Deerinwater Environmental Management Services, Inc.

FINAL REPORT Book 1 of 2

For The Expanded Site Investigation Phase II Former Atlas Missile Site No. 7 Vernon, Texas

Prepared For U.S. Army Corps of Engineers Tulsa District Contract No. DACA56-01-D-2005, Task Order No. 001



February 2002

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All of the previous material is contained in Volume One of Two.

Appendix M – Data Validation Report and Validated Data (Volume Two of Two)

Acronym List AMS Atlas Missile Site ASTM American Society of Testing Materials below ground surface bgs CFR **Code of Federal Regulations** COC Contaminate of Concern Contaminate of Potential Concern COPC DEMS Deerinwater Environmental Management Services DO Dissolved Oxygen DOD Department of Defense EB **Equipment Blank** EPA U.S. Environmental Protection Agency ESI **Expanded Site Investigation** FFA Future Farmers of America GW Ground Water GWP Ground Water Protection HTRW Hazardous, Toxic, Radioactive Waste IDW Investigative Derived Waste LCS/LCSD Laboratory Control Sample/Laboratory Control Sample Duplicate MSCs Medium Specific Concentrations MK Morrison Knudsen Corporation msl Mean Sea Level MW Monitoring Well NAVD North American Vertical Datum NGVD National Geodetic Vertical Datum PA/SI Preliminary Assessment and Site Inspection PCB Polychlorinated Biphenyl PID Photoionization Detector QA Quality Assurance QC Quality Control RCRA Resource Conservation and Recovery Act RRS-II Risk Reduction Standards No. 2

4

SI	Site Inspection
SOP	Standard Operating Procedure
SOW	Scope of Work
SVOC	Semi-volatile Organic Compound
TCLP	Toxicity Characteristic Leaching Procedure
TCE	Trichloroethene or Trichloroethylene
TDH	Texas Department of Health
TEPH	Total Extractable Petroleum Hydrocarbons
TPH	Total Petroleum Hydrocarbons
TNRCC	Texas Natural Resource Conservation Commission
TRPH	Total Recoverable Petroleum Hydrocarbons
USACE	U.S. Army Corps of Engineers
UST	Underground Storage Tank
VOC	Volatile Organic Compound

1.0 INTRODUCTION

1.1 Expanded Site Investigation Phase II Objectives

This report presents the results of the Expanded Site Investigation, Phase II (ESI Phase II) preformed September of 2001, at the former Atlas Missile Site No. 7 located near Vernon, Texas. The objectives of this ESI Phase II was to confirm the nature and extent of contaminants encountered during previously performed site investigations.

The ESI Phase II activities included the collection and chemical analysis of 65 surface soil samples. Collected soil samples were analyzed for the eight (8) RCRA metals, zinc, and PCBs to further define the lateral extent of existing soil contamination and to establish actual soil background concentrations. Four existing groundwater monitoring wells were redeveloped and groundwater samples collected. The collected groundwater samples were analyzed for the 8 RCRA metals, zinc, VOAs, SVOAs, Pesticides/PCBs, Herbicides, and TPH. This final ESI Phase II report discusses the physical description of the site, site history, discussion of the past and current field investigation activities, past and current investigation results, identification of potential data gaps, and recommendations for further investigation to achieve site closure under the Texas Natural Resource Conservation Commission (TNRCC) Risk Reduction Rules Standard No. 2 (RRS-II) Residential.

This final ESI Phase II report was prepared by Deerinwater Environmental Management Services, Inc. (DEMS) for the U.S. Army Corps of Engineers (USACE), Tulsa District, under Contract No. DACA56-01-D-2005, Task Order No.0001.

1.2 ESI Phase II Report Organization

Section 1 is the project introduction, this will highlight the ESI Phase II investigation goals. The historical use of the site is outlined in Section 2. Details of previous investigations are summarized in Section 3. Section 4 identifies the field investigation tasks, and Section 5 presents the analytical results of the ESI Phase II.

Section 6 is the Executive Summary, and Section 7 includes recommendations. Section 8 includes all reference material utilized in the preparation of this final report.

2.0 Site Background

2.1 Project Site Location

The former AMS No. 7 is located approximately 13 miles north-northwest of Vernon, Texas in Wilbarger County (Figure 1).

2.2 Regional Setting

The former Atlas Missile Site No. 7 is located in the gently rolling topography of northwestern Wilbarger County, Texas known as the Odell Sand Hills. This site has as an average elevation of 1365 feet above mean sea level (msl). Due to the sandy soils of the area, the surface drainage system in the Odell Sand Hills is poorly developed.

2.3 Site Background Information

2.3.1 Site History

Department of Defense (DOD) use began in 1960 with the acquisition of land at various locations in Oklahoma and Texas to be used for Atlas Missile Sites. Improvements at each site included underground missile silos, quonset huts, underground launch control centers, septic systems, water supply, fences, and roads. The AMS sites were declared to be excessive, by the DOD in approximately 1967. The United States Government, acting through the Department of Health, Education and Welfare, conveyed the property formerly AMS No. 7 by deed without warranty to the Northside Independent School District.

2.3.2 Site Ownership

The current property owner is the Northside Independent School District. The School district uses the facility for Future Farmers of America (FFA) exhibitions and livestock shows.

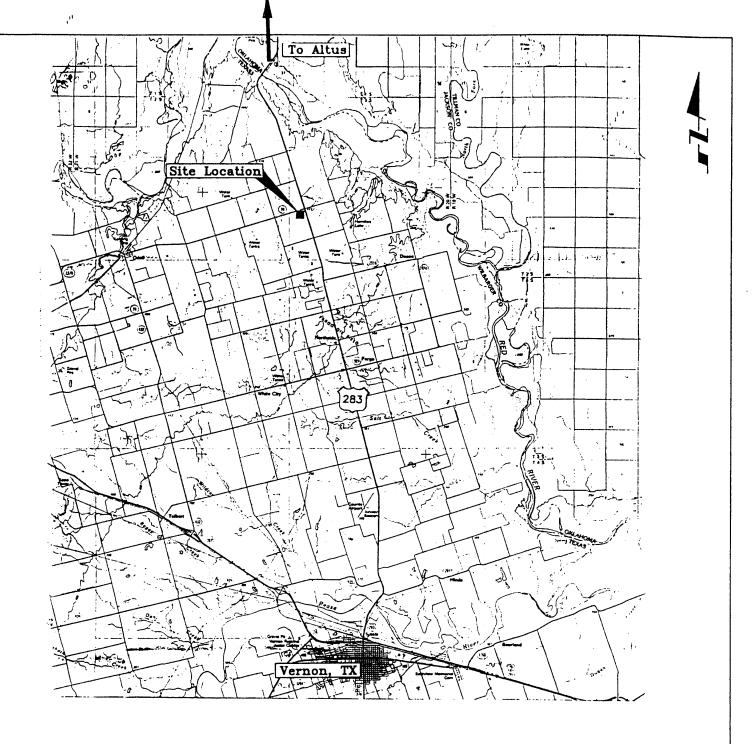


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2.4 Regional and Site Physiography, Geology and Underlying Aquifers

The near surface stratigraphic units consist of Quaternary age surficial deposits and underlying Permian age redbeds. The surficial deposits at the site consist of a thin mantle of recent age wind-blown sands and silt, that overly the Pleistocene age Seymour formation (Willis and Knowles, 1953). The Seymour formation is fluvial in origin and is comprised of fine to medium grained sands with interbedded silts and clays. Previous investigations at AMS No. 7 reported a thickness of Quaternary age surficial deposits ranging from 42 to 80 feet thick. The Seymour formation rests directly on the Permian age San Angelos formation of the Peace River Group. The Seymour Aquifer is the major groundwater aquifer for Wilbarger County. The aquifer is used locally for water supply and irrigation. The Seymour Aquifer is unconfined. The underlying San Angelos Formations is a minor aquifer in Wilbarger County. It has not been determined in past and current investigations that the San Angelos aquifer is under confined conditions or in connection with the overlying Seymour aquifer.

Four (4) monitoring wells were installed during the Expanded Site Investigation conducted by Morrison Knudsen Corporation (MK) in 2000. **Table 2.4** summarizes the total depth, producing aquifer, and elevation for each monitoring well as recorded during ESI field activities performed in 2000 by MK. Detailed well construction diagrams and well bore hole logs can be found in **Appendix K**.

Table 2.4	Т	ab	le	2.4
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Monitoring Well Total Depths and Producing Aquifer

Former Atlas	s Missile Site I	No. 7,	Vernon, Texas
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Monitoring	TOC Elevation	Hydro-	Total Depth	
Wells	msl (feet)	Stratigraphic Unit	bgs (feet)	
MW-06	1365.07	Seymour	31.5	
MW-07	1370.88	Seymour	23.53	
MW-08	1365.94	Seymour	25	
MW-09	1366.22	San Angelos	220	
		-		

Morrison Knudsen, ESI Final Report, January 2001

Contract No. DACA56-01-D-2005 Task Order No. 1 AMS No. 7 ESI Phase II Report Atlas Missile Site Investigations It was concluded in the Morrison Knudsen Final ESI Report that two hydrostatic units are intersected by the monitoring wells installed at this site. One unit is the Shallow Pleistocene age Seymour Formation and the other is the Permian age San Angelos Formation. Hydrostatic water measurements were taken from the three-groundwater monitoring wells located within the Seymour formation, this indicated the aquifers gradient is to the northwest.

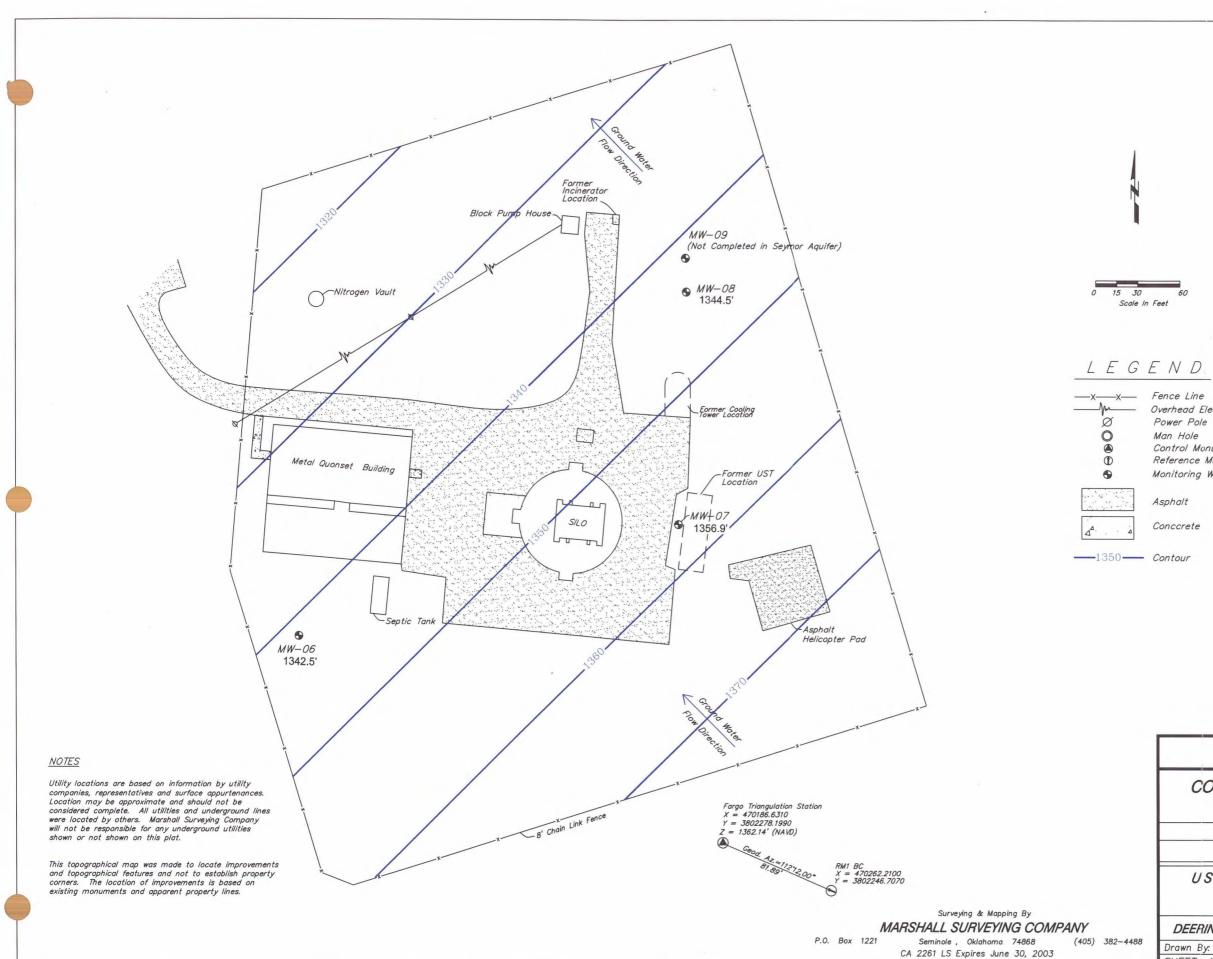
The deep bedrock aguifer is intersected by only one groundwater-monitoring well (MW-09). This one groundwater-monitoring well is not adequate to determine actual groundwater gradient for the San Angelos aquifer.

This interpretation is supported by the information gathered during the performance of this ESI Phase II. Prior to redeveloping each groundwater monitoring well, the static water level in each well was measured with an electric water level indicator to 1/100 foot. Measurements were taken from pre-established top of casing identification marks at the top of each well casing. Table 2.5 illustrates the static water level measurements prior to redevelopment. The static water level measurements were recorded on the groundwater sampling form for each well (Appendix C).

	Table 2.5				
Static Water Level Measurements					
Monitoring	TOC Elevation	Static Water	Hydro-	Static Water	
Wells	msl (feet)	Elevation msl	Stratigraphic Unit	Depth bgs (feet)	
		(feet)			
MW06	1365.07	1342.53	Seymour	22.54	
MW07	1370.88	1356.90	Seymour	13.98	
MW08	1365.94	1344.49	Seymour	21.45	
MW09	1366.22	1344.15	San Angelos	22.07	

ESI Phase II, DEMS, September 2001

A contoured potentiometric surface (water table) of the Seymour aquifer, based upon static water level measurements taken prior to redevelopment, is included as **Figure 2**. Results confirm groundwater gradient direction for the Seymour formation is to the northwest.



60

Overhead Electric Control Monument (Fargo) Reference Mark Monitoring Well Location

1							
FIGURE 2							
CONTOURED POTENTIOMETRIC SURFACE SEYMOR AQUIFER (AMS No. 7)							
CONTRACT No.	DACA 56-01-D-2005 TA	ASK ORDER No.1					
WILE	BARGER COUNTY, TEX	AS					
US ARMY CORPS OF ENGINEERS TULSA DISTRICT 1645 SOUTH 101st EAST AVENUE, TULSA, OKLAHOMA							
DEERINWATER ENVIRONMENTAL MANAGEMENT SERVICES, INC.							
Drawn By: JLA & SRR	Drawn By: JLA & SRR Checked By: JBM Date: DECEMBER 4, 2001						
SHEET 1 OF 1 Job No. 47401 Revised:							

3.0 Previous Environmental Investigations

3.1 Previous Environmental Investigations

Previous investigative efforts consisted of a Preliminary Assessment and Site Inspection (PA/SI) conducted in 1995, demolition and closure of various DOD structures in 1999, and an ESI performed in 2000.

The PA/SI was conducted in 1995 by the USACE, Tulsa District as part of the DOD Environmental Restoration Program. The primary objective of the PA/SI was to determine if there was a release or potential of hazardous substances due to past DOD usage of the site.

The PA included gathering and reviewing existing site information, interviews of former site personnel, DOD files, published geological/hydro-geological reports, and aerial photography. The completed PA identified the following sources for potential releases as:

- On-site storage tanks used to provide fuel for electrical generators and incinerator.
- Fuels and oils used for equipment maintenance, and
- The hydraulic system used to operate the silo launch bay doors.

The SI that followed the PA was to determine if site soils or groundwater contamination had occurred as a result of past DOD activities. SI activities consisted of performing the following:

- Collection of surface soil samples
- Installation of three shallow boreholes for surface and subsurface soils data collection.
- Installation of a shallow groundwater monitoring well and one deep groundwatermonitoring well to assess groundwater quality.
- Collection of water samples from the missile silo, groundwater monitoring wells, and on-site domestic water well.

3.1.1 PA/SI Findings and Recommendation - USACE (1995)

All references to field operations, analytical results and conclusions given in this report

were taken from the Morrison Knudsen January 2001 Expanded Site Investigation Report. Original data was not provided to DEMS. Morrison Knudsen reported that no Volatile Organic Compounds (VOCs) were detected in the soil or groundwater and all metals detected were stated as within the acceptable background ranges. However, total recoverable petroleum hydrocarbon (TRPH) and several Semi-volatile Organic Compounds (SOVCs) were detected in soils and groundwater samples. Bis (2-ethylhexyl) phthalate was the only SVOC detected in soils. This contaminate was detected in all three boreholes and at various depths ranging from the surface to 25 feet below ground surface (bgs). SVOCs detected in groundwater samples included Bis(2-ethlhexyl) phthalate, benzoic acid, di-n-octylphthalate, and phenol.

It was concluded in the 1995 USACE SI report, as represented in the Morrison Knudsen January 2000 report, that Bis(2-ethlhexyl) phthalate is commonly added to plastics to enhance flexibility. Therefore the presence of this compound in soil samples and groundwater was probably due to leaching of this compound from sampling equipment and rubber gloves used in sampling, rather than a result of former DOD activities. The USACE SI 1995 report also stated that the other SVOCs detected in groundwater were known laboratory contaminants and were thought to be introduced during the laboratory analysis procedures. The Morrison Knudsen January 2001 report did not provide any conclusions as to the potential source of the detected TRPH. The findings of the SI report recommended no further action was required at this site. The two monitoring wells installed during the 1995 PA/SI were plugged and abandoned in May of 1998 by the USACE.

In March 1999, the TNRCC completed its review of the 1995 SI report and responded with a Notice of Deficiency to the USACE, Tulsa District, disagreeing that the presence of SVOC contaminants were not field sampling or laboratory contamination, and that potential impacts to the upper and lower aquifers had not been properly evaluated. The TNRCC review and comments prompted the USACE, Tulsa District to review the data collected during the 1995 SI. The USACE concluded that the data collected was

questionable due to various quality control issues. This prompted the USACE, Tulsa District to contract an ESI, which was performed by Morrison Knudsen in 2000.

3.1.2 Expanded Site Investigation, Morrison Knudsen (MK 2001)

Morrison Knudsen conducted all field ESI activities in 2000. MK presented their findings for the AMS No. 7 ESI to the USACE in a final report dated January 2001.

The following is a brief description of field activities performed during the 2000 ESI.

- Collection of surface soil samples for chemical analysis.
- Drilling and continuous coring of three shallow boreholes. Boreholes were drilled to the top of the alluvial/bedrock contact. Soil samples were collected for chemical analysis at 5-foot intervals within the vadose zone at each borehole and at the underlying alluvial/bedrock, contact and soils were lithologically described.
- Drilling and continuous coring of one deep borehole. The deep borehole was drilled to 210 feet bgs.
- Subsequent installation of monitoring wells at each borehole location. Well development and groundwater sampling at each well following well installation.

3.1.3 MK (2001) ESI Surface Soil Sample Results

In the MK ESI 2001 final report, all analytical results, except detected metal concentrations in soils, were compared to the TNRCC RRS-II medium specific concentrations (MSCs) applicable to industrial activities (Appendix G). All analytical results for detected metals in soils were compared to the Texas Specific Background Concentrations (TNRCC Interoffice Memorandum dated June 28, 2000) (Appendix H).

No pesticides, herbicides or TRPH were detected in the surface soil samples collected.

Bis(2-ethlhexyl) phthalate were not detected in surface or subsurface soils during the ESI performed by MK. The absence of detectable levels of this compound suggest that the presence of this SVOC detected in the 1995 PA/SI samples were a result of laboratory cross contamination and not from previous DOD usage.

All laboratory results for metals in the soil were found to be less than TNRCC Texas Specific Background Concentrations, with the exception of lead and zinc located in the areas associated with the old incinerator, cooling tower, and underground storage tank (UST) locations.

Polychlorinated biphenyls (PCBs) were also detected in soil samples collected from areas near the incinerator, cooling tower, and UST locations. The detection of PCB contaminate is indicative of a prior release. However, PCB concentrations did not exceed the MSCs for inhalation, ingestion, and dermal contact, but do exceed the MSCs for groundwater protection. It was concluded in the MK ESI 2001 final report that because subsurface soil sample concentrations were non-detect for PCBs that the TNRCC groundwater protection criteria was met. **Table 3.3.1** lists the lead and zinc concentrations near the incinerator, cooling tower and former UST location.

MK (2001) Surface Soil Results Metals						
Sample Locations	Lead	Zinc				
Incinerator						
SS08	152 mg/kg	102 mg/kg				
SS09	19.3 mg/kg	45.6 mg/kg				
SS10	10.4 mg/kg 18.8 mg/l					
Cooling Tower	<u>.</u>					
SS11	18.4 mg/kg	181 mg/kg				
SS12	6.6 mg/kg	32.2 mg/kg				
USTs						
SS13	22.2 mg/kg	44.3 mg/kg				
SS14	14.5 mg/kg 11 mg/kg					

Table 3.1.3

Results taken from MK ESI report January 2001

3.1.4 MK (2001) ESI Subsurface Soil Sample Results

Subsurface soil samples were collected from three separate borehole locations (BH06, BH07 and BH08). All laboratory results for metals were less than the TNRCC Texas specific background concentrations. Several VOC and SVOC compounds were detected in the subsurface soil samples, with all results below the MSC values for inhalation, ingestion, dermal contact, and groundwater protection. **Table 3.1.4** lists the subsurface soil sample results.

MK (2001) Volatiles/Semivolatile Organics Results											
Suite/Compound		Boreh	ole BH0	6	Boreho	ole BH07		Bor	ehole H	3H08	
	S-05	S-10	S-18	S-76	S-05	S-10	S-05	S-10	S-15	S-18	S-80
VOC (ug/kg)	VOC (ug/kg)										
Acetone	41.2		16.1	34.6			52.2	26.4	62.5	27.8	26.7
Methylene Chloride	44.0	51.0	32.7		21.1	25.2	26.7	30.5	35.8	34.6	20.5
Toluene					3.96						
Trichloroethene (TCE)										36.7	
1,2,4-Trimethylbenzene					2.08						
Xylenes					4.48						
VOC (ug/kg)	VOC (ug/kg)										
Pentane	ND	ND	ND	ND	12.5J	ND	ND	ND	ND	ND	ND
SVOC (ug.kg)											
1,1,2,2-Tetrachloroethane	ND	ND	ND	ND	ND	15J	ND	ND	ND	ND	ND

Table 3.1.4

Results taken from MK ESI report January 2001

S-05 – sample ID denoting depth (in ft. bgs) -- Compound not detected above MDL

ND – Non-Detect

J – estimated value

3.1.5 MK (2001) ESI Groundwater Sampling Results

Several VOC and SVOC compounds were detected in the groundwater samples but were below the MSC groundwater values with the only exception being Trichloroethene (TCE) with a concentration of 0.140 mg/l from monitoring well MW08, which exceeded the MSCs for the TNRCC administrative code for public drinking water of .005 mg/l. Table **3.1.5** lists all detected analytes for the monitoring well groundwater samples.

Suite/Compound	Seymour Aquifer			San Angelos Aquifer				
_	MW06	MW07	MW08	MW09				
VOCs (ug/l)								
1.1-Dichloroethylene			0.3					
cis-1,2-Dichloroethylene			30					
trans-1, 2-Dichloroethylene			2.8					
Trichloroethylene (TCE)			140					
VOC tics (ug/l)								
Acetone			8.7					
Chloroform			0.5					
4-Isopropyltoluene			0.1					
SVOC tics (ug/l)								
Di(2-ethylhexyl)phthalate			1.0J	1.3J				
Metals (ug/l)								
Antimony			1.0					
Barium	200	410	320	260				
Chromium	12	15	8.3	1.3				
Copper	7.9	10	4.1	4.3				
Lead	14	6.8						
Nickel	12	18	8.7	100				
Inorganics (mg/l)								
Fluoride	0.09	0.6	0.6					
Nitrate	9.5		0.5	0.7				
Nitrite	0.01							

 Table 3.1.5

 MK (2001) Organic Compounds, Metal and Inorganics Detected in Groundwater

Results taken from MK ESI report January 2001

-- Compound not detected above MDL

J – estimated value

All reports referenced are on record and available for review at USACE, Tulsa District Office.

4.0 Field Investigation Activities

4.1 ESI Phase II Field Activities Overview

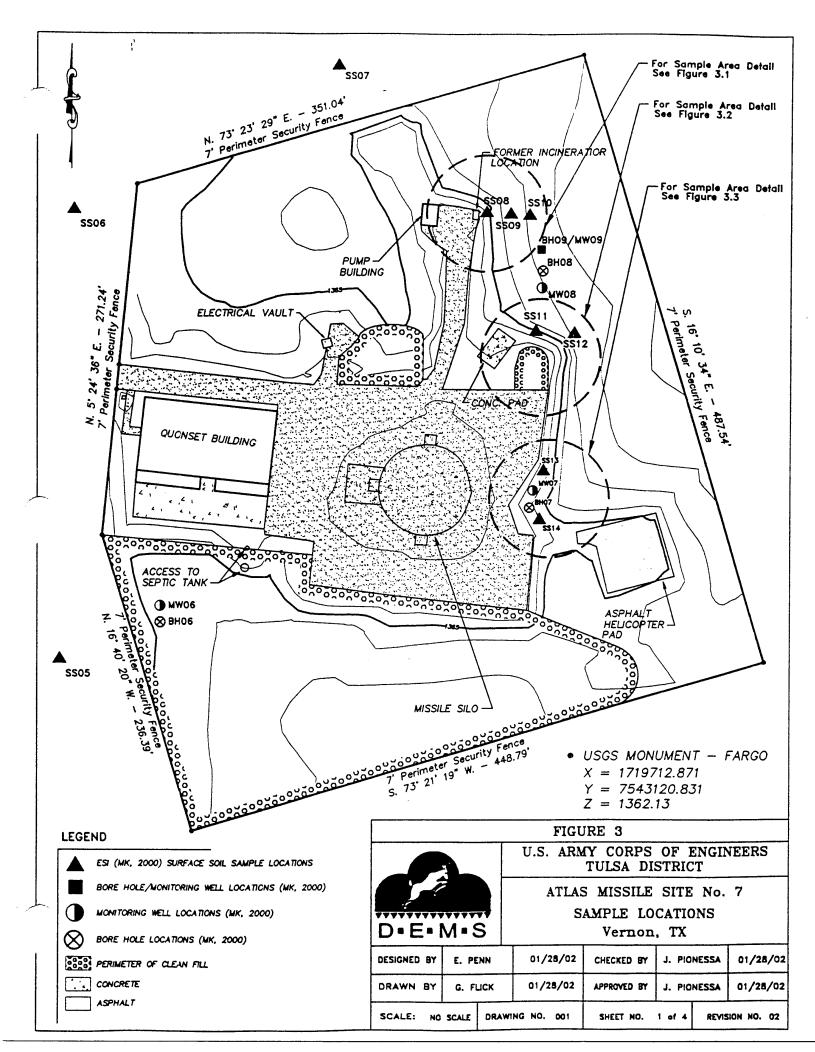
AMS No. 7 - Expanded Site Investigation, Phase Two Activities

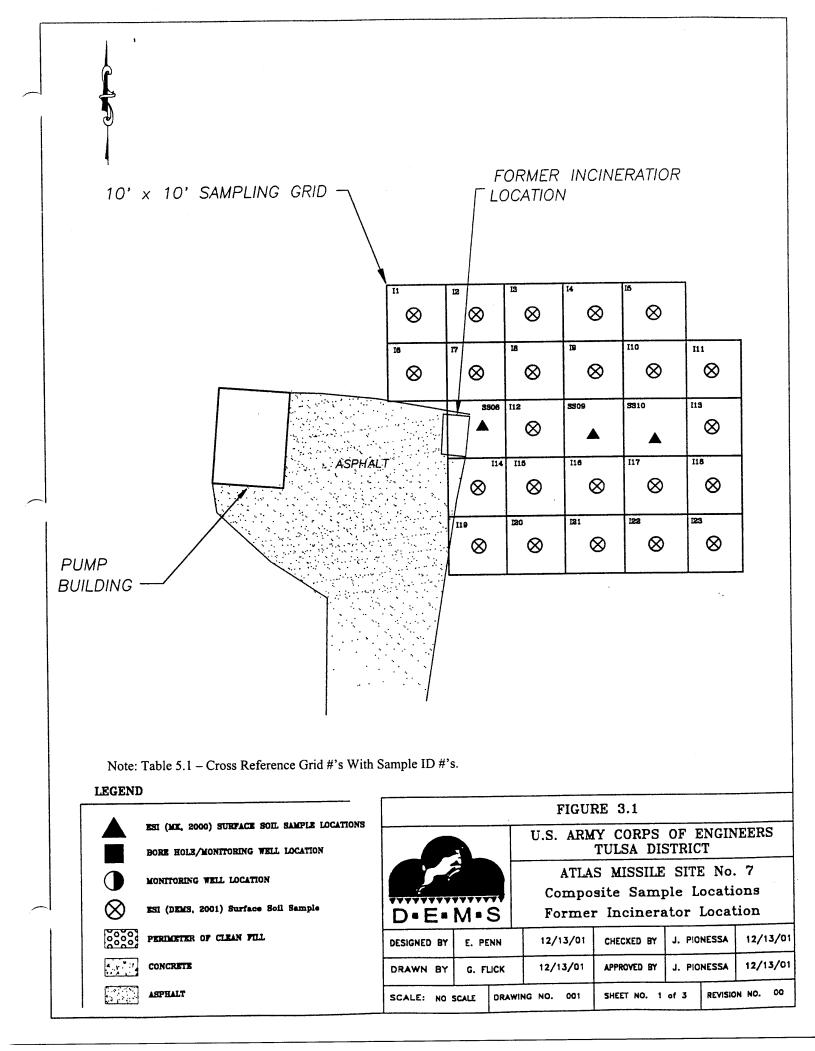
- Collection of 65 surface samples analyzed for the eight (8) RCRA metals, zinc, and PCBs to further define the lateral extent of existing soil contamination and to establish actual background metal concentrations.
- Redevelopment of four existing groundwater monitoring wells, stabilization, well purging, collection of GW samples, analyzing of eight (8) RCRA metals, zinc, VOCs, SVOCs, Pesticides/PCBs, Herbicides, and TPH.
- Profiling, transportation and disposal of the Investigative Derived Waste (IDW).

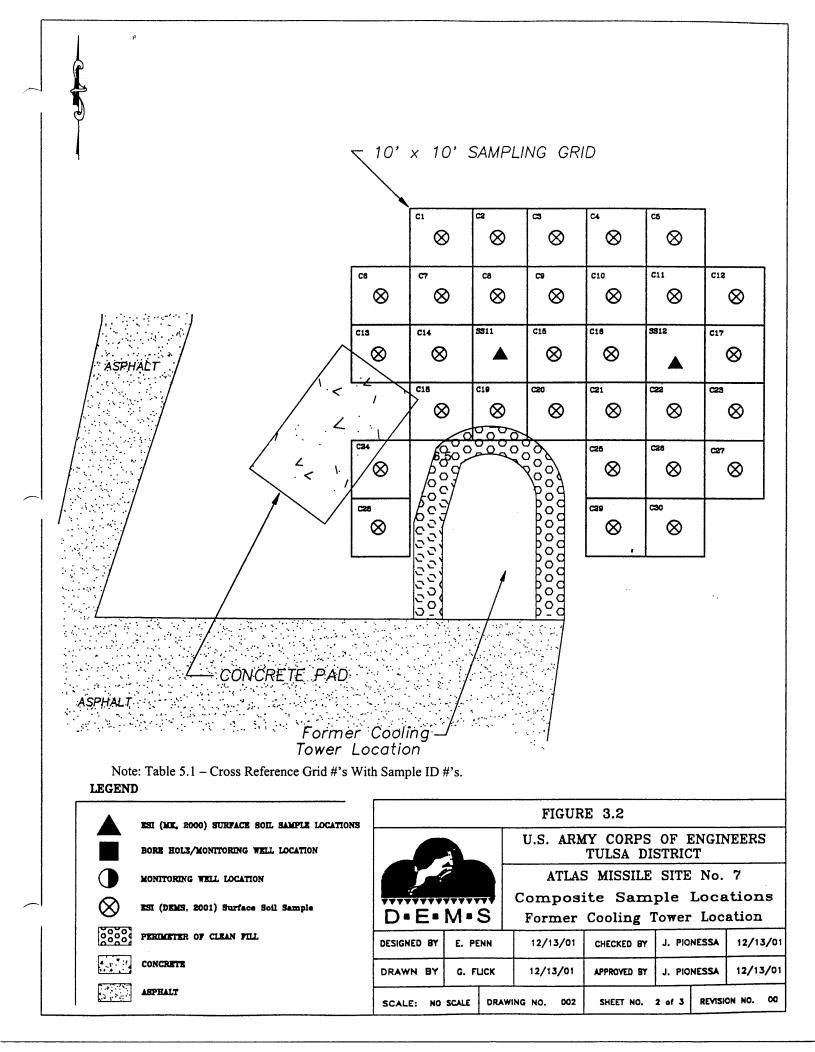
Photographic documentation of field activities are located in **Appendix A.** A large-scale map detailing monitoring well locations, previous soil sample locations, current sampling locations, and major site features are included as **Appendix J**.

