Comprehensive Long-term Environmental Action Navy

CONTRACT NUMBER N62467-04-D-0055

N00164.AR.001122
NSWC CRANE
5090.3a

Resource Conservation and Recovery Act Addendum No. 3 to the Quality Assurance Project Plan for SWMUs 8, 15, 18, 19, 20 and the Old Gun Tub Storage Lot for SWMU 9 (Pesticide Control/R-150 Tank Areas)

Naval Surface Warfare Center
Crane Division
Crane, Indiana

Contract Task Order 0042

September 2007

NAVFAC
Naval Facilities Engineering Command
Midwest
201 Decatur Avenue
Building 1A, Code EV
Great Lakes, Illinois 60088

TETRA TECH NUS, Inc.

RESOURCE CONSERVATION AND RECOVERY ACT
ADDENDUM NO. 3 TO THE
QUALITY ASSURANCE PROJECT PLAN
FOR
SWMUs 8, 15, 18, 19, 20, AND THE OLD GUN TUB STORAGE LOT
FOR
SWMU 9 (Pesticide Control/R-150 Tank Areas)

NAVAL SURFACE WARFARE CENTER
CRANE DIVISION
CRANE, INDIANA

COMPREHENSIVE LONG-TERM
ENVIRONMENTAL ACTION NAVY (CLEAN) CONTRACT

Submitted to:
Naval Facilities Engineering Command
Midwest
201 Decatur Avenue
Building 1A, Code EV
Great Lakes, Illinois 60088

Submitted by:
Tetra Tech NUS, Inc.
234 Mall Boulevard, Suite 260
King of Prussia, Pennsylvania 19406

CONTRACT NUMBER N62467-04-D-0055
CONTRACT TASK ORDER 0042

SEPTEMBER 2007

PREPARED UNDER THE SUPERVISION OF:

RALPH BASINSKI
PROJECT MANAGER
TETRA TECH NUS, INC.
PITTSBURGH, PENNSYLVANIA

APPROVED FOR SUBMITTAL BY:

KELLY CARPER
QUALITY ASSURANCE MANAGER
TETRA TECH NUS, INC.
PITTSBURGH, PENNSYLVANIA

HAK CHO
CORRECTIVE ACTION SECTION CHIEF
U.S. EPA REIGON 5

JOSE CISNEROS
WASTE MANAGEMENT BRANCH CHIEF
U.S. EPA REGION 5

HOWARD HICKEY
REMEDIAL PROJECT MANAGER
NAVFAC MW

TOM BRENT
ENVIRONMENTAL RESTORATION
SITE MANAGER
NSWC CRANE

HARRY ROMBERG
LABORATORY QUALITY ASSURANCE OFFICER
LAUCKS TESTING LABORATORIES, INC.

HUGH PRENTICE
LABORATORY DIRECTOR
LAUCKS TESTING LABORATORIES, INC.

TABLE OF CONTENTS

SECTION		PAGE NO.
ACRONYMS		iv
1.0	INTRODUCTION	1
2.0	SITE BACKGROUND AND HISTORY	1
3.0	PREVIOUS SAMPLING AND ANALYSIS	1
4.0	PROPOSED ACTIVITIES AND RATIONALE	2
5.0	FIELD ACTIVITIES	3
6.0	LABORATORY ANALYSES	4
7.0	REFERENCES	4

TABLES

NUMBER	
1	Sample Location and Rationale
2	Sample Identification and Analysis
3	Summary of Sample Analyses, Container Types and Volumes, Preservation Requirements, and Holding Times for Soils
4	Summary of Soil Analysis and Quality Control Samples

FIGURES

NUMBER	
1	Existing and Proposed Soil Sampling Locations

ACRONYMS

DRO	diesel range organics
IDEM	Indiana Department of Environmental Management
IDW	investigation-derived waste
IMWP	Interim Measures Work Plan
LDR	land disposal restriction
NSWC	Naval Surface Warfare Center Crane
PCB	polychlorinated biphenyl
QAPP	Quality Assurance Project Plan
QC	quality control
RCRA	Resource Conservation and Recovery Act
SWMU	Solid Waste Management Unit
TtNUS	Tetra Tech NUS, Inc.

1.0 INTRODUCTION

This document has been prepared as Addendum No. 3 to the Quality Assurance Project Plan for Solid Waste Management Units (SWMUs) 8, 15, 18, 19, 20, and the Old Gun Tub Storage Lot at the Naval Surface Warfare Center Crane (NSWC), Crane, Indiana (TtNUS, 2004). This work plan addendum was prepared for additional soil sampling to support remedial actions at SWMU 9 (Pesticide Control/R-150 Tank Areas). The purpose of this soil sampling is to further delineate the extent of contamination and refinement of remedial waste types and volumes. The focus of the current investigation is primarily the known areas of soil contamination where soil is proposed for excavation and removal.

