N00213.AR.000274
NAS KEY WEST
5090.3a

LETTER REGARDING BLASLAND, BOUCK AND LEE RESPONSES TO FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION COMMENTS ON SUPPLEMENTAL ASSESSMENT REPORT FOR HAMACA HAWK MISSILE SITE WITH ATTACHMENTS NAS KEY WEST FL
4/20/1998
BLASLAND, BOUCK AND LEE

0110

BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

Sent Via U. S. Mail

April 20, 1998

Mr. Jorge Caspary, P.G.
Florida Department of Environmental Protection
Technical Review Section
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Re: DEP Facility No. 449402036
NAS Key West
Hamaca Hawk Missile Site
Supplemental Assessment Report

Project: 880.11

Dear Mr. Caspary:

Blasland, Bouck & Lee, Inc. (BBL) has addressed the concerns identified in your review letter dated September 25, 1997, and attached Memorandum dated September 2, 1997, regarding the Hamaca Hawk Missile Site Contamination Assessment Report (CAR). Additional telephone conversations between the Florida Department of Environmental Protection (FDEP) (you and David Grabka) and me, on October 10, 1997 and December 10, 1997, modify the requests in the September 2 memorandum. These modifications are addressed with the appropriate response to memorandum comments below.

FDEP Comment

1. **A monitoring well should be installed approximately 30 feet down gradient of the former above-ground storage tank's location, between MW-3 and the pond to the southwest, to determine if contaminants are migrating toward or impacting the pond. Surface water criteria for Polynuclear Aromatic Hydrocarbons (PAHs) are several orders of magnitude lower than for groundwater of low yield/poor quality. The well should be sampled and analyzed for VOHs, VOAs, SVOAs, and TRPH by EPA Methods 601, 602, and FL-PRO.**

Response

The pond exists within a few feet west of MW-3, with a sharp, approximate 4 foot drop from the former above-ground storage tank (AST) pad to the pond. A conversation between FDEP and BBL on October 10, 1997, concluded that the well would not be required, since there is not enough room for another well

15741 Vinola Court • Montverde, Florida 34756
Tel/Fax (407) 469-3165

between MW-3 and the pond, but a surface water sample should be collected in that location and sampled for Semi-Volatile Organic Aromatics (SVOAs) only.

On December 10, 1997, BBL personnel could not collect a surface water sample adjacent to MW-3 because the pond was partially dry. In a telephone conversation with FDEP on that day, it was decided that a sediment sample of the pond bottom adjacent to MW-3 would be accepted instead of the surface water sample. The sediment sample should be analyzed for EPA Methods 8020, 8100, and Total Recoverable Petroleum Hydrocarbons (TRPH) by FL-PRO, according to FDEP.

The sediment sample SED-1 (**Figure 1**) was collected approximately 6 inches below land surface (BLS) using a decontaminated stainless steel handauger. The sample was dark gray to brown with organics and saturated. The sample was placed in sample containers prepared by the laboratory and placed in a cooler under ice. The sample was submitted to Savannah Environmental Laboratories, Inc. for analysis of EPA Methods 8020 and 8100 parameters, and total recoverable petroleum hydrocarbons (TRPH) by FL-PRO.

The laboratory report for SED-1 indicated that all parameters were below the laboratory detection limit for Purgeable Aromatics, TPH FL-PRO, and PAHs. No SQAG is established for Purgeable Aromatics or TPH, but the detection limit of 730 micrograms per kilogram (ug/Kg) for PAHs is higher than the sediment quality assessment guidelines (SQAGs) for marine and coastal waters (FDEP, 1994). Therefore, BBL resampled sediment at location SED-1 on February 19, 1998, using the same sampling method, and for the same analytical parameters as before. For quality assurance/quality control, an equipment blank was collected of the sampling equipment rinseate following decontamination and analyzed for the same parameters at the samples. The results of the February 19, 1998, sampling event indicated that only acenaphthene, with an estimated concentration of 32 ug/Kg, was detected above the SQAG Threshold Effects Level (TEL) of 6.71, but less than the Probable Effects Level (PEL) of 88.9 ug/Kg. The TEL represents the upper limit of the range of sediment contaminant concentrations dominated by no effects data entries (i.e., the minimal effects range). The PEL defines the lower limit of the range of contaminant concentrations that are usually or always associated with adverse biological effect. SQAGs should not be used directly as numerical cleanup levels, according to the FDEP. SQAGs are guidance numbers rather than strict regulatory criteria. The laboratory was not able to reach the TEL concentration for acenaphthylene, dibenzo(a,h) anthracene, and 2-methylnaphthalene; however, the detection limits for these parameters were all below the PEL guideline. The sediment samples (SED-1) were collected in an area that is intermittently dry and wet. This area is separated from other ponds in the area by an earthen berm. The analytical results were well below Chapter 62-770, Florida Administrative Code (FAC) soil cleanup target levels for those parameters.

The sediment analytical results for both sampling events are summarized in **Table 2** and the complete laboratory analytical reports with chain-of-custody records, and field sampling logs is provided in **Attachments A** and **B**, for the December 10, 1997 and February 19, 1998 sampling dates, respectively.

BBL was able to collect a surface water sample on December 10, 1997, approximately 40 feet southwest of MW-3, at the location labeled SW-1 on **Figure 1**. The surface water sample (SW-1) was collected from the surface using a decontaminated glass beaker clamped to an aluminum rod. The water depth at the sample location was less than one foot. Temperature, specific conductance, and pH were measured in the field, as indicated on **Table 1**. The sample was placed in a sample container prepared by the laboratory and stored in a cooler under ice. The sample was transported to Savannah Laboratories & Environmental Services, Inc. for analysis by EPA Method 610.

The laboratory analytical report for the December 10, 1997 sampling event SW-1 indicated that all parameters analyzed were below the laboratory detection limits of 10 micrograms per liter (ug/L) (**Table 3**). However, the target concentrations for surface water identified in Chapters 62-770, FAC and 62-302, FAC are less than 10 ug/L, except for fluorene and naphthalene. Therefore, BBL resampled the surface

water at location SW-1 on February 19, 1998, for the same parameters, using the same sampling method. The results of the February 19, 1998, sampling event indicated that none of the parameters analyzed were above the target levels; however, the laboratory could not obtain a detection limit as low as the target level for eight out of 14 parameters. The surface water had no visible petroleum sheen, but was in an area of abundant vegetation. As stated previously, the intermittent pond is separated from other area ponds by an earthen berm.

The complete analytical reports, chain-of-custody records, and field logs for the December 10, 1997, and February 19, 1998, sampling events, are provided in **Attachments A** and **B**. Surface water analytical results are provided in **Table 3**.

FDEP Comment

2. **MW-1 and MW-3 should be resampled and analyzed for VOHs, VOAs, SVOAs by EPA Methods 601, 602, 610 and FL-PRO.**

Response

Monitoring wells MW-1 and MW-3 were resampled on December 10, 1997. For quality assurance/quality control an equipment blank was collected of the sampler rinseate following decontamination and analyzed for the same parameters as the samples. A trip blank was prepared by the laboratory and transported to and from the site in the sample cooler. To ensure the presence of formation water in the wells and to determine the groundwater gradient, the water levels in all three wells on site were measured with an electronic water level indicator to 0.01 foot. Hydraulic gradient maps for December 10, 1997 and February 19, 1998, are provided as **Figures 2** and **3**. The data indicates that the groundwater flow was predominantly toward the south at the times indicated on **Table 4**, for both dates.

Wells MW-1 and MW-3 were purged of three to five well volumes until consecutive pH, specific conductance, and temperature varied no more than 5 percent. **Table 1** summarizes the final pH, temperature, specific conductance readings taken prior to sampling. The field analytical equipment was calibrated according the manufacturer's directions. Purging was accomplished using a peristaltic pump with new, decontaminated Teflon® tubing. Purge water was discharged onto the ground in the vicinity of the well and not allowed to flow off site or into the pond area.

Once purging was complete, samples were collected using Teflon® bailers. The samples were placed in laboratory-prepared (appropriately preserved) sample containers, stored under ice, and shipped via overnight courier in sealed coolers to Savannah Laboratories, Inc.

Groundwater Laboratory analytical result for the December 10, 1997, sampling event (**Table 5**) indicated no dissolved concentrations of petroleum hydrocarbons above the target levels established in Chapter 62-770, FAC. Only 1-methynaphthalene with a concentration of 39 ug/L and TRPH with a concentration of 1.2 milligrams per liter (mg/L) were detected in the groundwater sample from monitor well MW-3..

The complete laboratory report for groundwater sampling, chain-of-custody record, and field sampling logs, are provided in **Attachment A**. **Figure 4** illustrates the analytical results of the groundwater samples collected on December 10, 1997, as well as the June 4, 1997 sampling results. Groundwater sampling results indicate that limited impacts to groundwater from petroleum is present in the vicinity of MW-3. Apparently, the minor groundwater impact on site is being eliminated through natural attenuation All parameter concentrations are less than the limits allowed for No Further Action.

3. **A soil sample should be collected in the immediate vicinity of MW-3 at approximately 3 feet below land surface. The soil should be analyzed to determine if excessively contaminated soil is potentially a continuing source of groundwater contamination. The soil should be analyzed by EPA Methods 8020, 8100 and FL-PRO or their equivalents.**

Response

A soil sample was collected on December 10, 1997, from 3 feet BLS adjacent to MW-3 at the location shown on **Figure 1** labeled S-11. The sample was collected using a Geoprobe corer with disposable Teflon® sleeve. The sample consisted of white limestone fill and was moist. Soil sample S-11 was placed in sample containers prepared by the laboratory and stored under ice in the sample cooler. The sample was transported via overnight courier to Savannah Laboratories for analysis of EPA Methods 8020, 8100, and TPH FL-PRO.

The analytical results indicated that all parameters were well below the Chapter 62-770, FAC target levels, except TPH. TPH was detected in the sample at a concentration of 3,500 milligrams per kilogram (mg/Kg), which is above the target level of 350 mg/Kg. Analytical results are summarized on **Table 6** and the complete laboratory analytical report with chain-of-custody and field logs is provided in **Attachment A**.

Conclusions and Recommendations

All sampling was performed in accordance with BBL's Comprehensive Quality Assurance Plan (ComQAP) No. 880552G approved by FDEP. The laboratory used for analytical services (Savannah Laboratories & Environmental Services, Inc.) also has an approved ComQAP on file with FDEP. The ComQAP describes the methods utilized by BBL personnel for collection, preservation, transportation, and analysis of soil, sediment, surface water, and groundwater samples.

