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LETTER REPORT REGARDING QUARTER 3 GROUNDWATER MONITORING REPORT FOR  
SOLID WASTE MANAGEMENT UNIT 14 NS MAYPORT FL  
8/20/2002  
TETRA TECH NUS



**TETRA TECH NUS, INC.**

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Project Number N0424

Commander, Southern Division  
Naval Facilities Engineering Command  
ATTN: Ms. Adrienne Wilson (Code ES31)  
2155 Eagle Drive  
North Charleston, South Carolina 29406

Reference: CLEAN Contract Number N62467-94-D-0888  
Contract Task Order Number 0199

Subject: Quarter Three Groundwater Monitoring Report  
SWMU 14, Naval Station (NAVSTA) Mayport  
Mayport, Florida

Dear Ms. Wilson:

Tetra Tech NUS, Inc. (TtNUS) is pleased to submit this Quarter Three Groundwater Monitoring Report for the referenced Contract Task Order (CTO). This report was prepared for the U.S. Navy Southern Division, Naval Facilities Engineering Command under CTO 0199, for the Comprehensive Long-term Environmental Action Navy (CLEAN) Contract Number N62467-94-D-0888. The contents of this report document the fieldwork and results of the quarter three groundwater sampling effort at Solid Waste Management Unit (SWMU) 14.

SWMU 14, the Mercury/Oil Waste Spill Area, is located at the current firefighter-training center (FTC) due south of the St. Johns River, approximately 1,000 feet west of the Atlantic Ocean in the northeastern part of the NAVSTA Mayport. A site location map is presented as Figure 1.

Waste fuels and oils collected from various sources at NAVSTA Mayport were previously used to ignite and sustain fires for training purposes. These sources are no longer in use at SWMU 14. In addition, there was a petroleum storage area and an area reported to have been used for the storage of mercuric nitrate at SWMU 14 (TtNUS, 2001).

A Corrective Measures Study (CMS) (currently in review) (TtNUS, 2001) was conducted following the RCRA Facility Investigation (RFI) Report [ABB Environmental Services, Inc. (ABB-ES), 1995]. The CMS identified naphthalene, 1-methylnaphthalene, 2-methylnaphthalene, iron, and manganese as chemicals of concern (COCs) in the groundwater at SWMU 14 and recommended a combination of land-use controls (LUCs), passive skimming, and monitoring for natural attenuation.

An initial groundwater sampling effort was performed in July 2001 to assess the current levels of contamination at SWMU 14. The monitoring wells selected for quarterly monitoring were chosen, in part, based on the results of the initial sampling effort.

The quarter three sampling effort occurred in June 2002 and was performed in accordance with the SWMU 14 Workplan (TtNUS, 2001), the TtNUS Comprehensive Quality Assurance Plan (TtNUS, 1999), and the United States Environmental Protection Agency's (USEPA) Environmental Standard Operating

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Southern Division, Naval Facilities Engineering Command  
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Procedures Quality Assurance Manual (USEPA, 1996). The monitoring wells selected for sampling included MPT-14-MW01S, MW02S, MW05S, MW10S, MW11S, MW15S, MW17S, MW18S, MW20S, and MW21S. Monitoring well MPT-14-MW15S could not be located and was not sampled during this sampling effort. The monitoring well locations are presented in Figure 2.

Prior to sampling, a complete round of water levels were collected using a slope indicator equipped with an oil/water interface probe to determine the presence of light non-aqueous phase liquids (LNAPL). LNAPL was not detected in any of the monitoring wells at SWMU 14 during the quarter three sampling efforts.

Groundwater samples were analyzed for both chemical and natural attenuation parameters during the quarter three sampling event. Parameters selected for fixed-based laboratory analyses included iron, manganese, alkalinity, chloride, methane, nitrate, nitrite, orthophosphate, and sulfate. Parameters selected for field analyses included carbon dioxide, dissolved oxygen (DO), ferrous iron, hydrogen sulfide, and sulfide. Table 1 presents the field sampling results. Table 2 presents the analytical results for the selected parameters.

