	0.57	ND	0.00	0.57	ND
C4-Chrysenes	0.00	0.57	ND	0.00	0.57	ND
Benzo(b)fluoranthene	0.02	0.66	J	0.08	0.66	J
Benzo(k)fluoranthene	0.09	0.45	J	0.12	0.45	J
Benzo(e)pyrene	0.00	0.36	ND	0.08	0.36	J
Benzo(a)pyrene	0.03	0.71	J	0.04	0.71	J
Perylene	0.14	0.16	J	0.09	0.16	J
Indeno(1,2,3-c,d)pyrene	0.01	0.67	J	0.05	0.67	J
Dibenz(a,h)anthracene	0.03	0.36	J	0.02	0.36	J
Benzo(g,h,i)perylene	0.01	0.56	J	0.09	0.56	J
2-Methylnaphthalene	1.57	0.41		1.75	0.41	
1-Methylnaphthalene	0.96	0.50		1.03	0.50	
2,6-Dimethylnaphthalene	0.18	0.26	J	0.20	0.26	J
1,6,7-Trimethylnaphthalene	0.09	0.40	J	0.19	0.40	J
1-Methylphenanthrene	0.00	0.17	ND	0.00	0.17	ND

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

ATHOS I Oil Spill

Source	PA DEP	PA DEP
Client Sample ID	UPTPBFT-A	UPTPBFT-B
Sample Descriptor	Fillet	Fillet
Original Sample		
GERG ID	C46624	C46626
Sample Type	SAMP	SAMP
SDG	F8241	F8241
Dry Weight	2.32	1.96
Wet Weight	10.25	10.05
Sample Size Units	Grams	Grams
Matrix	Tissue	Tissue
% solid	22.7	19.5
% Lipid	1.6	1.7
Reporting Units	ng/g	ng/g
Calculation Basis (dry/wet)	Wet	Wet
QC Batch ID	T1499	T1499
Method	GCMS	GCMS
Collection Date	07/06/05	07/06/05
Receive Date	08/04/05	08/04/05
Extraction Date	08/30/05	08/30/05
Analysis Date	09/10/05	09/10/05
Surrogate Compounds	**%Recovery**	**%Recovery**
d8-Naphthalene	45.3	41.0
d10-Acenaphthene	61.7	57.8
d10-Phenanthrene	69.0	72.2
d12-Chrysene	67.3	67.3
d12-Perylene	70.1	63.5
Total PAHs	**Concentration**	**Concentration**
Total PAHs with Perylene	47.8	21.1
Total PAHs without Perylene	47.5	21.0
Total NS&T PAHs	18.4	11.0

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

ATHOS I Oil Spill

Client Sample ID	UPTPBFT-A			UPTPBFT-B		
Sample Descriptor	Fillet			Fillet		
Original Sample						
GERG ID	C46624			C46626		
Sample Type	SAMP			SAMP		
SDG	F8241			F8241		
PAH Compounds	**Concentration**	**MDL**		**Concentration**	**MDL**	
Naphthalene	1.53	0.52		2.33	0.53	
C1-Naphthalenes	4.95	0.89		2.61	0.91	
C2-Naphthalenes	7.31	0.52		1.45	0.53	
C3-Naphthalenes	6.92	0.78		0.00	0.80	ND
C4-Naphthalenes	4.22	0.78		0.00	0.80	ND
Biphenyl	0.56	0.43		0.33	0.44	J
Acenaphthylene	0.21	0.27	J	0.79	0.28	
Acenaphthene	1.19	0.27		0.42	0.28	
Fluorene	2.39	0.41		0.54	0.41	
C1-Fluorenes	3.43	0.81		0.00	0.83	ND
C2-Fluorenes	2.24	0.81		2.85	0.83	
C3-Fluorenes	3.07	0.81		2.84	0.83	
Phenanthrene	3.11	0.38		0.71	0.39	
Anthracene	1.29	0.32		1.20	0.33	
C1-Phenanthrenes/Anthracenes	0.90	0.34		1.29	0.35	
C2-Phenanthrenes/Anthracenes	0.00	0.34	ND	0.00	0.35	ND
C3-Phenanthrenes/Anthracenes	0.00	0.34	ND	0.00	0.35	ND
C4-Phenanthrenes/Anthracenes	0.00	0.34	ND	0.00	0.35	ND
Dibenzothiophene	0.59	0.14		0.13	0.14	J
C1-Dibenzothiophenes	0.51	0.28		0.00	0.28	ND
C2-Dibenzothiophenes	0.00	0.28	ND	0.00	0.28	ND
C3-Dibenzothiophenes	0.00	0.28	ND	0.00	0.28	ND
Fluoranthene	0.84	0.35		0.68	0.35	
Pyrene	0.34	0.37	J	0.65	0.38	
C1-Fluoranthenes/Pyrenes	0.00	0.72	ND	0.00	0.73	ND
C2-Fluoranthenes/Pyrenes	0.00	0.72	ND	0.00	0.73	ND
C3-Fluoranthenes/Pyrenes	0.00	0.72	ND	0.00	0.73	ND
Benzo(a)anthracene	0.11	0.36	J	0.16	0.36	J
Chrysene	0.10	0.28	J	0.28	0.29	J
C1-Chrysenes	0.00	0.56	ND	0.00	0.57	ND
C2-Chrysenes	0.00	0.56	ND	0.00	0.57	ND
C3-Chrysenes	0.00	0.56	ND	0.00	0.57	ND
C4-Chrysenes	0.00	0.56	ND	0.00	0.57	ND
Benzo(b)fluoranthene	0.09	0.65	J	0.31	0.66	J
Benzo(k)fluoranthene	0.23	0.44	J	0.28	0.45	J
Benzo(e)pyrene	0.18	0.35	J	0.33	0.36	J
Benzo(a)pyrene	0.21	0.70	J	0.31	0.71	J
Perylene	0.28	0.16		0.14	0.16	J
Indeno(1,2,3-c,d)pyrene	0.35	0.66	J	0.25	0.67	J
Dibenz(a,h)anthracene	0.25	0.35	J	0.08	0.36	J
Benzo(g,h,i)perylene	0.38	0.55	J	0.17	0.56	J
2-Methylnaphthalene	2.85	0.40		1.63	0.41	
1-Methylnaphthalene	2.10	0.49		0.98	0.50	
2,6-Dimethylnaphthalene	1.04	0.26		0.16	0.26	J
1,6,7-Trimethylnaphthalene	1.14	0.39		0.20	0.40	J
1-Methylphenanthrene	0.00	0.17	ND	0.06	0.17	J

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

ATHOS I Oil Spill

Source	PA DEP	PA DEP	
Client Sample ID	UPTPBFT-C	UPTPBFT-D	
Sample Descriptor	Fillet	Fillet	
Original Sample			
GERG ID	C46628	C46630	
Sample Type	SAMP	SAMP	
SDG	F8241	F8241	
Dry Weight	2.32	2.19	
Wet Weight	10.64	10.42	
Sample Size Units	Grams	Grams	
Matrix	Tissue	Tissue	
% solid	21.8	21.1	
% Lipid	4.8	2.8	
Reporting Units	ng/g	ng/g	
Calculation Basis (dry/wet)	Wet	Wet	
QC Batch ID	T1499	T1499	
Method	GCMS	GCMS	
Collection Date	07/06/05	07/06/05	
Receive Date	08/04/05	08/04/05	
Extraction Date	08/30/05	08/30/05	
Analysis Date	09/10/05	09/10/05	
Surrogate Compounds	**%Recovery**	**%Recovery**	
d8-Naphthalene	42.3	33.2	Q
d10-Acenaphthene	58.1	57.5	
d10-Phenanthrene	67.5	68.5	
d12-Chrysene	62.5	63.6	
d12-Perylene	58.5	64.0	
Total PAHs	**Concentration**	**Concentration**	
Total PAHs with Perylene	130.6	13.7	
Total PAHs without Perylene	130.5	13.7	
Total NS&T PAHs	53.3	8.4	

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

ATHOS I Oil Spill

Client Sample ID	UPTPBFT-C		UPTPBFT-D		
Sample Descriptor	Fillet		Fillet		
Original Sample					
GERG ID	C46628		C46630		
Sample Type	SAMP		SAMP		
SDG	F8241		F8241		
PAH Compounds	**Concentration**	**MDL**	**Concentration**	**MDL**	
Naphthalene	2.83	0.50	2.11	0.51	
C1-Naphthalenes	15.70	0.86	2.22	0.88	
C2-Naphthalenes	28.03	0.50	1.44	0.51	
C3-Naphthalenes	20.34	0.75	0.00	0.77	ND
C4-Naphthalenes	10.69	0.75	0.00	0.77	ND
Biphenyl	1.44	0.41	0.30	0.42	J
Acenaphthylene	2.30	0.26	0.62	0.27	
Acenaphthene	3.58	0.26	0.31	0.27	
Fluorene	6.84	0.39	0.45	0.40	
C1-Fluorenes	9.39	0.78	0.00	0.80	ND
C2-Fluorenes	5.52	0.78	0.00	0.80	ND
C3-Fluorenes	0.00	0.78 ND	0.00	0.80	ND
Phenanthrene	7.83	0.37	0.51	0.37	
Anthracene	5.94	0.31	1.34	0.32	
C1-Phenanthrenes/Anthracenes	5.30	0.33	3.19	0.33	
C2-Phenanthrenes/Anthracenes	0.00	0.33 ND	0.00	0.33	ND
C3-Phenanthrenes/Anthracenes	0.00	0.33 ND	0.00	0.33	ND
C4-Phenanthrenes/Anthracenes	0.00	0.33 ND	0.00	0.33	ND
Dibenzothiophene	1.04	0.13	0.13	0.14	J
C1-Dibenzothiophenes	0.00	0.27 ND	0.00	0.27	ND
C2-Dibenzothiophenes	0.00	0.27 ND	0.00	0.27	ND
C3-Dibenzothiophenes	0.00	0.27 ND	0.00	0.27	ND
Fluoranthene	1.84	0.33	0.27	0.34	J
Pyrene	0.74	0.36	0.21	0.37	J
C1-Fluoranthenes/Pyrenes	0.00	0.69 ND	0.00	0.71	ND
C2-Fluoranthenes/Pyrenes	0.00	0.69 ND	0.00	0.71	ND
C3-Fluoranthenes/Pyrenes	0.00	0.69 ND	0.00	0.71	ND
Benzo(a)anthracene	0.53	0.34	0.13	0.35	J
Chrysene	0.14	0.27 J	0.07	0.28	J
C1-Chrysenes	0.00	0.54 ND	0.00	0.55	ND
C2-Chrysenes	0.00	0.54 ND	0.00	0.55	ND
C3-Chrysenes	0.00	0.54 ND	0.00	0.55	ND
C4-Chrysenes	0.00	0.54 ND	0.00	0.55	ND
Benzo(b)fluoranthene	0.11	0.63 J	0.03	0.64	J
Benzo(k)fluoranthene	0.15	0.43 J	0.07	0.44	J
Benzo(e)pyrene	0.05	0.34 J	0.13	0.35	J
Benzo(a)pyrene	0.00	0.67 ND	0.02	0.69	J
Perylene	0.13	0.16 J	0.05	0.16	J
Indeno(1,2,3-c,d)pyrene	0.07	0.64 J	0.05	0.65	J
Dibenz(a,h)anthracene	0.04	0.34 J	0.03	0.34	J
Benzo(g,h,i)perylene	0.02	0.53 J	0.04	0.54	J
2-Methylnaphthalene	9.34	0.39	1.39	0.39	
1-Methylnaphthalene	6.36	0.48	0.83	0.49	
2,6-Dimethylnaphthalene	5.06	0.25	0.10	0.25	J
1,6,7-Trimethylnaphthalene	3.52	0.38	0.17	0.39	J
1-Methylphenanthrene	0.61	0.16	0.12	0.17	J

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

ATHOS I Oil Spill

Source	PA DEP	DE DNREC
Client Sample ID	UPTPBFT-E	Fish # 1
Sample Descriptor	Fillet	Fillet
Original Sample		
GERG ID	C46632	C46664
Sample Type	SAMP	SAMP
SDG	F8241	F8243
Dry Weight	4.86	1.94
Wet Weight	10.14	10.24
Sample Size Units	Grams	Grams
Matrix	Tissue	Tissue
% solid	47.9	18.9
% Lipid	0.4	0.6
Reporting Units	ng/g	ng/g
Calculation Basis (dry/wet)	Wet	Wet
QC Batch ID	T1499	T1499
Method	GCMS	GCMS
Collection Date	07/06/05	05/27/05
Receive Date	08/04/05	08/12/05
Extraction Date	08/30/05	08/30/05
Analysis Date	09/10/05	09/10/05
Surrogate Compounds	**%Recovery**	**%Recovery**
d8-Naphthalene	50.6	48.9
d10-Acenaphthene	66.0	67.7
d10-Phenanthrene	73.9	73.8
d12-Chrysene	71.4	74.3
d12-Perylene	71.1	66.7
Total PAHs	**Concentration**	**Concentration**
Total PAHs with Perylene	16.6	50.8
Total PAHs without Perylene	16.5	50.8
Total NS&T PAHs	7.7	38.9

