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SAMPLING WORK PLAN FOR SOLID WASTE MANAGEMENT UNIT 13 (SWMU 13)
BUILDING 171 SUMP PCB SOURCE DETERMINATION NSA CRANE IN
05/01/2008
TETRA TECH NUS INC

Comprehensive Long-term Environmental Action Navy

CONTRACT NUMBER N62467-04-D-0055



Rev. 0
05/08

Sampling Work Plan for SWMU 13 - Building 171 Sump PCB Source Determination

Naval Surface Warfare Center Crane
Crane, Indiana

Contract Task Order 0048

May 2008



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

**SAMPLING WORK PLAN
FOR
SWMU 13 - BUILDING 171 SUMP PCB SOURCE DETERMINATION
NAVAL SURFACE WARFARE CENTER CRANE
CRANE, INDIANA**

**COMPREHENSIVE LONG-TERM
ENVIRONMENTAL ACTION NAVY (CLEAN) CONTRACT**

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

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**CONTRACT NUMBER N62467-04-D-0055
CONTRACT TASK ORDER 0048**

MAY 2008

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ACRONYM

°C	degrees Celsius
CAAA	Crane Army Ammunition Activity
CLEAN	Comprehensive Long-Term Environmental Action Navy
CTO	Contract Task Order
EIs	Environmental Indicators
EPA	United States Environmental Protection Agency
FOL	Field Operations Leader
HASP	Health and Safety Plan
ID	Identification
IDW	investigation-derived waste
IM	Interim Measure
IMWP	Work Plans
MS	Matrix spike
MSD	matrix spike duplicate
NSWC	The Naval Surface Warfare Center
OGTSL	Old Gun Tub Storage Lot
OPR	Old Pistol Range
ORR	Old Rifle Range
OSHA	Occupational Safety and Health Administration
PCB	Polychlorinated Biphenyl
PPE	Personal protective equipment
PTA	Pyrotechnic Test Area
QA	Quality Assurance
QAPP	Quality Assurance Project Plan
QC	Quality Control
RCRA	Resource Conservation and Recovery Act
RCRIS	Conservation and Recovery Information System
RFI	RCRA Facility Investigation
SOP	Standard Operating Procedure
SSO	Site Safety Officer
SWMU	Solid Waste Management Unit
TOM	Task Order Manager
Tt	Tetra Tech NUS, Inc.

1.0 PROJECT DESCRIPTION

The Naval Surface Warfare Center (NSWC) Crane prepared a Quality Assurance Project Plan (QAPP) [Tetra Tech NUS, Inc. (Tt), 2004] for a Phase III Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) at the following Solid Waste Management Units (SWMUs):

- SWMU 8, Building 106 Pond
- SWMU 15, Roads and Grounds Area

That QAPP also governed data collection for completion of the United States Environmental Protection Agency (EPA) Region 5 RCRA Conservation and Recovery Information System (RCRIS) code Environmental Indicators (EIs) Forms (Form CA725) for the following SWMUs:

- 18, Load and Fill Area Buildings Area
- 19, Pyrotechnic Test Area (PTA)
- 20, Crane Army Ammunition Activity (CAAA) Quality Assurance (QA)/Quality Control (QC) Test Area
- Old Gun Tub Storage Lot (OGTSL)

That QAPP was approved by U.S. EPA Region 5, and the required field work was conducted in accordance with the QAPP.

More recently, Interim Measures (IMs) Work Plans (IMWPs) were developed to govern IMs to be conducted at the following Crane SWMUs:

- Old Pistol Range (OPR) at SWMU 7, Old Rifle Range (ORR)
- SWMU 8, Building 106 Pond Area
- SMWU 13, Mine Fill B
- SWMU 17, Polychlorinated Biphenyl (PCB) Pole Yard

The focus of the IMWPs is excavation of contaminated soil and sediment or other IMs that are designed to reduce or eliminate the extent and magnitude of contamination at each of these four sites.

The role of this Work Plan is explained in the next section.

1.1 DESCRIPTION OF WORK PLAN

This Work Plan governs sampling and analyses for the purposes of determining the source of PCB contamination in the SWMU 13 Building 171 Sump. Specifically, the objective is to provide data on PCB concentrations in sediment.

This Work Plan was prepared for the United States Navy, Naval Facilities Engineering Command, Engineering Field Division Midwest by Tt under Contract Task Order (CTO) 0048 of the Comprehensive Long-Term Environmental Action Navy (CLEAN) IV Contract Number N62467-04-D-0055. Any work to be conducted under this Work Plan is presented in this document or references are provided to other documents containing the required information.

Site physical conditions are summarized in the SWMU 13 IMWP (Tt, 2007). Descriptions of the IM to be conducted, except details of confirmation sampling and analyses and waste disposal sampling and analyses, are described in Section 3.0. Additional details of the IMs are provided in the remaining sections. Therefore, only very brief descriptions of the sites are provided below.

1.2 SCOPE OF WORK

PCBs were evidently released to soil and sediment in conjunction with use of Therminol boilers. These boilers heated a PCB heat transfer fluid that was used to melt explosives.

It is assumed that PCB oils were heated in Therminol boilers and then transferred to the SWMU 13 melt buildings (Buildings 166 and 171) where the oil was used as a heat transfer medium in the melting of explosive mixtures. Some of the oil was evidently spilled in the vicinity of the boilers because PCB contamination was detected at relatively high concentrations in soil, primarily in shallow soil (Tt, 2005). Excavation will be conducted to remove PCB-contaminated soil and sediment, as described in the SWMU 13 IMWP (Tt, 2007).

During RFI sampling, PCB-contamination was found in the Building 171 Sump. This information was used in the development of the IMWP. During the course of their review of the IMWP, EPA Region 5 requested that the source of this PCB contamination be determined (EPA, 2007).

A visual inspection of the Building 171 Sump indicated that the sump may receive flow from three settling/catch basins located northwest of Building 171. A visual inspection of the three settling/catch basins indicated that the Building 171 floor trenches may flow into these settling/catch basins.

The Work Plan details sediment/soil sampling of these three settling/catch basins and Building 171 floor trenches for PCBs and explosives.

1.3 PROJECT TARGET PARAMETERS AND RATIONALE FOR SELECTION

Table 1 presents summaries of scheduled analyses and rationale for characterization sampling.

2.0 SAMPLING AND ANALYSIS PLAN

2.1 GENERAL APPROACH

This section describes locations and rationales, as well as the equipment and procedures to be used for collecting, handling, preserving, and shipping samples to the analytical laboratory. All sediment/soil samples will be analyzed for PCBs and explosives as listed in Table 1. The following nces field Standard Operating Procedures (SOPs) (located in Appendix A) and the updated Health and Safety Plan (HASP) included in Appendix B, where applicable.

The field activities described in this Work Plan include the following:

- Collection of 10 sediment/soil samples including in settling/catch basins, floor trenches, and drainage trenches (see Figure 1).
- Mark all sample locations with global positioning system points.

Prior to any field activities, the Task Order Manager (TOM) will ensure that all field personnel read and understand this Work Plan and the associated HASP, the Field Operations Leader (FOL) will ensure that all required field equipment for non-health and safety-related equipment is available and operational, and the Site Safety Officer (SSO) will ensure that all health and safety-related equipment is available and operational (see Figure 2 and Table 2).

2.2 SAMPLE IDENTIFICATION SYSTEM

All samples collected for fixed-base laboratory analyses will be properly labeled with an adhesive-backed sample label affixed to each sample container in accordance with SOP_CTO0048-01 (Appendix A). The sample labels will include the following information: project name, project location, sample tracking/identification number, sampling date, sampling time, type of analysis required, matrix type, preservative, initials of sampler, and the name of the analytical laboratory to which the sample will be submitted.

Each sample collected will be assigned a unique sample tracking number. The sample tracking number for sediment/soil samples will be a four-segment, alphanumeric code beginning with the site designation ("13" represents SWMU 13) and followed by codes for the sample medium, sample location, and sample depth. These numbering schemes are described in SOP_CTO0048-02. Previously assigned sample

numbers will not be duplicated. Any other pertinent information regarding sample identification will be recorded in the field logbooks and on sample log sheets.

The sampling time recorded on the chain-of custody form and labels for duplicate samples will be "0000" so that the duplicate samples are "blind" to the laboratory. Notes detailing the sample number, time, date, and type will be recorded on the sample log sheets and will document the location of the duplicate sample (sample log sheets are not provided to the laboratory).

Matrix spike (MS) and matrix spike duplicate (MSD) samples will be designated on the field log sheet (see SOP_CTO0048-05) and chain-of-custody form (see SOP_CTO0048-03).

2.3 SAMPLING LOCATIONS, ANALYSES, AND RATIONALES

This section identifies sampling locations, QA/QC samples to be collected, analyses to be performed, and rationale for the sampling and analytical program. Details regarding the preservation, packaging, and shipping of samples are included in Section 2.5. All samples collected will be prepared and analyzed according to the normal laboratory protocol.

The total number of sediment/soil analyses for each analyte group is tabulated in Table 1. Sediment/soil QA/QC samples will be collected at frequencies listed in Table 3. Table 4 presents a summary of the sample analyses, container types and volumes, preservation requirements, and holding times for the samples to be collected at SWMU 13.

Sampling strategy was based upon a visual inspection of the site. Exact locations of the sediment/soil samples will be field located by the Tt and Navy representatives.

All sediment/soil samples will be collected using a disposable plastic trowel or sample location-specific stainless-steel trowel. Details regarding sampling equipment and procedures are included below and in SOP_CTO0048-05.

Global positioning system points, in lieu of surveying, will be taken at each individual sample location, which will allow for future repeatable investigations or guide in any remedial action. All visual observation results will be noted on the sediment/soil sample log.

Medium-specific sample analytical information is presented in Table 1 and appropriate containers to be used for each sample aliquot are listed in Table 4. After the samples are containerized, labeled, and

bagged (see SOP_CTO0048-01 and SOP_CTO0048-06), they will be placed in a cooler containing ice until they can be packaged and prepared for shipment (Section 2.5.1). Any investigation-derived waste (IDW) will be handled in accordance with Section 2.8.

Up to 10 sediment/soil samples will be collected within SWMU 13. The samples will be submitted to a fixed base laboratory for PCB and explosive analyses. The sediment/soil samples will be used to evaluate the source of PCB contamination in the Building 171 Sump. Final sample locations will be determined in the field during sample collection based on field observations and input from the Navy.

Sediment samples will be collected at each sample location from a depth of 0 to 6 inches. Soil samples will be collected using a hand hauger at various depth ranges starting with 0 to 6 inch deep interval based upon field conditions. Temporary individual pin flags will be placed at the sample locations and then photographed. Upon completion of sample collection and photographing at all sample locations, the temporary pin flags will be immediately removed from the site. The sediment/soil samples will be collected via a disposable plastic trowel or stainless-steel bowl and spoon. Alternatively, sediment samples may be collected using an extension device for settling/catch basin. The appropriate sample jar(s) used for analyses will then be filled and properly labeled. The stainless-steel bowl and spoon, if employed, will be decontaminated in the field between each sample as described in SOP_CTO0048-04.

2.4 QUALITY CONTROL SAMPLES

QC samples will be collected at the frequencies listed in Table 3. One duplicate sample per medium will be collected for every 20 samples. The duplicate samples will be placed in the same types of containers and handled in the same manner as the regular samples. The duplicate samples will be given unique QC sample Identifications (IDs) (see SOP_CTO0048-02). It is planned that all sediment/soil samples will be collected by plastic disposable trowels. If this is the case, no rinsate samples associated with sediment/soil samples will be collected. MS/MSD samples will be collected and analyzed in the fixed base laboratory at a rate of 1 per every 20 samples per medium. As samples are added to a cooler, the chain-of-custody form should be updated to include each new sample container (per SOP_CTO0048-03).

Field QC sample requirements for field duplicates and possible equipment rinsate blanks required for this project are described below.

Field Duplicates: Field duplicates are obtained during a single act of sampling and are used to assess the overall precision of the sampling and analysis program. Duplicate samples will be collected at a rate

of 1 for every 20 samples of each environmental medium. All duplicate samples will be analyzed for the same parameters in the laboratory as their environmental sample counterparts.

Temperature Blanks: Temperature blanks will be added to each cooler that contain samples, which must be kept cooled as a preservation requirement.

2.5 SAMPLE HANDLING, PACKAGING, AND SHIPPING

2.5.1 Sample Preservation

Preservation requirements for each of the parameters of interest are provided in Table 3-3. All samples are to be cooled to 4 degrees Celsius ($^{\circ}\text{C}$) \pm 2°C ; no chemical preservatives are necessary. All samples will be promptly chilled with ice to $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ and packaged in an insulated cooler. Each cooler will include a temperature blank. Ice will be sealed in containers to prevent water leakage. Samples will not be frozen.

2.5.2 Sample Labeling

Before samples are packaged, the sample labels will be checked to ensure that all information on the labels is complete and correct (see SOP_CTO0048-01) and that it matches the information on the sample collection log sheets and chain-of-custody form.

2.5.3 Sample Packaging

Each sample container shipped to the laboratory will be placed in a ZipLoc[®] bag to prevent cross contamination and leakage. If necessary, each ZipLoc[®] bag will be wrapped in bubble wrap to prevent breakage and cross-contamination. Only shipping containers that meet all applicable state and federal standards for safe shipment will be used. Cube ice will be placed in and around the samples in sufficient quantity to ensure that the samples remain chilled ($4^{\circ}\text{C} \pm 2^{\circ}\text{C}$) during transport to the analytical laboratory.

SOP_CTO0048-06 provides a detailed description of sample handling, packaging, and shipping procedures required for this project. The FOL will be responsible for ensuring the completion of the following forms:

- Sample labels
- Chain-of-custody forms

- Custody seals for coolers
- Shipping labels for coolers
- Express mail air bills

2.5.4 Sample Shipping

Shipping containers (i.e., coolers) will be sealed with nylon strapping tape in at least two places, and custody seals will be signed, dated, and affixed in a manner that will allow the receiver to quickly identify any tampering that may have occurred during transport to the laboratory (see SOP_CTO0048-01 and SOP_CTO0048-03).

Shipment will be made by a public courier at the next scheduled pickup following completion of sample collection. Copies of the air bills will be retained by the FOL for tracking purposes, if needed, and for communications with the laboratory. Air bills will be retained for the permanent record file.

2.5.5 Sample Custody

Custody of samples must be maintained and documented at all times, in accordance with SOP_CTO0048 03, beginning with the collection of samples in the field. A chain-of-custody form will be maintained for all samples collected during this investigation.

2.6 RECORD KEEPING

Standard forms, field notebooks, and a field logbook or electronic data files will be used to record all sample collection activities, field measurements, observations concerning site conditions, and other project-related information. Additional field records include sample log sheets, daily activity records, field logbooks, drilling and well completion log sheets, and field instrument calibration log sheets, among others. More details regarding record keeping are included in SOP_CTO0048-02 and SOP_CTO0048-05.

2.6.1 Field Logbooks

Bound, weatherproof field notebooks or electronic daily activity logs will be maintained by sampling personnel. All information related to sampling and other field activities will be recorded in field notebooks or electronic daily activity logs. This information will include, but is not limited to, sampling time, weather conditions, unusual events, field measurements, and descriptions of photographs.

A bound, weatherproof logbook or electronic daily activity log will be maintained by the FOL. This book or log will contain a summary of each day's activities and will reference the field notebooks or electronic logs when applicable.

2.6.2 Equipment Calibration Logs

An equipment calibration log sheet will be used to record each time an instrument is calibrated, recalibrated, or checked against a standard or background. Field instruments will be calibrated in accordance with the manufacturer's procedures.

2.6.3 Sample Collection Logs

All sample log sheets will be completed in accordance with SOP_CTO0048-05.

2.6.4 Chain-of-Custody Forms

A chain-of-custody form will be maintained for all samples collected during this investigation. These forms are a record of the people having custody of the samples from the time the samples are collected to the time they are analyzed and disposed (see SOP_CTO0048-03). The completed chain-of-custody document will be placed in a sealed plastic envelope and taped to the top inside lid of the shipping container before it is shipped. A copy of each chain-of-custody form will be retained by the FOL.

2.6.5 Shipping Forms/Air Bills

Copies of all forms and/or air bills related to the shipment of coolers will be retained by the FOL to trace the shipment, if necessary, and to communicate with the receiving laboratory.

2.6.6 Permanent Record File

At the completion of the field activities, the FOL will submit to the TOM all field records, data, field notebooks, logbooks, chain-of-custody records, sample log sheets, daily activity logs, and other records concerning the project, including all of the forms and log sheets listed above. The FOL will check these records for legibility and completeness before submitting them to the TOM. These forms, data, and field notes will become part of the permanent project record.

2.7 EQUIPMENT DECONTAMINATION

All reusable equipment used to collect samples will be decontaminated in accordance with SOP_CTO0048-04.

2.8 MANAGEMENT OF INVESTIGATION-DERIVED WASTE

It is anticipated that this investigation will generate the following types of potentially contaminated residues or IDW:

- Personal protective equipment (PPE)
- Equipment decontamination fluids
- Plastic disposable trowels
- Plastic ZipLoc® baggies

IDW will be handled as described in SOP_CTO0048-07.

2.9 SAFETY

The health and safety activities described in the following sections will ensure that field activities are performed at a high level of safety.

2.9.1 Health and Safety Plan

The HASP used for previous field activities at SWMU 13 and updated for this phase of investigation will be followed. The HASP has been prepared to describe specific health and safety requirements, concerns, and information related to these site activities. This document will be read and understood by each person working at the site. Each worker or visitor to the site must sign an acknowledgment that he or she has read and understands the HASP. The HASP has been included as Appendix B within this document.

2.9.2 Health and Safety Training

All workers involved in the field investigation shall have successfully completed the Occupational Safety and Health Administration (OSHA)-mandated 40-hour health and safety training and the follow-up annual 8-hour refresher courses when appropriate.

Tt personnel will supply OSHA documentation to the FOL before beginning work. Personnel who do not comply with this requirement must receive verbal approval to work from Tt corporate health and safety personnel.

2.9.3 Medical Approval and Personal Protective Clothing and Equipment

Workers at the site must be part of a medical monitoring program and must be medically approved to perform their duties without physical limitations. Protective clothing and equipment, as specified in the HASP, will be worn while performing site activities.

2.9.4 Safety Meetings

Safety meetings will be held among on-site workers whenever it is deemed appropriate by the SSO to discuss safety issues related to activities being performed, and the SSO will make site workers aware of any new conditions that could potentially affect health or safety.

2.10 ORGANIZATION AND LOGISTICS OF FIELD INVESTIGATIONS

2.10.1 Personnel

The duties, responsibilities, and lines of command for each person working on the project are described displayed on Figure 2. Persons working on the project will be intimately familiar with their roles and responsibilities. In addition, they will be familiar with the mechanisms and procedures for coordinating tasks, improving communications, and reporting incidences or irregularities. The FOL is responsible for coordinating all on-site personnel and activities. The SSO is responsible for health and safety monitoring and ensures that the HASP is adhered to during all field activities. The SSO has the authority to stop work if an imminent safety hazard is encountered.

2.10.2 Subcontractors

The Project Chemist will direct the activities of the fixed-base laboratory.

2.10.3 Mobilization and Demobilization

Following approval of this Work Plan, Tt will begin mobilization activities. All field team members will review this document and the associated HASP prior to mobilizing to the field. In addition, a field team orientation meeting will be held to familiarize personnel with the scope of the field activities. Items to be presented during that meeting include the following:

- Identification of this work Plan, associated HASP (Appendix B), and applicable field SOPs (Appendix A).
- Site-specific safety concerns and requirements.
- Project objectives.
- Sampling designs and strategies.
- Site-specific particulars of field operations (e.g., locations of utilities, physical access to sampling locations, communication mechanisms, lines of authority and responsibility, scheduling requirements, sample shipping concerns, etc.).
- Laboratory coordination.
- Site access requirements.
- Travel requirements.

The FOL will coordinate the mobilization activities for this project. The equipment required for the field activities will be mobilized from the Tt Pittsburgh office and/or Tt Louisville Office. The FOL and crew will demobilize from the site upon completion of the field operations and transport field equipment back to the Tt Pittsburgh office or third party vendor, as necessary. All work areas will be thoroughly checked and trash will be removed and disposed properly.

2.11 SCHEDULE

Approximately 2 working days have been scheduled to perform the described field activities at SWMU 13.

TABLE 1

LISTING OF SEDIMENT SAMPLES AND LABORATORY ANALYSES
 SWMU 13 - MINE FILL B
 WORK PLAN
 NSWC CRANE
 CRANE, INDIANA

Sample Location	Sample ID	PCBs SW-846 8082	Explosives Select SW-846 Method 8330	Rational
13SD069	13SD069	1	1	Visual inspection indicates that this large settling/catch basin that is located northwest of Building 171 flows to the Building 171 Sump.
13SD070	13SD070	1	1	Visual inspection indicates that this small settling/catch basin flows to the large settling/catch basin being sampled as 13SB069.
13SD071	13SD071	1	1	Visual Building 171 Sump inspection indicates that this small settling/catch basin is connected to the end of the trench coming from the escape manway.
13SD108	13SD1080006	1	1	Potential sample in elevated portion of trench (i.e., higher sidewalls) outside of escape manway. Sampling decision will be based on field observations. Final depth will be determined as directed by the Navy and field observations.
	13SD10806XX	1	1	
	13SD108XXXX	1	1	
13SD072	13SD072	1	1	Visual inspection indicated that this sample location flows from trench in escape manway below metal grate.
13SD073	13SD073	1	1	Visual catch basin inspection indicates that this sample location in drain trench surrounding Building 171 Melt-Pour room (connects to the trench in the escape manway) may flow into Building 171 Sump.
13SD074	13SD074	1	1	Visual catch basin inspection indicates that this sample location in drain trench surrounding Building 171 Melt-Pour room (connects to the trench in the escape manway) may flow into Building 171 Sump.
13SD075	13SD075	1	1	Visual catch basin inspection indicates that this sample location in drain trench surrounding Building 171 Melt-Pour room (connects to the trench in the escape manway) may flow into Building 171 Sump.
Total Sediment Samples		10	10	

ID - Identification.

