

N60200.AR.003372
NAS CECIL FIELD, FL
5090.3a

TOTAL RECOVERABLE PETROLEUM HYDROCARBON SUBCLASSIFICATION LETTER
REPORT FOR BUILDING 82 TANK G82 NAS CECIL FIELD FL
6/25/2002
TETRA TECH NUS INC

PITT-06-2-058

June 25, 2002

Project Number N0394

Mr. David Grabka
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-D-0888
Contract Task Order No. 0108

Subject: TRPH Subclassification, Tank G82
Naval Air Station Cecil Field
Jacksonville, Florida

Dear Mr. Grabka:

Pursuant to discussions held at the April 2002 BCT meeting, TtNUS is pleased to submit the results of the total recoverable petroleum hydrocarbons (TRPH) subclassification analyses of soil samples from the Tank G82 site. (See Figure 1.) The extent of contaminated soil and groundwater has been described in the Site Assessment Report (SAR) (TtNUS, 2000) and the SAR Addendum (SARA) (TtNUS, 2001). The SAR described the extent of soil contaminated by TRPH, polycyclic aromatic hydrocarbons (PAHs), and xylenes. Based on information in the SAR, the Remedial Action Contractor (RAC) excavated most of the contaminated soil in October 2000. However, the presence of a concrete encased piping run, the flightline apron, and the proximity of Building 82 prevented the complete excavation of the contaminated soil identified in the SAR. (See Figure 2.) After excavation, contaminated soil remained with concentrations of ethylbenzene, xylenes, naphthalene, 1-methylnaphthalene, 2-methylnaphthalene, and TRPH greater than FDEP leachability to groundwater soil cleanup target levels (SCTLs), but only the TRPH concentrations were greater than the residential SCTL.

During the SARA, soil samples were analyzed using synthetic precipitation leachate procedure (SPLP) to identify areas where contaminants could potentially leach from the soil. The SPLP results showed that only xylenes, 1-methylnaphthalene, and 2-methylnaphthalene would be leached from the soil at concentrations greater than groundwater cleanup target levels (GCTLs), but TRPH would not be leached from the soil at concentrations greater than the GCTL. Thus, contaminated soil remains near the water table adjacent to Building 82 and adjacent to the flightline apron, and some of this contaminated soil is subject to leaching by seasonal fluctuations in the water table. The overlying concrete minimizes the amount of precipitation that can percolate through the soil, and minimizes the potential for exposure to the contaminated soil. The contaminated soil next to the apron could be excavated, but removal would require supporting the concrete encased pipelines and the demolition and replacement of part of the apron. However, the contaminated soil next to Building 82 cannot be readily removed since excavation would undercut the building foundation.

As described in the SARA, the concentration of TRPH in subsurface soil samples is greater than the residential SCTL of 340 mg/kg. As noted, these concentrations do not adversely affect the groundwater, but their presence would require institutional controls to prevent exposure under residential scenarios. However, an alternative approach for the evaluation of TRPH is to perform a fractionation analysis of the

TRPH components that subclassifies the components according to carbon-chain length and structure (aliphatic or aromatic). The Total Petroleum Hydrocarbon Criteria Working Group (TPHCWG) of the FDEP developed a subclassification analytical method. Each of the subclassifications has a residential SCTL. The TRPH residential SCTL of 340 mg/kg is based on a very conservative assumption that all TRPH present is in the form of the most stringent subclassification (C8 – C10 aromatic). However, the lighter fractions can volatilize and biodegrade over time, leaving behind the original heavier fractions that typically have higher SCTLs.

Therefore, samples were collected at locations that were expected to have high TRPH concentrations and these were subjected to the TPHCWG analysis to determine if land use controls to restrict residential use and exposure could be eliminated.