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

ATHOS I Oil Spill

Client Sample ID	UPTPBFT-E			Fish # 1		
Sample Descriptor	Fillet			Fillet		
Original Sample						
GERG ID	C46632			C46664		
Sample Type	SAMP			SAMP		
SDG	F8241			F8243		
PAH Compounds	**Concentration**	**MDL**		**Concentration**	**MDL**	
Naphthalene	1.03	0.52		15.60	0.52	
C1-Naphthalenes	1.41	0.90		18.71	0.89	
C2-Naphthalenes	2.15	0.52		3.89	0.52	
C3-Naphthalenes	2.87	0.79		2.88	0.78	
C4-Naphthalenes	0.00	0.79	ND	0.00	0.78	ND
Biphenyl	0.35	0.43	J	0.34	0.43	J
Acenaphthylene	0.20	0.28	J	0.84	0.27	
Acenaphthene	0.54	0.28		0.27	0.27	J
Fluorene	0.86	0.41		0.52	0.41	
C1-Fluorenes	2.35	0.82		1.97	0.81	
C2-Fluorenes	0.00	0.82	ND	1.85	0.81	
C3-Fluorenes	0.00	0.82	ND	0.00	0.81	ND
Phenanthrene	1.36	0.38		0.67	0.38	
Anthracene	0.70	0.33		0.46	0.32	
C1-Phenanthrenes/Anthracenes	0.85	0.34		0.94	0.34	
C2-Phenanthrenes/Anthracenes	0.00	0.34	ND	0.00	0.34	ND
C3-Phenanthrenes/Anthracenes	0.00	0.34	ND	0.00	0.34	ND
C4-Phenanthrenes/Anthracenes	0.00	0.34	ND	0.00	0.34	ND
Dibenzothiophene	0.26	0.14		0.07	0.14	J
C1-Dibenzothiophenes	0.50	0.28		0.00	0.28	ND
C2-Dibenzothiophenes	0.00	0.28	ND	0.00	0.28	ND
C3-Dibenzothiophenes	0.00	0.28	ND	0.00	0.28	ND
Fluoranthene	0.59	0.35		0.52	0.35	
Pyrene	0.26	0.38	J	0.48	0.37	
C1-Fluoranthenes/Pyrenes	0.00	0.73	ND	0.00	0.72	ND
C2-Fluoranthenes/Pyrenes	0.00	0.73	ND	0.00	0.72	ND
C3-Fluoranthenes/Pyrenes	0.00	0.73	ND	0.00	0.72	ND
Benzo(a)anthracene	0.07	0.36	J	0.16	0.36	J
Chrysene	0.02	0.28	J	0.06	0.28	J
C1-Chrysenes	0.00	0.57	ND	0.00	0.56	ND
C2-Chrysenes	0.00	0.57	ND	0.00	0.56	ND
C3-Chrysenes	0.00	0.57	ND	0.00	0.56	ND
C4-Chrysenes	0.00	0.57	ND	0.00	0.56	ND
Benzo(b)fluoranthene	0.00	0.66	ND	0.13	0.65	J
Benzo(k)fluoranthene	0.07	0.45	J	0.00	0.44	ND
Benzo(e)pyrene	0.01	0.36	J	0.11	0.35	J
Benzo(a)pyrene	0.00	0.71	ND	0.15	0.70	J
Perylene	0.13	0.16	J	0.04	0.16	J
Indeno(1,2,3-c,d)pyrene	0.00	0.67	ND	0.12	0.66	J
Dibenz(a,h)anthracene	0.02	0.35	J	0.02	0.35	J
Benzo(g,h,i)perylene	0.04	0.55	J	0.01	0.55	J
2-Methylnaphthalene	0.76	0.40		12.30	0.40	
1-Methylnaphthalene	0.65	0.50		6.41	0.49	
2,6-Dimethylnaphthalene	0.29	0.26		0.74	0.26	
1,6,7-Trimethylnaphthalene	0.25	0.40	J	0.25	0.39	J
1-Methylphenanthrene	0.08	0.17	J	0.05	0.17	J

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

Source	DE DNREC	DE DNREC
Client Sample ID	Fish # 2	Fish # 3
Sample Descriptor	Fillet	Fillet
Original Sample		
GERG ID	C46666	C46668
Sample Type	SAMP	SAMP
SDG	F8243	F8243
Dry Weight	2.10	2.24
Wet Weight	10.08	10.05
Sample Size Units	Grams	Grams
Matrix	Tissue	Tissue
% solid	20.9	22.3
% Lipid	1.3	5.8
Reporting Units	ng/g	ng/g
Calculation Basis (dry/wet)	Wet	Wet
QC Batch ID	T1499	T1499
Method	GCMS	GCMS
Collection Date	05/27/05	05/27/05
Receive Date	08/12/05	08/12/05
Extraction Date	08/30/05	08/30/05
Analysis Date	09/10/05	09/10/05
Surrogate Compounds	**%Recovery**	**%Recovery**
d8-Naphthalene	44.3	50.5
d10-Acenaphthene	68.4	74.6
d10-Phenanthrene	78.6	77.1
d12-Chrysene	76.7	72.2
d12-Perylene	73.7	62.6
Total PAHs	**Concentration**	**Concentration**
Total PAHs with Perylene	9.7	66.7
Total PAHs without Perylene	9.6	66.6
Total NS&T PAHs	6.2	47.9

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

Client Sample ID	Fish # 2			Fish # 3		
Sample Descriptor	Fillet			Fillet		
Original Sample						
GERG ID	C46666			C46668		
Sample Type	SAMP			SAMP		
SDG	F8243			F8243		
PAH Compounds	**Concentration**	**MDL**		**Concentration**	**MDL**	
Naphthalene	1.67	0.53		20.45	0.53	
C1-Naphthalenes	1.57	0.91		19.09	0.91	
C2-Naphthalenes	1.07	0.53		4.92	0.53	
C3-Naphthalenes	1.02	0.80		2.60	0.80	
C4-Naphthalenes	0.00	0.80	ND	0.00	0.80	ND
Biphenyl	0.25	0.44	J	0.46	0.44	
Acenaphthylene	0.40	0.28		1.97	0.28	
Acenaphthene	0.27	0.28	J	0.60	0.28	
Fluorene	0.51	0.41		0.74	0.41	
C1-Fluorenes	0.00	0.83	ND	0.00	0.83	ND
C2-Fluorenes	0.00	0.83	ND	0.00	0.83	ND
C3-Fluorenes	0.00	0.83	ND	0.00	0.83	ND
Phenanthrene	0.34	0.39	J	0.84	0.39	
Anthracene	0.66	0.33		3.42	0.33	
C1-Phenanthrenes/Anthracenes	0.89	0.35		9.54	0.35	
C2-Phenanthrenes/Anthracenes	0.00	0.35	ND	0.04	0.35	J
C3-Phenanthrenes/Anthracenes	0.00	0.35	ND	0.00	0.35	ND
C4-Phenanthrenes/Anthracenes	0.00	0.35	ND	0.00	0.35	ND
Dibenzothiophene	0.08	0.14	J	0.22	0.14	
C1-Dibenzothiophenes	0.00	0.28	ND	0.00	0.28	ND
C2-Dibenzothiophenes	0.00	0.28	ND	0.00	0.28	ND
C3-Dibenzothiophenes	0.00	0.28	ND	0.00	0.28	ND
Fluoranthene	0.22	0.35	J	0.56	0.35	
Pyrene	0.25	0.38	J	0.61	0.38	
C1-Fluoranthenes/Pyrenes	0.00	0.73	ND	0.00	0.73	ND
C2-Fluoranthenes/Pyrenes	0.00	0.73	ND	0.00	0.73	ND
C3-Fluoranthenes/Pyrenes	0.00	0.73	ND	0.00	0.73	ND
Benzo(a)anthracene	0.11	0.36	J	0.17	0.36	J
Chrysene	0.05	0.29	J	0.10	0.29	J
C1-Chrysenes	0.00	0.57	ND	0.00	0.57	ND
C2-Chrysenes	0.00	0.57	ND	0.00	0.57	ND
C3-Chrysenes	0.00	0.57	ND	0.00	0.57	ND
C4-Chrysenes	0.00	0.57	ND	0.00	0.57	ND
Benzo(b)fluoranthene	0.02	0.66	J	0.11	0.66	J
Benzo(k)fluoranthene	0.10	0.45	J	0.09	0.45	J
Benzo(e)pyrene	0.05	0.36	J	0.04	0.36	J
Benzo(a)pyrene	0.04	0.71	J	0.00	0.71	ND
Perylene	0.04	0.16	J	0.05	0.16	J
Indeno(1,2,3-c,d)pyrene	0.01	0.67	J	0.01	0.67	J
Dibenz(a,h)anthracene	0.03	0.36	J	0.00	0.36	ND
Benzo(g,h,i)perylene	0.00	0.56	ND	0.02	0.56	J
2-Methylnaphthalene	0.96	0.41		12.62	0.41	
1-Methylnaphthalene	0.61	0.50		6.47	0.50	
2,6-Dimethylnaphthalene	0.12	0.26	J	0.75	0.26	
1,6,7-Trimethylnaphthalene	0.18	0.40	J	0.31	0.40	J
1-Methylphenanthrene	0.00	0.17	ND	0.00	0.17	ND

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

ATHOS I Oil Spill

Source	DE DNREC	DE DNREC
Client Sample ID	Fish # 4	Fish # 5
Sample Descriptor	Fillet	Fillet
Original Sample		
GERG ID	C46670	C46672
Sample Type	SAMP	SAMP
SDG	F8243	F8243
Dry Weight	2.45	2.18
Wet Weight	10.01	10.26
Sample Size Units	Grams	Grams
Matrix	Tissue	Tissue
% solid	24.5	21.2
% Lipid	16.4	2.2
Reporting Units	ng/g	ng/g
Calculation Basis (dry/wet)	Wet	Wet
QC Batch ID	T1499	T1499
Method	GCMS	GCMS
Collection Date	05/31/05	05/31/05
Receive Date	08/12/05	08/12/05
Extraction Date	08/30/05	08/30/05
Analysis Date	09/10/05	09/10/05
Surrogate Compounds	**%Recovery**	**%Recovery**
d8-Naphthalene	57.7	58.3
d10-Acenaphthene	64.7	70.3
d10-Phenanthrene	71.4	74.7
d12-Chrysene	66.3	64.4
d12-Perylene	63.3	66.7
Total PAHs	**Concentration**	**Concentration**
Total PAHs with Perylene	98.4	46.2
Total PAHs without Perylene	98.4	46.2
Total NS&T PAHs	60.5	36.7

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

ATHOS I Oil Spill

Client Sample ID	Fish # 4		Fish # 5		
Sample Descriptor	Fillet		Fillet		
Original Sample					
GERG ID	C46670		C46672		
Sample Type	SAMP		SAMP		
SDG	F8243		F8243		
PAH Compounds	**Concentration**	**MDL**	**Concentration**	**MDL**	
Naphthalene	18.29	0.53	14.22	0.52	
C1-Naphthalenes	19.15	0.92	16.11	0.89	
C2-Naphthalenes	8.54	0.53	4.06	0.52	
C3-Naphthalenes	11.72	0.80	2.46	0.78	
C4-Naphthalenes	8.69	0.80	0.00	0.78	ND
Biphenyl	0.61	0.44	0.46	0.43	
Acenaphthylene	3.34	0.28	1.47	0.27	
Acenaphthene	2.28	0.28	0.44	0.27	
Fluorene	2.74	0.42	0.65	0.41	
C1-Fluorenes	0.00	0.83 ND	0.00	0.81	ND
C2-Fluorenes	0.00	0.83 ND	0.00	0.81	ND
C3-Fluorenes	0.00	0.83 ND	0.00	0.81	ND
Phenanthrene	2.81	0.39	0.68	0.38	
Anthracene	7.36	0.33	2.03	0.32	
C1-Phenanthrenes/Anthracenes	7.01	0.35	2.02	0.34	
C2-Phenanthrenes/Anthracenes	0.00	0.35 ND	0.00	0.34	ND
C3-Phenanthrenes/Anthracenes	0.00	0.35 ND	0.00	0.34	ND
C4-Phenanthrenes/Anthracenes	0.00	0.35 ND	0.00	0.34	ND
Dibenzothiophene	0.61	0.14	0.20	0.14	
C1-Dibenzothiophenes	0.00	0.29 ND	0.00	0.28	ND
C2-Dibenzothiophenes	0.00	0.29 ND	0.00	0.28	ND
C3-Dibenzothiophenes	0.00	0.29 ND	0.00	0.28	ND
Fluoranthene	2.31	0.35	0.46	0.35	
Pyrene	2.39	0.38	0.60	0.37	
C1-Fluoranthenes/Pyrenes	0.00	0.74 ND	0.00	0.72	ND
C2-Fluoranthenes/Pyrenes	0.00	0.74 ND	0.00	0.72	ND
C3-Fluoranthenes/Pyrenes	0.00	0.74 ND	0.00	0.72	ND
Benzo(a)anthracene	0.32	0.37 J	0.12	0.36	J
Chrysene	0.11	0.29 J	0.05	0.28	J
C1-Chrysenes	0.00	0.58 ND	0.00	0.56	ND
C2-Chrysenes	0.00	0.58 ND	0.00	0.56	ND
C3-Chrysenes	0.00	0.58 ND	0.00	0.56	ND
C4-Chrysenes	0.00	0.58 ND	0.00	0.56	ND
Benzo(b)fluoranthene	0.00	0.66 ND	0.01	0.65	J
Benzo(k)fluoranthene	0.02	0.45 J	0.00	0.44	ND
Benzo(e)pyrene	0.03	0.36 J	0.09	0.35	J
Benzo(a)pyrene	0.03	0.72 J	0.02	0.70	J
Perylene	0.02	0.17 J	0.01	0.16	J
Indeno(1,2,3-c,d)pyrene	0.00	0.68 ND	0.00	0.66	ND
Dibenz(a,h)anthracene	0.04	0.36 J	0.02	0.35	J
Benzo(g,h,i)perylene	0.02	0.56 J	0.02	0.55	J
2-Methylnaphthalene	12.60	0.41	10.60	0.40	
1-Methylnaphthalene	6.55	0.51	5.51	0.49	
2,6-Dimethylnaphthalene	2.03	0.26	0.70	0.26	
1,6,7-Trimethylnaphthalene	2.19	0.40	0.28	0.39	J
1-Methylphenanthrene	0.00	0.17 ND	0.00	0.17	ND

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

ATHOS I Oil Spill

Source	NJ DEP	NJ DEP
Client Sample ID	NJDB-01	NJDB-01
Sample Descriptor	Carcass	Carcass
Original Sample		C46569
GERG ID	C46569	Q22256
Sample Type	SAMP	DUP
SDG	F7234	F7234
Dry Weight	2.35	2.30
Wet Weight	10.11	10.06
Sample Size Units	Grams	Grams
Matrix	Tissue	Tissue
% solid	23.2	22.8
% Lipid	6.9	8.2
Reporting Units	ng/g	ng/g
Calculation Basis (dry/wet)	Wet	Wet
QC Batch ID	T1500	T1500
Method	GCMS	GCMS
Collection Date	05/03/05	05/11/05
Receive Date	07/21/05	07/21/05
Extraction Date	08/31/05	08/31/05
Analysis Date	09/11/05	09/11/05
Surrogate Compounds	**%Recovery**	**% Recovery**
d8-Naphthalene	63.3	66.2
d10-Acenaphthene	67.4	71.8
d10-Phenanthrene	82.3	88.7
d12-Chrysene	58.6	63.4
d12-Perylene	57.3	67.9
Total PAHs	**Concentration**	**Concentration**
Total PAHs with Perylene	14.0	11.5
Total PAHs without Perylene	13.9	11.4
Total NS&T PAHs	9.8	8.9