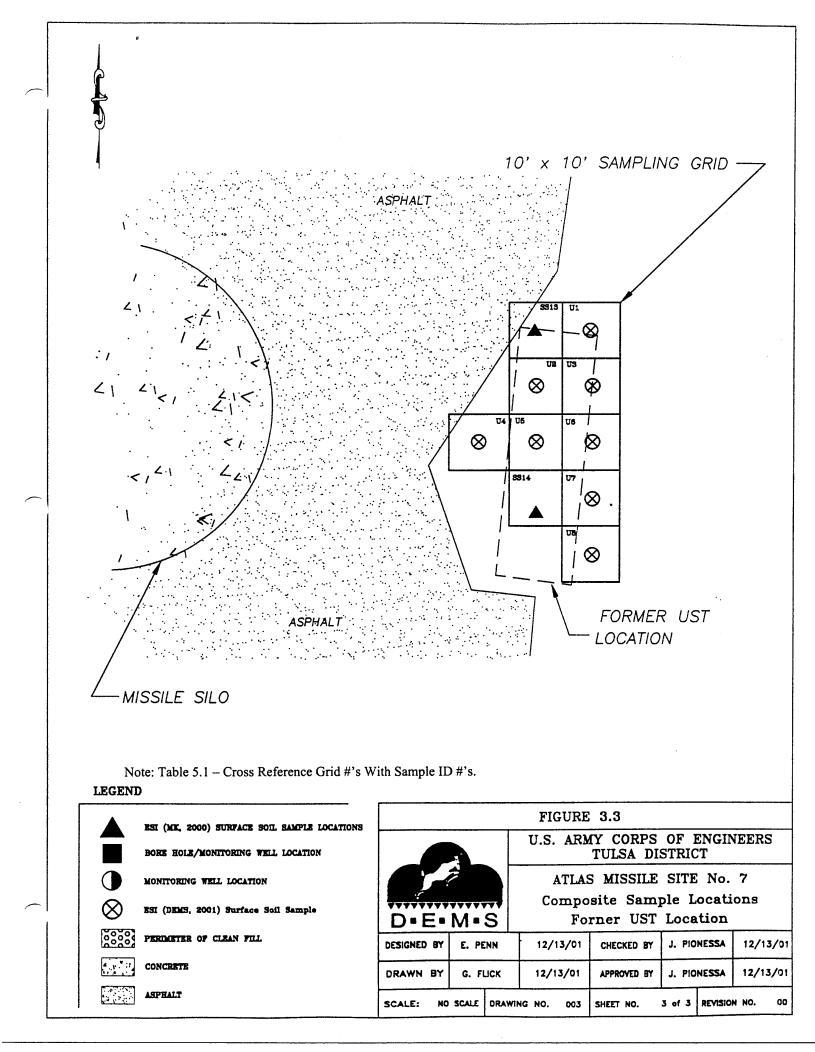
4.1.1 Surface Soil Samples

Various types of contamination were identified in the MK (2001) ESI final report. Soil samples taken from the areas of the incinerator, cooling tower, and UST indicated concentrations of lead and zinc potentially above acceptable background levels. Low levels of PCBs were also detected from soil samples collected near the incinerator, cooling tower, and UST. The PCBs results are indicative of a past release. This ESI Phase II identified these previous areas of concern that required further investigation. Figures 3 shows the previous ESI sample locations (MK 2001) and the areas where additional surface soil sampling occurred during this ESI Phase II. Figure 3.1 is a detailed map covering the area surrounding the former site of the incinerator. It includes the previous sampling locations (MK 2001) and new sample locations for this ESI Phase II, delineated by ten (10) foot square grids. Figure 3.2 is a detailed map covering the area around the former site of the cooling tower. It also includes previous sampling locations and new sample locations for this ESI Phase II, delineated by ten (10) foot square grids. Figure **3.3** is a detailed map covering the area surrounding the former UST site, which was removed during previous site activities. It includes the previous sampling locations and new sample locations used for this ESI Phase II, delineated by ten (10) foot square grids.









Sixty-one soil-sampling locations were identified for this ESI Phase II. The sample locations were laid out in 10 ft. by 10 ft. grids using a 100 foot tape measure, wooden stakes, and string. Each grid was individually marked with a flag recording its unique grid number. Each grid number was assigned a unique sample identification number (see Table 5.1, Section 5 of this report).

In addition to the sixty one (61) composited grid samples, four discrete background soil samples were collected. Each background soil sample was analyzed for the eight (8) RCRA metals, zinc, and PCBs. The background sampling locations for the background soil samples are shown on the detailed site map **Appendix J**.

4.1.2 Sample Collection Methods – Surface Soils

Each individual grid was represented by one composite soil sample. The composite sample was comprised of five (5) discrete samples taken from different locations within each grid. Each grid was divided into quarters, one sample was taken from each quarter and from the center. This material was collected from the top six (6) inches of the surface soils and composited as a representative sample for that grid. The four background soil samples were collected as discrete samples from the top six (6) inches of the surface soils. Samples collected were free of debris, rocks, and vegetation. Each sample was collected using a stainless steel trowel or stainless steel core barrel, which was decontaminated between each sample collection. Soil sampling collection logs were prepared for each sample collected, describing soil type, sampled interval, sample identification numbers and corresponding grid numbers, dates and times, field screening information, and analysis requested (see Appendix B). Each sample was labeled and placed into the appropriate sample containers as specified by the laboratory. Sample containers were bubble wrapped and placed in padded coolers with ice to lower the temperature to 4 degrees C. A chain of custody for each sample was prepared documenting a unique sample identification number, date and time of collection, analysis requested, and identity of the person collecting each sample. Each completed chain of custody was placed in the shipping cooler. The coolers were sealed with custody seals and secured for shipping. Sampling locations were subsequently staked with pin flags or survey laths and clearly marked with each unique grid number or sample ID number. The staked sampling locations were then surveyed by a licensed survey company.

4.1.3 Groundwater Well Re-development

The existing groundwater wells at AMS No. 7 were redeveloped as required in the approved work plan and scope of work (SOW). Well development was accomplished using a submersible pump. Originally DEMS proposed that each well be surged before and between periods of pumping. Surging was not used during the redevelopment process of MW06, MW07, and MW08. After obtaining current static water levels, it was determined that the total casing volume was very small and the top of the static water column was well below the top of the screened interval in each well. It was recommended in the field and agreed to by the USACE field representative on site, that surging within the screened interval would not be completed due to the potential for damaging the screen. Instead, redevelopment of these three wells was accomplished with pumping only. All three wells were redeveloped using a 12-volt DC submersible electric pump. Both MW07 and MW08 pumped dry during redevelopment and exhibited very slow recharge rates. It was proposed in the approved work plan that redevelopment of MW09 would include a sand bailer to remove accumulated fill from the casing. A check of total well depth indicated no measurable fill had accumulated in this well. Redevelopment proceeded with pumping only. MW09 was redeveloped using a three quarter horsepower, 220-volt, three-inch diameter, submersible electric pump.

During well redevelopment activities, various water quality parameters were measured and recorded. These parameters included pH, temperature, conductivity, and turbidity. This information was then recorded on the Monitoring Well Development/Purging logs located in **Appendix C**.

Well redevelopment requires the following criteria be met:

- Minimum removal of three (3) times the standing volume in the well casing plus saturated annulus,
- Sediment thickness remaining in the well is less than 1 percent of the screen length (0.1 foot for screens 10 feet long).

• Measured water quality parameters are stabilized. Stabilization is reached after all parameters are stabilized for three successive readings. Three successive readings should be within plus or minus 0.2 for pH, plus or minus 1 degree Celsius for temperature, plus or minus 3% for conductivity, and plus or minus 10% for turbidity.

All instruments used to measure water quality parameters, were calibrated twice daily. The calibration results are recorded on the Calibration Logs located in **Appendix D**.

All of the criteria noted above were achieved except in the following wells:

- MW07
- MW09

In MW07 three (3) times the standing volume in the well casing plus saturated annulus calculated to only 8.83 gallons. This well pumped dry very easily and exhibited a very slow recharge rate. Development continued over a two day period with just over two well volumes, being recovered. Parameters were checked between each recharge event. All water quality parameters had stabilized, with the exception of turbidity, which was still dropping. A substantial decrease in turbidities had occurred during the two-day development period. Beginning turbidities that were above 990 ntu were reduced to below 15 ntu. Due to the extremely slow recharge rate of this well, the significant improvement in turbidity, and the stabilization of all remaining parameters, this well was accepted as developed.

MW09, the deep well, had a calculated three well volumes of 390 gallons including filter pack. This well pumped dry after producing only 142 gallons, approximately one well volume, and exhibited a very slow recharge rate. After initially pumping dry, MW09 was allowed to recharge for fifteen (15) hours. Additional pumping only recovered 60 gallons of water. The last three sets of parameter readings had almost reached stabilization. Turbidity which was above 990 ntu during the original well development had fallen to 7.59 ntu. Due to the extremely slow recharge rate of this well, the significant improvement in turbidity, and the near stabilization of all remaining parameters, this well

was accepted as developed. Per the approved work plan, all wells were then allowed a stabilization period of 10 days before purging and sampling.

4.1.4 Low Flow Groundwater Sampling Activities

Before the start of groundwater sampling activities, plastic sheeting was placed on the ground surrounding each well. The plastic sheeting provided a clean work area, and prevented any cross contamination to sampling equipment. The air in the breathing zone and well casing was checked with a Photo Ionization Detector (PID) each time a well cap was removed to measure water level or collect a sample. No concentrations of organic vapors were recorded above background levels. All air-monitoring results are recorded on the Monitoring Well Sampling Collection Log for each well (**Appendix E**).

Purging and sampling were achieved using the Low-Flow Minimal Drawdown technique to minimize aeration and agitation of sediments in the well and formation. This sampling technique is based on parameter stabilization, not the number of well volumes removed. The Low Flow technique used in sampling the AMS No. 7 site is described below:

Low-flow ground water sampling was accomplished using a Sample Pro portable micro purge positive displacement bladder pump with Teflon tubing. Two pumps were used for this sampling event. Pumps were deconed immediately after removal and prior to placement into each monitoring well. The Teflon tubing used for each monitoring well was purchased new and only used once. Because of the very low well volumes in each well and the history of the wells pumping dry, all pumps were placed near the bottom of each well. Care was taken not to touch the bottom of the well with the bladder pump, due to the potential of disturbing well sediments. After placing the pump, each well was allowed to sit overnight to stabilize before purging or sampling. Waiting overnight allowed the well temperature and any disturbed sediments to stabilize. During well purging, flow rates were measured every two to three minutes using a graduated cylinder. This allowed for the maximum flow rate of <0.5 L/min to be maintained during the purging and stabilization process.

After purging and stabilization, ground water quality parameters were monitored in the field (real time) every 2 to 3 minutes during purging. These results were taken from an inline flow cell and field turbidity meter and recorded on the groundwater sampling forms for each individual well. Water quality field parameters used to indicate stabilization include temperature, pH, specific conductivity, turbidity, and dissolved oxygen. Stabilization was demonstrated with three successive field readings of temperature within +/- 0.5 degrees Celsius, +/- 0.01 pH, +/-3% specific conductivity, turbidity, and dissolved oxygen within +/- 10%. After the water quality parameters had stabilized within the EPA's recommended ranges, samples were collected. Sample collection occurred immediately after stabilization was established, regardless of well volumes removed. All readings obtained during purging, stabilization, and sampling information were recorded in the Monitoring Well Sampling Collection Log (**Appendix E**).

During Low-Flow purging and sampling, the water level within the well was monitored to ensure no excessive draw-down occurred. No excessive draw-down was observed in any of the wells sampled.

All instruments used to measure water quality parameters were calibrated twice daily. The calibration results are recorded on the Calibration Logs located in **Appendix D**.

4.1.5 Surveying and Mapping

All surface soil sample locations were surveyed upon completion of sampling activities. Horizontal coordinates were established relative to the Texas State Plane coordinate system. Surveys were connected to the coordinate system by third order, Class II control surveys. Horizontal coordinates were recorded to the nearest 0.1-foot. Survey coordinates for each sampling location and monitoring well location were recorded on a detailed site map, **Appendix J**.

Ground surface elevations were also shot at each location and recorded to the nearest 0.1 foot. Elevations will be referenced to the National Geodetic Vertical Datum of 1929 Contract No. DACA56-01-D-2005 Task Order No. 1 AMS no. 7 ESI Phase II Report 28 Atlas Missile Site Investigations Elevations DEMS Project No. 2075 (NGVD of 1929) or the North American Vertical Datum, 1988 Adjustment (NAVD 88). Vertical surveys will be connected to datum by third order leveling. A licensed surveyor was used to perform the survey services.

4.1.6 IDW Waste Disposal

Waste generated during the ESI Phase II included decontamination water, monitoring well development water, and purge water. The water generated during he ESI was stored in a 500-gallon poly tank pending laboratory analysis.

Water sample results of the IDW confirmed the IDW to be non-hazardous. A licensed vacuum truck was used to remove the water from the poly tank and transported it to an Oklahoma Department of Environmental Quality licensed facility for disposal. All IDW transportation and disposal documentation is included in **Appendix F**.

5.0 Investigation Results

This section presents the results of this ESI Phase II. It includes the nature and extent of the contamination, and identifies the contaminants of potential concern (COPCs) in soils and groundwater.

5.1 Data Quality and Review

The laboratory analysis of the soil and groundwater samples collected during the ESI Phase II field activities underwent an independent third party data validation review. Reported undetected mercury in nineteen of the surface soil samples was qualified as unusable data due to unacceptably low method bias resulting in a 73% completeness for mercury in soils. All remaining data was determined to be 100% usable. Therefore the overall goal of 90% completeness has been met for data quality. The independent data validation review concluded that the analytical results generated during the ESI Phase II were of sufficient documented quality to determine the nature and extent of contamination. The data evaluated is adequate to assess the level of contaminates present for the purposes of risk assessment, determination of remedial alternatives, and/or further investigation. A copy of the Data Validation Report and all validated data is presented in **Appendix M**.

5.2 Surface Soils

A total of sixty-five (65) surface soil samples were collected and analyzed for the eight (8) RCRA metals, zinc and PCBs. All surface soil samples were collected from the upper six (6") inches of the surface soils. Sixty-one (61) of the samples were collected near areas of previous known releases based on prior site investigations. The remaining four soil sample locations were collected along the perimeter of the site boundaries to establish site soil background concentrations. **Figures 3.1, 3.2** and **3.3**, located in Section 4 of this report, address the specific surface areas sampled during this investigation. **Table 5.1**, below, details the surface soil sampling analytical results.

	INCENERATOR							
Grid #	Sample ID	Arsenic	Barium	Chromium	Lead	Zinc	PCBs	Units
I1	AMS07SS001	1.6	56.1	6.8	34.4	58.5	.055	mg/kg
I2	AMS07SS002	1.2	55.4	6.6	34.9	33.1	<.0200	mg/kg
I3	AMS07SS003	1.7	56.2	7.5	16.2	25.7	<.0200	mg/kg
I4	AMS07SS004	1.6	51.8	6.9	10.6	33.1	<.0200	mg/kg
15	AMS07SS005	1.2	53.9	8.6	10	28	<.0200	mg/kg
I6	AMS07SS006	1.4	921	6.9	104	136	.228	mg/kg
17	AMS07SS007	1.8	98	9.8	288	82.2	<.0200	mg/kg
18	AMS07SS008	1.4	63.2	6.2	38.4	31.8	<.0200	mg/kg
18	AMS07SS008QC	1.7	64.3	7.12	39.4	31.9	<.0200	mg/kg
19	AMS07SS009	1.4	51.3	6.2	15.3	33.6	<.0200	mg/kg
I10	AMS07SS010	2.0	48.2	6.7	14	24.1	<.0200	mg/kg
I11	AMS07SS011	1.4	43.6	5.7	10.4	25	<.0200	mg/kg
I12	AMS07SS012	2.2	73.9	6.7	64.5	44.1	<.0200	mg/kg
I13	AMS07SS013	<1.000	47.9	5.1	11.5	24.6	<.0200	mg/kg
I14	AMS07SS014	1.6	73	9.4	163	88.4	<.0200	mg/kg
115	AMS07SS015	1.4	84.6	8.3	38.8	62.4	<.0200	mg/kg
I16	AMS07SS016	<.969	73.6	7.6	24	40.1	<.0200	mg/kg
I17	AMS07SS017	<.978	49.2	5.7	17.2	22.3	<.0200	mg/kg
I18	AMS07SS018	.988B	46.1	5.1	11.5	27.1	<.0200	mg/kg
I18	AMS07SS018QC	<.956	43.1	6.2	9.5	29.2	<.0680	mg/kg
I19	AMS07SS019	1.4	55	7.3	32.1	35.3	<.0200	mg/kg
I20	AMS07SS020	1.6	73.4	7.2	26.6	33.6	<.0200	mg/kg
I21	AMS07SS021	NA	NA	NA	NA	NA	<.0200	mg/kg
I22	AMS07SS022	<.944	44.4	6.8	21.9	25.7	<.0200	mg/kg
I23	AMS07SS023	1.4	48.8	8.7	12.2	26.9	<.0200	mg/kg

TABLE 5.1 Analytical Results For Surface Soil Samples

	COOLING TOWER							
Grid #	Sample ID	Arsenic	Barium	Chromium	Lead	Zinc	PCBs	Units
C1	AMS07SS024	1.2	55.5	5.6	6.6	36J	<.0202	mg/kg
C2	AMS07SS025	<1.004	53.0	5.8	4.6	24.5J	<.0204	mg/kg
C3	AMS07SS026	1.0BJ	47.4	6.6	4.0	23.1J	<.0202	mg/kg
C4	AMS07SS027	1.2	43.8	6.9	3.8	21.2J	<.0202	mg/kg
C5	AMS07SS028	1.0BJ	36.8	6.3	3.8	50.6J	<.0202	mg/kg
C5	AMS07SS028QC	<.977	32.8	5.1	3.3	53.1J	<.0202	mg/kg
C6	AMS07SS029	1.2	89.8	7.2	18.2	89.4J	.286	mg/kg
C7	AMS07SS030	1.4	61.1	6.7	9.3	46.3J	<.0204	mg/kg
C8	AMS07SS031	1.0BJ	53.1	7.7	4.8	33.1J	<.0202	mg/kg
С9	AMS07SS032	1.2	46.9	7.3	3.7	21.1J	<.0202	mg/kg
С9	AMS07SS032QC	1.2	206	6.9	3.7	21.4	<.0202	mg/kg
C10	AMS07SS033	<1.033	41.1	5.4	3.7	19.8	<.0213	mg/kg
C11	AMS07SS034	<.962	32.5	3.5	4.2	17.9	<.0202	mg/kg
C12	AMS07SS035	1.2	38.8	5.8	5.4	50.1	.082	mg/kg
C13	AMS07SS036	2.3	97.1	11.3	89.6	221	.395	mg/kg
C13	AMS07SS036QC	1.8	98.6	11.6	46.4	216J	.5J	mg/kg
C14	AMS07SS037	1.9	96.3	13.4	46.5	131J	<.0206	mg/kg
C15	AMS07SS038	1.0BJ	47.4	6.4	6.2	52.2J	<.0202	mg/kg
C16	AMS07SS039	1.0BJ	53.5	6.7	5.7	46.5J	<.0202	mg/kg

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		ULING	r IUW	ĽK				
Grid #	Sample ID	Arsenic	Barium	Chromium	Lead	Zinc	PCBs	Units
C17	AMS07SS040	1.0BJ	40.8	7.0	4.8	67.5J	.067J	mg/kg
C18	AMS07SS041	1.6	80.5	9.8	15.7	144J	<.0204	mg/kg
C19	AMS07SS042	1.4	74.9	10	13.9	89.4J	.046	mg/kg
C20	AMS07SS043	1.4	69.2	5.8	18.0	76.8	<.0204	mg/kg
C21	AMS07SS044	1.0	58.3	6.7	4.5	28.0	<.0202	mg/kg
C22	AMS07SS045	1.2	42.5	5.2	3.7	19.0	<.0202	mg/kg
C23	AMS07SS046	<1.008	36.1	5.8	5.0	82.5	<.0202	mg/kg
C24	AMS07SS047	1.6	99.3	10.4	54.0	365.0	.115	mg/kg
C25	AMS07SS048	1.6	66.5	6.4	7.0	34.5	<.0202	mg/kg
C26	AMS07SS049	1.4	62.8	7.8	5.8	43.4	.298	mg/kg
C27	AMS07SS050	<.972	39.2	6.2	7.3	120.2	<.0202	mg/kg
C27	AMS07SS050QC	<.996	33.1	5.0	6.6	108J	<.0202	mg/kg
C28	AMS07SS051	1.8	84.5	10.1	58.6	346.1	<.0202	mg/kg
C29	AMS07SS052	1.8	74.1	7.0	15.8	66.1	<.0202	mg/kg
C30	AMS07SS053	1.4	61.1	9.1	9.1	67.3	.024	mg/kg
FORM	IER UNDERGI	ROUNI	D STO	RAGE TA	NK A	AREA	1	
Grid #	Sample ID	Arsenic	Barium	Chromium	Lead	Zinc	PCBs	Units
U1	AMS07SS054	1.7	69.8	10.2	12.9	34.8	.045J	mg/kg
U2	AMS07SS055	1.5	69.9	12.0	22.1	40.4	.170	mg/kg
U3	AMS07SS056	1.4	66.2	9.1	10.9	38.5	<.1010	mg/kg
U4	AMS07SS057	1.3	82.3	12.3	30.6	34.8	<.1010	mg/kg
U5	AMS07SS058	1.4	71.8	10.3	40.8	35.4	<.1010	mg/kg
U6	AMS07SS059	1.8	55.8	7.0	13.3	26.8	<.1010	mg/kg
U6	AMS07SS059QC	1.9	59.1	8.4.0	11.9	26.4	<.1010	mg/kg
U7	AMS07SS060	1.8	75.9	12.3	37.2	48.2	.065	mg/kg
U8	AMS07SS061	1.0	64.4	7.0	7.0	30.8	<.0202	mg/kg
BACKGROUND								
	Sample ID	Arsenic	Barium	Chromium	Lead	Zinc	PCBs	Units
	AMS07SS062	1.4	35.7	60.5	3.3	16.2	<.0202	mg/kg
	AMS07SS063	1 BJ	19.9	3.6	1.7	<9.56	<.0200	mg/kg
	AMS07SS064	<.990	26.3	3	2.8	10.5	<.0202	mg/kg
	AMS07SS065	<.990	27.5	4.6	3	11.1	<.0202	mg/kg
ND – Non Detect						-		~ ~

Table 5.1 (continued)COOLING TOWER

ND – Non Detect

NA – Not Available

J – Estimated

Bold/ Shaded - Exceeds the Screen Level for Groundwater Protection (GWP) RRS-II MSC

The highlighted lead and PCB concentration on the preceding table all exceeded the residential Groundwater Protection (GWP) levels for soils as listed on the RRS-II MSC found in **Appendix G**.

Only two surface soil samples detected metals other than the metals indicated above. Sample number AMS07SS035 located in Grid C12, detected mercury at 0.153 mg/kg. Sample number AMS07SS051 located in Grid C28 detected cadmium at 0.402 mg/kg. The mercury detected in sample number AMS07SS035 is below the MSC of 6.1 mg/kg soils residential and 0.2 mg/kg for GWP residential. The cadmium detected in sample number AMS07SS051 is below the MSC of 1400 mg/kg soils residential and 0.5 mg/kg for GWP residential. **Table 5.2** below lists the RRS-II MSC screen levels for both soil GWP and residential, for the eight RCRA metals, zinc and PCBs.

	Table 5.2						
TNRCC RRS-II Residential and GWP Residential							
Screening Val	Screening Values Eight (8) RCRA Metals and Zinc						
Analyte	Analyte GWP Screening Soil Residen						
	Level mg/kg	Screening Level mg/kg					
Arsenic	5	20					
Barium	200	9100					
Cadmium	0.5	1200					
Chromium	10	53000					
Mercury	0.2	6.1					
Lead	1.5	500					
Silver	18	460					
Selenium	5	1300					
Zinc	1100	5900					
PCBs	.05	10					

Table 5.2

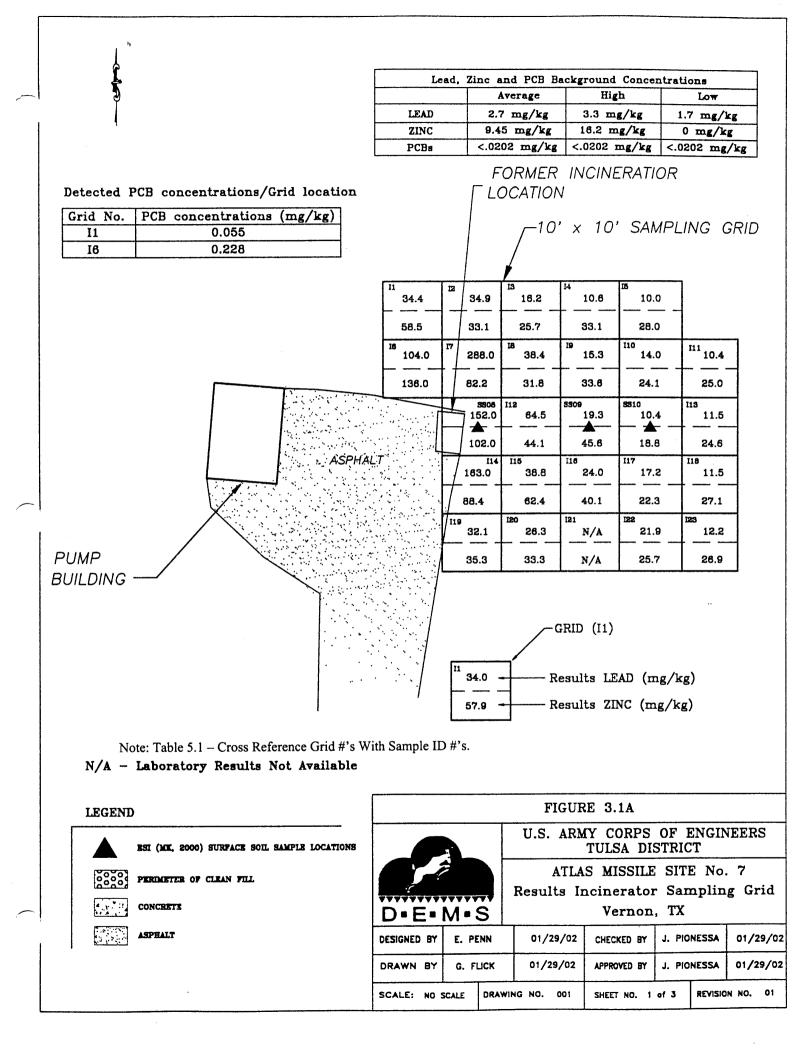
It is reported in the independent data validation report that undetected mercury in sample numbers AMS07SS025 through 032, SS036QC through 043, SS050, and SS050QC was qualified as unusable data due to unacceptably low method bias. This does not suggest that mercury should have been detected, only that the non-detect readings are bias low. This is probably due to soil matrix interference. Mercury had not been identified in previous site investigations as a COPC. Non-rejected mercury concentrations are below action levels for soils residential and GWP residential. Therefore mercury is not considered a primary COPC.

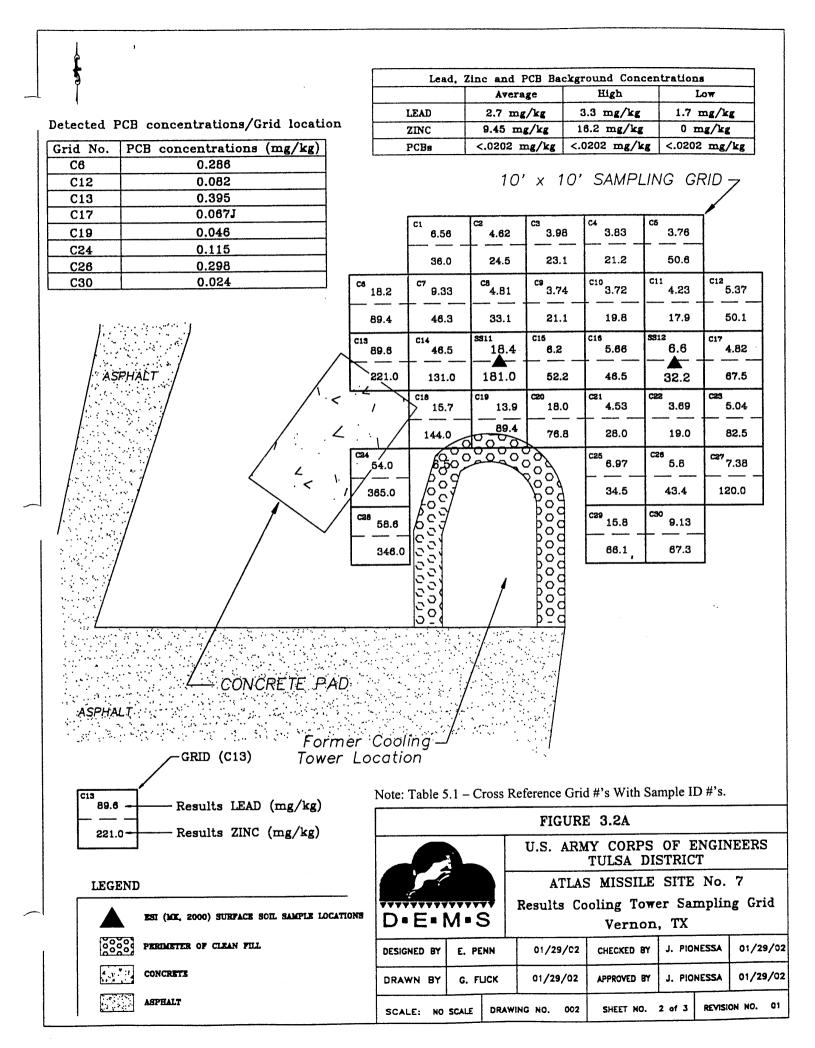
Only the detected concentration of lead and PCBs highlighted on **Table 5.1** exceeded any of the screening levels for both soils and GWP residential under RRS-II MSC found in **Appendix G.** No other analytic for soils exceeded screen levels for RRS-II MSC residential.