FIELD OPERATIONS

Field operations were performed in general accordance with the Base-wide Generic Work Plan Volumes I and II (TtNUS, 1998). Samples were collected on April 18, 2002. Subsurface sample locations were collected near the previous SPLP locations that had high TRPH concentrations (3,050 to 3,620 mg/kg). Two samples (CEF-G82-SU-202-06 and CEF-G82-SU-203-06) were collected from beneath the concrete slab and required coring. The third (CEF-G82-SU-201-06) was collected just past the edge of the concrete and did not require coring. All samples were collected from a depth of about 5 to 6 feet below the ground surface. Figure 3 shows the sample locations.

Following collection, the samples were placed on ice and shipped under chain of custody to Severn Trent Laboratories (STL) in Tampa, Florida for TRPH analysis (FL-PRO). The TPHCWG analyses were performed at STL Pensacola.

RESULTS

Table 1 summarizes the analytical results. First, the TRPH analyses were performed and compared to the TRPH SCTL. The TRPH result for sample CEF-G82-SU-201-06 was less than the TRPH SCTL, so the TPHCWG analysis was not performed on this sample. The TRPH concentrations in the other two samples (and the duplicate) were about two times the TRPH soil concentrations in samples collected nearby for the SPLP analyses during the SARA (See Figure 3). The TPHCWG analysis was performed on the other two samples and the duplicate. The results indicate that a subclassification group SCTL was exceeded for only one fraction (C₁₂ – C₁₆ aliphatic) in sample CEF-G82-SU-203-06. The C₁₂ – C₁₆ aliphatic concentration of 2,900 mg/kg is only slightly greater than the SCTL of 2,300 mg/kg. This sample was duplicated, and C₁₂ – C₁₆ aliphatic concentration in the duplicate was 2,000 mg/kg. The average C₁₂ – C₁₆ aliphatic concentration of the sample and the duplicate was 2,450 mg/kg, which is still greater than the SCTL. No other subclassification SCTLs were exceeded.

The analytical results for this event are summarized in Table 1, and the laboratory report is provided as Attachment A.

CONCLUSIONS and RECOMMENDATIONS

Of three samples, only one TRPH subclassification residential SCTL was exceeded in one sample. Therefore, if no active remedial action is taken, an institutional control to restrict residential use and exposure would be required.

However, the C₁₂ – C₁₆ aliphatic concentration is only slightly greater than the SCTL and is localized two small areas next to the building and next to the apron. The TRPH concentrations of the sample immediately to the south are less than the SCTL, and contaminated soil to the north has been previously excavated. Overall, the footprints of the contaminated soil next to the building and next to the apron are estimated to be about 8 feet by 4 feet and 15 feet by 5 feet, respectively.

Mr. David Grabka
FDEP
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A pilot-scale air sparging treatability study is proposed for the site. Compressed air will be injected just below the groundwater level so hydrocarbons will be stripped out of the soil and so that oxygen will be provided to promote aerobic biological activity. A vent well will also be installed to minimize the potential for hydrocarbons to enter Building 82. The estimated duration of the pilot test is 4 to 6 weeks.

If you have any questions with regard to this submittal, please contact me at (412) 921-7231.

Sincerely,

Joesph W. Logan
Task Order Manager

JL/jwl

Attachments

cc: W. Hansel, SOUTHDIV
D. Taylor, USEPA
D. Wroblewski, TtNUS (Cover Letter Only)
M. Perry, TtNUS (Unbound)/CTO 108 File