The assessment was performed in accordance with the requirements of Chapter 62-770, Florida Administrative Code. The following summarizes the complete investigation findings:

1. No source for leaking of petroleum products is currently present on site. The tank and lines have been removed.
2. The site is contaminated by Kerosene Analytical Group constituents. The source of the contamination may be from minor spills or overfills occurring over a number of years.
3. No free product has been detected in any of the soil borings or monitor wells at the site.
4. The groundwater table is generally encountered at the site between 4 and 5 feet BLS. The groundwater flow direction is most-likely influenced by the tides and flow generally in a westerly and/or southerly direction.
5. No potable or irrigation wells exist within one-half mile radius of the site.
6. The most recent sampling analyses indicated that dissolved petroleum constituents were not detected in the groundwater at concentrations above Chapter 62-770, FAC target levels. Only groundwater from well MW-3 indicated any impacts from petroleum hydrocarbons. The concentrations from the February, 1998 sampling event were less than the December, 1998 sampling event.
7. The former AST area and surrounding land is owned by the Navy.
8. Impacts to surface water were not detected at the detection limit achievable by the laboratory. The pond adjacent to the former AST pad is separated from other surface water bodies in the site area by an earthen berm.
9. Impacts to sediment in the pond bottom adjacent to well MW-3 were not detected above SQAG PEL levels.

10. No "excessively contaminated" soil (as based on organic vapor analysis) is present on site, except 1 foot above the water table in the immediate vicinity of well MW-3. The only parameter analyzed in a soil sample collected 3 feet BLS at this location above regulatory limits was TPH.

The only parameter of concern above regulatory levels remaining in any of the site media is elevated TPH in the vicinity of MW-3. The reduction in contaminant concentrations in the groundwater on site since the first sampling event in June 1997, indicates that natural attenuation is effectively reducing contaminant concentrations in the site media. Removing the minor amount of contaminated soil in the vicinity of MW-3 would result in unnecessary expense, since the site is in an area of Class G-III groundwater quality, no drinking water wells are in Key West, the remaining contaminant concentrations are quite low, and the intermittent pond adjacent to the former AST pad is apparently not hydraulically connected to other ponds in the area. Based on these considerations and the conclusions listed above, BBL, on behalf of the Navy, is requesting "No Further Action" for this site.

If you have any questions regarding this report, please call me at (407) 469-3165.

Sincerely,

BLASLAND, BOUCK & LEE, INC.

Amanda Shearer, P.G.
Project Manager
FL PG No. 01116

cc: Jim Simmen, NAS Key West
John Alonso, BBL

References:

Blasland, Bouck & Lee, Inc., August 1997, Contamination Assessment Report, Hamaca Hawk Missile Site, Naval Air Station Key West, Key West, Florida.

Florida Department of Environmental Protection , 1994, Approach to the Assessment of Sediment Quality in Florida Coastal Waters, Volumes 1 through 4. Prepared by MacDonald Environmental Sciences Ltd.

Table 1

Final Water Quality Field Measurements

Supplemental Assessment Report
Hamaca Hawk Missile Site
Naval Air Station Key West, Florida

Well	pH	Temp °F	Specific Conductance (µmhos/cm)
Sample Date: December 10, 1997			
MW-1	8.90	80.3	4,081
MW-2	NS	NS	NS
MW-3	8.00	82.0	3,000
SW-1	8.97	86.0	9,340
Sample Date: February 19, 1998			
SW-1	9.4	80.7	17,950

Notes: µmhos/cm = Micromhos per centimeter
NS = Not Sampled
Source: Blasland, Bouck & Lee, Inc., 1997, 1998

Table 2

Summary of Analytical Data
Sediment Sample SED-1

Supplemental Assessment Report
Hamaca Hawk Missile Site
Naval Air Station, Key West, Florida

Parameter	Concentration Sample Date 12/10/97	Concentration Sample Date 2/19/98	SQAG TEL/PEL
Acenaphthene	<730	32*J	6.71/88.9
Acenaphthylene	<730	29U*	5.87/128
Anthracene	<730	9.8	46.9/245
Benzo(a)pyrene	<730	44	88.8/763
Benzo(g,h,i)perylene	<730	15U*	NE
Benzo(b,k)fluoranthene	<730	53	NE
Benzo(a)anthracene	<730	42	74.8/693
Chrysene	<730	47	108/846
Fluoranthene	<730	93	113/1,494
Fluorene	<730	3.6*J	21.2/144
Indeno(1,2,3-cd)pyrene	<730	33	NE
Dibenzo(a,h)anthracene	<730	15U*	6.22/135
Naphthalene	<730	29U	34.6/391
Phenanthrene	<730	57	86.7/544
Pyrene	<730	70	153/1,398
1-Methylnaphthalene	<730	29U*	NE
2-Methylnaphthalene	<730	29U*	20.2/201
TPH - FL-PRO	<44	NA	NE

Notes:
All results in micrograms per kilogram (µg/kg)
NA = Not Analyzed
NE = None Established
SQAG = Sediment Quality Assessment Guidelines
PEL = Probable Effects Level
TEL = Threshold Effects Level
F65 = Elevated detection limit due to sample matrix interference.
J = Estimated value; tentatively identified compound.
U = Compound was analyzed, but not detected.
* = Detection limit above SQAG TEL
Source: Blasland, Bouck & Lee, Inc. 1997, 1998; Savannah Laboratories, Inc., 1997, 1998

Table 3

Summary of Analytical Data
Surface Water Sample SW-1

Supplemental Assessment Report
Hamaca Hawk Missile Site
Naval Air Station Key West, Florida

Parameter	Concentration Sample Date 12/10/97	Concentration Sample Date 2/19/98	Target /1
Acenaphthene	<10	<1.0U	3
Acenaphthylene	<10	<1.0U*	<0.031
Benzo(a)pyrene	<10	<0.20U*	<0.031
Benzo(g,h,i)perylene	<10	<0.50U*	<0.031
Benzo(b,k)fluoranthene	<10	<0.20U*	<0.031
Chrysene & Benzo(a)anthracene	<10 <10	<0.20U*	<0.031
Fluoranthene	<10	<0.50U*	0.3
Fluorene	<10	<0.50U	30
Indeno(1,2,3-c,d)pyrene & Dibenzo(a,hi)anthracene	<10 <10	<0.50U*	<0.031
Naphthalene	<10	1.0U	20
Phenanthrene	<10	0.20U*	<0.031
Anthracene	<10	0.20U	0.3
Pyrene	<10	0.090J	0.3
2-Methylnaphthalene	<10	1.0U	NE

Notes:
NE = Not Established
All results in micrograms per liter (µg/L)
/1 = 62-770. FAC or 62-302. FAC
J = Estimated value; tentatively identified compound
U = Compound was analyzed, but not detected at laboratory detection limit
* = Detection limit above target concentration
Source: Blasland, Bouck & Lee, Inc., 1997, 1998; Savannah Labs, 1997, 1998

Table 4

Groundwater Elevations

Supplemental Assessment Report
Hamaca Hawk Missile Site
Naval Air Station Key West, Florida

Well	TOC Elevation (ft MSL)	Depth to Water at 1015 12/10/97	Water-Table Elevation at 1015 12/10/97	Depth to Water at 1100 2/19/98	Water-Table Elevation at 1100 2/19/98
MW-1	3.58	4.30	-0.72	4.40	-0.82
MW-2	4.12	4.68	-0.56	4.77	-0.65
MW-3	3.57	4.12	-0.55	4.23	-0.66

Notes: All depth to water measurements taken from top of casing in feet.
ft MSL = Feet Mean Sea Level
TOC = Top of Casing
Benchmark assumed 5.00 ft MSL
Tides for Key West: 12/10/97: Low - 0015; 1154; High - 0701; 1843
02/19/98: Low - 0806; 2204; High - 0305; 1450
Source: Blasland, Bouck & Lee, Inc., 1997, 1998

Table 5

Summary of Groundwater Analytical Results

Supplemental Assessment Report
Hamaca Hawk Missile Site
Naval Air Station Key West, Florida

Sample ID	Benzene (µg/L)	Total VOAs /1 (µg/L)	Total Naphthalenes /2 (µg/L)	Total PAHs /3 (µg/L)	TRPH /4 (mg/L)	cis-1,2-DCE /5 (µg/L)
Sample Date: June 4, 1997						
MW-1	<1.0	BDL	BDL	<1.0	<1.0	1.8
MW-2	<1.0	BDL	BDL	<1.0	<1.0	<1.0
MW-3	<1.0	4.6	94	153	5.3	<1.0
Dup-1 (MW-3)	<1.0	7.3	123	201	NS	<1.0
Sample Date: December 10, 1997						
MW-1	<1.0	BDL	<10	<10	<0.30	<1.0
MW-3	<1.0	BDL	39*	<10	1.2	<1.0
62-770 Target Level	1	NE	NE	Detection Limit (10 max.)	5	70

Notes:
<1.0 = Below detection limit specified.
BDL = Combined analytes are below detection limit (detection limits vary).
µg/L = Micrograms per liter
mg/L = Milligrams per liter
NE = Not Established
NS = No Sample
Shading indicates a parameter above target level.
/1 Total Volatile Organic Aromatics = Sum of benzene, toluene, ethylbenzene, and xylene.
/2 Total Naphthalenes = Sum of naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene.
/3 Total PAHs = Sum of Polynuclear Aromatic Hydrocarbons.
/4 TRPH = Total Recoverable Petroleum Hydrocarbons. For 6/4/97 sample date - EPA Method 418.1, For 12/10/97 sample date - FL-PRO.
/5 cis-1,2-DCE = cis-1,2-dichloroethylene.
*39 µg/L 1-Methylnaphthalene - no target level established
Sources: Blasland, Bouck & Lee, Inc., 1997; Savannah Laboratories and Environmental Services, Inc., 1997.

