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NAS KEY WEST
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ANNUAL GROUNDWATER MONITORING PLAN REPORT FOR BOCA CHICA FLYING CLUB UNDERGROUND STORAGE TANK SITE 9 NAS KEY WEST FL

7/14/2000

TETRA TECH NUS

0395-7.2.4

TETRA TECH NUS, INC.
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TtNUS/DFB-99/1027/0395-7.2.3

July 14, 2000

Project Number 0395

Jorge R. Caspary, P.G.
Remedial Project Manager
Technical Review/Federal Facilities
Florida Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Reference: **Clean Contract No. N62467-94-D0888**
Contract Task Order No. 0110

Subject: **Annual Groundwater Monitoring Plan Report**
Flying Club UST Site 9, Naval Air Station,
Key West, Florida

Tetra Tech NUS, Inc. (TtNUS) is pleased to submit the Groundwater Monitoring Report for the referenced Contract Task Order (CTO). This report has been prepared for the U.S. Navy Southern Division Naval Facilities Engineering Command under CTO-110, for the Comprehensive Long-term Environmental Action Navy (CLEAN) Contract Number N62467-94-D-0888.

Monitoring Objectives. The objective of the quarterly groundwater monitoring program at UST Site 9 is to evaluate the contaminant plume stability until cleanup levels are achieved. The monitoring program is presented in the Remedial Action Plan (RAP) for Flying Club Site (UST Site 9), Naval Air Station, Key West, (August 1997). According to the RAP, the groundwater samples will be analyzed for the parameters listed in the Chapter 62-770, FAC, kerosene analytical group.

The groundwater at the site is classified as a G-III aquifer (McKenzie, 1990). As a result of this classification, the FDEP Groundwater Cleanup Target Levels (GCTLs) for groundwater of low yield/poor quality, as prescribed by Chapter 62-770, are the appropriate GCTLs.

First Quarterly Monitoring. Activities and results from the first quarter of free product monitoring and first quarter groundwater sampling event at UST Site 9, are detailed in the first quarter monitoring report submitted to the FDEP on December 15, 1999. Based on the hydrocarbon contaminant levels in the wells sampled, TtNUS recommended additional monitoring at the site to evaluate the natural attentuation of contaminants in the groundwater.

Second Quarterly Monitoring. Activities and results from the second quarter of free product monitoring and second quarter groundwater sampling event at UST Site 9, are detailed in the second quarter monitoring report submitted to the FDEP on February 7, 2000. Based on the hydrocarbon contaminant levels in the wells sampled, TtNUS recommended additional monitoring at the site to evaluate the natural attentuation of contaminants in the groundwater.

Q A Record

Third Quarterly Monitoring. Activities and results from the third quarter of free product monitoring and third quarter groundwater sampling event at UST Site 9, are detailed in the third quarter monitoring report submitted to the FDEP on May 15, 2000. Based on the hydrocarbon contaminant levels in the wells sampled, TtNUS recommended additional monitoring at the site to evaluate the natural attentuation of contaminants in the groundwater.

FOURTH QUARTER MONITORING

On June 9, 2000 TtNUS personnel collected groundwater samples from four UST Site 9 monitoring wells (KYW-A-127-MW5, KYW-A-127-MW6, KYW-A-127-MW12, and KYW-A-127-MW21). A duplicate groundwater sample and an equipment blank sample were also collected for laboratory analysis. All sampling activities were conducted in accordance with TtNUS', FDEP approved CompQAP #980038.

Immediately prior to the collection of the groundwater samples, water level and product measurements were recorded from each site monitoring well. Free phase petroleum product was not detected in any monitoring wells during this event. The water level data was used to determine purge volumes. In addition, depth-to-water measurements and top of casing elevations were used to calculate groundwater elevations. Based on these elevations, the groundwater was flowing primarily to the south-southwest at the time of sampling. A potentiometric surface map is included as Figure 1, Attachment A. Depth to water measurements, top of casing elevations, and groundwater elevation data are provided in Table 1, Attachment B.

Following collection of the groundwater samples, the sample bottles were packed on ice and shipped via overnight transport to PC&B Environmental Laboratories in Oviedo, Florida. The groundwater samples were analyzed for the parameters listed in the kerosene analytical group. The analytical results for the fourth quarterly groundwater sampling event are summarized in Table 2, Attachment B. A copy of the laboratory report is provided in Attachment C.

Volatile organic aromatics (VOA) concentrations were detected in the samples collected from KYW-A-127-MW6 and KYW-A-127-MW21. The detected VOA compounds were benzene, toluene, ethylbenzene, and xylenes. Benzene was detected in KYW-A-127-MW6 at a concentration of 19.1 µg/L. Toluene was detected in KYW-A-127-MW6 at a concentration of 8.8 µg/L. ethylbenzene were also detected in KYW-A-127-MW6 and KYW-A-127-MW21 at concentrations of 63.1 µg/L and 5.4 µg/L respectively.

Benzene concentrations were above FDEP GCTLs established for the groundwater in the samples collected from KYW-A-127-MW6. Toluene, ethylbenzene and xylene concentrations were below the FDEP GCTLs. Other VOA's detected in the groundwater samples collected from UST Site 9 do not have established FDEP GCTLs listed.

Naphthalene (including 1-Methyl naphthalene and 2-Methyl naphthalene) was the only Polynuclear Aromatic Hydrocarbon (PAH) detected the groundwater samples collected during the sampling event. Naphthalene was detected in KYW-A-127-MW6 and KYW-A-127-MW21at a concentrations of 78 µg/L and 18 µg/L. It was also detected in the duplicate blank. The naphthalene concentration in both wells was below the FDEP GCTLs established for the site.