SB - Soil boring.

SD - Sediment.

PCB - Polychlorinated biphenyl.

TABLE 2

**KEY PROJECT PERSONNEL
SWMU 13 BUILDING 171 SUMP PCB SOURCE DETERMINATION SAMPLING
NAMES, PHONE NUMBERS, AND ADDRESSES
NSWC CRANE
CRANE, INDIANA
PAGE 1 OF 1**

PERSON / TITLE / ORGANIZATION	ADDRESS	TELEPHONE
Howard Hickey Remedial Project Manager U.S. Navy NAVFAC	Department of the Navy Building 1A, Code 45313 201 Decatur Avenue Great Lakes, IL 60080	Phone: (847) 688-5999 FAX: (847) 688-2319
Tom Brent Environmental Site Manager NSWC Crane	NSWC Crane Code RP3-TB B-3245 300 Highway 361 Crane, Indiana 47522-5009	Phone: (812) 854-6160 Cell: (812) 295-6230 FAX: (812) 854-4177
Debra Humbert Program Manager Tetra Tech NUS	Tetra Tech NUS 661 Andersen Drive Pittsburgh, Pennsylvania 15220-2745	Phone: (412) 921-8968 FAX: (412) 921-4040
Richard Ninesteel Quality Assurance Coordinator Tetra Tech NUS	Tetra Tech NUS 661 Andersen Drive Pittsburgh, Pennsylvania 15220-2745	Phone: (412) 921-8746 FAX: (412) 921-4040
Matt Soltis Health and Safety Manager Tetra Tech NUS	Tetra Tech NUS 661 Andersen Drive Pittsburgh, Pennsylvania 15220-2745	Phone: (412) 921-8912 FAX: (412) 921-4040
Ralph Basinski Task Order Manager Tetra Tech NUS	Tetra Tech NUS 661 Andersen Drive Pittsburgh, Pennsylvania 15220-2745	Phone: (412) 921-8308 FAX: (412) 921-4040
Fred Ramser Field Operations Leader Tetra Tech NUS	Tetra Tech NUS 661 Andersen Drive Pittsburgh, Pennsylvania 15220-2745	Phone: (412) 921-8838 FAX: (412) 921-4040
Jim Goerd Site Safety Officer Tetra Tech NUS	Tetra Tech NUS 661 Andersen Drive Pittsburgh, Pennsylvania 15220-2745	Phone: (412) 921-8425 Cell: (412) 443-0244 FAX: (412) 921-4040
Joseph Samchuck Data Validation Manager Tetra Tech NUS	Tetra Tech NUS 661 Andersen Drive Pittsburgh, Pennsylvania 15220-2745	Phone: (412) 921-8510 FAX: (412) 921-4040
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Kelly Carper Quality Assurance Advisor Tetra Tech NUS	Tetra Tech NUS 661 Andersen Drive Pittsburgh, Pennsylvania 15220-2745	Phone: (412) 921-7273 FAX: (412) 921-4040
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TABLE 3

**SUMMARY OF SEDIMENT ANALYSES AND QUALITY CONTROL SAMPLES
SWMU 13 - MINE FILL B
WORK PLAN
NSWC CRANE
CRANE, INDIANA**

Sample Type	PCBs SW-846 8082 (Sediment)	Explosives Select SW-846 Method 8330 (Sediment)
Total Samples	10	10
Field Duplicates ⁽¹⁾	1	1
Rinsate Blanks ⁽²⁾	0	0
Matrix Spikes ⁽³⁾	1	1
Matrix Spike Duplicates ⁽⁴⁾	1	1

- 1) Field duplicates will be collected at a frequency of 1 per every 20 environmental samples.
- 2) Rinsate blanks will be collected at a maximum frequency of one per sampling device or instrument. These are estimates and may vary. If all sediment samples are collected via disposable trowels and ZipLoc[®] baggies, then no rinsate blanks will be collected.
- 3) Matrix spikes are collected for all organic and inorganic parameters at a frequency of 1 per every 20 field samples.
- 4) Matrix spike duplicates are collected for all organic parameters. Matrix spike duplicates are collected at a minimum frequency of 1 per every 20 field samples.

TABLE 4

**SUMMARY OF SAMPLE ANALYSES, CONTAINER TYPES AND VOLUMES,
PRESERVATION REQUIREMENTS, AND HOLDING TIMES FOR SEDIMENT SAMPLES
SWMU 13 – MINE FILL B
WORK PLAN
NSWC CRANE
CRANE, INDIANA**

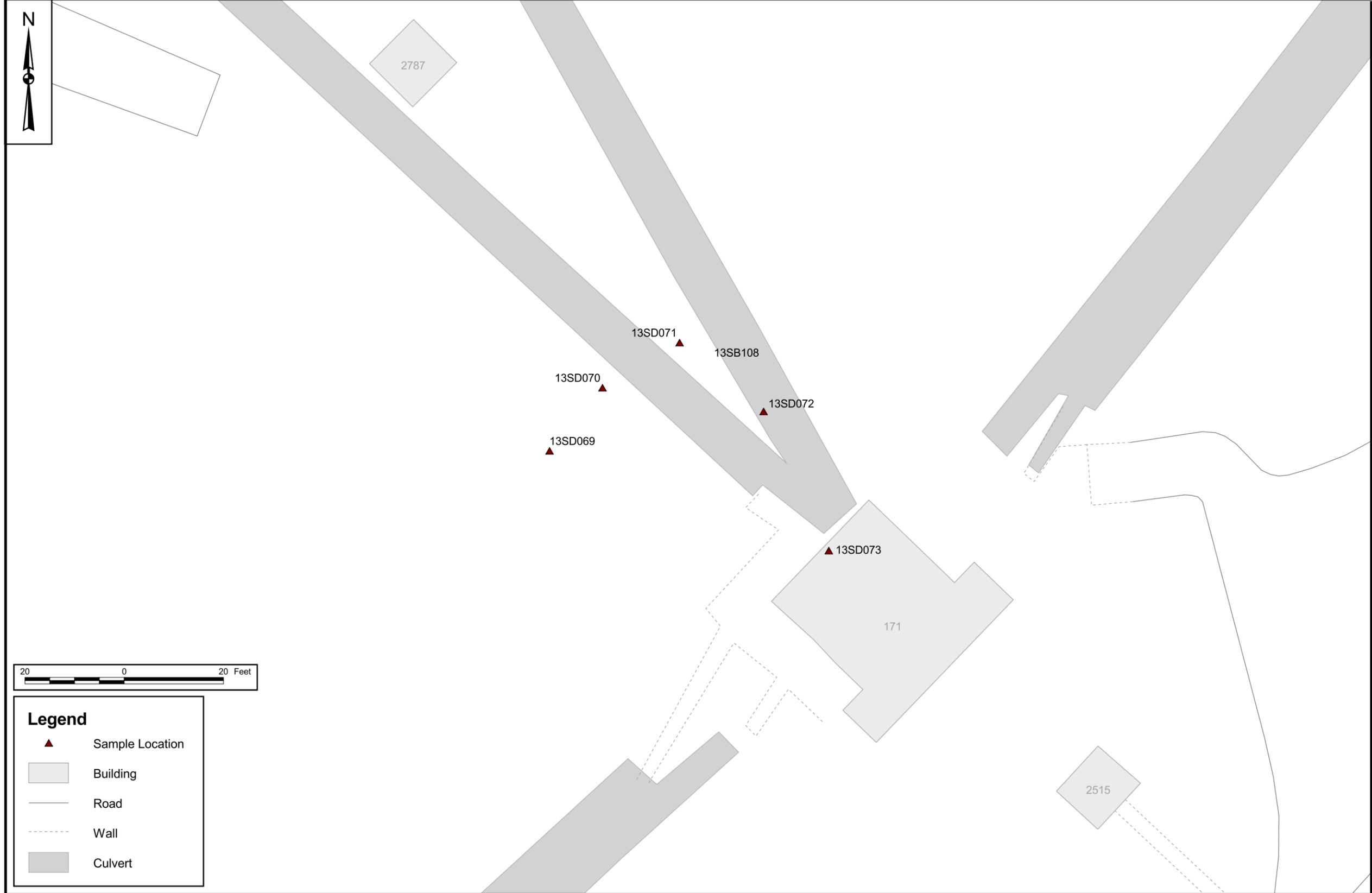
Parameter	Analyte/Methodology	Medium	Sample Container	Container Volume⁽¹⁾	Preservation	Maximum Holding Time⁽²⁾
PCBs	SW-846 8082	Sediment	Wide-mouth glass jar, Teflon-lined plastic cap	(1) 4 ounce	Cool to 4 °C, dark	Extraction within 14 days; analysis within 40 days of extraction.
Explosives	SW-846 8330	Sediment	Wide-mouth glass jar, Teflon-lined plastic cap	(1) 4 ounce	Cool to 4 °C, dark	Extraction within 7 days; analysis within 40 days of extraction.

1 The number in parenthesis indicates the sample container quantity.

2 All holding times are from date of collection.

°C = Degrees Celsius.

PCB – Polychlorinated biphenyl.



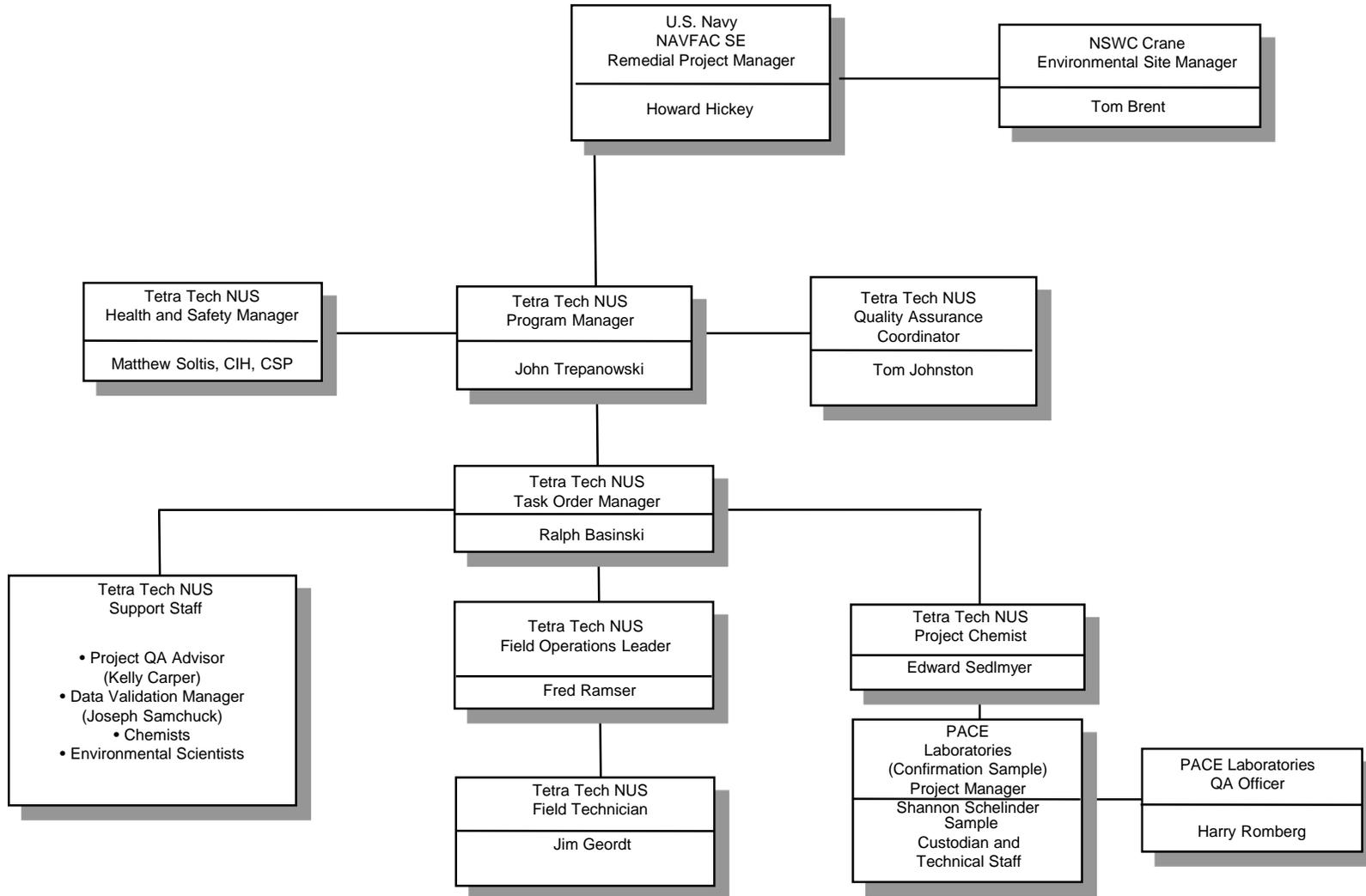
Legend

	Sample Location
	Building
	Road
	Wall
	Culvert

DRAWN BY J. ENGLISH		DATE 05/21/08
CHECKED BY V. PLACHY		DATE 05/21/08
COST/SCHED-AREA		SCALE AS NOTED
BUILDING 171 SOIL AND SEDIMENT SAMPLING LOCATIONS SWMU 13 NSWC CRANE CRANE, INDIANA		
CONTRACT NO. CTO 0048	APPROVED BY	DATE
DRAWING NO. FIGURE 1	APPROVED BY	DATE
REV 0		

FIGURE 2

PROJECT ORGANIZATION CHART
SWMU 13 –MINE FILL B
WORK PLAN
NSWC CRANE
CRANE, INDIANA



REFERENCES

Tt (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.

Tt, 2005. Resource Conservation and Recovery Act Facility Investigation Report for Mine Fill B (SWMU 13) Naval Surface Warfare Center Crane, Crane, Indiana Southern Division Naval Facilities Engineering Command, July.

Tt, 2007. Interim Measures Work Plan for SWMU 13 - Mine Fill B. Naval Surface Warfare Center Crane Crane, Indiana. March.

EPA, 2007. Electronic Mail (e-mail) from Peter Ramanauskas (United States Environmental Protection Agency Region 9) to Tom Brent (NSWC Crane) entitled: Re: FW: SWMU 13 IMWP Draft Responses to EPA Comments dated May 16, 2007. April 10.

APPENDIX A

STANDARD OPERATING PROCEDURES

STANDARD OPERATING PROCEDURE NUMBER CTO0048-01

SAMPLE LABELING

1.0 PURPOSE

This Standard Operating Procedure (SOP) describes the procedures to be used for labeling sample containers. Sample labels are used to document the sample identification (ID)/tracking number, date, time, analysis to be performed, preservative, matrix, sampler, and the analytical laboratory. A sample label will be attached to each sample container. The label for each container will contain identical information.

2.0 REQUIRED FIELD FORMS AND EQUIPMENT

Writing utensil

Disposable medical-grade gloves (e.g. latex, nitrile)

Sample logsheets

Required sample containers: All sample containers for analysis by fix-based laboratories will be supplied and deemed certified clean by the laboratory.

Preprinted sample labels

Chain-of-custody records

Sealable polyethylene bags

Heavy-duty cooler

Ice

3.0 PROCEDURES

3.1 The following information will be printed on the labels prior to field activities.

- Project number (CTO 0048)
- Project location (NSWC Crane)
- Sample ID
- Preservative

- Analysis to be performed
- Matrix type
- Laboratory name

3.2 Preprinted sample labels will be prepared before the team mobilizes to the field. Check to determine if

- One sample label exists for each sample container that is to be collected for all media during the field activities.
- The information printed on each label is correct.
- Extra blank labels are brought to the site in case additional environmental samples or QA samples are collected that are not anticipated in the Work Plan. Additional blank labels should also be brought to the site in case a sample container is broken or some of the preprinted labels are accidentally lost before they are attached to a container.

3.3 Once at the field site, sample containers should have labels affixed before sampling activities begin.

3.4 Select the labeled containers that are appropriate for a given sample and fill in the date, time, and sampler's initials just before sampling begins. Use a black waterproof marker or pen.

3.5 Fill the appropriate containers with sample material. Securely close the container lids without overtightening.

3.6 Write the same date, time, and sampler's initials on the label.

3.7 Place the sample container in a ziplock® plastic bag and place in a cooler containing ice.

3.8 Fill in appropriate information on the Sample Collection Log Form and the Chain-of-Custody Form.

An example sample label is attached at the end of this SOP.

4.0 ATTACHMENTS

1. Sample Label

ATTACHMENT 1
SAMPLE LABEL

Tetra Tech NUS, Inc. 661 Andersen Drive Pittsburgh, 15220 (412)921-7090		Project:	Location:	CTO:
Sample No:		Matrix:		
Date:	Time:	Preserve:		
Analysis:				
Sampled by:		Laboratory		

STANDARD OPERATING PROCEDURE NUMBER CTO0048-02

SAMPLE IDENTIFICATION NOMENCLATURE

1.0 PURPOSE

The purpose of this Standard Operating Procedure (SOP) is to establish a consistent sample nomenclature system that will facilitate subsequent data management at the Naval Surface Warfare Center (NSWC). The sample nomenclature system has been devised such that the following objectives can be attained.

- Sorting of data by site, location, or matrix
- Maintenance of consistency (field, laboratory, and database sample numbers)
- Accommodation of all project-specific requirements
- Accommodation of laboratory sample number length constraints
- Ease of sample identification

The NSWC Crane Environmental Protection Department must approve any deviations from this procedure.

2.0 REQUIRED FIELD FORMS AND EQUIPMENT

Pen with indelible ink

Sample container labels

3.0 SAMPLE IDENTIFICATION NOMENCLATURE

3.1 Monitoring Samples

All monitoring samples collected at NSWC Crane will be properly labeled with a sample label affixed to the sample container. Each sample will be assigned a unique sample tracking number. The sample tracking number will consist of a three- or four-segment alpha-numeric code that identifies the sample's associated solid waste management unit (SWMU) or associated site, sample type, location, and, for aqueous

samples, where applicable, whether a sample is filtered, and/or the sample round number. All sediment samples will be collected at a depth of 0 to 6 inches.

3.1.1 Numbering of Samples

The alphanumeric coding to be used is explained in the following diagram and subsequent definitions:

NN	AA	NNN
SWMU or Site Number	Matrix code	Location number

Character Type:

A = Alpha
N = Numeric

SWMU Number (NN):

13 = Mine Fill B

Matrix code (AA):

SD = Sediment Sample

Location number (NNN):

Sequential number beginning with "001" for each media.

3.1.2 Examples of Sample Nomenclature

A sediment sample collected from location 13SD069 at SWMU 13 would be designated as 13SD069.

3.2 Field Quality Assurance/Quality Control (QA/QC) Sample Nomenclature

Field QA/QC samples are described in the approved field sampling plan and this Work Plan. They will be designated using a different coding system. The QC code will consist of a four-segment alpha-numeric code that identifies the SWMU or site number, the sample QC type, the date the sample was collected, and the number of this type of QC sample collected on that date.

NN	AA	NNNNNN	NN
SWMU or Site Number	QC Type	Date	Sequence Number (per day)

The QC types are identified as:

RB = Rinsate Blank (Equipment Blank)

FD = Field Duplicate

The first rinsate blank associated with samples collected on May 28, 2008 would be designated as 13RB05280801.

The sampling time recorded on the Chain-of-Custody Form and labels for duplicate samples will be 0000 so that the samples are "blind" to the laboratory. Notes detailing the sample number, time, date, and type will be recorded on the sample log sheets and will document the location of the duplicate sample (sample log sheets are not provided to the laboratory).

3.3.2 Examples of Field QA/QC Sample Nomenclature

The first duplicate of the day taken of a sediment sample collected at SWMU 13 on May 28, 2008 would be designated as 13FD05280801.

The first source water blank associated with samples collected on October 12, 2007 would be designated as 13SB10120701.

STANDARD OPERATING PROCEDURE NUMBER CTO0048-03

SAMPLE CUSTODY AND DOCUMENTATION OF FIELD ACTIVITIES

1.0 PURPOSE

This Standard Operating Procedure (SOP) establishes the procedures for sample custody and documentation of field sampling and field analyses activities.

2.0 REQUIRED FIELD FORMS AND EQUIPMENT

The following logbooks, forms, and labels are required.

Site logbook

Field logbook

Sample label

Chain-of-Custody Form

Custody seals

Sediment/Soil Sample Log Sheet(s)

Equipment Calibration Log

3.0 PROCEDURES

This section describes custody and documentation procedures. All entries made into the logbooks, custody documents, logs, and log sheets described in this SOP must be made in indelible ink (black is preferred). No erasures are permitted. If an incorrect entry is made, the entry will be crossed out with a single strike mark, initialed, and dated.

3.1 Site Logbook

The site logbook is a hard-bound, paginated, controlled-distribution record book in which all major on-site activities are documented. At a minimum, the following activities and events will be recorded (daily) in the site logbook:

- All field personnel present
- Arrival/departure of site visitors
- Arrival/departure of equipment
- Start or completion of sampling activities
- Daily on-site activities performed each day
- Sample pickup information
- Health and safety issues
- Weather conditions

The site logbook is initiated at the start of the first on-site activity (e.g., site visit or initial reconnaissance survey). Entries are to be made for every day that on-site activities take place.

The following information must be recorded on the cover of each site logbook:

- Project name
- Project number
- Book number
- Start date
- End date

Information recorded daily in the site logbook need not be duplicated in other field notebooks but must summarize the contents of these other notebooks and refer to specific page locations in these notebooks for detailed information (where applicable). At the completion of each day's entries, the site logbook must be signed and dated by the field operations leader (FOL).

3.2 Field Logbooks

The field logbook is a separate dedicated notebook used by field personnel to document his or her activities in the field. This notebook is hardbound and paginated.

3.3 Sample Labels

Adhesive sample container labels must be completed and applied to every sample container. Information on the label includes the project name, location, sample number, date, time,

preservative, analysis, matrix, sampler's initials, and the name of the laboratory performing the analysis.

