

FOSTER WHEELER ENVIRONMENTAL CORPORATION

CONTRACT No. N44255-95-D-6030
DO No. 0095

**FINAL
SITE-SPECIFIC
HEALTH AND SAFETY PLAN**
Revision 0
October 30, 2001

**ORDNANCE AND EXPLOSIVES WASTE
CHARACTERIZATION, AND GEOTECHNICAL
AND SEISMIC EVALUATIONS
AT INSTALLATION RESTORATION SITE 1
ALAMEDA POINT
ALAMEDA, CALIFORNIA**

DCN: FWSD-RACII-02-0010



FOSTER WHEELER

FOSTER WHEELER ENVIRONMENTAL CORPORATION

TRANSMITTAL/DELIVERABLE RECEIPT

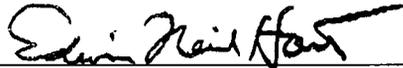
Contract No. N44255-95-D-6030 (RAC II)

Document Control No. 02-0010 Rev. 0

File Code: 6.0

TO: Contracting Officer
 Naval Facilities Engineering Command
 Southwest Division
 Mr. Richard Lovering, 02R1.RL
 1220 Pacific Highway
 San Diego, CA 92132-5190

DATE: 10/26/01
 DO: 0095
 LOCATION: NAS Alameda

FROM: 
Neil Hart, Program Manager

DESCRIPTION: Final Site-Specific Health and Safety Plan, Ordnance and Explosives
Waste Characterization, and Geotechnical and Seismic Evaluations at Installation Restoration
Site 1, Rev. 0, 10/30/01

TYPE: Contract/Deliverable DO Deliverable Notification
 Other

VERSION: Final REVISION #: 0
 (e.g. Draft, Draft Final, Final, etc.)

ADMIN RECORD: Yes No Category Confidential
 (PM to Identify)

SCHEDULED DELIVERY DATE: 10/18/01 ACTUAL DELIVERY DATE: 10/26/01

NUMBER OF COPIES SUBMITTED: 0/5C/9E

COPIES TO: (Include Name, Navy Mail Code, and Number of Copies)

NAVY:
R. Weissenborn (06CARW)
O/5E
J. Corbett (3ENJC) 1C/1E
D. Silva (05GDS) 3C/3E
Basic Contract File (02R1)
1C

FWENC:
R. Margotto
M. Schneider
A. Loan
L. Humphrey
T. Vaughns-Rachal

OTHER: (Distributed by FWENC)
See Attached for Additional
Distribution

Date/Time Received

Document Control No. 02-0010

Date: 10/30/01

DO: 0095

Location: NAS Alameda

**FINAL SITE-SPECIFIC HEALTH AND SAFETY PLAN, ORDNANCE AND EXPLOSIVES
WASTE CHARACTERIZATION, AND GEOTECHNICAL AND SEISMIC EVALUATIONS AT
INSTALLATION RESTORATION SITE 1, REV. 0, 10/30/01**

OTHER DISTRIBUTION:

M. Cassa - DTSC

J. Rohrer - DTSC

G. Yekta - CIWMB

A. Cook - USEPA

D. Mishek - RWQCB

K. Brasaemie - Tech Law - USEPA

M. Torrey - RAB Member

M. Sutter - RAB Member

E. Johnson - ARRA

T. Splitter - ARRA

Southwest Division
Naval Facilities Engineering Command
Contracts Department
1220 Pacific Highway, Building 127, Room 112
San Diego, California 92132-5190

CONTRACT NO. N44255-95-D-6030
DO No. 0095

FINAL
SITE-SPECIFIC HEALTH AND SAFETY PLAN
Revision 0
October 30, 2001

**ORDNANCE AND EXPLOSIVES WASTE CHARACTERIZATION,
AND GEOTECHNICAL AND SEISMIC EVALUATIONS
AT INSTALLATION RESTORATION SITE 1
ALAMEDA POINT
ALAMEDA, CALIFORNIA**

DCN: FWSD-RACII-02-0010



FOSTER WHEELER ENVIRONMENTAL CORPORATION

1230 Columbia Street, Suite 640
San Diego, CA 92101


Roger Margotto, CIH
Program Health and Safety Manager


Abid Loan, P.E.
Project Manager

TABLE OF CONTENTS

PAGE

LIST OF TABLES.....	iii
LIST OF FIGURES	iii
ABBREVIATIONS AND ACRONYMS	iv
1.0 INTRODUCTION	1-1
1.1 PURPOSE AND SCOPE	1-1
1.2 APPLICATION.....	1-1
1.3 SUMMARY OF MAJOR RISKS	1-1
2.0 ORGANIZATION OF THE PROJECT	2-1
3.0 SITE HISTORY AND PROJECT DESCRIPTION	3-1
3.1 PROJECT OBJECTIVE.....	3-2
3.2 PROJECT DURATION	3-2
4.0 POTENTIAL HAZARDS.....	4-1
4.1 CHEMICAL HAZARDS	4-1
4.2 ENVIRONMENTAL HAZARDS.....	4-1
4.3 BOATING.....	4-2
4.4 PHYSICAL HAZARDS.....	4-3
4.4.1 Heavy Lifting	4-3
4.4.2 Slips, Trips, and Falls.....	4-3
4.4.3 Contact with Mechanical Equipment and Heavy Equipment.....	4-4
4.4.4 Noise	4-4
4.4.5 Driving Hazards	4-4
4.4.6 General Precautions and Controls.....	4-4
4.5 UNEXPLODED ORDNANCE.....	4-5
4.5.1 Recommended Safe Work Practices for Range Residue Removal.....	4-5
4.5.2 Examples of Inspection Procedures.....	4-6
4.6 RADIOLOGICAL SCREENING	4-7
5.0 ACTIVITY HAZARD ANALYSIS	5-1
6.0 PERSONAL PROTECTIVE EQUIPMENT	6-1
7.0 AIR MONITORING AND OTHER MONITORING ACTIVITIES	7-1
7.1 DIRECT READING INSTRUMENTS.....	7-1
7.1.1 Photoionization Detector or Flame Ionization Detector	7-1
7.1.2 Explosimeter (LEL/O ₂).....	7-1
7.1.3 Particulate Monitor	7-1
7.2 MONITORING STRATEGY	7-2

TABLE OF CONTENTS
(Continued)

	<u>PAGE</u>
7.3 QUALITY ASSURANCE/QUALITY CONTROL.....	7-2
7.3.1 Calibration and Maintenance Procedures	7-3
7.3.2 Documentation.....	7-3
8.0 SITE CONTROL	8-1
8.1 EXCLUSION ZONE.....	8-1
8.2 CONTAMINATION REDUCTION ZONE	8-1
8.2.1 Decontamination Procedures	8-2
8.2.2 Personnel Decontamination	8-2
8.3 SUPPORT ZONE.....	8-2
9.0 MEDICAL SURVEILLANCE PROCEDURES	9-1
10.0 SAFETY CONSIDERATIONS.....	10-1
11.0 DISPOSAL PROCEDURES	11-1
12.0 EMERGENCY RESPONSE PLAN	12-1
13.0 TRAINING	13-1
14.0 LOGS, REPORTS, AND RECORDKEEPING.....	14-1
15.0 FIELD PERSONNEL REVIEW.....	15-1
16.0 REFERENCES	16-1

ATTACHMENTS

- Attachment 1 Material Safety Data Sheets
- Attachment 2 Activity Hazard Analyses (AHAs)
- Attachment 3 Forms

LIST OF TABLES

Table 1	Chemical Hazards Assessment
Table 2	Personal Protective Equipment
Table 3	Emergency Information

LIST OF FIGURES

Figure 1	Alameda Point (NAS Alameda) – Vicinity Map
Figure 2	Alameda Point (NAS Alameda) – IR Sites 1 and 2
Figure 3	Emergency Evacuation Routes IR Sites 1 and 2
Figure 4	Route to Hospital

ABBREVIATIONS AND ACRONYMS

AEDA	Ammunition, Explosives, and other Dangerous Articles
AHA	Activity Hazard Analysis
CIH	Certified Industrial Hygienist
CNS	central nervous system
CPT	cone penetrometer test
DLA	Defense Logistics Agency
DO	Delivery Order
DoN	United States Department of the Navy
dba	decibels, A-scale
EHS	Environmental Health and Safety
EOD	Explosives Ordnance Disposal
EPA	Environmental Protection Agency
ESQD	Explosive Safety Quantity-Distance
EZ	Exclusion Zone
FID	Flame Ionization Detector
FS	Feasibility Study
FWENC	Foster Wheeler Environmental Corporation
GI	gastrointestinal
GIS	Global Information System
IR	Installation Restoration
LEL	Lower Explosive Limit
LLRW	Low Level Radioactive Waste
mg/m ³	milligrams per cubic meter
MSDS	Material Safety Data Sheet
N/A	not applicable
NaI	Sodium Iodide
NAVSEA	Navy Sea Systems
NTR	Navy Technical Representative
OE	Ordnance and Explosive
O ₂	oxygen
PAH	polynuclear aromatic hydrocarbon
PCB	polychlorinated biphenyl
PEL	Permissible Exposure Level
PESM	Project Environmental Health and Safety Manager

ABBREVIATIONS AND ACRONYMS

(Continued)

PFD	personal flotation device
PID	photoionization detector
PjM	Project Manager
PPE	Personal Protective Equipment
ppm	parts per million
QA	quality assurance
QC	quality control
RI	Remedial Investigation
RPM	Remedial Project Manager
SEC	Site Emergency Coordinator
SHSP	Site-Specific Health and Safety Plan
SOW	Scope of Work
SHSS	Site Health and Safety Specialist
STEL	short-term exposure limit
SZ	Support Zone
TLV	threshold limit value
UXO	unexploded ordnance

1.0 INTRODUCTION

1.1 PURPOSE AND SCOPE

This Site-Specific Health and Safety Plan (SHSP) applies to work to be performed under Contract N44255-95-D-6030, Delivery Order (DO) Number 0095, to complete surface and shallow subsurface ordnance and explosive (OE) characterization and seismic and geotechnical evaluations at Alameda Point (the former Naval Air Station in Alameda, California). The information obtained will be necessary to support the Remedial Investigation (RI) and Feasibility Study (FS) reports.

1.2 APPLICATION

This SHSP will be used with the Alameda Point Base-Wide Health and Safety Plan and is applicable to all work conducted by Foster Wheeler Environmental Corporation (FWENC) and its subcontractors under the basic contract and this DO. Refer to the Base-Wide Plan for additional details common to all work performed at Alameda Point.

1.3 SUMMARY OF MAJOR RISKS

The potential hazards associated with this project include hazards associated with the removal of spent munitions associated with pistol range, work at a landfill known to contain hazardous materials, and heavy equipment that will be used for seismic and geotechnical evaluations including watercraft for offshore drilling operations. There is potential exposure to contaminants associated with the landfill including gunnery and artillery debris/unexploded ordnance (UXO), gasoline, jet fuel, polychlorinated biphenyl (PCB) containing oils and other waste products.

2.0 ORGANIZATION OF THE PROJECT

This section identifies the individuals from the United States Department of the Navy (DoN), and FWENC who have responsibility for the oversight and/or implementation of this project. The following is a list of key contacts for individuals involved in the project:

LIST OF POINTS OF CONTACT

Agency	Contact	Project Title
Southwest Division Naval Facilities Engineering Command 1220 Pacific Highway San Diego, CA 92132-5190	Rick Weissenborn, P.E. (619) 532-0952	Remedial Project Manager (RPM)
Southwest Division Naval Facilities Engineering Command Alameda Caretaker Site Office - SF 410 Palm Ave, Bldg 1, Suite 161 San Francisco, CA 94130-1802	Doug Delong (619) 532-0952	Environmental Compliance Manager, Alameda Point
Southwest Division Naval Facilities Engineering Command 1220 Pacific Highway San Diego, CA 92132-5190	Narcisco A. Ancog (619) 532-2540	Quality Assurance Officer
FWENC 1230 Columbia Street, Suite 640 San Diego, CA 92101	Neil Hart (619) 471-3511	Program Manager
FWENC 1940 Deere Avenue, Suite 200 Santa Ana, CA 92705	Abid Loan, P.E. (949) 756-7514	Project Manager
FWENC 1230 Columbia Street, Suite 640 San Diego, CA 92101	Roger Margotto, CIH, CSP, CHHM (619) 471-3503	Project Environmental Health and Safety Manager
FWENC Southwest Division RAC Site Trailer Gardeners Road and Industrial Road Naval Weapons Station 800 Seal Beach Boulevard Seal Beach, CA 90740	Mary Schneider (562) 598-6150 ext. 5881	Program Quality Control Manager
FWENC 1230 Columbia Street, Suite 640 San Diego, CA 92101	Tony Crino (619) 206-3344	Site Health and Safety Specialist
FWENC 1230 Columbia Street, Suite 640 San Diego, CA 92101	Walt Hess (619) 234-8696	Senior UXO Specialist

3.0 SITE HISTORY AND PROJECT DESCRIPTION

Alameda point is located on the West end of Alameda Island, which lies on the east side of San Francisco Bay adjacent to the City of Oakland. Alameda Point is rectangular in shape, approximately 2 miles long east to west, 1 mile wide north to south, and occupies 1,734 acres. Installation Restoration (IR) Sites 1 and 2 are former landfill areas located within Operable Units 3 and 4, at the North and Southwestern corners of the former NAS Alameda (see Figures 1 and 2).

IR Site 1, the "1943-1956 Disposal Area", is located in the northwestern corner of Alameda Point. The site was operated between 1943 and 1956 as the former NAS Alameda's main site for waste disposal. An estimated 15,000 to 200,000 tons of waste were placed in IR Site 1, including old aircraft engines, low-level radiological wastes, scrap metal, waste oil, paint wastes, solvents, cleaning compounds, and construction debris. In addition, other Naval installations disposed of wastes at this site, including the Oak Knoll Naval Hospital, Naval Supply Center Oakland, and Treasure Island. Materials reportedly disposed of at the landfill included municipal garbage, sludges, plating wastes, acids, mercury, PCB contaminated fluids, rags, batteries, inert ordnance, spoiled food, asbestos, pesticides, creosote, waste medicines and reagents.

The former pistol range area is located in the western portion of IR Site 1 and consists of a pistol range, a shotgun range, and an area immediately north of the pistol range used for disposal of spent ordnance (20 mm, lead bullets and pellets). According to employee interviews, during the construction of the pistol range, excavation went to a depth of 8 feet to remove buried debris, i.e., fence material, aircraft engine parts, etc. At the same time an unknown number of 55-gallon drums filled with fired 20 mm projectiles were dumped in this excavation. These projectiles were also mixed into concrete (as aggregate) used for the pistol range foundations. Soil sampling at the pistol range showed total lead concentrations were in the range of <10 to 34,000 mg/kg; cadmium was detected at concentrations of 130 mg/kg and zinc at 7,400 mg/kg at two sampling locations.

IR Site 2, the "West Beach Landfill", served as the former NAS Alameda disposal area from approximately 1952 through March 1978, although most disposal of hazardous waste at the landfill had been eliminated by the late 1960s and early 1970s. An estimated 1.6 million tons of garbage and between 30,000 and 500,000 tons of hazardous waste was placed in IR Site 2. Hazardous wastes included PCBs, solvents, plating wastes, metals, pesticides, inert ordnance, low-level radiological waste, infectious waste, and acids. In 1976, 4 truck loads of inert ordnance ranging in size of 4 feet long and 12 inches wide to smaller ammunition, from the Defense Logistics Agency (DLA), Alameda, was buried in the landfill. A one-time disposal of CS (o-Chlorobenzalmalonitrile) riot control agent (in containers as loose powder) from the 1968-

1969 Berkeley student demonstrations was accomplished, with the exact location of the disposal area unknown. The IR Site 2 site has a passive perimeter venting system for methane. Reportedly an explosion occurred during an intrusive (drilling) operation being conducted within the site.

3.1 PROJECT OBJECTIVE

The objective of the work as stated in the Scope of Work (SOW) for DO 0095 is to complete surface OE characterization at IR Site 1, surface and shallow subsurface OE characterization at IR Site 2, with seismic and geotechnical characterizations at both sites. The information obtained will be necessary to support the RI and FS reports to be prepared by others.

The data collected will be integrated into an existing database (Oracle, Access, or SQL server) set-up for the site. Drawings/maps generated will also be integrated into the existing site Global Information System (GIS) database. This GIS database is currently being developed.

3.2 PROJECT DURATION

This project is estimated to require up to 6 months of field activity. Work will be performed one site at a time. Each site will be demobilized before the project team moves on to the next site.

4.0 POTENTIAL HAZARDS

The Base-Wide Plan identifies hazards that are common to all construction projects within Alameda Point. Site-specific hazards associated with this DO are summarized below.

4.1 CHEMICAL HAZARDS

There is little likelihood for significant exposure to chemical contaminants onsite. Historical analytical results show low levels of chlorinated solvents as well as polynuclear aromatic hydrocarbons (PAHs). However, records show the landfill has accepted a wide variety of wastes including, lead acid batteries, grease, oil and antifreeze, and demolished military aircraft engines. There may also be very low levels of metals in the first few inches of soil in the area. This SHSP has copies of Material Safety Data Sheets (MSDSs) for each contaminant that can be anticipated (Attachment 1). The Site Health and Safety Specialist (SHSS) will also acquire MSDSs for all materials and chemicals brought on to the site. The SHSS will ensure that site personnel have received training on all of these chemicals, per Environmental Health and Safety (EHS) 4-2 Hazard Communication. If unknown materials or chemicals are encountered, the SHSS will contact the Project Environmental Health and Safety Manager (PESM) for additional guidance regarding these materials and to evaluate the need for additional training and protection. Table 1, Chemical Hazards Assessment, summarizes the chemical hazards at the project sites.

Dust control measures shall be implemented to minimize visible dust and inhalation exposures.

4.2 ENVIRONMENTAL HAZARDS

The project is to be performed in an outdoor area with grasses and shrubs. Workers may encounter poison oak, snakes, wild animals, bees, ticks, and other insects. The degree of hazard can range from annoyance to death from bites or anaphylactic shock. Recognition and avoidance are critical in maintaining a safe work site. Personnel with sensitivities, such as bee stings, should notify SHSS prior to site activities.

Since all planned work activities will be conducted outside where temperature conditions are unpredictable, there is a risk that site workers could develop heat stress. The likelihood of this occurring is dependent on environmental conditions, the level of work activity, and the personal control measures that are used to manage heat loads (i.e., work/rest cycles, use of cooling devices, hydration, etc.). Heat stress procedures described in the Base-Wide Plan and FWENC procedure EHS 4-6 Temperature Extremes will be followed. In addition, all site workers will be instructed in the recognition and control of thermal stress symptoms.

Workers must take special precautions regarding exposure to the aforementioned hazards and other environmental hazards described in the Base-Wide Plan.

4.3 BOATING

Operating boats or vessels on the open water carries the risk of having a crew member fall overboard and possibly drown, striking or being struck by other vessels operating in the area, losing power or steering and drifting into hazardous areas (i.e., shore, marine facilities, and so forth), and encountering severe weather and dangerous waters. The risk of a boating accident can be reduced by ensuring the boat operators are experienced, and when applicable licensed; operating the vessel in compliance with Coast Guard rules and regulations; maintaining the vessel in good mechanical order; avoiding bad weather and dangerous waters; and ensuring emergency equipment is available on-board (i.e., life vests, life rings, life boats, fire extinguishers, communication equipment, and so forth).

To address these concerns, all work conducted from barges (sediment drilling) and small vessels (bathymetry) will comply with FWENC Boating Safety Procedure EHS 6-6, and applicable Coast Guard regulations. Boats and barges will be operated by experienced crew members and all equipment will be inspected prior to use to ensure that it is in proper working order. The boat operator will ultimately be responsible for the safety of all personnel on the boat and for the integrity of the vessel and its safety equipment.

Prior to the start of field activities, the boat operator will give a detailed health and safety briefing on the location and use of all vessel safety equipment and the procedures for addressing an on-board emergency (i.e., fire, mechanical failure, man overboard situation, and so forth). All large vessels used on this project (e.g., barges) will meet U.S. Coast Guard requirements and will be licensed for the number of personnel expected on board at any time. The maximum number of passengers and weight that can safely be transported shall be posted. The number of passengers shall not exceed the number of personal flotation devices (PFDs). Personnel working on the bow or stern decks (outside the pilot house) without railings will be required to wear a Type II or equivalent PFD. Work after dark is prohibited.

To avoid collision with other vessels operating in the area, project boat operators will review the schedule of vessel activity in the bay before beginning work and notify Port Authority of their intended work location and activities. They will also look for and avoid other vessels operating in the area at all times. Boating operations will be suspended during severe weather or rough waters.

Prior to leaving shore, the Boat Operator and SSSS will complete a Float Plan to include the following:

- The names of the boat operator and all passengers
- A description and registration numbers of the boat
- Radio call sign or cellular telephone number
- A trip itinerary with expected time of return; and steps the SHSS will take to initiate a search response if the expected time of return is exceeded

The Project Manager (PjM) is responsible for coordinating with the FWENC PESM to implement the requirements of this procedure. The PjM shall provide the necessary management support and allocate sufficient project resources to permit project personnel to operate boats in a safe manner. Site managers and supervisors are responsible for implementation of the boating safety program in the field.

4.4 PHYSICAL HAZARDS

Several safety hazards are likely to be associated with the planned work including heavy lifting; noise; slip, trip, and fall hazards; working with and around mechanical equipment (drill rigs); and poor driving conditions. These hazards and the controls that will be applied to manage them are discussed below.

4.4.1 Heavy Lifting

Collecting boring samples, handling of bathymetric and sonar equipment involve heavy lifting. Such activities carry the risk of back and muscle strain. To control this hazard, workers will be instructed to use proper lifting techniques when moving heavy loads, particularly when launching small boats, stowing gear, and handling drilling equipment. These techniques will include using mechanical lifting devices whenever feasible to move equipment or supplies. When lifting exceptionally heavy loads individually, workers will maintain ergonomically safe lifting postures and have others help if mechanical lifting devices cannot be used.

4.4.2 Slips, Trips, and Falls

There are likely to be slip, trip, and fall hazards on-board the barge/drilling platform and in the landfill areas where the surveyors will be working. These hazards will be controlled by maintaining proper housekeeping and general employee awareness. Site workers will wear high traction, steel-toed safety boots and will pay careful attention to surface conditions to prevent slip, trip, and fall injuries. When stepping on to water craft, be sure to follow instructions. The step off distance cannot exceed 12-inches. The work areas will be inspected and evaluated before the start of each work day to identify any hazards that could cause injury. The results of these inspections will be communicated to site personnel during the daily tailgate safety briefing.

Buildings and or other standing structures such as docks or barges should not be entered unless they have been deemed structurally sound by the Navy Technical Representative (NTR). Do not wander off areas outside of your area of work.

4.4.3 Contact with Mechanical Equipment and Heavy Equipment

Drill rigs, barges, and small boats will be used on this project to sample sediments, conduct underwater surveys and to transport equipment and supplies to the work area. The drilling equipment, in particular, may have exposed gears and pulleys, which could pinch, grab, or crush an operator or surrounding personnel. In addition, personnel will be working within IR Sites 1 and 2 to excavate test pits to a depth of 4 feet using a rubber-tired backhoe.

Equipment operators must become thoroughly knowledgeable with the hazards associated with each piece of equipment in addition to reviewing applicable Activity Hazard Analysis (AHAs) and FWENC procedure EHS 3-13 Motorized Vehicle and Equipment. Drill rigs, the rubber tired backhoe, cone penetrometers and the associated hand and power tools all require competent workers trained in the proper operation of each piece of equipment. The Competent Person or designee shall perform daily pre-inspections on all equipment and tools, to prevent personal injury or property damage due to faulty equipment. All personnel will also wear reflective vests when working around mechanical equipment.

4.4.4 Noise

Noise levels in excess of 85 dBAs are certain to exist around the drill rig when boring samples are collected. In addition, high noise levels may be encountered when performing Cone Penetrometer Tests (CPTs). Refer to Base-Wide Health and Safety Plan and EHS Procedure 4-4 Hearing Conservation.

4.4.5 Driving Hazards

The drive to the work site may include unpaved roads. It requires drivers to recognize that driving on such roads have different hazards than driving on paved roads. It is possible for vehicles to lose traction or slide off of embankments. Seat belts shall be worn. Speed limits and all traffic control signs and devices shall be complied with at all times. Avoid sharp turns up or down steep grades. If you get stuck, call for help and wait by your vehicle. Review FWENC Project Rules Handbook Volume II, Section 2.11, Motor Vehicle Safety. Personnel shall be trained in approved site access routes and all base specific traffic rules.

4.4.6 General Precautions and Controls

- Hazard assessment is a continuous process and all personnel must be aware of their surroundings and constantly aware of the chemical and physical hazards that are or may be present.
- The use of the Buddy System is mandatory.

- Site personnel will be familiar with the physical characteristics of each site including site access, emergency assembly areas and evacuation routes, and the location of communication devices and safety equipment.
- DO NOT touch any unknown objects lying on the ground.
- While working in IR Sites 1 and 2, workers shall wear steel-toed boots with steel shanks at all times, except when performing any work with a magnetometer. Suitable work gloves shall be used for the work being done.
- AHAs will be developed for each specific task not covered within this plan to further characterize and define potential physical hazards and to implement control measures to prevent personal injury and/or property damage.

4.5 UNEXPLODED ORDNANCE

Some areas of the site may have UXO. Although the area has been pre-screened by prior consultants and Explosives Ordnance Disposal (EOD) personnel, FWENC personnel must be aware of the potential for UXO; and, if at any time they observe suspicious debris or objects, the procedures in the work plan for UXO will be followed. The project will use the services of a FWENC UXO superintendent and a UXO specialist as additional safety resources during the project. The work plan establishes the procedures for the handling of the debris and the inspection of the debris prior to packaging for disposal. FWENC Procedures for the safe handling of these materials is described in EHS Procedures 7-1 through 7-5. The subcontractor will also provide their Health and Safety plan to the PESM and to the Project Manager prior to the commencement of work. The UXO specialist and SHSS will pre-inspect all debris handling equipment prior to each use. Operating instructions for all equipment will be available. All workers will be trained on the use of the equipment.

4.5.1 Recommended Safe Work Practices for Range Residue Removal

Each company's safe work practices for handling UXO and debris should be based on regulations and documents of many different Department of Defense agencies and those of the respective military departments. Several of these references are listed in Section 16 of this document. Many of these references are available from the internet (A site with links to many of the publications is <http://savanna-army.mil/es/esm/index.htm>). Range residue removal and processing involve handling Ammunition, Explosives, and other Dangerous Articles (AEDA). Each processing activity will be preceded by inspections to verify that there are no UXO or residual explosive hazards. Safety Precautions include:

- All work will be under the supervision of UXO qualified personnel.
- Only UXO personnel will inspect scrap for ordnance and make decisions on the condition of ordnance items and the safety of movement.
- Evaluate whether electromagnetic radiation generated from radio or radar equipment can produce premature actuation of ordnance items containing sensitive electroexplosive

devices. The SHSS and FWENC UXO superintendent will strictly control the use of cellular phones and radios within IR Sites 1 and 2.

- All processing personnel will be trained in UXO familiarization.
- Only trained personnel will be allowed in the handling area during processing operations.
- Operations will be conducted only during daylight hours.
- Only qualified UXO personnel will handle UXO.
- All personnel will attend a daily safety meeting prior to entering the operating area.
- Anyone can stop operations for any unsafe act or situation.
- Safety violations and/or unsafe acts will be immediately reported to the SHSS.
- After the inspection of the UXO or debris, survey the debris before handling for radiation as described in Section 7.
- Inspect all debris and items for potential contamination (such as petroleum products, lead acid batteries, etc).
- Ensure that all employees have reviewed and understand AHAs associated with UXO activities, additional review may be necessary if task changes.

4.5.2 Examples of Inspection Procedures

Inspection procedures specific to each material handling process will be developed. Below are examples of such procedures that can be incorporated into the processing procedures developed by the project team and as described in the work plan the project. The applicable section(s) for a given material or item will be determined by the Senior UXO Supervisor and the SHSS and reviewed prior to starting a process. All inspection procedures shall be reviewed with applicable personnel prior to and when changes have occurred specific to each material handling process.

4.5.2.1 Full-Scale Inert Munitions

A UXO technician will inspect all full-scale munitions prior to their movement. The munitions will be checked that fuse wells are empty, positive venting has been completed and filler is exposed, and that filler is non-explosive. If UXO or suspect UXO is identified, the procedures in the work plan for UXO will be followed. Once the inspection is completed, the munitions will be moved to a secure storage area to wait for further demilitarization.

4.5.2.2 Sub-Munitions Dispenser Containers

Prior to their movement, all visible areas of the sub-munitions dispenser containers will be inspected by a UXO technician for the presence of sub-munitions. After initial inspection of the container, if no sub-munitions are found, the container will be turned over and the area under it inspected. All sections of the container will be inspected. If damage to the container prevents

complete visual inspection of some areas, those areas must be opened for inspections prior to releasing the container for further demilitarization. If UXO or suspect UXO is identified, the procedures in the work plan for UXO will be followed. Once the inspection is completed, the containers will be moved to a secure storage area to wait for further demilitarization.

4.5.2.3 Target Debris

Target debris (e.g. vehicle bodies, drums, tires, batteries, and so forth) will be inspected by a UXO technician for the presence of UXO, prior to moving. At the same time during this inspection the debris will be inspected for the presence of contamination with waste materials such as petroleum products and the presence of plates from lead acid batteries. All sections of the debris will be inspected. If damage prevents complete visual inspection in some areas, those areas must be opened for inspections prior to releasing the debris for further demilitarization. If UXO or suspect UXO is identified, the procedures for UXO will be followed. Once the inspection is completed, the debris will be moved to a secure storage area to wait for further demilitarization.

4.5.2.4 UXO Procedures

If UXO or suspect UXO is identified, work will stop, the Senior UXO Supervisor will be immediately notified and all non-UXO personnel will move to a safe area. If the Senior UXO Supervisor determines that the UXO can be safely moved, the UXO will be moved to a secure storage area. If the Senior UXO Supervisor determines that the UXO cannot be moved, the area will be marked with stakes or surveyor's tape and the processing operations moved to an area away from the UXO. The Senior UXO Supervisor will notify the NTR and take action as identified in the work plan to dispose of the UXO. If UXO or suspect UXO is identified, the principle of Explosive Safety Quantity-Distance (ESQD), as detailed in the Navy Sea Systems Command Ordnance Pamphlet (NAVSEA OP) 5 Volume 1, shall be implemented.

4.6 RADIOLOGICAL SCREENING

Refer to FWENC Radiological Protection Program RP3-38 "Radiological Screening Surveys," RP3-33 "Contamination Surveys" and RP3-32 "Radiation Surveys" prior to performing work.

Action levels for removal of radiological anomalies will be set at 1.5 times the site-specific background levels. Background levels will be established by taking 10 readings in the support zone for IR Sites 1 and 2 using a Ludlum 2221 Ratemeter with 44-10 Scintillation Probe. Until such time radiation levels exceed 1.5 times background, full implementation of the Radiological Protection Plan is not required (i.e. decontamination procedures and protective equipment for radiation exposure). If levels exceed the established 1.5 times action level, activities will be discontinued and the SHSS will immediately notify the PESM for further guidance. At no time will workers directly touch or handle any material that is potentially radioactive. Workers will follow safe work practices described in the radiological protection procedures.

5.0 ACTIVITY HAZARD ANALYSIS

The AHAs for this project are included as Attachment 2. The SHSS will modify these AHAs as appropriate, add new AHAs for any changes in tasks, and ensure that all employees who perform these tasks receive a briefing on the appropriate AHA. The SHSS will forward any modified or new AHAs to the PESM for review and approval. The equipment used for the task can vary dependent upon which subcontractors are used for work. The AHAs will be expanded to include specific equipment as the work plan becomes final.

6.0 PERSONAL PROTECTIVE EQUIPMENT

Table 2, Personal Protective Equipment (PPE), lists the PPE required for each task on this project. This table is prepared based on data provided prior to the start of the project. As additional testing, monitoring, and background information become available, the SHSS may adjust the action levels and PPE accordingly. Any changes to PPE require approval by the PESM. PPE levels were selected based on the presumption that there are low-level contaminants associated with organic vapors and metals.

7.0 AIR MONITORING AND OTHER MONITORING ACTIVITIES

Ambient air monitoring will be conducted during the debris removal activities or any intrusive work in order to determine airborne contamination levels. Personal air sampling will be performed to assess the concentrations of vinyl chloride in the breathing zone during selected intrusive activities. The SHSS will contact the PESM if conditions change from those now anticipated.

7.1 DIRECT READING INSTRUMENTS

7.1.1 Photoionization Detector or Flame Ionization Detector

A photoionization detector (PID) or flame ionization detector (FID) will be used to determine the presence and concentration of organic vapors.

- Instrument:** PID or FID with a 10.2 eV or 10.6 eV probe
Action Level: 10 parts per million (ppm) in breathing zone for sustained amount of time
Action: Level C respiratory protection and notify PESM, immediately.

If FID is used, the SHSS must be aware that it is possible that readings may include methane gas. Since some work is near or on landfills it is possible that there may be methane gas.

7.1.2 Explosimeter (LEL/O₂)

A Gastech Model 1314 or MSA Model 260 explosimeter or equivalent may be used to screen for the presence of flammable vapors, oxygen (O₂)-deficient atmosphere, and O₂-enriched atmosphere. If flammable vapors are at 10 percent lower explosive limit (LEL) or greater, work will cease and the area allowed to ventilate. If O₂ levels below 20.8 percent or above 22 percent are encountered, personnel will leave the area and the area will be ventilated. The instrument is used for hot work procedures such as welding, cutting and grinding.

- Instrument:** Gastech Model 1314 or MSA Model 260 or equivalent
Action Level: 10 percent \geq LEL, <20.8 percent O₂ or >22 percent O₂
Action: Stop work, allow area to ventilate and notify PESM.

7.1.3 Particulate Monitor

A MiniRAM may be used to evaluate the presence of particulates during test pit excavation activities.

- Instrument:** MiniRAM Particulate Monitor or equivalent
- Action Level:** >1.5 milligrams per cubic meter (mg/m³) in breathing zone for sustained amount of time (15 minutes).
- Action:** Stop work, re-evaluate and implement dust control measures.

7.2 MONITORING STRATEGY

Background levels will be measured with the FID or PID before any work commences. Monitoring of the area will begin by taking background readings. The FID or PID will be used wherever odors are detected and will continue to be used until odors can no longer be detected and organic vapor levels are below 5 ppm. During drilling, cone penetrometer testing, and excavation of test pits the FID or PID will be used at all times. The SHSS, in consultation with the PESM and with concurrence of the NTR, will determine if further actions and/or measurements are warranted to prevent or minimize exposure of personnel. It is essential that odors and measurable levels of organic vapors be limited to the exclusion zone (EZ). Similarly, any suspected contamination will be assessed by approaching the suspect contamination with the instrument turned on and assessing the vapor readings in the vicinity.

The combustible gas meter will be used continuously during any drilling activity as described in FWENC EHS Program EHS 6-2 "Drill Rigs, to insure that there are no unexpected flammable vapors or gases.

Dust suppression will be performed when excavating test pits within IR Sites 1 and 2 or processing dry soils. Monitoring with a MiniRam particulate monitor (or equivalent) will ensure levels remain below the selected action levels. Levels will be measured before work commences for background levels and during site excavation activities, as deemed necessary by the SHSS.

Vinyl chloride sampling will be performed using personal air sampling pumps, and charcoal tubes in accordance with NIOSH analytical method 1007. Personnel will wear air sampling pumps during intrusive activities, collecting eight(8) hour representative samples of the workers breathing zone. The number and frequency of breathing zone samples collected for vinyl chloride analysis will be determined by the Certified Industrial Hygienist (CIH) once intrusive work has commenced. The samples will be analyzed by an AIHA accredited laboratory.

7.3 QUALITY ASSURANCE/QUALITY CONTROL

Adherence to a proper quality assurance/quality control (QA/QC) plan is essential for a meaningful air sampling effort. The major concerns of a QA/QC plan are calibration of equipment and document control.

7.3.1 Calibration and Maintenance Procedures

All direct reading instruments will be calibrated daily, or before and after each use. Calibration records will be kept detailing date, time, span gas or other standard, and the name of the person performing the calibration. The calibration gas for the PID is usually isobutylene. The calibration gas for the FID is methane. The SHSS will ensure that the instrument is kept clean and will follow manufacturer's directions for keeping the lamp clean. The SHSS will perform no other maintenance procedures unless approved by the PESM.

The calibration gas for the LEL is usually a methane/air or a hexane/air mixture. O₂ is calibrated against normal air in a clean environment. A low-O₂ calibration gas can be used for calibrating the response of the O₂ sensor. Often, 100 percent nitrogen is used to "zero" the O₂ sensor. For purposes of this plan, calibration of the explosimeter means a daily field check with known calibration gases. The reading on the instrument must be within 3 percent of the stated value of the gas. If it is not, then formal calibration of the instrument must follow the manufacturer's calibration procedure.

Calibration of personal air sampling pumps will be performed by qualified personnel only, to accurately set the flow rate of the pumps as specified by NIOSH analytical method 1007. Flow rates will be calibrated daily prior to the start of the sample.

A check source will be provided for the radiological survey instruments. A daily source check is required prior to use each day as described in FWENC procedure RP 3-37, Portable Radiation Detection Instrumentation Operational Checks. The instrument calibration is valid for one year from the last calibration date.

7.3.2 Documentation

Strict adherence to document and data control procedures is essential for good QA/QC. Data and calibration records must be accounted for and retrievable at all times. Types of documents that are essential include notes, logbooks, maps, data sheets, equipment calibration logs, and reports. Forms required for this DO are presented in Attachment 3. These must be placed in the project files. Copies of all field data reports and personal sampling records will be sent to the PESM for review.

8.0 SITE CONTROL

IR Sites 1 and 2 are considered unsafe areas because of the hazardous materials and UXO items known to exist there. Existing fencing around the sites will be maintained throughout the operation. Access into the work site will be strictly controlled and limited to authorized personnel only. No unauthorized access is permitted within the perimeter boundaries.

Site control requires the establishment of a regulated area and designated site work zones. To minimize the transfer of potentially hazardous substances from the site, project personnel will:

- Schedule operations that utilize minimum numbers of personnel
- Establish site work zones around each work site location
- Implement appropriate decontamination procedures

Since this project covers a large work area, site control procedures will use a modified control zone strategy.

8.1 EXCLUSION ZONE

The EZ for this project is the area at each site where debris is staged, processed, packaged and removed. Barricades or cones will delineate the EZ. It should be noted that barricades will be required for any opening in the ground that is left unattended. Workers will place contaminated tools, if any, and equipment on plastic sheeting in this zone to prevent contamination of the surrounding area. An area is being set aside for energetics as described in the work plan. This is a separate controlled area within the exclusion zone. Postings shall be placed at entry of the exclusion zone to inform site personnel, visitors, and subcontractors of the requirements necessary for entry. This shall include, but not limited to, PPE requirements, contact personnel, Danger No Unauthorized Entry sign, No Smoking sign, and EZ sign-in log.

8.2 CONTAMINATION REDUCTION ZONE

In very close proximity to the EZ, workers will wrap any contaminated tools and equipment with plastic when preparing to leave the area. Workers will decontaminate the equipment and themselves in this area before moving to the next work area. This area will also be used for surveying all workers and equipment coming in contact with Low Level Radioactive Waste (LLRW).

8.2.1 Decontamination Procedures

The equipment, such as sampling tools, excavator or backhoe buckets, grapplers and shears and other equipment that has come in contact with potentially contaminated soil or debris, will be either brushed off and wiped clean or washed with water and a cleaning solution. This procedure will be done whenever equipment and tools are taken from one area to another and at the end of each project site activities. If decontamination water or debris are generated during these decontamination procedures, refer to Waste Management Plan for proper handling, storage, and labeling requirements.

8.2.2 Personnel Decontamination

Before leaving the excavation or sampling location, each worker will brush off work boots and remove any PPE that has been in contact with contaminated soil or debris. Brushing off should be done over a sheet of plastic to collect any contaminated soil. The plastic sheet and PPE will be wrapped up and placed in a plastic bag for subsequent disposal in a collection container, such as a 55-gallon disposal drum. Personnel will wash hands before leaving the area.

8.3 SUPPORT ZONE

The support zone (SZ) will be arranged considering accessibility, utility availability, wind direction, and line-of-sight to work. Included in this area will be the vehicle parking, toilets, water, and a break/lunch area. Access to toilets and hand-washing facilities are also required in the vicinity of the work areas.

9.0 MEDICAL SURVEILLANCE PROCEDURES

There are no additional medical surveillance procedures for this project at this time.

10.0 SAFETY CONSIDERATIONS

For safety considerations, refer to the Base-Wide Plan. In addition, these guidelines should be adhered to:

- Ensure that there are communications in place and functional. Check this function daily.
- Workers will work in sight of each other. If it is necessary for workers to work out of sight of each other, the buddy system will be used and each team will have a means of communicating with a team that has radio communication with the SUXO and the SHSS (i.e., each team would have local radio communication with all other teams, but at least one team has the radio that can contact the SUXO and the SHSS),
- Each work team will have an air horn to be used to summon help.
- All workers must comply with the FWENC Project Rules Handbook, Volume I and Volume II. Refer to the Base-Wide Plan for other rules.
- Workers will wear seat belts in all vehicles.
- Workers will wear reflective safety vests at all times when working in the EZ so that they are readily visible to other workers and at any time they are working near vehicle traffic including roads and parking lots.
- Ensure that the area is clear of personnel other than FWENC personnel and subcontractors.
- Use care when driving vehicles. Stay on roads. If the vehicle must be driven off a road, be sure to drive slowly. Be aware that there can be sudden dips or depressions, or that there can be a sudden drop off. Drive on unpaved roads only during daylight hours.
- At a minimum, a shaded break area will be provided for employees.
- The SHSS shall set-up a Daily On-site Log to track all individuals on-site at any given moment and to ensure that all personnel, visitors, and subcontractors are accounted for in case of emergency.
- Radioactive contaminated debris may be encountered in site landfills, therefore any debris that is to be removed from the area shall be surveyed in conjunction with FWENC RP 3-38, RP 3-33, and RP 3-32.
- Refer to Base-Wide Safety Plan – Emergency Response Plan in the event of an earthquake.
- All boating activities must conform to FWENC EHS 6-6 “Boating”.

11.0 DISPOSAL PROCEDURES

Refer to the Base-Wide Plan for general guidelines and to the Waste Management of the Work Plan for details on the types of waste streams to be generated and the appropriate methods for packaging and disposal. This project is designed to safely dispose of all debris. Any suspected contaminated soil or debris will be placed in an area at each site as designated by the NTR for subsequent management and disposal by the DoN.

12.0 EMERGENCY RESPONSE PLAN

Refer to the Base-Wide Plan for emergency response activities. Evacuation routes for both IR Sites 1 and 2 are found in Figure 3. The evacuation meeting point will be established on the pier at the northeast corner of the seaplane basin. The City of Alameda Fire and Rescue Service will contact or provide the necessary emergency support. Response will depend upon the location of the site and whether the worker may be transported more quickly for treatment by a site vehicle. The route to Alameda Hospital is found in Figure 4.

All decisions to transport injured workers by ground transportation must be evaluated carefully. The Alameda Fire and Rescue Service may place us in contact with an emergency medical provider who may help us in making the decision. The decision is based on many factors including the stability of the injured worker, whether the worker can be safely moved without causing further injury to the worker, the severity of the injury and the need for immediate treatment, the location of the project site, the proximity of nearby medical services, and the response time for emergency service to arrive at the site.

Table 3 is the list of emergency contacts and phone numbers. Both the figures for the specific project site and the figure for the area and Table 3 must be placed on the dashboard of each vehicle. The evacuation assembly area for the work area will be posted with a sign so that all personnel can identify the meeting point.

The Base-Wide Plan does not describe emergency response to an UXO incident. This project will have at least three workers who have experience with UXO. Two of these workers will be FWENC UXO Technicians. The FWENC UXO Supervisor/ESS will be in overall charge of any operations involving the handling or certification of UXO where FWENC employees are working. If UXO should detonate, all personnel will back off from the area. The UXO Supervisor/ESS will act as the Site Emergency Coordinator for any incident/accidents involving UXO.

During operations a minimum of two UXO personnel will be on-site at all times. In the event of an explosion during operations, the Site Emergency Coordinator (SEC) will immediately activate the emergency response plan. The SEC will direct any unaffected UXO Technician to report to the scene to provide immediate first aid and to determine if any additional explosive hazards exist. UXO personnel will survey and delineate a clear path free of explosive hazards for emergency support to render assistance to the victims. Under no circumstance should personnel proceed to the detonation site without UXO escort.

13.0 TRAINING

All personnel will receive training in the recognition of explosive ordnance and general site awareness training. Workers who work on boats or near the water will receive training on the use of personal flotation devices. Workers on boats will receive training on boat safety procedures and how to respond to boating emergencies. Workers working with LLRW or in areas where there is LLRW, will receive training on the hazards associated with radioactive materials. Personnel performing radioactive material screening will have documented training on the use of instrumentation and the protocols to be followed as required by FWENC radiological protection procedures. Other required training is discussed in the Base-Wide Plan.

14.0 LOGS, REPORTS, AND RECORDKEEPING

Refer to the Base-Wide Plan for requirements.

15.0 FIELD PERSONNEL REVIEW

All personnel are required to review the Base-Wide Plan and this SHSP. Upon completion of their review, all project personnel will sign the SHSP review form.

16.0 REFERENCES

Weston Work Plan, "UXO Operations".

DoD 4145.26-M, Contractor's Safety Manual for Ammunition and Explosives. September 1997.

DoD 6055.9-STD, DoD Ammunition and Explosives Safety Standards. July 1999.

DoD 4160.21-M, Defense Reutilization and Marketing Manual. August 1997.

DoD 4160.21-M-1, Defense Demilitarization Manual. October 1991.

AR 385-64, U.S. Army Explosives Safety Program. February 2000.

AR 200-1, Environmental Protection and Enhancement. February 1997.

AR 385-10, The Army Safety Program. February 2000.

AR 385-16, System Safety Engineering and Management. May 1990.

TM 9-1300-200, Ammunition General

TM 9-1300-214, Military Explosives

NAVSEAINST 8023.11, Standard Operating Procedures for the Processing of Expendable Ordnance at DoN and Marine Corps Activities.

TABLES

TABLE 1
CHEMICAL HAZARDS ASSESSMENT

Chemical Name	PEL/TLV	Routes of Exposure	Symptoms of Exposure	Target Organs
Gasoline	PEL – 300 ppm (Cal-OSHA) TLV – 300 ppm	Skin absorption, inhalation, ingestion	Acute: Nose, throat, lung irritation; headaches, blurred vision, vomiting, dizziness, fever, slurred speech, unconsciousness. Chronic: Appetite loss, nausea, weight loss, insomnia, sensitivity in digital extremities.	Skin, eye, respiratory, and central nervous system (CNS)
Diesel Fuel	PEL – none established TLV – none established	Skin contact, inhalation, ingestion	Acute: Eye irritation, skin irritation, nose/throat/lung irritation, nausea, vomiting, diarrhea, restlessness, drowsiness, loss of coordination. Chronic: Repeated contact with skin causes dermatitis.	Central nervous system, skin, respiratory system
PAHs, Coal Tar Pitch Volatiles (Chrysene, Pyrene, Phenanthrene, etc.) from residuals of diesel fuel	PEL – 0.2 mg/m ³ TLV – 0.2 mg/m ³	Inhalation Ingestion Contact	Acute: Skin contact may cause irritation, redness, burning, itching, dermatitis, and burns. Photosensitization may occur (rash worsens with exposure to sunlight). Inhalation irritating to respiratory tract. Eye contact may cause conjunctivitis, keratitis, or corneal burns. Ingestion may result in nausea, vomiting, abdominal pain, respiratory distress and shock. Exposure to large doses, especially by ingestion, may be fatal. Chronic: Dermatitis, skin cancer, lung cancer.	Respiratory system, skin, bladder, kidneys (lung, kidney and skin cancer)
Benzene	PEL – 1 ppm TLV – 0.5 ppm STEL – 5 ppm	Inhalation Ingestion Contact	Carcinogen. Acute: Irritation of eyes, nose, respiratory tract, breathlessness, euphoria, nausea, drowsiness, headache, dizziness, and intoxication. Severe exposure can cause convulsions and unconsciousness. Skin contact may cause dermatitis. Chronic: Blood disorders including leukemia.	Blood, CNS, bone marrow, eyes, skin, upper respiratory tract

TABLE 1
CHEMICAL HAZARDS ASSESSMENT

Chemical Name	PEL/TLV	Routes of Exposure	Symptoms of Exposure	Target Organs
Toluene	PEL – 50 ppm (Cal-OSHA) TLV – 50 ppm STEL – 150 ppm	Inhalation Skin Contact	Acute: Respiratory irritation, fatigue, weakness, confusion, dizziness, headache, dilated pupils, watering eyes, nervousness, insomnia, parasthesis, vertigo, narcotic coma, death. Dermatitis. Chronic: Mucous membrane irritation, headache, vertigo, nausea, appetite loss, intolerance to alcohol. Encephalopathies, liver enlargement and kidney dystrophy.	CNS, liver, kidney, skin
Ethylbenzene	PEL – 100 ppm TLV – 100 ppm STEL – 125 ppm	Inhalation Skin and Eye contact	Acute: Eye and nose irritation, chest constriction. High Concentrations: narcosis, cramps, death Chronic: Dermatitis, fatigue, sleepiness, headache, leukopenia	Eyes, respiratory system, CNS, skin, blood.
o-Chlorobenzalmalonitrile	PEL – 0.05 ppm TLV – None established Ceiling – 0.05 ppm	Inhalation Skin	Acute – Highly irritating to eyes, nose, and skin.	Eyes and skin
Xylene	PEL – 100 ppm TLV – 100 ppm STEL – 150 ppm	Inhalation Skin and eye contact, Ingestion	Acute: Dizziness, nausea, vomiting, abdominal pain, eye, nose, throat irritation; pulmonary edema, drowsiness, unconsciousness. Eye contact can cause conjunctivitis and corneal burns. Chronic: Dermatitis, peripheral and central neuropathy, liver damage.	CNS, eyes, GI tract, liver, kidneys and skin
Methane	PEL – None established TLV – None established	Inhalation Skin	Acute -Irritability, headache, Unconsciousness, death Simple asphyxiant	Eyes, respiratory system, CNS, blood

TABLE 1
CHEMICAL HAZARDS ASSESSMENT

Chemical Name	PEL/TLV	Routes of Exposure	Symptoms of Exposure	Target Organs
Vinyl Chloride	PEL <ul style="list-style-type: none"> • TWA – 1 ppm • STEL – 5 ppm TLV <ul style="list-style-type: none"> • TWA – 1 ppm 	Inhalation	Carcinogen	Liver

Notes:

CNS – central nervous system

GI – gastrointestinal

mg/m³ – milligrams per cubic meter

PEL – permissible exposure level

ppm – parts per million

STEL – short-term exposure limit

TLV – threshold limit value

TWA – time-weighted average

TABLE 2
PERSONAL PROTECTIVE EQUIPMENT

Task	USEPA Level	Respiratory Protection	Head	Hand	Clothing	Boots	Face	Eye	Hearing	Additional
Site setup, surveys	D	None required, unless dust exceeds action level	Hard Hat	Leather work gloves, as needed.	Work uniform or Tyvek® coveralls to keep clean	Steel toe, leather	N/A	Safety glasses	Protection when noise levels exceed 85 dBA	Fall protection for work above 6-foot level or near edges of excavation. Reflective safety vests.
CPT evaluations	C mod	None required unless PID/FID levels exceed action level	Hard Hat	Nitrile inner gloves, Nitrile or equivalent gloves, leather work gloves over.	Poethylene Tyvek® coveralls when you may encounter water; otherwise Tyvek® coveralls to keep clean	Steel toe, leather with PVC boot covers or PVC steel toe boots for liquids; otherwise steel toe boots	N/A	Safety glasses	Protection when noise levels exceed 85 dBA	Reflective safety vests; Type II or equivalent USCG life preservers when working aboard watercraft.

TABLE 2
PERSONAL PROTECTIVE EQUIPMENT

Task	USEPA Level	Respiratory Protection	Head	Hand	Clothing	Boots	Face	Eye	Hearing	Additional
Drilling (ground and water-based)	D	None required, unless drilling releases vapors above action limits	Hard Hat	Leather work gloves or puncture/cut resistant gloves. (If liquids present see sampling above).	Work uniform or Tyvek® coveralls to keep clean	Steel toe, leather	N/A	Safety glasses	Protection when noise levels exceed 85 dBA	Fall protection for work above 6-foot level or near edges of excavation. Reflective safety vests, USCG life preservers.
Excavation or grading	D	None required, unless dust exceeds action level	Hard hat	Leather work gloves, as needed.	Work uniform or Tyvek® coveralls to keep clean	Steel toe, leather	N/A	Safety glasses	Hearing protection required around heavy equipment unless noise levels are less than 85 dBA	Reflective safety vests.
Backfilling, site restoration	D	None required, unless dust exceeds action level	Hard hat	Leather work gloves, as needed.	Work uniform or Tyvek® coveralls to keep clean	Steel toe, leather	N/A	Safety glasses	Protection when noise levels exceed 85 dBA	

Notes:

- dBA - decibels, A-scale
- EPA - U.S. Environmental Protection Agency
- FID - flame ionization detector
- N/A - not applicable
- PID - photoionization detector
- PPE - personal protective equipment

TABLE 3

EMERGENCY INFORMATION

REPORT ALL FIRES, SERIOUS INJURIES, OR UNCONTROLLED SPILLS IMMEDIATELY: 911

Hospital:	Alameda Hospital (510) 522-3700 2070 Clinton Avenue Alameda, CA		
Directions:	Starting at the front of the Base, turn left on Ranger Avenue. Turn right on Lexington and left on Navy Way. Take Navy Way to Main Street and turn right. Continue to Central Avenue. Central Avenue becomes CA/61. Continue on to CA/61 to Chestnut Street and left onto Clinton Avenue.		
Clinic:	Concentra Medical Center (510) 465-9565 384 Embarcadero W Oakland, CA		
Directions:	Exit the site on Perimeter Road, turn left onto Arizona Street, right onto 2 nd Avenue, left onto Fulton, right onto 5 th Street, left onto Atlantic for about 1 mile, left onto SR-61 (Webster Street) for 0.6 miles, bear right onto Posey Tube for 0.6 miles and continue north on Harrison Street for about 150 yards, left onto 6 th Street for about 100 yards, left onto Webster Street for 0.3 miles, and right onto West Embarcadero for 80 yards to Concentra Medical Clinic.		
Fire/Police/EMS:	911 This number will connect you to emergency dispatch. There is a fire department on Base, but it should be contacted through the 911 number. <i>911 calls from a cell phone do not go directly to Base emergency services, but through the California State patrol.</i>		
Foster Wheeler Environmental Contacts:	Project Manager Abid Loan (949) 756-7514	Project PESM (CIH) Roger Margotto (619) 471-3503 pager: (714) 810-3742	Project SHSS Tony Crino (619) 206-3344
RPM:	Rick Weissenborn, P.E. (619) 532-0952		
Poison Control Center :	California Poison Control System, Central Office University of California, San Francisco School of Pharmacy, Box 1262 San Francisco, CA 94143 Emergency Phone: (800) 876-4766 [All of CA]		
CHEMTREC:	(800) 424-9300		
National Response Center:	(800) 424-8802		
RCRA Hotline:	(800) 424-9346		

FIGURES



NOT TO SCALE

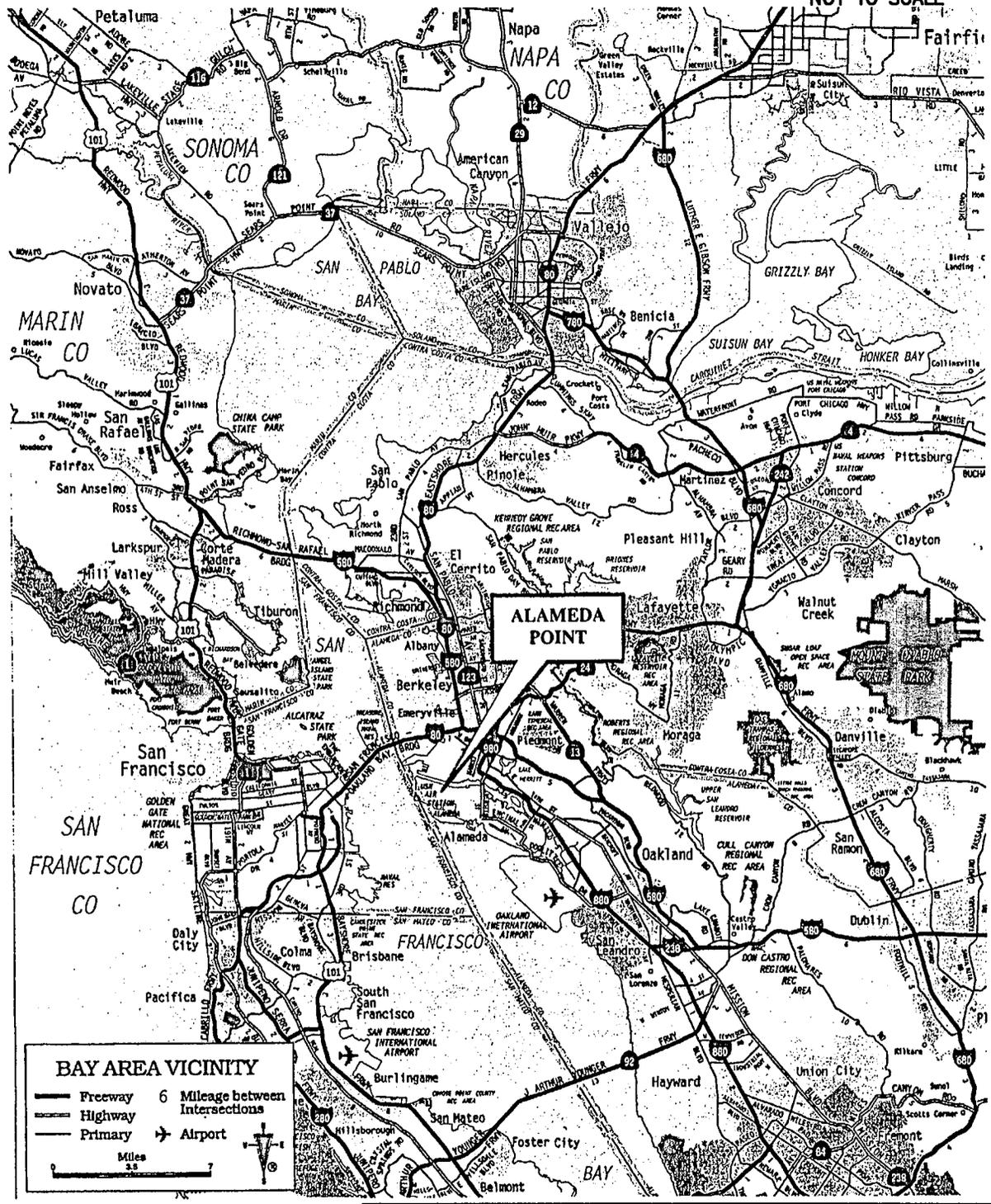


Figure 1
**ALAMEDA POINT(NAS ALAMEDA)
 VICINITY MAP**

ALAMEDA, CALIFORNIA

FOSTER  WHEELER
 ENVIRONMENTAL CORPORATION

I:\2384-ALAMEDA\020010\0200103.DWG
 PLOT/UPDATE: OCT 15 2001 14:20:42



NOT TO SCALE

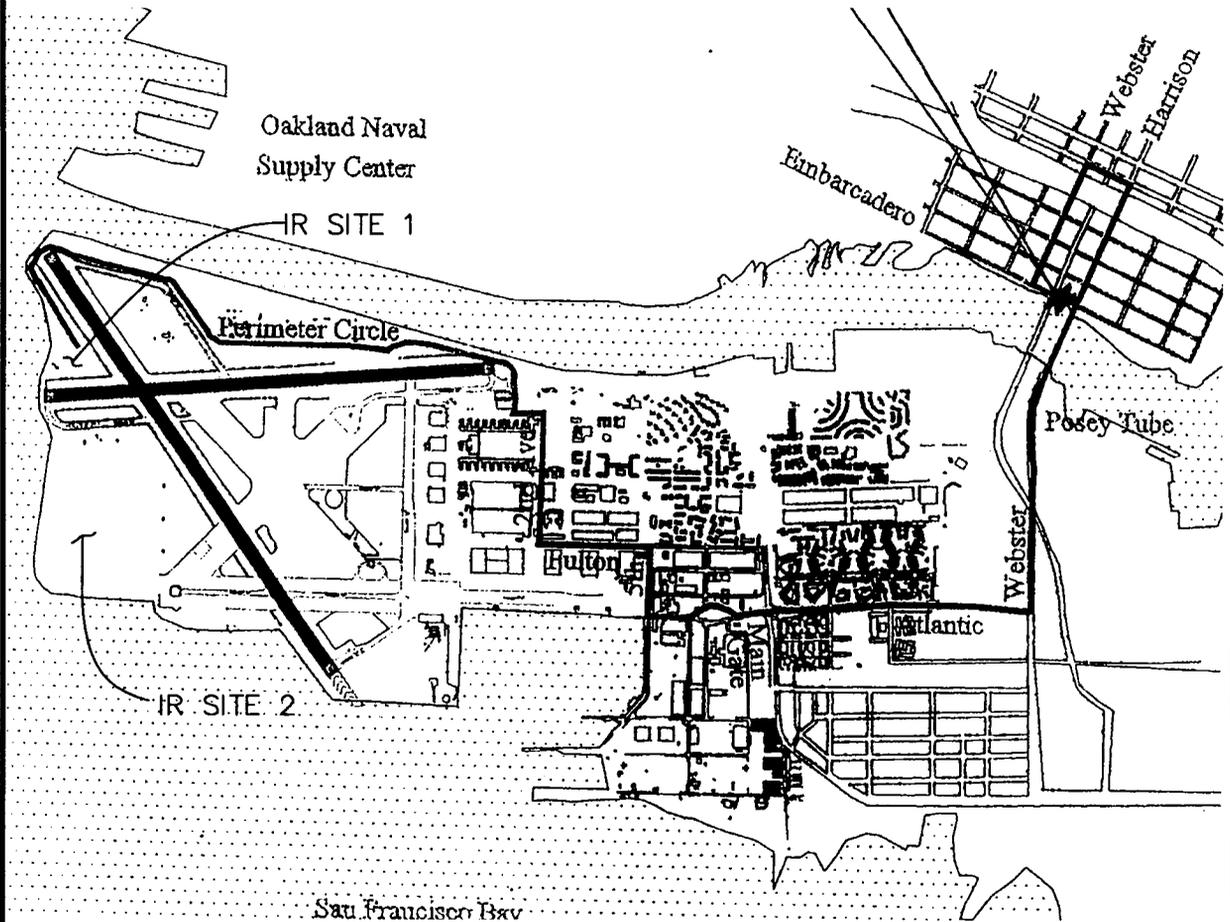
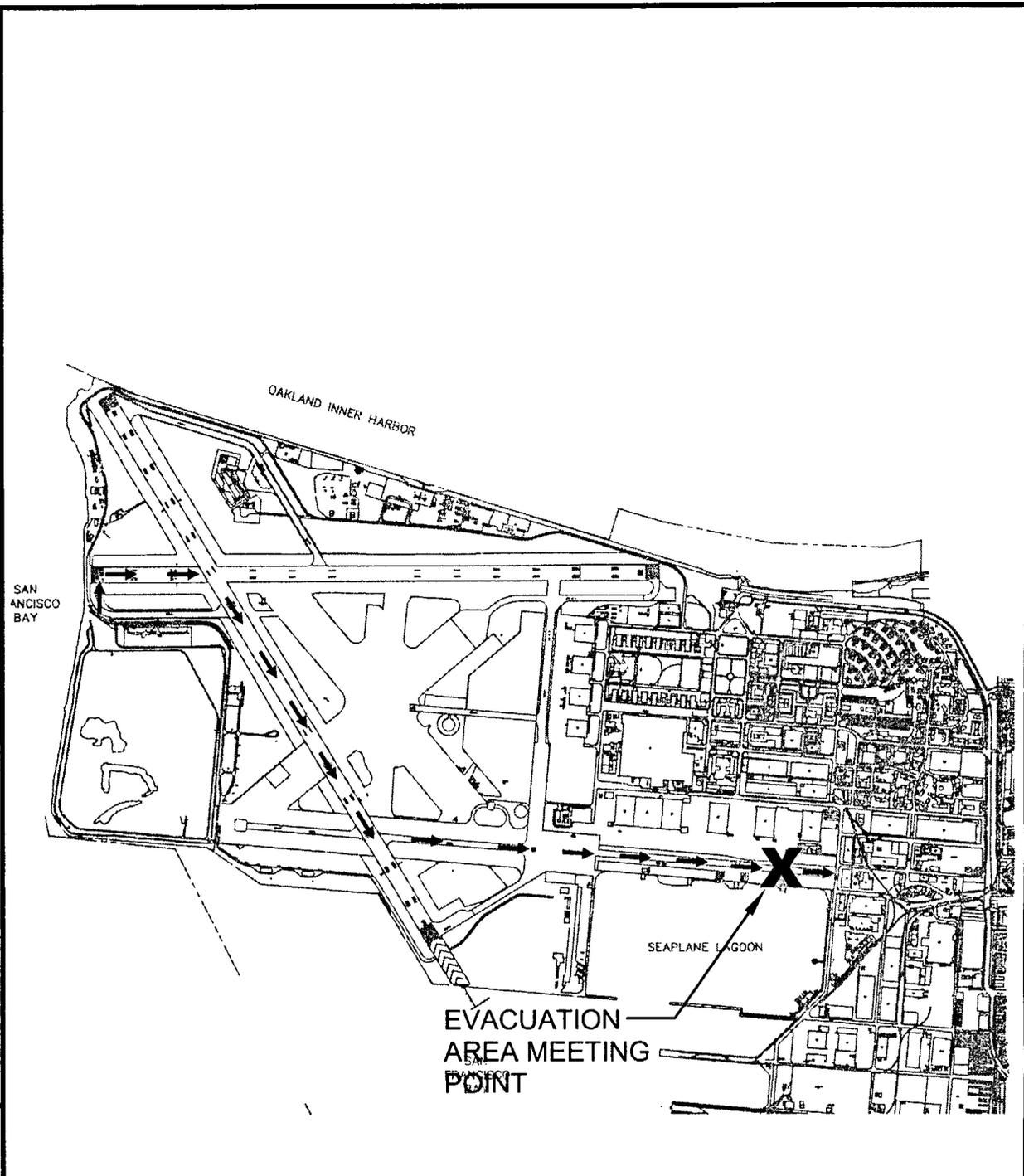


Figure 2
ALAMEDA POINT(NAS ALAMEDA)
IR SITES 1 AND 2

ALAMEDA, CALIFORNIA

FOSTER  WHEELER
ENVIRONMENTAL CORPORATION

DRAWN BY: MD	CHECKED BY: LH	APPROVED BY: LH	DCN: FWSD-RAC II-02-0010	DRAWING NO: 0200103.DWG
DATE: 10/15/01	REV: REVISION 0		DO: # 0095	



I:\2384--ALAMEDA\020010\0200103.DWG
 PLOT/UPDATE: OCT 24 2001 09:15:46

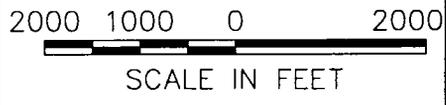
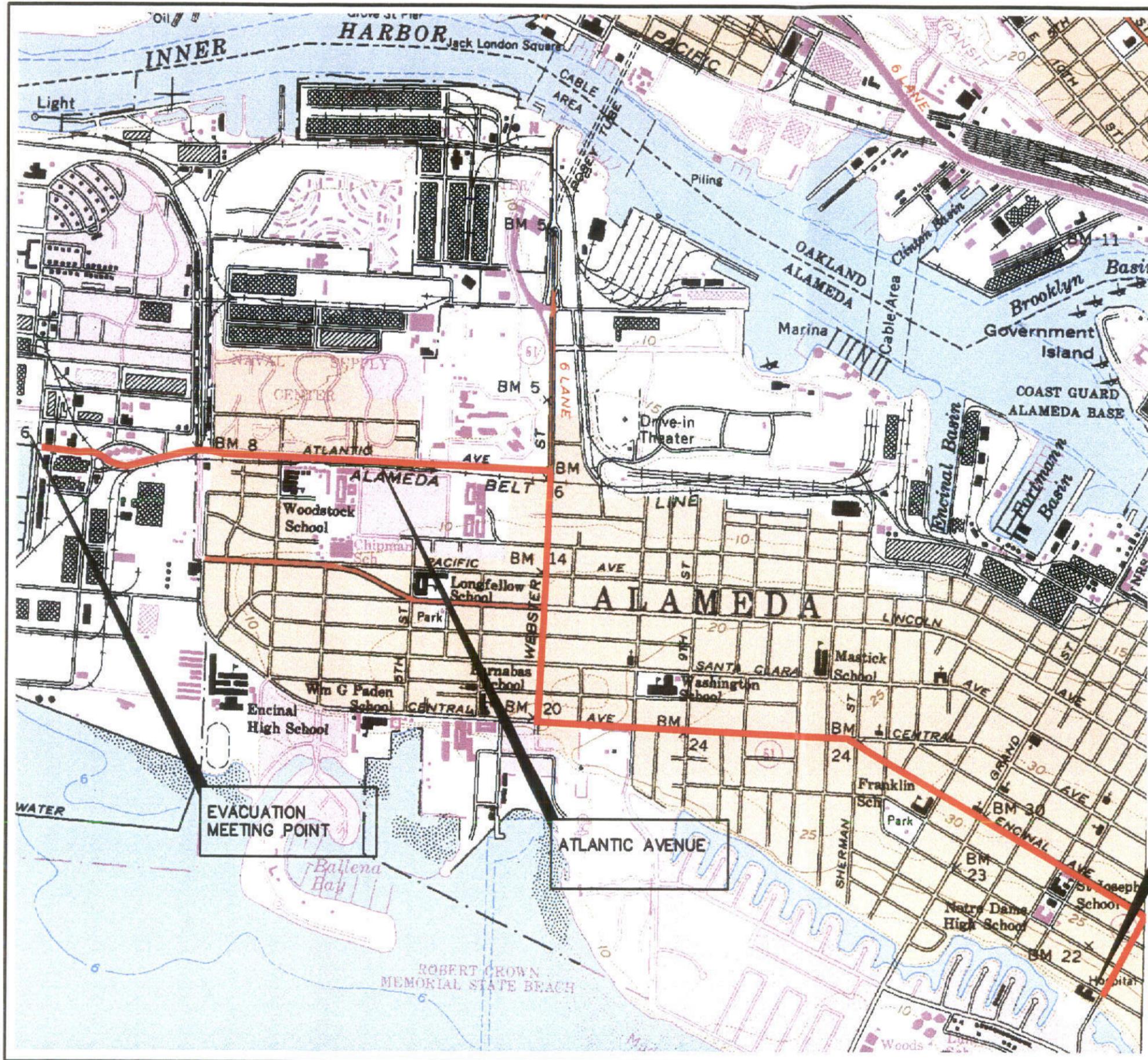


Figure 3
 EMERGENCY EVACUATION ROUTES
 IR SITES 1 AND 2

Southwest Division
 Naval Facilities Engineering Command

FOSTER  WHEELER
 ENVIRONMENTAL CORPORATION



HOSPITAL DIRECTIONS:

TAKE ATLANTIC AVENUE TO WEBSTER STREET AND TURN RIGHT. FOLLOW WEBSTER TO CENTRAL AVENUE AND TURN LEFT. FOLLOW CENTRAL UNTIL IT SPLITS AND TAKE THE RIGHT FORK THAT IS ENCINAL AVENUE. FOLLOW ENCINAL TO WILLOW STREET AND TURN RIGHT. TAKE WILLOW TO CLINTON STREET AND THE HOSPITAL IS LOCATED ON THE CORNER.



EVACUATION MEETING POINT

ATLANTIC AVENUE

ALAMEDA HOSPITAL
2070 CLINTON AVENUE
ALAMEDA, CA 94501
(510) 522-3700

Figure 4
ROUTE TO HOSPITAL

Fleet and Industrial Supply Center Oakland
Alameda Facility/Alameda Annex

FOSTER WHEELER
ENVIRONMENTAL CORPORATION

ATTACHMENT 1
MATERIAL SAFETY DATA SHEETS

HAZARDOUS SUBSTANCE FACT SHEET

Common Name: **VINYL CHLORIDE**

CAS Number: 75-01-4
DOT Number: UN 1086

RTK Substance number: 2001
Date: September 1986 Revision: December 1994

HAZARD SUMMARY

- * **Vinyl Chloride** can affect you when breathed in.
- * **Vinyl Chloride** is a **CARCINOGEN--HANDLE WITH EXTREME CAUTION**. It may also cause damage to the developing fetus.
- * **Vinyl Chloride** can severely irritate and burn the eyes and can reduce vision.
- * Exposure to **Vinyl Chloride** can irritate and burn the skin. Contact with the liquid or gas can cause frostbite.
- * **Vinyl Chloride** can cause headache, dizziness, fatigue, weakness, sleeping disturbances and loss of memory. Higher levels can cause you to feel lightheaded and to pass out.
- * Long-term exposure can damage the liver, nervous system, lungs, skin and blood vessels in the hands.
- * **Vinyl Chloride** is a **HIGHLY FLAMMABLE** and **REACTIVE** chemical and is a **DANGEROUS FIRE** and **EXPLOSION HAZARD**.

IDENTIFICATION

Vinyl Chloride is a colorless gas which is usually shipped as a liquid. It has a faintly sweet odor and is used to make plastics, adhesives and other chemicals.

REASON FOR CITATION

- * **Vinyl Chloride** is on the Hazardous Substance List because it is regulated by OSHA and cited by ACGIH, DOT, NIOSH, IARC, DEP, NFPA, NTP and EPA.
- * This chemical is on the Special Health Hazard Substance List because it is a **CARCINOGEN** and **MUTAGEN**, and is **FLAMMABLE**.
- * Definitions are provided on page 5.

HOW TO DETERMINE IF YOU ARE BEING EXPOSED

The New Jersey Right to Know Act requires most employers to label chemicals in the workplace and requires public employers to provide their employees with information and training concerning chemical hazards and controls. The federal OSHA Hazard Communication Standard, 1910.1200, requires private employers to provide similar training and information to their employees.

- * Exposure to hazardous substances should be routinely evaluated. This may include collecting air samples. Under OSHA 1910.20, you have a legal right to obtain copies of sampling results from your employer.
- * If you think you are experiencing any workrelated health problems, see a doctor trained to recognize occupational diseases. Take this Fact Sheet with you.
- * **ODOR THRESHOLD = 10 to 20 ppm.**
- * The range of accepted odor threshold values is quite broad. Caution should be used in relying on odor alone as a warning of potentially hazardous exposures.

WORKPLACE EXPOSURE LIMITS

OSHA: The legal airborne permissible exposure limit (PEL) is **1 ppm** averaged over an 8-hour workshift **and 5 ppm** not to be exceeded during any 15 minute work period.

NIOSH: Recommends the lowest reliably detectable level.

ACGIH: The recommended airborne exposure limit is **5 ppm** averaged over an 8-hour workshift.

- * **Vinyl Chloride** is a **CARCINOGEN** in humans. There may be no safe level of exposure to a carcinogen, so all contact should be reduced to the lowest possible level.

WAYS OF REDUCING EXPOSURE

- * Where possible, enclose operations and use local exhaust ventilation at the site of chemical release. If local exhaust ventilation or enclosure is not used, respirators should be worn.
- * A regulated, marked area should be established where **Vinyl Chloride** is handled, used, or stored as required by the OSHA Standard 1910.1017.
- * Wash thoroughly immediately after exposure to **Vinyl Chloride** and at the end of the workshift.
- * Wear protective work clothing.
- * Post hazard and warning information in the work area. In addition, as part of an ongoing education and training effort, communicate all information on the health and safety hazards of **Vinyl Chloride** to potentially exposed workers.

This Fact Sheet is a summary source of information of all potential and most severe health hazards that may result from exposure. Duration of exposure, concentration of the substance and other factors will affect your susceptibility to any of the potential effects described below.

HEALTH HAZARD INFORMATION

Acute Health Effects

The following acute (short-term) health effects may occur immediately or shortly after exposure to **Vinyl Chloride**:

- * **Vinyl Chloride** can severely irritate and burn the eyes and can reduce vision.
- * Exposure to **Vinyl Chloride** can irritate and burn the skin. Contact with the liquid or gas can cause frostbite.
- * **Vinyl Chloride** can cause headache, dizziness, fatigue, weakness, sleeping disturbances and loss of memory. Higher levels can cause you to feel lightheaded and to pass out.

Chronic Health Effects

The following chronic (long-term) health effects can occur at some time after exposure to **Vinyl Chloride** and can last for months or years:

Cancer Hazard

- * **Vinyl Chloride** is a CARCINOGEN in humans. It has been shown to cause liver, brain and lung cancer.
- * Many scientists believe there is no safe level of exposure to a carcinogen.

Reproductive Hazard

- * **Vinyl Chloride** may damage the developing fetus. There is limited evidence that **Vinyl Chloride** is a teratogen in animals.
- * An excess of spontaneous abortions has been reported among spouses of workers who had been exposed to **Vinyl Chloride**.
- * Increased rates of birth defects have been reported in areas where **Vinyl Chloride** processing plants are located. **Vinyl Chloride's** role in this increased risk is unknown at this time.

Other Long-Term Effects

- * Repeated exposure can cause a disease called "scleroderma". This causes the skin to become very smooth, tight and shiny. It causes the bones of the fingers to erode ("acro-osteolysis"), and damages the blood vessels in the hands ("Raynauds syndrome"). This causes the hands (or feet) to turn numb, pale or blue with even mild cold exposure.
- * **Vinyl Chloride** can damage the liver, nervous system and lungs.

MEDICAL

Medical Testing

For those with frequent or potentially high exposure (half the TLV or greater, or significant skin contact), the following are recommended before beginning work and at regular times after that:

- * Complete liver function tests.
- * Exam of the eyes and vision.
- * Exam of the skin and nervous system.
- * Chest x-ray and lung function tests.

Any evaluation should include a careful history of past and present symptoms with an exam. Medical tests that look for damage already done are not a substitute for controlling exposure.

Request copies of your medical testing. You have a legal right to this information under OSHA 1910.20.

WORKPLACE CONTROLS AND PRACTICES

Unless a less toxic chemical can be substituted for a hazardous substance, **ENGINEERING CONTROLS** are the most effective way of reducing exposure. The best protection is to enclose operations and/or provide local exhaust ventilation at the site of chemical release. Isolating operations can also reduce exposure. Using respirators or protective equipment is less effective than the controls mentioned above, but is sometimes necessary.

In evaluating the controls present in your workplace, consider: (1) how hazardous the substance is, (2) how much of the substance is released into the workplace and (3) whether harmful skin or eye contact could occur. Special controls should be in place for highly toxic chemicals or when significant skin, eye, or breathing exposures are possible.

In addition, the following controls are recommended:

- * Where possible, automatically pump liquid **Vinyl Chloride** from drums or other storage containers to process containers.
- * Specific engineering controls are required for this chemical by OSHA. Refer to the OSHA Standard: *1910.1017 Vinyl Chloride*.
- * Specific engineering controls are recommended for this chemical by NIOSH. Refer to the NIOSH Current Intelligence Bulletins: *Vinyl Halides Carcinogenicity # 79-102 and Reprints #79-146*.

- * Before entering a confined space where **Vinyl Chloride** may be present, check to make sure that an explosive concentration does not exist.

Good WORK PRACTICES can help to reduce hazardous exposures. The following work practices are recommended:

- * Workers whose clothing has been contaminated by **Vinyl Chloride** should change into clean clothing promptly.
- * Do not take contaminated work clothes home. Family members could be exposed.
- * Contaminated work clothes should be laundered by individuals who have been informed of the hazards of exposure to **Vinyl Chloride**.
- * Eye wash fountains should be provided in the immediate work area for emergency use.
- * If there is the possibility of skin exposure, emergency shower facilities should be provided.
- * On skin contact with **Vinyl Chloride**, immediately wash or shower to remove the chemical. At the end of the workshift, wash any areas of the body that may have contacted **Vinyl Chloride**, whether or not known skin contact has occurred.
- * Do not eat, smoke, or drink where **Vinyl Chloride** is handled, processed, or stored, since the chemical can be swallowed. Wash hands carefully before eating or smoking.

PERSONAL PROTECTIVE EQUIPMENT

WORKPLACE CONTROLS ARE BETTER THAN PERSONAL PROTECTIVE EQUIPMENT. However, for some jobs (such as outside work, confined space entry, jobs done only once in a while, or jobs done while workplace controls are being installed), personal protective equipment may be appropriate.

The following recommendations are only guidelines and may not apply to every situation.

Clothing

- * Avoid skin contact with **Vinyl Chloride**. Wear protective gloves and clothing. Safety equipment suppliers/manufacturers can provide recommendations on the most protective glove/clothing material for your operation.
- * All protective clothing (suits, gloves, footwear, headgear) should be clean, available each day and put on before work.
- * Safety equipment manufacturers recommend *North Silvershield* gloves.
- * Where exposure to cold equipment, vapors, or liquid may occur, employees should be provided with special clothing designed to prevent the freezing of body tissues.

Eye Protection

- * Wear splash-proof chemical goggles and face shield when working with liquid, unless full facepiece respiratory protection is worn.
- * Wear gas-proof goggles and face shield, unless full facepiece respiratory protection is worn.

Respiratory Protection

IMPROPER USE OF RESPIRATORS IS DANGEROUS. Such equipment should only be used if the employer has a written program that takes into account workplace conditions, requirements for worker training, respirator fit testing and medical exams, as described in OSHA 1910.134.

- * Where the potential exists for exposures over **1 ppm**, use a MSHA/NIOSH approved supplied-air respirator with a full facepiece operated in the positive pressure mode or with a full facepiece, hood, or helmet in the continuous flow mode, or use a MSHA/NIOSH approved self-contained breathing apparatus with a full facepiece operated in pressure-demand or other positive pressure mode.

HANDLING AND STORAGE

- * Prior to working with **Vinyl Chloride** you should be trained on its proper handling and storage.
- * A regulated, marked area should be established where **Vinyl Chloride** is handled, used, or stored.
- * **Vinyl Chloride** is not compatible with OXIDIZING AGENTS (such as PERCHLORATES, PEROXIDES, PERMANGANATES, CHLORATES, NITRATES, CHLORINE, BROMINE and FLUORINE), COPPER, ALUMINUM, IRON and STEEL.
- * Store in tightly closed containers in a cool, well-ventilated area away from HEAT, AIR and SUNLIGHT as hazardous polymerization may occur.
- * Sources of ignition, such as smoking and open flames, are prohibited where **Vinyl Chloride** is handled, used, or stored.
- * Metal containers involving the transfer of 5 gallons or more of **Vinyl Chloride** should be grounded and bonded. Drums must be equipped with self-closing valves, pressure vacuum bungs, and flame arresters.
- * Use only non-sparking tools and equipment, especially when opening and closing containers of **Vinyl Chloride**.
- * Wherever **Vinyl Chloride** is used, handled, manufactured, or stored, use explosion-proof electrical equipment and fittings.

QUESTIONS AND ANSWERS

Q: If I have acute health effects, will I later get chronic health effects?

A: Not always. Most chronic (long-term) effects result from repeated exposures to a chemical.

Q: Can I get long-term effects without ever having short-term effects?

A: Yes, because long-term effects can occur from repeated exposures to a chemical at levels not high enough to make you immediately sick.

Q: What are my chances of getting sick when I have been exposed to chemicals?

A: The likelihood of becoming sick from chemicals is increased as the amount of exposure increases. This is determined by the length of time and the amount of material to which someone is exposed.

Q: When are higher exposures more likely?

A: Conditions which increase risk of exposure include physical and mechanical processes (heating, pouring, spraying, spills and evaporation from large surface areas such as open containers), and "confined space" exposures (working inside vats, reactors, boilers, small rooms, etc.).

Q: Is the risk of getting sick higher for workers than for community residents?

A: Yes. Exposures in the community, except possibly in cases of fires or spills, are usually much lower than those found in the workplace. However, people in the community may be exposed to contaminated water as well as to chemicals in the air over long periods. Because of this, and because of exposure of children or people who are already ill, community exposures may cause health problems.

Q: Don't all chemicals cause cancer?

A: No. Most chemicals tested by scientists are not cancer-causing.

Q: Can men as well as women be affected by chemicals that cause reproductive system damage?

A: Yes. Some chemicals reduce potency or fertility in both men and women. Some damage sperm and eggs, possibly leading to birth defects.

Q: Who is at the greatest risk from reproductive hazards?

A: Pregnant women are at greatest risk from chemicals that harm the developing fetus. However, chemicals may affect the ability to have children, so both men and women of childbearing age are at high risk.

Q: Should I be concerned if a chemical is a teratogen in animals?

A: Yes. Although some chemicals may affect humans differently than they affect animals, damage to animals suggests that similar damage can occur in humans.

The following information is available from:

New Jersey Department of Health and
Senior Services
Occupational Disease and Injury Services
Trenton, NJ 08625-0360
(609) 984-1863

Industrial Hygiene Information

Industrial hygienists are available to answer your questions regarding the control of chemical exposures using exhaust ventilation, special work practices, good housekeeping, good hygiene practices, and personal protective equipment including respirators. In addition, they can help to interpret the results of industrial hygiene survey data.

Medical Evaluation

If you think you are becoming sick because of exposure to chemicals at your workplace, you may call a Department of Health and Senior Services physician who can help you find the services you need.

Public Presentations

Presentations and educational programs on occupational health or the Right to Know Act can be organized for labor unions, trade associations and other groups.

Right to Know Information Resources

The Right to Know Infoline (609) 984-2202 can answer questions about the identity and potential health effects of chemicals, list of educational materials in occupational health, references used to prepare the Fact Sheets, preparation of the Right to Know survey, education and training programs, labeling requirements, and general information regarding the Right to Know Act. Violations of the law should be reported to (609) 984-2202.

DEFINITIONS

ACGIH is the American Conference of Governmental Industrial Hygienists. It recommends upper limits (called TLVs) for exposure to workplace chemicals.

A **carcinogen** is a substance that causes cancer.

The **CAS number** is assigned by the Chemical Abstracts Service to identify a specific chemical.

A **combustible** substance is a solid, liquid or gas that will burn.

A **corrosive** substance is a gas, liquid or solid that causes irreversible damage to human tissue or containers.

DEP is the New Jersey Department of Environmental Protection.

DOT is the Department of Transportation, the federal agency that regulates the transportation of chemicals.

EPA is the Environmental Protection Agency, the federal agency responsible for regulating environmental hazards.

A **fetus** is an unborn human or animal.

A **flammable** substance is a solid, liquid, vapor or gas that will ignite easily and burn rapidly.

The **flash point** is the temperature at which a liquid or solid gives off vapor that can form a flammable mixture with air.

HHAG is the Human Health Assessment Group of the federal EPA.

IARC is the International Agency for Research on Cancer, a scientific group that classifies chemicals according to their cancer-causing potential.

A **miscible** substance is a liquid or gas that will evenly dissolve in another.

mg/m³ means milligrams of a chemical in a cubic meter of air. It is a measure of concentration (weight/volume).

MSHA is the Mine Safety and Health Administration, the federal agency that regulates mining. It also evaluates and approves respirators.

A **mutagen** is a substance that causes mutations. A **mutation** is a change in the genetic material in a body cell. Mutations can lead to birth defects, miscarriages, or cancer.

NAERG is the North American Emergency Response Guidebook. It was jointly developed by Transport Canada, the United States Department of Transportation and the Secretariat of Communications and Transportation of Mexico. It is a guide for first responders to quickly identify the specific or generic hazards of material involved in a transportation incident, and to protect themselves and the general public during the initial response phase of the incident.

NCI is the National Cancer Institute, a federal agency that determines the cancer-causing potential of chemicals.

NFPA is the National Fire Protection Association. It classifies substances according to their fire and explosion hazard.

NIOSH is the National Institute for Occupational Safety and Health. It tests equipment, evaluates and approves respirators, conducts studies of workplace hazards, and proposes standards to OSHA.

NTP is the National Toxicology Program which tests chemicals and reviews evidence for cancer.

OSHA is the Occupational Safety and Health Administration, which adopts and enforces health and safety standards.

PEOSHA is the Public Employees Occupational Safety and Health Act, a state law which sets PELs for New Jersey public employees.

ppm means parts of a substance per million parts of air. It is a measure of concentration by volume in air.

A **reactive** substance is a solid, liquid or gas that releases energy under certain conditions.

A **teratogen** is a substance that causes birth defects by damaging the fetus.

TLV is the Threshold Limit Value, the workplace exposure limit recommended by ACGIH.

The **vapor pressure** is a measure of how readily a liquid or a solid mixes with air at its surface. A higher vapor pressure indicates a higher concentration of the substance in air and therefore increases the likelihood of breathing it in.

ATTACHMENT 2
ACTIVITY HAZARD ANALYSES (AHAs)

ACTIVITY HAZARD ANALYSIS #1

Activity: Mobilization and Site SetupAnalyzed By/Date: Eric Goldman 3/10/01Reviewed By: Roger Margotto, CIH

Principal Steps	Potential Hazards	Recommended Controls
Set up work areas	<p>Potential exposure to chemical hazards.</p> <p>Noise exposure.</p> <p>Slip, trip, and fall hazards.</p> <p>Sharp objects/punctures.</p> <p>Strains from manually moving materials and equipment.</p>	<ul style="list-style-type: none"> • Delineate exclusion zones and use PPE specified in Table 2. • Ambient air monitoring and visual observation shall be used to verify selection of PPE. • Identify all chemical hazards and receive training (MSDS) regarding safe handling of chemicals. The Site Health and Safety Specialist (SHSS) will file copies of all material safety data sheets (MSDSs) at site. • Hearing protection is required when sound levels exceed 84 dBA continuously. Areas where hearing protection is required shall display warning signs requiring hearing protection. • Work areas shall be visually inspected and slip, trip, and fall hazards shall be marked, barricaded, or eliminated, if feasible. • Maintain proper illumination in all work areas. • Refer to EHS Procedure 3-8 "Fall Protection." • Wear cut resistant work gloves when sharp edges or other objects may cause the possibility of lacerations or other injury. When possible sharp edges will be blunted. • Workers should not stand or walk on equipment or supplies. • Personnel shall be directed to use proper lifting techniques such as keeping the back straight, lifting with legs, limiting twisting, and getting help when moving bulky/heavy materials and equipment. • Use of hand truck shall be encouraged. • Employees will not lift more than 50 pounds. • Refer to EHS Procedure 3-1 "Ergonomics."

ACTIVITY HAZARD ANALYSIS #1

Activity: Mobilization and Site Setup

Analyzed By/Date: Eric Goldman 3/10/01

Reviewed By: Roger Margotto, CIH

Principal Steps	Potential Hazards	Recommended Controls
	<p>Exposure to extreme temperatures.</p> <p>Eye hazards.</p> <p>Lack of communication in widely dispersed areas.</p> <p>Struck by or against heavy equipment.</p>	<ul style="list-style-type: none"> • Monitor for heat stress in accordance with EHS Procedure 4-6 "Temperature Extremes." • Provide fluids and rest breaks during warm weather and while wearing impermeable protective clothing. • Safety glasses are the minimum required eye protection for all work areas. • Insure each work team has a telephone or access to a telephone for communication. • If more than one team at a time is working, insure there is communication between the work teams and project management. • Wear high visibility reflective vests when exposed to vehicle traffic. • Make eye contact with operators before approaching equipment. • Understand and review posted hand signals. • Traffic barricades, signs, flags, and backup spotters will be used during field activities.

ACTIVITY HAZARD ANALYSIS #1

Activity: Mobilization and Site SetupAnalyzed By/Date: Eric Goldman 3/10/01Reviewed By: Roger Margotto, CIH

Principal Steps	Potential Hazards	Recommended Controls
Installation of utilities	Electrocution, improper installation.	<ul style="list-style-type: none"> • Only qualified electricians are allowed to hook up or disconnect electrical circuits. • Inspect all extension cords daily for structural integrity, ground continuity, and damaged areas. • Inspect extension cord connection. • Use ground fault circuit interrupters (GFCIs) on all outdoor 115 to 120 volts, 20 amps or less circuits. • Elevate or cover electric wire or flexible cord passing through work area to protect it from damage by foot traffic, vehicles, sharp corners, projections, or pinching. (Cover only in accordance with National Electrical Code requirements.) • Keep plugs and receptacles out of water unless they are approved-submersible types. • Ground all electrical circuits in accordance with the National Electrical Code or other applicable standards and regulations.
Install barricades and other support structures	Power and hand tools. Material handling.	<ul style="list-style-type: none"> • Inspect all tools before each use. • Personnel will be trained in the proper use of hand tools. • All power tools will be grounded or double insulated. • Identify and avoid pinch points. • Maintain communication with others involved in material handling. • Use appropriate PPE.

ACTIVITY HAZARD ANALYSIS #1

Activity: Mobilization and Site SetupAnalyzed By/Date: Eric Goldman 3/10/01Reviewed By: Roger Margotto, CIH

Principal Steps	Potential Hazards	Recommended Controls
	Strains from handling materials.	<ul style="list-style-type: none"> Personnel shall be directed to use proper lifting techniques such as keeping back straight, lifting with legs, limiting twisting, and getting help when moving bulky/heavy materials and equipment. Use of hand trucks shall be encouraged. Personnel shall work at a steady pace. Refer to EHS Procedure 3-1 "Ergonomics."
Equipment to be Used	Inspection Requirements	Training Requirements
Heavy equipment, hand tools	Daily and before use.	<ul style="list-style-type: none"> Only trained equipment operators may operate heavy equipment; only Department of Motor Vehicles (DMV)-licensed personnel will operate trucks. Specific training for power tools, hand tools, and electrical safety.

Notes:

DBA - decibel
 DMV - Department of Motor Vehicles
 EHS - Environmental Health and Safety
 GFCI - ground fault circuit interrupters
 MSDS - Material Safety Data Sheet
 PPE - personal protective equipment
 SHSS - Site Health and Safety Specialist

ACTIVITY HAZARD ANALYSIS #2

Activity: Sample Retrieval and HandlingAnalyzed By/Date: Eric Goldman 3/10/01Reviewed By: Roger Margotto, CIH

Principal Steps	Potential Hazards	Recommended Controls
Handling core samples	<p>Back strains.</p> <p>Exposure to chemical contaminants.</p> <p>Slips, trips, and falls.</p> <p>Strains from use of tools such as shovels, extension poles, and hand augers.</p>	<ul style="list-style-type: none"> • Follow EHS Procedure 3-1 “Ergonomics.” • Avoid prolonged repetitive motion. Rotate job tasks with other workers. • Use pivot and shift technique when shoveling soil into containers. • Get help or use mechanical lifting devices for heavy loads. • Wear required PPE and respiratory protection as specified in the Site-Specific Health and Safety Plan (SHSP). • Visual inspection and ambient air monitoring will determine selection of PPE and respiratory protection. • Remove PPE properly and wash hands. • Maintain good housekeeping in work area. • Mark or remove all identified trip and slip hazards from sampling areas. • Maintain proper illumination in work areas. • <i>Life preservers must be worn at all times when working on watercraft.</i> • Inspect all tools for damage before use. • Do not use damaged tools “out of service” and tag “out of service”. • Maintain steady pace and follow the rest periods given on the job. • Use appropriate tools for the task and maintain in good condition. • Always maintain three points of contact with the watercraft when retrieving sampling apparatus from water.
Drilling or punch for samples (Including off-shore drilling)	<p>Noise from rig.</p> <p>Contact with contaminated sediments.</p>	<ul style="list-style-type: none"> • Wear hearing protection while operating rig. • Wear modified Level C PPE. Establish control zones around work area. Employee awareness of contaminants and sampling procedures.

ACTIVITY HAZARD ANALYSIS #2

Activity: Sample Retrieval and HandlingAnalyzed By/Date: Eric Goldman 3/10/01Reviewed By: Roger Margotto, CIH

Principal Steps	Potential Hazards	Recommended Controls
Drilling or punch for samples (Including off-shore drilling) (continued)	<p>Back strain from heavy lifting.</p> <p>Pinch points.</p> <p>Slip, trip, and falls.</p> <p>Falling overboard and drowning.</p> <p>Contacting exposed gears or pulleys on drill rig.</p> <p>Underground utilities.</p> <p>Traffic.</p>	<ul style="list-style-type: none"> • Use mechanical lifting devices. Use proper lifting techniques. Seek help when lifting anything over 50 lbs. • Avoid placing hands in places close to moving machinery. • Wear gloves, and Type II or equivalent USCG life preservers (PFDs) as appropriate. • Wear high traction boots. Clear work area of trip hazards. Evaluate all work areas prior to starting tasks. • Boat occupants will wear PFDs. No standing or leaning over edge. Rehearse man over board drills. Ensure that barge or boat has appropriate guardrails. Employee awareness and operator awareness. • Inspect equipment. Install guards as appropriate. Isolate or de-energize defective equipment as necessary. • Insure drilling or soil boring locations are clear of underground utilities. • Call "Underground Services Alert (USA)" (Note: Normally USA acknowledges the call but does not respond to activities on military bases. However, there have been exceptions. It is always better to be "safe"). • FWENC will perform a review of all surveys and drawings. • Wear reflective safety vests. • Barricade and mark sampling sites for visibility. Use a flag person, if necessary to direct traffic away from sampling areas. • Coordinate with flight line operations. • Review bay boat schedules. Comply with Coast Guard right-of-way rules. Use horn to signal or warn other boats as appropriate. Suspend work during bad weather and poor visibility. Have experienced boat crews operate vessels.

ACTIVITY HAZARD ANALYSIS #2

Activity: Sample Retrieval and HandlingAnalyzed By/Date: Eric Goldman 3/10/01Reviewed By: Roger Margotto, CIH

Principal Steps	Potential Hazards	Recommended Controls
Drilling or punch for samples (Including off-shore drilling) (continued)	Tipping over drill rig on barge during rough waters. Vessel mechanical failure or onboard emergency. Zone control in each area.	<ul style="list-style-type: none"> • Ensure drill rig is securely lashed to deck of barge. Suspend drilling in rough waters. • Inspect vessel for mechanical integrity on a daily basis. Communicate fire and emergency evacuation procedures to all boat occupants. Ensure that emergency communications with Coast Guard are available. Ensure that emergency lifeboats, life rings, and vests are available. • Establish minimal zones in each work area by use of barricades or cones. • Remove PPE, decontaminate in zone, or cover contaminated equipment when moving to next zone.
Sample handling	Atmospheric and contact hazards from contaminated soil or water.	<ul style="list-style-type: none"> • Wear required PPE and respiratory protection. • Selection of PPE and respiratory protection will be determined by visual inspection and ambient air monitoring. • Decontaminate exteriors of sample containers. Avoid spills. Insure spill cleanup supplies are available.
Equipment to be Used	Inspection Requirements	Training Requirements
Hand tools	Daily and before use.	<ul style="list-style-type: none"> • Specific training for hand tools.
Floating Barge	Daily, before and during use.	<ul style="list-style-type: none"> • Specific training for operators and occupants.
Drill or punch rig	Daily, before and during use.	<ul style="list-style-type: none"> • Specific training for operators.

Notes:

PFD – personal flotation device
PPE – personal protective equipment
SHSP – Site-Specific Health and Safety Plan
USA – Underground Service Alert

ACTIVITY HAZARD ANALYSIS #3

Activity: Drilling and Cone Penetrometer Work **Analyzed By/Date:** Eric Goldman 03/10/01 **Reviewed By:** Roger Margotto, CIH

Principal Steps	Potential Hazards	Recommended Controls
Survey site	Slips, trips, and falls from various agents.	<ul style="list-style-type: none"> • Work areas shall be visually inspected and pre-existing slip, trip, and fall hazards shall be marked, barricaded, or eliminated as is feasible. • Work areas shall be kept neat and in an orderly state of housekeeping. • Proper illumination shall be maintained in work areas.
Drilling operations	<p>Damage to existing utilities.</p> <p>Noise.</p> <p>Traffic in area of drilling.</p> <p>Explosion hazards.</p> <p>Atmospheric and contact hazards from chemical agents.</p>	<ul style="list-style-type: none"> • Personnel shall contact service facilities engineer before working on utilities. • Earplugs shall be worn whenever drill rig is in operation. • Wear reflective safety vests. • Barricade and mark drilling sites for visibility. Use a flag person, if necessary, to direct traffic away from drilling areas. • Coordinate with flight line operations as necessary. • Explosimeter and PID will be used to monitor area prior to any intrusive work. • Any intrusive work will halt immediately if the PID reading rises above 5 ppm. • Do not perform any intrusive work directly over the gas condensate collection system at Site 2. • PPE shall be used. • Ambient air monitoring and visual monitoring shall be used to verify selection of PPE. • Proper decontamination of drilling implements shall be performed after use (or cover contaminated parts when moving to the next drilling site). • All soil cuttings shall be properly drummed and labeled. • All PPE shall be placed in a separate, properly labeled container.

ACTIVITY HAZARD ANALYSIS #4

Activity: UXO Related Work Activities Analyzed By/Date: Lance Humphrey 03/31/01 Reviewed By: Roger Margotto, CIH

Principal Steps	Potential Hazards	Recommended Controls
Geophysical Survey (see <i>Site-Specific Work Plan</i> , Section 5 for more detail)	Carrying heavy survey equipment.	<ul style="list-style-type: none"> • Use proper lifting techniques when carrying equipment. • Take frequent rest breaks. • Share the load.
Intrusive Operations (see <i>Site-Specific Work Plan</i> , Section 6 and Appendix 6-2)	<p>Contacting OE/UXO material.</p> <p>Hand excavation.</p> <p>Backhoe excavation.</p> <p>Handling of OE/UXO.</p>	<ul style="list-style-type: none"> • Evacuate all non-essential personnel from area before any intrusive operations. • Use remote sensing equipment to detect UXO. Mark and avoid positive targets. • Use probes prior to use of hand tools. • Performed by UXO-qualified personnel only. • Remove only the soil 12 inches from the identified item. • Excavation supervised only by a UXO supervisor. • Dig no deeper than 4 feet from the original surface. • Stockpile spoils no closer than 3 feet to the edge of the excavation. • Ensure the Senior UXO Supervisor is present. • Performed by an UXO-qualified person only (see Section 6).
Conventional Ordnance Disposal (see <i>Site-Specific Work Plan</i> , Section 6 for more detail)	Unplanned explosion.	<ul style="list-style-type: none"> • Notify Senior UXO Supervisor. • Allow only UXO-qualified personnel on-site. Under no circumstances will personnel work alone. • Keep all spark- and flame-producing materials away from energetic materials. • Do not handle ammunition and explosives roughly or carelessly. Extra care should be taken because in most cases the hazards of the ammunition and/or explosives increase with age, deterioration, or damage.

ACTIVITY HAZARD ANALYSIS #4

Activity: UXO Related Work Activities Analyzed By/Date: Lance Humphrey 03/31/01 Reviewed By: Roger Margotto, CIH

Principal Steps	Potential Hazards	Recommended Controls
<p>Conventional Ordnance Disposal (see <i>Site-Specific Work Plan</i>, Section 6 for more detail) (continued)</p>	<p>Explosive transport vehicle operation.</p>	<ul style="list-style-type: none"> • Carefully handle-blasting caps at all times. Install blasting caps only after all operators, except those priming the charges, have retreated to a safe area. • Conduct explosive operations only under favorable weather conditions. Do not perform detonation under periods of heavy, low total overcast, electrical storms, and/or dust, snow, or wind storms. • Do not stockpile explosive material near the detonation site. • After the planned detonation, remain at the safe area for 5 minutes for single shots and 30 minutes for multiple shots. The Senior UXO Supervisor will then inspect the site to ensure complete destruction of all energetic material. • Perform detonation operations only during daylight hours. • Take appropriate precautions to minimize the potential of electrostatic energy. • In the event of an electric or non-electric misfire, wait 30 minutes before investigating the cause of the misfire (see Section 6). • Driver training. • Ensure vehicle meets the requirements of 49 CFR 100 to 199 and is operated under the guidance of NAVSEA OP-2239. • Only the driver and one helper shall ride in a vehicle transporting explosive material.

Notes:

CFR - Code of Federal Regulations
 OE - ordnance and explosives
 UXO - unexploded ordnance

ACTIVITY HAZARD ANALYSIS #5

Activity: DemobilizationAnalyzed By/Date: Eric Goldman 03/10/01Reviewed By: Roger Margotto, CIH

Principal Steps	Potential Hazards	Recommended Controls
Decontaminate equipment	<p>Atmospheric and contact hazards.</p> <p>Slip, trip, and fall hazards.</p> <p>Exposure to high temperatures.</p> <p>Strains from manually moving materials and equipment.</p>	<ul style="list-style-type: none"> • Wear required PPE. • Use ambient air monitoring and visual monitoring to verify PPE selection. • Visually inspect work areas and slip, trip, and fall hazards will be marked, barricaded, or eliminated as feasible. • Maintain proper illumination in all work areas. • Refer to EHS Procedure 3-8 "Fall Protection." • <i>Life Preservers must be worn at all times when working aboard watercraft.</i> • Monitor for heat stress in accordance with EHS Procedure 4-6 "Temperature Extremes." • Maintain fluid intake and take breaks, as needed. • Use proper lifting techniques such as keeping back straight, lifting with legs, limiting twisting, and getting help when moving bulky/heavy materials and equipment. • Use of lifting devices whenever possible. • Refer to EHS Procedure 3-1 "Ergonomics." • Do not lift more than 50 pounds without help.
Demobilization and site restoration	Struck by or against heavy equipment.	<ul style="list-style-type: none"> • Wear high visibility reflective vests when exposed to vehicle traffic. Make eye contact with operators before approaching equipment. • Understand and review posted hand signals. • Use traffic barricades, signs, flags, and backup spotters during demobilization.

ACTIVITY HAZARD ANALYSIS #5

Activity: Demobilization Analyzed By/Date: Eric Goldman 03/10/01 Reviewed By: Roger Margotto, CIH

Principal Steps	Potential Hazards	Recommended Controls
Demobilization and site restoration (continued)	<p>Electrocution.</p> <p>Struck by or against heavy equipment.</p> <p>Material handling.</p>	<ul style="list-style-type: none"> • Allow only qualified electricians to disconnect electrical circuits. • Inspect all extension cords daily for structural integrity, ground continuity, and damaged areas. • Document extension cord inspection. • Use ground fault circuit interrupters (GFCIs) on all outdoor 115 to 120 volt, 20 ampere or less, circuits. • Cover or elevate electric wire or flexible cord passing through work area to protect it from damage by foot traffic, vehicles, sharp corners, projections, or pinching. • Keep plugs and receptacles out of water unless they are approved-submersible types. • Ground all electrical circuits in accordance with the National Electrical Code or other applicable regulations or standards. • Temporary wiring is not allowed to pass through walls, doors, windows (extension cords are one type of temporary wiring). • Wear high visibility reflective vests when exposed to vehicle traffic. • Make eye contact with operators before approaching equipment. • Understand and review posted hand signals. • Use traffic barricades, signs, flags, and backup spotters during demobilization. • Identify and avoid pinch points. • Maintain communication with others involved in material handling. • Use appropriate PPE.

ACTIVITY HAZARD ANALYSIS #5

Activity: Demobilization Analyzed By/Date: Eric Goldman 03/10/01 Reviewed By: Roger Margotto, CIH

Principal Steps	Potential Hazards	Recommended Controls
Demobilization and site restoration (continued)	Strains from manually moving materials and equipment.	<ul style="list-style-type: none"> • Use proper lifting techniques such as keeping back straight, lifting with legs, limiting twisting, and getting help when moving bulky/heavy materials and equipment. • Use lifting devices whenever possible. • Refer to EHS Procedure 3-1 "Ergonomics."

Equipment to be Used	Inspection Requirements	Training Requirements
Heavy equipment, hand tools, power tools	Daily or before use.	<ul style="list-style-type: none"> • Only trained equipment operators may operate heavy equipment; only Department of Motor Vehicles (DMV)-licensed personnel will operate trucks. • Specific training for power tools, hand tools, and electrical safety.

Notes:

DMV - Department of Motor Vehicles
 EHS - Environmental Health and Safety
 GFCI - ground fault circuit interrupters
 PPE - personal protective equipment

ATTACHMENT 3
FORMS



FOSTER WHEELER ENVIRONMENTAL CORPORATION
DAILY BRIEFING SIGN-IN SHEET

Date: _____ Project Name/Location: _____

Shift/Department: _____ Person Conducting Briefing: _____

1. AWARENESS (e.g., special EHS concerns, pollution prevention, recent incidents, etc.):

2. OTHER ISSUES (EHS Plan changes, attendee comments, etc.):

3. ATTENDEES (Print Name):

1.	21.
2.	22.
3.	23.
4.	24.
5.	25.
6.	26.
7.	27.
8.	28.
9.	29.
10.	30.
11.	31.
12.	32.
13.	33.
14.	34.
15.	35.
16.	36.
17.	37.
18.	38.
19.	39.
20.	40.

Daily Briefing Sign-In Sheet (Continued)

41.	56.
42.	57.
43.	58.
44.	59.
45.	60.
46.	61.
47.	62.
48.	63.
49.	64.
50.	65.
51.	66.
52.	67.
53.	68.
54.	69.
55.	70.

Give completed documentation to ESO.

SITE SAFETY BRIEFING FORM

Site: _____

Date: _____

Time: _____

OFS No.: _____

Task: _____

Health/Safety Officer: _____

Person Providing Briefing: _____

TOPICS:

- Site SHSP
- Chemical Hazards
- Equipment Hazards
- Electrical Hazards
- Heat Stress
- Personal Decontamination
- Personal Hygiene
- Employee Rights/Responsibilities
- Hazard Evaluations
- Emergency Response Procedures

PERSONS IN ATTENDANCE:
(Name/Organization)

PERSONS IN ATTENDANCE:
(Name/Organization)

NOTES/COMMENTS:

MEDICAL DATA SHEET

Project: _____

Name: _____

Home Telephone Number: _____

Home Address: _____

Age: _____ **Height:** _____ **Weight:** _____ **Blood Type:** _____

Name of Emergency Contact: _____

Telephone Number of Emergency Contact: _____

Drug or Other Allergies: _____

Particular Sensitivities: _____

Do you wear contact lenses? _____

Provide a checklist of previous illness or exposures to hazardous chemicals: _____

What medications are you presently using? _____

Do you have any medical restrictions? If yes, explain: _____

Name, address, and phone number of personal physician:



CORPORATE ESQ REPORT # _____

FOSTER WHEELER ENVIRONMENTAL CORPORATION**FOSTER WHEELER ENVIRONMENTAL CORPORATION
INCIDENT/NEAR MISS REPORT AND INVESTIGATION****TYPE OF INCIDENT - CHECK ALL THAT APPLY**

- | | | | |
|---|--|---|--------------------------------|
| <input type="checkbox"/> INJURY/ILLNESS | <input type="checkbox"/> VEHICLE DAMAGE | <input type="checkbox"/> PROPERTY DAMAGE | <input type="checkbox"/> FIRE |
| <input type="checkbox"/> SPILL/RELEASE | <input type="checkbox"/> PERMIT EXCEEDENCE | <input type="checkbox"/> HIGH LOSS POTENTIAL
(NEAR MISS) | <input type="checkbox"/> OTHER |

1.GENERAL INFORMATION

PROJECT/OFFICE:	REPORT #:	DATE OF REPORT:
DATE OF INCIDENT:	MILITARY TIME: _____	DAY OF WEEK: _____
FW SUPERVISOR ON DUTY:	AT SCENE OF INCIDENT: <input type="checkbox"/> YES <input type="checkbox"/> NO	
LOCATION OF INCIDENT:		
WEATHER CONDITIONS:	ADEQUATE LIGHTING AT SCENE:	<input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A

DESCRIBE WHAT HAPPENED (STEP BY STEP - use additional pages if necessary)**AFFECTED EMPLOYEE INFORMATION**

(Include injured person, driver/operator, or employee whose activities resulted in the incident. Use another page to provide information for additional employees)

NAME:	FWENC EMPLOYEE:	<input type="checkbox"/> YES <input type="checkbox"/> NO
HOME ADDRESS:		
SOCIAL SECURITY #:	HOME PHONE #:	
JOB CLASSIFICATION:	YEARS IN JOB CLASSIFICATION:	
HOURS WORKED ON SHIFT PRIOR TO INCIDENT:	YEARS WITH FWENC:	AGE:
DID INCIDENT RELATE TO ROUTINE TASK FOR JOB CLASSIFICATION: <input type="checkbox"/> YES <input type="checkbox"/> NO		

INJURY/ILLNESS INFORMATION

NATURE OF INJURY OR ILLNESS:

OBJECT/EQUIPMENT/SUBSTANCE CAUSING HARM:

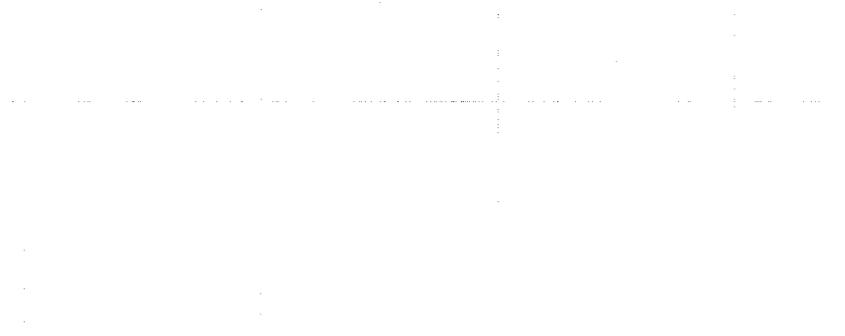
FIRST AID PROVIDED: YES NOIF YES, WHERE WAS IT GIVEN: ON SITE OFF SITE

IF YES, WHO PROVIDED FIRST AID:

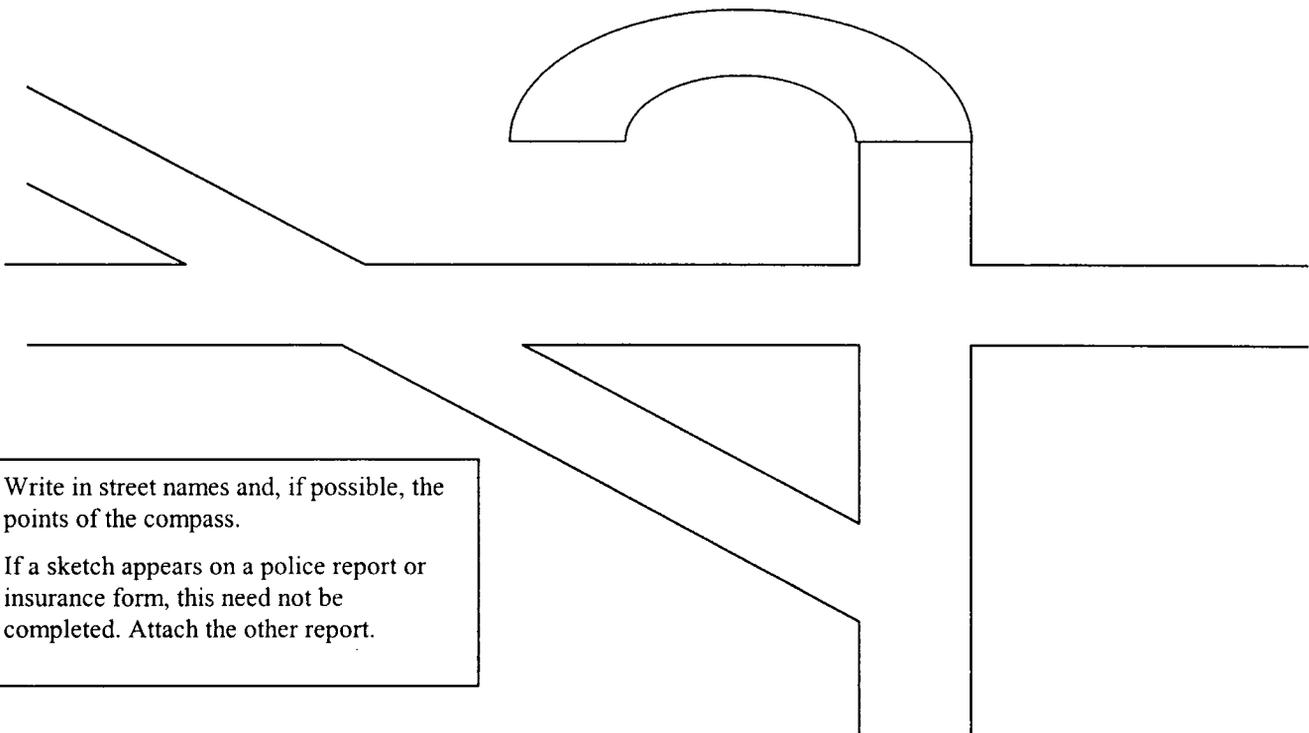
WILL THE INJURY/ILLNESS RESULT IN: RESTRICTED DUTY LOST TIME UNKNOWN

MEDICAL TREATMENT INFORMATION		
WAS MEDICAL TREATMENT PROVIDED?:	<input type="checkbox"/> YES	<input type="checkbox"/> NO
IF YES, WAS MEDICAL TREATMENT PROVIDED:	<input type="checkbox"/> ON SITE	<input type="checkbox"/> DR.'S OFFICE <input type="checkbox"/> HOSPITAL
NAME OF PERSON(S) PROVIDING TREATMENT:		
ADDRESS WHERE TREATMENT WAS PROVIDED:		
TYPE OF TREATMENT:		
VEHICLE AND PROPERTY DAMAGE INFORMATION		
VEHICLE/PROPERTY DAMAGED:		
DESCRIPTION OF DAMAGE:		
SPILL AND AIR EMISSIONS INFORMATION		
SUBSTANCE SPILLED OR RELEASED:	FROM WHERE:	TO WHERE:
ESTIMATED QUANTITY/DURATION:		
CERCLA HAZARDOUS SUBSTANCE? YES <input type="checkbox"/> NO <input type="checkbox"/> RQ EXCEEDED? YES <input type="checkbox"/> NO <input type="checkbox"/> SPECIFY: _____		
REPORTABLE TO AGENCY? YES <input type="checkbox"/> NO <input type="checkbox"/> SPECIFY: _____		
WRITTEN REPORT? YES <input type="checkbox"/> NO <input type="checkbox"/> TIME FRAME: _____		
RESPONSE ACTION TAKEN		
PERMIT EXCEEDENCE		
TYPE OF PERMIT:	PERMIT #:	
DATE OF EXCEEDENCE:	DATE FIRST KNOWLEDGE OF EXCEEDENCE:	
PERMITTED LEVEL OR CRITERIA (e.g., Water quality):		
EXCEEDENCE LEVEL OR CRITERIA:	EXCEEDENCE DURATION:	
REPORTABLE TO AGENCY? YES <input type="checkbox"/> NO <input type="checkbox"/> SPECIFY: _____		
WRITTEN REPORT? YES <input type="checkbox"/> NO <input type="checkbox"/> TIME FRAME: _____		
RESPONSE ACTION TAKEN:		
NOTIFICATIONS		
NAME(S) OF FWENC PERSONNEL NOTIFIED:	DATE/TIME:	
CLIENT NOTIFIED:	DATE/TIME:	
AGENCY NOTIFIED:	DATE/TIME:	<input type="checkbox"/> NOT REQUIRED
CONTACT NAME:		
PERSONS PREPARING REPORT		
EMPLOYEE'S NAME: (PRINT)	SIGN:	
EMPLOYEE'S NAME (PRINT)	SIGN:	
SUPERVISOR'S NAME: (PRINT)	SIGN:	
NOTE: Supervisor to forward a copy of Incident Report to immediate supervisor, PESM, ESS or ESC, and other personnel as identified in Table 1 of this procedure ASAP, but no later than 24 hours.		

INCIDENT SKETCH



VEHICLE INCIDENTS



Write in street names and, if possible, the points of the compass.

If a sketch appears on a police report or insurance form, this need not be completed. Attach the other report.

INVESTIGATIVE REPORT

DATE OF INCIDENT: _____

DATE OF INVESTIGATION REPORT: _____

INCIDENT COST:		ESTIMATED: \$ _____	ACTUAL: \$ _____
OSHA RECORDABLE(S):		<input type="checkbox"/> YES <input type="checkbox"/> NO	# RESTRICTED DAYS _____ # DAYS AWAY FROM WORK _____
CAUSE ANALYSIS			
Was the activity addressed in an AHA?		<input type="checkbox"/> YES (Attach a copy)	<input type="checkbox"/> NO
IMMEDIATE CAUSES – WHAT ACTIONS AND CONDITIONS CONTRIBUTED TO THIS EVENT? (USE NEXT PAGE)			
BASIC CAUSES - WHAT SPECIFIC PERSONAL OR JOB FACTORS CONTRIBUTED TO THIS EVENT? (USE NEXT PAGE)			
ACTION PLAN			
REMEDIAL ACTIONS - WHAT HAS AND OR SHOULD BE DONE TO CONTROL EACH OF THE CAUSES LISTED? INCLUDE MANAGEMENT PROGRAMS (SEE ATTACHED LIST) FOR CONTROL OF INCIDENTS IF APPLICABLE.			
ACTION	PERSON RESPONSIBLE	TARGET DATE	COMPLETION DATE
PERSONS PERFORMING INVESTIGATION			
INVESTIGATOR'S NAME: (PRINT)	SIGN:	DATE:	
INVESTIGATOR'S NAME: (PRINT)	SIGN:	DATE:	
INVESTIGATOR'S NAME: (PRINT)	SIGN:	DATE:	
MANAGEMENT REVIEW			
PROJECT/OFFICE MANAGER (PRINT)	SIGN:		
COMMENTS:			
PESM or ESC (PRINT)	SIGN:		
COMMENTS:			
NOTE: Attach additional information as necessary. Supervisor to forward copy of Investigative Report to the PM or OM, PESM or ESC ASAP, but no later than 72 hours after the incident. A copy shall be sent to the Director, Health and Safety Programs within 24 hours of completion of the report.			

EXAMPLES OF IMMEDIATE CAUSES

<u>SUBSTANDARD ACTIONS</u>	<u>SUBSTANDARD CONDITIONS</u>
<ol style="list-style-type: none"> 1. OPERATING EQUIPMENT WITHOUT AUTHORITY 2. FAILURE TO WARN 3. FAILURE TO SECURE 4. OPERATING AT IMPROPER SPEED 5. MAKING SAFETY DEVICES INOPERABLE 6. REMOVING SAFETY DEVICES 7. USING DEFECTIVE EQUIPMENT 8. FAILURE TO USE PPE PROPERLY 9. IMPROPER LOADING 10. IMPROPER PLACEMENT 11. IMPROPER LIFTING 12. IMPROPER POSITION FOR TASK 13. SERVICING EQUIPMENT IN OPERATION 14. UNDER INFLUENCE OF ALCOHOL/DRUGS 15. HORSEPLAY 	<ol style="list-style-type: none"> 1. GUARDS OR BARRIERS 2. PROTECTIVE EQUIPMENT 3. TOOLS, EQUIPMENT, OR MATERIALS 4. CONGESTION 5. WARNING SYSTEM 6. FIRE AND EXPLOSION HAZARDS 7. POOR HOUSEKEEPING 8. NOISE EXPOSURE 9. EXPOSURE TO HAZARDOUS MATERIALS 10. EXTREME TEMPERATURE EXPOSURE 11. ILLUMINATION 12. VENTILATION 13. VISIBILITY

EXAMPLES OF BASIC CAUSES

<u>PERSONAL FACTORS</u>	<u>JOB FACTORS</u>
<ol style="list-style-type: none"> 1. CAPABILITY 2. KNOWLEDGE 3. SKILL 4. STRESS 5. MOTIVATION 	<ol style="list-style-type: none"> 1. SUPERVISION 2. ENGINEERING 3. PURCHASING 4. MAINTENANCE 5. TOOLS/EQUIPMENT 6. WORK STANDARDS 7. WEAR AND TEAR 8. ABUSE OR MISUSE

MANAGEMENT PROGRAMS FOR CONTROL OF INCIDENTS

<ol style="list-style-type: none"> 1. LEADERSHIP AND ADMINISTRATION 2. MANAGEMENT TRAINING 3. PLANNED INSPECTIONS 4. TASK ANALYSIS AND PROCEDURES 5. TASK OBSERVATION 6. EMERGENCY PREPAREDNESS 7. ORGANIZATIONAL RULES 8. ACCIDENT/INCIDENT ANALYSIS 9. PERSONAL PROTECTIVE EQUIPMENT 	<ol style="list-style-type: none"> 10. HEALTH CONTROL 11. PROGRAM AUDITS 12. ENGINEERING CONTROLS 13. PERSONAL COMMUNICATIONS 14. GROUP MEETINGS 15. GENERAL PROMOTION 16. HIRING AND PLACEMENT 17. PURCHASING CONTROLS
---	---

NOTIFICATION REMINDER

Fatalities or hospitalization (admittance) of three or more individuals requires notification to OSHA within 8 hours. Contact the Director, Health and Safety Programs or Director, ESQ Programs to make the notification. If unavailable, the senior operations person on site should make the notification.

Incident/Near Miss Report and Investigation Instructions

General: The incident report (pages 1 and 2) must be completed within 24 hours. Do not delay the report if any information is unknown. It can be provided later by revising the Report.

Type of Incident: Check all that apply. A High Loss Potential (Near Miss) incident is one that does not result in loss, but under slightly different circumstances, could have resulted in an OSHA Recordable injury, spill, release, permit exceedence, fire, or vehicle/property damage in excess of \$500. All High Loss Potential (Near Miss) incidents are to be investigated.

General Information

Project/Office: If the incident occurs on a delivery order contract, give the contract/program name, DO# and location. If the incident occurs on a C&E field project, give the Office location managing the project as well as the project/location.

Report No.: Optional numbering field for offices/projects.

FW Supervisor: The Foster Wheeler Supervisor responsible for the work effort involving the incident. Do not give a subcontractor supervisor or craft foreman name. If a Foster Wheeler Supervisor was the Affected Employee, this field should contain the name of his or her supervisor. The Supervisor is the project supervisor if the incident happens on project, or the administrative supervisor if the incident happens in the office. E.g., a geologist, acting as an FOL gets injured on a job site, or in a motor vehicle in the course of project work. The FW Supervisor is most likely the Project Manager. If the same geologist gets injured lifting a box in his office, the FW Supervisor is likely the Office Science Lead.

Location of Incident: The specific location on the project, in the office, or off-site location.

Weather Conditions: Temperature, precipitation, approximate wind speed and direction, cloud cover, relative humidity. This information may be included in the description section, and must be given in detail whenever it is a factor in the cause or impact, e.g., spill, release, heat stress, wind blown material.

Describe What Happened: This section must be completed in sufficient detail to adequately describe the events and conditions leading up to and resulting from the incident. Try to answer the questions who, what, where, when, and how. This information is then used to determine why (cause). Provide details such as work objective, procedure being used, body position, and PPE. Include diagrams or sketches for all incidents involving vehicles/equipment and other incidents where they aid in providing detail or perspective. Consider attaching photographs. Follow the guidelines in Practical Loss

Control Leadership, and consider the impact of each of the following:

P - People
E - Equipment
M - Material
E - Environment

To do an effective job, a visual inspection of the scene is usually necessary along with private interviews of affected employees and witnesses.

Where appropriate, use terms indicating the type of contact, e.g., struck by; struck against; fall from elevation; fall on same level; caught in; caught between or under; caught on; contact with; overstress; equipment failure; environmental release; fire.

Affected Employee Information

FWENC Employee: Direct hire, whether professional, administrative, or craft; full-time or part-time; permanent or temporary. If the affected employee is not a FWENC employee, give the name of the employer and business relationship (e.g., client, subcontractor) in the description section above.

Hours Worked on Shift Prior to the Incident: Only include the amount of time the employee worked that shift or day prior to the incident.

Years with FWENC: For FWENC employees, give the number of years employed with FWENC. If the employee has worked for FWENC for less than a year, do not write <1. Give the answer in fraction of year, or specify the number of months, e.g., 0.1 or 1 month.

Injury/Illness Information

Nature of Injury or Illness: If the incident resulted in an injury or illness, give a brief description of the body part affected and type of injury or illness, e.g., fractured thumb, left hand; carpal tunnel syndrome, right hand.

First Aid Provided: First Aid is any treatment that does not have to be provided by a health care professional, even if it is. E.g., a laceration that is cleaned and bandaged in a clinic may constitute first aid, if sutures are not given.

Will the Injury Result In: Do not delay the report if this information is unknown.

Medical Treatment Information

Was Medical Treatment Provided? Medical treatment is that treatment that must be provided by a licensed medical practitioner, e.g., sutures, prescription medication, etc.

Type of Treatment: This information is important in determining OSHA recordability, since some forms of treatment would not constitute a Recordable case (e.g., one-time administration of prescriptions, negative diagnostic exams). Attach a copy of the treating professional's statement/work release.

Vehicle and Property Damage Information

Vehicle/Property Damaged: For vehicles, indicate VIN and whether it is company owned or leased, business trip rental (Avis) or owned by others.

Description of Damage: Be specific as to the identity of damaged part, location and extent.

Spill and Air Emissions Information

Substance Spilled or Released: For pure substances, list materials by common name/chemical. For wastes, indicate waste code. For mixtures or contaminated media, provide contaminant name, CAS No., concentration.

RQ Exceeded? Reportable quantity. Contact your ESQ representative for guidance. Specify the RQ for the material, whether you answer yes or no.

Reportable to Agency? If yes, specify the federal, state or local agency that must be provided with verbal and/or written notification.

Written Report? Answer yes if the release requires a written report to be filed and note the time frame.

Response Action Taken: Describe the mitigation efforts, as well as any reports made, beyond initial notification.

Permit Exceedence

Type of Permit: List name of permit including the agency name where applicable (e.g., NPDES, PSAPCA NOC)

Date of Exceedence: Specify date exceedence occurred (e.g., date discharge in excess of permit limits occurred)

Date First Knowledge of Exceedence: Specify date when first knew there was an exceedence (i.e., date analytical received). This date may be different from the date of the exceedence listed above.

Permitted Level or Criteria: List numerical discharge or emission limit or narrative criteria specified in the permit (e.g.,

20% opacity limit, Best Management Practices (BMP) implementation per SWPPP).

Exceedence Level or Criteria: Specify actual numerical discharge/emission limit or narrative criteria which was exceeded (e.g., 22% opacity, failure of BMPs (silt fencing collapse) per SWPPP)

Exceedence Duration: Specify time frame by date and hours (using military time) during which exceedence occurred.

See "Spill/Release Information" (above) for description of remaining questions.

Persons Preparing Report

Employee's Name: The affected employee described on page 1 should review the report and sign here, as well as other employees witnessing or involved in the incident.

Supervisor's Name: The FWENC Supervisor must review and sign the report indicating agreement. The FWENC Supervisor and the Investigator (next page) should be the same person.

Investigative Report

Report No.: This is the same as the project/office optional report number from page 1 of the Incident/Near Miss Report.

Date of Investigative Report: This date should be within 72 hours of the incident. In cases where the investigation is not completed until a later date, submit the incomplete report within the 72 hours, and a revised report should be submitted when the missing information is obtained.

Incident Cost: For all vehicle/equipment or property damage cases, an estimated or actual loss value must be entered. If an estimated value is entered, the report must be revised when the actual costs are known.

OSHA Recordables: This section should be completed in consultation with the PESM. If it cannot be determined at the time of the report, the PESM should consult with the Director, Health and Safety Programs and revise the report when a determination is made.

No. of Restricted Days: This relates to days of restricted work activity, not restrictions on motion or physical capability. If the employee is capable of doing his normal job the day after the injury and thereafter, there are no restricted days, even if the physician indicates a physical restriction. It does not include the day of the injury.

No. of Days Away from Work: The number of days after the day of the injury that the employee was scheduled to work but could not due to an occupational injury. If the treating physician releases an employee to return to work, but the employee chooses not to come to work, do not count those

days. In this case the PESM should contact the Director, Health and Safety Programs.

Cause Analysis

Immediate Causes: Determine the immediate causes, using the example on page 4. If one or more of the examples fits the circumstance, use those words in the cause description. This facilitates statistical analysis of the incident database for program evaluation/modification. However, do not confine your cause determination to the guide words. Explain, e.g., Improper Lifting – employee attempted to lift box by bending at the waist and twisting while lifting. Be sure that the incident description on page 1 is sufficiently detailed to support the causal analysis in this section. An assumption of cause (e.g., improper lifting) from the injury (low back pain) is not acceptable.

Basic Causes: Like the Immediate Causes, use the guide words in the attachment whenever appropriate and explain. For example, improper motivation may be because the correct way takes more time or effort; short cutting standard procedure is tolerated or positively reinforced; or the person thinks there is no personal benefit to always doing the job correctly.

Note: The investigator is encouraged to review the Practical Loss Control Leadership chapters on *Causes and Effects of Loss* and *Accident/Incident Investigation* before doing the causal analysis. As a check, the investigator may refer to the C.A.T. Chart available from the PESM.

Remedial Actions: Include all actions taken or those that should be taken to prevent recurrence. Be sure that actions address the causes. For example, training (safety meetings) may be a necessary response for lack of knowledge, but may be inadequate for improper motivation. If completion dates exceed the 72 hours reporting period, a revised report must be submitted when all remedial actions are complete.

Persons Performing Investigation: The primary investigator is the FWENC Supervisor in charge of the work where the incident occurred. Others participating in the investigation, such as the Project Manager, ESS, QC, site engineer, foreman, etc. should also sign the report.

Management Review: The Project or Office Manager and the PESM or office ESC must sign the report indicating their satisfaction with thoroughness of the investigation and the report, and their concurrence that the action items address the identified causes. This constitutes the peer review, and the report, particularly the description, should be clear to readers not familiar with the project or incident.



FOSTER WHEELER ENVIRONMENTAL CORPORATION

SITE SAFETY PLAN CHANGE APPROVAL FORM

N44255-95-D-6030

DO: _____

Date _____ Amendment Number _____

Project Name: _____ Project Number: _____

Section of SHSP: _____ Page Number: _____

Change to read: _____

Reason for change: _____

Approvals: _____

Project Superintendent or Manager

SSHS

PESM (CIH)