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

ATHOS I Oil Spill

Client Sample ID	NJDB-01			NJDB-01		
Sample Descriptor	Carcass			Carcass		
Original Sample				C46569		
GERG ID	C46569			Q22256		
Sample Type	SAMP			DUP		
SDG	F7234			F7234		
PAH Compounds	**Concentration**	**MDL**		**Concentration**	**MDL**	
Naphthalene	2.59	0.53		2.12	0.53	
C1-Naphthalenes	2.36	0.91		2.00	0.91	
C2-Naphthalenes	1.04	0.52		0.00	0.53	ND
C3-Naphthalenes	0.00	0.79	ND	0.00	0.80	ND
C4-Naphthalenes	0.00	0.79	ND	0.00	0.80	ND
Biphenyl	0.47	0.44		0.52	0.44	
Acenaphthylene	0.97	0.28		1.02	0.28	
Acenaphthene	0.28	0.28		0.24	0.28	J
Fluorene	0.79	0.41		0.74	0.41	
C1-Fluorenes	0.50	0.82	J	0.00	0.83	ND
C2-Fluorenes	0.00	0.82	ND	0.00	0.83	ND
C3-Fluorenes	0.00	0.82	ND	0.00	0.83	ND
Phenanthrene	0.53	0.38		0.58	0.39	
Anthracene	1.68	0.33		1.62	0.33	
C1-Phenanthrenes/Anthracenes	1.46	0.34		1.26	0.35	
C2-Phenanthrenes/Anthracenes	0.00	0.34	ND	0.00	0.35	ND
C3-Phenanthrenes/Anthracenes	0.00	0.34	ND	0.00	0.35	ND
C4-Phenanthrenes/Anthracenes	0.00	0.34	ND	0.00	0.35	ND
Dibenzothiophene	0.11	0.14	J	0.11	0.14	J
C1-Dibenzothiophenes	0.00	0.28	ND	0.00	0.28	ND
C2-Dibenzothiophenes	0.00	0.28	ND	0.00	0.28	ND
C3-Dibenzothiophenes	0.00	0.28	ND	0.00	0.28	ND
Fluoranthene	0.16	0.35	J	0.20	0.35	J
Pyrene	0.12	0.38	J	0.17	0.38	J
C1-Fluoranthenes/Pyrenes	0.00	0.73	ND	0.00	0.73	ND
C2-Fluoranthenes/Pyrenes	0.00	0.73	ND		0.73	ND
C3-Fluoranthenes/Pyrenes	0.00	0.73	ND		0.73	ND
Benzo(a)anthracene	0.22	0.36	J	0.17	0.36	J
Chrysene	0.06	0.29	J	0.07	0.29	J
C1-Chrysenes	0.00	0.57	ND	0.00	0.57	ND
C2-Chrysenes	0.00	0.57	ND	0.00	0.57	ND
C3-Chrysenes	0.00	0.57	ND	0.00	0.57	ND
C4-Chrysenes	0.00	0.57	ND	0.00	0.57	ND
Benzo(b)fluoranthene	0.16	0.66	J	0.13	0.66	J
Benzo(k)fluoranthene	0.05	0.45	J	0.12	0.45	J
Benzo(e)pyrene	0.07	0.36	J	0.07	0.36	J
Benzo(a)pyrene	0.08	0.71	J	0.08	0.71	J
Perylene	0.09	0.16	J	0.08	0.16	J
Indeno(1,2,3-c,d)pyrene	0.06	0.67	J	0.04	0.67	J
Dibenz(a,h)anthracene	0.08	0.35	J	0.01	0.36	J
Benzo(g,h,i)perylene	0.07	0.56	J	0.10	0.56	J
2-Methylnaphthalene	1.57	0.41		1.28	0.41	
1-Methylnaphthalene	0.79	0.50		0.72	0.50	
2,6-Dimethylnaphthalene	0.21	0.26	J	0.19	0.26	J
1,6,7-Trimethylnaphthalene	0.09	0.40	J	0.06	0.40	J
1-Methylphenanthrene	0.00	0.17	ND	0.00	0.17	ND

ND	Not Detected
J	<MDL
NA	Not Applicable
Q	Results Outside QC
I	Interference
B	Blank Contamination >3xMDL
D	Dilution

ATHOS I Oil Spill

Source	NJ DEP	NJ DEP
Client Sample ID	NJDB-02	NJDB-03
Sample Descriptor	Carcass	Carcass
Original Sample		
GERG ID	C46571	C46573
Sample Type	SAMP	SAMP
SDG	F7234	F7234
Dry Weight	3.08	2.40
Wet Weight	10.26	10.26
Sample Size Units	Grams	Grams
Matrix	Tissue	Tissue
% solid	30.0	23.4
% Lipid	12.6	8.9
Reporting Units	ng/g	ng/g
Calculation Basis (dry/wet)	Wet	Wet
QC Batch ID	T1500	T1500
Method	GCMS	GCMS
Collection Date	05/03/05	05/10/05
Receive Date	07/21/05	07/21/05
Extraction Date	08/31/05	08/31/05
Analysis Date	09/11/05	09/11/05
Surrogate Compounds	**%Recovery**	**%Recovery**
d8-Naphthalene	55.9	59.4
d10-Acenaphthene	62.5	68.7
d10-Phenanthrene	77.5	75.3
d12-Chrysene	51.1	54.9
d12-Perylene	55.7	56.3
Total PAHs	**Concentration**	**Concentration**
Total PAHs with Perylene	27.8	26.2
Total PAHs without Perylene	27.7	26.0
Total NS&T PAHs	16.9	13.8

ND	Not Detected
J	<MDL
NA	Not Applicable
Q	Results Outside QC
I	Interference
B	Blank Contamination >3xMDL
D	Dilution

ATHOS I Oil Spill

Client Sample ID	NJDB-02			NJDB-03		
Sample Descriptor	Carcass			Carcass		
Original Sample						
GERG ID	C46571			C46573		
Sample Type	SAMP			SAMP		
SDG	F7234			F7234		
PAH Compounds	**Concentration**	**MDL**		**Concentration**	**MDL**	
Naphthalene	3.77	0.52		3.77	0.52	
C1-Naphthalenes	3.79	0.89		4.86	0.89	
C2-Naphthalenes	1.53	0.52		1.97	0.52	
C3-Naphthalenes	1.91	0.78		2.15	0.78	
C4-Naphthalenes	0.00	0.78	ND	0.00	0.78	ND
Biphenyl	0.70	0.43		0.47	0.43	
Acenaphthylene	2.16	0.27		0.74	0.27	
Acenaphthene	0.70	0.27		0.32	0.27	
Fluorene	1.19	0.41		0.97	0.41	
C1-Fluorenes	1.08	0.81		0.54	0.81	J
C2-Fluorenes	0.00	0.81	ND	0.00	0.81	ND
C3-Fluorenes	0.00	0.81	ND	0.00	0.81	ND
Phenanthrene	0.88	0.38		0.89	0.38	
Anthracene	3.93	0.32		0.97	0.32	
C1-Phenanthrenes/Anthracenes	2.64	0.34		6.58	0.34	
C2-Phenanthrenes/Anthracenes	1.32	0.34		0.00	0.34	ND
C3-Phenanthrenes/Anthracenes	0.00	0.34	ND	0.00	0.34	ND
C4-Phenanthrenes/Anthracenes	0.00	0.34	ND	0.00	0.34	ND
Dibenzothiophene	0.15	0.14		0.13	0.14	J
C1-Dibenzothiophenes	0.00	0.28	ND	0.00	0.28	ND
C2-Dibenzothiophenes	0.00	0.28	ND	0.00	0.28	ND
C3-Dibenzothiophenes	0.00	0.28	ND	0.00	0.28	ND
Fluoranthene	0.29	0.35	J	0.22	0.35	J
Pyrene	0.34	0.37	J	0.28	0.37	J
C1-Fluoranthenes/Pyrenes	0.00	0.72	ND	0.00	0.72	ND
C2-Fluoranthenes/Pyrenes	0.00	0.72	ND	0.00	0.72	ND
C3-Fluoranthenes/Pyrenes	0.00	0.72	ND	0.00	0.72	ND
Benzo(a)anthracene	0.39	0.36		0.23	0.36	J
Chrysene	0.08	0.28	J	0.14	0.28	J
C1-Chrysenes	0.00	0.56	ND	0.00	0.56	ND
C2-Chrysenes	0.00	0.56	ND	0.00	0.56	ND
C3-Chrysenes	0.00	0.56	ND	0.00	0.56	ND
C4-Chrysenes	0.00	0.56	ND	0.00	0.56	ND
Benzo(b)fluoranthene	0.10	0.65	J	0.18	0.65	J
Benzo(k)fluoranthene	0.11	0.44	J	0.13	0.44	J
Benzo(e)pyrene	0.11	0.35	J	0.08	0.35	J
Benzo(a)pyrene	0.06	0.70	J	0.00	0.70	ND
Perylene	0.13	0.16	J	0.17	0.16	
Indeno(1,2,3-c,d)pyrene	0.27	0.66	J	0.21	0.66	J
Dibenz(a,h)anthracene	0.13	0.35	J	0.00	0.35	ND
Benzo(g,h,i)perylene	0.07	0.55	J	0.15	0.55	J
2-Methylnaphthalene	2.55	0.40		3.16	0.40	
1-Methylnaphthalene	1.24	0.49		1.70	0.49	
2,6-Dimethylnaphthalene	0.27	0.26		0.27	0.26	
1,6,7-Trimethylnaphthalene	0.34	0.39	J	0.16	0.39	J
1-Methylphenanthrene	0.11	0.17	J	0.19	0.17	

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

Source	NJ DEP	NJ DEP
Client Sample ID	NJDB-04	NJDB-05
Sample Descriptor	Carcass	Carcass
Original Sample		
GERG ID	C46575	C46577
Sample Type	SAMP	SAMP
SDG	F7234	F7234
Dry Weight	3.17	2.71
Wet Weight	10.36	10.10
Sample Size Units	Grams	Grams
Matrix	Tissue	Tissue
% solid	30.6	26.8
% Lipid	12.4	16.4
Reporting Units	ng/g	ng/g
Calculation Basis (dry/wet)	Wet	Wet
QC Batch ID	T1500	T1500
Method	GCMS	GCMS
Collection Date	05/10/05	05/11/05
Receive Date	07/21/05	07/21/05
Extraction Date	08/31/05	08/31/05
Analysis Date	09/11/05	09/11/05
Surrogate Compounds	**%Recovery**	**%Recovery**
d8-Naphthalene	73.3	64.2
d10-Acenaphthene	73.0	65.7
d10-Phenanthrene	92.2	78.1
d12-Chrysene	56.3	53.2
d12-Perylene	69.8	52.8
Total PAHs	**Concentration**	**Concentration**
Total PAHs with Perylene	53.2	43.4
Total PAHs without Perylene	51.9	42.3
Total NS&T PAHs	26.3	23.7

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

Client Sample ID	NJDB-04			NJDB-05		
Sample Descriptor	Carcass			Carcass		
Original Sample						
GERG ID	C46575			C46577		
Sample Type	SAMP			SAMP		
SDG	F7234			F7234		
PAH Compounds	**Concentration**	**MDL**		**Concentration**	**MDL**	
Naphthalene	3.84	0.51		3.22	0.53	
C1-Naphthalenes	4.38	0.88		3.83	0.91	
C2-Naphthalenes	2.25	0.51		2.38	0.53	
C3-Naphthalenes	2.12	0.77		2.19	0.79	
C4-Naphthalenes	0.00	0.77	ND	0.00	0.79	ND
Biphenyl	0.71	0.42		0.70	0.44	
Acenaphthylene	1.36	0.27		1.15	0.28	
Acenaphthene	0.58	0.27		0.68	0.28	
Fluorene	1.51	0.40		1.45	0.41	
C1-Fluorenes	1.63	0.80		1.03	0.82	
C2-Fluorenes	0.00	0.80	ND	0.00	0.82	ND
C3-Fluorenes	0.00	0.80	ND	0.00	0.82	ND
Phenanthrene	1.92	0.38		1.80	0.39	
Anthracene	2.51	0.32		2.91	0.33	
C1-Phenanthrenes/Anthracenes	12.18	0.34		8.54	0.34	
C2-Phenanthrenes/Anthracenes	2.89	0.34		0.00	0.34	ND
C3-Phenanthrenes/Anthracenes	0.00	0.34	ND	0.00	0.34	ND
C4-Phenanthrenes/Anthracenes	0.00	0.34	ND	0.00	0.34	ND
Dibenzothiophene	0.29	0.14		0.29	0.14	
C1-Dibenzothiophenes	0.00	0.28	ND	0.00	0.28	ND
C2-Dibenzothiophenes	0.00	0.28	ND	0.00	0.28	ND
C3-Dibenzothiophenes	0.00	0.28	ND	0.00	0.28	ND
Fluoranthene	2.43	0.34		1.87	0.35	
Pyrene	1.92	0.37		1.58	0.38	
C1-Fluoranthenes/Pyrenes	0.00	0.71	ND	0.00	0.73	ND
C2-Fluoranthenes/Pyrenes	0.00	0.71	ND	0.00	0.73	ND
C3-Fluoranthenes/Pyrenes	0.00	0.71	ND	0.00	0.73	ND
Benzo(a)anthracene	1.08	0.35		0.81	0.36	
Chrysene	0.79	0.28		0.70	0.29	
C1-Chrysenes	0.00	0.56	ND	0.00	0.57	ND
C2-Chrysenes	0.00	0.56	ND	0.00	0.57	ND
C3-Chrysenes	0.00	0.56	ND	0.00	0.57	ND
C4-Chrysenes	0.00	0.56	ND	0.00	0.57	ND
Benzo(b)fluoranthene	1.25	0.64		1.60	0.66	
Benzo(k)fluoranthene	0.98	0.44		0.54	0.45	
Benzo(e)pyrene	1.05	0.35		0.86	0.36	
Benzo(a)pyrene	1.28	0.69		0.95	0.71	
Perylene	1.34	0.16		1.13	0.16	
Indeno(1,2,3-c,d)pyrene	1.54	0.65		1.60	0.67	
Dibenz(a,h)anthracene	0.30	0.35	J	0.51	0.35	
Benzo(g,h,i)perylene	1.09	0.54		1.09	0.56	
2-Methylnaphthalene	2.89	0.40		2.45	0.41	
1-Methylnaphthalene	1.49	0.49		1.38	0.50	
2,6-Dimethylnaphthalene	0.49	0.26		0.44	0.26	
1,6,7-Trimethylnaphthalene	0.26	0.39	J	0.35	0.40	J
1-Methylphenanthrene	0.12	0.17	J	0.24	0.17	