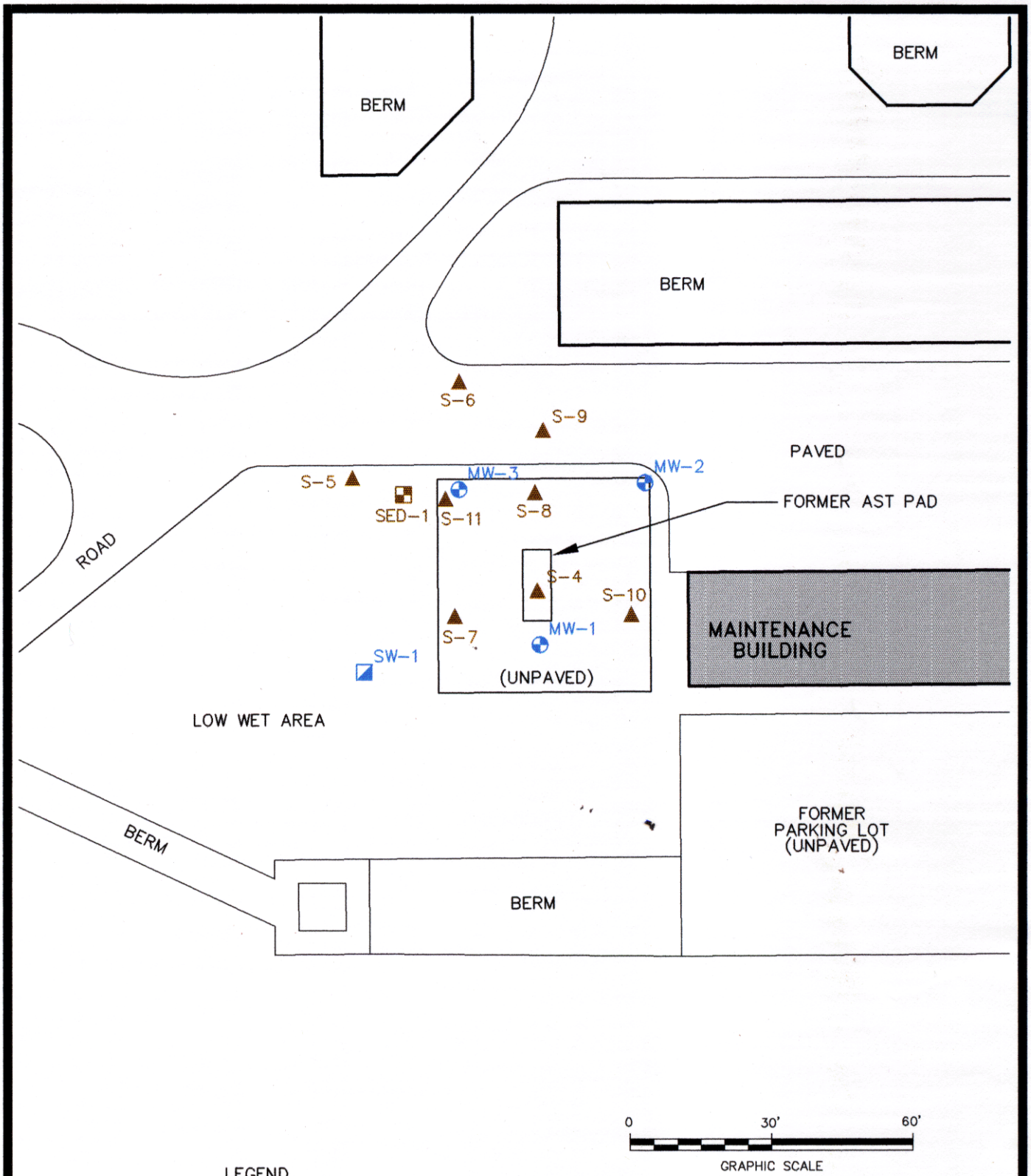
Table 6

Summary of Analytical Data
Soil Sample S-11
Sample Date: December 10, 1997

Supplemental Assessment Report
Hamaca Hawk Missile Site
Naval Air Station Key West, Florida

Parameter	Concentration (mg/kg)	Target /1 (mg/kg)
Acenaphthene	<7.1	2,300
Acenaphthylene	20	1,100
Anthracene	<7.1	19,000
Benzo(a)anthracene	<7.1*	1.4
Benzo(a)pyrene	<7.1*	0.1
Benzo(b)fluoranthene	<7.1*	1.4
Benzo(g,h,i)perylene	<7.1	2,300
Benzo(k)fluoranthene	<7.1	15
Chrysene	<7.1	140
Dibenzo(a,h)anthracene	<7.1*	0.1
Fluoranthene	<7.1	2,800
Fluorene	21	2,100
Indeno(1,2,3-c,d)pyrene	<7.1*	1.5
Naphthalene	15	1,000
Phenanthrene	<7.1	1,900
Pyrene	<7.1	2,200
Benzene	<0.0054	1.1
Ethylbenzene	<0.0054	240
Toluene	<0.0054	300
Total Xylenes	<0.0054	290
1,2-Dichloroethane	<0.0054	0.6
MTBE	<0.054	350
TPH FL-PRO	3,500	350

Notes:
mg/kg = Milligrams per kilogram
/1 = FAC, Chapter 62-770
Shaded box indicates parameter above targe concentration
* = detection limit above target concentration
Source: Blasland, Bouck & Lee, Inc., 1997; Savannah Labs, Inc., 1997



LEGEND

MW-1 MONITORING WELL

S-8 SOIL BORING

SED-1 SEDIMENT SAMPLE

SW-1 SURFACE WATER SAMPLE

NAS KEY WEST
HAMACA HAWK MISSILE SITE

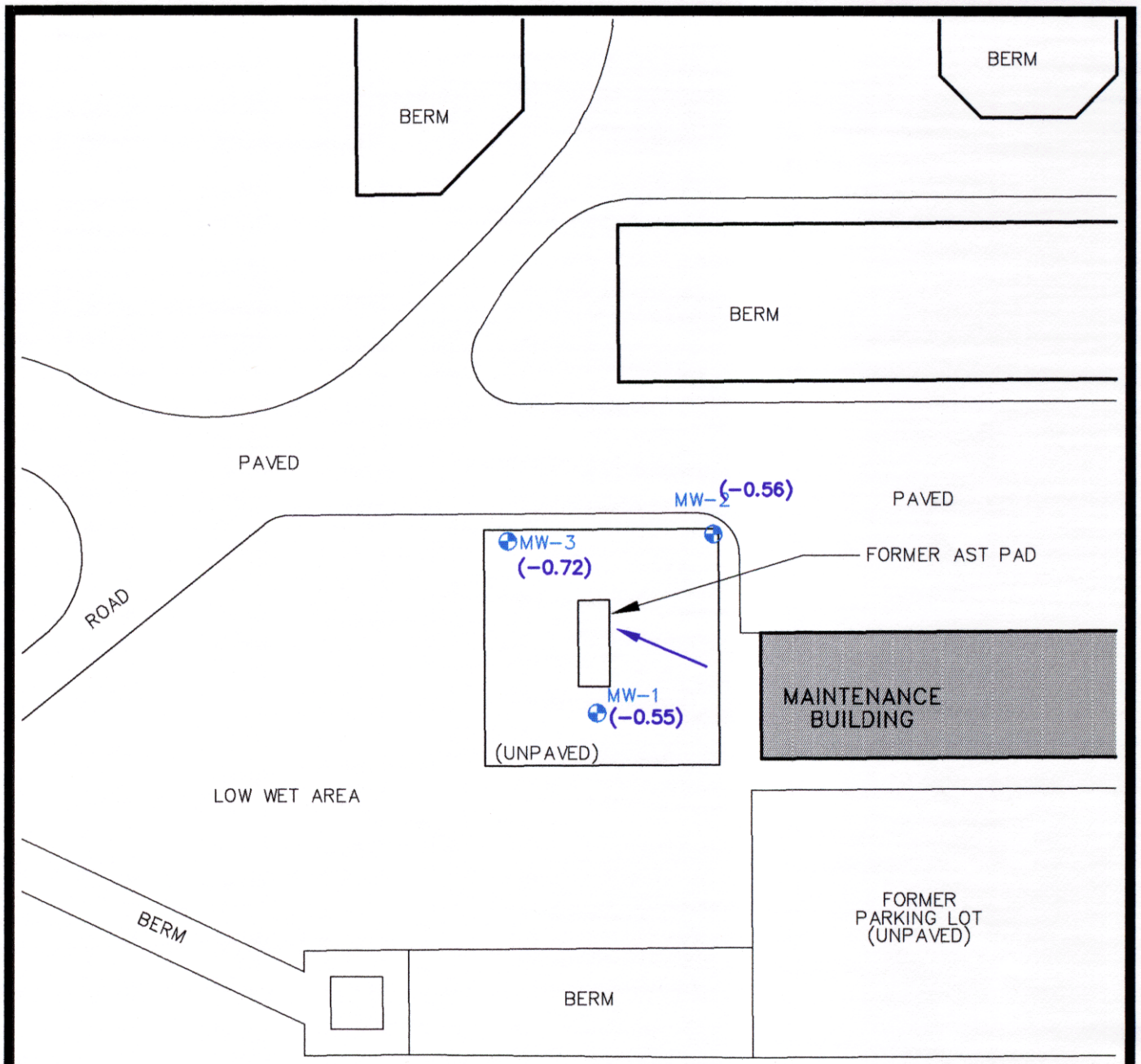
SUPPLEMENTAL ASSESSMENT REPORT

SITE MAP

BBL BLASLAND, BOUCK & LEE, INC. *engineers & scientists*

FIGURE **1**

P: STD-PCP\AP
1/13/98 TAM-54-JAR
880/11/88011SM1.DWG



LEGEND

MW-1 MONITORING WELL

(-0.72) RELATIVE WATER TABLE ELEVATION (FEET, MEAN SEA LEVEL)

GENERAL DIRECTION OF GROUNDWATER FLOW

0 30' 60'