3.4 Chain-of-Custody Form

The Chain-of-Custody Form (COC) is a multi-part form that is initiated as samples are acquired and accompanies a sample (or group of samples) as it is transferred from person to person. Each COC is numbered. This form must accompany any samples collected for laboratory chemical analysis. A copy of a blank COC form is attached at the end of this SOP.

The FOL or must include the name of the laboratory in the "Remarks" section to ensure that the samples are forwarded to the correct location. If more than one COC is necessary for any cooler, the FOL will indicate "Page ___ of ___" on each COC. The original (top) signed copy of the COC will be placed inside a large Ziploc-type bag and taped inside the lid of the shipping cooler. Once the samples are received at the laboratory, the sample custodian checks the contents of the cooler(s) against the enclosed COC(s). Any problems are noted on the enclosed COC Form (bottle breakage, discrepancies between the sample labels, COC form, etc.) and will be resolved through communication between the laboratory point-of-contact and the Task Order Manager (TOM). The COC form is signed and retained by the laboratory and becomes part of the sample's corresponding analytical data package.

3.5 Custody Seal

The custody seal is an adhesive-backed label with a number on each seal. It is part of the chain-of-custody process and is used to prevent tampering with samples after they have been collected in the field and sealed in coolers for transit to the laboratory. The custody seals are signed and dated by the samplers and affixed across the opening edges of each cooler (two seals per cooler) containing environmental samples. The laboratory sample custodian will examine the custody seal for evidence of tampering and will notify the Tt TOM if evidence of tampering is observed.

3.6 Equipment Calibration Log

The Equipment Calibration Log is used to document calibration of measuring equipment used in the field. The Equipment Calibration Log documents that the manufacturer's instructions were followed for calibration of the equipment, including frequency and type of standard or calibration

device. An Equipment Calibration Log must be maintained for each electronic measuring device requiring calibration. Entries must be made for each day the equipment is used.

3.7 Soil and Sediment Sample Log Sheet

The Soil and Sediment Sample Log Sheets are used to document the sampling of soils and sediments (see SOP_CTO0048-05).

4.0 ATTACHMENTS

1. Chain-of-Custody Record

PROJECT NO:		SITE NAME:		PROJECT MANAGER AND PHONE NUMBER			LABORATORY NAME AND CONTACT:				
SAMPLERS (SIGNATURE)				FIELD OPERATIONS LEADER AND PHONE NUMBER			ADDRESS				
				CARRIER/WAYBILL NUMBER			CITY, STATE				
STANDARD TAT <input type="checkbox"/> RUSH TAT <input type="checkbox"/> <input type="checkbox"/> 24 hr. <input type="checkbox"/> 48 hr. <input type="checkbox"/> 72 hr. <input type="checkbox"/> 7 day <input type="checkbox"/> 14 day				MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	CONTAINER TYPE PLASTIC (P) or GLASS (G)			TYPE OF ANALYSIS 	COMMENTS
DATE YEAR TIME SAMPLE ID							PRESERVATIVE USED				
1. RELINQUISHED BY				DATE	TIME	1. RECEIVED BY			DATE	TIME	
2. RELINQUISHED BY				DATE	TIME	2. RECEIVED BY			DATE	TIME	
3. RELINQUISHED BY				DATE	TIME	3. RECEIVED BY			DATE	TIME	
COMMENTS											

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY) 3/99
 FORM NO. TtNUS-001

ATTACHMENT 1
CHAIN-OF-CUSTODY RECORD

STANDARD OPERATING PROCEDURE NUMBER CTO0048-04

DECONTAMINATION OF FIELD SAMPLING EQUIPMENT

1.0 PURPOSE

This Standard Operating Procedure (SOP) establishes the procedures to be followed when decontaminating non-dedicated field sampling equipment during the field investigations at the NSWC Crane facility.

2.0 REQUIRED FIELD FORMS AND EQUIPMENT

Waterproof pens

Non-latex rubber or plastic gloves

Cotton gloves

Field logbook

Potable water

Deionized water

LiquiNox detergent

Brushes, spray bottles, paper towels, etc.

55-gallon drum or other container to collect and transport decontamination fluids

3.0 DECONTAMINATION PROCEDURES

- 3.1 Don non-latex and/or cotton gloves and decontaminate sampling equipment (in accordance with the following steps) prior to field sampling and between samples.
- 3.2 Rinse the equipment with potable water. Rinsing may be conducted by spraying with water from a spray bottle or by dipping. Collect the potable water rinsate into a container.
- 3.3 Wash the equipment with a solution of LiquiNox detergent. Prepare the LiquiNox wash solution in accordance with the instructions on the LiquiNox container. Collect the LiquiNox wash solution into a container. Use brushes or sprays as appropriate for the equipment. If oily residue has

accumulated on the sampling equipment, remove the residue with an isopropanol wash and repeat the Liquinox wash.

- 3.4 Rinse the equipment with potable water. Rinsing may be conducted by spraying with water from a spray bottle or by dipping. Collect the potable water rinsate into a container.
- 3.5 Rinse the equipment with deionized water. Rinsing may be conducted by spraying with water from a spray bottle or by dipping. Collect the deionized water rinsate into a container.
- 3.6 Remove excess water by air drying, shaking, or by wiping with paper towels as necessary.
- 3.7 Document decontamination by recording it in the field logbook.
- 3.8 Containerized decontamination solutions will be managed in accordance with the procedures described in SOP_CTO0048-09 and the Work Plan.

STANDARD OPERATING PROCEDURE NUMBER CTO0048-05

SOIL AND SEDIMENT SAMPLING

1.0 PURPOSE

This Standard Operating Procedure (SOP) establishes the procedure for soil and sediment sampling to support source determination sampling at SWMU 13 in accordance with the requirements of this Work Plan.

2.0 REQUIRED FIELD FORMS AND EQUIPMENT

The following field forms and equipment are required for sediment sampling.

Soil and Sediment Sample Log Sheets: A copy of this form is attached at the end of this SOP.

Bound field logbook

Disposable plastic trowels

Labeled sample containers: See SOPs_CTO0048-01 and _CTO0048-02 for sample identification procedures. Sample containers are certified clean by the laboratory supplying the containers.

Plastic storage bags

Shipping containers (containing ice)

Surgical gloves

Indelible marker

Chain-of-Custody Form

3.0 SEDIMENT SAMPLE LOCATION SELECTION

The sampling personnel will determine specific sampling locations with the goal of providing a representative sample of the catch/settling basins and trenches.

4.0 SAMPLING PROCEDURES

The sampler will wear clean, disposable, surgical gloves. Clear vegetative matter or debris, if present, from the each sample location using a disposable sampling trowel or spoon.

- 4.1 Fill in the required information on the Soil and Sediment Sample Log Sheet(s) (attached at the end of this SOP) and fill in the required information on the Chain-of-Custody (COC) Form.
- 4.2 For samples requiring non-VOC analyses use the trowel to dig up and homogenize the soil or sediment in an 10-inch-diameter circular area that is 6 inches deep at each sample location. Note the location of each sample in the "OBSERVATIONS/NOTES" section of the Soil and Sediment Sample Log Sheet. Stir the soil or sediment within the circular area; do not move the soil or sediment outside the circle. Also, do not dig or stir soil or sediment that is deeper than 6 inches below the ground surface.
- 4.3 Mix the material to a uniform consistency or until the consistency does not change visibly. Use the same trowel to scoop the homogenized soil or sediment into the requisite labeled sample containers for field analysis. All sample containers will be filled in the following sequence:
- Non-VOC organics
 - Explosives
- 4.4 Record the sample time (using military time) on the Soil and Sediment Sample Log sheet and sample container labels. Record all other required information on the labels as specified by SOP CTO0048-01.
- 4.5 For samples that are to be submitted for laboratory analysis place the labeled sample container into a plastic storage bag and then place the plastic storage bag holding the sample container into a cooler containing ice.
- 4.6 Record the date, sampling site, site conditions, location map, and other information on the Soil and Sediment Sample Log Sheet. Enter the sample information onto the Chain-of-Custody Form in accordance with SOP_CTO0048-03.

5.0 ATTACHMENTS

1. Soil and Sediment Sample Log Sheet

STANDARD OPERATING PROCEDURE NUMBER CTO0048-06

SAMPLE PRESERVATION, PACKAGING, AND SHIPPING

1.0 PURPOSE

This Standard Operating Procedure (SOP) describes the procedures for sample preservation, packaging, and shipping to be used in handling aqueous samples water soils, and sediments collected at the NSWC Crane.

2.0 REQUIRED FIELD FORMS AND EQUIPMENT

Shipping labels

Custody seals

Chain-of-custody (COC) form(s)

Sample containers with preservatives: All sample containers for analysis by fixed-base laboratories will be supplied, with preservatives added (if required) and deemed certified clean by the laboratory.

Sample shipping containers (coolers): All sample shipping containers are supplied by the laboratory.

Packaging material: Bubble wrap, ZipLoc[®] bags, strapping tape, etc.

3.0 PROCEDURES FOR SAMPLE PRESERVATION, PACKAGING, AND SHIPPING

3.1 The laboratory provides sample containers with preservative already included (as required) for the analytical parameter for which the sample is to be analyzed. All samples will be held, stored, and shipped at 4°C. This will be accomplished through refrigeration (used to hold samples prior to shipment) and/or ice.

3.2 The sampler shall maintain custody of the samples until the samples are relinquished to another custodian or to the common carrier.

3.3 Check that each sample container is properly labeled, the container lid is securely fastened, and the container is sealed in a ZipLoc[®] bag.

- 3.4 If the container is glass, place the sample container into a bubble-out shipping bag and seal the bag using the self-sealing, pressure sensitive tape supplied with the bag.
- 3.5 Inspect the insulated shipping cooler. Check for any cracks, holes, broken handles, etc. If the cooler has a drain plug, make certain it is sealed shut, both inside and outside of the cooler. If the cooler is questionable for shipping, the cooler must be discarded.
- 3.6 Put ice into ZipLoc[®] bags and place a layer of the sealed bags on the bottom of the cooler. Place the sample containers into the shipping cooler on top of the ice in an upright position (containers will be upright, with the exception of the 40-ml vials). Place ZipLoc[®] bags of ice flat against the sides of the cooler. Continue filling the cooler with samples until the cooler is nearly full and the movement of the sample containers is limited.
- 3.7 Add a final layer of ice sealed in ZipLoc[®] bags to the top of the samples just before the cooler is closed and sealed.
- 3.8 Close the cooler and seal the cooler with approximately four wraps of strapping tape at each end of the cooler. Prior to wrapping the last wrap of strapping tape, apply a signed, numbered, and dated custody seal to each side of the cooler (one per side). Cover the custody seal with the last wrap of tape. This will provide a tamper evident custody seal system for the sample shipment.
- 3.12 All samples will be shipped to the laboratory no more than 72 hours after collection. Under no circumstances will sample hold times be exceeded.

STANDARD OPERATING PROCEDURE NUMBER CTO0048-07

MANAGEMENT OF INVESTIGATION-DERIVED WASTE

1.0 PURPOSE

This Standard Operating Procedure (SOP) describes how investigation-derived waste (IDW) will be collected, segregated, classified, and managed during the field investigations at the NSWC Crane facility. The following types of IDW will be generated during this investigation:

- Decontamination solutions
- Personal protective equipment (PPE) and clothing
- Miscellaneous trash and incidental items
- Disposable plastic trowels

2.0 REQUIRED FIELD FORMS AND EQUIPMENT

Health and safety equipment (with PPE)

Decontamination equipment

Field logbook and indelible ink pen

Plastic sheeting and/or tarps

55-gallon drums with sealable lids

IDW labels for drums

Wastewater container tanks

Plastic garbage bags

3.0 PROCEDURES

Management of IDW includes the collection, segregation, temporary storage, classification, final disposal, and documentation of the waste-handling activities.

3.1 Liquid Wastes

Liquid wastes that may be generated during the site activities include decontamination solutions from non-disposable sampling equipment.

3.2 PPE and Incidental Trash

All PPE wastes and incidental trash materials (e.g., wrapping or packing materials from supply cartons, waste paper, disposable plastic trowels, etc.) will be decontaminated (if contaminated), double bagged, securely tied shut, and placed in a designated waste receptacle at NSWC Crane.

APPENDIX B

HEALTH AND SAFETY PLAN

Comprehensive Long-term Environmental Action Navy

CONTRACT NUMBER N62467-04-D-0055



Health and Safety Plan

for

Mine Fill B (SWMU 13)

Naval Surface Warfare Center (NSWC)
Crane, Indiana

Contract Task Order 0048

May 2008



Midwest

201 Decatur Avenue
Building 1A, Code EV
Great Lakes, Illinois 60088

HEALTH AND SAFETY PLAN

**FOR
MINE FILL B (SWMU 13)**

**NAVAL SURFACE WARFARE CENTER (NSWC)
CRANE, INDIANA**

**COMPREHENSIVE LONG-TERM
ENVIRONMENTAL ACTION NAVY (CLEAN) CONTRACT**

**Submitted to:
Midwest
201 Decatur Avenue
Building 1A, Code EV
Great Lakes, Illinois 60088**

**Submitted by:
TetraTech NUS
Foster Plaza 7, 661 Andersen Drive
Pittsburgh, Pennsylvania 15220**

**Contract Task Order (CTO) 0048
Contract Number N62467-04-D-0055**

May 2008

PREPARED UNDER THE SUPERVISION OF:

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1.0 INTRODUCTION

The objective of this Health and Safety Plan (HASP) is to provide the safety and health requirements, restrictions, practices and procedures for Tetra Tech NUS, Inc. (Tt) personnel at Solid Waste Management Unit (SWMU) 13 at the Naval Surface Warfare Center Crane (NSWC Crane), located in Crane, Indiana.

This HASP is to be used in conjunction with the Tt Health and Safety Guidance Manual. The Guidance Manual provides detailed information pertaining to hazard recognition and control, and Tt standard operating procedures. This HASP and the contents of the Guidance Manual were developed to comply with the requirements stipulated in 29 Code of Federal Regulations (CFR) 1910.120 (OSHA's Hazardous Waste Operations and Emergency Response Standard). Both documents must be present at the site to satisfy these requirements.

This HASP has been written to support proposed tasks and techniques associated with the scope of work as presented in Section 4.0. It has been developed using the latest available information regarding known or suspected chemical contaminants and potential physical hazards associated with the proposed work at the site. Should the proposed work site conditions and/or suspected hazards change, or if new information becomes available, this document will be modified. Changes to the HASP will be made with the approval of the Tt Site Safety Officer (SSO) and the Tt Health and Safety Manager (HSM). Requests for modifications to the HASP will be directed to the SSO who will determine whether to make the changes. The SSO will notify the Task Order Manager (TOM), who will notify the affected personnel of changes.

1.1 AUTHORITY

This work is authorized under the Comprehensive Long - Term Environmental Action Navy (CLEAN) contract, administered through the U.S. Navy Southeast, Naval Facilities Engineering Command, as defined under Contract No. N62467-04-D-0055; Contract Task Order Number 0048.

1.2 KEY PROJECT PERSONNEL AND ORGANIZATION

This section defines responsibilities for site safety and health for Tt employees engaged in onsite activities. All personnel assigned to participate in the field work have the primary responsibility for performing all of their work tasks in a manner that is consistent with the Tt Health and Safety Policy, the health and safety training that they have received, the contents of this HASP, and in an overall manner that protects their personal safety and health and that of their co-workers. The following persons are the

primary point of contact and have the primary responsibility for observing and implementing this HASP and for overall on-site health and safety.

- The Tt Project Manager (PM) is responsible for the overall direction and implementation of health and safety for this work.
- The Tt Field Operations Leader (FOL) is responsible for implementation of this HASP. The FOL manages field activities, executes the Work Plan, and enforces safety procedures as applicable to the Work Plan. Specifically, the FOL will:
 - Verify training and medical status of on-site personnel in relation to site activities.
 - Assist and represent Tt with emergency services (if needed)
 - Provide elements site-specific training for on site personnel.
- The Tt Site Safety Officer (SSO) or his/her representative supports the FOL concerning the aspects of health and safety including, but not limited to:
 - Coordinating health and safety activities
 - Selecting, applying, inspecting, and maintaining personal protective equipment
 - Establishing work zones and control points
 - Implementing air monitoring procedures
 - Implementing hazard communication, respiratory protection, and other associated safety and health programs
 - Coordinating emergency services
 - Providing elements of site-specific training
- Compliance with these requirements is monitored by the Project Health and Safety Officer (PHSO) and is coordinated through the HSM.
- All munitions and explosives of concern (MEC) Operations will be conducted under Tt Explosive Ordnance Disposal (EOD) personnel. These are as follows:

1.3 SITE INFORMATION AND PERSONNEL ASSIGNMENTS

Site Name: Naval Surface Warfare Center **Address:** Crane, Indiana

Remedial Project Manager: Howard Hickey **Phone Number:** (847) 688-5999

Site Contact: Thomas Brent **Phone Number:** (812) 854-6160

Site Address: 300 Highway 361 Crane, Indiana 47522-5001

Purpose of Site Visit: Multimedia sampling for PCBs.

Proposed Start-up Date: TBD

Project Team:

Tt Personnel:

Ralph Basinski

Fred Ramser

Matthew M. Soltis, CIH, CSP

Jennifer Choich, PhD

Jim Goerd

Discipline/Tasks Assigned:

Project Manager (PM)

Field Operations Leader (FOL)

Health and Safety Manager (HSM)

Project Health and Safety Officer (PHSO)

Site Safety Officer

Prepared by: Jennifer Choich, PhD

2.0 EMERGENCY ACTION PLAN

2.1 INTRODUCTION

This section has been developed as part of a planning effort to direct and guide field personnel in the event of an emergency. In the event of an emergency, the field team will primarily evacuate and assemble to an area unaffected by the emergency and notify the appropriate local emergency response personnel/agencies. Tt personnel are not authorized to participate in any emergency response activities. Workers who are ill or who have suffered a non-serious injury may be transported by site personnel to nearby medical facilities, provided that such transport does not aggravate or further endanger the welfare of the injured/ill person. The emergency response agencies listed in this plan are capable of providing the most effective response, and as such, will be designated as the primary responders. These agencies are located within a reasonable distance from the area of site operations, which ensures adequate emergency response time. The Navy Remedial Project Manager (RPM) Howard Hickey will be notified if outside response agencies are contacted.

Tt personnel may participate in minor event response and emergency prevention activities such as:

- Initial fire-fighting support and prevention
- Initial spill control and containment measures and prevention
- Removal of personnel from emergency situations
- Provision of initial medical support for injury/illness requiring only first-aid level support
- Provision of site control and security measures as necessary

2.2 EMERGENCY PLANNING

Through the initial hazard/risk assessment effort, emergencies resulting from chemical, physical, or fire hazards are the types of emergencies which could be encountered during site activities. To minimize or eliminate the potential for these emergency situations, pre-emergency planning activities will include the following (which are the responsibility of the SSO and/or the FOL):

- Coordinating with local Emergency Response personnel to ensure that Tt emergency action activities are compatible with existing emergency response procedures. Base Fire Protection and Emergency Services will be notified of scheduled events and activities. This is most imperative in situations where their services may be required. Due to the fact that the nearest hospital/medical center is over 4 minutes away, a CPR/First Aid trained personnel must be on-site at all times during the times work is being conducted.

- Establishing and maintaining information at the project staging area (support zone) for easy access in the event of an emergency. This information will include the following:
 - Chemical Inventory (of chemicals used onsite), with Material Safety Data Sheets.
 - Onsite personnel medical records (Medical Data Sheets).
 - A log book identifying personnel onsite each day.
 - Hospital route maps with directions (these should also be placed in each site vehicle).
 - Emergency Notification - phone numbers.

The Tt FOL will be responsible for the following tasks:

- Identifying a chain of command for emergency action.
- Educating site workers to the hazards and control measures associated with planned activities at the site, and providing early recognition and prevention, where possible.
- Periodically performing practice drills to ensure site workers are familiar with incidental response measures.
- Providing the necessary equipment to safely accomplish identified tasks.

2.3 EMERGENCY RECOGNITION AND PREVENTION

2.3.1 Recognition

Emergency situations that may be encountered during site activities will generally be recognized by visual observation. Visual observation will also play a role in detecting potential exposure events to some chemical hazards. To adequately recognize chemical exposures, site personnel must have a clear knowledge of signs and symptoms of exposure associated with the principle site contaminants of concern as presented in this HASP. Tasks to be performed at the site, potential hazards associated with those tasks and the recommended control methods are discussed in detail in Sections 5.0 and 6.0. Additionally, early recognition of hazards will be supported by daily site surveys to eliminate any situation predisposed to an emergency. The FOL and/or the SSO will be responsible for performing surveys of work areas prior to initiating site operations and periodically while operations are being conducted. Survey findings are documented by the FOL and/or the SSO in the Site Health and Safety logbook, however, site personnel will be responsible for reporting hazardous situations. Where potential hazards exist, Tt will initiate control measures to prevent adverse effects to human health and the environment.

The above actions will provide early recognition for potential emergency situations, and allow Tt to instigate necessary control measures. However, if the FOL and the SSO determine that control measures

are not sufficient to eliminate the hazard, Tt will withdraw from the site and notify the appropriate response agencies listed in Table 2-1.

2.3.2 Prevention

Tt and subcontractor personnel will minimize the potential for emergencies by following the Health and Safety Guidance Manual and ensuring compliance with the HASP and applicable OSHA regulations. Daily site surveys of work areas, prior to the commencement of that day's activities, by the FOL and/or the SSO will also assist in prevention of illness/injuries when hazards are recognized early and control measures initiated.

2.4 EVACUATION ROUTES, PROCEDURES, AND PLACES OF REFUGE

An evacuation will be initiated whenever recommended hazard controls are insufficient to protect the health, safety or welfare of site workers. Specific examples of conditions that may initiate an evacuation include, but are not limited to the following: severe weather conditions; fire or explosion; monitoring instrumentation readings which indicate levels of contamination are greater than instituted action levels; and evidence of personnel overexposure to potential site contaminants.