Total Recoverable Petroleum Hydrocarbons (TRPH), Lead and Ethylene dibromide (EDB) concentrations were detected were not detected in any of the groundwater samples collected.

In addition to the groundwater analytical samples, groundwater samples were also field screened for alkalinity, carbon dioxide, sulfide and ferrous iron using a Hach Test kit. Samples were collected from KYW-A-127-MW6 and KYW-A-127-MW12. Alkalinity concentrations ranged from 148 mg/L in KYW-A-127-MW6 to 180 mg/L in KYW-A-127-MW12. Carbon dioxide concentrations were 100.1 mg/L and 120.3 mg/L in KYW-A-127-MW6 and MW-12 respectively. Sulfide concentrations were 5 mg/L in KYW-A-127-

MW6 and were not detected in KYW-A-127-MW12. Ferrous iron concentrations were not detected in either of the wells.

Conclusions. Dissolved petroleum compounds were detected in two of the site wells, KYW-A-127-MW6 and KYW-A-127-MW21. Benzene was the only compound present that exceeded FDEP GCTLs. Additional monitoring data would be required to make any further conclusions concerning the natural attenuation of benzene in groundwater.

Recommendations. Based on the results of this sampling event, TtNUS recommends that future monitoring at UST Site 9 include only the sampling of monitoring well KYW-A-127-MW-6 for the following analyses:

USEPA 8021 for VOAs
USEPA Method 610/8100 for PAHs
Florida Petroleum Range Organics for TRPH
EPA 504 for EDB
EPA 6010 for Lead

Per the recommendation of the FDEP, groundwater from monitoring well KYW-A-127-MW-6 will be analyzed for natural attenuation parameters during the following one year of monitoring. The next quarterly sampling event is scheduled for September. If you have any questions with regard to this submittal, please contact the undersigned at (954) 570-5885.

Very truly yours,

Rick Ofsanko
Task Order Manager

Gary Braganza, P.G. 7-14-00
Florida License No. 1822

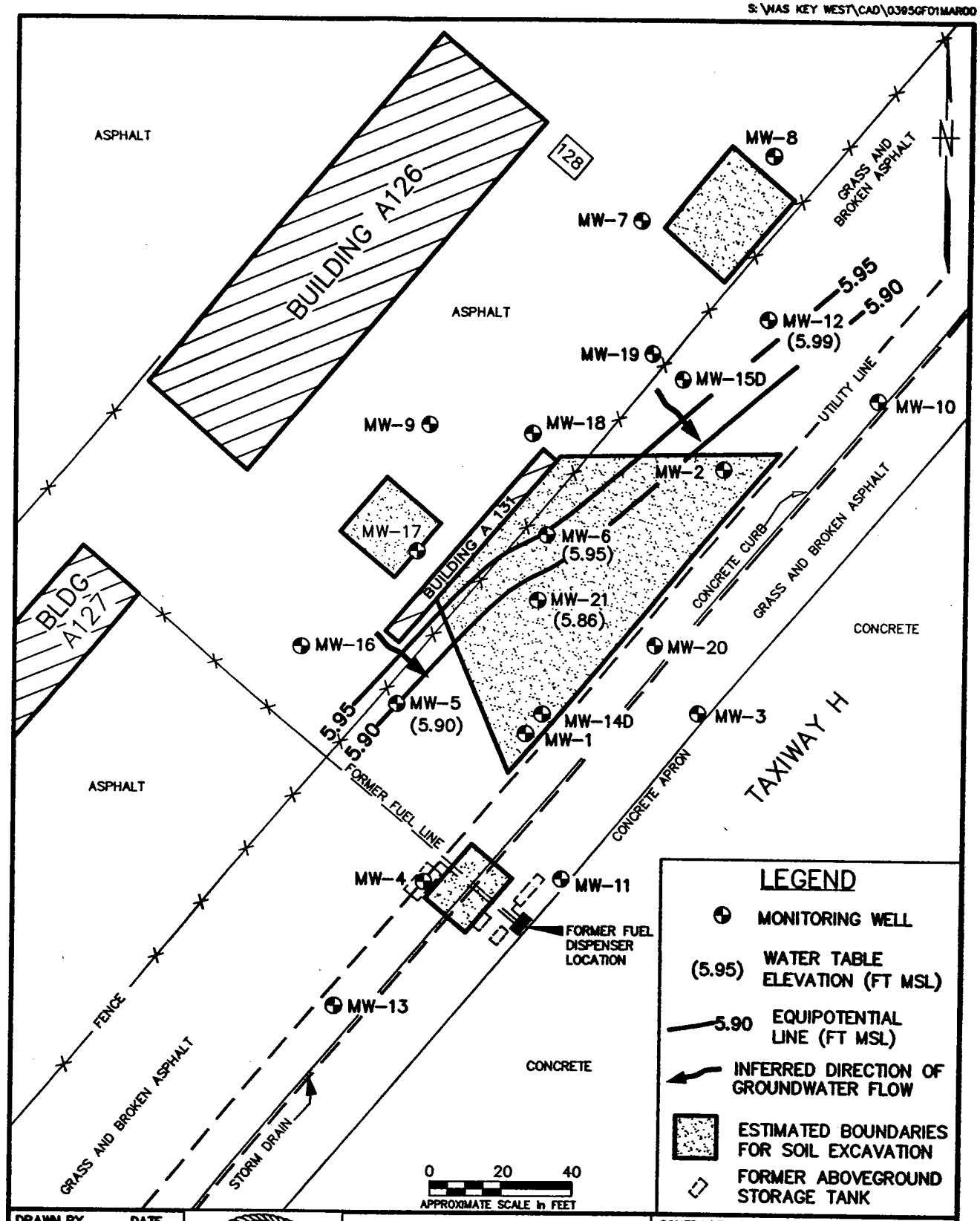
RO/gb

Enclosures

c: B. Glover, SDIV
M. Stanka, NAS Key West
M. Perry / file, TtNUS

ATTACHMENT A

S:\WAS KEY WEST\CAD\0395GF01MAR00



DRAWN BY DATE: LLK 6/29/00		CONTRACT NO. 0395	
CHECKED BY DATE	POTENTIOMETRIC SURFACE MAP JUNE 9, 2000 FLYING CLUB SITE, BLDG A-127 NAVAL AIR STATION KEY WEST, FLORIDA	APPROVED BY DATE	
COST/SCHED-AREA		APPROVED BY DATE	
SCALE: AS NOTED		DRAWING NO. FIGURE 1	REV. 0