GRAPHIC SCALE

NAS KEY WEST
HAMACA HAWK MISSILE SITE

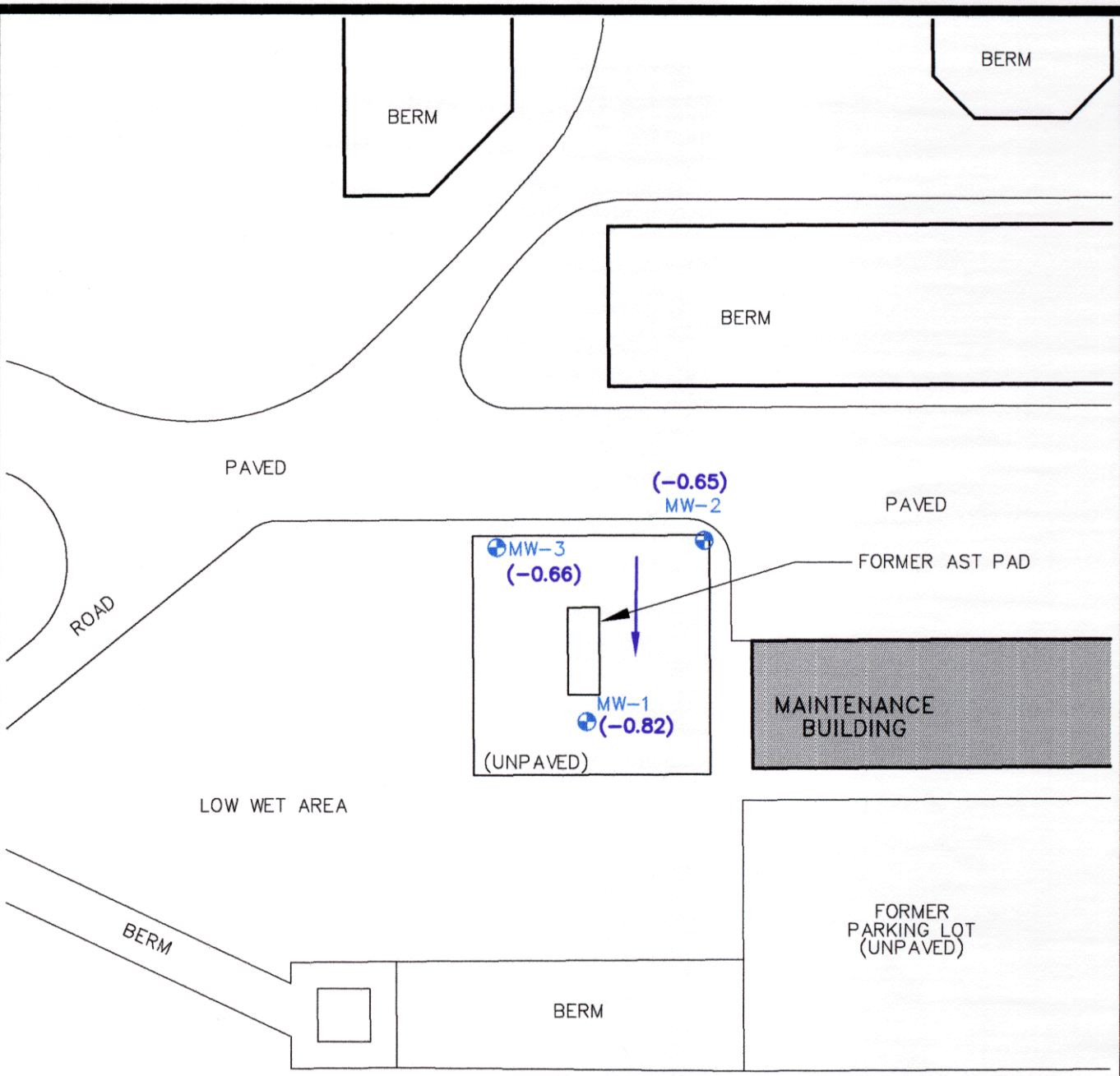
SUPPLEMENTAL ASSESSMENT REPORT

HYDRAULIC GRADIENT
12/10/97

BBL BLASLAND, BOUCK & LEE, INC. *engineers & scientists*

FIGURE **2**

L: GWL-121097
P: STD-PCP\AP
3/25/98 TAM-54-JAR
880/11/88011G01.DWG



LEGEND

MW−1 MONITORING WELL

(−0.66) RELATIVE WATER TABLE ELEVATION (FEET, MEAN SEA LEVEL)

GENERAL DIRECTION OF GROUNDWATER FLOW

0 30' 60'

GRAPHIC SCALE

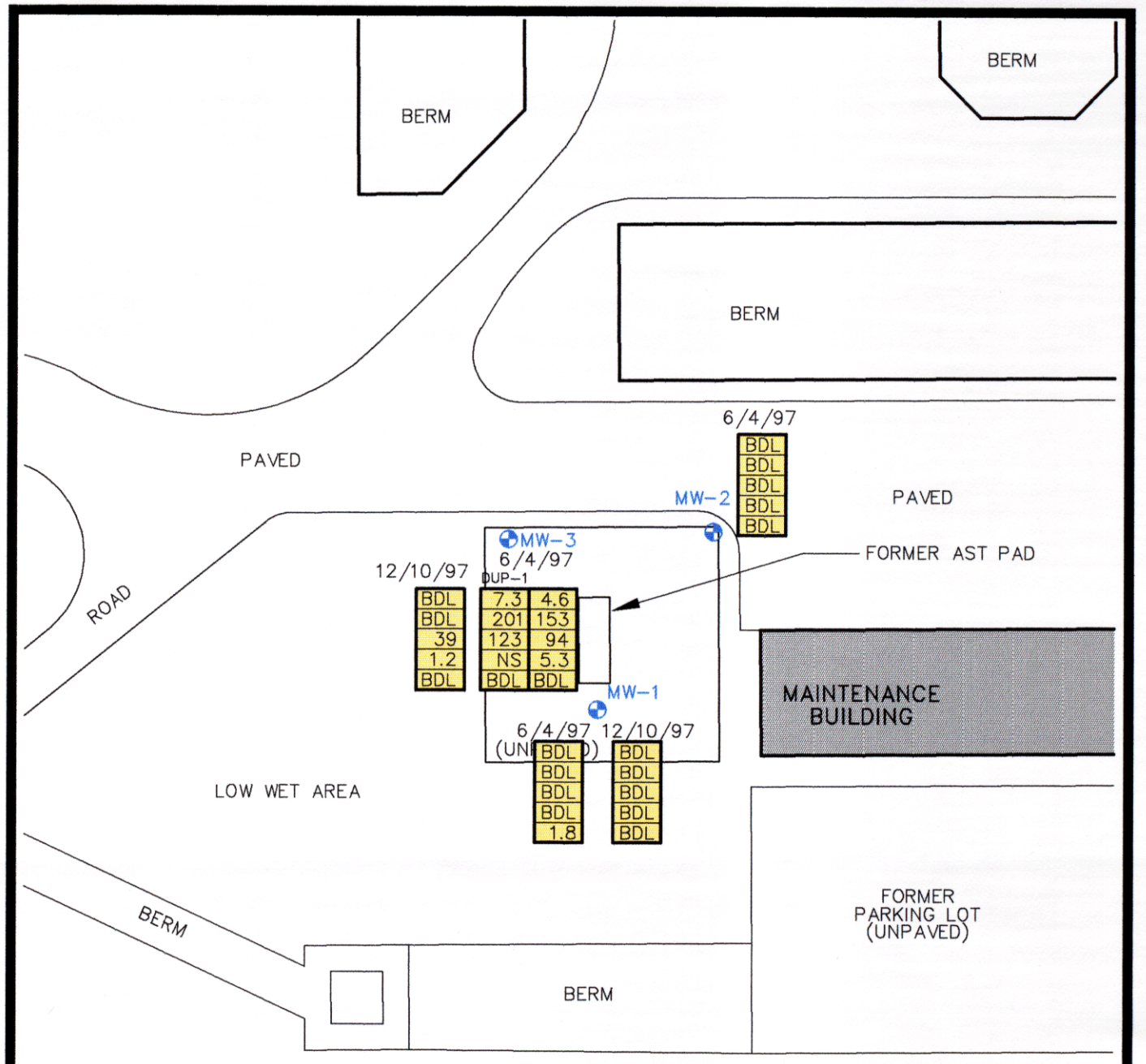
NAS KEY WEST
HAMACA HAWK MISSILE SITE
SUPPLEMENTAL ASSESSMENT REPORT

HYDRAULIC GRADIENT
2/19/98

BBL BLASLAND, BOUCK & LEE, INC. engineers & scientists

FIGURE 3

L: GWL−2/19/98
P: STD−PCP\AP
3/25/98 TAM−54−JAR
880/11/88011G01.DWG



LEGEND

MW-1 MONITORING WELL

6/4/97 SAMPLE DATE

4.6	TOTAL VOLATILE ORGANIC AROMATICS (μg/L)
153	TOTAL POLYNUCLEAR AROMATIC HYDROCARBONS (μg/L)
94	TOTAL NAPHTHALENES (μg/L)
5.3	TOTAL RECOVERABLE PETROLEUM HYDROCARBONS (mg/L)
1.8	cis-1,2-DICHLOROETHYLENE (μg/L)

(μg/L) = MICROGRAMS PER LITER
(mg/L) = MILLIGRAMS PER LITER
BDL = BELOW DETECTION LIMITS
NS = NO SAMPLE

0 30' 60'
GRAPHIC SCALE

NAS KEY WEST
HAMACA HAWK MISSILE SITE
SUPPLEMENTAL ASSESSMENT REPORT

SUMMARY OF PETROLEUM HYDROCARBONS IN GROUNDWATER

BBL BLASLAND, BOUCK & LEE, INC. engineers & scientists

FIGURE 4

L: GWQ-*
P: STD-PCP\AP
3/25/98 TAM-54-JAR
880/11/88011G01.DWG

ATTACHMENT A

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

RECEIVED
JAN 09 1998
BLASLAND, BOUCK & LEE
TAMPA

LOG NO: S7-77006
Received: 11 DEC 97
Reported: 05 JAN 98

Ms. Amanda Shearer
Blasland, Bouck, & Lee
3350 Buschwood Park Dr., Suite 100
Tampa, FL 33618

Project: Hamaca Hawk 880.11
Sampled By: Client
Code: 12228015
Page 1

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	DATE/ TIME SAMPLED
77006-1	S-11	12-10-97/1335
77006-2	SED-1	12-10-97/1250

PARAMETER	77006-1	77006-2
Purgeable Aromatics		
Benzene, ug/kg dw	<5.4	<11
Toluene, ug/kg dw	<5.4	<11
Ethylbenzene, ug/kg dw	<5.4	<11
Total Xylenes, ug/kg dw	<5.4	<11
Methyl tert-butyl ether (MTBE), ug/kg dw	<54	<110
Surrogate - a,a,a-Trifluorotoluene	100%	106%
Date Analyzed	12.17.97	12.15.97
Dilution factor	1.0	1.0
Batch ID	1215B	1215B
Clock ID	1A1217	1A1215

SL SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S7-77006
Received: 11 DEC 97
Reported: 05 JAN 98

Ms. Amanda Shearer
Blasland, Bouck, & Lee
3350 Buschwood Park Dr., Suite 100
Tampa, FL 33618

Project: Hamaca Hawk 880.11
Sampled By: Client
Code: 12228015

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	DATE/ TIME SAMPLED
77006-1	S-11	12-10-97/1335
77006-2	SED-1	12-10-97/1250

PARAMETER	77006-1	77006-2
Polynuclear Aromatics		
Acenaphthene, ug/kg dw	<7100	<730
Acenaphthylene, ug/kg dw	20000	<730
Benzo(a)pyrene, ug/kg dw	<7100	<730
Benzo(g,h,i)perylene, ug/kg dw	<7100	<730
Benzo(b,k)fluoranthene, ug/kg dw	<7100	<730
Chrysene + Benzo(a)anthracene, ug/kg dw	<7100	<730
Fluoranthene, ug/kg dw	<7100	<730
Fluorene, ug/kg dw	21000	<730
Indeno(1,2,3-cd)pyrene+Dibenzo(a,h)anthracene, ug/kg dw	<7100	<730
Naphthalene, ug/kg dw	15000	<730
Phenanthrene + Anthracene, ug/kg dw	<7100	<730
Pyrene, ug/kg dw	<7100	<730
1-Methylnaphthalene, ug/kg dw	16000	<730
2-Methylnaphthalene, ug/kg dw	<7100	<730
Surrogate - 2-Fluorobiphenyl	*F33	38 %
Dilution factor	20	1.0
Date Extracted	12.16.97	12.16.97
Date Analyzed	12.29.97	12.29.97
Batch ID	1216V	1216V

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LOG NO: S7-77006
Received: 11 DEC 97
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Tampa, FL 33618

Project: Hamaca Hawk 880.11
Sampled By: Client
Code: 12228015

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	DATE/ TIME SAMPLED
77006-1	S-11	12-10-97/1335
77006-2	SED-1	12-10-97/1250