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

ATHOS I Oil Spill

Source	PA DEP	PA DEP
Client Sample ID	UPTPBFT-A	UPTPBFT-B
Sample Descriptor	Carcass	Carcass
Original Sample		
GERG ID	C46625	C46627
Sample Type	SAMP	SAMP
SDG	F8241	F8241
Dry Weight	2.76	2.52
Wet Weight	10.02	10.25
Sample Size Units	Grams	Grams
Matrix	Tissue	Tissue
% solid	27.5	24.6
% Lipid	9.0	2.9
Reporting Units	ng/g	ng/g
Calculation Basis (dry/wet)	Wet	Wet
QC Batch ID	T1500	T1500
Method	GCMS	GCMS
Collection Date	07/06/05	07/06/05
Receive Date	08/04/05	08/04/05
Extraction Date	08/31/05	08/31/05
Analysis Date	09/11/05	09/11/05
Surrogate Compounds	**%Recovery**	**%Recovery**
d8-Naphthalene	58.2	63.9
d10-Acenaphthene	63.9	71.8
d10-Phenanthrene	79.9	87.6
d12-Chrysene	53.5	57.8
d12-Perylene	57.2	63.1
Total PAHs	**Concentration**	**Concentration**
Total PAHs with Perylene	219.0	41.7
Total PAHs without Perylene	219.0	41.6
Total NS&T PAHs	105.5	23.9

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

ATHOS I Oil Spill

Client Sample ID	UPTPBFT-A			UPTPBFT-B		
Sample Descriptor	Carcass			Carcass		
Original Sample						
GERG ID	C46625			C46627		
Sample Type	SAMP			SAMP		
SDG	F8241			F8241		
PAH Compounds	**Concentration**	**MDL**		**Concentration**	**MDL**	
Naphthalene	6.94	0.53		5.62	0.52	
C1-Naphthalenes	30.54	0.91		5.76	0.89	
C2-Naphthalenes	45.74	0.53		2.65	0.52	
C3-Naphthalenes	30.47	0.80		2.24	0.78	
C4-Naphthalenes	15.99	0.80		2.25	0.78	
Biphenyl	2.68	0.44		0.53	0.43	
Acenaphthylene	1.86	0.28		1.27	0.27	
Acenaphthene	8.08	0.28		0.76	0.27	
Fluorene	14.59	0.42		0.88	0.41	
C1-Fluorenes	7.16	0.83		4.40	0.81	
C2-Fluorenes	4.05	0.83		0.00	0.81	ND
C3-Fluorenes	0.00	0.83	ND	0.00	0.81	ND
Phenanthrene	17.87	0.39		1.43	0.38	
Anthracene	7.56	0.33		2.71	0.32	
C1-Phenanthrenes/Anthracenes	5.85	0.35		1.73	0.34	
C2-Phenanthrenes/Anthracenes	3.56	0.35		0.00	0.34	ND
C3-Phenanthrenes/Anthracenes	0.00	0.35	ND	0.00	0.34	ND
C4-Phenanthrenes/Anthracenes	0.00	0.35	ND	0.00	0.34	ND
Dibenzothiophene	1.87	0.14		0.18	0.14	
C1-Dibenzothiophenes	3.32	0.29		0.70	0.28	
C2-Dibenzothiophenes	0.00	0.29	ND	0.00	0.28	ND
C3-Dibenzothiophenes	0.00	0.29	ND	0.00	0.28	ND
Fluoranthene	5.31	0.35		1.45	0.35	
Pyrene	1.48	0.38		1.17	0.37	
C1-Fluoranthenes/Pyrenes	0.00	0.74	ND	0.00	0.72	ND
C2-Fluoranthenes/Pyrenes	0.00	0.74	ND	0.00	0.72	ND
C3-Fluoranthenes/Pyrenes	0.00	0.74	ND	0.00	0.72	ND
Benzo(a)anthracene	0.34	0.37	J	0.65	0.36	
Chrysene	0.08	0.29	J	0.65	0.28	
C1-Chrysenes	0.00	0.58	ND	0.00	0.56	ND
C2-Chrysenes	0.00	0.58	ND	0.00	0.56	ND
C3-Chrysenes	0.00	0.58	ND	0.00	0.56	ND
C4-Chrysenes	0.00	0.58	ND	0.00	0.56	ND
Benzo(b)fluoranthene	1.80	0.66		1.29	0.65	
Benzo(k)fluoranthene	0.13	0.45	J	0.49	0.44	
Benzo(e)pyrene	0.74	0.36		0.61	0.35	
Benzo(a)pyrene	0.09	0.71	J	0.62	0.70	J
Perylene	0.06	0.17	J	0.16	0.16	J
Indeno(1,2,3-c,d)pyrene	0.28	0.68	J	0.76	0.66	
Dibenz(a,h)anthracene	0.29	0.36	J	0.23	0.35	J
Benzo(g,h,i)perylene	0.28	0.56	J	0.52	0.55	J
2-Methylnaphthalene	18.23	0.41		3.80	0.40	
1-Methylnaphthalene	12.31	0.51		1.96	0.49	
2,6-Dimethylnaphthalene	7.96	0.26		0.47	0.26	
1,6,7-Trimethylnaphthalene	6.34	0.40		0.26	0.39	J
1-Methylphenanthrene	0.90	0.17		0.24	0.17	

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

ATHOS I Oil Spill

Source	PA DEP	PA DEP
Client Sample ID	UPTPBFT-C	UPTPBFT-D
Sample Descriptor	Carcass	Carcass
Original Sample		
GERG ID	C46629	C46631
Sample Type	SAMP	SAMP
SDG	F8241	F8241
Dry Weight	2.63	2.79
Wet Weight	10.03	10.11
Sample Size Units	Grams	Grams
Matrix	Tissue	Tissue
% solid	26.2	27.6
% Lipid	17.2	10.9
Reporting Units	ng/g	ng/g
Calculation Basis (dry/wet)	Wet	Wet
QC Batch ID	T1500	T1500
Method	GCMS	GCMS
Collection Date	07/06/05	07/06/05
Receive Date	08/04/05	08/04/05
Extraction Date	08/31/05	08/31/05
Analysis Date	09/11/05	09/11/05
Surrogate Compounds	**%Recovery**	**%Recovery**
d8-Naphthalene	57.0	64.8
d10-Acenaphthene	65.8	67.6
d10-Phenanthrene	67.5	88.1
d12-Chrysene	53.6	61.2
d12-Perylene	57.9	64.3
Total PAHs	**Concentration**	**Concentration**
Total PAHs with Perylene	291.5	60.3
Total PAHs without Perylene	291.4	60.1
Total NS&T PAHs	139.3	27.8

ND	Not Detected
J	<MDL
NA	Not Applicable
Q	Results Outside QC
I	Interference
B	Blank Contamination >3xMDL
D	Dilution

ATHOS I Oil Spill

Client Sample ID	UPTPBFT-C			UPTPBFT-D		
Sample Descriptor	Carcass			Carcass		
Original Sample						
GERG ID	C46629			C46631		
Sample Type	SAMP			SAMP		
SDG	F8241			F8241		
PAH Compounds	**Concentration**	**MDL**		**Concentration**	**MDL**	
Naphthalene	7.80	0.53		4.77	0.53	
C1-Naphthalenes	36.71	0.91		4.83	0.91	
C2-Naphthalenes	52.71	0.53		2.34	0.52	
C3-Naphthalenes	37.23	0.80		2.49	0.79	
C4-Naphthalenes	18.31	0.80		0.00	0.79	ND
Biphenyl	3.20	0.44		0.60	0.44	
Acenaphthylene	6.04	0.28		3.74	0.28	
Acenaphthene	8.53	0.28		0.40	0.28	
Fluorene	15.46	0.41		1.50	0.41	
C1-Fluorenes	14.02	0.83		5.28	0.82	
C2-Fluorenes	0.00	0.83	ND	0.00	0.82	ND
C3-Fluorenes	0.00	0.83	ND	0.00	0.82	ND
Phenanthrene	23.95	0.39		1.55	0.39	
Anthracene	21.66	0.33		9.66	0.33	
C1-Phenanthrenes/Anthracenes	23.38	0.35		12.31	0.34	
C2-Phenanthrenes/Anthracenes	8.66	0.35		6.58	0.34	
C3-Phenanthrenes/Anthracenes	0.00	0.35	ND	0.00	0.34	ND
C4-Phenanthrenes/Anthracenes	0.00	0.35	ND	0.00	0.34	ND
Dibenzothiophene	2.80	0.14		0.33	0.14	
C1-Dibenzothiophenes	0.00	0.28	ND	0.00	0.28	ND
C2-Dibenzothiophenes	0.00	0.28	ND	0.00	0.28	ND
C3-Dibenzothiophenes	0.00	0.28	ND	0.00	0.28	ND
Fluoranthene	6.35	0.35		1.05	0.35	
Pyrene	2.43	0.38		1.29	0.38	
C1-Fluoranthenes/Pyrenes	0.00	0.74	ND	0.00	0.73	ND
C2-Fluoranthenes/Pyrenes	0.00	0.74	ND	0.00	0.73	ND
C3-Fluoranthenes/Pyrenes	0.00	0.74	ND	0.00	0.73	ND
Benzo(a)anthracene	1.33	0.37		0.67	0.36	
Chrysene	0.16	0.29	J	0.08	0.29	J
C1-Chrysenes	0.00	0.58	ND	0.00	0.57	ND
C2-Chrysenes	0.00	0.58	ND	0.00	0.57	ND
C3-Chrysenes	0.00	0.58	ND	0.00	0.57	ND
C4-Chrysenes	0.00	0.58	ND	0.00	0.57	ND
Benzo(b)fluoranthene	0.31	0.66	J	0.14	0.66	J
Benzo(k)fluoranthene	0.06	0.45	J	0.12	0.45	J
Benzo(e)pyrene	0.15	0.36	J	0.11	0.36	J
Benzo(a)pyrene	0.04	0.71	J	0.03	0.71	J
Perylene	0.06	0.17	J	0.15	0.16	J
Indeno(1,2,3-c,d)pyrene	0.13	0.68	J	0.21	0.67	J
Dibenz(a,h)anthracene	0.00	0.36	ND	0.01	0.35	J
Benzo(g,h,i)perylene	0.00	0.56	ND	0.03	0.56	J
2-Methylnaphthalene	21.95	0.41		3.10	0.41	
1-Methylnaphthalene	14.76	0.50		1.73	0.50	
2,6-Dimethylnaphthalene	9.73	0.26		0.39	0.26	
1,6,7-Trimethylnaphthalene	7.52	0.40		0.61	0.40	
1-Methylphenanthrene	1.71	0.17		0.75	0.17	

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

ATHOS I Oil Spill

Source	PA DEP	DE DNREC
Client Sample ID	UPTPBFT-E	Fish # 1
Sample Descriptor	Carcass	Carcass
Original Sample		
GERG ID	C46633	C46665
Sample Type	SAMP	SAMP
SDG	F8241	F8243
Dry Weight	2.65	2.44
Wet Weight	10.26	10.01
Sample Size Units	Grams	Grams
Matrix	Tissue	Tissue
% solid	25.8	24.4
% Lipid	4.4	1.1
Reporting Units	ng/g	ng/g
Calculation Basis (dry/wet)	Wet	Wet
QC Batch ID	T1500	T1500
Method	GCMS	GCMS
Collection Date	07/06/05	05/27/05
Receive Date	08/04/05	08/12/05
Extraction Date	08/31/05	08/31/05
Analysis Date	09/11/05	09/11/05
Surrogate Compounds	**%Recovery**	**%Recovery**
d8-Naphthalene	66.5	66.9
d10-Acenaphthene	72.6	71.1
d10-Phenanthrene	88.3	82.9
d12-Chrysene	59.3	57.5
d12-Perylene	64.4	63.5
Total PAHs	**Concentration**	**Concentration**
Total PAHs with Perylene	62.3	60.1
Total PAHs without Perylene	62.3	60.1
Total NS&T PAHs	30.1	44.4

ND	Not Detected
J	<MDL
NA	Not Applicable
Q	Results Outside QC
I	Interference
B	Blank Contamination >3xMDL
D	Dilution

ATHOS I Oil Spill

Client Sample ID	UPTPBFT-E			Fish # 1	
Sample Descriptor	Carcass			Carcass	
Original Sample					
GERG ID	C46633			C46665	
Sample Type	SAMP			SAMP	
SDG	F8241			F8243	
PAH Compounds	**Concentration**	**MDL**		**Concentration**	**MDL**	
Naphthalene	2.83	0.52		18.90	0.53	
C1-Naphthalenes	5.68	0.89		20.27	0.92	
C2-Naphthalenes	7.60	0.52		4.13	0.53	
C3-Naphthalenes	6.95	0.78		2.81	0.80	
C4-Naphthalenes	5.24	0.78		3.48	0.80	
Biphenyl	0.73	0.43		0.38	0.44	J
Acenaphthylene	1.23	0.27		1.00	0.28	
Acenaphthene	2.06	0.27		0.34	0.28	
Fluorene	3.56	0.41		0.83	0.42	
C1-Fluorenes	2.00	0.81		3.19	0.83	
C2-Fluorenes	0.00	0.81	ND	0.00	0.83	ND
C3-Fluorenes	0.00	0.81	ND	0.00	0.83	ND
Phenanthrene	5.06	0.38		0.76	0.39	
Anthracene	4.51	0.32		0.87	0.33	
C1-Phenanthrenes/Anthracenes	7.87	0.34		0.91	0.35	
C2-Phenanthrenes/Anthracenes	2.15	0.34		0.95	0.35	
C3-Phenanthrenes/Anthracenes	0.00	0.34	ND	0.00	0.35	ND
C4-Phenanthrenes/Anthracenes	0.00	0.34	ND	-0.02	0.35	J
Dibenzothiophene	0.62	0.14		0.10	0.14	J
C1-Dibenzothiophenes	0.00	0.28	ND	0.00	0.29	ND
C2-Dibenzothiophenes	0.00	0.28	ND	0.00	0.29	ND
C3-Dibenzothiophenes	0.00	0.28	ND	0.00	0.29	ND
Fluoranthene	2.37	0.35		0.40	0.35	
Pyrene	1.00	0.37		0.41	0.38	
C1-Fluoranthenes/Pyrenes	0.00	0.72	ND	0.00	0.74	ND
C2-Fluoranthenes/Pyrenes	0.00	0.72	ND	0.00	0.74	ND
C3-Fluoranthenes/Pyrenes	0.00	0.72	ND	0.00	0.74	ND
Benzo(a)anthracene	0.26	0.36	J	0.06	0.37	J
Chrysene	0.11	0.28	J	0.03	0.29	J
C1-Chrysenes	0.00	0.56	ND	0.00	0.58	ND
C2-Chrysenes	0.00	0.56	ND	0.00	0.58	ND
C3-Chrysenes	0.00	0.56	ND	0.00	0.58	ND
C4-Chrysenes	0.00	0.56	ND	0.00	0.58	ND
Benzo(b)fluoranthene	0.14	0.65	J	0.03	0.66	J
Benzo(k)fluoranthene	0.03	0.44	J	0.04	0.45	J
Benzo(e)pyrene	0.11	0.35	J	0.09	0.36	J
Benzo(a)pyrene	0.02	0.70	J	0.06	0.71	J
Perylene	0.09	0.16	J	0.02	0.17	J
Indeno(1,2,3-c,d)pyrene	0.02	0.66	J	0.02	0.68	J
Dibenz(a,h)anthracene	0.05	0.35	J	0.00	0.36	ND
Benzo(g,h,i)perylene	0.05	0.55	J	0.04	0.56	J
2-Methylnaphthalene	3.24	0.40		13.51	0.41	
1-Methylnaphthalene	2.44	0.49		6.76	0.51	
2,6-Dimethylnaphthalene	1.31	0.26		0.93	0.26	
1,6,7-Trimethylnaphthalene	1.18	0.39		0.33	0.40	J
1-Methylphenanthrene	0.35	0.17		0.09	0.17	J

