

**WORK PLAN
CONTRACTOR QUALITY CONTROL PLAN
ENVIRONMENTAL PROTECTION PLAN
SAMPLING AND ANALYSIS PLAN
SITE HEALTH AND SAFETY PLAN
NON-TIME CRITICAL REMOVAL ACTION
SITE 16-CANS C-2 AREA AND SITE 15-SOIL REMOVAL AT TSTA
NAVAL AIR STATION ALAMEDA
ALAMEDA, CALIFORNIA**

**Contract No. N62474-93-D-2151
Delivery Order No. 0037**

Submitted to:

Department of the Navy
Engineering Field Activity, West
Naval Facilities Engineering Command
900 Commodore Drive, Building B-103
San Bruno, California 94066-2402

Submitted by:

IT Corporation
4585 Pacheco Boulevard
Martinez, California 94553



September 12, 1997

4585 Pacheco Boulevard
Martinez, California 94553-2233
510-372-9100
Fax: 510-372-5220

763356-ITNHO-0016

Mr. Myles Jones, Code 0222MJ, Contracting Officer
Engineering Field Activities, West
Naval Facilities Engineering Command
900 Commodore Drive, Building B208
San Bruno, California 94066-2402

Attention: Mr. George Kikugawa, Code 18312

Contract: N62474-93-D-2151, Environmental Remediation Contract for Sites in Northern and Central California and Nevada

Subject: Transmittal of Revision 0, Work Plan, Contractor Quality Control Plan, Environmental Protection Plan, Sampling and Analysis Plan, and Site Health and Safety Plan for the Non-Time Critical Removal Action, Site 16 C-2 CANS Area and Site 15 - Soil Removal at Temporary Storage and Treatment Area, Naval Air Station, Alameda, California, Delivery Order No. 0037

Dear Mr. Kikugawa:

Enclosed are ten (10), one controlled and nine (9) uncontrolled of the Revision 0 plans for the above referenced project. Specific plans include: Work Plan, Contractor Quality Control Plan, Environmental Protection Plan, Sampling and Analysis Plan and Site Health and Safety Plan.

As per a request from the Navy, copies have also been sent to the organizations listed below. If you have any questions regarding these documents, please contact me at (510) 372-9100.

Sincerely,
IT CORPORATION


John McGuire
Project Manager
Delivery Order 0037


Valerie Crooks, P.E.
Program Manager
EFA-West PMO

cc: Mr. James Ricks, US Environmental Protection Agency - (1) Controlled
Ms. Lynn Swan, Regional Water Quality Control Board - (1) Controlled
Mr. Tom Lamphar, California Department of Toxic Substance Control - (1) Controlled
Mr. Roger Caswell & Mr. Steve Edde, Alameda Point - (2) Controlled
Mr. Neal Hutchinson, PRC Environmental Inc. - (1) Controlled (1) Uncontrolled
Ms. Ardella Dailey, Ardella Dailey Community Co-Chair - (1) Controlled
Mr. Jones Tong, Resident Officer in Charge of Construction - (1) Controlled

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REPLACEMENT PAGES

FINAL
WORK PLAN
CONTRACTOR QUALITY CONTROL PLAN
ENVIRONMENTAL PROTECTION PLAN
SAMPLING AND ANALYSIS PLAN
SITE HEALTH AND SAFETY PLAN
NON-TIME CRITICAL REMOVAL ACTION
SITE 16-CANS C-2 AREA AND SITE 15-SOIL
REMOVAL AT TSTA

DATED 14 OCTOBER 1997

IS ENTERED IN THE DATABASE AND FILED AT
ADMINISTRATIVE RECORD NO. N00236.001446

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2.0 Contractor Quality Control Plan

3.0 Environmental Protection Plan

4.0 Sampling and Analysis Plan

5.0 Site Health and Safety Plan

**WORK PLAN
NON-TIME CRITICAL REMOVAL ACTION,
SITE 16 - CANS C-2 AREA AND SITE 15 - SOIL REMOVAL
AT TEMPORARY STORAGE AND TREATMENT AREA,
NAVAL AIR STATION, ALAMEDA, CALIFORNIA**

**Contract No. N62474-93-D-2151
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Submitted by:

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4585 Pacheco Boulevard
Martinez, California 94553

Final

Revision 0

September 1997

Issued to: _____

Date: 9/12/97

Copy #:

Controlled

Uncontrolled

**WORK PLAN
NON-TIME CRITICAL REMOVAL ACTION,
SITE 16 - CANS C-2 AREA AND SITE 15 - SOIL REMOVAL
AT TEMPORARY STORAGE AND TREATMENT AREA,
NAVAL AIR STATION, ALAMEDA, CALIFORNIA**

**Contract No. N62474-93-D-2151
Delivery Order No. 0037**

Revision 0

September 1997

Approved by: Thomas A. Davis Date: 9-10-97
Thomas A. Davis
IT Program Contractor
Quality Control Manager

Approved by: John McGuire Date: 9-9-97
John McGuire
IT Project Manager

Approved by: Valerie Crooks Date: 09/10/97
Valerie Crooks, P.E.
IT Program Manager

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1.0 Introduction

This Work Plan describes the work proposed for the non-time critical removal action at Site 16 - CANS C-2 Area and Site 15 - Soil Removal at the Temporary Storage and Treatment Area (TSTA), at Naval Air Station (NAS), Alameda, California (Figure 1).

Site 16 has been used at a storage yard where large shipping containers (CANS) were used as storage containers (Figure 2). Prior to the placement of CANS at this site, the area was used for aircraft parking and to store paints, solvents, acids and bases, and transformers containing PCBs. The containers reportedly corroded over time and leaked. PCB oil was also used for weed control in the storage yard until 1963. The contaminants of concern for this project are PCBs and lead.

The Temporary Storage and Treatment Area (TSTA) is located about 1000 feet west of Site 15 and 300 feet south of the Oakland Inner Harbor (Figure 3). The TSTA was built to contain the contaminated soil stockpiles excavated from Site 15 during a removal action which took place in 1995. The contaminants of concern at this site are also PCBs and lead.

2.0 Specific Tasks

The following sections describe each of the specific tasks required to complete the removal actions at Site 16 and the TSTA.

2.1 Work Plans

The Work Plans consist of this Construction Work Plan, a Site Health and Safety Plan, Contractor Quality Control Plan, Site Specific Quality Assurance Plan, and an Environmental Protection Plan. All necessary permits for the project will also be obtained prior to mobilization.

2.2 Mobilization and Site Preparation

IT personnel and equipment will mobilize to the site and a field office will be established. The field office will be located in Building 35. Telephone service, with several lines, will be provided. The field office will also contain office furniture, one computer, a copy machine, and a fax machine. Restrooms and drinking water will also be available at the field office. All equipment needed for the removal action will be staged adjacent to Site 16 prior to initiating field work.

Site preparation activities will include the establishment of staging areas, clearing vegetation, performance of preliminary earthwork necessary for excavation, and construction of temporary fencing around the work areas. During the mobilization and site preparation phase of work, calibrated truck scales will be set up for use during the transportation of contaminated soil. A utility survey will be conducted to verify the existence of any underground utilities which may require relocation or temporary disruption. All necessary permits for conducting the work, including the required base digging permit, will be obtained during this phase of work.

Because the analytical data is old, additional site characterization will be needed. This characterization will allow the soil from Site 16 to be profiled for acceptance at an approved disposal facility. Soil at Site 16 will be analyzed using EPA Methods 8015 TPH-E and P, 5520 E&P, 416.1, CAM 17 Metals, 8240, 8270, 8080 PN, and RCI. A total of 3 four-point composite samples will be collected and analyzed from Site 16. Additional samples will be collected in the TSTA from the clean sand and gravel used during the construction of the TSTA. The sand and gravel will be analyzed for PCBs and lead.

2.3 Excavation

Excavation activities will occur at both Site 16 and the TSTA, however, due to concerns about the potential for off -site migration of dust, initial excavation activities will begin at Site 16. Site 16 consists of an open area where large storage containers were used to store chemicals. These shipping containers reportedly corroded and leaked over the years. PCB oil was used for weed control in this storage yard until 1963.

All material will be removed using a track mounted excavator. Used concrete/asphalt will be excavated and recycled using an approved recycling facility. The perforated steel plates (PSP) will then be removed and loaded directly into trucks for transportation and disposal at an approved disposal facility. The contaminated soil to be excavated extends to a depth of 1 foot below ground surface (bgs). To the contaminated soil will be excavated and loaded directly onto trucks. Once loaded, the trucks will proceed to the temporary truck scales, weighed, and covered with tarps. Trucks which are overweight will return to the work area and have excess soil removed. Trucks which are determined to be too light will also return to the work area for additional loading. Once fully loaded and weighed, the trucks will be manifested and sent to the disposal facility.

The liner material used in the construction of the TSTA will be separated and loaded into bins for disposal at a Class II disposal facility. Once the liner has been removed, the soil in the TSTA will be profiled for disposal at an approved disposal facility. The electrical panel and water treatment system will be disconnected. Upon completion of these activities, the contaminated soil at the TSTA will be loaded into trucks and weighed and manifested for disposal at an approved disposal facility.

At all times during site work, dust will be controlled to prevent migration. In order to minimize any exposure to fugitive dust at Site 16, all work will be conducted prior to the start of the school year. If work extends into the school year, all work will be performed in the early morning hours prior to the start of the school day. Dust control will be accomplished through the use of a water truck and a hose. All excavation will cease when the wind gusts exceed 25 mph or constant wind speed is in excess of 10 mph. A wind speed indicator will be used at Site 16. Air particulate monitoring will be conducted during the removal action to comply with this restriction at Site 16.

Site security consisting of an exclusion zone, contamination reduction zone, and support zone will be established at both Site 16 and the TSTA. To the zones will be established to include all work areas and will be marked with caution tape.

A personnel decontamination (decon) station will be established adjacent to the work area. To the personnel decon station will consist of a step off area for donning and doffing protective clothing, and a series of tubs or buckets for washing boots, respirators, and washing hands and face. An equipment decon station will be established adjacent to each work area for the decontamination of the excavator used during soil excavation activities. To the equipment decon station will consist of an area where the equipment will be brushed off with brooms.

2.4 Sampling and Analysis

Once the top 12 inches of contaminated soil have been removed, PRC will conduct the confirmation sampling to verify that all soil with PCB and lead concentrations exceeding the cleanup levels has been removed. Sample locations which exceed the cleanup levels will require additional excavation. Excavation will continue until analytical data verifies the site to be clean.

2.5 Hauling of Contaminated Soil

All contaminated soil as well as the PSP will be excavated and loaded directly onto trucks for transportation and disposal at an approved disposal facility. The trucks will exit the base from the East Gate and leave the city through the Posey Tube. The trucks will then immediately enter the 880 freeway using the Harrison Street on-ramp in Oakland for southbound destinations or Broadway Street on-ramp for northbound destinations. Once loaded, the trucks will be weighed, covered with a tarp, and manifested. Signature on the manifest by the Navy representative will be obtained prior to transportation. A hazardous waste manifest will be provided by IT.

2.6 Backfill and Compaction

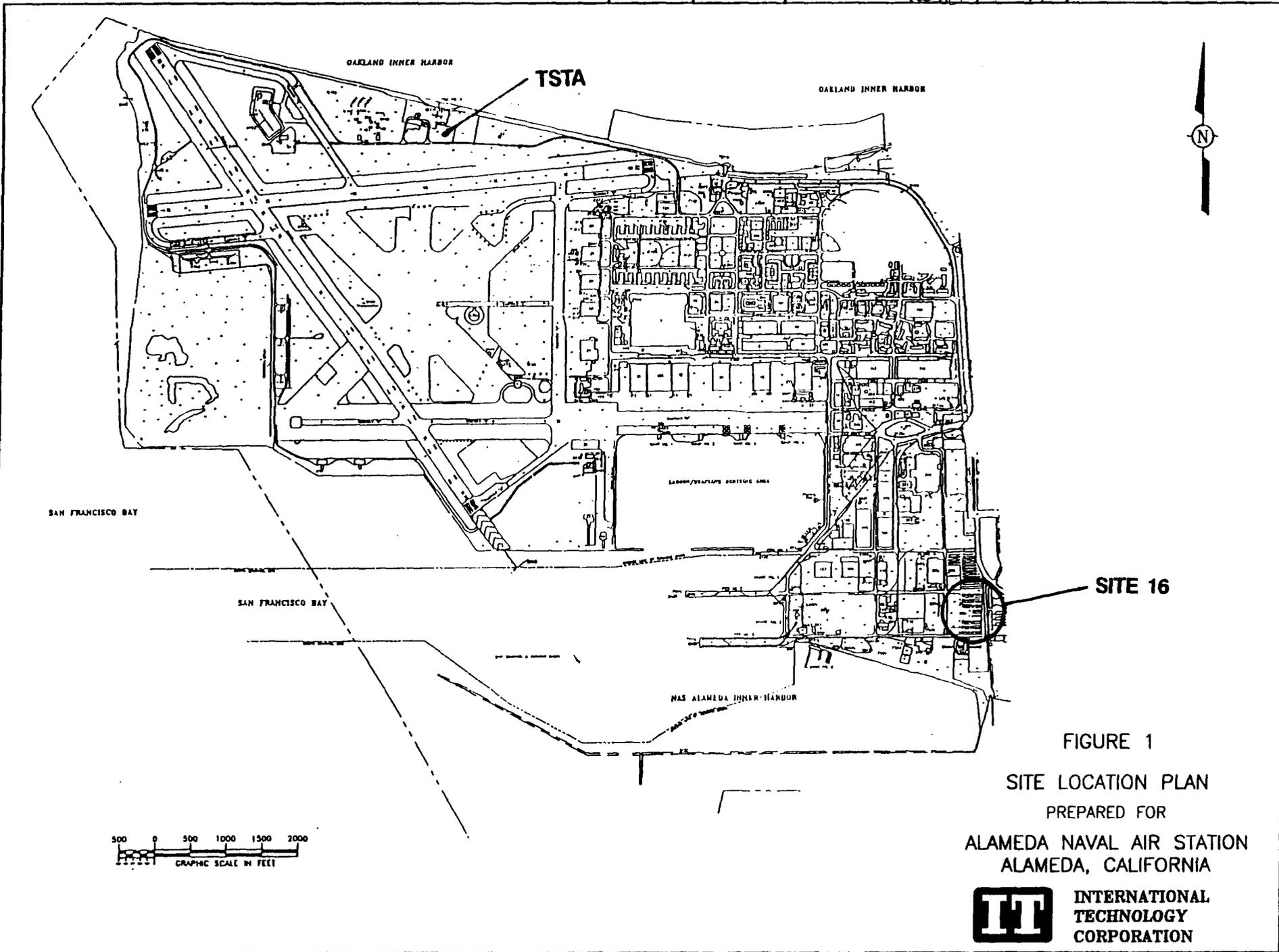
Once the removal actions have been completed at Site 16 and the TSTA, the excavations will be backfilled with clean fill placed in 6-inch lifts compacted to 90 percent or greater relative compaction. Prior to placement, the backfill will be certified as clean. Compaction testing will be performed using nuclear density method. The clean backfill will be brought to the surface at both Site 16 and the TSTA. Since the removal action at Site 16 will not extend greater than 12 inches below ground surface and the removal action at the TSTA consists of removing a stockpile, in is

not anticipated the groundwater will be encountered. A street sweeper will be used during all phases of work to prevent dust from spreading out on the site and to keep the haul roads clean.

2.7 Closeout Report

Upon completion of all field activities, IT will prepare a closeout report which will summarize all activities undertaken. This report will include copies of the permits, analytical results, manifests, and project documentation.

DRAWN BY	BJ	CHECKED BY	SPM 9-9-97	DRAWING NUMBER	763356-A2
	7-15-97	APPROVED BY	JA 9-10-97		



DRAWING NUMBER 763356-A5

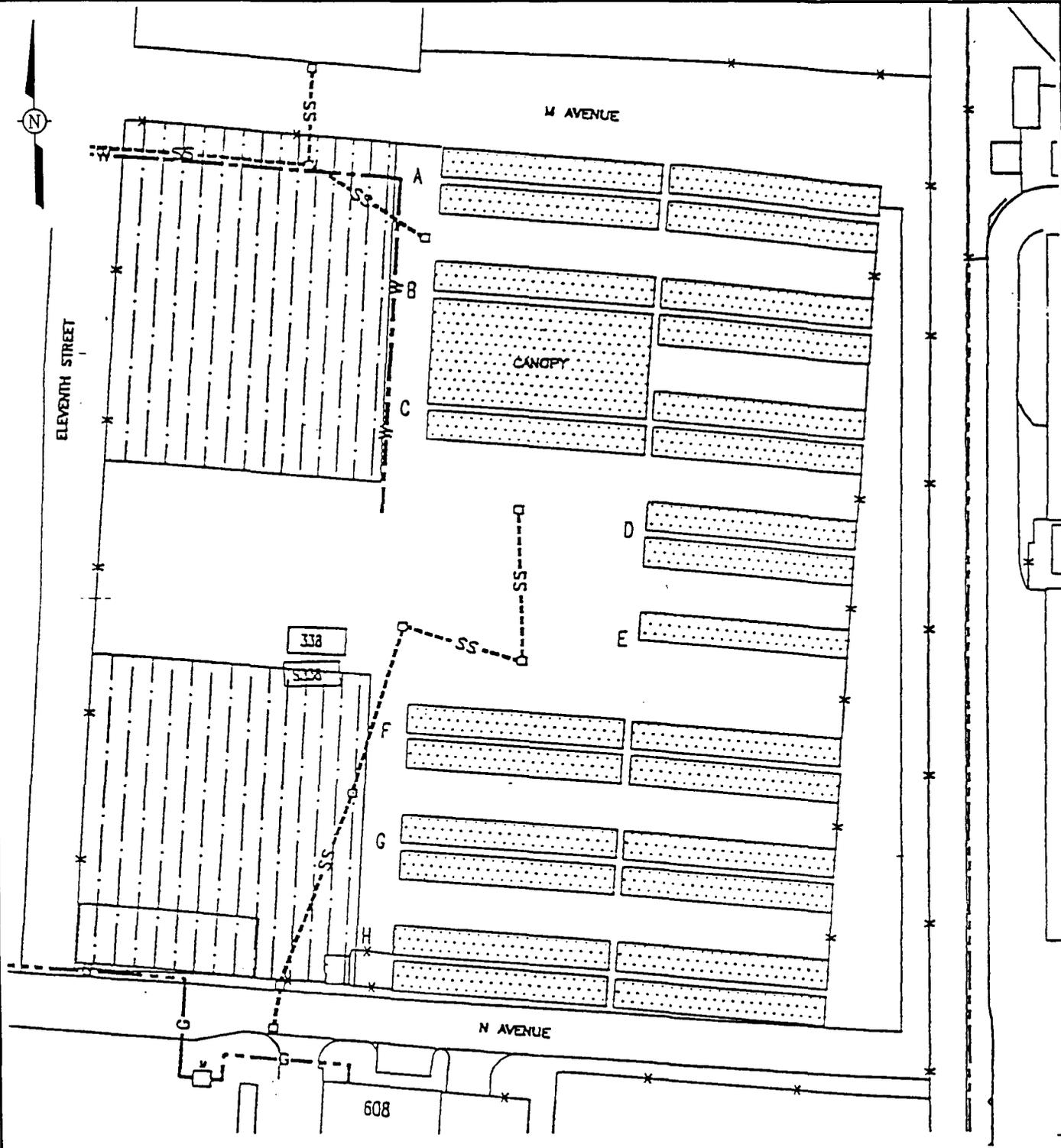
CHECKED BY [Signature] 9-9-97

APPROVED BY [Signature] 9-10-97

7-15-97

BU

DRAWN BY



NOTE: SITE PAVED WITH ASPHALT CONCRETE EXCEPT WHERE SHADED.

LEGEND

[Hatched box] STEEL PLATES ON GROUND SURFACE

[Dotted box] CANS BUILDINGS

-SS- STORM SEWER LINE

-G- NATURAL GAS LINE

-W- FIRE PROTECTION WATER LINE

SCALE

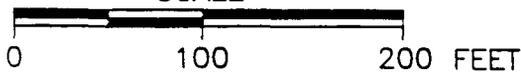


FIGURE 2

SITE PLAN
SITE 16

PREPARED FOR

ALAMEDA NAVAL AIR STATION
ALAMEDA, CALIFORNIA



INTERNATIONAL
TECHNOLOGY
CORPORATION

763356-A4

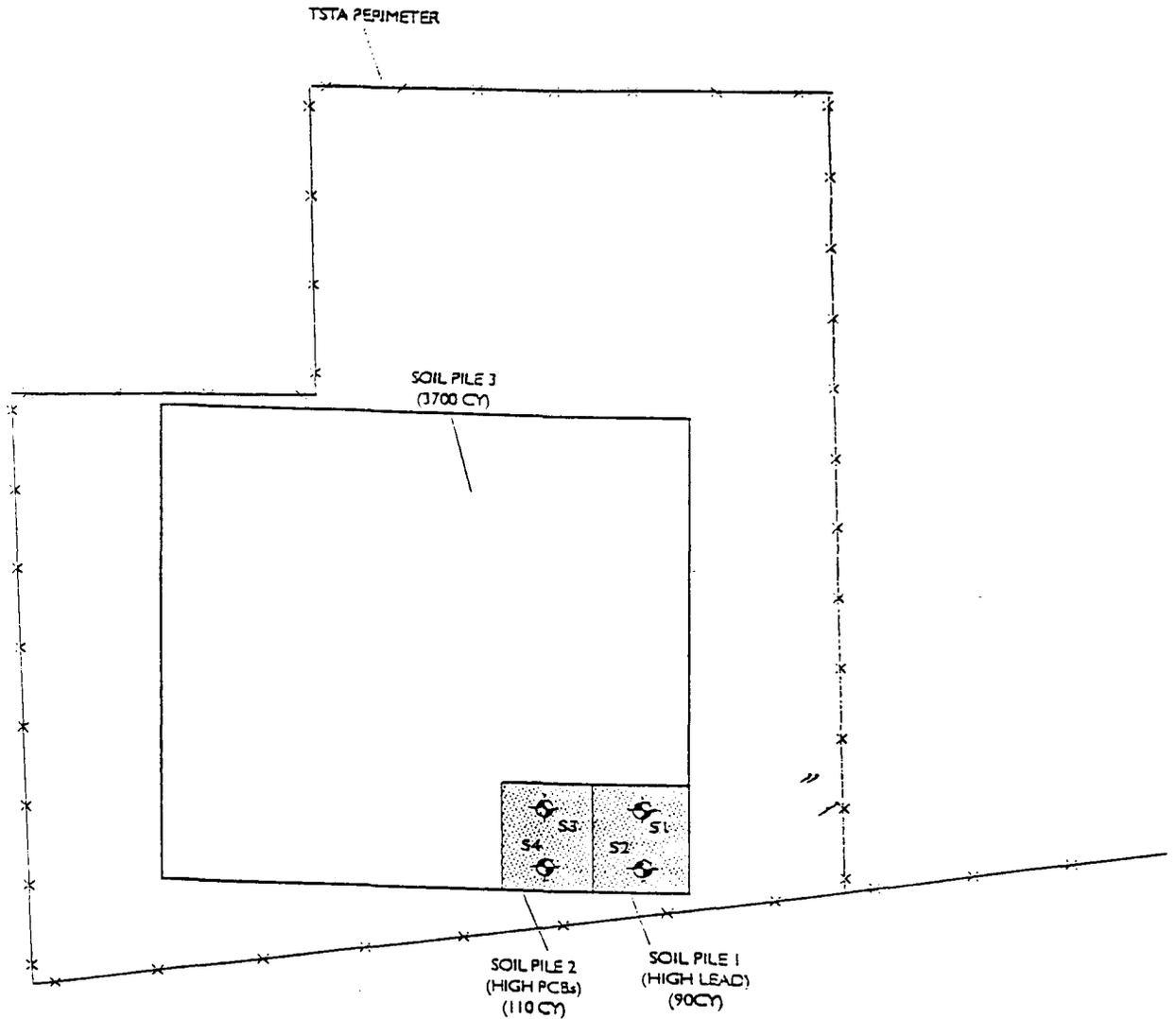
DRAWING NUMBER

PM 9-9-97
9-10-97

CHECKED BY
APPROVED BY

BJ
7-15-97

DRAWN BY



LEGEND

⊕ SAMPLING LOCATIONS

SAMPLES ANALYZED FOR TOTAL
LEAD, PCBs, CAL-WEST TEST,
CAL-WET WITH DEIONIZED WATER

APPROXIMATE SCALE

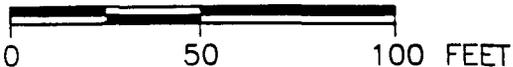


FIGURE 3

TSTA SITE PLAN

PREPARED FOR

**ALAMEDA NAVAL AIR STATION
ALAMEDA, CALIFORNIA**



**INTERNATIONAL
TECHNOLOGY
CORPORATION**

**CONTRACTOR QUALITY CONTROL PLAN
NON-TIME CRITICAL REMOVAL ACTIONS
AT SITE 16 (CANS C-2) AND SITE 15 TSTA
NAVAL AIR STATION
ALAMEDA, CALIFORNIA**

**CONTRACT NO. N62474-93-D-2151
DELIVERY ORDER NUMBER 0037**

Submitted to:

Department of the Navy
Engineering Field Activity West
Naval Facilities Engineering Command
900 Commodore Drive
San Bruno, California 95814-2922

Submitted by:

IT Corporation
4585 Pacheco Boulevard
Martinez, California 94553

Final

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September 1997

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**CONTRACTOR QUALITY CONTROL PLAN
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ALAMEDA, CALIFORNIA**

**CONTRACT NO. N62474-93-D-2151
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Revision 0

September 1997

Approved by: Thomas A. Davis Date: 9-10-97
Thomas A. Davis
IT Program Contractor
Quality Control Manager

Approved by: John McGuire Date: 9-9-97
John McGuire
IT Project Manager

Approved by: Valerie Crooks Date: 09/10/97
Valerie Crooks, P.E.
IT Program Manager

1.0 Introduction

This Contractor Quality Control Plan (CQCP) has been prepared to describe those QC actions which will be implemented during the sampling, excavation, backfilling, stockpiling, transportation and shipping of contaminated soils at sites 16 and 15 located at Alameda Naval Air Station.

The CQCP will be used in conjunction with the Program Contractor Quality Control Plan (PCQCP), Revision 2, and Standard Quality Procedures (SQP)/Standard Operating Procedures (SOP), as applicable and described below:

2.0 Program Contractor Quality Control Plan

Section 0.0 - Policy Statement; Applicable in its entirety

Section 1.0 - Introduction; Applicable in its entirety

Section 2.0 - Organization and Responsibilities; Applicable with the following modification:

As applicable to QC organization in Figure 1, Quality Control Organization Chart

Section 3.0 - Quality Control Management; Applicable in its entirety

Section 4.0 - Personnel Training and Qualification; Applicable in its entirety

Section 5.0 - Instructions, Procedures and Drawings; Applicable in its entirety

Section 6.0 - Document Control; Applicable in its entirety

Section 7.0 - Procurement; Applicable in its entirety

Section 8.0 - Data Quality Objectives; Not applicable

Section 9.0 - Field Activities; Applicable in its entirety

Section 10.0 - Analytical Activities; Applicable in its entirety

Section 11.0 - Report Preparation; Applicable in its entirety

Section 12.0 - Review of Work Activities; Applicable in its entirety

Section 13.0 - Inspections; Applicable in its entirety

Section 14.0 - Calibration and Maintenance of Measuring and Test Equipment; Applicable in its entirety

Section 15.0 - Test Control; Applicable in its entirety

Section 16.0 - Nonconformance Control and Corrective Actions; Applicable in its entirety

Section 17.0 - Change Control; Applicable in its entirety

Section 18.0 - Audits and Surveillance; Applicable with the following modification:

delete subsections 18.1 through 18.8

Section 19.0 - Records Management; Applicable in its entirety

3.0 Procedures

3.1 Standard Quality Procedures

The following Standard Quality Procedures (SQP) have been determined to be applicable:

SQP 1.1 Contractor Quality Control Program

SQP 3.2 Indoctrination and Training

SQP 4.1 Document Control

SQP 4.2 Records Management

SQP 5.1 Preparation, Revision and Approval of Plans and Procedures

SQP 6.1 Preparation, Review and Approval of Procurement Documents

SQP 7.1 Quality Inspections and Inspection Records

SQP 7.2 Receipt Inspection

SQP 8.2 Calibration and Maintenance of Measuring and Test Equipment

SQP 10.1 Nonconformance Control

SQP 10.2 Corrective Action

SQP 10.3 Stop Work Order

SQP 11.1 Field Work Variance/Request For Information

SQP 12.1 Quality Audits

SQP 12.2 Management Assessment

SQP 12.3 Quality Surveillances

SQP 13.1 Coordination of Subcontracted Analytical Laboratories

3.2 Standard Operating Procedures

The following Standard Operating Procedures (SOP) have been determined to be applicable:

SOP 1.1 Chain of Custody

SOP 2.1 Sample Handling, Packaging and Shipping

SOP 3.1 Surface and Shallow Subsurface Soil Sampling

SOP 6.1 Sampling Equipment and Well Material Decontamination

SOP 6.2 Drilling and Heavy Equipment Decontamination

SOP 17.1 Sample Labeling

SOP 17.2 Sample Numbering

SOP 18.1 Field QC Sampling

SOP 19.1 On-Site Sample Storage

SOP 23.1 Land Surveying

4.0 Attachments

CQC Manager Designation Letter

CQC Manager Alternate Designation Letter

CQC Organization Chart

Definable Features of Work Matrix

Testing Plan and Log

Geotechnical Laboratory Certifications

Submittal Register

**NON-TIME CRITICAL REMOVAL ACTIONS
AT SITE 16 (CANS C-2) AND SITE 15 TSTA
NAVAL AIR STATION
ALAMEDA, CALIFORNIA**

DELIVERY ORDER 0037

**ALTERNATE CQC MANAGER
LETTER OF DESIGNATION**

September 8, 1997

Mr. Tom Davis:

This letter will serve to assign you as IT Corporation's alternate site CQC Manager for the above captioned delivery order. In the case where the designated CQC Manager, Mr. Lee Laws, is unable to perform the CQC Manager's duties, you will serve in that capacity. In this role, you will have the responsibilities and authorities designated in Sections 2.1.3 of the Program Contractor Quality Control Plan, Revision 2. Additionally, you will have Stop Work authority and will exercise this authority consistent with the Program CQC Plan, Section 16.4 and SQP 10.3. You are granted the authority to approve submittals which have been certified by qualified submittal reviewers as identified on the CQC Organization Chart for this delivery order and as necessary to ensure the quality of the work, and direct the removal and/or replacement of nonconforming materials or work. You will be authorized to act as an alternate for 14 consecutive working days or 30 nonconsecutive working days at a maximum. In the case where it is believed that these time periods will be exceeded, you must notify me so that I may arrange with EFA-West and the ROICC to have this position replaced. You will report directly to me and will administer the established requirements of the delivery order CQC Plan.

If you have any questions or require additional information, please contact the undersigned at (510) 372-9100.

Sincerely,
IT CORPORATION



Valerie Crooks, P.E.
EFA-West Program Manager

**NON-TIME CRITICAL REMOVAL ACTIONS
AT SITE 16 (CANS C-2) AND SITE 15 TSTA
NAVAL AIR STATION
ALAMEDA, CALIFORNIA**

DELIVERY ORDER NUMBER 0037

**CQC MANAGER
LETTER OF DESIGNATION**

September 8, 1997

Mr. Lee Laws:

This letter will serve to assign you as IT Corporation's site CQC Manager for the above captioned delivery order. In the case where you are not able to perform the CQC Manager's duties, Mr. Tom Davis will serve as your alternate CQC Manager. In the role of CQC Manager you have the responsibilities and authorities designated in Section 2.1.3 of the Program Contractor Quality Control Plan, Revision 2. Additionally, you are granted Stop Work authority and will exercise this authority consistent with the Program CQC Plan, Section 16.4 and SQP 10.3. You are granted the authority to approve submittals which have been certified by qualified submittal reviewers as identified in the CQC organization chart for this delivery order and as necessary to ensure the quality of the work, and direct the removal and/or replacement of nonconforming materials or work. In this capacity you will report directly to me and will administer the established requirements of the delivery order CQC Plan.

If you have any questions or require additional information, please contact me at (510) 372-9100.

Sincerely,
IT CORPORATION



Thomas A. Davis
Program CQC Manager

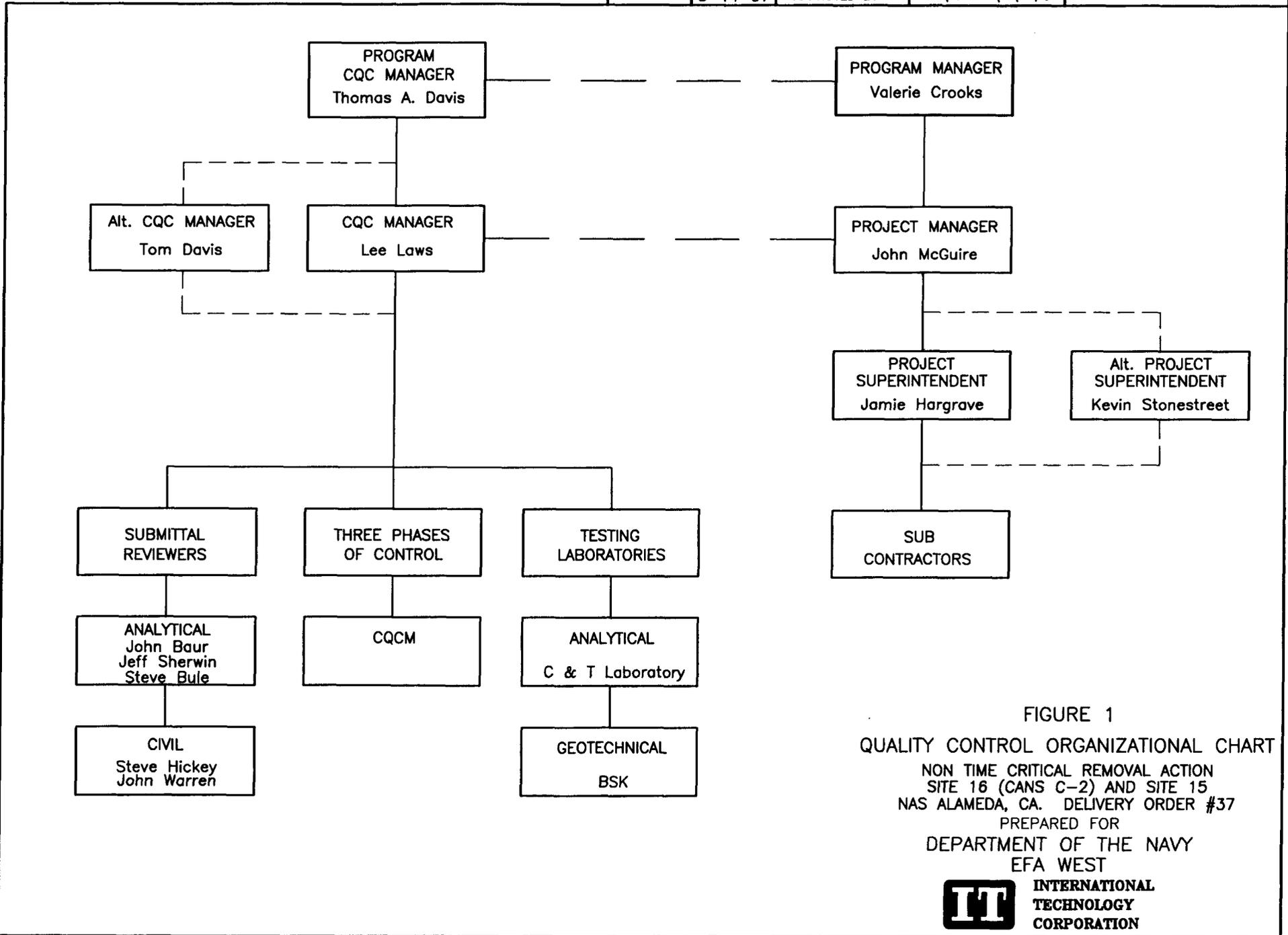


FIGURE 1
 QUALITY CONTROL ORGANIZATIONAL CHART
 NON TIME CRITICAL REMOVAL ACTION
 SITE 16 (CANS C-2) AND SITE 15
 NAS ALAMEDA, CA. DELIVERY ORDER #37
 PREPARED FOR
 DEPARTMENT OF THE NAVY
 EFA WEST



**CONTRACTOR QUALITY CONTROL PLAN
NON-TIME CRITICAL REMOVAL ACTIONS
AT SITE 16 (CANS C-2) AND SITE 15 TSTA
NAVAL AIR STATION, ALAMEDA, CALIFORNIA**

DELIVERY ORDER NUMBER 0037

DEFINABLE FEATURES OF WORK MATRIX

Spec. Section	Para. No.	Feature of Work	Prep		Initial		Follow up	Remarks
			Req	Date	Req	Date	Req	
Work Plan	2.2	Utility Survey	X		X		X	
Work Plan	2.3 / 2.6	Excavation and Backfill and Compaction of Soils	X		X		X	
Work Plan	2.4	Sampling and Analysis of Soils	X		X		X	
Work Plan	2.5	Transportation and Disposal	X		X		X	
			X		X		X	
			X		X		X	
			X		X		X	

TESTING PLAN AND LOG

CONTRACT NO. N62474-93-D-2151		PROJECT TITLE AND LOCATION					CONTRACTOR				
DELIVERY ORDER NO. 0037		NON-TIME CRITICAL REMOVAL ACTIONS AT SITE 16 (GANS C-2) AND SITE 15 TSTA NAVAL AIR STATION, ALAMEDA, CALIFORNIA					IT Corporation				
SPECIFICATION SECTION AND PARAGRAPH NUMBER	TEST PROCEDURE	TEST NAME	ACCREDITED/ APPROVED LAB		SAMPLED BY	LOCATION OF TEST		FREQUENCY of TEST	DATE COMPLETE	DATE FORWARDED TO CONTR. OFF	REMARKS
			YES	NO		ON SITE	OFF SITE				
2.6	ASTM D 1557	Soil Characterization	Yes		TBD	on site		1 per source			
2.6	ASTM D 2922	Compaction Test	Yes		TBD	on site		1 per Lin. Ft.			

**ENVIRONMENTAL PROTECTION PLAN
NON-TIME CRITICAL REMOVAL ACTION, SITE 16 CANS C-2 AREA
AND SITE 15 - SOIL REMOVAL AT THE TEMPORARY STORAGE
AND TREATMENT AREA
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September 1997

Approved by: Thomas A Davis
Thomas A. Davis
IT Program Contractor
Quality Control Manager

Date: 9-10-97

Approved by: John McGuire
John McGuire
IT Project Manager

Date: 9-9-97

Approved by: Valerie Crooks
Valerie Crooks, P.E.
IT Program Manager

Date: 09/10/97

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2.0 Environmental Conditions	2-1
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1.0 Introduction

1.1 Site Description

Naval Air Station, Alameda occupies approximately 2,635 acres located on the western end of Alameda Island in Alameda County, California (Figure 1). The former base is bounded to the north by the Oakland Inner Harbor, to the west and south by San Francisco Bay, and to the east by the City of Alameda. Military operations at the facility have ended and the base is transitioning to civilian use.

The Temporary Storage and Treatment Area (TSTA) is located about 1000 feet west of Site 15 and 300 feet south of the Oakland Inner Harbor (Figure 2). The TSTA was built to contain the contaminated soil stockpiles excavated from Site 15 during a removal action which took place in 1995. The contaminants of concern at the TSTA are lead and PCBs. Site 16 has been used as a storage yard where large shipping containers (CANS) were used as storage containers (Figure 3). Prior to the placement of the CANS at this site, the area was used for aircraft parking and to store paints, solvents, acids and bases, and transformers containing PCBs. The containers reportedly corroded over time and leaked. PCB oil was also used for weed control in the storage yard until 1963. The contaminants of concern at Site 16 are also lead and PCBs.

1.2 Objectives

IT Corporation (IT) was contracted by the Department of the Navy, Engineering Field Activity - West (EFA-West) to conduct a non-time critical removal action at Site 16 in compliance with the EE/CA, complete a non-time critical removal action at the TSTA in accordance with the EE/CA, and to prepare the required removal action documentation, excavate contaminated soil, provide sample collection and analysis, T&D of derived waste waters and soils and conduct the necessary activities to complete the work in accordance with federal, state and local requirements.

2.0 Environmental Conditions

The work area at Site 16 is covered with perforated steel plates (PSP) and a minor amount of asphalt. There is minimal vegetation within the site boundary. The site is relatively flat.

The TSTA consists of the stockpiles constructed by IT in 1995. The site is relatively flat with no pavement. The stockpiles consist of contaminated soil overlain by visqueen, clean sand and gravel. The TSTA site also has an electrical control panel used in the treatment process installed in 1995.

Work at Site 16 will be restricted to hours where school is not in session.

There are no known endangered/sensitive species which have been identified at either Site 16 or TSTA.

3.0 Environmental Protection Plan

The Environmental Protection Plan for the project has been developed to prevent the spread of contamination from Site 16 and the TSTA, with special emphasis to protect the high school located adjacent to Site 16.

Temporary six-foot fencing will be used to provide site security at the TSTA and Site 16. A utility survey will be conducted at Site 16 prior to beginning field work to verify utility locations which may interfere with the planned excavation activities. In the event that utility relocation is required, the Resident Officer in Charge of Construction will be contacted for direction.

The storm drains will be covered with hay bales to prevent fugitive runoff from entering the storm drain system.

Excavated soil will be loaded into trucks and transported to an approved disposal facility. The soil will not be stockpiled before excavation. Dust control will be accomplished with the use of a water truck and hose. The spraying of water will be directed by the project superintendent based on wind velocity and site observations.

Excavation equipment and the trucks used for transportation will be brushed off prior to leaving the base. A street sweeper will be used to keep the roadways clean and free from dirt accumulation.

Site restoration at Site 16 will consist of backfilling the excavation with clean imported fill material and gravel from the TSTA. The TSTA will be restored by removal of the stockpiles. Both Site 16 and the TSTA will be graded to the original grade and will provide drainage to prevent water from ponding. No concrete/asphalt resurfacing will be done at either location.

4.0 Pre-Construction Survey_____

Pictures of the two locations will be taken prior to mobilization for field work.