2.0 SITE BACKGROUND AND HISTORY

SWMU 9 was used as a pesticide control area from 1950 through 1974. The control activities consisted of storage and management of various types of pesticides and herbicides. The original Pesticide Control Building was Building 55. Pesticide spray tanks were reportedly rinsed in the vicinity of this building. Other areas associated with SWMU 9 include Building 150 and the former Fire Training Area.

Building 150 is currently used as a steam plant with associated aboveground fuel tanks and fuel lines. A spill from a fuel tank occurred in 2003.

The former Fire Training Area was used to train base personnel to fight fires that were started with various fuels including diesel fuel and used oil. The duration of the fire training and the types and volumes of fuel used is not known.

Various investigations have been conducted at SWMU 9. Based on the findings of the investigations, a remedial action (interim measure) is planned to remove soil contaminated with polychlorinated biphenyls (PCBs) and diesel range organics (DRO) near the Building 150 area and the former Fire Training Area. The remedial action will also remove soil contaminated with pesticides, and possibly herbicides, from the former Building 55 area.

3.0 PREVIOUS SAMPLING AND ANALYSIS

Four field investigations (Phases 1 through 4) were conducted in 2005 and 2006 to address contamination at SWMU 9.

Phase 1 Investigation (March 2005). Field activities for the Phase 1 Investigation consisted of collecting surface soil, subsurface soil, groundwater, surface water, and sediment samples within the area of

historical pesticide operations (former Building 55). Analytical results indicated that pesticides were present beyond the area sampled.

Phase 2 Investigation (May 2005). The Phase 2 investigation included further delineation of the nature and extent of contamination found in Phase 1. The analytical results from the two phases indicated that significant pesticide and petroleum contamination was present in soil in an area adjacent to a former wash rack located immediately west of former Building 55. High concentrations of PCBs were detected in surface and subsurface soil at the former Fire Training Area.

Phase 3 Investigation (October 2005). The Phase 3 investigation focused on the following areas of potential soil contamination:

- Additional soil samples were collected to delineate the nature and extent of contamination associated with the former wash rack adjacent to former Building 55.

- Soil samples were collected near Building 150 where a fuel spill occurred in 2003 and near a concrete pad stained with petroleum. No sampling and analysis had been conducted in this area.

- Soil samples were collected from the former Fire Training Area to determine the nature and extent of PCB contamination.

- Soil samples were collected from a former gas station where underground storage tanks were thought to have been located.

Phase 4 Investigation (August 2006). Analytical results from the previous three phases of investigation did not fully delineate the extent of surface and subsurface soil contamination in the area west of former Building 55 and within the former gas station area. In addition, soil samples needed to be collected at the Building 150 fuel spill area for analysis of specific polynuclear aromatic hydrocarbons.

4.0 PROPOSED ACTIVITIES AND RATIONALE

An Interim Measures Work Plan (IMWP) (TtNUS, 2007) has been prepared to support a soil removal action at SWMU 9. The remedial actions described in the IMWP include removal of soil contaminated with pesticides (and potentially with herbicides), PCBs, and/or DRO from three distinct areas (former Building 55 Area, Building 150 Area, and former Fire Training Area).

The extent of soil contaminated with PCBs and DRO has been adequately defined; however, additional information is needed on the nature and extent of soil contaminated with pesticides, and potentially with

herbicides. The existing analytical data for pesticides have been used to classify soil requiring remediation for Resource Conservation and Recovery Act (RCRA) waste disposal and land disposal restriction purposes. The collection of additional samples for pesticide analysis would allow further refinement of remedial waste types and volumes. Analysis for herbicides, which may be present as a result of activities at former Building 55, has not been conducted. The herbicides may be listed or Toxicity Characteristic RCRA hazardous waste, and analysis for herbicides may allow further refinement of remedial waste types and volumes.

Surface and subsurface soil samples will be collected within and around the area previously investigated. These samples will be analyzed for pesticides and herbicides to complete the delineation of soil contaminated with pesticides and potentially with herbicides. Surface and subsurface soil samples will also be collected from the area near former Building 55 where pesticide-contaminated soil is to be removed. Soil samples will be located near previous soil sampling locations and analyzed for herbicides only.