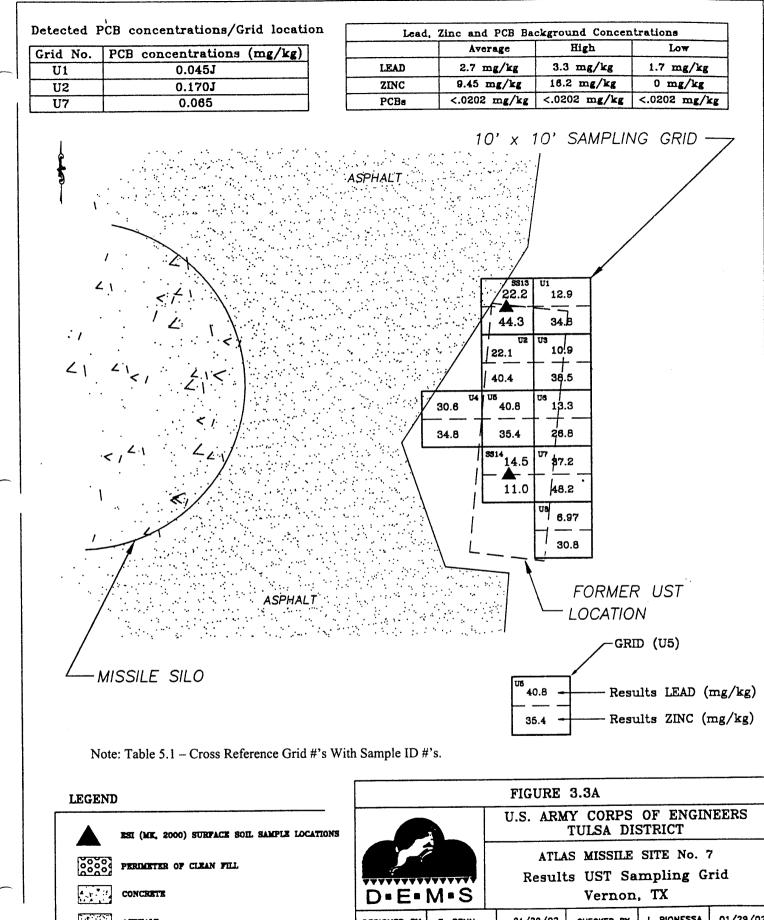
5.2.1 Comparison To Previous Site Investigations - Surface Soil Sampling

Previous surface soil analytical results, as presented in Section 3 of this report, indicated lead, zinc, and PCB contamination near the original locations of the incinerator, cooling tower, and UST. Analytical results for lead and zinc were compared, by MK in their ESI 2001 final report, to the Texas Specific Background Concentrations (Interoffice memorandum dated June 28, 2000). This memorandum lists background concentrations for lead at 15 mg/kg and zinc at 30 mg/kg. Several soil samples collected and analyzed during the MK ESI detected lead and zinc levels in excess of the Texas Specific Background Concentrations, causing MK to list them as primary COPCs. However, the Texas Specific Background Concentration levels of 15 mg/kg for lead and 30 mg/kg for zinc do not represent screening values or clean-up levels, but only suggested background values. The metal concentrations reported in the MK ESI final report should have been compared to MSC RRS-II soil screening levels for residential use of 500 mg/kg for lead, and 59000 mg/kg for zinc.

Analytical results from surface soil sampling conducted during this ESI Phase II did confirm elevated levels of lead, zinc, and some PCBs surrounding the incinerator, cooling tower, and UST. All three COPC maximum concentrations were below the MSCs RRS-II soil screening levels for residential use of 500 mg/kg for lead, 59000 mg/kg for zinc and 10 mg/kg for PCBs. **Figures 3.1A**, **3.2B**, and **3.3C** show the grid sampling locations for lead and zinc concentrations detected during this ESI Phase II investigation.







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J. PIONESSA CHECKED BY 01/29/02 01/29/02 DESIGNED BY E. PENN J. PIONESSA 01/29/02 01/29/02 APPROVED BY DRAWN BY G. FLICK REVISION NO. 01 3 of 3 NO SCALE DRAWING NO. CO3 SHEET NO. SCALE:

5.3 Groundwater

Goundwater samples were collected and analyzed for the eight (8) RCRA metals, zinc, VOCs, SVOCs, Pesticides/PCBs, Herbicides, and TPH from the four (4) groundwater monitoring wells on site. The water samples collected consist of three samples from the Seymour Aquifer (MW06, 07, 08) and one from the underlying San Angelos Aquifer (MW09). **Table 5.3**, below, details the monitoring well sampling and analytical results for all detected analytes.

		Table 5	5.3		
Groundwa	ater Ana	lytical Re	sults Moni	itoring We	lls
Analytical Suite/ Analyte	MW06	MW07	MW08	MW09	MW09QC
Metals (mg/l)					
Barium	.181	.336	.528	.049	.045
Cadmium	.002	<.0010	<.0010	.002	.003
Chromium	.011	<.0050	<.0050	.01	.014
Silver	.011	<.0050	<.0050	<.0050	<.0050
VOCs (mg/l)	1				
Cis-1,2- Dichloroethene	<.0020	<.0020	.0514	<.0020	<.0020
Trans- 1,2- Dichloroethene	<.0020	<.0020	.0026	<.0020	<.0020
Trichloroethene	<.0020	<.0020	.139	<.0020	<.0020
Toluene	<.0020	<.0020	.0028J	.0028J	.0025

ND - Non Detect

Bold – Results above MSCs Groundwater Residential RR Standard No. 2

No other VOC, SVOC or metals were reported above detection limits. Samples were also non-detect for Pesticides/PCBs, Herbicides and TPH.

5.3.1 Comparison To Previous Site Investigations - Monitoring Wells

5.3.1.1 Metals

Four metals were detected, barium, cadmium, chromium, and silver during the ESI Phase II. All metal concentrations are below MSCs for TNRCC RRS-II groundwater residential. All other metal results were below the laboratory detection limits. **Table 5.2.1** lists all metals above detection limits as reported in the MK ESI 2001 final report and detected during this ESI Phase II.

5.3.1.2 VOC's – Water Samples

Only four VOC's compounds were detected in water samples collected during this ESI Phase II. Cis-1,2- Dichloroethene, Trans-1,2- Dichloroethene, and Trichloroethene, were detected in MW08. Toluene was detected in MW08 and MW09. **Table 5.2.1** compares all detected concentrations for VOC compounds with the previous sampling events. This table also reports the MSCs action levels for each compound. These action levels were taken from the RRS-II-Res. (**See Attachment G**).

Trichloroethene is the only compound detected above the MSC action level for residential groundwater. Five VOC compounds, 1,1-Dichloreoethylene, acetone, chloroform, 4-Isopropyltoluene, and Vinyl Chloride identified in the MK ESI 2001 final report were not detected in this ESI Phase II.

5.3.1.3 SVOCs

The SVOC compound, Bis (2-ethylhexyl) phthalate was detected in MW08 as reported in the MK ESI 2001 final report. No SVOCs including Bis (2-ethylhexyl) phthalate were detected in the samples collected and analyzed during this ESI Phase II.

Table 5.3.1.3	
Groundwater	
Comparison Between MK Jan. 2001 Analytical Results with DEMS Dec. 2001 Res	ults
All Detected Analytes	

All units in – mg/l										
	MW	/06	MW	/07	MW08		07 MW08 MW09		V09	
Analytical Suite/ Analyte	MK Jan. 2001 Report	DEMS Dec. 2001 Report	MCS Action Levels Residential							
Metals										
Antimony	<.0002	N/A	<.0002	N/A	.001	N/A	<.001	N/A	.006	
Barium	.200	.181	.410	.336	.32	.528	.260	.049	2.0	
Cadmium	ND	.002	ND	<.001	ND	<.001	ND	.002	.005	
Chromium	.012	.011	.015	<.005	.0083	<.005	.0013	.01	.1	
Copper	.007	N/A	.010	N/A	.0041	N/A	.0043	N/A	1.3	
Lead	.014	<.003	.0068	<.003	<.0005	<.003	<.0025	<.003	.015	
Nickel	.012	N/A	.0182	N/A	.0087	N/A	.100	N/A	.73	
Silver	ND	.011	ND	<.005	ND	<.005	ND	<.005	.18	
VOCs										
Acetone	ND	<.05	N/D	<.05	.0087	<.05	N/D	<.05	3.7	
Chloroform	<.0001	<.002	<.0001	<.002	.0005	<.002	<.0001	<.002	.1	
1,1-Dichloroethene	<.0002	<.002	<.0002	<.002	.0003	<.002	<.0002	<.002	.007	
4-Isopropyltoluene	<.0001	<.002	<.0001	<.002	.0001	<.002	<.0001	<.002	*	
Cis-1,2- Dichloroethene	<.0001	<.002	<.0001	<.002	.030	.0514J	<.0001	<.002	.07	
Trans-1,2- Dichloroethene	<.0001	<.002	<.0001	<.002	.0028	.0026J	<.0001	<.002	.1	
Trichloroethene	<.0001	<.002	<.0001	<.002	.140	.139J	<.0001	<.002	.005	
Toluene	N/D	<.002	N/D	<.002	N/D	.0028J	N/D	.0028J	1	
Vinyl Chloride	<.0002	<.002	<.0002	<.002	.0002	<.002	<.0002	<.002	.002	
SVOCs										
Bis(2-ethylhexyl)phthalate	<.0006	<.01	<.0006J	<.01	1.0J	<.01	1.3J	<.01	*	

MSCs action levels from Texas Risk Reduction, Standard No. 2, Appendix G

J - Estimated

ND – Non Detect N/A – Not Analyzed * - No action level provided Bold/Shaded – Results above MSCs Groundwater Residential RR Standard No. 2

6.0 Executive Summary

This section summarizes the fieldwork, COPCs, and nature and extent of contamination defined by this ESI Phase II.

6.1 Field Sampling and COPCs

6.1.1 Soil

Previous site investigations indicated lead, zinc, and PCBs as the primary COPCs for surface soils. Potential areas for release were identified as the former sites for the cooling tower, incinerator, and UST. A total of sixty-one (61) surface soil samples were collected and analyzed for the eight (8) RCRA metals, zinc, and PCBs. Additionally, four (4) soil samples were collected and analyzed for the eight (8) RCRA metals, zinc, and PCBs to establish background concentrations. The average background results are presented in **Table 6.1.1** below.

	Table 6.1.1 Average Background Concentrations						
Analyte	Average	High	Low	Texas Specific Background Concentrations			
Arsenic	.6 mg/kg	1.4 mg/kg	0 mg/kg	5.9 mg/kg			
Barium	27.35 mg/kg	35.7 mg/kg	19.9 mg/kg	300 mg/kg			
Chromium	4.3 mg/kg	6 mg/kg	3 mg/kg	30 mg/kg			
Lead	2.7 mg/kg	3.3 mg/kg	1.7 mg/kg	15 mg/kg			
Zinc	9.45 mg/kg	16.2 mg/kg	0 mg/kg	30 mg/kg			
PCBs	<.0202	<.0202	<.0202	N/A			

Texas Specific Background Concentrations – Appendix H

N/A – Not Available

Site specific background results are all lower then the Texas Specific Background Concentrations as indicated on **Table 6.1.1**. To achieve closure of this site under RRS-1, all detected soils metal concentrations would be required to be at or below the site specific background concentrations. This would require a significant amount of soil removal. It is recommended that site closure be preformed under RRS-II Res. concentrations as indicated in **Appendix G**.

On site surface soil sample results confirmed, the previous site investigations conclusion, that lead, zinc, and PCBs are above background levels and should be considered the primary COPCs for surface soils. Analytical results for all metals tested are below the soil RRS-II MSC levels for residential. However, all lead and several sample locations for PCBs detected concentrations exceeding the RRS-II MSC GWP values for soils residential.

6.1.2 Groundwater

Water samples were collected from the three shallow monitoring wells and one deep well and analyzed for the 8 RCRA metals, zinc, VOCs, SVOCs, Pesticides/PCBs, Herbicides, and TPH. The primary COPCs reported in the MK ESI 2001 final report were Acetone, Chloroform, 1,1-Dichloroethylene, 4- Isopropyltoluene, Cis-1,2-Dichloroethene, Trans-1,2-Dichloroethene, Trichloroethene, and Vinyl Chloride all confined to MW08, with the exception of Vinyl Chloride which was also found in MW09. Only, four (4) VOC compounds were detected during this ESI Phase II sampling event. The four (4) VOC compounds are; Cis-1,2-Dichloroethene, Trans-1,2-Dichloroethene, Trichloroethene, and Toluene. All four compounds are present in MW08. Toluene is also present in MW09. Only Trichloroethene is above the TNRCC RRS-II-Res MSC screening value of .005 mg/l for residential. Cis-1,2-Dichloroethene and Trans-1,2-Dichloroethene, detected in MW08, were below the TNRCC RRS-II-Res MSC screening values of .07 mg/l for Cis-1,2-Dichloroethene and .1 mg/l for Trans-1,2-Dichloroethene. Toluene concentrations in MW08 and MW09 were below the MSC screening value of 1 mg/l for TNRCC RRS-II-Res. No SVOCs, Pesticides/PCBs, Herbicides, or TPH were detected in any of the monitoring wells sampled during this ESI Phase II.

6.2 Nature and Extent of Contamination

Surface soil sampling around the incinerator, cooling tower, and former UST site detected lead, zinc, and PCBs in excess of the established background concentrations. It is clear from the samples collected during this ESI Phase II that the incinerator, cooling

tower, and former UST site are probable sources of contamination. Sampling results confirmed higher concentrations closer to the established source and decreasing concentrations as one moves away from the source. Background samples taken from around the site perimeter demonstrates no surface contamination is moving offsite. The surface soil analytical results presented in **Figures 3.1A**, **3.2A**, **and 3.3A** show the extent of the surficial contamination is very limited in extent.

Groundwater analytical results detected trichloroethene in MW08 above the MSC screening values for residential use. One well is not sufficient to determine the extent or potential source of contamination for the trichloroethene detected in the shallow Seymour aquifer.

7.0 **Recommendations**

Based on the data gathered during this ESI Phase II and upon regulatory compliance review, the following recommendations for the former AMS No. 7 site are presented below. The recommendations for additional fieldwork and groundwater investigation listed below have also incorporated the comments and suggested/requested actions by the TNRCC in a letter dated September 24, 2001 to the USACE, Tulsa District. (Attachment **I**).

Contamination has been identified and confirmed surrounding the incinerator, • cooling tower, and former UST site. COPCs are lead, zinc, and PCBs, however none of the COPCs exceed the RR Standard 2 soil screening levels for residential use. Many of the soil sample results do exceed the values established for RR Standard 2 GWP. Therefore, further investigations need to be conducted to establish GWP. In the TNRCC letter dated September 24, 2001 they suggest leachate tests be conducted to determine site-specific soil to GWP values, in accordance with Texas Administrative Code Title 30 Part1 Chapter 335 Subchapter S Rule 335.559 subsection (g). Subsection (g) is based upon the original MK report that this site be closed as industrial. It has been recommended in this report that the site closure be based upon residential standards, so subsection (f) of the above referenced Texas Administrative Code should be applied. In particular subsection (f) (2) which defines the procedures required to meet GWP, "a concentration in soil that does not produce a leachate in excess of MCLs or MSCs for groundwater when subjected to the Synthetic Precipitation Leaching Procedure, Method 1312 of SW 846". Surface and shallow subsurface soil samples should be collected and analyzed for the total lead, zinc, and PCBs., along with leachate tests using the SPLP Method 1312. Samples should be collected from each boring at the surface, at two feet below surface and at three feet below surface. A total of four soil borings should be preformed at each identified source of contamination: incinerator, cooling tower, and former UST

site. One soil boring should be located within the area of highest concentrations Contract No. DACA56-01-D-2005 Task Order No. 1 44 AMS no. 7 ESI Phase II Report February 2002

for each identified area. Three additional borings should be located down surface gradient of the highest concentrations boring. Combining this new subsurface and leachate information with the current surface information, a detailed interpretation of both the horizontal and vertical extent of the metals contamination can be derived. Additionally, surface soil sampling should be preformed in areas where there is the potential for water run-off to determine if COPCs are being transported offsite. These surface samples should be tested for total lead, zinc, and PCBs.

- Additional ground water monitoring wells need to be installed up gradient and down gradient of MW08 to determine the down gradient extent and potential source of the TCE contamination in the Seymour aquifer and to comply with the recommendations of the TNRCC. These wells need to be drilled to a sufficient depth to adequately test the shallow aquifer estimated at 40 feet bgs. Subsurface soil samples should be collected from the boring of the monitoring wells. Samples should be collected at five (5) foot intervals or key stratum changes with a maximum of six (6) samples collected from each boring. Subsurface soil samples collected should be analyzed for the eight (8) RCRA metals, zinc, VOCs, SVOCs, pesticides/PCBs, herbicides, and TPH.
- Perform a well survey of all wells located within one half mile of the site. The survey should included location, well owners, well construction details (if available), total depth of well and screened interval, producing aquifer, current status of the well, and usage or type of well. The well survey shall include a map showing the wells locations.
- Currently MW09 is the only groundwater monitoring well installed in the deep aquifer (San Angelos Formation). It was noted in the TNRCC September 24, 2001 letter to the USACE, Tulsa District, that to provide significant conclusions

regarding the potential for releases from the bottom of the silo, a deep well must be installed directly down gradient to the silo. MW09 is probably not currently located directly down gradient from the silo. Therefore, it is DEMS's and TNRCC's recommendation that a new well be drilled in the deep aquifer (San Angelos Formation), to an approximate depth of 200 feet, down gradient to the silo. Gradient direction can be approximated using existing geologic and hydrogeologic literature. Groundwater from this well should be tested for the eight (8) RCRA metals, zinc, VOCs, SVOCs, pesticides/PCBs, herbicides, and TPH. This will provide additional groundwater information from the deep aquifer in relationship to potential releases form the silo.

- The TNRCC, in there response letter dated September 24, 2001 to USACE, Tulsa District (Attachment I) regarding Comments and Notice of Deficiency for the MK ESI 2001 final report, requested immediate action on the following items:
 - a) Immediately sample any water supply wells on the site or directly down gradient of the site.
 - Report groundwater sampling results to the TNRCC within 7 days of receipt of the laboratory results. This reporting requirement will continue until further notice from the TNRCC.
 - c) Immediately begin quarterly groundwater sampling of the existing wells.
 - d) The TNRCC suggested that further analysis of groundwater should be limited to analytes previously detected in soils and groundwater and their degradation products.

Past investigative surveys have recommended that the AMS No. 7 be classified as an industrial site. Based upon the concentrations and types of COPCs identified in this ESI Phase II, there is no advantage to classifying this site as industrial. Closure can be meet using the residential RR standard II screening levels.

8.0 References

The following references were utilized in the preparation of this report.

American Society for Testing Materials (ASTM), 1990. Standards Practice for Description and Identification of Soils (Visual-Manual Procedure). ASTM D-2488-90.

Morrison Knudsen (MK), *Expanded Site Investigation Report, Former Atlas Missile Site No. 7, Vernon, Texas*, prepared for the U.S. Army Corps of Engineers (USACE), Tulsa District. (January 2001).

Texas Natural Resource Conservation Commission (TNRCC), 1999, Chapter 335-Industrial Solid Waste and Municipal Hazardous Waste, Subchapter S.

EPA, 1996. Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures, in Ground Water Issue, EPA/540/S-95/504 (April)

- Price, R.D., 1979. Occurrence, Quality and Quantity of Ground Water in Wilbarger County, Texas, Report 240, published by Texas Department of Water Resources (November).
- Willis, G.W., and Knowles, 1953. *Ground-Water Resources of the Odell Sand Hills, Wilbarger County, Texas*, published by the Texas Board of Water Engineers (January).

Appendix A

Site Photographs



Instrument calibration



Pulling 3/4 horse electric pump from MW09.

development water.



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MW08 Redevelopment – Electric pump run from truck battery.





Low flow groundwater monitoring well sampling.



Stakes used to mark grid corners for surface soil sampling.



String used to mark grid boundary for surface soil sampling. Red Flag marks approximate center of grid



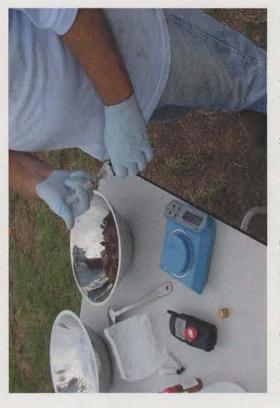
Surface being cleared of vegetation prior to surface soil sample collection.



Composite grid surface soil sample homogenized and Ready for placement in sample containers.



Decontamination of sampling equipment between samples.



Placing field weighed five (5) gram soil sample into sample container for VOA analysis.



Survey crew locating key site features, groundwater monitoring well and surface soil sampling location.

Appendix B

Soil Sample

Collection Logs



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Project No.: 2075 Site: Ams #7	Analytical Request					
Sample ID: AM50755001	Container Type	Sample Volume	P	arameter	Number of Containers	
Date (YYMMDD): 09-25-01	Glass	203	6010 B	+ zinc]]	
Time (HHMMSS): 9:59		******	7471A	Macung		
Top Depth: o"			PCB'S	• •		
Bottom Depth: 6"						
Matrix: Soil						
Sample Qualifier: QA / QC / RB / CS						
Sample Type: Grab (Comp)/ NA						
Sampler: Eldon Penn				49440.000 FM 001 FM 000 FM		
Witness:						
Contractor: DEMS						
Remarks:				1980-1980-1980-1980-1980-1980-1980-1980-		
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Soil Description SM- Ten H brown, sand, Subrounded-Subengulae, Silty, some gravel, rounded to angular Taken From Grid II				****		
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Project No.: 2075 Site: Ams #7	Analytical Request				
Sample ID: AMS 07 55002	Container Type	Sample Volume	Parameter	Number of Containers	
Date (YYMMDD): 04-25-0/	Glass	203	6010 B + zinc	<u> </u>	
Date (YYMMDD): 04-25-01 Time (HHMMSS): 10:11		9499-9399-939-939-939-939-939-939-939-93	7471A Mhenne		
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Bottom Depth: 6"					
Matrix: Soil					
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Sample Type: Grab (Comp)/ NA					
Sampler: Elcon					
Witness:				*****	
Contractor: DEMS					
Remarks:					
Soil Description	•				
SM - Tan - H brown sand subrounded to sub angular silty, some gravel, rounded to angular			1994), 2992), 2992), 2992), 2992), 2992), 2993), 29940), 2994), 2994), 2994), 2994), 2994), 2994), 2994), 2994), 2	*****	
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Date (YYMMDD): 04-25-01	Glass	Zoz	6010B + zin	Containers		
Time (HHMMSS): 10'. 19			DUTIA MA. A			
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Bottom Depth: 6"		500707079176176799947777748279877997799779978789878989999999999	ano menera berandi 1990 in 1990	92899999999999999999999999999999999999		
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Project No.: 2075 Site: Ams #7	Analytical Request					
Sample ID: AM50755004	Container Type	Sample Volume	Parameter	Number of Containers		
Date (YYMMDD): 09 - 25 - 01	Glass	203	6010 B + zinc	1		
Time (HHMMSS): 10:22				******		
Top Depth: 0"			PCB's			
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Matrix: Soil						
Sample Qualifier: QA / QC / RB / CS						
Sample Type: Grab (Comp)/NA						
Sampler: Elden		****				
Witness:						
Contractor: DEMS						
Remarks:						
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Project No.: 2075 Site: Ams #7	Analytical Request				
Sample ID: AM507 5500 5	Container Type	Sample Volume	Parameter	Number of Containers	
Date (YYMMDD): 09-25-01	Glass	203	6010 B + zinc	1	
Time (HHMMSS): /0:26		**********	7471A MACHAN	94494645 - 444051194041949666669999999999999999999999999	
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Matrix: Soil					
Sample Qualifier: QA / QC / RB / CS					
Sample Type: Grab (Comp)/ NA					
Sampler: Elca					
Witness:					
Contractor: DEMS					
Remarks:					
Soil Description					
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Project No.: 2075 Site: Ams #7	Analytical Request					
Sample ID: AM307 55006	Container Type	Sample Volume	Parameter	Number of Containers		
Date (YYMMDD): 01-25-01	Glass	203	6010 B + zinc			
Time (HHMMSS): /0:32						
Top Depth: 0"	- <u>19</u>		PR: Macany			
Bottom Depth: 6"		***************************************				
Matrix: Soil						
Sample Qualifier: QA / QC / RB / CS						
Sample Type: Grab (Comp)/NA						
Sampler: Flow						
Witness:						
Contractor: DEMS						
Remarks:						

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Project No.: 2075	Analytical Request					
Site: Ams #7		-				
Sample ID: AMG07 55007	Container Type	Sample Volume	Parameter	Number of Containers		
Date (YYMMDD): 07-25-01	Glass	203	6010 B + zinc			
Time (HHMMSS): 10:54			7471A Macnay			
Top Depth: 0"			pcs's +			
Bottom Depth: 6"						
Matrix: Soil						
Sample Qualifier: QA / QC / RB / CS				***		
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Contractor: DEMS		******				
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Project No.: 2075 Site: Ams #7	Analytical Request					
Sample ID: AM5075500B + 5500B QC	Container Type	Sample Volume	Parameter	Number of Containers		
Date (YYMMDD): 09-25-01	Glass	203	6010 B + zinc	1		
Time (HHMMSS): 11:27		*****	JUJIA MARY	******		
Top Depth: 0*		******	PCB,	2006-02-0-00-00-00-00-00-00-00-00-00-00-00-0		
Bottom Depth: 6"	· · · · · · · · · · · · · · · · · · ·	*****				
Matrix: Soil		*****				
Sample Qualifier: QA / QC / RB / CS						
Sample Type: Grab (Comp)/NA						
Sampler: Elden						
Witness:						
Contractor: DEMS						
Remarks:		-				
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Soil Description				-		
SM- Tan to It brown, sand, subrounded to subangulan silty, some gravel, rounded to angular	1 	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~				
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Subrounded to Subangulan	L			1		
Sitty some gravel, rounded	6					
to angular			Field Screening Results			
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Project No.: 2075	Analytical Request				
Site: Ams #7					
Sample ID: AM50755009	Container Type	Sample Volume	P2	ırameter	Number of Containers
Date (YYMMDD): 04-25-01	Glass	Z03	6010B	+ zinc	1
Time (HHMMSS): 11:25	- 245448930742864495499797979797979797979797979797979797		7471A	Mhenny	
Top Depth: o'	To executive execut		I ACB	Macny	
Bottom Depth: 6"					
Matrix: Soil					
Sample Qualifier: QA / QC / RB / CS					
Sample Type: Grab (Comp/NA				945-04-07-07-07-07-07-07-07-07-07-07-07-07-07-	
Sampler: Eldm					
Witness:	-	 	ļ	****	
Contractor: DEMS				***	
Remarks:					
Soil Description	-				
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Silty, some mavel, rounded					
SM- Tan. to H brown, sand, subrounded to subangular, Silty, some gravel, rounded to angular.		PII) Field Scr	eening Results	
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Project No.: 2075 Site: Ams #7	Analytical Request				
Sample ID: AM407 55010	Container Type	Sample Volume	Parameter	Number of Containers	
Date (YYMMDD): 09-25-0/	Glass	203	6010 B + zinc	1 1	
Time (HHMMSS): //;27		1999-1999 - 666 - 999 - 99 - 99 - 99 - 9	7471A MACHIN	*****	
Top Depth: o			PCB's	*************	
Bottom Depth: 6"			หมดสุขระสายและสายผู้เหตุลาสัยเมติสมีมีและสายผู้มีสอยและสายสายและสายสายมากม		
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Sample Qualifier: QA / QC / RB / CS					
Sample Type: Grab (Comp)/ NA Sampler: Elder					
Sampler: Eldu					
Witness:	20-10-10-10-10-10-10-10-10-10-10-10-10-10	**************************************			
Contractor: DEMS					
Remarks:					
Soil Description		***************************************		-	
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subrounded to subanaular.					
Litty some gravel rounded					
SM-Tan he it brown, Sand. Subrounded to subangular, Silty, some gravel, rounded to angular.	{	РП) Field Screening Result	5	
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Project No.: <u>2075</u> Site: <u>Ams</u> #7	Analytical Request				
Sample ID: AV6075501/ Date (VVMMDD): 06 45 01	Container Type	Sample Volume	Parameter	Number of Containers	
	Glass	203	6010 B + zinc		
Time (HHMMSS): 11:35	·]]]]]]]]]]]]]]]]]]]	*****	TUTIA MALON		
Top Depth: o*	. Conservation of the cons		PCB's	*******	
Bottom Depth: 6"			สมกร้างสารรู้แก่การเป็นเป็นมีมีมีมีมีและการรู้ในกระจะการการการการการการการการการการการการการก		
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Sample Qualifier: QA/QC/RB/CS		***************************************			
Sample Type: Grab (Comp)/ NA					
Sampler: EIZ					
Witness:	********				
Contractor: DEMS					
Remarks:					

Soil Description					
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SITY some mavel, rounded	P				
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Project No.: 2075 Site: Ams #7		An	alytical Rec	luest	
Sample ID: AMSOT 55012	Container Type	Sample Volume	Pa	rameter	Number of Containers
Date (YYMMDD): 09-25-01	Glass	203	6010B -	r zinc	
Time (HHMMSS): 11:36				Mhenry	
Top Depth: 0			PCB'	بر مع	
Bottom Depth: 6"				***	
Matrix: Soil					
Sample Qualifier: QA/QC/RB/CS			10000000000000000000000000000000000000		
Sample Type: Grab (Comp)/ NA					
Sampler: Elden					
Witness:				*******	
Contractor: DEMS				****	
Remarks:					
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Soil Description					
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SM- Jen to It brown: sand. Subrounded to subcongular: Silty, some chavel, rounded to angular			D Field Scr	eening Results	rime
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	mber of ntainers 1
Date (YYMMDD): 09-25-01       Glass       Zo3       6010 B + zinc         Time (HHMMSS): 12:15       7471 A       Macunu       PCBs         Bottom Depth: 6"       PCBs       Image: Complement of the	
Time (HHMMSS):       12:15       7471A Mb.cm.u         Top Depth:       0       9035         Bottom Depth:       4"       9035         Matrix:       Soil       Sample Qualifier:       QA / QC / RB / CS         Sample Qualifier:       QA / QC / RB / CS       9         Sample Qualifier:       QA / QC / RB / CS       9         Sample Qualifier:       QA / QC / RB / CS       9         Sample Type:       Grab (Comp) / NA       9         Sampler:       Eller       9         Witness:       0       9         Contractor:       DEMS       9         Soil       Description       9         SM-Tam to lift brown, Sandi       9         Silty, some gavel, rounded       9         Yo Sub angular,       9         Silty, some gavel, rounded       9         PID Field Screening Results       8         Reading       Time	
Top Depth:       0         Bottom Depth:       4"         Matrix: Soil       0         Sample Qualifier:       QA / QC / RB / CS         Sample Qualifier:       QA / QC / RB / CS         Sample Qualifier:       QA / QC / RB / CS         Sample Qualifier:       QA / QC / RB / CS         Sample Qualifier:       QA / QC / RB / CS         Sample Type:       Grab (Comp) / NA         Sampler:       Eller         Witness:       0         Contractor:       DEMS         Remarks:       0         Soil       Description         SM-Tom to //t brown, Sand,       0         Subrown ed to sub angular,       0         Silty, some gnavel, round ed       PID Field Screening Results         Reading       Time	
Bottom Depth: 2"         Matrix: Soil         Sample Qualifier: QA/QC/RB/CS         Sample Type: Grab (Comp)/NA         Sampler:         Eller         Witness:         Contractor:         DEMS         Remarks:         Soil Description         SM-Tom to 14 brown, Sand,         Silty, some gnavel, rounded         Field Screening Results         Reading         Time	
Sample Qualifier: QA/QC/RB/CS Sample Type: Grab (Comp)/NA Sampler: Elden Witness: Contractor: DEMS Remarks: Soil Description SM-Tant It brown, Sand, Subrounded to Sub Angular, Silty, some gravel, rounded To Sub Angular. PID Field Screening Results Reading Time	
Sample Type: Grab (Comp)/NA Sampler: Elden Witness: Contractor: DEMS Remarks: Soil Description SM-Tom to 1t brown, Sand, Subrounded to sub angular, Silty, some gravel rounded to Sub-angular. PID Field Screening Results Reading Time	
Sampler:       Ellen         Witness:       Contractor:         DEMS       Remarks:         Soil Description       Sand,         SM-Tant It brown, sand,       Sand,         Subrounded to sub angular,       PID Field Screening Results         No Subrandlar.       Reading	
Witness:     Contractor: DEMS       Remarks:     Soil Description       Soil Description     Soil Description       SM-Tam to 1t brown, sand,     Subrownded to sub angular,       Silty, some gnavel, rounded     PID Field Screening Results       Reading     Time	999-999-999-999-999-999-999-999-999-99
Contractor:       DEMS         Remarks:       Soil Description         Soil Description       Soil Description         SM-Tom to 1t brown, Sand,       Subrownded to Sub angulan,         Silty, some gnavel, rounded       PID Field Screening Results         Reading       Time	
Remarks: Soil Description SM-Tom to 1t brown, Sand, subrounded to Sub angular, Silty, some gnavel, rounded to Sub angular. PID Field Screening Results Reading Time	
Soil Description SM-Tan t /t brown, sand, subrounded to sub angulan, silty, some gnavel, rounded to sub-angular. PID Field Screening Results Reading Time	
SM-Tan to 17 brown, Sand, subrounded to sub angulan, silty, some gravel rounded to sub-angulan. PID Field Screening Results Reading Time	*****
SM-Tan to 17 brown, Sand, Subrounded to Sub Angulan, Silty, some gnavel rounded to Sub Angulan. PID Field Screening Results Reading Time	
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Project No.: 2075		Ал	alytical Requ	est	
Site: Ams #7					
Sample ID: AM507 55014	Container Type	Sample Volume	Para	meter	Number of Containers
Date (YYMMDD): 09-25-01	Glass	203	6010 B +	•	Containers
Time (HHMMSS): 12:17			100005 +	EINC	
Top Depth: 0"		*****	PCB'S	menny	****
Bottom Depth: 6"				*****	
Matrix: Soil		***************************************		*****	
Sample Qualifier: QA / QC / RB / CS		ан на на села н			
Sample Type: Grab (Comp)/ NA			****	******	
Sampler: Elden		***************************************	****	******	
Witness:				***********	**********
Contractor: DEMS				*******	
Remarks:					
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Soil Description		*****		******	
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Project No.: 2075 Site: Ams #7	Analytical Request				
Sample ID: AM507 55015	Container Type	Sample Volume	Parameter	Number of Containers	
Date (YYMMDD): 09-25-01	Glass	203	6010 B + zinc	1	
Time (HHMMSS): 12:27		***********	7471A MACAN		
Top Depth: o'			PCR's		
Bottom Depth: 6"					
Matrix: Soil					
Sample Qualifier: QA / QC / RB / CS					
Sample Type: Grab (Comp)/NA					
Sampler: Elden					
Witness:					
Contractor: DEMS					
Remarks:					
Soil Description					
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Project No.: <u>2075</u> Site: <u>Ams</u> #7	Analytical Request				
Sample ID: AMS0755016	Container Type	Sample Volume	Parameter	Number of Containers	
Date (YYMMDD): 09-25-01	Glass	203	6010 B + zinc	]	
Time (HHMMSS): 12:37					
Top Depth: o			PCB/		
Bottom Depth: 6"					
Matrix: Soil					
Sample Qualifier: QA / QC / RB / CS					
Sample Type: Grab (Comp/ NA					
Sampler: Elder					
Witness:					
Contractor: DEMS					
Remarks:					
Soil Description					
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Project No.: 2075 Site: Ams #7	Analytical Request				
Sample ID: AM507 65017	Container Type	Sample Volume	Parameter	Number of Containers	
Date (YYMMDD): 04-25-01	Glass	203	6010 B + zinc	]	
Time (HHMMSS): 12;43	-	*****	7471A MACKIN		
Top Depth: 0"			7471A Macking RCB's		
Bottom Depth: 6"					
Matrix: Soil					
Sample Qualifier: QA / QC / RB / CS					
Sample Type: Grab (Comp)/ NA					
Sampler: Elde					
Witness:					
Contractor: DEMS					
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Project No.: 2075	Analytical Request				
Site: Ams #7		*****			
Sample ID: AMS07 55018 + 55018 9C	Container Type	Sample Volume	Parameter	Number of Containers	
Date (YYMMDD): 04-25-01	Glass	203	6010 B + zinc		
Time (HHMMSS): 12:46			7471A Macany PCB's		
Top Depth: 0" Bottom Depth: 6"			PCB's +		
Bottom Depth: 6"					
Matrix: Soil					
Sample Qualifier: QA / QC / RB / CS					
Sample Type: Grab (Comp)/ NA					
Sampler: Elden					
Witness:					
Contractor: DEMS				****	
Remarks:				****	