In the event of an emergency requiring evacuation, personnel will immediately stop activities and report to the designated safe place of refuge unless doing so would pose additional risks. When evacuation to the primary place of refuge is not possible, personnel will proceed to a designated alternate location and remain until further notification from the Tt FOL. Safe places of refuge will be identified prior to the commencement of site activities by the SSO and will be conveyed to personnel as part of the pre-activities training session. This information will be reiterated during daily safety meetings. Whenever possible, the safe place of refuge will also serve as the telephone communications point for that area. During an evacuation, personnel will remain at the refuge location until directed otherwise by the Tt FOL or the on-site Incident Commander of the Emergency Response Team. The FOL or the SSO will perform a head count at this location to account for and to confirm the location of site personnel. Emergency response personnel will be immediately notified of any unaccounted personnel. The SSO will document the names of personnel onsite (on a daily basis) in the site Health and Safety Logbook. This information will be utilized to perform the head count in the event of an emergency.

Evacuation procedures will be discussed during the pre-activities training session, prior to the initiation of project tasks. Evacuation routes from the site and safe places of refuge are dependent upon the location at which work is being performed and the circumstances under which an evacuation is required. Additionally, site location and meteorological conditions (i.e., wind speed and direction) may dictate evacuation routes. As a result, assembly points will be selected and communicated to the workers relative

to the site location where work is being performed. Evacuation should always take place in an upwind direction from the site.

2.5 EMERGENCY CONTACTS

Prior to initiating field activities, personnel will be thoroughly briefed on the emergency procedures to be followed in the event of an accident. Table 2-1 provides a list of emergency contacts and their associated telephone numbers. This table must be posted where it is readily available to site personnel. Facility maps should also be posted showing potential evacuation routes and designated meeting areas.

As soon as possible, Navy RPM Howard Hickey will be informed of any incident or accident that requires medical attention.

Any pertinent information regarding allergies to medications or other special conditions will be provided to medical services personnel. This information is listed on Medical Data Sheets filed onsite (See Attachment I). If an exposure to hazardous materials has occurred, provide hazard information from Table 6-1 to medical service personnel.

**TABLE 2-1
EMERGENCY CONTACTS**

Crane, Indiana

CONTACT	TELEPHONE
Base Emergency Number (Fire Department, Base Security, Ambulance) <ul style="list-style-type: none"> • If dialing from an on-base phone: • If dialing from cell or off-base phone: 	854-3300 or 854-1333 911
Base Environmental Office	(812) 854-3114
Bedford Ambulance	(812) 279-6545
Bloomington Hospital (Bloomington, Indiana)	(812) 336-9515
Hospital, Bedford Medical Center (Bedford, Indiana)	(812) 275-1200
Poison Control Center	(800) 222-1222
National Response Center	(800) 424-8802
Base Contact, Thomas Brent	(812) 854-6160
Project Manager, Ralph Basinski	(412) 921-8308
Tt Crane Field Office Building 3245/ Field Operations Leader	(812) 854-0280
Tt Office, Pittsburgh	(412) 921-7090
CLEAN Health and Safety Manager, Matthew M. Soltis, CIH, CSP	(412) 921-8912
Tt Field Operations Leader Fred Ramser	(412) 921-8838
Tt Project Safety Officer Jennifer Choich, PhD	(412) 921-8083
Tt Site Safety Officer Jim Goerd	(422) 921-8425

2.6 EMERGENCY ROUTE TO HOSPITAL

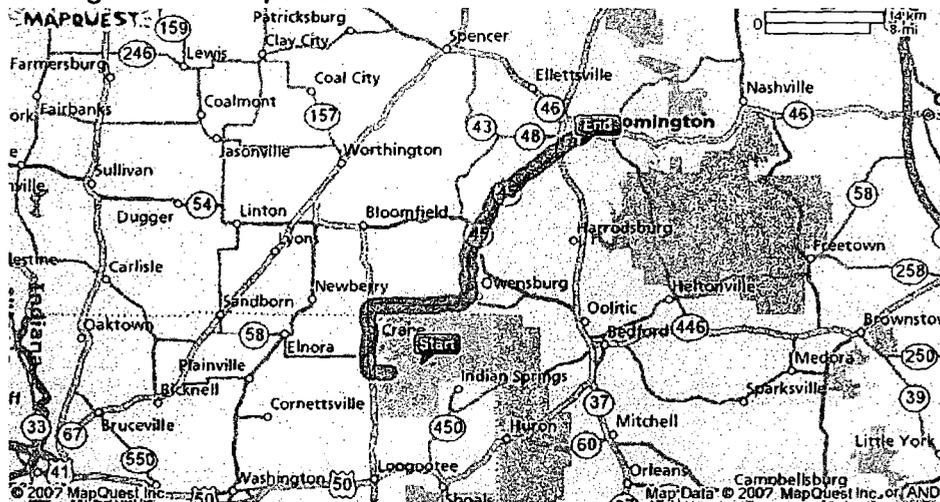
Directions to the Bloomington Hospital:

601 W. 2nd St.
 P.O. Box 1149
 Bloomington, Indiana 47402

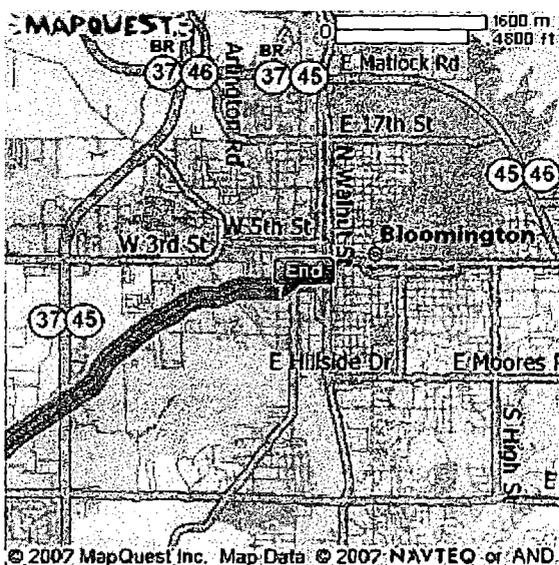
Exit NSWC Crane on H-45 through the Bloomington Gate. Follow Highway 45 North to Bloomington at Highway 45 and Highway 37. Continue going straight over the overpass (Bloomfield Road). Follow Bloomfield Road North; this road turns into 2nd Street. Follow 2nd Street, hospital will be on the right (601 West 2nd Street)

**FIGURE 2-1
 MAPS TO
 BLOOMINGTON HOSPITAL ROUTE MAP (BLOOMINGTON GATE)**

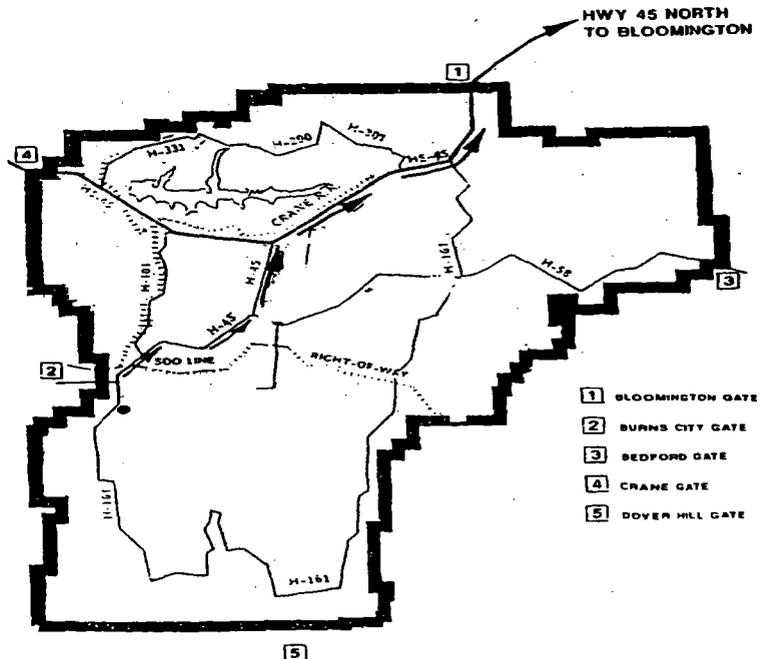
****Note: The Bloomington Gate is open 24 hours.**



ROUTE TO BLOOMINGTON HOSPITAL



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HWY 45 NORTH TO BLOOMINGTON

- 1** BLOOMINGTON GATE
- 2** BURNS CITY GATE
- 3** BEDFORD GATE
- 4** CRANE GATE
- 5** DOVER HILL GATE

Directions to Bedford Medical Center:*

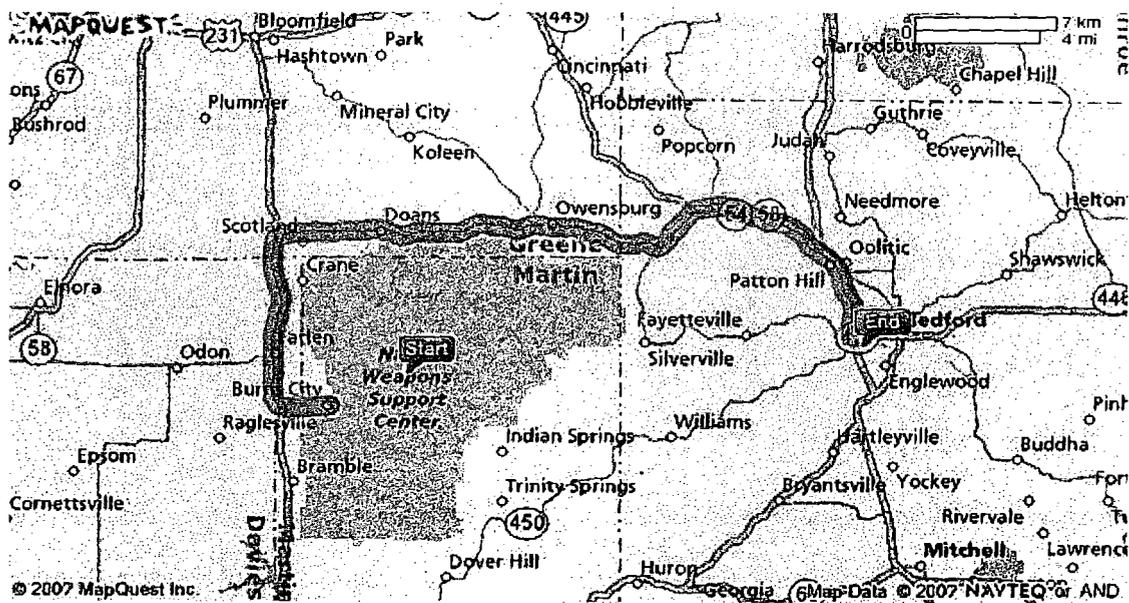
2900 16th Street
Bedford, Indiana 47421

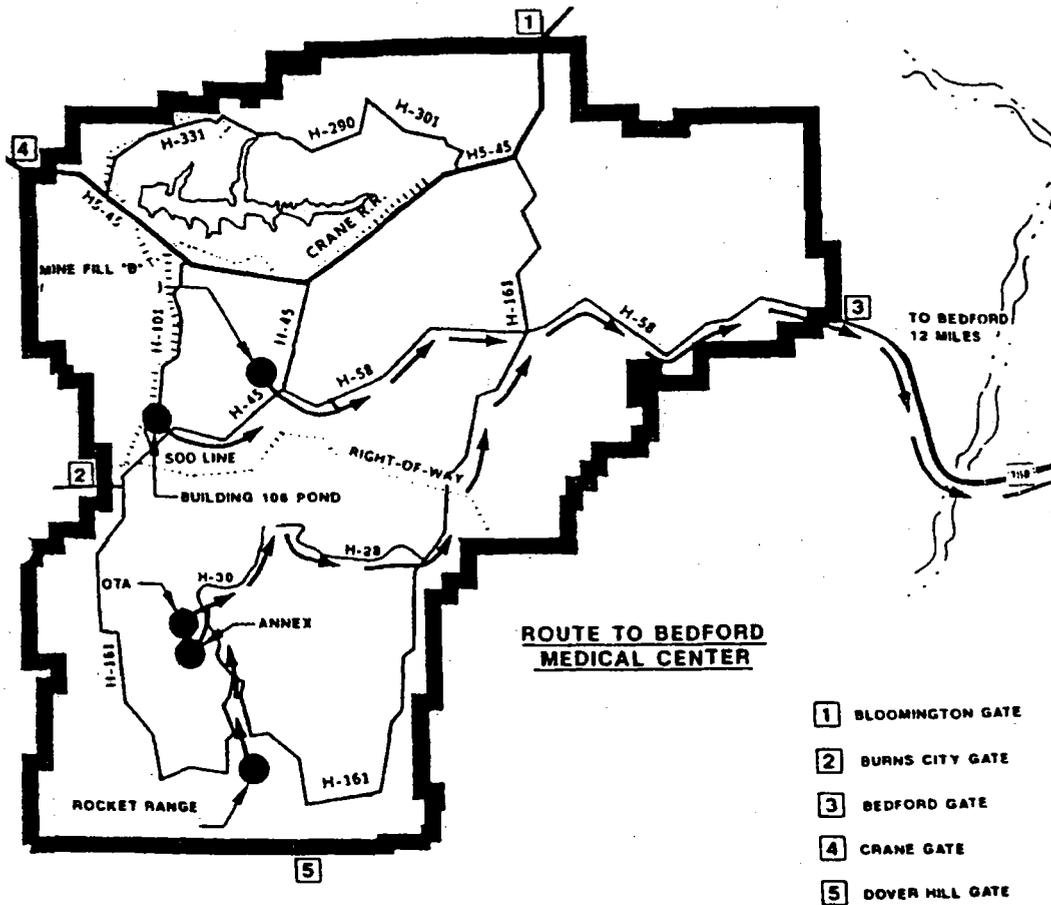
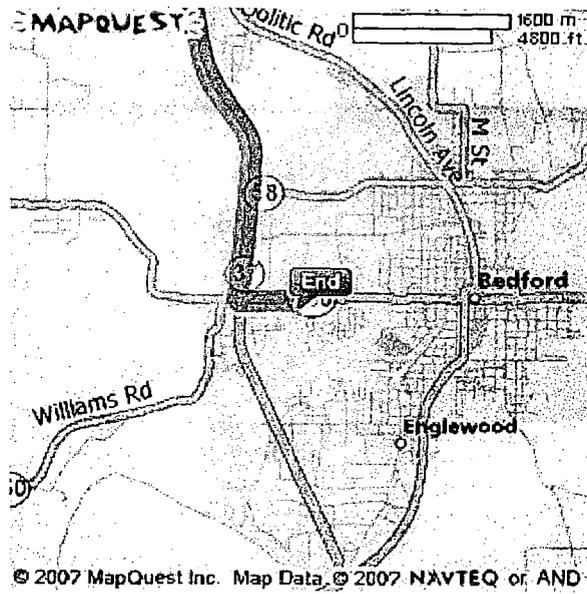
Exit the base on H-58, through the Bedford Gate. Head West on State Highway 158. State Highway 158 becomes 16th Street upon entering the City of Bedford. The medical center is on the right shortly after Plaza Drive.

***NOTE:** The Bedford Gate is open only from 0600 - 0830 and 1500 - 1800 hours, whereas the Bloomington Gate is open 24 hours. A map indicating the travel route from the site to the hospitals are included as Figures 2-2.

**FIGURE 2-2
MAPS TO
BEDFORD MEDICAL CENTER ROUTE MAP (BEDFORD GATE)**

***Note:** The Bedford Gate is open only from 0600 - 0830 and 1500 - 1800 hours.





As soon as possible, the Navy site contact Thomas Brent must be informed of any incident or accident that requires medical attention.

Any pertinent information regarding allergies to medications or other special conditions will be provided to medical services personnel. This information is listed on Medical Data Sheets filed onsite. If an exposure to hazardous materials has occurred, provide hazard information from Table 6-1 to medical service personnel.

2.7 EMERGENCY ALERTING AND ACTION/RESPONSE PROCEDURES

Site personnel will be working in close proximity to each other at NSWC. As a result, hand signals, voice commands, and line of site communication will be sufficient to alert site personnel of an emergency. When project tasks are performed simultaneously on different sites, vehicle horns will be used to communicate emergency situations.

If an emergency on Base warranting evacuation occurs, the following procedures are to be initiated:

- Initiate the evacuation via hand signals, voice commands, or line of site communication
- Report to the designated refuge point where the FOL will account for all personnel
- Once non-essential personnel are evacuated, appropriate response procedures will be enacted to control the situation.
- Describe to the FOL (FOL will serve as the Incident Coordinator) pertinent incident details.

In the event that site personnel cannot mitigate the hazardous situation, the FOL and SSO will enact emergency notification procedures to secure additional assistance in the following manner:

Dial 911 and call other pertinent emergency contacts listed in Table 2-1 and report the incident. Give the emergency operator the location of the emergency, the type of emergency, the number of injured, and a brief description of the incident. Stay on the phone and follow the instructions given by the operator. The operator will then notify and dispatch the proper emergency response agencies.

- On Base, call 854-3300 or 854-1333* and other appropriate emergency contacts (Table 2-1) and report the emergency. Give the emergency operator the location of the emergency, the type of emergency, the number of injured, and a brief description of what occurred. Stay on the phone and follow the instructions given by the operator. The operator will then notify and dispatch the proper emergency response agencies.

***NOTE:** On-base extensions 3300 and 1333 are the primary emergency phone numbers. From an NSWCC Crane phone, on Base extensions must be preceded by "854". Off-base numbers can only be reached by dialing "991" first. Furthermore, all emergencies involving site activities should subsequently be reported to the Environmental Protection Department (x -3114/1132/6160).

2.8 PPE AND EMERGENCY EQUIPMENT

A first-aid kit, eye wash units (or bottles of disposable eyewash solution) and fire extinguishers (strategically placed) will be maintained onsite and shall be immediately available for use in the event of an emergency. This equipment will be located in the field office as well as in each site vehicle. At least one first aid kit supplied with equipment to protect against bloodborne pathogens will also be available on site. Personnel identified within the field crew with bloodborne pathogen and first-aid training will be the only personnel permitted to offer first-aid assistance. In addition, due to the fact that the nearest hospital/medical center is over 4 minutes away, a CPR/First Aid trained personnel must be on-site at all times during the times work is being conducted.

2.9 DECONTAMINATION PROCEDURES / EMERGENCY MEDICAL TREATMENT

During any site evacuation, decontamination procedures will be performed only if doing so does not further jeopardize the welfare of site workers. Decontamination will not be performed if the incident warrants immediate evacuation. However, it is unlikely that an evacuation would occur which would require workers to evacuate the site without first performing the necessary decontamination procedures.

Site personnel will perform rescue operations from emergency situations and may provide initial medical support for injury/illnesses requiring only "Basic First-Aid" level support, and only within the limits of training obtained by site personnel. Basic First-Aid is considered treatment that can be rendered by a trained first aid provider at the injury location and not requiring follow-up treatment or examination by a physician (for example; minor cuts, bruises, stings, scrapes, and burns). Not included as Basic First-Aid are second or third degree burns, cuts, lacerations requiring stitches or butterfly bandaging, heat exhaustion, severe poisonous plant or insect bite reactions. Personnel providing medical assistance are required to be trained in First-Aid and in the requirements of OSHA's Bloodborne Pathogen Standard (29 CFR 1910.1030). Medical attention above First-Aid level support will require assistance from the designated emergency response agencies. Attachment II provides the procedure to follow when reporting an injury/illness, and the form to be used for this purpose. **If the emergency involves personnel exposures to chemicals, follow the steps provided in Figure 2-3.**

FIGURE 2-3
POTENTIAL EXPOSURE PROTOCOL

The purpose of this protocol is to provide guidance for the medical management of injury situations.

In the event of a personnel injury or accident:

- Rescue, when necessary, employing proper equipment and methods.
- Give attention to emergency health problems -- breathing, cardiac function, bleeding, and shock.
- Transfer the victim to the medical facility designated in this HASP by suitable and appropriate conveyance (i.e. ambulance for serious events)
- Obtain as much exposure history as possible (a Potential Exposure report is attached).
- If the injured person is a Tetra Tech NUS employee, call the medical facility and advise them that the patient(s) is/are being sent and that they can anticipate a call from the WorkCare physician. WorkCare will contact the medical facility and request specific testing which may be appropriate. WorkCare physicians will monitor the care of the victim. Site officers and personnel should not attempt to get this information, as this activity leads to confusion and misunderstanding.
- Call WorkCare at 1-800-455-6155 and enter Extension 109, being prepared to provide:
 - Any known information about the nature of the injury.
 - As much of the exposure history as was feasible to determine in the time allowed.
 - Name and phone number of the medical facility to which the victim(s) has/have been taken.
 - Name(s) of the involved Tetra Tech NUS, Inc. employee(s).
 - Name and phone number of an informed site officer who will be responsible for further investigations.
 - Fax appropriate information to WorkCare at (714) 456-2154.
- Contact Corporate Health and Safety Department (Matt Soltis) and Human Resources Department (Marilyn Duffy) at (412) 921-7090.

As data is gathered and the scenario becomes more clearly defined, this information should be forwarded to WorkCare.

WorkCare will compile the results of data and provide a summary report of the incident. A copy of this report will be placed in each victim's medical file in addition to being distributed to appropriately designated company officials.

Each involved worker will receive a letter describing the incident but deleting any personal or individual comments. A personalized letter describing the individual findings/results will accompany this generalized summary. A copy of the personal letter will be filed in the continuing medical file maintained by WorkCare.