TABLES

TABLE 1

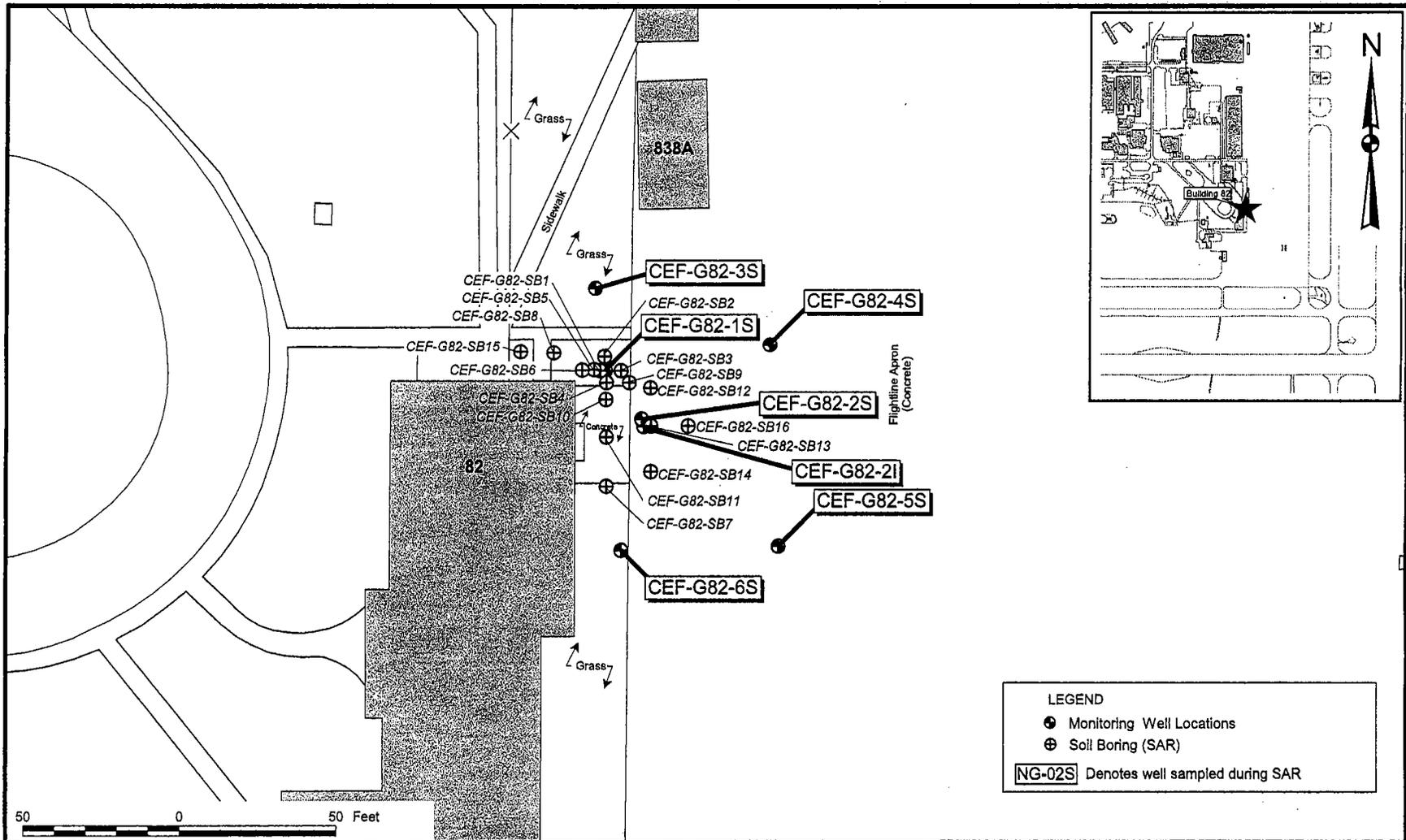
**SUMMARY OF TRPH AND TPHCWG RESULTS
TANK G82
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA**

Sample No.	CEF-G82-SU-201-06	CEF-G82-SU-202-06	CEF-G82-SU-203-06	CEF-G82-DU01 (Note 1)	Average of 203-06 and DU01 (Note 1)	Residential Criteria (Note 2)
TPH, mg/kg						
TRPH	180	7200	5500	8800	7150	340
Aromatics, mg/kg						
C5 – C7 Aromatic	NA	<50	<50	<50	<50	260
C7 – C8 Aromatic	NA	<50	<50	<50	<50	380
C8 – C10 Aromatic	NA	<50	<50	<50	<50	340
C10 – C12 Aromatic	NA	<50	<50	64	57	690
C12 – C16 Aromatic	NA	<50	170	510	340	1200
C16 – C21 Aromatic	NA	<50	64	110	87	1300
C21 – C35 Aromatic	NA	<50	<50	<50	<50	2200
Aliphatics, mg/kg						
C6 – C8 Aliphatic	NA	<50	<50	<50	<50	6300
C8 – C10 Aliphatic	NA	<50	180	220	200	630
C10 – C12 Aliphatic	NA	73	580	630	605	1300
C12 – C16 Aliphatic	NA	370	2900	2000	2450	2300
C16 – C21 Aliphatic (Note 2)	NA	<50	1100	700	900	32000
C21 – C35 Aliphatic (Note 2)	NA	<50	<50	<50	<50	