Soil Description	•				
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Sample ID: Amb 0755019 Container Sample Volume Parameter Number of Containers Date (YYMMDD): A-25-01 Glass Zoz 6008 + 2inc 1 Time (HHMMSS): 14:00 7431A Materia 1 Top Depti: 0 PCB : 1 Battom Depth: 0 PCB : 1 Sample Qualifier: Q/QC / RB / CS 1 1 Sampler: Elda 1 1 Sampler: Elda 1 1 Witness: Contractor: DEMS 1 Contractor: DEMS 1 1 Soil Description 1 1 1 Soil Ales o subangues 1 1 1 Sampler: Subangues 1 1 Soil Ales o subangues 1 1 1 Soil Ales o subangues 1 1 1 Sampler 1000 1000 1	Project No.: 2075 Site: Ams #7	Analytical Request				
Time (EHEMMSS): 14:00 Top Depti: 0" PCB's PCB's Matrix: Soil Sample Qualifier: QA/QC/RB/CS Sample Type: Grab (Com)/NA Sampler: Sampler: Elden Witness:	Sample ID: AMS0755019			Parameter		
Time (EHEMMSS): 14:00 Top Depti: 0" PCB is 0 Matrix: Soil 0 Sample Qualifier: 0.00 Sample Type: 0 Sample Type: 0 Sample Qualifier: 0 Sample Type: 0 Sample Qualifier: 0 Sample Qualifier: 0 Sample Type: 0 Contractor: 0 Soil Description 0 Soil Description 0 Substrained 0 Sample Type 0 Soil Description 0 Substrained 0 Soil Description 0 Substrained 0 Sample Qualifier: 0 Soil Description 0 Substrained 0 Sample Qualifier: 0 Soil Description 0 Sample Qualifier: 0 Sample Qualifier: 0 Soil Description 0 State 0 Sample Qualifier: 0 Sample Qualifier: 0 Sample Qualifier: 0 Weather: 0 Sample Qualifier: 0	Date (YYMMDD): 01-25-01	Glass	203	6010 B + zinc	1	
Bottom Depth: 4" Matrix: Soil Sample Qualifier: QA / QC / RB / CS Sample Type: Grab ComD/NA Sample Type: Grab ComP/NA Taken from Grab LIP This grid Alex MUD9 Weather: Sample Type Type			**************************************			
Bottom Depth: 4" Matrix: Soll Addifier: Sample Qualifier: QA / QC / RB / CS Sample Type: Grab (Comp)/NA Sampler: Elden Contractor: DEMS Remarks: Image: Sample Component of the sub-angular. Soil Nescriptrian Image: Sample Component of the sub-angular. Soil Taken from Grad L19 Image: Sample Component of the sub-angular. Taken from Grad L19 Image: Sample Component of the sub-angular. Image: Sample component of the sub-angular. Image: Sample component of the sub-angular. Image: Sample component of the sub-angular. Image: Sample component of the sub-angular. Image: Sample component of the sub-angular. Image: Sample component of the sub-angular. Image: Sample component of the sub-angular. Image: Sample component of the sub-angular. Image: Sample component of the sub-angular. Image: Sample component of the sub-angular. Image: Sample component of the sub-angular.	Top Depth: 0"			PCB's +		
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Sample Type: Grab (Comp)/NA Sampler: Film Witness: Contractor: DEMS Remarks: Soil Description SM-Tanto H frown, Sand, Sab roundale to subangular, to any was to any was Takin from Grie I 19 Takin from Grie I 19 Takin from Grie I 19 Negation as an any subangular, to any was Weather: Weather:						
Sampler: Elden Witness: Contractor: DEMS Remarks: Soil Description SM-Tanto II fnown, Sand Subroundate to subangular, cithy, Some gravil, rounded, to angular Taken from Grid 119 Taken from Grid 119 This gaid area MIDOG pod. Weather: Prepared By: The Market Samples and						
Sampler: Elden Witness: Contractor: DEMS Remarks: Soil Description SM-Tanto II fnown, Sand Subroundate to subangular, cithy, Some gravil, rounded, to angular Taken from Grid 119 Taken from Grid 119 This gaid area MIDOG pod. Weather: Prepared By: The Market Samples and	Sample Type: Grab (Comp)/ NA				1944 1949 1949 1949 1949 1949 1949 1949	
Contractor: DEMS Remarks: Soil Description SM-Tanto H-brown, Sand, Subsconduce to subangular, Silty, Some gravel, rounded, to angular Taken from Grid I 19 Taken from Grid I 19 Taken mullog pad. Weather: Weather:	Sampler: Elden					
Remarks: Soil Description Soil Description Sand, Substantiate to subangmen, PID Field Screening Results For Angular PID Field Screening Results Taken from Grid 119 O.00 Weather: O.00 Prepared By: Thur Mark O.00	Witness:					
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SM-Tanto H from, Sand, Subroundie to subangular, Silty, Some gravel, roundie, to angular Taken from Grid I 19 This gaid arean MID09 pod. Weather: Weather: Prepared By: The Mark					***	
SM-Tanto H from, Sand, Subroundie to subangular, Silty, Some gravel, roundie, to angular Taken from Grid I 19 This gaid arean MID09 pod. Weather: Weather: Prepared By: The Mark						
SM-Tanto H from, Sand, Subroundie to subangular, Silty, Some gravel, roundie, to angular Taken from Grid I 19 This gaid arean MID09 pod. Weather: Weather: Prepared By: The Mark	Soil Description	-				
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Prepared By: The March 1990						
Prepared By: The March 1990			***			
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Prepared By: The March 1990	Weather:					
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Prepared By: Show Mr	GA // //		90000000000000000000000000000000000000			
Charlest Due / Mar /	Prepared By: SAM IN					
	Checked By:					



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Project No.: 2075 Site: Ams #7	Analytical Request			
Sample ID: AM50755020	Container Type	Sample Volume	Parameter	Number of Containers
Date (YYMMDD): 04-15-01	Glass	203	6010 B + zinc	l containers
Time (HHMMSS): 14:14			THILA MACH	
Top Depth: o		******	PCB's	
Bottom Depth: 6"		***************************************	9999-1999-1999-1999-1999-1999-1999-199	*****
Matrix: Soil		*****		
Sample Qualifier: QA / QC / RB / CS				
Sample Type: Grab (Comp)/ NA				
Sampler: Elden				
Witness:		-		
Contractor: DEMS				
Remarks:				
Soil Description				-
t - y				
SM- Tan to It brown, sand				
subrounded to subangular.				
Silty, Some charle rounded				
SM- Tan to It brown sand, Subrounded to subangular; Silty, some chavel rounded to angular	<u> </u>	PID	Field Screening Results	Ì
		Reading		ime
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Prepared By: Char /h		****	99949999999999999999999999999999999999	****
Checked By:		****	********	
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Project No.: 2075 Site: Ams #7	Analytical Request				
Sample ID: AM 507 55021	Container Type	Sample Volume	Parameter	Number of Containers	
Date (YYMMDD): 09-25-0/	Glass	203	6010 B + zinc		
Time (HHMMSS): 14:19			PCB's		
Top Depth: 0"			PCB's		
Bottom Depth: 4"				*****	
Matrix: Soil					
Sample Qualifier: QA / QC / RB / CS					
Sample Type: Grab (Comp/NA				****	
Sampler: Eld	······································				
Witness:					
Contractor: DEMS					
Remarks:				***	
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Soil Description			2711111 2011 1011 1011 1011 1011 1011 10		
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Sity, some grave rouncic	ſ	PΠ	D Field Screening Result	5	
SM. Ian to It brown, sund. Subrounded to Subangular, Silty, some gravel rounded to angular.		Reading		Гіте	
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			<u>n-nn-n-s-shapatan nakan kanasan anan anan nakan nakan nakan nakan nakan nakan nakan nakan nakan naka</u>	*****	
Taken From grid I21				********	
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Prepared By: Slow M		***	20/20/20/20/20/20/20/20/20/20/20/20/20/2	9459 6 4 5 4 6 5 6 7 6 7 6 7 6 7 6 7 6 7 6 7 6 7 6 7	
Checked By: U					



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Project No.: 2075 Site: Ams #7	Analytical Request			
Sample ID: ANKO155022	Container Type	Sample Volume	Parameter	Number of Containers
Date (YYMMDD): 09-25-01	Glass	203	6010 B + zinc	1
Time (HHMMSS): 14;22				
Top Depth: 0"		1999294797777777777777777777777777777777	1471A Macnay 1CB's	
Bottom Depth: 4"				
Matrix: Soil				
Sample Qualifier: QA / QC / RB / CS				· ·
Sample Type: Grab (Comp)/ NA				
Sampler: Elon				100000 10000 10000 10000 10000 10000 10000 10000 10000 10000
Witness:				
Contractor: DEMS				1011 521 - 11 - 12 - 12 - 12 - 12 - 12 - 1
Remarks:			******	800900500 prostationsstation and a prostation of the second state
Soil Description	-			
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SM. Tan to Horown Sand		-		
Subrounded to subdranter				
Shi-Tan to H brown, sand Subrounded to subangular Sitty, some gravel, rounded				
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		Reading		Time
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Weather:				****

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Prepared By: 5 000				
Checked By: //				



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Project No.: 2075 Site: Ams #7	Analytical Request				
Sample ID: AM50755023	Container Type	Sample Volume	Para	meter	Number of Containers
Date (YYMMDD): 07-25-0/	Glass	203	6010 B +	zinc	1
Time (HHMMSS): 14125		*****	7471A M	henn	*****
Top Depth: 0"			7471A M ACB'S	4	
Bottom Depth: 6"					
Matrix: Soil					
Sample Qualifier: QA / QC / RB / CS					
Sample Type: Grab (Comp)/NA					
Sampler: Eldan					
Witness:			*****		
Contractor: DEMS					
Remarks:					

Soil Description				*****	
SM-Tan to It brown sand Subrounded to Sub angular, Silty, some gravel, rounded to angular					
Subrounded to Subanantar,					
Gilty some asault vounded	· ************************************				
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Weather:		2012/00/00/00/00/00/00/00/00/00/00/00/00/00		99990009990000000000000000000000000000	*****
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Prepared By:			1	******	
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Project No.: 2075 Site: Ams #7	Analytical Request				
Sample ID: AM60755024	Container Type	Sample Volume	Parameter	Number of Containers	
Date (YYMMDD): 09-26-01	Glass	203	6010 B + zinc	1 1	
Time (HHMMSS): 10:16	. Construction of the second		7471A Macny		
Top Depth: 0"			PCB: +		
Bottom Depth: 6"					
Matrix: Soil					
Sample Qualifier: QA / QC / RB / CS					
Sample Type: Grab (Comp)/ NA					
Sampler: Elder					
Witness:					
Contractor: DEMS					
Remarks:					

Soil Description					
SM- Tan sand subrounded					
SM- Tan sand subrounded to subangular, silty some			1		
savel sunder to angular.					
1		PΠ	D Field Screening Resu	lts	
		Reading		Time	
Take from Grid CI		2.00			
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Checked By:					
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Project No.: <u>2075</u> Site: <u>Ams</u> #7	Analytical Request			
Sample ID: AMS07 55025	Container Type	Sample Volume	Parameter	Number of Containers
Date (YYMMDD): 09-26-01	Glass	203	6010 B + zinc	1 1
Time (HHMMSS): 10:22		**************************************	7471A Mhenny	
Top Depth: 0"		****	PCB'>	********************************
Bottom Depth: 6"				
Matrix: Soil				
Sample Qualifier: QA / QC / RB / CS				
Sample Type: Grab (Comp)/ NA		564-7497-019-019-019-01-9-1-9-1-9-1-9-1-9-1-9-1-		
Sampler: Ela				
Witness:				
Contractor: DEMS				
Remarks:		***		
Soil Description SM-Tau H brown, sand, Subrounded-Subandular, Silty, some. gravel, rounded		******		-
SM-Tay H'Drown, sand		*****		
Subrounder-subandular,				
Silty some aravel, returned				
to angular	. Angelen en e	gen julio de de la presidente de la preside		
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Taken from grid C-2		Reading		Time
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Project No.: 2075	Analytical Request				
Site: Ams #7					
Sample ID: AMS0155026	Container Type	Sample Volume	Parameter	Number of Containers	
Date (YYMMDD): 09-26-0/	Glass	203	6010 B + zinc	1 1	
Time (HHMMSS): 10:53		**********	7471A Mhenny	******	
Top Depth: o'		*****	PCB's	********	
Bottom Depth: 6"		******		1999-1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1	
Matrix: Soil					
Sample Qualifier: QA/QC/RB/CS					
Sample Type: Grab (Comp)/ NA	*****				
Sampler: Eld					
Witness:					
Contractor: DEMS					
Remarks:					
Soil Description				-	
SM-Tay H'Drown, Sand,					
Soil Description SM-Tay H brown sant, Subrounder-subancillar,	······································				
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to angular					
			) Field Screening Results		
Taken from grid (-3		Reading	l	lime	
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Project No.: 2075 Site: Ams \$7	Analytical Request			
Sample ID: AMS0755027	Container Type	Sample Volume	Parameter	Number of Containers
Date (YYMMDD): 09-26-0/	Glass	2 <i>03</i>	6010 B + zinc	1
Time (HHMMSS): 10:56	- ))			******
Top Depth: o		******	PCB's	******
Bottom Depth: 6"				
Matrix: Soil		40000000000000000000000000000000000000		
Sample Qualifier: QA / QC / RB / CS				
Sample Type: Grab (Comp)/NA		*******		
Sampler: Ekm				1999 - 1999 - 1999 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 -
Witness:	· .	*****		******
Contractor: DEMS				
Remarks:				
Soil Description SM-Tay H brown sant, Subrounder-Subanquilat,				-
SM-TAN H DOWD Sant				******
Suprounded-Subanculat.				
Silty, some gravel, rounded				
to annular.		-		
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Taken from arid C-4		Reading		ime
Taken from grid C-4			•	ime
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Sample ID: AMSON 56028 94 92 Date (YYMMDD): 09-24-0/ Type Volume Containers Glass 203 6010 B + 2i-0 / Type Volume Glass 203 6010 B + 2i-0 / 7471A Miscan / Ref ' Matrix: Soil Sample Qualifier: QA / QC / RB / CS Sample Type Grab (Compl/NA Sampler: E-10 4- Witness: Contractor: DEMS Remarks: Soil Description Soil Description Soil Pescription Soil Pescripti	Project No.: <u>2075</u> Site: <u>Ams</u> #7	Analytical Request			
Date (YYMMDD): $O(-2b-0)$ Glass       2 o 2 $bolo B + 2inc$ 1         Time (HHMMSS): $O(5T_0)$ Top Depth: $o''$ Ref 's       1         Bottom Depth: $o''$ Ref 's       1         Sample Qualifier: QA/QC/RB/CS       Sample Qualifier: QA/QC/RB/CS       1         Sample Type: Grab (Comp)/NA       QA       SampleQualifier: QA/QC/RB/CS         Contractor: DEMS       Class       2 os         Soil Description       SampleQualifier: QA/QC/RB/CS       1         Sample Type: Grab (Comp)/NA       SampleQualifier: QA/QC/RB/CS       1         Sample Type: Grab (Comp)/NA       SampleQualifier: QA/QC/RB/CS       1         Sample Type: Grab (Comp)/NA       Sample (Comp)/NA       1         Sample (Comp)/NA       SampleQualifier: QA/QC/RB/CS       1         Soil Description       SampleQualifier: QA/QC/RB/CS       1         Soil Description       SampleQualifier: QA/QC/RB/CS       1         Meanue       0.00       1       1         Weather:       0.0	Sample ID: AMS0755028 QA			Parameter	
Time (HHMMSS):     10:576       Top Depth:     0"       Bottom Depth:     0"       Matrix: Soil     Sample Qualifier:       Sample Qualifier:     Elda       Sampler:     Elda       Sampler:     Elda       Contractor:     DEMS       Soil Description     0       Soil Description     0 <t< td=""><td></td><td>CARLS DATE AND AND AND AND AND AND AND AND AND AND</td><td>203</td><td>6010 B + zinc</td><td>1</td></t<>		CARLS DATE AND	203	6010 B + zinc	1
Bottom Depth: 4" Matrix: Soil Sample Quilifier: QA/QC/RB/CS Sample Type: Grab (Comp)/NA Sample Type: Grab (Comp)/NA Sample Quilifier: QA/QC/RB/CS Sample Quilifier: QA/QC/RB/CS PID Field Screening Results Reading Time 0.00 Weather: Prepared By: Machine Prepared By: Machine Calculation Quilifier: QA/QC/RB/CS Calculation Quilifier: QA/QC/RB/CS Calculation Quilifier: QA/QC/RB/CS Calculation Quilifier: QA/QC/RB/CS Calculation Quilifier: QA/QC/RB/CS Calculation QA/QC/RB/CS Calculation QA/QC/RB/CS Calculation QA/QA/C PID Field Screening Results Reading Time Calculation QA/QA/C PID Field Screening Results Calculation QA/QA/QA/C PID Field Screening Results C				7471A MACHAN	
Bottom Depth: 4" Matrix: Soil Sample Quilifier: QA/QC/RB/CS Sample Type: Grab (Comp)/NA Sample Type: Grab (Comp)/NA Sample Quilifier: QA/QC/RB/CS Sample Quilifier: QA/QC/RB/CS PID Field Screening Results Reading Time 0.00 Weather: Prepared By: Machine Prepared By: Machine Calculation Quilifier: QA/QC/RB/CS Calculation Quilifier: QA/QC/RB/CS Calculation Quilifier: QA/QC/RB/CS Calculation Quilifier: QA/QC/RB/CS Calculation Quilifier: QA/QC/RB/CS Calculation QA/QC/RB/CS Calculation QA/QC/RB/CS Calculation QA/QA/C PID Field Screening Results Reading Time Calculation QA/QA/C PID Field Screening Results Calculation QA/QA/QA/C PID Field Screening Results C				RB's	
Matriz: Soil Sample Qualifier: QA / QC / RB / CS Sample Qualifier: QA / QC / RB / CS Sample Trab (Comp)/NA Sample Trab (Comp)/NA Sample Comp/NA Sample Comp/NA Sample Comp/NA Contractor: DEMS Remarks:					
Sample Type: Grab (Comp)/NA Sampler: Elda Witness: Contractor: DEMS Remarks: Soil Description Sm-Tau H Brown, Sard, Subrounded-Subancular, Silty Serve, Gravel, Infunded to Complate PID Field Screening Results Reading Taken from Grid. C-5 Reading Time O.00 Weather: Prepared By: Markow PID Field Screening Results					
Sampler:       Eiden         Witness:       Colass       Zoa       Colorbit Zinc       1         Contractor:       DEMS       Glass       7471 A Marcung       1         Remarks:       Glass       483       7471 A Marcung       1         Soil Description       Glass       483       7471 A Marcung       1         Soil Description       Glass       483       7471 A Marcung       1         Smonounder-Subandular       Glass       403       1       1         Silty some.       Gravel, munder       1       1       1         Silty some.       Gravel, munder       1       1       1         Weather:       0.00       1       1       1         Weather:       Image: Marcung fill       Image: Filled Screening Results       1         Image: Filled Screening Results       Image: Filled Screening Results       1         Image: Filled Screening Results       Image: Filled Screening Results       1         Image: Filled Screening Results       Image: Filled Screening Results       1         Image: Filled Screening Results       Image: Filled Screening Results       1         Image: Filled Screening Results       Image: Filled Screening Results       1	Sample Qualifier: QA / QC / RB / CS				
Sampler:       Eiden         Witness:       Colass       Zoa       Colorbit Zinc       1         Contractor:       DEMS       Glass       7471 A Marcung       1         Remarks:       Glass       483       7471 A Marcung       1         Soil Description       Glass       483       7471 A Marcung       1         Soil Description       Glass       483       7471 A Marcung       1         Smonounder-Subandular       Glass       403       1       1         Silty some.       Gravel, munder       1       1       1         Silty some.       Gravel, munder       1       1       1         Weather:       0.00       1       1       1         Weather:       Image: Marcung fill       Image: Filled Screening Results       1         Image: Filled Screening Results       Image: Filled Screening Results       1         Image: Filled Screening Results       Image: Filled Screening Results       1         Image: Filled Screening Results       Image: Filled Screening Results       1         Image: Filled Screening Results       Image: Filled Screening Results       1         Image: Filled Screening Results       Image: Filled Screening Results       1	Sample Type: Grab (Comp)/NA	ØA,	Sample		
Remarks:     Class     Yoz       Soil Description     Image: Subancular, Subancular, Subancular, Subancular, Silty, serve gravel, munded     Image: Subancular,					
Remarks:     Class     Yoz       Soil Description     Image: Subancular, Subancular, Subancular, Subancular, Silty, serve gravel, munded     Image: Subancular,		Glass	Zoz	6010Bt Zinc	1
Remarks:     Class     Yoz       Soil Description     Image: Subancular, Subancular, Subancular, Subancular, Silty, serve gravel, munded     Image: Subancular,	Contractor: DEMS	Class	483	7471 A Marcung	
Soil Description Sm-Tau H DirDinn Sart, Subrounder- Subancular, Silty Seme. Gravel, muned to amular. PID Field Screening Results Reading Time 0.00 Weather: Prepared By: Markan	Remarks:	Class	403	<b>6</b>	
Subrounded - Subancular,         Silty, some. gravel, rounded         +0 arryular.         PID Field Screening Results         Taken from grid. C-5         Reading         0.00         Image: Subancular, Subancula					
Subrounded - Subancular,         Silty, some. gravel, rounded         +0 arryular.         PID Field Screening Results         Taken from grid. C-5         Reading         0.00         Image: Subancular, Subancula	Soil Description				
Subrounded - Subancular,         Silty, some. gravel, rounded         +0 arryular.         PID Field Screening Results         Taken from grid. C-5         Reading         0.00         Image: Subancular, Subancula	SM-Tay H' Drown, sand				
Silty Some Gravel, rounded to anyular. Taken from Grid. C-5 Reading Time 0.00 Weather: Weather: Prepared By: Markow Prepared By: Markow I I I I I I I I I I I I I I I I I I I	Suprounded-Subandular				
Ho angular.       PID Field Screening Results         Taken from grid. C-5       Reading       Time         0.00	Silty, some gravel, rounded				
PID Field Screening Results       Taken from Grid. C-5       Reading       O.00       Image: Streening Results       O.00       Image: Streening Results       Image: Streening Res	to abraular.				
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Prepared By: Handhard				2010-2010/01/01/01/01/01/01/01/01/01/01/01/01/	195991451114911491191491491491491491491491491491
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Project No.: 2075 Site: Ams #7	Analytical Request			
Sample ID: AM509 5=029	Container Type	Sample Volume	Parameter	Number of Containers
Date (YYMMDD): 04-210-01	Glass	203	6010B + zinc	1 1
Time (HHMMSS): //:20		******	7471A MACH	
Top Depth: o		999-999-999-99-99-99-99-99-99-99-99-99-	PCB's	
Bottom Depth: 6"		**********	99944 - 9494 - 9494 - 9494 - 9494 - 9494 - 9494 - 9494 - 9494 - 9494 - 9494 - 9494 - 9494 - 9494 - 9494 - 9494	
Matrix: Soil		1999-1999 - Tanan Kalendara (Kalendara) - Tanan (Kalendara) - Tanan (Kalendara) - Tanan (Kalendara) - Tanan (Ka	100m 19900000000000000000000000000000000	
Sample Qualifier: QA/QC/RB/CS		Алтания и полно		*******
Sample Type: Grab (Comp)/ NA			1997 2017 2017 2017 2017 2017 2017 2017 201	
Sampler: Elden		****		
Witness:		**********		*****
Contractor: DEMS		<del>รมแรงสามมา</del> รถางการการการการการการการการการการการการการก		
Remarks:		******		
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Soil Description Sm-Tay H brown, sand, Subrounder-Subangulat,			anan ang mananan kanan kan Na	
SM-TEN H DOWD SAR	-	******	999499 999499 9994 9999 9994 9994 9994	****
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Silty, some gravel, rounder				
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Taken from grid C-6		Reading	1 1	ime
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Sample ID: Ams 0755030       Container       Sample       Parame         Date (YYMMDD): 69-21-01       Glass       Zo3       Gold B + 2i         Time (HHMMSS): 11:22       7471 A       Mac         Top Depth: 0'       O'       PCi3's         Bottom Depth: 0'       O'       PCi3's         Matrix: Soil       Sample Type: Grab (Comp)/NA       Sample Type: Grab (Comp)/NA         Sample: E Jac       Sample Type: Grab (Comp)/NA         Sample: Discription       Samition         Soil Description       Samition         Soil Description       Samition         Soil Description       Samition         Sample: E Jac       Samition         Sample: Discription       Samition         Soil Description       Samition         Soil Description       Samition         Sample: Complian       Samition         Soil tu, Some Grade Lord       Samition         Siltu, Some Grade Lord       Samition         Sample: Complian       Samition         Sample: Complian       Samition         Source       Samition         Source       Samition         Source       Samition         Source       Samition         Samition	Analytical Request				
Date (YYMMDD): $0G-2L-0I$ Time (HHMMSS): $11:22$ Top Depth: $0^{\circ}$ Bottom Depth: $0^{\circ}$ Matrix:       Soil         Sample Qualifier: $QA/QC/RB/CS$ Sample Type:       Glass         Sample Qualifier: $QA/QC/RB/CS$ Sample Type:       Grab (Compl/NA         Sampler:       Elden         Witness: $Ocids$ Contractor:       DEMS         Scil Description $Sand         Samonanded - Subandaular.       Sand         Silty Serve.       Gravel, moded         -to Armular.       PID Field Screening         Taken from Grid. C-7       Reading         Index       Index         Index       Index         Soil Alege from Grid. C-7       Reading         Index       Index         Index       Index         Index       Index         Soil Description       Index         Soil Description       Index         Index       Index         Index       Index         Index       Index         Index       Index         $	eter Number of Containers				
Time (HHMMSS):       11:22         Top Depth:       0'         Bottom Depth:       0'         Matrix: Soil       Sample Qualifier: QA/QC/RB/CS         Sample Qualifier:       QA/QC/RB/CS         Sample Type:       Grab (Comp)/NA         Sampler:       Elde         Witness:       0         Contractor:       DEMS         Scil Deschiphian       0         Silty Seme.       Gravel, rounded.         Silty Seme.       Gravel, rounded.         Your       PID Field Screening         Taken from Grid. C-7       Reading         1       0.00					
Bottom Depth: 2* Matrix: Soil Sample Qualifier: QA / QC / RB / CS Sampler: E Jac Witness: Contractor: DEMS Remarks: Soil Description SM-Tau H BIDIND, Sard, Subrounded-Subancular, Silty, SEME Gravel, Munded HO Drowlar. PID Field Screening PID Field Screening					
Bottom Depth: 2* Matrix: Soil Sample Qualifier: QA / QC / RB / CS Sampler: E Jac Witness: Contractor: DEMS Remarks: Soil Description SM-Tau H BIDIND, Sard, Subrounded-Subancular, Silty, SEME Gravel, Munded HO Drowlar. PID Field Screening PID Field Screening	1011-1011-1011-101-101-101-101-101-101-				
Sample Qualifier: QA/QC/RB/CS Sample Type: Grab (Comp)/NA Sampler: E Hender Witness: Contractor: DEMS Remarks: Soil Description Son-Tau H DrDwn, Sard. Subrounded - Subancular, Silty, Some, Gravel, munded to angular. PID Field Screening Taken from Grid. C-7 Reading					
Sample Type: Grab (Com)/NA Sampler: E He Witness: Contractor: DEMS Remarks: Soil Description Son-Tau H brown, Sard. Subrounded - Subancular, Silty, Some. Gravel, munded to angular. PID Field Screening PID Field Screening 0.00	*******				
Sampler: EHm Witness: Contractor: DEMS Remarks: Soil Description Sm-Tau H brown, Sard, Subrounded-Subancular, Silty, Seme. Gravel, rounded to angular. PID Field Screening PID Field Screening					
Witness: Contractor: DEMS Remarks: Soil Description Son-Tay H DrDwn, Sard: Subrounded - Subancylar, Silty, Some. Gravel, rounded to angular. PID Field Screening Taken from Grid C-7 Reading					
Contractor: DEMS Remarks: Soil Description SM-Tau H Brown, Sart, Subrounded-Subancular, Silty, Some. Gravel, mular, H angular. PID Field Screening PID Field Screening 0.00					
Remarks: Soil Description Sm-Tau H Brown, Sart: Subrounded - Subandular, Silty Some. Gravel, riturded to angular. PID Field Screening Neading					
Soil Description Sm-Tay H provin, Sard, Subrounded-Subancular, Silty, some. gravel, rounded to angular. PID Field Screening Neading 0.00					
Subrounded-Subanculat, Silty, Seme. Gravel, risurded to angular. PID Field Screening Reading 0.00					
Subrounded-Subanculat, Silty, Seme. Gravel, rounded to angular. PID Field Screening Reading 0.00					
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Silty, Some. Gravel, refunded to anywar. Taken from grid. C-7 					
to Angular. PID Field Screening Reading 0.00					
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Prepared By: Flace Pro-					
Checked By:					



