



DEPARTMENT OF THE NAVY  
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Ser EP1583/

13 JAN 2004

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From: Commanding Officer, Navy Environmental Health Center  
To: Commanding Officer, Atlantic Division, Naval Facilities Engineering Command  
(Dan Hood), 1510 Gilbert Street, Norfolk, VA 23511-2699

Subj: HEALTH AND SAFETY PLAN REVIEW FOR SITE INVESTIGATION  
OPERABLE UNIT No. 18 (Site 94), MARINE CORPS BASE CAMP LEJEUNE,  
JACKSONVILLE, NC

Ref: (a) CH2MHILL ltr 183499.SI.WP of 5 Dec 03

Encl: (1) Subject Health and Safety Plan Review

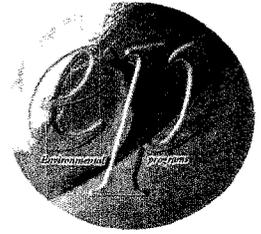
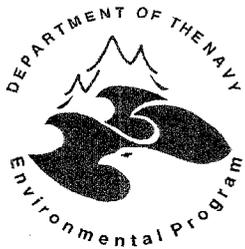
1. Per reference (a), we have completed a review of the subject document and are forwarding our comments to you as enclosure (1).

2. We are available to discuss the enclosed information by telephone with you and, if you desire, with you and your contractor. If you require additional assistance, please call Mr. Donald J. Coons at (757) 953-0936 or Ms. Mary Ann Simmons at (757) 953-0945. The DSN prefix is 377. The e-mail addresses are: coonsd@nehc.med.navy.mil and simmonsm@nehc.med.navy.mil.

C. P. RENNIX

By direction

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## NAVY ENVIRONMENTAL HEALTH CENTER ENVIRONMENTAL PROGRAMS DIRECTORATE

### Health and Safety Plan Review

**Location:** Jacksonville, N. C.

**Command:** MCB Camp Lejeune

**Site:** Operable Unit No. 18 (Site 94)

**Work Description:** Site Investigation

**Document Date:** December 2003

**Contract No/Contract Task Order No:** N62470-02-D-3052/0036

**EP Document No:** 1583

**Prepared for:** LANTNAVFACENGCOM

**Prepared by:** CH2MHILL

**Date Received:** 15 December 2003

**Reviewed by:**

Mr. Donald J. Coons, (757) 953-0936, coonsd@nehc.med.navy.mil, DSN 377

## HEALTH AND SAFETY PLAN REVIEW

- Ref: (a) 29 CFR 1910.120 (Hazardous Waste Operations and Emergency Response)  
(b) 29 CFR 1926.65 (Hazardous Waste Operations and Emergency Response)  
(c) Navy/Marine Corps Installation Restoration Manual (February 1997)  
(d) U. S. Army Corps of Engineers, Safety and Health Requirements Manual, EM 385-1-1

**General Comment:** We compared this health and safety plan (HASP) to federal requirements found in references (a) through (d), and have noted discrepancies in this HASP from these primary references. The acronyms used in our comments are included as Attachment (1).

### **Administrative Comments:**

1. It should be noted that these comments are essentially identical to the comments submitted regarding the HASP for Operable Unit No. 20 (Site 86) on 28 August 2003 and the comments submitted regarding the HASP for Operable Unit No. 10 (Site 35) on 10 October 2003.
2. To facilitate preparation of site-specific HASPs we suggest the use of the electronic formatted e-hasp located at [www.osha.gov/dts/osta/oshasoft/chasp/index.html](http://www.osha.gov/dts/osta/oshasoft/chasp/index.html).

### **Specific Comments:**

1. Page C-1, "CH2MHILL HEALTH AND SAFETY PLAN":

**Comment:** The third sentence of the first paragraph states, "The plan adopts, by reference, the Standards of Practice (SOPs) in the CH2MHILL *Corporate Health and Safety Program, Program and Training Manual*, as appropriate." Information stating that these documents will be available on-site for review and use is not provided.

**Recommendation:** Include information in the final site-specific health and safety plan stating that these reference materials will be available on-site.