FORM CADD NO. SDIV_AV.DWG – REV 0 – 1/20/98

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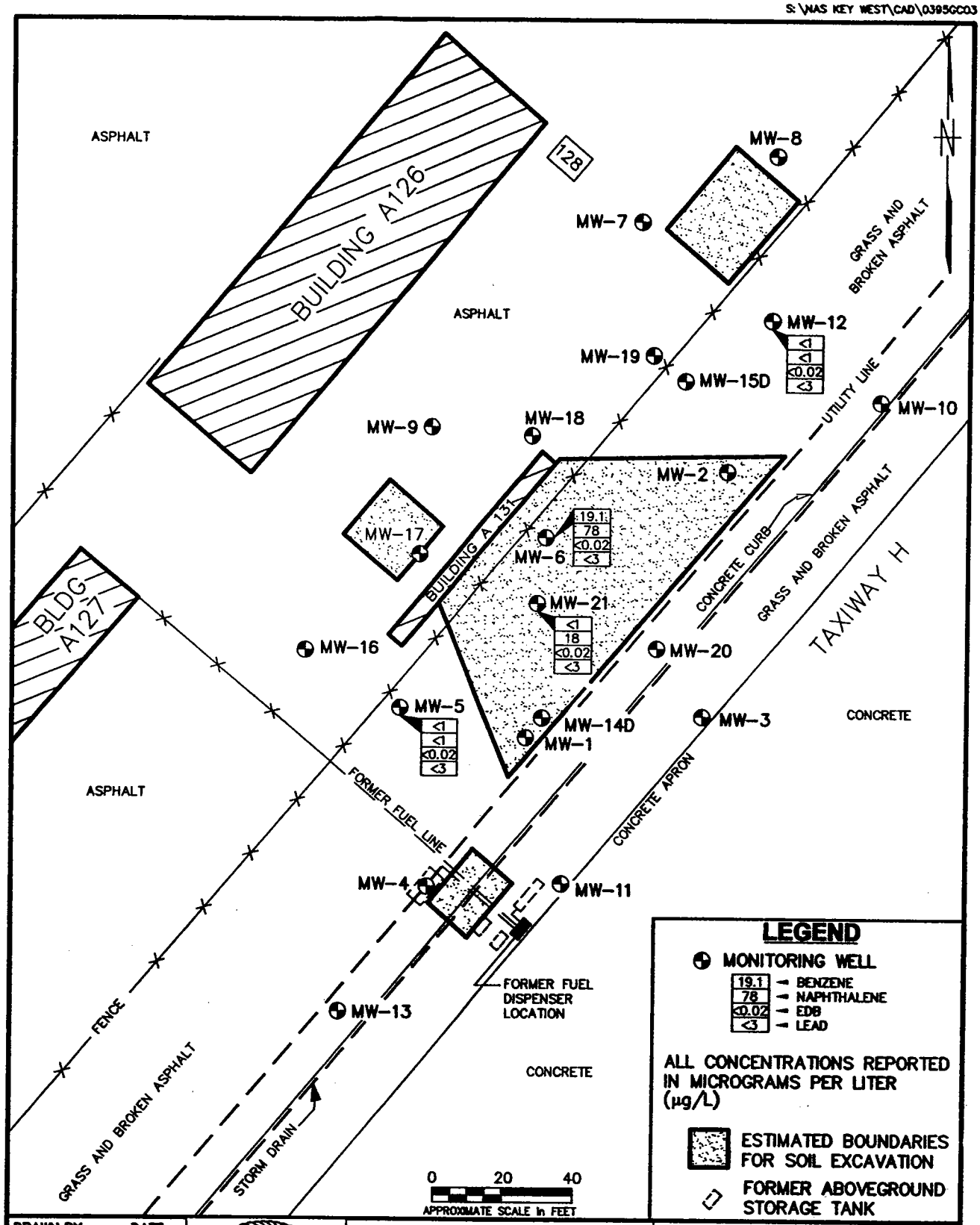

DRAWN BY DATE: LLK 6/29/00		CONTRACT NO. 0395	
CHECKED BY DATE	CONTAMINANT CONCENTRATIONS JUNE 9, 2000 FLYING CLUB SITE, BLDG A-127 NAVAL AIR STATION KEY WEST, FLORIDA	APPROVED BY DATE	
COST/SCHED--AREA		APPROVED BY DATE	
SCALE: AS NOTED		DRAWING NO. FIGURE 2	REV. 0

FORM CADD NO. SDIV_AV.DWG – REV 0 – 1/20/98

ATTACHMENT B

TABLE 1
TOP OF CASING ELEVATIONS, WATER TABLE ELEVATIONS, AND TOTAL DEPTHS
Flying Club UST Site 9
Naval Air Station, Key West, Florida