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Project No.: 2075 Site: Ams \$7	Analytical Request			
Sample ID: AMS 01 450 31	Container Type	Sample Volume	Parameter	Number of Containers
Date (YYMMDD): 09-26-01	Glass	203	6010 B + zinc	
Time (HHMMSS): 11:28			THIS MLCH	
Top Depth: o"			PCB'S	
Bottom Depth: 6"		*******	******	******
Matrix: Soil		*****		
Sample Qualifier: QA / QC / RB / CS		***************************************		
Sample Type: Grab (Comp)/ NA		****		
Sampler: Elda				
Witness:		· -		**************************************
Contractor: DEMS				
Remarks:				
				1999 - California Califo
Soil Description SM-Tay H brown, sand,		·. ·		
SM-Tay H'Drown sand				
Subrounder-Subancular, Silty, some gravel, rounder				
Silty, some gravel, rounded				
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<u> </u>		PII	) Field Screening Results	
Taken from grid C-B	- Development of the second of	Reading		ime
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Project No.: 2075	Analytical Request			
Site: Ams #7				
Sample ID: AMS0755032 PA	Container Type	Sample Volume	Parameter	Number of Containers
Date (YYMMDD): 09-26-01	Glass	203	6010 B + zinc	1
Time (HHMMSS): 11:36		, en en la desta de la construction de la construcción de la construcción de la construcción de la construcción	7471A MACHAN	*****
Top Depth: o	Gass	*******	7471 A Mhenny PC13 5	
Bottom Depth: 6"			***************************************	
Matrix: Soil				****
Sample Qualifier: QA/QC/RB/CS				
Sample Type: Grab (Comp)/ NA				
Sampler:				
Witness:	QA S	Impl.		
Contractor: DEMS		-		
Remarks:	Gluss	202	(DIOBTZINC JKIA) PCB	Bescenny 1
	Glass	402	PCB	02
Soil Description				
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Soil Description SM-Tau H brown, sant, Subrounded-Subancular, Silty, some, gravel, rounded				
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			Field Screening Results	
Taken from grid C-9		Reading	Ti	me
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Proposed Rue			11111120100100100101010000000000000000	
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Checked By:				
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Project No.: Zo 75 Site: Ams #7	Analytical Request				
Sample ID: AM507 55033	Container Type	Sample Volume	Parameter	Number of	
Date (YYMMDD): 04-26-01 Time (HHMMSS): 11140	Glass	203	6010 B + zinc	Containers	
Top Depth: O'			7471A Macan		
Bottom Depth: 6" Matrix: Soil			ACB'S +	****	
Sample Quello		*******			
Sample Qualifier: QA/QC/RB/CS		*******			
Sample Type: Grab (Comp)/NA Sampler:					
Witness:					
Contractor: DEMS				1000	
Remarks:					
Soil Description					
SM-Tay H prown, sand				********	
Suprounded-Supandula					
Subrounder-Subancular, Silty, some gravel, munder					
to angular.	li				
Taken from grid C-10		PID	Field Screening Results	1	
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Weather:					
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Prepared By: Ilda Pro-	******				
Checked By:		*******	***************************************		



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Project No.: 2075 Site: Ams #7	Analytical Request				
Sample ID: AMS 0755 034	Container Type	Sample Volume	P	arameter	Number of Containers
Date (YYMMDD): 09-26-01	Glass	203	6010 R	+ zinc	1
Time (HHMMSS): 11:51	·	*********	74716	MLeu	
Top Depth: o"		***************************************	PR'A'L	Macning	
Bottom Depth: 6"		******	and the second		
Matrix: Soil		***************		9999 - Barry Conde Carlos Carlos Conde Carlos Conde Carlos Conde Carlos Carlos Carlos Carlos Carlos Carlos Carl	******
Sample Qualifier: QA / QC / RB / CS				***************************************	*****
Sample Type: Grab (Comp)/NA				****	
Sampler: Film		98894949999999999999999999999999999999		*****	*****
Witness:				*****************	******
Contractor: DEMS					
Remarks:		***************************************		*****	******
Soil Description SM-Tay H Drown, Sand,				***************************************	-
SM-TAN H'DOWD Sard		*****	1		*****
Subrounded-subancular,				*******	*****
Silty, some gravel, returned				******	
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Checked By:			*****		*****



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Project No.: 2075 Site: Ams #7	Analytical Request			
Sample ID: 11507 50 35	Container Type	Sample Volume	Parameter	Number of Containers
Date (YYMMDD): 04-210-01	Glass	203	6010 B + zinc	
Time (HHMMSS): 11:55			THILA MALEN	
Top Depth: 0"			PCB'S	***************************************
Bottom Depth: 6"		*****	9999 (1999))))))))))))))))))))))))))))))	
Matrix: Soil		******	10000 0000 0000 0000 0000 0000 0000 00	*******
Sample Qualifier: QA / QC / RB / CS		********		****
Sample Type: Grab (Comp)/NA		******	1999 - Carlo C	
Sampler:				
Witness:		-		******
Contractor: DEMS				********
Remarks:		-	999999 (1999) 1999 (1999) 1999 (1999) 1999 (1999) 1999 (1999) 1999 (1999) 1999 (1999) 1999 (1999) 1999 (1999) 1	******
Soil Description SM-Tay H brown sand, Subrounded-Subandular,		· · ·		*****
SM-Tay H prown. sand.		*****	*****	***************
Subrounded-Subandulat.		*******		*****
Silty some gravel, rounder		*****		****
to angular.	C			
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Weather:	27-014-017-05-014-012-02-02-02-02-02-02-02-02-02-02-02-02-02	*****	ала це и на става и на става на става и на става на става По става на с	2012/04/04/05/04/05/04/06/04/04/04/04/04/04/04/04/04/04/04/04/04/
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Prepared By:				
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Site:       Ams = 7         Sample ID:       Amson of 53 a ght	Project No.: 2075	Analytical Request			
Date (YYMMDD):     Of - 21e - 01       Time (HHMMSS):     12 i 3/e       Top Depth:     0'       Bottom Depth:     0'       Bottom Depth:     0'       Sample Qualifier:     QA / QC / RB / CS       Sample Qualifier:     QA / QC / RB / CS       Sample Qualifier:     QA / QC / RB / CS       Sample Qualifier:     QA / QC / RB / CS       Sample Qualifier:     QA / QC / RB / CS       Sample Type:     Glass       Sample Type:     Grab (Comp)/NA       Sample Type:     Glass       Sample Ty	Site: Ams #7				
Date (YYMMDD):     Of - 210-01     Others     Others     Others     Others       Time (HHMMSS):     12:310     7431A     Microwy     I       Bottom Depth:     0'     RCA's     I       Bottom Depth:     0'     RCA's     I       Sample Qualifier:     0A/0C/RB/CS     I     I       Sample Type:     Glass     I     I       Vitness:     I     I     I       Contractor:     DEMS     I     I       Soil Description     I     I     I       Silty Strice Gravel, Itriumed     I     I       Mate:     Itriumed     I       Nele:     Itriumed     I       Veather:     I     I	S /7			Parameter	
Time (HHMMSS):     12136       Top Depth:     0"       Bottom Depth:     0"       Sample Qualifier:     0/00/RB/CS       Sampler:     Elden       Witness:     0       Contractor:     DEMS       Soil Depth:     0       Soil Depth:     0       Sample Type:     Grad (Comp)/NA       Sampler:     Elden       Witness:     0       Contractor:     DEMS       Soil Depth:     0       Soil Dep	Date (YYMMDD): 04 - 210 - 01		THE REPORT OF THE PERSON NUMBER OF THE PERSON OF THE PERSO	6010 R + zinc	
Bottom Depta: /	Time (HHMMSS): 12:36		******	7471A Mean	
Bottom Depta: /				PR's	
Sample Qualifier: QA/QC/RB/CS Sample Type: Grab (Comp)/NA Sampler: Eldon Contractor: DEMS Remarks: Contractor: DEMS Remarks: Soil Description SM-Tau H DrDing Sard; Subrounded-Subancular; Silty Some Gravel, munded to Congular PID Field Screening Results PID Field Screening Results PID Field Screening Results PID Field Screening Results Quad mutanial himestare Weather:			***********		1911 11 12 12 12 12 12 12 12 12 12 12 12 1
Sample Type: Grab (Comp)/NA Sampler: Ellicon Witness: Contractor: DEMS Remarks: Soil Description Soil Description Soil Description Soil Description Soil Description Soil Description Soil Description Subroundee - Subancular, Silty Some Gravel, muner to Changular PID Field Screening Results PID Field Screening Results Nele: Lange increase in rock - angular wood grad mutbaid Limestane Weather:			*****		
Sampler:       Elden         Witness:       Contractor:         Contractor:       DEMS         Remarks:       Image: Subanaylar         Soil Description       Image: Subanaylar         Son-Tail H Driven, Surd,       Image: Subanaylar         Subrounded - Subanaylar       Image: Subanaylar         Silty, some, Gravel, rounded       Image: Subanaylar         Silty, some, Gravel, rounded       Image: Subanaylar         Taken from Grid, C -13       Reading         Nole:       Image: Increase incompared         grad material himestrad       Image: I	Sample Qualifier: QA/QC/RB/CS				170000
Witness:       Contractor: DEMS         Remarks:       Image: Solid Mescriphian         Soil Descriphian       Image: Solid Mescriphian         Taken from Grid. C-13       Reading         Nele: Image: Image: Image: Solid Mescriphian       Image: Solid Mescriphian         Image: Image: Image: Image: Image: Solid Mescriphian       Image: Solid Mescriphian         Image:	Sample Type: Grab (Comp)/NA				******
Contractor: DEMS         Remarks:         Soil Description         Sm-Tau H Drown, Such         Subroundec-Subancular,         Silty Strike Gravel, much         Ho Argular.         PID Field Screening Results         Reading         Taken from Grid. C-13         Reading         Nole: lawy increase in         yrack - dong was road         grad material timestee         Weather:         Image: law increase in         Image: law index         Image: law index      <					
Remarks:       Soil Description         Smo-Tay H Drownsard, Subrounded-Subangulat, Silty some gravel, rounded to angulat.       Image: Solution Sard, Subrounded-Subangulat, Silty some gravel, rounded to angulat.         Taken from grid. C-13       PID Field Screening Results Reading         Taken from grid. C-13       Reading         wole: lang increase in rrack - angulat bimestere       Image: Solution Sard, Subrounded Screening Results         weather:       Image: Solution Sard, Subrounded Screening Results         Weather:       Image: Solution Sard, Solution Strate					*****
Soil Description Sm-Tau H DrDuD, Sard, Subrounded-subanculat, Silty, some. Gravel, rounded to angulat Taken from Grid. C-13 Reading Time Nole: languine voad grad material Limestane Weather:	Contractor: DEMS				
Ho angular.       PID Field Screening Results         Taken from Grid. C13       Reading       Time         Nole:       Image increase in rock Image less road grad material himestrate       Image less road less ro	Kemarks:				
Ho angular.       PID Field Screening Results         Taken from Grid. C13       Reading       Time         Nole:       Image increase in rock Image less road grad material himestrate       Image less road less ro	<u>Cil Novie te</u>		*****		
Ho angular.       PID Field Screening Results         Taken from Grid. C13       Reading       Time         Nole:       Image increase in rock Image less road grad material himestrate       Image less road less ro	Soil Description				
Ho angular.       PID Field Screening Results         Taken from Grid. C13       Reading       Time         Nole:       Image increase in rock Image less road grad material himestrate       Image less road less ro	SIT- TOU H DIDUND, SUNC,		****		
Ho angular.       PID Field Screening Results         Taken from Grid. C13       Reading       Time         Nole:       Image increase in rock Image less road grad material himestrate       Image less road less ro	Subrounder-subancular,				
PID Field Screening Results         Taken from Grid. C-13       Reading       Time         Nole:       Image:	SILFY SETTRE. Gravel, rounder	l l			
Nole:     And material     Reading     Time       Nole:     ang increase in     0.00     0.00       rock - ang len road     0.00     0.00       grad material Limestrae     0.00     0.00       Weather:     0.00     0.00	to carquiar.	P			
Nole:     And material     Reading     Time       Nole:     ang increase in     0.00     0.00       rock - ang len road     0.00     0.00       grad material Limestrae     0.00     0.00       Weather:     0.00     0.00			PID	Field Screening Results	
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Weather:	Note: large increase in				
Weather:	rock - angular road				
Weather:	grad material timestone	-			an ( California de Sana), canada da California
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Project No.: 2075 Site: Ams #7	Analytical Request			
Site: AMS #7 Sample ID: AM50755037	Container Type	Sample Volume	Parameter	Number of
Date (YYMMDD): 09 - 26 -01	Glass	Zo3	1 Ala B +	Containers
Date (YYMMDD): 09 - 26 - 01 Time (HHMMSS): 12:15			6010 B + zinc	
Top Depth: o	·	*******	PCB's	
Bottom Depth: 6"				
Matrix: Soil	• Overske operation of the second			
Sample Qualifier: QA / QC / RB / CS				
Sample Type: Grab (Comp)/NA				
Sampler: Elda				*****
Witness:				******
Contractor: DEMS		999-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1		
Remarks:				*********
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Subrounate - Subancular,				
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Soil Description SM-Tay H brown sand, Subrounder-subancular, Silty, some, gravel, rounder to angular				
		PID	Field Screening Results	
Taken from grid C-14		Reading	l T	ime
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Weather:		4094848938826984899998989999999999999999999999999		
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En H		******		
Prepared By: 7/04				
Checked By:				
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# SOIL SAMPLE COLLECTION LOG

Project No.: <u>2075</u> Site: <u>Ams</u> #7	Analytical Request				
Sample ID: AMS0755038	Container Type	Sample Volume	Parameter	Number of Containers	
Date (YYMMDD): (99-26-01	Glass	203	16010 B + zinc	1 Containers	
Time (HHMMSS): 12:15		· · · ·	16010 5 + 212		
Top Depth: 0"		****************	PCB's		
Bottom Depth: 6"		****	MLD_S		
Matrix: Soil		****		******	
Sample Qualifier: QA / QC / RB / CS		*****			
Sample Type: Grab (Comp)/ NA					
Sampler: Ella	*****	****			
Witness:	**********	************		*****	
Contractor: DEMS				*****	
Remarks:		****		*****	
				*****	
Soil Description SM-Tay H Drown, Sand,		1999-1999-1999-1999-1999-1999-1999-199			
SM-Tay H DOWD Sand		******		-	
Subrounder-subangular,					
Silty, some gravel, munder			n na		
to annular	L		1		
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taken from and are		PID	Field Screening Results		
Taken from grid C-15		Reading		ime	
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Prepared By: Shace Pro-		***************************************	******	****	
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Checked By:			90000000000000000000000000000000000000	*****	

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Project No.: 2075 Site: Ams #7	Analytical Request			
Sample ID: AM50755039	Container Type	Sample Volume	Parameter	Number of
Date (YYMMDD): 09-26-01	Glass	203	1 Ala P + Pica	Containers
Time (HHMMSS): 12:20			6010 B + zinc	
Top Depth: 0"			7471 A Maching ACB's	**************************************
Bottom Depth: 6"		*****		*****
Matrix: Soil		****		
Sample Qualifier: QA / QC / RB / CS		******		******
Sample Type: Grab (Comp)/NA		*****		
Sampler: Elda		****		
Witness:		*****		*****
Contractor: DEMS		***************************************		
Remarks:		******		

Soil Description SM-Tay H Drown, Sard, Subrounded-Subancular, Silty, some, gravel, rounded			NNN	
SM-TAN H DOWD Sard			****	•
Suprounded-Supportulat				
Silturseme Gravel rounded				
to angular.	L		- 1	
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Taken from grid 6-16		Reading	l T	іте
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Checked By:		9	***************************************	1912004524990000000000000000000000000000000
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SOIL SAMPLE COLLECTION LOG

Project No.: 2075 Site: Ams #7	Analytical Request				
Sample ID: AMS0755040	Container Type	Sample Volume	Parameter	Number of Containers	
Date (YYMMDD): 09-26-01	Glass	203	6010 B + zinc	1 1	
Time (HHMMSS): 12:25	. Several and a several s		7471A MLen		
Top Depth: 0"		*******	7471A Macany PCB's	**************************************	
Bottom Depth: 6"		******	***************************************	******	
Matrix: Soil		************		****	
Sample Qualifier: QA / QC / RB / CS		******		*******	
Sample Type: Grab (Comp)/ NA	20100000000000000000000000000000000000	******	2012/2012/2012/2012/2012/2012/2012/2012		
Sampler: Elden		*****			
Witness:		9999-9780-9889999-98999-98999-98999-98999-98999-98999-98999-98999-98999-98999-9899			
Contractor: DEMS		***************************************			
Remarks:		*******			
	2010/00/00/00/00/00/00/00/00/00/00/00/00/	*****	******	****	
Soil Description Sm-Tay H Drown, Sand,				****	
SM-Tay H prown sant		**************************************	алана <mark>на калониција со се на се </mark>		
Subrounder-subancular,		****	1998 - 1994 - 1994 - 1997		
Silty, some gravel, rounder		*****	4,999,999,999,999,999,999,999,999,999,9	****	
to angular.					
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Taken from and CD	1915/00/00/00/00/00/00/00/00/00/00/00/00/00		Field Screening Results	Terrollowing on the International Content of the International Content	
Taken from grid C-17		Reading	1	ime	
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Project No.: 2075 Site: Ams \$7	Analytical Request				
Sample ID: AM50755041	Container Type	Sample Volume	Parameter	Number of Containers	
Date (YYMMDD): 09-26-01	Glass	203	6010 B + zinc	1	
Time (HHMMSS): 12:28			7471A MACHIN		
Top Depth: 0"			7471A Macany ACR's		
Bottom Depth: 6"				*******	
Matrix: Soil				*********	
Sample Qualifier: QA / QC / RB / CS					
Sample Type: Grab (Comp)/NA					
Sampler: Elda					
Witness:					
Contractor: DEMS					
Remarks:					
		-			
Soil Description SM-Tay H Drown, Sand,	•				
SM-Tay H'Drown, sand		******			
Subrounded-Subancular,		***			
SILtu some aravel, manded		*****			
to angular					
	1	PII) Field Screening Result	5	
Taken from grid C-18		Reading		Fime	
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Checked By:		ayuu ayaa ahaa ahaa ahaa ahaa ahaa ahaa		*****	



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Project No.: 2075 Site: Ams #7	Analytical Request			
Sample ID: AMS0735042	Container	Sample	Parameter	
ANISCISSIC	Туре	Volume	Farameter	Number of Containers
Date (YYMMDD): 09-26-01	Glass	203	6010 B + zinc	1
Time (HHMMSS): 13:44			7471A MACHAN	*****
Top Depth: o*		***************************************	7471 A Macany ACB's	
Bottom Depth: 4"				
Matrix: Soil			999 - Carlon C	
Sample Qualifier: QA/QC/RB/CS				
Sample Type: Grab (Comp)/ NA				
Sampler: Eldon				
Witness:		-		
Contractor: DEMS				******
Remarks:		****		
		•		
Soil Description Sm-Tay H Drown, Sand,				-
SM-Tay H' prown, sand				
Subrounaed-Subandulat.				
SILty, some grave, rounded				
to annular				
<u> </u>		PID	Field Screening Results	
Taken from grid C-19		Reading		ime
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note: Uling high rock Content - Angular road bed material line store			антаналарын алабатын барарын арау каралуунан араларын арактын арактын арактын алары аралары караларын арактын Антан аларын арактын ар	
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Prepared By: Eller Per		****	***************************************	
Checked By:				



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Project No.: 2075	Analytical Request				
Site: Ams #7					
Sample ID: AM50755043	Container Type	Sample Volume	Parameter	Number of Containers	
Date (YYMMDD): 09-26-0/ Time (HHMMSS): 13:45	Glass	203	6010 R + zinc		
Time (HHMMSS): 13:45	a prima na mana		THILD MALON	*******	
Top Depth: o*		******	6010 B + zinc 7471 A Macking PCB, 5	****	
Bottom Depth: 4"			งหมาง การการการการการการการการการการการการการก	98.4456-996-9999-997-997-997-997-997-997-997-9	
Matrix: Soil			1997 - Carl Barrowski, Barrowski, Sandar Barrowski, Barrowski Sandar Barrowski, Barrowski Barrowski, Barrowski 1997 - Carl Barrowski, Barrowski Barrowski, Barrowski Sandar Barrowski, Barrowski Barrowski, Barrowski Barrowski	******	
Sample Qualifier: QA/QC/RB/CS				****	
Sample Type: Grab (Comp)/NA					
Sampler: Elden				****	
Witness:)	******	
Contractor: DEMS				*******	
Remarks:					
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Soil Description	-	·. •		-	
SIT- TOU H DIDUOD SURT.		****			
Subrounder-subancular,					
Stifu seine graves mander	L				
Soil Description SM-Tay H brown, sand, Subrounder-subancular, Silty, some, gravel, rounder to angular.					
		PID	Field Screening Results		
Taken from grid c-20		Reading		ime	
Note: High rock content - angular road bed material limestone.	0.	.00			
Note: High rock content -				******	
angular road bed material					
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Weather:					
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Prepared By: Slelan Pe					
Prepared By: Slelan Pe	·				
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Project No.: 2075 Site: Ams #7	Analytical Request				
Sample ID: AMS0755044	Container Type	Sample Volume	Parame	· ·	Number of
Date (YYMMDD): 09-27-01	Glass	203	1/ NA C : -:		Containers
Time (HHMMSS): 8:0/			16010 B + 21-	C	<u> </u>
Top Depth: 0"			RB'S	Kang	*****
Bottom Depth: 6"		******	NAS -		-
Matrix: Soil		*****			
Sample Qualifier: QA/QC/RB/CS					
Sample Type: Grab (Comp)/NA			A		
Sampler: EHan Witness:		9999-9999-9999-9999-999-999-999-999-99			*****

Contractor: DEMS Remarks:		***************************************	***		

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Soil Description	-				77879777777777777777777777777777777777
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Subrounaer-Subancular,		*******			
silty some graves, rounded		*****			antikaka ang mang mang mang mang mang mang mang
Soil Description SM-Tay H Brown, Sard, Subrounder-Subancular, Silty, some. gravel, rounded to angular.					
		PID			
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Note: High succent		UU	*****	65x500000000000000000000000000000000000	
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Project No.: 2075	Analytical Request				
Site: Ams #7	Analytical Request				
Sample ID: AMS0755045	Container Type	Sample Volume	Parameter	Number of	
Date (YYMMDD): 09-27-01	Glass	203	1 / Ala R + at a	Containers	
Time (HHMMSS): 8:06			6010 B + 210C		
Top Depth: o			PCB's		
Bottom Depth: 6"			<u>ACO 2</u>		
Matrix: Soil		****	****		
Sample Qualifier: QA/QC/RB/CS		*******			
Sample Type: Grab (Comp)/NA		*******	-		
Sampler: Elcan		***************************************			
Witness:					
Contractor: DEMS					
Remarks:		*****	*****	****	
Soil Description					
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Subrounded-Subancular,		********	₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩		
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Taken from grid C-22		Reading	Field Screening Results		
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Prepared By: Sola Pre-		*****			
Checked By:		56554445547454744474747474793479347934688744476487644			



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	tainer ype \$ \$	Sample Volume Zo3	Paramete 6010 B + zinc 7471 A Mhcn MCB's	Contai	
Date (YYMMDD):09-27-01GlaTime (HHMMSS):8/20Top Depth:0"Bottom Depth:4"Matrix:SoilSample Qualifier:QA/QC/RB/CSSample Qualifier:Comp/NASampler:F/dexWitness:Contractor:Contractor:DEMSRemarks:	A DECEMBER OF	IN STREET, BUILDING THE REAL PROPERTY OF	6010 B + 21-0 7471 A Mbck ACB's	2 1 1	ners
Time (HHMMSS): 8:20 Top Depth: 0" Bottom Depth: 0" Matrix: Soil Sample Qualifier: QA / QC / RB / CS Sample Type: Grab (Comp)/ NA Sampler: E/dc Witness: Contractor: Contractor: DEMS Remarks:			7471 A MACH MBCH MB'S		
Top Depth: 0" Bottom Depth: 4" Matrix: Soil Sample Qualifier: Sample Qualifier: QA / QC / RB / CS Sample Type: Grab (Comp) / NA Sampler: E / dam Witness: Contractor: Contractor: DEMS Remarks: Image: Contractor:					
Matrix: Soil Sample Qualifier: QA/QC/RB/CS Sample Type: Grab (Comp)/NA Sampler: E/dex Witness: Contractor: DEMS Remarks:					
Sample Qualifier: QA/QC/RB/CS Sample Type: Grab (Comp)/NA Sampler: E/dea Witness: Contractor: DEMS Remarks:					
Sample Type: Grab (Comp)/NA Sampler: E/da Witness: Contractor: DEMS Remarks:					
Sample Type: Grab (Comp)/NA Sampler: E/da Witness: Contractor: DEMS Remarks:					
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Remarks:					*****
Soil Description SM-Tan H Drown Sard,		99 - 99 - 99 - 99 - 99 - 99 - 99 - 99			
Soil Description Sm-Tay H brown sard,					
SM-Tay H' prown, sand,					****
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to angular.					
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Prepared By: Ildin Min	*****	an fi fan de			20194-1910 WILLIAM
Checked By:					



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Project No.: 2075 Site: Ams #7	Analytical Request				
Sample ID: AM50755047	Container Type	Sample Volume	Parameter	Number of Containers	
Date (YYMMDD): 04-27-01 Time (HHMMSS): 8:25	Glass	203	16010 B + zinc		
Time (HHMMSS): 8:25			7471A Meren		
Top Depth: 0"			7471 A Maching ACB's		
Bottom Depth: 6"	20-00000000000000000000000000000000000	***************************************		*******	
Matrix: Soil		*********		******	
Sample Qualifier: QA / QC / RB / CS				*****	
Sample Type: Grab (Comp)/ NA					
Sampler: Flden		******			
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Contractor: DEMS					
Remarks:				*****	
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Soil Description SM-Tay H Drown, Sand,		·- ·		-	
SM-Tay H' prown, sand					
Subrounder-subancular, Silty, some gravel, rounder					
Silty, some gravel, rounder					
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		PIL	Field Screening Results		
Taken from grid C-24		Reading		ime	
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Prepared By: Slace be					
Checked By:		****			
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Project No.: 2075 Site: Ams #7	Analytical Request				
Sample ID: AM307 55048	Container Type	Sample Volume	Parameter	Number of Containers	
Date (YYMMDD): 09-27-01	Glass	203	6010 B + zinc	1	
Time (HHMMSS): 8:29		***************************************	THIL MILL		
Top Depth: 0"		******	7471A Macany ACB's		
Bottom Depth: 6"			net and a second s	*****	
Matrix: Soil			7481cm/949092474855625645656666666666666666666666666666		
Sample Qualifier: QA / QC / RB / CS	· ·		***************************************	*******	
Sample Type: Grab (Comp)/ NA	. ~	******			
Sampler: Flow		*******		*****	
Witness:		-			
Contractor: DEMS				*******	
Remarks:				1977-1979 - Constanting and Constanting of the Constanting of the Constanting of the Constanting of the Constant	
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Soil Description SM-Tay H brown, sand, Subrounder-subangular,					
SM-Tay H' prown sand					
Subrounded-subandular,					
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<u> </u>	ſ	PII) Field Screening Results		
Taken from grid C-25		Reading		ìme	
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Project No.: <u>2075</u> Site: <u>AM5</u> # 7	Analytical Request				
Sample ID: AMS0755049	Container Type	Sample Volume	Paramet	ter Number of Containers	
Date (YYMMDD): 09-27-0/	Glass	203	16010 B + zin		
Time (HHMMSS): 9: 32			THILA MAN		
Top Depth: o'		***	7471A Mhe RB's		
Bottom Depth: 6"		99999999999999999999999999999999999999			
Matrix: Soil		*******			
Sample Qualifier: QA / QC / RB / CS				*****	
Sample Type: Grab (Comp)/ NA		***************************************			
Sampler: Elden		*******		9/19/19/19/19/19/19/19/19/19/19/19/19/19	
Witness:					
Contractor: DEMS					
Remarks:				***************************************	
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Soil Description Sm-Tay H brown, sand, Subrounded-Subanquilat,		· ·		ана на полото на полото на полото на полото на полото на боле на полото на полото на полото на полото на полото	
SM-Tay H'Drown, sand.					
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Taken from grid C-26		Reading		Time	
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Project No.: 2075 Site: Ams #7	Analytical Request				
Sample ID: AM50755050 4C 9A	Container Type	Sample Volume	Parameter	Number of Containers	
Date (YYMMDD): 09-26-01	Glass	203	6010 B + zinc	Containers	
Time (HHMMSS): 13.56		5 5 3	THUR MAN	1999/1999 (Con-1999) - 1999 (Construction Construction Construction Construction Construction Construction Cons	
Top Depth: o"		****	PCB's		
Bottom Depth: 6"	-	**************************************		*******	
Matrix: Soil					
Sample Qualifier: QA / QC / RB / CS				*****	
Sample Type: Grab (Comp)/NA		***********			
Sampler: Elda	QA ,	Sample		*****	
Witness:	. In the second se	· · ·			
Contractor: DEMS	Glass	203	BRCRA+ 2inc	/	
Remarks:	Glass	402	BRCRA+ zinc RB's	2	
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Soil Description				***************************************	
SM-Tay H'prown sand				*******	
Subrounder-subancular.					
Silty some aravel rounded					
to angular					
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Taken from grid C-27	**************************************	Reading		lime	
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Checked By:			**************************************	1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 -	
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Sample ID: AM:D7:5051 Date (YYMMDD): Of-22-01 Time (HHMMSS): 9/02 Top Depth: o' Bottom Depth: a Sample Type: Container Sample Type: Cartainer Sample Type: Sample Type: Sample Type: Sample Type:	Project No.: 2075 Site: Ams \$7	Analytical Request				
Date (YYMMDD): C4-27-0/ Glass Zoz 6008 + zinc 1 Time (HHMMSS): 9:02 7471 A Mbcany 788 s 1 Bottom Depth: 0' 788 s 1 1 Bottom Depth: 0' 788 s 1 1 Sample Qualifier: 04/9C/RB/CS 1 1 1 Sample Qualifier: 04/9C/RB/CS 1 1 1 Sample Type: Grab (Comp)/NA 5 1 1 Sample Qualifier: 04/9C/RB/CS 1 1 1 Sample Type: Grab (Comp)/NA 5 1 1 Sample Type: Grab (Comp)/NA 5 1 1 Sample Type: Grab (Comp)/NA 1 1 <td>Sample ID: AM50755051</td> <td></td> <td></td> <td>Parameter</td> <td></td>	Sample ID: AM50755051			Parameter		
Time (HHMMSS): 9:02. 7471 A Mbcaou Top Depth: 9' RCB's Bottom Depth: 4" RCB's Matrix: Soil Sample Qualifier: QA/QC/RB/CS Sample Qualifier: QA/QC/RB/CS Sample Type: Grab (Compl/NA) Sample Type: Grab (Compl/NA) Sample Type: Grab (Compl/NA) Soil (Dept/Sample Type:	Date (YYMMDD): 04-27-0/	Glass	203	6010 B + zinc	1	
Top Depth: 0' Bottom Depth: 4'' Bottom Depth: 4'' Sample Qualifier: 0.4/QC / RB / CS Sample Type: Grab Compl/NA 1 Sampler: Ethen Witness: 1 Contractor: DEms Soil Description 1 Soil Description 1 Soil Description 1 Subrounded: Subancular, Subrounded: Subancular, Subrounded: PID Field Screening Results Taken from Grid. C-28 Nole: Hind. percent angular 1 Urestare 1 Soil bescreent angular 1 Urestare 1 Weather: 1 Weather: 1	Time (HHMMSS): 9:07			7471A Machan	****	
Bottom Depth: 4" Matrix: Soil Sample Qualifier: QA/QC/RB/CS Sample Type: Grab (Com)/NA Sampler: Ellen Witness: Contractor: DEMS Remarks: Soil Description Sm-Tau H DrDurn, Sant, Subrounded-Subancular, Silty, Stree, Gravel, rotunded to Angular. PID Field Screening Results Reading Time 0.00 Weather: Weather:	Top Depth: 0"			ACB'S +	************	
Sample Qualifier: QA/QC/RB/CS Sample Type: Grab Comp/NA Sampler: Ellan Contractor: DEMS Remarks: Soil Description Sm-Tau H brown Sard: Subrowneder-subachular: Silty Some Gravel, rithined to angular: Taken from Grid. C-28 Reading Time O.00 Nole' High percent engular Limeshae mide bed material	Bottom Depth: 6"		**************************************	ana inangina di Katamini ang Milinana na katang		
Sampler Type: Grab (Com)/NA Sampler: Ella Witness: Contractor: DEMS Remarks: Soil Description Sm-Tay H brown Sard: Subrownded-Subanaylar; Silty, Serve, Gravel, rounded to argular. PID Field Screening Results Taken from Grid. C-28 Nole: High percent angular Limestan yourd bed material Weather:	Matrix: Soil					
Sampler: Etter Witness: Contractor: DEMS Image: Contractor: Remarks: Image: Contractor: Soil Description Image: Contractor: Soil Contractor: Image: Contractor: Description: Image: Contractor: Taken from Grid. C-28 Reading Nole: Image: Contractor: Image: Contractor: Image: C						
Witness:						
Contractor: DEMS Remarks: Soil Description Sm-Tau H Drown, Sart Subrounded-Subandulat, Silty, Some, Gravel, mumed Ho Arrowlat PID Field Screening Results Reading Taken from Grid. C-28 Reading Nole: High percent angular Jimestone word bed metrical Weather: Image: Im	Sampler: Ellen					
Remarks:						
Remarks:						
Subrounded-Subandulat, Silty, seme. gravel, rounded to angular. Taken from grid. C-28 Nole: High percent engular Limestone visual bed material Weather:						
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Subrounded-Subandulat, Silty, seme. gravel, rounded to angular. Taken from grid. C-28 Nole: High percent engular Limestone visual bed material Weather:	Soil Description	-				
Subrounded-Subandulat, Silty, seme. gravel, rounded to angular. Taken from grid. C-28 Nole: High percent engular Limestone visual bed material Weather:	SM-Tay H'Drown, sant.					
Silty, Some. Gravel, manaded to angulac Taken from grid. C-28 Nole: High percent ongular Limestone visue bed material Weather:	Subrounded-Subancillar.					
Hogyar PID Field Screening Results Taken from Grid. C-28 Reading Time Nole: High percent ongular 0.00 1 Jimestrae visue bed material 1 1 Weather: 1 1	Silty, some gravel, rounded					
PID Field Screening Results Taken from grid. C-20 Reading Time Nole: High percent engular Image: Control of the second of t	to annular.					
Taken from grid. C-28 Reading Time Note: High percent engulari 0.00			РП) Field Screening Result	S	
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Note: High percent enquini Limestone visue bed material			0.00			
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Checked By:	Checked By:			*****		



