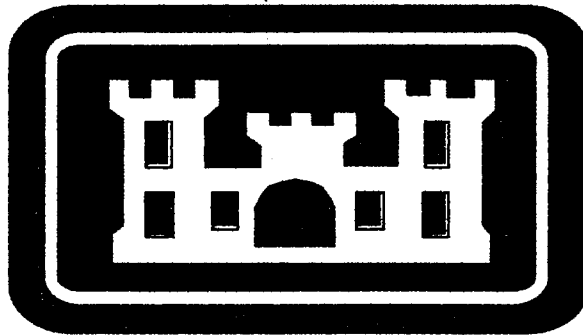


**Final Report
Preliminary Site Investigations**

 **ENTERED**

SWMU 66

**Directorate of Environment
Fort Bliss, Texas
and
Fort Worth District
U.S. Army Corps of Engineers**



By



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For

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July 1997

SWMU 66

6.0 MCGREGOR BORROW PIT DRUM BURIAL SITE (NM)

SWMU 66

6.1 *Description of Field Activities*

On November 4 and 10, 1995, samples were collected at the McGregor borrow pit drum burial site (Figure 8) as part of a PSI in order to determine the nature and extent of potential contaminants of concern associated with the buried drum, to characterize the contents of the known buried drum, and to determine whether or not any additional drums are buried in the area. This site consists of an area of disturbed soil that contains one partial buried drum which was encountered during borrow pit excavation activities in 1992. The buried drum is situated on a small caliche bench located along the southeastern edge of the borrow pit and approximately six to eight feet above the base of the pit (Figure 8). All field activities were performed in accordance with the Sampling and Analysis Plan (October 1995).

In order to determine if other buried drums were present in the zone where natural vegetation had been disturbed, a surface geophysics survey utilizing a magnetometer was performed to detect other metal objects or buried drums in the subsurface, if any. The magnetometer survey was conducted on a ten-foot grid over a 40 feet by 90 feet area, as illustrated in Figure 8. The results of the magnetometer survey are illustrated in Figure 9 and the center of the known buried drum is estimated to be located at approximately 23E and 11N (Figure 9). The known buried drum was the only buried metal object detected in the magnetometer survey.

During a preliminary site visit by field personnel, the soil around the exposed end of the drum was carefully excavated revealing that the drum contained a yellowish-white material that may be dried oil base paint. An odor of solvents and an oily residue were observed and a Webster calorimetric test determined that the drum contents were not explosive. No labels or markings were found on the drum.

During the PSI activities, five samples were collected for analyses in the vicinity of the known buried drum (Figure 8). A sample of what appears to be dried paint was collected from the contents of the drum and labeled sample 5. An additional sample, MGP-1, was collected after the laboratory determined it did not have enough sample to run all the requested analyses. Four soil samples (MGP-2 through MGP-5) were collected around the excavated area where the drum was located. The boreholes were advanced utilizing a stainless steel hand-auger and the samples were collected using a stainless steel spoon. Two samples (MGP-2 and MGP-3) were collected from the soil on the perimeter of the excavation, at an approximate depth of 6 inches bgs. Sample MGP-4 was collected directly beneath the drum at an approximate depth of 12 inches below the bottom of the excavation. Sample MGP-5 was collected directly beneath the drum at an approximate depth of 9 inches below the bottom of the excavation.

6.2 *Sample Analyses*

All samples were submitted to an approved ACOE MRD laboratory for analyses. Samples MGP-1, sample 5, MGP-2, MGP-3, MGP-4, and MGP-5 were submitted for VOC analysis by EPA SW 846 Methods 5030/8260, SVOC analysis by EPA SW 846 Method 8270 TPH by EPA Method 418.1, and oil and grease by EPA Method 413.2. Sample MGP-1 and sample 5 were submitted for metals analysis by EPA SW 846 Methods 6010/7470/8150/8080 and ignitability by EPA Method 1010. In addition, sample MGP-1 and sample 5 were submitted for TCLP VOC, TCLP SVOC, TCLP metals, TCLP Chlorinated Pesticides, TCLP Herbicides, corrosivity, reactivity,

releasable sulfide, releasable cyanide, TPH, and oil and grease. A trip blank, sample MGP-6, was submitted for VOC analysis by EPA SW 846 Methods 5030/8260. A minimal level of data validation was performed on the data. This included verification of requested deliverables and verification that holding times were met for extraction and analyses. No other validation, transcription or calculation checks were performed.