Table 1 summarizes the sample locations, depth intervals to sample, and rationale. Table 2 lists the sample locations, sample identification numbers, and analytical parameters. Table 3 lists the sample analyses, container types and volumes, preservation requirements, and holding times. Table 4 is a summary of soil samples and quality control (QC) samples. Proposed and existing soil sample locations are shown on Figure 1.

5.0 FIELD ACTIVITIES

Field activities including methods of sample collection and analysis, handling of investigation-derived waste (IDW), and decontamination procedures will be consistent with those described in the approved QAPP for SWMUs 8, 15, 18, 19, and 20 and the Old Gun Tub Storage Lot (TtNUS, 2004). The rationale for using this QAPP is that it was prepared for similar field activities and analytical methods at NSWC Crane and was approved by the Indiana Department of Environmental Management (IDEM), which is also the lead regulatory agency for the SWMU 9 activities. Soil is the only medium to be sampled during this investigation.

The fieldwork associated with this sampling effort is anticipated to be conducted over one 5-day shift. During this fieldwork, soil samples will be collected to further:

1. Delineate herbicide and/or pesticide contamination.
2. Identify any areas of soil contaminated with pesticides and/or herbicides outside the proposed IMWP remediation area.
3. Identify if herbicide contamination is associated with former Building 55.

Soil sample locations 09SB084 through 09SB086 will be collected to further delineate pesticide and potentially herbicide contamination associated with former Building 55.

Soil samples locations 09SB087 through 09SB089 will be collected to determine whether soil outside of the current IMWP proposed remedial action boundaries is contaminated with herbicides (i.e., to determine if the current pesticide delineation is adequate for remediation).

To determine if herbicide contamination is co-located with pesticide contamination, soil sample locations 09SB090 through 09SB107 will be collected within the IMWP proposed remediation area associated with form Building 55 from locations at or near previous soil sample location as detailed in Table 1. The available pesticide data for this area is adequate for pesticide waste disposal and land disposal restriction (LDR) determinations but insufficient for herbicide waste disposal and LDR determinations.

6.0 LABORATORY ANALYSES

The primary objectives of the proposed field investigation is to collect laboratory data necessary to identify any additional areas of contaminated soil and to classify soil requiring remediation for waste disposal and LDR purposes. The extent of soil contaminated with PCBs and DRO has been adequately defined. Based on the previous analytical results and the historical operations conducted at SWMU 9, the Navy and IDEM have agreed that the following fractions (parameters) will be analyzed for in accordance with IDEM guidance:

- Pesticides (SW-846 Method 8081).
- Herbicides (SW-846 Method 8151A).

Table 2 summarizes the sample locations, sample identification numbers, and proposed analytical parameters and methods. Table 3 summarizes the sample analyses, container types and volumes, preservation requirements, and holding times. Table 4 presents the total numbers of soil samples and QC samples to be collected.

7.0 REFERENCES

TtNUS (Tetra Tech NUS, Inc.), 2004. Quality Assurance Project Plan for RCRA Facility Investigation at Building 106 Pond (SWMU 8) and Roads and Grounds Area (SWMU 15) and Environmental Indicator Investigation for SWMU 18 (Load and Fill Area Buildings), SWMU 19 (Pyrotechnic Test Area), SWMU 20 (Crane Army Ammunition Activity Quality Assurance/Quality Control Test Area), and the Old Gun Tub

Storage Lot, Naval Surface Warfare Center, Crane, Indiana. Prepared for Southern Division, Naval Facilities Engineering Command, North Charleston, South Carolina. Pittsburgh, Pennsylvania.

TtNUS, 2007. Interim Measures Work Plan for SWMU 9 – Pesticide Control Area, Naval Surface Warfare Center, Crane, Indiana. Prepared for Naval Facilities Engineering Command Midwest, Great Lakes, Illinois. King of Prussia, Pennsylvania.