**FIGURE 2-3 (continued)
WORKCARE
POTENTIAL EXPOSURE REPORT**

Name: _____ Date of Exposure: _____
 Social Security No.: _____ Age: _____ Sex: _____
 Client Contact: _____ Phone No.: _____
 Company Name: _____

I. Exposing Agent

Name of Product or Chemicals (if known): _____

Characteristics (if the name is not known)

Solid Liquid Gas Fume Mist Vapor

II. Dose Determinants

What was individual doing? _____

How long did individual work in area before signs/symptoms developed? _____

Was protective gear being used? If yes, what was the PPE? _____

Was their skin contact? _____

Was the exposing agent inhaled? _____

Were other persons exposed? If yes, did they experience symptoms? _____

III. Signs and Symptoms (check off appropriate symptoms)

Immediately With Exposure:

Burning of eyes, nose, or throat	Chest Tightness / Pressure
Tearing	Nausea / Vomiting
Headache	Dizziness
Cough	Weakness
Shortness of Breath	

Delayed Symptoms:

Weakness	Loss of Appetite
Nausea / Vomiting	Abdominal Pain
Shortness of Breath	Headache
Cough	Numbness / Tingling

IV. Present Status of Symptoms (check off appropriate symptoms)

Burning of eyes, nose, or throat	Nausea / Vomiting
Tearing	Dizziness
Headache	Weakness
Cough	Loss of Appetite
Shortness of Breath	Abdominal Pain
Chest Tightness / Pressure	Numbness / Tingling
Cyanosis	

Have symptoms: (please check off appropriate response and give duration of symptoms)

Improved: _____ Worsened: _____ Remained Unchanged: _____

V. Treatment of Symptoms (check off appropriate response)

None: _____ Self-Medicating: _____ Physician Treated: _____

2.10 INJURY/ILLNESS REPORTING

If any Tt personnel are injured or develop an illness as a result of working on site, the Tt "Incident Report Form" (Attachment II) must be followed. Following this procedure is necessary for documenting of the information obtained at the time of the incident.

Any pertinent information regarding allergies to medications or other special conditions will be provided to medical services personnel. This information is listed on Medical Data Sheets filed onsite. If an exposure to hazardous materials has occurred, provide information on the chemical, physical, and toxicological properties of the subject chemical(s) to medical service personnel.

3.0 SITE BACKGROUND

3.1 SITE HISTORY

NSWC Crane is located in Crane, Indiana approximately 75 miles southwest of Indianapolis and 71 miles northwest of Louisville, Kentucky. The facility encompasses approximately 100 square miles (64,463 acres) in Daviess, Greene, Lawrence, and Martin Counties. It is located in a rural, sparsely populated area. The acreage surrounding the base is either wooded or farmed land. The facility, originally called Naval Ammunition Depot (NAD) Burns City, was opened in 1941 to serve as an inland ammunition production and storage center. The Depot's name was changed to NAD Crane in 1943. Today NSWC Crane's mission is to "provide quality and responsive engineering, technical and material support to the Fleet for combat subsystems, equipment and components, microelectronic technology, microwave components, electronic warfare, acoustic sensors tests, engineering pyrotechnics, small arms, electronic module test and system command." Under the Single Service Management Program, a segment of the Center's mission is to provide support (including environmental protection) to the Crane Army Ammunition Activity (CAAA). The Army is tasked with the production and renovation of conventional ammunition and related items, the performance of manufacturing, engineering, and product quality assurance to support production; and the storage, shipment, demilitarization, and disposal of conventional ammunition and related components. Because of the nature of the Army's operations, CAAA contributes significant financial support for the environmental program through an Inter-Service Support Agreement.

3.2 SWMU 13-MINE FILL B

This HASP covers the field work being conducted at SWMU 13. Facilities at Mine Fill B can be divided into two halves in which identical activities took place. Operations at Mine Fill B began in December 1941. Mine Fill B has historically been used to manufacture mines, depth charges, rocket heads, aerial bombs, and projectiles. Production of explosive ordnance occurred at Mine Fill B from 1941 until 1973. Since 1973, the facilities at Mine Fill B have been used for renovation of ordnance and equipment.

Mine Fills A and B are nearly identical units that were used for the production of large mines, depth charges, rocket heads, aerial bombs, and projectiles. In the past, explosives powders discharged from roof vents, accumulated on building roofs, and were washed down to the ground, resulting in the contamination of soils. Wastewater containing explosives were previously discharged into ditches. An interim removal action was conducted in which explosives-contaminated soils were removed for biological treatment of explosives. Treated soils were then placed onto the areas from which the contaminated soils were removed.

4.0 SCOPE OF WORK

This section describes the project tasks that will be performed at NSWC Crane – SWMU 13 by TetraTech. The planned activities involved in this effort are presented in detail in the Work Plan developed for the project. If new tasks are to be performed at the site this section will be modified accordingly.

Specific tasks to be conducted at SWMU 13 include the following:

Phase 1:

- Mobilization and demobilization
- Soil and sediment sampling:
 - Drainage trench sediment sampling
 - Catch basin sampling
 - Floor drain sampling (including heavy lifting of steel grate covers)
 - Soil and sediment sampling via hand augering, collection via a disposable plastic trowel or stainless-steel bowl and spoon. Sediment samples may be collected using an extension device for settling/catch basin.
- Decontamination of personnel and sampling equipment
- Investigative Derived Waste (IDW) management

Phase 2:

- Mobilization and demobilization
- Soil and sediment sampling following excavation
- Decontamination of personnel and sampling equipment
- Investigative Derived Waste (IDW) management

For more detailed description of the associated tasks refer to the individual Work Plans for each phase. If additional tasks are determined to be necessary, this HASP will need to be amended and a hazard evaluation of the additional tasks performed.

5.0 IDENTIFYING AND COMMUNICATING TASK-SPECIFIC HAZARDS AND GENERAL SAFE WORK PRACTICES

The purpose of this section is to identify the anticipated hazards and appropriate hazard prevention/hazard control measures that are to be observed for each planned task or operation. These topics have been summarized for each planned task through the use of task-specific Safe Work Permits (SWPs), which are to be reviewed in the field by the SSO with all task participants prior to initiating any task. Additionally, potential hazard and hazard control matters that are relevant but are not necessarily task-specific are addressed in the following portions of this section.

Section 6.0 presents additional information on hazard anticipation, recognition, and control relevant to the planned field activities.

5.1 GENERAL SAFE WORK PRACTICES

In addition to the task-specific work practices and restrictions identified in the SWPs attached to this HASP, the following general safe work practices are to be followed when conducting work on-site.

- Eating, drinking, chewing gum or tobacco, taking medication, or smoking in contaminated or potentially contaminated areas or where the possibility for the transfer of contamination exists is prohibited.
- Wash hands and face thoroughly upon leaving a contaminated or suspected contaminated area. If a source of potable water is not available at the work site that can be used for hands-washing, the use of waterless hands cleaning products will be used, followed by actual hands-washing as soon as practicable upon exiting the site.
- Avoid contact with potentially contaminated substances including puddles, pools, mud, or other such areas. Avoid, kneeling on the ground or leaning or sitting on equipment. Keep monitoring equipment away from potentially contaminated surfaces.
- Plan and mark entrance, exit, and emergency evacuation routes.
- Rehearse unfamiliar operations prior to implementation.
- Buddies should maintain visual contact with each other and with other on-site team members by remaining in close proximity to assist each other in case of emergency.

- Establish appropriate safety zones including support, contamination reduction, and exclusion zones.
- Minimize the number of personnel and equipment in contaminated areas (such as the exclusion zone). Non-essential vehicles and equipment should remain within the support zone.
- Establish appropriate decontamination procedures for leaving the site.
- Immediately report all injuries, illnesses, and unsafe conditions, practices, and equipment to the SSO.
- Observe co-workers for signs of toxic exposure and heat or cold stress.
- Inform co-workers of potential symptoms of illness, such as headaches, dizziness, nausea, or blurred vision.

6.0 HAZARD ASSESSMENT AND CONTROLS

This section provides reference information regarding the chemical and physical hazards which may be associated with activities that are to be conducted as part of the scope of work.

6.1 CHEMICAL HAZARDS

Based on historical information, the predominant chemical substances assumed to be encountered at SWMU 13 are polycarbonated biphenyls (PCBs). However, based on previous site investigations, in addition to PCBs, other contaminants have also been detected including metals, volatile organic compounds (VOCs), and semi-volatile organic compounds (SVOCs) in surface soils, sediments, and groundwater. Based on an evaluation of these data PCB, VOC, and SVOC concentrations do not exceed ACGIH TLV or the OSHA PEL occupational exposure limits (OELs). From a worst-case scenario, only metal concentrations immediately above a captured air phase above contaminated soil (such as in the head space of a sample jar) could reach concentrations that exceed the ACGIH TLV or the OSHA PEL values. Table 6-1 shows the worst-case scenario concentrations of metals in comparison to the amount of dust-in-air that would have to be generated before the OEL would be reached.

**TABLE 6-1
COMPARISON OF WORST-CASE CHEMICAL CONCENTRATIONS
WITH CURRENT OCCUPATIONAL EXPOSURE LIMITS**

Contaminant of Concern	Highest Concentration Previously Detected in Soils (mg/kg)	Amount of Dust-in-Air that would have to be generated before PEL/TLV would be reached (mg/m ³)	Current OSHA PEL And ACGIH TLV
Particulates			
Lead	521	35.82	OSHA & ACGIH: 0.05 mg/m ³ , TWA ₈
Arsenic	58	260.42	OSHA & ACGIH: 0.01 mg/m ³ , TWA ₈
Iron (dusts)	2,999	62.19	ACGIH (salts, soluble) 5 mg/m ³ , TWA ₈
Aluminum	30,500	40.98	OSHA: 5 mg/m ³ , (resp) ACGIH: 10 mg/m ³ , TWA ₈
Cobalt	107	217.39	OSHA: 0.1 mg/m ³ , ACGIH: 0.02 mg/m ³ , TWA ₈

Table Notes:

TWA₈: Average air concentration over an 8-hour work period that is not to be exceeded

STEL: Concentration in air that is not to be exceeded based on 15 minutes exposure time

mg/kg: milligrams per kilogram

mg/m³: milligrams per cubic meter

6.1.1 Metal Properties and Exposure

Heavy metals are chemical elements with a specific gravity that is at least 5 times the specific gravity of water. Heavy metals become toxic when they are not metabolized by the body and accumulate in the soft tissues. Metal toxicity usually occurs from a sudden or unexpected exposure to a high level of the heavy metal (e.g., from careless handling, inadequate safety precautions, or an accidental spill or release of toxic material). Symptoms of metal toxicity include damaged or reduced mental and central nervous function, lower energy levels, and damage to blood composition, lungs, kidneys, liver, and other vital organs. Long-term exposure may result in slowly progressing physical, muscular, and neurological degenerative processes that mimic Alzheimer's disease, Parkinson's disease, muscular dystrophy, and multiple sclerosis.

6.1.2 PCB Properties and Exposures

Polychlorinated biphenyls are mixtures of up to 209 individual chlorinated compounds (known as congeners). There are no known natural sources of PCBs. PCBs are either oily liquids or solids that are colorless to light yellow. Some PCBs can exist as a vapor in air. PCBs have no known smell or taste. Many commercial PCB mixtures are known in the U.S. by the trade name Aroclor.

PCBs have been used as coolants and lubricants in transformers, capacitors, and other electrical equipment because they don't burn easily and are good insulators. The manufacture of PCBs was stopped in the U.S. in 1977 because of evidence they build up in the environment and can cause harmful health effects. Products made before 1977 that may contain PCBs include old fluorescent lighting fixtures and electrical devices containing PCB capacitors, and old microscope and hydraulic oils.

The most commonly observed health effects in people exposed to large amounts of PCBs are skin conditions such as acne and rashes. Studies in exposed workers have shown changes in blood and urine that may indicate liver damage.

6.1.3 VOC/SVOC Properties and Exposures

A majority VOC/SVOCs are related to chlorinated solvents and associated degradation products, paint thinners, dry cleaning solvents, constituents of petroleum fuels (e.g. gasoline and natural gas), and crude oil tanking.

VOC/SVOCs generally express symptoms including:

- Irritating at all points of contact. Chronic or elevated concentrations directly contacting the skin may result in dermatitis.
- Inhalation of high concentrations (not anticipated in an outdoor environment) can result in central nervous system effects including dizziness, blurred vision, overexcitement, narcotic effects, and unconsciousness. Systemic effects through inhalation can also result in altered (erratic) heart beat and possible cardiac arrest.

6.1.4 Potential Routes of Exposure

Inhalation: Based on the data from previous investigations at this worksite, worker exposure to airborne concentrations of dust containing metals that could represent a health concern is considered to be possible. Although it is not probable that the amount of dust-in-air that would have to be generated to reach the OEL is very unlikely to be reached, unfortunately it is below the visible range of the naked eye (greater than 2.5 mg/m³). Therefore, recognizing that the soil/sediment conditions may present a health concern, airborne particulate/dust monitors will be used to monitor the breathing zone. Instruments to be used and action levels are discussed in Section 7.0. In addition, if dust is found to be generated in amounts of concern, workers will use area wetting techniques during dust-generating activities (i.e., hand-augering, excavation, etc) to minimize dust generation. However, it is important to keep in mind the following:

- the planned work area is outdoors, with ample natural ventilation that will reduce any airborne particulates through dilution and dispersion,
- the values used in this evaluation were the highest concentration previously detected in the soil.

As a result of these factors, it is very unlikely that workers participating in this activity will encounter any airborne concentrations of the above metals that would represent an occupational exposure concern. Examples of onsite practices that are to be observed that will protect workers from exposure via inhalation include:

- Proper PPE use and hygiene care
- Proper airborne monitoring and use of area wetting techniques, when necessary

Ingestion and Skin Contact: Potential exposure concerns to these Contaminants of Concern (COC) may also occur through ingesting or coming into direct skin contact with contaminated soils. However, the likelihood of worker exposure concerns through these two routes are considered very unlikely, provided that workers follow good personal hygiene and standard good sample collection/sample handling practices, and wear appropriate PPE as specified in this HASP. Examples of onsite practices that are to be observed that will protect workers from exposure via ingestion or skin contact include the following:

- No hand-to-mouth activities on site (eating, drinking, smoking, etc.)
- Washing hands upon leaving the work area and prior to performing any hand to mouth activities
- Wearing proper gloves whenever handling potentially-contaminated media, including soils, hand tools, and sample containers.

6.2 PHYSICAL HAZARDS

The following is a list of physical hazards that may be encountered at the site or may be present during the performance of site activities.

- Injury due to overexertion from operating the hand auger
- Slip, trips, and falls
- Contact with underground utilities (electric lines, gas lines, water lines, etc.)
- Strain/muscle pulls from heavy lifting
- Ambient temperature extremes (heat/cold stress)
- Pinch/compression points
- Vehicular and equipment traffic
- Inclement weather
- Heavy equipment hazards (pinch/compression points, rotating equipment, etc.).
- Noise in excess of 85 decibels (dBA)
- Natural hazards (snakes, ticks, poisonous plants, etc.)

These hazards are discussed further below, and are presented relative to each task in the task-specific Safe Work Permits.

6.2.1 Slips, Trips, and Falls

During various site activities there is a potential for slip, trip, and fall hazards associated with wet, steep, or unstable work surfaces. To minimize hazards of this nature, personnel required to work in and along areas prone to these types of hazards will be required to exercise caution, and use appropriate precautions (restrict access, guardrails, life lines and/or safety harnesses) and other means suitable for the task at hand. Site activities will be performed using the buddy system.

6.2.2 Contact with Underground Utilities

Underground utilities such as pressurized lines, water lines, telephone lines, buried utility lines, and high voltage power lines are known to be present throughout the facility. Clearance of underground utilities for

will be conducted by the Navy construction contractor. Please refer to the contractors Standard Operating Procedure (SOP) for more information.

6.2.3 Strain/Muscle Pulls from Heavy Lifting

During execution of planned activities there is some potential for strains, sprains, and/or muscle pulls due to the physical demands and nature of this site work. To avoid injury during lifting tasks personnel are to lift with the force of the load carried by their legs and not their backs. When lifting or handling heavy material or equipment use an appropriate number of personnel. Keep the work area free from ground clutter to avoid unnecessary twisting or sudden movements while handling loads.

6.2.4 Ambient temperature extremes (heat/cold stress)

Because of the geographical location of the planned work, the likely seasonal weather conditions that will exist during the planned schedule, and the physical exertion that can be anticipated with some of the planned tasks, it will be necessary for the field team to be aware of the signs and symptoms and the measures appropriate to prevent cold stress. This is addressed in detail in section 4.0 of the Tt Health and Safety Guidance Manual, which the SSO is responsible for reviewing and implementing as appropriate on this project.

In general, four factors contribute to cold stress: cold temperatures, high or cold wind, dampness and cold water. A cold environment forces the body to work harder to maintain its temperature. Cold air, water, and snow all draw heat from the body. Wind chill is the combination of air temperature and wind speed. Early signs of cold stress include shivering, lack of coordination, stumbling, fumbling hands, slurred speech, memory loss, and pale, cold skin, which may be followed by the inability to walk or stand, confusion, severe muscle stiffness or unconsciousness, and eventually death.

To prevent cold stress, the following preventive measures are to be implemented by the SSO:

- When possible, schedule the tasks so that they are performed during warmer periods of the day such as late afternoon
- Educate the field staff in cold stress signs and symptoms so that they can monitor themselves and their co-workers
- Schedule frequent breaks during the coldest parts of the day (such as a few minutes each hour). Breaks should be in warm areas, and in a location where workers can remove PPE, wash their hands, drink fluids and warm themselves.

- Drinking fluids should be non-caffeinated. Sports-drinks with electrolytes are acceptable provided that they do not contain alcohol. Water is also acceptable.

For more information on cold stress recognition and prevention, consult Section 4.0 of the Tt Health and Safety Guidance Manual.

6.2.5 Pinch/Compression Points

Handling of tools, machinery, and other equipment on site may expose personnel to pinch/compression point hazards during normal work activities. Where applicable, equipment will have intact and functional guarding to prevent personnel contact with hazards. Personnel will exercise caution when working around pinch/compression points, using additional tools or devices (e.g., pinch bars) to assist in completing activities.

6.2.6 Inclement Weather

Project tasks under this Scope of Work will be performed outdoors. As a result, inclement weather may be encountered. In the event that adverse weather (electrical storms, tornadoes, etc.) conditions arise, the FOL and/or the SSO will be responsible for temporarily suspending or terminating activities until hazardous conditions no longer exist.

6.2.7 Heavy Equipment Hazards (Pinch/compression points, rotating equipment, etc.)

Often the hazards associated with drilling operations are the most dangerous to be encountered during site activities. The SSO will thoroughly discuss safe drilling procedures during the pre-activities training session. All site personnel will sign the form in Figure 8-2 documenting that they received the training and understand the procedures.

6.2.8 Noise in excess of 85 dBA

Some sampling procedures/heavy equipment operation causes noise in excess of 85 decibels. When sampling at the drilling equipment or utilizing heavy equipment that causes noise, use hearing protection. The use of hearing protection outside of 25 feet from the heavy equipment should be incorporated under the following condition: If you have to raise your voice to talk to someone who is within 2 feet of your location, hearing protection must be worn.

6.2.9 Flying Projectiles

The use of some heavy equipment and power washers carry a risk of flying projectiles. Use eye and face protective equipment when operating such equipment. All other personnel must be restricted from the area.

6.3 NATURAL HAZARDS

Insect/animal bites and stings, poisonous plants, inclement weather, and other natural hazards must be considered given the location of activities to be conducted. In general, avoidance of areas of known infestation or nesting will be the preferred exposure control. Use of additional PPE with joints (ankles and wrists) taped, such as long pants tucked into boots or coveralls, is also recommended. Specific discussion on principle hazards of concern follows:

6.3.1 Insect/Animal Bites and Stings

Ticks, insect/animal bites, and stings are difficult to control given the climate and environmental setting of NSW Crane. However, in an effort to minimize this hazard the following control measures will be enacted where possible.

- Commercially available bug sprays and repellents will be used whenever possible – Toxicity Characteristics Leaching Procedure (TCLP) pesticides include chlordane, endrin, lindane, methoxychlor, toxathene and heptachlor. Commercially available repellants may be used providing these components are not part of the analyte listing. Products such as DEET should not be applied directly to the skin due to potential irritation. This product, when permitted for use, should be applied over clothing articles.
- Loose fitting light colored clothing with long sleeves, where possible should be worn. This will also aid in insect control by providing a barrier between the field person and the insects and to provide easy recognition of crawling insects against the lighter background. Pant legs should be secured to the work-boots using duct tape to prevent access by ticks. Mosquito nets are also recommended for use when commercially available repellents are not permitted.
- Clothing/limited body checks for ticks and other crawling insects should be conducted upon exiting heavily vegetated areas. Workers should perform a more detailed check of themselves when showering in the evening. Ticks prefer moist areas of the body (arm-pits, genitals, etc.) and will migrate to those locations.

- The FOL/SSO will preview all access routes and work areas in an effort to identify physical hazards including nesting areas in and around the work sites. These areas will be flagged and communicated to all site personnel.
- The FOL/SSO must determine if site personnel (through their Medical Data Sheets), suffer allergic reactions to bee and other insect stings and bites. When personnel are on-site who are predisposed to these conditions, the FOL/SSO will take the appropriate measures to secure physician directed antidotes.

It is important that any allergies be reported on the Medical Data Sheets and to the SSO.

Tick and Mosquito Transmitted Illnesses and Diseases

Ticks and mosquitoes have been identified in the transmission of diseases including Lyme's disease and malaria. Warm months (Spring through early Fall) are the most predominant time for this hazard. However, due to the climate and environmental setting of NSWC Crane, this hazard may occur year round. Information concerning transmitted Lyme's Disease including recognition, evaluation, tick removal, and control is provided in Section 4.0 of the Health and Safety Guidance Manual.

Malaria may occur when a mosquito or other infected insect sucks blood from an infected person, and the insect becomes the carrier to infect other hosts. The parasite reproduces within the mosquito, and is then passed on to another person through the biting action. Acute symptoms include chills accompanied by fever and general flu like symptoms. This generally terminates in a sweating stage. These symptoms may recur every 48 to 72 hours.

Conditions such as this should not be taken for granted and should be reported to the SSO immediately.