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Project No.: <u>2075</u> Site: <u>Ams</u> #7	Analytical Request				
Sample ID: AM50755052	Container	Sample	Parameter	Number of	
	Туре	Volume		Containers	
Date (YYMMDD): 09-27-01	Glass	203	6010 B + zinc	1	
Time (HHMMSS): 9:08			7471A Macnay		
Top Depth: o"		*****			
Bottom Depth: 4"					
Matrix: Soil		,			
Sample Qualifier: QA/QC/RB/CS		******			
Sample Type: Grab (Comp)/ NA		*****			
Sampler: Elden					
Witness:					
Contractor: DEMS					
Remarks:					
Call Marine 1					
Soil Description SM-Tay H brown sant, Subrounder-subangular,		****************			
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Subrounder-Subancinar,					
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Taken from grid C-29		Reading	T	ime	
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Project No.: 2075 Site: Ams \$7	Analytical Request				
Sample ID: AMS0755053	Container Type	Sample Volume	Parameter	Number of Containers	
Date (YYMMDD): 09-27-01	Glass	203	6010 B + zinc	1	
Time (HHMMSS): CIND			THILA MALEN		
Top Depth: o			7471A MACKAN DCB'S		
Bottom Depth: 6"		******		****	
Matrix: Soil		***************************************	44777 (2007) (2017) (2017) (2017) (2017) (2017) (2017) (2017) (2017) (2017) (2017) (2017) (2017) (2017) (2017)		
Sample Qualifier: QA / QC / RB / CS	200-000-000-000-000-000-000-000-000-000	*****			
Sample Type: Grab (Comp)/NA					
Sampler: EHan				*********	
Witness:					
Contractor: DEMS				*******	
Remarks:				1999/1999 - Constant of	

Soil Description SM-Tay H brown, sand,		·. ·			
SM-Tay H'Drown, sand.		****************			
Subrounded-Subandulat.				9999-9999-9999-9999-9999-9999-9999-9999-9999	
Silty, some gravel, returned					
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Taken from grid C-30		Reading		Time	
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Prepared By: Sola Can		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			
Checked By:		0444424070070707070707070707070707070707			
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Project No.: 2075 Site: Ams #7	Analytical Request				
Sample ID: AM50755054	Container Type	Sample Volume	Parameter	Number of Containers	
Date (YYMMDD): 04-27-01	Glass	203	6010 B + 2inc		
Time (HHMMSS): 9:16		***************************************	JUJIA MAN		
Top Depth: 0"		******	7471A Mhenny ACB's		
Bottom Depth: 6"		******	en en der einer		
Matrix: Soil		*****			
Sample Qualifier: QA/QC/RB/CS		*****		******	
Sample Type: Grab (Comp)/NA		*********		******	
Sampler: Elden	· ·	1998 - Barris Marine Marine Marine Carlos and			
Witness:		******			
Contractor: DEMS		******		******	
Remarks:	1999) - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999	***			

Soil Description SM-Tay H Drown, sand,	-		****	****	
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Project No.: 2075	Analytical Request				
Site: Ams #7					
Sample ID: AMS0755055	Container Type	Sample Volume	Parai	neter	Number of Containers
Date (YYMMDD): 09-27-01	Glass	203	6010 B +		Containers
Time (HHMMSS): 9:10			DUDIA M	67	
Top Depth: o"			PCB'S	nensy	
Bottom Depth: 6"		************		*****	
Matrix: Soil				****	
Sample Qualifier: QA / QC / RB / CS	a de serair de la de se a constante de la serair per de la de s				
Sample Type: Grab (Comp)/NA		***************************************		*******	****
Sampler: Eldan			*****		
Witness:					
Contractor: DEMS		***************************************			
Remarks:		*****	*****	******	

Soil Description SM-Tay H Drown, Sand,				******	
SM-Tay H' prown sand				******	-
Subrounder-subancular.		****			
Silty, some Gravel, rounded		*****		*****	
Subrounder-Subancular, Silty, some gravel, rounder to angular.	[·			
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Taken from grid u-2		Reading	Field Screenin		
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Prepared By: Rea De		*****			
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Project No.: <u>2075</u> Site: <u>Ams</u> * 7	Analytical Request				
Sample ID: AMS0755056	Container Type	Sample Volume	Parameter	Number of Containers	
Date (YYMMDD): 07-27-0/	Glass	203	6010 B + zinc	1	
Time (HHMMSS):	· · · · · · · · · · · · · · · · · · ·		7471A MILLON		
Top Depth: 0"		***************************************	7471 A Machany ACR's		
Bottom Depth: 6"		***********	*****		
Matrix: Soil		****		***************************************	
Sample Qualifier: QA / QC / RB / CS		********	******	****	
Sample Type: Grab (Comp)/ NA					
Sampler: Ella		*****			
Witness:					
Contractor: DEMS				******	
Remarks:		*****		******	

Soil Description SM-Tay H Drown, Sard,			999 m 201	***************************************	
SM-Tay H' prown. sand.				****	
Subrounded-subandulat,		*****	1999 - Constanting California Balancia de ante e a cale a constanting de la constanting de la constanting de la 1999 - Constanting de la constanting de		
Silty, some gravel, returned		*****		******	
to angular					
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Project No.: 2075	Analytical Request				
Site: Ams #7					
Sample ID: AM50755057	Container Type	Sample Volume	Parameter	Number of Containers	
Date (YYMMDD): 09-27-01	Glass	203	6010 B + zinc	1	
Time (HHMMSS): 10:01			7471A MACH		
Top Depth: o"		******	PCB's		
Bottom Depth: 6"			ann fan fan ster gener gener gener fan gener fan gener fan ser fan ster fan ster fan ster fan ster fan ster fan	******	
Matrix: Soil				*********	
Sample Qualifier: QA / QC / RB / CS					
Sample Type: Grab (Comp)/ NA					
Sampler: Eldu	****************				
Witness:					
Contractor: DEMS					
Remarks:					
Soil Description SM-Tay H prown, sand,		•. •		-	
SMI- Iau H Brown sand					
Subrounder-Subangular, Silty, some gravel, rounder					
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Taken from grid 4-4		Reading		Гime	
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Prepared By: Elden Om					



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Project No.: <u>2075</u> Site: Ams *7	Analytical Request				
Sample ID: AM50755058	Container Type	Sample Volume	Param	eter	Number of Containers
Date (YYMMDD): 04-23-01	Glass	203	6010 B + 2	inc	1
Time (HHMMSS): 10:02			JUJIA ME	*****	
Top Depth: 0"		******	7471A ML 10/35	LEC.	
Bottom Depth: 6"			****		
Matrix: Soil		**********			
Sample Qualifier: QA / QC / RB / CS				****	
Sample Type: Grab (Comp/ NA		*********************			
Sampler: Elden				*****	*******
Witness:				******	
Contractor: DEMS		***************************************			******
Remarks:	2010/00/00/00/00/00/00/00/00/00/00/00/00/	*****		**********	

Soil Description SM-Tay H brown, send,		·. ·	****	***************************************	*
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Subrounder-subandulat.		******		******	
Subrounder-subancular, Silty, some gravel, rounder		*********			
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Taken from grid 4-5		Reading	Tield Sci eenim	g Results Tin	
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Project No.: 2075	Analytical Request				
Site: Ams #7	Anarytical Request				
Sample ID: AMS0755059 QC QA	Container Type	Sample Volume	Parameter	Number of Containers	
Date (YYMMDD): 09-26-01	Glass	203	6010 B + zinc	l containers	
Time (HHMMSS): 14:26			7471A MACH		
Top Depth: 0"			7471A Maching ACB'S	*******	
Bottom Depth: 6"			anne han gener gener (1997) yn de leggene en weren en we	******	
Matrix: Soil				******	
Sample Qualifier: QA / QC / RB / CS					
Sample Type: Grab (Comp)/NA	QA	Sample.			
Sampler: Elden					
Witness:	Glass	203.	BRCRA+ zinc PCB's	1	
Contractor: DEMS	Glass	203. 402	ACB's	2	
Remarks:		<i>~</i>			
Soil Description SM-Tay H brown, sand,	•				
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Silty, some. gravel, rounded	l				
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SOIL SAMPLE COLLECTION LOG

Project No.: 2075 Site: Ams #7	Analytical Request				
Sample ID: AMS0755060	Container Type	Sample Volume	Parameter	Number of Containers	
Date (YYMMDD): 09-27-01	Glass	203	6010 B + zinc	Contamers	
Time (HHMMSS): 10:04			TRUID + ZIAC		
Top Depth: o		******	RB'S MACHIN		
Bottom Depth: 6"		*****			
Matrix: Soil		******			
Sample Qualifier: QA / QC / RB / CS		*******		*****	
Sample Type: Grab (Comp)/NA		*******		**************************************	
Sampler: Elda	2	*******			
Witness:		****		********	
Contractor: DEMS					
Remarks:				*****	
	analise and a second				
Soil Description Sm-Tan H brown, sand,					
SM-TON H DOWD Sand		**********	000 m C + + + + + + + + + + + + + + + + + +		
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Taken from grid 4-2	-	Reading		Time	
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Prepared By: Slow Pro-			************	1953 de la constant d	

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Project No.: 2075 Site: Ams #7	Analytical Request				
Sample ID: AM50755061	Container Type	Sample Volume	Parameter	Number of Containers	
Date (YYMMDD): 04-27-01	Glass	203	6010B + zinc	Containers	
Time (HHMMSS): 0:10			TRUID & PINC	*******	
Top Depth: o"		******	7471A Maching AB's		
Bottom Depth: 6"		******	9948449-19948-1994-1994-1994-1994-1994-1		
Matrix: Soil		****	*****	*****	
Sample Qualifier: QA/QC/RB/CS		******	999777988987979797979797979797979797979		
Sample Type: Grab (Comp)/NA		***************************************	800000	1999 Million and a state of the	
Sampler: Ella		***************************************		*****	
Witness:		· _	*****	*********	
Contractor: DEMS		***************************************	99999		
Remarks:			999	*******	

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Checked By:		***************************************	*****		
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Project No.: 2075 Site: Ams #7	Analytical Request				
Sample ID: AM50755062	Container Type	Sample Volume	Parameter	Number of Containers	
Date (YYMMDD): 01-77-0/	Glass	203	6010 B + zinc	1	
Time (HHMMSS): 1/2: 57		***************************************	7471 A Marcuny	********	
Top Depth: 0"			PCB'S +		
Bottom Depth: 6"				98 MAR 2019 STATE ST	
Matrix: Soil		******			
Sample Qualifier: QA / QC / RB / CS					
Sample Type: Grab CompLink Grab				********	
Sampler: Elder					
Witness:					
Contractor: DEMS					
Remarks:					
Soil Description		****		- -	
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Prepared By: Ilda			***************************************		
Checked By:				<u>an na mana ana amin' ao amin' ao amin' ao amin' am</u>	



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Project No.: <u>2075</u> Site: <u>Ams</u> #7	Analytical Request					
Sample ID: AMS0755063	Container Type	Sample Volume	F	arameter	Number of Containers	
Date (YYMMDD): 09-27-01	Glass	203	, LAIA R	+ zinc	I Containers	
Time (HHMMSS): 10:50			ALLA	Meren		
Top Depth: o*		*******	D'R'	Mucuny	*****	
Bottom Depth: 6"			19000		*****	
Matrix: Soil						
Sample Qualifier: QA / QC / RB / CS			l	***********************	2017 2017 2017 2017 2017 2017 2017 2017	
Sample Type: Grab (Somphild Grab						
Sampler:						
Witness:						
Contractor: DEMS Remarks:						
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Soil Description		*******		1999 (1997) 1997 (1997) 1997 (1997) 1997 (1997) 1997 (1997) 1997 (1997) 1997 (1997) 1997 (1997) 1997 (1997) 199		
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Prepared By: Alanta			*****			
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Project No.: <u>2075</u> Site: <u>Ams</u> #7	Analytical Request				
Sample ID: AM50755064	Container Type	Sample Volume	Parameter	Number of Containers	
Date (YYMMDD): 04-27-01	Glass	203	6010 B + zinc	1	
Time (HHMMSS): 10:40			7471A Machan	******	
Top Depth: o*		<u></u>	1471A Macany	******	
Bottom Depth: 6"			nen gener gener gener gener gener son en	*****	
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Sample Type: Brab Comp NAL grob					
Sampler: Elda				1999 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 -	
Witness:				****	
Contractor: DEMS					
Remarks:		*****			
Soil Description					
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Prepared By: Eleka On					
Checked By:	J				



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Project No.: 2075 Site: Ams #7	Analytical Request				
Sample ID: AM50755065	Container Type	Sample Volume	Parameter	Number of Containers	
Date (YYMMDD): 19-27-0/	Glass	203	1/010R + 1000	Containers	
Time (HHMMSS): 10:37			6010 B + zinc		
Top Depth: 0		******	PCB'S		
Bottom Depth: 6"		******			
Matrix: Soil	**************************************	*****			
Sample Qualifier: QA / QC / RB / CS		***************		*****	
Sample Type: Grab Gamphia Grab Sampler: Eldan		******			
Sampler: Eldan					
Witness:		***************************************			
Contractor: DEMS				*****	
Remarks:		**********			
Soil Description					
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Prepared By: Alaham		*********	***		
Checked By:		**********	*****		

Appendix C

Monitoring Well

Development Logs

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MONITORING WELL DEVELPOMENT/PURGING LOG

WELL NO .: NW OL

09-04-01-DATE: <u>09-05-01</u>

Depth from Top of Casing:

Top of water (ft) 25.05 - 2.53 = 22.54 bgs Bottom of well (ft) 33.83 - 2.53 = 31.30 bgs Well diameter (in) Z

Top, sampling interval:_ Bottom, sampling interval $V = 0.0408 \text{ x} \Delta H (ft) \text{ x} D (in^2)_{-}$ 1,43 (gal) $3 \times V = 24.24$ (gal) Will volume in Filter pack 6.65. Total well udume 6.65-1,43 = 8.08 gallons

Well Development Technique:

Pumping with D wilt electic pump Did not surge - well volume very low -top of water below top of Green

Groundwater Parameters

тіме +9	VOLUME (Gal)	TURBIDITY (± 10.0%) 79 -04 -01	S.C. (± 3.0%)	D.O. (± 10.0%)	темр. (± 0.5°С)	pH (± 0.1%)
10:17	11.5	71.4	396		21.7	7.02
10:22	18	47,0	400		21.1	6.94
10:27	20.5	4,77	401		20.8	6.96
10:36	27	6.24	401	/	21.1	7.04
10:30	29	1.57	405		70.7	7.03
N .	31.5	1.19	401		20.9	7.07
10:47	34	1.60	403		70.9	7.0B
10:51 10:55	36	1,15	404		20.8	7.08

NOTES:

When First opened well was not under pressure or vacuum. PID reading 0.00 PPM. 09-04-01 Recovered 9 gallens will did Not pump dry. First Flow very cloudy - Clearing at end of pumping. Top of water on 09-05-01 25.11 (From top of cusing). Will did wit pump dry.

Development/Purging Oversight: Eldon Pen 20- 1

Page / of /

AMS #7



MONITORING WELL DEVELPOMENT/PURGING LOG

Top, sampling interval:

 $3 \times V = 2/6.49$

Bottom, sampling interval $V = 0.0408 \text{ x} \Delta H (ft) \text{ x} D (in^{4})_{---}$

WELLNO .: MW07

09-04-01 -DATE: 09-05-01

1.56

(gal)

(gal)

Depth from Top of Casing:

Top of water (ft) 16.65 - 2.67 = 13.48 bgs Bottom of well (ft) 76,22 - 2.67= 23.55 695 Well diameter (in)____

Well Development Technique:

Volume in Filter pack 7.28 gallons Total well volume 7.28 + 1.56 = 8.83 gallons Pumping with 12 volt electric pump. Did not surge - well volume very low - top of water below top of Screen.

Groundwater Parameters

TIME +9	VOLUME (Gal) 94) From 0	TURBIDITY (± 10.0%) 9-04-01	S.C. (± 3.0%)	D.O. (± 10.0%)	TEMP. (± 0.5°C)	pH (± 0.1%)
11:z4	10	10.02	713		23.1	6.67
11:33	12	82.5	709		23,6	6.87
11:42	13.5	47.5	704		Z3.3	6.87
11:55	14	27.5	703		23,2	6.83
12:06	14.5	21.6	690		24.9	6,79
12:10	14.75	14.2	649		25	6,78
12:16	15	11.3	005		24.8	1
and a second						

NOTES:

When First opened well not under pressure or vacuum, PID reading 0.00 ppm. 09-04-01 Pumped dry at 2.5 gallance. Slow recharge. Contined until 9 gallons removed. First Fluid very clondy - clearing at the and of pumping. Top of water on 09-05-01 - 16.69. Turbidity erratic probably due to pumping dry between each parameter check well

Development/Purging Oversight: Eld m Kenn

Page __ of __

Ams #7



MONITORING WELL DEVELPOMENT/PURGING LOG

WELL NO .: NIW 08

09-04-01 DATE: <u>09-05-01</u>

Depth from Top of Casing:

Top of water (ft) <u>24.48 - 303 = 21.45</u> Bottom of well (ft) <u>28.03 - 3.03 = 25</u> by s	Top, sampling interval:
Bottom of well (ft) 28.03 - 3.03 = 25 bys	Bottom, sampling interval
Well diameter (in) Z	$V = 0.0408 \text{ x} \Delta H (ft) \text{ x} D (in^2)$, 58 (gal)
• •	$3 \mathbf{x} \mathbf{V} = \frac{9.81}{(\text{gal})}$
Volume	in Filter pack = 2,78 gallons
Well Development Technique: Total well	in Filter pack = 2,78 gallons 1 volume 2.78 + 58 = 3.27 gallons
Pumping with 12 volt electic pum	
Did Not surge - well volume very lo	w- top of water below top
of screen	, , ,
•	

Groundwater Parameters

	TIME	VOLUME (Gal)	TURBIDITY (± 10.0%)	S.C. (± 3.0%)	D.O. (± 10.0%)	TEMP. (± 0.5°C)	pH (± 0.1%)
	14:38)	off scale	686		25.8	6.68
	14:55	2,5	3.7	686		23,2	6.91
09-04-0	15:00	4.5	9	641		25	6.65
	15:45	8	~~~	$\sim\sim\sim$	/ /	~~~	~
	13:30	8.5	10.15	1,20		22.5	6.77
- Cal	13:36	9	21.00	1016	(22,3	6.78
107-0501	13:43	9.5	12,70	625		21.6	6,79
	13:51	10	7.95	629		21.3	6.76

NOTES:

When First opened well not under pressure or vacuum. PTD reading D.00 PPM. 09-04-01 - Well pumped dry at .75 gallans - slow rechange. Took parameter readings to 4.5 gallans removed. PH meter stopped working. Continued 4.5 gallons until B total gallons removed removing water 24.49 / From top of casing Top of water

Development/Purging Oversight: Eldon Renn Schan Ne Page 1 of 2

AMS #7



MONITORING WELL DEVELPOMENT/PURGING LOG

WELL NO .: MW OB

09-04-01 DATE: 09-05-0

Depth from Top of Casing:

Top of water (ft) <u>24.48-3.03 = 21.4</u> 5 bg 5 Bottom of well (ft) <u>28.03 - 3.03 = 25 bg</u> 5	Top, sampling interval: Bottom, sampling interval $V= 0.0408 \times \Delta H (ft) \times D (in^2)$ (gal)
Well diameter (in) 2 Volum	3 x V = 9.8/(gal) ne in Filter pack = 2.78 gal ell volume 2.78 + .58 = 3.27 gal
Dumping with 12 volt electic pur Did Not surge - well volume ven	1 Jon - top of water
below top of screen	J

Groundwater Parameters

TIME	VOLUME (Gal)	TURBIDITY (± 10.0%)	S.C. (± 3.0%)	D.O. (± 10.0%)	ТЕМР. (± 0.5°С)	pH (± 0.1%)
13:55	10.5	6.28	631		21.5	6.73
14:03	11	5.52	628		21.1	6.76
14:13	12	4.68	629		20.6	6.73
14:18	17.5	5.75	632		20.7	6.79
				(
		ł	`			
						2010-0 CONTRACTOR OF CONTRACTOR

NOTES:

19-05-01- Well pumped dry between each parameter reading. Stopped development - rechange slowing dom Purameter had stabilized.

Development/Purging Oversight: Eldon Penn

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AMSAN



MONITORING WELL DEVELPOMENT/PURGING LOG

WELL NO .: MW 09

09-05-01 DATE:<u>09-06-01</u>

Depth from Top of Casing:	
Top of water (ft) <u>25,47 - 3.40 =</u> 22.07 Bottom of well (ft) <u>215,42</u>	Top, sampling interval: Bottom, sampling interval
Well diameter (in)	V= 0.0408 x ΔH (ft) x D (in ²) /24 (gal) 3 x V= 390 (gal)
	Volume in Filter pack 6.12 gal tal well volume 6.12 + 124 = 1.30,12
Three quarter horse power 220	volt electic pump.
Nid not sand bail well - due	to no apparent Fill and
past low recharge rate.	· · · · · · · · · · · · · · · · · · ·
pasi 100 recourge races	

Groundwater Parameters

	TIME	VOLUME (Gal)	TURBIDITY (± 10.0%)	S.C. (± 3.0%)	D.O. (± 10.0%)	TEMP. (± 0.5°C)	pH (± 0.1%)
	16:20	30	243	7.19		20.8	9.68
	16:25	100	495	51,7		20.9	10.76
07-05-01	16:39	135	252	7.07		24,7	10.85
	17:07	142	1021	6.97		23,5	10,79
\sim	7:43	162	57.8	8.16		19,7	7,23
	7:50	182	16.70	8.13		19.6	7,12
09-06-01	7:53	702	7,59	8.07		19.6	7.05
	7:59		umo dry	-	/		

NOTES:

when First opened well not under pressure or vacuum PID reading 0.00 PPM. 09-05-01- Well pumped dry at 130 gal. Slow recharge rate Let well recharge ora night. 09-01-01- Top of water 109.11' (From top of casing). Poor over night rechange. Will pumped dry after 70 gallens. to red AFL 30 min

Development/Purging Oversight: Ellon fern Oden D

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Appendix D

Calibration Logs



INSTRUMENT CALERATION LOG

DEMS PROJECT NO. 2075

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AM5 # 7

DATE	TIME	INSTRUMENT TYPE/NO.	CALERATION MEDIA/STANDARD	INITIAL READING	FINAL READING	PASS – P FAIL - F
0404/01	10:02	1 - 44-#4	muchill Alaskal		10.01	P
54/04/01	10:02	Corning Conduct	1408	1397	1400	P
^{54/} 04/01 ^{54/} 04/01	w:16	Corning Checkmah	IDNIN 10NIN 10NIN 1408 Conductivity Standa IT AH 40 BUFFU 10 BUFFU 10	6.93	6.99	p
- Voy/01	10:22	Cerning Chickmale	DH DH DH DH DH	9.93	9.99	P
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PHOTOIONIZATION DETECTOR CALIBRATION DATA SHEET

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T# 2075

STRUMENT NO. <u>580B OUM</u>

CALIBRATION GAS: Isobutylene

	DATE	TIME	PERSON CALIBRATING	SPAN SETTING	READING (PPM) 100 Pon-Sma G	REMARKS
	09/04/01	9:54	Eldon Penn	100 PPm	99.7 101.7 101.3	Pussed
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INSTRUMENT CALBRATION LOG

Ams# 7

DEMS PROJECT NO. 2015

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DATE	TIME	INSTRUMENT TYPE/NO.	CAUBRATION MEDIA/STANDARD	INITIAL READING	FINAL READING	PASS – P FAIL - F
94-05-01	8:38	PHmeter	4.0 Buffer 7.0 Buffer	3.47 7.27	4,00 7,01	Pass Pass
		Lamotte	7.0 ButFler 10 Standard	10.07 1.12	10:00 NHU 1.05 NH	Pass Pass
9-05-01	9.10	Corning Corning Chuckmale T Corductivity	1 Standard O Air 1×08 Standard	S	1.05 vtu 0 1409	Pass
9-05-01	9:18	Churchmale T	1208 Hondand	14.07	1701	1.4.91

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		*****	998114-99-97411510-94-6010-0610-0615511-0610-0610-0610-0610-0	*****		201.4ml 40.4ml 40.0ml 40.0m

PHOTOIONIZATION DETECTOR CALIBRATION DATA SHEET

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NSTRUMENT NO. 580 B DUM

CALIBRATION GAS: Isobutylene

	DATE	TIME	PERSON CALIBRATING	SPAN SETTING	READING (PPNI) 100 PPM-506 (2)	REMARKS
	09-05-01	B:10	Ellen	100 PPM	96.7 99.0 99.7 99.0	Passed
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INSTRUMENT CALIBRATION LOG

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Ams #7

DATE	TIME	INSTRUMENT TYPE/NO.	CALBRATION MEDIA/STANDARD	INITIAL READING	FINAL READING	PASS – P FAIL - F
-9-06-01	7:04	pH meter	7.0 BuFFn	7.06	7.02 9.94	P P
09-06-01		La motte	10.0 Butter 10 Standard	9,99	10.01	P P
06-06-01	7.00	2020 Turbidimeter	10 Standard 1 Standard 0 Ait	1.01	1.01	P
09-06-01	סו:ר	2020 Turbidimeter Coning Coning Character Constructionity	1409 Standard	1414		P
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INSTRUMENT CALIBRATION LOG

DEMS PROJECT NO. 2015 ANS" 7

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		TYPE/NO.	MEDIA/STANDARD	READING	READING	PASS – P FAIL - F		
9-24-01	0905	Flow cell	Specific condictivity	10.0	10.0	9		
****	0907	Flow cell	pH - 7	7.14	7.0	2		
	0908	F-law cell	рн. ч	4.14	4.0	5		
	0110	Flowcell	GD GD	760	760	5		
	0912	Flowell	7. DO	100 2	10070	5		
	0832	ていし.と.ち	0.0	10.23	10.0	9		
	0840	Tur. 2.4	1.0	1.05	1.0	P		
	1500	Flowcal	SP S	16.4	0.01	5		
	1203	Flowcall	PH-7	ו.ר	٦.0	6		
	1507	Flowcell	54-1	4.13	4.0	6		
Anila 1.5 (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	1209	Flow cell	BP	760	760	Ģ		
	1511	Flowcell	% 00	100%	100 70	9		
	1520	ていんふち	16.0	10.23	10.0	P		
	1522	Turbidity	1.0	1.05	1.0	6		
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PHOTOIONIZATION DETECTOR CALIBRATION DATA SHEET

-CT # _____ 2015

AMP TYPE: _____

CALIBRATION GAS: 1506-1-1/m

DATE	TIME	PERSON CALIBRATING	SPAN SETTING	READING (PPM)	REMARKS
9.25-01	1540	Stores	100	100 pp-	Puss
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			9944-910-1010-0010-014-07-00-05-0044-9040-949400-1-00-00-014-014-01-00-00-04-04-07-00-0-0-04-04-04-04-04-04-04	ynterne an de gegenen an tean twe en an tean an twe an twe an twe an twe and the anti-twe and twe and twe and t	
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INSTRUMENT CALIBRATION LOG

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DATE	TIME	INSTRUMENT TYPE/NO.	CALIBRATION MEDIA/STANDARD	INITIAL READING	FINAL READING	PASS - P FAIL - F
9-26-01	0750	Flowcell	SP	10.14	10.0	P
9-26-01	075I	Flow cell	PH-7	7.16	J .D	P
9-26.01	5300	Flow ccll	pH - 4	4.01	4. D	P
9-26.01	0755	Flowcell	BP	760	760	?
9-22.01	0757	Flow cell	% 00	100	100%	P
9.26.01	0746	Turbidity	10.0	10.16	10.0	P
9-26-01	0748	ていいち	1.0	1.05	1.0	9
9-26-01	1400	Flourell	SP	10.16	0.01	9
9-26-01	1402		рн-7	וס.ר	ט.ר	P
9-22-01	1404		PH-4	4.10	Ч.О	P
9-26-01	1406		BP	760	760	P
9-21-01	1408	V	% DO	100%	100 %	9
9-24-01	1412	Т.л.л.т	10,0	10.05	10.0	9
9-26-01	1413	L L	1.0	1.01	1.0	Ş

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Appendix F

Transportation And Disposal Documentation

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WHITE-DISPOSAL YELLOW-TRANSPORTER

PINK-RETURN COPY

GOLDENROD-GENERATOR

Appendix G

Risk Reduction Rules Standard 2 Tables

Background Information:

Section 335.558(d) of the existing Risk Reduction Rules indicates that the Commission will periodically revise the example unadjusted Standard No. 2 MSCs presented in the Appendix II table to reflect newly promulgated standards and to provide MSCs based on current toxicological data. Additionally, §335.556(b) requires consideration of other exposure pathways by which human populations are likely to be exposed (e.g., dermal absorption and vegetable uptake) when setting MSCs.

However, because no specific equations or parameters were provided in the rule, consideration of the dermal absorption pathway has not been addressed in a consistent manner. Therefore, in order to facilitate implementation of Standard No. 2, the MSC values have been updated to reflect current standards (e.g., MCLs), toxicological factors, the soil dermal absorption exposure pathway where appropriate (see Section VII of the memo entitled Implementation of the Existing Risk Reduction Rule for more detail), and to identify contaminants where exposure through vegetable consumption is of particular concern (i.e., cadmium). The updated Standard No. 2 MSCs are provided below for your convenience.

The updated Standard No. 2 Soil MSCs have been calculated using the Risk Reduction Standard No. 2 equations, with the addition of the dermal pathway, updated toxicity factors, and updated chemical/physical properties. In calculating the updated Standard No. 2 Soil MSCs, a risk level of 10^{-6} was used for Class A and B carcingens and a risk level of 10^{-5} was used for Class C carcinogens, and a hazard quotient of 1 was used for all noncarcinogens. In cases where contaminants had both carcinogenic and noncarcinogenic toxicity factors, both types of MSCs (carcinogenic and noncarcinogenic) were calculated and the lowest value (i.e., most conservative) was selected as the updated Standard No. 2 Soil MSC.

The updated Standard No. 2 Groundwater MSCs have been calculated using the MCL (when available) or Risk Reduction Standard No. 2 equations with updated toxicity factors when MCLs were not available. In calculating the updated Standard No. 2 Groundwater MSCs, a risk level of 10⁻⁶ was used for Class A and B carcingens and a risk level of 10⁻⁵ was used for Class C carcinogens, and a hazard quotient of 1 was used for all noncarcinogens. In cases where contaminants had both carcinogenic and noncarcinogenic toxicity factors, both types of MSCs (carcinogenic and noncarcinogenic) were calculated and the lowest value (i.e., most conservative) was selected as the updated Standard No. 2 Groundwater MSC.