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	7-15-97	APPROVED BY	20 9-10-97		

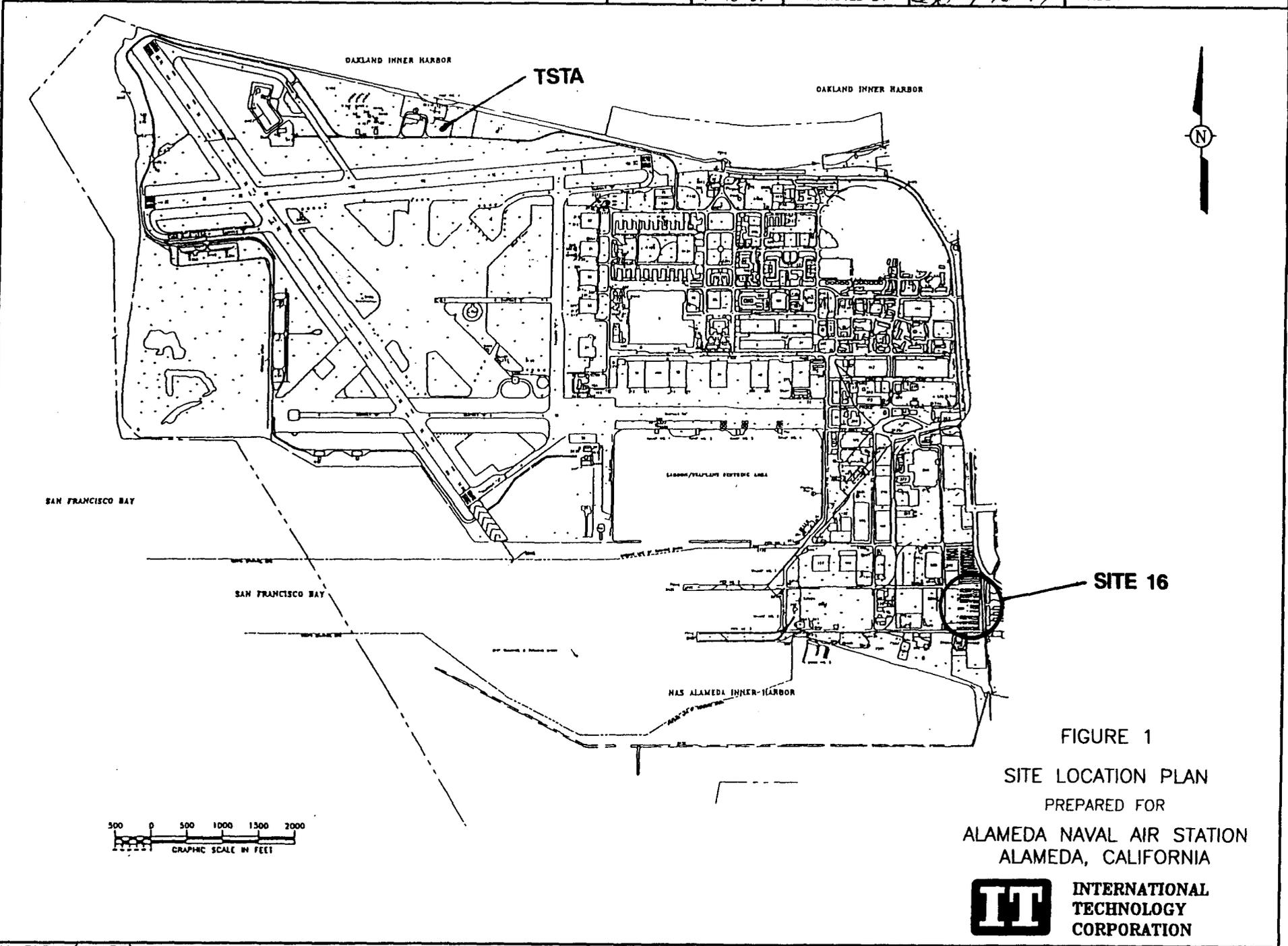


FIGURE 1

SITE LOCATION PLAN
PREPARED FOR

ALAMEDA NAVAL AIR STATION
ALAMEDA, CALIFORNIA

IT INTERNATIONAL
TECHNOLOGY
CORPORATION

DRAWING NUMBER 763356-A5

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7-15-97

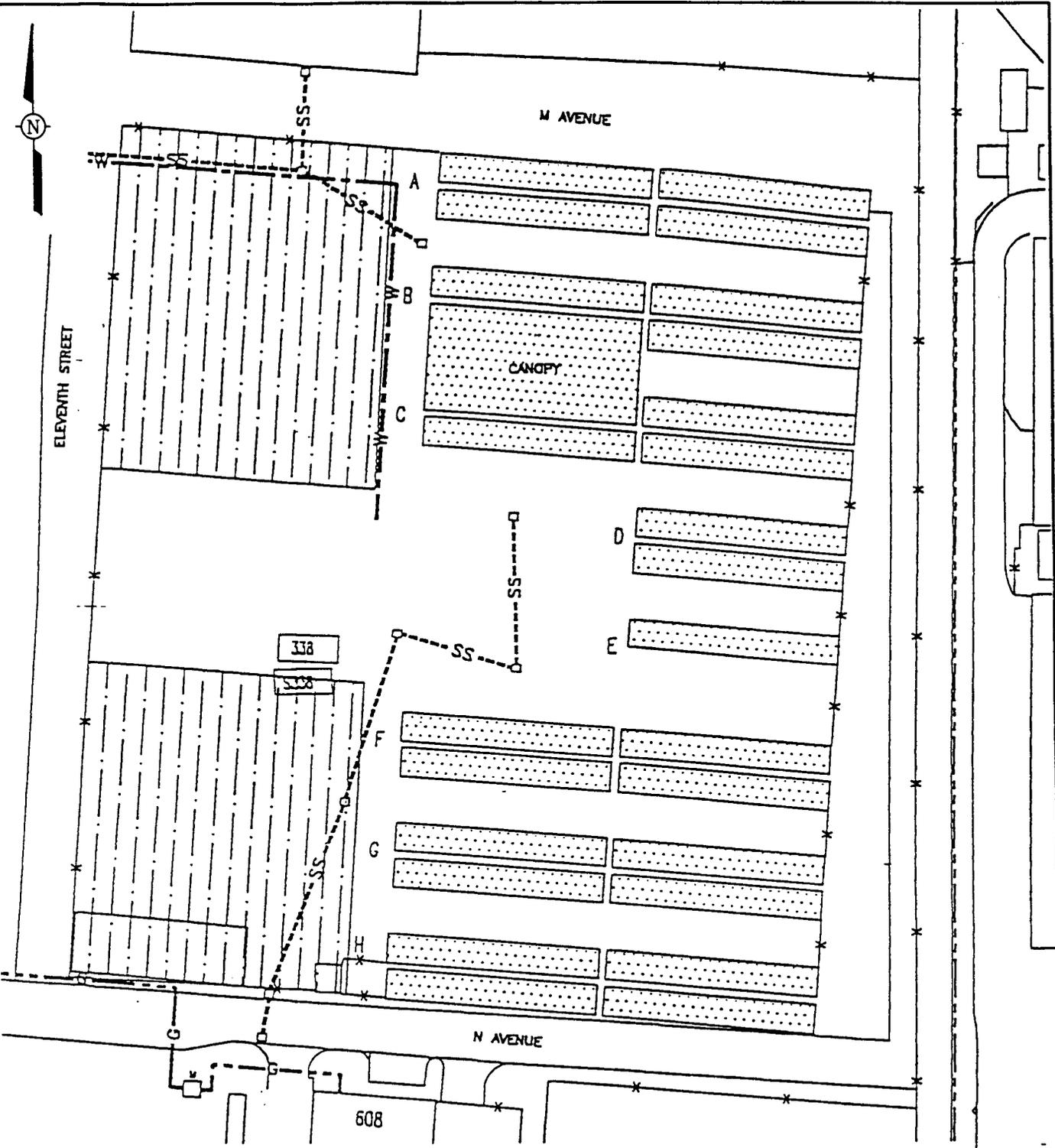
BJ

DRAWN BY



ELEVENTH STREET

M AVENUE



NOTE: SITE PAVED WITH ASPHALT CONCRETE EXCEPT WHERE SHADED.

LEGEND

-  STEEL PLATES ON GROUND SURFACE
-  CANS BUILDINGS
- ss- STORM SEWER LINE
- G- NATURAL GAS LINE
- W- FIRE PROTECTION WATER LINE

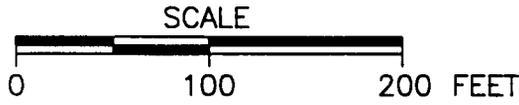


FIGURE 2

SITE PLAN
SITE 16

PREPARED FOR

ALAMEDA NAVAL AIR STATION
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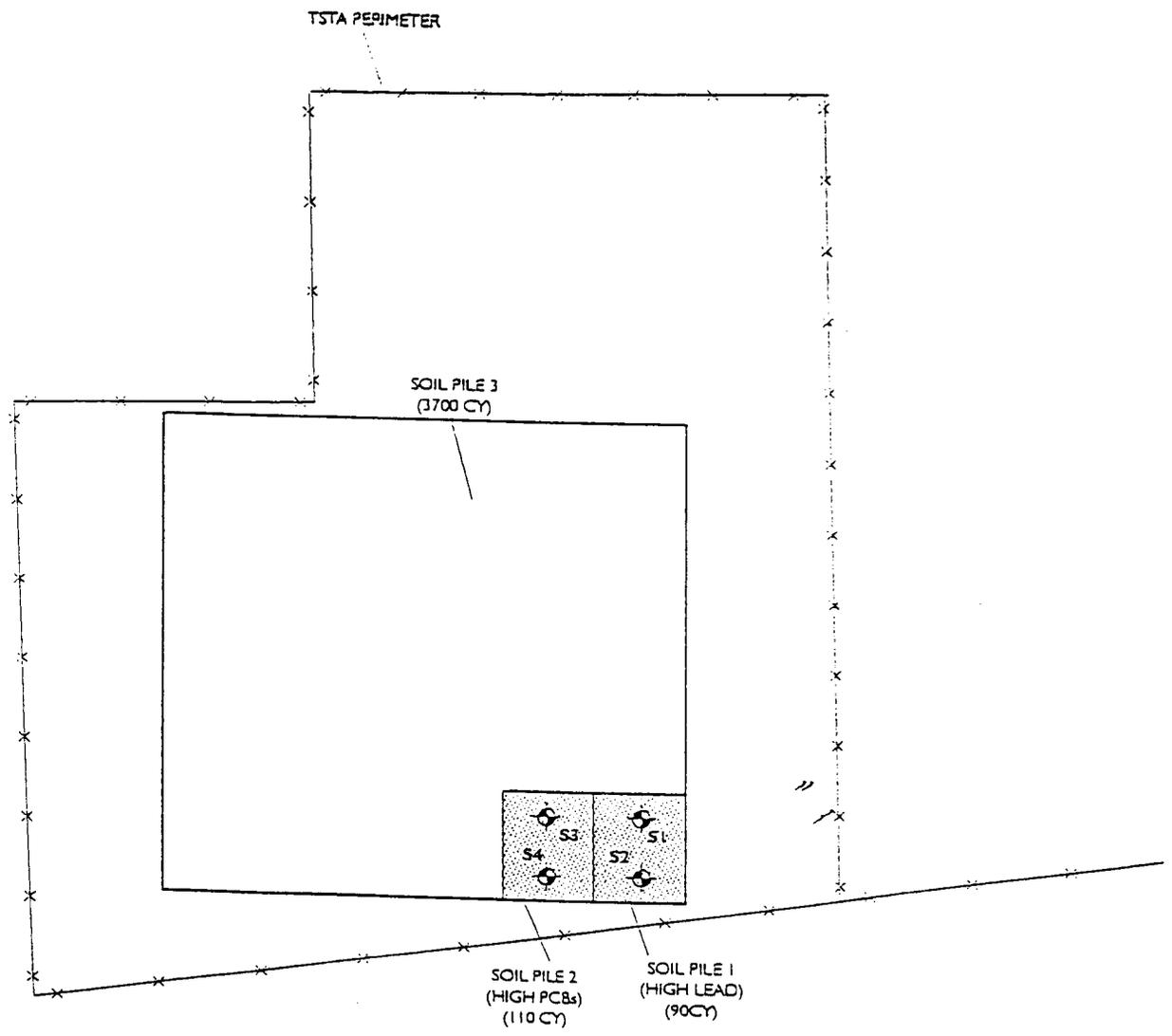
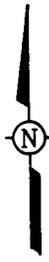
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APPROVED BY

BJ
7-15-97

SPM 9-9-97
9-10-97

DRAWN BY



LEGEND

⊕ SAMPLING LOCATIONS

SAMPLES ANALYZED FOR TOTAL LEAD, PCBs, CAL-WEST TEST, CAL-WET WITH DEIONIZED WATER

APPROXIMATE SCALE

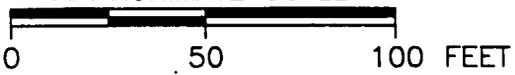


FIGURE 3

TSTA SITE PLAN

PREPARED FOR

**ALAMEDA NAVAL AIR STATION
ALAMEDA, CALIFORNIA**



**INTERNATIONAL
TECHNOLOGY
CORPORATION**

**SAMPLING AND ANALYSIS PLAN
NON-TIME CRITICAL REMOVAL ACTION, SITE 16 CANS C-2 AREA
AND SITE 15 - SOIL REMOVAL AT THE TEMPORARY STORAGE
AND TREATMENT AREA
NAVAL AIR STATION
ALAMEDA, CALIFORNIA**

**Contract No. N62474-93-D-2151
Delivery Order No. 0037**

Submitted to:

Department of the Navy
Engineering Field Activity, West
Naval Facilities Engineering Command
900 Commodore Drive, Building B-208
San Bruno, California 94066-2402

Submitted by:

IT Corporation
4585 Pacheco Boulevard
Martinez, California 94553

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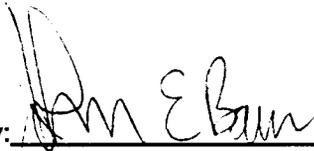
**SAMPLING AND ANALYSIS PLAN
NON-TIME CRITICAL REMOVAL ACTION, SITE 16 CANS C-2 AREA
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NAVAL AIR STATION
ALAMEDA, CALIFORNIA**

**Contract No. N62474-93-D-2151
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Revision 0

September 1997

Approved by:



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IT Program Chemist

Date:

9/10/97

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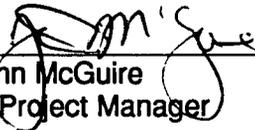


Thomas A. Davis
IT Program Contractor
Quality Control Manager

Date:

9-10-97

Approved by:



John McGuire
IT Project Manager

Date:

9-9-97

Approved by:



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2	Required Holding Times
3	Estimated Sample Quantity and Types
4	Analytical Method Requirements - Solid Waste Characterization
5	Solid Waste Acceptance Criteria
6	Solid Waste Acceptance Criteria - CAM 17 Metals
7	Solid Waste Acceptance Criteria - Organic Compounds

1.0 Site Background

This Sampling and Analysis Plan has been prepared for the non-time critical removal action at Site 16 - CANS C-2 Area and Site 15 - Soil removal at the Temporary Storage and Treatment Area (TSTA), at Naval Air Station (NAS) Alameda, California. The primary contaminants of concern for this project are PCBs and lead.

Site 16 has been used as a storage yard for large shipping containers (CANS) used for storage of paints, solvents, acids, bases and transformers containing PCB oil. Prior to the placement of CANS at this site, the area was used for aircraft parking. The shipping containers and transformers reportedly became corroded over time and leaked. PCB oil was also used for weed control in the storage yard until 1963.

This project will include the excavation and disposal of a volume estimated at approximately 1,800 cubic yards of contaminated soil at Site 16 and approximately 5,000 cubic yards at the TSTA. This removal action will consist of excavation activities at both Site 16 and TSTA. Removal action activities are detailed in the Work Plan.

2.0 Sampling Objectives

Sampling and analysis of the materials generated during the excavation activities will be performed to determine proper disposal of the solid wastes. Solid wastes will be characterized for disposal at an appropriate off-site landfill. The analytical results will be evaluated to determine the most cost effective offsite disposal facility. The analytical data will be reviewed by the Project Manager (PM) and designated technical personnel to determine the proper disposal method for the generated wastes. This data will be available to the Navy, regulatory agencies and off-site landfill personnel.

IT will sample the sand and gravel at the TSTA to verify it as clean. Five samples will also be collected from the trench and sump at the TSTA to verify the native soil as being clean.

Sampling and analysis of remaining soil after initial excavation activities will be conducted by PRC EMI to determine the extent of the excavation and to confirm that soil containing hazardous substances at concentrations that meet the project remediation goals are removed. Excavated soil will be sampled and analyzed to determine proper disposal. Since results of the sampling and analysis will be used to determine the ultimate disposition of the generated waste, definitive data is required. Only a Navy and IT Corporation (IT) approved analytical laboratory will be subcontracted to perform the required analyses. Analytical results will be submitted to IT in a standard laboratory report as described in Section C.1, Task 8.0 of IT's Navy RAC Analytical Services subcontract, February 1995.

Perimeter air monitoring for airborne PCB's and lead will take place during all excavation activities at Site 16.

All sampling activities will be performed in accordance with Section 9 of the Program Contractor Quality Control Plan (PCQCP) for Environmental Remedial Actions, Revision 1, September 1995.

3.0 Sample Location and Frequency

The perforated runway plates as well as the excavated soil from Site 16 will be loaded directly onto trucks for transportation to and disposal at an approved disposal facility. The material from Site 16 and TSTA will be removed as outlined in the project work plan.

IT will conduct initial soil characterization sampling at Site 16. Final confirmation sampling and analysis will be conducted by PRC EMI to verify that all soil with PCB and lead concentrations exceeding the cleanup levels has been removed. If the results of the laboratory analysis show that the remediation goals have been met, backfilling will begin with the placement of clean backfill in the excavation.

3.1 Site 16 Sampling

Prior to excavation, three four-point composite samples will be collected at Site 16 (four individual grab samples composited at the laboratory into one sample). The individual grab samples should be collected at evenly distributed locations at a depth of 0-6 inches.

Samples will be analyzed for total petroleum hydrocarbons as gasoline, diesel and jet fuel by EPA Method 8015 Modified, pesticides and polychlorinated biphenyls (PEST/PCBs) by EPA Method 8080, California regulated metals (CAM 17) by EPA Method 6010/7000, and reactivity, corrosivity (as pH) and ignitability (RCI) according to SW-846 Chapter 7. The California waste extraction test (WET) may be required to determine metals concentrations for comparison to landfill acceptance criteria. The toxicity characteristic leaching procedure (TCLP) may also be required to determine soluble metals concentrations for comparison to landfill acceptance criteria. A normal 2-week turnaround time will be required for the analytical results based on the project schedule.

Results of these analyses will be compared to the Solid Waste Acceptance Criteria, Tables 5, 6 and 7, to determine the proper off-site landfill to be used. Wastes not acceptable for disposal at a Class II or III facility must be disposed at a Class I facility.

Initially, Site 16 will be excavated to the dimensions listed in the work plan. Confirmation sampling by PRC EMI will begin after the initial excavation.

3.2 TSTA Sampling

The TSTA containing the stockpiled soil from Site 15 during the removal action that took place in 1995 will be sampled using a four-point composite. Representative samples are required for wastes intended for landfills. A four-point composite (four individual grab samples composited at the laboratory into one sample) generally satisfies the requirements for representativeness. The individual grab samples should be collected at evenly distributed locations at a depth of 0-6 inches to two feet within each grid. One composite sample must be collected and analyzed per 750 cubic yards of solid waste. Results of these analyses will be compared to the Solid Waste Acceptance Criteria, Tables 5, 6 and 7, to determine the proper off-site landfill to be used. Wastes not acceptable for disposal at a Class II or III facility must be disposed at a Class I facility. These samples will be collected after mobilization to the field.

Samples will be analyzed for total petroleum hydrocarbons by EPA Method 8015 Modified, volatile organic compounds (VOCs), including benzene, toluene, ethyl benzene and xylenes (BTEX), by EPA Method 8240, semivolatile organic compounds (SVOCs) by EPA Method 8270, pesticides and polychlorinated biphenyls (PEST/PCBs) by EPA Method 8080, California regulated metals (CAM 17) by EPA Method 6010/7000, and reactivity, corrosivity (as pH) and ignitability (RCI) according to SW-846 Chapter 7. The California waste extraction test (WET) may be required to determine metals concentrations for comparison to landfill acceptance criteria. The toxicity characteristic leaching procedure (TCLP) may also be required to determine soluble metals concentrations for comparison to landfill acceptance criteria. A fast turnaround time will be required for the analytical results based on the project schedule.

3.3 QA/QC Samples

One Source Blank (Field Blank) and one Rinsate Blank shall be collected during the first soil sampling event. If the Rinsate Blank indicates inadequate equipment decontamination, then the problem must be corrected and a Rinsate Blank collected during the subsequent sampling event.

Trip blanks shall be included in any sample shipment that includes samples being tested for volatile organic compounds or volatile mixtures (i.e., gasoline).

4.0 Sample Designation

Samples will be uniquely designated using the following numbering system: Site 16 samples will be sequentially numbered beginning with 3716001, 3716002, etc. TSTA samples will be sequentially numbered beginning with 37TS001, 37TS002, etc.

Sample numbers will be documented and sample containers labeled in accordance with IT SOPs 17.1 and 17.2.

5.0 Sampling Equipment and Procedures

5.1 Site 16 Samples

Initial waste characterization samples from Site 16 will be collected prior to excavation using a slide hammer with brass sleeves. The brass sleeves will then be removed, each end covered with teflon tape and capped.

5.2 TSTA Samples

The stockpiled solids will be divided into a grid delineating individual stockpiles of 100 cy each to determine sampling frequency. Four (4) discreet samples will be collected and submitted for analysis per 100 cy. Sample locations should be marked using pin flags or wooden stakes.

Solids samples will be collected from the stockpiles using a hand auger and as described in IT SOP 3.1. The solids are transferred from the collection device into certified pre-cleaned sample containers (8 oz glass jars). The sample container should be completely filled so that minimal headspace exists.

5.3 Decontamination of Sampling Equipment

Decontamination of all reusable sampling equipment (hand auger) used during the project will be performed before initial use on site and between each use at distinct sample locations. Sampling equipment decontamination will be performed per IT SOP 6.1. Equipment will be scrubbed with a brush and washed using laboratory-grade detergent. Equipment will be rinsed first with water and followed by deionized water.

6.0 Sample Handling and Analysis

Sample containers, preservatives and holding times will be observed as indicated in Tables 1 and 2. The sample chain of custody will be implemented in accordance with IT SOP 1.1. Samples will be packaged and placed in coolers with ice for shipment to the laboratory according to IT SOP 2.1.

Specific analytical method requirements are outlined in Tables 3 and 4. These methods shall be performed in accordance with IT's Statement of Work, Navy RAC Analytical Services subcontract, February 1995.

TABLE 1
SAMPLE CONTAINERS

Analysis	Soil Containers per Sample ¹	Water Containers per Sample ²
VOC SVOC Pesticides/PCBs Metals	8-oz. jar ³ 8-oz. jar ³ 8-oz. jar ³ 8-oz. jar ³	3 x 40 mL vials ^{4,5} 2 x 1 L ambers ⁶ 2 x 1 L ambers ⁶ 1 x 1 L polyethylene ⁷
TPH - Purgeable (gasoline) TPH - Extractable (diesel, motor oil)	8-oz. jar ³ 8-oz. jar ³	3x40 mL vials ⁴ 2 x 1 L ambers ⁶
Ignitability Reactivity Corrosivity (as pH)	8-oz. jar ³ 8-oz. jar ³ 8-oz. jar ³	NA NA NA
WET/TCLP	8-oz. jar ³	NA

Notes:

oz. = Ounce

mL = Milliliter

L = Liter

NA = Not applicable

¹ = Total soil sample containers shall be provided with a 15 percent additional allotment for field duplicates and matrix spikes

² = Total water sample containers shall be provided with a 20 percent additional allotment for field duplicates and matrix spikes

³ = All glass jars shall have Teflon-lined lids; a maximum of two 8-ounce jars per sample shall be required; for certain projects, glass jars of different sizes may be requested. Brass or stainless steel sleeves may be supplied by the field and used in place of 8-oz glass jars

⁴ = All vials shall have caps with Teflon-lined septa

⁵ = Preserved with HCL

⁶ = All ambers shall have Teflon-lined caps

⁷ = Preserved with HNO₃

**TABLE 2
REQUIRED HOLDING TIMES¹**

Analysis	Soil	Water
Metals	Hg-28 days, Others-6 months	Hg-28 days, Others-6 months
VOC	14 days	14 days
SVOC	14 days/40 days ²	7 days/40 days ²
Pesticides/PCBs	14 days/40 days ²	7 days/40 days ²
TPH-Purgeable (gasoline)	14 days	14 days
TPH-Extractable (diesel, motor oil)	14 days/40 days ² 28 days	7 days/40 days ² NA
Reactivity	14 days	14 days
Corrosivity (as pH)	2 days	2 hours
Ignitability/Flashpoint	NA	48 hours
WET/TCLP	PHT/PHT/AHT ³	NA

Notes:

NA = Not applicable

PHT = Preparation holding time from appropriate analytical method

AHT = Analytical holding time from appropriate analytical method

¹ = From the date of sample collection

² = x days/y days = x days for sample extraction (or leaching)/y days for analysis of extracts (or leachate)

³ = a days/b days/c days = a days for leaching/b days for leachate/c days for analysis of extracts

TABLE 3

ESTIMATED SAMPLE QUANTITY AND TYPES

Parameters	Method No.	Original Samples	MS/MSD Samples (5%)	QC Field Duplicates (10%)	Rinsate Blanks	Source Blank	Trip Blanks	Total Samples
WASTE CHARACTERIZATION - Site 16								
Waste Characterization	All Analysis	38	-	-	1	-	-	39
TSTA SAMPLES								
Total Samples for:	All Analysis	50	3	-	1	-	1	55
Volatiles	EPA 8240	-	-	-	-	-	-	
Semivolatiles	EPA 8270	-	-	-	-	-	-	
Pesticide/PCB	EPA 8080	-	-	-	-	-	-	
TPH	EPA 8015M	-	-	-	-	-	-	
CAM 17 metals	EPA 6010/7000	-	-	-	-	-	-	
RCI	SW-846 Chapter 7	-	-	-	-	-	-	
California Waste Extraction Test		-	-	-	-	-	-	
Concrete/Asphalt Samples								
Total Samples for:	All Analysis	1/100cy	1	-	1	-	-	
Volatiles	EPA 8240	-	-	-	-	-	-	
Semivolatiles	EPA 8270	-	-	-	-	-	-	
Pesticide/PCB	EPA 8080	-	-	-	-	-	-	
TPH	EPA 8015M	-	-	-	-	-	-	
CAM 17 metals	EPA 6010/7000	-	-	-	-	-	-	
RCI	SW-846 Chapter 7	-	-	-	-	-	-	
California Waste Extraction Test		-	-	-	-	-	-	

TABLE 4
ANALYTICAL METHOD REQUIREMENTS
Solid Waste Characterization

Analysis	Method Reference
VOC SVOC Pesticides/PCBs CAM 17 Metals ²	8240 ¹ 8270 8080 6010/7000
TPH - PRG and EXT	8015 mod
Percent Moisture Reactivity, Corrosivity (as pH) and Ignitability (RCI)	CLP SOW Chapter 7, SW-846
TCLP	1311

Notes:

- ¹ = Must include benzene, toluene, ethylbenzene and xylenes
- ² = STLC or TCLP metals may be required

**TABLE 5
SOLID WASTE ACCEPTANCE CRITERIA***

Parameter	BFI Vasco Road Class III	BFI Keller Canyon Class II	Chem Waste Kettleman Class I
CAM 17 Metals	See table 6	See table 6	-
Benzene	0.4 mg/L	10.0 mg/L	-
Toluene	16 mg/L	-	-
Ethylbenzene	12.0 mg/L	-	-
Xylene	8.0 mg/L	-	-
8240	see table 7	see table 7	-
8270	see table 7	see table 7	-
8080	see table 7	see table 7	-
reactive Sulfide	<100 mg/kg	<500 mg/kg	-
reactive Cyanide	<10 mg/kg	<250 mg/kg	-
Corrosivity	pH range: 5 to 10	pH range: 2.0 to 12.5	-
Ignitability	Flashpoint >140 °F	Flashpoint >140 °F	-

- * Criteria based upon BFI Industrial Waste Services, Waste Acceptance Guidelines for The Vasco Road Sanitary Landfill, and The Keller Canyon Landfill. In the event an alternative disposal site is chosen, the acceptance criteria will be amended.
- No requirement, must provide data.

**TABLE 6
SOLID WASTE ACCEPTANCE CRITERIA*
CAM 17 METALS**

	BFI Vasco Road Class III			BFI Keller Canyon Class II		
	TTLIC Limit, mg/Kg	STLC (WET) Limit**, mg/L	10 X STLC	TTLIC Limit, mg/Kg	STLC (WET) Limit**, mg/L	10 X STLC
Antimony	3.5	0.35	3.5	500	15	150
Arsenic	3.5	0.35	3.5	500	5	50
Barium	700	70	700	10000	100	1000
Beryllium	0.7	0.07	0.7	75	0.75	7.5
Cadmium	3.5	0.35	3.5	100	1	10
Chromium	35	3.5	35	500	5	50
Cobalt	35	3.5	35	8000	80	800
Copper	140	14	140	2500	25	250
Lead	20	1.05	10.5	1000	5	50
Mercury	0.06	0.006	0.06	20	0.2	2
Molybdenum	7	0.7	7	3500	350	3500
Nickel	70	7	70	200	20	200
selenium	7	0.7	7	100	1	10
Silver	35	3.5	35	500	5	50
Thallium	1.4	0.14	1.4	700	7	70
Vanadium	14	1.4	14	2400	24	240
Zinc	1400	140	1400	5000	250	2500

- * Criteria based upon BFI Industrial Waste Services, Waste Acceptance Guidelines for The Vasco Road Sanitary Landfill, and The Keller Canyon Landfill. In the event an alternative disposal site is chosen, the acceptance criteria will be amended.
- ** STLC results may not be required if the TTLIC result is less than 10 times the STLC limit.

TABLE 7
SOLID WASTE ACCEPTANCE CRITERIA*
ORGANIC COMPOUNDS

	BFI Vasco Road Class III and BFI Keller Canyon Class II			
	TTL Limit, mg/kg	TCLP Limit**, mg/L	STLC (WET) Limit***, mg/L	20 X TCLP/ 10 X STLC
Carbon Tetrachloride	10	0.5		10
chlordane	2.5	0.03		0.6
chlorobenzene	2000	100		2000
Cresols	4000	200		4000
DDT,DDE,DDD	1		0.1	1
1,4 Dichlorobenzene	150	7.5		150
1,2 Dichloroethane	10	0.5		10
1,1 Dichloroethylene	14	0.7		14
2,4 Dinitrotoluene	2.6	0.13		2.6
Endrin	0.2	0.02		0.2
Heptachlor	4.7	0.008		0.16
Hexachlorobenzene	2.6	0.13		2.6
Hexachlorobutadiene	10	0.5		10
Hexachloroethane	60	3		60
Methoxychlor	100	10		100
Methyl Ethyl Ketone	4000	200		4000
Nitrobenzene	40	2		40
Pentachlorophenol	17	100		17
Polychlorinated Biphenyls	50		5	50
Tetrachloroethylene	14	0.7		14
Toxaphene	5	0.5		5
Trichloroethylene	2040	0.5		10
Vinyl Chloride	4	0.2		4

* Criteria based upon BFI Industrial Waste Services, Waste Acceptance Guidelines for The Vasco Road Sanitary Landfill, and The Keller Canyon Landfill. In the event an alternative disposal site is chosen, the acceptance criteria will be amended.

** TCLP results may not be required if the TTL result is less than 20 times the TCLP limit

*** STLC results may not be required if the TTL result is less than 10 times the STLC limit.

**SITE HEALTH AND SAFETY PLAN
NON-TIME CRITICAL REMOVAL ACTIONS,
SITE 16-CANS C-2 AREA AND SITE 15-TSTA
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ALAMEDA, CALIFORNIA**

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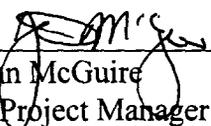
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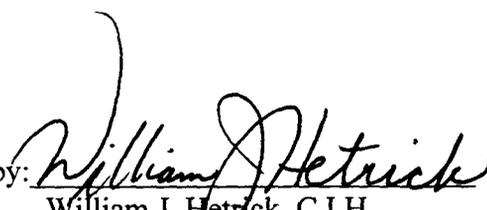
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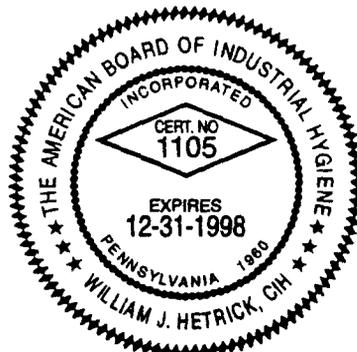


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List of Acronyms

ABIH	American Board of Industrial Hygiene
AIDS	Acquired Immune Deficiency Syndrome
AIHA	American Industrial Hygiene Association
ANSI	American National Standards Institute
ATSDR	Agency for Toxic Substances and Disease Registry
bpm	Beats Per Minute
BCSP	Board of Certified Safety Professionals
°C	Degrees Celsius
Cal/EPA	California Environmental Protection Agency
Cal/OSHA	California Department of Industrial Relations, Division of Occupational Safety and Health
CANs	Large Shipping Containers
CCR	California Code of Regulations
CET	Certified Environmental Trainer
CFR	Code of Federal Regulations
CIH	Certified Industrial Hygienist
CO	Contracting Officer
CPR	Cardiopulmonary Resuscitation
CSP	Certified Safety Professional
CRZ	Contamination Reduction Zone
dBA	Decibels, A-weighted
DOT	Department of Transportation
DTSC	Department of Toxic Substances Control
EFA	Engineering Field Activity
EKG	Electrocardiogram
EMR	Environmental Medical Resources, Inc. (Occupational Health Physician)
EPA	Environmental Protection Agency
EZ	Exclusion Zone
°F	Degrees Fahrenheit
FADL	Field Activity Daily Log
FID	Flame Ionization Detector
FM	Factory Mutual
FR	Federal Register
GFCI	Ground Fault Circuit Interrupter
HAZWOPER	Hazardous Waste Operations and Emergency Response
HBV	Hepatitis B Virus
HEPA	High Efficiency Particulate
HIV	Human Immunodeficiency Virus
HS	Health and Safety

List of Acronyms: Continued

IDLH	Immediately Dangerous to Life and Health
IIPP	Injury and Illness Prevention Plan
IT	IT Corporation
LEL	Lower Explosive Limit
MSDS	Material Safety Data Sheet
NAS	Naval Air Station
NIOSH	National Institute of Occupational Safety and Health
NOSC	Navy On-Scene Coordinator
NOSCDR	Navy On-Scene Commander
NRR	Noise Reduction Rating
OSHA	Occupational Safety and Health Administration
OVA	Organic Vapor Analyzer
PCBs	Polychlorinated Biphenyls
PEL	Permissible Exposure Limit
PHSP	Program Health and Safety Plan
PID	Photo ionization Detector
PM	Project Manager
PPE	Personal Protective Equipment
ppm	Parts per Million by Weight
PS	Project Superintendent
RIST	Recirculating In Situ Treatment
ROICC	Resident Officer In Charge Of Construction
SEIR	Supervisor's Employee Injury Report
SHSO	Site Health and Safety Officer
SHSP	Site Health and Safety Plan
SIR	Safety Inspection Report
SSHO	Site Safety and Health Officer (Replaced with SHSO)
SSHP	Site Safety and Health Plan (Replaced with SHSP)
T8CCR	Title 8 California Code of Regulations (Cal/OSHA Regulations)
TBA	To Be Announced
TSM	Tailgate Safety Meeting
TSTA	Temporary Storage and Treatment Area
UL	Underwriter's Laboratory
USA	Underground Services Alert
USACE	U.S. Army Corps of Engineers
USN	U.S. Navy
UST	Underground Storage Tank
VOC	Volatile Organic Compound
WBGT	Wet Bulb Globe Temperature

Disclaimer

The enclosed Site Health and Safety Plan (SHSP) has been designed for the methods presently contemplated by IT Corporation (IT) for execution of the proposed work. Therefore, the SHSP may not be appropriate if the work is not performed by or using the methods presently contemplated by IT.

In addition, as the work is performed, conditions different from those anticipated may be encountered and the SHSP may have to be modified. Therefore, IT makes no representations or warranties as to the adequacy of the SHSP, except for warranties specifically stated in the SHSP itself.

1.0 Introduction

1.1 Objective

The objective of this Site Health and Safety Plan (SHSP) is to ensure that safe working conditions exist during the work activities at Naval Air Station (NAS) Alameda. The safety procedures outlined have been established based on preliminary analysis of potential hazards within the site. This SHSP describes the health and safety requirements and procedures to be used while conducting field work and includes:

- Responsibilities of persons on site;
- Training Program;
- Medical Surveillance Program;
- Activity Hazard Analysis;
- Hazard Control Program;
- Personal Control Program;
- Decontamination Procedures;
- Emergency Response Plan;
- Spill Containment Program;
- Industrial Hygiene Monitoring Program; and
- Certain Specific Work Procedures.

This document, in combination with IT's corporate Health and Safety Policy and Procedures Manual, also serves as the company's Injury and Illness Prevention Plan (IIPP) and Code of Safe Work Practices.

1.2 Site and Facility Description

NAS Alameda is an inactive military facility with a closed airfield located on the island of Alameda, California, which is on the east side of San Francisco Bay. It is bordered on three sides by open water. The land boundary abuts the City of Alameda on the east. The facility is located on former marshland that has been gradually filled in starting in the early 1900s to the late 1950s. Other facilities reportedly located on the site have included a rail terminal, an oil refining company, and a yacht harbor. Currently, the facility is home to several private industries.

Site 16 has been used as a storage yard where large shipping containers (CANs) were used for storage. Prior to the placement of the CANs, the area was used for aircraft parking and to store paints, solvents, acids, bases, and transformers containing PCBs. The containers reportably corded and leaked out their contents over a course of time. PCB oil was also used for weed control in the area. The contaminants of concern are PCBs and lead.

The Temporary Storage and Treatment Area (TSTA) is located at the Naval Aviation Depot (NADEP) Farm about 1000 feet west of Site 15 and 300 feet south of the Oakland Inner Harbor. The TSTA was built to contain the contaminated soil stockpiles excavated from Site 15 in 1995. The contaminants of concern are also PCBs and lead.

1.3 Policy Statement

It is the policy of International Technology Corporation (IT) to provide a safe and healthful work environment for all its employees and subcontractors. IT considers no phase of operation or administration to be of greater importance than injury or illness prevention. Safety takes precedence over expediency or shortcuts, and every reasonable step to reduce the possibility of injury, illness, or accident will be taken.

This SHSP prescribes the procedures that must be followed during field work associated with the Non-Time Critical Removal project. Operational changes which could affect the health or safety of personnel, the community, or the environment will not be made without the prior approval of the IT Project Manager (PM), and the Program Certified Industrial Hygienist (CIH).

The provisions of this SHSP are mandatory for all IT personnel and subcontractors assigned to the project. IT requires all visitors to the work site to abide by the requirements of this SHSP. The Program CIH will provide written addenda to this SHSP when changes warrant. No changes to the plan will be implemented without prior approval of the Program CIH or his authorized representative, and acceptance by the ROICC, the EFA West Contracting Officer Representative.

1.4 References

This SHSP complies with Federal Occupational Safety and Health Administration (OSHA), California Department of Industrial Relations, Division of Occupational Safety and Health (Cal/OSHA), United States Environmental Protection Agency (EPA), California Environmental

Protection Agency (Cal/EPA), and California Department of Toxic Substances Control (DTSC), and U.S. Army Corps of Engineer (USACE) regulations. This SHSP follows the guidelines established in the following documents:

- Standard Operating Safety Guidelines (EPA, June 1992);
- Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities; Department of Health and Human Services (DHHS), National Institute of Occupational Health and Safety (NIOSH), Environmental Protection Agency (EPA), and U.S. Coast Guard (USCG) Publication No. 86-116;
- Title 29 of the Code of Federal Regulations (CFR), Parts 1910 and 1926 including Part 1910.120/1926.65 or in California Title 8 California code of Regulations (T8CCR) (Cal/OSHA Construction and General Industry Safety Orders) including Section 5192 (Hazardous Waste Operations and Emergency Response);
- U.S. Army Corps of Engineers Safety and Health Requirements Manual (USACE 385-1-1, September 1996);
- IT Health and Safety Policies and Procedures.

The contents of this SHSP are consistent with, or supplement the IT Health and Safety Policies and Procedures. All applicable provisions of the Policies will also be followed during this project. A copy of the Health and Safety Policy and Procedures manual will be maintained at the job site by the Site Health and Safety Officer (SHSO). All IT employees and subcontractors must follow the facilities' fire, safety, and traffic regulations, all applicable federal, state, and local regulations, as well as the USACE Safety and Health Requirements Manual (EM385-1-1).

2.0 Responsibilities

2.1 All Personnel

Each person is responsible for his/her own health and safety, for completing tasks in a safe manner and for reporting any unsafe acts or conditions to his/her supervisor and the Project Superintendent (PS). All persons on-site are responsible for continuous adherence to health and safety procedures during the performance of any project work. In no case may work be performed in a manner which conflicts with the intent of, or the inherent safety precautions expressed in, this SHSP. After due warning, persons who violate procedure and work rules may be dismissed from the site, terminated, or have their contract revoked. Blatant disregard or repeated infractions of health and safety policies are grounds for disciplinary action up to, and including, dismissal, and/or removal from the work area.

All IT and subcontractor personnel are required to read and acknowledge their understanding of this SHSP. All project personnel are expected to abide by the requirements of this SHSP and cooperate with project management in ensuring a safe and healthful work site. Site personnel are required to immediately report any of the following to the PS:

- Accidents and injuries, no matter how minor;
- Unexpected or uncontrolled release of chemical substances;
- Any signs or symptoms of chemical exposure;
- Any unsafe or malfunctioning equipment; and
- Any changes in site conditions which may affect the health and safety of project personnel.

2.2 Project Manager

The Project Manager (PM) has overall responsibility for the health and safety of all personnel on the project. The PM's responsibility with regard to health and safety is to maintain company policy and resolve health and safety issues with the assistance and guidance of the Program CIH. The PM will provide the Program CIH with the company name and representatives of those

contractors being considered for hire, as well as those hired, to allow required preliminary information to be collected in a timely manner.

The PM is responsible to:

- Notify the Program CIH when field operations begin so that field support can be scheduled;
- Ensure that the SHSP is read and signed by all field personnel on the project, including subcontractors. The SHSP must also be signed by the Program CIH and the PM;
- Ensure that all provisions of the SHSP are followed. Contact the Program CIH for any variances or modifications desired;
- Demonstrate a personal commitment to safety on the project;
- Ensure that tailgate safety meetings are conducted daily, signed by all field workers and reviewed by the PS and the PM;
- Ensure that Field Activity Daily Log (FADL) forms are completed for each day of operations, signed and dated by the author, and that all persons listed have signed the SHSP and tailgate form;
- Have supervisors inspect the project at least weekly, with inspections and corrective actions documented on FADL forms;
- Ensure correction of any reported or observed safety hazard;
- Ensure employees are trained on the hazards of any hazardous substances used. MSDSs must be on-hand for all hazardous materials (other than wastes) and containers must be properly labeled;
- Ensure that project safety equipment is inspected regularly (monthly for fire extinguishers);
- Report all near-miss, injury, illness and vehicle accident incidents to the Program CIH and the Resident Officer In Charge Of Construction (ROICC) within 24 hours and ensure that a Supervisor's Employee Injury Report (SEIR) form is initiated. Accidents resulting in a fatality or inpatient hospitalization of 3 or more employees

must be reported within 8 hours. The ROICC will be notified using the Contractor Significant Incident Report (CSIR-1);

- Notify the Program CIH when field work lasts more than six months so that the SHSP can be reviewed and updated as needed;
- Immediately notify the Program CIH and the ROICC upon receiving notice of any regulatory agency inspection;
- Ensure that the project files receive copies of:
 - all internal and external HS correspondence
 - all air sampling records (including “none-detected”)
 - all accident reports and Accident Review Board documentation
 - documentation of audits and corrective actions
 - air monitoring equipment calibration records
 - all FADLs.
- The PM must have completed the Hazardous Waste Supervisor’s course.

The PM will perform at least one site safety audit per month while field activities are conducted and will ensure that all accidents, incidents and/or near-misses are investigated in a timely manner. The PM will ensure that management performs an investigation of all incidents or accidents which had the potential to cause a lost-time or hospitalization incident or fatality within 24 hours of the incident.

The PM for this delivery order is John McGuire.

2.3 Program Certified Industrial Hygienist (CIH)

The Program CIH is responsible for the preparation and modification (as necessary) of this SHSP. The Program CIH will approve changes and update the SHSP as warranted by altered site conditions and shall have the only authorization to effect such changes (except those changes outlined in the Emergency Response Plan). The Program CIH will advise the PM on health and safety issues which may have an impact on project operations. In addition, the Program CIH is responsible to:

- Oversee and review the work of the Site Health and Safety Officer (SHSO);

- Administer the general health and safety program;
- Provide technical assistance to the PM and the PS;
- Investigate significant accidents, illnesses and near-misses. Recommend corrective actions as appropriate. Review all Accident/Incident Investigation Reports;
- Establish the required personal protective equipment for each work area;
- Assist the PS and SHSO in establishing decontamination area locations;
- Evaluate and approve contractors regarding health and safety compliance both prior to accepting the contract and upon completion of the project, as appropriate; and
- Establish proper employee exposure monitoring and assess the appropriateness of protective measures.

The Program CIH is William J. Hetrick. Mr. Hetrick is certified by the American Board of Industrial Hygiene (ABIH).

2.4 Project Superintendent

The Project Superintendent (PS) reports to the PM and is responsible for field enforcement of the SHSP. This includes communicating project health and safety requirements to all on-site project personnel (both IT and subcontractor personnel), consulting with the Program CIH regarding changes to the SHSP, and conducting periodic health and safety inspections with the SHSO. The PS is responsible for informing the Program CIH and the PM of any changes to the work plan, prior to implementation, so that health and safety issues introduced by those changes may be properly addressed. The PS will be on-site during all project related activities. If the PS must leave the site, the PM will designate the responsibilities of the PS to a qualified alternate supervisor [i.e., person(s) having 8-hours of hazardous waste operations supervisory training per 29 CFR 1910.120 (e)(4), 1926.65 (e)(4), and or T8CCR 5192 (e)(4)], as appropriate.

Other responsibilities include:

- Reading and being familiar with the Project SHSP, as well as appropriate IT Policies and Procedures;

- Directing work so as to ensure personnel safety and protection of property and the environment;
- Presiding at tailgate safety meetings (a shared responsibility by the SHSO);
- Providing all required safety supplies to work crews prior to each task;
- Demonstrating a personal commitment to safety on the project;
- Observing project personnel for signs of chemical or physical trauma;
- Conducting jobsite safety audits with the SHSO at least weekly;
- Immediately notifying the PM and Program CIH upon receiving notice of any jobsite inspection by a regulatory agency;
- Correcting any hazards disclosed by project workers or the SHSO;
- Rendering appropriate disciplinary action to individuals who do not strictly adhere to the project SHSP;
- Immediately notifying the PM, Program CIH, and the SHSO of any illnesses, accidents, injuries, or near-misses related to the project, and submitting appropriate documentation to the Program CIH with 24 hours;
- Assist the Program CIH and/or SHSO in establishing appropriate site control zones; and
- The PS must have completed the Hazardous Waste Supervisor's course.

The Project Superintendent will be determined prior to project start up. A qualified alternate supervisor designated by the PM will be available in case the PS is temporarily away from the jobsite (due to illness or other emergency). The qualified alternate PS that will be available on site in the absence of the primary PS will also be determined prior to project start up.

2.5 Site Health and Safety Officer

The Site Health and Safety Officer (SHSO) will represent the Program CIH on-site during field activities. As such, the SHSO will be responsible for providing independent surveillance of the routine implementation of the project SHSP. The SHSO may not, however, authorize changes to

or variances from the SHSP. Any modifications of the project SHSP must be approved by the Program CIH with written concurrence of the ROICC, the Contracting Officer's representative.

Other duties of the SHSO include:

- Immediately stopping work if Immediately Dangerous to Life or Health (IDLH) or other extremely hazardous conditions are encountered;
- Verifying that all personnel have the necessary training and medical clearance prior to entering the site;
- Identifying all site personnel with medical restrictions to the PS;
- Determining that monitoring equipment is properly calibrated and used, and that results are properly recorded and filed;
- Providing guidance to the Project Administrator for purchasing safety related equipment;
- Informing the Program CIH of significant changes in either the environment or work procedures which may require modification of the SHSP;
- Observing work party members for symptoms of on-site exposure or stress;
- Overseeing implementation of the SHSP, reporting any deviations from the Plan, regardless of the potential to adversely impact the health and safety of the employees, to the PS and the Program CIH;
- Immediately notifying the PS of any unsafe conditions observed, and providing technical guidance to the PS for the correction of the condition;
- Recording daily maximum and minimum temperatures;
- Conducting employee exposure monitoring for workplace contaminants, noise and/or heat stress as outlined in Section 8;
- Monitoring the use of required protective clothing and safe work practices;
- Recording on the Entry Log forms the names of all personnel who enter the exclusion zone (EZ) or contamination reduction zone (CRZ);

- Determining and posting routes to capable medical facilities and emergency telephone numbers (including poison control facilities), and arranging emergency transportation to medical facilities;
- Notifying local public emergency officers of the nature of the operations, and posting of their telephone numbers in an appropriate location;
- Conducting and documenting required project specific training;
- Conducting job site safety audits at least daily;
- Ensuring that training and medical records are maintained on-site for all IT and subcontractors personnel;
- Monitoring project personnel to ensure ongoing compliance with the SHSP;
- Assisting the PS in establishing appropriate Work Zones;
- Presiding at tailgate safety meetings (a shared responsibility by the PS) and maintaining attendance records;
- Monitoring that decontamination procedures are meeting established criteria;
- Acting as Project Hazard Communication Coordinator as required by 29 CFR 1910.1200;
- Responding to employee's/contractor's health and safety concerns;
- Periodically auditing subcontractor qualifications to ensure only properly qualified personnel are allowed in the work area;
- Ensure employees are trained on the hazards of any hazardous substances used. MSDSs must be on-hand for all hazardous materials (other than wastes) and containers must be properly labeled;
- Ensure that all safety equipment on site is periodically inspected (monthly for all fire extinguishers); and
- The SHSO must have completed the Hazardous Waste Supervisor's course.