PARAMETER	77006-1	77006-2
Petroleum Range Organics (FL-PRO)		
Petroleum Range Organics (FL-PRO), mg/kg dw	3500	<44*F65
Surrogate - O-Terphenyl (OTP)	*F33	*F33
Dilution factor	20.0	2.0
Date Extracted	12.16.97	12.16.97
Date Analyzed	12.29.97	12.24.97
Batch ID	1216X	1216X
Percent Solids, %	93	45

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Project: Hamaca Hawk 880.11
Sampled By: Client
Code: 12228015

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
77006-3	MW-1	12-10-97/1055
77006-4	Eq Blk 1	12-10-97/1040
77006-5	MW-3	12-10-97/1120

PARAMETER	77006-3	77006-4	77006-5
Polynuclear Aromatics			
Acenaphthene, ug/l	<10	<10	<10
Acenaphthylene, ug/l	<10	<10	<10
Benzo(a)pyrene, ug/l	<10	<10	<10
Benzo(g,h,i)perylene, ug/l	<10	<10	<10
Benzo(b,k)fluoranthene, ug/l	<10	<10	<10
Chrysene + Benzo(a)anthracene, ug/l	<10	<10	<10
Fluoranthene, ug/l	<10	<10	<10
Fluorene, ug/l	<10	<10	<10
Indeno(1,2,3-cd)pyrene+Dibe nzo(a,h)anthracene, ug/l	<10	<10	<10
Naphthalene, ug/l	<10	<10	<10
Phenanthrene + Anthracene, ug/l	<10	<10	<10
Pyrene, ug/l	<10	<10	<10
1-Methylnaphthalene, ug/l	<10	<10	39
2-Methylnaphthalene, ug/l	<10	<10	<10
Surrogate - 2-Fluorobiphenyl	92 %	72 %	76 %
Date Extracted	12.15.97	12.15.97	12.15.97
Date Analyzed	12.24.97	12.24.97	12.24.97
Dilution factor	1.0	1.0	1.0
Batch ID	1215U	1215U	1215U

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Project: Hamaca Hawk 880.11
Sampled By: Client
Code: 12228015

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
77006-3	MW-1	12-10-97/1055
77006-4	Eq Blk 1	12-10-97/1040
77006-5	MW-3	12-10-97/1120

PARAMETER	77006-3	77006-4	77006-5
Purgeable Halocarbons			
Bromodichloromethane, ug/l	<1.0	<1.0	<1.0
Bromoform, ug/l	<5.0	<5.0	<5.0
Bromomethane, ug/l	<1.0	<1.0	<1.0
Carbon tetrachloride, ug/l	<1.0	<1.0	<1.0
Chlorobenzene, ug/l	<1.0	<1.0	<1.0
Chloroethane, ug/l	<1.0	<1.0	<1.0
2-Chloroethylvinyl ether, ug/l	<10	<10	<10
Chloroform, ug/l	<1.0	<1.0	<1.0
Chloromethane, ug/l	<1.0	<1.0	<1.0
Dibromochloromethane, ug/l	<1.0	<1.0	<1.0
1,2-Dichlorobenzene, ug/l	<1.0	<1.0	<1.0
1,3-Dichlorobenzene, ug/l	<1.0	<1.0	<1.0
1,4-Dichlorobenzene, ug/l	<1.0	<1.0	<1.0
Dichlorodifluoromethane, ug/l	<1.0	<1.0	<1.0
1,1-Dichloroethane, ug/l	<1.0	<1.0	<1.0
1,2-Dichloroethane, ug/l	<1.0	<1.0	<1.0
1,1-Dichloroethene, ug/l	<1.0	<1.0	<1.0
Cis/Trans-1,2-Dichloroethene, ug/l	<1.0	<1.0	<1.0
1,2-Dichloropropane, ug/l	<1.0	<1.0	<1.0

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
77006-3	MW-1	12-10-97/1055
77006-4	Eq Blk 1	12-10-97/1040
77006-5	MW-3	12-10-97/1120

PARAMETER	77006-3	77006-4	77006-5
Petroleum Range Organics (FL-PRO)			
Petroleum Range Organics (FL-PRO), mg/l	<0.30	<0.30	1.2
Surrogate - O-Terphenyl (OTP)	98 %	120 %	82 %
Dilution factor	1.0	1.0	1.0
Date Extracted	12.16.97	12.16.97	12.16.97
Date Analyzed	12.23.97	12.23.97	12.23.97
Batch ID	1216Y	1216Y	1216Y

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Sampled By: Client
Code: 12228015

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
77006-3	MW-1	12-10-97/1055
77006-4	Eq Blk 1	12-10-97/1040
77006-5	MW-3	12-10-97/1120

PARAMETER	77006-3	77006-4	77006-5
Purgeable Aromatics			
Benzene, ug/l	<1.0	<1.0	<1.0
Toluene, ug/l	<1.0	<1.0	<1.0
Ethylbenzene, ug/l	<1.0	<1.0	<1.0
Total Xylenes, ug/l	<2.0	<2.0	<2.0
Surrogate - a,a,a-Trifluorotoluene	83%	90%	87%
Date Analyzed	12.15.97	12.16.97	12.16.97
Dilution factor	1.0	1.0	1.0
Batch ID	1215A	1215A	1215A
Clock ID	1B1215	1B1215	1B1215

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Code: 12228015

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
77006-3	MW-1	12-10-97/1055
77006-4	Eq Blk 1	12-10-97/1040
77006-5	MW-3	12-10-97/1120

PARAMETER	77006-3	77006-4	77006-5
cis-1,3-Dichloropropene, ug/l	<1.0	<1.0	<1.0
trans-1,3-Dichloropropene, ug/l	<1.0	<1.0	<1.0
Methylene chloride (Dichloromethane), ug/l	<5.0	<5.0	<5.0
1,1,2,2-Tetrachloroethane, ug/l	<1.0	<1.0	<1.0
Tetrachloroethene, ug/l	<1.0	<1.0	<1.0
1,1,1-Trichloroethane, ug/l	<1.0	<1.0	<1.0
1,1,2-Trichloroethane, ug/l	<1.0	<1.0	<1.0
Trichloroethylene, ug/l	<1.0	<1.0	<1.0
Trichlorofluoromethane, ug/l	<1.0	<1.0	<1.0
Vinyl chloride, ug/l	<1.0	<1.0	<1.0
Surrogate - Bromochloromethane	90%	86%	80%
Date Analyzed	12.15.97	12.16.97	12.16.97
Dilution factor	1.0	1.0	1.0
Batch ID	1215A	1215A	1215A
Clock ID	1B1215	1B1215	1B1215

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Project: Hamaca Hawk 880.11
Sampled By: Client
Code: 12228015

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
77006-6	SW-1	12-10-97/1220
77006-6-RE	SW-1	12-10-97/1220

PARAMETER	77006-6	77006-6-RE
Polynuclear Aromatics		
Acenaphthene, ug/l	<10	<10
Acenaphthylene, ug/l	<10	<10
Benzo(a)pyrene, ug/l	<10	<10
Benzo(g,h,i)perylene, ug/l	<10	<10
Benzo(b,k)fluoranthene, ug/l	<10	<10
Chrysene + Benzo(a)anthracene, ug/l	<10	<10
Fluoranthene, ug/l	<10	<10
Fluorene, ug/l	<10	<10
Indeno(1,2,3-cd)pyrene+Dibe nzo(a,h)anthracene, ug/l	<10	<10
Naphthalene, ug/l	<10	<10
Phenanthrene + Anthracene, ug/l	<10	<10
Pyrene, ug/l	<10	<10
1-Methylnaphthalene, ug/l	<10	<10
2-Methylnaphthalene, ug/l	<10	<10
Surrogate - 2-Fluorobiphenyl	66 %	76 %
Date Extracted	12.15.97	12.26.97
Date Analyzed	12.24.97	12.30.97
Dilution factor	1.0	1.0
Batch ID	1215U	1226W

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Project: Hamaca Hawk 880.11
Sampled By: Client
Code: 12228015

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR SOLID/SEMISOLID
77006-7	Method Blank
77006-8	Lab Control Standard % Recovery
77006-9	LCS Accuracy Control Limit (%R)

PARAMETER	77006-7	77006-8	77006-9
Purgeable Aromatics			
Benzene, ug/kg dw	<5.0	140%	39-140%
Toluene, ug/kg dw	<5.0	110%	46-148%
Ethylbenzene, ug/kg dw	<5.0	---	---
Total Xylenes, ug/kg dw	<5.0	---	---
Methyl tert-butyl ether (MTBE), ug/kg dw	<50	---	---
Surrogate - a,a,a-Trifluorotoluene	93%	---	---
Date Analyzed	12.15.97	---	---
Dilution factor	1.0	---	---
Batch ID	1215B	---	---
Clock ID	1A1215	---	---

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Tampa, FL 33618

Project: Hamaca Hawk 880.11
Sampled By: Client
Code: 12228015

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR SOLID/SEMISOLID
77006-7	Method Blank
77006-8	Lab Control Standard % Recovery
77006-9	LCS Accuracy Control Limit (%R)

PARAMETER	77006-7	77006-8	77006-9
Polynuclear Aromatics			
Acenaphthene, ug/kg	<330	44 %	15-141 %
Acenaphthylene, ug/kg	<330	45 %	36-114 %
Benzo(a)pyrene, ug/kg	<330	45 %	30-130 %
Benzo(g,h,i)perylene, ug/kg	<330	44 %	25-126 %
Benzo(b,k)fluoranthene, ug/kg	<330	45 %	26-128 %
Chrysene + Benzo(a)anthracene, ug/kg	<330	48 %	30-127 %
Fluoranthene, ug/kg	<330	50 %	28-132 %
Fluorene, ug/kg	<330	44 %	17-146 %
Indeno(1,2,3-cd)pyrene+Dibenzo(a,h)anthracene, ug/kg	<330	42 %	20-131 %
Naphthalene, ug/kg	<330	40 %	10-133 %
Phenanthrene + Anthracene, ug/kg	<330	45 %	38-118 %
Pyrene, ug/kg	<330	48 %	25-165 %
1-Methylnaphthalene, ug/kg	<330	39 %	20-140 %
2-Methylnaphthalene, ug/kg	<330	43 %	20-140 %
Surrogate - 2-Fluorobiphenyl	42 %	49 %	---
Dilution factor	1.0	---	---
Date Extracted	12.16.97	---	---
Date Analyzed	12.23.97	---	---
Batch ID	1216V	---	---

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Project: Hamaca Hawk 880.11
Sampled By: Client
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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR SOLID/SEMISOLID
77006-7	Method Blank
77006-8	Lab Control Standard % Recovery
77006-9	LCS Accuracy Control Limit (%R)