Abbreviations:

CAS# - Chemical Abstracts Service number GW-Res - Groundwater MSC for Residential Use GW-Ind - Groundwater MSC for Industrial Use GWP-Res - Soil MSC for Residential Use Based on Groundwater Protection GWP-Ind - Soil MSC for Industrial Use Based on Groundwater Protection SAI-Res - Soil MSC for Residential Use Based on Inhalation, Ingestion, and Dermal Contact SAI-Ind - Soil MSC for Industrial Use Based on Inhalation, Ingestion, and Dermal Contact

Updated Examples of Standard No. 2, Appendix II Medium-Specific Concentrations (MSCs)

(Last update: March 15, 2001)

		GW-Res	GW-Ind	GWP-Res	GWP-Ind	SAI-Res*	SAI-Ind ^a
Contaminant	CAS #	(mg/l)	(mg/l)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Acenaphthene	83-32-9	2.2E+00	6.1E+00	2.2E+02	6.1E+02	8.2E+03	5.3E+04
Acenaphthylene	208-96-8	2.2E+00	6.1E+00	2.2E+02	6.1E+02	8.2E+03	5.3E+04
Acetaldehyde	75-07-0	3.7E+00	1.0E+01	3.7E+02	1.0E+03	5.2E+00	8.8E+00
Acetone	67-64-1	3.7E+00	1.0E+01	3.7E+02	1.0E+03	1.6E+03	2.4E+03
Acetone cyanohydrin	75-86-5	2.9E-02	8.2E-02	2.9E+00	8.2E+00	1.2E+02	8.2E+02
Acetonitrile	75-05-8					1.8E+02	2.6E+02
Acetophenone	98-86-2	3.7E+00	1.0E+01	3.7E+02	1.0E+03	2.7E+03	4.3E+03
Acifluorfen, sodium	62476-59-9	4.7E-01	1.3E+00	4.7E+01	1.3E+02	2.0E+03	1.3E+04
Acrolein	107-02-8	7.3E-01	2.0E+00	7.3E+01	2.0E+02	5.5E+03	4.1E+04
Acrylamide	79-06-1	1.9E-05	6.4E-05	1.9E-03	6.4E-03	1.1E-01	6.4E-01
Acrylic acid	79-10-7	1.8E+01	5.1E+01	1.8E+03	5.1E+03	1.4E+05	1.0E+06
Acrylonitrile	107-13-1	1.6E-04	5.3E-04	1.6E-02	5.3E-02	7.9E-02	1.4E-01
Alachlor	15972-60-8	2.0E-03	2.0E-03	2.0E-01	2.0E-01	6.1E+00	3.6E+01
Aldicarb	116-06-3	7.0E-03	7.0E-03	7.0E-01	7.0E-01	1.5E+02	1.0E+03
Aldicarb sulfone	1646-88-4	7.0E-03	7.0E-03	7.0E-01	7.0E-01	1.5E+02	1.0E+03
Aldrin	309-00-2	5.0E-06	1.7E-05	5.0E-04	1.7E-03	2.7E-02	1.4E-01

(Last update: March 15, 2001)

		GW-Res	GW-Ind	GWP-Res	GWP-Ind	SAI-Res*	SAI-Ind ^a
Contaminant	CAS #	(mg/l)	(mg/l)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Allyl alcohol	107-18-6	1.8E-01	5.1E-01	1.8E+01	5.1E+01	1.4E+03	1.0E+04
Allyl chloride	107-05-1	3.7E-01	1.0E+00	3.7E+01	1.0E+02	1.3E+00	1.8E+00
Aluminum	7429-90-5	3.7E+01	1.0E+02	3.7E+03	1.0E+04	1.5E+05	
Aminopyridine, 4-	504-24-5	7.3E-04	2.0E-03	7.3E-02	2.0E-01	3.1E+00	2.0E+01
Amino-2,6-dinitrotoluene, 4-	19406-51-0	6.1E-03	1.7E-02	6.1E-01	1.7E+00	2.6E+01	
Amino-4,6-dinitrotoluene, 2-	່ 35572-78-2່	6.1E-03	1.7E-02	6.1E-01	1.7E+00	2.6E+01	1.7E+02
Ammonia	7664-41-7						2.3E+02
Aniline	62-53-3	1.5E-02	5.0E-02	1.5E+00	5.0E+00	8.6E+01	5.0E+02
Anthracene	120-12-7	1.1E+01	3.1E+01	1.1E+03	3.1E+03		
Antimony	່ 7440 -36-0 ່	6.0E-03	6.0E-03	6.0E-01	6.0E-01	7.2E+01	4.9E+02
Aramite	140-57-8	3.4E-03	1.1E-02	3.4E-01	1.1E+00		1.1E+02
Arsenic	7440-38-2	5.0E-02	5.0E-02	5.0E+00		2.0E+01 ^b	
Arsine	7784-42-1						
Asbestos	1332-21-4		•				
Atrazine	1912-24-9	3.0E-03	3.0E-03	3.0E-01	3.0E-01	2.2E+01	1.3E+02
Barium	7440-39-3	2.0E+00	2.0E+00	2.0E+02	2.0E+02	9.1E+03	5.9E+04
Benzaldehyde	100-52-7	3.7E+00	1.0E+01	3.7E+02	1.0E+03		2.5E-01
Benzene	71-43-2	5.0E-03	5.0E-03	5.0E-01	5.0E-01	8.8E-01	1.6E+00
Benzenethiol	108-98-5	3.7E-04	1.0E-03	3.7E-02	1.0E-01		3.9E+00
Benzidine	92-87-5	3.7E-07	1.2E-06	3.7E-05	1.2E-04	2.1E-03	1.2E-02
Benz-a-anthracene	56-55-3	2.0E-04	3.9E-04	2.0E-02			3.4E+00
Benzo-a-pyrene	50-32-8	2.0E-04	2.0E-04	2.0E-02	2.0E-02	6.3E-02	3.4E-01
Benzo-b-fluoranthene	205-99-2	2.0E-04	3.9E-04	2.0E-02	3.9E-02	6.3E-01	3.4E+00
Benzo-k-fluoranthene	207-08-9	1.2E-03	3.9E-03	1.2E-01	3.9E-01	6.3E+00	3.4E+01
Benzo-g,h,i-perylene	191-24-2	1.1E+00	3.1E+00	1.1E+02	3.1E+02	4.1E+03	2.7E+04
Benzoic acid	65-85-0	1.5E+02	4.1E+02	1.5E+04	4.1E+04	6.2E+05	4.1E+06
Benzotrichloride	98-07-7	6.6E-06	2.2E-05	6.6E-04	2.2E-03	3.8E-02	2.2E-01
Benzyl alcohol	100-51-6	1.1E+01	3.1E+01	1.1E+03	3.1E+03	4.6E+04	3.1E+05
Benzyl chloride	100-44-7	5.0E-04	1.7E-03	5.0E-02	1.7E-01	3.8E+00	3.4E+01
Beryllium	7440-41-7	4.0E-03	4.0E-03	4.0E-01	4.0E-01	4.6E+01	2.7E+02
Biphenyl, 1,1-	92-52-4	1.8E+00	5.1E+00	1.8E+02	5.1E+02	1.9E+02	2.7E+02
Bis (2-chloroethoxy) methane	111-91-1	3.9E-07	1.3E-06	3.9E-05	1.3E-04	2.2E-03	1.3E-02
Bis (2-chloroethyl) ether	111-44-4	7.7E-05	2.6E-04	7.7E-03	2.6E-02	1.5E-01	3.2E-01
Bis (2-chloroisopropyl) ether	108-60-1	1.2E-02	4.1E-02	1.2E+00	4.1E+00	4.8E+01	1.5E+02
Bis (2-chloromethyl) ether	542-88-1	3.9E-07	1.3E-06	3.9E-05	1.3E-04	1.1E-04	1.9E-04
Bis (2-ethyl-hexyl) phthalate	117-81-7	6.0E-03	6.0E-03	6.0E-01	6.0E-01	1.7E+01	6.5E+01
Bisphenol A	80-05-7	1.8E+00	5.1E+00	1.8E+02	5.1E+02	7.7E+03	5.1E+04
Boron	7440-42-8	3.3E+00	9.2E+00	3.3E+02	9.2E+02	2.3E+04	1.7E+05
Bromobenzene	108-86-1	7.3E-01	2.0E+00	7.3E+01	2.0E+02	8.0E+00	1.1E+01
Bromodichloromethane	75-27-4	1.0E-01	1.0E-01	1.0E+01	1.0E+01	1.0E+01	9.2E+01
Bromoform	75-25-2	1.0E-01	1.0E-01	1.0E+01	1.0E+01	3.4E+01	8.5E+01
Bromomethane	74-83-9	5.1E-02	1.4E-01	5.1E+00	1.4E+01	3.5E+00	
Bromophenyl phenylether, 4-	101-55-3	5.7E-05	1.9E-04	5.7E-03	1.9E-02	r	1.6E+00
Butadiene, 1,3-	106-99-0					1.8E-02	3.0E-02
Butanol, n-	71-36-3	3.7E+00	1.0E+01	3.7E+02		2.7E+04	
Butyl acrylate	141-32-2	3.3E-01	9.2E-01	3.3E+01	9.2E+01	8.6E+01	1.2E+02
Butylbenzene, n-	104-51-8	1.5E+00		1.5E+02		2.7E+03	
Butylbenzene, sec-	135-98-8	1.5E+00	4.1E+00	1.5E+02	4.1E+02	3.0E+03	5.4E+03
Butylbenzene, tert-	98-06-6	1.5E+00	4.1E+00	1.5E+02	4.1E+02	2.6E+03	
Butylate	2008-41-5	1.8E+00	5.1E+00	1.8E+02	5.1E+02	7.7E+03	5.1E+04
Butyl benzyl phthalate	85-68-7	7.3E+00	2.0E+01	7.3E+02	2.0E+03	3.1E+04	2.0E+05

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(Last update: March 15, 2001)

Contaminant	CAS #	GW-Res (mg/l)	GW-Ind (mg/l)	GWP-Res (mg/kg)	GWP-Ind (mg/kg)		
Cacodylic acid	75-60-5	1.1E-01	3.1E-01	1.1E+01	3.1E+01	(mg/kg) 4.6E+02	(mg/kg)
Cadmium	7440-43-9	5.0E-03	1		1		3.1E+03
Caprolactam	105-60-2	3.0E-03 1.8E+01	5.0E-03	5.0E-01	5.0E-01	2.4E+02°	
Captan	133-06-2	2.4E-02	5.1E+01	1.8E+03 2.4E+00	5.1E+03	7.7E+04	5.1E+05
Carbaryl	63-25-2	2.4E-02 3.7E+00	8.2E-02 1.0E+01	3.7E+00		1.4E+02	
Carbazole	86-74-8	4.3E-03	1.4E-02	3.7E+02	1.0E+03	1.5E+04	1.0E+05
Carbofuran	1563-66-2	4.0E-03	4.0E-02	4.0E+00	1.4E+00 4.0E+00		1.4E+02
Carbon disulfide	75-15-0	4.0E+02 3.7E+00	4.0E-02			7.7E+02 1.0E+03	5.1E+03
Carbon tetrachloride	56-23-5	5.0E-03	5.0E-03	5.0E-01	5.0E-01	3.5E-01	
Carbosulfan	55285-14-8		1.0E+00	3.7E+01	1.0E+02		6.3E-01
Chloral	75-87-6	3.7E+00	1.0E+00	3.7E+02	1.0E+02	2.7E+04	
Chloral hydrate (1,1-ethanediol, 2,2,2-trichloro-)	302-17-0	3.7E+00	1.0E+01	3.7E+02	1.0E+03	2.7E+04 1.5E+04	2.0E+05
Chlordane (technical)	12789-03-6	2.0E-03	2.0E-03	2.0E-01	2.0E-01	1.5E+04 1.6E+00	
Chlordane, cis- (alpha chlordane)	5103-71-9	2.4E-04	8.2E-04	2.4E-02	8.2E-02		1.1E+01
Chlordane, gamma	57-74-9	2.4E-04 2.4E-04	8.2E-04	2.4E-02 2.4E-02	8.2E-02 8.2E-02	1.4E+00 1.8E+00	
Chlorfenvinphos	470-90-6	2.6E-02	7.2E-04	2.6E+00		1.1E+02	1.6E+01 7.2E+02
Chlorine	7782-50-5	4.0E+00	4.0E+00	4.0E+02	4.0E+02	2.0E+04	1.4E+02
Chloroaniline, p-	106-47-8	4.0E-00	4.1E-01	4.0E+02 1.5E+01	4.1E+01	2.0E+04 6.2E+02	
Chlorobenzene	108-90-7	1.0E-01	1.0E-01	1.0E+01	1.0E+01		4.1E+03 5.9E+02
Chlorobenzilate	510-15-6	3.2E-04	1.1E-03	3.2E-02		4.0E+02	
Chlorobromomethane (bromochloromethane)	74-97-5	1.5E+00	4.1E+00	1.5E+02	4.1E+02	2.4E+00	3.4E+02
Chloro-1,3-butadiene, 2-	126-99-8					1.0E+01	
Chlorodifluoromethane	75-45-6						1.4E+01 1.5E+04
Chloroethane (ethyl chloride)	75-00-3	1.5E+01	4.1E+01	1.5E+03	4.1E+03	1.1E+04	
Chloroethoxy ethene, 2- (2-chloroethylvinylether)	110-75-8	7.7E-04	2.6E-03	7.7E-02	2.6E-01	2.1E+00	3.0E+00
Chloroform	67-66-3	1.0E-01	1.0E-01	1.0E+01	1.0E+01	3.1E-01	5.1E-01
Chloromethane	74-87-3	6.6E-02	2.2E-01	6.6E+00	2.2E+01	2.3E+00	3.8E+00
Chloro-3-methylphenol, 4-	59-50-7	1.8E-01	5.1E-01	1.8E+01	5.1E+01		
Chloronaphthalene, 2- (chloronaphthalene, beta)	91-58-7	2.9E+00	8.2E+00	2.9E+02	8.2E+02	1.1E+04	7.1E+04
Chlorophenoi, 2-	95-57-8	1.8E-01	5.1E-01	1.8E+01	5.1E+01		4.0E+03
Chlorophenyl phenylether, 4-	7005-72-3	5.7E-05	1.9E-04	5.7E-03	1.9E-02	2.8E-01	1.2E+00
Chlorotoluene, o- (2-chlorotoluene)	95-49-8	7.3E-01	2.0E+00	7.3E+01		1.5E+03	
Chlorotoluene, p- (4-chlorotoluene)	106-43-4	7.3E-01	2.0E+00	7.3E+01	2.0E+02	3.4E+00	4.8E+00
Chlorpyrifos	2921-88-2	1.1E-01	3.1E-01	1.1E+01	3.1E+01		
	16065-83-1/		1 2002 01 1				
Chromium (III) (total chromium)	7440-47-3	1.0E-01	1.0E-01	1.0E+01	1.0E+01	5.9E+04	3.5E+05
Chromium (VI)	18540-29-9	1.0E-01	1.0E-01	1.0E+01		2.0E+02	
Chrysene	218-01-9	1.2E-02	3.9E-02	1.2E+00	3.9E+00	6.3E+01	3.4E+02
Cobalt	7440-48-4	2.2E+00	6.1E+00	2.2E+02		1.5E+04	
Copper	7440-50-8	1.3E+00	1.3E+00	1.3E+02	1.3E+02	1.0E+04	
Coumaphos	56-72-4	2.6E-01	7.2E-01	2.6E+01		1.1E+03	
Cresol, m- (3-methylphenol)	108-39-4	1.8E+00	5.1E+00	1.8E+02	5.1E+02		5.1E+04
Cresol, o- (2-methylphenol)	95-48-7	1.8E+00	5.1E+00	1.8E+02	5.1E+02		
Cresol, p- (4-methylphenol)	106-44-5	1.8E-01	5.1E-01	1.8E+01	5.1E+01		5.1E+03
Crotonaldehyde	123-73-9	4.5E-04	1.5E-03	4.5E-02	1.5E-01	3.4E+00	
Cumene (isopropylbenzene)	98-82-8	3.7E+00	1.0E+01	3.7E+02	1.0E+03		9.0E+03
Cyanazine	21725-46-2	1.0E-03	3.4E-03	1.0E-01	3.4E-01	5.8E+00	
Cyanide	57-12-5	2.0E-01	2.0E-01	2.0E+01	2.0E+01	5.1E+03	3.7E+04
Cyanogen	460-19-5	1.5E+00	4.1E+00	1.5E+02	4.1E+02		6.0E+00
Cyclohexane	110-82-7	1.8E+02	5.1E+02	1.8E+04	5.1E+04	2.0E-01	2.8E-01
Cyclohexanol	108-93-0	1.8E+02		1.8E+04			

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(Last update: March 15, 2001)

Contaminant	CAS #	GW-Res (mg/l)	GW-Ind (mg/l)	GWP-Res (mg/kg)	GWP-Ind		
Cyclohexanone	108-94-1	1.8E+02	5.1E+02	1.8E+04	(mg/kg) 5.1E+04	(mg/kg)	(mg/kg)
Cyclotetramethylenetetranitramine (HMX)	2691-41-0	1.8E+02	5.1E+02			2.1E+03	3.0E+03
Cyclotrimethylenetrinitramine (RDX)	121-82-4	7.7E-03	2.6E-02	7.7E-01	2.6E+02	1.4E+04	
Cymene (isopropyltoluene)	99-87-6	3.7E+00	1.0Ė+01	3.7E+02		3.6E+01	5.4E+01
DDD	72-54-8	3.7E+00 3.5E-04			1		6.7E+03
DDE	72-55-9	2.5E-04	1.2E-03	3.5E-02	1.2E-01	2.4E+00	1.8E+01
DDT	50-29-3	2.5E-04 2.5E-04	8.4E-04	2.5E-02			1.3E+01
Di-n-butyl phthalate	84-74-2		8.4E-04	2.5E-02	8.4E-02	1.7E+00	1.2E+01
Di-n-octyl phthalate	•	3.7E+00	1.0E+01	3.7E+02			1.0E+05
Diacetone alcohol (4-hydroxy-4-methyl-2-pentanone)	117-84-0	7.3E-01	2.0E+00	7.3E+01	2.0E+02	3.1E+03	2.0E+04
Diallate	123-42-2	1.5E+00	4.1E+00	1.5E+02	4.1E+02		4.1E+04
Diazinon	2303-16-4	1.4E-03	4.7E-03	1.4E-01	4.7E-01	8.0E+00	4.7E+01
Dibenz(a,h)acridine	333-41-5	3.3E-02	9.2E-02	3.3E+00			
Dibenz-a,h-anthracene	226-36-8	7.1E-05	2.4E-04	7.1E-03	2.4E-02	4.1E-01	2.4E+00
Dibenzofuran	53-70-3	2.0E-04	2.0E-04	2.0E-02	2.0E-02		
	132-64-9	1.5E-01	4.1E-01	1.5E+01	4.1E+01	6.2E+02	4.1E+03
Dibromo-3-chloropropane, 1,2-	96-12-8	2.0E-04	2.0E-04	2.0E-02	2.0E-02	3.5E-01	2.0E+00
Dibromochloromethane	124-48-1	1.0E-01	1.0E-01	1.0E+01	1.0E+01	7.6E+01	6.8E+02
Dicamba	1918-00-9	1.1E+00	3.1E+00		3.1E+02		
Dichlorobenzene, 1,2-	95-50-1	6.0E-01	6.0E-01	6.0E+01	6.0E+01	2.6E+03	3.9E+03
Dichlorobenzene, 1,3-	541-73-1	1.1E+00	3.1E+00	1.1E+02	3.1E+02		7.1E+01
Dichlorobenzene, 1,4-	106-46-7	7.5E-02	7.5E-02	7.5E+00	7.5E+00	2.7E+02	2.4E+03
Dichlorobenzidine, 3,3-	91-94-1	1.9E-04	6.4E-04	1.9E-02	6.4E-02	1.1E+00	6.4E+00
Dichloro-2-butene, 1,4-	764-41-0					2.3E-02	3.8E-02
Dichlorodifluoromethane	75-71-8	7.3E+00	2.0E+01	7.3E+02	2.0E+03	2.2E+03	3.1E+03
Dichloroethane, 1,1-	75-34-3	3.7E+00	1.0E+01	3.7E+02	1.0E+03	8.9E+02	1.3E+03
Dichloroethane, 1,2-	107-06-2	5.0E-03	5.0E-03	5.0E-01	5.0E-01	2.7E-01	4.7E-01
Dichloroethylene, 1,1-	75-35-4	7.0E-03	7.0E-03	7.0E-01	7.0E-01	6.0E-01	1.1E+00
Dichloroethylene, cis-1,2-	156-59-2	7.0E-02	7.0E-02	7.0E+00	7.0E+00	1.2E+03	2.5E+03
Dichloroethylene, trans-1,2	156-60-5	1.0E-01	1.0E-01	1.0E+01	1.0E+01	1.4E+03	2.4E+03
Dichlorophenol, 2,4-	120-83-2	1.1E-01	3.1E-01	1.1E+01	3.1E+01	4.6E+02	3.1E+03
Dichlorophenoxyacetic acid, 2,4- (2,4-D)	94-75-7	7.0E-02	7.0E-02	7.0E+00	7.0E+00	2.0E+03	1.4E+04
Dichloropropane, 1,2-	78-87-5	5.0E-03	5.0E-03	5.0E-01	5.0E-01	9.4E+00	
Dichloropropane, 1,3-	142-28-9	8.5E-03	2.9E-02	8.5E-01	2.9E+00	3.0E+01	8.0E+01
Dichloropropane, 2,2-	594-20-7	1.3E-02	4.2E-02	1.3E+00	4.2E+00		
Dichloropropanol, 2,3-	616-23-9	1.1E-01	3.1E-01	1.1E+01	3.1E+01	4.6E+02	3.1E+03
Dichloropropene, 1,1-	563-58-6	8.5E-04	2.9E-03	8.5E-02	2.9E-01	9.9E-01	
Dichloropropene, cis 1,3-	10061-01-5	1.6E-03	5.3E-03	1.6E-01	5.3E-01	1.2E+01	3.4E+01
Dichloropropene, 1,3- (mixed isomers)	542-75-6	8.5E-04	2.9E-03	8.5E-02	2.9E-01		4.2E+00
Dichloropropene, trans 1,3-	10061-02-6	8.5E-03	2.9E-02	8.5E-01	2.9E+00		4.0E+01
Dichlorvos	62-73-7	2.9E-04	9.9E-04	2.9E-02			9.9E+00
Dicyclopentadiene	77-73-6	1.1E+00	3.1E+00	1.1E+02		8.2E+03	
Dieldrin	60-57-1	5.3E-06	1.8E-05	5.3E-04	1.8E-03	3.1E-02	
Diethanolamine	111-42-2	1.8E-02	5.1E-02	1.8E±00			5.1E+02
Diethylene glycol monobutyl ether	112-34-5	3.3E+00	9.2E+00	3.3E+02			
Diethylhexyl adipate	103-23-1	7.1E-01	2.4E+00	7.1E+01			2.4E+04
Diethyl phthalate	84-66-2	2.9E+01	8.2E+01	2.9E+03	8.2E+03		
Diethylstilbestrol	56-53-1	1.8E-08	6.1E-08	1.8E-06	6.1E-06	1.0E-04	6.1E-04
Dimethoate	60-51-5	7.3E-03	2.0E-02	7.3E-00		3.1E+01	
Dimethoxybenzidine, 3,3'-	119-90-4	6.1E-03	2.0E-02 2.0E-02	6.1E-01		•	
Dimethylbenzidine, 3,3'-	119-90-4						2.0E+02
	, ,	9.3E-06	3.1E-05	9.3E-04		5.3E-02	3.1E-01
Dimethyl phenol, 2,4-	105-67-9	7.3E-01	2.0E+00	7.3E+01	2.0E+02	3.1E+03	2.0E+04

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(Last update: March 15, 2001)

		GW-Res	GW-Ind	GWP-Res	GWP-Ind	SAI-Res [®]	SAI-Ind ^a
Contaminant	CAS #	(mg/l)	(mg/l)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Dimethylphthalate	131-11-3	2.9E+01	8.2E+01	2.9E+03	8.2E+03	1.2E+05	8.2E+05
Dinitrobenzene, 1,3- (dinitrobenzene, 2,4-)	99-65-0	3.7E-03	1.0E-02	3.7E-01	1.0E+00	1.5E+01	1.0E+02
Dinitrobenzene, 1,4-	100-25-4	1.5E-02	4.1E-02	1.5E+00	4.1E+00	6.2E+01	4.1E+02
Dinitro-2-methylphenol, 4,6- (dinitro-o-cresol, 4, 6-)	534-52-1	7.3E-02	2.0E-01	7.3E+00	2.0E+01	3.1E+02	2.0E+03
Dinitrophenol, 2,4-	51-28-5	7.3E-02	2.0E-01	7.3E+00	2.0E+01		2.0E+03
Dinitrotoluene, 2,4-	121-14-2	1.3E-04	4.2E-04	1.3E-02	4.2E-02	7.2E-01	4.2E+00
Dinitrotoluene, 2,6-	606-20-2	1.3E-04	4.2E-04	1.3E-02	4.2E-02	7.2E-01	4.2E+00
Dinoseb	88-85-7	7.0E-03	7.0E-03	7.0E-01	7.0E-01	1.5E+02	1.0E+03
Dioxane 1,4-	123-91-1	7.7E-03	2.6E-02	7.7E-01	2.6E+00	5.8E+01	5.2E+02
Diphenylamine	122-39-4	9.1E-01	2.6E+00	9.1E+01	2.6E+02	3.9E+03	2.6E+04
Diphenylhydrazine, 1,2-	122-66-7	1.1E-04	3.6E-04	1.1E-02	3.6E-02	6.1E-01	3.6E+00
Diquat	85-00-7	2.0E-02	2.0E-02	2.0E+00	2.0E+00	3.4E+02	2.2E+03
Disulfoton	298-04-4	1.5E-03	4.1E-02	1.5E-01	4.1E-01		4.1E+01
	330-54-1	7.3E-02	2.0E-01	7.3E+00	2.0E+01	3.1E+02	2.0E+03
Diuron	115-29-7	2.2E-01	6.1E-01	2.2E+01	6.1E+01		9.2E+01
Endosulfan	959-98-8	7.3E-02	2.0E-01	7.3E+00	2.0E+01	3.1E+02	2.0E+03
Endosulfan I		2.2E-01	6.1E-01	2.2E+01			6.1E+03
Endosulfan II	33213-65-9			2.2E+01 2.2E+01	6.1E+01	9.3E+02	6.1E+03
Endosulfan sulfate	1031-07-8	2.2E-01 1.0E-01	6.1E-01		1.0E+01		2.0E+04
Endothall	145-73-3			1.0E+01 2.0E-01	2.0E-01	4.6E+01	3.1E+02
Endrin	72-20-8	2.0E-03	2.0E-03				
Endrin aldehyde	7421-93-4	1.1E-02	3.1E-02	1.1E+00	3.1E+00		•
Endrin ketone	N-McG/D	1.1E-02	3.1E-02	1.1E+00	3.1E+00	4.6E+01	3.1E+02
Epichlorohydrin	106-89-8	8.6E-03	2.9E-02	8.6E-01	2.9E+00	7.2E+00	
Ethion	563-12-2	1.8E-02	5.1E-02	1.8E+00	5.1E+00	7.7E+01	5.1E+02
Ethoxy ethanol, 2-	110-80-5	1.5E+01	4.1E+01		4.1E+03		6.0E+00
Ethyl acetate	141-78-6	3.3E+01	9.2E+01	3.3E+03	9.2E+03	8.9E+03	1.3E+04
Ethyl acrylate	140-88-5	1.8E-03	6.0E-03	1.8E-01	6.0E-01	,	
Ethyl benzene	100-41-4	7.0E-01	7.0E-01	7.0E+01	7.0E+01	4.3E+03	6.9E+03
Ethyl dipropylthiocarbamate, S-	759-94-4	9.1E-01	2.6E+00		2.6E+02		2.6E+04
Ethyl ether	60-29-7	7.3E+00	2.0E+01	7.3E+02	2.0E+03	3.8E+03	5.7E+03
Ethyl methacrylate	97-63-2	3.3E+00	9.2E+00				9.9E+03
Ethyl-2-methyl benzene, 1-	611-14-3	7.3E+00	2.0E+01	7.3E+02	2.0E+03	5.5E+03	8.4E+03
Ethyl-4-methyl benzene, 1-	622-96-8	7.3E+00	2.0E+01	7.3E+02	2.0E+03		
Ethylenediamine	107-15-3	7.3E-01	2.0E+00	7.3E+01	2.0E+02	5.5E+03	4.1E+04
Ethylene dibromide (dibromoethane, 1,2-)	106-93-4	5.0E-05	5.0E-05	5.0E-03	5.0E-03	7.2E-03	
Ethylene glycol	107-21-1	7.3E+01	2.0E+02	7.3E+03	2.0E+04	3.1E+05	2.0E+06
Ethylene oxide	75-21-8	8.3E-05	2.8E-04	8.3E-03	2.8E-02	7.5E-02	1.4E-01
Ethylene thiourea	96-45-7	7.7E-04	2.6E-03	7.7E-02	2.6E-01	4.4E+00	2.6E+01
Famphur	52-85-7	1.1E-03	3.1E-03	1.1E-01	3.1E-01		3.1E+01
Fluoranthene	206-44-0	1.5E+00	4.1E+00	1.5E+02	4.1E+02	5.5E+03	3.6E+04
Fluorene	86-73-7	1.5E+00	4.1E+00	1.5E+02	4.1E+02		
Fluorine (soluble fluoride)	7782-41-4	4.0E+00	4.0E+00	4.0E+02	4.0E+02	1.5E+04	
Formaldehyde	50-00-0	7.3E+00	2.0E+01	7.3E+02	2.0E+03		4.1E+05
Formic acid	64-18-6	7.3E+01	2.0E+02	7.3E+03	2.0E+04	5.5E+05	4.1E+06
Furan	110-00-9	3.7E-02	1.0E-01	3.7E+00	1.0E+01	3.9E+01	6.1E+01
Furfural	98-01-1	1.1E-01	3.1E-01	1.1E+01	3.1E+01	8.2E+02	
Glycidylaldehyde	765-34-4	1.5E-02	4.1E-02		4.1E+00	1.1E+02	8.2E+02
Heptachlor	76-44-8	4.0E-04	4.0E-04	4.0E-02	4.0E-02	9.3E-02	4.1E-01
Heptachlor epoxide	1024-57-3		2.0E-04				3.1E-01
Hexachlorobenzene	118-74-1	1.0E-03	1.0E-03	1.0E-01	1.0E-01	2.5E-01	1.0E+00
						1.6E+01	
Hexachlorobutadiene	87-68-3	7.3E-03	2.0E-02	7.3E-01	2.0E+00	1.6E+01	3.2E+01

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(Last update: March 15, 2001)