Snakes and Other Wild Animal Encounters

Indigenous animals including snakes (poisonous and non-poisonous varieties), raccoons, and other animals native to the region may have to be contended with. These animals may be encountered if work locations encroach on nesting or territories claimed by these animals.

To avoid the obvious hazards conveyed as part of a direct encounter, the following actions will be taken to minimize impact on the field crews and/or operations.

- FOL/SSO will preview access routes and work locations for nesting areas or signs of animal activities (tracks, foraging areas, etc.). All identified suspect areas will be communicated to the field crews. To

the extent possible, suspected nesting/habitat areas are to be avoided. Otherwise, snake chaps will be required as a precaution.

6.3.2 Poisonous Plants

Various plants that can cause allergic reactions may be encountered during fieldwork. These include, but may not be limited to, poison ivy, poison oak, and poison sumac. Contact of field personnel with previous plants may occur when clearing vegetation for access to work areas, or through movement through these plants. An irritating, allergic reaction can occur when direct contact is achieved between the plant and the bare skin of a field person, or the plant and some piece of equipment or clothing article that then later comes in contact with the bare skin of a field person. Oils are transferred from the plant to exposed skin, clothing, or piece of equipment. The degree of the irritating, allergic reaction can vary significantly from one person to the next.

Protective measures to control and minimize the effects of this hazard may include, but not limited to, the following:

- Identify plants for field personnel.
 - Poison Ivy - Characterized by climbing vines, three leaf configuration ovate to elliptical in shape, deep green leaves with a reddish tint, greenish flowers, and white berries.
 - Poison Sumac - Characterized as a tall bush of the sumac family bearing compound leaves (7 to 13 entire leaflets), branched from a central axis, drooping, with auxiliary clusters of white fruit.
- NOTE:** These white fruits and berries may exist only during pubescent stages.
- Poison oak - Characterized as similar to poison ivy consisting of a shrub, stems erect, 0.3 to 2.0 meters (1 to 13 feet) tall, leaflets consist of broad thick lobes coarsely serrated configuration, denser at the base, less so than the top.
- Protective measures may include wearing disposable garments such as Tyvek when clearing brush. These may be carefully removed and disposed of along with any oils accumulated from the plants.
 - Personal Hygiene - The oils obtained from the plants will only elicit an allergic response when the person's bare skin layer is contacted. This can be aggravated through skin pores open when perspiring, or through breaks in the skin such as cuts, nicks, scratches, etc... This can also be

accomplished when using excessively hot water for cleaning the skin, which also causes pores to open. Prior to break time, lunchtime, etc. personnel should wash with cool water and soap to remove as much of the oils as possible. In heavily vegetated areas of these plants, additional measures including barrier creams and blocks may be used to prevent the oils from accessing and penetrating the skin.

All of these plants present an airborne sensitization hazard when burned. This is not to occur as part of this scope of work and therefore will not be addressed.

7.0 AIR MONITORING

Metals, in the form of dust particulates, may be present in significant concentrations during intrusive activities (i.e., sampling during excavation) to present an inhalation hazard. As a precautionary measure to assure that such exposures are avoided and documented, continuous monitoring will be conducted during the intrusive site activities (i.e., sampling during excavation, etc.) using an airborne particulate/dust monitor, the worker's sense of smell, and perception of irritation.

7.1 INSTRUMENTS AND USE

The airborne particulate/dust monitor will be used **only during intrusive activities** primarily to monitor source points and worker breathing zone areas, while observing instrument action levels. The SSO shall obtain and document the daily background (BG) reading at an upwind, unaffected area and observe for readings above that BG level. The SSO shall monitor source areas (e.g., above collected samples and confined areas, etc.) for the presence of any reading above the daily-established BG level. If elevated readings are observed, the SSO shall monitor the workers breathing zone (BZ) areas with the airborne particulate/dust monitor. If the appropriate instrument Action Level is exceeded (see below), the following process will be followed:

- The SSO shall order all personnel to stop work and retreat upwind to a safe, unaffected area, where they will remain until further directed by the SSO.
- The SSO shall allow at least 5 minutes to pass so that the work area can ventilate, and will then re-approach the work area while continuously monitoring the BZ areas.
- Only when BG levels are regained in BZ areas will work be permitted to resume.
- If BG levels are not regained, the SSO will contact the HSM for additional direction.

7.1.1 Instrument Action Levels:

Air monitoring shall be conducted continuously **during intrusive site operations**. Additionally, monitoring will be initiated at any potential source emissions then moved to the worker's breathing zone whenever source readings indicate concentrations greater than background levels.

To detect the presence of airborne particulates and dust an airborne particulate/dust monitor will be used **only during intrusive activities. Workers will use area wetting techniques or evacuate the area if levels are greater than 3.0 mg/m³.** Workers shall remain in an unaffected area until readings subside.

Once elevated readings subside, workers may continue at the present level of protection if work is allowed to continue per the SSO. If sustained readings are observed, contact the PHSO for additional guidance on air monitoring procedures and levels of protection.

7.2 INSTRUMENT MAINTENANCE AND CALIBRATION

Hazard monitoring instruments will be maintained and pre-field calibrated by the Tt Equipment Manager. Operational checks and field calibration will be performed on all instruments each day prior to their use. Field calibration will be performed on instruments according to manufacturer's recommendations. These operational checks and calibration efforts will be performed in a manner that complies with the employees health and safety training, the manufacturer's recommendations, and with the applicable manufacturer standard operating procedure (copies of which can be found in the Health & Safety Guidance Manual which will be maintained on site for reference). All calibration efforts must be documented. Figure 7-1 is provided for documenting these calibration efforts. This information may instead be recorded in a field operations logbook, provided that all of the information specified in Figure 7-1 is recorded. This required information includes the following:

- Date calibration was performed
- Individual calibrating the instrument
- Instrument name, model, and serial number
- Any relevant instrument settings and resultant readings (before and after) calibration
- Identification of the calibration standard (lot no., source concentration, supplier)
- Any relevant comments or remarks

7.3 DOCUMENTING INSTRUMENT READINGS

The SHSO is responsible for ensuring that air monitoring instruments are used in accordance with the specifications of this HASP and with manufacturer's specifications/recommendations. In addition, the SHSO is also responsible for ensuring that all instrument use is documented. This requirement can be satisfied either by recording instrument readings on pre-printed sampling log sheets or in a field log book. **This includes the requirement for documenting instrument readings that indicate no elevated readings above noted daily background levels (i.e., no-exposure readings).** At a minimum, the SHSO must document the following information for each use of an air monitoring device:

- Date, time, and duration of the reading
- Site location where the reading was obtained
- Instrument used
- Personnel present at the area where the reading was noted
- Other conditions that are considered relevant to the SHSO (such as weather conditions, possible instrument interferences, etc.)

8.0 TRAINING/MEDICAL SURVEILLANCE REQUIREMENTS

8.1 INTRODUCTORY/REFRESHER/SUPERVISORY TRAINING

This section is included to specify health and safety training and medical surveillance requirements for Tt personnel participating in on site activities. Tt personnel must complete 40 hours of introductory hazardous waste site training prior to performing work at NSWC Crane. Tt personnel who have had introductory training more than 12 months prior to site work must have completed 8 hours of refresher training within the past 12 months before being cleared for site work. In addition, 8-hour supervisory training in accordance with 29 CFR 1910.120(e)(4) will be required for site supervisory personnel.

Documentation of Tt introductory, supervisory, and refresher training as well as site-specific training will be maintained at the site. Copies of certificates or other official documentation will be used to fulfill this requirement.

8.2 SITE-SPECIFIC TRAINING

Tt SSO will provide site-specific training to Tt employees who will perform work on this project. Figure 8-1 will be used to document the provision and content of the project-specific and associated training. Site personnel will be required to sign this form prior to commencement of site activities. This training documentation will be employed to identify personnel who through record review and attendance of the site-specific training are cleared for participation in site activities. This document shall be maintained at the site to identify and maintain an active list of trained and cleared site personnel.

The Tt SSO will also conduct a pre-activities training session prior to initiating site work. This will consist of a brief meeting at the beginning of each day to discuss operations planned for that day, and a review of the appropriate Safe Work Permits with the planned task participants. A short meeting may also be held at the end of the day to discuss the operations completed and any problems encountered.

8.3 MEDICAL SURVEILLANCE

Tt personnel participating in project field activities will have had a physical examination meeting the requirements of Tt's medical surveillance program. Documentation for medical clearances will be maintained in the Tt Pittsburgh office and made available, as necessary, and will be documented using Figure 8-1 for every employee participating in onsite work activities at this site.

Each field team member, including visitors, entering the exclusion zone(s) shall be required to complete and submit a copy of the Medical Data Sheet (see Attachment I of this HASP). This shall be provided to

the SSO, prior to participating in site activities. The purpose of this document is to provide site personnel and emergency responders with additional information that may be necessary in order to administer medical attention.

8.4 SITE VISITORS

Site visitors will be escorted and restricted from approaching any work areas where they could potentially be exposed to hazardous chemicals. If a visitor has authorization from the client and from the Tt Project Manager to approach our work areas, the FOL must assure that the visitor first provides documentation indicating that he/she/they have successfully completed the necessary OSHA introductory training, receive site-specific training from the SSO, and that they have been physically cleared to work on hazardous waste sites.

9.0 SITE CONTROL

This section outlines the means by which Tt will delineate work zones and use these work zones in conjunction with decontamination procedures to prevent the spread of contaminants into previously unaffected areas of the site. It is anticipated that a three-zone approach will be used during work at this site. This approach will be comprised of an exclusion zone, a contamination reduction zone, and a support zone. It is also anticipated that this approach will control access to site work areas, restricting access by the general public, minimizing the potential for the spread of contaminants, and protecting individuals who are not cleared to enter work areas.

9.1 EXCLUSION ZONE

The exclusion zone will be considered the areas of the site of known or suspected contamination. It is anticipated that the areas around excavation will have the potential for contaminants brought to the surface. These areas will be marked and personnel will maintain safe distances. Once intrusive activities have been completed and surface contamination has been removed, the potential for exposure is again diminished and the area can then be reclassified as part of the contamination reduction zone. Therefore, the exclusion zones for this project will be limited to those areas of the site where active work (excavation work areas and sample collection) is being performed plus a designated area of at least 25 feet surrounding the work area. Exclusion zones will be delineated as deemed appropriate by the FOL, through means such as erecting visibility fencing, barrier tape, cones, and/or postings to inform and direct personnel.

9.1.1 Exclusion Zone Clearance

A pre-startup site visit will be conducted by members of the identified field team in an effort to identify proposed subsurface investigation locations, conduct utility clearances, and provide upfront notices concerning scheduled activities within the facility.

Subsurface activities will proceed only when utility clearance has been obtained. In the event that a utility is struck during a subsurface investigative activity, the emergency numbers provided in Section 2.0, Table 2-1, will be notified.

9.2 CONTAMINATION REDUCTION ZONE

The contamination reduction zone (CRZ) will be a buffer area between the exclusion zone and any area of the site where contamination is not suspected. This area will also serve as a focal point in supporting exclusion zone activities. This area will be delineated using barrier tape, cones, and postings to inform and

direct facility personnel. Decontamination will be conducted at a central location. Equipment potentially contaminated will be bagged and taken to that location for decontamination.

9.3 SUPPORT ZONE

The support zone for this project will include a staging area where site vehicles will be parked, equipment will be unloaded, and where food and drink containers will be maintained. The support zones will be established at areas of the site where away from potential exposure to site contaminants during normal working conditions or foreseeable emergencies.

9.4 SAFE WORK PERMITS

All work conducted in support of this project will be performed using Safe Work Permits (SWPs) to guide and direct field crews on a task by task basis. An example of the SWP to be used is provided in Figure 9-1. Partially completed SWPs for the work to be performed are included as Attachment III of this HASP. These permits were completed to the extent possible as part of the development of this HASP. It is the SSO's responsibility to finalize and complete all blank portions of the SWPs based on current, existing conditions the day the task is to be performed, and then review that completed permit with all task participants as part of a pre-task tail gate briefing session. This will ensure that site-specific considerations and changing conditions are appropriately incorporated into the SWP, provide the SSO with a structured format for conducting the tail gate sessions, as well will also give personnel an opportunity to ask questions and make suggestions. All SWPs require the signature of the FOL or SSO.

9.5 SITE VISITORS

Site visitors for the purpose of this document are identified as representing the following groups of individuals:

- Personnel invited to observe or participate in operations by Tt
- Regulatory personnel (i.e., DoD, EPA, OSHA)
- Property Owners
- Authorized Navy Personnel
- Other authorized visitors

Non-Tt personnel working on this project are required to gain initial access to the base by coordinating with the Tt FOL or designee and following established base access procedures.

9.6 SITE SECURITY

Site security will be accomplished using Tt field personnel. Tt will retain complete control over active operational areas. As this activity takes place at a Navy facility open to public access, the first line of security will take place using exclusive zone barriers, site work permits, and any existing barriers at the sites to restrict the general public. The second line of security will take place at the work site referring interested parties to the Base Contact. The Base Contact will serve as a focal point for base personnel, interested parties, and serve as the final line of security and the primary enforcement contact.

9.7 BUDDY SYSTEM

Personnel engaged in on site activities will practice the "buddy system" to ensure the safety of personnel involved in this operation.

9.8 MATERIAL SAFETY DATA SHEET (MSDS) REQUIREMENTS

Tt and subcontractor personnel will provide MSDSs for chemicals brought on site. The contents of these documents will be reviewed by the SSO with the user(s) of the chemical substances prior to any actual use or application of the substances on site. A chemical inventory of the chemicals used on site will be developed using the Health and Safety Guidance Manual. The MSDSs will then be maintained in a central location (i.e., temporary office) and will be available for anyone to review upon request.

9.9 COMMUNICATION

As personnel will be working in proximity to one another during field activities, a supported means of communication between field crew members will not be necessary.

External communication will be accomplished by using the telephones at predetermined and approved locations. External communication will primarily be used for the purpose of resource and emergency resource communications. Prior to the commencement of activities at the NSWCC Crane, the FOL will determine and arrange for telephone communications.

**FIGURE 9-1
SAFE WORK PERMIT**

Permit No. _____ Date: _____ Time: From _____ to _____

I. Work limited to the following (description, area, equipment used): _____

II. Primary Hazards: Potential hazards associated with this task: _____

III. Field Crew: _____

IV. On-site Inspection conducted Yes No Initials of Inspector _____ Tt
Equipment Inspection required Yes No Initials of Inspector _____ Tt

V. Protective equipment required	Respiratory equipment required
Level D <input type="checkbox"/> Level B <input type="checkbox"/>	Yes <input type="checkbox"/> Specify on the reverse
Level C <input type="checkbox"/> Level A <input type="checkbox"/>	No <input type="checkbox"/>
Modifications/Exceptions: _____	

VI. Chemicals of Concern	Hazard Monitoring	Action Level(s)	Response Measures
_____	_____	_____	_____
_____	_____	_____	_____
Primary Route(s) of Exposure/Hazard: _____			

(Note to FOL and/or SHSO: Each item in Sections VII, VIII, and IX must be checked Yes, No, or NA)

VII. Additional Safety Equipment/Procedures

Hard-hat..... <input type="checkbox"/> Yes <input type="checkbox"/> No	Hearing Protection (Plugs/Muffs).... <input type="checkbox"/> Yes <input type="checkbox"/> No
Safety Glasses <input type="checkbox"/> Yes <input type="checkbox"/> No	Safety belt/harness <input type="checkbox"/> Yes <input type="checkbox"/> No
Chemical/splash goggles..... <input type="checkbox"/> Yes <input type="checkbox"/> No	Radio/Cellular Phone..... <input type="checkbox"/> Yes <input type="checkbox"/> No
Splash Shield..... <input type="checkbox"/> Yes <input type="checkbox"/> No	Barricades..... <input type="checkbox"/> Yes <input type="checkbox"/> No
Splash suits/coveralls <input type="checkbox"/> Yes <input type="checkbox"/> No	Gloves (Type –) <input type="checkbox"/> Yes <input type="checkbox"/> No
Impermeable apron..... <input type="checkbox"/> Yes <input type="checkbox"/> No	Work/rest regimen <input type="checkbox"/> Yes <input type="checkbox"/> No
Steel toe Work shoes or boots .. <input type="checkbox"/> Yes <input type="checkbox"/> No	Chemical Resistant Boot Covers <input type="checkbox"/> Yes <input type="checkbox"/> No
High Visibility vest..... <input type="checkbox"/> Yes <input type="checkbox"/> No	Tape up/use insect repellent <input type="checkbox"/> Yes <input type="checkbox"/> No
First Aid Kit <input type="checkbox"/> Yes <input type="checkbox"/> No	Fire Extinguisher..... <input type="checkbox"/> Yes <input type="checkbox"/> No
Safety Shower/Eyewash <input type="checkbox"/> Yes <input type="checkbox"/> No	Other..... <input type="checkbox"/> Yes <input type="checkbox"/> No

Modifications/Exceptions: _____

VIII. Site Preparation

Utility Locating and Excavation Clearance completed.....	Yes	No	NA
Vehicle and Foot Traffic Routes Established/Traffic Control Barricades/Signs in Place	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Physical Hazards Identified and Isolated (Splash and containment barriers).....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Emergency Equipment Staged (Spill control, fire extinguishers, first aid kits, etc.).....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

IX. Additional Permits required (Hot work, confined space entry, excavation etc.) Yes No
 If yes, SHSO to complete or contact Health Sciences, Pittsburgh Office (412)921-7090

X. Special instructions, precautions: _____

Permit Issued by: _____ Permit Accepted by: _____

10.0 SPILL CONTAINMENT PROGRAM

10.1 SCOPE AND APPLICATION

It is not anticipated that quantities of bulk potentially hazardous materials (greater than 55-gallons) will be handled during some of the site activities conducted as part of the scope of work (including IDW). It is also not anticipated that spillage of these materials would constitute a significant danger to human health or the environment. Further, it is possible that as the job progresses disposable PPE and other non-reusable items will be generated. As needed, 55 -gallon drums will be used to contain waste waters, IDW, and other unwanted items generated during investigatory activities. Any aqueous IDW will be transported to the sewer systems and discharged to the NSWC Industrial Sewer System. PPE will be disposed into trash dumpsters. Soil IDW will be left on-site.

10.2 POTENTIAL SPILL AREAS

Potential spill areas will be monitored in an ongoing attempt to prevent and control further potential contamination of the environment. Currently, there are various areas vulnerable to this hazard including the areas used for central staging and decontamination activities. Additionally, areas designated for handling, loading, and unloading of potentially contaminated soils, waters, and debris present limited potential for leaks or spills. It is anticipated that all IDW generated as a result of this scope of work will be disposed of on-site.

10.3 PERSONNEL TRAINING AND SPILL PREVENTION

Personnel will be instructed in the procedures for incipient spill prevention, containment, and collection of hazardous materials in the site-specific training. The FOL and the SSO will serve as the Spill Response Coordinators for this operation, should the need arise.

10.4 SPILL PREVENTION AND CONTAINMENT EQUIPMENT

The following represents the types of equipment that may be maintained at the staging area for the purpose of supporting this Spill Prevention/Containment Program.

- Sand, clean fill, vermiculite, or other noncombustible absorbent (oil-dry);
- Drums (55-gallon U.S. Department of Transportation DOT 1A1 or 1A2)
- Shovels, rakes, and brooms
- Labels

10.5 SPILL CONTROL PLAN

This section describes the procedures the Tt field crew members will employ upon the detection of a spill or leak.

- Notify the SSO or FOL immediately upon detection of a leak or spill. Activate emergency alerting procedures for that area to remove non-essential personnel.
- Employ the personal protective equipment stored at the staging area. Take immediate actions to stop the leak or spill by plugging or patching the container or raising the leak to the highest point in the vessel. Spread the absorbent material in the area of the spill, covering it completely.
- Transfer the material to a new vessel; collect and containerize the absorbent material. Label the new container appropriately. Await analyses for treatment and disposal options.
- Re-containerize spills, including 2-inch of top cover impacted by the spill. Await test results for treatment or disposal options.

It is not anticipated that a spill will occur that the field crew cannot handle. Should this occur, notification of the appropriate Emergency Response agencies will be carried out by the FOL or SSO in accordance with the procedures discussed in Section 2.0 of this HASP.

11.0 CONFINED-SPACE ENTRY

It is not anticipated, under the proposed scope of work, that confined space and permit-required confined space activities will be conducted. **Therefore, personnel under the provisions of this HASP are not allowed, under any circumstances, to enter confined spaces.** A confined space is defined as an area which has one or more of the following characteristics:

- Is large enough and so configured that an employee can bodily enter and perform assigned work.
- Has limited or restricted means for entry or exit (for example, tanks, manholes, sewers, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may have limited means of entry).
- Is not designed for continuous employee occupancy.

Additionally, a Permit-Required Confined Space must also have one or more of the following characteristics:

- Contains or has a potential to contain a hazardous atmosphere.
- Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly caving walls or by a floor that slopes downward and tapers to a smaller cross-section.
- Contains any other recognized, serious, safety or health hazard.

For further information on confined space, consult the Health and Safety Guidance Manual or call the PHSO. If confined space operations are to be performed as part of the scope of work, detailed procedures and training requirements will have to be addressed.

12.0 MATERIALS AND DOCUMENTATION

The FOL shall ensure the following materials/documents are taken to the project site and used when required.

- A complete copy of this HASP
- Health and Safety Guidance Manual
- Incident Reports
- Medical Data Sheets
- Material Safety Data Sheets for chemicals brought on site, including decontamination solutions, fuels, sample preservatives, calibration gases, etc.
- A full-size OSHA Job Safety and Health Poster (Attachment IV) (posted in the site trailer)
- Training/Medical Surveillance Documentation Form (Blank)
- First-Aid Supply Usage Form
- Emergency Reference Form (Section 2.0, extra copy for posting)
- Directions to the Hospital

12.1 MATERIALS TO BE POSTED AT THE SITE

The following documentation is to be posted or maintained at the site for quick reference purposes. In situations where posting these documents is not feasible (such as no office trailer), these documents should be separated and immediately accessible.

