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MCB CAMP LEJEUNE
5090.3a

EnSafe Environmental and Safety Designs, Inc.

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May 17, 1995

Commanding Officer,
Atlantic Division
Naval Facilities Engineering Command
Attn: Code 18231, Linda G. Saksvig
1510 Gilbert St.
Norfolk, Virginia 23511-2699

Subject: Contract N62470-93-D-4009, Delivery Order 0004— **Marine Corps Base, Camp Lejeune SWMU Assessment.**

Dear Ms. Berry:

Enclosed are two copies of the revisions Marine Corps Base Camp Lejeune's Draft Solid Waste Management Unit Assessment Report and our response to your comments.

Two additional copies of the Draft report have been forward to Camp Lejeune at your request.

We have included a cost estimate for conducting housekeeping efforts.

If you have any questions, please call me.

Sincerely,

Environmental and Safety Designs, Inc.

Robert Moser /RH

By: Robert Moser, P.E.

copy: JNS, Memphis, TN
Mr. Brynn Ashton, MCB Camp Lejeune (8 copies of revisions, 2 draft copies, 2 copies of response to comments and cost estimate)

Telephone: 901-372-7962 • Facsimile: 901-372-2454

EXECUTIVE SUMMARY

Solid waste management units (SWMUs) were assessed at Marine Corps Base (MCB) Camp Lejeune, North Carolina. The assessment objectives were to review existing environmental files, documents, and reports to identify potential SWMUs and visit each potential SWMU to document factual design, process, and release information. Each SWMU was screened and categorized into one of two groups: 1) those that did not have a release potential and 2) those having a release potential.

Approximately 300 units were identified and visited. These included 119 oil/water separators, 81 less-than-90-day hazardous waste accumulation areas, 53 above-ground used oil storage tanks, 20 underground used oil storage tanks, 29 vehicle wash racks, eight spill containment basins, six soil piles, six ditches, three backwash basins, three containerized waste storage areas, three ponds, two stained soil areas, and one solvent recovery still. Fifty-five SWMUs were recommended for general housekeeping to clean up one-time release potentials or implement management procedures. Soil removal and/or steam cleaning and environmental sampling was recommended for 45 sites including 15 oil/water separators, eight above-ground storage tanks, seven concrete pavement areas, three underground storage tanks, two releases, two wash racks, two container storage areas, and outfall 034, a soil pile, a pond, and a basin to confirm whether a release had occurred. An immediate removal action was recommended for Site AS515-oil/water separator to remove free product from an adjacent ditch. One UST is recommended to be integrity tested and secondary containment is recommended to be constructed around one hazardous waste accumulation area. Management procedures or continued sampling under the another environmental program are recommended to implemented to prevent or monitor a release from five oil/water separators, two hazardous waste accumulation areas, two soil piles, and a pond. No further action was recommended for the remaining sites.

Housekeeping is the removal and clean up of one-time releases such as removing stained soil or cleaning stained concrete. Housekeeping is also measures taken to prevent a release such as overpacking a damaged drum or implementing training and management procedures.

The assessment is not to replace the Resource Conservation and Recovery Act facility assessment previously conducted. The assessment did not include all potential release sites. This assessment was limited to 265 potential units by scope and excluded the 86 units identified in a Federal Facilities Agreement and being assessed through the Installation Restoration Program. Sites being assessed under MCB Camp Lejeune's underground storage tank program were also excluded. The results of this assessment have shown there are many active units associated with the industrial process at MCB Camp Lejeune with no visual evidence of a potential for a release.

Table 1: Housekeeping						
Site Number	Nature of Housekeeping	Soil Removal	Steam Cleaning	Sample	Other	Approximate Cost
SFC 282	Spot staining within far north bay of unit. Spot staining at south side near empty drum storage rack. Remove the staining by steam cleaning.	X	X	X		$5,050
FC 285	Remove petroleum staining from concrete beneath unit by steam cleaning.		X	X		$815
1601	Remove two petroleum stained areas adjacent the unit by steam cleaning.		X	X		$815
902	Remove the petroleum stain from within the unit by steam cleaning.		X	X		$815
816	Install engineering control berm to prevent overflows of material to the environment.				X $2,500	$2,500
GP 19	Sample soil around the wash rack drain area and in low-lying area adjacent to the unit.			X		$1,150
FC 200	Need to ensure when the oil/water separator is cleaned waste materials are not released.				X	$0
FC 120	Need to ensure that containers used in the storage of hazardous waste are in good condition.				X	$0
SFC 279	Remove petroleum stain from the concrete near the front of the unit by stream cleaning.		X	X		$815
SM 93	Remove petroleum from the floor of the unit and steam clean the floor.		X	X		$815
M 144	Remove petroleum from the floor of the unit and steam clean the floor.		X	X		$815
SM 187	Soil around the unit and near the wash rack drain should be sampled and analyzed. Also, samples should be taken and analyzed at equal intervals within the natural/man-made trench beginning at the washrack drain and leading to the bay.	X		X		$7,475
1041	Need to provide secondary containment and shelter for hazardous waste being stored.				X	$7,500
S 1735	Sample soil around external walls of unit where visible stains of heating oil No. 6 are present.			X		$1,150
1700-1	Need to monitor the use of this oil/water separator to ensure it does not overflow.				X	$0
1700-2	Need to monitor the use of this oil/water separator to ensure it does not overflow.				X	$0
1203	Sample soil around wash rack drain area.			X		$1,150

