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GROUNDWATER MONITORING WELL REPORT APRIL 2001 FOR BUILDING 189 WITH
TRANSMITTAL LETTER NAS KEY WEST FL
6/26/2001
TETRA TECH NUS



TETRA TECH NUS, INC.

AIK-01-0219

June 26, 2001

Project Number HK 7846

via Electronic Mail

Byas Glover (Code 18410)
Department of the Navy
SOUTHDIV NAVFACENGCOM
P.O. Box 190010
North Charleston, South Carolina 29419-9010

Reference: CLEAN Contract No. N62467-94-D-0888
Contract Task Order No. 059

Subject: Groundwater Monitoring Well Report, April 2001 for Building 189, Rev. 0
Naval Air Station Key West, Florida

Dear Mr. Glover:

TtNUS is pleased to submit the enclosed PDF file for the Groundwater Monitoring Well Report, April 2001 for Building 189, Rev. 0, Naval Air Station Key West, Florida. At your request, a copy of this final report is being distributed to the Florida Department of Environmental Protection FDEP for their review and comment or concurrence. I am planning on receiving comments or concurrence on this document from FDEP within the next 30 days.

Please call me at (803) 649-7963, extension 345, if you have any questions regarding the enclosed report.

Sincerely,

C. M. Bryan
Project Manager

CMB:spc

Enclosure

c: Ms. Debbie Wroblewski (Cover Letter Only)
Mr. Joe Fugitt, FDEP
File: 7846-7.4.1

Mr. R. Courtright, NAS Key West
Mr. M. Perry/File

**GROUNDWATER MONITORING WELL REPORT
APRIL 2001**

**for
BUILDING 189**

**Naval Air Station
Key West, Florida**



**Southern Division
Naval Facilities Engineering Command**

Contract Number N62467-94-D-0888

Contract Task Order 059

June 2001

Rev. 0

GROUNDWATER MONITORING WELL REPORT
APRIL 2001

FOR

BUILDING 189

NAVAL AIR STATION
KEY WEST, FLORIDA

COMPREHENSIVE PERFORMANCE
ENVIRONMENTAL ACTION NAVY (CLEAN) CONTRACT

SUBMITTED TO:
SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
2155 EAGLE DRIVE
NORTH CHARLESTON, SOUTH CAROLINA 29406

SUBMITTED BY:
TETRA TECH NUS
661 ANDERSON DRIVE
FOSTER PLAZA 7
PITTSBURGH, PENNSYLVANIA 15220

CONTRACT NUMBER N62467-94-D-0888
CONTRACT TASK ORDER 059

JUNE 2001

PREPARED UNDER THE SUPERVISION OF:



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TETRA TECH NUS
AIKEN, SOUTH CAROLINA

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PITTSBURGH, PENNSYLVANIA

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ACRONYMS

AS/SVE	Air Sparging/Soil Vapor Extraction
CLEAN	Comprehensive Long-Term Environmental Action, Navy
CTO	Contract Task Order
FDEP	Florida Department of Environmental Protection
GCTL	Groundwater Contaminant Target Level
KAG	Kerosene Analytical Group
µg/l	microgram per liter
MOP	monitoring only plan
PAH	polynuclear aromatic hydrocarbon
TtNUS	Tetra Tech NUS, Inc.

1.0 QUARTERLY REPORT

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-059, for the Comprehensive Long-Term Environmental Action, Navy (CLEAN) Contract Number N62467-94-D-0888.

1.1 SITE HISTORY OVERVIEW

Building 189 is located adjacent to the eastern seawall (East Quay Wall) of the turning basin, which was formerly used to dock naval vessels. During reconstruction of the quay wall in 1989, a north-to-south-oriented Bunker C fuel oil pipeline was discovered approximately 25 feet west of Building 189. The fuel line was broken prior to or during reconstruction activities.

