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SAMPLING AND ANALYSIS PLAN ADDENDUM FOR INFORMATIONAL SAMPLING SOLID
WASTE MANAGEMENT UNIT 5 (SWMU 5) OLD BURN PIT SITE NSA CRANE IN
1/1/2010
TETRA TECH

Comprehensive Long-term Environmental Action Navy

CONTRACT NUMBER N62472-03-D-0057



Sampling and Analysis Plan Addendum

for
Informational Sampling

for
SWMU 5 – Old Burn Pit Site

at
Naval Support Activity Crane
Crane, Indiana

Contract Task Order C063

January 2010



201 Decatur Avenue
Building IA, Code EV
Great Lakes, Illinois 60088

SAP Worksheet #1 -- Title and Approval Page

(UFP-QAPP Manual Section 2.1)

FINAL

SAMPLING AND ANALYSIS PLAN ADDENDUM (SAP ADDENDUM)
January 2010

**For Informational Sampling
At
SWMU 5 - Old Burn Pit Site
Naval Support Activity Crane
Crane, Indiana**

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**Prepared under:
Comprehensive Long-Term Environmental Action Navy (CLEAN)
Contract N62472-03-D-0057, Contract Task Order C063**

Addendum to:

***Sampling and Analysis Plan
Field Sampling Plan and Quality Assurance Project Plan
Approved: October 2009***

***Verification Soil Sampling
SWMU 12 Battery Dump Site***

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EXECUTIVE SUMMARY OF SAP ADDENDUM

This Sampling and Analysis Plan Addendum (SAP Addendum) presents requirements for informational soil sampling at Solid Waste Management Unit (SWMU) 5 - Old Burn Pit (site) at Naval Support Activity (NSA) Crane, in Crane, Indiana. This SAP Addendum describes the surface soil excavation and post excavation sampling that will be performed for a lead hot spot in the non-constructible area of SWMU 5. This SAP Addendum is an addendum to the approved SAP that was prepared and approved for SWMU 12 – Battery Dump Site in October 2009. This SAP Addendum contains site specific information about SWMU 5 and references the approved worksheets in the SWMU 12 SAP for the majority of the requirements. A SAP Addendum is presented for SWMU 5 (instead of a complete SAP) because of the relatively small size of the proposed SWMU 5 excavation (less than 3 cubic yards) and the similarity with the scope contained in the approved SWMU 12 SAP.

SWMU 5 was an active waste disposal area from 1942 to 1972. Trash and rubbish from NSA Crane, including wood, paper, construction material, and industrial wastes were burned at the site. The site stopped receiving waste in 1972 and the area has been naturally re-vegetated. Environmental investigations performed at SWMU 5 included soil and groundwater sampling and analysis. Interim measures are proposed to address environmental conditions and will consist of excavating lead-contaminated soil from one identified hot spot and removal of metallic surface debris. These interim measures will be performed in a manner that minimizes disruption to the existing vegetation.

The proposed hot spot excavation consists of excavating a 6 ft. x 6 ft. area at one previous sampling location with known elevated lead concentrations. This area will be excavated to a depth of 2 ft. Informational samples will be collected from the bottom and sidewalls of the excavation and analyzed for lead in the field using X-ray fluorescence (XRF) and in a fixed based laboratory. This sampling will be performed for informational purposes. When the excavation is complete, the excavated area will be backfilled with non-contaminated soil and reseeded.

Because of similarities to work proposed at SWMU 12, this SAP Addendum references the SWMU 12 SAP in many instances. This SAP Addendum only contains worksheets that were revised to provide site-specific information to address the work at SWMU 5.

SAP Worksheets presented in SWMU 5 Addendum

SAP Worksheet #1 -- Title and Approval Page..... 1
SAP Worksheet #2 -- SAP Identifying Information 4
SAP Worksheet #3 -- Distribution List..... 7
SAP Worksheet #4 -- Project Personnel Sign-Off Sheet 8
SAP Worksheet #5 -- Project Organizational Chart..... 9
SAP Worksheet #6 -- Communication Pathways (Substitute Personnel Only) 10
SAP Worksheet #7 -- Personnel Responsibilities and Qualifications Table (Substitute Personnel Only).. 10
SAP Worksheet #8 -- Special Personnel Training Requirements Table (Substitute Personnel Only) 10
SAP Worksheet #9 -- Project Scoping Session Participants Sheet..... 11
SAP Worksheet #10 -- Problem Definition..... 14
SAP Worksheet #11 -- Project Quality Objectives/Systematic Planning Process Statements..... 17
SAP Worksheet #13 -- Secondary Data Criteria and Limitations Table 20
SAP Worksheet #15 -- Reference Limits and Evaluation Table 21
SAP Worksheet #16 -- Project Schedule / Timeline Table (optional format)..... 22
SAP Worksheet #17 -- Sampling Design and Rationale..... 23
SAP Worksheet #18 -- Sampling Locations and Methods/SOP Requirements Table 25
SAP Worksheet #20 -- Field Quality Control Sample Summary Table..... 26

List of SWMU 5 Figures

- Figure 1 – SWMU 5 – Base and Site Location Map
- Figure 2 – SWMU 5 – Aerial Photograph
- Figure 3 – SWMU 5 – Site Plan and Work Area
- Figure 5 – SWMU 5 – Excavation Plan
- Figure 5A – SWMU 5 – Informational Sample Locations

SAP WORKSHEET #2 -- SAP IDENTIFYING INFORMATION

(UFP-QAPP Manual Section 2.2.4)

Site Name/Number: NSA Crane, Crane, Indiana
Solid Waste Management Unit: SWMU 5
Contractor Name: Tetra Tech
Contract Number: N62472-03-D-0057
Contract Title: Comprehensive Long-Term Environmental Action Navy (CLEAN)
Work Assignment Number (optional): CTO C063

1. This SAP was prepared in accordance with the requirements of the *Uniform Federal Policy for Quality Assurance Plans (UFP-QAPP)* (U.S. EPA, 2005) and *U.S. EPA Guidance for Quality Assurance Project Plans, EPA QA/G-5, QAMS (2002)*.

2. Identify regulatory program: The Navy's Installation Restoration (IR) Program, Resource Conservation and Recovery Act (RCRA).

3. This SAP is a project-specific SAP.

4. List dates of scoping sessions that were held:

Scoping Session	Date
<u>Project kickoff meeting</u>	<u>May 13, 2009</u>
<u>Site reconnaissance and Tech Memo Review</u>	<u>August 19, 2009</u>
<u>DQO Planning Meeting</u>	<u>October 5, 2009</u>

5. List dates and titles of any SAP documents written for previous site work that are relevant to the current investigation.

Title	Date
<u>Field Sampling Plan and Quality Assurance Plan SWMU 12</u>	<u>October, 2009</u>
<u>SWMU 5 Old Burn Pit Technical Memorandum</u>	<u>September 4, 2009</u>

6. List organizational partners (stakeholders) and connection with lead organization:

Indiana Department of Environmental Management (IDEM) (regulatory stakeholder)
U.S. EPA Region 5 (regulatory stakeholder)
NSA Crane (property owner)

7. Lead organization

Naval Facilities Engineering Command (NAVFAC) Midwest

8. If any required SAP elements or required information are not applicable to the project or are provided elsewhere, then note the omitted SAP elements and provide an explanation for their exclusion below:

UFP-QAPP Worksheet #	Required Information	SWMU 5 Addendum Cross-Reference to SWMU12 UFP-SAP
A. Project Management		
<i>Documentation</i>		
1	Title and Approval Page	Provided with Addendum
2	Table of Contents SAP Identifying Information	Provided with Addendum
3	Distribution List	Provided with Addendum
4	Project Personnel Sign-Off Sheet	Provided with Addendum
<i>Project Organization</i>		
5	Project Organizational Chart	Provided with Addendum
6	Communication Pathways	Supplement provided with Addendum – List of Substitute Personnel only
7	Personnel Responsibilities and Qualifications Table	Supplement provided with Addendum – List of Substitute Personnel only
8	Special Personnel Training Requirements Table	Supplement provided with Addendum – List of Substitute Personnel only
<i>Project Planning/ Problem Definition</i>		
9	Project Planning Session Documentation (including Data Needs tables) Project Scoping Session Participants Sheet	Provided with Addendum
10	Problem Definition, Site History, and Background. Site Maps (historical and present)	Provided with Addendum
11	Site-Specific Project Quality Objectives	Provided with Addendum
12	Measurement Performance Criteria Table	No change – comply with SWMU 12 UFP-SAP
13	Sources of Secondary Data and Information Secondary Data Criteria and Limitations Table	Provided with Addendum
14	Summary of Project Tasks	No change – comply with SWMU 12 UFP-SAP
15	Reference Limits and Evaluation Table	Provided with Addendum
16	Project Schedule/Timeline Table	Provided with Addendum
B. Measurement Data Acquisition		
<i>Sampling Tasks</i>		
17	Sampling Design and Rationale	Provided with Addendum
18	Sampling Locations and Methods/ SOP Requirements Table Sample Location Map(s)	Provided with Addendum
19	Analytical Methods/SOP Requirements Table	Provided with Addendum
20	Field Quality Control Sample Summary Table	Provided with Addendum
21	Project Sampling SOP References Table Sampling SOPs	No change – comply with SWMU 12 UFP-SAP
22	Field Equipment Calibration, Maintenance, Testing, and Inspection Table	No change – comply with SWMU 12 UFP-SAP
<i>Analytical Tasks</i>		
23	Analytical SOPs Analytical SOP References Table	No change – comply with SWMU 12 UFP-SAP
24	Analytical Instrument Calibration Table	No change – comply with SWMU 12 UFP-SAP

UFP-QAPP Worksheet #	Required Information	SWMU 5 Addendum Cross-Reference to SWMU12 UFP-SAP
25	Analytical Instrument and Equipment Maintenance, Testing, and Inspection Table	No change – comply with SWMU 12 UFP-SAP
<i>Sample Collection</i>		
26	Sample Handling System, Documentation Collection, Tracking, Archiving and Disposal Sample Handling Flow Diagram	No change – comply with SWMU 12 UFP-SAP
27	Sample Custody Requirements, Procedures/SOPs Sample Container Identification Example Chain-of-Custody Form and Seal	No change – comply with SWMU 12 UFP-SAP
<i>Quality Control Samples</i>		
28	QC Samples Table Screening/Confirmatory Analysis Decision Tree	No change – comply with SWMU 12 UFP-SAP
<i>Data Management Tasks</i>		
29	Project Documents and Records Table	No change – comply with SWMU 12 UFP-SAP
30	Analytical Services Table Analytical and Data Management SOPs	No change – comply with SWMU 12 UFP-SAP
C. Assessment Oversight		
31	Planned Project Assessments Table Audit Checklists	No change – comply with SWMU 12 UFP-SAP
32	Assessment Findings and Corrective Action Responses Table	No change – comply with SWMU 12 UFP-SAP
33	QA Management Reports Table	No change – comply with SWMU 12 UFP-SAP
D. Data Review		
34	Verification (Step I) Process Table	No change – comply with SWMU 12 UFP-SAP
35	Validation (Steps IIa and IIb) Process Table	No change – comply with SWMU 12 UFP-SAP
36	Validation (Steps IIa and IIb) Summary Table	No change – comply with SWMU 12 UFP-SAP
37	Usability Assessment	No change – comply with SWMU 12 UFP-SAP

SAP Worksheet #3 -- Distribution List

(UFP-QAPP Manual Section 2.3.1)

Name of SAP Recipient	Title/Role	Organization	Telephone Number (Optional)	E-Mail Address or Mailing Address	Document Control Number (Optional)
Howard Hickey	NAVFAC Remedial Project Manager (RPM)	NAVFAC Midwest	847-688-2600, ext 243	Howard.hickey@navy.mil	Not Applicable
Tom Brent	Environmental Restoration Site Manager (ERSM)	NAVFAC PWD MW Crane	812-854-6160	Thomas.brent@navy.mil	Not Applicable
Peter Ramanauskas	U.S. EPA RPM	U.S. EPA Region 5	312-886-7890	U.S. EPA Region 5 77 West Jackson Blvd. Chicago, Illinois 60604	Not Applicable
Bonnie Capito	NAVFAC Atlantic/Librarian	NAVFAC Atlantic	757-322-4785	bonnie.capito@navy.mil	Not Applicable
Doug Griffin	State RPM	IDEM Office of Land Quality	317-233-2710	dgriffin@idem.in.gov	Not Applicable
Tony Klimek	Tetra Tech Project Manager (PM)	Tetra Tech	513-557-5057	Tony.Klimek@tetrattech.com	Not Applicable
Ralph Basinski	Crane Activity Coordinator	Tetra Tech	412-921-8308	Ralph.Basinski@tetrattech.com	Not Applicable
Kim Kostzer	Laboratory PM	Empirical Laboratories	615-345-1115	kkostzer@empirlabs.com	Not Applicable
Jon Tucker	NAVFAC Chemist	NAVFAC	757-322-8288	Jonathan.tucker@navy.mil	Not Applicable

Each person in this table will be responsible for distributing copies of this SAP Addendum to appropriate personnel within their organization. For example, the PM will be responsible for distributing copies of this SAP to all project personnel listed in Worksheet #4 (Project Personnel Sign-Off Sheet).

SAP Worksheet #4 -- Project Personnel Sign-Off Sheet

(UFP-QAPP Manual Section 2.3.2)

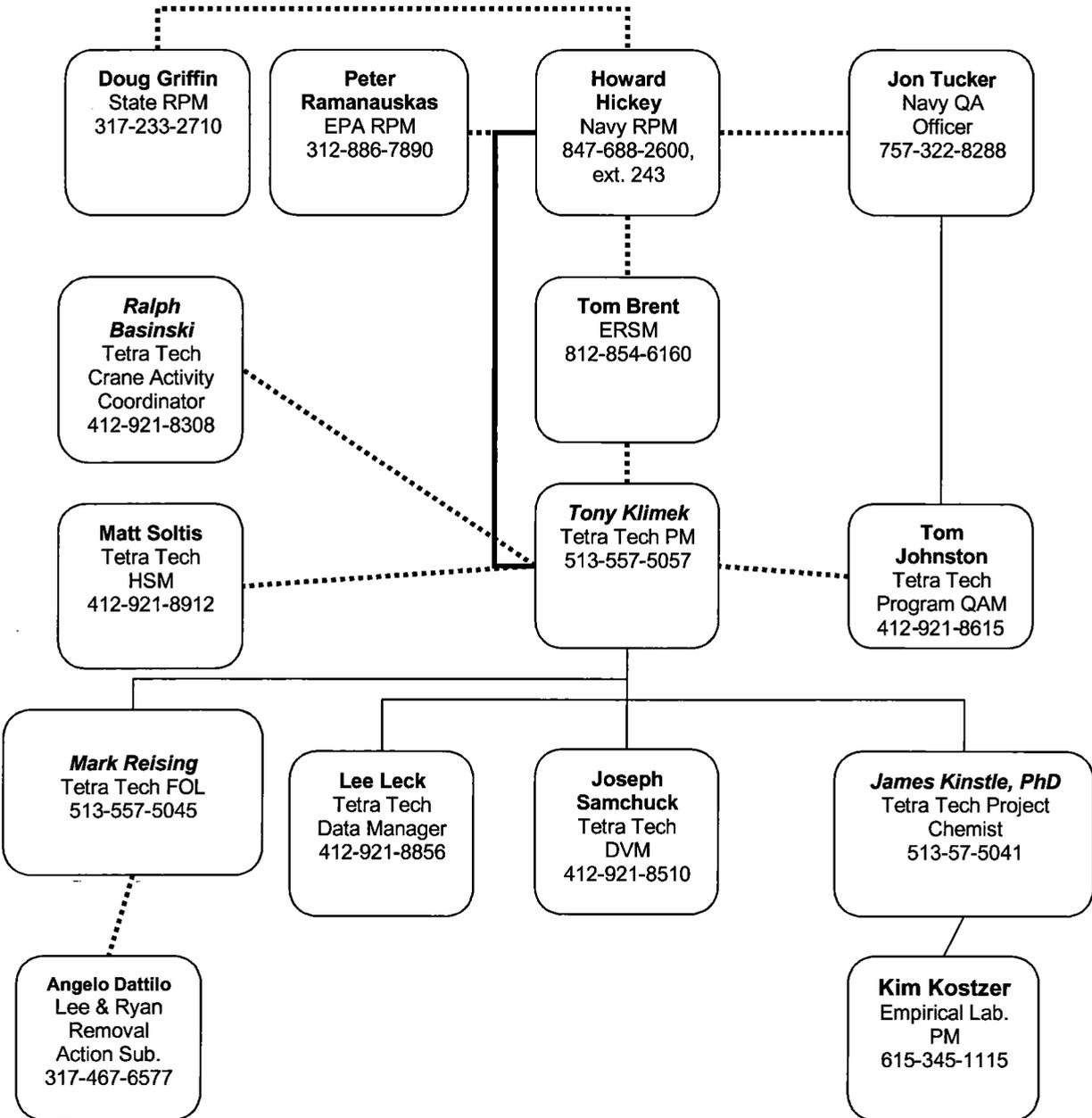
Key personnel will be instructed to read the SAP prior to attending an internal site-specific kick-off meeting for field activities. The Tetra Tech PM will track when the reviews have been completed, obtain signatures, and insure that the completed sign-off sheet is included in the central project file.