Table 1: Housekeeping						
Site Number	Nature of Housekeeping	Soil Removal	Steam Cleaning	Sample	Other	Approximate Cost
TC 773	Engineer wash rack and drain to adequately contain wash water prior to discharge to oil/water separator.			X	X $2,500	$3,650
TC 773 <90-day	Remove the petroleum stain from the floor of the unit by steam cleaning.		X	X		$815
FC 230-1	Soil above action level should be removed and disposed of accordingly.			X		$1,150
S 1619	Sample soil along diversion ditch circumventing the grit chamber to said unit and remove all soil above the action level. Sampling also may be needed within nearby drainage ditch.	X		X		$7,475
1771	Need to instruct personnel on proper waste management procedures so incidental releases can be minimized.				X	$0
SM 269	Remove the grass and soil stained with petroleum. Instruct personnel on proper waste management procedures.		X	X		$815
S1892	Remove the petroleum from around the generator, steam clean the area, and place a pan or absorbent beneath the generator to collect future releases.		X	X	X $500	$1,315
1780-1 (OWS)	Instruction needs to be provided so if the oil/water separator is used during an emergency fuel want be allowed to pass through.				X	$0
1780-2 (OWS)	Close and remove unit and redirect wash water from maintenance bay cleaning activities to oil/water separator.			X	X $5,000	$7,050
1780-1 (UST)	Close and remove unit and redirect wash water from maintenance bay cleaning activities to oil/water separator.			X	X $5,000	$6,150
1780-3 (OWS)	The unit needs to be drained, cleaned, and inspected for leaks.				X $1,000	$1,000
1780-2 (UST)	An integrity test should be performed on the tank.				X $2,500	$2,500
S 1753	Soil above action level should be removed and disposed of accordingly.			X		$1,150
S1745	Instruction should be provided on correct painting operations and waste management procedures.				X	$0
1601	Remove all visibly contaminated soil around and below the drainage pipe discharging through one side of the concrete diking.	X	X	X		$6,200
1205	Remove visible oil product from asphalt area where unit is placed.		X	X		$815
034	Remove all visible oil product from the ditch.	X		X		$6,700

Table 1: Housekeeping						
Site Number	Nature of Housekeeping	Soil Removal	Steam Cleaning	Sample	Other	Approximate Cost
BB 224	Remove all visible oil product from the soil. Remove soil pile with hydrocarbon smell.	X		X		$5,900
2611	Remove the petroleum from the asphalt by steam cleaning.		X	X		$815
NH 118	Sample soil around the tank after the visibly stained soil is removed.	X		X		$5,750
2615	Remove the heavy oil stain from the inside walls of the unit.					$1,200
PT 33	This unit should either cease operations or obtain a pretreatment permit. If operations are ceased, then the grease should be removed and properly disposed of. The unit should be dismantled and soil samples should be collected and analyzed.	X	X	X	X $1,000	$5,010
1502-O/W-1	Drain the oil/water separator and steam clean the unit.		X			$1,365
SA 22	Continue to monitor under current monitoring program.					$0
TT 2453	Remove visibly stained soil.	X		X		$5,750
BA 130	Sample soil around the tile field.	X				$4,600
S946 Soil Pile	Continue to monitor under current monitoring program.					$0
S946 O/W	Continue to monitor under current monitoring program.					$0
S946 Containers	Remove contaminated soil, sample and properly dispose of the soil. Continue to monitor under current monitoring program.	X		X		$5,750
1106/1107 UST	Remove visibly stained soil.	X		X		$5,750
1106/1107 OWS	Remove visibly stained soil.	X		X		$5,750
AS 504	Remove oil product from bermed concrete pad where unit is located.	X	X	X		$6,350
AS 515 (AST)	Remove visible oil product from concrete pad where unit is located. Remove soil around and below the drainage pipe discharging through one side of concrete diking.	X	X	X		$6,725
AS 4115	Remove all visible oil product from the bermed concrete pad and remove soil around and below the drainage pipe discharging through one side of concrete diking.	X	X	X		$6,350