- **Chemical Inventory Listing (posted)** - This list represents all chemicals brought on-site, including decontamination solutions, sample preservations, fuel, etc. This list should be posted in a central area.
- **MSDSs (maintained)** - The MSDSs should also be in a central area accessible to all site personnel. These documents should match all the listings on the chemical inventory list for all substances employed on-site. It is acceptable to have these documents within a central folder and the chemical inventory as the table of contents.
- **The OSHA Job Safety & Health Protection Poster (posted)** - This poster should be conspicuously posted in places where notices to employees are normally posted, as directed by 29 CFR 1903.2 (a)(1). Each FOL shall ensure that this poster is not defaced, altered, or covered by other material. The law also states that reproductions or facsimiles of the poster shall be at least 8½ by 14 inches with 10 point type.

- **Site Clearance (maintained)** - This list is found within the training section of the HASP (Figure 8-1). This list identifies all site personnel, dates of training (including site-specific training), and medical surveillance. The list indicates not only clearance, but also status. If personnel do not meet these requirements, they do not enter the site while site personnel are engaged in activities.
- **Emergency Phone Numbers and Directions to the Hospital(s) (posted)** - This list of numbers and directions will be maintained at all phone communications points and in each site vehicle.
- **Medical Data Sheets/Cards (maintained)** - Medical Data Sheets will be filled out by on-site personnel and filed in a central location. The Medical Data Sheet will accompany any injury or illness requiring medical attention to the medical facility. A copy of this sheet or a wallet card will be given to all personnel to be carried on their person.
- **Personnel Monitoring (maintained)** - All results generated through personnel sampling (levels of airborne toxins, noise levels, etc.) will be posted to inform individuals of the results of that effort.
- **Placards and Labels (maintained)** - Where chemical inventories have been separated because of quantities and incompatibilities, these areas will be conspicuously marked using DOT placards and acceptable [Hazard Communication 29 CFR 1910.1200(f)] labels.

The purpose of maintaining or posting this information, as stated above, is to allow site personnel quick access. Variations concerning location and methods of presentation are acceptable providing the objective is accomplished.

13.0 ACRONYMS / ABBREVIATIONS

ACGIH	American Conference of Governmental and Industrial Hygienists
BG	Background
BZ	Breathing Zone
CAAA	Crane Army Ammunition Activity
CFR	Code of Federal Regulations
CIH	Certified Industrial Hygienist
CLEAN	Comprehensive Long-Term Environmental Action Navy
COC	Contaminants of Concern
CPR	Cardio Pulmonary Resuscitation
CSP	Certified Safety Professional
CTO	Contract Task Order
dba	decibels
DoD	Department of Defense
DOT	Department of Transportation
DRI	Direct Reading Instrument
EOD	Explosive Ordnance Disposal
FOL	Field Operations Leader
HASP	Health and Safety Plan
HAZWOPER	Hazardous Waste Operations and Emergency Response
HSM	Health and Safety Manager
IDW	Investigation Derived Waste
MEC	Munitions and Explosives of Concern
mg/m ³	milligrams per cubic meter
N/A	Not Available
NIOSH	National Institute for Occupational Safety and Health
NSWC	Naval Surface Warfare Center
OELs	Occupational Exposure Limits
OSHA	Occupational Safety and Health Administration (U.S. Department of Labor)
PCBs	Polycarbonated biphenyls
PEL	Personal Exposure Limit
PhD	Piled Higher and Deeper
PHSO	Project Health and Safety Officer
PPE	Personal Protective Equipment
RPM	Remedial Project Manager
SOP	Standard Operating Procedure

SSO	Site Safety Officer
STEL	Short term exposure limit
SVOC	Semi-volatile Organic Compounds
SWP	Safe Work Permits
TBD	To be determined
TLV	Threshold Limit Values
TOM	Task Order Manager
TWA	Time Weighted Average
SWMU	Solid Waste Management Unit
Tt	Tetra Tech NUS, Inc.
UXO	Unexploded Ordnance
VOCs	Volatile Organic Compounds

ATTACHMENT I

MEDICAL DATA SHEET

MEDICAL DATA SHEET

This Medical Data Sheet must be completed by on-site personnel and kept in the command post during the conduct of site operations. This data sheet will accompany any personnel when medical assistance is needed or if transport to hospital facilities is required.

Project _____
Name _____ Home Telephone _____
Address _____
Age _____ Height _____ Weight _____
Person to notify in the event of an emergency: Name: _____
Phone: _____

Drug or other Allergies: _____

Particular Sensitivities : _____

Do You Wear Contacts? _____

What medications are you presently using? _____

Name, Address, and Phone Number of personal physician: _____

Note: Health Insurance Portability and Accountability Act (HIPAA) Requirements

HIPAA took effect April 14, 2003. Loosely interpreted, HIPAA regulates the disclosure of Protected Health Information (PHI) by the entity collecting that information. PHI is any information about health status (such as that you may report on this Medical Data Sheet), provision of health care, or other information. HIPAA also requires it to ensure the confidentiality of PHI. This Act can affect the ability of the Medical Data Sheet to contain and convey information you would want a Doctor to know if you were incapacitated. So before you complete the Medical Data Sheet understand that this form will not be maintained in a secure location. It will be maintained in a file box or binder accessible to other members of the field crew so that they can accompany an injured party to the hospital.

DO NOT include information that you do not wish others to know, only information that may be pertinent in an emergency situation or treatment.

Name (Print clearly)

Signature

Date

ATTACHMENT II

INCIDENT REPORT FORM



TETRA TECH, INC.

Safety Excellence

TETRA TECH, INC. INCIDENT REPORT

Report Date	Report Prepared By	Incident Report Number

INSTRUCTIONS:

All incidents (including those involving subcontractors under direct supervision of Tetra Tech personnel) must be documented on the IR Form.

Complete any additional parts to this form as indicated below for the type of incident selected.

TYPE OF INCIDENT (Check all that apply)	Additional Form(s) Required for this type of incident
Near Miss (No losses, but could have resulted in injury, illness, or damage)	<input type="checkbox"/> Complete IR Form Only
Injury or Illness	<input type="checkbox"/> Complete Form IR-A; Injury or Illness
Property or Equipment Damage, Fire, Spill or Release	<input type="checkbox"/> Complete Form IR-B; Damage, Fire, Spill or Release
Motor Vehicle	<input type="checkbox"/> Complete Form IR-C; Motor Vehicle

INFORMATION ABOUT THE INCIDENT

Description of Incident

Date of Incident	Time of Incident
	_____ AM <input type="checkbox"/> PM <input type="checkbox"/> OR Cannot be determined <input type="checkbox"/>

Weather conditions at the time of the incident	Was there adequate lighting?
	_____ Yes <input type="checkbox"/> No <input type="checkbox"/>

Location of Incident

_____ Was location of incident within the employer's work environment? Yes No

Street Address	City, State, Zip Code and Country

Project Name	Client:

Tt Supervisor or Project Manager	Was supervisor on the scene?
	Yes <input type="checkbox"/> No <input type="checkbox"/>

WITNESS INFORMATION (attach additional sheets if necessary)

Name	Company

Street Address	City, State and Zip Code

Telephone Number(s)



CORRECTIVE ACTIONS

Corrective action(s) immediately taken by unit reporting the incident:

Blank lines for corrective actions taken immediately.

Corrective action(s) still to be taken (by whom and when):

Blank lines for corrective actions still to be taken.

ROOT CAUSE ANALYSIS LEVEL REQUIRED

Root Cause Analysis Level Required: Level - 1 [] Level - 2 [] None []

Root Cause Analysis Level Definitions

Table with 2 columns: Level and Definition. Level 1 definition includes work related fatality, hospitalization, property damage, and senior management request. Level 2 definition includes OSHA recordable lost time incident, near miss, and senior management request.

Complete the Root Cause Analysis Worksheet and Corrective Action form. Identify a corrective action(s) for each root cause identified within each area of inquiry.

NOTIFICATIONS

Table with 5 columns: Title, Printed Name, Signature, Telephone Number, Date. Rows include Project Manager or Supervisor, Site Safety Coordinator or Office H&S Representative, Operating Unit H&S Representative, and Other.

The signatures provided above indicate that appropriate personnel have been notified of the incident.

Blank line for additional notes or signatures.

INSTRUCTIONS:

Complete all sections below for incidents involving injury or illness.
Do NOT leave any blanks.
Attach this form to the IR FORM completed for this incident.

Incident Report Number: (From the IR Form)

EMPLOYEE INFORMATION

Company Affiliation

Tetra Tech Employee?

TetraTech subcontractor employee (directly supervised by Tt personnel)?

Full Name

Company (if not Tt employee)

Street Address, City, State and Zip Code

Address Type

Home address (for Tt employees)

Business address (for subcontractors)

Telephone Numbers

Work: _____

Home: _____

Cell: _____

Occupation (regular job title)

Department

Was the individual performing regular job duties?

Yes No

Time individual began work

_____ AM PM OR Cannot be determined

Safety equipment

Provided? Yes No

Type(s) provided: Hard hat Protective clothing

Used? Yes No If no, explain why

Gloves High visibility vest

Eye protection Fall protection

Safety shoes Machine guarding

Respirator Other (list)

NOTIFICATIONS

Name of Tt employee to whom the injury or illness was first reported

Was H&S notified within one hour of injury or illness?

Yes No

Date of report

H&S Personnel Notified

Time of report

Time of Report

If subcontractor injury, did subcontractor's firm perform their own incident investigation?

Yes No If yes, request a copy of their completed investigation form/report and attach it to this report.

INJURY / ILLNESS DETAILS

What was the individual doing just before the incident occurred? Describe the activity as well as the tools, equipment, or material the individual was using. Be specific. Examples: "Climbing a ladder while carrying roofing materials"; "Spraying chlorine from a hand sprayer"; "Daily computer key-entry"

What Happened? Describe how the injury occurred. Examples: "When ladder slipped on wet floor and worker fell 20 feet"; "Worker was sprayed with chlorine when gasket broke during replacement"; "Worker developed soreness in wrist over time"

Describe the object or substance that directly harmed the individual: Examples: "Concrete floor"; "Chlorine"; "Radial Arm Saw". If this question does not apply to the incident, write "Not Applicable".

MEDICAL CARE PROVIDED

Was first aid provided at the site: Yes No If yes, describe the type of first aid administered and by whom?

Was treatment provided away from the site: Yes No If yes, provide the information below.

Name of physician or health care professional	Facility Name
Street Address, City State and Zip Code	Type of Care?
	Was individual treated in emergency room? Yes <input type="checkbox"/> No <input type="checkbox"/> Was individual hospitalized overnight as an in-patient? Yes <input type="checkbox"/> No <input type="checkbox"/> Did the individual die? Yes <input type="checkbox"/> No <input type="checkbox"/> If yes, date: _____ Will a worker's compensation claim be filed? Yes <input type="checkbox"/> No <input type="checkbox"/>
Telephone Number	

NOTE: Attach any police reports or related diagrams to this report.

SIGNATURES

I have reviewed this report and agree that all the supplied information is accurate

Affected individual (print)	Affected individual (signature)	Telephone Number	Date

This form contains information relating to employee health and must be used in a manner that protects the confidentiality of the employee to the extent possible while the information is being used for occupational safety and health purposes.

INSTRUCTIONS:

Complete all sections below for incidents involving property/equipment damage, fire, spill or release.
Do NOT leave any blanks.
Attach this form to the IR FORM completed for this incident.

Incident Report Number: (From the IR Form)

TYPE OF INCIDENT (Check all that apply)

Property Damage Equipment Damage Fire or Explosion Spill or Release

INCIDENT DETAILS

Results of Incident: Fully describe damages, losses, etc.

Response Actions Taken

Responding Agency(s) (i.e. police, fire department, etc.)

Agency(s) Contact Name(s)

DAMAGED ITEMS (List all damaged items, extent of damage and estimated repair cost)

Item:	Extent of damage:	Estimated repair cost

SPILLS / RELEASES (Provide information for spilled/released materials)

Substance	Estimated quantity and duration	Specify Reportable Quantity (RQ)
		_____ Exceeded? Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/>

FIRES / EXPLOSIONS (Provide information related to fires/explosions)

Fire fighting equipment used? Yes No If yes, type of equipment: _____

NOTIFICATIONS

Required notifications	Name of person notified	By whom	Date / Time
Client: _____ Yes <input type="checkbox"/> No <input type="checkbox"/>			
Agency: _____ Yes <input type="checkbox"/> No <input type="checkbox"/>			
Other: _____ Yes <input type="checkbox"/> No <input type="checkbox"/>			

Who is responsible for reporting incident to outside agency(s)? To Client Other Name: _____

Was an additional written report on this incident generated? Yes No If yes, place in project file.

INSTRUCTIONS:

Complete all sections below for incidents involving motor vehicle accidents. Do NOT leave any blanks.
 Attach this form to the IR FORM completed for this incident.

Incident Report Number: (From the IR Form)			
INCIDENT DETAILS			
Name of road, street, highway or location where accident occurred		Name of intersecting road, street or highway if applicable	
County	City	State	
Did police respond to the accident?		Did ambulance respond to the accident?	
Yes <input type="checkbox"/> No <input type="checkbox"/>		Yes <input type="checkbox"/> No <input type="checkbox"/>	
Name and location of responding police department		Ambulance company name and location	
Officer's name/badge #			
Did police complete an incident report? Yes <input type="checkbox"/> No <input type="checkbox"/> If yes, police report number: _____ Request a copy of completed investigation report and attach to this form.			

VEHICLE INFORMATION

How many vehicles were involved in the accident? _____ (Attach additional sheets as applicable for accidents involving more than 2 vehicles.)

Vehicle Number 1 - Tetra Tech Vehicle		Vehicle Number 2 - Other Vehicle	
Vehicle Owner / Contact Information		Vehicle Owner / Contact Information	
Color		Color	
Make		Make	
Model		Model	
Year		Year	
License Plate #		License Plate #	
Identification #		Identification #	
Describe damage to vehicle number 1		Describe damage to vehicle number 2	
Insurance Company Name and Address		Insurance Company Name and Address	
Agent Name		Agent Name	
Agent Phone No.		Agent Phone No.	
Policy Number		Policy Number	

Vehicle Number 1 – Tetra Tech Vehicle		Vehicle Number 2 – Other Vehicle	
Driver's Name		Driver's Name	
Driver's Address		Driver's Address	
Phone Number		Phone Number	
Date of Birth		Date of Birth	
Driver's License #		Driver's License #	
Licensing State		Licensing State	
Gender	Male <input type="checkbox"/> Female <input type="checkbox"/>	Gender	Male <input type="checkbox"/> Female <input type="checkbox"/>
Was traffic citation issued to Tetra Tech driver? Yes <input type="checkbox"/> No <input type="checkbox"/>		Was traffic citation issued to driver of other vehicle? Yes <input type="checkbox"/> No <input type="checkbox"/>	
Citation #		Citation #	
Citation Description		Citation Description	

PASSENGERS IN VEHICLES (NON-INJURED)

List all non-injured passengers (excluding driver) in each vehicle.
 Driver information is captured in the preceding section.
 Information related to persons injured in the accident (non-TT employees) is captured in the section below on this form.
 Injured TT employee information is captured on FORM IR-A

Vehicle Number 1 – Tetra Tech Vehicle		Vehicle Number 2 – Other Vehicle	
How many passengers (excluding driver) in the vehicle? ____		How many passengers (excluding driver) in the vehicle? ____	
Non-Injured Passenger Name and Address		Non-Injured Passenger Name and Address	
Non-Injured Passenger Name and Address		Non-Injured Passenger Name and Address	
Non-Injured Passenger Name and Address		Non-Injured Passenger Name and Address	

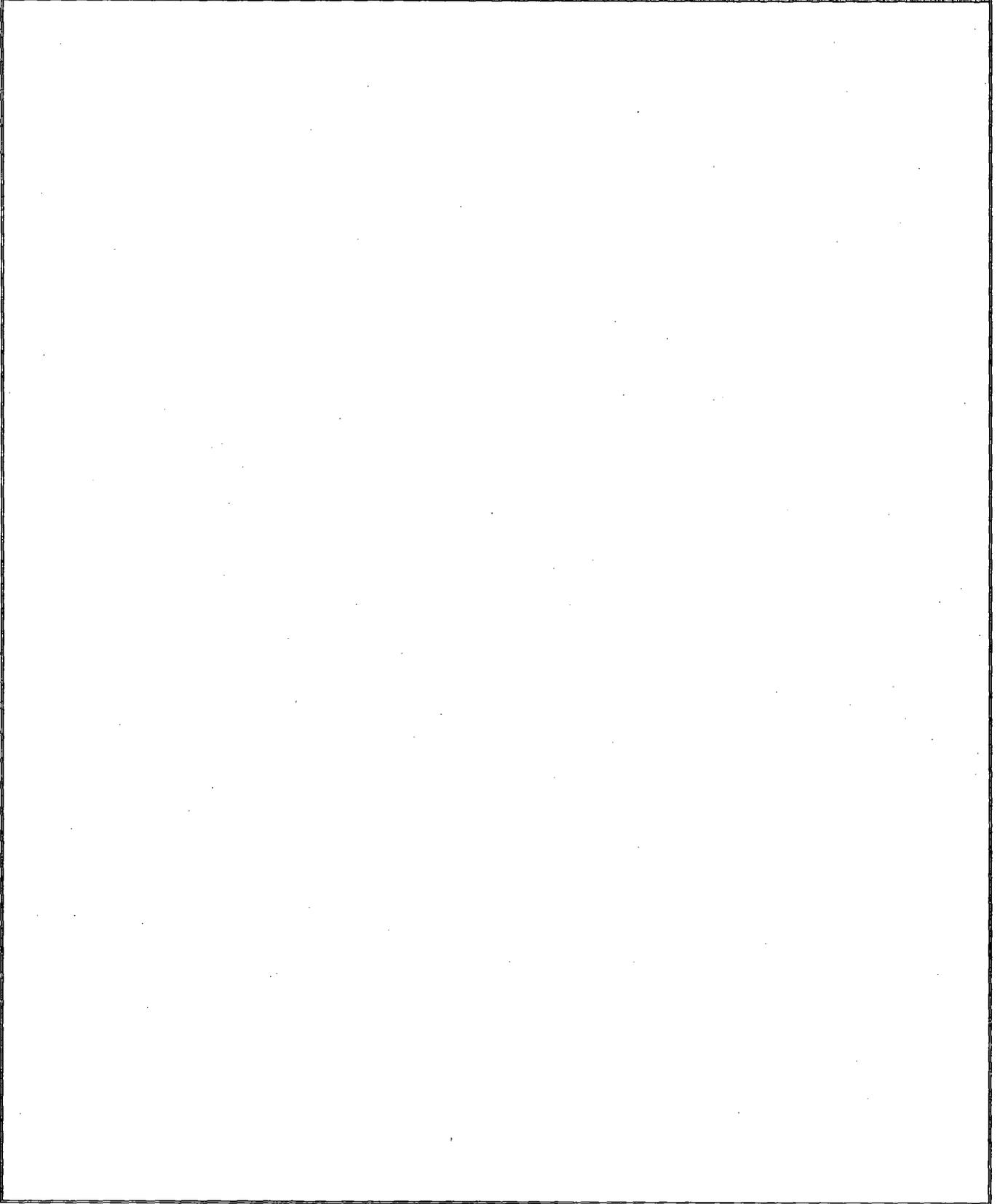
INJURIES TO NON-TETRA TECH EMPLOYEES

Name of injured person 1				Address of injured person 1			
Age	Gender	Car No.	Location in Car	Seat Belt Used?	Ejected from car?	Injury or Fatality?	
	Male <input type="checkbox"/> Female <input type="checkbox"/>			Yes <input type="checkbox"/> No <input type="checkbox"/>	Yes <input type="checkbox"/> No <input type="checkbox"/>	Injured <input type="checkbox"/> Died <input type="checkbox"/>	
Name of injured person 2				Address of injured person 2			
Age	Gender	Car No.	Location in Car	Seat Belt Used?	Ejected from car?	Injury or Fatality?	
	Male <input type="checkbox"/> Female <input type="checkbox"/>			Yes <input type="checkbox"/> No <input type="checkbox"/>	Yes <input type="checkbox"/> No <input type="checkbox"/>	Injured <input type="checkbox"/> Died <input type="checkbox"/>	

OTHER PROPERTY DAMAGE

Describe damage to property other than motor vehicles	
Property Owner's Name	Property Owner's Address

COMPLETE AND SUBMIT DIAGRAM DEPICTING WHAT HAPPENED



ATTACHMENT III
SAFE WORK PERMITS

**SAFE WORK PERMIT
PHASE 1 AND PHASE 2
MOBILIZATION AND DEMOBILIZATION ACTIVITIES
NSWC CRANE – SWMU 13**

Permit No. _____ Date: _____ Time: From _____ to _____

I. Work limited to the following (description, area, equipment used): Mobilization and demobilization activities

II. Primary Hazards: Lifting; slips, trips and falls; vehicular and foot traffic; insect/animal bites and stings; poisonous plants; inclement weather.

III. Field Crew: _____

IV. On-site Inspection conducted Yes No Initials of Inspector _____ Tt

Equipment Inspection required Yes No Initials of Inspector _____ Tt

V. Protective equipment required

Level D Level B
Level C Level A

Respiratory equipment required

Yes Specify on the reverse
No

Modifications/Exceptions: Minimum requirement include sleeved shirt and long pants, or coveralls, safety glasses and safety footwear. Hard hats and hearing protection will be worn when working near operating equipment.