Name	Organization/Title/Role	Telephone Number (optional)	Signature/E-Mail receipt	SAP Addendum Sections Reviewed	Date SAP Read
Tony Klimek	Tetra Tech PM	513-557-5057		All	
Mark Reising	Tetra Tech/Field Operations Leader (FOL) and Site Safety Officer (SSO)	513-557-5045		All	
James Kinstle, PhD	Tetra Tech/Project Chemist	513-557-5041		All	
Tom Johnston	Tetra Tech/Quality Assurance Manager (QAM)	412-921-8615		All	
Ralph Basinski	Tetra Tech/Crane Activity Coordinator	412-921-8308		All	
Matt Soltis	Tetra Tech/Health and Safety Manager (HSM)	412-921-8912		HASP	
Joseph Samchuck	Tetra Tech/Data Validation Manager (DVM)	412-921-8510		Worksheets #12, #14, #15, #19, #20, #23-28, #30, #34-37	
Lee Leck	Tetra Tech/Data Manager	412-921-8856		Worksheets #12, #14, #15, #19, #20, #23-28, #30, #34-37	
Kim Kostzer	Empirical Laboratories PM	615-345-1115		Worksheets #12, #14, #15, #19, #20, #23-28, #30, #34-36	

SAP Worksheet #5 -- Project Organizational Chart

(UFP-QAPP Manual Section 2.4.1)

Lines of Authority —————
 Lines of Communication



Changes/Additions in SWMU 5 Addendum from SWMU 12 UFP-SAP are noted in italics.

SAP Worksheet #6 Communication Pathways; # 7 Personnel Responsibilities and Qualifications; # 8 Special Personnel Training Requirements Table - *Only Change for SWMU 5 SAP Addendum is List of Substitute Personnel as listed herein*
(UFP-QAPP Manual Section 2.4.1)

Personnel listed in this table will replace those in the SWMU 12 SAP for the particular role during the SWMU 5 work. All other personnel listed in the corresponding SWMU 12 SAP table will remain the same.

Name	Company/Role	Phone Number	Replace in SWMU 12 SAP
Tony Klimek	Tetra Tech PM	513-557-5057	Steve Ruffing
Mark Reising	Tetra Tech/Field Operations Leader (FOL)	513-557-5045	James Goerd
Jim Kinstle	Tetra Tech/Project Chemist	513-557-5041	Ed Sedlmyer

SAP Worksheet #9 Project Scoping Session Participants Sheet

(UFP-QAPP Manual Section 2.5.1)

Project Name: SWMU 5 Old Burn Site Projected Date(s) of Sampling: December 2009 Project Manager: Tony Klimek		Site Name: SWMU 5 Old Burn Pit Site Location: NSA, Crane, Indiana			
Date of Session: May 13, 2009 Scoping Session Purpose: Project Kickoff Meeting					
Name	Title	Affiliation	Phone #	E-mail Address	Project Role
Tony Klimek	PM	Tetra Tech	513-557-5057	Tony.Klimek@tetrattech.com	Project Manager
Ralph Basinski	Crane Site Coordinator	Tetra Tech	412-921-7090	Ralph.Basinski@tetrattech.com	Crane Site Coordinator
Tom Brent	ERSM	Navy	812-854-6160	Thomas.Brent@navy.mil	NSA Crane Contact

During the scoping meeting, the project site was reviewed in the field and the general project approach and excavation plan was discussed.

Project Name: SWMU 5 Old Burn Site Projected Date(s) of Sampling: December 2009 Project Manager: Tony Klimek		Site Name: SWMU 5 Old Burn Pit Site Location: NSA, Crane, Indiana			
Date of Session: August 19, 2009 Scoping Session Purpose: Site Visit / Meeting with ERSM					
Name	Title	Affiliation	Phone #	E-mail Address	Project Role
Tony Klimek	PM	Tetra Tech	513-557-5057	Tony.Klimek@tetrattech.com	Project Manager
Lauren Foster	Field Personnel	Tetra Tech	513-557-5049	Lauren.Foster@tetrattech.com	Project Team Member
Tom Brent	ERSM	Navy	812-854-6160	Thomas.Brent@navy.mil	NSA Crane Contact

Klimek and Foster visited the Site and discussed details of the soil hot spot excavation with Tom Brent, including access routes to the excavation area and methods to minimize disturbance to the Site. The meeting also included a discussion of the Media Cleanup Standard (MCS) and the proposed informational sampling. The MCS was verified to be 800 mg/kg, which is the cleanup level for construction workers.

Project Name: SWMU 5 Old Burn Site Projected Date(s) of Sampling: December 2009 Project Manager: Tony Klimek		Site Name: SWMU 5 Old Burn Pit Site Location: NSA, Crane, Indiana			
Date of Session: October 5, 2009 Scoping Session Purpose: DQO Planning Meeting					
Name	Title	Affiliation	Phone #	E-mail Address	Project Role
Tony Klimek	PM	Tetra Tech	513-557-5057	Tony.Klimek@tetrattech.com	Project Manager
Ralph Basinski	Crane Site Coordinator	Tetra Tech	412-921-7090	Ralph.Basinski@tetrattech.com	Crane Site Coordinator
Jim Kinstle	Project Chemist	Tetra Tech	513-557-5041	Jim.Kinstle@tetrattech.com	Project Chemist

The team discussed the development of the DQOs and developed the strategy and approach to prepare an addendum to the approved SWMU 12 SAP to address the sampling work at SWMU 5.

SAP Worksheet #10 -- Problem Definition

(UFP-QAPP Manual Section 2.5.2)

10.1 SITE DESCRIPTION AND HISTORY

SWMU 5 is located in the northwestern corner of Naval Support Activity (NSA) Crane (Figure 1). The Site occupies approximately 25 acres and is bounded on the west by Highway 331 and on the east by the power line running along a ridge west-northwest of Lake Oberlin. The southern boundary and northern boundary are as shown on Figure 2. The Site consists of two areas – the burn pit area to the south and the gully area to the north. The burn pit area to the south has been regraded and currently contains a gravel trailer parking area and a grassy area. The gully area to the north is currently wooded and is the area in which the Interim Measure (IM) will be performed.

SWMU 5 was an active waste disposal area from 1942 to 1972. It is currently inactive, and no additional waste disposal activities are proposed for the Site. Undefined amounts of rubbish including wood, paper, construction material, and industrial wastes were burned at the Site in the burn pit area. Reportedly, no explosive materials or wastes were burned at SWMU 5. As rubbish was burned, residual ash and metal debris from the burning activities were continually pushed off of the burn pit into the gully area to the north. The gully area will henceforth be referred to as the "Work Area" (Figure 3).

The topography of SWMU 5 consists of undulating terrain dissected by many small drainage ways (Figure 3). Surface elevations across the Work Area generally increase from west to east. Surface elevations range from slightly over 550 feet above mean sea level (msl) along the unnamed creek on the west side to 680 feet above msl on the northeastern side of SWMU 5. Thus, there is about 130 feet of relief at the SWMU. Surface water runoff from SWMU 5 drains into Culpepper Branch, a tributary of First Creek.