The project Site Health and Safety Officer is Ian Langtry. The Project Manager, with the concurrence of the Program CIH, will designate another suitable project worker to act as alternate SHSO in case the primary SHSO cannot be on site (due to illness or other emergency).

2.6 Subcontractor Management and Personnel

Subcontractor management is responsible for the compliance of their personnel with this SHSP. Since subcontractors are hired for their specific expertise, they must assume primary responsibility for the health and safety of their personnel. The subcontractor's Field Supervisor or Crew Leader will also be responsible for performing a weekly safety inspection of their operations. A copy of this inspection must be submitted to the PS each week. If the subcontractor personnel will be performing work within either the Exclusion Zone (EZ) or Contamination Zone (CRZ), the subcontractor's Field Supervisor must have successfully completed 8 hours of Hazardous Waste Supervisory training per 29 CFR 1910.120 (e)(4), 1926.65 (e)(4), or in California, T8CCR 5192 (e)(4);

Subcontractors must also:

- Comply with all applicable Occupational Safety and Health Administration (OSHA) regulations as defined in 29 CFR 1910 and 1926, as well as the United States Army Corps of Engineers "Safety and Health Requirements Manual" (EM 385-1-1).
- Perform all work in California in Compliance with applicable Cal/OSHA standards, found in Title 8 of the California Code of Regulations (T8CCR).
- Perform all work in accordance with this SHSP.
- If the work will be performed in the EZ or CRZ, provide documentation for each on-site worker of successful completion of 40 hours training in health and safety practices for hazardous waste operations per 29 CFR 1910.120, 1926.65, or in California T8CCR-5192. This must be received prior to the employee starting work on the site.
- For work in the EZ or CRZ, provide documentation for each on-site worker of a doctor's approval for the worker to perform hazardous waste remediation work based on an annual medical exam and work history review prior to the worker arriving on site.

- Provide updated documentation as on-site individuals complete annual HAZWOPER refresher training and/or receive annual medical examinations for workers entering the EZ or CRZ. Such documentation must be provided prior to the expiration date of the previous year's training/physical examination.
- Provide their own personal protective equipment (including safety boots, safety glasses, hard hats, respirators, protective clothing and the like).
- Report all incidents/accidents/injuries/near-misses immediately to the PS. Provide input to IT's investigation of any mishap or near miss. Provide documentation to IT of the subcontractor's internal investigation of the mishap/near miss.
- Provide proof of additional (non-HAZWOPER) training upon request (e.g., documentation of forklift training). If the requested documentation is not provided, the subcontractor's personnel may not be permitted to preform the work on site that is covered by the required additional training.
- Submit to the Program CIH a task-specific hazard analysis for their anticipated work.
- Provide awareness level training to affected IT workers regarding any material, equipment or operation which may pose a hazard to the IT employees.
- Provide a Material Safety Data Sheet (MSDS) to IT for all materials used on the project which are regulated by the Hazard Communication Standard (29 CFR 1910.1200). MSDSs shall be approved by IT Corporation prior to the material being brought on site.
- Notify IT in writing prior to bringing any radioactive materials or devices (e.g., nuclear density gauges) onto the jobsite. Such notification must identify by name the subcontractor's Radiation Safety Officer and list the company's radioactive material license number. A federal license or proof of reciprocity to work on a federal instillation must be provided.
- Provide own first aid kits and first aid trained individual.
- Submit personnel to "reasonable cause" drug and alcohol testing when directed to do so by the Project Manager (in accordance with IT Policy HS101). Results of such testing are to be provided to IT Corporation immediately upon receipt.
- Remove any worker from the project who tests positive for either drugs or alcohol.

- Have in place an active and effective Drug free Workplace Program in compliance with the Federal Drug free Workplace Act.
- Provide written notification to subcontractor's own employees of the results of any industrial hygiene monitoring conducted by IT on those employees.
- Immediately inform the IT Project Superintendent of the presence, or anticipated presence, of regulatory agency officials at the jobsite. Provide documentation to IT of any citations or notices of violation issued to the subcontractor for work on, or associated with the project. Such documentation shall include a copy of the written citation and a summary of the subcontractor's corrective action plan.

2.7 On-Site Personnel and Visitors

No visitor will be allowed within the Work Zones without authorization from the PM and the PS. Visitors requesting authorization to enter the Contamination Reduction Zones (CRZs) or Exclusion Zones (EZs) must meet the requirements established for Project Personnel, including appropriate medical exams and training. On-site Navy personnel will also be held to these requirements.

3.0 Project Hazard Analysis

3.1 Scope of Work

This project will revolve around the removal and disposal of contaminated soils at Site 16 and the TSTA. Prior to soil removal activities a utility survey will be conducted to verify the existence of any underground utilities that may require relocation or disruption, followed by a characterization of the stockpiles to establish contamination concentrations. Removal activities will be accomplished through the use of excavation, transportation, and disposal of soil confirmed to be contaminated.

3.2 Activity Hazard Analysis

The activity hazard analysis identifies potential safety, health, and environmental hazards and provides for the protection of personnel, the community, and the environment. Because of the complexity and constant change of remediation projects, supervisors must continually inspect the work site to identify hazards which may harm site personnel, the community, or the environment. The PS must be aware of these changing conditions and discuss them with the PM, the Program CIH, and the SHSO. The Project PS will keep supervisors for subcontractors informed of the changing conditions. Changes to the hazard analysis may be originated by the SHSO, but must be approved by the Program CIH. Appendix D contains an activity hazard analysis for each major task associated with this project and is supplemented by the following sections. Tasks to be performed during this project include:

- Mobilization/Demobilization
- Site Preparation/Site Restoration
- Utility clearance/survey
- Soil sampling and characterization
- Excavation of contaminated soils
- Soil segregation and stockpiling
- Loading and disposal of contaminated soils
- Equipment decontamination
- Backfill/compaction

The following sections detail hazards likely to be faced by project personnel engaged in site activities.

3.2.1 Materials Handling

Loading and unloading materials such as visqueen, sampling supplies, and decontamination equipment present a variety of hazards. These include cuts and abrasions from sharp objects, back injuries from poor lifting techniques as well as setting up and dismantling equipment, crushing injuries from falling or moving loads, pinch points, and being struck by moving equipment or loads. The following fundamentals address the proper lifting techniques that are essential in preventing back injuries:

- The size, shape, and weight of the object to be lifted must first be considered. No individual employee is permitted to lift any object that weights over 60 pounds. Multiple employees or the use of mechanical lifting devices are required for objects over the 60-pound limit.
- The anticipated path to be taken by the lifter should be inspected for the presence of slip, trip, and fall hazards.
- The feet will be placed far enough apart for good balance and stability (typically shoulder width). **THE FOOTING WILL BE SOLID.**
- The worker will get as close to the load as possible. The legs will be bent at the knees.
- The back will be kept as straight as possible and abdominal muscles should be tightened.
- To lift the object, the legs are straightened from their bending position.
- A worker will never carry a load that cannot be seen over or around.
- When placing an object down, the stance and position are identical to that for lifting. The legs are bent at the knees and the object lowered.

When two or more workers are required to handle the same object, coordination is essential to ensure that the load is lifted uniformly and that the weight is equally divided between the individuals carrying the load. When carrying the object, each worker, if possible, will face the

direction in which the object is being carried. In handling bulky or heavy items, the following guidelines will be followed to avoid injury to the hands and fingers:

- A firm grip on the object is essential; leather gloves shall be used if necessary.
- The hands and object shall be free of oil, grease, and water which might prevent a firm grip. Fingers shall be kept away from any points that could cause them to be pinched or crushed, especially when setting the object down.
- The item shall be inspected for metal slivers, jagged edges, burrs, and rough or slippery surfaces prior to being lifted.

Site operations shall be organized to minimize the amount of drum and container movement. All employees involved in the transfer of drums or containers shall be warned of the potential hazards associated with the contents of the drums or containers during tailgate safety meetings prior to beginning transfer operations. Tailgate safety meetings should also include information on safe handling techniques, including:

- Proper lifting techniques, back injury prevention;
- Procedures and equipment used to minimize sources of ignition during transfer operations;
- Positioning of drums and containers to minimize obstruction of the work site; and
- Employees are not to stand upon or work from drums or containers at any time.

U.S. Department of Transportation (DOT) specified salvage drums or containers and suitable quantities of proper absorbent shall be kept available and utilized in areas where spills, leaks or ruptures may occur. Drums or containers that cannot be moved without rupture, leakage or spillage shall be emptied into a sound container using a device classified for the material being transferred.

3.2.2 Vehicle Traffic

The project worksite is located within an inactive military base with both industrial and personal vehicle traffic nearby. Work in such areas presents a risk of being stuck by a vehicle. Collisions between vehicles are also possible unless safe driving practices are used.

All IT employees who will be driving restricted-visibility vehicles (e.g., trucks, vans and pick-ups) at the project site shall have successfully completed IT's Safe Driver Training Course. Vehicle operators will check carefully for nearby traffic before proceeding at a cautious pace on facility roadways. Unless otherwise marked, speeds should be held to 15 mph or less while on site.

Care should be taken to ensure that trucks, equipment and materials are placed in a manner that keeps obstruction of local traffic to a minimum. During work activities, it may become necessary to move equipment in order to accommodate traffic and site activities.

Workers on foot should not wander into the active roadways. If work in active traffic areas is required, workers will wear bright orange safety vests, and the work zone will be marked with barricades, cones or tape to warn traffic.

Where traffic control is necessary, base representatives will be contacted to ensure minimal disruption of base activities. When the base cannot provide traffic control officers, project workers may do so using high visibility road vests, hand-held stop signs and traffic cones.

3.2.3 Chemical Hazards

Health effects along with routes of exposure for health significant site contaminants are detailed in the following paragraphs:

Lead - Lead has no local toxic effects. Systemic poisoning symptoms are nonspecific: fatigue, headache, poor sleeping, aching bones and muscles, constipation, abdominal pains, and decreased appetite. All these symptoms are reversible with time away from exposure. Continued exposure results in anemia, pallor, "lead line" on the gums, and decreased hand grip strength. Lead also has central nervous system effects and has been implicated in producing learning deficiencies in exposed children. Compounds of lead display a variety of toxic effects that are more specific to the compound than the lead. Some of these compounds have been found to be carcinogenic in experimental animals.

Petroleum Distillates - Petroleum distillates can affect the body if they are inhaled, come in contact with the eyes or skin, or are swallowed. Over exposure to petroleum distillates may

cause dizziness, drowsiness, headache, and nausea. They may also cause irritation of the eyes, throat and skin.

Polychlorinated Biphenyls - The primary hazard from PCB contamination is the inhalation of contaminated dust or skin contact with contaminated soil. Symptoms of inhalation exposure include irritation of the nose, eyes, and throat. Skin contact can cause burning, itching, redness, tingling, and loss of feeling at the exposed area. Prolonged skin contact may cause chloracne (an acne-like rash). Acute and chronic exposure can cause liver damage. Signs and symptoms include edema, jaundice, vomiting, anorexia, nausea, abdominal pain, and fatigue. A suspect human carcinogen, PCBs are known to cause cancer in laboratory animals.

Personnel working on the site may be exposed to diesel and gasoline exhaust from the trucks and machinery in use during project activities. Because the area is outside and therefore well ventilated, exhaust levels should not reach concentrations capable of causing any adverse health effects. Symptoms of exposure to high levels of exhaust include nausea, headache, dizziness, coughing and irritation of the eyes and upper respiratory system.

Air Sampling Media

Ambient air sampling will be commence at the start of any intrusive activities. To comply with both the Lead Management Plan (Appendix E) and the makings of a Lead Compliance Program, and initial exposure assessment will be completed to determine appropriate levels of protection. This sampling will consist of integrated personal sampling equipment. At a minimum, personnel sampling will continue until contaminant concentrations are found to be below the prescribed action levels. In addition to the sampling of personnel, perimeter monitoring will take place to ensure that no airborne contamination is leaving the work area.

Other Contaminants

Activities required during the project may result in some slight exposure of site workers and visitors to contaminants at very low concentrations. The State of California's Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65) requires notification of all persons who may be exposed to substances that have been determined by the State of California to cause cancer, birth defects or other reproductive harm.

The contaminants which may be present on site that have been determined by the State to cause cancer or reproductive harm are listed and described in Tables 3-1, 3-2, and 3-3 following this section of this SHSP.

During on-site activities, all personnel will wear appropriate protective clothing whenever the possibility for contact with contaminated soil or groundwater exists (see Section 5.0). If respiratory protection is required, only NIOSH approved non-disposable respirators may be worn. Disposable respirators are not permitted.

Material Safety Data Sheets (MSDSs) will be provided on-site for each hazardous material (other than waste) brought on-site. MSDSs are found in Appendix B.

3.2.4 Exposure Standards

Threshold Limit Values (TLVs) and Permissible Exposure Limits (PELs) refer to airborne concentrations of substances which represent conditions that nearly all employees may be repeatedly exposed to day after day without adverse effect. The TLVs are prescribed by the ACGIH and are based upon the best available information obtained through industrial experience and animal or human studies. The PELs are prescribed by OSHA and have the effect of law. They are the minimum levels which must be followed for worker protection. Because of the wide variation in individual susceptibility, a small percentage of workers may experience discomfort from some substances at concentrations below these values. It has been policy to use the stricter of these two exposure standards for good hygienic practices; however, whenever applicable, even stricter guidelines may be utilized.

Currently, exposure levels to pesticides and other chemical substances are regulated by OSHA and recommended by the ACGIH. These exposures are based upon the time-weighted average (TWA) concentration for a normal 8-hour workday and a 40-hour work week. Several chemical substances have short-term exposure limits (STEL) or ceiling values which allow a maximum concentration to which workers can be exposed continuously for a short period of time without suffering from irritation, chronic or irreversible tissue damage, narcosis of a sufficient degree to result in accidental injury, impaired self-rescue abilities, or substantially reduced work efficiency.

The STEL is defined by the ACGIH as a 15-minute TWA exposure which should not be exceeded at any time during a workday even if the 8-hour TWA is within the TLV-TWA. Exposure above the TLV-TWA up to the STEL should not be longer than 15 minutes and should not occur more than four times per day. There should be at least 60 minutes between successive exposures in this range. An averaging period other than 15 minutes may be recommended when this is warranted by observed biological effects. OSHA requires that a 15-minute "Ceiling" concentration never be exceeded for that chemical constituent. This notation appears as the letter "C" after the chemical name. Table 3-4 contains the exposure guidelines for identified health significant contaminants.

3.2.5 Clearing - General Practices

Clearing brush and ground cover may be necessary on this project. Clearing may be accomplished either by mechanical means or by hand. If mechanical means are used (i.e., heavy equipment), the general safety precautions for heavy equipment will be observed. If personnel are clearing brush by hand, the following rules apply:

- All employees using a machete or ax must be trained in the use of the tool. This training must be documented.
- When employees are using a machete or ax to clear the area, no one is permitted within 30 feet of the person swinging the tool.
- Personnel will be instructed to not stand with their backs toward the active machete/ax work area.
- All personnel must wear the appropriate PPE outlined in Section 5.0 and be familiar with the use of a machete or ax.

When using a chain saw or chipper, the following rules must be adhered to:

- All personnel using a chain saw or chipper must be trained in the use of the equipment. This training must be documented.
- The chain saw or chipper operator and helper must wear proper PPE. This includes
 - Hard hat - ANSI approved
 - Safety glasses - ANSI approved
 - Wire screen face shield - ANSI approved

- Hearing protection (ear muffs)
 - Leather gloves
 - Long sleeved shirt (buttoned at the wrists)
 - Chain saw approved chaps
 - Steel toed boots - ANSI approved
- Before beginning the operation, alert all personnel in the area that chain saw or chipper operations are about to commence.
 - Watch for kickback from the saw and do not force the saw if it becomes stuck.

3.2.6 Excavation Procedures

Excavation of soil is generally accomplished using heavy earthmoving equipment. This equipment introduces loud noise levels which may cause hearing loss, and may also present a risk of workers being struck by the machinery. Earthmoving equipment can also tip over if mishandled.

Falls can result from unbarricaded excavations. If workers must enter the excavation, they risk being buried or otherwise injured by moving soil unless the excavation is properly shored or sloped. Contaminant vapors can also accumulate in deep excavations.

When performing excavation activities, the IT Procedure HS307 for excavation and trenching must be followed. A copy of this procedure along with all other IT H&S Policies and Procedures will be maintained with the SHSO's field office. Any excavation 5 feet deep or greater into which persons will enter and perform work must be shored, sloped, or otherwise made safe for entry. Excavations less than 5 feet in depth and which a competent person examines and determines there to be no potential for cave-in do not require protective systems. In accordance with the California Division of Occupational Safety & Health (DOSH) requirements, notification of DOSH will be made before starting work on excavations 5 feet deep or deeper into which workers are required to enter.

All excavations will be performed from a stable ground position. Daily inspections of the excavation will be made by a competent person, one who has received training in excavation safety and who has been designated a competent person by IT. The competent person will determine the likelihood of a cave-in, and remedial action such as sloping or shoring will be

taken if the walls appear to be unstable. The competent person will verify that adequate means of egress are in place.

All spoil will be located at least 2 feet from the edge of the excavation to prevent it from falling back into the excavation. Perimeter protection will be used for all excavation activities at the site, consisting of warning barricades or fencing placed at a distance not closer than 6 feet from the edge of the excavation and displaying adequate warning at an elevation of 3 feet to 4 feet above ground as determined by SHSO.

All project personnel will participate in the site-specific training session and be instructed on the following requirements.

- Before excavating, the existence and location of underground pipe, electrical equipment, and gas lines will be determined and documented. If the locations of any lines are in question, a cable avoiding tool will be used to positively locate them.
- No ignition sources are permitted if the ambient airborne concentration of flammable vapors exceeds 10 percent of the lower explosive limit (LEL) during the excavation. A combustible gas indicator (CGI) will be used to make this determination.
- Operations must be suspended and the area vented if the airborne flammable concentration reaches 10 percent of the LEL in the area of an ignition source (i.e., sparks from bucket of excavator).
- Combustible gas readings of the general work area will be made regularly.
- If excavating equipment is located in the vicinity of overhead power lines, Table 3-5 will be used to determine safe working distances.
- Ladders will be provided and placed at an angle not more than 30 degrees from vertical, and secured as necessary. Ladder side rails will extend at least 3 feet above the ground surface.
- No one shall enter the trench without proper shoring, sloping or benching in place. Entry into trenches and/or excavations also requires daily site inspections by a competent person, continued supervision from outside the excavation, and atmospheric testing wherever toxic gases or oxygen deficiency may be a problem.

- Excavations greater than four feet in depth that require personnel to enter will have sufficient means of entry and egress (stairs, ladders, ramps). Means of entry/egress will not require personnel to travel laterally more than 25 feet.
- Excavations occurring within 3 feet of communication cables will be performed by hand digging until the cable is exposed.
- Crossing directly over the trench will be permitted only where approved walkways with handrails are provided. All other traffic is to be directed around the trench, at a safe distance from the trench edges.
- The trench will be completely filled in upon completion of the work.

3.2.7 Heavy Equipment

This introduces loud noise levels which may cause hearing loss, and may also present a risk of workers being struck by the machinery. Earthmoving equipment can also tip over if mishandled.

- Prior to use, all heavy equipment will be inspected. This inspection will be documented on Form CESP 150-R.
- Heavy equipment not being used in the excavation and trenching operations will be placed a sufficient distance from the trench so that their weight does not weaken the trench walls.
- Whenever the operator leaves the operator's position, the equipment shall be shut off, unless the equipment must be running to perform required maintenance or safety inspections.
- Blades and buckets on heavy equipment will be lowered during transport and whenever the operator leaves the machine.
- Construction equipment will be given the right-of-way during field activities.
- Scrapers are to be given the right of way over all other equipment and vehicles. Driver visibility is limited.
- Direction of haul roads will be discussed in the daily tailgate safety meetings. Emphasis will be placed on any changes in direction of haul roads.
- High visibility vests and vehicle markings (i.e., flags) will be utilized when in the vicinity of scraper operations.

- No unauthorized vehicles will be allowed on scraper haul roads. Designated locations to cross will be marked.
- Heavy equipment will have a reverse signal alarm that operates automatically with backward movement.
- The operator will check the condition of equipment each day before operating. This check will include brakes, clutches, steering mechanisms, hydraulic and electrical systems, and signs of abnormal wear.
- No worker will use a piece of equipment unless they have been trained and are familiar with its operation.
- Personnel are not allowed to work off machine implements or to use them as ladders or scaffolds.
- Unauthorized riding on equipment or riding parts of equipment not intended for occupancy by either operator or passenger is prohibited.

3.2.8 Backfilling/Compaction

Backfilling of trenches, excavations, and the buildup of earthworks such as levies and landfill caps is generally accomplished using heavy earthmoving equipment and compactors. These pieces of equipment produce loud noise (over 85 dBA) which may cause hearing loss, and may also present a risk of workers being struck by the machinery. Earthmoving equipment can also tip over if mishandled. Such equipment also presents a risk of striking workers near them.

All backfilling and earthwork will be performed from a stable ground position. The use of vibrating compaction equipment may weaken the walls of an excavation or trench. The stability of the walls of the excavation or trench will be monitored by an IT designated competent person. Any signs of instability will result in immediate stopping of work and evacuation of any workers next to or in the excavation trench until the walls can be stabilized by sloping or shoring.

All project personnel will participate in site-specific training and be instructed on the following:

- If earthmoving/compaction equipment is located in the vicinity of overhead power lines, Table 3-5 will be used to determine minimum safe working distances.

- No one shall enter an excavation/trench without proper shoring sloping or benching in place. Entry into excavation/trench also requires daily site inspections by the competent person and the SHSO. Continued supervision from outside the excavation/trench is required as long as workers are in the excavation/trench.
- Whenever the operator leaves the operator's position, the equipment shall be shut off, unless the equipment must be running to perform required maintenance or safety inspections.
- Blades and buckets shall be locked in the transport position such as the boom on a backhoe or lowered to the ground whenever the operator leaves the machine.
- Heavy equipment will have a reverse signal alarm that operates automatically with backward movement.
- Ground personnel will ensure that they have acknowledged visual contact with the equipment operator before moving within the swing radius or the forward or reverse path of the equipment.
- No worker shall use a piece of equipment unless they have been trained and are familiar with its operation.

3.2.9 Pressure Washing

Pressure washing will likely be used for equipment decontamination activities. Because of the significant hazard of cutting and injecting water into the body, IT Policy HS-303 Pressurized Water Cleaning and Cutting Equipment, will be reviewed with crew and maintained at site office for further reference.

Training and providing the proper PPE is extremely important prior to using the pressure washing unit. At a minimum, safety glasses, a face shield, and leg/metatarsal guards will be worn. Although HS-303 defines high pressure as 1000 psi, lower pressures can also cause significant injury.

3.2.10 Maintenance/Troubleshooting

Equipment and machinery maintenance and troubleshooting work can expose project workers to contaminated materials and other hazards. Troubleshooting electrical and mechanical equipment can expose workers to shock hazards, and crushing or pinch hazards.

Whenever employees or subcontractors are working on equipment or in areas where the activation of the equipment or the charging of hazardous materials lines might endanger the worker's safety, lockout and tagout procedures (IT Policy HS315) are required. Should the project extend more than 30 days with lockout/tagout planned for more than seven calendar days, or when locking/tagging out specialized equipment having its own lockout requirements, the Program CIH shall be notified for an addendum to this SHSP.

3.2.10.1 General Lockout/Tagout Requirements

Lockout and tagout procedures are required during maintenance of powered tools or equipment, during valve changeouts and other work on hazardous waste or materials lines, and during confined space entries. Other tasks may also required lockout and tagout procedures if use of nearby equipment or material transfer lines could harm employees. The requirements of lockout and tagout include:

- Locks and tags are to be used when a machine, equipment or piping system is capable of being locked out. Tags alone are allowed only when the equipment will not accept locks.
- Authorized padlocks shall be assigned to each authorized employee. Each group's lock will be individually keyed and the shift supervisor shall maintain the master keys.
- All new equipment installed must be designed to accept a lockout device.
- Where multiple items must be locked out, a group lock box must be used.
- Where multiple locks must be placed on an item, a multiple lock hasp must be used.
- Only the protected employee may remove his/her personal lock. When the employee is no longer present and the lock must be removed, only that employee's immediate supervisor may remove the lock and tag, and only after ensuring that the employee is out of harm's way.
- All locks must be accompanied by a tag indicating the name of the employee applying the lock, the date the lock was applied, equipment name or number, the reason for the lockout and a warning against the potential hazard of activation.

- A legend must be displayed warning against activation and stating that the lock and tag may be removed only by authorized personnel.
- Tags must be single-use, hand-attachable, legible and designed to withstand the environment where they are in use. Tags must be self-locking and non-releasable with a minimum unlocking strength of 50 pounds.
- A “Lockout Log” (HS315 Attachment 3) shall be maintained by the site supervisor as part of the SHSP.
- The PM or PS is responsible for informing the ROICC of the lockout/tagout procedure to be used at the jobsite. This must be documented on Field Activity Daily Logs (FADLs).
- Subcontractors are to use IT's lockout/tagout procedure. Their own procedure may be used only after it has been reviewed and approved by the Project CIH.
- If the client has their own lockout/tagout requirements, these shall be implemented only after IT's requirements have been met.
- The PM and PS shall assure that locks, hasps and other equipment and site specific training are provided.

Lockout/tagout procedures are not required when work is conducted on equipment where an employee has direct control over the cord(s) or plug(s) connected to the associated equipment.

3.2.10.2 Lockout/Tagout Checklist

Where lockout/tagout procedures are required, the following steps shall be followed:

- Check equipment file for specific lockout/tagout procedures.
- Determine the requirements for lockout. Document each energy source to the equipment.
- Conduct a survey to locate and identify all isolation devices that apply to the equipment.
- Use the equipment type-specific procedures if applicable (HS315 Attachments 4-7). Complete the “Lockout/Tagout Procedure for Specific Equipment” form (HS315 Attachment 8), logging all data, and return to supervisor.

- Shut off energy source(s) to affected equipment.
- Affix lock(s) and tag(s) to each energy source controlling the device.
- Identify work on process lines or vessels and determine isolation requirements.
- Blind, blank, disconnect or double-valve and vent all hazardous materials lines (including steam). Identify isolation points with tags.
- When a tag only is used because the equipment can't be locked out, complete the following:
 - Remove fuses, block machine, etcetera.
 - Complete HS315 Attachment 8 and give to site supervisor.
- Relieve all stored energy (e.g., capacitor banks, springs, compressed air, hydraulic and steam).
- Verify that isolation of energy has occurred by attempting to activate equipment at the on/off switch.
- Return the control switch to the off position before proceeding.

Before returning any equipment to service following lockout and tagout, the following procedures are required:

- Ensure that all nonessential items (e.g., tools and cleaning rags) are removed from the equipment.
- Ensure that equipment components are intact.
- Check work area to ensure that all employees are safely positioned or removed from the area.
- Notify all affected employees and site supervisor before re-energizing the equipment.
- Remove lockout/tagout device.
- Re-energize equipment or open valves and restore flow in process line; place back into service.

Where equipment must be locked out for longer than one work shift, the individual lock(s) of the outgoing shift working on equipment will be removed and replaced by the on-coming shift's individual lock(s). The authorized employees of the on-coming shift must inspect and "try" the system to ensure de-energization. The Project Superintendent shall re-audit the system as necessary.

3.2.11 Hand Tools

Use of hand tools may expose workers to cuts, lacerations or puncture wounds if adequate hand protection is not worn or tools are improperly used or stored. Damaged hand tools may also expose employees to injuries from shattered tools and flying debris.

The following safe work practices apply to the use of hand tools:

- Only use a tool for its designed use.
- Do not use damaged tools.
- Driving faces of hammers, chisels, drift pins, bars, and similar tools must be inspected to eliminate mushroomed heads, broken faces and other defects.
- Tools must be returned to their proper storage place.
- Sharp tools must not be carried in pockets.
- Wood handles must be sound and securely wedged or fastened to the tool. Tape must not be used to cover defects such as cracks.
- When hand tools are being used overhead, those working or standing below must be notified.
- Pipe wrenches must be inspected regularly. Replace the heel and jaw sections if found to be defective or worn out.
- Pipe wrenches must not be used to bend, raise or lift pipe.
- Always wear safety glasses to protect the eyes.

3.2.12 Power Tools

Power tools present many potential hazards, including shock and electrocution, injuries from accidental activation and injuries from using damaged or malfunctioning equipment.

When using power tools, the following precautions shall be followed:

- Power tools will be inspected and their operation tested prior to being placed in service.
- Eye protection (safety glasses or goggles) must be worn whenever operating power tools.
- Power tools must be grounded or of the double-insulated type.
- Power tools shall not be used in wet locations.
- All power tools must be protected by a Ground Fault Circuit Interrupter (GFCI).
- Splicing, cutting or “repairing” electrical wire by unauthorized personnel is prohibited.
- Plugs and cords must be protected from damage.
- Grounding plugs are never to be removed.
- Electrical tools are not to be used inside a confined space without prior approval by the SHSO or Program CIH.
- All electrical tools must be turned off before connecting or disconnecting the power supply.
- Extension cords must be visually inspected each time they are used. Cords must be disconnected from the power source before coiling for storage.
- Extension cords used with portable electric tools shall be of three-wire type and shall be rated for hard or extra-hard usage (Types S, ST, SO, STO, SJ, SJO, SJT, or SJTO).

3.2.13 Confined Space Entry

It is not anticipated that any work conducted during this project will require entry into a confined space. A confined space is defined as an enclosure which is large enough for an employee to enter, but which has limited means of access and egress and is not designed for continuous employee occupancy.

A permit-required confined space is a confined space as defined above which also contains one or more health and/or safety hazards. This can include chemical, mechanical, electrical, or other hazards.

A survey of the project site will be made by the SHSO to identify any potential permit required confined spaces. All identified permit required confined spaces will be appropriately marked to provide warning to personnel not to enter.

In the event that entry into a confined space is required, the Program CIH must be notified and a more detailed health and safety requirements established as addenda to this SHSP and IT Procedure HS300: "Confined Space" followed. Prior to entry, the confined space will be certified by an IT Entry Supervisor. Initial monitoring for combustibility, toxicity, and oxygen content will be conducted to determine the atmospheric class and subsequent protection level required. In addition, personnel entering the confined space must have completed training specifically for confined space entry.

3.2.14 Noise

Some of the equipment used on the project generates loud noise. Exposure to sound levels above 85 dBA can cause temporary impairment of hearing. Prolonged and repeated exposure to sound levels above 85 dBA can cause permanent hearing damage. The risk and severity of hearing loss increases with the intensity and duration of the exposure. In addition to damaging hearing, noise can impair voice communication, thereby increasing the risk of incidents.

All on-site IT and subcontractor personnel shall wear hearing protection, with a Noise Reduction Rating (NRR) of at least 25, when noise levels exceed 85 dBA (or wherever voices must be raised in order to be understood at arms length). The SHSO will perform sound level monitoring or noise dosimetry on operations which require hearing protection. All site personnel who may

be exposed to noise shall also receive baseline and annual audiograms and training as to the causes and prevention of hearing loss, in accordance with IT Procedure HS402.

Whenever possible, equipment that does not generate excessive noise levels will be selected for this project. If the use of noisy equipment is unavoidable, wherever possible, barriers or increased distance will be used to minimize worker exposure to noise.

Blasting or use of explosives is not permitted without written permission from the Navy's Contracting Officer and the Program CIH, and then only during designated times.

3.2.15 Heat Stress

Wearing personal protective equipment (PPE) can put site personnel at considerable risk of heat stress and heat related illnesses if proper precautions are not implemented. Heat related illnesses range from transient heat fatigue to heat stroke and death. Heat related illnesses are caused by a number of interacting factors which include environmental conditions, clothing, work load, and characteristics of the individual worker.

Individuals vary in their susceptibility to heat stress. Factors that influence an individual's tolerance for heat include physical fitness, diet, alcohol/drug use, sleeping habits, acclimation, genetics, medical condition, age and weight.

The signs of heat stress disorders are given below.

3.2.16.1 Heat Cramps

Heat cramps are caused by heavy sweating and inadequate electrolyte replacement. Signs and symptoms include muscle spasms and pain in the hands, feet and abdomen.

3.2.16.2 Heat Exhaustion

Heat exhaustion occurs from increased stress on various body organs. Signs and symptoms include:

- Pale, cool, moist skin;
- Heavy sweating;

- Dizziness, nausea; and/or
- Fainting.

3.2.16.3 Heat Stroke

Heat stroke is the most serious form of heat stress and must always be treated as a true medical emergency. SUMMON MEDICAL HELP IMMEDIATELY. The body's temperature regulation system fails, and the body temperature rapidly rises to critical levels. Immediate action must be taken to cool the body before serious injury or death occurs. Place the victim in a cool shower or cool bath or use ice packs. Monitor for drowning potential if the victim is cooling down in a bath tub or any type of container with enough water to drown if unconsciousness develops (may be less than 1 inch). Do not give anything to drink in case the victim vomits. Signs and symptoms of heat stroke include:

- Red, hot unusually dry skin;
- Lack of, or reduced perspiration;
- Nausea;
- Dizziness and confusion;
- Strong, rapid pulse; and/or
- Coma.

3.2.16.4 Prevention

Heat stress is a major hazard to personnel working in impermeable protective clothing. Therefore, measures will be taken in preventing heat stress, including:

- Site workers will be encouraged to drink plenty of water throughout the day. They should drink at least 16 oz of water before going on site regardless if they are thirsty or not.
- On-site drinking water will be kept cool to encourage personnel to drink frequently.
- All personnel will be advised of the dangers and symptoms of heat stroke, heat exhaustion and heat cramps.
- All employees shall be informed of the importance of adequate rest, acclimation and proper diet in the prevention of heat stress disorders.

- Work/rest schedules will be adjusted by the PS and SHSO to account for the acclimatization of workers upon first encountering heat stress conditions.
- Workers will be instructed to limit their intake of alcohol during hot weather, as alcohol inhibits the body's ability to handle heat by causing dehydration.

One or more of the following control measures can be used to help control heat stress and are mandatory if any site worker has a heart rate (measured immediately prior to rest period) in excess of 110 beats per minute:

- A work regimen that will provide adequate rest periods for cooling down will be established, as required.
- Cooling devices such as vortex tubes or cooling vests must be used when personnel must wear impermeable clothing in conditions of extreme heat.
- Employees will be instructed to monitor themselves and coworkers for signs of heat stress and to take additional breaks as necessary.
- A shaded rest area must be provided. All breaks must take place in the shaded rest area.
- Employees shall not be assigned to other tasks during breaks.
- Employees shall remove impermeable garments during rest periods. This includes white Tyvek-type garments.

3.2.16.5 Sunburn

Operations will require IT and subcontractor employees to work outside during daylight hours, typically seven to nine hours per day. Under these conditions, workers are at great risk for developing sunburn on unprotected skin.

Sunburn is a burn to the skin caused by overexposure to ultra-violet light (sunshine). The symptoms of exposure are not usually apparent until two to four hours after the exposure ceases. Depending upon the severity of the exposure the symptoms can range from reddening of the skin accompanied by mild discomfort, to painful deep burns and blisters. Although light-haired, fair-skinned, blue-eyed personnel are at the greatest risk of sunburn, all complexion types can develop sunburn if the exposure is long and intense enough.

Sunscreen products with sun protection factor ratings of 15 or higher will be available to project personnel. Areas of primary concern include; nose, cheeks, ears and the back of the neck. Sunscreen will be applied as necessary and reapplied after each break.

3.2.16.6 Monitoring Program

For each day of field operations, the daily maximum and minimum temperatures on-site will be recorded. When workers are in Level D protective equipment, additional heat stress monitoring shall be initiated by the SHSO whenever ambient temperatures on site exceed 85°F. When workers are in Level C or modified Level D protective equipment, physiological monitoring will begin at 78°F. When workers are in Level B protective equipment, physiological monitoring will begin at 70°F. These benchmarks are not to preclude heat stress monitoring at lower temperatures if workers exhibit signs of heat stress. At the discretion of the Program CIH, environmental and/or physiological monitoring will be carried out. Environmental monitoring shall consist of the determination of Wet Bulb Globe Temperatures (WBGTs) when ambient temperatures exceed the values listed above. Physiologic monitoring may consist of pulse rate and/or body temperature determinations. Monitoring and interpretation of monitoring results will be in accordance with IT Procedure HS400, "Working in Hot Environments."

3.2.16.7 Reporting

Individuals experiencing the symptoms of heat stress shall notify the PS. The distressed individual shall immediately halt field activities and be treated for heat stress. Early detection and treatment of heat stress can prevent further serious illness or injury and lost work-time. Proper and effective heat stress treatment can prevent the onset of more serious heat stroke or exhaustion conditions. Individuals having progressed to heat exhaustion or stroke become more sensitive and predisposed to additional heat stress situations. Regardless of ambient temperature, physiological monitoring will be implemented if heat stress is experienced.

If symptoms of heat stress are observed, the following procedures will be implemented:

- Instruct the affected person to lie down in a cool, shaded area or air-conditioned room and elevate feet. Abbreviated decontamination procedures may be followed.
- Summon medical support, if appropriate. This is required in all cases of heat stroke or unconsciousness.

3.2.17 Cold Stress

Cold stress is not anticipated to be encountered during the execution of this project because daytime temperatures are not expected to be below 45°F. However, workers should be aware that most cold-related worker fatalities have resulted from failure to escape low environmental air temperatures, or from immersion in low temperature water. The single most important aspect of life-threatening hypothermia is a fall in the deep core temperature of the body.

In the event that the weather becomes unusually cold (temperatures below 45°F) project workers should be protected from exposure to cold by wearing proper clothing. This will prevent the deep core temperature from falling below 36 degrees Celsius (°C). Lower body temperatures will very likely result in reduced mental alertness, reduction in rational decision making, or loss of consciousness with the threat of fatal consequences. To prevent such occurrence, the following measures must be implemented:

- Project workers must be provided with warm clothing, such as mittens, heavy socks, etc., when the air temperature is below 45°F. Protective clothing, such as Tyvek or other disposable coveralls, may be used to shield employees from the wind.
- When the air temperature is below 35°F, clothing for warmth, in addition to chemical protective clothing, will be provided to employees. This should include:
 - Insulated suits, such as whole body thermal underwear
 - Wool socks or polypropylene socks to keep moisture off the feet
 - Insulated gloves
 - Insulated boots
 - Insulated head cover such as hard hat, winter liner, or knit cap
 - Insulated jacket, with wind and water resistant outer layer.
- At air temperatures below 35°F, the following work practices must be implemented:
 - If the clothing of a site worker might become wet on the job site, the outer layer of clothing must be water impermeable.
 - If a project worker's underclothing becomes wet in any way, the worker must change into dry clothing immediately. If the clothing becomes wet from sweating (and the employee is not uncomfortable), the employee may finish the task at hand prior to changing into dry clothing.

- Project workers must be provided with a warm (65°F or above) break area.
- Hot liquids such as soups or warm, sweet drinks shall be provided in the break area. The intake of coffee and tea should be limited, due to their circulatory and diuretic effects.
- The buddy system shall be practiced at all times on site. Any site worker observed with severe shivering shall leave the work area immediately.
- Project workers should dress in layers, with thinner lighter clothing worn next to the body.
- Project workers should avoid overdressing when going into warm areas or when performing strenuous activities.
- Employees handling liquids with a high vapor pressure, such as gasoline, methanol, or hexane, shall take special precautions to avoid soaking of gloves and clothing with those materials.

3.2.18 Fire Prevention and Protection

Fire prevention is of primary importance to this project. Every effort will be made to prevent the start of any fires. If a fire should occur, the NAS Alameda Fire Department will be called, even if the fire has been extinguished.

During dry weather, the potential for fire exists in any unpaved grassy perimeter regions of the site. Where VOC levels are high, both a fire and explosion hazard exist. Sparks from operating equipment, or even contact with hot catalytic converters can cause ignition.

Smoking or open flames are prohibited except in designated smoking areas. Vehicles and equipment will not be left idling or parked in or around areas where catalytic converters may cause a fire. Equipment and vehicles should stay on the paved areas.

All flammable liquids will be stored in Underwriters Laboratory (UL) or Factory Mutual (FM) approved storage cabinets. Small quantities of most flammable liquids (five gallons or less) may be stored in work areas, or carried in vehicles, providing those materials will be used that day and will be contained in a safety can or other approved container. Class IA flammable liquids should be limited to two gallons in an approved safety can. Any flammable wastes will be stored

or disposed of in metal containers, clearly marked as containing flammable materials. Storage of combustible materials, in work areas, will be kept to a minimum.

An IT Hot Work permit must be completed and posted prior to any hot work (such as welding or cutting) on site, including hot work performed by subcontractors. The facility fire department must also be contracted to determine if other permits are required prior to hot work.

In order to provide fire protection, IT will provide and maintain portable fire extinguishers as listed in Table 3-6 in the following manner:

- Portable fire extinguishers will be provided, where needed, and inspected on a monthly basis. A visual inspection will be made to ensure that extinguishers are fully charged and in an operable condition. Hoses, nozzles, brackets, and supports will be inspected for deficiencies and corrected. Safety pins will be inspected to ensure that the break-away seal is unbroken. If the break-away seal is broken, the extinguisher must be serviced by a service technician. Gauge pressure will be checked on pressurized units on a monthly basis to ensure units are fully charged and non-pressurized units will have their cartridges weighed on an annual basis. The chemical within dry chemical extinguishers will be inspected on an annual basis to ensure that it is powdery and in a free-running condition. An inspection tag will be attached to all extinguishers to designate that they have received an annual inspection.
- Fire extinguishers will be suitably placed, distinctly marked, and readily accessible.
- A fire extinguisher with a rating of not less than 10-B will be located within 50 feet wherever more than 5 gallons of flammable liquid is being used on the work site (this does not apply to integral fuel tanks of motor vehicles).
- A fire extinguisher with a rating of not less than 20-B will be located outside of and within 10 feet of the door opening into any room, building, or trailer used for storage of more than 60 gallons of flammable or combustible liquids.
- If flammable liquids are being stored in an outside location, at least one portable fire extinguisher with a rating of not less than 20-B will be located at least 25 feet from the storage area, but not more than 75 feet away.
- All tank trucks or vehicles used for transporting and/or dispensing flammable or combustible liquids will have a portable fire extinguisher with not less than a 20-BC rating.

- A portable fire extinguisher with a rating of not less than 20-BC will be placed within 50 feet of each service or fueling area.
- Fire extinguishers will be placed in storage areas so they are capable of extinguishing materials being stored.
- All fire extinguishers will be approved by a nationally recognized testing laboratory.
- A fire extinguisher with a rating of not less than 2-A will be provided where torches or open flames are in use.
- At least one dry chemical or carbon dioxide fire extinguisher, with a 5-BC rating minimum, will be available for placement on each unit of heavy equipment, and each site vehicle (excluding rental cars).
- At least one dry chemical fire extinguisher with a rating of 2A 10BC shall be provided in any trailer used as office or work area. If computers or other electronic equipment is in use, an additional CO₂ extinguisher of a 5BC rating may be advisable.

Fuel handling is another hazard which will be present during this task. Refueling of the mechanical equipment poses burn hazards. All refueling and fuel handling equipment must be Underwriters Laboratories (UL) listed and Factory Mutual (FM) approved. The refueling must be done in a designated area to prevent contamination from minor spills and to reduce the risk of fires. The following guidelines must be followed whenever personnel are dispensing flammable and combustible liquids:

- Flammable liquid dispensing systems will be electrically bonded and grounded. All tanks, hoses, and containers of 5 gallons or less will be kept in metallic contact while flammable liquids are being transferred; transfer of flammable liquids in containers in excess of 5 gallons will be done only when the containers are electrically bonded.
- Flammable or combustible liquids will be drawn from, or transferred into, vessels, containers, or tanks within a building or outside only through a closed piping system, from safety cans, by means of a device drawing through the top, or from a container, or portable tanks, by gravity or pump, through an approved self closing valve. Transferring by means of air pressure on the container or portable tanks is prohibited.

- Areas in which flammable or combustible liquids are transferred in quantities greater than 5 gallons from one tank or container to another will be separated from other operations by at least 25 feet or a barrier having a fire resistance of at least 1 hour. Drainage or other means will be provided to control spills.
- Natural or mechanical ventilation will be provided to maintain the concentration of flammable vapor at or below 10 percent of the lower explosive level.
- Dispensing units will be protected against collision damage.
- Dispensing nozzles and devices for flammable liquids will be of an approved type.
- Lamps, lanterns, heating devices, and similar equipment will not be filled while hot: these devices will be filled only in well-ventilated rooms free of open flames or in open air and will not be filled in storage buildings.

In case of a fire on the site, the PS will assess the situation and direct fire fighting activities. IT personnel trained in the use of extinguisher may attempt to extinguish the fire with available extinguishers, if safe to do so. Fire fighting is a job for the fire department. No property or equipment is so important as to risk an employee's life.

3.2.19 Electrical Power

All electrical equipment must have a GFCI as part of the circuit. All equipment must be suitable and approved for the class of hazard. Temporary wiring conductors installed for operation of construction tools and equipment will be either Type TW or THW contained in metal raceways, or will be hard usage or extra hard usage multiconductor cord. Temporary wiring will be secured above the ground or floor in a workmanlike manner and will not present an obstacle to persons or equipment. Applicable OSHA standards for electrical power, 29 CFR 1926 Subpart K, will apply.

3.2.20 Portable Electric Equipment

Various types of portable electric equipment (including portable generators, ground fault circuit interrupters and flexible cords) may be used during the course of the project. To minimize electric shock hazards, the following rules apply to these pieces of equipment.