TABLE 1

SAMPLE LOCATION AND RATIONALE
SWMU 9 PESTICIDE CONTROL AREA WORK PLAN ADDENDUM
NSWC CRANE
CRANE, INDIANA

Sample Location	Depth Intervals to Sample[1]	Comments and Sample Rationale	Pesticides	Herbicides
09SB084	0-2'; 2-4'; 4-6'	Complete pesticide delineation (adding herbicides)	X	X
09SB085	0-2'; 2-4'; 4-6'	Complete pesticide delineation (adding herbicides)	X	X
09SB086	0-2'; 2-4'; 4-6'	Complete pesticide delineation (adding herbicides)	X	X
09SB087	0-2'; 2-4'; 4-6'	Herbicide delineation only - pesticides well-defined		X
09SB088	0-2'; 2-4'; 4-6'	Herbicide delineation only - pesticides well-defined		X
09SB089	0-2'; 2-4'; 4-6'	Herbicide delineation only - pesticides well-defined		X
09SB090	0-2'; 2-4'; 4-6'	Repeat (near) exiting sample location 09SB023 Herbicides only - pesticides well-defined		X
09SB091	0-2'; 2-4'; 4-6'	Repeat (near) exiting sample location 09SB027 Herbicides only - pesticides well-defined		X
09SB092	0-2'; 2-4'; 4-6'	Repeat (near) exiting sample location 09SB026 Herbicides only - pesticides well-defined		X
09SB093	0-2'; 2-4'; 4-6'	Repeat (near) exiting sample location 09SB022 Herbicides only - pesticides well-defined		X
09SB094	0-2'; 2-4'; 4-6'	Repeat (near) exiting sample location 09SB018 Herbicides only - pesticides well-defined		X
09SB095	0-2'; 2-4'; 4-6'	Repeat (near) exiting sample location 09SB024 Herbicides only - pesticides well-defined		X
09SB096	0-2'; 2-4'; 4-6'	Repeat (near) exiting sample location 09SB069 Herbicides only - pesticides well-defined		X
09SB097	0-2'; 2-4'; 4-6'	Repeat (near) exiting sample location 09SB021 Herbicides only - pesticides well-defined		X
09SB098	0-2'; 2-4'; 4-6'	Repeat (near) exiting sample location 09SB025 Herbicides only - pesticides well-defined		X
09SB099	0-2'; 2-4'; 4-6'	Repeat (near) exiting sample location 09SB019 Herbicides only - pesticides well-defined		X
09SB100	0-2'; 2-4'; 4-6'	Repeat (near) exiting sample location 09SB070 Herbicides only - pesticides well-defined		X
09SB101	0-2'; 2-4'; 4-6'	Repeat (near) exiting sample location 09SB068 Herbicides only - pesticides well-defined		X
09SB102	0-2'; 2-4'; 4-6'	Repeat (near) exiting sample location 09SB046 Herbicides only - pesticides well-defined		X
09SB103	0-2'; 2-4'; 4-6'	Repeat (near) exiting sample location 09SB020 Herbicides only - pesticides well-defined		X
09SB104	0-2'; 2-4'; 4-6'	Repeat (near) exiting sample location 09SB066 Herbicides only - pesticides well-defined		X
09SB105	0-2'; 2-4'; 4-6'	Repeat (near) exiting sample location 09SB030 Herbicides only - pesticides well-defined		X
09SB106	0-2'; 2-4'; 4-6'	Repeat (near) exiting sample location 09SB067 Herbicides only - pesticides well-defined		X
09SB107	0-2'; 2-4'; 4-6'	Repeat (near) exiting sample location 09SB047 Herbicides only - pesticides well-defined		X

1 - The last sample interval will be collected at 2 feet above bedrock.

TABLE 2

SAMPLE IDENTIFICATION AND ANALYSIS
SWMU 9 PESTICIDE CONTROL AREA WORK PLAN ADDENDUM
NSWC CRANE
CRANE, INDIANA

Sample Location	Sample ID	Pesticides SW-846 8081	Herbicides SW-846 8151A
09SB84	09SB840002	X	X
	09SB840204	X	X
	09SB840406	X	X
	09SB84XXXX(1)	X	X
09SB85	09SB850002	X	X
	09SB850204	X	X
	09SB850406	X	X
	09SB85XXXX(1)	X	X
09SB86	09SB860002	X	X
	09SB860204	X	X
	09SB860406	X	X
	09SB86XXXX(1)	X	X
09SB87	09SB870002	---	X
	09SB870204	---	X
	09SB870406	---	X
	09SB87XXXX(1)	---	X
09SB88	09SB880002	---	X
	09SB880204	---	X
	09SB880406	---	X
	09SB88XXXX(1)	---	X
09SB89	09SB890002	---	X
	09SB890204	---	X
	09SB890406	---	X
	09SB89XXXX(1)	---	X
09SB90	09SB900002	---	X
	09SB900204	---	X
	09SB900406	---	X
	09SB90XXXX(1)	---	X
09SB91	09SB910002	---	X
	09SB910204	---	X
	09SB910406	---	X
	09SB91XXXX(1)	---	X
09SB92	09SB920002	---	X
	09SB920204	---	X
	09SB920406	---	X
	09SB92XXXX(1)	---	X
09SB93	09SB930002	---	X
	09SB930204	---	X
	09SB930406	---	X
	09SB93XXXX(1)	---	X