PARAMETER	77006-7	77006-8	77006-9
Petroleum Range Organics (FL-PRO)			
Petroleum Range Organics (FL-PRO), mg/kg	<10	84 %	63-153 %
Surrogate - O-Terphenyl (OTP)	65 %	114 %	---
Dilution factor	1.0	---	---
Date Extracted	12.16.97	---	---
Date Analyzed	12.23.97	---	---
Batch ID	1216X	---	---

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
77006-10	Method Blank
77006-11	Lab Control Standard % Recovery
77006-12	LCS Accuracy Control Limit (%R)
77006-13	Method Blank
77006-14	Lab Control Standard % Recovery

PARAMETER	77006-10	77006-11	77006-12	77006-13	77006-14
Purgeable Halocarbons					
Bromodichloromethane, ug/l	<1.0	---	---	---	---
Bromoform, ug/l	<5.0	---	---	---	---
Bromomethane, ug/l	<1.0	---	---	---	---
Carbon tetrachloride, ug/l	<1.0	---	---	---	---
Chlorobenzene, ug/l	<1.0	95%	38-150%	---	---
Chloroethane, ug/l	<1.0	---	---	---	---
2-Chloroethylvinyl ether, ug/l	<10	---	---	---	---
Chloroform, ug/l	<1.0	---	---	---	---
Chloromethane, ug/l	<1.0	---	---	---	---
Dibromochloromethane, ug/l	<1.0	---	---	---	---
1,2-Dichlorobenzene, ug/l	<1.0	---	---	---	---
1,3-Dichlorobenzene, ug/l	<1.0	---	---	---	---
1,4-Dichlorobenzene, ug/l	<1.0	---	---	---	---
Dichlorodifluoromethane, ug/l	<1.0	---	---	---	---
1,1-Dichloroethane, ug/l	<1.0	---	---	---	---
1,2-Dichloroethane, ug/l	<1.0	---	---	---	---
1,1-Dichloroethene, ug/l	<1.0	105%	28-167%	---	---
Cis/Trans-1,2-Dichloroethene, ug/l	<1.0	---	---	---	---

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
77006-10	Method Blank
77006-11	Lab Control Standard % Recovery
77006-12	LCS Accuracy Control Limit (%R)
77006-13	Method Blank
77006-14	Lab Control Standard % Recovery

PARAMETER	77006-10	77006-11	77006-12	77006-13	77006-14
1,2-Dichloropropane, ug/l	<1.0	---	---	---	---
cis-1,3-Dichloropropene, ug/l	<1.0	---	---	---	---
trans-1,3-Dichloropropene, ug/l	<1.0	---	---	---	---
Methylene chloride (Dichloromethane), ug/l	<5.0	---	---	---	---
1,1,2,2-Tetrachloroethane, ug/l	<1.0	---	---	---	---
Tetrachloroethene, ug/l	<1.0	---	---	---	---
1,1,1-Trichloroethane, ug/l	<1.0	---	---	---	---
1,1,2-Trichloroethane, ug/l	<1.0	---	---	---	---
Trichloroethylene, ug/l	<1.0	115%	35-146%	---	---
Trichlorofluoromethane, ug/l	<1.0	---	---	---	---
Vinyl chloride, ug/l	<1.0	---	---	---	---
Surrogate - Bromochloromethane	91%	---	---	---	---
Date Analyzed	12.15.97	---	---	---	---
Dilution factor	1.0	---	---	---	---
Batch ID	1215A	---	---	---	---
Clock ID	1B1215	---	---	---	---

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Project: Hamaca Hawk 880.11
Sampled By: Client
Code: 12228015

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
77006-10	Method Blank
77006-11	Lab Control Standard % Recovery
77006-12	LCS Accuracy Control Limit (%R)
77006-13	Method Blank
77006-14	Lab Control Standard % Recovery

PARAMETER	77006-10	77006-11	77006-12	77006-13	77006-14
Purgeable Aromatics					
Benzene, ug/l	<1.0	115%	39-150%	---	---
Toluene, ug/l	<1.0	115%	46-148%	---	---
Ethylbenzene, ug/l	<1.0	---	---	---	---
Total Xylenes, ug/l	<2.0	---	---	---	---
Surrogate a,a,a-Trifluorotoluene	100%	---	---	---	---
Date Analyzed	12.15.97	---	---	---	---
Dilution factor	1.0	---	---	---	---
Batch ID	1215A	---	---	---	---
Clock ID	1B1215	---	---	---	---
Petroleum Range Organics (FL-PRO)					
Petroleum Range Organics (FL-PRO), mg/l	<0.30	59 %	55-118 %	---	---
Surrogate - O-Terphenyl (OTP)	82 %	102 %	---	---	---
Dilution factor	1.0	---	---	---	---
Date Extracted	12.16.97	---	---	---	---
Date Analyzed	12.23.97	---	---	---	---
Batch ID	1216Y	---	---	---	---

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
77006-10	Method Blank
77006-11	Lab Control Standard % Recovery
77006-12	LCS Accuracy Control Limit (%R)
77006-13	Method Blank
77006-14	Lab Control Standard % Recovery

PARAMETER	77006-10	77006-11	77006-12	77006-13	77006-14
Polynuclear Aromatics					
Acenaphthene, ug/l	<10	74 %	25-153 %	<10	74 %
Acenaphthylene, ug/l	<10	72 %	28-134 %	<10	74 %
Benzo(a)pyrene, ug/l	<10	52 %	18-134 %	<10	72 %
Benzo(g,h,i)perylene, ug/l	<10	36 %	22-160 %	<10	72 %
Benzo(b,k)fluoranthene, ug/l	<10	58 %	58-132 %	<10	79 %
Chrysene + Benzo(a)anthracene, ug/l	<10	66 %	65-125 %	<10	74 %
Fluoranthene, ug/l	<10	78 %	66-122 %	<10	78 %
Fluorene, ug/l	<10	76 %	17-167 %	<10	76 %
Indeno(1,2,3-cd)pyrene+Dibe nzo(a,h)anthracene, ug/l	<10	41 %	30-153 %	<10	72 %
Naphthalene, ug/l	<10	64 %	45-120 %	<10	62 %
Phenanthrene + Anthracene, ug/l	<10	74 %	29-164 %	<10	78 %
Pyrene, ug/l	<10	76 %	21-159 %	<10	76 %
1-Methylnaphthalene, ug/l	<10	60 %	20-140 %	<10	---
2-Methylnaphthalene, ug/l	<10	62 %	20-140 %	<10	---
Surrogate - 2-Fluorobiphenyl	84 %	76 %	---	68 %	74 %
Date Extracted	12.15.97	---	---	12.26.97	---
Date Analyzed	12.24.97	---	---	12.29.97	---
Dilution factor	1.0	---	---	1.0	---
Batch ID	1215U	---	---	1226W	---

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S7-77006
Received: 11 DEC 97
Reported: 05 JAN 98

Ms. Amanda Shearer
Blasland, Bouck, & Lee
3350 Buschwood Park Dr., Suite 100
Tampa, FL 33618

Project: Hamaca Hawk 880.11
Sampled By: Client
Code: 12228015

REPORT OF RESULTS

LOG NO SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES

PARAMETER

Methods: EPA SW-846 and 40 CFR Part 136.
*F33 = Because the sample was diluted prior to analysis, surrogate recoveries are not reported.

*F65 = Elevated detection limits were reported due to sample matrix interference which required sample or extract dilution.

Michael J. Salum, Project Manager

Final Page Of Report

Serial Number 38043

SL SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC.

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

☑ 5102 LaRoche Avenue, Savannah, GA 31404 — Phone: (912) 354-7858 — Fax: (912) 352-0165
☐ 2846 Industrial Plaza Drive, Tallahassee, FL 32301 — Phone: (904) 878-3994 — Fax: (904) 878-9504
☐ 414 SW 12th Avenue, Deerfield Beach, FL 33442 — Phone: (305) 421-7400 — Fax: (305) 421-2584
☐ 900 Lakeside Drive, Mobile, AL 36693 — Phone: (205) 666-6633 — Fax: (205) 666-6696
☐ 6712 Benjamin Road, Suite 100, Tampa, FL 33634 — Phone: (813) 885-7427 — Fax: (813) 885-7049
☐ 100 Alpha Drive, Suite 110, Destrehan, LA 70047 — Phone: (504) 764-1100 — Fax: (504) 725-1163

Sent Via Fed Ex

PROJECT REFERENCE	PROJECT NO.	P.O. NUMBER
Hamaca Hawk	880.11	

PROJECT LOC. (State)	SAMPLER(s) NAME	PHONE	FAX
	Wilfred Chin, Amanda Shearer	407 469-3165	407 469-3165

CLIENT NAME	CLIENT PROJECT MANAGER
Blasland Bouck + Lee	Amanda Shearer

CLIENT ADDRESS (CITY, STATE, ZIP): 3350 Buschwood Pk Dr Ste 100 Tampa FL 33618

PAGE 1 OF 1

☑ STANDARD REPORT DELIVERY
☐ EXPEDITED REPORT DELIVERY (surcharge)
Date Due: _____

SAMPLE DATE	SAMPLE TIME	SL NO.	SAMPLE IDENTIFICATION	AQUEOUS (WATER)	SOLID OR SEMISOLID	AIR	NONAQUEOUS LIQUID (oil, solvent, etc)	610/ph FL-PRO	601/602	[redacted]/8020	8100 TPH FL-PRO	610	602						REMARKS
			MATRIX TYPE					—	LB	W	—	—	LB						
			NUMBER OF CONTAINERS SUBMITTED																
12/10/97	10:55		MW-1	X				2	3										
	10:40		EQ BLK-1	X															
	—		TRIP	X									3						
	11:20		MW-3	X				2	3										
	13:35		S-11		X					1	1								
	12:50		SED-1		X					1	1								
	12:20		SW-1	X								2							

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
S. Campbell	12/4/97	2:10	[signature]	12/10/97	2:30			

RECEIVED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
[signature]	12/9/97	8:30						

LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	SL LOG NO.	LABORATORY REMARKS:
[signature]	12/11/97	9:13	☑ YES ☐ NO		57-76006	

ORIGINAL

BLASLAND, BOUCK & LEE
ENGINEERS & GEOSCIENTISTS

WATER SAMPLING LOG

Project/No. 880.11 Page ____ of ____

Site Location Homace Hawk

Site/Well No. MW-1 Coded/Replicate No. ____ Date 12/10/97

Weather hot, humid Time Sampling Began 10:50 Time Sampling Completed 10:55

EVACUATION DATA

Description of Measuring Point (MP) T-O-C

Height of MP Above/Below Land Surface ____ MP Elevation ____

Total Sounded Depth (TD) of Well Below MP 11.98 Water-Level Elevation ____

Held ____ Depth to Water (DTW) Below MP 4.30 Diameter of Casing/Construction type ____

Wet ____ Water Column (WC) in Well (TD - DTW) 7.68 Gallons Pumped/Bailed Prior to Sampling (GAL x VOL x PUMP RATE) ~~3.69~~ 4.92

Gallons per Foot (GPF) 1.23

Gallons in Well (WC x GPF) ____ Sampling Pump Intake Setting (feet below land surface) ____

Evacuation Method peristaltic w/ disp. teflon tubing

SAMPLING DATA/FIELD PARAMETERS

Color clear Odor none Appearance Sl. cloudy Temperature ____ °F/°C

Other (specific ion; OVA; HNU; etc.) ____

Specific Conductance, umhos/cm	pH	T °F	Turb
3,860	9.28	80.2	
3,890	8.94	80.4	
4,081	8.90	80.3	

Sampling Method and Material disposable teflon bailer

Constituents Sampled (order of collection)	Container Description From Lab ✓ or B.B.&L. ____	Preservative/pH Checked
1. 601/602	3/40ml	HCl
2. 610	2/amber glass	—
3. FLPRO (TRPH)		—
4.		
5.		

