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NAS CECIL FIELD, FL
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REMEDIAL ACTION PLAN REVISION 2 FOR NORTH FUEL FARM AREA NAS CECIL FIELD FL

11/26/1997

ABB ENVIRONMENTAL SERVICES INC

ABB

2523-3220

November 26, 1997

Mr. Mike Deliz
Florida Department of Environmental Protection
Twin Towers Office Building
2600 Blairstone Road
Tallahassee, Florida 32399-2400

Dear Mr. Deliz:

SUBJECT: **Remedial Action Plan - Revision II**
North Fuel Farm
NAS Cecil Field, Jacksonville, Florida
Contract No. N62467-89-D-0317/090

INTRODUCTION

Based on discussions between the Navy and the Florida Department of Environmental Protection (FDEP), ABB Environmental Services, Inc. (ABB-ES) was tasked to collect surface and subsurface soil samples from the North Fuel Farm area at Naval Air Station (NAS) Cecil Field, Jacksonville, Florida. The objective of this sampling event was to determine if additional soil excavation is necessary prior to installation of the groundwater remediation system(s).

FIELD INVESTIGATION

On August 5 and 6, 1997, ABB-ES collected 34 subsurface soil samples from 18 locations at the North Fuel Farm area. Samples were collected from either one, two, or three depth intervals, depending on the depth to water table at each sampling location. Depth to water table varied from 2.5 feet to 4.5 feet below land surface. Table 1 lists the depths of samples collected at each of the sampling locations.

All samples were shipped to Quanterra Environmental Services, Tampa, Florida for analyses of USEPA methods SW846 6010A (Lead), 8310 (PAHs), 8020 (VOCs), and FL-PRO Total Petroleum Hydrocarbons (TPH). Figure 1 presents the sample locations and concentrations of chemicals exceeding the State of Florida, chapter 62-770 guidance values.

ANALYTICAL RESULTS

Based on the results presented in Table 2, benzene, ethylbenzene, toluene, and xylene (total), benzo(a)pyrene, naphthalene, and TPH exceeded at least one of the three Florida Soil Cleanup Goals

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(FSCG) criteria (residential/industrial/leachability). Table 2 presents a summary of analytical results and also presents a comparison of the contaminant concentrations against the State of Florida Chapter 62-770 soil cleanup goals.

RECOMMENDATIONS

Based on the results presented in this memorandum, it is recommended that the total quantity of soil requiring remediation (ABB-ES, 1997), per chapter 62-770 guidelines, be revisd as follows:

• JP-5 Spill Area	4,000 cy
• Retention Pond Area	1,400 cy
• Area East of the Mound	2,150 cy
Total Soil Volume	**7,550 cy**

REFERENCES

ABB Environmental Services, Inc. (ABB-ES). 1997. *Remedial Action Plan, North Fuel Farm Site, Naval Air Station Cecil Field, Jacksonville, Florida.* Prepared for Southern Division, Naval Facilities Engineering Command, North Charleston, South Carolina.

Very truly yours,

ABB ENVIRONMENTAL SERVICES, INC.

Gopi Kanchibhatla
Senior Engineer

Rao Angara
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Attachments

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TABLES

Table 1. List of Subsurface Soil Samples

North Fuel Farm Area
NAS Cecil Field, Jacksonville, Florida

Sampling Date and Time	Sample ID	Depth of Sample, feet bls.
08/05/97, 09:50	76SS-1-1, -2	1-2, 3-4
08/05/97, 10:42	76SS-2-1, -2, -3	1-2, 3-4, 4-5
08/05/97, 11:02	76SS-3-1, -2	1-2, 3-4
08/05/97, 11:20	76SS-4-1, -2	1-2, 3-4
08/05/97, 11:45	76SS-5-1, -2	1-2, 3-4
08/05/97, 12:05	76SS-6-1, -2	1-2, 3-4
08/05/97, 12:30	76SS-7-1, -2	1-2, 3-4
08/05/97, 15:35	76SS-8-1, -2	1-2, 2.5-3.5
08/05/97, 15:50	76SS-9-1, -2	1-2, 3-3.5
08/05/97, 16:05	76SS-10-1, -2	1-2, 2.5-3.5
08/06/97, 08:45	76SS-14-1, -2	0.5-1.5, 1.5-2.5
08/06/97, 09:15	76SS-15-1, -2	0.5-1.5, 1.5-2.5
08/06/97, 09:40	76SS-16-1	0.5-1.5
08/06/97, 11:00	76SS-17-1, -2	1-2, 2-3
08/06/97, 11:15	76SS-18-1, -2	0.5-1.5, 1.5-2.5
08/06/97, 11:30	76SS-19-1	0.5-1.5
08/06/97, 11:50	76SS-20-1, -2	0.5-1.5, 2-3
08/06/97, 12:10	76SS-21-1, -2	0.5-1.5, 1.5-2.5