Well ID	Total Depth	Top of Casing Elevation[1]	August 22, 1999		November 24, 1999		March 2, 2000	
			Groundwater Level	Groundwater Elevation	Groundwater Level	Groundwater Elevation	Groundwater Level	Groundwater Elevation
KYW-A-127-MW-5	12.88	10.00	6.43	3.57	6.53	3.47	4.50	5.5
KYW-A-127-MW-6	13.00	9.07	5.35	3.72	5.42	3.65	3.70	5.37
KYW-A-127-MW-12	12.45	9.68	5.83	3.85	5.96	3.72	4.30	5.38
KYW-A-127-MW-21	12.97	8.96	5.34	3.62	5.43	3.53	3.52	5.44

Well ID	Total Depth	Top of Casing Elevation[1]	June 9, 2000					
			Groundwater Level	Groundwater Elevation				
KYW-A-127-MW-5	12.88	10.00	4.10	5.90				
KYW-A-127-MW-6	13.00	9.07	3.12	5.95				
KYW-A-127-MW-12	12.45	9.68	3.69	5.99				
KYW-A-127-MW-21	12.97	8.96	3.08	5.86				

NOTES:
[1] Top of casing and groundwater elevations are relative to an arbitrary site reference elevation of 10 feet.
All measurements reported in feet.

TABLE 2

GROUNDWATER MONITORING WELL ANALYTICAL SUMMARY

Flying Club UST Site 9

Naval Air Station, Key West, Florida

Sample Location	Date	Benzene	Ethyl benzene	Isopropyl benzene	Toluene	Total Xylenes	Naph-thalene	TRPH	Lead
Cleanup Target Level(1)		10	300	N/A	400	200	200	50	150
KYW-A-127-MW-5	11/24/99	<1	<1	<1	<1	<1	<5	<0.1	<3
	3/2/00	<1	<1	<1	<1	<1	<5	<0.1	<3
	6/9/00	<1	NR	NR	NR	NR	<5	<0.1	<3
KYW-A-127-MW-6	11/24/99	21.7	93.6	23.1	5	29.3	105.0	0.4	9
	3/2/00	35.1	195	33.8	8.4	63.7	205.0	0.6	<3
	6/9/00	19.1	63.1	NR	8.8	33.6	78.0	0.4	<3
KYW-A-127-MW-12	11/24/99	<1	<1	<1	<1	<1	<1	<0.1	<3
	3/2/00	<1	<1	<1	<1	<1	<1	<0.1	<3
	6/9/00	<1	<1	NR	<1	<1	<5	<0.1	<3
KYW-A-127-MW-21	11/24/99	<1	<1	<1	<1	<1	<1	<1	<3
	3/2/00	<1	8.4	3.4	<1	<1	40.8	<1	<3
	6/9/00	<1	5.4	NR	<1	7	18	<0.1	<3
KYW-A-127-DUP	11/24/99	22.1	97.4	24.3	5	31.3	130	0.4	<3
	3/2/00	41.8	255	43.4	10.5	4.6	220	0.6	<3
	6/9/00	<1	6.1	NR	5.7	6.8	14	<0.1	<3

NOTES:

(1)Groundwater cleanup target levels as specified in Table VIII of Chapter 62-770, Florida Administrative Code.

TRPH = total recoverable petroleum hydrocarbons.

Concentrations reported in micrograms per liter for all chemicals except TRPH. TRPH is reported in milligrams per liter.

NR = not reported

ATTACHMENT C

PC&B Environmental Laboratories, Inc.

210 Park Road, Oviedo, Florida 32765
Phone: 407-359-7194 Fax: 407-359-7197

06-16-2000

Rick Ofsanko
Tetra Tech NUS, Inc.
794 S. Military Trail
Deerfield Beach, FL 33442-

Dear Rick Ofsanko:

Enclosed are the results of the analysis of your samples received 06/10/2000.

Our laboratory is certified by the Florida DHRS (Lab #E83239) and operates under an FDEP approved Comprehensive Quality Assurance Plan (#900134G). Unless otherwise noted, all results are reported as received. All data were determined in accordance with published procedures (EPA-600/4-79-020), Methods for Chemical Analysis of Water and Wastes, Revised March 1983, or later and/or Standard Methods for the examination of Water and Wastewater, 18th Edition 1989, or later and/or Test Methods for Evaluating Solid Waste (EPA-SW-846, Revised January 1995, or later), unless stated otherwise in our CompQapp under method modifications.

If you have any questions, please do not hesitate to give me a call.

Sincerely,

Sheldon Stone
Laboratory Manager

PC&B Environmental Laboratories, Inc.

210 Park Road, Oviedo, Florida 32765
Phone: 407-359-7194 Fax: 407-359-7197

Client : Tetra Tech NUS, Inc.
794 S. Military Trail
Deerfield Beach, FL 33442-

Contact : Rick Ofsanko
Phone : (954) 570-5885

Laboratory Reference Number : 200060079

Project Name : UST Site 9 Key West
Project Number :

Chain of Custody : 18723

Laboratory ID	Matrix	Client ID	Status	Date/Time Sampled
200060079-1	Water	KYW-A-127-MW5	RUN	06/09/2000 08:00
200060079-2	Water	KYW-A-127-MW6	RUN	06/09/2000 08:40
200060079-3	Water	KYW-A-127-MW12	RUN	06/09/2000 09:15
200060079-4	Water	KYW-A-127-MW21	RUN	06/09/2000 09:50
200060079-5	Water	KYW-A-127-DUP	RUN	06/09/2000
200060079-6	Water	EQ BLANK	RUN	06/09/2000 10:20

Number	Parameter	Description
6	EPA 602/8021	Aromatic Volatile Organics
6	EPA 504	EDB/DBCP
6	FL-PRO	Petroleum Hydrocarbons
6	EPA 610/8100	Polynuclear Aromatic Hydrocarbons
6	EPA 6010	Lead by ICAP

PC&B Environmental Laboratories, Inc.