6.3 Analytical Results

The detectable concentrations of all analytes are presented in Table 9. The organic and inorganic qualifiers are defined at the bottom of Table 9. VOCs were detected in sample MPG-1. VOCs were not detected in soil samples MGP-2 through MGP-5. Concentrations for detected VOCs are as follows: 100,000 µg/kg n-propylbenzene; 620,000 µg/kg 1,3,5-trimethylbenzene; 2,000,000(E) µg/kg 1,2,4-trimethylbenzene; 170,000 µg/kg sec-butylbenzene; 310,000 µg/kg p-isopropyltoluene; and, 350,000 µg/kg naphthalene. No compounds were detected from the TCLP VOC analysis. Methylene chloride (55 µg/kg) and chloroform (11 to 13 µg/kg) were detected in the trip blank samples (MPG-6 and sample 6). It is possible that these compounds are lab contaminants and not actually present in the samples.

SVOCs were detected in sample MPG-1. SVOCs were not detected in soil samples MGP-2 through MGP-5. Concentrations for detected SVOCs are as follows: 200,000(E) µg/kg naphthalene; 77000 µg/kg 2-methylnaphthalene; 3100(J) µg/kg fluorene; and, 6600(J) µg/kg phenanthrene. The TCLP SVOC analysis detected 100 µg/kg 3+4-methylphenol in sample MPG-1. All TCLP metal concentrations were below the contract required detection limits. No compounds were detected in the TCLP chlorinated pesticides and TCLP herbicides analyses. General chemistry analyses for sample 5 indicated the following: 6.3 pH; releasable cyanide and releasable sulfide were not detected; the sample is ignitable; and, the sample is not reactive.

The TPH concentrations for samples MGP-1 and sample 5 ranged from 273,000 to 285,000 mg/kg and the oil and grease concentrations ranged from 289,000 to 318,000 mg/kg. The TPH concentrations for soil samples MGP-2 through MGP-5 ranged from 34.3 to 80.4 mg/kg, and the oil and grease concentrations ranged from 28.0 to 98.4 mg/kg.

6.4 Summary and Recommendations

The magnetometer survey in the area of disturbed vegetation did not locate any additional buried drums or metal objects. The contents of the sampled drum contains a wide variety of VOCs, SVOCs, TPH, oil and grease, and is ignitable. The soil surrounding the drum contains concentrations less than 100 mg/kg for TPH and oil and grease, and no detectable concentrations of VOCs or SVOCs.

Based upon the PSI results for this site, the drum contents appear to be the only potential environmental problem. The New Mexico Environment Department (NMED) does not set action level concentrations (i.e. a specific concentration, that when exceeded, requires remedial action) for those VOCs, SVOCs, THP and oil and grease detected at the McGregor Borrow Pit. NMED, however, utilizes an EPA "Risk-Based Concentration" table which establishes carcinogenic and non-carcinogenic risk-based concentrations for a wide variety of compounds based on pathway entry into the body. The McGregor results are compared with this list per the request of Ft. Bliss, Directorate of Environment draft report review. The following compounds identified at McGregor are in EPA's "Risk-Based Concentration" table and are below both the residential and commercial/industrial land use values:

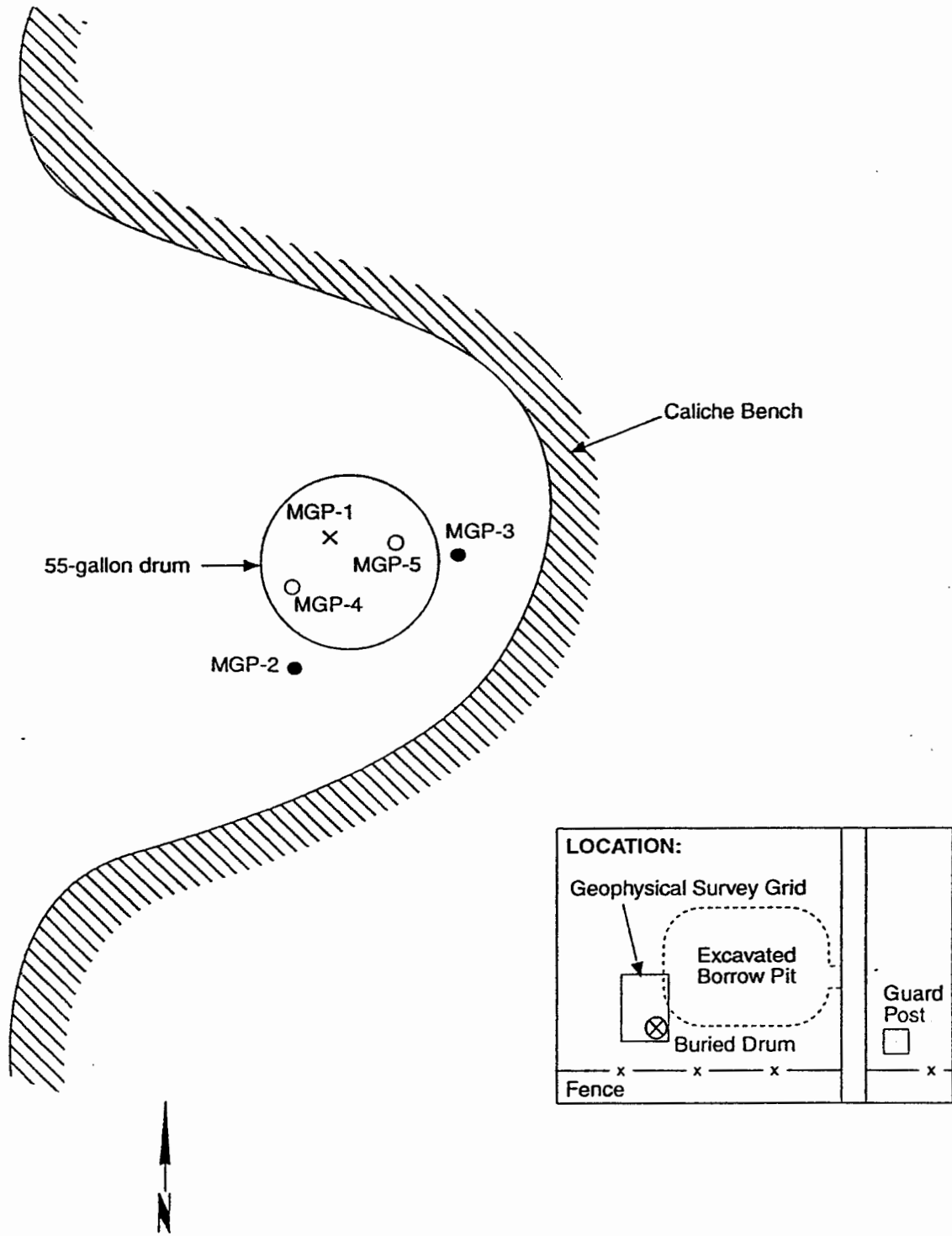
- *1,3,5-trimethylbenzene*
- *1,2,4-trimethylbenzene*
- *naphthalene*
- *sec-butylbenzene*
- *fluorene*
- *3+4-methylphenol*

The following compounds identified in McGregor soils are not listed in EPA's "Risk-Based Concentration" table:

- *n-propylbenzene*
- *p-isopropyltoluene*
- *2-methylnaphthalene*
- *phenanthrene*
- *TPH*
- *oil and grease*

This comparison to EPA's "Risk-Based Concentration" values is not presented in lieu of a risk assessment and does not make an inference to how clean or contaminated the site is based on these values. It is strictly for comparison purposes only and should not be used or interpreted as a risk assessment.

The recommendations listed below are in order of highest priority. Additional site investigation activities can be stopped at any time if it is determined that the contaminants do not pose an environmental risk. The following activities are recommended at the McGregor Drum Burial Site (NM): 1) perform a higher level of data validation to verify analytical results; 2) unless validated data reveals any contaminants of concern, leave the soil surrounding the buried drum in place; 3) remove the partially buried drum and its contents, and properly dispose of it according to regulations because of the elevated concentrations of VOCs, SVOCs, oil and grease, and TPH detected in the paint.