VI. Chemicals of Concern	Hazard Monitoring	Action Level(s)	Response Measures
<u>None anticipated</u>	<u>None</u>	<u>None</u>	<u>None</u>

Primary Route(s) of Exposure/Hazard: NA

(Note to FOL and/or SHSO: Each item in Sections VII, VIII, and IX must be checked Yes, No, or NA)

VII. Additional Safety Equipment/Procedures

Hard-hat..... <input type="checkbox"/> Yes <input type="checkbox"/> No	Hearing Protection (Plugs/Muffs)..... <input type="checkbox"/> Yes <input type="checkbox"/> No
Safety Glasses <input type="checkbox"/> Yes <input type="checkbox"/> No	Safety belt/harness..... <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Chemical/splash goggles <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Radio/Cellular Phone <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Splash Shield..... <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Barricades <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Splash suits/coveralls..... <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Gloves (Type – Work) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Impermeable apron <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Work/rest regimen..... <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Steel toe work shoes/boots <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Chemical Resistant Boot Covers..... <input type="checkbox"/> Yes <input type="checkbox"/> No
High visibility vest <input type="checkbox"/> Yes <input type="checkbox"/> No	Tape up/use insect repellent <input type="checkbox"/> Yes <input type="checkbox"/> No
First Aid Kit <input type="checkbox"/> Yes <input type="checkbox"/> No	Fire Extinguisher..... <input type="checkbox"/> Yes <input type="checkbox"/> No
Safety Shower/Eyewash..... <input type="checkbox"/> Yes <input type="checkbox"/> No	Other <input type="checkbox"/> Yes <input type="checkbox"/> No

Modifications/Exceptions: Tyvek coverall to protect against natural hazards (e.g., ticks) if working/walking through areas of high grass. Use insect repellants containing at least 10% DEET and tape up in such areas. Follow manufacturer's recommendations for proper application and reapplication. Hard hat when overhead hazards exist. Safety glasses when near eye hazards. Hearing protection when in high noise areas.

VIII. Site Preparation

	Yes	No	NA
Utility Locating and Excavation Clearance completed.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Vehicle and Foot Traffic Routes Established/Traffic Control Barricades/Signs in Place....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Physical Hazards Identified and Isolated (Splash and containment barriers)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Emergency Equipment Staged (Spill control, fire extinguishers, first aid kits, etc).....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

IX. Additional Permits required (Hot work, confined space entry, excavation etc.)..... Yes No
If yes, SHSO to complete or contact Health Sciences, Pittsburgh Office (412)921-7090

X. Special instructions, precautions: Preview work locations to identify potential hazards (slips, trips, and falls, natural hazards, etc.) Review PPE needs based on activities being performed and the associated hazards. Use safe lifting procedures and obtain assistance when handling heavy or awkward objects. Suspend site activities in the event of inclement weather. Observe site workers for signs and symptoms of heat/cold stress. Use sun block (SPF > 15) to prevent sunburn if necessary.

Permit Issued by: _____ Permit Accepted by: _____

**SAFE WORK PERMIT
PHASE 1
SOIL AND SEDIMENT SAMPLING ACTIVITIES
NSWC CRANE – SWMU 13**

Permit No. _____ Date: _____ Time: From _____ to _____

I. Work limited to the following (description, area, equipment used): Phase 1 soil and sediment sampling activities using hand augers, trowels, spoons, etc.

II. Primary Hazards: Slips, trips and falls; heavy equipment hazards, vehicular and foot traffic; insect/animal bites and stings; poisonous plants; inclement weather, chemical contamination.

III. Field Crew: _____

IV. On-site Inspection conducted Yes No Initials of Inspector _____ Tt
Equipment Inspection required Yes No Initials of Inspector _____ Tt

V. Protective equipment required **Respiratory equipment required**
 Level D Level B Yes Specify on the reverse
 Level C Level A No

Modifications/Exceptions: Minimum requirement include sleeved shirt and long pants, or coveralls, safety glasses and safety footwear. Hard hats and hearing protection will be worn when working near operating equipment.

VI. Chemicals of Concern <u>None anticipated</u>	Hazard Monitoring /Action Level(s) <u>NA</u>	Response Measures <u>NA</u>
------------------------------------------------------------	--------------------------------------------------------	---------------------------------------

Primary Route(s) of Exposure/Hazard: inhalation, dermal, ingestion

(Note to FOL and/or SHSO: Each item in Sections VII, VIII, and IX must be checked Yes, No, or NA)

VII. Additional Safety Equipment/Procedures

Hard-hat..... <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Hearing Protection (Plugs/Muffs)..... <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Safety Glasses <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Safety belt/harness/lifeline <input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Chemical/splash goggles <input type="checkbox"/> Yes <input type="checkbox"/> No	Radio/Cellular Phone <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Splash Shield..... <input type="checkbox"/> Yes <input type="checkbox"/> No	Barricades <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Splash suits/coveralls <input type="checkbox"/> Yes <input type="checkbox"/> No	Gloves (Type – Work) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Impermeable apron <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Work/rest regimen..... <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Steel toe work shoes/boots <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Chemical Resistant Boot Covers..... <input type="checkbox"/> Yes <input type="checkbox"/> No
High visibility vest <input type="checkbox"/> Yes <input type="checkbox"/> No	Tape up/use insect repellent <input type="checkbox"/> Yes <input type="checkbox"/> No
First Aid Kit <input type="checkbox"/> Yes <input type="checkbox"/> No	Fire Extinguisher..... <input type="checkbox"/> Yes <input type="checkbox"/> No
Safety Shower/Eyewash..... <input type="checkbox"/> Yes <input type="checkbox"/> No	Other <input type="checkbox"/> Yes <input type="checkbox"/> No

Modifications/Exceptions: Minimum requirement include sleeved shirt and long pants, safety footwear, and nitrile gloves Tyvek coverall to protect against natural hazards (e.g., ticks) if working/walking through areas of high grass. Use insect repellants containing at least 10% DEET and tape up in such areas. Follow manufacturer's recommendations for proper application and reapplication.

VIII. Site Preparation

	Yes	No	NA
Utility Locating and Excavation Clearance completed.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Vehicle and Foot Traffic Routes Established/Traffic Control Barricades/Signs in Place....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Physical Hazards Identified and Isolated (Splash and containment barriers)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Emergency Equipment Staged (Spill control, fire extinguishers, first aid kits, etc.).....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

IX. Additional Permits required (Hot work, confined space entry, excavation etc.)..... Yes No
If yes, SHSO to complete or contact Health Sciences, Pittsburgh Office (412)921-7090

X. Special instructions, precautions: Preview work locations to identify potential hazards (slips, trips, and falls, natural hazards, etc.) Review PPE needs based on activities being performed and the associated hazards. Use safe lifting procedures and obtain assistance when handling heavy or awkward objects. Suspend site activities in the event of inclement weather. Observe site workers for signs and symptoms of heat/cold stress. Use sun block (SPF > 15) to prevent sunburn if necessary.

Permit Issued by: _____ Permit Accepted by: _____

**SAFE WORK PERMIT
PHASE 2
SOIL AND SEDIMENT SAMPLING ACTIVITIES
NSWC CRANE – SWMU 13**

Permit No. _____ Date: _____ Time: From _____ to _____

I. Work limited to the following (description, area, equipment used): Phase 2 soil and sediment sampling activities

II. Primary Hazards: Slips, trips and falls; vehicular and foot traffic; insect/animal bites and stings; poisonous plants; inclement weather, chemical contamination.

III. Field Crew: _____

IV. On-site Inspection conducted Yes No Initials of Inspector _____ Tt
Equipment Inspection required Yes No Initials of Inspector _____ Tt

V. Protective equipment required Level D Level B
 Level C Level A
Respiratory equipment required Yes Specify on the reverse
No

Modifications/Exceptions: Minimum requirement include sleeved shirt and long pants, or coveralls, safety glasses and safety footwear. Hard hats and hearing protection will be worn when working near operating equipment.

VI. Chemicals of Concern	Hazard Monitoring /Action Level(s)	Response Measures
<u>Dust (metals)</u>	<u>airborne particulate/dust</u>	<u>Suspend site activities</u>
_____	<u>monitor reading above 3mg/m3</u>	<u>and retreat to unaffected</u>
_____	_____	<u>area. If readings are</u>
_____	_____	<u>sustained use area</u>
_____	_____	<u>wetting techniques or</u>
		<u>contact SSO.</u>

Primary Route(s) of Exposure/Hazard: inhalation, dermal, ingestion

(Note to FOL and/or SHSO: Each item in Sections VII, VIII, and IX must be checked Yes, No, or NA)

VII. Additional Safety Equipment/Procedures

Hard-hat.....	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Hearing Protection (Plugs/Muffs).....	<input type="checkbox"/> Yes <input type="checkbox"/> No
Safety Glasses	<input type="checkbox"/> Yes <input type="checkbox"/> No	Safety belt/harness/lifeline	<input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Chemical/splash goggles	<input type="checkbox"/> Yes <input type="checkbox"/> No	Radio/Cellular Phone	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Splash Shield.....	<input type="checkbox"/> Yes <input type="checkbox"/> No	Barricades	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Splash suits/coveralls.....	<input type="checkbox"/> Yes <input type="checkbox"/> No	Gloves (Type – Work)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Impermeable apron	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Work/rest regimen.....	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Steel toe work shoes/boots	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Chemical Resistant Boot Covers.....	<input type="checkbox"/> Yes <input type="checkbox"/> No
High visibility vest	<input type="checkbox"/> Yes <input type="checkbox"/> No	Tape up/use insect repellent	<input type="checkbox"/> Yes <input type="checkbox"/> No
First Aid Kit	<input type="checkbox"/> Yes <input type="checkbox"/> No	Fire Extinguisher.....	<input type="checkbox"/> Yes <input type="checkbox"/> No
Safety Shower/Eyewash.....	<input type="checkbox"/> Yes <input type="checkbox"/> No	Other	<input type="checkbox"/> Yes <input type="checkbox"/> No

Modifications/Exceptions: Minimum requirement include sleeved shirt and long pants, safety footwear, and nitrile gloves Tyvek coverall to protect against natural hazards (e.g., ticks) if working/walking through areas of high grass. Use insect repellants containing at least 10% DEET and tape up in such areas. Follow manufacturer's recommendations for proper application and reapplication. Hearing protection in high noise areas. Hard hat when overhead hazards exist. Safety glasses when near eye hazards.

VIII. Site Preparation

	Yes	No	NA
Utility Locating and Excavation Clearance completed.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Vehicle and Foot Traffic Routes Established/Traffic Control Barricades/Signs in Place....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Physical Hazards Identified and Isolated (Splash and containment barriers)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Emergency Equipment Staged (Spill control, fire extinguishers, first aid kits, etc.).....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

IX. Additional Permits required (Hot work, confined space entry, excavation etc.)..... Yes No
If yes, SHSO to complete or contact Health Sciences, Pittsburgh Office (412)921-7090

X. Special instructions, precautions: Preview work locations to identify potential hazards (slips, trips, and falls, natural hazards, etc.) Review PPE needs based on activities being performed and the associated hazards. Use safe lifting procedures and obtain assistance when handling heavy or awkward objects. Suspend site activities in the event of inclement weather. Observe site workers for signs and symptoms of heat/cold stress. Use sun block (SPF > 15) to prevent sunburn if necessary.

Permit Issued by: _____ Permit Accepted by: _____

**SAFE WORK PERMIT
PHASE 1 AND PHASE 2
DECONTAMINATION ACTIVITIES
NSWC CRANE – SWMU 13**

Permit No. _____ Date: _____ Time: From _____ to _____

I. **Work limited to the following (description, area, equipment used):** Decontamination of equipment. Brushes and spray bottles will be used to decontaminate small sampling equipment.

II. **Primary Hazards:** Chemical exposure, transfer of contamination, inclement weather, noise, slips/trips.

III. **Field Crew:** _____

IV. **On-site Inspection conducted** Yes No Initials of Inspector _____ Tt

Equipment Inspection required Yes No Initials of Inspector _____ Tt

V. **Protective equipment required**

Level D Level B
Level C Level A

Respiratory equipment required

Yes Specify on the reverse
No

Modifications/Exceptions: Minimum requirement include sleeved shirt and long pants, safety glasses, safety footwear, and nitrile gloves. Impermeable aprons are preferred protection against soiling work clothes when lifting auger flights because of the need to carry close to the body. If it (impermeable apron) does not offer adequate protection, PVC rain suits or PE or PVC coated Tyvek should be employed. Chemical resistant boot covers if excessive liquids are generated or to protected footwear.

VI. **Chemicals of Concern**

Decontamination Fluids

Hazard Monitoring/Action Level(s)

refer to MSDS

Response Measures

refer to MSDS

Primary Route(s) of Exposure/Hazard: Inhalation and direct contact and ingestion

(Note to FOL and/or SHSO: Each item in Sections VII, VIII, and IX must be checked Yes, No, or NA)

VII. **Additional Safety Equipment/Procedures**

Hard-hat.....	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Hearing Protection (Plugs/Muffs).....	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Safety Glasses	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Safety belt/harness.....	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Chemical/splash goggles	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Radio/Cellular Phone	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Splash Shield.....	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Barricades	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Splash suits/coveralls.....	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Gloves (Type – Nitrile).....	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Impermeable apron	<input type="checkbox"/> Yes <input type="checkbox"/> No	Work/rest regimen.....	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Steel toe Work shoes or boots ..	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Chemical Resistant Boot Covers.....	<input type="checkbox"/> Yes <input type="checkbox"/> No
High Visibility vest.....	<input type="checkbox"/> Yes <input type="checkbox"/> No	Tape up/use insect repellent	<input type="checkbox"/> Yes <input type="checkbox"/> No
First Aid Kit	<input type="checkbox"/> Yes <input type="checkbox"/> No	Fire Extinguisher.....	<input type="checkbox"/> Yes <input type="checkbox"/> No
Safety Shower/Eyewash.....	<input type="checkbox"/> Yes <input type="checkbox"/> No	Other	<input type="checkbox"/> Yes <input type="checkbox"/> No

Modifications/Exceptions: Chemical resistant boot covers if excessive liquids are generated or to protect footwear.

VIII. **Site Preparation**

	Yes	No	NA
Utility Locating and Excavation Clearance completed.....	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Vehicle and Foot Traffic Routes Established/Traffic Control Barricades/Signs in Place	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Physical Hazards Identified and Isolated (Splash and containment barriers)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Emergency Equipment Staged (Spill control, fire extinguishers, first aid kits, etc).....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

IX. **Additional Permits required** (Hot work, confined space entry, excavation etc.)..... Yes No
If yes, SHSO to complete or contact Health Sciences, Pittsburgh Office (412)921-7090

X. **Special instructions, precautions:** Suspend site activities in the event of inclement weather. Employ proper lifting techniques. When/where possible use heavy equipment to move and place containers.

Permit Issued by: _____ Permit Accepted by: _____

**SAFE WORK PERMIT
PHASE 1 AND PHASE 2
IDW MANAGEMENT
NSWC CRANE – SWMU 13**

Permit No. _____ Date: _____ Time: From _____ to _____

SECTION I: General Job Scope

- I. **Work limited to the following (description, area, equipment used):** IDW management activities includes containerization, staging, monitoring for leaks of IDW accumulated wastes. Wastes types include purge and decontamination wash waters.
- II. **Primary Hazards:** Lifting, pinches and compressions; flying projectiles; slips, trips, and falls and chemical contamination.
- III. **Field Crew:** _____
- IV. **On-site Inspection conducted** Yes No Initials of Inspector _____ Tt
Equipment Inspection required Yes No Initials of Inspector _____ Tt

SECTION II: General Safety Requirements (To be filled in by permit issuer)

- V. **Protective equipment required** **Respiratory equipment required**
 Level D Level B Yes See Reverse
 Level C Level A No
- Modifications/Exceptions: None anticipated

- VI. **Chemicals of Concern** **Hazard Monitoring /Action Level(s)** **Response Measures**
None anticipated none none

Primary Route of Exposure/Hazard: NA

(Note to FOL and/or SHSO: Each item in Sections VII, VIII, and IX must be checked Yes or No)

VII. Additional Safety Equipment/Procedures

- | | | | |
|----------------------------------|---------------------------------------------------------------------|-------------------------------------|---------------------------------------------------------------------|
| Hard-hat..... | <input type="checkbox"/> Yes <input type="checkbox"/> No | Hearing Protection (Plugs/Muffs)... | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| Safety Glasses | <input type="checkbox"/> Yes <input type="checkbox"/> No | Safety belt/harness..... | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| Chemical/splash goggles | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | Radio/Cellular Phone | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Splash Shield..... | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | Barricades | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Splash suits/coveralls..... | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | Gloves (Type – Leather/Cotton).... | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| Impermeable apron | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | Work/rest regimen..... | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| Steel toe work shoes/boots | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | Chemical Resistant Boot Covers | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| High visibility vest..... | <input type="checkbox"/> Yes <input type="checkbox"/> No | Tape up/use insect repellent | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| First Aid Kit..... | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | Fire Extinguisher..... | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Safety Shower/Eyewash..... | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | Other | <input type="checkbox"/> Yes <input type="checkbox"/> No |

Modifications/Exceptions: If you are using pneumatic/electric power to open drums – Safety glasses are required; If power equipment is employed to move drums or you are working near operating equipment hard hats will be employed. Tyvek coverall to protect against natural hazards (e.g., ticks) if working/walking through areas of high grass. Use insect repellants containing at least 10% DEET if necessary. Follow manufacturer's recommendations for proper application and reapplication. If working in areas where snakes are a threat, wear snake chaps to protect against bites. High visibility vest if near active traffic areas.

- VIII. **Site Preparation**
- | | | | |
|-------------------------------------------------------------------------------------------|--------------------------|--------------------------|-------------------------------------|
| | Yes | No | NA |
| Utility Locating and Excavation Clearance completed..... | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Vehicle and Foot Traffic Routes Established/Traffic Control Barricades/Signs in Place.... | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Physical Hazards Identified and Isolated..... | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Emergency Equipment Staged (Spill control, fire extinguishers, first aid kits, etc)..... | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

- IX. **Additional Permits required (Hot work, confined space entry, excavation etc.).....** Yes No
If yes, SHSO to complete or contact Health Sciences, Pittsburgh Office (412)921-7090

- X. **Special instructions, precautions:** Suspend site activities in the event of inclement weather. Employ proper lifting techniques. When/where possible use heavy equipment to move and place containers. When placing drums – Place the label and retention ring nut on the outside where it is readily visible. Place 4-drums to a pallet. Maintain a minimum distance of 4-feet between pallet rows. An IDW inventory shall be generated to provide the number of drums, contents, and volumes. This inventory should be provided to the facility contact. Inspect equipment prior to use.

Permit Issued by: _____ Permit Accepted by: _____

**ATTACHMENT IV
OHSA POSTER**

Job Safety and Health

It's the law!

OSHA

Occupational Safety and Health Administration
U.S. Department of Labor

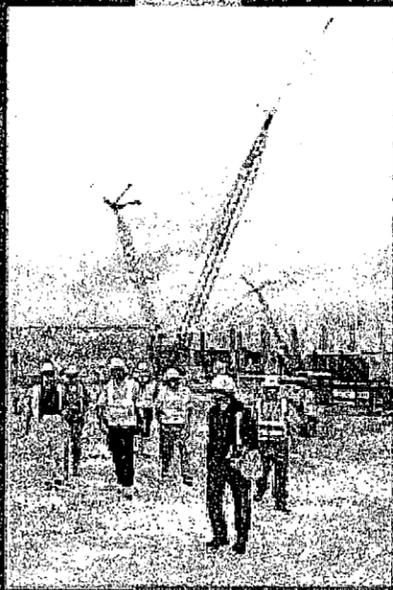
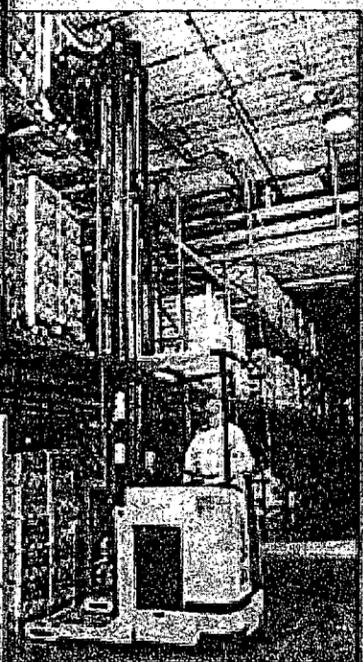
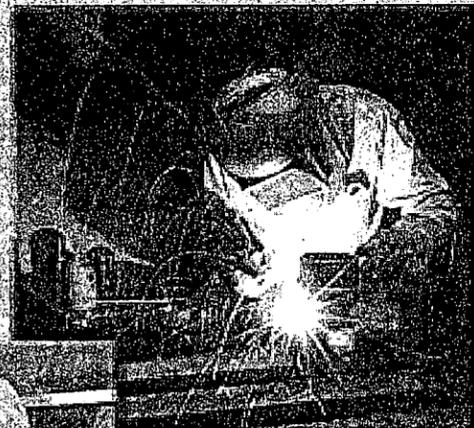
EMPLOYEES:

- You have the right to notify your employer or OSHA about workplace hazards. You may ask OSHA to keep your name confidential.
- You have the right to request an OSHA inspection if you believe that there are unsafe and unhealthful conditions in your workplace. You or your representative may participate in that inspection.
- You can file a complaint with OSHA within 30 days of retaliation or discrimination by your employer for making safety and health complaints or for exercising your rights under the *OSH Act*.
- You have the right to see OSHA citations issued to your employer. Your employer must post the citations at or near the place of the alleged violations.
- Your employer must correct workplace hazards by the date indicated on the citation and must certify that these hazards have been reduced or eliminated.
- You have the right to copies of your medical records and records of your exposures to toxic and harmful substances or conditions.
- Your employer must post this notice in your workplace.
- You must comply with all occupational safety and health standards issued under the *OSH Act* that apply to your own actions and conduct on the job.

EMPLOYERS:

- You must furnish your employees a place of employment free from recognized hazards.
- You must comply with the occupational safety and health standards issued under the *OSH Act*.

This free poster available from OSHA –
The Best Resource for Safety and Health



Free assistance in identifying and correcting hazards or complying with standards is available to employers, without citation or penalty, through OSHA-supported consultation programs in each state.

1-800-321-OSHA
www.osha.gov

OSHA 3165-12-06R