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

ATHOS I Oil Spill

Source	DE DNREC	DE DNREC
Client Sample ID	Fish # 2	Fish # 3
Sample Descriptor	Carcass	Carcass
Original Sample		
GERG ID	C46667	C46669
Sample Type	SAMP	SAMP
SDG	F8243	F8243
Dry Weight	2.35	2.63
Wet Weight	10.12	10.01
Sample Size Units	Grams	Grams
Matrix	Tissue	Tissue
% solid	23.3	26.3
% Lipid	2.6	13.9
Reporting Units	ng/g	ng/g
Calculation Basis (dry/wet)	Wet	Wet
QC Batch ID	T1500	T1500
Method	GCMS	GCMS
Collection Date	05/27/05	05/27/05
Receive Date	08/12/05	08/12/05
Extraction Date	08/31/05	08/31/05
Analysis Date	09/11/05	09/11/05
Surrogate Compounds	**%Recovery**	**%Recovery**
d8-Naphthalene	63.9	56.3
d10-Acenaphthene	65.6	63.3
d10-Phenanthrene	82.7	75.3
d12-Chrysene	60.9	53.0
d12-Perylene	66.5	50.5
Total PAHs	**Concentration**	**Concentration**
Total PAHs with Perylene	70.4	89.3
Total PAHs without Perylene	70.3	89.3
Total NS&T PAHs	11.5	60.1

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

ATHOS I Oil Spill

Client Sample ID	Fish # 2		Fish # 3		
Sample Descriptor	Carcass		Carcass		
Original Sample					
GERG ID	C46667		C46669		
Sample Type	SAMP		SAMP		
SDG	F8243		F8243		
PAH Compounds	**Concentration**	**MDL**	**Concentration**	**MDL**	
Naphthalene	3.01	0.53	19.51	0.53	
C1-Naphthalenes	2.13	0.91	20.02	0.92	
C2-Naphthalenes	1.56	0.52	5.49	0.53	
C3-Naphthalenes	2.24	0.79	5.05	0.80	
C4-Naphthalenes	0.00	0.79 ND	6.14	0.80	
Biphenyl	0.42	0.44 J	0.56	0.44	
Acenaphthylene	0.98	0.28	3.47	0.28	
Acenaphthene	0.48	0.28	1.36	0.28	
Fluorene	0.73	0.41	1.69	0.42	
C1-Fluorenes	4.90	0.82	5.60	0.83	
C2-Fluorenes	0.00	0.82 ND	0.00	0.83	ND
C3-Fluorenes	0.00	0.82 ND	0.00	0.83	ND
Phenanthrene	0.85	0.38	3.84	0.39	
Anthracene	1.67	0.33	8.28	0.33	
C1-Phenanthrenes/Anthracenes	43.77	0.34	4.52	0.35	
C2-Phenanthrenes/Anthracenes	5.70	0.34	0.00	0.35	ND
C3-Phenanthrenes/Anthracenes	0.00	0.34 ND	0.00	0.35	ND
C4-Phenanthrenes/Anthracenes	0.00	0.34 ND	0.00	0.35	ND
Dibenzothiophene	0.11	0.14 J	0.35	0.14	
C1-Dibenzothiophenes	0.00	0.28 ND	0.00	0.29	ND
C2-Dibenzothiophenes	0.00	0.28 ND	0.00	0.29	ND
C3-Dibenzothiophenes	0.00	0.28 ND	0.00	0.29	ND
Fluoranthene	0.43	0.35	1.29	0.35	
Pyrene	0.62	0.38	1.30	0.38	
C1-Fluoranthenes/Pyrenes	0.00	0.73 ND	0.00	0.74	ND
C2-Fluoranthenes/Pyrenes	0.00	0.73 ND	0.00	0.74	ND
C3-Fluoranthenes/Pyrenes	0.00	0.73 ND	0.00	0.74	ND
Benzo(a)anthracene	0.26	0.36 J	0.44	0.37	
Chrysene	0.38	0.29	0.08	0.29	J
C1-Chrysenes	0.00	0.57 ND	0.00	0.58	ND
C2-Chrysenes	0.00	0.57 ND	0.00	0.58	ND
C3-Chrysenes	0.00	0.57 ND	0.00	0.58	ND
C4-Chrysenes	0.00	0.57 ND	0.00	0.58	ND
Benzo(b)fluoranthene	0.02	0.66 J	0.10	0.67	J
Benzo(k)fluoranthene	0.00	0.45 ND	0.00	0.45	ND
Benzo(e)pyrene	0.02	0.36 J	0.08	0.36	J
Benzo(a)pyrene	0.04	0.71 J	0.13	0.72	J
Perylene	0.07	0.16 J	0.04	0.17	J
Indeno(1,2,3-c,d)pyrene	0.00	0.67 ND	0.00	0.68	ND
Dibenz(a,h)anthracene	0.00	0.35 ND	0.00	0.36	ND
Benzo(g,h,i)perylene	0.00	0.56 ND	0.00	0.56	ND
2-Methylnaphthalene	1.41	0.41	13.27	0.41	
1-Methylnaphthalene	0.72	0.50	6.75	0.51	
2,6-Dimethylnaphthalene	0.25	0.26 J	1.04	0.27	
1,6,7-Trimethylnaphthalene	0.26	0.40 J	0.78	0.40	
1-Methylphenanthrene	0.09	0.17 J	0.46	0.17	

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

Source	DE DNREC	DE DNREC
Client Sample ID	Fish # 4	Fish # 5
Sample Descriptor	Carcass	Carcass
Original Sample		
GERG ID	C46671	C46673
Sample Type	SAMP	SAMP
SDG	F8243	F8243
Dry Weight	3.23	2.69
Wet Weight	10.02	10.15
Sample Size Units	Grams	Grams
Matrix	Tissue	Tissue
% solid	32.2	26.5
% Lipid	18.8	13.8
Reporting Units	ng/g	ng/g
Calculation Basis (dry/wet)	Wet	Wet
QC Batch ID	T1500	T1500
Method	GCMS	GCMS
Collection Date	05/31/05	05/31/05
Receive Date	08/12/05	08/12/05
Extraction Date	08/31/05	08/31/05
Analysis Date	09/11/05	09/11/05
Surrogate Compounds	**%Recovery**	**%Recovery**
d8-Naphthalene	55.9	59.4
d10-Acenaphthene	62.5	68.7
d10-Phenanthrene	77.5	75.3
d12-Chrysene	51.1	54.9
d12-Perylene	55.7	56.3
Total PAHs	**Concentration**	**Concentration**
Total PAHs with Perylene	26.8	25.6
Total PAHs without Perylene	26.6	25.4
Total NS&T PAHs	16.9	13.8

ND	Not Detected
J	<MDL
NA	Not Applicable
Q	Results Outside QC
I	Interference
B	Blank Contamination >3xMDL
D	Dilution

Client Sample ID	Fish # 4			Fish # 5		
Sample Descriptor	Carcass			Carcass		
Original Sample						
GERG ID	C46671			C46673		
Sample Type	SAMP			SAMP		
SDG	F8243			F8243		
PAH Compounds	**Concentration**	**MDL**		**Concentration**	**MDL**	
Naphthalene	3.77	0.53		3.77	0.52	
C1-Naphthalenes	3.79	0.91		4.86	0.90	
C2-Naphthalenes	1.53	0.53		1.97	0.52	
C3-Naphthalenes	1.91	0.80		2.15	0.79	
C4-Naphthalenes	0.00	0.80	ND	0.00	0.79	ND
Biphenyl	0.70	0.44		0.47	0.43	
Acenaphthylene	2.16	0.28		0.74	0.28	
Acenaphthene	0.70	0.28		0.32	0.28	
Fluorene	1.19	0.42		0.97	0.41	
C1-Fluorenes	0.00	0.83	ND	0.00	0.82	ND
C2-Fluorenes	0.00	0.83	ND	0.00	0.82	ND
C3-Fluorenes	0.00	0.83	ND	0.00	0.82	ND
Phenanthrene	0.88	0.39		0.89	0.38	
Anthracene	3.93	0.33		0.97	0.32	
C1-Phenanthrenes/Anthracenes	2.64	0.35		6.58	0.34	
C2-Phenanthrenes/Anthracenes	1.32	0.35		0.00	0.34	ND
C3-Phenanthrenes/Anthracenes	0.00	0.35	ND	0.00	0.34	ND
C4-Phenanthrenes/Anthracenes	0.00	0.35	ND	0.00	0.34	ND
Dibenzothiophene	0.15	0.14		0.13	0.14	J
C1-Dibenzothiophenes	0.00	0.29	ND	0.00	0.28	ND
C2-Dibenzothiophenes	0.00	0.29	ND	0.00	0.28	ND
C3-Dibenzothiophenes	0.00	0.29	ND	0.00	0.28	ND
Fluoranthene	0.29	0.35	J	0.22	0.35	J
Pyrene	0.34	0.38	J	0.28	0.38	J
C1-Fluoranthenes/Pyrenes	0.00	0.74	ND	0.00	0.73	ND
C2-Fluoranthenes/Pyrenes	0.00	0.74	ND	0.00	0.73	ND
C3-Fluoranthenes/Pyrenes	0.00	0.74	ND	0.00	0.73	ND
Benzo(a)anthracene	0.39	0.37		0.23	0.36	J
Chrysene	0.08	0.29	J	0.14	0.28	J
C1-Chrysenes	0.00	0.58	ND	0.00	0.57	ND
C2-Chrysenes	0.00	0.58	ND	0.00	0.57	ND
C3-Chrysenes	0.00	0.58	ND	0.00	0.57	ND
C4-Chrysenes	0.00	0.58	ND	0.00	0.57	ND
Benzo(b)fluoranthene	0.10	0.66	J	0.18	0.66	J
Benzo(k)fluoranthene	0.11	0.45	J	0.13	0.45	J
Benzo(e)pyrene	0.11	0.36	J	0.08	0.36	J
Benzo(a)pyrene	0.06	0.71	J	0.00	0.71	ND
Perylene	0.13	0.17	J	0.17	0.16	
Indeno(1,2,3-c,d)pyrene	0.27	0.68	J	0.21	0.67	J
Dibenz(a,h)anthracene	0.13	0.36	J	0.00	0.35	ND
Benzo(g,h,i)perylene	0.07	0.56	J	0.15	0.55	J
2-Methylnaphthalene	2.55	0.41		3.16	0.40	
1-Methylnaphthalene	1.24	0.51		1.70	0.50	
2,6-Dimethylnaphthalene	0.27	0.26		0.27	0.26	
1,6,7-Trimethylnaphthalene	0.34	0.40	J	0.16	0.40	J
1-Methylphenanthrene	0.11	0.17	J	0.19	0.17	

ND Not Detected
J <MDL
NA Not Applicable
Q Results Outside QC
I Interference
B Blank Contamination >3xMDL
D Dilution

APPENDIX H

Shoreline Assessment Results

H.1. Delineation of shoreline segments designated for shoreline (SCAT) surveys.

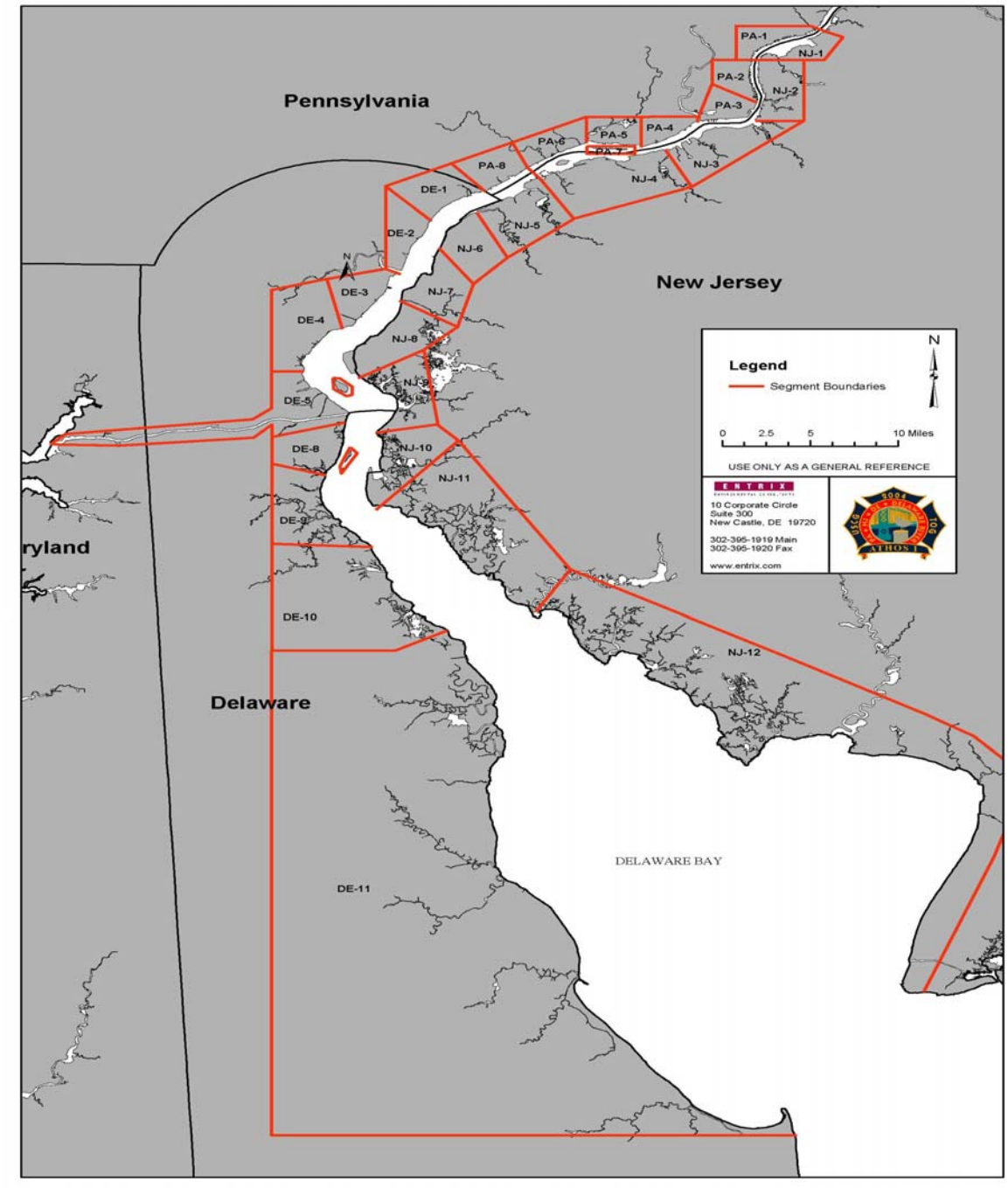
H.2. Shoreline oiling categories (Very Light, Light, Moderate, and Heavy) as derived for shoreline oiling data.