Table 1: Housekeeping						
Site Number	Nature of Housekeeping	Soil Removal	Steam Cleaning	Sample	Other	Approximate Cost
AS 515 (OWS)	Remove visible oil product from concrete pad where unit is located. Remove visibly contaminated soil and sediment from ditch.	X		X		$7,200
AS 118	Remove stained soil.	X		X		$5,900
AS 114	Remove stained soil.	X		X		$5,900
STC 868	Remove visible oil product from concrete pad where the unit is located.		X	X		$815
45	Continue to monitor under current monitoring program.					$0
	Cost per action	**$4,600**	**$450**	**$365-$3,250***	**$0-$2,500**	**Total: $164,530**
Added 30% for overhead, profit, taxes, and contingency						**$230,342**

Note: * This cost will vary depending on the analysis performed by the laboratory. Each additional sample analyzed will increase the cost by $450-$525, depending on the analysis performed. In some cases, where soil samples have to taken along a ditch, the number of samples increases to 5 per site, and therefore the labor rate increases.

Table 2a: Site Sampling						
Site Number	Area of Sampling	Soil/Sediment	Oil/Grease	BTEX	Non-Halogenated Volatiles	Halogenated Volatiles
GP 19	Wash rack drain area and in low-lying area adjacent to the unit.	Soil	X	X	X	
SM 187	Around the unit and near the wash rack drain.	Soil	X	X	X	
S 1735	Around external walls of unit.	Soil	X		X	
1203	Around wash rack drain area.	Soil	X	X	X	
TC 773	Directly under expansion/contraction joints between the joining of concrete and asphalt.	Soil	X	X	X	
FC 230-1	Outside far wall of unit near fence.	Soil	X	X	X	
S 1619	Along diversion ditch circumventing grit chamber. Possibly near drainage ditch.	Soil	X	X	X	
1780-2	Small creek adjacent to unit.	Sediment	X	X	X	
		Surface Water	X	X	X	
1780-1	Beneath unit and respective fittings.	Soil	X	X	X	
S 1753	Stains by wash rack drain area.	Soil	X	X	X	
1601	Bermed drainage pipe area.	Soil	X	X	X	
034	Area where oil product is removed from ditch area.	Soil	X	X	X	X
		Sediment	X	X	X	X
BB 224	Soil pile	Soil	X	X	X	X
NH 118	Around tank after stained soil is removed.	Soil	X	X	X	
TT 2453	Around back door of service station.	Soil	X	X	X	
BA 130	Around tile field.	Soil	X	X	X	
1106/1107 UST	Under and around UST.	Soil	X	X	X	
1106/1107 OWS	Around oil/water separator.	Soil	X	X	X	
AS 504	Directly below discharge pipe to ensure contamination has been removed.	Soil	X	X	X	X

Table 2a: Site Sampling						
Site Number	Area of Sampling	Soil/Sediment	Oil/Grease	BTEX	Non-Halogenated Volatiles	Halogenated Volatiles
AS 515	Directly below discharge pipe to ensure contamination has been removed.	Soil	X	X	X	X
AS 4115	Directly below discharge pipe to ensure contamination has been removed.	Soil	X	X	X	X
AS 515	In ditch to ensure all contaminant is removed.	Soil	X	X	X	X
		Sediment	X	X	X	X
AS 118	In ditch to ensure all contaminant is removed.	Soil	X	X	X	X
AS 114	In ditch to ensure all contaminant is removed.	Soil	X	X	X	X
	Total number of sites:		27	27	27	10
	Unit cost per analysis:		$50	$80	$285	$110
	Total cost:		**$1,350**	**$2,160**	**$7,695**	**$1,100**

Table 2b: Sampling						
Site Number	Area of Sampling	Soil/ Sediment	Oil/Grease	Non-halogenated semivolatile organics	Halogenated semivolatile organics	RCRA Metals
PT 33	Near Building PT 33 Pond	Soil	X	X	X	X
	Unit cost per analysis:		$50	$285	$110	$85

Assumptions:

- 2 people at $61/hr to perform sampling.