10.2 PREVIOUS INVESTIGATIONS

Environmental investigations were performed at SWMU 5 from 1981 to 2006, including an Initial Assessment Study (IAS) and a RCRA Facility Investigation (RFI). Surface soil, subsurface soil, sediment, surface water, and groundwater samples were collected and analyzed for the full list of Appendix IX constituents [volatile organic compounds (VOCs), semivolatife organic compounds (SVOCs), pesticides, polychlorinated biphenyls (PCBs), and metals], and miscellaneous inorganics. Surface water samples also were analyzed for total and dissolved metals, hardness, and total suspended solids (TSS), and sediment samples were analyzed for total organic carbon (TOC) to assist in assessing the potential risks to human health and ecological receptors. Additionally, soil characteristic parameters [cation exchange capacity (CEC), pH, and TOC] were analyzed to determine the potential fate and transport of

contaminants at the Site and the potential for risks outside the Site boundaries. Using the analytical data obtained during the SWMU 5 2005 RFI, TtNUS performed human health and ecological risk assessments. Lead concentrations representing an unacceptable ecological risk were identified in one soil hot spot location in the Work Area (Figure 5). No other unacceptable risks to human health or ecological receptors were identified in the risk assessments.

Based on the results of the 2005 RFI, a Corrective Measures Proposal (CMP) Report for SWMU 5 was developed and finalized in September 2006 (Tetra Tech). The CMP combined historical site investigations along with current site conditions to expand upon the SWMU 5 risk assessments. The CMP determined that it is possible that some individual plants and/or invertebrates are being impacted at locations where metals concentrations in soil are elevated. However, as discussed in OSWER Directive 9285.7-28P, Issuance of Final Guidance: Ecological Risk Assessment and Risk Management Principles for Superfund Sites, remedial actions generally should not be designed to protect organisms on an individual basis (with the exception of certain protected species) but to protect local populations and communities of biota (1999).

10.3 CONCEPTUAL SITE MODEL

The topography of the SMWU 5 Work Area is hilly and includes multiple drainage ways and a gully. SWMU 5 surface water drains into Culpepper Branch, a tributary of First Creek. Since it was used as a disposal area, natural revegetation has occurred. Through natural revegetation, an ecological community has been established at the site. Trees ranging up to 18 inches in diameter and thick underbrush are located across this area. Based on observations during site visits and the apparent similarity between the forested areas at and surrounding SWMU 5, the ash and metal contamination from Old Burn Pit activities do not appear to have significantly impacted the local populations of plants/invertebrates and/or the ecological community at the site.

The site has been divided into two areas - constructible and non-constructible (due to topography). The SWMU 5 Work Area (e.g., the hot spot excavation area) is in the non-constructible area of the site. In addition to its topography, parts of the non-constructible area have general heavy metal contamination in the soil and contain ash from previous Old Burn Pit activities. Therefore, future development will not occur near the hot spot (05SB06) and this area will remain undeveloped and wooded. Under current and future land use, ecological receptors are the only populations that may be exposed to the lead contamination from the soil hot spot.

The 2005 RFI risk assessment concluded that the one surface soil hot spot located within the contaminated area of SWMU 5 is a source of lead contamination that poses an unacceptable risk to

ecological receptors. Surface soil samples were collected from eight widely scattered locations across the site during the RFI sampling. Because of the size of the site, these sampling locations were typically greater than 100 feet apart. The hot spot sampling location (05SB06) had the highest surface soil lead concentration at the site (16,900). The next highest surface soil lead concentration was 450 mg/kg (05SB02) and the remaining lead surface soil sample concentrations were less than 400 mg/kg. The RFI report stated that metal shavings in the sample collected at 05SB06 likely contributed to the elevated level of lead.

However, it was determined during the development of the CMP (Tetra Tech, 2006) that because the site comprises only a small portion of the overall habitat for ecological receptors in this area, any localized impacts to ecological receptors (including wildlife) at SWMU 5 will not impact the overall ecology in this area of NSA Crane. Based on this observation, potential risk to ecological receptors is not a basis for this remediation activity at SWMU 5.

During discussions with regulators, an overall strategy was developed and approved that addressed the lead hot spot while minimizing disruption of the ecological community that has been established at the site and in surrounding areas. Therefore, the Navy and regulators agreed on an approach that includes limited excavation of the 05SB06 lead hot spot while minimizing disturbance of the established ecological community. The hot spot excavation area will be 6 feet in length, 6 feet in width, and 2 feet deep. The excavation will be filled with "clean fill" (e.g., soil with a lead concentration less than 400 mg/kg). Tetra Tech will perform informational verification sampling to document the concentration of lead remaining in the subsurface soil in the excavation floor and sidewalls.

SAP Worksheet #11 -- Project Quality Objectives/Systematic Planning Process Statements

(UFP-QAPP Manual Section 2.6.1)

11.0 PROJECT QUALITY OBJECTIVES/SYSTEMATIC PLANNING PROCESS

Project quality objectives (PQOs) for SWMU 5 Old Burn Pit Site are presented in this section. PQOs document the environmental decisions that need to be made at a site as well as the level of data quality necessary to support these decisions. To establish PQOs for the site, the U.S. EPA's seven-step DQO process was followed (U.S. EPA, 2006).

11.1 PROBLEM DEFINITION

As stated in Worksheet 10.2, lead identified in one soil hot spot location at the site, was the only chemical of concern detected at a concentration that presented an unacceptable risk to ecological receptors. Therefore, lead-contaminated surface soil removal from that hot spot location is proposed to address the unacceptable ecological risk at the site. The Project Action Level (PAL) is presented in Worksheet #15. Post excavation informational sampling is proposed to obtain data for excavation site. The excavation area will be backfilled with non-contaminated soil and reseeded. This remedial action will not result in no further action at SWMU 5; land use control (LUCs) will be implemented at the site to protect other site receptors.

11.2 INFORMATION INPUTS

Data required to make decisions include the following:

1. PAL for surface soil lead (800 mg/kg), as developed in Tetra Tech (2009), is protective of the industrial/construction site workers.
2. The XRF readings during excavation will be used as a screening method for these informational samples. The informational samples will be analyzed in a fixed based lab. Additional horizontal excavation may be performed at the discretion of the Navy.

11.3 STUDY AREA BOUNDARY

One soil hot spot (sample location 05SB06), located in the non-constructible western-central portion of the site and previously found to contain lead at concentrations above 16,000 mg/kg, will be excavated. The planned soil excavation area is identified on Figure 5. Excavation limits for this location are 6 feet

wide, 6 feet long and 2 feet deep with sample location 05SB06 as the center point of excavation. The excavation will be approximately 2.67 cubic yards of soil. The width and length of the excavation may be expanded at the discretion of the Navy based on the results of XRF screening readings performed by Tetra Tech, and fixed-base laboratory results.

11.4 DECISION RULE

Once the surface soil has been excavated, the Navy will evaluate the XRF data and fixed-base laboratory data to determine if further horizontal excavation will be conducted. The Navy may elect to continue horizontal excavating in the direction of contaminated soil. This additional excavation will proceed in 2 ft or other increments in the appropriate direction. The excavated will be backfilled with non-contaminated earth and reseeded.

11.5 PERFORMANCE CRITERIA

The primary objective for sampling at this site is to remediate the lead hot spot (05SB06). Data is being collected for the excavation floor and sidewalls for informational purposes and for potential incorporation of this data into the existing RFI data. This requires that the data be representative of the targeted soil population, that the data be generated by sufficiently sensitive analytical methods that are operating within quality control limits, and that the data are considered to be comparable in terms of quality and representativeness in light of project objectives and decision rules. Laboratory QC limits and project action limits are presented in Worksheet #15.

11.6 SAMPLING DESIGN

11.6.1 Informational Sampling of Excavation Areas

Informational samples will be collected from the excavation floor and sidewalls for potential incorporation into the exiting RFI data. One composite floor sample and 4 grab sidewall samples will be collected from the initial SWMU 5 Old Burn Pit excavation area. The initial excavation area is shown on Figure 5. If the Navy elects to excavate additional horizontal area, additional informational samples will be collected as described in Worksheet #17. To guide excavation activities, all informational samples will be field tested with XRF for lead as described in Worksheet #17.