H.3. Shoreline classification from the Environmental Sensitivity index (ESI) for Delaware, New Jersey, and Pennsylvania.

H.4. Summary of shoreline oiling data.

H.5. Report to the Pennsylvania Bureau of Forestry on a Visit to Inspect Oil Damage to Tidal Marshes of Little Tinicum Island from the Athos I Oil Spill of November 26, 2004.

Appendix H.1. Delineation of shoreline segments designated for shoreline (SCAT) surveys.



Appendix H.2. Shoreline oiling categories (Very Light, Light, Moderate, and Heavy) as derived for shoreline oiling data.

Shoreline Oiling Width	% Oiling within Shoreline Oiling Width	Oil Thickness	Oil Characterization
<0.5 feet	<1%	<.01 cm (film)	Very Light
		>.01-.1 cm (coat)	Very Light
		>.1-1.0 cm (cover)	Light
		>1 cm (thick or pooled)	Light
	1-10%	<.01 cm (film)	Very Light
		>.01-.1 cm (coat)	Very Light
		>.1-1.0 cm (cover)	Light
		>1 cm (thick or pooled)	Light
	11-50%	<.01 cm (film)	Very Light
		>.01-.1 cm (coat)	Very Light
		>.1-1.0 cm (cover)	Light
		>1 cm (thick or pooled)	Light
	51-90%	<.01 cm (film)	Very Light
		>.01-.1 cm (coat)	Light
		>.1-1.0 cm (cover)	Moderate
		>1 cm (thick or pooled)	Moderate
	91-100%	<.01 cm (film)	Light
		>.01-.1 cm (coat)	Moderate
		>.1-1.0 cm (cover)	Moderate
		>1 cm (thick or pooled)	Heavy
>0.5-3 feet	<1%	<.01 cm (film)	Very Light
		>.01-.1 cm (coat)	Very Light
		>.1-1.0 cm (cover)	Light
		>1 cm (thick or pooled)	Light
	1-10%	<.01 cm (film)	Very Light
		>.01-.1 cm (coat)	Very Light
		>.1-1.0 cm (cover)	Light
		>1 cm (thick or pooled)	Light
	11-50%	<.01 cm (film)	Very Light
		>.01-.1 cm (coat)	Light
		>.1-1.0 cm (cover)	Moderate
		>1 cm (thick or pooled)	Moderate

Shoreline Oiling Width	% Oiling within Shoreline Oiling Width	Oil Thickness	Oil Characterization
>0.5-3 feet	51-90%	<.01 cm (film)	Light
		>.01-.1 cm (coat)	Moderate
		>.1-1.0 cm (cover)	Moderate
		>1 cm (thick or pooled)	Heavy
	91-100%	<.01 cm (film)	Light
		>.01-.1 cm (coat)	Moderate
		>.1-1.0 cm (cover)	Heavy
		>1 cm (thick or pooled)	Heavy
>3-6 feet	<1%	<.01 cm (film)	Very Light
		>.01-.1 cm (coat)	Very Light
		.1-1.0 cm (cover)	Light
		>1 cm (thick or pooled)	Light
	1-10%	<.01 cm (film)	Very Light
		>.01-.1 cm (coat)	Light
		>.1-1.0 cm (cover)	Moderate
		>1 cm (thick or pooled)	Moderate
	11-50%	<.01 cm (film)	Light
		>.01-.1 cm (coat)	Moderate
		.1-1.0 cm (cover)	Moderate
		>1 cm (thick or pooled)	Heavy
	51-90%	<.01 cm (film)	Light
		>.01-.1 cm (coat)	Moderate
		>.1-1.0 cm (cover)	Heavy
		>1 cm (thick or pooled)	Heavy
	91-100%	<.01 cm (film)	Light
		>.01-.1 cm (coat)	Moderate
		>.1-1.0 cm (cover)	Heavy
		>1 cm (thick or pooled)	Heavy

Shoreline Oiling Width	% Oiling within Shoreline Oiling Width	Oil Thickness	Oil Characterization
>6 feet	<1%	<.01 cm (film)	Very Light
		>.01-.1 cm (coat)	Very Light
		>.1-1.0 cm (cover)	Light
		>1 cm (thick or pooled)	Light
	1-10%	<.01 cm (film)	Very Light
		>.01-.1 cm (coat)	Light
		>.1-1.0 cm (cover)	Moderate
		>1 cm (thick or pooled)	Moderate
	11-50%	<.01 cm (film)	Light
		>.01-.1 cm (coat)	Moderate
		>.1-1.0 cm (cover)	Moderate
		>1 cm (thick or pooled)	Heavy
	51-90%	<.01 cm (film)	Light
		>.01-.1 cm (coat)	Moderate
		>.1-1.0 cm (cover)	Heavy
		>1 cm (thick or pooled)	Heavy
	91-100%	<.01 cm (film)	Light
		>.01-.1 cm (coat)	Moderate
		>.1-1.0 cm (cover)	Heavy
		>1 cm (thick or pooled)	Heavy

Appendix H.3. Shoreline classification from the Environmental Sensitivity Index (ESI) for Delaware, New Jersey, and Pennsylvania.

ESI No.	Estuarine Shoreline Classification (ESI)
1B	Exposed seawalls and other solid structures made of concrete, wood, or metal
2A	Eroding bluffs
2B	Wave-cut clay platforms
3	Fine-grained sand beaches
4	Medium- to coarse-grained sand beaches
5	Mixed sand and gravel beaches
6A	Gravel beaches
6B	Riprap structures
7	Exposed tidal flats
8A	Vegetated, steeply sloping riverine bluffs
8B	Sheltered seawalls and other solid structures made of concrete, wood, or metal
9	Sheltered tidal flats
10A	Salt and brackish -water marshes
U	Unranked

From: NOAA (2000). Delaware, New Jersey, Pennsylvania Environmental Sensitivity Index Metadata. November 2000.

Appendix H.4. Summary of shoreline oiling data. See Appendix H.1 for delineation of shoreline segments; Appendix H.2 for definition of degree of oiling; and Appendix H.3 for description of ESI habitat type.

Segment	Degree of Oiling	ESI	Shoreline Segment Length (mi.)
DE-1	UNSURVEYED	6B	0.69
	LIGHT	10A/5	0.49
		1B	1.43
		6B	1.93
	MEDIUM	10A/5	0.17
		5	0.58
		6B	1.19
	VERY LIGHT	6B	0.80
DE-2	LIGHT	10A	0.38
		6B	1.26
	MEDIUM	6B	0.09
	VERY LIGHT	10A	0.56
		1B	0.29
		5	0.79
		6B	3.28
DE-3	UNSURVEYED	10A	3.84
	CLEAN	10A	3.88
		1B	0.24
		5	0.49
		6B	2.82
	VERY LIGHT	10A	0.23
		1B	1.17
		6B	0.12
DE-4	UNSURVEYED	10A	6.61
		5	0.14
		6B	0.31
	CLEAN	10A	3.24
		10A/5	0.19
		5	1.39
		6A	0.26
		6B	0.95

Segment	Degree of Oiling	ESI	Shoreline Segment Length (mi.)
DE-5	UNSURVEYED	10A	1.42
		6B	0.45
		8A	3.68
	CLEAN	10A	7.42
		1B	0.23
		2A	0.06
		5	0.27
		6B	2.38
		6B/10A	0.32
	LIGHT	10A	0.55
	VERY LIGHT	10A	3.61
		1B	0.46
		6B	22.41
		8A	0.54
DE-6	UNSURVEYED	10A	0.75
		6B	0.37
	VERY LIGHT	10A	2.44
		1B	0.23
		1B/10A	0.11
		6B	0.92
DE-7	UNSURVEYED	6B	0.17
	LIGHT	10A	0.62
		6B	0.52
	VERY LIGHT	10A	0.92
DE-8	UNSURVEYED	10A	0.72
	LIGHT	10A	4.19
		1B	0.17
	VERY LIGHT	10A	3.29
		6B	0.30
		6B/5	0.08
DE-9	UNSURVEYED	10A	28.06
	CLEAN	10A	3.51
		4	0.07
		5	0.14
	VERY LIGHT	10A	29.41
		1B	0.06
		1B/5	0.27
		4	0.11
		5	0.36
		6B	0.22

Segment	Degree of Oiling	ESI	Shoreline Segment Length (mi.)
DE-10	UNSURVEYED	10A	37.08
		1B	0.34
		5	1.24
		6B	0.14
	CLEAN	10A	10.03
		10A/5	0.18
		1B	0.63
		5	2.86
		6B	0.09
	VERY LIGHT	10A	6.74
DE-12	CLEAN	1B	0.20
		4	6.14
		4/10A	1.29
		5	4.29
		5/10A	0.11
		6A	0.27
		6B	0.15
MD-1	UNSURVEYED	6B	11.08
NJ-1	CLEAN	10A	0.58
		1B	1.05
		5	0.26
		6A	0.10
		6B	1.63
		8A	2.71
	HEAVY	5	0.02
	LIGHT	1B	3.35
		5	0.66
		6B	0.38
	MEDIUM	5	0.75
	VERY LIGHT	1B	1.05
		5	0.26
		6B	0.72
		8A	1.01
NJ-2	LIGHT	1B	6.04
		5	0.32
		6B	0.45
		8B	0.41
	MEDIUM	1B	3.32
	VERY LIGHT	1B	0.31

Segment	Degree of Oiling	ESI	Shoreline Segment Length (mi.)
NJ-3	UNSURVEYED	10A	5.91
		1B	0.56
		5	0.67
	CLEAN	10A	0.44
	HEAVY	10A	0.76
		1B	0.90
		1B/5	0.16
		5	1.49
		6A	0.03
		6B	0.62
	LIGHT	10A	0.46
		5	0.66
		8A	1.66
		8B	0.21
	MEDIUM	10A	0.89
		1B	0.16
		5	2.75
		6A	0.20
		6B	0.73
		8A	0.08
	VERY LIGHT	10A	3.07
		5	0.57
		6B	0.08
NJ-4	UNSURVEYED	10A	13.50
		8A	2.13
	CLEAN	10A	0.87
		5	0.04
	HEAVY	10A	0.53
		1B	0.36
		1B/5	0.65
		5	0.98
		6B	0.68
	LIGHT	10A	1.12
		1B	0.20
		1B/5	0.10
		5	1.99
		6A	0.03
		6B	0.28
	MEDIUM	10A	2.36
		1B	0.92
		5	2.43
		6B	1.88
	VERY LIGHT	10A	3.64
		1A	1.89
		1B	0.40
		5	0.05
		6B	0.49
		8A	0.10

Segment	Degree of Oiling	ESI	Shoreline Segment Length (mi.)
NJ-5	UNSURVEYED	10A	3.30
	CLEAN	10A	0.66
	HEAVY	5	0.23
	LIGHT	10A	20.17
		10A/5	0.29
		10A/6A	0.09
		1B	0.21
		4	0.07
		5	2.76
		6A	0.51
		8A	3.25
	MEDIUM	10A	2.82
		10A/5	0.08
		10A/6A	0.12
		5	0.18
		8A	0.41
	VERY LIGHT	5	0.39
NJ-6	LIGHT	10A	0.33
		6B	0.17
	VERY LIGHT	10A	0.32
		1B	0.62
		5	1.85
		6B	0.72
NJ-7	UNSURVEYED	10A	7.64
		5	0.08
		6B	0.45
		8A	1.88
	LIGHT	10A	0.22
		1B	0.91
		5	0.48
		6B	4.68
NJ-8	UNSURVEYED	10A	0.90
	VERY LIGHT	10A	0.30
		1B	2.49
		1B/6A	0.15
		1B/6B	1.53
		5	1.67
		6B	3.36
NJ-9	UNSURVEYED	10A	16.61
	LIGHT	10A	1.31
		6B	0.14
	VERY LIGHT	10A	8.80
		1B	1.65
		4	0.11
		5	0.15
		6B	0.42

Segment	Degree of Oiling	ESI	Shoreline Segment Length (mi.)
NJ-10	UNSURVEYED	10A	22.34
		1B	0.07
		5	0.05
	CLEAN	10A	0.72
		10A/6B	0.57
		1B	0.16
		5	0.05
		6B	3.54
	VERY LIGHT	10A	5.47
NJ-11	UNSURVEYED	10A	70.46
		1B	2.06
		5	0.94
		5/10A	0.17
		6B	1.69
		8A	1.18
	CLEAN	10A	104.74
		1B	2.05
		5	0.64
		6B	0.92
		8A	5.43
		8B	0.21
NJ-12	UNSURVEYED	10A	148.32
		10A/5	3.20
		1B	2.19
		1B/5	0.44
		1B/6B	0.24
		3	0.08
		4	1.50
		5	17.64
		5/10A	1.13
		6A	0.35
		6B	4.12
		6B/4	0.13
		8B	0.40
	CLEAN	10A	2.05
		1B	1.13
		1B/5	0.50
		1B/6B	0.36
		3	0.01
		4	0.31
		5	2.66
		6A	0.11
		6B	0.76
	VERY LIGHT	10A/5	0.14
		6B/5	0.10

Segment	Degree of Oiling	ESI	Shoreline Segment Length (mi.)
PA-1	UNSURVEYED	6B	0.60
		8A	0.44
		8B	0.38
	CLEAN	1B	1.10
		5	0.78
		6A	0.15
		6B	1.38
		8A/6A	0.17
	Medium	1B	10.36
		5	0.17
		6B	2.59
PA-2	MEDIUM	1B	11.09
		5	0.28
		6B	0.36
		8B	0.66
PA-3	UNSURVEYED	1B	1.09
		5	0.07
		6B	0.04
	CLEAN	10A	0.07
		1B	2.40
		6B	0.14
		8A	0.16
		8B	3.06
	HEAVY	1B	0.12
	LIGHT	1B	2.62
		5	0.07
		6B	1.09
		8A	0.13
	MEDIUM	1B	8.27
		6B	0.28
	VERY LIGHT	1B	0.02
PA-4	UNSURVEYED	1B	0.07
	HEAVY	10A	0.11
		10A/5	0.22
		1B	1.62
		5	0.15
		6B	3.30
	MEDIUM	1B	0.40
		5	0.85

Segment	Degree of Oiling	ESI	Shoreline Segment Length (mi.)
PA-5	UNSURVEYED	10A	0.32
		1B	0.33
		6B	0.25
		8A	1.18
	CLEAN	10A	2.79
		1B/6B	0.25
		6B	0.44
		8A	0.54
	HEAVY	1B	0.05
		5	0.63
		6B	0.00
	LIGHT	1B	0.49
		1B/6B	0.95
		6B	0.83
	MEDIUM	10A	0.67
		6B	1.18
	VERY LIGHT	10A	0.47
		1B	0.27
		6B	0.05
		8A	0.58
		8A/6A	0.20
PA-6	UNSURVEYED	8A	0.62
	CLEAN	6A	0.01
		8A	0.77
		8B	1.27
	LIGHT	1B	2.22
		5	0.28
		6B	1.28
		6B/1B	1.90
		8A	0.05
	MEDIUM	1B	1.21
		6A	0.14
		6B	0.38
	VERY LIGHT	1B	1.55
		6A	0.04
		8A	0.19
PA-7	HEAVY	3	0.53
		5	0.54
	LIGHT	3	0.20
		5	0.92
	MEDIUM	3	1.13
		5	0.94
		6A	0.08

Segment	Degree of Oiling	ESI	Shoreline Segment Length (mi.)
PA-8	LIGHT	1B	3.01
		6B	1.83
	MEDIUM	1B	1.04
		6B	0.09
	VERY LIGHT	1B	0.59
		6B	0.26

Appendix H.5.