Remarks (Visitors, Field Decon, QC Sample Locations/Time) EQ BLK - 1 10:40

Sampling Personnel (Signatures) [signature]

WELL CASING VOLUMES

GAL/FT.				
	1-1/4" = 0.077	2" = 0.16	3" = 0.37	4" = 0.65
	1-1/2" = 0.10	2-1/2" = 0.24	3-1/2" = 0.50	6" = 1.46

BLASLAND, BOUCK & LEE
ENGINEERS & GEOSCIENTISTS

WATER SAMPLING LOG

Project/No. 880.11 Page ____ of ____

Site Location Hanover

Site/Well No. MW-3 Coded/Replicate No. ____ Date 12/10/97

Weather hot, humid Time Sampling Began 11:15 Time Sampling Completed 11:20

EVACUATION DATA

Description of Measuring Point (MP) T-O-C

Height of MP Above/Below Land Surface ____ MP Elevation ____

Total Sounded Depth (TD) of Well Below MP 12.45 Water-Level Elevation ____

Held ____ Depth to Water (DTW) Below MP 4.12 Diameter of Casing/Construction type ____

Wet ____ Water Column (WC) in Well (TD - DTW) 8.33 Gallons Pumped/Bailed Prior to Sampling (GAL x 4 VOL x PUMP RATE) 5.50

Gallons per Foot (GPF) .16

Gallons in Well (WC x GPF) 1.37 Sampling Pump Intake Setting (feet below land surface) ____

Evacuation Method peristaltic pump w/ teflon tubing

SAMPLING DATA/FIELD PARAMETERS

Color clear Odor none Appearance sl. cloudy Temperature ____ °F/°C

Other (specific ion; OVA; HNU; etc.) ____

Specific Conductance, umhos/cm	pH	T	Turb
2430	7.92	85.9	
2940	7.72	84.4	
2940	7.77	82.6	
3010	7.99	82.1	
3050	8.00	82.5	

Sampling Method and Material disposable teflon bailer

Constituents Sampled (order of collection)	Container Description From Lab ____ or B.B.&L. ____	Preservative/pH Checked
1. 601/602	3/ 40 ml	HCl
2. 610/TPH & PRO	2/ Amber	—
3.		
4.		
5.		

Remarks (Visitors, Field Decon, QC Sample Locations/Time) ____

Sampling Personnel (Signatures) [signature]

WELL CASING VOLUMES

GAL/FT.				
	1-1/4" = 0.077	2" = 0.16	3" = 0.37	4" = 0.65
	1-1/2" = 0.10	2-1/2" = 0.24	3-1/2" = 0.50	6" = 1.46

BLASLAND, BOUCK & LEE
ENGINEERS & GEOSCIENTISTS

SOIL/SEDIMENT SAMPLING LOG

Project No. 880.11 Page ____ of ____

Site Location Homer Hawk

Sample I.D. No. S-11 Coded/Replicate No. ____

Date 12/10/97 Time of Sampling: Begin 13:35 End ____

Weather ____

Site Description Adjacent to MW-3

SAMPLING DATA

Collection Method Geoprobe corer

Depth 3' Moisture Content moist

Color white, limerock Odor yes

Description ____

Analyses Required (Order of Collection)	Container Description
~~8020~~ 8020	125 ml glass
8100	250 ml glass
TPH FL-PRO	

Sample Monitoring (TIP, OVA, HNU, etc.) ____

Remarks ____

(Visitors, Field Decon) ____

(QC Sample Locations/Time) ____

Sampler(s) (Signatures) [signature]

BLASLAND, BOUCK & LEE
ENGINEERS & GEOSCIENTISTS

SOIL/SEDIMENT SAMPLING LOG

Project No. 880.11 Page ____ of ____

Site Location Hanna Hook

Sample I.D. No. SED-1 Coded/Replicate No. ____

Date 12/10/97 Time of Sampling: Begin 12:50 End ____

Weather ____

Site Description Adjacent to MW-3 in dried portion of pond

SAMPLING DATA

Collection Method Hand auger

Depth 6" Moisture Content ____

Color dark gray/brown Odor ____

Description ____

Analyses Required (Order of Collection)	Container Description
8020	125 ml glass
8100	250 ml glass
TRPH FL PRO	

Sample Monitoring (TIP, OVA, HNU, etc.) ____

Remarks ____

(Visitors, Field Decon) ____

(QC Sample Locations/Time) ____

Sampler(s) (Signatures) [illegible]

BLASLAND, BOUCK & LEE
ENGINEERS & GEOSCIENTISTS

Figure 7-4

WATER SAMPLING LOG

Project/No. 880.11 Page ____ of ____

Site Location Homer Hawk

Site/Well No. SW-1 Codes/Replicate No. ____ Date 12/10/97

Weather ____ Time Sampling Began 10:20 Time Sampling Completed 12:20

EVACUATION DATA

Description of Measuring Point (MP) ____

Height of MP Above/Below Land Surface ____ MP Elevation ____

Total Sounded Depth (TD) of Well Below MP ____ Water-Level Elevation ____

Held ____ Depth to Water (DTW) Below MP ____ Diameter of Casing/Construction type ____

Wet ____ Water Column (WC) in Well (TD - DTW) ____ Gallons Pumped/Bailed Prior to Sampling (CAL x 4 VOL x PUMP RATE) ____

Gallons per Foot (GPF) ____

Gallons in Well (WC x GPF) ____ Sampling Pump Intake Setting (feet below land surface) ____

Evacuation Method ____

SAMPLING DATA/FIELD PARAMETERS

Color lt. brown Odor organic Appearance silty Temperature 86 °F/°C

Other (specific ion: OVA; HNU; etc.) ____

Specific Conductance, umhos/cm 9,340 pH 8.97

Sampling Method and Material glass beaker attached to aluminum rod

Constituents Sampled (order of collection)	Container Description From Lab ✓ or B.B.&L. ____	Preservative/pH Checked
1. 610	Amber glass	—
2.		
3.		
4.		
5.		

Remarks (Visitors, Field Decon, QC Sample Locations/Time) ____

Sampling Personnel (Signatures) [signature]

WELL CASING VOLUMES

GAL./FT.				
	1-1/4" = 0.077	2" = 0.16	3" = 0.37	4" = 0.65
	1-1/2" = 0.10	2-1/2" = 0.24	3-1/2" = 0.50	6" = 1.46

MULTIPLE WELL MEASUREMENTS

BLASLAND, BOUCK & LEE, INC.
ENGINEERS & SCIENTISTS

Project No. 880.11
Site Location Horace Hart
Instrument Type

Well No.	Date	Time	Total Depth	DTW	Stick Up	Wet	Held	Remarks (Well Diameter, Construction Type, Cap, Grout Condition, Locked)
mw-1	12/10/91	10:15	11.98	4.30				
mw-2	↓		12.13	4.68				
mw-3	↓		12.45	4.12				

NOTES (Visitors, Well Condition, Odors, Hazards)

BB&L Personnel (Signatures)

ATTACHMENT B

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S8-80989
Received: 20 FEB 98
Reported: 06 MAR 98
Revised: 19 MAR 98

Ms. Amanda Shearer
Blasland, Bouck, & Lee
3350 Buschwood Park Dr., Suite 100
Tampa, FL 33618

Project: Hamaca Hawk 880.11
Sampled By: Client
Code: 135580323

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	DATE/ TIME SAMPLED
80989-1	SED-1	02-19-98/0950

PARAMETER	80989-1
Polynuclear Aromatics (8310)	
Acenaphthene, ug/kg dw	32*J
Acenaphthylene, ug/kg dw	29U
Anthracene, ug/kg dw	9.8
Benzo(a)anthracene, ug/kg dw	42
Benzo(a)pyrene, ug/kg dw	44
Benzo(b)fluoranthene, ug/kg dw	53
Benzo(g,h,i)perylene, ug/kg dw	15U
Benzo(k)fluoranthene, ug/kg dw	23
Chrysene, ug/kg dw	47
Dibenzo(a,h)anthracene, ug/kg dw	15U
Fluoranthene, ug/kg dw	93
Fluorene, ug/kg dw	3.6*J
Indeno(1,2,3-cd)pyrene, ug/kg dw	33
Naphthalene, ug/kg dw	29U
Phenanthrene, ug/kg dw	57
Pyrene, ug/kg dw	70
1-Methylnaphthalene, ug/kg dw	29U
2-Methylnaphthalene, ug/kg dw	29U
Date Extracted	02.25.98
Date Analyzed	03.04.98
Percent Solids (160.3), %	68

SL SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S8-80989
Received: 20 FEB 98
Reported: 06 MAR 98
Revised: 19 MAR 98

Ms. Amanda Shearer
Blasland, Bouck, & Lee
3350 Buschwood Park Dr., Suite 100
Tampa, FL 33618

Project: Hamaca Hawk 880.11
Sampled By: Client
Code: 135580323

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
80989-2	SW-1	02-19-98/1030
80989-3	EQ-1	02-19-98/0945

PARAMETER	80989-2	80989-3
Polynuclear Aromatics (HPLC) (610)		
Acenaphthene, ug/l	1.0U	1.0U
Acenaphthylene, ug/l	1.0U	1.0U
Benzo(a)pyrene, ug/l	0.20U	0.20U
Benzo(g,h,i)perylene, ug/l	0.50U	0.50U
Benzo(b,k)fluoranthene, ug/l	0.20U	0.20U
Chrysene + Benzo(a)anthracene, ug/l	0.20U	0.20U
Fluoranthene, ug/l	0.50U	0.50U
Fluorene, ug/l	0.50U	0.50U
Indeno(1,2,3-cd)pyrene+Dibenzo(a,h)anthracene, ug/l	0.50U	0.50U
Naphthalene, ug/l	1.0U	1.0U
Phenanthrene + Anthracene, ug/l	0.20U	0.20U
Pyrene, ug/l	0.090J	0.50U
1-Methylnaphthalene, ug/l	10U*	10U*
2-Methylnaphthalene, ug/l	1.0U	1.0U
Surrogate - 2-Fluorobiphenyl	58 %	68 %
Date Extracted	02.24.98	02.24.98
Date Analyzed	03.16.98	03.16.98
Dilution factor	1.0	1.0
Batch ID	0224U	0224U