Two surface water samples were collected from the outfalls north of SWMU 14. The samples were analyzed for total recoverable petroleum hydrocarbons (TRPH) using the Florida Petroleum Range Organics (FL-PRO) Method, polynuclear aromatic hydrocarbons (PAHs) using USEPA Method 8310, iron, and manganese. Table 3 presents a summary of the analytical results for the surface water samples.

Results for the quarter three sampling event indicate that natural attenuation is continuing to take place at SWMU 14 based on comparison of the field data and analytical results from the second and third quarter sampling events. TtNUS recommends that groundwater monitoring for natural attenuation parameters continue in support of the CMS. During the second quarter sampling event, 2-methylnaphthalene [390J micrograms per liter ( $\mu\text{g/L}$ )] was detected in excess of its regulatory criteria of 20  $\mu\text{g/L}$  in monitoring well MW-18S. Therefore, fourth quarter monitoring data for well MW-18S will be reviewed to determine if concentrations are showing an increasing or decreasing trend. If concentrations should indicate an exceedence or increase in the fourth quarter, TtNUS will recommend corrective action be taken at the site.

An aggressive fluid vapor recovery event took place at monitoring well MW-18S after the quarter three sampling event. On July 19, 2002, Allvac Services (Allvac) extruded 2,765 gallons of water from monitoring well MW-18S in an effort to recover any free product from the well and surrounding areas. No free product was observed to be recovered during the event. Allvac properly disposed of the non-regulated, non-hazardous liquid recovered from MW-18S.

If you have any questions with regard to this submittal, please feel free to contact me at (904) 281-0400 or Terry Hansen at (850) 385-9899.

Sincerely,



Alan L. Pate  
Environmental Scientist II

pc: Mr. J. Cason, FDEP (2 copies)  
Ms. C. Mitchell, NAVSTA Mayport  
Ms. D. Lancaster, NAVSTA Mayport  
Mr. T. Hansen

Mr. M. Halil, JA Jones  
Mr. M. Perry/File (unbound copy)  
Ms. D. Wroblewski (letter only)  
Project File

## TABLES

**Table 1**  
**Quarter Three Groundwater Field Sampling Results Summary**  
Solid Waste Management Unit 14  
U.S. Naval Station Mayport  
Mayport, Florida

Sample ID	MPT-14-MW01S-03	MPT-14-MW02S-03	MPT-14-MW05S-03	MPT-14-MW010S-03	MPT-14-MW011S-03
Collect Date	12-Jun-2002	12-Jun-2002	11-Jun-2002	11-Jun-2002	11-Jun-2002
Total Depth (Ft. Top of Casing)	16.32	16.01	12.50	12.50	12.72
Water Level (Ft. Top of Casing)	5.29	6.11	2.75	2.58	3.55
Temperature (°C)	24.20	24.70	24.80	26.40	26.4
pH (Standard Units)	7.21	7.22	7.66	7.65	7.59
Conductivity (mS/cm)	1.86	0.57	5.18	0.385	0.83
Turbidity (NTU)	0	0	0	0	0
Redox Potential (Millivolts)	-151	-210	-179	-159	-292
Dissolved Oxygen (mg/L)	1.0	1.0	0.6	2.0	0.8
Carbon Dioxide (mg/L)	350	475	110	20	20
Sulfide (mg/L)	0.09	0.48	0.12	0.02	0.32
Ferrous Iron (mg/L)	0.36	0.39	0.75	0.01	0.09
Hydrogen Sulfide (mg/L)	2	5.0	0.5	0	0.5
Notes:					
Ft = Feet		Redox = Oxidation - Reduction			
°C = Degrees Centigrade		mg/L = Milligrams per Liter			
mS/cm = Microsiemens per Centimeter		NA = Not Analyzed			
NTU = Nephelometric Turbidity Unit					