In 1998, TtNUS implemented a monitoring only plan (MOP) at the site. Six wells were sampled for parameters of the Kerosene Analytical Group (KAG). By the end of the sixth quarter of sampling, petroleum hydrocarbon levels in the sampled wells were below Groundwater Contaminant Target Levels (GCTLs) for the site; however, free product was still present in MW-02. The product, Bunker C fuel oil, could not be recovered with a bailer because of its high viscosity. In May 2000, an Air Sparging/Soil Vapor Extraction (AS/SVE) Treatability Study was initiated at the site to remediate both residual hydrocarbon contaminants in the soil and groundwater and free product in the groundwater in the vicinity of former MW-2 (TtNUS, 2000).

Based on continued low-level detections in the influent and effluent vapor samples and the absence of free product in any of the wells, it was recommended by the Florida Department of Environment Protection (FDEP) that the long-term AS/SVE study be terminated at the end of the second quarter. The results indicated that minor concentrations of residual hydrocarbons were present in the soil and would be eliminated over time by natural attenuation processes. TtNUS recommended monitoring the source well (MW-02) and one perimeter well (MW-01) for two additional quarters. In addition, all four wells (MW-01, MW-02, AS-1, and AS-2) were monitored for free product. A map of the site showing locations of the monitoring wells is shown in Figure 1-1.

1.2 MONITORING OBJECTIVES

The objectives of the quarterly monitoring program were to evaluate groundwater quality at the site following termination of the long-term AS/SVE study and to monitor any rebound effects that might occur

after the system was shut down. The FDEP GCTLs for groundwater of low yield/poor quality, as prescribed by Chapter 62-770, are the appropriate GCTLs for the site.

1.3 SECOND QUARTERLY GROUNDWATER MONITORING

On April 12, 2001, TtNUS personnel collected groundwater samples from two monitoring wells (MW-01 and MW-02). A duplicate groundwater sample was also collected from MW-01 for laboratory analysis. All sampling was conducted in accordance with TtNUS FDEP-approved CompQAP No. 980038. Immediately prior to collection of the groundwater samples, water level and free product measurements were recorded from the designated monitoring wells. The water level data was used to determine purge volumes. In addition, depth-to-water measurements, along with top of casing elevations, were used to calculate groundwater elevations. Based on these elevations, the groundwater was flowing primarily to the west at the time of sampling. Figure 1-2 depicts the groundwater elevations recorded on April 12, 2001. Top of casing elevations, water table elevations, and depth-to-water measurements are provided in Table 1-1.

Following sample collection, the sample bottles were packed on ice and shipped via overnight transport to Katahdin Analytical Services laboratory in Westbrook, Maine. The groundwater samples were analyzed by EPA Method 610 for polynuclear aromatic hydrocarbons (PAHs). Due to an inadvertent delay by the shipping company, the samples were delivered three days late to the laboratory. The temperature of the samples upon arrival at the laboratory was recorded at 11 degrees Celsius, which exceeds the standard preservation temperature of 4 degrees Celsius. However, the samples were within the method holding time and, because the samples were not analyzed for volatile organic compounds, analysis of the samples was considered acceptable. Copies of the data validation package are provided in Appendix A. Chain-of-custody forms and log sheets are included in Appendix B.

1.4 FREE PRODUCT MONITORING

During monthly visits, monitoring wells MW-02, AS-1, AS-2, and MW-01 were gauged for the presence of free product. Free product was not detected in any of the wells during the quarter.

1.5 CONCLUSIONS AND RECOMMENDATIONS

Two PAH constituents, pyrene and fluoranthene, were detected in MW-02 at concentrations of 0.4 micrograms per liter ($\mu\text{g/l}$) and 0.07 $\mu\text{g/l}$, respectively. Both detected concentrations were below the GCTLs. PAH constituents were not detected in MW-01. PAH constituents had not been detected in either well during the first quarterly sampling event. Therefore, based on results of the first and second quarterly sampling events, TtNUS recommends that a No Further Action status be requested for the site.