210 Park Road
Oviedo, FL 32765
407-359-7194 - (FAX) 359-7197

Case Narrative

Rick Ofsanko
Tetra Tech NUS, Inc.
794 S. Military Trail
Deerfield Beach, FL 33442-

CASE NARRATIVE for Work Order: 200060079
Project Number:
Project Name: UST Site 9 Key West

This Case Narrative is a summary of events and/or problems encountered with this Work Order.

For samples requesting EPA 601/602/8010/8020/8021 analysis, the GCMS method EPA 624/8260 was substituted in order to generate the highest quality data possible at no additional cost.

Definition of Flags

DL	=	No surrogate result due to dilution or matrix interference.
J	=	Estimated Value, value not accurate.
L	=	Off-scale high. Actual value is greater than value given.
Q	=	Sample held beyond the accepted holding time.
T	=	Value reported is less than the laboratory method detection limit.
V	=	Analyte was both detected in the method blank and sample.

PC&B Environmental Laboratories, Inc.
210 Park Road
Oviedo, FL 32765
PHONE: 407-359-7194
FAX: 359-7197

Aromatic Volatile Organics

CLIENT NAME: Tetra Tech NUS, Inc.
PROJECT NAME: UST Site 9 Key West
PROJECT NUMBER:
DATE RECEIVED: 06/10/2000
ANALYTICAL PROTOCOL: EPA 602/8021

Lab Reference Number	200060079-1	200060079-2	200060079-3	200060079-4	200060079-5
Client Sample ID	KYW-A-127-MW5	KYW-A-127-MW6	KYW-A-127-MW12	KYW-A-127-MW21	KYW-A-127-DUP
Date Sampled	06/09/2000	06/09/2000	06/09/2000	06/09/2000	06/09/2000
Date Extracted	06/14/2000	06/14/2000	06/14/2000	06/14/2000	06/14/2000
Date Analyzed	06/14/2000	06/14/2000	06/14/2000	06/14/2000	06/14/2000
Sample Matrix (as Received)	Water	Water	Water	Water	Water
Analysis Confirmed	GCMS	GCMS	GCMS	GCMS	GCMS
Dilution Factor	1	1	1	1	1
Result Units	ug/l	ug/l	ug/l	ug/l	ug/l
Benzene	1.0 U	19.1	1.0 U	1.0 U	1.0 U
Chlorobenzene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichlorobenzene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,3-Dichlorobenzene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,4-Dichlorobenzene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	1.0 U	63.1	1.0 U	5.4	6.1
MTBE	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Toluene	1.0 U	8.8	1.0 U	1.0 U	1.0 U
m & p-Xylenes	1.0 U	30.8	1.0 U	5.9	5.7
o-Xylene	1.0 U	2.8	1.0 U	1.1	1.1
(Surr) 1,2-Dichloroethane-d4 (%)	108	105	110	106	114
(Surr) Toluene-d8 (%)	127	112	124	105	122
(Surr) 4-Bromofluorobenzene (%)	97	93	91	96	90

U = Undetected. The value preceeding the 'U' is the RL for the analyte, based on dilution. Results reported on a Wet Weight basis.

FDEP CompQAPP # 900134G - FHRS Certification # E83239/83353

Reviewed by: _____

PC&B Environmental Laboratories, Inc.
210 Park Road
Oviedo, FL 32765
PHONE: 407-359-7194
FAX: 359-7197

Aromatic Volatile Organics

CLIENT NAME: Tetra Tech NUS, Inc.
PROJECT NAME: UST Site 9 Key West
PROJECT NUMBER:
DATE RECEIVED: 06/10/2000
ANALYTICAL PROTOCOL: EPA 602/8021

Lab Reference Number	200060079-6
Client Sample ID	EQ BLANK
Date Sampled	06/09/2000
Date Extracted	06/14/2000
Date Analyzed	06/14/2000
Sample Matrix (as Received)	Water
Analysis Confirmed	GCMS
Dilution Factor	1
Result Units	ug/l
Benzene	1.0 U
Chlorobenzene	1.0 U
1,2-Dichlorobenzene	1.0 U
1,3-Dichlorobenzene	1.0 U
1,4-Dichlorobenzene	1.0 U
Ethylbenzene	1.0 U
MTBE	5.0 U
Toluene	1.0 U
m & p-Xylenes	1.0 U
o-Xylene	1.0 U
(Surr) 1,2-Dichloroethane-d4 (%)	103
(Surr) Toluene-d8 (%)	120
(Surr) 4-Bromofluorobenzene (%)	91

U = Undetected. The value preceeding the 'U' is the RL for the analyte, based on dilution. Results reported on a Wet Weight basis.