11.6.2 Other Sampling and Analysis

The Subcontractor shall analyze the excavated material for disposal classification to determine if it should be classified as either hazardous or nonhazardous waste. The Subcontractor also will be responsible to obtain backfill material and to characterize the material to verify that it is not contaminated. This

characterization sampling and analysis shall be in accordance with the requirements specified on p.33 §11.2 of the SWMU 12 SAP. This Subcontractor characterization sampling is not part of this SAP.

11.6.3 Sampling Requirements

- Field SOPs –Worksheet #21 and Appendix A in SWMU 12 Document
- Documentation requirements – Worksheet #29 in SWMU 12 Document
- Analytical requirements – as discussed above

References

- Tetra Tech, 2001. Final Base wide Background Soil Investigation Report, Naval Surface Warfare Center Crane, Crane, Indiana. Revision 1, January.
- Tetra Tech, 2009. Technical Memorandum for SWMU 5 Old Burn Pit, Naval Support Activity Crane Division, Crane, Indiana. September.
- U.S. EPA, 2006. Guidance on Systematic Planning Using the Data Quality Objectives Process (QA/G-4). EPA/240/B-06/001 February 2006.

SAP Worksheet #13 – Secondary Data Criteria and Limitations Table
 (UFP-QAPP Manual Section 2.7)

Secondary Data	Data Source (originating organization, report title and date)	Data Generator(s) (originating organization, data types, data generation / collection dates)	How Data Will Be Used	Limitations on Data Use
RFI	<i>Resource Conservation and Recovery Act Facility Investigation Report for SWMUs 4 (McComish Gorge), 5 (Old Burn Pit), 9 (Pesticide Control/R-150 Tank Area), and 10 (Rockeye), July 2005.</i>	Originating Organization: Tetra Tech Data Types: Surface soil, subsurface soil, sediment, surface water, and groundwater Data Collection Dates: 2001-2003	Used to establish excavation limits	None
Tech Memo	<i>Technical Memorandum for SWMU 5 Old Burn Pit, September 2009.</i>	Originating Organization: Tetra Tech Data Types: MCS Data Collection Dates: 2008-2009	When combined with data obtained while implementing this UFP-SAP the data will be used to define the conditions in the area of the excavation and to assess additional potential actions	None

SAP Worksheet #15 -- Reference Limits and Evaluation Table
 (UFP-QAPP Manual Section 2.8.1)

Matrix: Soil

Analytical Group: Inorganics – Metals (Fixed-Base Laboratory)

Analyte	CAS Number	Media Cleanup Standard (MCS) /Project Action Limit (mg/kg)	Project Action Limit Reference	Project Quantitation Limit Goal (mg/kg)	Laboratory-Specific Limits	
					Quantitation Limit (mg/kg)	Method Detection Limit (mg/kg)
Lead	7439-92-1	800	Technical Memorandum	266	11	0.033

SAP Worksheet #16 -- Project Schedule / Timeline Table (optional format)
 (UFP-QAPP Manual Section 2.8.2)

Activity	Organization	Dates (MM/DD/YY)		Deliverable	Deliverable Due Date
		Anticipated Date(s) of Initiation	Anticipated Date of Completion		
Submit Draft Technical Memorandum	Tetra Tech	July 6, 2009	July 28, 2009	Yes	July 28, 2009
Navy Review	Navy	July 28, 2009	August 4, 2009		
Submit Final Draft Technical Memorandum	Tetra Tech	August 4, 2009	September 4, 2009	Yes	September 4, 2009
Regulator Review	U.S. EPA and IDEM	September, 2009	November 5, 2009		
Receive Comments/Comment Resolution	Tetra Tech	November 5, 2009	November 17, 2009		
Prepare and submit Final Technical Memorandum	Tetra Tech	November 17, 2009	November 24, 2009	Yes	November 20, 2009
Issue RFP for Subcontractor	Tetra Tech		December 3, 2009		
Select Subcontractor	Tetra Tech		December 18, 2009		
Interim Removal Action (Field work)	Tetra Tech Subcontractor	January 5, 2010	January 22, 2010		
Laboratory Analysis	Empirical Laboratories	January 11, 2009	January 15, 2010		
Data Validation	Tetra Tech	January 15, 2010	January 29, 2010		
Prepare Draft Report	Tetra Tech	January 15, 2009	February 26, 2010		
Submit Draft Report for Navy Review	Tetra Tech		February 26, 2010	Yes	February 28, 2010

SAP Worksheet #17 -- Sampling Design and Rationale (UFP-QAPP Manual Section 3.1.1)

17.1 INFORMATIONAL SAMPLING OF EXCAVATION AREAS

Figure 5 shows the proposed limit of excavation at the SWMU 5 Old Burn Pit Site. As discussed in Worksheet #11, one composite floor sample and four grab sidewall samples will be collected from the proposed excavation area for informational purposes only. No further excavation is required per the agreement with EPA Region 5. Additional excavation may be performed at the discretion of the Navy RPM. The excavation floor samples will be collected at a rate of one composite sample for every 100 sf of exposed surface area, with a minimum of one sample collected from each depth interval. Excavation sidewall samples will be collected at a rate of one grab sample for every 25 linear feet of exposed sidewall, with a minimum of one sample collected from each directionally facing sidewall. The excavation floor composite sample will be made up from two locations—north of the soil hot spot and south of the soil hot spot, and will incorporate the appropriate amount of exposed surface area. The locations of each grab sample will be determined in the field (see section 17.1.1). Additional informational samples may be collected at the request of the Navy RPM. The basis of this approach is to excavate the most significant known contaminated surface soil while minimizing disturbance to the surrounding areas.

17.1.1 Selection of Grab Sample Locations

Field personnel will use Figure 5A to randomly select each grab sample location within designated sidewalls and/or excavation floor grid. Figure 5A shows a schematic diagram of the locations and sample identifications for each of the six informational sample locations for the SWMU 5 excavation, including two floor grab samples that are to be composited from the excavation floor and the four sidewall grab samples. Figure 5A will be used as follows to identify the locations from which to obtain individual informational grab samples or be combined to form a composite informational sample. GPS coordinates will be recorded at each grab sample location.

17.1.2 XRF Field Testing

The XRF screening number will be used as field data for comparison to the fixed base laboratory data (Tetra Tech, 2009). If a sample has an XRF result that exceeds 800 mg/kg, the Navy may elect further horizontal excavation. If a sample has an XRF result that is less than 800 mg/kg, the composite sample will be sent to the fixed-base laboratory for verification of XRF data. If further horizontal excavation

occurs, another sidewall sample will be collected and field tested using XRF. The additional excavation floor and sidewall samples will be sent to a fixed-base laboratory for valid excavation lead concentrations. Based on historic removal actions conducted in past years, the project team can expect a 5 business day delay between sample collection and analytical verification of the XRF data from the laboratory. See SOP-05 in Appendix A for XRF field testing procedures.

17.2 COLLECTION OF QUALITY ASSURANCE/QUALITY CONTROL SAMPLES

Quality assurance/quality control (QA/QC) samples will be collected to aid the data validation process (see Worksheet #20 for a summary of field QA/QC samples, including sampling identifications information):

- MSs will be collected at a frequency of 1 per 20 samples

References

Tetra Tech, 2009. Resource Conservation and Recovery Act Facility Investigation for UXO 7 Ranges, Naval Surface Warfare Center Crane Division, Crane, Indiana. July.

SAP Worksheet #18 – Sampling Locations and Methods/SOP Requirements Table

(UFP-QAPP Manual Section 3.1.1)

Sampling Location/ ID Number ^(1, 5)	Location	Matrix	Depth ⁽¹⁾ (units)	Analytical Group ⁽²⁾	Number of Samples (identify field duplicates)	Sampling SOP Reference ⁽³⁾
05-SO-CF-01A	Hot Spot Excavation Floor	Soil	0-6 inches	Metals	1	SOP-01, SOP-02, SOP-03, SOP-07
05-SO-GW-02A	Hot Spot Excavation Wall	Soil	0-6 inches	Metals	1	SOP-01, SOP-02, SOP-03, SOP-07
05-SO-GW-03A	Hot Spot Excavation Wall	Soil	0-6 inches	Metals	1	SOP-01, SOP-02, SOP-03, SOP-07
05-SO-GW-04A	Hot Spot Excavation Wall	Soil	0-6 inches	Metals	1	SOP-01, SOP-02, SOP-03, SOP-07
05-SO-GW-05A	Hot Spot Excavation Wall	Soil	0-6 inches	Metals	1	SOP-01, SOP-02, SOP-03, SOP-07
FD-NNNN-01 ⁽⁴⁾	Hot Spot Excavation Wall	Soil	0-6 inches	Metals	1	SOP-01, SOP-02, SOP-03, SOP-07

- 1 Samples will be collected at 0 to 6 inches from the floor and sidewalls of the excavation.
- 2 Samples will be analyzed for lead.
- 3 Standard operating procedure (SOP) or worksheet that describes the sample collection procedures.
- 4 The Field Duplicate sample ID number will include the date of collection
- 5 This is the minimum total number of samples.