TABLE 1-1

**TOP OF CASING ELEVATIONS, WATER TABLE ELEVATIONS, AND TOTAL DEPTHS
SITE 189, TRUMAN ANNEX
NAVAL AIR STATION
KEY WEST, FLORIDA**

Well ID	Total Depth	Top of Casing Elevation ⁽¹⁾	January 21, 2001		April 12, 2001	
			Groundwater Level	Groundwater Elevation	Groundwater Level	Groundwater Elevation
B189-MW01	12.88	10.00	5.92	4.08	5.95	4.05
B189-MW02	13.00	10.74	7.25	3.49	6.79	3.95
B189-MW11	12.97	10.45	NM	NM	6.60	3.85

1. TiNUS assigned an arbitrary 10-foot top of casing elevation for well B189-MW01 to provide a benchmark against which to establish top of casing elevations for the other wells listed in this table.

REFERENCES

TtNUS, (Tetra Tech NUS, Inc.), 2000. Air Sparging/Vapor Extraction Treatability Study Work Plan for Building 189, Truman Annex, Naval Air Station Key West, Key West, Florida, prepared for Southern Division Naval Facilities Engineering Command (SOUTHNAVFACENGCOM), Charleston, South Carolina, May.

APPENDIX A
DATA VALIDATION PACKAGE

AIK-01-0219

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CTO059

AIK-01-0219

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CTO 059

AIK-01-0219

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CTO 059

APPENDIX B
FIELD DOCUMENTATION



340 County Road No. 5
 P.O. Box 720
 Westbrook, ME 04092
 Tel: (207) 874-2400
 Fax: (207) 775-4029

CHAIN of CUSTODY

PLEASE BEAR DOWN AND
 PRINT LEGIBLY IN PEN

Page ___ of ___

Client: Tech Tech MS Contact: Lindy Harrison Phone #: 803 849-1963 Fax #: 803 842-4454
 Address: 700 Taint Ridge Road City: Ankeny State: IA Zip Code: 52243
 Purchase Order #: _____ Proj. Name / No.: NAS Key West Katahdin Quote #: _____
 Bill (if different than above) Address: _____

Sampler (Print / Sign): [Signature] Copies To: _____

LAB USE ONLY WORK ORDER # _____
 KATAHDIN PROJECT MANAGER _____

ANALYSIS AND CONTAINER TYPE PRESERVATIVES

REMARKS: _____

SHIPPING INFO: FED EX UPS CLIENT
 AIRBILL NO: 820604268074
 TEMP °C _____ TEMP BLANK INTACT NOT INTACT

| Filt. |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| YO |

* Sample Description	Date / Time coll'd	Matrix	No. of Cntrs.	VOC's	EDB	Lead	PHAS	TRPH												
FCN16-243	4/11/01/1245	CW	11	3	3	1	2	2												
FCN20-243	4/11/01/1245	CW	11	3	3	1	2	2												
FCN16-243-DS	4/11/01/1245	CW	3	3																
FCN20-243-DS	4/11/01/1245	CW	3	3																
D189-NW-01-141201	4/12/01/1930	CW	2				2													
DUP-131	/																			
B189-DUP-041201	4/12/01/1930	CW					2													
B189-NW-02-041201	4/12/01/1930	CW					2													
/	/																			
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COMMENTS _____

Relinquished By: (Signature) <u>[Signature]</u>	Date / Time <u>4/12/00</u>	Received By: (Signature) _____	Relinquished By: (Signature) _____	Date / Time _____	Received By: (Signature) _____
Relinquished By: (Signature) _____	Date / Time _____	Received By: (Signature) _____	Relinquished By: (Signature) _____	Date / Time _____	Received By: (Signature) _____



Project Site Name: Building 189
 Project No.: 7896 CR 2021

Sample ID No.: B189-MW-D1-04/201

Sample Location: B189-MW-01

Sampled By: Emily Harrison

C.O.C. No.: _____

Type of Sample:

Domestic Well Data

Monitoring Well Data

Other Well Type: _____

QA Sample Type: _____

Low Concentration

High Concentration

SAMPLING DATA:

Date:	Color	pH	S.G.	Temp.	Turbidity	DO	Salinity	Other
Time:	(visual)	(S.U.)	(m3/cm)	(°C)	(NTU)	(mg/l)	(%)	
<u>4/12/01</u>								
<u>0930</u>								
Method:								

PURGE DATA:

Date:	Time	pH	S.G.	Temp.	Turbidity	DO	Salinity	Other
<u>04/12/01</u>	<u>0840</u>	<u>7.48</u>	<u>22.0</u>	<u>26.5</u>	<u>0</u>	<u>0.29</u>	<u>1.33</u>	<u>lots of sediment</u>
Method:	<u>100% PUMP</u>							
Monitor Reading (ppm):	<u>0.0</u>	<u>7.89</u>	<u>21.5</u>	<u>26.7</u>	<u>0</u>	<u>0.64</u>	<u>1.30</u>	
Well Casing Diameter & Material	<u>0900</u>	<u>7.90</u>	<u>21.6</u>	<u>26.7</u>	<u>0</u>	<u>0.30</u>	<u>1.30</u>	
Type:	<u>2" PVC</u>	<u>0910</u>	<u>7.88</u>	<u>21.6</u>	<u>26.8</u>	<u>0</u>	<u>0.56</u>	<u>1.31</u>
Total Well Casing (TD):	<u>12.41</u>	<u>0929</u>	<u>7.89</u>	<u>21.7</u>	<u>27.2</u>	<u>0</u>	<u>0.77</u>	<u>1.31</u>
Static Water Level (WL):	<u>5.95</u>							
Casing Volume (gal):	<u>6.4</u>							
Start Purge (hrs):	<u>0830</u>							
End Purge (hrs):	<u>0930</u>							
Total Purge Time (min):	<u>60</u>							
Total Vol. Purged (gal):	<u>4 gal</u>							

SAMPLE COLLECTION INFORMATION:

Analyte	Preservative	Container Requirements	Collected
<u>DATA</u>	<u>---</u>	<u>2 x 1L Amber</u>	

OBSERVATIONS & NOTES:

3 casing vol = 3.35 gal

Circle if Applicable:

MS/MSD

Duplicate ID No.:

B189-DUP-04/201

Signature(s):

E. Harrison



Project Site Name: Building 189
 Project No.: ETD 0059

Sample ID No.: B189 MWA-4120
 Sample Location: MW-2
 Sampled By: Greg Braguna
 C.O.C. No.:

- Domestic Well Data
 Monitoring Well Data
 Other Well Type:
 QA Sample Type:

Type of Sample:
 Low Concentration
 High Concentration

SAMPLING DATA

Date:	Color (Visual)	pH (S.C.)	S.C. (mSec)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	Salinity (‰)	Other
4/12/01								
Time: 6:45								
Method: low flow								

PURGE DATA:

Case	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
4/12/01								
Method: backflow		7.25	20.4	26.6	10	0.60		
Monitor Reading (ppm): 00		7.30	20.6	26.7	10	0.41		
Well Casing Diameter & Material Type: 4" PVC		7.29	20.7	26.7	10	0.41		
Total Well Depth (TD): 212.68		7.30	20.7	26.8	10	0.38		
Static Water Level (MW): 6.79		7.28	20.7	27.0	10	0.38		
Underside Volume (gal): 9.9		7.29	20.7	27.0	10	0.38		
Start Purge (hrs): 8:30								
End Purge (hrs): 9:30								
Total Purge Time (min): 60.00								
Total Vol Purged (gal): 12 gal								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
FAH	-	20L amber	

OBSERVATIONS / NOTES:

Circle if Applicable:

M3/M3D

Duplicate ID No.:

Signature(s):