



**WORK PLAN
FINAL**

**NAVAL AIR STATION ALAMEDA, LANDFILL 1 AND 2
(IR SITES 1 AND 2) RADIOLOGICAL SURVEYS AND
ANOMALY REMOVAL**

**WP NO. NASA-2
REVISION 2**

SSPORTS Environmental Detachment
Code 120 PO Box 2135
Vallejo, CA 94592-0135

6/5/98

N00236.001538
ALAMEDA POINT
SSIC NO. 5090.3

DRAFT FINAL WORK PLAN
LANDFILL 1 AND 2 RADIOLOGICAL SURVEYS AND
ANOMALY REMOVAL, REVISION 1

DATED 10 APRIL 1998

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SSPORTS REVIEW AND APPROVAL

WORK PLAN FOR

NAVAL AIR STATION ALAMEDA, LANDFILL 1 AND 2 (IR SITES 1 AND 2)
RADIOLOGICAL SURVEYS AND ANOMALY REMOVAL

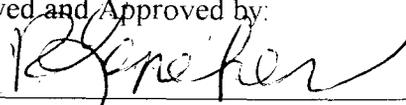
WP NO. NASA-2

Rev. 2



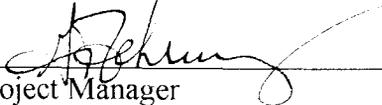
Project Engineer
Radiological Group

6/5/98

Reviewed and Approved by:


Project Manager
Radiological Group

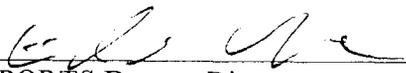
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Project Manager
Operations

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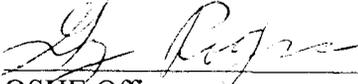
Radiological OSHE Reviewed and Approved:



SSPORTS Deputy Director

6/15/98

OSHE Reviewed and Approved:



OSHE Office

6-15-98

Engineering Department Reviewed and Approved:



SSPORTS Director

6/15/98

Table of Contents

SECTION	PAGE
Review and Approval.....	1
Table of Contents.....	2
List of Revisions.....	3
1.0 Background/Purpose.....	4
2.0 References.....	4
3.0 General Notes.....	5
4.0 Prerequisites.....	6
5.0 Procedures.....	8
6.0 Decontamination.....	9
7.0 Disposal.....	9
8.0 Certification and Closure WORK PLAN COMPLETION.....	9
TABLE I RADIOLOGICAL STANDARDS FOR SURFACE CONTAMINATION	10
Acronyms.....	11
<u>Figures</u>	
1. General Area View, Alameda Point.....	12
2. Landfill #1 and #2 Survey Area map.....	13
<u>Enclosures</u>	
1 (A & B). SSPORTS Review of Initial Surface Area Survey Data	
2 (A & B). Resurvey and Marking of Surface Areas for Soil Removal	
3 (A & B). USRADS Survey Map	
4 (A & B). Survey of Areas Excavated	
5 (A & B). Photographs	
<u>Appendices</u>	
Appendix A Health and Safety Plan	

1.0 BACKGROUND/PURPOSE

1.1 IR-1 (Site 1) is a former landfill that operated between 1943 and 1956. IR-2 (Site 2), which operated after closure of IR-1, was closed in 1978. Both landfills were used for the disposal of industrial and municipal waste from NAS Alameda including low level radioactive material. Both IR-1 and IR-2 showed elevated radiation levels during previous surveys.

The purpose of this work plan (WP) is to provide instructions for SSPORTS Environmental Detachment personnel, using Ultra-Sonic Ranging and Data Systems (USRADS) equipment, to identify anomalies that pose an external radiation hazard within sites IR-1 and northern part of IR-2 (see Figures 2). It is expected that the anomalies will normally be discrete materials which can be readily identified and removed but may include contaminated soil. After anomalies are removed, the excavated areas will be restored with clean fill to the elevation of the surrounding terrain and the remediated areas will be resurveyed using USRADS.

The USRADS equipment being used for this survey, when equipped with four 3X3 NaI detectors mounted on a cart, is capable of providing survey data 18 inches deep in the soil along a path approximately one meter wide. This will result in a 100% scan survey when paths are adjacent to each other and on level clear terrain. Areas that contain trees, shrubs, asphalt, concrete, buildings and other structures cannot be surveyed 100%. At Sites 1 and 2, it is estimated that 75% of the terrain is level enough to achieve 100% scan surveys using USRADS.

For terrain which is not level, but accessible to personnel, the USRADS can be utilized using a backpack equipped with one 3X3 NaI detector. This method will yield approximately 20% to 30 % coverage depending on irregularities in the terrain.

Some areas along the western waterfront are covered with large irregular concrete pieces. These areas, which may constitute 5% to 10% of the sites, are not considered feasible for surveys and will not be surveyed. In addition, paved runways, paved roads, concrete/asphalt slabs and the inside and outside of buildings will not be surveyed.

Survey data from the USRADS will be used to generate Plot Maps which will identify anomalies and their locations. Histograms will be generated from all USRADS data to provide a distribution of readings. From this distribution a determination will be made on which anomalies require further investigation. Hand held instruments will then be used to pin-point these anomalies and to indicate anomaly removal. All surveys will be performed using direct measuring instruments, no solid sampling of soil is anticipated. In the unlikely event that solid samples are required, they shall be handled in accordance with paragraphs 3.3.7 through 3.3.9.

Any anomalies removed per this procedure will be placed in an appropriate container, labeled radioactive material and removed to a Radioactive Material Storage Area (ammunition bunker 353 or building 5 small parts paint shop) pending shipment for disposal.

2.0 REFERENCES

1. SSPORTS DET INST 4110.2, Hazardous Material Control and Management
2. NAVSEA S0420-AA-RAD-010 (RAD 010), Radiological Affairs Support Program Manual
3. Standard Operating Procedure for USRADS Radiological Scan Survey System

4. U. S Atomic Energy Commission, Directorate of Regulatory Standards, Regulatory Guide 1.86, Termination of Operating Licenses for Nuclear Reactors, June 1974

3.0 **GENERAL NOTES**

3.1 **On-Site Organization.**

Position	Personnel (list by name)	Code	Phone
SSPORTS Representatives*			
Project Team Leader	Andy Rutkovskis	120	(707) 562-3467
Health and Safety Coordinator	Hugh Alsworth	120	(707) 562-3468
Project Engineer	Andy Rutkovskis	120	(707) 562-3467
Data/Record Keeper	Hugh Alsworth	120	(707) 562-3468
On-Site Workers	Personnel		
Other Site Representatives (not on-site)			
Project Manager	Ron Leneker	120	(707) 562-3464
Safety & Environmental Engineer	Andy Rutkovskis	120	(707) 562-3467
Occupational Safety, Health, and Environment Officer	Greg Rodgers/	120	(707) 562-3245
	John Bouldt	120	(707) 562-3200

The above personnel assignments are in effect as of the issue date of this work plan. The Health and Safety Coordinator and Data/Record Keeper personnel names shall be entered into the field copies of the work plan prior to start of work. Any changes in the above assignments after issue of the work plan shall be annotated on the field copies of this work plan and signed by the Project Team Leader and the Project Engineer.

3.3 **General Notes.**

3.3.1 **TRAINING:** Workers participating in the clean-up shall be currently qualified in Hazardous Waste Operations and Emergency Response (HAZWOPER) in accordance with 29 CFR 1910.120 (40 hour training). Workers will be trained in Hazardous Communications (HAZCOM YJ A553) and have a current certification in Cardio-Pulmonary Resuscitation (CPR) and First Aid or equivalent Red Cross certified training. Additionally, workers operating forklifts require course YJ-1015, backhoe operators require course HEQ-BHOE, front-end loader operators require course HEQ-FRNT and bobcat operators require course ENV-C044.

3.3.2 **HAZARDS:** See Appendix A

3.3.3 **PERSONAL PROTECTIVE EQUIPMENT:** See Appendix A

3.3.4 **COMMUNICATION AND RESPONSE TO SPILLS:** See Appendix A

3.3.5 **STORAGE AND DISPOSAL:** Properly contain, store and label of materials resulting from removal and sampling in accordance with reference 2.2. Removed material will be stored in ammunition bunker 353 or building 5 small parts paint shop in a designated Radioactive

Material Storage Area (RMSA) pending disposal. Guidelines for establishing and maintaining the RMSA are in reference 2.2. Post storage area with "Caution, Radioactive Material" signs in accordance with reference 2.2. Disposal of radiological waste will be performed by a Naval Sea Systems Detachment - Radiological Affairs Support Office (NAVSEADET RASO) designated contractor. Contact RASO at (757) 887-4692 (fax # (757) 887-3235) to arrange for radiological waste disposal.

3.3.6 SAFETY MEETING: Conduct a safety meeting before surveying and excavation begins and hold subsequent safety meetings on a daily basis.

3.3.7 If solid samples are taken, use chain of custody forms for all solid samples and maintain accountability through the life of the sample.

3.3.8 The analysis of solid samples will be performed either by SSPORTS laboratory using the guidance in EPA-QA/G-5 or by a certified outside laboratory.

3.3.9 Do not dispose of any solid samples until specifically authorized.

4.0 PREREQUISITES

4.1 **Site field Log.** Maintain a site field log. Entries should include a brief of each day's activities, unusual events, a listing of all individuals (name and agency) that enter the site for any reason. Copies of Site Log and Daily Activity Site Report sheets are in Appendix A.

4.2 **Storm Sewer Protection.** N/A

4.3 **Notifications.** N/A

4.4 **Land Survey.**

UXO personnel perform land survey to designate 0,0 points and layout grid reference lines with 100 foot marks for USRADS system for Sites 1 and 2.

4.5 **On-Site Controls.**

A controlled area surrounding the survey, remediation and any on site storage areas shall be established during survey and removal activities to prevent unauthorized entry. The boundaries of this controlled area shall be agreed upon by the OHSC and the Project Team Leader. Boundaries may be established by traffic control markers, plastic caution tape, ropes, warning signs, and/or other devices as approved by the OHSC.

4.6 **"Clean" Fill Sampling.**

Prior to commencing excavation refill operations per paragraph 5.6 obtain assurance that fill material chosen for the refill of excavations does not contain radioactivity, PCB's, or heavy metals

above applicable limits and that no fill material UXO related concerns exist. Perform sampling and/or visual inspection as necessary to ensure fill material chosen will not introduce additional contaminants to the landfill.

4.7 Radiological Controls.

Operations performed per this work instruction that result in removal of potentially radiologically contaminated soil will be performed under the direction of SSPORTS Radiological personnel. Personnel handling potentially contaminated soil will wear "Tyvek" suits, rubber gloves and rubber shoe covers at a minimum. Personnel will avoid contact with soil as much as practicable. SSPORTS Radiological personnel shall monitor radiation levels using μR meter during all work evolution's. OHSC shall ensure workers are wearing proper dosimeters.

4.8 Asbestos.

Asbestos containing materials are known to be have been buried at landfill sites 1 and 2. If during initial surveys or excavation operations, items are identified which may contain Asbestos Containing Materials (ACM), the items will require sampling by qualified Asbestos inspectors from the SSPORTS Asbestos Branch. If the items are confirmed to contain asbestos, procedures will need to be issued by the SSPORT's Asbestos Branches for the material removal and the removal must be performed by qualified personnel.

4.9 Equipment.

- a. Herculite sheeting and PVC bags (various sizes) (10 mil minimum thickness)
- b. Plastic buckets with resealable lids
- c. 55 gallon drums with plastic liners
- d. Tape (black "pipe-wrap" and cloth back waterproof)
- e. HEPA Vacuum
- f. absorbent cloth/paper material
- g. personnel protective equipment ("Tyvek suits, rubber gloves, rubber shoe covers HEPA respirators, etc)
- h. 650 ml marinelli beakers and radon canisters.
- i. "Polaroid" camera and film
- j. Ultrasonic range and data acquisition system (USRADS)
- k. Survey instruments (Eberline Model E600 digital counter scalers)
- l. Gamma detectors (Eberline Model SPA-3 NaI scintillation probes, 3X3 shielded)
- m. Beta-gamma detectors (Eberline Model SHP-360 "pancake" probes)
- n. Alpha/Beta detectors (Eberline Model SHP 380AB probe or equivalent)
- o. Sample counting equipment: EG&G Ortec Model 92X Spectrum Masters with Gamma Vision software (at Mare Island Bldg 132)
- p. Alpha-beta swipe counting equipment (Xetex Model 560A Abacus counters)
- q. Ludlum Model 19 μR meter. or equivalent
- r. Kabota B2150 tractor for USRADS detector assembly, if required
- s. Two (2) portable gas generators

5.0 PROCEDURES

5.1 Perform 100 percent surveys of Sites 1 and 2 using NaI gamma scintillation detector(s) within 3 to 4 inches of the surface using USRADS equipment in accordance with reference 2.3. Use a minimum of 3 NaI detectors, preferably 4 detectors. If terrain does not allow use of USRADS cart equipment, use backpack and one 3X3 NaI detector. Use reference point (0,0) designated for each site in section 4.4 (see figure 2). The optimum grid size for USRADS surveys is approximately 100 feet by 200 feet (two to three grids per acre).

5.2 SSPTS radiological personnel review initial surface area survey data obtained using USRADS in paragraph 5.1. Based upon this review, record in enclosure (1A for Site 1 and 1B for Site 2) areas that will require further investigation. Specify "x" and "y" coordinates as indicated on USRADS produced survey map. Attach map as enclosure (#A for Site 1 and 3B for Site 2).

Note: Areas requiring further review will be based upon use of histograms of survey data and based upon repeatability of suspect locations (detected by more than one detector).

5.3 Perform manual surveys of areas listed in enclosure (1A for Site 1 and 1B for Site 2) to confirm results. List all areas in enclosure (2A for Site 1 and 2B for Site 2) where manual surveys confirm NaI readings greater than 1-1/2 mean background. Mark these areas at the actual site for soil removal operations.

5.4 Prior to soil removal operations, take photographs of site in as-received condition. Attach these photographs as enclosure (5A for Site 1 and 5B for Site 2) for use during performance of paragraph 5.6. Remove soil from the areas listed in enclosure (2A for Site 1 and 2B for Site 2) to a depth of 6 inches (15 cm), wetting soil as required to minimize dust generation. If anomaly still remains, remove soil in 6 inch increments to a depth not to exceed eighteen inches total. Layout soil removed on herculite covered area and hand survey. Dispose of soil in approved containers.

5.4 Perform manual surveys of areas excavated. If area excavated is large enough, surveys may be performed using USRADS equipment. Record results in enclosure (4A for Site 1 and 4B for Site 2).

5.5 SSPTS perform radiological review of excavated area survey and initial sample data to ensure satisfactory remediation prior to filling the excavated areas with clean fill dirt.

5.6 Restore site to original condition using pre-excavation photographs in enclosure (5A for Site 1 and 5B for Site 2). Fill excavation holes with clean fill dirt. Photograph excavation areas after filling with clean fill and attach to enclosure 5.

5.7 Reperform surveys of filled area using USRADS equipment.

5.8 SSPTS perform a review of USRADS data for completeness and for any additional soil removal or surveys that may be required.

6.0 DECONTAMINATION

6.1 Equipment

Equipment leaving the controlled area will be surveyed. The average/maximum radiation/contamination levels associated with surface contamination resulting from beta-gamma emitters shall not exceed the applicable standards listed References 2.2 and 2.4. Contamination in excess of limits is not expected. However, if equipment contamination exceeds limits specified in (table 1), wipe clean with damp cloth, control as radioactive material or dispose of as radioactive waste.

6.2 Personnel

Personnel decontamination is covered in Health and Safety Plan, Appendix A.

7.0 DISPOSAL

7.1 Hazardous waste will be disposed of by NAS Alameda personnel. Radioactive waste will be disposed of by RASO designated contractor.

Potentially/known radioactive material shall be double bagged/wrapped in 6 mil plastic., and labeled as radioactive material. Material shall be transported to ammunition bunker 353 or building 5, small parts paint shop for storage pending disposal at the end of each shift.

8.0 WORK PLAN COMPLETION

8.1 Return the original Work Plan, site and daily activity reports and a copy of Sample Data Sheets and disc copy of USRADS data for review to SSPORTS Radiological Project Group, Bldg. 132.

8.2 All Work Plan tasks have been completed including the submittal of all required documentation.

YES ___ NO ___ On Site-Project Team Leader _____ Date _____

8.3 Conduct review of Work Plan. All required documentation has been submitted and accepted.

YES ___ NO ___ Project Manager _____ Date _____

TABLE 1 Radiological Standards for Surface Contamination

APPLICABLE STANDARDS REFERENCES 2.2 and 2.4	DETECTION METHOD	MINIMUM REQUIRED DETECTION LIMIT	INSTRUMENT TO BE USED
<p>The surface contamination activity for Ra-226 shall not exceed:</p> <p>20 dpm/100 cm² removable</p> <p>100 dpm/100 cm² average</p> <p>300 dpm/100 cm² maximum</p>	<p>Contamination swipe samples</p> <p>Direct surface scan</p> <p>Direct surface scan</p>	<p>5 dpm/100 cm²</p> <p>50 dpm/100 cm²</p> <p>50 dpm/100 cm²</p>	<p>Xetex Model 560A</p> <p>Eberline E-600 with SHP-380AB detector probe or equivalent.</p> <p>Eberline E-600 with SHP-380AB detector probe or equivalent.</p>
<p>APPLICABLE STANDARDS REFERENCE 2.2</p>			
<p>The average/maximum radiation levels associated with surface contamination resulting from Beta/Gamma emitters should not exceed 0.2 mrem/hr at 1 cm, and 1.0 mrem/hr at 1 cm, respectively, measured through not more than 7 mg/cm² of total absorber.</p>	<p>Ion Chamber Direct surface scan</p>	<p>0.1 mrem/hr</p>	<p>Ludlum Model 19, or equivalent</p>

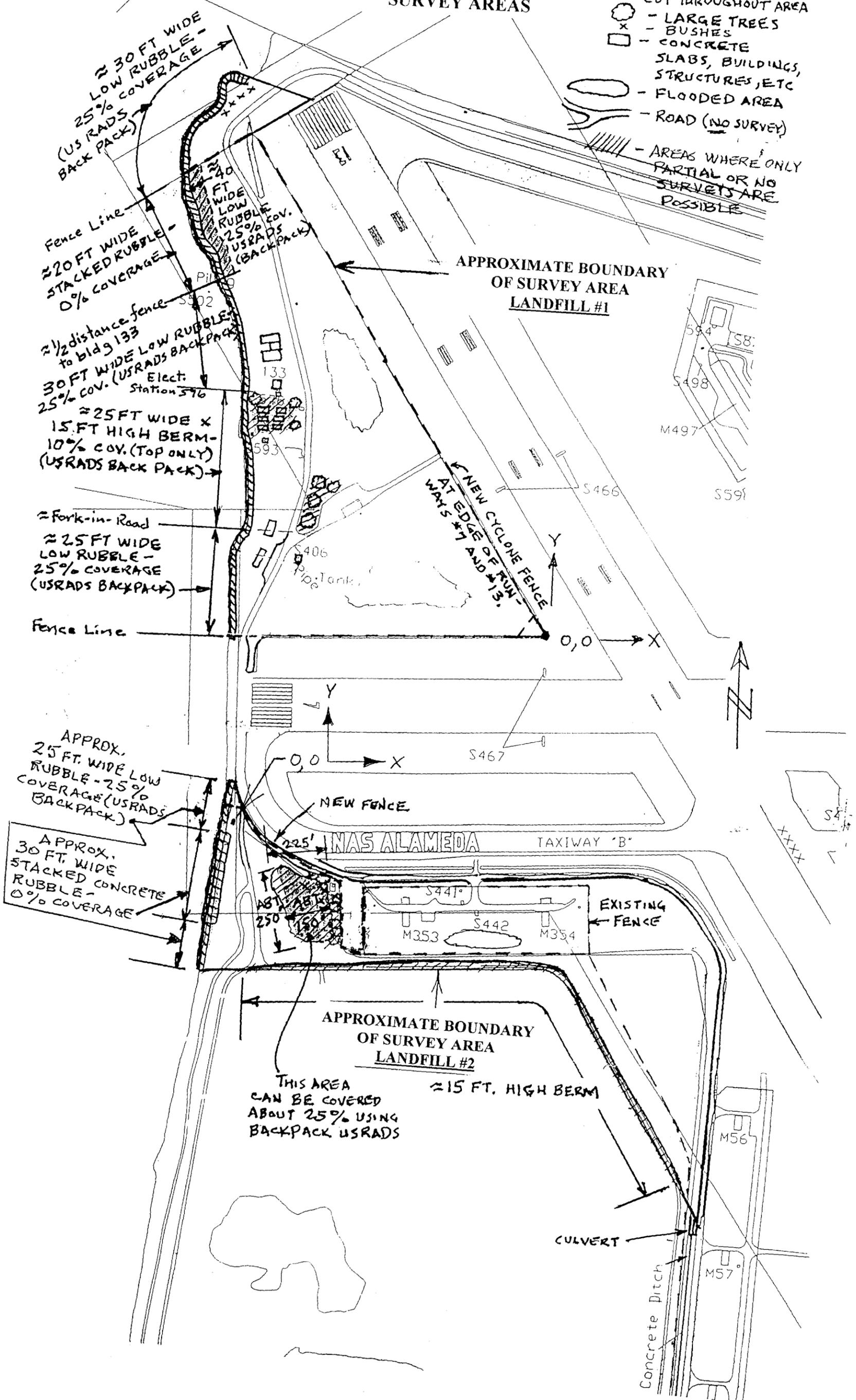
ACRONYMS

CFR	Code of Federal Regulations
CPR	Coronary Pulmonary Resuscitation
dpm	disintegration per minute
HAZCOM	Hazard Communication
HEPA	High Efficiency Particulate Airfilter
RMSA	Radioactive Material Storage Area
NaI	Sodium Iodide
NASA	Naval Air Station Alameda
NRC	Nuclear Regulatory Commission
NUREG	Nuclear Regulations
OHSC	Occupational Health and Safety Coordinator
pCi	pico Curies (1×10^{-12} Curies)
PVC	Poly Vinyl Chloride
Ra-226	Radium 226
RASO	Radiological Affairs Support Office
REV	Revision
SSPORTS	Supervisor Shipbuilding Portsmouth
uR/hr	micro Roentgen/hour
WP	Work Plan

FIGURE 2
LANDFILLS #1 AND #2
SURVEY AREAS

- LEGEND -

- GENERAL - GRASS NEEDS TO BE CUT THROUGHOUT AREA
- LARGE TREES
- BUSHES
- CONCRETE SLABS, BUILDINGS, STRUCTURES, ETC
- FLOODED AREA
- ROAD (NO SURVEY)
- AREAS WHERE ONLY PARTIAL OR NO SURVEYS ARE POSSIBLE



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ENCLOSURES

FINAL WORK PLAN LANDFILL 1 AND 2 RADIOLOGICAL SURVEYS AND ANOMALY REMOVAL

DATED 05 JUNE 1998

ENCLOSURE 3A
SITE #1
USRADS SURVEY MAP

ENCLOSURE 3B
SITE #2
USRADS SURVEY MAP

**ENCLOSURE 5A
SITE #1
PHOTOGRAPHS**

**ENCLOSURE 5B
SITE #2
PHOTOGRAPHS**



APPENDIX A

HEALTH AND SAFETY PLAN FOR SSPORTS ENVIRONMENTAL DETACHMENT RADIOLOGICAL GROUP RELATED SURVEYS AND ANOMALY REMOVAL ALAMEDA NAVAL AIR STATION, LANDFILL 1 AND 2 (IR SITES 1 AND 2)

Prepared by: H. Alsworth
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June 5, 1998

NASA-2 HSP
REV 2

TABLE OF CONTENTS

A. PURPOSE	3
B. SITE DESCRIPTION	3
C. KEY PERSONNEL AND RESPONSIBILITIES	4
D. ON-SITE CONTROLS	4
E. HAZARD EVALUATION	5
F. PERSONAL PROTECTIVE CLOTHING AND EQUIPMENT	8
G. SITE WORK PARTY	12
H. COMMUNICATION	12
I. DECONTAMINATION PROCEDURES	13
J. EMERGENCY RESPONSE	16
K. TRAINING REQUIREMENTS	19
L. SITE-SPECIFIC SAFETY	19
M. MONITORING	22
N. MEDICAL SURVEILLANCE REQUIREMENTS	24
O. GENERAL SAFETY RULES	24
P. ILLUMINATION	25
Q. SANITATION	25
R. HEALTH and SAFETY FORMS	25

FIGURE 1 HOSPITAL MAP

REFERENCES

1. OPNAVINST 5100.23D, Navy Occupational Safety and Health Program Manual
2. 10 CFR, Chapter 1, Part 20, Standards for Protection Against Radiation
3. NAVMED P-5055, Radiation Health Protection Manual
4. NAVSEA S0420-AA-RAD-010 (RAD-010), Radiological Affairs Support Program Manual
5. NUREG/CR-5849, Manual for Conducting Radiological Surveys in Support of License Termination
6. NEHC-TM92-6, Prevention and Treatment of Heat and Cold Stress Injuries
7. 29 CFR 1910.120, Hazardous Waste Operations and Emergency Response
8. 29 CFR 1926.1101, Asbestos in the Construction Industry
9. 29 CFR 1926, Construction Standards
10. EM 385-1-1, U.S. Army Corps of Engineers, Safety and Health Requirements Manual
11. Radiation Survey Report, Naval Air Station, Alameda, California, PRC Environmental Management Inc., February 1997

LIST OF ATTACHMENTS

1. Health and Safety Plan Acceptance Form (Attachment 1)
2. Field Monitoring Instruments Calibration Schedule
3. Daily Site Field Status Log
4. Utilities Site Safety Form and SSPORTS Project Sheet

A. PURPOSE

The purpose of this Health & Safety Plan is to provide guidance for personnel health and safety while conducting radiological surveys using USRADS system and removal of anomalies that pose an external radiation hazard at potentially radioactively contaminated landfill sites 1 and 2. This will include a detailed surface scan for radioactive sources, excavation of identified sources to a maximum depth of 1.5 feet and resurveying of the excavated sites.

B. SITE DESCRIPTION

Description: Site 1, located in the northwestern corner of NAS Alameda, served as a landfill for the base between 1943 and 1956 and consists of 12 acres of the 120 acres comprising the IR site. This landfill received all waste except liquid waste generated at the NAS Alameda. This waste included old aircraft engines, kitchen scraps and garbage from ships in port, cables, scrap metal, waste oil, waste paint, waste solvents, cleaning compounds, construction debris, and low-level radiological material.

Site 2, located in the southwestern corner of NAS Alameda, served as a landfill for the base from 1956 to 1978 and consists of 110 acres. This landfill received waste including waste chemical drums, municipal garbage, solvents, oily waste and sludge, paint waste, plating waste, industrial strippers and cleaners, acids, mercury, PCB-contaminated liquids, batteries, low-level radiological waste, scrap metal, inert ordnance, asbestos, pesticides (solid and liquid), tear gas agent (Ortho-chlorobenzylidene), infectious waste, creosote, dredge spoils, and waste medicines and reagents.

Both sites were compacted and covered with soil.

Existing hazards: Are described in section E and additionally will be covered during each initial site safety briefing.

Surrounding population: The nearest populated areas are the city of Alameda several miles to the east and workers at the closed Naval Air Station approximately one mile to the east base. The general area surrounding the landfills is uninhabited.

General topography: Flat level ground with small hills, covered with grass, gravel or asphalt with few trees. Shoreline covered with concrete debris leading to mud shores.

Climate: Cool rainy winters and warm dry summers. Mean temperatures for coldest month is above 32 °F and for summer is approximately 72 °F. Average annual temperature is 58 °F.

Location and area affected: Both landfills are located on the western section of the former NAS Alameda with landfill 1 comprising the northern section and landfill 2 the southern section. East, North and South of the landfills is San Francisco Bay. The effected areas of the landfills that are to be surveyed are identified on figures 2 of the Work Plan.

C. KEY PERSONNEL AND RESPONSIBILITIES

Radiological Project Manager: Ron Leneker (phone (707) 562-3464) has overall responsibility for the technical administration of the radiological work.

Health & Safety Engineer: Andy Rutkovskis (phone (707) 562-3467) has overall responsibility for the development and maintenance of the site-specific Health and Safety plan for work involving radiological considerations.

Occupational Safety, Health & Environment (OSHE): Greg Rodgers (phone (707) 562-3245) or John Bouldt (phone (707) 562-3200) serves as the Health and Safety Officer and OSH Specialist for the SSPORTS organization at Mare Island, and has overall responsibility for the industrial health and safety program.

On-Site H&S Coordinator: Hugh Alsworth (phone (707) 562-3468)) has overall responsibility for the implementation and enforcement of the Health and Safety plan for work involving radiological considerations.

Emergency Coordinator: The site specific Fire Chief (phone (510) 784-4601) or his designee has overall responsibility for coordinating fire emergencies, confined space & trench rescue, and hazardous spill management.

Project Team Leader: James McNamara (phone (707) 562-3467) has overall responsibility for directing and controlling radiological site specific work projects.

D. ON-SITE CONTROLS

This Health and Safety Plan applies to all workers and visitors who require access to the work site. Changes to the H&S Plan must be in writing, and will require written approval of the Occupational Safety, Health and Environment Office, prior to implementation. A copy of this H&S Plan and must be kept on the site. All personnel working the site must be familiar with this H&S Plan and shall sign the Health & Safety Plan Acceptance Form, see Attachment 1.

The On-site Health & Safety Coordinator (OHSC) shall be responsible for ensuring that all personnel entering an active work area comply with the Health & Safety Plan, medical and training requirements for the site, and have the required level of Personal Protective Equipment (PPE). Only authorized personnel will be allowed in active work areas. Daily site safety meetings will be held each morning before work begins. The Project Team Leader shall maintain a Site Log for the purpose of recording events.

A marked-off area shall be established to manage access control and security for sites involving surveys and minor radiological sampling. A fenced-off area shall be established to manage access control and security for sites involving major radiological removal. Access gates shall be securely locked at the conclusion of work each day for major radiological remediation sites. The safe perimeter boundary is designated as the outer fence line. No unauthorized access is permitted

within the boundary. The Exclusion Zone is defined as the area to be remediated. The decontamination station, command station and staging areas shall be upwind from the exclusion zone.

E. HAZARD EVALUATION

CHEMICAL HAZARDS:

Chemical hazards include, but are not limited to, heavy metals, petroleum products, PCB's, asbestos, volatile or semi-volatile organic compounds, corrosives, herbicides, and insecticides.

Chemical hazards may exist at these sites of concern involving the SSPTS Radiological group's work and they differ by identity, quantity, toxicity, concentration, volatility, and biodegradability. Most contaminants are subsurface so passive exposure is unlikely. However, during excavation, soil sampling and when soil samples are sifted through, the exposed contaminants may become airborne and more available for inhalation or ingestion. Such conditions may require dust abatement by wet methods, standing upwind of the operation or upgraded PPE.

Work with breathing zone upwind from any surface disturbance. Level C personnel protection will be required when disturbing the soil until air monitoring of excavation indicates PPE may be reduced. Otherwise, a modified Level D protection will be required at sites where the contamination is on the surface. The level of protection will be specified by the Project OHSC during the safety tailgate briefing session before workers enter any site.

All personnel working on this site will be required to have a current **Hazardous Waste Operations and Emergency Response (HAZWOPER 29 CFR 1910.120)** training and be dressed in accordance with the Project HSO tailgate briefing sessions.

PHYSICAL HAZARDS:

Slipping or tripping on uneven ground can cause a twisted ankle in any environment. Stepping into holes or trenches in the ground that are hidden or covered by vegetation can also cause major injuries.

Tools, materials, extension cords, hoses, or debris shall not be placed where they may cause tripping or other hazards.

Physical injury from thorns, thistles, broken glass, barbed wire, protruding nails, sharps (medical waste), etc. can easily occur if care is not taken while climbing over, leaning against, kneeling on, or crawling on horizontal or upright surfaces in the field. If skin is broken by an injury, have it checked by a local medical clinic to see if a Tetanus vaccination is recommended.

Ultraviolet (UV) radiation damage to the skin or the cornea of the eye will occur during a sunny or a cloudy day, without being felt until later. To prevent UV radiation damage, use a hat, UV-filtering sunglasses and suitable sun-block lotion.

Heat stress will occur when the body's natural cooling mechanism (perspiration) has not cooled the body's internal temperature sufficiently. Drink plenty of fluids to prevent dehydration when working in high temperatures. Monitoring for heat stress shall occur when ambient temperature exceeds 70 °F per reference 6.

Cold stress (hypothermia) will occur during cold weather if the body's temperature drops below normal. Prepare for cold, windy or wet weather. Clothing may include wool socks, thermal underwear, insulating coat or pants, insulated hat and wool undergloves. Wear head covering. Drink plenty of fluids. Stay active to maintain a high metabolism and body heat. If shivering starts, move inside, before the condition becomes serious.

Lightning can occur without warning. In flat areas, like wetlands, mud flats, or open fields on top of a hill, lightning will seek the nearest (tallest) electrical ground. Do not take cover under a tree. If a thunderstorm approaches, take cover inside a vehicle or a building.

Noise levels above 84 dBA may cause temporary impairment of hearing. Prolonged and repeated exposure to such noise levels may cause permanent hearing damage. Adequate hearing protection (single ear plugs or muffs) shall be specified whenever excessive noise levels are anticipated such as the operation of forklifts or dirt moving equipment. For levels above 84 dBA, hearing protection with a minimum noise reduction ratio of at least 25 shall be specified. Rule of thumb: If you must raise your voice within one arms length of the person you are conversing with, you are exceeding 84 dBA.

Electrical Shock - If employees use electrical appliances out doors or in wet locations, all circuits shall be protected by Ground Fault Circuit Interrupters. Employees shall inspect electrical cords and appliances daily for external defects prior to each use.

BIOLOGICAL HAZARDS:

Flying insects such as mosquitoes, wasps, hornets, and bees may be encountered at these landfill sites. Bite reactions to these insects vary from person to person. Violent reactions may occur from wasp, hornet, and bee stings. If the person is allergic, nausea, shock, constriction of the airway can result. Death may result. Mosquito bites can transmit encephalitis and other diseases. Use insect repellent when required and avoid disturbing any wasp, hornet, or bee nest and walk slowly, if flying wasps, hornets, or bees are encountered.

Bird excrement accumulation poses a potential biological threat to site workers and visitors. A group of pulmonary diseases and disorders are caused by exposure to infected bird droppings. Inhaling dust from infected droppings may result in one of these pulmonary infections. Level C PPE shall be invoked during work which could produce bird excrement dust. High efficiency particulate air (HEPA) respirator filters shall be used during work in this type of environment.

Mammal bites, from rabbits, cats, squirrels, opossum, raccoons, skunks, rodents, or others may cause a puncture, laceration, or avulsion (tear). All animal bites carry a risk of infection. Many mammals can transmit rabies in a bite through infected saliva. Medical attention should be sought and the animal detained, if possible.

Spider bites are usually not poisonous, however, **Black Widow** and **Brown Recluse** spiders inflict **poisonous** bites that cause localized as well as systemic effects that can be serious, painful and occasionally cause death. Identification of the spider involved is important in diagnosing health effects and prescribing treatment.

Microbial Hazards can result in infection. Disease-producing microbial agents may spread to humans via contaminated food or water, insect transmission, environmental dispersal, or direct contact with contaminated materials. Personal cleanliness is especially important in preventing ingestion and infection. Sifting and digging through mud or soil shall be done while wearing gloves and using a tool to stir or break up samples.

Both poisonous and non-poisonous reptile bites can cause serious wounds that should be treated immediately. **Rattlesnake bites** are more likely to occur in the spring and summer months in areas usually not disturbed by daily human activities. They are normally in grassy areas, around wood piles and in rocky areas, but can also be inside unused structures. Because reptiles are cold blooded, they try to stay cool in the shade in hot weather and may sun on a rock or other warm spot during cold weather. To avoid surprising a snake, make noise (vibration) while working, wear high top boots, and avoid placing hands or feet where visibility is not clear. A snake bite requires immediate medical attention. Snake bite victims should be kept calm so the circulatory system of the victim will not transport the venom very far from the initial wound. Treatment should be provided by qualified medical personnel only. Immediately call the number listed in the Emergency Response section of this WP for prompt medical attention.

When working near brush, trees or tall grass tick exposure is anticipated. Use the buddy system and routinely check for ticks every few hours or as frequently as possible. After returning indoors and removing clothing, employees should check their entire body very carefully. Adult ticks are more likely to be located on the head and neck regions, while the nymphs and larvae are more likely to be found on the lower extremities. First aid recommendations from **Lyme Disease, Vector Surveillance and Control**, Technical Information Memo No. 26, Armed Forces Pest Management Board, March 1990.

Tick Removal Procedures

- (1) Using tweezers, grasp the tick behind the mouth parts (head) and slowly but firmly remove the tick. Do not attempt field removal of any remaining body parts as this should be done by medical personnel.
- (2) Do not use any chemical agents such as alcohol, or petroleum oils, hot match heads or similar methods.
- (3) Ticks should not be handled or smashed with fingers as disease inoculation by this mode is possible.
- (4) Clean the wound and apply antiseptic.
- (5) Monitor tick bites and be alert for a rash or other symptoms that may develop up to six weeks following the bite.
- (6) Ticks should be saved for identification.

RADIOLOGICAL HAZARDS:

Radiological hazards are often found in the most unsuspected areas. Radioactive materials were and are used for various processes such as luminescent painting, welding rods, metal processing, check sources, etc.. The use of Radium 226 for painting meter/gage dials and various equipment knobs, buttons, switches, and bridge markers was quite extensive prior to 1972. Prior to 1972 none of these radioactive materials were controlled, resulting in uncontrolled release/dumping in these landfills.

The whole body radiation exposure levels expected to be normally encountered at sites 1 and 2, based on a radiological investigation perform per reference 11, would not exceed the levels requiring personnel exposure monitoring or control. Unnecessary lingering at these sites shall be avoided to maintain exposure to radiation as low as reasonably achievable (ALARA). All eating, drinking, chewing, or smoking shall be avoided at the sites, especially during dust generating evolution's. The on site health & safety coordinator shall ensure that the exposure controls of reference 3, paragraphs 20.1101 through 20.1601, reference 4, Chapter 4, and reference 5, Section II are met by conducting appropriate surveys, prior to allowing personnel entry onto the particular site of concern and during excavation operations exposing previously inaccessible areas. Post storage area with "Caution - Radioactive Material" signs per reference 2 and 4. During work operations, work and material storage areas will be survey to verify radiation levels using a μ R meter. Post storage area with "Radioactive Material Located Inside" signs. Ensure workers are wearing dosimetry (DT-648 worn on waist).

Surface soil sampling and radiological surveying will be conducted following the guidelines of reference 5 as applicable work document. PPE for sampling shall be level C and may be changed by the on-site Health and Safety Coordinator. All collected samples shall be strictly controlled using the chain of custody forms. No sample shall be discarded unless specifically so authorized by written documentation from the SSPORTS Radiological group.

Do not perform operations which could cause airborne dust particles without taking necessary preventive measures such as using water spray mist, HEPA vacuums or respiratory protection. During ground remediation actions using heavy equipment excessive dust generation may occur, unless preventive measures are taken. Always operate equipment in a slow and deliberate manner and work soil and materials in a wet state whenever possible.

F. PERSONAL PROTECTIVE CLOTHING AND EQUIPMENT

Based on the evaluation of potential hazards for the site, the following levels of personal protection have been designated for applicable work areas or tasks.

<u>Location</u>	<u>Job Function</u>	<u>Level of Protection</u>
<u>Exclusion Zones</u>	<u>Initial Survey</u>	<u>D</u>
<u>Exclusion Zone</u>	<u>Excavation</u>	<u>C or D</u>
<u>Exclusion Zone</u>	<u>Survey of Debris</u>	<u>C or D</u>
<u>Decon Zones</u>	<u>All</u>	<u>D</u>
<u>Support Zone</u>	<u>All</u>	<u>standard work uniform</u>

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Personal protective equipment will be worn by field personnel as safeguard from known or suspected chemical and physical hazards. PPE shall be used when initial surveys, excavation and follow-up surveys are performed. Personal protection level C is recommended during initial ground breaking until air monitoring indicates PPE levels may be reduced. Personal protection level D is recommended for initial survey and follow up surveys. Levels of protection are determined by site hazards, concentration of chemical contaminants in the soil to be treated, job tasks, engineering controls, exposure routes and duration of worker exposure. Workers shall be trained in PPE donning and doffing procedures, inspections and limitations. Such knowledge can be obtained from the training specified in Section K.

1. Level C protection shall be worn during excavation or when the possibility of incidental respiratory or skin exposure exists.

Equipment for Level C protection. PPE may include, but is not committed or limited to, the following as appropriate:

1. Full or half-facepiece, powered air-purifying respirators (NIOSH approved).
2. Hooded chemical-resistant clothing (coveralls; two-piece chemical-splash suit; disposable chemical-resistant coveralls).
3. Coveralls.
4. Gloves, outer, chemical-resistant.
5. Gloves, inner, chemical-resistant.
6. Boots, outer, chemical-resistant steel toe and shank.
7. Boot-covers, outer, chemical-resistant (disposable).
8. Hard hat (under suit) and hearing protection (ear plugs).
9. Face shield/safety glasses.

2. Level D shall be worn as a basic work uniform in areas without respiratory or skin hazards. This level provides minimal protection against chemical hazards.

Equipment for Level D protection. PPE may include, but is not committed or limited to, the following as appropriate:

1. Coveralls.
2. Gloves.
3. Boots/shoes, chemical-resistant, steel toe and shank.
4. Boots, outer, chemical-resistant (disposable).
5. Safety glasses or chemical splash shield.
6. Hard hat and hearing protection.
7. Boot covers (disposable).

3. Level C shall be used during initial intrusive work. This work includes soil excavation, screening and surveying after excavation and dust producing processes. The level of protection may be reduced to Level D or upgraded to a higher level at the discretion of the Health and Safety Coordinator based on visual survey and air monitoring results. Powered air-purifying respirators equipped with combination HEPA and organic vapor filter cartridges shall be used.

4. Besides personal protective equipment, field personnel must have ready access to the following:

- An eyewash station with a minimum of 15 minute capacity.
- At least 3 gallons of potable water in a container to permit decontamination if there is accidental skin or eye contact with chemicals. If an operational faucet is readily available, the requirement to have water in a container may be omitted.
- Field instrumentation as applicable for potential hazards, including oxygen level, combustible gas, carbon monoxide, and radiological survey/frisking instruments
- Body electrolyte (salts) replenishing drinks to minimize dehydration, cramps, and heat stress.

It is not anticipated that Level A or B PPE will be required for any radiological projects at these landfill sites, unless specific site conditions should arise which could change the requirements. PPE requirements will be changed on a case basis as required. Respirators will be required if excessive dust producing evolution's are encountered. If respirators are used, follow the requirements listed below.

RESPIRATOR SELECTION, USE, AND MAINTENANCE

All personnel taking part in site activities must fulfill worker provisions outlined in OSHA 29 CFR 1910.134 and reference 1 and 10 concerning the use, maintenance, and limitations of air-purifying respirators. All site personnel must be trained and medically qualified for respirator use and must have completed a qualitative fit test for the respirator used at the site.

All personnel shall have a current SSPORTS respirator card in their possession.

Only NIOSH approved air purifying respirators shall be used. Respirators shall be equipped with NIOSH approved filter cartridges selected for protection against the contaminant(s) of concern. Only NIOSH approved respiratory assemblies will be used. Air-purifying respirators of the appropriate type will be selected by the Site Safety Officer in conjunction with the OSHE office based upon knowledge of the substances that may be present and the concentrations of compounds previously encountered at the site. The requirement for breathing zone air monitoring shall be determined by the OSHE office. Air-purifying respirators will be used only when they provide protection against the substances encountered on site.

Factors preventing the use of air-purifying respirators are as follows:

- Oxygen-deficient atmosphere (less than 20.0 percent oxygen)
- Concentrations of substances that may be immediately dangerous to life and health (IDLH)
- Confined or unventilated areas that may contain airborne contaminants not yet characterized
- Unknown contaminant concentrations or concentrations that may exceed the maximum use level for the designated cartridges, in accordance with the selected cartridge manufacturer's instructions
- Unidentified contaminants
- High relative humidity (which reduces the sorbent life of the cartridges)
- Identified substances with inadequate warning properties (for example, they are tasteless, odorless, and invisible)

Respirators will be inspected daily and exchanged at the tool room every 30 days and if found to be damaged or in need of repair. Respirators will be cleaned and disinfected in the support zone at least

weekly. Cleaned respirators will be placed in clean plastic bags and stored in the support zone in a manner to prevent contamination, distortion or damage. The following respirator inspection and cleaning procedures will be followed whenever respirator protection is used:

- Daily Inspection and Checkout Procedures:
 - Visually inspect the entire unit for obvious damage and deteriorated rubber.
 - Inspect the face piece harness for damage.
 - Inspect the lens for damage, and make sure the face piece has the proper seal.
 - Pull off the plastic cover of the exhalation valve, and check the valve for debris and tears in the neoprene that could cause leakage.
 - Unscrew the cartridges of both inhalation valves, and visually inspect the neoprene valves for tears. Make sure the inhalation valves and cartridge receptacle gaskets are in place.
 - Make sure a protective cover is attached to the lens.
 - Make sure the speaking diaphragm retainer ring is hand-tight.
 - Don the respirator, and perform a negative and positive pressure test fit check.
 - If cartridge change-out is needed -disassemble the respirator in the support zone by removing the cartridges, damaging them to prevent accidental reuse, and discarding them.

- Procedures to Follow after Routine Use in the Exclusion Zone:
 - Wash and rinse the respirator in the support zone with soap and warm water.
 - At a minimum, wipe the respirator with manufacturer approved disinfectant wipes. Allow the respirator to air dry in the support zone.

The effectiveness of the respiratory protection program will be continuously monitored by the OSHE office. Monitoring of worker stress levels during activities that require respiratory protection will be performed by the Site Safety Officer or the designee.

If there are unanticipated changes in site conditions, the H&S Coordinator may upgrade the PPE and the decontamination requirements, if appropriate.

In addition to personal protective clothing and equipment, field personnel having duties in or near the work zone must have ready access to the following:

- ◆ An eyewash kit (must provide 15 minutes of flushing)
- ◆ At least 3 gallons of potable water in a container to permit decontamination in the event of accidental skin or eye contact with chemicals or radioactively contaminated soil or objects.
- ◆ Field instrumentation as applicable for potential hazards, including oxygen level, combustible gas, carbon monoxide, organic vapors and radiological survey/frisking instruments.
- ◆ Potable water for employees (drinking)

If there are unanticipated changes in site conditions or adverse results from air monitoring, the H&S Coordinator may upgrade the PPE and the decontamination requirements, if appropriate.

G. SITE WORK PARTY

The Site Foreman shall ensure that each worker records his name and job function in the daily Site Log, attachment 3.

H. COMMUNICATIONS PROCEDURES

Internal and external communications are to be in effect whenever a site entry is to be made. Internal communications requires that the field team members be able to communicate with each other at all times. Methods of communication may be via radio, verbal, hand signals, or other viable means. The method of choice must be understood by all members and tested to determine its effectiveness.

An external communications system is required to call for off-site emergency assistance and to handle administrative tasks. Alternatives which meet the requirements are a telephone, cellular telephone or radio communications system. Every team member must be aware of the location of the nearest external communications system and be competent in its use.

Other communications systems which may be appropriate for special circumstances include, but are not limited to, sirens, horns, whistles and flags. All team members must be briefed on the purpose of each.

Communications systems for this site are:

(Blanks to be completed on-site by On-Site Foreman or On-Site H&S Coordinator)

EXTERNAL: Cellular Phone INTERNAL: Verbally & Hand Signals
Air Horn

Applicable telephone numbers or radio channels are: (707) 486-8295 or 8725

EXTERNAL: _____
INTERNAL: N/A
Other signals: Air Horn

The following standard hand signals shall be used in case of radio/telephone failure:

- | | |
|--|------------------------------|
| Hand gripping throat ----- | Out of air or can't breathe |
| Grip partner's wrist or
hands around waist----- | Leave area immediately |
| Hands on top of head ----- | Need assistance |
| Thumbs up ----- | OK, understand, am all right |
| Thumbs down ----- | No, negative |

I. DECONTAMINATION PROCEDURES

The following procedures for personnel and equipment decontamination when exiting the Exclusion Zone shall be used where appropriate, judged by the site Health and Safety Coordinator. The Health and Safety Coordinator may recommend and implement changes in personnel and equipment decontamination procedures. Helpers performing decontamination duties will wear, as a minimum, the same level of protection as those workers being decontaminated.

1. Decontamination At Level C Personal Protection

The following decontamination stations are recommended for Level C decontamination. Stations shall be set up in the following order in the decontamination area if level C decontamination is required.

- a) Segregated equipment drop for hand tools and monitoring equipment.
Deposit equipment used on-site (tools, sampling devices and containers, monitoring instruments, radios, clipboards, etc.) on plastic drop cloths or in different containers with plastic liners.

Equipment: various size containers
 plastic liners
 plastic drop cloths

- b) Boot cover, outer glove and coverall wash and rinse. Scrub outer boot covers and gloves with decontamination solution or detergent water. Rinse off decontamination solution using copious amounts of water. Repeat as many times as necessary.

Equipment: containers (20 to 30 gallons)
 decontamination solution of one gallon of water and
 13 oz calcium Hypochlorite or detergent water
 high-pressure spray unit
 containers (30 to 80 gallons)
 water
 5 to 8 long-handle, soft-bristle scrub brushes

- c) Removal station for boot covers and outer gloves. Remove tape around boots and gloves and deposit in container with a plastic liner. Remove boot covers and outer gloves and deposit in container with a plastic liner.

Equipment: containers (20 to 50 gallons)
 plastic liners
 bench or stool

- d) Respirator or cartridge change station. If worker leaves the hot zone to change respirator or cartridge, this is the last step in the decontamination procedure. Worker's cartridge is exchanged, new outer gloves and boot covers donned, and joints taped. Worker returns to duty.

Equipment: cartridge (or respirator)
tape
boot covers
gloves

- e) Removal station for coveralls. Remove disposable coveralls with the assistance of a helper. Deposit suit in container with plastic liner.

Equipment: containers (30 to 50 gallons)
bench or stool
plastic liner

- f) Inner glove wash and rinse. Wash inner gloves with decontamination solution or detergent water that will not harm skin. Repeat as many times as necessary. Rinse inner gloves with water. Repeat as many times as necessary.

Equipment: decontamination solution of one gallon of water and
13 oz calcium Hypochlorite or detergent water
basin or bucket
water
small table

- g) Removal station for respirators. Remove the air purifying respirator while avoiding touching face with gloves. Deposit respirator in container with plastic liner.

Equipment: containers (30 to 50 gallons)
plastic liners

- h) Removal station for inner gloves. Remove inner gloves and deposit in container with plastic liner.

Equipment: containers (20 to 30 gallons)
plastic liners

- I) Hand and face wash and rinse. Wash hands and face.

Equipment: water
soap
tables
wash basins or buckets

All disposable items will be placed in plastic bags and drummed. The items will be tested for possible residual contamination and will be properly disposed of based on analytical results.

2. Decontamination At Level D Personal Protection

The following decontamination stations are recommended for Level D decontamination. Stations should be set up in the following order in the decontamination area if level D decontamination is required.

- a) Segregated equipment drop for hand tools and monitoring equipment. Deposit equipment used on-site (tools, sampling devices and containers, monitoring instruments, radios, clipboards, and so on) on plastic drop cloths or in different containers with plastic liners.

Equipment: various size containers
 plastic liners
 plastic drop cloths

- b) Boot and glove wash and rinse. Boots and gloves will be rinsed with clean water.

Equipment: containers (20 to 30 gallons)
 decontamination solution of one gallon of water and
 13 oz calcium Hypochlorite or detergent water
 water
 2 to 3 long-handle, soft-bristle scrub brushes

- c) Removal station for disposable gloves and booties, if worn. Remove disposable gloves and booties and place in container with plastic liner.

Equipment: container (20 to 30 gallons)
 plastic liners

- d) Removal station for safety glasses, hard hat, and Tyvek, if worn. Remove safety glasses and hard hat. With assistance of helper, remove Tyvek suit. Deposit in container with plastic liner.

Equipment: container (30 to 50 gallons)
 bench or stool
 plastic liner

- e) Hand and face wash and rinse. Wash hands and face.

Equipment: water
 soap
 container (30 to 50 gallons)
 2 to 3 long-handle, soft-bristle scrub brushes

All disposable items will be double-bagged into plastic bags and drummed. The items will be tested for possible residual contamination and will be properly disposed of based on analytical results.

3. Field Tools And Equipment Decontamination

Decontaminate tools and equipment in wash tubs or drums to collect all wastewater. Wash tools and equipment with tap water and non-phosphate detergent solution followed by a tap water rinse. Use wire brush or stiff bristle brush to remove stubborn particles adhering to equipment. Allow tools to air dry. Wipe instruments that can not be soaked in water with damp rags.

4. Heavy Equipment Decontamination

Select an appropriate area within the fenced perimeter of the site to perform heavy equipment decontamination. Decontaminate equipment only when the excavation phase of the project is completed or when heavy equipment has to be moved out of the site. Berm and line decontamination area with heavy-duty impermeable plastic. Decontaminate parts of heavy equipment that have come in contact with potentially contaminated soil by physically scraping, sweeping, or wiping soil from affected surfaces of the machinery. Damp rags could be used. All loosened debris will be collected for proper disposal.

5. Disposal Of Wastes From Decontamination

Disposable clothing and equipment will be bagged and placed in drums. The items will be tested for possible residual contamination and will be properly disposed of based on analytical results. Wash and rinse wastewater will be collected and their disposal will also be based on analytical results.

6. Radiological Decontamination

During radiological surveying, if personnel radiological contamination exceeds levels specified in Section M.3, decontaminate with masking tape and/or wipe with a damp cloth. Verify the contamination has been removed by scan survey of the effected area with beta-gamma and alpha-beta probes held within 1/8" of the effected area. Repeat decontamination efforts until no detectable contamination is detected. Notify the Project Management. Dispose of decontamination materials as radioactive waste. Radiological waste will be disposed of by a RASO designated contractor.

J. EMERGENCY RESPONSE

Emergency and general safety equipment shall be available at the site and shall be properly inspected and maintained. Qualified Fire Department EMTs are available for emergency response actions in 5 to 7 minutes. The following safety equipment shall be staged in a location familiar to all personnel:

- ◆ Supply of clean water (10 gallons)
- ◆ Fire extinguisher (rated 20BC minimum)
- ◆ Portable eyewash unit (rated 15 minutes minimum)
- ◆ Air horn
- ◆ First Aid Kit with CPR mouthpiece

(Blanks to be completed on-site by Site Foreman or On-Site H&S Coordinator)

Emergency equipment is available on-site at the following locations:
(include size or quantity, as appropriate)

Emergency eyewash	_____	At job site
Emergency shower	_____	N/A
Fire extinguisher	_____	At job site
Air horn	_____	At job site

Local ambulance service is available through Central Dispatch at telephone number 911. Response time to the site is 7 minutes

Seriously injured personnel will be evacuated to the nearest Emergency Room located at Alameda Hospital at 2070 Clinton Ave. (see figure 1). From Landfills 1 and 2, proceed southeast along the perimeter Rd to Red Line Ave. (1.8 miles) and turn left. Proceed to Lexington Ave. and turn right (0.1 miles). Proceed to Avenue F (Tower Ave.)(0.4 miles) and then turn left. and turn right. Turn right on Ferry Point Rd. (0.3 miles) and proceed to Atlantic Ave. (0.2 miles) and turn left and exit gate (0.4 miles). Turn right on Main St. and proceed to Central Ave. (0.25 miles). Head south on Central till it splits off to the right to Encinal Ave. (1.8 miles), proceed on Encinal Ave. to Willow St. (0.8 miles). Turn right on Willow st. and proceed to Clinton Ave. (0.2 miles) Alameda Hospital will be on the opposite corner of Willow st. and Clinton Ave. The telephone number to this facility is (510) 522-3700 or (510) 523-4357.

EMERGENCY TELEPHONE NUMBERS

<u>Service</u>	<u>When calling from a base telephone</u>	<u>When calling from a cellular phone</u>	<u>Point of Contact</u>
Fire/Police	9911	(510) 748-4601	Central Dispatch
Ambulance	9911	(510) 268-0770	Central Dispatch
Spill Team	9911		
H&S Specialist	(707) 562-3245 or 480-7920 (cell phone)		Greg Rodgers
Env Compliance Spec	(707) 562-3200 or 480-7920 (cell phone)		John Boultdt

Note: "911" calls from a cellular phone are routed through the CHP dispatch center, which will take additional time.

EMERGENCY PROCEDURES (may be modified as required for incident)

The following standard emergency procedures shall be used by on-site personnel. The On-site Health and Safety Coordinator shall be notified of any on-site emergencies and shall be responsible for ensuring that appropriate procedures are followed.

Personnel Injury in the Exclusion Zone: Upon notification of an injury within the Exclusion Zone, the designated emergency signal two long air horn blasts shall be broadcast and all site personnel inside the zone shall assemble at the decontamination line. If required, the rescue team will enter the Exclusion Zone and remove the injured person to the hotline. The On-site Health and Safety Coordinator or Project Team Leader shall ensure the injured person is decontaminated to the extent possible prior to removal to the Support Zone. The Fire Department EMT shall initiate the

necessary first aid, and notify the designated medical facility of the nature of the accident and the condition of the injured person. If the severity of the injury is such that decontamination is not completed, the ambulance carrier and hospital shall be briefed as to the type and degree of possible contamination by the On-Site Health and Safety Coordinator. No party shall reenter the Exclusion Zone until a determination of cause of the injury or symptoms is determined.

Personnel Injury in the Support Zone: Upon notification of an injury in the Support Zone, The Project Team Leader and the H&S Coordinator will assess the nature of the injury. If the cause of the injury or loss of the injured person does not effect the performance of site personnel in their tasks, operations may continue while the Fire Department EMT initiates appropriate first aid and necessary follow-up as mentioned above. If the injury or loss of the injured person will increase the risk to others, the designated emergency signal two long air horn blasts shall be broadcast and all site personnel shall assemble at the decontamination line for further instruction. Activities inside the Exclusion Zone shall cease until the additional hazards can be removed or minimized.

Fire/Explosion: Upon notification of a fire or explosion at the site, the designated emergency signal two long air horn blasts shall be broadcast and all site personnel shall assemble at the decontamination line. The fire department shall be notified and all personnel will be directed to a safe area of the site by the Project Team Leader.

Personal Protection Equipment Failure: If any site worker experiences a failure or displacement of PPE which affects the level of protection required for the task which is being performed, that person and his/her partner shall put the work in a safe condition, (if it is possible to do so without adverse effect on health and safety), and immediately proceed to the decontamination area. Reentry shall not be permitted until the appropriate level of protection is reestablished.

Other Equipment Failures: Any other equipment failures will be addressed by the project team leader and Site Health & Safety Coordinator to determine the effects on continuing operations on site. If the failure is determined to have adverse effects on the safety of personnel on site or completion of the Work Plan tasks, all personnel shall leave the Exclusion Zone until the problem is remedied or appropriate actions to circumvent the problem have been implemented.

The following emergency escape routes are designated for use when egress from the Exclusion Zone cannot occur through the decontamination line and exiting the area is necessary due to an emergency: To be discussed at the daily safety meeting
('tail-gate' meeting).

In all situations of on-site emergency resulting in the evacuation of personnel from the Exclusion Zone, personnel shall not reenter the area until:

- 1) The condition or conditions resulting in the emergency have been cleared.
- 2) Hazards have been reassessed.
- 3) Site Safety Plan has been reviewed.
- 4) Site personnel have been briefed on any changes to the Site Safety Plan.

ACCIDENT/INCIDENT REPORTING

Whenever an employee, subcontractor, or member of the public is injured at the work site, the Project Manager, in coordination with the Safety Engineer, must prepare a written accident/incident report in accordance with 29 CFR 1904.8, NAVFACINST 5100.11 and reference 10 using NAVFAC report form (CSIR-1). In addition, an incident report shall be prepared for "near misses" and minor injuries not requiring medical evaluation. The purposes of the accident/incident report are to document fully what happened and to assess the accident/incident for "lessons learned." The report shall be forwarded to EFA West via the cognizant Remediation Project Manager (RPM). The accident/incident report must be prepared in addition to any reports required by OSHA or Worker's Compensation Insurance claims offices. While much of the information requested is the same, the accident/incident report will provide a much more detailed account of the conditions at the time of the accident/incident and the actions taken at the time of discovery. The OSH Specialist and the Project Manager shall review these reports and may institute corrective or preventive actions to reduce the likelihood of future occurrences. These actions may include making changes in procedures or equipment, retraining personnel, or communicating cautionary warnings to personnel.

K. TRAINING REQUIREMENTS

General site workers engaged in hazardous substance removal or other activities which expose, or potentially expose, workers to hazardous materials and health hazards shall receive Hazard Communication (HAZCOM) training in accordance with reference 7. Additionally, workers and supervisors shall receive HAZWOPER training as required by reference 7, current certification in cardio-pulmonary resuscitation (CPR) and First Aid or equivalent Red Cross certified training. Additionally, workers operating forklifts require course YJ-1015, backhoe operators require course HEQ-BHOE, front-end loader operators require course HEQ-FRNT and bobcat operators require course ENV-C044. Industrial hygienist performing air monitoring will have completed a Workplace Monitoring Course in accordance with reference 1

Training records and certificates will be maintained for regulatory inspection at the SSPORTS Training office. The training coordinator is Ms. Tanya Wigger and she can be reached at (707) 562-3396.

L. SITE-SPECIFIC SAFETY PROCEDURES

1. ASBESTOS

Whenever insulation materials are found (during excavation), such as tank liners, membranes, or pipe lagging, stop work and contact the Occupational Safety, Health and Environment, Greg Rodgers at (707) 562-3245 or Cirilo Lacson at (707) 562-3222. Sampling for asbestos shall be done by asbestos-qualified building inspectors. Only qualified asbestos workers shall remove asbestos, in accordance with procedures approved by the OSHE office, and meeting the requirements of reference 8.

2. FREE PRODUCT

'Free product' refers to a petroleum product which is found floating in an excavation. If found, stop work and notify the Project Team Leader who will contact the cognizant Fire Department inspector. The product shall be sampled and then removed as soon as practical using a vacuum truck. Extreme care must be taken during free product removal to prevent fire or explosion.

3. NOISE HAZARDS

All heavy equipment operators shall wear single hearing protection (plugs or muffs) whenever equipment such as forklift or dirt moving equipment is used

4. UTILITIES

Prior to any excavation work, notify Underground Service Alert (USA) at 1-800-227-2600 at least 24 hours in advance to locate and verify : the known and/or documented utilities locations, that no other utilities exist, and to mark the locations of all utilities either known or suspected. SSPTS site supervisor shall prepare a hand-drawn map of the USA site markings and dimensions from the nearest site markings (Attachment 4). In addition, if considered necessary by the site supervisor, several representative photographs of the USA markings should be made as visual evidence of the markings to support the drawing. The Site Supervisor will have the responsibility to put the utilities in the required out-of-service condition and to brief all site workers on their location and current status. Extreme care must be taken when working near underground utilities since the exact location is often unknown. Use only hand tools when working near utilities.

5. EXCAVATION SAFETY

Excavation work shall comply with OSHA requirements detailed in reference 9, Subpart P. As a minimum, the following safety requirements shall be strictly observed:

- Erect barriers around all open excavations.
- Excavations shall be inspected daily by a competent person before workers enter them.
- Excavations are not expected to exceed two feet thus shoring is not required.
- Excavations are not expected to exceed two feet, therefore Confined Space Entry requirements do not apply.
- The level of protection for entry personnel will be based on evaluation by the On-Site Health and Safety Coordinator or Supervisor and the results of air monitoring. The minimum acceptable protection level will be Level D.
- Do not allow water to accumulate in excavations. Surface runoff water will be prevented from entering the excavation.
- Excavated materials (spoils) shall not be stored closer than two feet from the edge of the trench.

6. SAFETY PROCEDURES IN THE USE OF HEAVY EQUIPMENT

The following heavy equipment may be used at the site:

- Front loader

- Backhoe
- Forklift
- Dump trucks
- Excavator

These types of equipment can present a substantial hazard to work safety. General requirements for motor vehicles and material handling equipment are provided in 29 CFR 1926, Subpart O - Motor Vehicles, Mechanized Equipment, and Marine Operations.

The following precautions will be followed whenever heavy equipment is used.

- Heavy equipment will be inspected by the operator before each work shift. The on-site Health and Safety Coordinator will ensure compliance with this precaution.
- Equipment operators will be instructed to report any abnormalities, such as equipment failure, oozing liquids, and unusual odors, to their supervisor or the on-site Health and Safety Coordinator.
- Only qualified and licensed personnel will operate heavy equipment.
- Ignition keys shall remain inserted at all times during working hours.
- Hard hats, steel-toed boots, and safety glasses or goggles will be worn at all times around heavy equipment in addition to any other PPE specified by this HASP.
- Workers will not assume that the equipment operator is aware of their exact location. Workers will not walk directly behind or to the side of heavy equipment without the operator's knowledge and will maintain visual contact with equipment operators at all times.
- When an operator must maneuver equipment in tight quarters, the presence of a second person will be required to ensure adequate clearance. When a large amount of close maneuvering is required, to ground guides will be used: one in the direction the equipment is moving, and the other in the operator's normal field of vision to relay signals.
- All heavy equipment will remain in the exclusion zone until the work has been completed. The equipment will then be decontaminated within the designated decontamination area.
- Hand-signal communications will be established when verbal communication is difficult. One person per work team will be designated to give hand signals to equipment operators.
- Equipment with an obstructed rear view must have an audible alarm that sounds when the equipment is moving in reverse (unless a spotter guides the operator).
- Parking brakes will be kept engaged when equipment is not in used.
- Blades, buckets, dump bodies, and other hydraulically operated components will be kept fully lowered when the equipment is not in use.
- Equipment cabs will be kept free of all non-essential items.
- Seat belts must be present in all vehicles having rollover protective structures (ROPS).
- With specific exceptions, all material-handling equipment will be provided with ROPS. Material-handling equipment lacking a ROPS will not be operated on a grade can safely accommodate the equipment involved.
- All precautions will be taken before moving heavy equipment. Appropriate equipment will be used to transport heavy equipment.
- An ongoing maintenance program for all tools and equipment will be implemented. All tools and moving equipment will be inspected regularly to ensure that parts are secured, are intact, and have no cracks or areas of weakness. The equipment must operate according to

manufacturer specifications. Defective items will be promptly repaired or replaced. Maintenance and repair logs will be kept.

- Tools will be stored in clean, secure areas to prevent damage, loss, or theft.
- Workers will not use equipment which they are not familiar with. This precaution applies to heavy as well as light equipment.
- Loose-fitting clothing and loose, long hair will be prohibited around moving machinery.
- Workers will make sure that no underground or overhead power lines, sewer lines, gas lines, or telephone lines present a hazard in the work area.
- All personnel who are not essential to work activities will be kept out of the work area.
- Workers will be aware of their footing at all times.
- Workers will remain alert at all times.
- All self-propelled construction and industrial equipment, whether moving alone or in combination shall be equipped with a reverse signal alarm. Reverse signal alarms shall be audible and sufficiently distinct to be heard under prevailing conditions.
- Each bulldozer, scraper, dragline, crane, motor grader, front-end loader, mechanical shovel, backhoe, and other similar equipment shall be equipped with at least one dry chemical or carbon dioxide fire extinguisher with a minimum rating of 5-B:C.

7. RADIOLOGICAL SURVEYING, SAMPLING, & REMEDIATION

PPE as specified during the pre-shift briefing will be worn, unless specifically modified by the OHSC. Material removed from the work site will be controlled in accordance with the requirements of references 3-6. Transporting of any controlled material off this facility will not be performed per this work plan.

Note: Certain PPE will be worn at all times (e.g. safety shoes and covers, gloves and glasses)

M. MONITORING

1. AIR MONITORING

The need for air monitoring of the work area will be determined by the Health and Safety Coordinator before beginning any work task. At a minimum air monitoring for organic vapors and explosive atmospheres will be performed during initial ground breaking. This monitoring will be performed by trained personnel using currently accepted industrial hygiene practices.

2. GUIDELINES FOR ATMOSPHERIC HAZARDS

a. **Organic Vapors**

The following instruments may be used to monitor for organic vapors during site activities.

- Instrument: Photoionization Detector (PID), or Flame Ionization Detector (FID)
- Activity: During site excavation work, subsequent periodic monitoring
- Monitoring Frequency: As determined by the On-Site Health and Safety Coordinator.

Initial PID readings from initial ground breaking operations shall be recorded in the field logbook.

b. Explosive Atmospheres

When a flammable compound reaches a certain concentration in air, it becomes explosive when exposed to an ignition source. The lowest concentration able to support combustion is known as the Lower Explosive Limit (LEL). Each flammable compound has its own LEL. Monitoring indicates how close the airborne concentration of a flammable compound is to this limit.

Site activities shall not be conducted when airborne concentrations of any flammable compound reaches 10 percent of its LEL. The following instrument, monitoring frequency, and general action levels may be used to monitor for explosive atmospheres during site activities.

- Instrument: Combustible gas and oxygen indicator
(calibrated for specific instrument calibration gas)
- Activity: Site excavation
- Monitoring Frequency: During initial ground breaking
- Action Levels: 10% of LEL

3. RADIATION (IONIZING) LEVEL MONITORING

Radiation levels shall be frequently monitored when changing conditions exist, i.e. soil is removed exposing previously inaccessible areas (i.e. during excavation).

- Instrument Eberline E600 survey meter with SHP-360 beta/gamma pancake probe or SHP-380 alpha/beta probe or equivalent
(personnel decontamination and monitoring)

Ludlum Model 19 or equivalent Micro-R meter
(personnel exposure monitoring)
- Activity Initial site survey, subsequent periodic surveys as site conditions change and personnel decontamination
- Monitoring Frequency As deemed necessary by the OSHC
- Action Levels: > 100 CPM above background for beta/gamma pancake probe
> 14 CPM above background for Alpha/Beta probe

> 20 micro-R for personnel exposure control

4. USE AND MAINTENANCE OF MONITORING EQUIPMENT

Specific monitoring equipment used for this site includes:

(Blanks to be completed on-site by the Site Foreman or H&S Coordinator)

	<u>Equipment Description / Ser #</u>	<u>Calibration Due Date</u>
(1)	_____	_____
(2)	_____	_____
(3)	_____	_____

4. MEDICAL MONITORING

If it is determined by the Project Team Leader and the Site Health & Safety Coordinator that heat or cold stress or temperature monitoring is required (mandatory if ambient temperature exceeds 70° F and personnel are garbed in impermeable protective clothing), see reference 6 for procedures.

N. MEDICAL SURVEILLANCE REQUIREMENTS

All personnel performing work at the site shall be enrolled in, as a minimum, a medical surveillance program designed for the HAZWOPER Hazardous Waste Worker. Other programs for specific hazards of this site are listed below:

- Forklift and heavy equipment medical programs for those operating heavy equipment.
- Respirator (Health) surveillance.
- Asbestos worker surveillance *

*(required only if Action Level is exceeded for 30 or more days per year or 10 days per quarter)

O. GENERAL SAFETY RULES

The following safety guidelines are instrumental in maintaining a proper and safe work environment for all personnel. Employees assigned to work on this project shall familiarize themselves with these instructions.

- ◆ Refrain from any horseplay, scuffling, and other acts which tend to endanger the safety or well-being of your fellow employees.
- ◆ Do not eat, drink, smoke or apply cosmetics while inside the site.
- ◆ Walk, do not run. Concentrate on what you are doing at all times.
- ◆ Promptly report unsafe conditions and practices to your supervisor if available, or to any supervisor.
- ◆ Consider the safety of your fellow employees; warn or advise them of dangerous situations in the work area; do not assume that unsafe conditions are obvious to them.
- ◆ Be alert for moving vehicles or cranes when walking around the site. Stand clear of any suspended load.

- ◆ Pick up debris. Practice good housekeeping habits to prevent trip and fall hazards.
- ◆ Do not enter compartments, tanks, voids or trenches until they have been tested and approved for entrance by the Confined Space Program Manager or his designated representative.
- ◆ Keep off all equipment and material handling vehicles unless authorized.
- ◆ For your own protection, don't use any tool or equipment which you have not been authorized or properly trained to operate.
- ◆ Size up loads prior to attempting to lift them. Always use the muscles in the legs to lift objects and not the weaker muscles of the back.
- ◆ Do not enter a restricted area without the required PPE, including as a minimum, a hard hat, safety shoes, eye protection, and hearing protection (if appropriate).
- ◆ Be aware of protruding edges, such as nails or sharp metal that could puncture protective clothing.
- ◆ Be aware of slippery or uneven surfaces that could cause falls, slips, and trips.
- ◆ All equipment must maintain at least a 10' clearance from overhead power lines. Avoid standing in water when operating electrical equipment.
- ◆ Use the Buddy System. Do not work alone.
- ◆ Do not do close-up sniff testing of soil, piping, or tank components, as they are potentially hazardous.

P. ILLUMINATION

Natural sunlight is adequate to do construction work outdoors during day shift hours. Artificial light, either incandescent or fluorescent lighting system capable of producing a minimum of 5 foot-candles, must illuminate the general work site when working indoors or working outdoors after sunset.

Q. SANITATION

Provide the workers at the site with the following:

- Adequate supply of potable water and facilities with warm water for workers to wash their hands and face at the end of the work shift.
- Drinking water in containers capable of being tightly closed, and equipped with a tap. Clearly mark drinking water containers and do not use them for any other purpose.
- Trash cans.
- Portable toilet facilities
- Portable eyewash (15 minute water supply).
- Shower.

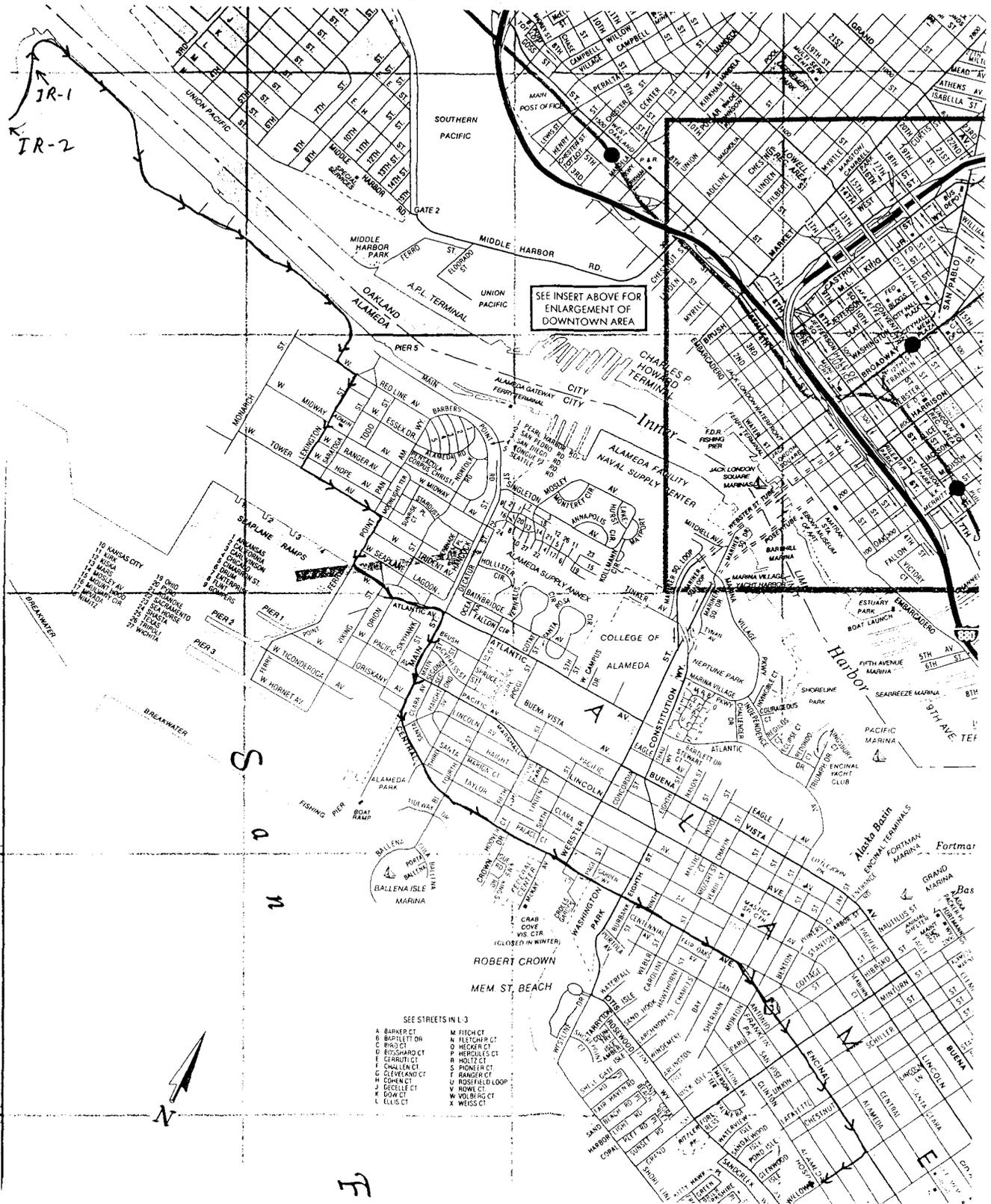
All personnel shall thoroughly wash their hands and face with soap and water prior to eating, drinking, smoking, chewing gum/tobacco products, applying cosmetics, and using sanitary facilities

R. HEALTH AND SAFETY FORMS

The Site Foreman and Health and Safety Coordinator shall complete, maintain, or secure signatures in all pertinent Health and Safety forms for this project. These documents are listed below.

1. Health and Safety Plan Acceptance Form
2. Field Monitoring Instruments Calibration Schedule
3. Daily Site Field Status Log

FIGURE 1 HOSPITAL ROUTE MAP



Attachment 1
Health and Safety Plan Acceptance Form
(Sheet 1 of 2)

Meeting Information:

Site: _____

Date: _____

Time: _____

Meeting held by:

Name (Print)

Signature

Date

Items Discussed:

Hazard Evaluation:

Toxic Vapors	Yes _____	No _____
Explosivity	Yes _____	No _____
Radioactivity	Yes _____	No _____
O ₂ Depletion	Yes _____	No _____
Physical Hazards	Yes _____	No _____
Other (list):		
_____	Yes _____	No _____
_____	Yes _____	No _____
_____	Yes _____	No _____
_____	Yes _____	No _____

Personal protection to be worn and equipment to be used: Yes _____ No _____

Decontamination Procedures: Yes _____ No _____

Emergency Information:

First aid:	Yes _____	No _____
Hospital Route:	Yes _____	No _____
Poison Control Center:	Yes _____	No _____
Eye rinse/Shower locations:	Yes _____	No _____
Water faucet locations:	Yes _____	No _____
Fire extinguisher locations:	Yes _____	No _____
Fire hydrant locations:	Yes _____	No _____

Attachment 1
Health And Safety Plan Acceptance Form
 (Sheet 2 of 2)

Instructions: This form is to be completed by each person prior to beginning work at the site.
 (Note: The completed form is to be returned to the On-site Health and Safety files.)

Project _____

By my signature below, I acknowledge that I have read and understand the contents of the Health and Safety Plan for this project. I agree to perform my work in accordance with the Health and Safety Plan.

Attendees:

Team Members:

<u>Name (Print)</u>	<u>Signature</u>	<u>Date</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Visitors:

Name (Print): _____	Affiliation: _____
Signature: _____	Date: _____
Name (Print): _____	Affiliation: _____
Signature: _____	Date: _____
Name (Print): _____	Affiliation: _____
Signature: _____	Date: _____

ATTACHMENT 2

FIELD MONITORING INSTRUMENTS CALIBRATION SCHEDULE

Instrument To Be Calibrated	Standard Reference	Acceptance Specifications	Calibration Schedule
Combustible Gas Indicator (CGI)	Refer to manufacturer's instructions and calibration gasses (H ₂ S, CO, Methane)	Refer to the manufacturer's daily calibration requirements	Before and after use
Photo Ionization Detector (PID)	Refer to manufacturer's instructions and calibration gas (Benzene)	Refer to the manufacturer's daily calibration requirements	Before and after use
Mercury detector	Functional test	Refer to the manufacturer's daily calibration requirements	Before use

ATTACHMENT 3
Daily Site Field Status Log

Location: _____

Date: _____

CHECKLIST

Item	Check
1. RADIAC Source Check	
2. Equipment Check	
3. Area Check	
4. Safety Meeting	

Remarks:

1. Equipment Problems: _____

Procedure Problems: _____

3. Other Remarks (Area checks and access): _____

Work Accomplished:

Progress To Schedule:

Supervisor On Site: _____ **Signature** _____

ATTACHMENT 4 UTILITIES SITE SAFETY FORM

Site: _____

UTILITY	HAZARD TO WORK	VULNERABLE TO DAMAGE	POLLUTION HAZARD	LOCATION	DATE	SIGNATURE
Fiber Optic Local Area Network (LAN) Conduit	No	Yes	No			
Fire Fighting High Pressure Mains	Yes	Yes	No			
Fresh Water Piping	Yes	Yes	No			
Fuel Oil Distribution Piping (inactive)	Yes	Yes	Yes			
High Pressure Compressed Air Piping	Yes	Yes	No			
High Voltage Above Ground Electric Power	Yes	Yes	No			
High Voltage Underground Electric Power	Yes	Yes	No			
Industrial Wastewater Treatment Sewer Piping	Yes	Yes	Yes			
Natural Gas Piping	Yes	Yes	No			
Salt Water Piping	Yes	Yes	No			
Sanitary Sewer Piping	Yes	Yes	Yes			
Steam Condensate Piping	Yes	Yes	Yes			
Steam (hot) Piping	Yes	Yes	Yes			
Stormwater Sewer Piping	No	Yes	No			
Telephone Lines	No	Yes	No			
Wheeler Vacuum System Piping	No	Yes	Yes			
Other:						

The Site Foreman or his designee shall complete this form and a hand-drawn sketch of the utilities USA identifies as present on the site. Include pipe size.