SAP Worksheet #20 -- - Field Quality Control Sample Summary Table
(UFP-QAPP Manual Section 3.1.1)

Matrix	Analytical Group	No. of Sampling Locations	No. of Field Duplicates	No. of MSs	No. of Field Blanks	No. of Equip. Blanks	No. of VOA Trip Blanks	No. of PT Samples	Total No. of Samples to Lab¹
Soil	Lead	5	1	0	0	0	0	0	6

1 This is the minimum total number of samples.

Attachment A – Figures

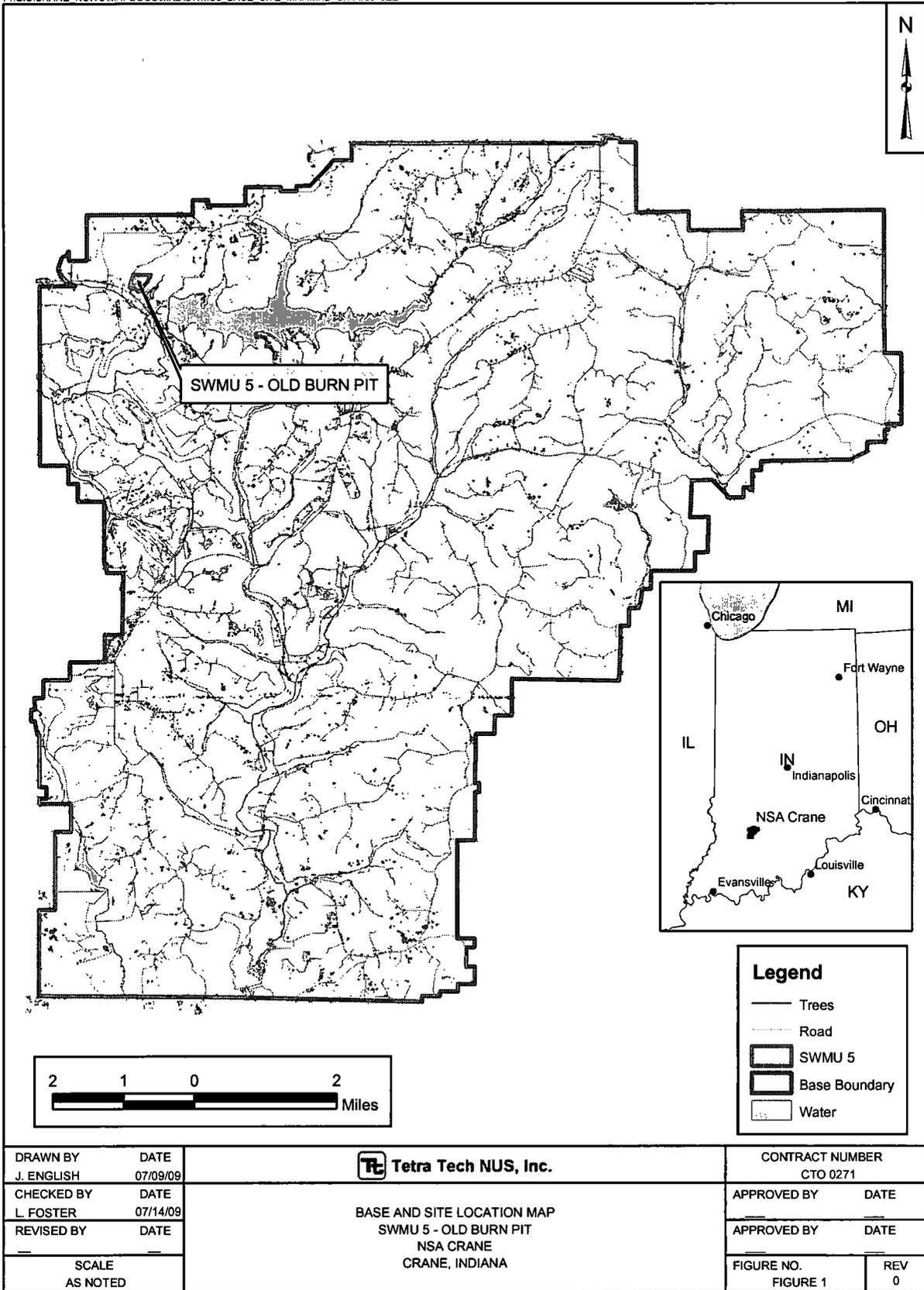
Figure 1 – SWMU 5 – Base and Site Location Map