Reviewed by : _____

Quality Control Report for Spike/Spike Duplicate Analysis

Aromatic Volatile Organics

Matrix: Water
Lab Sample ID: MW-QC
QC Batch ID: 0006MS3029
Spike Units: ug/l

Analysis Date: 06/15/2000
Preparation Date: 06/15/2000
Method: EPA 602
Analyst: DG

Analyte	Spike Amount	Sample Result	Spike Result	Spike Percent Recovery	MSD Result	MSD Percent Recovery	RPD
Benzene	50.0	0.0	53.0	106	51.0	102	4
Ethylbenzene	50.0	0.0	49.0	98	50.0	100	2
MTBE	50.0	0.0	54.0	108	49.0	98	10
Toluene	50.0	0.0	54.0	108	51.0	102	6
m & p-Xylenes	100.0	0.0	105.0	105	113.0	113	7
o-Xylene	50.0	0.0	55.0	110	60.0	120	9

Quality Control Limits

Analyte	Lower Limit	Upper Limit	RPD
Benzene	63	140	13
Ethylbenzene	70	131	10
MTBE	60	155	13
Toluene	67	130	11
m & p-Xylenes	68	128	10
o-Xylene	69	130	10

PC&B Environmental Laboratories, Inc.
210 Park Road
Oviedo, FL 32765
PHONE: 407-359-7194
FAX: 359-7197

Polynuclear Aromatic Hydrocarb

CLIENT NAME: Tetra Tech NUS, Inc.
PROJECT NAME: UST Site 9 Key West
PROJECT NUMBER:
DATE RECEIVED: 06/10/2000
ANALYTICAL PROTOCOL: EPA 610/8100

Lab Reference Number	200060079-1	200060079-2	200060079-3	200060079-4	200060079-5
Client Sample ID	KYW-A-127-MW5	KYW-A-127-MW6	KYW-A-127-MW12	KYW-A-127-MW21	KYW-A-127-DUP
Date Sampled	06/09/2000	06/09/2000	06/09/2000	06/09/2000	06/09/2000
Date Extracted	06/12/2000	06/12/2000	06/12/2000	06/12/2000	06/12/2000
Date Analyzed	06/12/2000	06/12/2000	06/12/2000	06/12/2000	06/12/2000
Sample Matrix (as Received)	Water	Water	Water	Water	Water
Analysis Confirmed	No	No	No	No	No
Dilution Factor	1	1	1	1	1
Result Units	ug/l	ug/l	ug/l	ug/l	ug/l
Acenaphthene	5 U	5 U	5 U	5 U	5 U
Acenaphthylene	5 U	5 U	5 U	5 U	5 U
Anthracene	5 U	5 U	5 U	5 U	5 U
Benzo(a)anthracene	5 U	5 U	5 U	5 U	5 U
Benzo(a)pyrene	5 U	5 U	5 U	5 U	5 U
Benzo(b)fluoranthene	5 U	5 U	5 U	5 U	5 U
Benzo(ghi)perylene	5 U	5 U	5 U	5 U	5 U
Benzo(k)fluoranthene	5 U	5 U	5 U	5 U	5 U
Chrysene	5 U	5 U	5 U	5 U	5 U
Dibenzo(ah)anthracene	5 U	5 U	5 U	5 U	5 U
Fluoranthene	5 U	5 U	5 U	5 U	5 U
Fluorene	5 U	5 U	5 U	5 U	5 U
Indeno(123-cd)pyrene	5 U	5 U	5 U	5 U	5 U
Naphthalene	5 U	78	5 U	18	14
1-Methyl naphthalene	5 U	11	5 U	5 U	5 U
2-Methyl naphthalene	5 U	18	5 U	5 U	5 U
Phenanthrene	5 U	5 U	5 U	5 U	5 U
Pyrene	5 U	5 U	5 U	5 U	5 U
(Surr) 2-Fluorobiphenyl (%)	82	75	75	77	68

U = Undetected. The value preceeding the 'U' is the RL for the analyte, based on dilution. Results reported on a Wet Weight basis.

FDEP CompQAPP # 900134G - FHRS Certification # E83239/83353

Reviewed by : _____

PC&B Environmental Laboratories, Inc.
210 Park Road
Oviedo, FL 32765
PHONE: 407-359-7194
FAX: 359-7197

Polynuclear Aromatic Hydrocarb

CLIENT NAME: Tetra Tech NUS, Inc.
PROJECT NAME: UST Site 9 Key West
PROJECT NUMBER:
DATE RECEIVED: 06/10/2000
ANALYTICAL PROTOCOL: EPA 610/8100

Lab Reference Number	200060079-6	
Client Sample ID	EQ BLANK	
Date Sampled	06/09/2000	
Date Extracted	06/12/2000	
Date Analyzed	06/12/2000	
Sample Matrix (as Received)	Water	
Analysis Confirmed	No	
Dilution Factor	1	
Result Units	ug/l	
Acenaphthene	5	U
Acenaphthylene	5	U
Anthracene	5	U
Benzo(a)anthracene	5	U
Benzo(a)pyrene	5	U
Benzo(b)fluoranthene	5	U
Benzo(ghi)perylene	5	U
Benzo(k)fluoranthene	5	U
Chrysene	5	U
Dibenzo(ah)anthracene	5	U
Fluoranthene	5	U
Fluorene	5	U
Indeno(123-cd)pyrene	5	U
Naphthalene	5	U
1-Methyl naphthalene	5	U
2-Methyl naphthalene	5	U
Phenanthrene	5	U
Pyrene	5	U
(Surr) 2-Fluorobiphenyl (%)	80	

U = Undetected. The value preceeding the 'U' is the RL for the analyte, based on dilution. Results reported on a Wet Weight basis.