Notes:

- 1 - CEF-G82-SU-203-06 was duplicated.
- 2 - Aliphatic criteria is for C16 - C35.
- 3 - Bold indicates that concentration is greater than residential criteria.
- 4 - NA - Not Analyzed.

FIGURES



LEGEND

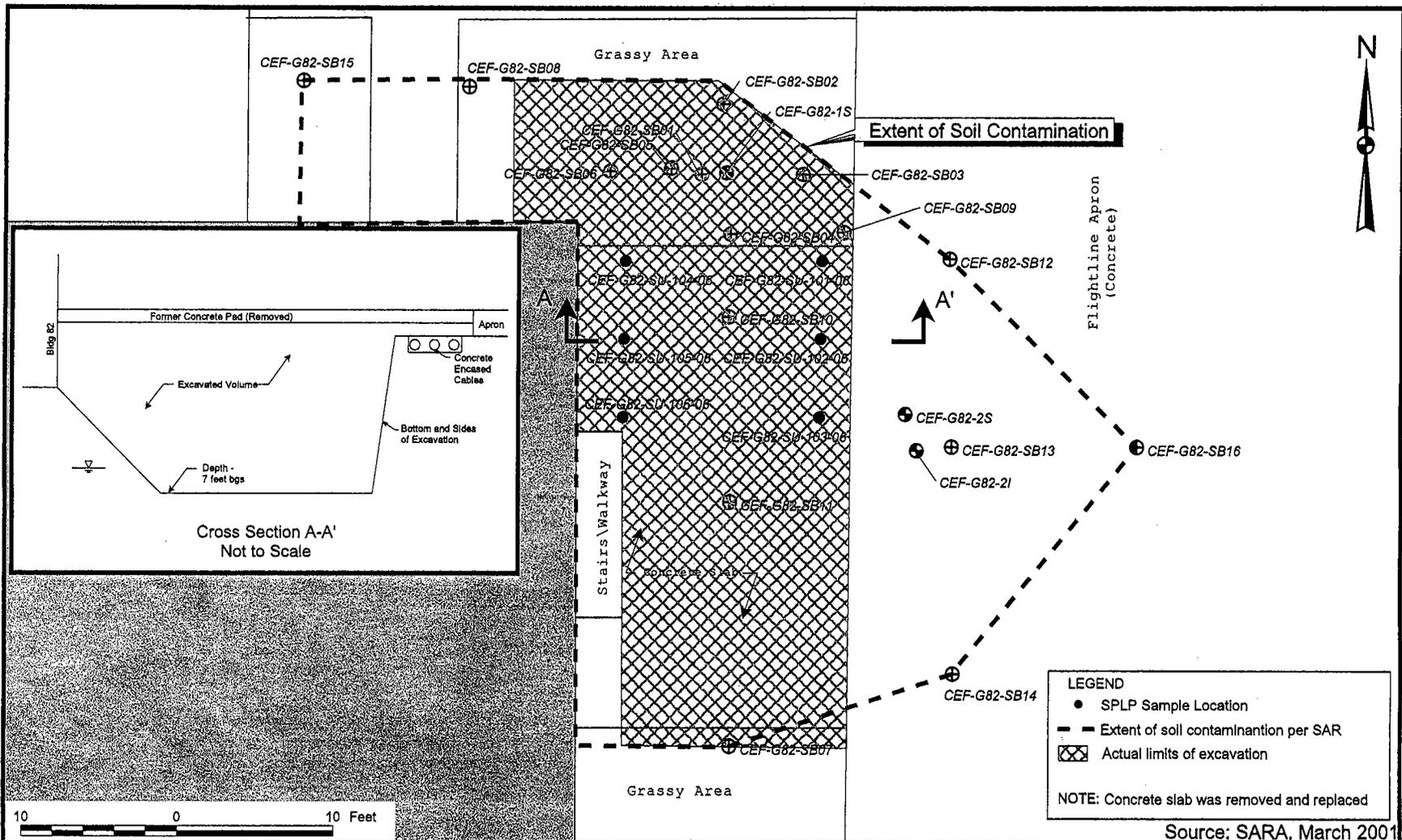
- Monitoring Well Locations
- ⊕ Soil Boring (SAR)
- NG-02S** Denotes well sampled during SAR