Figure 2 – SWMU 5 – Aerial Photograph

Figure 3 – SWMU 5 – Site Plan and Work Area

Figure 5 – SWMU 5 – Excavation Plan

Figure 5A – SWMU 5 – Informational Sample Locations

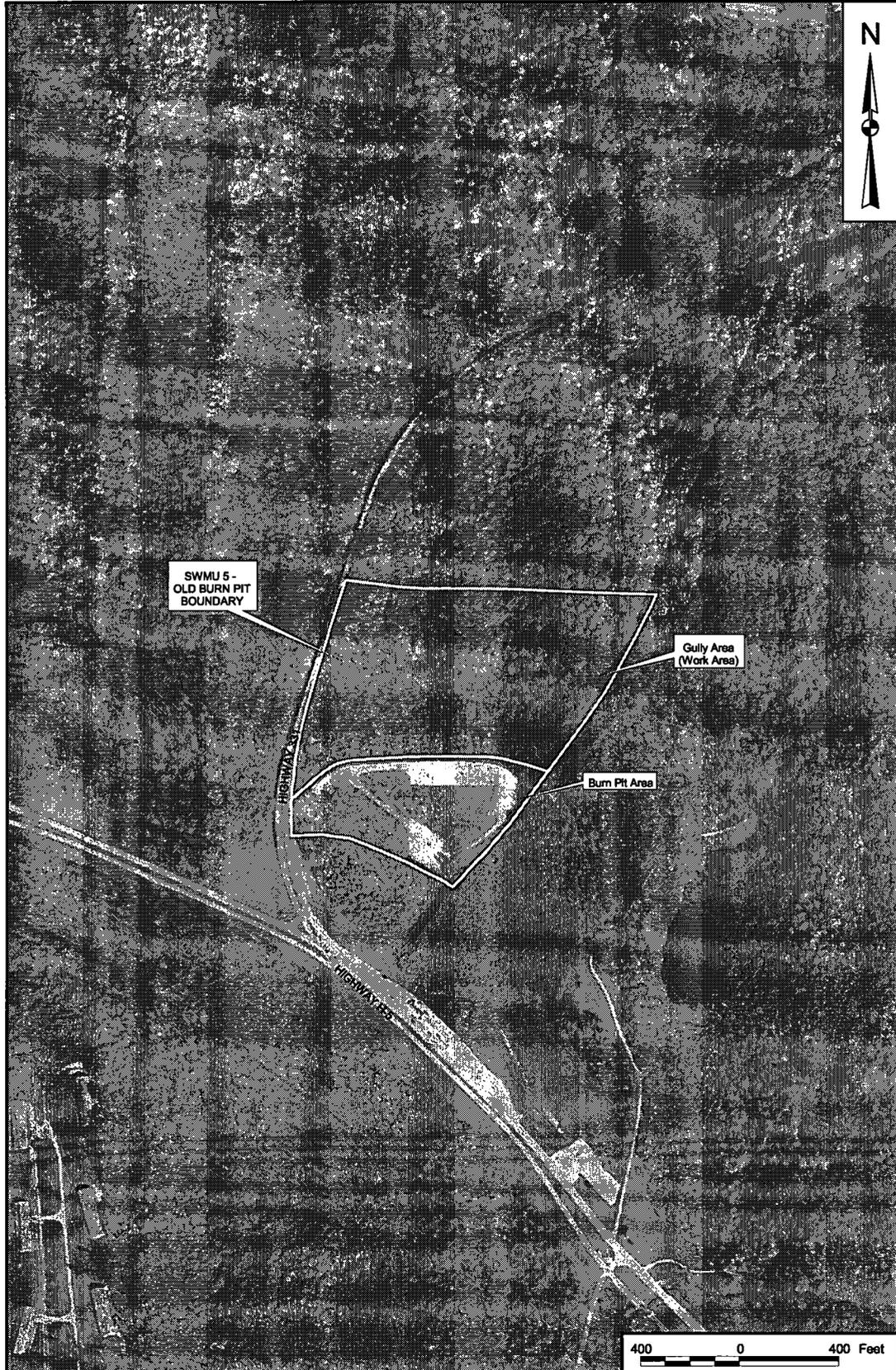


DRAWN BY	DATE
J. ENGLISH	07/09/09
CHECKED BY	DATE
L. FOSTER	07/14/09
REVISED BY	DATE
—	—
SCALE AS NOTED	

Tetra Tech NUS, Inc.

BASE AND SITE LOCATION MAP
SWMU 5 - OLD BURN PIT
NSA CRANE
CRANE, INDIANA

CONTRACT NUMBER CTO 0271	
APPROVED BY	DATE
APPROVED BY	DATE
FIGURE NO. FIGURE 1	REV 0

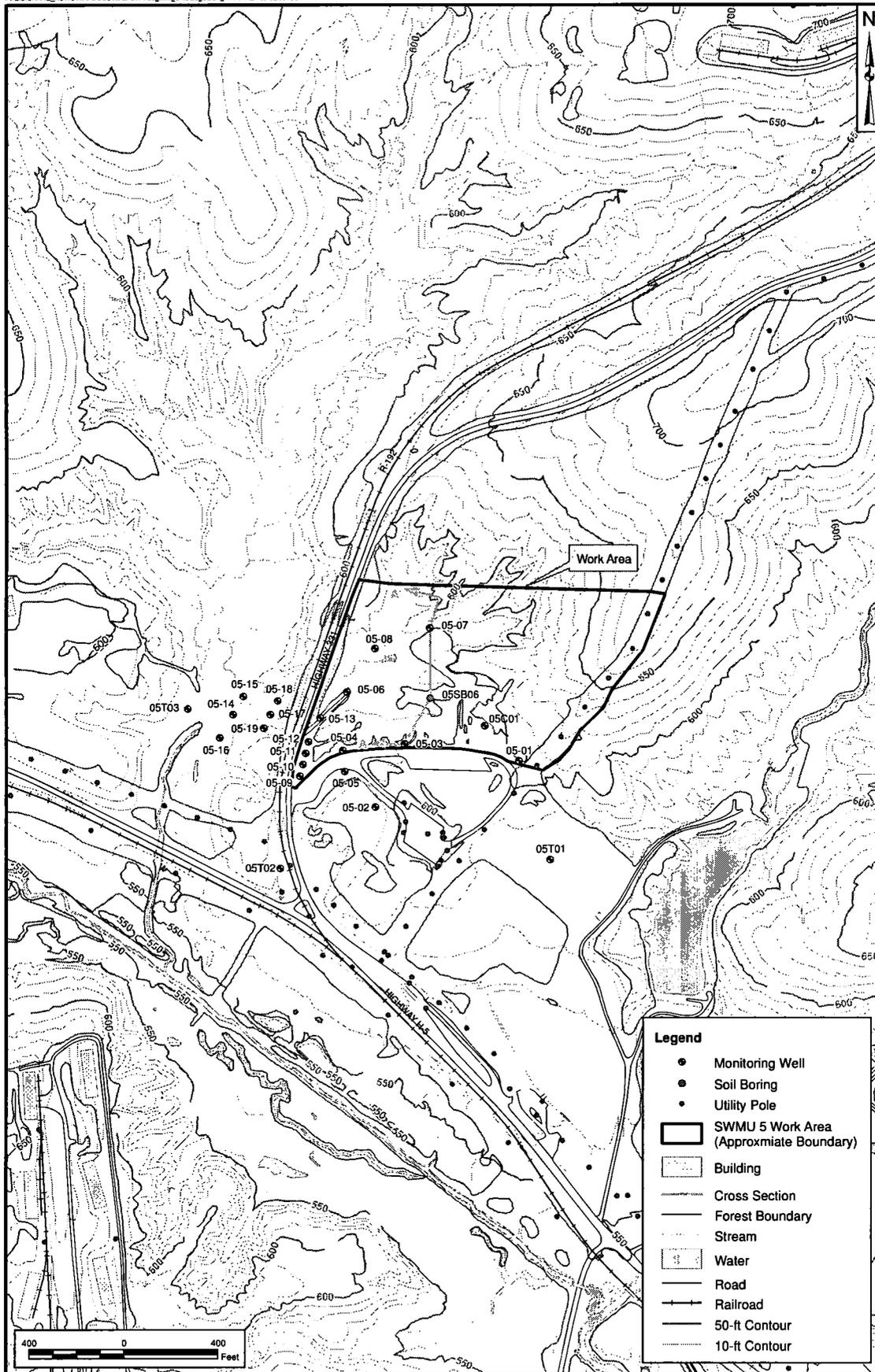


DRAWN BY J. ENGLISH	DATE 07/28/09
CHECKED BY L. FOSTER	DATE 07/27/09
COST/SCHEDULE AREA	
SCALE AS NOTED	



AERIAL PHOTOGRAPH (2003)
SWMU 5 AND SURROUNDING AREAS
NSA CRANE
CRANE, INDIANA

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



Legend

- Monitoring Well
- Soil Boring
- Utility Pole
- SWMU 5 Work Area (Approximate Boundary)
- ▭ Building
- Cross Section
- Forest Boundary
- Stream
- ▭ Water
- Road
- Railroad
- 50-ft Contour
- 10-ft Contour

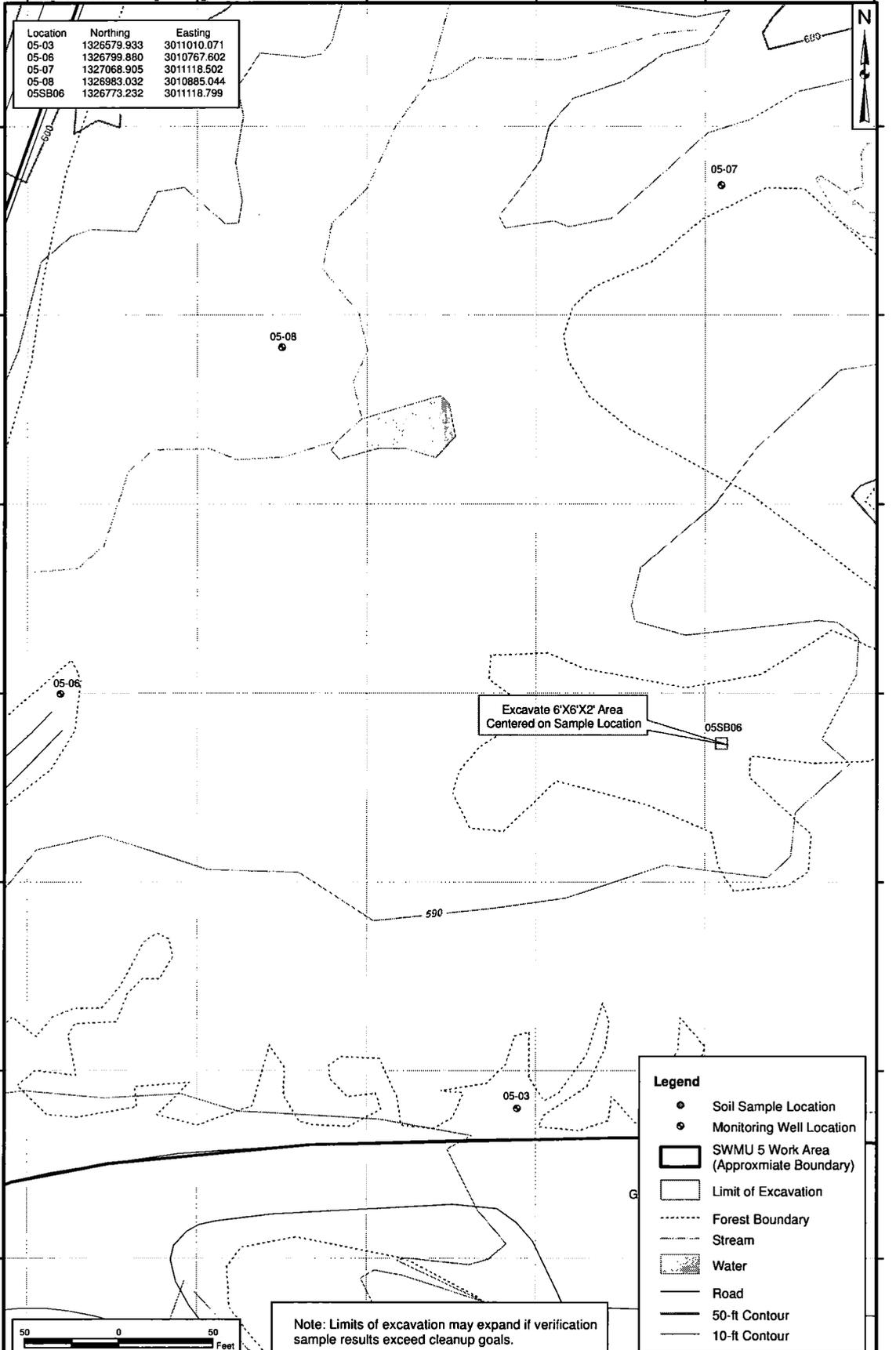
DRAWN BY S. STROZ DATE 07/27/09
 CHECKED BY L. FOSTER DATE 09/02/09
 REVISED BY DATE