FDEP CompQAPP # 900134G - FHRS Certification # E83239/83353

Reviewed by : _____

Quality Control Report for Spike Analysis

Polynuclear Aromatic Hydrocarbons

Matrix: Water
Lab Sample ID: 0006042-1
QC Batch ID: 0006PAH038
Spike Units: ug/l

Analysis Date: 06/12/2000
Preparation Date: 06/12/2000
Method: EPA 610
Analyst: RM

Analyte	Spike Amount	Sample Result	Spike Result	Percent Recovery	Lower Control Limit	Upper Control Limit
(Surr) 2-Fluorobiphenyl	100	0	94	94	47	115
Acenaphthene	50	0	47	94	56	123
Acenaphthylene	50	0	45	90	46	101
Anthracene	50	0	47	94	60	126
Benzo(a)anthracene	50	0	43	86	43	121
Benzo(a)pyrene	50	0	44	88	49	113
Benzo(b)fluoranthene	50	0	42	84	46	120
Benzo(ghi)perylene	50	0	40	80	37	113
Benzo(k)fluoranthene	50	0	50	100	47	125
Chrysene	50	0	44	88	47	114
Dibenzo(ah)anthracene	50	0	40	80	40	118
Fluoranthene	50	0	45	90	52	111
Fluorene	50	0	47	94	46	108
Indeno(123-cd)pyrene	50	0	40	80	39	117
Naphthalene	50	0	44	88	40	115
Phenanthrene	50	0	45	90	47	125
Pyrene	50	0	44	88	54	111

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PHONE: 407-359-7194
FAX: 359-7197

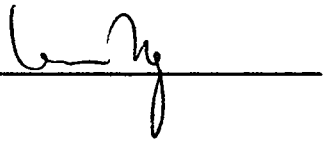
EDB/DBCP

CLIENT NAME: Tetra Tech NUS, Inc.
PROJECT NAME: UST Site 9 Key West
PROJECT NUMBER:
DATE RECEIVED: 06/10/2000
ANALYTICAL PROTOCOL: EPA 504

Lab Reference Number	200060079-1	200060079-2	200060079-3	200060079-4	200060079-5
Client Sample ID	KYW-A-127-MW5	KYW-A-127-MW6	KYW-A-127-MW12	KYW-A-127-MW21	KYW-A-127-DUP
Date Sampled	06/09/2000	06/09/2000	06/09/2000	06/09/2000	06/09/2000
Date Extracted	06/14/2000	06/14/2000	06/14/2000	06/14/2000	06/14/2000
Date Analyzed	06/14/2000	06/14/2000	06/14/2000	06/14/2000	06/14/2000
Sample Matrix (as Received)	Water	Water	Water	Water	Water
Analysis Confirmed	No	No	No	No	No
Dilution Factor	1	1	1	1	1
Result Units	ug/l	ug/l	ug/l	ug/l	ug/l
Ethylene dibromide (EDB)	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
1,2-Dibromo-3-chloropropane	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U

U = Undetected. The value preceeding the 'U' is the RL for the analyte, based on dilution. Results reported on a Wet Weight basis.

FDEP CompQAPP # 900134G - FHRS Certification # E83239/83353

Reviewed by : 

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FAX: 359-7197

EDB/DBCP

CLIENT NAME: Tetra Tech NUS, Inc.
PROJECT NAME: UST Site 9 Key West
PROJECT NUMBER:
DATE RECEIVED: 06/10/2000
ANALYTICAL PROTOCOL: EPA 504

Lab Reference Number	200060079-6
Client Sample ID	EQ BLANK
Date Sampled	06/09/2000
Date Extracted	06/14/2000
Date Analyzed	06/14/2000
Sample Matrix (as Received)	Water
Analysis Confirmed	No
Dilution Factor	1
Result Units	ug/l
Ethylene dibromide (EDB)	0.02 U
1,2-Dibromo-3-chloropropane	0.1 U

U = Undetected. The value preceeding the 'U' is the RL for the analyte, based on dilution. Results reported on a Wet Weight basis.

FDEP CompQAPP # 900134G - FHRS Certification # E83239/83353

Reviewed by : _____

Quality Control Report for Spike Analysis

EDB/DBCP

Matrix: Water
Lab Sample ID: 0006095-2
QC Batch ID: 0006EDB002
Spike Units: ug/l

Analysis Date: 06/14/2000
Preparation Date: 06/14/2000
Method: EPA 504
Analyst: RM

Analyte	Spike Amount	Sample Result	Spike Result	Percent Recovery	Lower Control Limit	Upper Control Limit
Ethylene dibromide (EDB)	1.00	0.00	1.00	100	48	135
1,2-Dibromo-3-chloropropane	1.0	0.0	0.8	80	43	134

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Petroleum Hydrocarbons

CLIENT NAME: Tetra Tech NUS, Inc.
PROJECT NAME: UST Site 9 Key West
PROJECT NUMBER:
DATE RECEIVED: 06/10/2000
ANALYTICAL PROTOCOL: FL-PRO

Lab Reference Number	200060079-1	200060079-2	200060079-3	200060079-4	200060079-5
Client Sample ID	KYW-A-127-MW5	KYW-A-127-MW6	KYW-A-127-MW12	KYW-A-127-MW21	KYW-A-127-DUP
Date Sampled	06/09/2000	06/09/2000	06/09/2000	06/09/2000	06/09/2000
Date Extracted	06/12/2000	06/12/2000	06/12/2000	06/12/2000	06/12/2000
Date Analyzed	06/12/2000	06/12/2000	06/12/2000	06/12/2000	06/12/2000
Sample Matrix (as Received)	Water	Water	Water	Water	Water
Analysis Confirmed	No	No	No	No	No
Dilution Factor	1	1	1	1	1
Result Units	mg/l	mg/l	mg/l	mg/l	mg/l
Total PHS	0.1 U	0.4	0.1 U	0.1 U	0.1 U
(Surr) C-39 (%)	60	50	55	59	52

U = Undetected. The value preceeding the 'U' is the RL for the analyte, based on dilution. Results reported on a Wet Weight basis.