Report to the Pennsylvania Bureau of Forestry on a Visit to Inspect Oil Damage to Tidal Marshes of Little Tinicum Island from the Athos I Oil Spill of November 26, 2004

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On December 16, 2004 I visited Little Tinicum Island in the Delaware River in Delaware County, PA with Paul Jardel and Thomas L. Magge of the Pennsylvania Department of Environmental Protection. Our visit was timed to coincide with low tide. We walked the entire north side of Little Tinicum Island inspecting the shoreline and the exposed tidal mud flats and lagoons.

Tidal Mud Flats

We saw very little oil on the surface of the tidal flats; however, anything that protruded from the surface had oil on it, including debris and plants.

Dormant leaves of spatterdock *with black coating of oil visible*

Plants that were visible on the tidal flats included dormant leaves of spatterdock (*Nuphar advena*), sweetflag (*Acorus calamus*), arrowhead (*Sagittaria rigida*), arrow-arum (*Peltandra virginica*), and dwarf spike-rush (*Eleocharis parvula*). Black deposits of oil were visible on the leaves of many, but not all, of these plants. We did see a few small (6 inch diameter or less) patches of oil on the mud and an occasional area with oil sheen on the water; but for the most part the surface of the tidal flat appeared to be free of oil. There was no evidence that the oil had penetrated into the sediments on the mud flats.

Arrowhead leaves with an oily coating **l**

My assessment is that the oil-coated leaves will almost certainly die, but the rhizomes of the plants mentioned above, all of which are perennials, will be unaffected; and that normal growth will resume in the spring. Other perennial species that were not visible at this time but are known to be present, including strap-leaf arrowhead (*Sagittaria subulata*), Smith's bulrush (*Scirpus smithii*), and mud-

plantain (*Heteranthera multiflora*) should also be unaffected. The seeds of tidal flat annuals,
including long-lobed arrowhead (*Sagittaria calycina* var. *spongiosa*) and spike-rush (*Eleocharis obtusa* var. *peasii*), should also be unaffected.

ATVs and other vehicles and heavy foot traffic should not be allowed on the tidal flats, as the rhizomes of some of these plants are slender and fragile.

High Tide Line

Deposits of oil were present on vegetation, rocks, debris, and the sand along the high tide line; the intensity of the deposit varied depending on the exposure of each section of shoreline. Those areas most open to the east (upstream direction) were the most severely affected. Thick black oil coated the lower 1-3 feet of dead stems of common reed (*Phragmites australis*), purple loosestrife (*Lythrum salicaria*), swamp-mallow (*Hibiscus moschuetos*), and smartweed (*Polygonum* sp.). Stems and exposed roots of woody plants, including shrubs such as arrow-wood (*Viburnum dentatum*), groundsel-tree (*Baccharis halimifolia*), black elderberry (*Sambucus canadensis*), false indigo (*Amorpha fruticosa*), and trees also were coated to a height of about 12 inches at the base.

In a few areas near the east (upstream) end of the island, oil had soaked in to the sand and gravel surface just below the high tide line forming an asphalt-like crust.

Oil coating the lower portions of purple loosestrife and smartweed at the high tide line

I recommended that dead stems of the herbaceous species be cut as close to the base as possible and removed from the site to prevent the oil on them from being redistributed. Woody stems of shrubs may be girdled and killed by the oil, due to the toxicity of the oil to the cambium layer just below the bark; however, the bark of older stems may be thick enough to protect them. Whether the stems are cut or left in place, regrowth will likely occur from dormant buds at the base or from stolons. Similarly, exposed roots and lower stems of trees that are coated with oil may be girdled, or they may escape damage depending on the thickness of the bark. It is probably best to leave these roots and stems in place.

Several rare tidal marsh plants typically grow at or near the high tide line, wild rice (*Zizania aquatica*), waterhemp ragweed (*Amaranthus cannabinus*), Walter's barnyard grass (*Echinochloa walteri*), swamp-beggar-ticks (*Bidens bidentoides*), and marsh fleabane (*Pluchea odorata*), are all annuals and not visible at this time. Because they over-winter as seeds, they will likely escape direct impact from the oil.

Water-horehound (*Lycopus rubellus*), an herbaceous perennial that often grows right at the high tide line, may be vulnerable to damage from the oil. It frequently grows in crevices among the roots of trees right at the uppermost reach of the tide. Its over-wintering structures are stolons and tubers.

Interior Areas

In order to move people and materials from one side of the island to the other clean-up contractors have blazed several ATV trails through the island interior. These disturbances should not cause any permanent harm.

List of PNHP-classified plants known to occur at Little Tinicum Island

Common name	Scientific name	Growth cycle	Status
waterhemp ragweed	*Amaranthus cannabinus*	annual	PR
swamp beggar-ticks	*Bidens bidentoides*	annual	PT/PE
Walter's barnyard grass	*Echinochloa walteri*	annual	PE
spike-rush	*Eleocharis obtusa var. peasii*	annual	PE
dwarf spike-rush	*Eleocharis parvula*	perennial	PE
mud-plantain	*Heteranthera multiflora*	perennial	PE
water-horehound	*Lycopus rubellus*	perennial	
marsh fleabane	*Pluchea odorata*	annual	TU/PE
long-lobed arrowhead	*Sagittaria calycina var. spongiosa*	annual	PE
strap-leaf arrowhead	*Sagittaria subulata*	perennial	PR
Smith's bulrush	*Scirpus smithii*	perennial	PE
wild-rice	*Zizania aquatica*	annual	PR

APPENDIX I

Bird and Wildlife Survey Data

I.1. Summary results of 3,428 ground surveys conducted between November 30, 2004 and January 10, 2005.

I.2. Ratio of total birds observed during ground surveys/number of site visits by date.

I.3. Summary of aerial survey data

Appendix I.1. Summary results of 3,428 ground surveys conducted between November 30, 2004 and January 10, 2005.

Guild	Common name	Total count	Most Observed in One Day	Most Observed Oiled in One Day	No oiling	Trace	Light	Moderate	Heavy	Total oiled	Proportion of Observed Species Oiled	Proportion of Total Birds Oiled
Dabbling ducks	Wood duck	2	1	0	2	0	0	0	0	0	0.00	0.00
	Northern pintail	4938	3010	10	4915	3	19	0	1	23	0.00	0.00
	American wigeon	83	31	0	83	0	0	0	0	0	0.00	0.00
	Northern shoveler	389	176	2	386	3	0	0	0	3	0.01	0.00
	Green-winged teal	1116	463	0	1116	0	0	0	0	0	0.00	0.00
	Blue-winged teal	5	4	0	5	0	0	0	0	0	0.00	0.00
	Mallard	7671	802	45	7224	164	159	73	51	447	0.06	0.03
	American black duck	922	217	10	881	26	11	1	3	41	0.04	0.00
	Black mallard hybrid	5	2	0	5	0	0	0	0	0	0.00	0.00
	Gadwall	524	111	1	521	2	0	0	1	3	0.01	0.00
	Muscovy duck	74	18	7	58	2	14	0	0	16	0.22	0.00
	Duck sp.	240	90	7	214	1	5	4	16	26	0.11	0.00
	Unknown shoveler	7	6	0	7	0	0	0	0	0	0.00	0.00
Diving birds	Red-throated loon	4	1	0	4	0	0	0	0	0	0.00	0.00
	Double-crested cormorant	257	57	14	174	6	39	29	9	83	0.32	0.01
	Great cormorant	1	1	0	1	0	0	0	0	0	0.00	0.00
	Cormorant	26	10	1	24	1	0	0	1	2	0.08	0.00
	Horned grebe	4	3	1	1	1	1	1	0	3	0.75	0.00
	Pied-billed grebe	112	68	2	105	3	2	2	0	7	0.06	0.00

Guild	Common name	Total count	Most Observed in One Day	Most Observed Oiled in One Day	No oiling	Trace	Light	Moderate	Heavy	Total oiled	Proportion of Observed Species Oiled	Proportion of Total Birds Oiled
Diving ducks	Lesser scaup	45	21	7	33	1	2	7	2	12	0.27	0.00
	Ring-necked duck	565	199	5	546	15	1	3	0	19	0.03	0.00
	Greater scaup	114	100	0	114	0	0	0	0	0	0.00	0.00
	Canvasback	59	28	4	46	1	7	5	0	13	0.22	0.00
	Bufflehead	856	520	15	747	35	51	23	0	109	0.13	0.01
	Goldeneye	66	59	0	66	0	0	0	0	0	0.00	0.00
	American coot	442	105	5	437	0	4	0	1	5	0.01	0.00
	Hooded merganser	36	17	0	36	0	0	0	0	0	0.00	0.00
	Black scoter	2	1	1	1	0	1	0	0	1	0.50	0.00
	Common merganser	249	47	7	232	12	4	0	1	17	0.07	0.00
	Red-breasted merganser	3	3	0	3	0	0	0	0	0	0.00	0.00
	Ruddy duck	440	170	2	437	3	0	0	0	3	0.01	0.00
Gulls	Herring gull	13451	6294	88	12536	551	242	96	26	915	0.07	0.06
	Laughing gull	118	95	21	94	2	2	20	0	24	0.20	0.00
	Yellow-legged gull	7	7	0	7	0	0	0	0	0	0.00	0.00
	Ring-billed gull	27367	3282	832	21945	2165	2183	902	172	5422	0.20	0.33
	Lesser black-backed gull	18	3	1	17	1	0	0	0	1	0.06	0.00
	Iceland gull	6	4	1	3	3	0	0	0	3	0.50	0.00
	Glaucous gull	3	1	0	3	0	0	0	0	0	0.00	0.00
	Great black-headed gull	5	3	0	5	0	0	0	0	0	0.00	0.00
	Great black-backed gull	4256	2144	56	3787	336	92	35	6	469	0.11	0.03
	Bonaparte's gull	15	5	0	15	0	0	0	0	0	0.00	0.00
	Gull sp.	5822	1422		5557	48	115	86	16	265	0.05	0.02

Guild	Common name	Total count	Most Observed in One Day	Most Observed Oiled in One Day	No oiling	Trace	Light	Moderate	Heavy	Total oiled	Proportion of Observed Species Oiled	Proportion of Total Birds Oiled
Kingfisher, Shorebirds	Belted kingfisher	118	21	3	111	3	4	0	0	7	0.06	0.00
	Ruddy turnstone	11	11	0	11	0	0	0	0	0	0.00	0.00
	Sanderling	55	34	8	47	0	8	0	0	8	0.15	0.00
	Dunlin	1353	781	0	1353	0	0	0	0	0	0.00	0.00
	Purple sandpiper	102	70	0	102	0	0	0	0	0	0.00	0.00
	Western sandpiper	200	200	0	200	0	0	0	0	0	0.00	0.00
	Killdeer	287	146	25	262	0	0	0	25	25	0.09	0.00
	Black-bellied plover	5	5	0	5	0	0	0	0	0	0.00	0.00
	Greater yellowlegs	7	7	0	7	0	0	0	0	0	0.00	0.00
Swans / geese	Greater white-fronted goose	357	80	0	26	1	72	243	15	331	0.93	0.02
	Canada goose	59724	9432	1243	51683	1948	3459	1500	1136	8041	0.13	0.49
	Snow goose	22094	20330	2	22090	3	0	1	0	4	0.00	0.00
	Tundra swan	595	172	14	512	1	26	24	32	83	0.14	0.01
	Mute swan	1773	558	15	1735	24	13	1	0	38	0.02	0.00
	Unknown swan	53	50	0	53	0	0	0	0	0	0.00	0.00
Wading birds	Great egret	60	11	2	55	0	5	0	0	5	0.08	0.00
	Great blue heron	367	38	12	309	12	40	3	3	58	0.16	0.00
	Snowy egret	4	3	0	4	0	0	0	0	0	0.00	0.00
	Glossy ibis	1	1	0	1	0	0	0	0	0	0.00	0.00
	Total Birds	157491	51551	2469	140959	5377	6581	3059	1517	16532		

Appendix I.2. Ratio of total birds observed during ground surveys/number of site visits by date.