2. Page C-7, Section 1.2, "Task Hazard Analysis":

**Comment:** A check-list listing potential hazards for various tasks does not constitute a proper activity/task hazard analysis. A site-specific activity/task hazard analyses must be prepared for each major task to be performed under this scope of work. A properly completed activity/task hazard analysis should list the major steps of each task, the hazards anticipated, and the methods or procedures to control or minimize the hazards.

**Recommendation:** We highly recommend the three column format found in the U. S. Army Corps of Engineers *Safety and Health Requirements Manual*, EM 385-1-1, 3 September 1996, page 4, Figure 1-1, both for its simplicity and ease of use.

3. Page C-12, Section C.2.1.9, "IDW Drum Disposal":

**Comment:** Guidance provided in the fourth bullet directs the use of a non-sparking tool for opening drums that contain, or may contain flammable materials.

**Recommendation:** Ensure that only non-sparking bung wrenches are available on-site to avoid error.

4. Pages C-14 and C-15, Section C.2.2.8, "Heat Stress":

**Comments:**

a. The table entitled "Symptoms and Treatment of Heat Stress," is incomplete. No body temperature information, other than high or low, is provided. It should be noted that a worker suffering from heat exhaustion may experience a rise in body temperature to around 102 degrees Fahrenheit and that this condition may lead to heat stroke if not properly managed. Workers who may be experiencing heat stroke generally will have body temperatures of 104 degrees Fahrenheit or above which is a true medical emergency and can lead to death if not properly treated. Additionally, guidance directing the removal of PPE and the loosening or removal of personal clothing as decency permits is not included.

b. The information directing that a potential heat stroke victim be soaked in the field is improper. Soaking a potential heat stroke victim in the field is not a recommended field first aid procedure and, if necessary, should be left to medical personnel once the casualty has been transported to a medical facility.

c. Guidance provided in the last paragraph on page C-15 under "Monitoring Heat Stress" is inadequate in that no guidance for monitoring of body temperatures or physiological monitoring, other than pulse rates is included. Seventy degrees Fahrenheit is cited as a reference temperature for consideration of heat stress monitoring but the type of clothing worn by workers (i.e., standard work uniform or impermeable clothing) was not a consideration. The type of clothing being worn will influence at what temperature heat stress monitoring will begin. Guidance for conducting a heat stress monitoring program can be found in the NIOSH/OSHA/USCG/EPA *Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities*, DHHS (NIOSH) Publication No. 85-115, 1985, the *EPA Standard Operating Guides*, Publication No. 9285.1-03, June 1992, and the ACGIH 2002 *Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices*.

**Recommendations:**

a. Include information in the final site-specific health and safety plan for the proper field management and treatment of heat stress casualties.

b. Revise the final health and safety plan to include guidance for conducting a heat stress prevention program. It should be noted that 70 degrees Fahrenheit is the point where careful heat stress monitoring of workers wearing semi-permeable or impermeable protective clothing

should commence. The values provided in the ACGIH TLV guidance no longer apply in this situation.

5. Page C-18, Section C.2.4, "Radiological Hazards and Control":

**Comment:** Guidance in this section directs the reader to the *CH2MHILL's Corporate Health and Safety Program and Training Manual* for information pertaining to operations in radiologically contaminated areas. Radiation has not previously been identified as a site hazard.

**Recommendation:** If radiological safety will not be a concern, then delete the reference in the final site-specific health and safety plan.

6. Page C-19, Section 2.5, "Contaminants of Concern":

**Comment:** Information provided in the sixth row third column states the exposure limit for Chloroform is 50 ppm. Guidance found in the 2002 edition of the American Conference of Governmental Industrial Hygiene TLVs and BEIs states that the exposure limit is 10 ppm.

**Recommendation:** We recommend revising the final HASP to employ the lower value which will provide a greater level of protection to site workers that may be exposed.

7. Page C-24, Section C.3.1, "CH2MHILL Employees Medical Surveillance and Training":

**Comments:**

a. The fourth sentence of the first paragraph states, "Employees designated "FA-CPR" are currently certified by the American Red Cross, or equivalent, in first aid and CPR." It is unclear if the "FA-CPR" providers have received training in the bloodborne pathogens criteria as required by 29 CFR 1910.1030.

b. The fifth sentence of the first paragraph states, "At least one FA-CPR designated employee must be present during all tasks performed in exclusion or decontamination zones." Reference (c) directs that at least two individuals, trained and certified in adult first aid/CPR be on-site at all times work is being performed.

**Recommendations:**

a. Revise the final HASP to include information stating that the "FA-CPR" designated personnel have received bloodborne pathogen training meeting the criteria of 29 CFR 1910.1030. Further, state that at least two personnel trained and certified in adult first aid/CPR will be on-site at all times work is being performed.

8. Pages C-24 and 25, Section C.5, “Air Monitoring/Sampling”:

**Comments:**

a. Section C.5.1, “Air Monitoring Specifications,” directs the calibration of direct reading air monitoring equipment be performed on a daily basis.

b. Section C.5.3, first paragraph “Air Sampling,” states “Sampling, in addition to real-time monitoring, may be required by other OSHA regulations where there may be exposure to certain contaminants. Air sampling typically is required when site contaminants include lead, cadmium, arsenic, asbestos, and certain volatile organic compounds.” It is unclear why this information is included as none of the compounds are cited as COPCs.

c. The second sentence of the third paragraph states, “Regulations may require reporting to monitored personnel.”

d. Information stating the location(s) (i.e., perimeter, worker breathing zones, or point source) that air-monitoring will be conducted is not provided.

**Recommendations:**

a. Revise guidance in the final HASP to direct that all direct reading air monitoring equipment be calibrated before and after each period of use in accordance with manufacturer’s instructions and standard industrial hygiene practice.

b. Revise the document to provide site-specific information and guidance regarding the COPCs that will be encountered during this scope of work.

c. Revise sentence in the final HASP to state how site personnel will be informed of air monitoring results in accordance with 29 CFR 1910.120.(h)(4)(i).

d. Revise the final HASP to include information as to where air-monitoring will be performed.

9. Page C-26, Section C.6.1, “Decontamination Specifications”:

**Comment:** Guidance for disposal of spent personnel or heavy equipment decontamination fluids directs discharging them to a sanitary sewer or containerizing for off-site disposal.

**Recommendation:** Revise the guidance in the final site-specific HASP to direct that spent decontamination fluids be containerized for further testing to determine proper method of disposal.

10. Page C-29 through C-30, Section C.8, "Site Control Plan":

**Comment:** A requirement for all site personnel and visitors entering the CRZ/EZ to log-in/log-out from the site daily is not included.

**Recommendation:** Include a requirement for all site personnel and visitors entering the CRZ/EZ to log-in/log-out from the site daily.

11. Pages C-36 through C-38, Section C.9, "Emergency Response Plan":

**Comments:**

a. Section C.9.1, "Pre-Emergency Planning," the eleventh bullet directs rehearsing the emergency response plan prior to commencing on-site operations. Guidance for critiquing the rehearsal or event is not provided.

b. Section C.9.2, "Emergency Equipment and Supplies," lists an eye wash as part of the equipment available on-site. Information stating that this unit meets the American National Standards Institute (ANSI) Standard ANSI Z358.1-1998 or later criteria, and is capable of delivering potable water to the eyes at the rate of not less than 1.5 liters per minute (0.4 gallon per minute) for 15 minutes is not provided.

c. Section C.9.3, "Incident Response," directs employees to evacuate the immediate work area in the event of a fire, explosion, or chemical release. If site workers will evacuate the site, an emergency action plan meeting the requirements of 29 CFR 1910.38 must be provided.

d. Section C.9.4, "Emergency Medical Treatment," first bullet directs the reader to Section 9.8 for a listing of emergency response authorities. Section 9.8 is not included in this document. However, an Attachment 4, "Emergency Contacts," was noted at the back of this document.

e. Section C.9.4, "Emergency Medical Treatment," the sixth bullet states, "Perform decontamination where feasible; lifesaving and . . ." Decontamination of a contaminated casualty may only be postponed, it cannot be omitted.

f. Section C.9.5, "Evacuation," the first bullet states, "Evacuation routes and assembly areas ( . . . ) are specified on the site map." It is unclear where this map is located as a site map was not included with the HASP. Additionally, a map showing the correct route(s) to the nearest emergency medical facility(s) is not included in the HASP.

**Recommendations:**

a. Include a requirement to critique the emergency response exercise or event in the final HASP.

b. Include information stating that the emergency eyewash units will meet the requirements of the ANSI Standard Z358.1-1998 or later in the final HASP.

c. Revise the final HASP to designate this section as an emergency action plan vice an emergency response plan.

d. Revise the final HASP to provide correct information regarding the location of the "Emergency Contact" listing.

e. Revise the final HASP to provide information stating how contaminated casualties will be managed and decontaminated.

f. Ensure that both maps are included in the final HASP. Additionally, it is recommended that written directions to the nearest emergency medical facility(s) and the emergency telephone number(s) be included with the hospital route map(s).

12. Attachment 4, "Emergency Contacts":

**Comment:** A method for contacting the LEPC, or the local poison control center was not included in the contact listing.

**Recommendation:** Include the telephone number for the LEPC and the nearest poison control center in the final HASP. The use of the national poison control number 1-800-222-1222 will place the caller in contact with the poison control center closest to where the call originates. Verify all emergency telephone numbers prior to commencing on-site work.

## ACRONYMS

ACGIH:	American Conference of Governmental Industrial Hygienists
ANSI:	American National Standards Institute
ATSDR:	Agency for Toxic Substances and Disease Registry
BBP:	Bloodborne Pathogen Program
COC:	Contaminant of Concern
CPR:	Cardiopulmonary Resuscitation
CRZ:	Contamination Reduction Zone
EIC:	Engineer-in-Charge
EMS:	Emergency Medical Service
EPA:	Environmental Protection Agency
EZ:	Exclusion Zone
HBV:	Hepatitis B Virus
HIV:	Human Immunodeficiency Virus
IDLH:	Immediately Dangerous to Life and Health
LEL	Lower Explosive Limit
LEPC:	Local Emergency Planning Committee
MSDS:	Material Safety Data Sheet
NIOSH:	National Institute for Occupational Safety and Health
NOSC:	Navy On-Scene Coordinator
NOSCDR:	Navy On-Scene Commander
OSHA:	Occupational Safety and Health Administration
OV:	Organic Vapor
PCB:	Polychlorinated Biphenyl
PEL:	Permissible Exposure Limit
PID:	Photoionization Device
PPE:	Personal Protective Equipment
PPM:	Parts Per Million
SCBA:	Self Contained Breathing Apparatus
SOP:	Standard Operating Procedure
STEL:	Short Term Exposure Limit
TLV:	Threshold Limit Value



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Ser EP4452/

29 JAN 2004

**000095**

From: Commanding Officer, Navy Environmental Health Center  
To: Commanding Officer, Atlantic Division, Naval Facilities Engineering Command  
(Dan Hood), 1510 Gilbert Street, Norfolk, VA 23511-2699

Subj: MEDICAL REVIEW OF DRAFT SITE 94, SITE INVESTIGATION WORK  
PLAN, OPERABLE UNIT NO. 18 (SITE 94), MARINE CORPS BASE CAMP  
LEJEUNE, NC

Ref: (a) CH2MHILL ltr 183499.SI.WP of 5 Dec 03

Encl: (1) Subject Medical Review

1. Per reference (a), we have completed a review of the subject document and forward our comments to you as enclosure (1).

2. We are available to discuss the enclosed information by telephone with you and, if you desire, with you and your contractor. If you require additional assistance, please call Mr. Kenneth Gene Astley at (757) 953-0937 or Mr. David McConaughy at (757) 953-0942. The DSN prefix is 377. The e-mail addresses are: [astleyg@nehc.med.navy.mil](mailto:astleyg@nehc.med.navy.mil) and [mcconaughyd@nehc.med.navy.mil](mailto:mcconaughyd@nehc.med.navy.mil).

A handwritten signature in black ink, appearing to read "C. P. Rennix".

C. P. RENNIX

By direction

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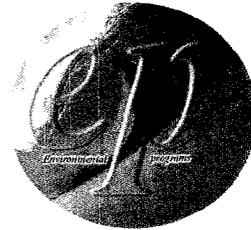
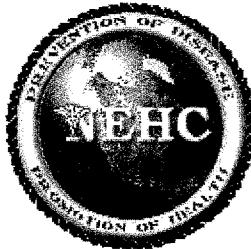
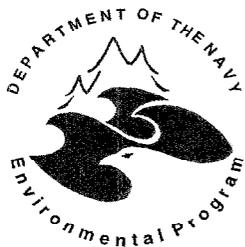
CNO (N-453)

NAVFAC (ENC-KPB)

BUMED (MED-M3F4)

CMC (LFL)

MCB Camp Lejeune (ACS EMD/IRP, Rick Raines)



## NAVY ENVIRONMENTAL HEALTH CENTER ENVIRONMENTAL PROGRAMS DIRECTORATE

### Site Investigation Review

**Location:** Camp Lejeune, North Carolina

**Site:** Site 94, Operable Unit 18

**Work Description:** Work Plan

**Document Date:** December 2003

**Contract No./Contract Task Order No.:** N62470-02-D-3052/0036

**EP Document No.:** 4452

**Prepared for:** LANTNAVFACENGCOM

**Prepared by:** CH2M Hill Federal Group, Ltd.

**Date Received:** 15 December 2003

**Reviewed by:**

Kenneth Gene Astley, (757) 953-0937, [astleyg@nehc.med.navy.mil](mailto:astleyg@nehc.med.navy.mil), DSN 377

**MEDICAL REVIEW OF  
DRAFT SITE 94 SITE INVESTIGATION WORK PLAN  
OPERABLE UNIT NO. 18 (SITE 94)  
MARINE CORPS BASE  
CAMP LEJEUNE, NORTH CAROLINA**

**General Comments:**

1. The document entitled "Draft Site 94 Site Investigation Work Plan Operable Unit No, 18 (Site 94) Marine Corps Base Camp Lejeune, North Carolina," was provided to the Navy Environmental Health Center (NAVENVIRHLTHCEN) for review on 15 December 2003. The report was prepared for Atlantic Division, Naval Facilities Engineering Command by CH2M Hill Federal Group, Ltd.
2. The text states on Page 1-1, concerning the objective of the site investigation, that "The focus of the site investigation will be gathering initial site data with regards to evaluating the horizontal extent of any contamination in support of determining whether further investigation is recommended for the site." However, the text states on Page 3-1 that "Approximately 20 DPT borings will be advanced at Site 94 in order to profile the horizontal and vertical distribution of impacted groundwater within the vicinity of monitoring wells ...". The text further states on Page 3-2 that "Installation and construction of these new wells will provide additional lithologic information and assist in long-term monitoring of groundwater quality and groundwater flow direction in the intermediate aquifer unit at the site." The exact purpose of this work plan should be discussed further in the text.
3. We suggest that the Risk Assessment Guidance for Superfund (RAGS): Volume 1 - Human Health Evaluation Manual (Part D, Standardized Planning, Reporting and Review of Superfund Risk Assessments) Final December 2001 information format be used for data result display. Data that will not be used for a human health risk assessment should be labeled with this information.
4. The field sampling and analysis plan should state that, before the start of sampling activities, plastic sheeting should be placed on the ground surrounding the well. The plastic sheeting should be used to provide a clean working area around the well head, and prevent any soil contaminants from contacting sampling equipment.
5. The field sampling and analysis plan should state that, when monitoring well sampling is being conducted, those wells expected to have low levels of contamination or no contamination be sampled prior to those wells expected to have higher levels of contamination. This practice will help reduce the potential for cross contamination between wells.

6. The field sampling and analysis plan should state that both filtered and unfiltered groundwater samples will be taken. If risk estimates for both filtered and unfiltered samples are developed, both values can be discussed in a human health risk assessment. Because some heavy metals absorb strongly to soil/sediment particles, the difference between the resultant risk estimates from filtered and unfiltered sampling results can be large. Providing comparison values can therefore be very useful in demonstrating that the risk estimates from unfiltered groundwater samples are too conservative.