TABLE 2

SAMPLE IDENTIFICATION AND ANALYSIS
SWMU 9 PESTICIDE CONTROL AREA WORK PLAN ADDENDUM
NSWC CRANE
CRANE, INDIANA

Sample Location	Sample ID	Pesticides SW-846 8081	Herbicides SW-846 8151A
09SB94	09SB940002	---	X
	09SB940204	---	X
	09SB940406	---	X
	09SB94XXXX(1)	---	X
09SB95	09SB950002	---	X
	09SB950204	---	X
	09SB950406	---	X
	09SB95XXXX(1)	---	X
09SB96	09SB960002	---	X
	09SB960204	---	X
	09SB960406	---	X
	09SB96XXXX(1)	---	X
09SB97	09SB970002	---	X
	09SB970204	---	X
	09SB970406	---	X
	09SB97XXXX(1)	---	X
09SB98	09SB980002	---	X
	09SB980204	---	X
	09SB980406	---	X
	09SB98XXXX(1)	---	X
09SB99	09SB990002	---	X
	09SB990204	---	X
	09SB990406	---	X
	09SB99XXXX(1)	---	X
09SB100	09SB1000002	---	X
	09SB1000204	---	X
	09SB1000406	---	X
	09SB100XXXX(1)	---	X
09SB101	09SB1010002	---	X
	09SB1010204	---	X
	09SB1010406	---	X
	09SB101XXXX(1)	---	X
09SB102	09SB1020002	---	X
	09SB1020204	---	X
	09SB1020406	---	X
	09SB102XXXX(1)	---	X
09SB103	09SB1030002	---	X
	09SB1030204	---	X
	09SB1030406	---	X
	09SB103XXXX(1)	---	X

TABLE 2

SAMPLE IDENTIFICATION AND ANALYSIS
SWMU 9 PESTICIDE CONTROL AREA WORK PLAN ADDENDUM
NSWC CRANE
CRANE, INDIANA

Sample Location	Sample ID	Pesticides SW-846 8081	Herbicides SW-846 8151A
09SB104	09SB1040002	---	X
	09SB1040204	---	X
	09SB1040406	---	X
	09SB104XXXX(1)	---	X
09SB105	09SB1050002	---	X
	09SB1050204	---	X
	09SB1050406	---	X
	09SB105XXXX(1)	---	X
09SB106	09SB1060002	---	X
	09SB1060204	---	X
	09SB1060406	---	X
	09SB106XXXX(1)	---	X
09SB107	09SB1070002	---	X
	09SB1070204	---	X
	09SB1070406	---	X
	09SB107XXXX(1)	---	X
TOTALS		**12**	**96**

1 - XXXX indicates sample interval to be collected at 2 feet above bedrock.

TABLE 3

SUMMARY OF SAMPLE ANALYSES, CONTAINER TYPES AND VOLUMES, PRESERVATION REQUIREMENTS, AND HOLDING TIMES FOR SOILS
SWMU 9 PESTICIDE CONTROL AREA WORK PLAN ADDENDUM
NSWC CRANE
CRANE, INDIANA

Parameter	Analyte/Methodology	Sample Container (Solid)	Container Volume	Preservation	Maximum Holding Time[1]
Pesticides	SW-846 8081A	Wide-mouth jar, Teflon-lined plastic cap	4 ounce	Cool to 4°C	Extraction within 14 days; analysis within 40 days of extraction.
Herbicides	SW-846 8151A	Wide-mouth jar, Teflon-lined plastic cap	4 ounce	Cool to 4°C	Extraction within 14 days; analysis within 40 days of extraction.

1 All holding times are from date of collection.

°C - Degrees Centigrade.

TABLE 4

SUMMARY OF SOIL ANALYSES AND QUALITY CONTROL SAMPLES
SWMU 9 PESTICIDE CONTROL AREA WORK PLAN ADDENDUM
NSWC CRANE
CRANE, INDIANA

Sample Type	Pesticides SW-846 8081	Herbicides SW-846 8151A
Total Environmental Samples	12	96
Field Duplicates (1)	1	5
Rinsate Blanks (2)	1	1
Matrix Spikes (3)	1	5
Matrix Spike Duplicates (4)	1	5

1 Field duplicates will be collected at a frequency of one per every 20 environmental samples.
2 Rinsate blanks will be collected at a frequency of one per sampling device or instrument. These amounts are estimates and may vary.
3 Matrix spikes are collected at a frequency of one per every 20 field samples.
4 Matrix spike duplicates are collected at a frequency of one per every 20 field samples.