3.2.20.1 Portable and Vehicle-Mounted Generators

All portable and vehicle-mounted generators must be grounded, except under the following conditions:

- (1) The noncurrent-carrying metal parts of equipment located on the vehicle and the equipment grounding conductor terminals of the receptacles are bonded to the generator or vehicle frame, and
- (2) The generator supplies only equipment located on the vehicle or the generator and/or cord - and plug - connected equipment through receptacles mounted on the vehicle or on the generator, and
- (3) The frame of a vehicle-mounted generator is bonded to the vehicle frame, or
- (4) The generator is single-phase, portable or vehicle-mounted, rated not more than 5 KW, and the circuit conductors of the generator are insulated from the generator frame and all other grounded surfaces.

3.2.20.2 Ground Fault Circuit Interrupters

Ground fault circuit interrupters will be used on all electrical power lines used at the project site. In each case, the ground fault interrupter will be placed as close to the power source as feasible.

3.2.20.3 Flexible Cords

Flexible cords and cables will be protected from accidental damage. Sharp corners and projections will be avoided. When passing through doorways or other pinch points, protection will be provided to avoid damage. Flexible cords used will be of three-wire type and rated for hard or extra-hard usage.

3.2.21 Dust Control

Excavation and backfilling activities can create airborne dust. Excessive generation of dust can limit visibility, cause irritation to workers and create airborne chemical contamination which spreads the overall extent of contamination and puts nearby unprotected personnel at risk of overexposure.

Project personnel will take all reasonable precautions to minimize the generation of dust at the worksite. Such precautions include operating vehicles in a slow and deliberate manner and

working materials in a wet state whenever possible. Where dust generation is significant, the Program CIH will be contacted to establish an air monitoring program and dust reduction measures (up to and including misting of the dust cloud or ceasing operations) shall be implemented.

The most effective way to control dust is to minimize its initial generation. Preventative measures will be implemented by project personnel to maintain fugitive dust emissions at levels below action levels established in Table 8-1. The following list details methods and measures to be applied.

3.2.21.1 Methods and Measures

- Enforcement of speed limits on haul roads.
- Excavated soil in transit will be covered with tarps.
- Use of dust suppressants during loading and hauling operations. Suppressants may include water spraying of haul roads, stockpile(s) and loading equipment.
- Dust control using wet methods shall be water truck and hose.
- Use manufactured dust suppressants which are environmentally acceptable.
- Schedule and stage operations to take advantage of prevailing winds.
- Excavation at Site 16 will cease when wind gusts exceed 25 mph or consistently in excess of 10 mph.
- Schedule hauling operations to minimize trips on dirt haul roads.
- Covering of stockpiles for long term storage.
- Dry brooming and dry powder brooming are prohibited. Instead, use vacuuming, wet mopping, wet sweeping, or wet power brooming.
- Air blowing shall not be permitted to clean surfaces or clothing.
- Only wet cutting is permitted for cutting concrete blocks and concrete.

3.2.22 Slip, Trip and Fall Hazards

Poor housekeeping results in a workplace which is laden with slip, trip and fall hazards. Such accidents can cause serious injuries, including broken bones, contusions, and/or deep lacerations.

Much of the work we perform involves working on wet visqueen. This can increase the chances of slip, trip, and fall injuries.

To minimize slip trip and fall hazards caused by poor housekeeping, the following measures shall be taken:

- Work areas shall be inspected daily for adequate housekeeping and findings recorded on daily inspection reports.
- All stairways, passageways, gangways, and access ways shall be kept free of materials, supplies, and obstructions at all times.
- Loose or light material shall not be stored or left on roofs or floors that are not closed in, unless safely secured.
- Tools, materials, extension cords, hoses, or debris shall not be placed where they may cause tripping or other hazards.
- Tools, materials, and equipment subject to displacement or falling shall be adequately secured.
- Empty bags having contained lime, cement, and other dust-producing material shall be removed and properly disposed of immediately.
- Scrap lumber and debris shall be cleared from work areas and access ways.
- Personnel will avoid walking on visqueen when ever possible.
- Field technicians will work together when repositioning sandbags, pulling visqueen, or moving bales of hay (wet hay bales are extremely heavy).

3.2.23 Environmental Hazards

Poisonous or stinging insects, spiders and/or snakes may be a concern for project personnel during sampling and other site activities. Disease vectors, such as ticks, may also be present.

Poison oak or other noxious flora may be present on or near the site, and can cause severe skin irritation on contact. Physical hazards are also posed by native vegetation in the area, including thistles and other thorny weeds.

Site workers should inspect protected areas (e.g., boreholes, pits and storage areas) prior to reaching into them or entering them in any way. Portable toilets have been a source of spider and snake bites. Stinging insects and their nests shall be avoided wherever possible, and workers shall wear long pants and if necessary, long sleeved shirts and gloves to protect them from insect bites and sharp or irritating plants.

3.2.23.1 Ticks

Ticks are vectors of many different diseases including rocky mountain spotted fever, Q fever, tularemia, Colorado tick fever, and lyme disease. They attach to their host's skin and intravenously feed on its blood creating an opportunity for disease transmission. Covering exposed areas of the body and the use of tick repellent are two ways to prevent tick bites. Periodically during the workday, employees will inspect themselves for the presence of ticks. If a tick is discovered, the following procedure should be used to remove it:

- Do not try to detach a tick with your bare fingers; microorganisms from a crushed tick may be able to penetrate even unbroken skin. Fine-tipped tweezers should be used.
- Grip the tick as close to your skin as possible and gently pull it straight away from you until it releases its hold.
- Do not twist the tick as you pull and do not squeeze its bloated body. That may actually inject microorganisms into your skin.
- Thoroughly wash your hands and the bite area with soap and water. Then apply an antiseptic to the bite area.
- Save the tick in a small container with the date, the body location of the bite, and where you think the tick came from.
- Notify the SHSO of any tick bites as soon as possible.

Recently, lyme disease has been the most prevalent type of disease transmitted by ticks in the United States.

3.2.23.2 Poisonous Plants

Poison ivy, poison oak, and poison sumac are identified by three or five leaves radiating from a stem. Poison ivy is in the form of a vine while oak and sumac are bush-like. All produce a delayed allergic hypersensitivity. The plant tissues have an oleoresin, which is active in live, dead, and dried parts. The oleoresin may be carried through smoke, dust, contaminated articles, and the hair of animals. Symptoms usually occur 24 to 48 hours after exposure resulting in burning or stinging, and weeping and/or crusted blisters. Should exposure to any of these plants occur, wash the affected area with a mild soap and water, but do not scrub the area. The best antidote for poisonous plants is recognition and avoidance.

3.2.23.3 Snakes

There are various types of poisonous snakes indigenous to the western United States. The degree of toxicity resulting from snake bites depends on the potency of the venom, the amount of venom injected, and the size of the person bitten. Poisoning may occur from injection or absorption of venom through cuts or scratches.

The most effective way to prevent snake bites is to avoid snakes in the first place. Personnel should avoid walking at night or in high grass and underbrush. Visual inspection of work areas should be performed prior to activities taking place. The use of leather boots and long pants will be required, since more than half of all bites are on the lower part of the leg. No attempt at killing snakes should be made; many people are bitten in such an attempt.

If someone is bitten by a potentially poisonous snake, the following treatment should be initiated:

- Keep patient calm
- Notify emergency medical services
- Wash the wound and keep the affected body part immobile

- Apply direct pressure to site of bite if bleeding is extreme
- Keep the affected area lower than the heart
- Carry a victim who must be transported, or have him/her walk slowly
- Transport to closest medical facility.

3.2.23.4 Flying Insects

Flying insects such as mosquitos, wasps, hornets, and bees may be encountered while site activities occur. Table 3-4 discusses problems associated with them.

3.2.23.5 Bird Excrement

Accumulation of bird excrement can pose a biological threat to site workers and visitors. There is a group of pulmonary disease and disorders which result from exposure to infected bird droppings. The inhalation of dust from infected droppings can result in one of these pulmonary infections. All site activities that deal with the disturbance of bird excrement will be performed in Level C PPE using high efficiency particulate air (HEPA) respirator filters at a minimum.

3.2.23.6 Hantavirus

Rodents, such as deer mice, can potentially carry hantavirus. Deer mice usually live at higher elevations, like mesas, and can be distinguished from other rodents by their small size (2 to 4 inches long) and by their bi-colored tail. However, the Center for Disease Control believes that other rodents also have the potential to carry the virus, so precautions must be taken when dealing with any species of rodent. It is not possible to distinguish whether a rodent carries the hantavirus by observation.

Hantavirus affects the respiratory system in humans. The first symptoms of infection can occur at any time up to 45 days after exposure and include one or more of the following: fever, muscle aches, headache, or coughing. These symptoms progress rapidly into a severe lung disease that often requires intensive care treatment. Hantavirus can be transferred to humans, primarily from breathing infected rodent excreta particles that have become airborne or ingesting excreta particles that have clung to hands or clothing. It can also be contacted from rodent bites or transferred through broken skin. Though the illness caused by hantavirus is severe, it is a relatively rare illness that can be prevented by simple precautions and common sense.

The best way to avoid contact with hantavirus is to avoid contact with rodents and their excreta. Do not leave food or garbage where rodents have access to them; this includes leaving food items and wrappers in vehicles. When possible, seal any opening greater than 1/4-inch diameter in vehicles or structure with steel wool to prevent rodent access.

Minor amounts of rodent excreta and rodents caught in mouse traps may be disposed of by personnel, provided precautions are taken. A suggested procedure is:

- When excreta or dead rodents are discovered in an enclosed area, ventilate the area for 30 minutes; the more air flow the better.
- Wear the proper PPE.
- Implement dust suppression techniques (such as use of a “bug” sprayer filled with water and a small amount of detergent to lightly spray the floor prior to entry) may have to be used.
- To dispose of wastes, place the rodent excreta or dead rodent in a plastic bag. Rinse gloved hands with bleach solution of 1 part bleach to 10 parts water, then doff any PPE in proper order, placing disposable items, such as boot covers and respirator cartridges in with the wastes. Place the waste, if any, into a plastic bag and mark the bag clearly as “POTENTIALLY INFECTIOUS.” Wet the wastes with the bleach solution, seal the plastic bag, place it into a second plastic bag, and seal this bag also. Spray the outside of the plastic bag with a commercial spray disinfectant. The waste may be disposed of as regular garbage.
- After the wastes are properly bagged, spray the surfaces where the wastes originally were found with disinfectant.
- Thoroughly wash hands, face, and forearms with soap and water.

When mouse traps are used to control rodents, the traps should be checked on a regular basis. Dead rodents should be disposed of immediately; the trap may be discarded along with the dead rodent.

3.2.24 Use of a Nuclear Density Gauge

Soil density testing may be conducted using a nuclear density gauge. A nuclear density gauge is an electronic instrument which uses a small amount of radioactive material to measure the density and moisture of construction materials. The Cesium-137 (Cs-137) source capsule is in a holder threaded and adhered in the base of the gauge. The Americium-241/Be (Am-241) source is within the gauge and cannot be reached without disassembly of the gauge.

The radioactive material used in the gauge is in a dual sealed source capsule. This means it is inside of a stainless steel capsule which is sealed by welding, and inside of a second stainless steel capsule which is sealed by welding. There is little possibility that the radioactive material will escape. Current source construction techniques are to deposit the Cesium-137 into a ceramic material and fire it. If a source constructed in this manner was breached, the radioactive material may break or chip, but it would not be in a dust form. The use of a ceramic binder would compromise the intimacy of the Americium-Beryllium mixture so the Am-241/Be is pressed into a pellet.

All use of nuclear density gauges by IT or sub-contractor personnel must be performed in compliance with the following requirements:

- Only authorized users may operate the density gauge. An authorized user has been properly trained on the use of the device and the hazards of radiation, and who has been so designated by IT's California Radiation Safety Officer (RSO), or the sub-contractor's RSO. Authorized users must carry a letter of designation from the RSO.
- The RSO shall be notified of the planned use of the gauge at least two weeks prior to gauge use so that state nuclear license reciprocity arrangement may be made for use of the gauge on a federal facility.
- IT will make sure that the Radiological Health Branch of the State Department of Health Services is notified regarding the transfer of gauges, and will maintain all records as required by the license and the regulations.
- In the case of sub-contractor use of a nuclear density gauge or other instrument with a radioactive source, IT will make sure that the subcontractor provides a copy of their license and that they can operate the nuclear density or other instrument on property with exclusive federal jurisdiction. This shall include proof of current reciprocity with the U.S. Nuclear Regulatory Commission (NRC)

- The SHSO will assure that gauges are stored and secured in an appropriate area.
- All use of the nuclear density gauge shall be in compliance with IT Corporation's Radiation Safety Plan, and each user shall have read and reviewed a copy of this plan.
- At no time is the operator to leave the equipment unattended while out of its storage case, or in the possession of an unauthorized person.
- Keep all unauthorized persons out of the immediate operating area (at least 5 feet away).
- The operator must verify that the gauge has had leak test measurements at the proper interval.
- When not being used for field measurements the gauge will be placed in the "SAFE" position and returned to its storage case.
- When using the gauge the operator will wear the personal monitoring device (radiation dosimeter) assigned. When the operator is not using the gauge, the monitoring device will be kept in a low background, low heat area.
- During transportation the gauge shall be fully secured in the transporting vehicle and located away from personnel. When transported in a closed vehicle (car or van), the case will be locked and the vehicle will be locked when the operator is not with the vehicle. When transported in an open bed vehicle (pickup truck), the case will be locked and the case securely fastened and locked to the truck bed when the operator is not with the vehicle. The gauge will only be transported in an approved DOT shipping container with all the required labels and marking. The authorized user will inspect the shipping case to assure that it is physically sound and that all closure devices (hinges, hasps, latches, etc.) are properly installed, secured and free of defects.
- No one shall attempt to repair, modify or open the sealed source under any circumstances.
- The operator shall examine the integrity of the shutter of the gauge prior to use. If shutter integrity is in question, do not operate the gauge and notify the RSO.
- When field testing is complete the gauge will be returned to its place of storage as soon as possible.

- At all times, operators will observe as low as reasonably achievable (ALARA) principles to minimize any dose received. This may include: being near the equipment only when necessary, standing away from the equipment when possible during operation, always have base pointed away from body.
- The following documents will be with the equipment storage case at all times (except as required during transport of the gauge):
 - Copy of the License,
 - Copy of authorization letter/card from RSO,
 - Copy of the Gauge Operations Manual,
 - Copy of the current Leak Test Certificate,
 - Copy of the current Transit Case Certificate.
- All personnel using the gauges will be assigned a personal monitoring device (dosimeter). These will be either a film badge which is exchanged monthly, or a thermoluminescent dosimeter which is exchanged quarterly. The badge will be returned to the IT RSO or subcontractor's RSO at the designated time. Badge loss must be reported immediately and supported by a memo to the appropriate RSO which includes date of incident, persons involved, description of the incident, and measures taken to prevent a reoccurrence.
- All radioactive material/equipment will be stored in the designated area only. Equipment will be locked in its case while not in use. The storage area will be locked at all times and key access authorized for operators only. Regulation requires that the storage area meet the following:
 - Storage locker or separate room with a minimum of 10 feet from any permanent work station;
 - Security against unauthorized removal with key/combination lock control;
 - Signs posted which state:
 1. "CAUTION RADIOACTIVE MATERIAL"
 2. Notice to Employees (Form RH-2364).
 3. Notice of where a copy of the; License, Radiation Safety Plan, and Title 17 CCR may be viewed.
 - Area includes circuit for charging equipment.

While in-transit involving over-night storage, the case should be covered so it is not visible from outside the vehicle while the operator is not present. If appropriate, the gauge should be chain locked in its case to the steering wheel in the cab of the truck.

- Any incident involving potential dispersment of radioactive material, theft or loss of the gauge must be immediately reported to the IT RSO and subcontractor's RSO as appropriate.

3.2.25 Sanitation

3.2.25.1 Break Area

A designated break area shall be established in the support zone. The break area shall contain drinking water and be arranged to provide shade to workers during hot weather (>85°F).

3.2.25.2 Potable Water

The following rules apply for all field operations:

- An adequate supply of potable water shall be provided;
- Portable containers used to dispense drinking water shall be capable of being tightly closed, and equipped with a tap;
- All containers used for drinking water shall be clearly marked and not used for any other purpose; and
- Disposable cups or personal, marked, insulated drink containers will be supplied. If disposable cups are used, both a sanitary container for unused cups and a receptacle for disposing of used cups shall be provided.

Outlets for nonpotable water shall be identified to clearly indicate that the water is unsafe and is not to be used for drinking or washing. There shall be no cross connection (open or potential) between potable and nonpotable water systems. Nonpotable and potable water systems shall be physically separated so as to minimize confusion and possible cross contamination.

3.2.25.3 Toilet Facilities

A minimum of one separate toilet facility shall be provided for each 20 employees, or fraction thereof, of each sex. Such facilities may include both urinals and toilets, with the provision that

the number of toilets is at least half of the minimum required number of facilities. Where there are less than five employees, separate toilet facilities for each sex are not required provided the toilet facilities can be locked from the inside and contain at least one toilet.

Toilet facilities on the site are to be kept clean, maintained in good working order and provided with an adequate supply of toilet paper. Toilets are to be placed only in cleared areas to reduce the chance of becoming home to biting reptiles, insects, spiders, etc. The toilet should be inspected before each use.

3.2.25.4 Food Handling and Storage

There shall be no handling of food in the contaminated work areas of the work area. Food may be stored in refrigerators, however, those refrigerators may only be used for storage of foods, and beverages. Refrigerators used for sample or chemical storage should be clearly marked as such.

3.2.25.5 Trash Collection

Trash generated by project personnel will properly be disposed of in trash receptacles. These receptacles will be emptied regularly.

3.2.26 Other Safe Work Practices

- Horseplay is not permitted at anytime on the job.
- Workers shall not use equipment on which they have not been trained.
- Eating, drinking, smoking and applying cosmetics are allowed only in clean areas.

Table 3-1

Proposition 65 Warning and Notification

As required under the Safe Drinking Water and Toxic Enforcement Act of 1986 (also known as Proposition 65), on February 27, 1987, the Governor published a listing of those chemicals determined by the State of California to cause cancer, birth defects, or other reproductive harm. Proposition 65 requires that businesses that handle any of the listed chemicals notify people in the affected area of that fact. IT Corporation handles some of the listed chemicals at the Removal Action Project within NAS Alameda, Alameda, California.

The chemicals present on site that have been determined to cause cancer include:

- Diesel Exhaust
- Polychlorinated Biphenyls

The following contaminants on site have been determined by the State to cause reproductive harm:

- Lead

Table 3-2

HAZARDOUS AND TOXIC MATERIALS

CONTAMINANT (SYNONYM)	PHYSICAL DESCRIPTION	CHEMICAL & PHYSICAL PROPERTIES	INCOMPATIBILITIES	SOURCES & ANTICIPATED CONCENTRATION	TARGET ORGANS	SYMPTOMS OF EXPOSURE
Aroclor-1254 (Polychlorinated Biphenyl) (PCB)	Light yellow viscous liquid	MW: 326 BP: 689-734°F MP: N/A VP: 0.00006 mmHg Sol: insoluble FP: N/A LEL: N/A UEL: N/A IP: N/A	Strong oxidizing agents	Soil from Site 16 and TSTA	Skin, eyes, liver	Eye, skin and respiratory system irritation, somnolence, diarrhea
Diesel exhaust	Appearance and odor vary	MW: N/A BP: N/A MP: N/A VP: varies Sol: N/A FP: N/A LEL: N/A UEL: N/A IP: varies	Varies	Site equipment	Eyes, respiratory system	Eye irritation, pulmonary function changes, carcinogen
Lead	Metal: a heavy, ductile, soft gray solid	MW: 207.2 BP: 3164°F MP: 621°F VP: 0 mm Hg Sol: insoluble FP: N/A LEL: N/A UEL: N/A IP: N/A	Strong oxidizers, hydrogen peroxide, active metals (sodium, potassium).	Soil from Site 16 and TSTA	Kidneys, blood, gastrointestinal tract, CNS.	Pallor, blue gums, lethargy; colic, abdominal pain, constipation; anemia, weight loss.

Table 3-2

**HAZARDOUS AND TOXIC MATERIALS
Continued**

MW:	Molecular weight.
BP:	Boiling point at 1 atmosphere pressure, in degrees Fahrenheit (°F).
MP:	Melting point in °F.
VP:	Vapor pressure at 1 atmosphere pressure and 68°F.
Sol:	Solubility in water at 68°F, as percentage (%) by weight.
FP:	Flash point, closed cup method, in °F.
LEL:	Lower explosive limit in air, as % by volume.
UEL:	Upper explosive limit in air, as % by volume.
IP:	Ionization potential, in electron-volts (eV).
CNS:	Central nervous system.
mm Hg:	Millimeters of mercury.
eV:	Electron volts.
°F:	Degrees Fahrenheit
°C:	Degrees Celsius
%:	Percent
ppm:	Parts per million
mg/m ³ :	Milligrams per cubic meter.
u/l:	Micrograms per liter.
>:	Greater than.
<:	Less than.
N/A:	Not applicable.

Table 3-3

EXPOSURE GUIDELINES

CONTAMINANT (SYNONYMS)	OSHA PEL		ACGIH TLV		NIOSH REL		IDLH
	8-HR TWA	15-MIN STEL	8-HR TWA	15-MIN STEL	8-HR TWA	15-MIN STEL	
Aroclor-1242 (Chlorodiphenyl) (PCB)	1 mg/m ³		1 mg/m ³		0.001 mg/m ³		Carcinogen 5 mg/m ³
Aroclor-1254 (Chlorodiphenyl) (PCB)	0.5 mg/m ³	-	0.5 mg/m ³	-	0.001 mg/m ³	-	5 mg/m ³ Carcinogen: suspect Fertility effects
Diesel engine emissions	-	-	-	-	Lowest feasible concentration	-	Carcinogen
Lead	0.05 mg/m ³	-	0.05 mg/m ³	-	< 0.1 mg/m ³	-	Fertility effects

OF: Olfactory fatigue occurs quickly after initial detection of odor.
 OSHA: Occupational Safety and Health Administration. Permissible Exposure Limit.
 ACGIH: American Conference of Government Industrial Hygienists.
 TLV: Threshold Limit Value.
 TWA: Time-weighted average.
 STEL: Short-term exposure limit.
 Hr: Hour.
 Min: Minute.
 f/cc: Fibers per cubic centimeter.
 mg/m³: Milligrams per cubic meter.
 ppm: Parts per million by volume.

TABLE 3-4

EXPOSURE GUIDELINES FOR IDENTIFIED
HEALTH SIGNIFICANT SITE CONTAMINANTS
(CONTINUED)

Odor Thresh:	Odor threshold.
Eye Irr Lvl:	Eye irritant level.
< :	Less than.
> :	Greater than.
≈ :	Approximately.

Table 3-4

FLYING INSECTS

Organism	Description	Habitat	Problem	Severity	Protection
Hornet	One inch long with some body hair. Abdomen is mostly black.	Round, paper-like nest hanging from trees, shrubs, or under eaves of buildings.	One nest may contain up to 100,000 hornets which will attack in force at the slightest provocation.	Severe pain, allergic reactions similar to bees.	Do not come near or disturb nest. If a hornet investigates you, do not move.
Mosquito	Small, dark, fragile body with transparent wings. From 1/8 to 1/4 inch long.	Where water is available for breeding.	Bites and sucks blood. Itching and swelling result.	Can transmit encephalitis and other diseases. Scratching causes secondary infections.	Use plenty of insect repellent and wear gloves.
Wasp	Very thin waist. Color can be black, yellow or orange with stripes.	Underground nest. Paper-like honeycomb nest in abandoned buildings hollow trees, etc.	Stings. Some species will attack if you get too close to the nest.	Severe pain, allergic reactions similar to bees. Can be fatal.	Avoid Nest. Do not swat at them.
Bee	Generally has yellow and black stripes and two pair of wings.	Hollow logs, underground nest, old buildings,	Stings when annoyed. Leaves venom sac in victim.	If person is allergic, nausea, shock, constriction of the airway can result. Death may result.	Be careful and watch where you walk. Cover exposed skin. Avoid areas where bees are swarming. Avoid wearing sweet fragrances and bright clothing. Move slowly or stand still when bees are swarming about you.

Table 3-5

Minimum Clearance from Energized Overhead Electric Lines

Nominal System Voltage (kV)	Minimum Required Clearance (feet)
0 - 50	10
51 - 100	12
101 - 200	15
201 - 300	20
301 - 500	25
501 - 750	35
751 - 1000	45

NOTE: Whenever equipment operations must be performed closer than 20 feet from overhead power lines, the Program CIH must be notified. When clearance to proceed is received from the Program CIH, the electric utility company must be contacted to turn the power off or physically insulate (protect) the lines if the operation must be performed closer to the power line than is allowed in this table.

Table 3-6

Fire Extinguisher Requirements

Area	Rating	Location
Flammable liquids 5 gal or more used on worksite (not integral fuel tanks of motor vehicles).	10B	Within 50 feet.
Flammable or combustible liquids 60 gal or more. Stored inside a room, building or trailer.	20B	Outside of door of storage area and within 10 feet of the door.
Flammable liquids stored outside.	20-B	At least 25 feet but not more than 75 feet from storage area.
Tank trucks or vehicles used to transport or dispensing flammable or combustible liquids.	2A-20-BC	Mounted in or on vehicle.
Fueling area.	20-BC	Within 50 feet of service or fueling area.
Other storage areas.	2A-10-BC	Near exit no more than 75 feet unobstructed travel to extinguisher from anywhere in storage area.
Vehicle and heavy equipment.	1A-5-BC	Mounted in or on vehicle/ equipment.
Trailers/offices.	2A-10-BC	Mounted near exit not more than 75 unobstructed travel from anywhere in trailer/office.
Hot work activities	2A	Within 50 feet.

Note: These extinguisher ratings are the minimum acceptable for each listed application. Extinguishers with higher ratings may be substituted. For applications not listed, contact the Program CIH for guidance.

4.0 Buddy System

Project staffing during hazardous waste operations shall meet the requirements and intent of the “buddy system,” which requires that at least two persons are required to be at the work area when work is conducted in the exclusion zone which might result in worker contamination.

The buddy system is a method of organizing employees into work groups and is designed to provide those employees with assistance when needed. Each employee in a work group is designated to be observed by at least one other person. Assignment of designated partners should take place during the Tailgate Safety Meeting (TSM).

The responsibility of the buddy is to:

- Provide assistance if needed;
- Maintain line of sight contact or verbal contact with workers in the EZ;
- Observe for signs of chemical or physical trauma or heat/cold stress such as:
 - changes in complexion and skin discoloration,
 - changes in coordination or demeanor,
 - excessive saliva and pupillary response,
 - changes in speech pattern;
- Periodically verify the integrity of all protective clothing; and
- Notify the SHSO if emergency help is needed.

Entry to or exit from the EZ under the conditions described earlier without a designated partner is prohibited.

The buddy system shall be used whenever workers enter the Exclusion Zones or whenever confined space entry or hot work is performed.

5.0 Personal Protective Equipment

5.1 Levels of Protection

The EPA's terminology for personal protective equipment (PPE) is used on this project (Levels D, C, B, and A). The levels of protection for each task has been assigned in accordance with table 5-1. Based on the Activity Hazard Analysis, project personnel will utilize Level D, Modified Level D, and Level C protective clothing for project activities.

Level C PPE will be worn during start up activities and while the lead exposure assessment is being conducted (using personal air sampling equipment). At a minimum, Level C will continue to be used if actions levels in air are detected. A lead compliance program will be developed by the Program CIH and the Project Manager if action levels are exceeded.

At a minimum, four sets of appropriate PPE will be maintained at the site for Navy visitors. This does not include respiratory protection equipment which is to be supplied to non-IT personnel by their employer, nor does this include other government contractors who must supply all their own PPE.

5.1.1 Level D Protection

Level D PPE shall be used when:

- Work functions preclude significant splashes, immersions, or the potential for unexpected inhalation of, or contact with, hazardous concentrations of harmful chemicals.
- Atmospheric concentrations of contaminants are less than one-half the TLV/PEL.

Level D PPE at a minimum shall consist of:

- Standard work uniform or coveralls
- Steel-toed work boots, ANSI approved
- Safety glasses, ANSI approved
- Hearing protection (if necessary) 25 dBA or greater protection
- Splash shield (if necessary)

- Hard-hat, ANSI approved
- Leather palm gloves (if necessary).

Heat stress monitoring will be conducted in accordance with section 3.2 of this SHSP.

Level D-modified PPE at a minimum shall consist of:

- Standard work uniform or coveralls
- Steel-toed work boots, ANSI approved
- Steel-toed PVC* boots - if liquids encountered, ANSI approved
- Tyvek* coveralls with hoods and elastic wrists and ankles
- Leather-palmed gloves
- Latex or Nitrile gloves (inner) - if liquids encountered
- Nitrile* gloves (outer) - if liquids encountered
- Hearing protection (if necessary) 25 dBA or greater protection
- Splash shield (if necessary)
- Hard-hat, ANSI approved
- Safety glasses, ANSI approved
- Rain gear or poly-coated Tyvek* for pressure washing activities
- Metatarsal guards (pressure washing activities).

*Or constructed of other materials as appropriate

Openings in the PPE (i.e., ankles, wrists, zippers, etc.) will be duct taped to seal the opening.

Heat stress monitoring will be conducted in accordance with section 3.2 of this SHSP.

5.1.2 Level C Protection

Level C protection shall be used when:

- The types of air contaminants have been identified, concentrations have been measured, and an air-purifying respirator (APR) is available that can remove contaminants.

- Oxygen is at least 20 percent and the lower explosive limit (LEL) is less than 10 percent.
- The substance has adequate warning properties and all criteria for the use of an APR has been met.

Level C protective equipment at a minimum shall consist of:

- Half-face or Full-face APR with NIOSH/Mine Safety and Health Administration (MSHA)-approved cartridges (full-face is required if eye irritation is encountered)
- Combination filter/cartridge providing protection against:
 - Not more than 1,000 parts per million (ppm) organic vapors, chlorine, chlorine dioxide, hydrogen chloride, sulfur dioxide, and escape only from hydrogen sulfide
 - Dusts, fumes, and mists having a TWA less than 0.05 milligrams per cubic meter (mg/m^3)
 - Asbestos-containing dusts and mists
 - Radionuclides
- Cartridges approved for the specific contaminants if the cartridge above is not appropriate.
- Surgical scrubs*
- Steel-toed PVC* boots - if liquids encountered. ANSI approved
- Tyvek* coveralls with hoods and elastic wrists and ankles (poly-coated* when there is a potential for contaminated water contact)
- Leather-palmed gloves
- Latex or Nitrile gloves (inner) - if liquids encountered
- Nitrile* gloves (outer) - if liquids encountered
- Hearing protection (if necessary) 25 dBA or greater protection

- Hard-hat, ANSI approved
- Safety glasses, ANSI approved if Full-faced APR not worn
- Splash shield (if necessary). If full-faced APR not worn. Must be worn with safety glasses, ANSI approved

*Or constructed of other materials as appropriate

Openings in the PPE (i.e., ankles, wrists, zippers, etc.) will be duct taped to close the openings.

Heat stress monitoring will be conducted in accordance with section 3.2 of this SHSP.

5.1.3 Level B Protection

Level B Protection is required when airborne concentrations of hazardous materials exceed or are expected to exceed twice the OSHA permissible exposure limit (PEL) in confined spaces.

Level B protection will not be used on this project without contacting the Program CIH for an addendum to this SHSP. The equipment listed for Level C protection will be used for Level B protection except a full-face, pressure demand, supplied air respirator, either self contained or an airline with an egress bottle will be substituted for the air purifying respirator worn in Level C.

Heat stress monitoring will be conducted in accordance with section 3.2 of this SHSP

5.1.4 Level A Protection

Level A protection use is not anticipated during this project.

5.2 Respiratory Protection

Respiratory protective equipment shall be NIOSH-approved and respirator use shall conform to American National Standards Institute (ANSI) Z88.2, OSHA 29 CFR 1926.103, and 29 CFR 1910.134 requirements. IT Procedure HS601 further defines the respiratory protection program which details the selection, use, inspection, cleaning, maintenance, storage, and fit testing of respiratory protective equipment. This procedure complies with the requirements contained within 29 CFR 1926.103 and will be maintained in the SHSO's site office along with the rest of IT's Health and Safety Policies and Procedures.

- All site personnel will have a separate assigned respirator face piece.
- Only properly cleaned, maintained, NIOSH-approved respirators are to be used on this site.
- Contact lenses are not to be worn when a respirator is required
- All site personnel will be clean-shaven in facial areas which touch the sealing surface of the respirator.
- Respirators will be regularly inspected. A positive and negative pressure test will be performed prior to each use.
- When respirators are being used, they shall be cleaned at the end of the work shift using mild soap and warm water, and left to air dry. After drying, the respirator will be stored in a clean plastic bag.

All personnel (including visitors) performing on-site activities and using an air purifying respirator must have successfully passed a qualitative respirator fit test in accordance with OSHA 29 CFR 1926.103 within the last 12 months. Documentation of fit testing is the responsibility of each employer. Fit testing and any training related to respiratory protection for IT personnel will be documented on the IT Respiratory Training Completion Form.

5.3 Using Personal Protective Equipment

All persons entering the EZ shall don the required PPE in accordance with the entries listed in Table 5-1. When leaving the EZ, PPE will be removed in accordance with the procedures listed, in order to minimize the spread of contamination.

5.3.1 Donning Procedures

These procedures are mandatory, only where Modified Level D or higher PPE is required for the project:

- Remove bulky outer wear.
- Put on the required chemical protective coveralls.
- Put on chemical protective boots.
- Tape the legs of the coveralls to the boots with duct tape.

- Put on chemical protective gloves.
- Tape the wrists of the protective coveralls to the gloves.
- Don respirator if required, and perform appropriate fit check.
- Put hood or head covering over head and respirator straps.
- Don remaining PPE, such as safety glasses or goggles and hard hat.

If these procedures are instituted, one person shall remain outside the work area to ensure that each person entering has the proper protective equipment. No persons shall be allowed to enter an EZ if they are not wearing the required PPE.

5.3.2 Doffing Procedures

Whenever a person leaves a work site requiring Modified Level D or higher PPE, the following decontamination sequence will be followed:

- Upon entering the CRZ, rinse contaminated materials from the boots.
- Clean reusable protective equipment.
- Remove protective garments, equipment, and respirator (if worn). All disposable clothing should be placed in plastic bags, which are labeled with contaminated waste labels.
- Wash face and hands immediately and shower as soon as possible.
- Proceed to clean area and dress in clean clothing.
- Clean and disinfect respirator for next use.

All disposable equipment, garments, and PPE shall be bagged in plastic bags, and properly labeled for disposal.

The level of personal protection selected will be based upon real-time air monitoring of the work environment and an assessment by the Program CIH or SHSO of the potential for skin contact with contaminated materials. The PPE selection is given in Table 5-1.

5.4 Personal Protective Equipment for Visitors

An adequate supply of hard hats, safety glasses and other personal protective equipment shall be maintained on-site for use by government personnel and other visitors except other government contractors who must supply all of their own personal protective equipment.. Visitors are not to be supplied with chemical protective clothing without prior approval by the SHSO, and proper training documentation. Respirators will not be issued to non-IT personnel.

5.5 Activity Specific Levels of Protection

The required level of protection is specific to the activity being conducted. At NAS Alameda, the initial levels of PPE are listed in Table 5-1.

**Table 5-1
Activity/Level of Protection**

Task	Activity	Initial Levels of PPE
1	Mobilization	Level D
2	Site Preparation	Level D
3	Utility clearance and survey	Level D
4	Soil sampling and characterization	Modified D/Level C
5	Excavation of contaminated soils	Level C/Modified D
6	Soil separation/segregation	Level C/Modified D
7	Loading and disposal of contaminated soils	Modified D/Level D
8	Equipment decontamination	Modified D
9	Backfill/compaction	Level D
10	Site restoration	Level D
11	Demobilization	Level D

As site activities progress, levels of PPE are subject to change or to modification. Upgrading of PPE can occur when action levels are exceeded or whenever the need arises to protect the safety and health of site personnel. Levels of PPE will not be downgraded without prior approval from the CIH.

6.0 Site Control

The project area will be divided into three work zones: exclusion zone (EZ), a contamination reduction zone (CRZ), and a support zone. The PS and Program CIH or SHSO shall together be responsible for designation of the work zones. Based upon the exposure to contaminated materials or anticipated hazards associated with the work.

The EZ will include any area where chemical contamination may be encountered and will be marked with barrier tape or other means to warn personnel of the hazards. The EZ will be large enough to prevent contamination from leaving the marked area.

Immediately adjacent to the EZ, a CRZ with a decontamination area for equipment and personnel will be established. This area will also be delineated with traffic cones and/or barrier tape. The CRZ will be large enough to provide a safety zone to prevent the movement of contaminants from the EZ into the support zone.

The remainder of the IT project area will be designated as the support zone. No special markings or warning labels are required for this area.

Only personnel who have completed 40 hours of hazardous waste operations as defined under 29 CFR 1910.120/1926.65, or in California T8CCR-5192, or hazardous waste refresher training within the past 12 months, have been certified as fit for hazardous waste operations by a physician within the past 12 months and are wearing the proper PPE shall be allowed within the EZ or CRZ. Personnel without such training may only enter the designated support zone.

6.1 Hazard Briefing

No person will be allowed on the site during site operations without first being given a site hazard briefing. In general, the briefing will consist of a review of the tailgate safety meeting. All persons on the site, including visitors, must sign the site-specific tailgate safety meeting form. Tailgate safety meetings shall be held daily, involving all personnel on site.

6.2 Documentation of Certification

A subcontractor training and medical file will be established for the project and kept on site during all site operations. The 40-hour training, update, and specialty training (first-aid/cardiopulmonary resuscitation [CPR]) certificates, as well as the current annual medical clearance for all subcontractor personnel, will be maintained within that file. All IT and subcontractor personnel must provide their training and medical documentation to the SHSO prior to the start of field work. This documentation will be maintained at the project home office at the close of the project.

6.3 Entry Log

The SHSO at the site will maintain a site entry log with the names of all personnel who enter the CRZ and EZ. These logs will be incorporated into the project file.

6.4 Emergency Entry and Exit

The exclusion zone, contamination reduction zones, evacuation routes, and emergency equipment locations will be included on a site map prior to the initiation of on-site activities. During an emergency, the evacuation routes noted on the site map should be followed. If conditions such as wind direction or physical hazards do not allow access to the prescribed evacuation routes, evacuate by the safest route available and decontaminate to the greatest extent possible. Additional emergency procedures can be found in Section 12.

6.5 Entry Requirements

In addition to the entry requirements listed above, no personnel will be allowed in any EZ or CRZ unless they are wearing the minimum PPE as described in Chapter 5.0.

7.0 Decontamination

In general, everything that enters an EZ at a site must either be decontaminated or properly discarded upon exit from an EZ. All personnel must enter and exit an EZ through a CRZ. Prior to movement from an EZ, contaminated equipment will be decontaminated and then inspected by the SHSO before it is moved into the support zone. This inspection will be noted in the daily log.

7.1 Procedures for Equipment Decontamination

Any item or vehicles taken into an EZ must be assumed to be contaminated and must be carefully inspected and/or decontaminated prior to leaving that particular EZ. A visual inspection of the frame and tires of all vehicles and equipment leaving an EZ will be completed. In order for a vehicle or equipment to pass inspection, it must be in a broom-clean condition, water washed, and free of loose dirt or sludge material on tailgates, axles, wheels, bucket, etc. .

The equipment decontamination area will be used to remove soil from all equipment leaving the work area. Decontamination procedures will consist of washing equipment to remove mud and/or dirt. A special "clean area" will be utilized by personnel who must come in contact with equipment during vehicle maintenance and repair. All equipment requiring maintenance or repair will be staged in a CRZ prior to servicing.

Personnel assigned to vehicle decontamination will wear the protective equipment, clothing and respiratory protection consistent with this SHSP. Seats and flooring in equipment and vehicles that are to be used in the EZ will be covered to the greatest extent possible with disposable polyethylene.

7.2 Personnel Decontamination

Personnel decontamination facilities will be established by IT on site to ensure that personnel maintain a high degree of personal hygiene and minimize the possibility of exposure to chemical hazards. These personnel hygiene facilities will conform to the requirements specified in 29 CFR 1926.65. A personnel decontamination area will be established in the CRZ immediately outside the EZ to facilitate decontamination and PPE removal. All personnel exiting the EZ will

pass through the decontamination area to remove any contamination. Standard IT decontamination procedures are as follows:

Decontamination Procedures

- Step into first wash tub and wash PVC boots and outer gloves with soap solution and scrub brush.
- Step into second wash tub and rinse boots and outer gloves with clean water and scrub brush.
- Remove outer gloves (e.g., Nitrile) and dispose in the proper receptacle.
- Remove outer Tyvek coveralls and dispose in the proper receptacle.
- Remove PVC boots and place in boot rack.
- Remove respirator, place in container to be cleaned.
- Remove inner gloves and dispose in proper receptacle.
- Wash hands and face before eating, drinking, or smoking (break/end of shift).
- Redress in street clothes/leave site.

Personnel are required to wash hands, face, and other exposed skin areas prior to leaving the CRZ for breaks or lunch. Towels, washcloths, soap and shampoo will be provided to personnel as required. Work clothes will be left in the shower/change facility as appropriate. With the exception of work within the SZ, no disposable work clothing, shoes, or boots will be worn off or carried out of the CRZ. Non-disposable soiled work clothes will be laundered on site or taken to an appropriate laundry service. Inner protective clothing and towels will be laundered utilizing soap and chlorine bleach. Boots and respirators will be decontaminated prior to being taken into the support zone.

8.0 Site Monitoring

8.1 Air Monitoring

Air monitoring is essential to ensure that all field personnel are adequately protected from airborne contaminants. Whenever work is performed that might generate gases, organic vapors, dusts, fumes, mists or other airborne hazardous materials, air monitoring will be conducted.

- Photoionization detector (PID) will be used to measure gasses and organic vapors in the work area.
- Mini Ram aerosol monitors will be used to measure respirable dust.
- Integrated air sampling pumps for lead and PCB's will be used for personnel and perimeter monitoring.
- All air monitoring results will be documented in project logs.

Air monitoring will be used to determine the effectiveness of engineering control in keeping the readings below the action levels as specified in Table 8-1.

The Program CIH may direct the SHSO to conduct integrated personal exposure monitoring. Integrated air samples will be analyzed through a laboratory accredited by the American Industrial Hygiene Association (AIHA).

8.1.1 Locations to be Monitored

All personal, integrated air monitoring samples and direct reading instrumentation readings taken for the purpose of determining appropriate health and safety precautions shall be collected/taken in the approximate "breathing zone" of site personnel. Locations to be monitored are found in Table 8-2.

If entry into a confined space is deemed necessary, combustible gas, oxygen, and total organics readings will be collected and recorded from the top, middle, and bottom of the confined space prior to initial entry. Once the IT entry supervisor and/or SHSO has reviewed this information, determined the PPE necessary for entry, and the entry has been initiated, readings shall be taken in the approximate "breathing zone" of the IT employee(s) working within the confined space.

Readings may also be taken in other locations to determine areas of localized contamination or combustibility within the confined space. Work shall stop and all personnel shall exit the confined space when readings exceed acceptable values at any location within the space.

8.1.2 Frequency

Breathing zone air monitoring must be conducted periodically throughout the day while work is being performed in the EZ regardless of the level of protection being worn. Such readings must be documented on FADL forms even if contaminant concentrations are “nondetectable” or read “no meter response.” Frequency requirements for air monitoring are found in Table 8-2. At a minimum, Hourly air monitoring is required during active excavation of contaminated soils and during confined space entry. The SHSO may reduce the frequency of the monitoring only after receiving approval from the Program CIH.

8.1.3 Monitoring Equipment Maintenance and Calibration

All air monitoring equipment (e.g., photo ionization detectors, flame ionization detectors, etc.) will be maintained in accordance with IT Procedure HS603 and the specific manufacturer's instructions. Calibration will occur before and after each use.

All personal sampling pumps shall be calibrated in accordance with OSHA sampling protocols and NIOSH methods for the analyte of interest.

All direct reading instrumentation calibrations should be conducted under the approximate environmental conditions the instrument will be used. All air monitoring equipment calibrations and maintenance activities shall be documented on the IT FADL, or equivalent.

When applicable, only manufacturer-trained and/or authorized IT personnel will be allowed to perform instrument repairs or preventive maintenance.

8.2 Noise Monitoring

Noise monitoring may be performed by the SHSO under the direction of the Program CIH if high noise levels are routinely encountered. High noise levels are considered to be noise levels which make normal conversation difficult to understand at arm's length. The PS is to contact the SHSO or Program CIH if this situation is routinely present.

8.3 Heat Stress

When workers are in Level D protective equipment, heat stress monitoring shall be initiated whenever ambient temperatures on site exceed 85°F. When workers are in Level C or modified Level D protective equipment, physiological monitoring will begin at 78°F. When workers are in Level B protective equipment, physiological monitoring will begin at 70°F. These benchmarks are not to preclude heat stress monitoring at lower temperatures if workers exhibit signs of heat stress. At the discretion of the Program CIH, additional environmental and/or physiologic monitoring will be carried out. Environmental monitoring shall consist of the determination of Wet Bulb Globe Temperatures (WBGTs). Physiologic monitoring may consist of pulse rate and/or body temperature determinations.

8.4 Safety Reviews

Jobsite safety reviews (audits) shall be conducted by all levels of project management.

Specifically:

- The SHSO shall inspect the jobsite at least daily. Findings shall be documented on FADLs and communicated to the PS.
- The PS shall conduct a safety audit with the SHSO at least weekly. Findings shall be documented on FADLs and communicated to project workers, the PM and Program CIH.
- The PM shall conduct an on-site safety audit at least monthly. Findings shall be documented on Safety Inspection Report (SIR) forms and copied to the Program CIH. Whenever possible, the Program CIH shall be included in these audits.
- The Program CIH or designated representative may conduct unannounced jobsite safety audits at anytime. Findings will be documented on SIRs and copied to the PM and Program Manager.

8.5 Monitoring Records

The SHSO shall ensure that site monitoring records are complete and incorporated into the project file. Any personnel or area air monitoring results will be incorporated into the host office health and safety files. The Program CIH will be responsible for establishing, maintaining, and forwarding to other IT offices (as necessary) all required monitoring information as described below for placement in individual employee files:

- Employee name, social security number, payroll number
- The date, time, pertinent task information, exposure information
- Description of the analytical methods, equipment used, and calibration data
- Type of PPE worn
- Engineering controls used to reduce exposure.