Table 2. Summary of Laboratory Analytical Results for Subsurface Soil Samples, August 1997
North Fuel Farm Area, NAS Cecil Field, Jacksonville, Florida

KEROSENE GROUP ANALYTICAL PARAMETER	SAMPLE DESIGNATION							FSCG, 1997		
	SS-1-1	SS-1-2	SS-2-1	SS-2-2	SS-2-3	SS-3-1	SS-3-2	Residential	Industrial	Leachability
VOLATILE ORGANIC COMPOUNDS (mg/kg)										
Benzene	ND	ND	ND	ND	ND	ND	ND	1.1	1.5	0.007
Ethylbenzene	ND	ND	ND	ND	ND	ND	2.6	940	6,800	0.4
Toluene	ND	ND	ND	ND	ND	ND	ND	300	2,000	0.4
Xylenes (total)	ND	ND	ND	ND	ND	ND	1.4	7,800	54,000	0.3
POLYNUCLEAR AROMATIC HYDROCARBONS (mg/kg)										
Benzo (a) anthracene	0.0082	0.028	ND	ND	ND	0.12	ND	1.4	5.1	2.9
Benzo (a) pyrene	0.0078	0.025	0.006	ND	ND	**0.16**	ND	0.1	0.5	7.8
Benzo (b) fluoranthene	0.0074	0.025	ND	ND	ND	0.011	ND	1.4	5	9.8
Benzo (ghi) perylene	ND	ND	0.018	ND	0.013	0.073	ND	15	52	32
Benzo (k) fluoranthene	ND	0.017	ND	ND	ND	0.07	ND	15	52	25
Chrysene	0.009	0.029	0.0067	ND	ND	0.19	ND	140	490	80
Fluoranthene	0.029	0.055	0.019	ND	0.019	0.11	ND	2,800	45,000	550
Ideno(1, 2, 3 - cd)pyrene	ND	0.014	ND	ND	ND	0.1	ND	1.5	5.2	28
1-Methylnaphthalene	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA
2-Methylnaphthalene	ND	ND	ND	ND	ND	0.066	ND	NA	NA	NA
Naphthalene	ND	ND	ND	ND	ND	ND	0.11	1,000	8,600	1
Pyrene	0.022	0.041	ND	ND	0.0092	0.065	ND	2,200	40,000	570
TPH (mg/kg)	ND	ND	ND	ND	ND	**5,600**	**8,000**	380	2,700	380
METALS (mg/kg)										
Lead	2.8	2.1	5.7	5.6	7	0.35	0.92	500	1000	NA

See notes at end of table.

Table 2. Summary of Laboratory Analytical Results for Subsurface Soil Samples, August 1997
North Fuel Farm Area, NAS Cecil Field, Jacksonville, Florida

KEROSENE GROUP ANALYTICAL PARAMETER	SAMPLE DESIGNATION							FSCG, 1997		
	SS-4-1	SS-4-2	SS-5-1	SS-5-2	SS-6-1	SS-6-2	SS-7-1	Residential	Industrial	Leachability
VOLATILE ORGANIC COMPOUNDS (mg/kg)										
Benzene	ND	ND	ND	ND	ND	ND	ND	1.1	1.5	0.007
Ethylbenzene	1.8	ND	ND	ND	ND	ND	1.9	940	6,800	0.4
Toluene	ND	ND	ND	ND	ND	ND	ND	300	2,000	0.4
Xylenes (total)	1.6	ND	ND	ND	ND	ND	1.5	7,800	54,000	0.3
POLYNUCLEAR AROMATIC HYDROCARBONS (mg/kg)										
Benzo (a) anthracene	ND	ND	ND	ND	ND	ND	ND	1.4	5.1	2.9
Benzo (a) pyrene	ND	ND	ND	ND	ND	ND	ND	0.1	0.5	7.8
Benzo (b) fluoranthene	ND	ND	ND	ND	ND	ND	ND	1.4	5	9.8
Benzo (ghi) perylene	ND	ND	ND	ND	ND	ND	ND	15	52	32
Benzo (k) fluoranthene	ND	ND	ND	ND	ND	ND	ND	15	52	25
Chrysene	ND	ND	ND	ND	ND	ND	ND	140	490	80
Fluoranthene	ND	ND	0.0099	ND	0.02	0.019	ND	2,800	45,000	550
Ideno(1, 2, 3 - cd)pyrene	ND	ND	ND	ND	ND	ND	ND	1.5	5.2	28
1-Methylnaphthalene	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA
2-Methylnaphthalene	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA
Naphthalene	ND	ND	ND	ND	ND	ND	0.15	1,000	8,600	1
Pyrene	ND	ND	ND	ND	0.0066	ND	ND	2,200	40,000	570
TPH (mg/kg)	**6,200**	**3,500**	ND	ND	13	ND	**14,000**	380	2,700	380
METALS (mg/kg)										
Lead	ND	0.74	5.4	5.6	5.5	4.5	1.8	500	1000	NA