LEGEND

- MGP-1 X Paint Sample
- MGP-2 O Soil Sample taken underneath drum
- MGP-4 ● Soil Sample

FIGURE 8
FT. BLISS MCGREGOR BORROW PIT
 FT.WORTH ACOE/FT.BLISS PSI/TX

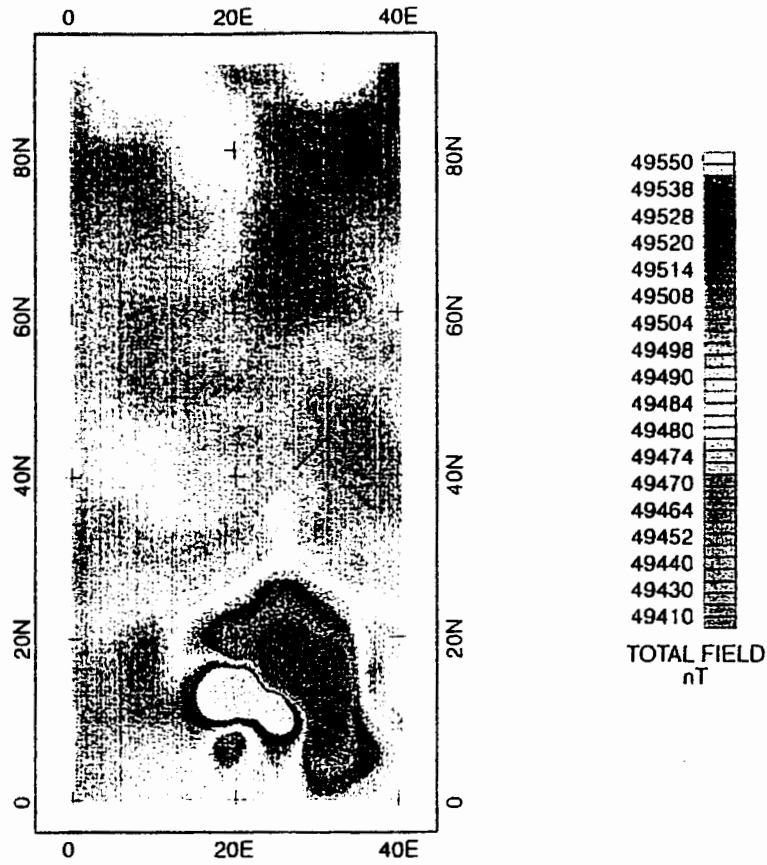


FIGURE 9
INTERPRETED MAGNETOMETER DATA
FROM MCGREGOR BORROW PIT
FT.WORTH ACOE/FT.BLISS PSI/TX

PROJECT NO. 954 2025 DRAWING NO. 63272 DATE 12/8/95 DRAWN BY EA

TABLE 9
MCGREGOR BORROW PIT DRUM BURIAL SITE (NM)
ANALYTICAL RESULTS

Sample ID Number	Date Sampled	Sample Description	Volatile Organic Compounds		TCLP Volatile Organic Compounds		Semi-Volatile Organic Compounds	
			EPA SW 846 Method 8260		EPA SW 846 Method 8240		EPA SW 846 Method 8270	
			Constituent	(ug/kg)	Constituent	(ug/kg)	Constituent	(ug/kg)
MGP-1 & sample 5	11/3/95 & 10/23/95	drum contents	n-Propylbenzene	100000	Not Detected		Naphthalene	200000(E)
			1,3,5-Trimethylbenzene	620000			2-Methylnaphthalene	77000
			1,2,4-Trimethylbenzene	2000000(E)			Fluorene	3100(J)
			sec-Butylbenzene	170000			Phenanthrene	6600(J)
			p-Isopropyltoluene	310000			TICs:	
			Naphthalene	350000			Dimethylphenyl ethanone isomer	110000(J)
			TICs:				1H-Inden-1-one, 2,3-dihydro-	99000(JN)
			Unknown C9H12	8900000(J)			2 Unknown hydrocarbon TICs	110000(J) to 560000(J)
			3 Unknown C10H14	7800000(J) to 22000000(J)			1 Unknown hydrocarbon TIC	220000(BJ)
			Unknown substituted Cyclohex	19000000(J)			7 Unknown TICs	100000(BJ) to 320000(BJ)
			3 Unknown Hydrocarbon TICs	8900000(J) to 41000000(J)			8 Unknown TICs	110000(J) to 1000000(J)
			2 Unknown TICs	6100000(J) to 7300000(J)				
MGP-2	11/3/95	soil from perimeter of excavation	Not Detected		Not Analyzed		TICs:	
							Cyclopentasiloxane, decamethyl	140(JN)
							2 Unknown hydrocarbon TICs	170(J) to 190(J)
							5 Unknown TICs	150(J) to 2700(J)
MGP-3	11/3/95	soil from perimeter of excavation	Not Detected		Not Analyzed		TICs:	
							7 Unknown hydrocarbon TICs	140(J) to 370(J)
							5 Unknown TICs	230(J) to 3300(J)
MGP-4	11/3/95	soil from beneath buried drum	Not Detected		Not Analyzed		TICs:	
							7 Unknown hydrocarbon TICs	180(J) to 390(J)
							4 Unknown TICs	310(J) to 3400(J)
MGP-5	11/3/95	soil from beneath buried drum	Not Detected		Not Analyzed		TICs:	
							5 Unknown hydrocarbon TICs	170(J) to 270(J)
							10 Unknown TICs	150(J) to 5300(J)
MGP-6	11/3/95	trip blank	Chloroform	11	Not Analyzed		Not Analyzed	
6	10/23/95	trip blank	Methylene chloride	55	Not Analyzed		Not Analyzed	
			Chloroform	13				