**Table 1 (continued)**  
**Quarter Three Groundwater Field Sampling Results Summary**  
Solid Waste Management Unit 14  
U.S. Naval Station Mayport  
Mayport, Florida

Sample ID	MPT-14-MW017S-03	MPT-14-MW018S-03	MPT-14-MW20S-03	MPT-14-MW21S-03
Collect Date	11-Jun-2002	11-Jun-2002	11-Jun-2002	12-Jun-2002
Total Depth (Ft. Top of Casing)	7.25	7.29	6.00	7.50
Water Level (Ft. Top of Casing)	6.03	6.06	NM	NM
Temperature (°C)	28.40	29.40	28.50	27.50
pH (Standard Units)	7.13	7	6.94	6.97
Conductivity (mS/cm)	0.489	1.10	0.719	0.589
Turbidity (NTU)	0	3.9	4.5	0
Redox Potential (Millivolts)	-228	-178	-169	-122
Dissolved Oxygen (mg/L)	0.8	0.6	2.0	1.0
Carbon Dioxide (mg/L)	85	175	75	45
Sulfide (mg/L)	0.31	0.51	0.12	0.06
Ferrous Iron (mg/L)	0.1	0.21	1.25	1.75
Hydrogen Sulfide (mg/L)	0.7	0.1	0.1	0
Notes:				
Ft = Feet		Redox = Oxidation - Reduction		
°C = Degrees Centigrade		mg/L = Milligrams per Liter		
mS/cm = Microsiemens per Centimeter		NM=Not measured		
NTU = Nephelometric Turbidity Unit				

TABLE 2

**SUMMARY OF ORGANIC AND INORGANIC COMPOUNDS DETECTED IN GROUNDWATER - SWMU 14  
NAVAL STATION MAYPORT, MAYPORT, FLORIDA**

Parameter	GCTL	Sample Number	MPT-14-MW01S-03	MPT-14-MW01S-03D	MPT-14-MW02S-03	MPT-14-MW05S-03	MPT-14-MW10S-03
		Sample Location	Date	6/12/2002	6/12/2002	6/12/2002	6/11/2002
<b>Metals</b>	<b>(<math>\mu\text{g/L}</math>)</b>						
IRON	300		<b>821</b>	<b>808</b>	<b>501</b>	<b>873</b>	<b>620</b>
MANGANESE	50		<b>54.2</b>	<b>53.9</b>	46.2	<b>56.2</b>	<b>54.5</b>
<b>Miscellaneous</b>	<b>(mg/L)</b>						
ALKALINITY	NA		265	265	247	251	155
CHLORIDE	250000		418	418	35.5	1410	14.0
METHANE	NA		0.120	0.140	0.690	0.024	0.0079
NITRATE	10000		0.013	0.017	0.027	0.050 U	0.013
NITRITE	1000		0.25 U	0.25 U	0.050 U	0.50 U	0.50 U
ORTHOPHOSPHATE	NA		0.00018	0.00013	0.000094 U	0.000050 U	0.00014
SULFATE	250000		64.4	62.8	4.4	196	13.6

**Notes:** Bold indicates an exceedance of limits.

GCTL = Groundwater Target Cleanup Level from Chapter 62-777, Florida Administrative Code (F.A.C).

$\mu\text{g/L}$  = Micrograms per liter

mg/L = Milligrams per liter

U = Compound not detected

TABLE 2 (continued)