FDEP CompQAPP # 900134G - FHRS Certification # E83239/83353

Reviewed by :

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Petroleum Hydrocarbons

CLIENT NAME: Tetra Tech NUS, Inc.
PROJECT NAME: UST Site 9 Key West
PROJECT NUMBER:
DATE RECEIVED: 06/10/2000
ANALYTICAL PROTOCOL: FL-PRO

Lab Reference Number	200060079-6
Client Sample ID	EQ BLANK
Date Sampled	06/09/2000
Date Extracted	06/12/2000
Date Analyzed	06/12/2000
Sample Matrix (as Received)	Water
Analysis Confirmed	No
Dilution Factor	1
Result Units	mg/l
Total PHS	0.1 U
(Surr) C-39 (%)	62

U = Undetected. The value preceeding the 'U' is the RL for the analyte, based on dilution. Results reported on a Wet Weight basis.

FDEP CompQAPP # 900134G - FHRS Certification # E83239/83353

Reviewed by : _____

Quality Control Report for Spike/Spike Duplicate Analysis

Petroleum Hydrocarbons

Matrix: Water
Lab Sample ID: 0006042-1
QC Batch ID: 0006FLRO039
Spike Units: mg/l

Analysis Date: 06/12/2000
Preparation Date: 06/12/2000
Method: FL-PRO
Analyst: RM

Analyte	Spike Amount	Sample Result	Spike Result	Spike Percent Recovery	MSD Result	MSD Percent Recovery	RPD
(Surr) C-39	100.0	0.0	92.0	92	85.0	85	8
Total PHS	50.0	0.0	32.0	64	34.0	68	6

Quality Control Limits

Analyte	Lower Limit	Upper Limit	RPD
SS_C-39	7	139	30
Total PHS	57	110	11

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Report of Analysis

CLIENT NAME: Tetra Tech NUS, Inc.
PROJECT NAME: UST Site 9 Key West
PROJECT NUMBER:
DATE RECEIVED: 06/10/2000

Lab Reference Number			200060079-1	200060079-2	200060079-3	200060079-4	200060079-5
Client Sample ID			KYW-A-127-MW5	KYW-A-127-MW6	KYW-A-127-MW12	KYW-A-127-MW21	KYW-A-127-DUP
Date Sampled			06/09/2000	06/09/2000	06/09/2000	06/09/2000	06/09/2000
Sample Matrix (as Received)			Water	Water	Water	Water	Water
EPA 6010	Lead, Total	ug/l	3 U	3 U	3 U	3 U	3 U

U = Undetected. The value preceeding the 'U' is the RL for the analyte. Results reported on a Wet Weight basis.

FDEP CompQAPP # 900134G - FHRS Certification # E83239/83353

Reviewed by : _____

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PHONE: 407-359-7194

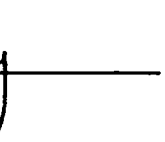
Report of Analysis

CLIENT NAME: Tetra Tech NUS, Inc.
PROJECT NAME: UST Site 9 Key West
PROJECT NUMBER:
DATE RECEIVED: 06/10/2000

Lab Reference Number			200060079-6
Client Sample ID			EQ BLANK
Date Sampled			06/09/2000
Sample Matrix (as Received)			Water
EPA 6010	Lead, Total	ug/l	3 U

U = Undetected. The value preceeding the 'U' is the RL for the analyte. Results reported on a Wet Weight basis.

FDEP CompQAPP # 900134G - FHRS Certification # E83239/83353

Reviewed by : 

Quality Control Report for Spike Analysis

INORGANICS

Analyte		Spike Amount	Sample Result	Spike Result	Percent Recovery	Lower Control Limit	Upper Control Limit
Method: EPA 6010	QC Batch: 2006RC052	Sample ID: 2006079-1	Date Prep: 06/13/2000		Date Anal: 06/14/2000	Analyst: GG	
Lead, Total		100 ug/l	0	86	86	78	120

18723

PC&B Environmental

210 Park Road, Oviedo, FL 32765
407-359-7194 (FAX) 407-359-7197

Chain of Custody

Work Order: 2000600079

Date: 6/9/00 Page 1 of 1

COMPANY: TETRA TECH NUS

ADDRESS: 794 S. MILITARY TRAIL

SAMPLED BY: GARY BRAGANZA SIGN: [signature]

PHONE: (954) 570-5885 FAX: (954) 570-5974

#	SAMPLE ID	DATE/TIME	MATRIX: AIR	WATER	SLUDGE	SOIL/SOLID	ORG. LIQUID	ANALYSIS REQUESTED: EPA 504	EPA 602/8021	EPA 6010	FL-PRO	EPA 610/8100	PRESERVATION	Number of Containers
1	KYW-A-127-MW5	6/9/00 8:00						2	2	1	1	1		7
2	KYW-A-127-MW6	8:40						2	2	1	1	1		7
3	KYW-A-127-MW12	9:15						2	2	1	1	1		7
4	KYW-A-127-MW21	9:50						2	2	1	1	1		7
5	KYW-A-127-DUP	↓						2	2	1	1	1		7
6	FB BLANK	10:20						2	2	1	1	1		7
7														
8														
9														
10														
11														
12														
13														42

RELINQUISHED BY	DATE/TIME	RECEIVED BY	DATE/TIME
1: [signature]	6-5-00	1: [signature]	6/6/00
2: [signature]	6/9	2: [signature]	6/10/00 12:00
3:		3:	

PROJECT INFORMATION

PROJECT NAME: UST SITE 9 KEY WEST

PROJECT #:

SITE ADDRESS: KEY WEST

PROJECT MANAGER: RICK OFSANKO.

SAMPLE RECEIPT

Total # of Containers	42
Chain of Custody Seals	
Recv'd in Good Condition	
PO #:	

SPECIAL INSTRUCTIONS/COMMENTS:

INVOICE TO: (IF DIFFERENT FROM ABOVE)

QUOTE/CONTRACT #:

WHITE: Project File YELLOW: Laboratory PINK: Sampler