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41

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**TABLE 9
MCGREGOR BORROW PIT DRUM BURIAL SITE (NM)
ANALYTICAL RESULTS**

Sample ID Number	Date Sampled	Sample Description	TCLP Semi-Volatile Organic Compounds		TCLP Metals		TCLP Chlorinated Pesticides	
			EPA SW 846 Methods 1311/3520/8270		EPA SW 846 1311/6010/7470		EPA SW 846 1311/3520/8080	
			Constituent	(ug/kg)	Constituent	(ug/kg)	Constituent	(ug/kg)
MGP-1 & sample 5	11/3/95 & 10/23/95	drum contents	3+4-Methylphenol	100	Arsenic Barium Cadmium Chromium Lead Mercury Selenium Silver	1.5(B) 26.6 (B) 2.1(B) <2.0 <1.0 <0.10 <2.0 <3.0	Not Detected	
MGP-2	11/3/95	soil from perimeter of excavation	Not Analyzed		Not Analyzed		Not Analyzed	
MGP-3	11/3/95	soil from perimeter of excavation	Not Analyzed		Not Analyzed		Not Analyzed	
MGP-4	11/3/95	soil from beneath buried drum	Not Analyzed		Not Analyzed		Not Analyzed	
MGP-5	11/3/95	soil from beneath buried drum	Not Analyzed		Not Analyzed		Not Analyzed	
MGP-6	11/3/95	trip blank	Not Analyzed		Not Analyzed		Not Analyzed	
6	10/23/95	trip blank	Not Analyzed		Not Analyzed		Not Analyzed	

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**TABLE 9
MCGREGOR BORROW PIT DRUM BURIAL SITE (NM)
ANALYTICAL RESULTS**

Sample ID Number	Date Sampled	Sample Description	TCLP Herbicides		General Chemistry	
			EPA SW 846 Method 1311/8150		(Including Oil and Grease and TPH)	
			Constituent	(ug/kg)	Constituent	units specified below
MGP-1 & sample 5	11/3/95 & 10/23/95	drum contents	Not Detected		Corrosivity Cyanide releasable Ignitability Reactivity Sulfide releasable Oil and grease * TPH* Oil and grease ** TPH**	6.3 pH <0.10 mg/kg Yes (no units) No (no units) <10.5 mg/kg 318000 mg/kg (dry) 273000 mg/kg (dry) 289000 mg/kg (dry) 285000 mg/kg (dry)
MGP-2	11/3/95	soil from perimeter of excavation	Not Analyzed		Oil and grease TPH	70.4 mg/kg (dry) 78.0 mg/kg (dry)
MGP-3	11/3/95	soil from perimeter of excavation	Not Analyzed		Oil and grease TPH	28.0 mg/kg (dry) 34.3 mg/kg (dry)
MGP-4	11/3/95	soil from beneath buried drum	Not Analyzed		Oil and grease TPH	98.4 mg/kg (dry) 80.4 mg/kg (dry)
MGP-5	11/3/95	soil from beneath buried drum	Not Analyzed		Oil and grease TPH	80.5 mg/kg (dry) 49.7 mg/kg (dry)
MGP-6	11/3/95	trip blank	Not Analyzed		Not Analyzed	
6	10/23/95	trip blank	Not Analyzed		Not Analyzed	

Organic Qualifiers:

(J) indicates an estimated value.

(N) indicates presumptive evidence of a compound. This flag is used only for TICs.

(E) is used to identify compounds whose concentrations exceed the calibration range of the GC MS instrument for that specific analysis.

Inorganic Qualifiers:

(B) indicates that the reported value is less than the Contract Required Detection Limit (CRDL), but greater than the Instrument Detection Limit (IDL).