SUMMARY OF ORGANIC AND INORGANIC COMPOUNDS DETECTED IN GROUNDWATER - SWMU 14  
NAVAL STATION MAYPORT, MAYPORT, FLORIDA

Parameter	GCTL	Sample Number	MPT-14-MW11S-03	MPT-14-MW17S-03	MPT-14-MW18S-03	MPT-14-MW20S-03	MPT-14-MW21S-03
		Sample Location	Date	6/11/2002	6/11/2002	6/11/2002	6/12/2002
<b>Metals</b>	( µg/L)						
IRON	300		104	71.3	<b>427</b>	<b>3280</b>	<b>2780</b>
MANGANESE	50		<b>52.4</b>	8.5	<b>66.0</b>	<b>126</b>	<b>104</b>
<b>Miscellaneous</b>	( mg/L)						
ALKALINITY	NA		199	153	529	362	230
CHLORIDE	250000		106	37.4	30.5	26.0	22.4
METHANE	NA		0.140	0.073	0.990	0.470	0.390
NITRATE	10000		0.050 U	0.050 U	0.050 U	0.050 U	0.021
NITRITE	1000		0.050 U				
ORTHOPHOSPHATE	NA		0.000091	0.000050	0.000098	0.000050	0.000050 U
SULFATE	250000		25.6	9.3	8.3	2.2	32.2

Notes: **Bold** indicates an exceedance of limits.

GCTL = Groundwater Target Cleanup Level from Chapter 62-777, Florida Administrative Code (F.A.C).

µg/L = Micrograms per liter

mg/L = Milligrams per liter

U = Compound not detected

TABLE 3

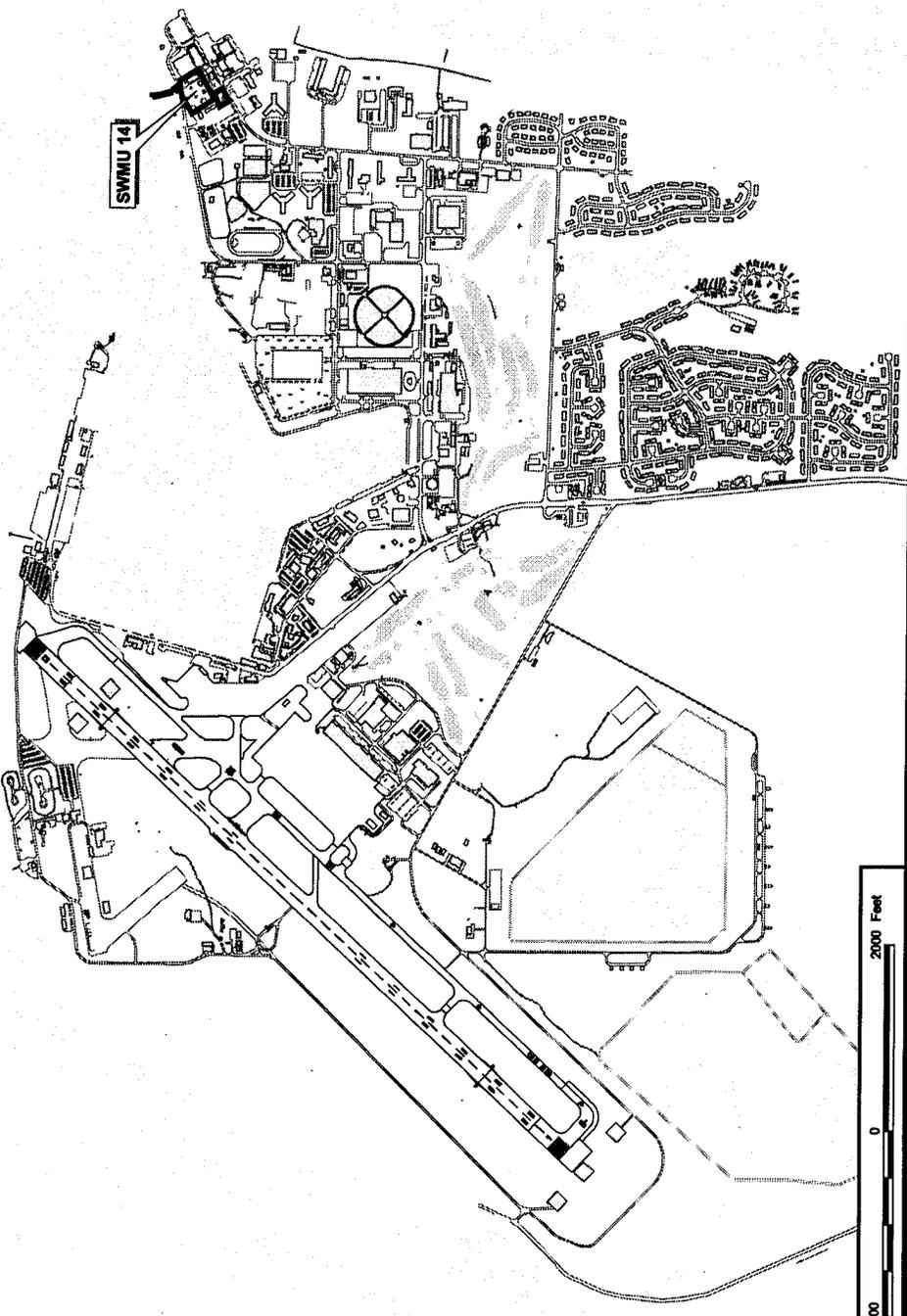
SUMMARY OF ORGANIC AND INORGANIC COMPOUNDS DETECTED IN SURFACE WATER - SWMU 14  
NAVAL STATION MAYPORT, MAYPORT, FLORIDA