SL SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S8-80989
Received: 20 FEB 98
Reported: 06 MAR 98
Revised: 19 MAR 98

Ms. Amanda Shearer
Blasland, Bouck, & Lee
3350 Buschwood Park Dr., Suite 100
Tampa, FL 33618

Project: Hamaca Hawk 880.11
Sampled By: Client
Code: 135580323

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR SOLID/SEMISOLID
80989-4	Method Blank
80989-5	Lab Control Standard % Recovery
80989-6	LCS Accuracy Control Limit (%R)

PARAMETER	80989-4	80989-5	80989-6
Polynuclear Aromatics (8310)			
Acenaphthene, ug/kg dw	50U	38 %	11-144 %
Acenaphthylene, ug/kg dw	20U	---	---
Anthracene, ug/kg dw	4.0U	---	---
Benzo(a)anthracene, ug/kg dw	4.0U	---	---
Benzo(a)pyrene, ug/kg dw	4.0U	---	---
Benzo(b)fluoranthene, ug/kg dw	4.0U	---	---
Benzo(g,h,i)perylene, ug/kg dw	10U	---	---
Benzo(k)fluoranthene, ug/kg dw	4.0U	---	---
Chrysene, ug/kg dw	4.0U	76 %	10-199 %
Dibenzo(a,h)anthracene, ug/kg dw	10U	---	---
Fluoranthene, ug/kg dw	10U	---	---
Fluorene, ug/kg dw	10U	42 %	10-142 %
Indeno(1,2,3-cd)pyrene, ug/kg dw	10U	---	---
Naphthalene, ug/kg dw	20U	34 %	31-159 %
Phenanthrene, ug/kg dw	4.0U	---	---
Pyrene, ug/kg dw	10U	65 %	49-156 %
1-Methylnaphthalene, ug/kg dw	20U	---	---
2-Methylnaphthalene, ug/kg dw	20U	---	---
Date Extracted	02.25.98	---	---
Date Analyzed	03.04.98	---	---

SL SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S8-80989
Received: 20 FEB 98
Reported: 06 MAR 98
Revised: 19 MAR 98

Ms. Amanda Shearer
Blasland, Bouck, & Lee
3350 Buschwood Park Dr., Suite 100
Tampa, FL 33618

Project: Hamaca Hawk 880.11
Sampled By: Client
Code: 135580323

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
80989-7	Method Blank
80989-8	Lab Control Standard % Recovery
80989-9	LCS Accuracy Control Limit (%R)

PARAMETER	80989-7	80989-8	80989-9
Polynuclear Aromatics (HPLC) (610)			
Acenaphthene, ug/l	1.0U	70 %	D-124 %
Acenaphthylene, ug/l	1.0U	70 %	D-139 %
Benzo(a)pyrene, ug/l	0.20U	64 %	D-128 %
Benzo(g,h,i)perylene, ug/l	0.50U	62 %	D-116 %
Benzo(b,k)fluoranthene, ug/l	0.20U	66 %	6-150 %
Chrysene + Benzo(a)anthracene, ug/l	0.20U	68 %	12-135 %
Fluoranthene, ug/l	0.50U	74 %	14-123 %
Fluorene, ug/l	0.50U	74 %	D-142 %
Indeno(1,2,3-cd)pyrene+Dibenzo(a,h)anthracene, ug/l	0.50U	60 %	D-116 %
Naphthalene, ug/l	1.0U	58 %	D-122 %
Phenanthrene + Anthracene, ug/l	0.20U	36 %	D-126 %
Pyrene, ug/l	0.50U	74 %	D-140 %
1-Methylnaphthalene, ug/l	10U*	36 %	D-100 %
2-Methylnaphthalene, ug/l	1.0U	62 %	D-100 %
Surrogate - 2-Fluorobiphenyl	68 %	68 %	---
Date Extracted	02.24.98	---	---
Date Analyzed	03.19.98	---	---
Dilution factor	1.0	---	---
Batch ID	0224U	---	---

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S8-80989
Received: 20 FEB 98
Reported: 06 MAR 98
Revised: 19 MAR 98

Ms. Amanda Shearer
Blasland, Bouck, & Lee
3350 Buschwood Park Dr., Suite 100
Tampa, FL 33618

Project: Hamaca Hawk 880.11
Sampled By: Client
Code: 135580323

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
80989-7	Method Blank
80989-8	Lab Control Standard % Recovery
80989-9	LCS Accuracy Control Limit (%R)

PARAMETER	80989-7	80989-8	80989-9

Methods: EPA SW-846 and 40 CFR Part 136.

* The surrogate evaluated for the original analysis via GC-FID co-elutes with 1-Methylnaphthalene when analyzed via HPLC. Subsequently, the detection limit for 1-Methylnaphthalene is reported from the original GC-FID analysis.

Michael J. Salum, Project Manager

Final Page Of Report

Serial Number 55 10

SL SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC.

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

☑ 5102 LaRoche Avenue, Savannah, GA 31404 Phone: (912) 354-7858 Fax: (912) 352-0165
☐ 2846 Industrial Plaza Drive, Tallahassee, FL 32301 Phone: (904) 878-3994 Fax: (904) 878-9504
☐ 414 SW 12th Avenue, Deerfield Beach, FL 33442 Phone: (954) 421-7400 Fax: (954) 421-2584
☐ 900 Lakeside Drive, Mobile, AL 36693 Phone: (334) 666-6633 Fax: (334) 666-6696
☐ 6712 Benjamin Road, Suite 100, Tampa, FL 33634 Phone: (813) 885-7427 Fax: (813) 885-7049
☐ 100 Alpha Drive, Suite 110, Destrehan, LA 70047 Phone: (504) 764-1100 Fax: (504) 725-1163

PROJECT REFERENCE: Annaca Hawk
PROJECT NO.: 880.11
P.O. NUMBER:
PROJECT LOC. (State): FL
SAMPLER(s) NAME: Amanda Shearer, Wilfred Chin
PHONE: 407 469-3165
FAX: 407 469-3165
CLIENT NAME: Blasland Bouck + Lee
CLIENT PROJECT MANAGER: Amanda Shearer
CLIENT ADDRESS (CITY, STATE, ZIP): 3350 Buschwood Pk Dr. 100 Tampa, FL

MATRIX TYPE / REQUIRED ANALYSES — PAGE 1 OF 1

☒ STANDARD REPORT DELIVERY
☐ EXPEDITED REPORT DELIVERY (surcharge)
Date Due: _____

SAMPLE DATE	SAMPLE TIME	SL NO.	SAMPLE IDENTIFICATION	AQUEOUS (WATER)	SOLID OR SEMISOL.	AIR	NONAQUEOUS LIQUID (oil, solvent, etc)	PAHs	PAHs	REMARKS
2/19/98	9:50a		SED-1	X			1			Detection limits as discussed previously
↓	10:30a		SW-1	X				2		
↓	9:45		EQ-1	X				2		

Sent via fedex

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
[signature]	2/19/98	100	[signature]	2/19/98	12:00			
RECEIVED BY: (SIGNATURE)	**DATE**	**TIME**	**RECEIVED BY: (SIGNATURE)**	**DATE**	**TIME**	**RECEIVED BY: (SIGNATURE)**	**DATE**	**TIME**
[signature]	2/19/98	9:45						

LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	SL LOG NO.	LABORATORY REMARKS:
C. Vasquez	2/20/98	9:22	☑ YES ☐ NO		S8-80989	

ORIGINAL

BLASLAND, BOUCK & LEE
ENGINEERS & GEOSCIENTISTS

SOIL/SEDIMENT SAMPLING LOG

Project No. 880.11 Page ____ of ____

Site Location Hawker Hawk

Sample I.D. No. SED-1 Coded/Replicate No. ____

Date 2/19/98 Time of Sampling: Begin 9:50 End ____

Weather hot, humid

Site Description ____

SAMPLING DATA

Collection Method glass jar

Depth 6" Moisture Content ____

Color tan limestone w/ magnis. Odor ____

Description ____

Analyses Required (Order of Collection)	Container Description
PAHs	250 ml glass

Sample Monitoring (TIP, OVA, HNU, etc.) ____

Remarks ____

(Visitors, Field Decon) ____

(QC Sample Locations/Time) EQ-1 9:45

Sampler(s) (Signatures) [signature]

BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

WATER SAMPLING LOG

Project No. 880.11 Page 1 of 1

Site Location Hamaker Brook

Site/Well No. SW-1 Coded/ Replicate No. Date 2/19/98

Weather hot, humid Time Sampling Began 10:30a Time Sampling Completed

EVACUATION DATA

Description of Measuring Point (MP) surface within wet area adjacent to AST pad

Height of MP Below Land Surface 0.5 (feet) MP Elevation (feet)

Total Sounded Depth (TD) of Well Below MP (feet) Water-Level Elevation (feet)

Depth to Water (DTW) Below MP (feet) Diameter of Casing/ Construction Type

Water Column (WC) in Well (TD - DTW) (feet) Gallons Pumped/Bailed Prior to Sampling (GAL x 5 VOL x PUMP RATE)

Gallons per Foot (GPF)

Gallons in Well (WC x GPF) Sampling Pump Intake (feet below land surface)

Evacuation Method

SAMPLING DATA/FIELD PARAMETERS

Color lt. brown Odor organic Appearance silty Temperature / 80.7 °F/°C

Other (specification; OVA; HNU; etc)

Specific Conductance, umhos/cm / 17,950 pH / 9.4

Sampling Method and Material glass jar

CONTAINER DESCRIPTION

	Constituents Sampled	From Lab ✓ or BBL	Preservative
1.	PAHs	amber glass	Ø
2.			
3.			
4.			
5.			
6.			
7.			

Remarks

Sampling Personnel R. Stearn / W. Chin

WELL CASING VOLUMES

GAL./FT.				
	1-1/4" = 0.077	2" = 0.16	3" = 0.37	4" = 0.65
	1-1/2" = 0.10	2-1/2" = 0.24	3-1/2" = 0.50	6" = 1.46

13951047N

MULTIPLE WELL MEASUREMENTS

BLASLAND, BOUCK & LEE, INC.
ENGINEERS & SCIENTISTS

Project No. 880.11
Site Location Hagman Hawk
Instrument Type Keck

Well No.	Date	Time	Total Depth	DTW	Stick Up	Wet	Held	Remarks (Well Diameter, Construction Type, Cap, Grout Condition, Locked)
MW-1	2/14/99	10:56	12.05	4.40				
MW-2	↓	11:00	12:02	4.77				
MW-3	↓	12:03	12.03	4.23				

NOTES (Visitors, Well Condition, Odors, Hazards) _____

BB&L Personnel (Signatures) _____