DRAWN BY	DATE
MJJ	20Dec99
CHECKED BY	DATE
COST/SCHEDULE-AREA	
SCALE	
AS NOTED	



SITE PLAN
 BUILDING 82 - TANK G82
 TRPH SUBCLASSIFICATION INVESTIGATION
 NAVAL AIR STATION CECIL FIELD
 JACKSONVILLE, FLORIDA

CONTRACT NUMBER 0394	
APPROVED BY	DATE
APPROVED BY	DATE
DRAWING NO. FIGURE 1	REV 0



LEGEND

- SPLP Sample Location
- - - Extent of soil contamination per SAR
- ▨ Actual limits of excavation

NOTE: Concrete slab was removed and replaced

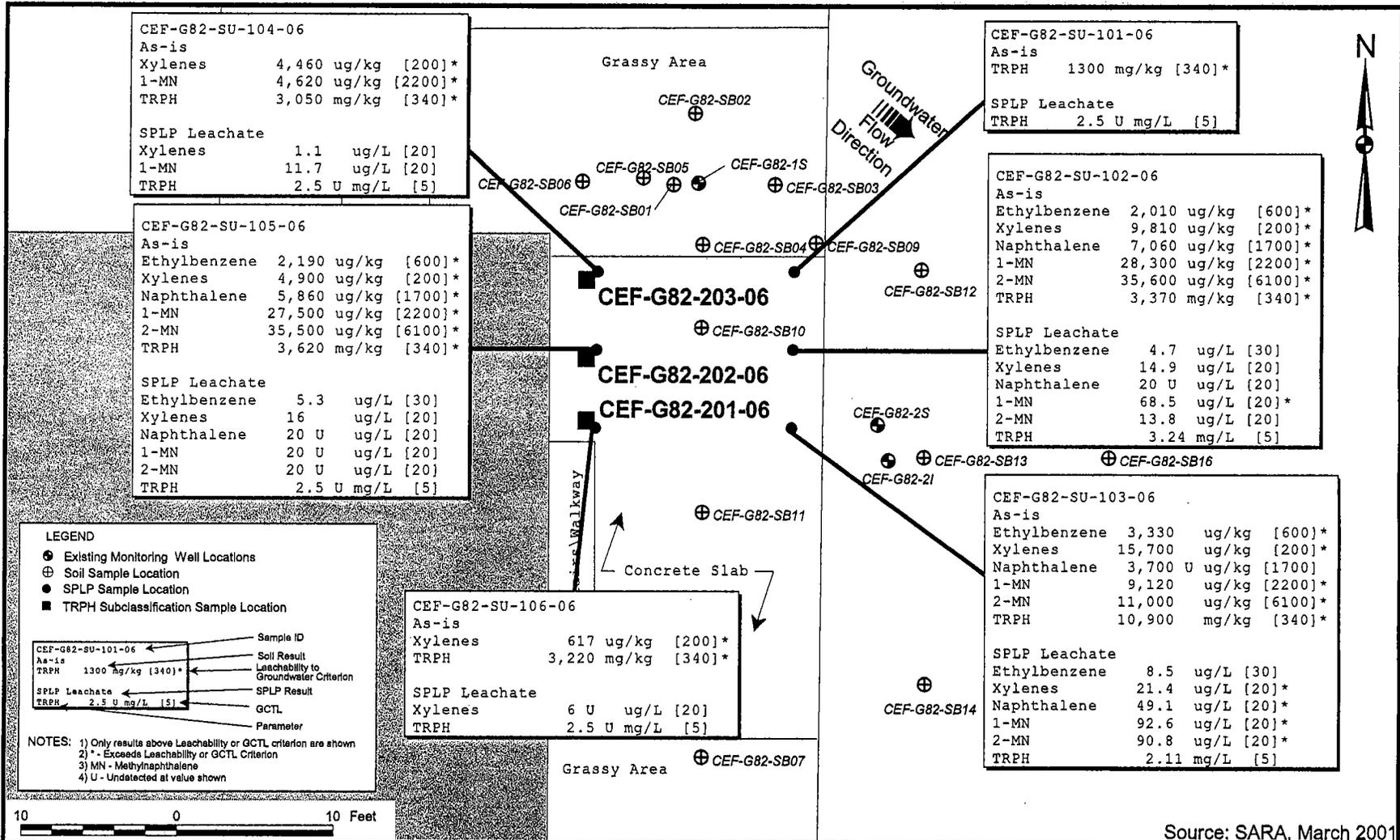
Source: SARA, March 2001

DRAWN BY	DATE
MJJ	25 Jul 00
CHECKED BY	DATE
COST/SCHEDULE-AREA	
SCALE	
AS NOTED	



ACTUAL EXTENT OF EXCAVATION
 BUILDING 82 - TANK G82
 TRPH SUBCLASSIFICATION INVESTIGATION
 NAVAL AIR STATION CECIL FIELD
 JACKSONVILLE, FLORIDA

CONTRACT NUMBER 0394	
APPROVED BY	DATE
APPROVED BY	DATE
DRAWING NO. FIGURE 2	REV 0



DRAWN BY MJJ	DATE 28Jan01		<p align="center">SAMPLE LOCATIONS</p> <p align="center">BUILDING 82 - TANK G82</p> <p align="center">TRPH SUBCLASSIFICATION INVESTIGATION</p> <p align="center">NAVAL AIR STATION CECIL FIELD</p> <p align="center">JACKSONVILLE, FLORIDA</p>		CONTRACT NUMBER 0394	
CHECKED BY	DATE				APPROVED BY	DATE
COST/SCHEDULE-AREA					APPROVED BY	DATE
SCALE AS NOTED					DRAWING NO. FIGURE 3	REV 0

ATTACHMENT A