Sample Number	MPT-14-SW01-03	MPT-14-SW02-03
Sample Location		
Collection	6/12/2002	6/12/2002
	<b>GCTL</b>	
<b>PAHs</b>	<b>(µg/L)</b>	
1-METHYLNAPHTHALENE	20	1 U
2-METHYLNAPHTHALENE	20	1 U
ACENAPHTHENE	20	1 U
ACENAPHTHYLENE	210	1 U
ANTHRACENE	2100	0.2 U
BENZO(A)ANTHRACENE	0.20	0.03 J
BENZO(A)PYRENE	0.20	0.047 J
BENZO(B)FLUORANTHENE	0.20	0.091 J
BENZO(G,H,I)PERYLENE	210	0.069 J
BENZO(K)FLUORANTHENE	0.50	0.042 J
CHRYSENE	4.80	0.064 J
DIBENZO(A,H)ANTHRACENE	0.20	0.2 U
FLUORANTHENE	280	0.12 J
FLUORENE	280	0.2 U
INDENO(1,2,3-CD)PYRENE	0.20	0.087 J
NAPHTHALENE	20	1 U
PHENANTHRENE	210	0.1 J
PYRENE	210	0.1 J
<b>TRPH (FL PRO)</b>	<b>( mg/L)</b>	
TRPH	5	0.3 U
<b>Metals</b>	<b>(µg/L)</b>	
IRON	300	252
MANGANESE	50	10.2