- Sampling Labor: Assume 1 hour for each sample. This will cover deconing between samples, labeling bottles, and filling out chains of custodies. So, based on Table 2, there are 37 sites, assume 2 samples per site = 74 (this will account for sites with multiple stained areas, sampling along equal intervals within ditches and along pipe runs, and large sites.) x 2 x 61 = $9,028 total or $244/site labor for sampling. **Say $250/site.**

- Analytical Costs: These will vary depending on the test performed. But standard is $415/sample rounded to $450/sample. For samples which require halogenated volatiles, then it becomes $525/sample. The cost in Table 1 reflects two samples per site as does the labor rate for sampling calculated above. I am assuming 2 samples per site for each media sampled. This may be too small a number. So say the range of these costs is **$1,400-$1,550 per site.**

  For samples that have to be taken along a ditch (SM 187, S 1619, and AS 515), assume 5 samples total. This will have an analytical cost of **$2,250-$2,625/site.**

  Example calculations:

  Site SFC 282 = 4,600 (soil removal) + 450 (st. cleaning) = $5,050.
  Site SM 187 = 4,600 (soil removal) + 450 x 5 (lab cost x # of samples) + 625 (labor for 5 samples) = $7,475.
  Site 1601 = 4,600 (soil removal) + 450 (st. cleaning) + 450 x 2 (lab cost x # of samples) + 250 (labor for 2 samples) = $6,200.
  Site BB 224 = 4,600 (soil removal) + 525 x 2 (lab cost x # of samples) + 250 (sample labor) = $5,900.
  Site AS 515 (OWS) = 4,600 (soil removal) + 525 x 4 (lab cost x # of samples) + 500 (labor for 4 samples) = $7,200.

- Soil Excavation and Disposal: Assume each site that has soil removal will have a 20' x 20' x 2' area = 800 cf or 30 cy. Soil excavation at $11/cy and soil disposal at $135/cy (3 55-gallon drums [55/7.48/27 = .27] at $45/drum) (includes transportation and assumes disposal at solid waste landfill as non-hazardous, but petroleum contaminated waste). So $146/cy at 30 cy/site x 15 sites = $65,700 total or $4,380 per site. Include labor at 2-3 hours/site at $75/hr. 15 sites x 2.5 hrs x $75/hr = $2,1812 total or $188/site. **Say $4,600/site.**

- Steam Cleaning: Equipment Rental = $47/day x 3 days = $141 total or $20/site Assume 2-3 hours per site, 2 man crew at $150/hr/crew. 7 sites at 2.5 x $150 = $2,625 total or $375/site. Water discharged to 55-gallon drums, say 1 drum per site at $45/drum = 7 x $45 = $315 total or $45/site. Usually there is a $75 pickup fee, but these costs have been padded enough not to worry about this. It is assumed that oil & grease and BTEX will be analyzed for at a cost of $365 per site. **Say $815/site.**

- Other (tank removal): For these categories, assume the tank/ows is 5,000 gallons. So, items to include here are liquid and sludge removal, disposal and transportation, overburden excavation and replacement, tank demolition, disposal and transportation, fixture demolition, backfill purchase and excavation, and restoration of cover. Say **$5,000** per tank. This does not include preparation of tank closure plan or any of the permitting that may be necessary in the state of NC.

- Other (construction of berm): Assume 24 cy needed to construct berm at $50/cy = $1,200. Then add labor and equipment at $75/hour x 16 hours = $1,200 = **$2,400**.

- For Site PT 33, two options are available. This cost estimate includes the cost for ceasing operations and dismantling the unit. The analytical costs include RCRA metals (table shows this). The cost for grease removal (represented under soil removal) will depend on the amount of grease. Assuming that the grease is a characteristic waste, assume 3 55-gallon drums at $750/drum = $2,250 for disposal. Assume that the unit has to be steam cleaned at $450. Sampling costs equal $530 x 2 samples + $250 for labor = $1,310. Then, to dismantle the unit assume 2 man crew at 100/hr/crew for 8 hours = $800 round to $1,000. Total equals $2,250 + $450 + $1,310 + $1,000 = $5,010.

These costs are based on EnSafe's prior experience. However, if this work is contracted to EnSafe, a more detailed cost estimate based on more specific information will be provided. The detailed cost estimate may vary significantly from the numbers presented here, as much as three times. Also, EnSafe oversite for each of the activities performed, airfare, and per diem have not been included in this cost estimate.

COMMENTS TO THE SOLID WASTE MANAGEMENT UNIT FACILITY ASSESSMENT STUDY

1. **COMMENTS:**
General — It is requested that the consultant provide an executive summary that includes a concise synopsis of the report and a compilation of proposed action at each site. Please have the consultant provide Camp Lejeune a draft copy of the executive summary for review prior to finalization.