8.6 Notification

The Program CIH will ensure that each employee is informed in writing of the results which represent that employee's exposure. Monitoring results representative of an employee's exposure shall be reported in writing to the affected employee, with copies retained in the project file and the employee's medical file.

Whenever the results indicate that the representative employee exposure exceeds the Permissible Exposure Limit (PEL), the notification shall state that the PEL was exceeded, and shall provide a description of the corrective action taken to reduce exposure to a level below the PEL.

IT may conduct industrial hygiene monitoring on subcontractor employees. Notification of subcontractor personnel of industrial hygiene monitoring results is the responsibility of the subcontractor.

**Table 8-1
Action Levels**

When in Level D PPE

Analyte	Action Level ¹	Required Action ²
Dust Unknown VOCs	≥ .5 mg/m ³ above background > 5 ppm above background	Upgrade to Level C Detector tube for Benzene. continue work if no Benzene detected
Lead	≥ .03 mg/m ³ based on personal air samples	Stop work ³ ; comply with Lead Management Plan
Benzene	> 1 ppm ≤ 5 ppm > 5 ppm	Upgrade to Level C Stop work; contact CIH ³
O ₂	≥ 23.5% or ≤ 20%	Stop work; determine cause ³
LEL	≥ 10% of LEL	Stop work; determine cause ³

When in Level C PPE

Analyte	Action Level ¹	Required Action ²
Dust Unknown VOCs	≥ 5.0 mg/m ³ above background ≥ 50 ppm above background in breathing zone (BZ)	Stop work; initiate dust suppression ³ Stop work; detector tube for benzene; if no benzene continue in Level C ³
Lead	≥ .05 mg/m ³ based on personal air samples	Stop work ³
Benzene	> 5 ppm ≤ 50 ppm	Upgrade to Level B. contact CIH ³
O ₂	≥ 23.5% or ≤ 20%	Stop work; determine cause ³
LEL	≥ 10% of LEL	Stop work; determine cause ³

When in Level B PPE

Analyte	Action Level ¹	Required Action ²
Unknown VOCs	≥ 100 ppm above background in BZ	Stop work; detector tube for benzene: contact CIH ³
O ₂	≥ 23.5% or ≤ 20%	Stop work; determine cause ³
LEL	≥ 10% of LEL	Stop work; determine cause ³

¹ Five excursions above the action level in any 15 minute period or a sustained reading in excess of the action levels for 5 minutes will trigger a response.

² Frequency of air monitoring may be adjusted by the CIH after sufficient characterization of site contaminants has been completed, tasks are modified or site controls have proven effective.

³ Contact with the Program CIH must be made prior to continuance of work. The Program CIH may then initiate integrated air sampling along with additional engineering controls.

No one is permitted to downgrade levels of PPE without authorization from the Program CIH.

Table 8-2

Air Monitoring Frequency and Location

WORK ACTIVITY	INSTRUMENT	FREQUENCY ¹	LOCATION
Task 1			
Mobilization	PID or FID Miniram O2/LEL Detector Tube	N/A N/A N/A N/A	N/A N/A N/A N/A
Task 2			
Site Preparation	PID Miniram O2/LEL Detector Tube	N/A N/A N/A N/A	N/A N/A N/A N/A
Task 3			
Utility clearance and survey	PID Miniram O2/LEL Detector Tube (Benzene)	N/A N/A N/A N/A	N/A N/A N/A N/A
Task 4			
Soil sampling and characterization	PID Miniram O2/LEL Detector Tube (Benzene)	Periodically Continuously N/A If Required	BZ of employees BZ of employees N/A BZ of employees
Task 5			
Excavation of contaminated soils	PID Miniram O2/LEL Personal Sampling Pumps for lead and PCBs at Site 16 Detector Tube (Benzene)	Periodically Continuously N/A Full Shift If required	BZ of employees BZ of employees and perimeter N/A BZ of employees and perimeter BZ of employees
Task 6			
Loading and disposal of contaminated soils	PID Miniram O2/LEL Personal Sampling Pumps for lead and PCBs at Site 16 Detector Tube (Benzene)	Periodically Continuously N/A If required: Full Shift If required	BZ of employees BZ of employees and perimeter N/A BZ of employees and perimeter BZ of employees
Task 7			
Equipment decontamination	PID Miniram O2/LEL Detector Tube (Benzene)	Periodically Continuously N/A If required	BZ of employees BZ of employees N/A BZ of employees
Task 8			
Backfill/compaction	PID Miniram O2/LEL Detector Tube (Benzene)	N/A Periodically N/A N/A	N/A BZ of employees N/A N/A
Task 9			
Site restoration	PID Miniram O2/LEL Detector Tube (Benzene)	N/A N/A N/A N/A	N/A N/A N/A N/A
Task 10			
Demobilization	PID Miniram O2/LEL Detector Tube (Benzene)	N/A N/A N/A N/A	N/A N/A N/A N/A

¹ Frequency of air monitoring may be adjusted by the CIH after sufficient characterization of site conditions has been completed. Periodic is defined as at least once an hour unless sampling data demonstrates a less frequent monitoring schedule is justified

9.0 Employee Training

9.1 General

All personnel entering the EZ or CRZ shall have completed at least 40 hours of hazardous waste operations-related training, as required by 29 CFR 1910.120/1926.65, or in California T8CCR-5192. All field employees must have received a minimum of three days of actual field experience under the direct supervision of a trained, experienced supervisor. Those personnel who completed the 40-hour training more than 12 months prior to the start of the project shall have completed an 8-hour refresher course within the past 12 months. The PS, PM, Program CIH, and the SHSO must have completed an additional 8 hours of relevant supervisory health and safety training. With the exception of subcontractor personnel who will be working only in the support zone, subcontractor personnel must meet the above training requirements and subcontractor supervisors must also have the 8-hour hazardous waste supervisor training.

A copy of each training certificate will be maintained at the project job site. Subcontractors must provide certificates of training for the project file for all employees assigned to the project, if they will be working in either the EZ or CRZ. Training certificates for both subcontractor and IT personnel shall be maintained on-site.

9.1.1 Tailgate Safety Meetings

Prior to the start of the project, all personnel will participate in an initial tailgate safety meeting. During the initial tailgate safety meeting, the SHSP will be discussed. The PS will ensure that the anticipated site hazards are summarized and explained to all personnel, and that those personnel are aware of the precautions they must take to minimize their exposure to those hazards. Tailgate safety meetings will be held at the start of each work shift. All new employees must attend the meeting and be familiar with this SHSP. The PS will not delegate all safety related training to the SHSO.

Attendance records and meeting notes shall be maintained with the project file.

9.2 Hazard Communication

All personnel performing field activities will receive basic hazard communication training which involves a review of the IT written hazard communication program (IT Health & Safety

Procedure HS060), MSDSs, container labeling, and chemical health hazards. Personnel will be trained on the hazards of chemicals handled or used on site by reviewing the Chemical Hazards listed in Section 3.2 of the SHSP and the MSDSs in Appendix B. MSDSs will be obtained for all materials purchased for the site that require them.

9.2.1 Site-Specific Health and Safety Plan

The SHSO will present the SHSP (including all attached MSDSs) and discuss it with all personnel assigned to the project. All workers and visitors must read and sign the SHSP acknowledging acceptance of site rules and understanding of site hazards before the start of the site work. In addition to the body of the SHSP, Appendix E “Lead Management Plan” will also be reviewed by all personnel.

9.3 Site Workers' Basic Course

Each site worker will have received training in basic 40 hour HAZWOPER course and be current in that training through an annual 8 hour refresher training as required, as well as site specific training prior to performing field work. The content of the 40 hour HAZWOPER training will consist of:

- General site safety
- Physical hazards (fall protection, noise, heat stress, cold stress)
- Names and titles of key personnel responsible for site health and safety
- Safety, health, and other hazards typically present at hazardous waste sites
- Use of PPE
- Work practices by which employees can minimize risks from hazards
- Safe use of engineering controls and equipment on site
- Medical surveillance requirements including recognition of symptoms and signs which might indicate overexposure to hazards
- Worker right-to-know (Hazard Communication, 29 CFR 1910.1200)

- Routes of exposure to contaminants
- Engineering controls and safe work practices
- Components of the site health and safety program
- Decontamination practices for personnel and equipment
- Confined-space entry procedures
- Emergency response plan.

9.4 Supervisors' Course Content

Management and supervisors must receive an additional eight hours of training that includes:

- General site safety and health programs;
- PPE programs;
- Air monitoring techniques;
- Spill containment techniques.

9.5 Site-Specific Training

Site-specific training and a Lead Awareness training will be accomplished through an initial review of this SHSP and the Lead Management Plan (Appendix E) by the SHSO and through the daily tailgate safety meetings. All such training shall include signatures of all attendees and shall be documented in the project files.

9.6 First Aid and Cardiopulmonary Resuscitation (CPR)

At least two employees current in first aid/CPR will be assigned to the project and at least one of these will be on the site whenever operations are ongoing. First aid trained personnel shall also be trained in Bloodborne pathogens hazards and precautions as described in Section 11.0. First aid and CPR training courses are offered to all IT employees. Refresher training in first aid and CPR is required to maintain a current certificate. The SHSO and the PS shall be current in first aid/CPR training.

10.0 Medical Surveillance Program

IT utilizes the services of a Board-Certified Occupational Medicine physician for the medical surveillance requirements of this project. Environmental Medicine Resources (EMR), Inc. (below) will review all medical examinations and will be available for medical consultation on an “as-needed” basis.

EMR, Inc.
4360 Chamblee Dunwoody Road
Suite 202
Atlanta, GA 30341
1-800-229-3674

10.1 Medical Examination

As required by IT Policy and Procedure HS100, all personnel on site working within a CRZ or EZ will have successfully completed a preplacement or periodic/updated physical examination. The contents of this examination have been determined by EMR and are consistent with the medical surveillance requirements for hazardous waste operations.

10.1.1 Preplacement Examination

This examination has been designed to meet 29 CFR 1926.65 or in California T8CCR5192 requirements for hazardous waste site operations.

The IT medical surveillance program examination at a minimum consists of:

- Medical and occupational history questionnaire which includes information on past gastrointestinal, hematologic, renal cardiovascular, reproductive, immunological, and neurologic problems
- Physical examination
- Blood pressure measurements
- Complete blood count (CBC) and differential to include hemoglobin and hematocrit determinations, red cell indices, and smear of peripheral morphology
- Blood urea nitrogen and serum creatinine

- Blood chemistry (SMAC 24)
- Pulmonary function test
- Audiogram
- Electrocardiogram (EKG) for employees over 35 years old or when other complications indicate the necessity
- Drug and alcohol screening
- Visual acuity.

The following information is provided to the examining physician:

- A copy of 29 CFR 1926.65 and their Appendices
- A description of employee's duties
- A list of potential contaminants which the employee may be exposed to
- A description of the PPE to be used
- Information from previous medical exams.

The medical surveillance provided to the employee includes a judgment by the medical examiner as to the ability of the employee to use either positive-pressure or negative-pressure respiratory equipment. Any employee found to have a medical condition which could directly or indirectly be aggravated by exposure to these chemical substances or by the use of respiratory equipment will not be employed for the project. A copy of the medical examination is provided to the employee.

The employee will be informed by EMR of any medical conditions that would result in work restriction or that would prevent them from working at hazardous waste sites.

10.1.2 Annual Examination

IT employees receive either an annual or biannual update examination meeting the requirements of 29 CFR 1926.65 depending upon the attending physician's determination based on employee exposure. The results of these exams are compared to previous results and the baseline physical

to clear the employee for continued work. If any indication of over exposure to hazardous materials is found, appropriate actions are taken as recommended by the occupational medicine physician.

10.1.3 Exit Examination

IT offers exit physical examinations for all employees involved in the medical surveillance program who are leaving the company for any reason to ensure they are in good health.

10.2 Subcontractor Requirements

Subcontractors must provide documentation that all their employees have successfully completed a physical examination by a qualified physician. The physical examinations will meet the requirements of 29 CFR 1926.65 and 29 CFR 1926.103, Respiratory Protection. Subcontractors will provide this documentation by supplying copies of the medical examination certificate for each employee they have on site.

10.3 Medical Records

Medical and personal exposure monitoring records will be maintained according to the requirements of 29 CFR 1926.65 and will be kept for duration of employment plus a minimum of 30 years. Confidentiality of employee medical records will be maintained. The written medical opinion from the occupational physician will be made available upon request to the ROICC site representative for any site worker.

10.4 Medical Restrictions

When a medical care provider identifies a need to restrict work activity, the employee's home office will communicate the restriction to the employee, the PS, the SHSO, and the CIH. The terms of the restriction will be discussed with the employee and the PS. Every attempt will be made to keep the employee working, while not violating the terms of the medical restriction. Employees that experienced chemical overexposure will not return to the EZ until released by the occupational medicine physician.

10.5 First-Aid and Medical Treatment

All persons on site must report any near-miss incident, accident, injury, or illness to their immediate supervisor or the Field Supervisor. First aid will be provided on site by the employee

trained in first aid or the SHSO. Injuries and illnesses requiring medical treatment will be accompanied by an "Authorization for Treatment" Form initiated by the SHSO. The employee's supervisor or the Field Supervisor will complete the "Supervisor's Employee Injury Report" and conduct an accident investigation as soon as emergency conditions no longer exist and first-aid and/or medical treatment has been rendered. The investigation should follow the Accident/Injury Investigation Report. These two reports must be completed and submitted to the SHSO within 24 hours after the incident. The PM shall be notified by the PS as soon as possible after the incident occurs. The ROICC must also be notified of the accident by the PM (via submittal of the NAVFAC Form CSIR-1) within 24 hours. The SHSO will notify the Program CIH of all incidents.

First-aid kits are kept at the CRZ and in all IT vehicles. If treatment beyond first aid is required, the injured should be transported to the medical facility listed in Chapter 12.0 of this SHSP and the PS should immediately contact the Martinez Health and Safety Administrator at 510-372-9100 to initiate case management procedures. The PS should describe to the Health and Safety Administrator, the circumstances leading to the injury or illness. The H&S Administrator will contact the EMR Case Manager for follow-up on the treatment that the employee is receiving, the work restrictions, and the return to work authorization.

NOTE: If the injured is not ambulatory or shows any sign of not being in a comfortable and stable condition for transport, then an ambulance/paramedics **MUST** be summoned. If there is any doubt as to the injured worker's condition, let the local paramedic or ambulance service examine and transport the worker.

11.0 Bloodborne Pathogen Exposure Control Plan_____

This section serves as a Bloodborne Pathogen Exposure Control Plan for IT workers who may serve as voluntary first aid and CPR care providers. At all times, at least one person on site will be adequately trained in first aid and CPR, in the requirements of the Bloodborne Pathogens Standard as listed in 29 CFR 1910.1030 and in California, 8 CCR 5193, IT Procedure HS512, and in the contents of this plan.

11.1 Definitions

11.1.1 Bloodborne Pathogens

Bloodborne pathogens are those agents (i.e., bacteria, virus, fungi) found in blood, blood components, certain body fluids, and other materials, objects, or surfaces that have had contact with blood or body fluids that are capable of causing human disease or death to unprotected people who come into contact with them. Diseases caused by bloodborne pathogens include, but are not limited to, hepatitis B virus (HBV), human immunodeficiency virus (HIV), hepatitis C, malaria, and syphilis. The most significant and of greatest concern are HBV and HIV.

11.1.2 Hepatitis B

HBV is the major bloodborne pathogen hazard that first aid/CPR care providers may encounter. The HBV can remain infectious for up to 10 days even in dried blood. The virus adversely affects 8,000 to 10,000 workers annually resulting in approximately 200 deaths each year. Hepatitis means "inflammation of the liver" causing severe liver damage or cirrhosis. Exposure symptoms include fever, fatigue, nausea, vomiting, muscle aches, loss of appetite, and jaundice (yellowing of the eyes or skin). Hepatitis diagnosis is difficult because some symptoms are similar to the flu and may remain mild for an extended period of time. Presently, no cure exists for hepatitis, but it can be prevented with a vaccination.

11.1.3 Human Immunodeficiency Virus

HIV attacks and deteriorates the body's immune system and eventually weakens it to the point that infection sets in causing the disease Acquired Immune Deficiency Syndrome (AIDS). HIV

is primarily transmitted through sexual contact, but may also be transmitted through contact with blood and body fluids. HIV is not transmitted by touching or working with people who are HIV-positive.

11.1.4 Human Immunodeficiency Virus Exposure Symptoms

HIV leads to AIDS-related illnesses which eventually cause neurological problems, cancer, pneumonia, and death. People may carry the virus for many years of their lives without experiencing any symptoms. Upon development, symptoms may include weight loss, skin lesions, dry cough, fever, fatigue, diarrhea, or swelling of the lymph glands.

Presently, no cure exists for HIV or AIDS and no vaccination is currently available.

11.2 Exposure Determination

Persons in any job classifications at IT may be exposed to bloodborne pathogens when administering first aid or CPR, or during decontamination of equipment/surfaces contaminated by blood or other potentially infectious materials during an incident.

IT employees could be subject to bloodborne pathogens exposure due to:

- Punctures through the skin with a contaminated sharp object (i.e., scissors, needles, broken glass, etc.)
- Contact or absorption of blood or blood-contaminated objects through open or broken skin (i.e., cuts, scratches, rashes)
- Blood splashes to their eyes, nose, or mouth or other mucous membranes.

Workers can reduce their risk of contacting HBV or HIV by implementing the proper work practices (outlined in this plan) before, during, and after responding to emergency medical incidents involving personal injuries.

11.3 Measures for Prevention

The establishment of work practice controls is an integral part of an effective exposure control plan in preventing accidental infection of employees. These work practices are designed to protect employees from reasonably foreseeable occupational exposures to bloodborne pathogens from blood and other potentially infectious material. The work practice controls outlined in this

section are applicable to the administration of first aid in emergency situations and subsequent cleanup only.

11.3.1 Universal Precautions

Universal precautions is an approach to infection control which operates on the assumption that all human blood and bodily fluids are to be treated as if they are known to be contaminated with HIV, HBV, or other infectious diseases. Universal precautions shall be implemented whenever there exists a foreseeable potential for contact with blood or bodily fluids.

11.3.2 Engineering Controls

As a result of the location of the worksite, the nature of work in outdoor locations with potential exposure to airborne chemical contaminants, and the potential for exposure being limited to emergency situations, the implementation of engineering controls is not feasible. Exposure control shall be accomplished through implementation of work practice controls and use of personal protective equipment.

11.3.3 Work Practice Controls

Work practice controls shall be instituted whenever foreseeable potential contact with, or exposure to, blood and bodily fluid exists. Examples of situations in which these controls are to be implemented include, but are not limited to, accidents or injuries in which administration of first aid is required, application of bandages to minor cuts and abrasions of another person, and contact with sores, wounds, or broken skin.

Following are specific work practice controls that shall be implemented:

- Prior to examining or providing first aid treatment to an injured person, put on a pair of clean impervious gloves. Gloves are provided in the first aid kits or surgical latex or nitrile unglves may be used.
- Open wounds or cuts will be promptly bandaged.
- Wash hands and face as soon as possible after administering first aid or CPR. If wash facilities are not readily available, stock disposable one-time use towelettes.
- No eating, drinking, or smoking is allowed in any work area where a potential exists for occupational exposure to blood borne pathogens.

- Non-disposable equipment or materials that have or may have blood or infectious fluid contact must be washed immediately after their use. (A 1 to 10 solution of bleach and water is recommended proper decontamination.)
- Any clothing that becomes contacted with blood or infectious fluids shall be removed as soon as possible after administering first aid or CPR.
- No personal clothing that becomes contacted with blood or infectious fluids shall be laundered off-site.
- First-aid kits on-site are to be equipped with a pair of surgical gloves and CPR mouth pieces.

Direct contact with blood and bodily fluids should be kept to an absolute minimum, as required in a particular situation. In situations where direct contact is likely, personal protective equipment shall be worn to help prevent infection.

Based upon professional judgment, an employee may choose to temporarily forego the use of PPE if he determines that the use of PPE will further jeopardize his well-being or that of the injured worker. This limited application must be carefully evaluated by the employee. If this does occur, IT is obligated to investigate and document the circumstances in an effort to provide alternative means to avoid further occurrence.

11.3.4 Personal Protective Equipment

The following are specific personal protective equipment items that shall be implemented:

- Always wear hand (i.e., latex or nitrile surgical gloves) and eye (i.e., safety glasses, goggles) protection to administer or apply first aid or CPR.
- Always use CPR mouthpieces or ventilation devices.
- Inspect PPE prior to use to ensure it is in good working order and without flaws.
- Do not reuse gloves once removed.
- After use, remove gloves from top to bottom inside-out, not allowing unprotected skin to contact the exterior of the gloves.

11.3.5 Waste Handling and Disposal

Disposable items that have or may have blood contact must be bagged separately from other trash. These wastes must be placed in leak proof containers or bags and labeled. A collection container for contaminated articles will be available on-site. Wastes used in medical emergency treatment (i.e., gloves, towels, gauze) shall be disposed in the infectious waste container(s). The container will be replaced as needed and not be overfilled.

The waste will remain on site in approved container(s) until an approved disposal facility capable of receiving medical wastes is identified. If emergency medical teams who respond to an incident are unable to accept blood-contaminated waste, the Program CIH shall be contacted to arrange for proper disposal.

11.4 Medical Requirements

11.4.1 Hepatitis B Vaccination

All potentially exposed employees will have made available to them at no cost a Hepatitis B vaccination. The employee will also receive training as to the vaccine's efficacy, safety, benefits, and consequences prior to administration. The vaccination series shall be initiated within 24 hours of providing first aid/CPR in an incident and shall be administered under the supervision of a licensed physician. Employees may at their own discretion decline the vaccination, in which case documentation of declination will be completed and employees may be assigned immediately. If an employee covered by this exposure plan decides to accept the vaccination at a later date, the vaccination will be offered at that time at no cost to the employee.

11.4.2 Post-Exposure Procedures and Evaluation

Subsequent to all reported exposure incidents, a confidential medical evaluation and follow-up shall be made available to each employee exposed in the incidents.

11.4.3 Documentation Procedures

Documentation of the exposure incident shall be recorded as soon as possible, and include the route(s) of exposure, the circumstances surrounding the incident, and the identification of the source individual. Additionally, each incident shall be placed on the "first aid incident list" attached to the location OSHA Log of Occupational Injuries and Illnesses.

11.4.4 Blood Testing

As soon as feasible, the source individual in an exposure incident will be asked to consent to a blood test to determine HBV and HIV infectivity. Where applicable laws require employee consent, documented consent shall be obtained prior to testing. If an employee refuses the blood test, documentation of the refusal will be made. Documentation of the test results shall be made available to the exposed employee(s). All results should be kept confidential, as criminal and civil penalties may be charged against persons negligently or wilfully releasing such information.

Exposed employees will be asked to consent to a blood test for HBV and HIV serological status. If consent to HIV testing is denied, the blood sample will be preserved for 90 days, within such time the employee may elect to consent to the HIV test.

11.4.5 Post-Exposure Medical Evaluations

Exposed employees shall receive a healthcare professional's written opinion for post-exposure evaluations. The written opinion shall include the results of the evaluation and any medical conditions resulting from the exposure incident which requires further medical treatment.

11.5 Bloodborne Pathogen Hazard Communication

- Containers used for disposal of blood contaminated supplies and waste will be labeled in accordance with the word "biohazard."
- Warning signs are not applicable, as there are no designated areas for medical treatment on site. In cases of potential exposure, observers and non essential personnel should be verbally warned to keep a safe distance from injured personnel.
- All associates who are first aid/CPR trained and may provide assistance shall be trained in the requirements of HS512 and this SHSP.

11.6 Recordkeeping

11.6.1 Training Records

All employees on the project shall review this plan and sign it to document their review. All employees who are trained to provide first aid and/or CPR shall be trained in the bloodborne pathogen standard, and on IT Corporation's Bloodborne Pathogen Exposure Control Plan. All

employees who attend Bloodborne Pathogen training shall sign the class Training Attendance Form. The training record will contain the date; training outline; name and qualifications of the trainer, and names and job titles of attendees. All participants must take and pass the training quiz. The training records will be maintained by the IT Training Department for at least three years from the training date.

11.6.2 Medical Records

Medical records necessary for IT employees must include documentation on HBV vaccination status, medical follow-up, post-exposure testing, and a medical professional's written evaluation. The employee medical records will be forwarded to EMR (see Chapter 12.0) for inclusions in the employee's medical file.

IT shall maintain the employee medical records for the duration of the employee's employment plus 30 years thereafter. If, for whatever reason, IT no longer does business and no successor exists, IT will notify the Director of NIOSH in writing three months prior to the disposal of records. If so directed, the records shall be transferred to the Director of NIOSH.

11.6.3 Incident Recording

An incident that occurs as a result of rendering emergency medical care will be recorded on the OSHA 200 log as OSHA defines work-related injuries and illnesses. All injuries involving the release of blood or other bodily fluids must be immediately reported to the Health and Safety Department to ensure proper reporting and follow-up.

12.0 Emergency Response Plan and Contingency Procedures

Site personnel must be prepared to respond and act quickly in the event of an emergency or accidental contaminant release. Emergency preparedness and response procedures will aid in protecting site workers and the surrounding environment. Preplanning measures will include employee training, fire and explosion prevention and protection, chemical spill and discharge prevention and protection, and safe work practices to avoid personal injury or exposure.

12.1 Personnel Roles/Lines of Authority

The roles and responsibilities of IT personnel for response to emergencies at NAS Alameda will be clearly defined and coordinated with IT subcontractors, ROICC personnel, and the NAS Alameda Base Fire Department emergency support services. The NAS Fire Department will evaluate the emergency situation and make the determination whether to involve the HAZMAT Unit in the response. The responsibilities of specific project individuals and the coordination of the NAS Fire Department are defined as follows.

12.1.1 Project Superintendent

At all times during scheduled work activities, a designated PS will be present on site. This individual will be responsible for implementing these procedures and determining appropriate response actions. Depending upon the circumstances and time permitting, the PS will review proposed response actions with the SHSO, and the ROICC site representative. Specific responsibilities for the PS include:

- Evaluating and assessing emergency incidents or situations;
- Assigning personnel and coordinating response activities on site;
- Assuring that field personnel are aware of the potential hazards associated with the site;
- Summoning the local emergency response team;
- Notifying the Project Manager or, in the PM's absence, the Program Manager of an emergency situation;

- Coordinating response to an incident with the ROICC site representative;
- Assuring that all IT emergency equipment is routinely inspected and functional;
- Working with the SHSO regarding the correction of any work practices or conditions that may result in injury to personnel or exposure to hazardous substances;
- Assuring that appropriate emergency response agencies are aware of the provisions made herein;
- Evaluating the safety of site personnel in the event of an emergency, and providing evacuation coordination if necessary;
- Maintaining site facilities and assisting site personnel in accessing those facilities; and
- Complete the appropriate form or forms and submit them to the program CIH within one business day of the incident.

The PS will direct all emergency response activities conducted or managed by IT and is responsible for field implementation and enforcement of health and safety policies and procedures. The PS will be fully trained in health and safety procedures and maintain current certification in standard first aid and CPR. Other responsibilities include overall supervision and management of field activities.

12.1.2 Site Health and Safety Officer

The SHSO is responsible for implementing, communicating, and enforcing health and safety policies and procedures during the course of the project. The SHSO will review the fitness and training records of all field personnel for compliance with the established requirements and will assist in arranging proper training and medical examinations. He will also assist in evaluating health and safety concerns with respect to environmental releases and emergency response actions. In the event of an injury, contact the Martinez Health and Safety Administrator at 510-372-9100 for notification of EMR medical incident reporting case manager.

12.1.3 Project Manager

The PM will provide support to emergency responders and dedicate appropriate project resources to the response effort. If required, the PM will mobilize additional personnel and equipment to

the site. The PM will notify the ROICC site representative and provide recommendations concerning any additional action(s) to be taken. This notification will be accomplished by completing a NAVFAC (CSIR-1) Contractor Significant Incident Report.

12.2 List of Emergency Contacts and Notification

The PS and SHSO will be notified immediately in the event of an emergency. The PS will immediately evaluate the incident and, if necessary, notify the ROICC and the NAS Fire Department emergency support services. If not previously notified, the PM, ROICC site representative, and designated environmental contact will be advised of the situation. Telephone numbers for emergency contact personnel are listed in Table 12-1. The list will be maintained with current contacts, and telephone numbers will be posted along with other emergency phone numbers at all telephone locations at the site.

The information provided to the notified person should include the nature of the incident and the exact location and suspected contaminants or material involved. Information regarding the incident that should be reported to the emergency operator includes the following:

- Name and telephone number of the individual reporting the incident
- Location and type of incident
- Nature of the incident (fire, explosion, spill, or release) and substances involved
- Number and nature of medical injuries
- Movement or direction of spill/vapor/smoke
- Response actions currently in progress
- Estimate of quantity of any released materials
- Status of incident
- Other pertinent information.

Once the urgency of the emergency incident has been resolved, a complete incident report will be completed by the PS with the aid of SHSO and provided via the PM to the ROICC representative.

12.3 Medical Emergency Response

Prior to field work, the SHSO will contact all potential emergency organizations and coordinate any expected response in the event of a medical emergency. In the event of severe physical or chemical injury, the NAS Fire Department's emergency response personnel will be summoned for emergency medical treatment and ambulance service. Their response time is estimated to be between 5 and 10 minutes upon initial notification. The Fire Department's emergency medical responders will be utilized to provide care to severely injured personnel. In serious cases, the normal decontamination procedures may be abbreviated or bypassed. Care must be taken to prevent exposure to the emergency medical responders. Once an initial assessment is made by the emergency medical technicians, the decision on using ground or air transportation for the victims will be made. Minor injuries will be treated on site by qualified first-aid/CPR providers. These less serious injuries may only be treated after the employee has been decontaminated. If additional treatment beyond first aid is required, the injured personnel will be transported to Alameda Hospital, which can provide 24-hour emergency medical care along with the services of a critical care center.

All employee injuries must be promptly reported to the PS who is to contact the Martinez Health and Safety Administrator to initiate case management procedures. See Section 10-5 for details.

Transportation routes and maps will be posted in the project office and in each site vehicle prior to the initiation of on-site activities. A copy of this map has been provided in Appendix A.

12.4 Personal Exposure or Injury

Every precaution will be taken to aid in the prevention of injuries and/or exposure to contaminants. These precautions are detailed in this SHSP and generally consist of the following measures:

- Personnel will be properly trained for their work duties
- Site personnel will wear appropriate PPE for each specific task or work assignment
- Site personnel will follow the proper field safety protocols as defined
- Site controls will be enforced so that only authorized personnel are able to access the work zones

- Site personnel will be made aware of potential environmental and chemical hazards
- Real-time air monitoring will be performed to evaluate the effectiveness of engineering controls and levels of personal protection
- Proper decontamination procedures will be followed for personnel and equipment.

In the event of personal exposure to contaminants, the following general guidelines will be adhered to:

- Project personnel who have had contaminants splashed in their eyes or who have experienced eye irritation while in the exclusion zone, shall immediately proceed to the eyewash station, set up in the contamination reduction zone. Do not decontaminate prior to using the eyewash. Remove whatever protective clothing is necessary to use the eyewash. Thoroughly flush the eye with clean water. Arrange prompt transport to the designated medical facility.
- Contact/Absorption through skin - Copious amounts of potable water will be used to flush, for at least 20 minutes, contaminants from the skin. This activity will occur in the on-site shower trailer if available, otherwise use the closest source of potable water available. Start flushing while removing contaminated clothing. If irritation persists, repeat flushing. The condition of the individual will be assessed and transport to a medical center arranged if necessary. Do not transport victim unless the recommended flushing period is completed or flushing can be continued during transport.
- Inhalation - The victim will be moved immediately to an area providing fresh air. Decontamination of the victim and rescue breathing or Cardiopulmonary Resuscitation will be provided if necessary. The condition of the individual will be assessed and transport to a medical center arranged if necessary via ambulance.
- Ingestion - Immediately contact local poison control center. The victim will be decontaminated, if necessary, and transported to a medical facility via ambulance.

12.5 Fire Control

Prior to intrusive activities at the site, a tour conducted by the SHSO and PS will be given to the NAS Fire Department's personnel. Specific hazards inherent with the site will be conveyed at that time. In the event of a fire or explosion, or imminent danger of fire or explosion, all activities will halt and the NAS Fire Department will be notified immediately. If it is safe to do so, site personnel may use fire-fighting equipment available on site to remove and isolate

flammable or other hazardous materials which may contribute to the fire. Upon arrival of the NAS Fire Department emergency responders, the PS will advise the fire chief or lead representative of the location, nature, and identification of the hazardous materials on site.

The following measures will be implemented during site field activities to minimize the risk of fire and/or explosion:

- Smoking is permitted on site only in the designated smoking area
- Good housekeeping procedures will be required on site
- Material storage methods will be in accordance with manufacturers' recommendations
- Flammable liquids will be stored in approved containers and cabinets only
- All storage, handling, or use of flammable and combustible materials will be conducted by trained personnel
- Entry and exit pathways will be kept clear of debris or obstacles
- Work areas will be cleared of excess vegetation and obstructions.

Any base-specific guidelines established by NAS Alameda will be strictly enforced. Any fire, no matter how small, must be reported to the NAS Fire Department.

12.6 Spills or Leaks

IT will maintain the following equipment and materials in the CRZ for use during spill response activities:

- Absorbent pads
- Granular absorbent material (noncombustible)
- Polyethylene sheeting
- 55-gallon drums
- Shovels and assorted hand tools.

If a hazardous waste spill or material release to the air, soil, or water at the site is observed, IT will immediately notify the ROICC site representative and NAS Fire Department's HAZMAT Unit. An assessment will be made of the magnitude and potential impact of the release. If it is safe to do so, site personnel will attempt to locate the source of the release, prevent further release, and contain the spilled and/or affected materials as follows:

- The spill or release area will be approached cautiously. Real-time air monitoring will be continuously performed in the spill vicinity.
- Hazards will be identified based on available information from witnesses or material identification documents (placards, MSDSs, logs). The potential hazards will be evaluated to determine the proper personal protection levels, methods, and equipment necessary for response.
- If necessary, the release area will be evacuated, isolated, and secured.
- If possible, spill containment will initially be made without entering the immediate hazard area.
- Entry to the release area will be made with the PPE, personnel, methods, and equipment necessary to perform the work. Hazardous spill containment and collection will be performed in four steps as follows:
 - Contain the spill with absorbent socks, booms, granules, or construction of temporary dikes.
 - Control the spill at the source by plugging leaks, uprighting containers, over packing containers, or transferring contents of a leaking container.
 - Collect the spilled material with shovels or heavy equipment as necessary.
 - Store the spilled material for further treatment or disposal. Treatment and/or disposal options of the material will depend on the amount and type of material.

If site personnel cannot safely and sufficiently respond to an environmental release, evacuation of the area may be warranted. The decision to evacuate will depend upon the risk of exposure to personnel and the severity of the release. The NAS Fire Department will be notified in the event of a significant spill. Upon their arrival at the site, the PS will brief them on the current situation at hand and any potential hazards the team may be faced with.

12.7 Safety Signals

While working on site, the following hand signals will be used for communication when necessary.

<u>Hand Signal</u>	<u>Meaning</u>
Arms crossed over head	Shut-off equipment
Hand gripping throat	Out of air, can't breath
Both hands around waist	Leave area immediately
Wave hands over head	Need assistance
Thumbs up	Okay, I am all right, I understand
Thumbs down	No, negative

Vehicle or portable air horns will be used for alarm signals as follows:

- One long blast: Emergency evacuation of the site
- Two short blasts: Clear working area around powered or moving equipment.

12.8 Site Evacuation Procedures

The authority to order personnel to evacuate the area rests with the PS and SHSO. In the event that site evacuation is required, a continuous, uninterrupted air horn will be sounded for approximately ten seconds. Air horns will be located in the work area. Radio communication, if appropriate, will also be used to keep continuous communication between the site and the main office.

Personnel working in the EZ or CRZ will immediately make their way to the muster point for a "head count." Depending on the severity of the event and allowable time, personnel exiting the EZ and CRZ may be instructed to forgo or modify decontamination procedures.

Personnel in the support zone will immediately report to the muster point for a "head count" and further instructions. The PS and the SHSO will remain in contact to ensure that evacuation

procedures are properly executed. If the muster point is inaccessible, personnel will evacuate to an upwind location as determined by the windsock and perform a “head count.”

Situations requiring evacuation may include unusually severe weather conditions, fires, or significant chemical spills or releases. In the event of project evacuation, the ROICC site representative, NAS Fire Department, and the NAS Base Security Department will be notified immediately. A site emergency map that delineates evacuation routes, emergency air horn locations, first-aid kit locations, rally point, and site contamination control zone perimeters will be developed once an on-site evaluation of conditions and topography is complete.

12.9 Emergency Decontamination Procedures

Treatment of illnesses or injuries to personnel working within the contaminated areas of the site may be more difficult because of protective clothing requirements and the potential for exposure to the contaminants. The SHSO or Emergency Medical Care Provider must quickly assess the extent of the injury or illness of the victim. A determination will be made if lifesaving medical treatment is critical and if personal decontamination procedures will create additional injuries or aggravate the existing condition. Life-threatening injuries must receive immediate medical attention. Decontamination procedures may be modified, simplified, or eliminated completely under such circumstances.

The following guidelines are established for responding to minor emergencies where an individual may have been injured or overcome by exposure to a hazardous substance at the site. If a truly serious injury exists, only portions of these guidelines may be appropriate to ensure prompt medical treatment.

- Notify supervisory and safety personnel.
- Select an emergency decontamination location upwind and/or uphill from any spills, and determine most effective pathway for emergency vehicles.
- Field decontamination should be performed in two stages: washing with soapy water, followed by a clear water rinse.
- Upon reaching the injured party, stabilize any life-threatening problems, such as spills or fires, and remove (i.e., brush or blot with absorbency pads) visible, gross contamination. If possible, prevent coming in contact with any contamination

present at the scene. However, do not delay with this task, and be prepared to transport immediately to the decontamination area.

- Have support personnel perform real-time air monitoring.
- Determine type, nature, and extent of exposure or injury based on mechanism.
- Quickly cut or tear first layer of protective clothing (outer suit) off of the injured party and discard. If cutting, always cut away from the body toward the extremities to avoid inflicting further injury.
- Without delay, efficiently move the injured away from the accident scene, possible contamination, or any hazardous substances. Relocate to a nearby “clean” area to expedite removal of respiratory protection and establish communication.
- If the individual is unconscious, evaluate if an adequate airway exists and breathing and circulation are present (ABCs). If absent, commence rescue breathing or CPR without delay.
- Move the injured personnel to the decontamination area and transfer responsibilities to support personnel.
- Using soapy solution, support personnel should carefully wash outer garments as needed and rinse.
- Spray outer protective clothing with clear water.
- Quickly remove tape from the injured’s wrists and ankles—assume the individual is injured until an assessment indicates otherwise.
- Carefully, but quickly, cut second layer of protective clothing (inner suit, boots, and gloves) off injured party. Always cut away from the body toward the extremities to avoid inflicting further injury.
- Be prepared to turn emergency care over to Emergency Medical Service personnel. Otherwise, administer appropriate standard first aid to injuries.
- Following stabilization of any injuries, monitor and be on the alert for shock, wrap the injured in a warm blanket or other items to conserve body heat, and be prepared for vomiting.
- Cover any contact surfaces of transport equipment with a protective sheet or plastic.

- Inform all arriving personnel and transport crew of nature and extent of injuries and any potential hazards present.

12.10 Adverse Weather Conditions/Natural Disasters

Adverse weather and natural disasters can take many forms. Thunder and lightning storms, hail, high winds, tornados and earthquakes are a few examples. Sudden changes in the weather, extreme weather conditions, and natural disasters can create a number of subsequent hazards. Generally, poor working conditions occur, and slip, trip and fall hazards exist. Natural disasters can create many secondary hazards such as release of hazardous materials to the environment, structure failure and fires.

Routinely monitoring weather conditions and reports may help reduce the impact of severe weather and natural disasters. It may be necessary to halt certain hazardous operations or stop work altogether to allow the situation to pass. The SHSO must decide what operations, if any, are safe to perform based on existing and anticipated conditions.

The best protection against most severe weather episodes and natural disasters is to avoid them. This means seeking shelter before the storm hits. Stay away from pipes and electrical equipment, including telephones, should lightning be a threat and watch for damage caused by lightning strikes nearby.

12.10.1 Earthquakes

The following general guidelines will be adhered to in the event of an earthquake:

- If you are indoors, duck or drop down to the floor. Take cover under a sturdy desk, table or other furniture. Hold on to it and be prepared to move with it. Hold the position until the ground stops shaking and it is safe to move. Stay clear of windows, fireplaces, and heavy furniture or appliances. Do not rush outside. You may be injured by falling glass or building parts. Do not try using the stairs or elevators while the building is shaking or while there is danger of being hit by falling glass or debris.
- If you are outside, get into the open, away from buildings and power lines.

- If you are driving - stop if it is safe - but stay inside. Do not stop on or under a bridge, overpass or tunnel. Move your car as far out of the normal traffic pattern as possible. Do not stop under trees, light posts, electrical power lines or signs.

12.11 Critique and Follow-Up of Emergency Procedures

The ROICC site representative will be verbally notified immediately and receive a written notification via the NAVFAC (CSIR-1) within 24 hours of all accidents or incidents including releases of toxic chemicals, fires, or explosions. The report will include the following items:

- Name, organization, telephone number, and location of the Contractor
- Name and title of the person(s) reporting
- Date and time of accident/incident
- Location of accident/incident (i.e., site location, facility name)
- Brief summary of accident/incident including pertinent details such as type of operation ongoing at time of accident
- Cause of accident/incident, if known
- Casualties (fatalities, disabling injuries)
- Details of any existing chemical hazard or contamination
- Estimated property damage, if applicable
- Nature of damage, effect on contract schedule
- Action taken by Contractor to ensure safety and security
- Other damage or injuries sustained (public or private).

The PS and the SHSO will investigate the cause of the incident to prevent its reoccurrence. The investigation should begin as soon as practical after the incident is under control, but not later than the first work day after the incident. Investigations will follow the procedures described below:

- Interview witnesses and participants as soon as possible or practical.

- Determine the chronological sequence of events (opinions as to cause should not be solicited at this time).
- Note the location, movement, displacement, liquid levels, sounds, noises, or other sensory perceptions experienced by the participants or witnesses.
- Obtain weather data.
- Ascertain the location and position of all switches, controls, etc.
- Verify the condition of all safeguards.

After the facts have been collected, causal factors should be identified. Two causal factors typically exist, apparent and contributing; and there may be several of each. Apparent factors are those which are self-evident or readily deduced. Contributing factors usually become apparent by questioning why the apparent causal factor was allowed to exist.

Table 12-1

EMERGENCY PHONE NUMBERS

NAS Alameda Fire Department Emergency	911
NAS Alameda Security Department Emergency	911
NAS Alameda Fire Department's HAZMAT Response Emergency	911
Alameda Hospital Information	(510) 523-4357
Regional Poison Control Center	800-523-2222
 <i>Key Project and IT Personnel</i>	
IT Program Manager:	Valerie Crooks (510) 372-9100
Program CIH	William Hetrick, CIH (510) 372-9100 Pager: (510) 988-5979
Project Manager:	John McGuire (510) 372-9100
Site Health & Safety Officer:	Londell Allen Phone: TBD Pager: (510) 988-5425
Project Superintendent	Jamie Hargrave Phone: TBD Pager: (510) 988-5353

Occupational Physician
Environmental Medicine Resources

Elayne Theriault, M.D.
(800) 229-3674
(770) 455-0818

Medical Incident Reporting
Environmental Medicine Resources
Case Manager

Lea R. Bessey, RN, OHN
(800) 229-3674
(770) 455-0818

Navy Contact ROICC

Jones Jong
(510) 302-2273

Hospital

Alameda Hospital
2070 Clinton Ave.
(510) 523-4357

Directions to Medical Care,

From the East Gate,
Take Atlantic Avenue to Webster street (Highway 61),
Turn right,
Continue to Central Avenue, to left (Highway 61),
Continue to Willow street,
Turn right to hospital,
Corner of Clinton and Willow.

13.0 Record Keeping and Data Management

Proper record keeping and data management are essential in the implementation of this SHSP. The forms associated with the record keeping and data management requirements must be completed in an accurate, timely fashion and filed with the appropriate entities. It is the responsibility of the PS to ensure that the forms are properly completed. Completed forms will be kept and maintained by IT. These records will be maintained for a five-year period. Subcontractors will also be responsible for keeping a copy of the forms pertaining to their personnel.

13.1 Logs

The SHSO will maintain and complete a daily log for each day's work. The daily log will document chronologically each day's health and safety activities in sufficient detail for future reference as needed. Other relevant data and field information will be recorded on separate log forms for air monitoring, sampling, equipment calibration inspections, and incident reporting.

An EZ sign-in log will be maintained that will provide a project record of the following information for confined space entry activities:

- Worker's name
- Work area
- Duties performed
- Level of protection
- Time in/time out

All personnel will be required to log in and out of the EZ.

A visitors sign-in log will be maintained in the project office and administration area. Visitors requesting access to hazardous field activities must have appropriate project approval, be medically qualified, and have the health and safety training prerequisites for hazardous waste operations.

An OSHA 200 Log will be kept in the site administration facility.

13.2 Safety Inspections

IT's accident prevention program is centered around the following key procedures:

- Project reporting, investigation, and review of all near misses, incidents, and accidents
- Management reviews of all incident/accident reports, corrective action, and project safety concerns
- Review of project, operations, and construction activities by health and safety professionals.

Safety reviews and inspections are conducted by all tiers of the management structure and are documented. A list of all corrective action items is required to be maintained showing the corrective action, responsible person, and the date action is to be completed. Follow-up inspections are conducted by health and safety personnel to ensure that corrective actions or measures have been implemented.

The PS will inspect the site weekly and interview one or two site workers regarding areas of safety concerns or ideas for safety improvement. Site supervisory personnel will inspect site conditions and activities daily to identify changing conditions or potential hazards. Identified safety and occupational health deficiencies and suggested corrective measures will be brought to the attention of the PS and SHSO. Safety review inspections will be recorded and filed for reference by project management and ROICC personnel.