**Notes:**

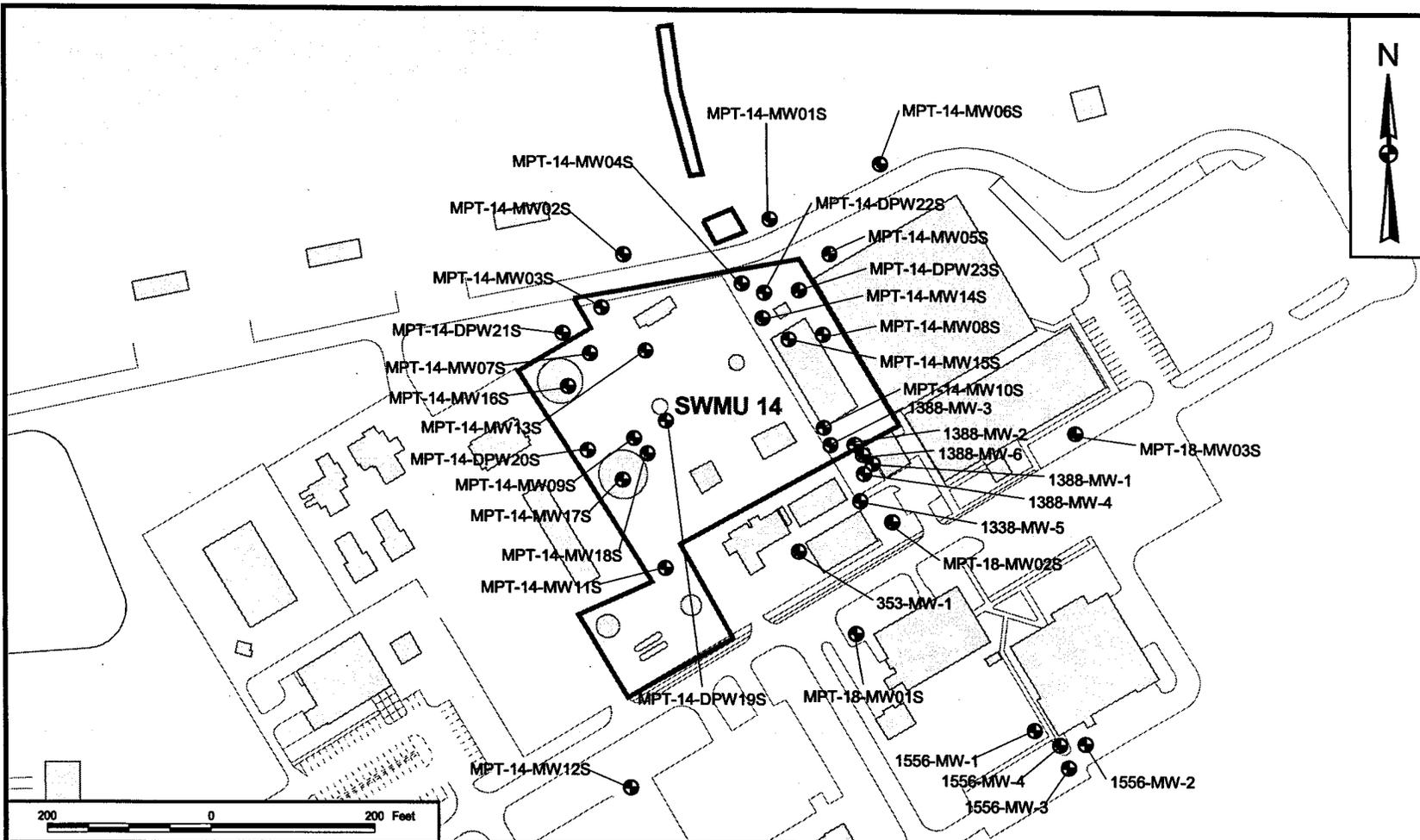
- GCTL = Groundwater Target Cleanup Level from Chapter 62-777, F.A.C.
- PAHs = Polycyclic Aromatic Hydrocarbons
- µg/L = Micrograms per liter
- U = Compound not detected
- J = Indicates the presence of a chemical at an estimated concentration
- TRPH = Total Petroleum Hydrocarbons
- mg/L = Milligrams per liter
- FL-PRO = Florida Petroleum Range Organics

## FIGURES



DRAWN BY A. JANOCHA		DATE 06/01/02		CONTRACT NUMBER 0091
CHECKED BY T. THOMPSON		DATE 06/03/02		
COST/SCHEDULE-AREA			DRAWING NO. FIGURE 1	REV 0
SCALE AS NOTED			SITE LOCATION MAP U.S. NAVAL STATION MAYPORT, FLORIDA	

P:\GIS\MAYPORT\_JNS\APRS0123.APR SITE MAP LAYOUT 060602.AJ



DRAWN BY A. JANOCHA	DATE 05/01/02	
CHECKED BY T. THOMPSON	DATE 05/03/02	
COST/SCHEDULE-AREA		
SCALE AS NOTED		

SITE MAP  
 U.S. NAVAL STATION  
 MAYPORT, FLORIDA

CONTRACT NUMBER 0091	
APPROVED BY	DATE
APPROVED BY	DATE
DRAWING NO. FIGURE 2	REV 0

P:\GIS\MAYPORT\_NS\APRS\0123.APR SITE MAP LAYOUT 05/06/02 AJ