   RESPONSE:
An executive summary has been prepared.

2. **COMMENTS:**
Page 1-1, Section 1.2, Paragraph 1, Line 14, should read: "EnSafe inspected the units from..."

   RESPONSE:
Changed.

3. **COMMENTS:**
Page 1-2, Line 4, should read: "...of being previously unidentified SWMUs or..."

   RESPONSE:
Changed.

4. **COMMENTS:**
Page 2-3, Line 1: Please identify acronym "PBJ"

   RESPONSE:
At direction of Camp Lejeune, this has been deleted.

5. **COMMENTS:**
Page 2-4, Line 7, should read, "...chemical agent resistive coating (CARC)..." Also, there are additional categories of waste paint, such as epoxy paint and oil-based paint.

   RESPONSE:
Changed.

6. **COMMENTS:**
Page 3-2, Line 19, should read: "There are 8 steam generating plants at Camp Lejeune. The main generating plant, Building 1700, is permitted to burn both coal and No.6 or No. 2 fuel oil... the power plant is a major contributor of SOx, NOx, and particulate emissions."

   RESPONSE:
Changed.

7. **COMMENTS:**
Page 4-1, Line 18: "Pollutants may also reach the air through volatilization and as combustion products."

RESPONSE:
Changed.

8. **COMMENTS:**
Page 5-4, Line 14: Please list the additional FFA sites in column format.

RESPONSE:
Changed.

9. **COMMENTS:**
Page 5-5, Line 7: Delete, "These are too many to be described in this report.

RESPONSE:
Deleted.

10. **COMMENTS:**
Page 5-5, Paragraph 5.2, Line 3, should read: "...is currently evaluating all USTs on-site."

RESPONSE:
Changed.

11. **COMMENTS:**
Table 5-2: Change "SV" to "VR" to represent visual evidence of release.

RESPONSE:
The column is for recommendations. We would prefer that "SV" for sampling visit remain in this column. A sampling visit will confirm if hazardous constituents have been released.

12. **COMMENTS:**
Table 5-2: Clarify page numbering designations.

RESPONSE:
A foot note will be used to identify that these page numbers correspond to the field book and its page number.

13. **COMMENTS:**
Appendix D: Clarify page numbering designations.

RESPONSE:
See response to comment 12 above.

14. **COMMENTS:**
Please provide a brief summary of projected costs involved in the various activities contained in the project recommendations.

RESPONSE:
Will provide.

COMMENTS TO THE SOLID WASTE MANAGEMENT UNIT
FACILITY ASSESSMENT STUDY
ADDITIONAL COMMENTS TO
EXECUTIVE SUMMARY

1. **COMMENTS:**
Line 15 should indicate which outfalls are to be sampled.

RESPONSE:
Will indicated which outfalls are to be sampled.

2. **COMMENTS:**
Please indicate in greater detail those activities which are required under "further assessment", particular how these activities relate to RCRA corrective action and the Federal Facilities Agreement.

RESPONSE:
Activity descriptions are provided in Sections 6 and 7. Under the RCRA corrective process, housekeeping is for those sites where a one time release has occurred. The RCRA corrective action process allows for confirmatory sampling (sampling visit) approach to evaluate whether a hazardous constituent has been released before recommending it for a RCRA facility investigation.

The Federal Facilities Agreement identified sites covered by the agreement. However, it can be expanded, by mutual agreement, to include all the sites presented in this report.

3. **COMMENTS:**
Please detail those actions required if "further assessment" indicates contamination.

RESPONSE:
If a release is indicated by confirmatory sampling during a sampling visit, the next phase will be the Resource Conservation and Recovery Act Facility Investigation (RFI), Corrective Measures Study (CMS). A RFI is similar to a Remedial Investigation and Feasibility Study under Superfund. The U.S. Environmental Protection Agency administrative process for Subpart S is as follows:

RCRA FACILITY ASSESSMENT
ISSUE/MODIFY CORRECTIVE ACTION PERMIT

RFI
CORRECTIVE MEASURES STUDIES AND SELECTION
MODIFY CORRECTIVE ACTION PERMIT

CORRECTIVE MEASURES IMPLEMENTATION
REMEDY COMPLETE
MODIFY CORRECTIVE ACTION PERMIT

4. **COMMENTS:**
Briefly describe "housekeeping" activities required at the 31 sites.

RESPONSE:
Information in Table 6 will be expanded to include additional information.

5. **COMMENTS:**
It would be useful to put the definition of SWMU and Define the requirements under 40CFR264.90 and 264.100.

RESPONSE:
Definition and requirements have been included.