13.3 Accident Reporting and Investigation

All project personnel are required to report all near misses, injuries, illnesses, and accidents to their immediate supervisor. The SHSO will immediately arrange appropriate medical care as required. Once immediate medical care for the injured personnel has been accomplished, the SHSO will complete and submit the appropriate report forms within 24 hours. The appropriate form(s) to be completed may include:

- IT Supervisor's Employee Injury Report
- IT Vehicle Accident Report
- IT General Liability, Property Damage, and Loss Report

- NAVFAC Contractor Significant Incident Report (CSIR-1)

Copies of the IT forms listed in Appendix C of this SHSP have been sent to the SHSO in a separate Postings, Permits and Forms package.

Identified safety and occupational health deficiencies and corrective measures will be documented and filed on site for reference by the ROICC or designated representative.

All near misses, injuries, illnesses, and accidents will be investigated by on-site management personnel. The PS and SHSO will investigate the conditions which led to the accident. They will document how the accident occurred and identify unsafe acts or conditions that occurred or existed at the time of the accident. Corrective actions will be determined and implemented to prevent recurrence of the accident, and responsibility for implementation of corrective actions will be assigned. The investigation will be started immediately, and all information will be collected as soon as possible after the occurrence. The final report and required forms will be submitted to the PM for signature and forwarding to the ROICC and other appropriate personnel.

14.0 Summary and Checklist

14.1 Summary

The removal and disposal of contaminated soils located at Site 16 and the TSTA.

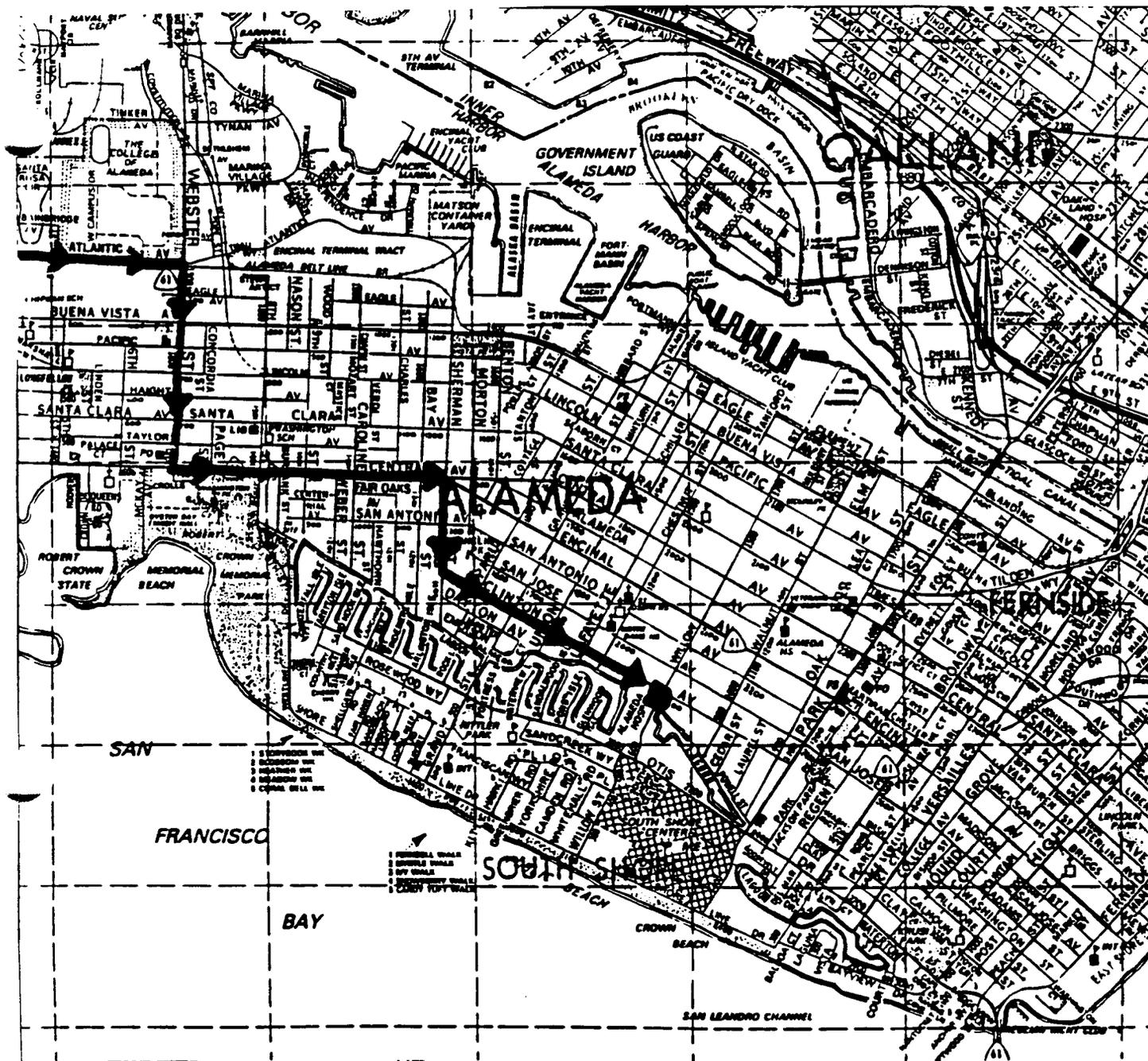
14.2 Checklist

- First aid kits (one per vehicle and facility)
- Fire extinguishers (one per vehicle and facility)
- Safety glasses or goggles, ANSI approved
- Hard hats, ANSI approved
- Ear plugs 25 dBA or greater
- Under gloves (latex, Nitrile)
- Impermeable gloves
- Work gloves
- Steel toed work boots, ANSI approved
- Tyvek suits (sizes XXL - XXXXL)
- Duct tape
- Trash bags
- Eyewash
- Emergency shower
- Portable toilet
- Drinking water and disposable cups
- Air purifying respirators (full-face /half face)
- Organic vapor/HEPA cartridges, NIOSH approved
- Thermometer
- Barricade tape (yellow and red)
- Photo ionization Detector (PID)
- Mini Ram Aerosol Monitor
- Decon tubs
- Brushes
- Hand/face wash station
- Paper towels
- Complete H&S Plan
- MSDSs
- Rubber boots/boot covers
- Noise Dosimeter/Sound level meter with calibrator
- Traffic control signs
- Traffic control vests
- Barricades with lights
- Traffic cones

- Personal Sampling Pump
- Filter Cassettes
- Pulse rate meter
- Air flow calibrator
- Isobutylene calibration gas

APPENDIX A

SITE AND HOSPITAL LOCATION MAPS



1. Exit Nas Alameda, through the Main Gate, follow Main St. to Atlantic Avenue.
2. Turn left onto Atlantic Avenue
3. Turn right onto Webster Street
4. Turn left onto Central Avenue
5. Turn right onto Sherman Street
6. Finally turn left on Clinton Avenue

Alameda Hospital
 2070 Clinton Avenue
 Alameda, California

FIGURE 1-1

(510) 523-4357

305904-A4
DRAWING NUMBER
DATE 7/12/75
APPROVED BY [Signature]
9-29-95

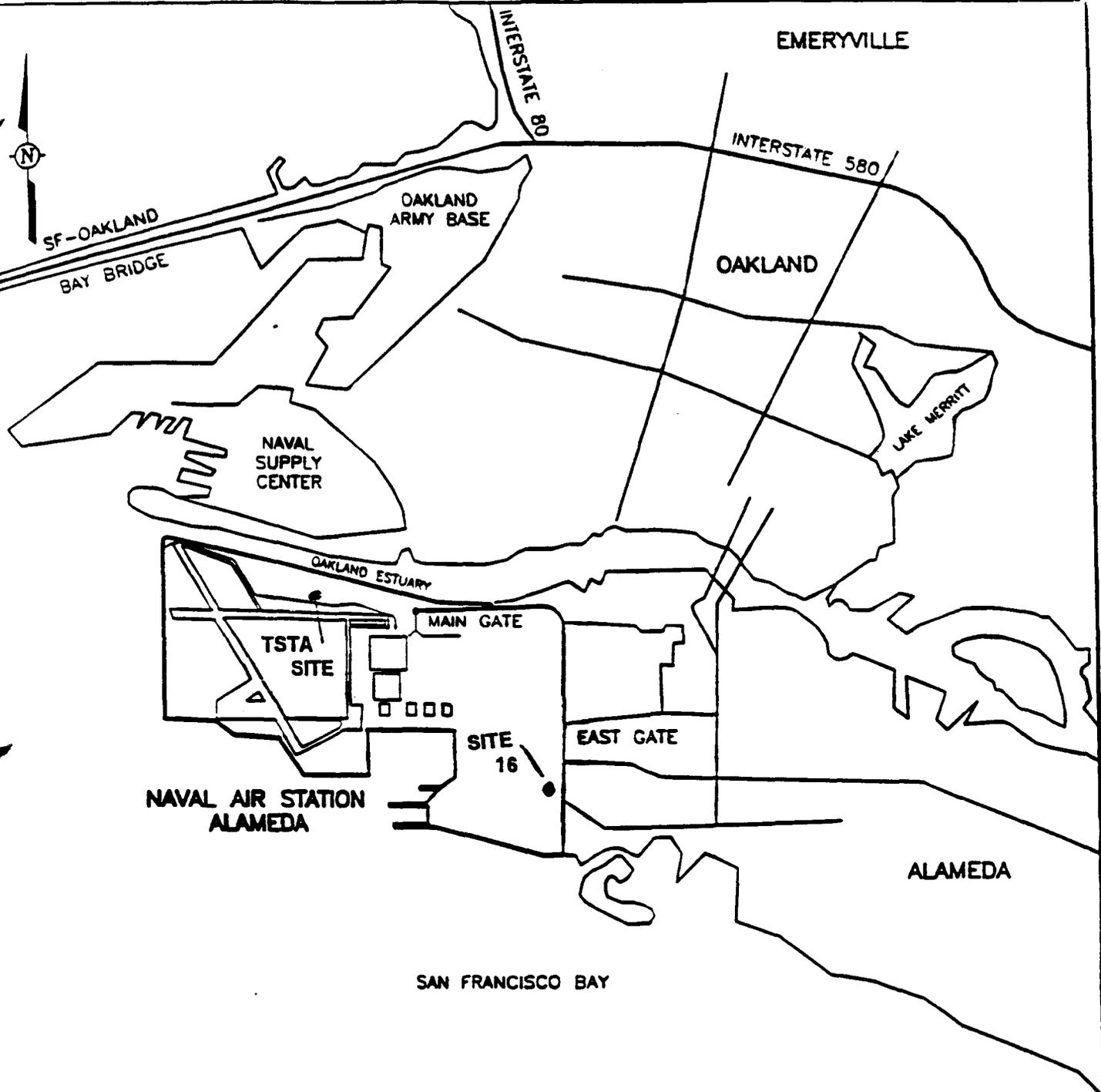
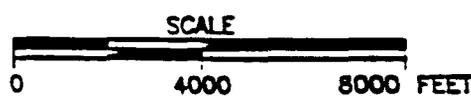


FIGURE 1-2

DELIVERY ORDER 37
LOCATIONS OF SITE 16
AND TSTA

NAVAL AIR STATION
ALAMEDA, CALIFORNIA



INTERNATIONAL
TECHNOLOGY
CORPORATION

APPENDIX B
MATERIAL SAFETY DATA SHEETS

SUPELCO -- AROCLOR 1254, 48586
MATERIAL SAFETY DATA SHEET
NSN: 681000N059175
Manufacturer's CAGE: 54968
Part No. Indicator: A
Part Number/Trade Name: AROCLOR 1254, 48586

=====
General Information
=====

Company's Name: SUPELCO INC
Company's Street: SUPELCO PARK
Company's City: BELLEFONTE
Company's State: PA
Company's Country: US
Company's Zip Code: 16823-0048
Company's Emerg Ph #: 814-359-3441
Company's Info Ph #: 814-359-3441
Record No. For Safety Entry: 001
Tot Safety Entries This Stk#: 001
Status: SMJ
Date MSDS Prepared: 28DEC89
Safety Data Review Date: 27APR95
MSDS Serial Number: BXGNB

=====
Ingredients/Identity Information
=====

Proprietary: NO
Ingredient: POLYCHLORINATED BIPHENYL (AROCLOR 1254); (AROCLOR 1254) (SARA 313) (CERCLA)
Ingredient Sequence Number: 01
NIOSH (RTECS) Number: TQ1360000
CAS Number: 11097-69-1
OSHA PEL: 0.5 MG/M3, S
ACGIH TLV: 0.5 MG/M3, S

=====
Physical/Chemical Characteristics
=====

Appearance And Odor: CLEAR VISCOUS LIQUID TO STICKY SOLID.
Boiling Point: 689F, 365C
Melting Point: N/A
Vapor Pressure (MM Hg/70 F): N/A
Vapor Density (Air=1): N/A
Specific Gravity: 1.5 (H*20=1)
Evaporation Rate And Ref: NOT APPLICABLE
Solubility In Water: NOT APPLICABLE
Percent Volatiles By Volume: N/A

=====
Fire and Explosion Hazard Data
=====

Flash Point: NOT APPLICABLE
Lower Explosive Limit: N/A
Upper Explosive Limit: N/A
Extinguishing Media: THIS MATERIAL IS NOT FLAMMABLE. EXTINGUISHING MEDIA DETERMINED BY SUPPORTING FIRE.
Special Fire Fighting Proc: USE NIOSH/MSHA APPROVED SCBA & FULL PROTECTIVE EQUIPMENT (FP N).
Unusual Fire And Expl Hazrds: THE FOLLOWING TOXIC VAPORS ARE FORMED WHEN THIS MATERIAL IS HEATED TO DECOMPOSITION: HCL.

=====
Reactivity Data
=====

Stability: YES
Cond To Avoid (Stability): NOT APPLICABLE

Materials To Avoid: NOT APPLICABLE
 Hazardous Decomp Products: HCL.
 Hazardous Poly Occur: NO
 Conditions To Avoid (Poly): NOT RELEVANT

=====

Health Hazard Data

=====

LD50-LC50 Mixture: LD50:(ORAL,RAT) 1295 MG/KG.
 Route Of Entry - Inhalation: NO
 Route Of Entry - Skin: YES
 Route Of Entry - Ingestion: NO
 Health Haz Acute And Chronic: MAY IRRITATE EYES &/OR SKIN. HARMFUL IF
 ABSORBED THROUGH SKIN. IRRITATES SKIN. DERMATITIS. LIVER DAMAGE.
 Carcinogenicity - NTP: YES
 Carcinogenicity - IARC: YES
 Carcinogenicity - OSHA: NO
 Explanation Carcinogenicity: AROCLOR 1254:IARC MONOGRAPHS, SUPP, VOL 7, PG
 322, 1987:GRP 2A. NTP 7TH ANNUAL RPT ON CARCINS, 1994:ANTIC TO BE (SUPDAT)
 Signs/Symptoms Of Overexp: SEE HEALTH HAZARDS.
 Med Cond Aggravated By Exp: NONE SPECIFIED BY MANUFACTURER.
 Emergency/First Aid Proc: EYES:FLUSH W/WATER FOR AT LEAST 15 MINUTES.
 IMMED MOVE TO FRESH AIR. INGEST:NEVER GIVE ANYTHING BY MOUTH TO UNCONSCIOUS
 PERSON. NEVER TRY TO MAKE UNCONSCIOUS PERSON VOMIT. DO NOT INDUCE VOMITING.
 CONTACT MD.

=====

Precautions for Safe Handling and Use

=====

Steps If Matl Released/Spill: CLEAN AREA W/SOAP & WATER. TAKE UP W/
 ABSORBENT MATERIAL. VENTILATE AREA.
 Neutralizing Agent: NONE SPECIFIED BY MANUFACTURER.
 Waste Disposal Method: COMPLY W/ALL APPLICABLE FEDERAL, STATE OR LOCAL
 REGULATIONS.
 Precautions-Handling/Storing: STORE IN SEALED CONTAINER IN COOL, DRY
 LOCATION. REPORTED CANCER HAZARD. AVOID EYE OR SKIN CONTACT. AVOID
 BREATHING VAPORS.
 Other Precautions: THIS MATL IS INTENDED FOR R&D USE ONLY & MAY NOT BE
 USED FOR DRUG, HOUSEHOLD OR OTHER PURPOSES. MATL SHOULD BE HANDLED ONLY BY
 QUALIFIED PERSONS TRAINED IN LAB PROCEDURES & GOOD SAFETY PRACTICES.

=====

Control Measures

=====

Respiratory Protection: WEAR NIOSH/MSHA APPROVED RESPIRATORY PROTECTION.
 Ventilation: USE ONLY IN WELL VENTILATED AREA.
 Protective Gloves: IMPERVIOUS GLOVES (FP N).
 Eye Protection: ANSI APPROVED CHEM WORKERS GOGGS (FP N).
 Other Protective Equipment: EYE WASH FOUNTAIN & DELUGE SHOWER WHICH MEET
 ANSI DESIGN CRITERIA (FP N).
 Work Hygienic Practices: NONE SPECIFIED BY MANUFACTURER.
 Suppl. Safety & Health Data: EXPLAN OF CARCIN:CARCINOGEN. ANIMAL:LIVER.

=====

Transportation Data

=====

=====

Disposal Data

=====

=====

Label Data

=====

Label Required: YES
 Technical Review Date: 27APR95
 Label Date: 26APR95
 Label Status: M
 Common Name: AROCLOR 1254, 48586
 Chronic Hazard: YES

Signal Word: WARNING!
Acute Health Hazard-Moderate: X
Contact Hazard-Slight: X
Fire Hazard-None: X
Reactivity Hazard-None: X
Special Hazard Precautions: ACUTE:MAY IRRITATE EYES &/OR SKIN. HARMFUL IF
CANCER HAZARD. CONTAINS AROCLOR 1254, WHICH IS LISTED AS A LIVER CARCINOGEN
(FP N).
Protect Eye: Y
Protect Skin: Y
Protect Respiratory: Y
Label Name: SUPELCO INC
Label Street: SUPELCO PARK
Label City: BELLEFONTE
Label State: PA
Label Zip Code: 16823-0048
Label Country: US
Label Emergency Number: 814-359-3441

=====
URL for this msds <http://siri.org>. If you wish to change, add to, or
delete information in this archive please send updates to dan@siri.org.

FLYING J -- #2 DIESEL - DIESEL FUEL
MATERIAL SAFETY DATA SHEET
NSN: 9140002865294
Manufacturer's CAGE: 3R475
Part No. Indicator: A
Part Number/Trade Name: #2 DIESEL

=====
General Information
=====

Item Name: DIESEL FUEL
Company's Name: FLYING J INC
Company's Street: 48 W 990 S
Company's P. O. Box: 678
Company's City: BRIGHAM CITY
Company's State: UT
Company's Country: US
Company's Zip Code: 84302-3121
Company's Emerg Ph #: 800-424-9300
Company's Info Ph #: 801-298-7733
Record No. For Safety Entry: 054
Tot Safety Entries This Stk#: 112
Status: SE
Date MSDS Prepared: 13FEB92
Safety Data Review Date: 24OCT92
Supply Item Manager: KY
MSDS Serial Number: BKNTQ
Specification Number: VV-F-800
Spec Type, Grade, Class: GR DF-2
Hazard Characteristic Code: F8
Unit Of Issue: GL
Unit Of Issue Container Qty: BULK
Type Of Container: BULK
Net Unit Weight: UNKNOWN

=====
Ingredients/Identity Information
=====

Proprietary: NO
Ingredient: ALIPHATIC PETROLEUM SOLVENT
Ingredient Sequence Number: 01
Percent: UNKNOWN
NIOSH (RTECS) Number: OA5500000
CAS Number: 8008-20-6
OSHA PEL: NOT ESTABLISHED
ACGIH TLV: NOT ESTABLISHED
Other Recommended Limit: 100 MG/M3 8 HR TWA

=====
Physical/Chemical Characteristics
=====

Appearance And Odor: CLEAR LIQUID
Boiling Point: 330F,166C
Vapor Pressure (MM Hg/70 F): UNKNOWN
Vapor Density (Air=1): UNKNOWN
Specific Gravity: 0.8
Decomposition Temperature: UNKNOWN
Evaporation Rate And Ref: UNKNOWN
Solubility In Water: NEGLIGIBLE (<0.1 %)
Viscosity: 2-4 CST @100F
Corrosion Rate (IPY): UNKNOWN

=====
Fire and Explosion Hazard Data
=====

Flash Point: 150F,66C
Lower Explosive Limit: 0.4%

Upper Explosive Limit: 6%

Extinguishing Media: WATER FOG, CO2, FOAM, OR DRY CHEMICAL. DO NOT USE SPRAY OR A DIRECT STREAM OF WATER.

Special Fire Fighting Proc: WEAR FIRE FIGHTING PROTECTIVE EQUIPMENT AND A FULL FACED SELF CONTAINED BREATHING APPARATUS. COOL FIRE EXPOSED CONTAINERS WITH WATER SPRAY.

Unusual Fire And Expl Hazrds: FOR FIRE INVOLVING THIS MATERIAL, DO NOT ENTER ANY ENCLOSED OR CONFINED FIRE SPACE WITHOUT PROPER PROTECTIVE EQUIPMENT. HAVE ADEQUATE VENTILATION.

=====
 Reactivity Data
 =====

Stability: YES

Cond To Avoid (Stability): HIGH HEAT, OPEN FLAMES AND OTHER SOURCES OF IGNITION

Materials To Avoid: STRONG OXIDIZING AGENTS

Hazardous Decomp Products: CARBON MONOXIDE, CARBON DIOXIDE AND OTHER HARMFUL PRODUCTS

Conditions To Avoid (Poly): NONE SPECIFIED BY MANUFACTURER.

=====
 Health Hazard Data
 =====

LD50-LC50 Mixture: ORAL LD50 (RAT) IS > 10,000 MG/KG

Route Of Entry - Inhalation: YES

Route Of Entry - Skin: YES

Route Of Entry - Ingestion: NO

REPEATED/PROLONGED CONTACT CAN CAUSE IRRITATION. INHALATION: NONE EXPECTED UNDER NORMAL CONDITIONS OF USE. INHALATION OF MIST/HIGH CONCENTRATION OF VAPORS CAN PRODUCE DIZZINESS, HEADACHE & IRRITATES EYE, NOSE & THROAT. INGESTION: HARMFUL IF ASPIRATED INTO LUNG. CHRONIC-NOT GIVEN.

Carcinogenicity - NTP: NO

Carcinogenicity - IARC: NO

Carcinogenicity - OSHA: NO

Explanation Carcinogenicity: EXPOSURE TO DIESEL EXHAUST SHOULD BE MINIMIZED TO REDUCE THE POTENTIAL CANCER RISK.

Signs/Symptoms Of Overexp: THIS MATERIAL IS AN ASPIRATION HAZARD, A SKIN IRRITANT AND MAY BE A SKIN CANCER HAZARD BASED ON TESTS WITH LABORATORY ANIMALS. PRIMARY EXPOSURE ROUTE IS SKIN CONTACT. INHALATION IF VAPORS OR MISTS ARE GENERATED.

Med Cond Aggravated By Exp: NOT GIVEN

Emergency/First Aid Proc: GET MEDICAL CARE. INHALATION: REMOVE TO FRESH AIR. RESUSCITATE IF NEEDED. EYE/SKIN: FLUSH WITH WATER FOR SEVERAL MINUTES. WASH SKIN WITH SOAP & WATER. INGESTION: CALL A PHYSICIAN IMMEDIATELY. DO NOT INDUCE VOMITING.

=====
 Precautions for Safe Handling and Use
 =====

Steps If Matl Released/Spill: PICK UP SMALL SPILLS/RESIDUE WITH INERT ABSORBENT. FOR LARGE SPILLS, WEAR PROTECTIVE EQUIPMENT. REMOVE ALL IGNITION SOURCES. DIKE & CONTAIN SPILLS. DON'T ALLOW SPILLS TO ENTER SEWERS, STREAMS ETC. PICK UP SPILLS.

Neutralizing Agent: NOT APPLICABLE

Waste Disposal Method: WASTE MAY BE BURNED IN AN APPROVED INCINERATOR OR DISPOSED OF IN ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE AND FEDERAL LAWS AND REGULATIONS.

Precautions-Handling/Storing: STORAGE-STORE IN COOL, DRY WELL-VENTILATED AREA IN CLOSED CONTAINER AWAY FROM HEAT, IGNITION SOURCES & OXIDIZERS.

Other Precautions: COMBUSTIBLE LIQUID. USE WITH ADEQUATE VENTILATION. AVOID CONTACT WITH EYES, SKIN AND CLOTHING. LAUNDRY CONTAMINATED CLOTHING BEFORE REUSE. TO PREVENT RISK OF SKIN CANCER, PROTECT YOUR SKIN WITH GLOVES AND IMPERVIOUS CLOTHING.

=====
 Control Measures
 =====

Respiratory Protection: IN SITUATION WHERE VAPOR CONCENTRATIONS MAY EXCEED THE RECOMMENDED EXPOSURE LIMITS, A NIOSH-APPROVED ORGANIC VAPOR CARTRIDGE RESPIRATOR SHOULD BE WORN. USE SELF-CONTAINED SUPPLIED-AIR RESPIRATOR FOR EMERGENCIES.

Ventilation: GENERAL DILUTION OR MECHANICAL VENTILATION/EXPLOSION-PROOF LOCAL EXHAUST TO KEEP VAPOR BELOW RECOMMENDED EXPOSURE LIMITS

Protective Gloves: NEOPRENE, NITRILE, OR POLYVINYL ALCOHOL

Eye Protection: USE CHEMICAL SAFETY GOGGLES & FACESHIELD

Other Protective Equipment: EYE WASH STATION. BARRIER CREAMS SPECIFIC FOR PETROLEUM-BASED MATERIALS MAY BE USED WHEN GLOVES ARE IMPRACTICAL.

Work Hygienic Practices: DO NOT TAKE INTERNALLY. AVOID SKIN CONTACT. WASH SKIN AFTER USING PRODUCT. DO NOT EAT, DRINK OR SMOKE IN WORK AREA.

=====
 Transportation Data
 =====

Trans Data Review Date: 92298
 DOT PSN Code: ZZZ
 DOT Proper Shipping Name: NOT REGULATED BY THIS MODE OF TRANSPORTATION
 IMO PSN Code: ZZZ
 IMO Proper Shipping Name: NOT REGULATED FOR THIS MODE OF TRANSPORTATION
 IATA PSN Code: ZZZ
 IATA Proper Shipping Name: NOT REGULATED BY THIS MODE OF TRANSPORTATION
 AFI PSN Code: ZZZ
 AFI Prop. Shipping Name: NOT REGULATED BY THIS MODE OF TRANSPORTATION
 =====

=====
 Disposal Data
 =====

=====
 Label Data
 =====

Label Required: YES
 Technical Review Date: 24OCT92
 MFR Label Number: UNKNOWN
 Label Status: F
 Common Name: #2 DIESEL
 Chronic Hazard: NO
 Signal Word: WARNING!
 Acute Health Hazard-Slight: X
 Contact Hazard-Slight: X
 Fire Hazard-Moderate: X
 Reactivity Hazard-None: X
 REPEATED/PROLONGED CONTACT CAN CAUSE IRRITATION. INHALATION: NONE EXPECTED UNDER NORMAL CONDITIONS OF USE. INHALATION OF MIST/HIGH CONCENTRATION OF VAPORS CAN PRODUCE DIZZINESS, HEADACHE & IRRITATES EYE, NOSE & THROAT. INGESTION: HARMFUL IF ASPIRATED INTO LUNG. CHRONIC-NOT GIVEN. STORAGE-STORE IN COOL, DRY WELL-VENTILATED AREA IN CLOSED CONTAINER AWAY FROM HEAT, IGNITION SOURCES & OXIDIZERS. FIRST AID- GET MEDICAL CARE. INHALATION: REMOVE TO FRESH AIR. GIVE CPR IF NEEDED. EYE/SKIN: FLUSH WITH WATER. WASH SKIN WITH SOAP & WATER. INGESTION: CALL A PHYSICIAN IMMEDIATELY. DO NOT INDUCE VOMITING.
 Protect Eye: Y
 Protect Skin: Y
 Protect Respiratory: Y
 Label Name: FLYING J INC
 Label Street: 48 W 990 S
 Label P.O. Box: 678
 Label City: BRIGHAM CITY
 Label State: UT
 Label Zip Code: 84302-3121
 Label Country: US
 Label Emergency Number: 800-424-9300
 =====

URL for this msds <http://siri.org>. If you wish to change, add to, or delete information in this archive please send updates to dan@siri.org.

G A AVRIL -- LEAD
MATERIAL SAFETY DATA SHEET
NSN: 961000N028847
Manufacturer's CAGE: 3H480
Part No. Indicator: A
Part Number/Trade Name: LEAD

=====
General Information
=====

Company's Name: G A AVRIL CO
Company's Street: 2108 EAGLE COURT
Company's City: CINCINNATI
Company's State: OH
Company's Country: US
Company's Zip Code: 45212
Company's Emerg Ph #: 513-731-5133
Company's Info Ph #: 513-731-5133
Record No. For Safety Entry: 001
Tot Safety Entries This Stk#: 001
Status: SMJ
Date MSDS Prepared: 11AUG89
Safety Data Review Date: 01SEP95
MSDS Serial Number: BMYKW
Hazard Characteristic Code: N1

=====
Ingredients/Identity Information
=====

Proprietary: NO
Ingredient: LEAD
Ingredient Sequence Number: 01
Percent: 99+
NIOSH (RTECS) Number: OF7525000
CAS Number: 7439-92-1
OSHA PEL: 0.05 MG/M3
ACGIH TLV: 0.15 MG/M3;DUST

=====
Physical/Chemical Characteristics
=====

Appearance And Odor: BLUISH-GRAY SOFT METAL, ODORLESS, VARIOUS SHAPES AND SIZES.
Boiling Point: 3164F,1740C
Melting Point: 621F,327C
Specific Gravity: 11.3
Solubility In Water: INSOLUBLE

=====
Fire and Explosion Hazard Data
=====

Flash Point: NOT APPLICABLE
Lower Explosive Limit: N/A
Upper Explosive Limit: N/A
Extinguishing Media: DRY CHEMICALS OR SAND SHOULD BE USED WITH MOLTEN METALS.
Special Fire Fighting Proc: WEAR NIOSH/MSHA APPROVED SCBA AND FULL PROTECTIVE EQUIPMENT (FP N).
Unusual Fire And Expl Hazrds: MODERATE IN FORM OF DUST WHEN EXPOSED TO HEAT/FLAME. WHEN HEATED TO HIGH TEMPERATURES LEAD EMITS HIGHLY TOXIC FUMES; CAN REACT VIGOROUSLY W/OXIDIZING MATL.

=====
Reactivity Data
=====

Stability: YES
Cond To Avoid (Stability): LEAD CAN REACT VIOLENTLY W/OXIDIZING MATL. H2O MAY BECOME TRAPPED W/IN SURF CRACKS WHICH MAY CAUSE AN EXPLO (SUPP DATA)

Materials To Avoid: STRONG OXIDIZING MATL, E.G., CHLORINE TRIFLUORIDE, HYDROGEN PEROXIDE, SODIUM AZIDE.

Hazardous Decomp Products: NOT APPLICABLE

Hazardous Poly Occur: NO

Conditions To Avoid (Poly): NOT RELEVANT.

=====
 Health Hazard Data
 =====

LD50-LC50 Mixture: NONE SPECIFIED BY MANUFACTURER.

Route Of Entry - Inhalation: YES

Route Of Entry - Skin: NO

Route Of Entry - Ingestion: YES

Health Haz Acute And Chronic: CHRONIC OVEREXPOSURE TO HIGH LEVELS OF AIRBORNE OR INGESTED LEAD MAY RESULT IN ANEMIA, INSOMNIA, WEAKNESS, CONSTIPATION, NAUSEA AND ABDOMINAL PAIN. PROLONGED OVEREXPOSURE MAY RESULT IN KIDNEY AND NERVOUS SYSTEM INVOLVEMENT AND REPRODUCTIVE EFFECTS.

Carcinogenicity - NTP: NO

Carcinogenicity - IARC: YES

Carcinogenicity - OSHA: NO

Explanation Carcinogenicity: LEAD AND LEAD COMPOUNDS (INORGANIC): GROUP 2B.

Signs/Symptoms Of Overexp: SEE HEALTH HAZARDS. TOLUENE CAS 108-88-3 APPEARS ON THE NAVY LISTING OF OCCUP REPRO HAZ. SEEK CONSULTATION FROM APPROP PROFESSIONALS CONCERN LATEST HAZ LIST INFO AND SAFE HANDLING AND EXPOS RECOMMENDATIONS (FP N).

Med Cond Aggravated By Exp: DISEASES OF BLOOD & BLOODFORMING ORGANS, KIDNEYS, NERV & POSS REPROD SYS MAY BE AGGRAVATED BY OVEREXP TO LEAD. EXPOS TO LEAD MAY RESULT IN INJURY TO A DEVELOPING FETUS.

Emergency/First Aid Proc: IT IS UNLIKELY THAT OCCUPATIONALLY RELATED EXPOS TO MATL WOULD RESULT IN AN ACUTE ILLNESS. INHAL: REMOVE FROM EXPOSURE & CONSULT PHYS. SKIN: FOR HOT METAL BURNS, EXPOS AREA SHOULD BE COOLED W/ WATER AND MED ATTN SOUGHT. INGEST: CALL MD (FP N). EYES: IMMED FLUSH WITH POTABLE WATER FOR A MINIMUM OF 15 MIN, SEEK ASSISTANCE FROM MD (FP N).

=====
 Precautions for Safe Handling and Use
 =====

Steps If Matl Released/Spill: VACUUMING OR WET-SWEPT RECOMMENDED. DRY SWEEPING MAY RESULT IN HIGH CONCENTRATIONS OF AIRBORNE DUST. SPECIAL CARE SHOULD BE TAKEN WHEN HANDLING MOLTEN METAL.

Neutralizing Agent: NONE SPECIFIED BY MANUFACTURER.

Waste Disposal Method: METAL TURNINGS, GRINDINGS, DRIPPINGS, OR DROSSES SHOULD BE RECYCLED. WASTE SHOULD BE DISPOSED OF IN ACCORDANCE WITH FEDERAL, STATE AND LOCAL REGULATIONS.

Precautions-Handling/Storing: FOOD AND DRINK SHOULD NOT BE CONSUMED OR TOBACCO PRODUCTS USED, NOR COSMETICS APPLIED IN AREAS WHERE LEAD MAY BE USED.

Other Precautions: ALWAYS WASH HANDS AFTER HNDLG LEAD & BEFORE EATING, DRINKING OR SMOKING. AVOID INHAL OF DUST/FUMES IN CONCENTRATIONS ABOVE OSHA LIMITS. MATL IN STORAGE CAN BECOME WET FROM CONDENSATION. IT MUST BE THORO DRIED BEFORE ADDING TO MOLTEN METAL.

=====
 Control Measures
 =====

Respiratory Protection: NIOSH/MSHA APPROVED DUST/FUME RESPIRATOR SHOULD BE WORN WHERE APPLICABLE LIMITS MAY BE EXCEEDED.

Ventilation: PROVIDE SUFFICIENT MECH (GEN &/OR LOC EXHAUST) VENT TO MAINTAIN EXPOSURE BELOW TLV'S.

Protective Gloves: IMPERVIOUS GLOVES (FP N).

Eye Protection: CHEMICAL WORKERS GOGGLES (FP N).

Other Protective Equipment: WORK CLOTHES SHOULD BE WORN & LAUNDERED IN ACCORDANCE WITH CURRENT OSHA LEAD STANDARDS.

Work Hygienic Practices: WASH HANDS AFTER HANDLING LEAD AND BEFORE EATING, DRINKING, OR SMOKING.

Suppl. Safety & Health Data: CNDTNS (STAB): WHEN THE METAL IS MELTED.

=====
Transportation Data
=====

Trans Data Review Date: 92189
DOT PSN Code: ZZZ
DOT Proper Shipping Name: NOT REGULATED BY THIS MODE OF TRANSPORTATION
IMO PSN Code: ZZZ
IMO Proper Shipping Name: NOT REGULATED FOR THIS MODE OF TRANSPORTATION
IATA PSN Code: ZZZ
IATA Proper Shipping Name: NOT REGULATED BY THIS MODE OF TRANSPORTATION
AFI PSN Code: ZZZ
AFI Prop. Shipping Name: NOT REGULATED BY THIS MODE OF TRANSPORTATION
Additional Trans Data: NOT REGULATED FOR TRANSPORTATION
=====

=====
Disposal Data
==========
Label Data
=====

Label Required: YES
Technical Review Date: 25MAR92
Label Date: 23MAR92
Label Status: G
Common Name: LEAD
Chronic Hazard: YES
Signal Word: CAUTION!
Acute Health Hazard-Slight: X
Contact Hazard-None: X
Fire Hazard-None: X
Reactivity Hazard-None: X
Special Hazard Precautions: LEAD CAN REACT VIOLENTLY WITH OXIDIZING MATERIALS. WATER MAY BECOME TRAPPED WITHIN SURFACE CRACKS WHICH MAY CAUSE AN EXPLOSION WHEN THE METAL IS MELTED. ACUTE: IT IS UNLIKELY THAT OCCUPATIONALLY RELATED EXPOSURE TO THIS MATERIAL WOULD RESULT IN AN ACUTE ILLNESS. CHRONIC: CANCER HAZ. LEAD IS LISTED AS A CARCINOGEN. OVEREXPOSURE TO HIGH LEVELS OF AIRBORNE OR INGESTED LEAD MAY RESULT IN ANEMIA, INSOMNIA, WEAKNESS, CONSTIPATION, NAUSEA AND ABDOMINAL PAIN. PROLONGED OVEREXPOSURE MAY RESULT IN KIDNEY, NERVOUS SYSTEM & REPRODUCTIVE EFFECTS. EXPOSURE TO LEAD MAY RESULT IN INJURY TO A DEVELOPING FETUS. LEAD APPEARS ON THE NAVY REPRO HAZ LIST.
Protect Eye: Y
Protect Skin: Y
Protect Respiratory: Y
Label Name: G A AVRIL CO
Label Street: 2108 EAGLE COURT
Label City: CINCINNATI
Label State: OH
Label Zip Code: 45212
Label Country: US
Label Emergency Number: 513-731-5133
=====

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APPENDIX C

JOBSITE POSTINGS, PERMITS AND FORMS

Jobsite postings, permits and forms, as listed below, are being provided to the SHSO for use on the job site only:

Postings:

- CALOSHA Poster Safety & Health Protection on the Job
- Operating Rules for Industrial Trucks
- Notice - On-The-Job Injuries
- Access to Medical & Exposure Records
- Emergency Phone Numbers
- Workers Compensation Instructions
- Confirmation of Registration of Carcinogens

Human Resource Postings:

- IT affirmative action program Handicapped Individuals and Veterans of the Vietnam Era
- Discrimination in Employment is Prohibited by Law
- Minimum Wage
- EDD Notice to Employees
- Notice: Employee Polygraph Protection Act
- Notice to All Employees Working on Federal Or Federally Financed Construction Projects
- Notice to Employees Working on Government Contracts
- Your Rights Under the Family and Medical Leave Act of 1993
- Payday Notice

Permits:

- Trench/Excavation Annual Permit 1997
- Notification Form
- DOSH Address

Forms:

- Tailgate Safety Meeting
- Safety Inspection Reports (5 pages)
- Supervisor's Employee Injury Report
- Vehicle Accident Report Accident Diagram
- Accident/Injury Investigation
- General Liability, Property Damage and Loss Report
- Accident Review Board
- Contractor Significant Incident Report (8 pages)
- Safety Inspection Check List for Construction Equipment (CESPD Form 150-R)
- Photoionization Detector Calibration Log
- Colormetric Detector Tube Log
- Combustible Gas/Oxygen Meter Calibration Log
- Integrated Air Sampling Log
- Real Time Aerosol Monitoring Log
- Hot Work Permit
- Confined Space Entry Permit
- Underground and Overhead Utility Checklist

APPENDIX D

ACTIVITY HAZARD ANALYSIS

- Mobilization/Demobilization
- Site Preparation
- Utility Clearance/Survey
- Soil Sampling and characterization
- Excavation of Contaminated Materials
- Soil Segregation and stockpiling
- Loading and Disposal of Contaminated Soils
- Equipment Decontamination
- Backfilling and Compaction
- Site Restoration

**ACTIVITY HAZARD ANALYSIS
MOBILIZATION/DEMOBILIZATION**

Principal Steps	Potential Hazards	Recommended Controls
Placement/Unloading of Equipment and Materials	Heavy lifting	Use proper lifting techniques. Lifts greater than 60 lbs. require assistance or mechanical equipment; size-up the lift. Recommend wearing a back support if possible.
	Noise	Hearing protection is mandatory above 85 dBA.
	Falling objects	Hardhat, stay alert and clear of materials suspended overhead, steel-toed boots.
	Flying debris, dirt, dust etc.	Safety glasses/eye wash.
	Pinch points	Keep hands and feet clear of moving/suspended materials and equipment.
		Stay alert at all times!
	Beware of contact points.	
	Fire	Fire extinguishers shall be suitably placed, distinctly marked, readily accessible, and maintained in a fully charged and operable condition.
		Fire lanes providing access to all areas shall be established and maintained free of obstruction (the minimum space between one-story non-fire-resistant buildings shall be 20 feet). Initial survey of the suitability and effectiveness of fire prevention and protection measures and facilities at each installation shall be made by competent persons.
	High winds	Mobile/portable facilities shall be anchored to withstand high winds.
	Hot work	Refer to H&S Policy HS 314.
	Vehicle traffic	Pay attention at all times.
		Make sure that operators of vehicles know that you are near their equipment.
Installation of office and support structures	Contact With Utilities	Above and underground utilities shall be located. A qualified person shall install required utilities in compliance with national, state, and local codes.
	Slip, trip, and fall hazards	Determine best access route before transporting equipment.

Principal Steps	Potential Hazards	Recommended Controls
		Good housekeeping, keep work area picked up and clean as feasible. Continually inspect the work area for slip, trip, and fall hazards.
		Look before you step, ensure safe and secure footing.
	Cut hazards	Wear adequate hand protection.
	Biological hazards	Inspect work area carefully and avoid placing hands or feet into concealed areas.
		Be alert for bees, spiders, ticks, and snakes.
	Hazardous plants (poison oak prevalent), insects, snakes, etc. (biological)	Remove vegetation, identify hazardous plants, insects, etc.
	Flood potentials	Check meteorology/climatology of area; history of flooding.
	Toilets (sanitary)	Chemical toilets provided in accordance with SHSP.
	Heat stress	Refer to Section 4.5 of SHSP.
	Fire	Fire extinguishers shall be suitably placed, distinctly marked, readily accessible, and maintained in a fully charged and operable condition.
		Fuel will be transported and stored in approved containers.
	Contact with moving equipment/vehicles	Work area will be barricaded/ demarcated.
	Hazard communications	Label all containers as to contents (fuel cans, etc.)
		Obtain Material Safety Data Sheets for materials brought on site.
	Cross contamination and contact with potentially contaminated materials	No Exclusion Zone activities are associated with this task.
	Strains and sprains	Use the proper tool for the job being performed.
		Get assistance if needed.
		Avoid twisting/turning while pulling on tools, materials, etc.
	Unattended worker	"Buddy system" visual contact will be maintained between personnel site activities.

Principal Steps	Potential Hazards	Recommended Controls
Mobilization of trailers	Driving over soft ground	Make initial visual check. Level ground with loader and spread gravel.
		Apply gravel if needed to prevent mud of standing water. Loader (if used for spreading or grading) must meet all safety requirements.
	Level/Blocking trailer, driving stakes (stabilization) anchoring	Use caution when jacking and placing blocks or cribbing. If ground is soft, add stone to secure footing.
	Setting steps in place.	Steps must be OSHA-approved (with proper handrails, midrail, steps, with a platform in front of door; Refer to USACE (Section 21.E 02, 05, 07, 08)
		Lighting for work and means of egress; electrical hookup to trailers to be made by qualified electrician. GFCIs required on all circuits.
	Clearing hazards	If clearing is necessary, tree cutting will comply with chainsaw safety standards.
	Ventilation	Trailer ventilation shall not bring in exhaust from vehicles, etc.
Equipment to be Used	Inspection Requirements	Training Requirements
<ul style="list-style-type: none"> •Hand tools •PPE •Heavy equipment •Vendor trucks 	<ul style="list-style-type: none"> •Pre-postmaintenance •Visual prior to use 	<ul style="list-style-type: none"> •Tailgate Safety Meeting •Site specific orientation •Hazard communication

**SITE HEALTH AND SAFETY PLAN, NON-TIME
CRITICAL REMOVAL ACTION SITE 16-CANS C-2 AREA
AND SITE 15-SOIL REMOVAL AT TSTA**

APPENDIX D – ACTIVITY HAZARD ANALYSIS

**MOBILIZATION/DEMOBILIZATION
PAGE 4 OF 4**

**FINAL WORK PLAN, CONTRACTOR QUALITY
CONTROL PLAN, ENVIRONMENTAL PROTECTION
PLAN, SAMPLING AND ANALYSIS PLAN, SITE HEALTH
AND SAFETY PLAN, NON-TIME CRITICAL REMOVAL
ACTION SITE 16-CANS C-2 AREA AND SITE 15-SOIL
REMOVAL AT TSTA**

THE ABOVE IDENTIFIED PAGE IS NOT AVAILABLE.

**EXTENSIVE RESEARCH WAS PERFORMED BY
NAVFAC SOUTHWEST TO LOCATE THIS PAGE. THIS
PAGE HAS BEEN INSERTED AS A PLACEHOLDER
AND WILL BE REPLACED SHOULD THE MISSING ITEM
BE LOCATED.**

QUESTIONS MAY BE DIRECTED TO:

**DIANE C. SILVA
RECORDS MANAGEMENT SPECIALIST
NAVAL FACILITIES ENGINEERING COMMAND
SOUTHWEST
1220 PACIFIC HIGHWAY
SAN DIEGO, CA 92132**

TELEPHONE: (619) 532-3676

**ACTIVITY HAZARD ANALYSIS
SITE PREPARATION**

Activity	Potential Hazards	Recommended Controls
Placement/unloading of construction materials	Noise	Noise levels above 85 dBA mandates hearing protection.
	Slip, trip and fall hazards	Good housekeeping, keep work area picked up and as clean as feasible. Continually inspect the work area for slip, trip and fall hazards.
	Pinch points	Keep feet and hands clear of moving/suspended materials and equipment.
		Beware of contact points.
		Stay alert at all times!
	Fire	Fire extinguishers shall be suitably placed, distinctly marked, readily accessible, and maintained in a fully charged and operable condition. See Table 3-6.
	Strains and sprains	Use proper lifting techniques, lifts greater than 60 lbs. require assistance or mechanical equipment. Size up the lift.
	Heavy equipment operations	Before any machinery or mechanized equipment is placed into service, it shall be inspected and tested by a competent mechanic and certified to be in safe operating condition.
		Equipment shall be inspected before being placed into service and at the beginning of each shift.
		Preventive maintenance procedures recommended by the manufacturer shall be followed.
		All lockout-tagout procedure shall be used for equipment found to be faulty or undergoing maintenance.
		Machinery and mechanized equipment shall be operated only by designated personnel.
		Getting off or on any equipment while it is in motion is prohibited.