See notes at end of table.

Table 2. Summary of Laboratory Analytical Results for Subsurface Soil Samples, August 1997
North Fuel Farm Area, NAS Cecil Field, Jacksonville, Florida

KEROSENE GROUP ANALYTICAL PARAMETER	SAMPLE DESIGNATION							FSCG, 1997		
	SS-7-2	SS-8-1	SS-8-2	SS-9-1	SS-9-2	SS-10-1	SS-10-2	Residential	Industrial	Leachability
VOLATILE ORGANIC COMPOUNDS (mg/kg)										
Benzene	ND	ND	ND	ND	ND	ND	ND	1.1	1.5	0.007
Ethylbenzene	0.86	0.1	12	11	ND	ND	ND	940	6,800	0.4
toluene	ND	ND	0.91	ND	ND	ND	ND	300	2,000	0.4
Xylenes (total)	ND	0.33	17	1	ND	ND	ND	7,800	54,000	0.3
POLYNUCLEAR AROMATIC HYDROCARBONS (mg/kg)										
Benzo (a) anthracene	ND	ND	ND	0.022	ND	0.011	0.012	1.4	5.1	2.9
Benzo (a) pyrene	ND	ND	ND	0.61	ND	0.054	ND	0.1	0.5	7.8
Benzo (b) fluoranthene	ND	ND	ND	0.04	ND	0.037	ND	1.4	5	9.8
Benzo (ghi) perylene	ND	ND	ND	0.048	ND	0.048	ND	15	52	32
Benzo (k) fluoranthene	ND	ND	ND	0.028	ND	0.021	ND	15	52	25
Chrysene	ND	ND	ND	0.024	ND	ND	0.009	140	490	80
Fluoranthene	ND	ND	ND	0.059	ND	0.043	0.02	2,800	45,000	550
Ideno(1, 2, 3 - cd)pyrene	ND	ND	ND	0.069	ND	ND	ND	1.5	5.2	28
1-Methylnaphthalene	0.38	42	13	ND	ND	ND	ND	NA	NA	NA
2-Methylnaphthalene	0.29	51	15	ND	ND	ND	ND	NA	NA	NA
Naphthalene	0.17	25	7.5	ND	ND	ND	ND	1,000	6,600	1
Pyrene	ND	ND	ND	0.053	ND	0.0077	0.043	2,200	40,000	570
TPH (mg/kg)	**9,300**	**21,000**	**8,000**	**480**	26	ND	200	380	2,700	380
METALS (mg/kg)										
Lead	1.8	1.4	1.4	6.1	1.4	1.5	2.1	500	1000	NA

See notes at end of table.

Table 2. Summary of Laboratory Analytical Results for Subsurface Soil Samples, August 1997
North Fuel Farm Area, NAS Cecil Field, Jacksonville, Florida