GROUNDWATER ANALYTICAL REPORT



STL Pensacola

LOG NO: C2-04659
 Received: 26 APR 02
 Reported: 08 MAY 02

Mr. Paul Calligan
 Tetra Tech NUS, Inc.
 661 Anderson Drive
 Pittsburgh, PA 15220

Client PO. No.: N3996-P2264(SS)

Requisition: N3996J60050210

Project: TANK 682, NAS CECIL FIELD, FL
 Sampled By: Client
 Code: 09262058

Page 1

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	DATE/ TIME SAMPLED			
04659-1	CEF-682-SU-201-06	04-18-02/11:10			
04659-2	CEF-682-SU-202-06	04-18-02/10:55			
04659-3	CEF-682-SU-203-06	04-18-02/10:35			
04659-4	CEF-682-DU01	04-18-02/08:00			
PARAMETER		04659-1	04659-2	04659-3	04659-4
TPH-WG-ALI (TPHCWG)					
>/= C6-C8 Aliphatics, mg/kg dw	N/A	<50	<50	<50	<50
>C8-C10 Aliphatics, mg/kg dw	---	<50	180	220	220
>C10-C12 Aliphatics, mg/kg dw	---	73	580	630	630
>C12-C16 Aliphatics, mg/kg dw	---	370	2900	2000	2000
>C16-C21 Aliphatics, mg/kg dw	---	<50	1100	700	700
>C21-C35 Aliphatics, mg/kg dw	---	<50	<50	<50	<50
Dilution Factor	---	1	1	1	1
Prep Date	---	04.29.02	04.29.02	04.29.02	04.29.02
Analysis Date	---	05.03.02	05.03.02	05.03.02	05.03.02
Batch ID	---	GES031	GES031	GES031	GES031
Prep Method	---	TPHCWG	TPHCWG	TPHCWG	TPHCWG
Analyst	---	IE	IE	IE	IE
Quantitation Factor	---	1.27	1.14	1.17	1.17