**ACTIVITY HAZARD ANALYSIS
SITE PREPARATION**

Activity	Potential Hazards	Recommended Controls
Placement/unloading of construction materials	Heavy equipment operations	Machinery or equipment requiring an operator shall not be permitted to run unattended.
		Machinery or equipment will not be operated in a manner that will endanger persons or property nor will the safe operating speeds or loads be exceeded.
		All machinery or equipment will be shut down and positive means taken to prevent its operation while repairs or manual lubrications are being done.
		All repairs on machinery or equipment will be made at a location which provides protection from traffic for repair persons.
		Bulldozer and scraper blades, end-loader buckets, and similar equipment will be either fully lowered or blocked when being repaired or when not in use.
	Ropes, slings, chains and hooks	The use of ropes, slings and chains shall be in accordance with the safe recommendations of their manufacturer.
		Rigging equipment shall not be loaded in excess of its recommended safe working load.
		The use of open hooks is prohibited in rigging to lift any load where there is danger of relieving the tension on the hook due to the load or hook catching or fouling.
		Hooks, shackles, rings, pad eyes and other fittings that show excessive wear or that have been bent, twisted or otherwise damaged shall be removed from service.
		Rigging equipment for material handling shall be inspected prior to use on each shift and as necessary during its use to insure that it is safe. Defective rigging equipment shall be removed from service.

**ACTIVITY HAZARD ANALYSIS
SITE PREPARATION**

Activity	Potential Hazards	Recommended Controls
Placement/unloading of construction materials	Ropes, slings, chains and hooks	Rigging equipment, when not in use, shall be removed from the immediate work area and properly stored so as not to present a hazard.
		Taglines shall be used to control the loads being handled by hoisting equipment.
	Hoisting equipment	All hoisting equipment shall be capable of passing a performance (operating) test prior to being placed into service.
Placement of building materials	Hoisting equipment	At no time shall the hoisting equipment be loaded in excess of the manufacturers rating.
		While hoisting equipment is in operation, the operator shall not perform any other work and he/she shall not leave his/her position at the controls until the load has been safely landed or returned to the ground.
		A standard signal system shall be used on all hoisting equipment.
Support Area Construction	Knife cuts	Cutting strokes will always be away from the body.
		Leather gloves will be worn when cutting.
		Place knife in sheath on holder when not in use.
		Unused knives will never be left with cutting edges exposed.
		Never use a knife that is defective or has a broken blade or handle.
		Never use a knife as a prybar or screwdriver.
		Don't use a dull blade; replace or have sharpened prior to use.
	Pinch points	Keep feet and hands clear of moving/suspended materials and equipment.
		Stay alert at all times!
	Flying debris	Wear safety glasses at all times.

**ACTIVITY HAZARD ANALYSIS
SITE PREPARATION**

Activity	Potential Hazards	Recommended Controls
	Fire	A dry chemical fire extinguisher with a minimum UL rating of 1A5BC will be readily available.
Support Area Construction	Fire	No smoking or open flames within 50 ft. of the work area. (Work area will be posted)
		Fire extinguishers shall be suitably placed, distinctly marked, readily accessible, and maintained in a fully charged and operable condition. See Table 3.6.
		All hoses, couplings, fixtures, etc. shall be properly bonded and grounded.
		IT Corporation's HS314 "Hot Work in Hazardous Locations" Policy and Procedure shall be adhered to at all times.
	Fueling	Only UL/FM approved safety cans shall be used to store fuel.
		Do not refuel equipment while it is operating.
		Fire extinguishers shall be suitably placed, distinctly marked, readily accessible, and maintained in a fully charged and operable condition. See Table 3.6.
	Faulty or damaged equipment	Before any machinery or mechanized equipment is placed into service, it shall be inspected and tested by a competent mechanic and certified to be in safe operating condition.
		Equipment shall be inspected before being placed into service and at the beginning of each shift.
	Electrical hand tools/electrocution	Preventive maintenance procedures recommended by the manufacturer shall be followed.
		A lockout-tagout procedure shall be used for equipment found to be faulty or undergoing maintenance.
		Ground fault circuit interrupters inspect extension cords, hand tool inspection, lockout-tagout procedure.

**ACTIVITY HAZARD ANALYSIS
SITE PREPARATION**

Activity	Potential Hazards	Recommended Controls
	Contact with glues, solvents, etc.	Be familiar with the materials you are working with (MSDSs)
	Noise	If noise levels exceed 85 dBA wear hearing protection.
Support Area Construction	Heavy lifting	Safe lifting procedures. Loads over 60 lbs require assistance or mechanical lifting device.
	Slip, trip and fall hazards	Good housekeeping
	Excavation and trenching	Follow policy and procedures for safe trench excavation.
Handling sharp objects	Cuts	Wear appropriate hand protection.
Grinding/sawing	Flying particles	Proper eye protection.
Material storage	Flammable and combustible liquids	Store in NO SMOKING AREA and 50 ft. from combustible construction materials.
		Fire extinguisher readily available. See Table 3.6.
		Properly grounded and bonded.
	Round stock	Secure from rolling, work from the top of the stack.
	Slip, trip and fall hazards	Good housekeeping
Material Storage	Sprains and strains	Safe lifting procedures
	Pinch points/cuts	Adequate hand protection and observation of contact points.
	Hazard communication	Proper labeling/MSDSs.
Application of sealants	Pinch points	Beware of contact points.
		Keep hands, fingers, and feet clear of moving parts.
		Stay alert at all times!
	Cut hazards	Wear adequate hand protection.
	Noise	Noise levels above 85 dBA mandate hearing protection.
	Heavy lifting	Any lifting over 60 lbs. requires assistance or the use of a mechanical lifting device.
	Moving equipment	Signal person will assist in positioning equipment.
		Signal person will wear a reflective vest for high visibility.

**ACTIVITY HAZARD ANALYSIS
SITE PREPARATION**

Activity	Potential Hazards	Recommended Controls
	Contact with sealants	Personnel will wear adequate protective clothing and equipment to protect themselves against contact with sealant.
Application of sealants	Contact with sealants	MSDS's of all sealant materials will be obtained and reviewed with applicable personnel.
Material Hauling	Dump truck operations	Dump truck bodies shall be fully lowered or blocked when maintenance is being performed or when not in use.
		Dump trucks will have back-up alarms.
		A signal person will be used when the point of operation is not in full view of the vehicle, machine or equipment operator; vehicles are backed more than 100 ft; terrain is hazardous; or 2 or more vehicles are backing in the same area.
		Dump trucks will not be loaded in a manner that obscures the operator's view ahead or to either side or that interferes with the safe operation of the vehicle.
Material Hauling	Dump truck operations	The load on every truck will be distributed, checked, tied down, or secured.
		Loads will be covered when there is a hazard of flying/falling dirt, rock, debris, or material.
		All dump trucks will be equipped with a holding device to prevent accidental lowering of the body.
		All hoist levers will be secured to prevent accidental starting or tripping of the mechanism.
		Trip handles for tailgates will be arranged to keep the operator in the clear.

**ACTIVITY HAZARD ANALYSIS
SITE PREPARATION**

Activity	Potential Hazards	Recommended Controls
Equipment to be Used	Inspection Requirements	Training Requirements
<ul style="list-style-type: none">• Heavy equipment• PPE• Dump trucks• Hand tools	<ul style="list-style-type: none">• Pre-postmaintenance• Visual prior to use• CESP Form 150 R	<ul style="list-style-type: none">• Tailgate Safety Meeting• Site specific orientation• Hazardous waste operations• Hazard communication

**ACTIVITY HAZARD ANALYSIS
UTILITY CLEARANCE/SURVEYING**

Activity	Potential Hazards	Recommended Controls
Surveying	Slips, Trips, Falls	Good housekeeping, keep work area picked up and as clean as feasible. Continually inspect the work areas for slip, trip, and fall hazards
		When working on uneven surfaces, take care when stepping. Watch where you walk.
	Moving Vehicles	The wearing of high visibility vests is required in areas where vehicle traffic may be encountered.
		Flaggers and traffic control devices such as cones and barricades may be needed when working in traffic.
Equipment to be Used	Inspection Requirements	Training Requirements
<ul style="list-style-type: none"> •Survey Equipment •PPE 	None	<ul style="list-style-type: none"> •Tailgate safety meeting •Site specific orientation •Hazard communications

**ACTIVITY HAZARD ANALYSIS
SOIL SAMPLING**

Activity	Potential Hazards	Recommended Controls
Staging equipment	Slip, trip and fall hazards	Determine best access route before transporting equipment.
		Good housekeeping, keep work area picked up and clean as feasible. Continually inspect the work area for slip, trip and fall hazards.
		Look before you step, insure safe and secure footing.
	Heavy lifting	Use proper lifting techniques. Lifts greater than 60 lbs. require assistance or mechanical equipment; size-up the lift.
	Falling objects	Stay alert and clear of materials suspended overhead. Use steel-toed boots and hard hat.
	Flying debris, dirt, dust etc.	Use safety glasses/goggles. Ensure that eye wash is in good working order.
	Pinch points	Keep hands, fingers, and feet clear of moving/suspended materials and equipment.
		Beware of contact points.
		Stay alert at all times!
	Insects, spiders and snakes	Inspect work area carefully and avoid placing hands and feet into concealed areas.
	Cut hazards	Wear adequate hand protection. Use care when handling glassware.
	Fire	Fire extinguishers shall be suitably placed, distinctly marked, readily accessible, and maintained in a fully charged and operable condition. See Table 3-6.
	Fire/chemical exposure	All solvents will be transported in UL/FM approved containers and sources of ignition will be prohibited.
		Initial real time air monitoring will take place.
Staging Equipment	Contact with moving equipment/vehicles	Work area will be barricaded/demarcated.

Activity	Potential Hazards	Recommended Controls
Staging Equipment	Contact with moving equipment/vehicles	Equipment will be laid out in an area free of traffic flow..
	Work in excavations	IT Policy and Procedure HS 307 - "Excavation and Trenching" will be adhered to at all times
	Hazard communication	Label all containers as to contents and dispose of properly.
		Obtain Material Safety Data Sheets for solvents, etc. that are being used.
	Noise	Sound levels above 85 dBA mandates hearing protection.
Sample Collection	Working at elevated heights/falls	Ladders will be secured by top, bottom, and intermediate fastenings as required.
		Personnel working at heights of 6 feet or more must be secured with fall protection (safety belt/lanyard).
	Electrical shock	All electrical circuits will be deenergized and locked out.
	Insects, spiders and snakes	Inspect work areas carefully and avoid placing hands and feet into concealed areas.
	Cross-contamination and contact with potentially contaminated materials	Sampling technicians will wear proper protective clothing and equipment to safeguard against potential contamination.
		Only essential personnel will be in the work area.
		Initial real-time air monitoring will take place before and during sampling activities.
		All personnel will follow good hygiene practices.
		Proper decontamination procedures will be followed.
		All liquids and materials used for decontamination will be contained and disposed of in accordance with Federal, State and Local regulations.
	Cut hazards	Use care when handling glassware.
		Wear adequate hand protection.
Sample Collection	Hazard communication	Label all containers as to contents.
	Strains/sprains	Use the proper tool for the job being performed.

Activity	Potential Hazards	Recommended Controls
Sample Collection	Strains/sprains	Get assistance if needed.
		Avoid twisting/turning while pulling on tools, grates, manway covers, etc.
	Spills/residual materials	Absorbent material and containers will be kept available where leaks or spills may occur.
	Lighting	Adequate lighting will be provided to insure a safe working environment.
	Unattended worker	"Buddy System" - visual contact will be maintained with the sampling technician during sampling activities.
	Confined spaces	IT Policy and Procedure HS300 - "Confined Spaces" will be adhered to at all times.
	Contact with potentially contaminated materials	Real-time air monitoring will take place. Appropriate PPE will be utilized.
		Good housekeeping will be stressed to safeguard against cross contamination of nearby areas and eliminate safety hazards.
		All site personnel will practice good personal hygiene by utilizing the decon facility on site.
		The work area will be demarcated. All unnecessary personnel will be kept out of the work area and in an upwind location.
		IT Policy and Procedure HS601 - "Respiratory Protective Devices" will be adhered to at all times.
		Maintain MSDS's for any preservatives such as HCl acid. Follow protection procedures.
Equipment decontamination	Chemical exposure	Maintain MSDS's for all chemicals such as methanol or hexane and follow protection procedures.
On-site sample analysis	Various	On-site laboratory will develop and adhere to a site specific chemical hygiene plan (CHP). The CHP will be submitted to the Program CIH for review and acceptance.

Activity	Potential Hazards	Recommended Controls
Moving and shipping collected samples	Heavy lifting	Use proper lifting techniques. Lifts greater than 60 lbs. require assistance or mechanical equipment; size-up the lift.
	Pinch points	Keep hands, fingers, and feet clear of moving/suspended materials and equipment.
		Beware of contact points.
		Stay alert at all times!
	Cut hazards	Wear adequate hand protection. Use care when handling glassware.
	Hazard communication	Label all containers as to contents and associated hazards.
Equipment to be Used	Inspection Requirements	Training Requirements
<ul style="list-style-type: none"> ● Hand tools ● PPE ● Sampling equipment 	<ul style="list-style-type: none"> ● Pre-postmaintenance ● Visual prior to use 	<ul style="list-style-type: none"> ● Tailgate Safety Meeting ● Site specific orientation ● Hazardous waste operations ● Hazard communication

**ACTIVITY HAZARD ANALYSIS
SOIL CHARACTERIZATION**

Activity	Potential Hazards	Recommended Controls
Job setup for soil characterization	Heavy lifting	Use proper lifting techniques. Lifts greater than 60 lbs. require assistance or mechanical equipment; size-up the lift.
	Slip, trip and fall hazards	Good housekeeping, keep work area picked up and as clean as feasible. Continually inspect the work area for slip, trip and fall hazards.
	Cut hazards	Wear adequate hand protection.
	Lighting	Adequate lighting will be provided to ensure a safe working environment.
	Strains/sprains	When pulling or lifting, do not turn or twist your back.
		Use the proper tool for the task being performed.
	Contact with potentially contaminated materials	Appropriate PPE will be required.
		Keep airborne particulates to a minimum.
		Practice good housekeeping, avoid spreading potentially contaminated materials.
	Fueling	Only UL/FM approved safety cans shall be used to store fuel.
		Do not refuel equipment while it is operating.
		Fire extinguishers shall be suitably placed, distinctly marked, readily accessible, and maintained in a fully charged and operable condition. See Table 3-6.
Soil characterization	Noise	Use hearing protection and monitor noise level.
	Unqualified operators	Machinery and mechanized equipment shall be operated only by designated personnel.
	Out of control equipment	Machinery or equipment requiring an operator shall not be permitted to run unattended.
Soil characterization	Out of control equipment	Machinery or equipment will not be operated in a manner that will endanger persons or property nor will the safe operating speeds or loads be exceeded.
	Pinch points	Keep feet and hands clear of moving/suspended materials and equipment

**ACTIVITY HAZARD ANALYSIS
SOIL CHARACTERIZATION**

Activity	Potential Hazards	Recommended Controls
		Stay alert at all times!
	Falling objects	Hard hats, remove unsecured tools and materials before operating equipment.
		Stay alert and clear of materials suspended overhead.
	Flying debris	Splash shield will be used.
	Contact with potentially contaminated materials	Appropriate PPE will be required.
Pressure washing equipment	High pressures	IT Policy and Procedure HS303 "Pressurized Water Cleaning and Cutting Equipment" shall be adhered to at all times.
	Unqualified operators	Machinery and mechanized equipment shall be operated only by designated personnel.
	Out of control equipment	Machinery or equipment requiring an operator shall not be permitted to run unattended.
		Machinery or equipment will not be operated in a manner that will endanger persons or property nor will the safe operating speeds or loads be exceeded.
	Noise	Sound levels above 85 dBA mandates hearing protection.
	Activation during repairs	All machinery or equipment will be shut down and positive means taken to prevent its operation while repairs or manual lubrications are being done.
	Pinch points	Keep feet and hands clear of moving/suspended materials and equipment.
		Stay alert at all times!
	Falling objects	Hard hats, remove unsecured tools and materials before operating equipment.
Pressure washing equipment	Falling objects	Stay alert and clear of materials suspended overhead.
	Flying debris	Splash shield will be used.
	Contact with potentially contaminated materials	Appropriate PPE will be required.

**ACTIVITY HAZARD ANALYSIS
SOIL CHARACTERIZATION**

Activity	Potential Hazards	Recommended Controls
	Hot work (hot water/steam cleaning)	IT Policy and Procedure HS314 "Hot Work in Hazardous Locations" will be adhered to at all times during any operations involving hot work.
Equipment to be Used	Inspection Requirements	Training Requirements
<ul style="list-style-type: none"> • Hand tools • PPE • Heavy equipment • Soil separator 	<ul style="list-style-type: none"> • Pre-postmaintenance • Visual prior to use • CESP Form 150R 	<ul style="list-style-type: none"> • Tailgate Safety Meeting • Site specific orientation • Hazardous waste operations • Hazard communication • HAZCAT

**SITE HEALTH AND SAFETY PLAN, NON-TIME
CRITICAL REMOVAL ACTION SITE 16-CANS C-2 AREA
AND SITE 15-SOIL REMOVAL AT TSTA**

APPENDIX D – ACTIVITY HAZARD ANALYSIS

**SOIL CHARACTERIZATION
PAGES 4, 5 & 6 OF 6**

**FINAL WORK PLAN, CONTRACTOR QUALITY
CONTROL PLAN, ENVIRONMENTAL PROTECTION
PLAN, SAMPLING AND ANALYSIS PLAN, SITE HEALTH
AND SAFETY PLAN, NON-TIME CRITICAL REMOVAL
ACTION SITE 16-CANS C-2 AREA AND SITE 15-SOIL
REMOVAL AT TSTA**

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NAVFAC SOUTHWEST TO LOCATE THESE PAGES.
THIS PAGE HAS BEEN INSERTED AS A
PLACEHOLDER AND WILL BE REPLACED SHOULD
THE MISSING ITEMS BE LOCATED.**

QUESTIONS MAY BE DIRECTED TO:

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**ACTIVITY HAZARD ANALYSIS
EXCAVATION OF CONTAMINATED MATERIALS**

Activity	Potential Hazards	Recommended Controls
Excavation	Underground utilities	All underground utilities will be located prior to excavating.
	Open excavations	IT Policy and Procedure HS307 - "Excavation and Trenching" will be adhered to at all times.
	Confined spaces	IT Policy and Procedure HS 300 - "Confined Spaces" will be adhered to at all times.
	Noise	Noise levels above 85 dBA mandates hearing protection.
	Heavy equipment operations	Before any machinery or mechanized equipment is placed into service, it shall be inspected and tested by a competent mechanic and certified to be in safe operating condition.
		Equipment shall be inspected before being placed into service and at the beginning of each shift.
		Preventive maintenance procedures recommended by the manufacturer shall be followed.
		A lockout - tagout procedure shall be used for equipment found to be faulty or undergoing maintenance.
		Machinery and mechanized equipment shall be operated only by designated personnel.
		Getting off or on any equipment while it is in motion is prohibited.
		Machinery or equipment requiring an operator shall not be permitted to run unattended.
	Contact with overhead power lines	See distances in Table 3-5.
	Heavy equipment operations	Machinery or equipment will not be operated in a manner that will endanger persons or property nor will the safe operating speeds or loads be exceeded.

**ACTIVITY HAZARD ANALYSIS
EXCAVATION OF CONTAMINATED MATERIALS**

Activity	Potential Hazards	Recommended Controls
Excavation	Heavy equipment operations	All machinery or equipment will be shut down and positive means taken to prevent its operation while repairs or manual lubrications are being done.
		All repairs on machinery or equipment will be made at a location which provides protection from traffic for repair persons.
		Bulldozer and scraper blades, end-loader buckets, and similar equipment will be either fully lowered or blocked when being repaired or when not in use.
		All self-propelled construction equipment shall be equipped with a back-up alarm.
	Fire	Each bulldozer, backhoe, or other similar equipment will be equipped with at least one dry chemical fire extinguisher having a minimum UL rating of 1A5BC.
	Contact with potentially contaminated materials	Real-time air monitoring will take place. Proper personal protective clothing and equipment will be utilized.
		Good housekeeping will be stressed to safe guard against cross contamination of surrounding areas and eliminate safety hazards.
		All site personnel will practice good personal hygiene.
		The work area will be demarcated. All unnecessary personnel will be kept out of the work area and in an upwind location.
		Refer to SHSP for chemical hazard discussion.
	Potential lead involvement or exposure (hazard)	Personal air samples will be collected to determine an exposure assessment.
		Engineering controls will be implemented.
		Proper personal protective clothing and equipment will be utilized.
		Personal hygiene and good housekeeping practices will be followed

**ACTIVITY HAZARD ANALYSIS
EXCAVATION OF CONTAMINATED MATERIALS**

Activity	Potential Hazards	Recommended Controls
Excavation	Potential lead involvement or exposure (hazard)	Work zones will be established and clearly marked.
		Lead related training will be required.
		Refer to the SHSP or LMP for chemical hazard discussion
	Noise	Noise levels above 85 dBA mandates hearing protection.
	Slip, trip and fall hazards	Good housekeeping, keep work area picked up and as clean as feasible. Continually inspect the work area for slip, trip and fall hazards.
	Pinch points	Keep feet and hands clear of moving/suspended materials and equipment.
Excavation	Pinch points	Beware of contact points.
		Stay alert at all times!
	Strains and sprains	Use proper lifting techniques, lifts greater than 60 lbs. requires assistance or mechanical equipment; size up the lift.
Material hauling	Dump truck operations	Dump truck bodies shall be fully lowered or blocked when maintenance is being performed or when not in use.
		Dump trucks will have back-up alarms.
		A signal person will be used when the point of operation is not in full view of the vehicle, machine or equipment operator; vehicles are backed more than 100 ft; terrain is hazardous; or 2 or more vehicles are backing in the same area.
		Dump trucks will not be loaded in a manner that obscures the operator's view ahead or to either side or that interferes with the safe operation of the vehicle.
		The load on every truck will be distributed, checked, tied down, or secured.

**ACTIVITY HAZARD ANALYSIS
EXCAVATION OF CONTAMINATED MATERIALS**

Activity	Potential Hazards	Recommended Controls
		Loads will be covered when there is a hazard of flying/falling dirt, rock, debris, or material.
		All dump trucks will be equipped with a holding device to prevent accidental lowering of the body.
		All hoist levers will be secured to prevent accidental starting or tripping of the mechanism.
Material hauling	Dump truck operations	Trip handles for tailgates will be arranged to keep the operator in the clear.
Equipment to be Used	Inspection Requirements	Training Requirements
<ul style="list-style-type: none"> • Hand tools • PPE • Heavy equipment • Dump trucks 	<ul style="list-style-type: none"> • Pre-postmaintenance • Visual prior to use • CESP Form 150 R 	<ul style="list-style-type: none"> • Tailgate Safety Meeting • Site specific orientation • Hazardous waste operations • Hazard communication • Lead Management Plan

**ACTIVITY HAZARD ANALYSIS
SOIL SEGREGATION AND STOCKPILING**

Activity	Potential Hazards	Recommended Controls
Job setup for soil segregation and stockpiling	Heavy lifting	Use proper lifting techniques. Lifts greater than 60 lbs. require assistance or mechanical equipment; size-up the lift.
	Slip, trip and fall hazards	Good housekeeping, keep work area picked up and as clean as feasible. Continually inspect the work area for slip, trip and fall hazards.
	Cut hazards	Wear adequate hand protection.
	Lighting	Adequate lighting will be provided to ensure a safe working environment.
	Strains/sprains	When pulling or lifting, do not turn or twist your back.
		Use the proper tool for the task being performed.
	Contact with potentially contaminated materials	Appropriate PPE will be required.
		Keep airborne particulates to a minimum.
		Practice good housekeeping, avoid spreading potentially contaminated materials.
	Fueling	Only UL/FM approved safety cans shall be used to store fuel.
		Do not refuel equipment while it is operating.
		Fire extinguishers shall be suitably placed, distinctly marked, readily accessible, and maintained in a fully charged and operable condition. See Table 3-6.
Soil segregation and stockpiling	Noise	Use hearing protection and monitor noise level.
	Unqualified operators	Machinery and mechanized equipment shall be operated only by designated personnel.
	Out of control equipment	Machinery or equipment requiring an operator shall not be permitted to run unattended.
Soil segregation and stockpiling	Out of control equipment	Machinery or equipment will not be operated in a manner that will endanger persons or property nor will the safe operating speeds or loads be exceeded.

**ACTIVITY HAZARD ANALYSIS
SOIL SEGREGATION AND STOCKPILING**

Activity	Potential Hazards	Recommended Controls
	Pinch points	Keep feet and hands clear of moving/suspended materials and equipment
		Stay alert at all times!
	Falling objects	Hard hats, remove unsecured tools and materials before operating equipment.
		Stay alert and clear of materials suspended overhead.
	Flying debris	Splash shield will be used.
	Contact with potentially contaminated materials	Appropriate PPE will be required.
Pressure washing equipment	High pressures	IT Policy and Procedure HS303 "Pressurized Water Cleaning and Cutting Equipment" shall be adhered to at all times.
	Unqualified operators	Machinery and mechanized equipment shall be operated only by designated personnel.
	Out of control equipment	Machinery or equipment requiring an operator shall not be permitted to run unattended.
		Machinery or equipment will not be operated in a manner that will endanger persons or property nor will the safe operating speeds or loads be exceeded.
	Noise	Sound levels above 85 dBA mandates hearing protection.
	Activation during repairs	All machinery or equipment will be shut down and positive means taken to prevent its operation while repairs or manual lubrications are being done.
	Pinch points	Keep feet and hands clear of moving/suspended materials and equipment.
		Stay alert at all times!
	Falling objects	Hard hats, remove unsecured tools and materials before operating equipment.
Pressure washing equipment	Falling objects	Stay alert and clear of materials suspended overhead.
	Flying debris	Splash shield will be used.

**ACTIVITY HAZARD ANALYSIS
SOIL SEGREGATION AND STOCKPILING**

Activity	Potential Hazards	Recommended Controls
	Contact with potentially contaminated materials	Appropriate PPE will be required.
	Hot work (hot water/steam cleaning)	IT Policy and Procedure HS314 "Hot Work in Hazardous Locations" will be adhered to at all times during any operations involving hot work.
Loadout of equipment	Noise	Noise levels above 85 dBA mandates hearing protection.
	Heavy equipment operations	Before any machinery or mechanized equipment is placed into service, it shall be inspected and tested by a competent mechanic and certified to be in safe operating condition.
Loadout of equipment	Heavy equipment operations	Equipment shall be inspected before being placed into service and at the beginning of each shift.
		Preventive maintenance procedures recommended by the manufacturer shall be followed.
		A lockout - tagout procedure shall be used for equipment found to be faulty or undergoing maintenance.
		Machinery and mechanized equipment shall be operated only by designated personnel.
		Getting on or off any equipment while it is in motion is prohibited.
		Machinery or equipment requiring an operator shall not be permitted to run unattended.
Loadout of equipment	Heavy equipment operations	Machinery or equipment will not be operated in a manner that will endanger persons or property nor will the safe operating speeds or loads be exceeded.
		All machinery or equipment will be shutdown and positive means taken to prevent its operation while repairs or manual lubrications are being done.
		All repairs on machinery or equipment will be made at a location which provides protection from traffic for repair persons.

**ACTIVITY HAZARD ANALYSIS
SOIL SEGREGATION AND STOCKPILING**

Activity	Potential Hazards	Recommended Controls
		All self-propelled construction equipment shall be equipped with a back-up alarm.
	Fire	Each bulldozer, backhoe, or other similar equipment will be equipped with at least one dry chemical fire extinguisher having a minimum UL rating of 1A5BC.
	Truck and Equipment Traffic	Site personnel will wear orange safety vests to identify themselves to traffic.
		Load out area will be properly demarcated.
Loadout of equipment	Slip, trip and fall hazards	Good housekeeping, keep work area picked up and as clean as feasible. Continually inspect the work area for slip, trip, and fall hazards. Look where you step, ensure safe footing when climbing on/off equipment etc.
	Pinch points	Keep feet and hands clear of moving/suspended materials and equipment.
		Beware of contact points. Stay alert at all times!
	Strains/sprains	Use proper lifting techniques. Lifts greater than 60 lbs require assistance or mechanical equipment. Size-up the lift. When pulling on materials, pull in a straight line. Do not twist and pull simultaneously.
	Ropes, slings, chains, and hooks	The use of ropes, slings, and chains shall be in accordance with the safe recommendations of their manufacturer.
		Rigging equipment shall not be loaded in excess of its recommended safe working load.
Loadout of equipment	Ropes, slings, chains, and hooks	The use of open hooks is prohibited in rigging to lift any load where there is danger of relieving the tension on the hook due to the load or hook catching or fouling.
		Hooks, shackles, rings, pad eyes, and other fittings that show excessive wear or that have been bent, twisted, or otherwise damaged shall be removed from service.

**ACTIVITY HAZARD ANALYSIS
SOIL SEGREGATION AND STOCKPILING**

Activity	Potential Hazards	Recommended Controls
		Rigging equipment for material handling shall be inspected prior to use on each shift and as necessary during its use to insure that it is safe. Defective rigging equipment shall be removed from service.
		Rigging equipment, when not in use, shall be removed from the immediate work area and properly stored so as not to present a hazard.
		Taglines shall be used to control the loads being handled by hoisting equipment.
Loadout of equipment	Hoisting Equipment	All hoisting equipment shall be capable of passing a performance (operating) test prior to being placed into service.
		At no time shall the hoisting equipment be loaded in excess of the manufacturer's rating except during performance tests.
		While hoisting equipment is in operation, the operator shall not perform any other work and he/she shall not leave his/her position at the controls until the load has been safely landed or returned to the ground.
		A standard signal system shall be used on all hoisting equipment.
	Heat	Be aware of warning signs of these conditions
	Bees, spiders, and snakes	Inspect work area carefully and avoid placing hands and feet into concealed areas.
	Cut hazards	Wear adequate hand protection.
	Falling objects	Hard hat, stay alert and clear of materials suspended overhead, steel-toed boots.
Equipment to be Used	Inspection Requirements	Training Requirements
<ul style="list-style-type: none"> • Hand tools • PPE • Heavy equipment • Soil separator 	<ul style="list-style-type: none"> • Pre-postmaintenance • Visual prior to use • CESP Form 150R 	<ul style="list-style-type: none"> • Tailgate Safety Meeting • Site specific orientation • Hazardous waste operations • Hazard communication

**ACTIVITY HAZARD ANALYSIS
LOADING AND DISPOSAL OF CONTAMINATED SOILS**

Activity	Potential Hazards	Recommended Controls
Loading stockpiled soil	Noise	Noise levels above 85 dBA mandates hearing protection.
	Heavy equipment operations	Before any machinery or mechanized equipment is placed into service, it shall be inspected and tested by a competent mechanic and certified to be in safe operating condition.
		Equipment shall be inspected before being placed into service and at the beginning of each shift.
		Preventive maintenance procedures recommended by the manufacturer shall be followed.
		A lockout - tagout procedure shall be used for equipment found to be faulty or undergoing maintenance.
		Machinery and mechanized equipment shall be operated only by designated personnel.
		Getting off or on any equipment while it is in motion is prohibited.
		Machinery or equipment requiring an operator shall not be permitted to run unattended.
	Contact with overhead power lines	See distances in Table 3-5.
	Heavy equipment operations	Machinery or equipment will not be operated in a manner that will endanger persons or property nor will the safe operating speeds or loads be exceeded.
		All machinery or equipment will be shut down and positive means taken to prevent its operation while repairs or manual lubrications are being done.
		All repairs on machinery or equipment will be made at a location which provides protection from traffic for repair persons.

Activity	Potential Hazards	Recommended Controls
Loading stockpiled soil		Bulldozer and scraper blades, end-loader buckets, and similar equipment will be either fully lowered or blocked when being repaired or when not in use.
		All self-propelled construction equipment shall be equipped with a back-up alarm.
	Fire	Each bulldozer, backhoe, or other similar equipment will be equipped with at least one dry chemical fire extinguisher having a minimum UL rating of 1A5BC.
	Contact with potentially contaminated materials	Real-time air monitoring will take place. Proper personal protective clothing and equipment will be utilized.
		Good housekeeping will be stressed to safe guard against cross contamination of surrounding areas and eliminate safety hazards.
		All site personnel will practice good personal hygiene.
		The work area will be demarcated. All unnecessary personnel will be kept out of the work area and in an upwind location.
		Refer to Section 3.2 of SHSP for chemical hazard discussion.
	Noise	Noise levels above 85 dBA mandates hearing protection.
	Slip, trip and fall hazards	Good housekeeping, keep work area picked up and as clean as feasible. Continually inspect the work area for slip, trip and fall hazards.
	Pinch points	Keep feet and hands clear of moving/suspended materials and equipment.
		Beware of contact points.
		Stay alert at all times!
	Strains and sprains	Use proper lifting techniques, lifts greater than 60 lbs. requires assistance or mechanical equipment; size up the lift.

Activity	Potential Hazards	Recommended Controls
Material hauling	Dump truck operations	Dump truck bodies shall be fully lowered or blocked when maintenance is being performed or when not in use.
Material hauling		Dump trucks will have back-up alarms.
		A signal person will be used when the point of operation is not in full view of the vehicle, machine or equipment operator; vehicles are backed more than 100 ft; terrain is hazardous; or 2 or more vehicles are backing in the same area.
		Dump trucks will not be loaded in a manner that obscures the operator's view ahead or to either side or that interferes with the safe operation of the vehicle.
		The load on every truck will be distributed, checked, tied down, or secured.
		Loads will be covered when there is a hazard of flying/falling dirt, rock, debris, or material.
		All dump trucks will be equipped with a holding device to prevent accidental lowering of the body.
		All hoist levers will be secured to prevent accidental starting or tripping of the mechanism.
	Dump truck operations	Trip handles for tailgates will be arranged to keep the operator in the clear.
Equipment to be Used	Inspection Requirements	Training Requirements
<ul style="list-style-type: none"> • Hand tools • PPE • Heavy equipment • Dump trucks 	<ul style="list-style-type: none"> • Pre-postmaintenance • Visual prior to use • CESP Form 150 R 	<ul style="list-style-type: none"> • Tailgate Safety Meeting • Site specific orientation • Hazardous waste operations • Hazard communication

ACTIVITY HAZARD ANALYSIS DECONTAMINATION OF EQUIPMENT

Activity	Potential Hazards	Recommended Controls
Job setup for decontamination of equipment	Heavy lifting	Use proper lifting techniques. Lifts greater than 60 lbs. require assistance or mechanical equipment; size-up the lift. Recommend wearing a back support if possible.
	Slip, trip and fall hazards	Good housekeeping, keep work area picked up and as clean as feasible. Continually inspect the work area for slip, trip and fall hazards.
	Cut hazards	Wear adequate hand protection.
	Lighting	Adequate lighting will be provided to ensure a safe working environment.
	Strains/sprains	When pulling or lifting, do not turn or twist your back.
		Use the proper tool for the task being performed.
	Contact with potentially contaminated materials	Appropriate PPE protection will be required.
		Real time air monitoring will take place during decontamination activities.
		Keep airborne particulates to a minimum.
		Practice good housekeeping, avoid spreading potentially contaminated materials.
	Fueling	Only UL/FM approved safety cans shall be used to store fuel.
		Do not refuel equipment while it is operating.
		Fire extinguishers rated at a minimum of 20BC shall be suitably placed, distinctly marked, readily accessible, and maintained in a fully charged and operable condition. See Table 3-6
	Faulty or damaged equipment	Before any machinery or mechanized equipment is placed into service, it shall be inspected and tested by a competent mechanic and certified to be in safe operating condition.
Job setup for decontamination of equipment		Equipment shall be inspected before being placed into service and at the beginning of each shift.

Activity	Potential Hazards	Recommended Controls
		Preventive maintenance procedures recommended by the manufacturer shall be followed.
		A lockout - tagout procedure shall be used for equipment found to be faulty or undergoing maintenance.
Pressure washing equipment	High pressures	IT Policy and Procedure HS303 "Pressured water cleaning and cutting equipment" shall be adhered to at all times.
		The operator shall be thoroughly instructed in handling and operating the gun, nozzle and controls prior to operating the unit.
		Deadman controls shall not be lashed down or rendered inoperative.
		Full Face protection shall be used at all times. This will include safety glasses/goggles and a face shield or a full face respirator.
		The operator shall wear metatarsal covers (guards) at all times
		At no time shall the pressure washer be used to wash/decon personnel.
	Unqualified operators	Machinery and mechanized equipment shall be operated only by designated personnel.
	Out of control equipment	Machinery or equipment requiring an operator shall not be permitted to run unattended.
		Machinery or equipment will not be operated in a manner that will endanger persons or property nor will the safe operating speeds or loads be exceeded.
	Noise	Sound levels above 85 dBA mandates hearing protection.
	Activation during repairs	All machinery or equipment will be shut down and positive means taken to prevent its operation while repairs or manual lubrications are being done.
	Pinch points	Keep feet and hands clear of moving/suspended materials and equipment.
		Stay alert at all times!

Activity	Potential Hazards	Recommended Controls
	Falling objects	Hardhats, remove unsecured tools and materials before operating equipment.
	Falling objects	Stay alert and clear of materials suspended overhead.
	Flying debris	Splash shield will be used.
	Contact with potentially contaminated materials	Appropriate PPE will be required.
Pressure washing equipment	Hot work (hot water/steam cleaning)	IT Policy and Procedure HS314 "Hot Work in Hazardous Locations" will be adhered to at all times during any operations involving hot work.
Stage-setup equipment for pumping liquids	Pinch points	Keep hands, fingers, and feet clear of moving parts.
	Heavy lifting	Any lifting over 60 lbs requires assistance or the use of a mechanical lifting device.
	Moving equipment	Signal person will assist in positioning equipment.
	Contact with potentially contaminated materials	Real time air monitoring will take place. Appropriate PPE protection will be required.
Pumping liquids	Faulty equipment	Equipment will be inspected prior to being placed into service and at the beginning of each shift.
	Pressurized systems	All discharge hoses and connections shall be routinely inspected.
	Noise	Sound levels above 85 dBA mandates hearing protection.
	Fire	A dry chemical fire extinguisher with a minimum UL rating of 1A5BC will be readily available.
	Refueling	Proper bonding and grounding. Only UL/FM approved safety cans will be used.
	Noise	Noise levels above 85 dBA mandates hearing protection.
	Heavy equipment operations	Before any machinery or mechanized equipment is placed into service, it shall be inspected and tested by a competent mechanic and certified to be in safe operating condition.

Activity	Potential Hazards	Recommended Controls
	Heavy equipment operations	Equipment shall be inspected before being placed into service and at the beginning of each shift.
		Preventive maintenance procedures recommended by the manufacturer shall be followed.
		A lockout - tagout procedure shall be used for equipment found to be faulty or undergoing maintenance.
Loadout of equipment		Machinery and mechanized equipment shall be operated only by designated personnel.
		Getting on or off any equipment while it is in motion is prohibited.
		Machinery or equipment requiring an operator shall not be permitted to run unattended.
		Machinery or equipment will not be operated in a manner that will endanger persons or property nor will the safe operating speeds or loads be exceeded.
		All machinery or equipment will be shutdown and positive means taken to prevent its operation while repairs or manual lubrications are being done.
		All repairs on machinery or equipment will be made at a location which provides protection from traffic for repair persons.
		All self-propelled construction equipment shall be equipped with a back-up alarm.
	Fire	Each bulldozer, backhoe, or other similar equipment will be equipped with at least one dry chemical fire extinguisher having a minimum UL rating of 1A5BC.
	Truck and Equipment Traffic	Site personnel will wear orange safety vests to identify themselves to traffic.
		Load out area will be properly demarcated. Ground personnel to make eye contact with equipment/vehicle operators prior to traffic zone entry. Ground personnel will avoid blind spots directly in front of and directly behind equipment/vehicles.

Activity	Potential Hazards	Recommended Controls
	Slip, trip and fall hazards	Good housekeeping, keep work area picked up and as clean as feasible. Continually inspect the work area for slip, trip, and fall hazards. Look where you step, ensure safe footing when climbing on/off equipment etc.
	Pinch points	Keep feet and hands clear of moving/suspended materials and equipment.
		Beware of contact points. Stay alert at all times!
Loadout of equipment	Strains/sprains	Use proper lifting techniques. Lifts greater than 60 lbs require assistance or mechanical equipment. Size-up the lift. When pulling on materials, pull in a straight line. Do not twist and pull simultaneously.
	Ropes, slings, chains, and hooks	The use of ropes, slings, and chains shall be in accordance with the safe recommendations of their manufacturer.
		Rigging equipment shall not be loaded in excess of its recommended safe working load.
		The use of open hooks is prohibited in rigging to lift any load where there is danger of relieving the tension on the hook due to the load or hook catching or fouling.
		Hooks, shackles, rings, pad eyes, and other fittings that show excessive wear or that have been bent, twisted, or otherwise damaged shall be removed from service.
		Rigging equipment for material handling shall be inspected prior to use on each shift and as necessary during its use to insure that it is safe. Defective rigging equipment shall be removed from service.
	Ropes, slings, chains and hooks	Rigging equipment, when not in use, shall be removed from the immediate work area and properly stored so as not to present a hazard.
		Taglines shall be used to control the loads being handled by hoisting equipment.
	Hoisting Equipment	All hoisting equipment shall be capable of passing a performance (operating) test prior to being placed into service.

Activity	Potential Hazards	Recommended Controls
		At no time shall the hoisting equipment be loaded in excess of the manufacturers rating except during performance tests.
		While hoisting equipment is in operation, the operator shall not perform any other work and he/she shall not leave his/her position at the controls until the load has been safely landed or returned to the ground.
		A standard signal system shall be used on all hoisting equipment.
Loadout of equipment	Heat	Be aware of warning signs of these conditions
	Insects, spiders, and snakes	Inspect work area carefully and avoid placing hands and feet into concealed areas.
	Cut hazards	Wear adequate hand protection.
	Falling objects	Hardhat, stay alert and clear of materials suspended overhead, steel-toed boots.
Equipment to be Used	Inspection Requirements	Training Requirements
<ul style="list-style-type: none"> •Hand tools •PPE •Heavy equipment •Pressure Washer 	<ul style="list-style-type: none"> •Pre-postmaintenance •Visual prior to use •CESPD Form 150 R 	<ul style="list-style-type: none"> •Tailgate Safety Meeting •Site specific orientation •Hazardous waste operations •Hazard communication •Pressure washer training

**ACTIVITY HAZARD ANALYSIS
BACKFILLING AND COMPACTION**

Activity	Potential Hazards	Recommended Controls
Backfilling and compaction	Heavy equipment operations	Before any machinery or mechanized equipment is placed into service, it shall be inspected and tested by a competent mechanic and certified to be in safe operating condition.
	Areas on or adjacent to contaminated material	Implement appropriate level of protection.
		Equipment shall be inspected before being placed into service and at the beginning of each shift.
		Preventive maintenance procedures recommended by the manufacturer shall be followed.
		A lockout - tagout procedure shall be used for equipment found to be faulty or undergoing maintenance.
		Machinery and mechanized equipment shall be operated only by designated personnel.
		Getting off or on any equipment while it is in motion is prohibited.
		Machinery or equipment requiring an operator shall not be permitted to run unattended.
		Machinery or equipment will not be operated in a manner that will endanger persons or property nor will the safe operating speeds or loads be exceeded.
		All machinery or equipment will be shut down and positive means taken to prevent its operation while repairs or manual lubrications are being done.
		All repairs on machinery or equipment will be made at a location which provides protection from traffic for repair persons.
Backfilling and compaction	Areas on or adjacent to contaminated material	Bulldozer, compactor blades, end-loader buckets, and similar equipment will be either fully lowered or blocked when being repaired or when not in use.

**ACTIVITY HAZARD ANALYSIS
BACKFILLING AND COMPACTION**

Activity	Potential Hazards	Recommended Controls
		All self-propelled construction equipment shall be equipped with a back-up alarm.
	Overhead power lines	See distances
	Fire	Each bulldozer, compactors, or other similar equipment will be equipped with at least one dry chemical fire extinguisher having a minimum UL rating of 1 A5BC.
	Open excavations	IT Policy and Procedure HS307 "Excavation and Trenching" will be adhered to at all times.
		Excavations will be backfilled as soon as possible.
	Dump truck operations	Dump truck bodies shall be fully lowered or blocked when maintenance is being performed or when not in use.
		Dump trucks will have back-up alarms.
		A signal person will be used when the point of operation is not in full view of the vehicle, machine or equipment operator; vehicles are backed more than 100 ft; terrain is hazardous; or 2 or more vehicles are backing in the same area.
		Dump trucks will not be loaded in a manner that obscures the operator's view ahead or to either side or that interferes with the safe operation of the vehicle.
		The load on every truck will be distributed, checked, tied down, or secured.
		Loads will be covered when there is a hazard of flying/falling dirt, rock, debris, or material.
Backfilling and compaction	Dump truck operations	All dump trucks will be equipped with a holding device to prevent accidental lowering of the body.
		All hoist levers will be secured to prevent accidental starting or tripping of the mechanism.