KEROSENE GROUP ANALYTICAL PARAMETER	SAMPLE DESIGNATION							FSCG, 1997		
	SS-14-1	SS-14-2	SS-15-1	SS-15-2	SS-16-1	SS-17-1	SS-17-2	Residential	Industrial	Leachability
VOLATILE ORGANIC COMPOUNDS (mg/kg)										
Benzene	ND	ND	ND	ND	ND	ND	ND	1.1	1.5	0.007
Ethylbenzene	ND	ND	ND	ND	ND	5.3	15	940	6,800	0.4
toluene	ND	ND	ND	ND	ND	0.88	ND	300	2,000	0.4
Xylenes (total)	ND	ND	ND	ND	ND	10	4.4	7,800	54,000	0.3
POLYNUCLEAR AROMATIC HYDROCARBONS (mg/kg)										
Benzo (a) anthracene	0.025	ND	ND	ND	ND	ND	ND	1.4	5.1	2.9
Benzo (a) pyrene	ND	ND	ND	ND	ND	ND	ND	0.1	0.5	7.8
Benzo (b) fluoranthene	ND	ND	ND	ND	ND	ND	ND	1.4	5	9.8
Benzo (ghi) perylene	0.033	ND	ND	ND	ND	ND	ND	15	52	32
Benzo (k) fluoranthene	ND	ND	ND	ND	ND	ND	ND	15	52	25
Chrysene	ND	ND	ND	ND	ND	ND	ND	140	490	80
Fluoranthene	ND	ND	ND	ND	0.01	ND	ND	2,800	45,000	550
Ideno(1, 2, 3 - cd)pyrene	ND	ND	ND	ND	ND	ND	ND	1.5	5.2	28
1-Methylnaphthalene	ND	ND	ND	ND	ND	19	0.49	NA	NA	NA
2-Methylnaphthalene	ND	ND	ND	ND	ND	24	0.57	NA	NA	NA
Naphthalene	ND	ND	ND	ND	ND	11	0.29	1,000	8,600	1
Pyrene	ND	ND	ND	ND	0.014	ND	ND	2,200	40,000	570
TPH (mg/kg)	**770**	**910**	36	290	ND	ND	ND	380	2,700	380
METALS (mg/kg)										
Lead	6.5	1.1	0.77	2.6	1.4	1.4	7.6	500	1000	NA

See notes at end of table.

Table 2. Summary of Laboratory Analytical Results for Subsurface Soil Samples, August 1997
North Fuel Farm Area, NAS Cecil Field, Jacksonville, Florida

KEROSENE GROUP ANALYTICAL PARAMETER	SAMPLE DESIGNATION								FSCG, 1997		
	SS-18-1	SS-18-2	SS-19-1	SS-20-1	SS-20-2	SS-20-3	SS-21-1	SS-21-2	Residential	Industrial	Leachability
VOLATILE ORGANIC COMPOUNDS (mg/kg)											
Benzene	ND	ND	ND	ND	ND	ND	1.3	1.3	1.1	1.5	0.007
Ethylbenzene	ND	ND	2.0	ND	ND	ND	18	4.0	940	6,800	0.4
toluene	ND	ND	ND	ND	ND	ND	1.8	ND	300	2,000	0.4
Xylenes (total)	1.3	1.1	1.7	ND	28	67	11	1.6	7800	54,000	0.3
POLYNUCLEAR AROMATIC HYDROCARBONS (mg/kg)											
Benzo (a) anthracene	0.13	ND	ND	ND	ND	ND	ND	ND	1.4	5.1	2.9
Benzo (a) pyrene	0.18	ND	ND	ND	ND	ND	ND	ND	0.1	0.5	7.8
Benzo (b) fluoranthene	0.14	ND	ND	ND	ND	ND	ND	ND	1.4	5	9.8
Benzo (ghi) perylene	0.093	ND	ND	ND	ND	ND	ND	ND	15	52	32
Benzo (k) fluoranthene	ND	ND	ND	ND	ND	ND	ND	ND	15	52	25
Chrysene	0.15	ND	ND	ND	ND	ND	ND	ND	140	490	80
Fluoranthene	0.32	ND	ND	ND	ND	ND	ND	ND	2,800	45,000	550
Ideno(1, 2, 3 - cd)pyrene	0.12	ND	ND	ND	ND	ND	ND	ND	1.5	5.2	28
1-Methylnaphthalene	0.27	1.2	4.7	ND	0.11	ND	2.5	0.8	NA	NA	NA
2-Methylnaphthalene	ND	1.8	5.1	ND	0.086	ND	3.7	0.94	NA	NA	NA
Naphthalene	ND	0.3	1.2	ND	ND	ND	1.6	0.62	1,000	8,600	1
Pyrene	ND	ND	ND	ND	ND	ND	ND	ND	2,200	40,000	570
TPH (mg/kg)	**2,700**	**3,200**	**5,400**	ND	ND	16	**61,000**	340	380	2,700	380
METALS (mg/kg)											
Lead	3.6	3.5	0.6	1.6	1.5	8.1	3.5	5.0	500	1,000	NA

Notes:

FSCG = State of Florida Soil Cleanup Goal
2700 = exceeds soil cleanup goal for residential scenario
mg/kg = milligrams per kilogram
TPH = total petroleum hydrocarbons
ND = non-detect
NA = not available

FIGURES

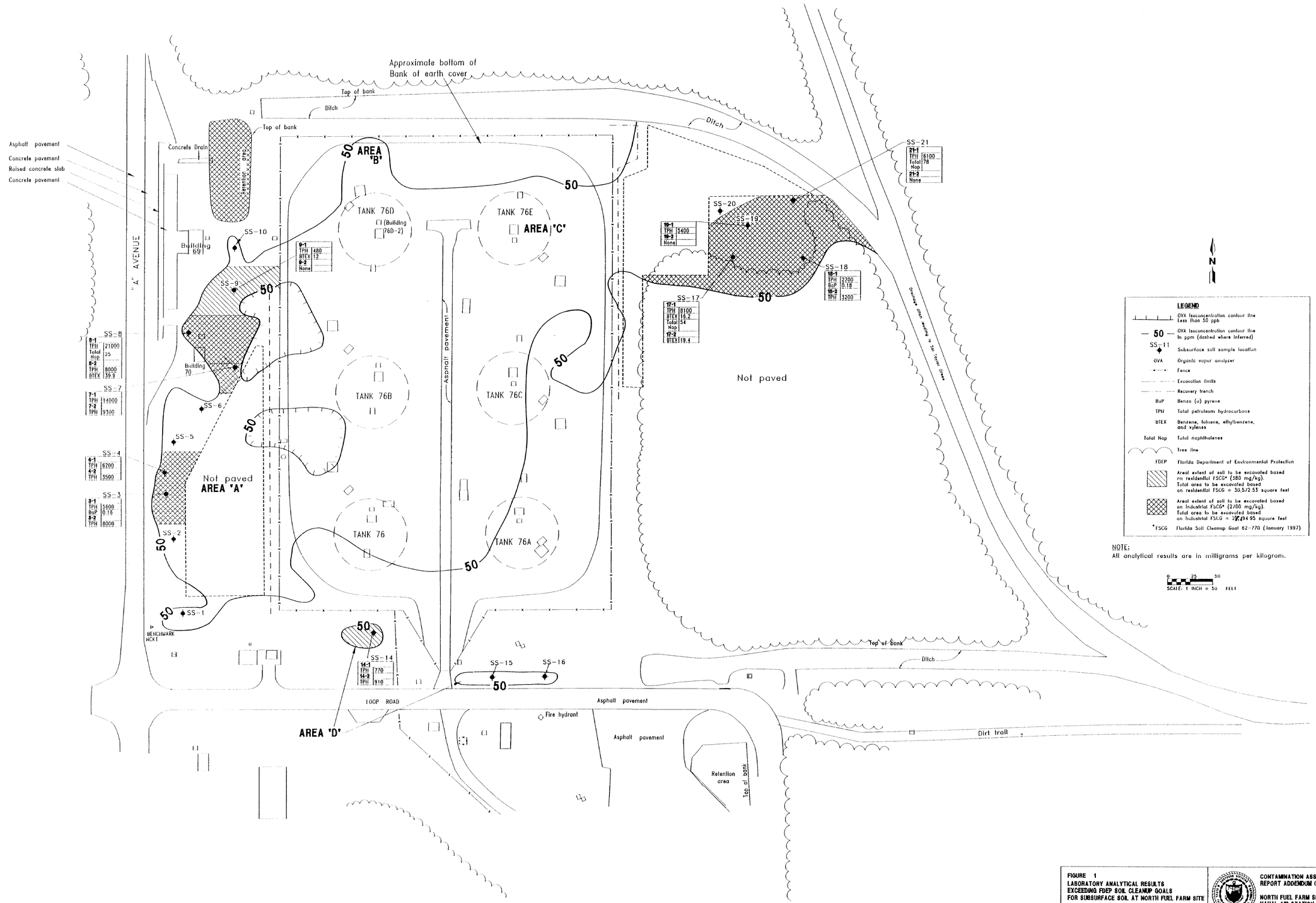

FIGURE 1
LABORATORY ANALYTICAL RESULTS EXCEEDING FDEP SOIL CLEANUP GOALS FOR SUBSURFACE SOIL AT NORTH FUEL FARM SITE

CONTAMINATION ASSESSMENT REPORT ADDENDUM (REVISION 2)

NORTH FUEL FARM SITE
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA