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LETTER DISCUSSING PLAN FOR EXPEDITED INTERIM MEASURES SITES CNC CHARLESTON SC
9/25/1997
SOUTH CAROLINA DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL

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OMOTE PROTECT PROSPER
00 Bull Street
olumbia, SC 29201-1708

CERTIFIED MAIL

September 25, 1997

Mr. Tony Hunt
Southern Division, NAVFACENGCOM
Code 1877
P.O. Box 190010
North Charleston, SC 29419-9010

RE: Plan for Expedited Interim Measures Sites
Charleston Naval Base
SC0 170 022 560

Dear Mr. Hunt:

The purpose of this letter is to document the decision reached by the Project Team at the meeting held in Charleston on the September 9-10, 1997. Consensus was reached on expedite Interim/Stabilization Measures for sites where off-site contaminant migration is possible and no controls are in place. In discussions with the Project Team was agreed that the first submission towards meeting this goal was due on October 28, 1997. The sites included in this submission are SWMU 17, SWMU 39, SWMU 166 and AOC 607.

For your perusal, attached find a copy of the Environmental Indicators memo that SCDHEC has prepared for EPA Region IV. It concludes that there is plausible human exposure to contaminants and groundwater contamination is not controlled at the Charleston Naval Base. It also documents the decision reached in the August meeting and reconfirmed on the September meeting in Charleston.

If you have any questions concerning this matter please contact Johnny Tapia at (803) 896-4179 or Paul Bergstrand at (803) 896-4016.

Sincerely,

Johnny Tapia, Environmental Engineer Associate
Corrective Action Engineering
Bureau of Land and Waste Management

attachment

cc: Paul Bergstrand, Hydrogeology
Rich Richter, Trident District

D H E C
PROMOTE PROTECT PROSPER

2600 Bull Street
Columbia, SC 29201-1708

MEMORANDUM

TO: Project File

Joan Hartley, Manager
Corrective Action Engineering Section
Bureau of Land and Waste Management

CC: Jon Johnston, RCRA Branch USEPA Region IV
Caron Falconer, RCRA North Programs Section USEPA Region IV
Rich Richter, Trident District

FROM: Johnny Tapia P., Environmental Engineer Associate
Corrective Action Engineering Section
Bureau of Land and Waste Management

SUBJ: Evaluation of the Charleston Naval Shipyard's status under the RCRIS Corrective Action Environmental Indicator Event Codes (CA725 and CA750)

EPA I.D. Number: SC0 170 022 560

DATE: September 18, 1997

I. PURPOSE OF MEMO

This memo is written to formalize an evaluation of the Charleston Naval Shipyard's status in relation to the following RCRIS corrective action codes:

1) Human Exposures Controlled Determination (CA725),

2) Groundwater Releases Controlled Determination (CA750).

The applicability of these event codes adheres to the definitions and guidance provided by the Office of Solid Waste (OSW) in the July 29, 1994, memorandum to the Regional Waste Management Division Directors.

The State of South Carolina became authorized, in January 1995, to implement those portions of RCRA covered under the HSWA Corrective Action process. The recommendations provided in this memo have been generated in cooperation with the USEPA Region IV staff through the use of EPA's current Environmental Indicator ranking system.

II. HUMAN EXPOSURES CONTROLLED DETERMINATION (CA725)

There are three (3) national status codes under CA725. These status codes are:

1) YE Yes, applicable as of this date.

2) NA Previous determination no longer applicable as of this data.

3) NC No control measures necessary.

The State of South Carolina in conjunction with EPA Region IV, has also added a RCRIS status code to CA725 which tracks initial evaluations in which a determination is made that plausible human exposures to current contamination risks are not controlled. This status code is listed as "NO, not applicable as of this date." Use of this status code is only applicable during the first CA725 evaluation. Evaluations subsequent to the first evaluation will use the national status codes (i.e., YE, NA and NC) to explain the current status of exposure controls.

Note that the three national status codes for CA725 are based on the entire facility (i.e., the codes are not SWMU specific). Therefore, every area at the facility must meet the definition before a YE, NA or NC status code can be entered for CA725. Similarly, the status code, NO, is applicable if plausible human exposures are not controlled in any areas of the facility.

This particular CA725 evaluation is the first evaluation performed by SCDHEC for the Charleston Naval Shipyard. Because assumptions have to be made as to whether or not human exposures to current media contamination are plausible and, if plausible, whether or not controls are in place to address these plausible exposures, this memo first examines each environmental media (i.e., soil, groundwater, surface water, air) at the entire facility including any offsite contamination emanating from the facility rather than from individual areas or releases. After this independent media by media examination is presented, a final recommendation is offered as to the proper CA725 status code for the Charleston Naval Shipyard.

The following discussions, interpretations and conclusions on contamination and exposures at the facility are based on the following reference documents:

1. Memo from Lawson Anderson (EA/H) to Project Team
   "Summary of Geoprobe Investigation CTO-290" June 28, 1996.
2. Zone H Draft RFI Report, July 5, 1996.
3. Zone A Draft RFI Report, September 12, 1996.
4. Memo from Lawson Anderson (EA/H) to Tony Hunt (SOUTHDIV)
   "Summary of SWMU 39 Investigations for DHEC Hess Oil Project Manager"
   October 9, 1996.
5. Site-Specific RFI Discussions for SWMUs 1, 2 and 39, August 19, 1997.

III. MEDIA BY MEDIA DISCUSSION OF CONTAMINATION AND THE STATUS OF PLAUSIBLE HUMAN EXPOSURES

Releases from SWMUs and/or AOCs have contaminated groundwater at concentrations above relevant action levels. SWMU 39 is the site of a former storage area for petroleum, oil and lubricant (POL) drums. As part of Zone A investigation, detections of chlorinated solvents and BTEX compounds were reported in shallow groundwater, as reported in references 3 and 4. There has been a total of 11 groundwater sampling event, a Geoprobe investigation and a CPT investigation (Reference 5) , which reported the following levels of detections: PCE= 1-16 ug/l (MCL= 5 ug/l); TCE=1-91 ug/l (MCL= 5 ug/L); DCE=1.2-6.5 ug/l (MCL= 7 ug/l); vinyl chloride VC= 1.9-5.8 ug/L (MCL= 2 ug/l); and Benzene= 25-170 ug/l (MCL= 5 ug/l). Subsequent investigation (reference 1) identified a suspected plume and levels consistent with previous investigations. Deep and intermediate groundwater bearing zones are being monitored, specially at the west boundary of the base, that is adjacent to a marsh area and close to a residential zone. At this point vinyl chloride was detected in shallow groundwater up to 6.2 ug/L (Reference 5). A northwest to southwest trending divide lies in the central portion of zone A, and behaves as a recharge zone for the shallow aquifer. Groundwater to the east of this divide flows toward the Cooper River. To the south, groundwater flows toward Noisette Creek; to the west, groundwater flows either to the west into the marsh and wetland feeding Noisette Creek or to the south directly toward Noisette Creek. The surficial aquifer at the Charleston Naval Base is not used as a source of drinking water, and research indicated that no drinking water wells exist in a four mile radius of the base, however private non-reported wells do exist.

SWMU 166 located on the Naval Annex property has a chlorinated solvents plume in shallow, intermediate and deep groundwater that has already moved off-site. The detections off-site were: PCE=25-100 ug/L (MCL= 5ug/L), TCE=4-100 ug/L (MCL= 5ug/L), DCE=7-47 ug/L (MCL=7ug/L). TCE concentrations at the property boundary reached 3,940 ug/L. This information is contained in references 2, 5, 6, 7 & 8 listed in section V of this memo. Currently no controls are in place.

In addition to the observed groundwater contamination, there are plausible human exposures to this contamination. For example, at SWMU 39 there is a possible groundwater-to-surface water cross-media transport to the marsh area because of the shallow groundwater table (as low as 2 feet), but surface water and sediment samples collected indicated that transfer from groundwater to surface water is not happening to date. No controls are installed to stop groundwater from migrating off-base or to prevent access to the marsh area and the headwaters of Noisette Creek. Both, the marsh area and Noisette Creek are used regularly for fishing and shellfish collection. Currently, these plausible human exposures to contaminated groundwater are not controlled.

On August 25, 1997 a group of sites were considered for expedited corrective measures. SCDHEC and EPA had asked the Navy to expedite Interim Measures/ Corrective Measures, at sites where off-site migration is possible and no controls are in place. The first submittal towards controlling off-site migration of chlorinated solvents at SWMU 39, SWMU 166 and AOC 607 is due on October 10, 1997. Other sites with groundwater contamination located within the base property will also be included in this submittal.

Based on the above discussion, plausible human exposures to groundwater contamination are currently not controlled and control measures for groundwater are necessary.

Releases from SWMUs and/or AOCs have possibly contaminated surface water at concentrations above relevant action levels. Currently surface water bodies that surround the Charleston Naval Base (Shipyard Creek, Noisette Creek and the Cooper River) are under investigation. There is evidence of past releases from AOCs/SWMUs (through the storm sewer system or surface runoff), to the above mentioned water bodies. Many of these outfalls

discharge into the Cooper river. Dry-docks operations were mainly for repair and construction of naval ships, which was one of the main activities at the base. Waste produced from these activities were regularly released into the Cooper river.

In addition to the possible presence of surface water contamination, there are plausible human exposures, for example, discharges into the creeks and rivers where fishing and shellfish harvesting for human consumption has been observed. These plausible human exposures are not currently controlled.

Based on the above, plausible human exposures to surface water contamination are not controlled and control measures are necessary at this time.

Soil at the facility is contaminated at concentrations above relevant action levels. There are numerous AOCs/SWMUs contaminated with inorganics, PCBs, pesticides. Polycyclic Aromatic Hydrocarbons (PAHs) are present throughout the entire facility. SWMU 9 is a 11 acre landfill that received industrial and domestic waste. This landfill is surrounded by SWMUs 19,20 and 121, AOCs 649, 650, 651, and 654. All are studied as one unit. SWMU 19 had 10 detections of BaP (110-604) ug/Kg. The BaP RBC is 88 ug/Kg. PCBs were detected (32-2,300) ug/Kg. Its RBC = 83 ug/kg. At SWMU 20, BaP was detected in nine out of ten locations in the range (87-820) ug/Kg. The BaP RBC= 88 ug/Kg. At SWMU 121, BaP was detected in 11 soil samples in the range (77-1,700) ug/Kg. Benzo(a)anthracene and Benzo(b)fluoranthene were detected in 8 and 11 soil samples respectively. Their detections range was (93-1,900) ug/Kg and (92-2,700) ug/Kg respectively. The RBC for both PAHs is 880 ug/Kg. PCBs (RBC =83 ug/Kg) were detected in the range of 66- 4,300 ug/Kg. Lead, Beryllium and copper were detected in all soil samples at (40.6-2,770) mg/Kg, (0.16-14.6) mg/Kg, (60-4,060) mg/Kg respectively. Their RBCs are 400 mg/Kg, 0.15 mg/Kg and 3,100 mg/Kg respectively. AOCs 649, 650 and 651 had detections of PAHs Benzo(a)anthracene, Benzo(b)fluoranthene and Benzo(a)pyrene with maximum detections of 1,900, 4,000 and 2,000 respectively.

In addition to the soil contamination at the facility, there are plausible human exposures to this contamination. For example, the area of SWMU 9 that encompass the above mentioned SWMUs and AOCs, is not fenced or has any access control to the area. There is not a designed cap or cover on top of the landfill area. Probable past exposure occurred because a running track and a baseball field were constructed on top of the landfill and adjacent areas. Current site workers have unrestricted access to this area. The area that bounds the landfill, by the side of Shipyard creek has no access controls to prevent trespassers from entering the site. These plausible human exposures are not controlled.

Based on the above discussion, plausible human exposures to contaminated soil are not controlled and control measures are necessary at this time.

Releases to air from soil, groundwater and/or surface water contaminated by SWMUs and/or AOCs at the facility are not known to be occurring at concentrations above relevant action levels or not expected to be occurring above relevant action levels.

Therefore, there is no human exposure to contamination via an air route.

IV. STATUS CODE RECOMMENDATION FOR CA725:

As explained in Section III, because human exposures to contamination are not currently controlled for groundwater, surface water and soil, it is recommended that CA725 NO be entered into RCRIS. Page 7 of this memo is the summary table for the selection of the proper Status Code for CA 725.

V. GROUNDWATER RELEASES CONTROLLED DETERMINATION (CA750)

There are three (3) status codes listed under CA750:

1) YE Yes, applicable as of this date.

2) NA Previous determination no longer applicable as of this date.

3) NR No releases to groundwater.

SCDHEC in conjunction with EPA Region IV, has also added an additional RCRIS status code which tracks the initial evaluations in which a determination is made that groundwater releases are not controlled. This status code is listed as "NO, not applicable as of this date." Use of the regional status code is only applicable in the first CA750 evaluation. Evaluations subsequent to the first evaluation will use the national status codes (i.e., YE, NA and NR) to explain the current status of groundwater control.

Note that the three national status codes for CA750 are designed to measure the adequacy of actively or passively controlling the physical movement of groundwater contaminated with hazardous constituents above relevant action levels. The point where the success or failure of controlling the migration of hazardous constituents is measured is termed the designated boundary (e.g., the facility boundary, a line upgradient of receptors, the leading edge of the plume as defined by levels above action levels or cleanup standards, etc.). Therefore, every contaminated area at the facility must meet the definition before these event/status codes can be entered. Similarly, the regional status code is applicable if contaminated groundwater is not controlled in any area(s) of the facility.

This evaluation for CA750 is the first formal evaluation performed for the Charleston Naval Shipyard. Please note that CA750 is based on the adequate control of **all** contaminated groundwater at the facility.

The following discussions, interpretations and conclusions on contaminated groundwater at the facility are based on the following reference documents:

1. Memo from Lawson Anderson (EA/H) to Project Team
   "Summary of Geoprobe Investigation CTO-290"
   June 28 1996.
2. Zone H Draft RFI Report, July 5, 1996.
3. Zone A Draft RFI Report, September 12, 1996.
4. Memo from Lawson Anderson (EA/H) to Tony Hunt (SOUTHDIV)
   "Summary of SWMU 39 Investigations for DHEC Hess Oil Project Manager"
   October 9, 1996.
5. Britton Dotson (EA/H) to Tony Hunt (SOUTHDIV), February 5, 1997
   " Updated Zone K 60% Meeting Notes"
6. TCE Plume Geoprobe Sampling Locations, March 21, 1997
7. TCE Plume Geoprobe Sampling Locations, May 13, 1997
8. Naval Annex and Vicinity TCE Plume Investigation, September 8, 1997

VI. STATUS CODE RECOMMENDATION FOR CA750:

Based on data contained in the documents referenced in Section V and summarized in the groundwater portion of Section III, releases from SWMUs and/or AOCs have contaminated groundwater at concentrations above relevant action levels. Additionally, references 2, 5, 6, 7 and 8 describe the identified TCE plume at SWMU 166. This plume has not been completely characterized yet. It is moving off-base.

Although the groundwater is contaminated above relevant action levels, control measures have not been implemented. Because all groundwater contamination at the facility is not controlled and this is the first evaluation at this facility, it is recommended that CA750 NO be entered into RCRIS.

On August 25, 1997 a group of sites were considered for expedited corrective measures. SCDHEC and EPA had asked the Navy to expedite Interim Measures/ Corrective Measures, at sites where off-site migration is possible and no controls are in place. The first submittal towards controlling off-site migration of chlorinated solvents at SWMU 39, SWMU 166 and AOC 607 is due on October 10, 1997. Other sites with groundwater contamination located within the base property will also be included in this submittal.

Table 1: Summary Table for Use in Selecting the Proper Status Code for CA725

OPTION	Media				STATUS CODE IF ALL MEDIA FALL UNDER THE SAME OPTION	STATUS CODE FOR SPECIFIC FACILITY
	Groundwater	Surface Water	Soil Sediment	Air		
1.Media not contaminated[1]				✓	NC	
2.The media is contaminated and cleanup standards **met** to the point of controlling plausible human exposures					YE (1A)	
3.The media is contaminated *[onsite and/or offsite]* and all plausible *[onsite and/or offsite]* human exposures are controlled by *[Stabilization/IM and/or Access Controls]*[2]					YE (1B)	***NO***
4.The media is contaminated *[onsite and/or offsite]* and some plausible human exposures are not controlled	✓	✓	✓		NO (if first evaluation) NA (if second or subsequent evaluation)	

FOOTNOTES:

[1] If there is not enough concrete information available for an easy determination as to whether or not a medium is contaminated, then, a judgement must be made as to whether or not contamination can be reasonably expected given the site-specific nature of facility's operational history. If a reasonable assumption on contamination cannot be made for every environmental media, then a CA725 determination cannot be made.

[2] Stabilization/Interim Measures and/or Access Controls which account for all exposures in all media at the facility will be covered under this option. In addition to fences, soil covers, etc., Access Controls can include those specific cases where human exposures to onsite contamination are restricted due to a lack of human receptors (e.g., the groundwater is contaminated but there are no onsite drinking water wells and the facility recognizes that drinking water wells should not be installed). With regard to contamination that has migrated offsite, plausible human exposures cannot be considered controlled unless tangible control measures have been implemented to prevent human exposure to the offsite contamination.