STL Pensacola

LOG NO: C2-04659
 Received: 26 APR 02
 Reported: 08 MAY 02

Mr. Paul Calligan
 Tetra Tech NUS, Inc.
 661 Anderson Drive
 Pittsburgh, PA 15220

Client PO. No.: N3996-P2264(SS)

Requisition: N3996J60050210

Project: TANK 682, NAS CECIL FIELD, FL
 Sampled By: Client
 Code: 09262058

Page 2

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	DATE/ TIME SAMPLED			
		04659-1	04659-2	04659-3	04659-4
04659-1	CEF-682-SU-201-06			04-18-02/11:10	
04659-2	CEF-682-SU-202-06			04-18-02/10:55	
04659-3	CEF-682-SU-203-06			04-18-02/10:35	
04659-4	CEF-682-DU01			04-18-02/08:00	
PARAMETER		04659-1	04659-2	04659-3	04659-4
TPH-WG-ARO (TPHCWG)		N/A	<50	<50	<50
>C5-C7 Aromatics, mg/kg dw		---	<50	<50	<50
>C7-C8 Aromatics, mg/kg dw		---	<50	<50	<50
>C8-C10 Aromatics, mg/kg dw		---	<50	<50	64
>C10-C12 Aromatics, mg/kg dw		---	<50	170	510
>C12-C16 Aromatics, mg/kg dw		---	<50	64	110
>C16-C21 Aromatics, mg/kg dw		---	<50	<50	<50
>C21-C35 Aromatics, mg/kg dw		---	1	1	1
Dilution Factor		---	04.29.02	04.29.02	04.29.02
Prep Date		---	05.03.02	05.03.02	05.03.02
Analysis Date		---	GES031	GES031	GES031
Batch ID		---	TPHCWG	TPHCWG	TPHCWG
Prep Method		---	IE	IE	IE
Analyst		---	1.27	1.14	1.17
Quantitation Factor		---			
Total TPH at >/= C6-C35 (TPHCWG), mg/kg dw		<50	N/A	N/A	N/A
Dilution Factor		1	---	---	---
Prep Date		04.29.02	---	---	---
Analysis Date		04.29.02	---	---	---
Batch ID		GES031	---	---	---
Prep Method		TPHCWG	---	---	---
Analyst		IE	---	---	---
Quantitation Factor		1.13	---	---	---
Percent Solids		87	74	82	80

LOG NO: B2-11577
 Received: 22 APR 02
 Reported: 25 APR 02

Mr. Paul Calligan
 Tetra Tech NUS, Inc.
 1401 Oven Park Drive Suite 102
 Tallahassee, FL 32308

Client PO. No.: N3996-P2264 (SS)

Project: N3996JG0050210
 Sampled By: Client
 Code: 111920429

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POSITIVE RESULTS SUMMARY REPORT

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	DATE/ TIME SAMPLED
11577-1	CEF-G82-SU-201-06	04-18-02/11:10
11577-2	CEF-G82-SU-202-06	04-18-02/10:55
11577-3	CEF-G82-SU-203-06	04-18-02/10:35
11577-4	CEF-G82-DU01	04-18-02/08:00

PARAMETER	11577-1	11577-2	11577-3	11577-4
Petroleum Range Organics (FL-PRO) (FL-PRO)				
Petroleum Hydrocarbons , mg/kg dw	180	7200	5500	8800


 Nancy Robertson