**ACTIVITY HAZARD ANALYSIS
BACKFILLING AND COMPACTION**

Activity	Potential Hazards	Recommended Controls
		Trip handles for tailgates will be arranged to keep the operator in the clear.
	Contact with moving equipment	Ground personnel shall wear reflective vests.
	Noise	Noise levels above 85 dBA mandates the use of hearing protection.
Backfill with existing clear materials or borrow material	Confined space hazards and trenching	Excavation and trenching will comply with 29 CFR 1926, USACE (Subpart P and Section 06.1 and 25A)
Final grading	Contaminated borrow material	Check historical and analytical data on borrow material
	Noise hazards	Administer hearing protection
	Heavy equipment, travel	Use qualified operators
	Mechanical moving parts, pinch, paint, etc.	Have all grounding in place
		Use lockout/tagout for maintenance
		Assure all emergency stop switches are working
Nuclear Density Gauge	Radiation	Only trained and qualified operators shall operate equipment
		Equipment operators shall be aware of gauge location.
Equipment to be Used	Inspection Requirements	Training Requirements
<ul style="list-style-type: none"> • Hand tools • PPE • Heavy equipment • Nuclear density gauge 	<ul style="list-style-type: none"> • Pre-postmaintenance • Visual prior to use • CESP Form 150 R 	<ul style="list-style-type: none"> • Tailgate Safety Meeting • Site specific orientation • Hazardous waste operations • Hazard communication • Radiation safety

**ACTIVITY HAZARD ANALYSIS
SITE RESTORATION**

Activity	Potential Hazards	Recommended Controls
Site restoration	Heavy equipment operations	Before any machinery or mechanized equipment is placed into service, it shall be inspected and tested by a competent mechanic and certified to be in safe operating condition.
	Areas on or adjacent to contaminated material	Implement appropriate level of protection.
		Equipment shall be inspected before being placed into service and at the beginning of each shift.
		Preventive maintenance procedures recommended by the manufacturer shall be followed.
		A lockout - tagout procedure shall be used for equipment found to be faulty or undergoing maintenance.
		Machinery and mechanized equipment shall be operated only by designated personnel.
		Getting off or on any equipment while it is in motion is prohibited.
		Machinery or equipment requiring an operator shall not be permitted to run unattended.
		Machinery or equipment will not be operated in a manner that will endanger persons or property nor will the safe operating speeds or loads be exceeded.
		All machinery or equipment will be shut down and positive means taken to prevent its operation while repairs or manual lubrications are being done.

**ACTIVITY HAZARD ANALYSIS
SITE RESTORATION**

Activity	Potential Hazards	Recommended Controls
Site restoration	Areas on or adjacent to contaminated material	All repairs on machinery or equipment will be made at a location which provides protection from traffic for repair persons.
		Bulldozer and scraper blades, end-loader buckets, and similar equipment will be either fully lowered or blocked when being repaired or when not in use.
		All self-propelled construction equipment shall be equipped with a back-up alarm.
	Overhead power lines	See Table 3-5 for Minimum Clearance from Energized Overhead Electric Lines
	Fire	Each bulldozer, backhoe, or other similar equipment will be equipped with at least one dry chemical fire extinguisher having a minimum UL rating of 1A5BC.
	Open excavations	IT Policy and Procedure HS307 "Excavation and Trenching" will be adhered to at all times.
		Excavations will be backfilled as soon as possible.
	Dump truck operations	Dump truck bodies shall be fully lowered or blocked when maintenance is being performed or when not in use.
		Dump trucks will have back-up alarms.
		A signal person will be used when the point of operation is not in full view of the vehicle, machine or equipment operator; vehicles are backed more than 100 ft; terrain is hazardous; or 2 or more vehicles are backing in the same area.

**ACTIVITY HAZARD ANALYSIS
SITE RESTORATION**

Activity	Potential Hazards	Recommended Controls
Site restoration	Dump truck operations	Dump trucks will not be loaded in a manner that obscures the operator's view ahead or to either side or that interferes with the safe operation of the vehicle.
		The load on every truck will be distributed, checked, tied down, or secured.
		Loads will be covered when there is a hazard of flying/falling dirt, rock, debris, or material.
		All dump trucks will be equipped with a holding device to prevent accidental lowering of the body.
		All hoist levers will be secured to prevent accidental starting or tripping of the mechanism.
		Trip handles for tailgates will be arranged to keep the operator in the clear.
	Contact with moving equipment	Ground personnel shall wear reflective vests.
	Noise	Noise levels above 85 dBA mandates the use of hearing protection.
Final grading	Noise hazards	Administer hearing protection
	Heavy equipment, travel	Use qualified operators
	Mechanical moving parts, pinch, paint, etc.	Have all grounding in place
		Use lockout/tagout for maintenance
		Assure all emergency stop switches are working

**ACTIVITY HAZARD ANALYSIS
SITE RESTORATION**

Activity	Potential Hazards	Recommended Controls
Equipment to be Used	Inspection Requirements	Training Requirements
<ul style="list-style-type: none">•Hand tools•PPE•Heavy equipment	<ul style="list-style-type: none">•Pre-postmaintenance•Visual prior to use•CESPD Form 150 R	<ul style="list-style-type: none">•Tailgate Safety Meeting•Site specific orientation•Hazardous waste operations•Hazard communication

APPENDIX E

LEAD MANAGEMENT PLAN

LEAD MANAGEMENT PLAN

HEALTH AND SAFETY OPERATING PROCEDURES

1.0 Purpose

This Lead Management Plan (LMP), in conjunction with the Site Health and Safety Plan (SHSP), is intended to ensure that safe working conditions exist during certain lead related activities. The LMP describes the requirements and procedures to be used while performing specific activities and includes:

- Responsibilities of persons on site
- Training Program
- Medical Surveillance Program
- Hazard Analysis/Assessment
- Hazard Control Measures
- Personnel Protection Program
- Decontamination Procedures
- Industrial Hygiene Monitoring Program

The LMP will, in conjunction with the SHSP, provide all the necessary procedures and guidelines to ensure that work is done safely and will comply with the occupational safety and health standards for lead in 29 Code of Federal Regulations (CFR) 1926.62. Specific Lead Based Paint Abatement activities which are impacted by the Housing and Urban Development Guidelines will be addressed in project Specific Abatement Plans and not covered by this procedure.

This LMP covers the construction activities associated with the investigation, testing, removal or encapsulation of materials containing, or believed to contain, organic and/or inorganic lead ("lead") which have the potential to expose personnel to lead at or above the action level of 0.030 milligrams per cubic meter of air (mg/m^3) or elevate an individual's blood lead level above 30 micrograms per deciliter of blood ($\mu\text{g}/\text{dL}$). Areas where lead containing materials are known to be present could be: drilling in areas known or believed to contain lead, sampling activities which list lead as an analyte, engineering activities involving lead containing materials, construction activities involving lead containing soil or materials, and any other activity which involves, or may involve, contact with material known to contain lead, for example lead-based painted material tanks or structures scheduled for demolition and disposal.

The scope of this LMP (although consistent with) is more stringent than that detailed in 29 CFR 1926.62 & 8CCR 5192 in that it covers occupational exposures to inorganic and a class of organic lead compounds called lead soaps. Other compounds such as tetraethyl lead and tetramethyl lead are excluded. Additionally, implementation of this LMP is required when the exposure action level (0.030 mg/m^3) is (or may be) reached or employee blood lead levels exceed $30 \text{ } \mu\text{g/dL}$. The regulatory limit for airborne concentration of inorganic/organic lead is 0.05 mg/m^3 and the acceptable concentration of lead in blood is $40 \text{ } \mu\text{g/dL}$ or less. However, it is recommended in 29 CFR 1926.62 that blood lead levels do not exceed $30 \text{ } \mu\text{g/dL}$ in those workers (both male and female) who intend to have children to minimize adverse reproductive health effects to the parents and developing fetus.

2.0 References

This LMP, when accompanied by the Project SHSP, complies with applicable Federal Occupational Safety and Health Administration (OSHA) and California Department of Industrial Relations, Division of Occupational Safety and Health (Cal-OSHA), United States Environmental Protection Agency (USEPA), and California EPA (Cal-EPA, Department of Toxic Substances Control) regulations. This LMP follows the guidelines established in the following documents:

Standard Operating Safety Guides (USEPA July 1986);

Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities (National Institute for Occupational Safety and Health [NIOSH] 86-116);

Title 29 of the Code of Federal Regulations, Part 1926 (29 CFR 1926) (OSHA Occupational Safety and Health Standards - Construction Industry); and

Title 8 of the California Code of Regulations, Chapter 30, Subchapter 7, (commencing with Section 3200) (Cal-OSHA General Industry Safety Orders).

The contents of this LMP, when accompanied by the Project SHSP, are consistent with, or supplement, all of the appropriate IT Corporation (IT) corporate Health and Safety Policies and Procedures.

3.0 Definitions

3.1 Lead - Metallic lead, all inorganic lead compounds and organic lead soaps. Organic lead compounds are excluded from this definition.

3.2 Lead - Permissible Exposure Limit (PEL) - 50 micrograms/cubic meter calculated as an 8 hour time weighted average.

3.3 Lead - Action Level - 30 micrograms/cubic meter calculated as an 8 hour time weighted average.

3.4 Competent Person

An individual who is capable of identifying existing and predictable lead hazards in the surroundings or working conditions and who has authorization to take prompt corrective measures to eliminate them.

3.5 Compliance Program

A written compliance program identifying various malpractices, activities, technologies and schedules that will be utilized to achieve compliance with the OSHA PEL and Action Level.

4.0 General

All persons on site are responsible for continuous adherence to safety and health procedures during the performance of any work. In no case may work be performed in a manner which conflicts with the intent of, or the inherent safety precautions expressed in, this LMP. After due warning, persons who violate any procedure may be dismissed from the site, terminated, or have their contract revoked. Blatant disregard or repeated infractions of safety and health policies are grounds for immediate dismissal or removal from the site. Safety and health responsibilities for those responsible or governed by this LMP are detailed in the following sections.

All IT and contractor personnel governed by this LMP are required to participate in a review of and acknowledge their understanding of this LMP (Figure 1) and the appropriate SHSP.

Persons on site are required to immediately report any of the following to their Supervisor and/or the Project Superintendent/Project Manager (PS/PM):

- Accidents and injuries, no matter how minor;
- Unexpected or uncontrolled release of lead or other chemical substances;
- Any signs or symptoms of chemical or physical trauma;
- Any unsafe or malfunctioning equipment; and
- Any changes to site conditions or working procedures which may affect the safety and health of project personnel.

- Any deviation of required work practices which contribute to lead exposure.

5.0 Training Program

5.1 General Requirements

All applicable training requirements identified in the SHSP will be met. In addition, requirements established in 29 CFR 1926.62, as outlined below, will be met.

Subcontractors performing activities covered by this LMP must provide verification of all required training before work may begin.

5.2 Lead Training Requirements

A pre-project meeting will be held prior to work beginning in any area covered by this LMP. Those required to attend include: Project Management and work crew (including subcontractor employees) and project SHSO.

The pre-project meeting will review, at a minimum, the following:

- The contents of this LMP and the SHSP;
- The contents of 29 CFR 1926.62 including the written compliance program specified in 29 CFR 1926.62 (e)(2).
- The specific nature of the operations which could result in exposure to lead above the action level (i.e., project work plan);
- Hazards associated with exposure to lead;
- The purpose, proper selection, fitting, use, and limitations of respirators;
- Methods of controlling exposure to lead: including work area controls, personal protective equipment, decontamination and hygiene procedures, and safe work practices;
- Purpose and description of the LMP Medical Surveillance Program, medical removal protection program and medical treatment available as described in 29 CFR 1926.62;
- Purpose and description of the LMP industrial hygiene monitoring program;

- Instructions to project personnel that chelating agents should not routinely be used to remove lead from their bodies and should not be used at all except under the direction of a licensed physician;
- Employee's rights as described in 29 CFR 1910.1200, 29 CFR 1910.20 and 29 CFR 1926.59.

5.3 Access to Information and Training Materials

A copy of the 29 CFR 1926.62 standard and its appendices will be made readily available to all affected employees. Documentation of all training conducted in compliance with this LMP will be kept in a central file at IT's project management office and in the SHSO's site office. Access to these records will be made available upon request.

6.0 Medical Surveillance Program

6.1 General Program

The applicable medical examinations identified in the SHSP will be provided to all project personnel covered by this LMP. Contractors must provide documentation to the SHSO that these exams have been successfully completed by all crew members assigned to work areas governed by this LMP before work may begin.

6.2 Lead Program

A LMP Medical Surveillance Program shall be established, in compliance with 29 CFR 1926.62, for persons potentially occupationally exposed to lead during work activities according to the following guidelines:

Biological Monitoring

- Persons supporting work activities identified as having lead exposure potential;
- Persons identified by the CIH to be in a "lead sensitive" job category;
- Persons occupationally exposed any day at or above the action level for lead (0.030 mg/m³).

Lead Specific Medical Exam

- Persons supporting work activities identified in this LMP as having a lead exposure potential (see Section 4.7);
- Persons identified to be in a "lead sensitive" job category (see Section 4.7);

- Persons occupationally exposed at or above the action level for lead (0.030 mg/m³);
- Persons for whom biological monitoring has indicated lead or zinc protoporphyrin levels beyond established acceptable levels;
- Persons showing signs or symptoms associated with lead intoxication;
- Persons in work areas covered by this LMP requesting medical advice concerning the effects of current or past lead exposures;
- Persons in work areas covered by this LMP, with a confirmed pregnancy; and
- Persons in work areas covered by this LMP demonstrating difficulty breathing during use of respiratory protective equipment.

This LMP Medical Surveillance Program shall be provided to employees by IT. Where this LMP Medical Surveillance Program and the Medical Program required by 29 CFR 1926.65, 1910.120, and T8CCR 5192 are duplicated, efforts shall be made to utilize available medical information. Where the programs differ, the most conservative program requirements, in terms of the patient, shall be met. A list of current program participants will be maintained by the CIH.

Subcontractors must provide documentation that their employees participate in a Medical Surveillance Program for Lead which meets or exceeds the IT Program described in this LMP.

6.2.1 Lead Program Exam Content

Biological Monitoring

The biological monitoring aspect of the LMP Medical Surveillance Program will consist of blood sampling and analysis for lead and zinc protoporphyrin (ZPP) levels.

Lead Specific Medical Exam

The Lead Specific Medical Exam aspect of the LMP Medical Surveillance Program will be managed by Environmental Medical Resources, Inc. (EMR) and is consistent with applicable regulations. At a minimum, the exam contains the following:

- A detailed work history and a medical history, with particular attention to past lead exposure (occupational and non-occupational), personal habits (smoking,

hygiene, etc) and past gastrointestinal, hematologic, renal, cardiovascular, reproductive and neurological concerns;

- A thorough physical examination, with particular attention to teeth, gums, hematologic, gastrointestinal, renal, cardiovascular, and neurological systems;
- Blood pressure measurement;
- Blood sample and analysis to determine:
 - Blood lead levels;
 - Hemoglobin and hematocrit determinations, red cell indices, and examination of peripheral smear morphology;
 - Zinc protoporphyrin;
 - Blood urea nitrogen; and
 - Serum creatinine;
- A routine urinalysis with microscopic examination;
- Any laboratory or other test relevant to lead exposure which the examining physician deems necessary by sound medical practice; and
- A pregnancy test, if appropriate.

The following information will be provided to the examining physician by the CIH:

- A copy of 29 CFR 1926.62;
- A description of the person's anticipated or actual job duties as they relate to the potential/real exposure;
- Anticipated and/or actual exposure levels to lead and any other toxic substances (as appropriate);
- A description of personal protective equipment to be used and/or used; and

Occupation history, if available.

6.2.2 Lead Program Exam Frequency

The biological monitoring will be performed every 2 months for the first 6 months, and every 6 months thereafter, while the activity which required the monitoring is being performed. Should the activity requiring the monitoring not last over a two month period, an initial exam

and an exam at the end of the activity will be conducted for those who do not perform lead abatement activities on a regular basis.

The Lead Specific Medical Exam shall be performed at least annually for those employees having the potential to be exposed or who had exposure. The exam will also be made available as medically appropriate to persons who have either been removed from exposure to lead due to a risk of sustaining material impairment to health, or otherwise been limited pursuant to a final medical determination.

6.2.3 Exit Exam

If an IT or subcontractor employee covered by this LMP transfers to a non-lead area, terminates, or completes the contracted project within six months of the due date of the physical , an exit exam will be given in accordance with IT Procedures HS100 and this LMP. It is the responsibility of the PM and/or the employee's immediate supervisor to notify the CIH within a reasonable time period (one week) prior to transfer, termination, or completion of contracted work to allow for the necessary arrangements. Employees refusing an exit exam will be sent a certified letter stating the exam is available at time of end of service to the project.

6.2.4 Chelation

In accordance with 29 CFR 1926.62, IT shall assure that affected project personnel do not engage in prophylactic chelation at any time. If therapeutic or diagnostic chelation is to be as a result of workplace exposure to lead, IT shall assure that it be done under the supervision of a licensed physician, in a clinical setting, with thorough and appropriate medical monitoring, and that the person is notified in writing prior to its occurrence.

6.3 Medical Consultant Responsibilities

EMR is the contracted medical support services for all IT job sites. EMR's responsibilities will include:

- Develop the Lead Specific Medical Exam protocol;
- Notify CIH of annual examinations as they come due;
- Provide IT with a written medical opinion for each examination;

- Notify the IT Director of Safety and Health of questionable, as well as unacceptable, exam results, including medical restrictions;
- Respond to questions concerning medical results and related issues;
- Monitor contracted clinics to ensure accuracy and reliability of medical services performed; and
- Communicate with IT's consulting physician and/or the participating patient's selected physician providing the second medical opinion as appropriate.

6.4 Notification of Results

IT will obtain a written medical opinion from EMR, in the form of a Medical Summary Report (MSR) which contains the following information:

- The physician's opinion as to whether the employee has any detected medical condition which would place the employee at increased risk of material impairment of the employee's health from exposure to lead;
- Any recommended special protective measures to be provided to the employee, or limitations to be placed upon the employee's exposure to lead;
- Any recommended limitation upon the employee's use of respirators, including determination of whether the employee can wear a powered air purifying respirator (PAPR) if a physician determines that the employee cannot wear a negative pressure respirator; and
- The results of the blood lead and other biological exam determinations.

The CIH will communicate medical results and any restrictions/recommendations through the EMR Medical Summary Report per IT Procedure HS100. As stated in IT Procedure HS105, every effort shall be made to utilize employees with physical activity restrictions as a result of work place injuries or illnesses without violating restriction provisions. It is the SHSO/PS responsibility to monitor employees with medical restrictions for compliance with each restriction. The CIH or SHSO shall schedule necessary appointments for reevaluation as appropriate.

It is the responsibility of the Contractor to communicate, in writing, all medical findings, determinations, and opinions relating to an employee's potential or real exposure to the CIH in

a timely manner so that any necessary arrangements to mitigate the exposure, establish an air monitoring program and observe work restrictions established by the physician can be made.

6.5 Interpretation of Results

6.5.1 Multiple Physician Review

Because IT has selected the physician to conduct the examinations for the LMP, persons participating in the program may designate a second physician:

- To review any findings, determinations or recommendations of the initial physician; and
- To conduct such examinations, consultations, and laboratory tests as the second physician deems necessary to facilitate the review.

The participant has a right to this second physician review after each occasion that the IT selected physician conducts a medical examination or consultation related to this LMP. This second opinion will be provided at no cost to the participant. The participant will be provided a written reminder of this right at the time the appointment is kept (Figure 2). However, the participant must do the following within 15 days after the receipt of the IT selected physician's written opinion in order to qualify for the second opinion:

- Inform the CIH, in writing, that they intend to seek a second medical opinion; and
- Initiate steps to make an appointment with the physician of their choice.

6.5.2 Medical Removal

Any employee with an elevated blood lead (at or above 30 $\mu\text{g}/\text{dL}$) will be removed from any potential or real exposure to lead and additional medical evaluations performed. Any employee whose medical evaluation results in a medical finding, determination, or opinion that the employee has a detected medical condition which places the employee at increased risk of material impairment to health from exposure to lead shall be temporarily removed from any potential or real exposure to lead. Persons with elevated blood lead levels will not be required to enter the exclusion zones.

IT will provide an IT Associate up to 18 months of medical removal protection benefits on each occasion that an employee is removed from exposure to lead or otherwise limited pursuant to this LMP. This means that, as long as the job the employee was removed from continues, the employee shall retain the total normal earnings, seniority and other employment rights and benefits of an IT Associate. This includes the employee's right to their former job status as though the employee had not been medically removed or otherwise medically limited.

6.5.3 Medical Restrictions

Where a medical determination results in any recommended special protective measures for the employee, or limitations on the employee's exposure to lead, IT shall implement and act consistent with the recommendation.

The employee's supervisor, as well as appropriate members of project management will be informed of any medical restrictions so that compliance with those restrictions may be assured.

6.5.4 Return to Former Job Status

The employee who has been medically removed from activities which may have resulted in lead exposure may be returned to former job status when:

- Two consecutive blood sampling events indicate that the employee's blood lead level is at or below 30 $\mu\text{g}/\text{dL}$; and
- A subsequent medical determination results in a medical finding, determination, or opinion that the employee no longer has a detected medical condition which places the employee at increased risk of material impairment to health from exposure to lead.

Any limitations placed on an employee or any special protective measures provided will be removed upon receipt of a medical determination result which indicates that those limitations or measures are no longer needed. The employee must provide appropriate documentation of medical clearance to the CIH and SHSO and cannot return to work activities covered by this LMP until a Return to Work Authorization has been completed by the IT physician. A copy of the authorization form is in IT procedures.

6.6 Recordkeeping

Medical records will be maintained in accordance with IT Procedures HS102 and 104 and 29 CFR 1926.62 section (n).

6.7 Qualifying Activities and Job Titles

6.7.1 Activities

Activities which are covered by this LMP and qualify for participation in the LMP Medical Surveillance Program include:

- Hazardous waste operations in the LMP Work Areas;
- Handling of materials from the LMP Work Areas;
- Engineering activities involving lead containing materials/waste;
- Construction activities involving lead containing materials/waste;
- Sampling activities which list lead or lead compounds as a constituent; and
- Other activities which involve the potential contact with lead containing materials/waste.

6.7.2 Job Titles/Groups

The following job titles/groups are covered by this LMP and qualify for participation in the LMP Medical Surveillance Program.

- Project management personnel
- Persons permanently assigned to the project
- Persons assigned to work involving activities covered by this LMP

7.0 Lead Exposure Potential, Routes of Entry and Assessment

7.1 Exposure Potential and Routes of Entry

7.1.1 Exposure Potential

Selected work activities will, as previously described in SHSP, require contact with sludge, soil, dust, and groundwater that may be contaminated with lead, or lead containing materials, in addition to the wide variety of other organic solvents, inorganic gases, and metal compounds within the soil. The anticipated primary means of exposure will be inhalation and possible skin contact with contaminated materials.

7.1.1.1 Chemical Identification

- Chemical formula for Lead is Pb;
- Appearance of Pb: heavy, soft gray ductile solid;
- Current OSHA Permissible Exposure Limit (PEL) for lead is 0.05 mg/m³, for tetraethyl lead (TEL) is 0.05 mg/m³; and
- The action level for inorganic lead in air is 0.030 mg/m³.

Pure lead is a metal at room temperature and pressure and is a basic chemical element. It can combine with other substances to form other lead compounds, such as TEL or tetramethyl lead (TML).

7.1.1.2 Health Risk Information

Lead is very toxic to the body, especially the nervous system. Health effects from lead exposure include nervousness, sleep disturbances, learning disabilities, and behavior abnormalities.

Research indicates that adverse health effects from exposure to lead can occur at levels lower than previously recognized. Lead is especially toxic to children because their nervous system is more vulnerable.

7.1.2 Routes of Exposure

All forms of lead can be absorbed into the body by inhalation (breathing) and ingestion (eating). Inorganic lead is not absorbed through the skin such as TEL, which is readily absorbed through

the skin. When lead is scattered in the air as a dust, fume, or mist, it can be inhaled and absorbed through the lungs and upper respiratory tract. Inhalation of airborne lead is generally the most important source of occupational lead absorption. Lead can affect the body if it is inhaled, comes in contact with the eyes or skin, or is swallowed. It may readily enter the body through the skin. Lead is also absorbed through the digestive system if swallowed. If you handle food, cigarettes, chewing tobacco, or make-up with hands contaminated with lead, it will contribute to an exposure through ingestion.

A significant portion of the lead that is inhaled or ingested can get into the blood stream. Once in the blood stream, lead is circulated throughout the body and stored in various organs and body tissues. Some of this lead is quickly filtered and excreted, but some remains in the blood and other tissues. As exposure to lead continues, the amount stored in the body will increase if the body is absorbing more lead than excreting. Even though there is no awareness of immediate symptoms of disease, the lead stored in the body tissue can be slowly causing irreversible damage.

7.1.2.1 Short-Term (Acute) Overexposure

Lead is a potent, systemic poison that serves no known useful function once absorbed by your body. Taken in large enough doses, lead can kill you in a matter of days. A condition affecting the brain called acute encephalopathy may arise which develops quickly to seizures, coma and death from cardio-respiratory arrest. Short term occupational exposures of this magnitude are highly unusual, but not impossible. Similar forms of encephalopathy may arise from extended chronic exposure to lower doses of lead. There is no sharp dividing line between rapidly developing acute effects of lead and chronic effects which take longer to acquire.

7.1.2.2 Long-Term (Chronic) Overexposure

Chronic overexposure to lead may result in severe damage to your blood-forming, nervous, urinary and reproductive systems. Some common symptoms of chronic overexposure include loss of appetite, metallic taste in the mouth, anxiety, constipation, nausea, pallor, excessive tiredness, weakness, insomnia, headache, nervous irritability, muscle and joint pain or soreness, fine tremors, numbness, dizziness, hyperactivity and colic. In lead colic there may be severe abdominal pain. Damage to the central nervous system in general and the brain (encephalopathy) in particular are among the most severe forms of lead poisoning.

The absorption by humans of a sufficient quantity of tetraethyl lead either briefly at a high rate or for prolonged periods at a lower rate may cause intoxication. The onset of symptoms may be delayed for up to eight days after termination of exposure. The milder toxic effects are difficulty in sleeping, tiredness, wild dreams, anxiety, trembling, spasms, slow heart beat, low body temperature, paleness, nausea and loss of appetite. More severe intoxication causes episodes of disorientation, hallucinations, grimacing, and intense activity which requires that the person be restrained. These episodes may convert into manic or violent convulsive seizures which may end in unconsciousness or death. Organic lead may cause irritation of the eyes.

Chronic overexposure to lead also results in kidney damage with few, if any, symptoms appearing until permanent damage has occurred.

Chronic overexposure to lead impairs the reproductive systems of both men and women. Overexposure to lead may result in decreased sex drive, impotence and sterility in men. Lead can alter the structure of sperm cells raising the risk of birth defects. Lead exposure may result in decreased fertility and abnormal menstrual cycles in women. Lead is also toxic to the developing fetus and can result in birth defects, mental retardation and behavioral disorders.

Personnel shall inform their supervisor and SHSO of any non-visual effects of toxic exposure such as:

- Headache, dizziness, blurred vision, insomnia, numbness;
- Nausea, cramps, muscle or joint pain;
- Metallic taste, loss of appetite; and
- Irritation of the eyes, skin or respiratory tract.

7.1.2.3 Health Protection

The measurement of the body's blood lead level is the most useful indicator of the amount of lead being absorbed by an individual. The best way to prevent all forms of lead-related impairments and diseases - both short and long term - is to maintain the blood lead level below 30 µg/dl. The provisions of the OSHA lead standard and IT's LMP are designed with this end in mind. Medical surveillance, respiratory protection guidelines, work practices, and hygiene standards are all part of the design to control exposure to lead to a safe level. IT has the prime responsibility to provide a healthy work place, but all employees have a responsibility to follow safety and health procedures and practices.

7.2 Exposure Assessment

It is required that the SSHSP address lead exposure conditions during tasks involving lead containing coatings, paints, soils and any additional aspects of construction/demolition or remediation activities. 29 CFR 1926.62 (d) is to be reviewed and the lead exposure assessment to be conducted will incorporate the PPE and respiratory protection for specific tasks as outlined in Table 7-1, Protection of Employees During Exposure Assessment.

7.2.1 Exposure Monitoring

Exposure monitoring will be conducted for exposure assessment of tasks utilizing full shift personnel sampling of each job classification and each work area.

7.2.2 Compliance Program

A written compliance program will be developed prior to the initiation of any lead construction related tasks. The elements of this program are those identified as 29 CFR 1926.62 (e)(2).

8.0 Hazard Control Program, Treatment Methods and Disposal

8.1 Hazardous Chemical Exposure

Personal protective equipment (PPE) will be utilized to minimize worker exposure to lead or lead containing compounds when engineering or administrative controls are not feasible. Engineering controls may include ventilation equipment, working upwind, dust control, vapor suppression techniques. Engineering controls are the preferred methods for hazard control. Administrative controls include reducing the duration of a single worker's exposure by increasing the number of operators and rotating them. Rotation is not recommended. PPE includes such items as chemical resistant coveralls, respiratory and hearing protection, monitoring equipment and safety gear.

Selection of appropriate PPE will be made by the SHSO, under the supervision of the CIH, and will be based on knowledge of the chemical and physical state of the lead compounds, concentration in air/materials potentially contacted, duration of exposure, nature of the activities to be conducted in the work area, potential safety hazards, additional potential chemical hazards, and the construction and material of the PPE being considered. The CIH will have final authority on PPE selection and makes initial decisions on PPE selection.

8.2 Hygiene Practices and Housekeeping

In addition to the decontamination procedures detailed in the SHSP, lead-associated housekeeping procedures detailed in 29 CFR 1926.62 (h), and the following hygiene and housekeeping practices will be followed:

- Clean change areas shall be maintained in the Support (Clean) Zone (SZ);
- Do not dry sweep, shovel or handle lead contaminated materials where the potential for airborne dust generation is likely;
- Shower facilities shall be maintained and available at all times during field work covered by the LMP;
- Vacuum use shall be with HEPA filtration only;
- An adequate supply of cleansing agents and towels shall be maintained;
- Compressed air shall not be used where lead contaminated materials may be generated in air;
- All reusable clothing materials shall be laundered;
- A Decontamination Station will be available in the Contamination Reduction Zone (CRZ) for all projects covered by this LMP;
- Food, beverage, and tobacco products shall not be present or consumed in the Exclusion Zone (EZ) or the CRZ;
- Project personnel will wash their hands, forearm, face and neck before eating, drinking, smoking or applying cosmetics;
- No used protective clothing or equipment is permitted inside the support zone clean areas without being properly decontaminated;
- Work clothes for use during project activities shall be provided by Project Management;
- Project personnel shall shower at the end of the shift before leaving the site as determined by the SHSO or CIH;

- An adequate supply of potable water shall be provided at the work site. Only bottled water shall be utilized for drinking and cooking purposes;
- Portable containers used to dispense drinking water shall be capable of being tightly closed, and equipped with a tap. Water shall not be dipped from the container;
- Containers used to distribute drinking water shall be clearly marked and not used for any other purpose; and
- Single service cups (to be used only once) will be supplied. A sanitary container for the unused cups and a receptacle for disposing of the used cups shall be provided.

8.3 Lead Waste

Lead containing waste will be handled as follows:

- As stated previously, paint chips, paint dust, and other lead based paint (LBP)-contaminated debris (whether wet or dry) resulting from the scraping, sanding, grinding, blasting, abrading or otherwise removing of LBP from building components, will be segregated by waste stream, packaged and stored until waste characterization results are available and arrangements for the disposal of the wastes are finalized.
- LBP waste shall be stored in U.S. Department of Transportation (DOT) approved 55-gallon drums or other appropriate container per 49 CFR Part 178. Each container shall be labelled to identify the type of waste as defined in 49 CFR Part 172 and the date the waste was first placed into the container. Hazardous waste identification labels shall be affixed to containers containing lead-contaminated waste within a period not to exceed 24 hours from the Contractor's receipt of waste characterization laboratory results.
- California waste characterization testing requirements shall be performed as stipulated in 22 CCR Section 66262.11 et seq., including using one or more of the following testing procedures:
 - Total Threshold Limit Concentration (TTLC)
 - California Waste Extraction Test (CWET)
 - Toxicity Characteristic Leaching Procedure (TCLP)

Lead containing waste will be characterized in the following priority:

- All lead waste will be sampled and analyzed by the Contractor. One sample will be collected and analyzed which is representative of each full container, or alternately each waste stream, subject to removal from the work site. This first sample will be analyzed for its Total Threshold Limit Concentration (TTLC). If the TTLC analysis reports the sample to contain lead in a concentration equal to or greater than 1000 milligrams of lead per kilogram (mg/kg) of waste, the entire contents of the sampled waste container will be judged to be hazardous waste subject to federal RCRA regulation. No further analysis will be necessary.

If the TTLC analysis reports the sample to contain lead in a concentration less than 50 mg/kg of waste, the entire contents of the sampled waste container will be judged to be non-hazardous waste and not subject to federal RCRA regulation. Further analysis by the California Waste Extraction Test (CWET) will be required to determine whether the waste must be stabilized prior to land disposal.

- If, however, the TTLC analysis reports the sample to contain lead in a concentration less than 1000 mg/kg and greater than 50 mg/kg of waste, the contents of the sampled waste container will be judged to be potentially a hazardous waste subject to federal RCRA and/or California EPA (non-RCRA) regulation. In this case, one representative sample will be collected from the waste container for additional characterization by CWET and Toxicity Characteristic Leaching Procedure (TCLP) analyses.
- All lead waste shall remain stored in secured waste storage areas until results of waste characterization are available. Due to analytical methods of these tests, this may require storage for a minimum of seven (7) to 10 working days.

9.0 Work Area Control

9.1 General

The Hazard Control Program for the project is detailed in the SHSP. The SHSP will detail the control program, based on all site hazards, including those related to lead exposure. This LMP details the control program required for work areas where lead exposure is expected or anticipated.

The work areas covered by this LMP will be delineated into exclusion zones. These zones are defined and described in the SHSP. The SHSO shall record in the Field Activity Daily Log all persons entering a work area supported by this LMP. The Entry Log shall be maintained at each work area. At the end of each shift, the Entry Logs will be turned into the Site Administrative Assistant for filing.

9.2 Work Zones and Signs

Prior to work beginning, the PS/SHSO will classify the work area into three zones: (1) Exclusion Zone (EZ), (2) Contamination Reduction Zone (CRZ), and (3) Support (Clean) Zone (SZ). The purpose of this classification is to reduce the accidental spread of hazardous substances between contaminated and clean areas. The establishment of work zones will help ensure that; personnel are properly protected against potential hazards present, work activities and contamination are confined to appropriate areas, and personnel can be located and evacuated in an emergency. The EZ will be identified by some physical means (such as barrier tape) and labelled with the following warning sign:

**WARNING
LEAD WORK AREA
POISON
NO SMOKING OR EATING**

Only IT personnel, contractors and authorized visitors who have completed the 40-hour Hazardous Waste Operations training course (or equivalent) and meet the additional requirements of the Exclusion Zone (e.g., Lead Safety Training) will be allowed within the area.

9.3 Personnel Protection Program (PPE)

9.3.1 Acceptable Contaminant Concentrations

- Current OSHA PEL for lead is 0.05 mg/m^3 , and
- The action level for inorganic and organic lead compounds is 0.030 mg/m^3

9.3.2 Personal Protective Equipment (PPE)

Personal protective equipment (PPE) will be assigned according to project tasks and work areas.

The CIH has the only authority to downgrade PPE levels. This type of change will be based on a minimum of two consecutive sets of integrated monitoring data (no less than one and no more than three work days apart), or real-time monitoring which indicate that airborne contaminant concentrations are below current action levels recommended/required by appropriate agencies.

9.3.2.1 Levels of Protection

Project-specific personnel protective equipment requirements are given in Table 7-1, Protection of Employees During Exposure Assessment, found at the end of this HSOP.

9.3.2.2 PPE Selection Criteria

PPE selection criteria will be used in the selection of project specific PPE, and in the upgrade or downgrade of PPE levels. Downgrading of the PPE levels will not be made without the approval of the CIH.

9.4 Respiratory Protection Program

The Respiratory Protection Program detailed in the SHSP shall be followed. Respiratory protection procedures detailed in 29 CFR 1926.62 shall also be followed. The following additions are required for work covered by this LMP.

- Air-purifying respirators will be cleaned with mild soap and warm water daily by the wearer. The respirator will be air-dried before being reassembled and stored in a sealable container in the SZ. Employees responsible for such activity will be given adequate training annually by the SHSO;
- Respirators will not be placed in unprotected areas of potential contamination when not in use;
- Qualified project personnel will have an assigned air purifying respirator when use is required;
- A pair of Self-Contained Breathing Apparatus (SCBA) units will be located in an area designated by the SHSO;
- Qualified personnel will have been fit tested and certified in the use of air purifying respirators within the past six months in accordance with 29 CFR 1926.62. Fit test and respirator qualification cards or certifications must be available prior to commencing work covered by this LMP;
- Within the past year, project personnel assigned to use respiratory protection must have been medically certified as being capable of wearing a respirator. Documentation of the medical certification must be available to the SHSO prior to commencement of site work;
- Project personnel scheduled to wear a respirator will be clean shaven. Mustaches and side burns are permitted, but they must not interfere with the face-to-face piece seal of the respirator;
- Respirators will be inspected and a positive and negative pressure test performed prior to each use by the user;

- After each use, the respirator will be wiped with a disinfectant cleansing wipe. The respirator will also be thoroughly cleaned at the end of the work shift. The respirator will be stored in a clean sealable plastic bag; and
- SCBAs will be red-tagged after each use to prevent reuse prior to inspection and recharging.

9.5 Decontamination Program

The decontamination program has been designed to eliminate the spread of hazardous material contamination beyond the CRZ and to reduce that contamination to a minimum outside the Exclusion Zone. By following decontamination procedures and reducing the spread of contamination, the risk of exposure to contaminants while removing protective clothing is also reduced and good personal hygiene practices are enhanced.

The procedures listed in the SHSP for personnel decontamination will be implemented based on the required level of protection. Procedures for equipment decontamination are also outlined. Modification to these procedures or the program must be approved, in writing, by the CIH and communicated to all project personnel prior to implementation.

10.0 Industrial Hygiene Monitoring Program

The CIH shall be responsible for determining method, type, and extent of industrial hygiene (IH) monitoring to be conducted prior to initiating project activities. The monitoring program detailed in the SHSP shall be followed. In addition, the following LMP Air Monitoring Program shall be implemented.

10.1 IH Monitoring Schedule

The CIH will determine the type and extent of exposure monitoring to be conducted based on the project site-specific conditions. The SHSO compiles data for the CIH to review as needed.

10.1.1 New Project/Phase

Monitoring will be conducted at the beginning of each project to: (1) evaluate effectiveness of protective equipment assigned, (2) assess current hazard potentials, and (3) evaluate operation exposures. For projects covered by this LMP, this will include, as a minimum, integrated sampling for inorganic lead and real-time monitoring for total dust levels.

10.1.2 Safety and Health Assessment

Monitoring will be repeated, as appropriate, to provide the CIH adequate information to make accurate assessments concerning the safety and health of persons on site. For projects covered by this LMP, this will include, as a minimum, integrated sampling for inorganic lead and real-time monitoring for total dust levels.

10.1.3 Condition Change

Monitoring will be conducted at any time project conditions change which may affect the exposure of persons in a work area. A change in condition may include, but is not limited to:

- Weather changes;
- Worker complaints/concerns; or
- Variation in work plan/procedures.

Monitoring to be conducted will be determined by the CIH and based on the type of condition and the level of change. Real time dust monitoring results which exceed the action levels established in the SHSP will automatically trigger the initiation of integrated air sampling.

11.0 Lead-Based Paint Management Plan Amendments

All changes to this LMP must be made in writing. The CIH must approve, by signature, any changes (excluding those exempted below) prior to implementation. Upon submittal and approval, changes will be communicated to all site personnel and contractors before actual field implementation. All changes will be classified as one of the following categories and filed accordingly.

- General Work Practices;
- Work Areas;
- Medical Surveillance Program;
- Personal Protective Equipment;
- Work Area Control Zones; and
- Decontamination Procedures

Those changes which do not require prior approval from the CIH to be implemented by the SHSO include:

- PPE level upgrade; and

- Changes in decontamination procedures during an emergency or injury related incident.;
- Changes required by state, local, and federal law which require immediate action.

These changes shall be documented by the SHSO.

**SITE HEALTH AND SAFETY PLAN, NON-TIME
CRITICAL REMOVAL ACTION SITE 16-CANS C-2 AREA
AND SITE 15-SOIL REMOVAL AT TSTA**

APPENDIX E – LEAD MANAGEMENT PLAN

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**FINAL WORK PLAN, CONTRACTOR QUALITY
CONTROL PLAN, ENVIRONMENTAL PROTECTION
PLAN, SAMPLING AND ANALYSIS PLAN, SITE HEALTH
AND SAFETY PLAN, NON-TIME CRITICAL REMOVAL
ACTION SITE 16-CANS C-2 AREA AND SITE 15-SOIL
REMOVAL AT TSTA**

THE ABOVE IDENTIFIED PAGE IS NOT AVAILABLE.

**EXTENSIVE RESEARCH WAS PERFORMED BY
NAVFAC SOUTHWEST TO LOCATE THIS PAGE. THIS
PAGE HAS BEEN INSERTED AS A PLACEHOLDER
AND WILL BE REPLACED SHOULD THE MISSING ITEM
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QUESTIONS MAY BE DIRECTED TO:

**DIANE C. SILVA
RECORDS MANAGEMENT SPECIALIST
NAVAL FACILITIES ENGINEERING COMMAND
SOUTHWEST
1220 PACIFIC HIGHWAY
SAN DIEGO, CA 92132**

TELEPHONE: (619) 532-3676

FIGURE 2
EMPLOYEE NOTIFICATION OF RIGHT
TO A SECOND MEDICAL OPINION

IT Corporation, in accordance with the Occupational Health and Safety Administration's Lead standard for the Construction Industry: Title 29 of the Code of Federal Regulations, Part 1926, Section 62 (29 CFR 1926.62), hereby notifies _____ of your right to a second medical opinion. This medical opinion may be sought to; further evaluate and/or interpret any findings, determinations or recommendations of the initial physician, and/or conduct such examinations, consultations, and laboratory tests as the second physician deems necessary to facilitate that review. This second medical opinion may be sought regarding any potential or actual occupational exposure to lead during the course of business with IT Corporation.

Notification Made By:

Name/Title

Date

I, _____, acknowledge that I have received notification from IT Corporation of my right to seek a second medical opinion, as provided me by law through the OSHA 29 CFR 1926.62.

I also acknowledge that I must inform IT Corporation of my intent to seek a medical opinion and initiate the steps to do so by scheduling an appointment with the physician of my choice. I understand that I must take this action within fifteen (15) days after receipt of this notification, or receipt of the initial physician's written opinion, whichever is later.

- I wish to decline a second medical opinion.
- I have scheduled an appointment for a second medical opinion for _____
(date)
- I will notify you of my decision regarding a second medical opinion within 15 working days of the date of this notification.

Signature of Employee

Date

TABLE 7-1

PROTECTION OF EMPLOYEES DURING EXPOSURE ASSESSMENT

Task involving lead containing coatings or paint	Airborne concentration of lead or condition of use	Required respirator ¹	Protective clothing and equipment
<ul style="list-style-type: none"> Manual demolition of structures, manual scraping, manual sanding, heat gun applications, and power tool cleaning with dust collection systems. Spray painting with lead paints. 	Not in excess of 500 $\mu\text{g}/\text{m}^3$	<ul style="list-style-type: none"> 1/2 mask air purifying respirator with high efficiency filters.^{2,3} 	Tyvek coveralls with hoods and elastic wrist and ankles, PVC steel-toed boots, latex gloves, nitrile gloves, safety glasses or goggles, duct tape openings (wrist and ankles), hard hats.
<ul style="list-style-type: none"> Using lead containing mortar, lead burning Rivet busting, power tool cleaning without dust collection systems, clean up activities where dry expendable abrasives are used, and abrasive blasting enclosure movement and removal. 	Not in excess of 1,250 $\mu\text{g}/\text{m}^3$	<ul style="list-style-type: none"> Loose fitting hood or helmet powered air purifying respirator with high efficiency filters.³ Hood or helmet supplied air respirator operated in a continuous-flow mode-e.g., type CE abrasive blasting respirators operated in a continuous-flow mode. 	Tyvek coveralls with hoods and elastic wrist and ankles, PVC steel-toed boots, latex gloves, nitrile gloves, safety glasses or goggles, duct tape openings (wrist and ankles), hard hats.
<ul style="list-style-type: none"> Abrasive blasting, welding, cutting, and torch burning. 	Not in excess of 2,500 $\mu\text{g}/\text{m}^3$	<ul style="list-style-type: none"> Full facepiece air purifying respirator with high efficiency filters.³ Tight fitting powered air purifying respirator with high efficiency filters.³ 1/2 mask or full facepiece supplied air respirator operated in a continuous-flow mode. Full facepiece self-contained breathing apparatus (SCBA) operated in demand mode. 	Tyvek coveralls with hoods and elastic wrist and ankles, PVC steel-toed boots, latex gloves, nitrile gloves, safety glasses or goggles, duct tape openings (wrist and ankles), hard hats.
Non specified	Not in excess of 50,000 $\mu\text{g}/\text{m}^3$	<ul style="list-style-type: none"> 1/2 mask supplied air respirator operated in pressure demand or other positive-pressure mode. 	Tyvek coveralls with hoods and elastic wrist and ankles, PVC steel-toed boots, latex gloves, nitrile gloves, safety glasses or goggles, duct tape openings (wrist and ankles), hard hats.
Non specified	Not in excess of 100,000 $\mu\text{g}/\text{m}^3$	<ul style="list-style-type: none"> Full facepiece supplied air respirator operated in pressure demand or other positive-pressure mode-e.g., type CE abrasive blasting respirators operated in a positive-pressure mode. 	Tyvek coveralls with hoods and elastic wrist and ankles, PVC steel-toed boots, latex gloves, nitrile gloves, safety glasses or goggles, duct tape openings (wrist and ankles), hard hats.
Non specified	Greater than 100,000 $\mu\text{g}/\text{m}^3$ unknown concentration, or fire fighting.	<ul style="list-style-type: none"> Full facepiece SCBA operated in pressure demand or other positive-pressure mode. 	Tyvek coveralls with hoods and elastic wrist and ankles, PVC steel-toed boots, latex gloves, nitrile gloves, safety glasses or goggles, duct tape openings (wrist and ankles), hard hats.

¹ Respirators specified for higher concentrations can be used at lower concentrations of lead.

² Full facepiece is required if the lead aerosols cause eye or skin irritation at the use concentrations.

³ A high efficiency particulate filter (HEPA) means a filter that is 99.97 percent efficient against particles of 0.3 micron size or larger.