SITE PLAN
 SWMU 5 - WORK AREA
 NSA CRANE
 CRANE INDIANA

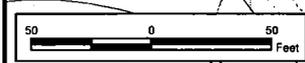
CONTRACT NUMBER	
APPROVED BY	DATE
APPROVED BY	DATE
FIGURE NO.	REV
FIGURE 3	0

SCALE AS NOTED



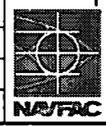
Location	Northing	Easting
05-03	1326579.933	3011010.071
05-06	1326799.880	3010767.602
05-07	1327068.905	3011118.502
05-08	1326983.032	3010885.044
05SB06	1326773.232	3011118.799

Legend	
●	Soil Sample Location
○	Monitoring Well Location
▭	SWMU 5 Work Area (Approximate Boundary)
▭	Limit of Excavation
---	Forest Boundary
---	Stream
▨	Water
---	Road
---	50-ft Contour
---	10-ft Contour



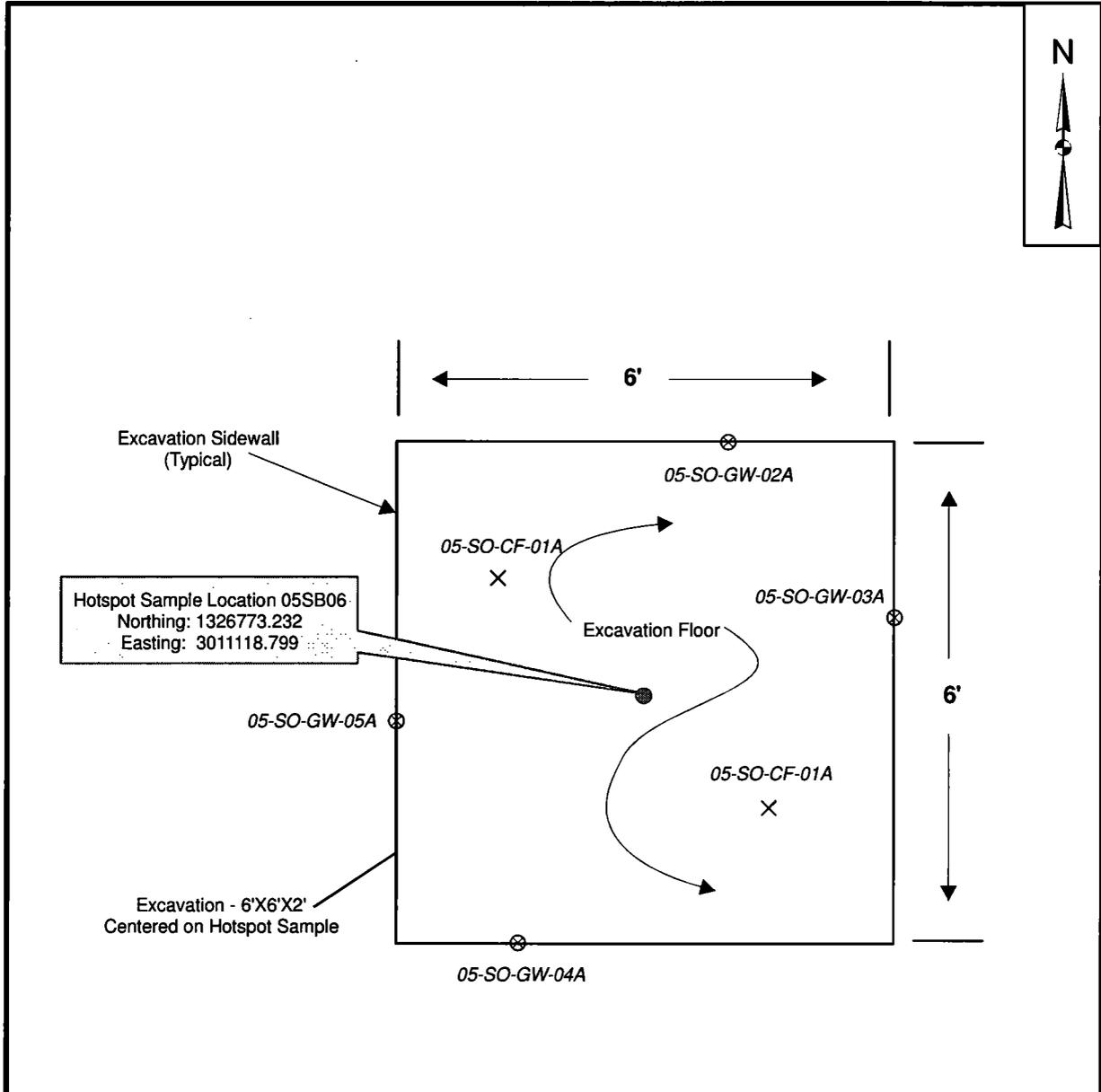
Note: Limits of excavation may expand if verification sample results exceed cleanup goals.

DRAWN BY S. STROZ	DATE 07/16/09
CHECKED BY L. FOSTER	DATE 09/04/09
REVISED BY	DATE
SCALE AS NOTED	



EXCAVATION PLAN
 SWMU 5 - WORK AREA
 NSA CRANE
 CRANE INDIANA

CONTRACT NUMBER C063	
APPROVED BY	DATE
APPROVED BY	DATE
FIGURE NO. FIGURE 5	REV 0



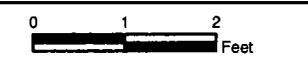
Hotspot Sample Location 05SB06
 Northing: 1326773.232
 Easting: 3011118.799

Notes:

1. Locations of composite samples and grab samples are approximate. Actual sample locations will be determined in the field, by the FOL.
2. A field duplicate will be collected at one grab sample location, as selected by the FOL.

Legend

- Soil Hotspot Location
- × Composite Sample Location
- ⊗ Grab Sample Location



DRAWN BY S. STROZ	DATE 10/27/09
CHECKED BY L. FOSTER	DATE 01/15/10
REVISED BY	DATE
SCALE AS NOTED	



INFORMATIONAL SAMPLE LOCATIONS
 SWMU 5
 NSA CRANE
 CRANE, INDIANA

CONTRACT NUMBER 0063	
APPROVED BY	DATE
APPROVED BY	DATE
FIGURE NO. 5A	REV 0