Guild	Common name	11/30/04	12/1/04	12/2/04	12/3/04	12/4/04	12/5/04	12/6/04	12/7/04	12/8/04	12/9/04	12/10/04	12/11/04	12/12/04	12/13/04
	# DAILY SITE VISITS	29	17	198	161	232	237	162	181	276	177	91	235	258	43
Dabbling ducks	Wood duck			0.01				0.01							
	Northern pintail		0.12	0.49	0.52	1.22	0.35	1.29	0.14	2.18	1.19	0.02	12.81	0.31	1.21
	American wigeon				0.04	0.09	0.03	0.19		0.02	0.01			0.01	
	Northern shoveler			0.22		0.22	0.11	0.02		0.10		0.02	0.75	0.02	
	Green-winged teal			0.01				0.02	1.17	1.68	0.05		1.18	0.00	1.40
	Blue-winged teal	0.03													
	Mallard	2.41	6.00	2.04	3.32	2.59	2.17	2.78	3.07	2.91	1.35	1.84	2.34	1.17	1.33
	American black duck	0.55	0.06	0.18	0.18	0.49	0.06	0.36	0.07	0.13	0.26	0.15	0.92	0.10	
	Black mallard hybrid									0.01			0.01		
	Gadwall			0.02	0.35		0.17	0.12	0.04	0.40	0.63	0.22	0.09	0.34	
	Muscovy duck			0.01		0.02			0.07	0.05	0.03	0.07	0.00		
	Duck sp.			0.16	0.56	0.03		0.06	0.24	0.01	0.01	0.08			0.12
	Unknown shoveler								0.01						
Diving birds	Red-throated loon							0.01	0.01	0.00				0.00	
	Double-crested cormorant		0.12	0.16	0.19	0.25	0.11	0.12	0.07	0.06	0.03	0.05	0.02	0.05	
	Great cormorant														
	Cormorant		0.12	0.01	0.02	0.00	0.02			0.01			0.00		
	Horned grebe				0.02										
	Pied-billed grebe		0.12	0.01	0.03	0.04	0.01	0.02	0.01	0.03	0.01			0.02	

Guild	Common name	11/30/04	12/1/04	12/2/04	12/3/04	12/4/04	12/5/04	12/6/04	12/7/04	12/8/04	12/9/04	12/10/04	12/11/04	12/12/04	12/13/04
Diving ducks	Lesser scaup			0.02			0.01			0.03	0.01		0.03		
	Ring-necked duck			0.01	0.19	0.08	0.22	0.15	0.15	0.72	0.34		0.20	0.21	0.02
	Greater scaup					0.03	0.03								
	Canvasback				0.02	0.01	0.12			0.03	0.03				
	Bufflehead	0.21	0.18	0.14	0.17	0.32	0.22	0.09	0.13	0.05	0.06	0.04	0.06	0.05	0.02
	Goldeneye						0.01		0.02						
	American coot			0.32	0.47	0.45	0.05	0.41	0.07	0.21	0.06		0.01	0.01	0.12
	Hooded merganser		0.06			0.07	0.00	0.01		0.01	0.01	0.07		0.01	
	Black scoter										0.01			0.00	
	Common merganser			0.06	0.01		0.08	0.02		0.05					0.09
	Red-breasted merganser														
	Ruddy duck		0.06	0.02	0.48	0.08	0.53	0.02	0.02	0.01	0.05	0.01	0.03	0.03	0.05
Gulls	Herring gull		**6.06**	**31.79**	0.68	**1.47**	**2.16**	**1.63**	0.15	**1.25**	0.70	0.12	**2.09**	0.17	**2.60**
	Laughing gull			0.48			0.05	0.01		0.00			0.03	0.00	
	Yellow-legged gull									0.03					
	Ring-billed gull	**1.97**	**36.24**	**12.60**	**8.30**	**13.93**	**10.68**	**11.06**	**4.72**	**11.89**	**4.58**	**1.01**	**2.56**	**3.79**	**1.91**
	Lesser black-backed gull														
	Iceland gull														
	Glaucous gull												0.00		
	Great black-headed gull									0.01					
	Great black-backed gull		0.41	**10.83**	0.30	0.19	0.65	**1.04**	0.06	0.62	0.07	0.05	0.74	0.40	0.28
	Bonaparte's gull			0.03				0.03						0.02	
	Gull sp.	**7.69**	**7.24**	**7.18**	**5.53**	**2.74**	**1.67**	0.02	0.22			0.09	0.09	0.43	

Guild	Common name	11/30/04	12/1/04	12/2/04	12/3/04	12/4/04	12/5/04	12/6/04	12/7/04	12/8/04	12/9/04	12/10/04	12/11/04	12/12/04	12/13/04
Kingfisher/ Shorebirds	Belted kingfisher		0.18	0.11	0.02	0.05	0.05	0.06	0.03	0.01	0.02	0.02	0.05	0.02	0.02
	Ruddy turnstone														
	Sanderling							0.02	0.08	0.01					
	Dunlin									0.44			**3.32**		
	Purple sandpiper														
	Western sandpiper												0.85		
	Killdeer			0.19	0.09	0.63	0.16					0.01			
	Black-bellied plover									0.02					
	Greater yellowlegs												0.03		
Swans / geese	Greater white-fronted goose				0.17	0.34	0.18	0.25	0.23	0.17		0.04	0.00	0.00	0.19
	Canada goose	0.55	**82.53**	**12.65**	**34.74**	**20.29**	**13.97**	**13.83**	**8.20**	**26.38**	**13.93**	**11.87**	**40.14**	**7.71**	**15.56**
	Snow goose			**1.02**		**2.59**	0.02			**3.39**			**86.51**		
	Tundra swan			0.30	0.09	0.44	0.02	0.14	0.04	0.20	0.19	0.07	0.18	0.67	0.44
	Mute swan		0.06	0.02	**3.47**	0.46	0.99	0.92	0.27	0.45	0.76	0.26	0.35	0.24	0.09
	Unknown swan	0.03						0.31				0.01			
Wading birds	Great egret	0.07		0.01		0.05	0.01	0.01		0.01	0.01	0.01	0.02	0.02	
	Great blue heron	0.21	0.35	0.16	0.09	0.14	0.11	0.12	0.16	0.06	0.08	0.14	0.09	0.07	0.02
	Snowy egret					0.01		0.01							
	Glossy ibis														

Guild	Common name	12/14/04	12/15/04	12/16/04	12/17/04	12/19/04	12/21/04	12/22/04	12/23/04	12/28/04	12/30/04	1/4/05	1/5/05	1/6/05	1/10/05
	# DAILY SITE VISITS	202	122	97	205	2	114	84	29	96	58	48	6	49	19
Dabbling ducks	Wood duck														
	Northern pintail	0.20	0.25	0.02	0.58		0.02				0.02	0.06		0.02	
	American wigeon		0.04									0.04		0.02	
	Northern shoveler		0.43												
	Green-winged teal	0.36	0.13		0.00										
	Blue-winged teal		0.03												
	Mallard	**1.76**	**2.48**	**4.72**	**1.97**		**1.64**	**1.36**	**1.90**	0.86	**2.41**	0.63	**12.17**	**1.06**	**2.74**
	American black duck	0.49	0.37	0.52	0.20		0.26			0.30	0.09	0.04			
	Black mallard hybrid				0.00										
	Gadwall	0.08	0.06		0.09						0.07				
	Muscovy duck		0.15		0.05										
	Duck sp.	0.03		0.05	0.07		0.12				0.09				
	Unknown shoveler										0.10				
Diving birds	Red-throated loon														
	Double-crested cormorant	0.10			0.00		0.10								
	Great cormorant									0.01					
	Cormorant		0.08	0.01											
	Horned grebe							0.01							
	Pied-billed grebe		0.56		0.00			0.02		0.01					

Guild	Common name	12/14/04	12/15/04	12/16/04	12/17/04	12/19/04	12/21/04	12/22/04	12/23/04	12/28/04	12/30/04	1/4/05	1/5/05	1/6/05	1/10/05
Diving ducks	Lesser scaup				0.01						0.36				
	Ring-necked duck	0.12	0.01		0.11			0.01							
	Greater scaup			1.03											
	Canvasback	0.01	0.04		0.01					0.02					
	Bufflehead	0.03	0.02	5.36	0.13		0.03	0.11		0.04	0.02				
	Goldeneye			0.61	0.00										
	American coot	0.00	0.02	0.03			0.16	0.01		0.01	0.02	0.04			
	Hooded merganser			0.02	0.00										
	Black scoter														
	Common merganser	0.01	0.02	0.26	0.04		0.23	0.46		0.49	0.10	0.40		0.39	
	Red-breasted merganser			0.03											
	Ruddy duck	0.01	0.03	1.75											
Gulls	Herring gull	0.88	4.26	1.20	0.58		0.54	8.74	0.03	9.04	0.93	22.75		0.20	48.58
	Laughing gull		0.01												
	Yellow-legged gull														
	Ring-billed gull	4.66	12.85	12.14	4.89	46.50	7.49	5.98	0.38	7.32	5.02	3.54	17.50	11.24	33.53
	Lesser black-backed gull		0.02					0.02				0.06			0.58
	Iceland gull							0.01				0.08			0.05
	Glaucous gull							0.01							0.05
	Great black-headed gull	0.01													
	Great black-backed gull	0.16	1.70	0.73	0.28	1.00	0.82	2.98	0.24	0.66	0.50	4.06		0.63	8.58
	Bonaparte's gull				0.00										
	Gull sp.	3.12	2.59	0.02	3.06		0.78		9.86						

Guild	Common name	12/14/04	12/15/04	12/16/04	12/17/04	12/19/04	12/21/04	12/22/04	12/23/04	12/28/04	12/30/04	1/4/05	1/5/05	1/6/05	1/10/05
Kingfisher/ Shorebirds	Belted kingfisher	0.04	0.02	0.05	0.02		0.02	0.01	0.03		0.03	0.02			
	Ruddy turnstone		0.09												
	Sanderling		0.28	0.02											
	Dunlin			**4.64**											
	Purple sandpiper	0.16	0.57												
	Western sandpiper														
	Killdeer	0.05		0.01	0.18			0.01							
	Black-bellied plover														
	Greater yellowlegs														
Swans / geese	Greater white-fronted goose		0.02		0.12		0.11	0.02		0.15	0.19				
	Canada goose	**18.21**	**12.34**	**16.69**	**16.36**		**18.58**	**3.42**	**13.90**	**2.21**	**6.93**	**2.63**	**68.00**	**10.80**	**45.11**
	Snow goose	0.08	0.01				0.02								
	Tundra swan	0.05			0.09		0.04				0.17			0.14	
	Mute swan	0.32			0.64		0.09	0.15		0.14	0.14				
	Unknown swan				0.00										
Wading birds	Great egret	0.04		0.03	0.02		0.05		0.07	0.01		0.06			
	Great blue heron	0.11	0.07	0.14	0.19		0.14	0.05	0.03	0.05	0.10	0.02		0.04	
	Snowy egret														
	Glossy ibis	0.00													

Appendix I.3. Summary of aerial survey data. "P" indicates that not all survey segments in an area (e.g., "New Jersey-North") were flown; "F" indicates that all shoreline survey segments in an area were flown.

Guild	Common name	11/28/2004	11/29/2004	11/30/2004	12/2/2004	12/3/2004	12/5/2004	12/9/2004	12/13/2004	12/15/2004	12/16/2004	12/21/2004
NUM. SEGMENTS FLOWN (of 23 total)		**4**	**3**	**8**	**19**	**5**	**23**	**10**	**12**	**11**	**4**	**12**
COVERAGE BY AREA	**Delaware**				**F**		**F**			**F**	**P**	
	New Jersey - North	**P**	**P**	**P**	**F**		**F**	**P**	**F**			**F**
	New Jersey - South			**P**	**F**		**F**			**F**	**P**	
	Pennsylvania			**P**		**F**	**F**	**P**	**F**			**F**
Dabbling ducks	American black duck	261	109	135	8147	70	3656	1199	1252	3519	4710	2895
	American wigeon	0	0	0	0	0	61	0	0	45	0	0
	Blue-winged teal	0	0	0	0	0	0	0	0	1	0	0
	Gadwall	35	0	20	15	0	423	35	0	0	4	10
	Green-winged teal	15	25	30	595	0	895	195	540	998	390	0
	Mallard	413	86	130	2262	257	3375	2191	2169	967	4442	3490
	Northern pintail	10	0	0	20	0	1075	1455	2320	38	1246	115
	Northern shoveler	0	0	0	0	0	0	0	0	0	40	0
	Unknown dabbling duck	0	0	0	5	0	333	0	0	140	0	0
Diving birds	Common loon	0	0	0	0	0	3	0	0	0	0	0
	Cormorant sp.	2	5	4	30	21	46	40	54	0	0	65
	Double-crested cormorant	0	0	0	9	0	1	0	0	47	1	0
	Red-throated loon	0	0	0	0	0	5	0	0	0	0	0
	American coot	70	0	70	50	0	90	0	50	0	0	30

Guild	Common name	11/28/2004	11/29/2004	11/30/2004	12/2/2004	12/3/2004	12/5/2004	12/9/2004	12/13/2004	12/15/2004	12/16/2004	12/21/2004
NUM. SEGMENTS FLOWN (of 23 total)		**4**	**3**	**8**	**19**	**5**	**23**	**10**	**12**	**11**	**4**	**12**
Diving ducks	Black scoter	0	0	0	2	0	0	0	0	0	0	0
	Bufflehead	100	0	70	63	5	110	15	62	14	10	25
	Canvasback	0	0	5	5	0	45	5	35	16	0	155
	Common merganser	0	0	0	14	0	6	0	0	0	0	135
	Greater scaup	0	0	0	9	0	0	0	0	0	0	0
	Hooded merganser	0	0	0	10	0	7	5	0	0	4	60
	Long-tailed duck	0	0	0	1	0	0	0	0	13	0	0
	Red-breasted merganser	27	2	5	5	0	10	0	5	1	0	17
	Ring-necked duck	5	0	0	0	0	0	95	90	0	0	50
	Ruddy duck	90	0	100	213	0	218	130	0	48	0	25
	Lesser scaup	75	0	50	83	0	265	95	10	12	0	10
	Scoter sp.	0	0	0	5	0	0	0	0	0	0	0
	Surf scoter	0	0	0	0	0	3	0	0	0	0	0
	Unkown diving duck	0	0	0	1	0	2	0	0	9	0	0
Gulls	Great black-backed gull	0	0	0	108	0	238	0	0	18	3	0
	Gull sp.	1015	235	1980	3295	1155	7662	1897	4899	1160	200	4140
	Herring gull	0	0	0	57	0	1157	0	0	88	26	0
	Northern gannet	0	0	0	10	0	102	0	0	0	0	0
	Ring-billed gull	0	0	0	1114	0	1149	0	0	844	0	0
Shorebirds	Unknown shorebird	0	0	0	1448	0	355	0	0	297	0	5
Swans / geese	Canada goose	1271	277	2422	6911	1068	12373	5313	6308	4468	3915	8250
	Goose sp.	0	0	0	0	0	0	0	0	20	0	0
	Mute swan	1	0	0	35	1	45	9	8	133	35	4
	Greater white-fronted goose	0	0	0	0	0	0	0	0	0	0	0
	Snow goose	0	0	0	3438 0	0	64260	0	0	57220	36002	0
	Swan sp.	0	0	0	0	0	152	0	0	89	0	0
	Tundra swan	0	11	9	178	0	90	29	20	0	64	30
Wading birds	Great blue heron	2	1	0	29	0	32	8	2	4	3	5
	Great egret	0	4	0	14	0	1	0	1	0	1	