		GW-Res	GW-Ind	GWP-Res	GWP-Ind	SAI-Res ^a	SAI-Ind ^a
Contaminant	CAS #	(mg/l)	(mg/l)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Hexachlorocyclohexane, alpha (alpha-BHC)	319-84-6	1.4E-05	4.5E-05	1.4E-03	4.5E-03	9.0E-02	6.5E-01
Hexachlorocyclohexane, beta (beta-BHC)	319-85-7	4.7E-04	1.6E-03	4.7E-02	1.6E-01	3.2E+00	
Hexachlorocyclohexane, gamma (lindane; gamma-BHC	58-89-9	2.0E-04	2.0E-04	2.0E-02	2.0E-02	4.4E-01	3.1E+00
Hexachlorocyclohexane, delta (delta-BHC)	319-86-8	4.7E-05	1.6E-04	4.7E-03	1.6E-02		
Hexachlorocyclohexane, techn (technical-BHC)	608-73-1	4.7E-05	1.6E-04	4.7E-03	1.6E-02	3.2E-01	2.3E+00
Hexachlorocyclopentadiene	77-47-4	5.0E-02	5.0E-02	5.0E+00	5.0E+00		5.0E+00
Hexachloroethane	67-72-1	3.7E-02	1.0E-01	3.7E+00	1.0E+01	1.5E+02	7.5E+02
Hexachlorophene	70-30-4	1.1E-02	3.1E-02	1.1E+00	3.1E+00	4.6E+01	3.1E+02
Hexane, n-	110-54-3	2.2E+00	6.1E+00	2.2E+02	6.1E+02	5.7E+01	8.1E+01
Hexanediol, 1,6-	629-11-8	1.8E+02	5.1E+02	1.8E+04	5.1E+04	7.7E+05	5.1E+06
Hexanoic acid	142-62-1	1.8E+02	5.1E+02	1.8E+04	5.1E+04	7.7E+05	5.1E+06
Hexanone, 2-	591-78-6	2.2E+00	6.1E+00	2.2E+02	6.1E+02	6.2E+01	8.7E+01
Hexazinone	51235-04-2	1.2E+00	3.4E+00	1.2E+02	3.4E+02	5.1E+03	3.4E+04
Hexylene glycol (2-methyl-2,4-pentanediol)	107-41-5	1.1E+01	3.1E+01	1.1E+03	3.1E+03	4.6E+04	3.1E+05
Hydrazine	302-01-2	2.8E-05	9.5E-05	2.8E-03	9.5E-03	2.1E-01	1.9E+00
Indene	95-13-6	7.3E-01	2.0E+00			7.9E+01	
Indeno-1,2,3-cd-pyrene	193-39-5	2.0E-04	3.9E-04	2.0E-02	3.9E-02	6.3E-01	3.4E+00
Isobutyl alcohol	78-83-1	1.1E+01		1.1E+03	3.1E+03	3.0E+03	
Isodrin	465-73-6	5.0E-06	1.7E-05	5.0E-04	1.7E-03	2.8E-02	1.6E-01
Isopropyl alcohol	67-63-0	7.3E+00	2.0E+01	7.3E+02	2.0E+03		4.1E+05
	78-59-1	9.0E-01	3.0E+00	9.0E+01	3.0E+02	5.2E+03	3.0E+04
Isophorone	143-50-0	5.3E-06	1.8E-05	5.3E-04	1.8E-03	3.1E-02	1.8E-01
Kepone (chlordecone)	, .		•	•	1.5E+00	5.0E+02 ^d	
Lead (inorganic)	7439-92-1	1.5E-02	1.5E-02	1.5E+00			2.4E+05
Lithium	7439-93-2	4.7E+00	1.3E+01	4.7E+02	1.3E+03	3.1E+03	2.4E+03 2.0E+04
Malathion	121-75-5	7.3E-01	2.0E+00	7.3E+01	2.0E+02		
Maleic anhydride	108-31-6	3.7E+00	1.0E+01	3.7E+02	,	1.5E+04	
Maleic hydrazide	123-33-1	1.8E+01	5.1E+01	1.8E+03	5.1E+03	7.7E+04	5.1E+05
Malononitrile	109-77-3	7.3E-04	2.0E-03	7.3E-02	2.0E-01	3.1E+00	
Manganese	7439-96-5	1.7E+00	1.4E+01	1.7E+02	1.4E+03	1.7E+04	1.1E+05
Mercury $(pH = 4.9)$	7439-97-6	2.0E-03	2.0E-03	2.0E-01	2.0E-01		1.5E-01
Mercury $(pH = 6.8)$	7439-97-6	2.0E-03	2.0E-03	2.0E-01	2.0E-01	6.1E+00	9.6E+00
Methacrylic acid (2-methyl-2-propenoic acid)	79-41-4	3.7E-01	1.0E+00				
Methacrylonitrile	126-98-7	3.7E-03	1.0E-02	3.7E-01	1.0E+00	1.1E+01	2.2E+01
Methanol	67-56-1	1.8E+01	5.1E+01	1.8E+03	5.1E+03	1.4E+05	1.0E+06
Methomyl	16752-77-5	9.1E-01	2.6E+00	9.1E+01	2.6E+02	3.9E+03	2.6E+04
Methoxychlor	72-43-5	4.0E-02	4.0E-02	4.0E+00	4.0E+00	•	
Methoxyethanol, 2-	109-86-4					6.1E+00	8.5E+00
Methyl acetate (acetic acid, methyl ester)	79-20-9	1.5E+00	4.1E+00	1.5E+02	4.1E+02	1.8E+03	2.9E+03
Methyl chrysene, 1-	3351-28-8	1.2E-01	3.9E-01	1.2E+01	3.9E+01	6.3E+02	3.4E+03
Methyl chrysene, 2-	3351-32-4	1.2E-01	3.9E-01	1.2E+01	3.9E+01		3.4E+03
Methyl cyclohexane	108-87-2	1.8E+02	5.1E+02	1.8E+04	5.1E+04		5.3E+03
Methyl ethyl ketone (2-butanone)	78-93-3	2.2E+01	6.1E+01	2.2E+03	6.1E+03	•	8.6E+03
Methyl iodide (iodomethane)	74-88-4	5.1E-02	1.4E-01	5.1E+00	1.4E+01	1.8E+01	2.6E+01
Methyl isobutyl ketone	108-10-1	2.9E+00	8.2E+00	2.9E+02		2.0E+03	
Methyl mercury	22967-92-6	3.7E-03	1.0E-02	3.7E-01	1.0E+00	2.5E+01	1.9E+02
Methyl methacrylate	80-62-6	5.1E+01	1.4E+02	5.1E+03	1.4E+04		
Methylpyrrolidone, N-	872-50-4	7.3E-01	2.0E+00	7.3E+01	2.0E+02		2.0E+04
Methylnaphthalene, 1-	90-12-0	7.3E-01	2.0E+00		2.0E+02	2.7E+03	1.8E+04
Methylnaphthalene, 2-	91-57-6	7.3E-01	2.0E+00	7.3E+01	2.0E+02	2.7E+03	1.8E+04
Methyl parathion	298-00-0	9.1E-03	2.6E-02		2.6E+00	3.9E+01	2.6E+02
Methylene bromide (dibromomethane)	74-95-3	1.1E-01	3.8E-01	1.1E+01	3.8E+01	1.9E+02	2.7E+02
Internatione oronnue (anoronnomentane)				*****	*****		**************************************

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(Last update: March 15, 2001)

		GW-Res	GW-Ind	GWP-Res	GWP-Ind	SAI-Res*	SAI-Ind ^a
Contaminant	CAS #	(mg/l)	(mg/l)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Methylene-bis (2-chloroaniline) 4,4'-	101-14-4	6.6E-04	2.2E-03	6.6E-02	2.2E-01	3.8E+00	
Methylene chloride (dichloromethane)	75-09-2	5.0E-03	5.0E-03	5.0E-01	5.0E-01	8.7E+00	1.6E+01
Methyltetrahydrofuran, 2-	96-47-9	1.1E-01	3.8E-01	1.1E+01	3.8E+01		1.3E+02
Methyltetrahydropyran, 2-	10141-72-7	1.1E-01	3.8E-01	1.1E+01	3.8E+01		2.0E+02
Metolachlor	51218-45-2	5.5E+00	1.5E+01	5.5E+02	1.5E+03		1.5E+05
Molinate	2212-67-1	7.3E-02	2.0E-01	7.3E+00	2.0E+01	3.1E+02	2.0E+03
Molybdenum	7439-98-7		5.1E-01			1.1E+03	
Morpholine	110-91-8	1.8E+04	5.1E+04	1.8E+06	5.1E+06	1.4E+08	1.0E+09
		3.7E-01/	1.0E+00/				
МТВЕ	1634-04-4	1.5E-02 ^e	1.5E-02 ^e	3.7E+01	1.0E+02	1.5E+03	3.7E+03
Naled	300-76-5	7.3E-02	2.0E-01	7.3E+00	2.0E+01	1.1E+02	2.2E+02
Naphthalene	91-20-3	7.3E-01	2.0E+00	7.3E+01	2.0E+02	1.8E+02	
Nickel and compounds	7440-02-0	7.3E-01	2.0E+00	7.3E+01	2.0E+02	1.9E+03	1.2E+04
Nitrate	14797-55-8	1.0E+01	1.0E+01	1.0E+03	1.0E+03	4.1E+05	
Nitrite	່ 14797-65-0່	1.0E+00	1.0E+00	1.0E+02	, 1.0E+02 ,	2.5E+04	1.9E+05
Nitroaniline, 2-	88-74-4	1.1E-02	3.1E-02	1.1E+00		4.6E+01	
Nitroaniline, 3-	99-09-2	1.1E-02	3.1E-02	1.1E+00	່ 3.1E+00 ່	4.6E+01	3.1E+02
Nitroaniline, 4-	100-01-6	2.2E-02	7.5E-02	2.2E+00		1.3E+02	
Nitrobenzene	98-95-3	1.8E-02	5.1E-02	1.8E+00	5.1E+00	6.5E+01	2.7E+02
Nitropropane, 2-	79-46-9					4.2E-03	7.0E-03
Nitroso-n-ethylurea, n-	759-73-9	6.1E-07	2.0E-06	, 6.1E-05	2.0E-04	3.5E-03	2.0E-02
Nitroso-methyl-ethyl-amine, n-	10595-95-6		1.3E-05	3.9E-04	1.3E-03	2.9E-02	2.6E-01
Nitrosodi-n-butylamine, n-	924-16-3	1.6E-05	5.3E-05	1.6E-03	່ 5.3E-03 ່	4.1E-02	1.0E-01
Nitrosodi-n-propylamine, n-	621-64-7	1.2E-05	4.1E-05	1.2E-03	4.1E-03	4.1E-02	1.6E-01
Nitrosodiethanolamine	1116-54-7	3.0E-05	1.0E-04	3.0E-03	1.0E-02	1.7E-01	1.0E+00
Nitrosodiethylamine, n-	55-18-5	5.7E-07	1.9E-06	5.7E-05	1.9E-04	4.3E-03	3.8E-02
Nitrosodimethylamine, n-	62-75-9	1.7E-06	5.6E-06	1.7E-04	5.6E-04	1.3E-02	1.1E-01
Nitrosodiphenylamine	86-30-6	1.7E-02	5.8E-02	1.7E+00	5.8E+00		
Nitrophenol, 2-	88-75-5	7.3E-02	2.0E-01	7.3E+00	2.0E+01	3.1E+02	2.0E+03
Nitrophenol, 4-	100-02-7	7.3E-02	2.0E-01	7.3E+00	2.0E+01	3.1E+02	2.0E+03
Nitrosopyrrolidine, n-	930-55-2	4.1E-05	1.4E-04	4.1E-03	1.4E-02	2.3E-01	1.4E+00
Nitrotoluene, m-	99-08-1	3.7E-01	1.0E+00	3.7E+01	1.0E+02	4.4E+02	7.9E+02
Nitrotoluene, o-	88-72-2	3.7E-01	1.0E+00	3.7E+01	1.0E+02	4.7E+02	8.6E+02
Nitrotoluene, p-	99-99-0	3.7E-01	1.0E+00	3.7E+01	1.0E+02	4.4E+02	7.9E+02
Octamethylpyrophosphoramide	152-16-9	7.3E-02	2.0E-01	7.3E+00	2.0E+01	3.1E+02	2.0E+03
Oxamyl	23135-22-0	2.0E-01	2.0E-01	2.0E+01	2.0E+01	3.9E+03	2.6E+04
Parathion (ethyl parathion)	56-38-2	2.2E-01	6.1E-01	2.2E+01	6.1E+01	9.3E+02	6.1E+03
Pebulate	1114-71-2	1.8E+00	5.1E+00	1.8E+02	5.1E+02	7.7E+03	5.1E+04
Pendimethalin	40487-42-1	1.5E+00	4.1E+00	1.5E+02	4.1E+02	6.2E+03	4.1E+04
Pentachlorobenzene	608-93-5	2.9E-02	8.2E-02	2.9E+00	8.2E+00	1.2E+02	8.0E+02
Pentachloronitrobenzene	82-68-8	3.3E-03	1.1E-02	3.3E-01	1.1E+00		1.1E+02
Pentachlorophenol	87-86-5	1.0E-03	1.0E-03	1.0E-01	1.0E-01		
Pentanediol, 1,5-	111-29-5	1.8E+02	5.1Ė+02	1.8E+04	5.1E+04	7.7E+05	
Perchlorate	NA	2.2E-02 ^f	9.2E-02	2.2E+00 ^f	9.2E+00	6.6E+01 ^f	1.2E+03
Phenanthrene	85-01-8	1.1E+00	3.1E+00	1.1E+02	3.1E+02	4.1E+03	
Phenol	108-95-2	2.2E+01	6.1E+01	2.2E+03			
Phenyl mercuric acetate	62-38-4	2.9E-03	8.2E-03	2.9E-01	8.2E-01	1.2E+01	8.2E+01
Phenylene diamine, m-	108-45-2	2.2E-01	6.1E-01	2.2E+01		9.3E+02	
Phenylene diamine, p-	106-50-3	6.9E+00	1.9E+01	6.9E+02	1.9E+03	2.9E+04	1.9E+05
Phorate	298-02-2	7.3E-03	2.0E-02	7.3E-01	2.0E+00		•
Phosphine	7803-51-2	1.1E-02	3.1E-02	1.1E+00	3.1E+00	5.9E+01	4.1E+02

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(Last update: March 15, 2001)

		GW-Res	GW-Ind	GWP-Res	GWP-Ind	SAI-Res ^a	SAI-Ind ^a
Contaminant	CAS #	(mg/l)	(mg/l)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Phosphorus, white	7723-14-0	7.3E-04	2.0E-03	7.3E-02	2.0E-01	4.0E+00	and and a second state and second
Phthalic anhydride	85-44-9	7.3E+01	2.0E+02	7.3E+03	2.0E+04	3.1E+05	2.0E+06
Polybrominated biphenyls (PBBs)	67774-32-7	9.6E-06	3.2E-05	9.6E-04	3.2E-03	5.5E-02	3.2E-01
Polychlorinated biphenyls (PCBs)	1336-36-3	5.0E-04	5.0È-04	5.0E-02	5.0E-02	1.0E+01 ^g	1.0E+01 ⁸
Pronamide	23950-58-5		7.7E+00	2.7E+02		1.2E+04	
Propargite	2312-35-8	7.3E-01	2.0E+00	7.3E+01	2.0E+02	3.1E+03	2.0E+04
Propargyl alcohol	107-19-7	7.3E-02	2.0E-01	7.3E+00		5.5E+02	
Propham	122-42-9	7.3E-01	2.0E+00	7.3E+01	2.0E+02	3.1E+03	2.0E+04
Propionitrile (propane nitrile)	107-12-0	1.5E-02	4.1E-02		4.1E+00	4.3E+01	
Propylbenzene, n-	103-65-1	1.5E+00	4.1E+00	1.5E+02	4.1E+02	3.2E+03	5.9E+03
Propylene glycol	57-55-6	7.3E+02	2.0E+03	7.3E+04	2.0E+05		2.0E+07
Propylene glycol monomethyl ether	107-98-2	2.6E+01	7.2E+01	2.6E+03	7.2E+03		1.4E+06
Propylene oxide	75-56-9	3.5E-04	1.2E-03	3.5E-02	1.2E-01		3.1E+00
Pyrene	129-00-0	1.1E+00	3.1E+00	1.1E+02	3.1E+02	4.1E+03	2.7E+04
Pyridine	110-86-1	3.7E-02	1.0E-01	3.7E+00			
Quinoline	91-22-5	7.1E-05	2.4E-04	7.1E-03	2.4E-02	4.1E-01	2.4E+00
Selenium	7782-49-2	5.0E-02	5.0E-02	5.0E+00		1.3E+03	
Selenourea	630-10-4	1.8E-01	5.1E-01	1.8E+01	5.1E+01	1.4E+03	1.0E+04
Silver	7440-22-4	1.8E-01	5.1E-01	1.8E+01			
Sodium diethyldithiocarbamate	148-18-5	3.2E-03	1.1E-02	3.2E-01	1.1E+00	2.4E+01	2.1E+02
· ·	57-24-9	1.1E-02	3.1E-02				3.1E+02
Strychnine	100-42-5	1.0E-01	1.0E-01	1.0E+01	1.0E+01	1.3E+04	2.3E+04
Styrene	126-33-0	7.3E-04	2.0E-03	7.3E-02	2.0E-01		2.0E+01
Sulfolane	994-05-8	1.5E+00	4.1E+00	1.5E+02	4.1E+02		8.2E+04
Tert-amyl-methyl ether (TAME)	634-90-2	1.1E-02	3.1E-02	1.1E+00	3.1E+00		3.1E+02
Tetrachlorobenzene, 1,2,3,5-	95-94-3	1.1E-02	3.1E-02	1.1E+00	3.1E+00	4.6E+01	3.0E+02
Tetrachlorobenzene, 1,2,4,5-	630-20-6	3.3E-02	1.1E-01	3.3E+00			1.0E+02
Tetrachloroethane, 1,1,1,2-	79-34-5	4.3E-03	1.4E-02	4.3E-01	1.4E+00	5.1E+00	9.8E+00
Tetrachloroethane, 1,1,2,2-	127-18-4	5.0E-03	5.0E-03		5.0E-01		1.7E+01
Tetrachloroethylene	58-90-2	1.1E+00	3.1E+00	1.1E+02	3.1E+02	4.6E+03	3.1E+04
Tetrachlorophenol, 2,3,4,6-	3689-24-5		5.1E-02	1.8E+00		7.7E+01	
Tetraethyl dithiopyrophosphate (Sulfotep)	109-99-9	1.1E-01	3.8E-01	1.1E+01	3.8E+01	5.4E+01	9.5E+01
Tetrahydrofuran	142-68-7	1.1E-01	3.8E-01			8.5E+01	
Tetrahydropyran	78-00-2	3.7E-06	1.0E-05	3.7E-04	1.0E-03	1.5E-02	9.7E-02
Tetraethyl lead	7791-12-0	2.0E-03	2.0E-03		2.0E-01		1.5E+02
Thallium and compounds (as thallium chloride)	39196-18-4	1.1E-02	3.1E-02	1.1E+00	3.1E+00	4.6E+01	3.1E+02
Thiofanox	23564-05-8		8.2E+00		8.2E+02		8.2E+04
Thiophanate-methyl	137-26-8	1.8E-01	5.1E-01	1.8E+01	5.1E+01	7.7E+02	5.1E+03
Thiram	7440-31-5	2.2E+01	6.1E+01		6.1E+03		
Tin	7440-31-5	1.8E+04	5.1E+01	1.8E+06	5.1E+06		2.4E+08
Titanium	108-88-3		1.0E+00				2.4E+03
Toluene		1.0E+00 2.7E-05	8.9E-05	2.7E-03	8.9E-03	1.5E-01	
Toluenediamine, 2,4-	95-80-7						2.0E+05
Toluenediamine, 2,6-	823-40-5	7.3E+00	2.0E+01	↓ 7.3E+02	2.02+03		4.1E+02
Toluene diisocyanate, 2,4/2,6-	26471-62-5		1.5E-02		1.5E+00		1.5E+02
Toluidine, p-	106-49-0	4.5E-03	3.0E-02	3.0E-01	3.0E-01	4.4E-01	2.6E+00
Toxaphene	8001-35-2	3.0E-03					8.2E+03
TP Silvex, 2,4,5-	93-72-1	5.0E-02	5.0E-02		1.3E+02		
Triallate	2303-17-5	4.7E-01	1.3E+00				9.5E+02
Triaminotrinitrobenzene (TATB)	3058-38-6	2.8E-02	9.5E-02		3.1E+00	4.6E+01	3.1E+02
Tributyltin oxide	56-35-9	1.1E-02	3.1E-02	1.1E+00			6.0E+04
Trichloro-1,2,2-trifluoroethane, 1,1,2-	76-13-1	1.1E+03	3.1E+03	1.1E+05	1 J.IETV)	; 4 .JETV4	

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Updated Examples of Standard No. 2, Appendix II Medium-Specific Concentrations (MSCs)

(Last update: March 15, 2001)

Contaminant	CAS #	GW-Res (mg/l)	GW-Ind (mg/l)	GWP-Res	GWP-Ind	SAI-Res*	
Trichlorobenzene, 1,2,3-	87-61-6	1.1E-01	Washington and a state of the second s	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Trichlorobenzene, 1,2,4-	120-82-1	7.0E-02	3.1E-01	1.1E+01	3.1E+01	4.2E+02	2.0E+03
Trichlorobenzene, 1,3,5-	108-70-3	1.1E-01	7.0E-02	7.0E+00	7.0E+00		6.1E+03
Trichloroethane, 1,1,1-	71-55-6	2.0E-01	3.1E-01	1.1E+01	3.1E+01	3.7E+02	1.4E+03
Trichloroethane, 1,1,2-	79-00-5	5.0E-01	2.0E-01	2.0E+01	2.0E+01	2.3E+03	3.4E+03
Trichloroethylene	79-01-6	5.0E-03	5.0E-03	5.0E-01	5.0E-01	9.7E+00	1.7E+01
Trichlorofluoromethane	75-69-4	1.1E+01	5.0E-03	5.0E-01	5.0E-01	3.7E+00	6.6E+00
Trichlorophenol, 2,4,5-	95-95-4		3.1E+01	1.1E+03	3.1E+03	2.6E+03	3.8E+03
Trichlorophenol, 2,4,6-	88-06-2	3.7E+00	1.0E+01	3.7E+02	1.0E+03	1.5E+04	
Trichlorophenoxyacetic acid, 2,4,5-		7.7E-03	2.6E-02	7.7E-01	2.6E+00	4.4E+01	2.6E+02
Trichloropropane, 1,1,2-	93-76-5	3.7E-01	1.0E+00	3.7E+01		1.5E+03	1.0E+04
Trichloropropane, 1,2,3-	598-77-6	1.8E-01	5.1E-01	1.8E+01	5.1E+01		2.7E+02
Triethanolamine	96-18-4	1.2E-05	4.1E-05	1.2E-03	4.1E-03	9.1E-02	8.2E-01
Triethylamine	102-71-6	7.3E+00	2.0E+01	7.3E+02	2.0E+03	3.1E+04	2.0E+05
Triethylphosphorothioate, O, O, O-	121-44-8					3.7E+01	
Trifluralin	126-68-1	3.0E-04	8.5E-04	3.0E-02	8.5E-02	1.3E+00	8.5E+00
Trimethylbenzene, 1,2,3-	1582-09-8	1.1E-01	3.7E-01	1.1E+01	3.7E+01		3.7E+03
Trimethylbenzene, 1,2,4-	526-73-8	1.8E+00	5.1E+00	1.8E+02	5.1E+02	8.6E+01	1.2E+02
Trimethylbenzene, 1,3,5-	95-63-6	1.8E+00	5.1E+00	1.8E+02		9.6E+01	1.4E+02
Trinitrobenzene, 1,3,5-	108-67-8	1.8E+00	5.1E+00	1.8E+02	5.1E+02	8.3E+01	1.2E+02
	99-35-4	1.1E+00	3.1E+00		3.1E+02	4.6E+03	3.1E+04
Trinitrophenylmethylnitramine (tetryl; nitramine) Trinitrotoluene, 2,4,6-	479-45-8	3.7E-01	1.0E+00	3.7E+01	1.0E+02	1.5E+03	1.0E+04
	118-96-7	1.8E-02	5.1E-02	1.8E+00		7.7E+01	5.1E+02
Uranium (soluble saits)	7440-61-1	2.0E-02	2.0E-02	2.0E+00		7.6E+02	5.6E+03
Valeric acid (pentanoic acid)	109-52-4	1.8E+02	5.1E+02	1.8E+04	5.1E+04	7.7E+05	5.1E+06
Vanadium Vernam	7440-62-2	2.6E-01	7.2E-01	2.6E+01		4.8E+02	3.0E+03
1	1929-77-7	3.7E-02	1.0E-01	3.7E+00	1.0E+01	1.5E+02	1.0E+03
Vinyl acetate	108-05-4	3.7E+01	1.0E+02	3.7E+03		5.7E+02	8.0E+02
Vinyl chloride	75-01-4	2.0E-03	2.0E-03	2.0E-01		3.6E-02	6.6E-02
Warfarin	81-81-2	1.1E-02	3.1E-02	1.1E+00	3.1E+00	4.6E+01	3.1E+02
Xylene, m-	108-38-3	1.0E+01	1.0E+01	1.0E+03	1.0E+03		3.3E+03
Xylene, o-	95-47-6	1.0E+01	1.0E+01	1.0E+03	1.0E+03		4.8E+04
Xylene, p-	106-42-3	1.0E+01	1.0E+01	1.0E+03	1.0E+03	2.7E+03	3.8E+03
Xylenes	1330-20-7	1.0E+01	1.0E+01	1.0E+03	1.0E+03		3.6E+03
Zinc	7440-66-6	1.1E+01	3.1E+01	1.1E+03	3.1E+03	5.9E+04	4.1E+05
6 C aliphatics (TPH)	NA	2.2E+00	6.1E+00	2.2E+02			2.1E+02
>6-8 C aliphatics (TPH)	NA	2.2E+00	6.1E+00	2.2E+02			4.2E+02
>8-10 C aliphatics (TPH)	NA	3.7E+00	1.0E+01	3.7E+02			4.8E+03
>10-12 C aliphatics (TPH)	NA	3.7E+00	1.0E+01	3.7E+02			1.0E+04
>12-16 C aliphatics (TPH)	NA	3.7E+00	1.0E+01	3.7E+02	1.0E+03	8.2E+03	2.0E+04
>16-21 C aliphatics (TPH)	NA	7.3E+01	2.0E+02	7.3E+03	2.0E+04	3.1E+05	2.0E+06
>16-21 C, >21-35 C aliphatics (TPH) (for transformer		-		,		· 1	
mineral oil releases only)	NA	5.8E+01	1.6E+02	5.8E+03	1.6E+04	2.5E+05	1.6E+06
>7-8 C aromatics (TPH)	NA	3.7E+00		3.7E+02		3.7E+03	
>8-10 C aromatics (TPH)	NA	1.5E+00	4.1E+00			•	2.8E+03
>10-12 C aromatics (TPH)	NA	1.5E+00				2.7E+03	
>12-16 C aromatics (TPH)	NA	1.5E+00	4.1E+00				1.1E+04
>16-21 C aromatics (TPH)	NA	1.1E+00				4.1E+03	
>21-35 C aromatics (TPH)	NA	1.1E+00	3.1E+00		•	4.1E+03	
	1	-					
Footnotes	I	I	1	1	i	1	

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Updated Examples of Standard No. 2, Appendix II Medium-Specific Concentrations (MSCs)

(Last	update:	March	15, 2	2001)
			· · · ·	
		18 July 19 19		

		GW-Res	GW-Ind	GWP-Res	GWP-Ind	SAI-Res ^a	SAI-Ind [*]
Contaminant ·	CAS #	(mg/l)	(mg/l)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)

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"SAI was originally defined as "Soil/Air and Ingestion Standard." However, the SAI values provided in this table include the soil dermal absorption pathway where appropriate as well.

^bThe SAI-Res (20 mg/kg) and SAI-Ind (200 mg/kg) values for arsenic are based on the cleanup levels established by the Executive Director (interoffice memos entitled "Arsenic Soil Cleanup Standards" from Dan Pearson on May 19, 1995 and "Arsenic Soil Cleanup Standards for Commercial/Industrial Areas" from Jeff Saitas on September 11, 1998, respectively).

^cThe SAI-Res MSC value for cadmium does <u>NOT</u> account for vegetable ingestion. Please include this pathway when warranted due to site-specific conditions.

^dThe SAI-Res and SAI-Ind values for lead were calculated using the USEPA Lead Uptake/Biokinetic Model and the USEPA Model for Assessing Risks Associated with Adult Exposures to Lead in Soil, respectively.

The first value for MTBE represents the health-based value; the second value for MTBE is based on odor and taste.

The GW-Res, GWP-Res, and SAI-res values for perchlorate are specifically set to address a childhood exposure scenario, due to the potential for the unique toxicity of perchlorate to children.

⁸The SAI-Res and SAI-Ind value for PCBs (10 mg/kg) is based on the TSCA limit defined in 40 CFR 761.125. An alternate cleanup level of 25 mg/kg may be appropriate for certain industrial sites, provided the site meets the requirements for a restricted access site (i.e., > 0.1 km from a residential/commercial area limited by man-made barriers) as defined in TSCA 40 CFR 761.123.

Appendix H

Texas Specific Background Concentrations

Texas Natural Resource Conservation Commission

INTEROFFICE MEMORANDUM

То:	Remediation Division Project Managers	Date:	June 28, 2000	
Thru:	Jacqueline S. Hardee, P.E., Director Remediation Division	t (Initialed JS	'H)	
From:	Chet Clarke, Manager (Initialed WI Technical Support Section	DC)		
Subject:	Using non-site specific background Reduction Rules.	assumptions	under the 30 TAC 335 Ri	isk

As stated in Section VI.3 of the TNRCC Interoffice Memorandum dated July 23, 1998, regarding Implementation of the Existing Risk Reduction Rule, commonly referred to as the "Consistency Document," background concentrations established under the Risk Reduction Rule (30 TAC 335) must be established site-specifically and that Soil Conservation Survey or U.S. Geological Survey reports should not be used to characterize site-specific background for soils. The general policy regarding background as stated in the Consistency Document stands but is now modified to address situations when background cannot be established site-specifically. These situations are limited to sites without appropriate locations being available, due to the extent of contamination from releases or presence of physical barriers, to collect natural background concentration data which are reasonably proximal or within the same environmental media as the affected media of interest. In situations where there are no appropriate locations to collect natural background concentration data, persons may use the following table to determine background concentrations. Otherwise, the person must set background site-specifically. Quantification of anthropogenic background likely will not be influenced by these location constraints and should continue to be based on sample locations beyond the release site.

Texas-Spec	ific Background Concentration
Metal	Median Background Concentration (mg/kg)
Aluminum	30,000
Antimony	1
Arsenic	5.9
Barium	300
Beryllium	1.5

Using non-site specific background assumptions under the Ch. 335 Risk Reduction Rule Page 2 June 28, 2000

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Boron	30
Total Chromium	30
Cobalt	7
Соррег	15 .
Fluorine	190 ~
Iron	15,000
Lead	15
Manganese	300
Mercury	0.04
Nickel	10
Selenium	0.3
Strontium	100
Tin	0.9
Titanium	2,000
Thallium	9.3
Vanadium	50
Zinc	30

Additional constituents may be added to this table as information becomes available.

Appendix I

TNRCC Letter September 24, 2001 " Robert J. Huston, *Chairman* R. B. "Ralph" Marquez, *Commissioner*

John M. Baker, *Commissioner* Jeffrey A. Saitas, *Executive Director*



TEXAS NATURAL RESOURCE CONSERVATION COMMISSION

Protecting Texas by Reducing and Preventing Pollution

September 24, 2001

CERTIFIED MAIL #5753 RETURN RECEIPT REQUESTED

EERINWATER

Ms. Lisa Lawson Project Manager Department of the Army U.S. Corps of Engineers, Tulsa District 1645 South 101st East Avenue Tulsa, OK 74128-4609

RE: Comments and Notice of Deficiency <u>Expanded Site Investigation</u>, dated January 16, 2001 (ESI) Former Atlas Missile Site No. 7, Vernon, Texas TNRCC Facility ID No. T1641

Dear Ms. Lawson:

The Texas Natural Resource Conservation Commission (TNRCC) has received the above referenced ESI received in our offices on April 19, 2001 under a cover letter dated April 16, 2001. Based on our review, the TNRCC cannot approve the ESI at this time. Please submit a revised report which addresses the enclosed comments and deficiencies.

An original and one copy of the written response to these comments and deficiencies must be submitted to the TNRCC at the letterhead address using mail code number MC-127. An additional copy should be submitted to the TNRCC Region 3 Office in Abilene.

Due to concerns for groundwater contamination, the TNRCC is requesting expedited reporting of groundwater sampling results and a schedule for additional site characterization. The deadlines are provided in the enclosure. The facility name, location and identification number(s) in the TNRCC reference line above should be included in your response.

Please note that it is the continuing obligation of persons associated with a site or facility to ensure that industrial solid wastes and/or municipal hazardous wastes are managed in such a way that it does not cause a discharge of wastes or an imminent threat of discharge, nor a nuisance or an endangerment to either human health or the environment as required by 30 TAC §335.4. Be advised that the burden remains upon the owner/operator to take necessary and authorized action to correct such conditions whenever they exist.

P.O. Box 13087 • Austin, Texas 78711-3087 • 512/239-1000 • Internet address: www.tnrcc_state_tx.us

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TNRCC letter dated September 24, 2001 ENCLOSURE TNRCC Facility ID No. T1641

Comments and Deficiencies Expanded Site Investigation, dated January 16, 2001 (ESI) Atlas Missile Site No. 7

- 1. Non-residential land use and cleanup standards for the former missile site are acceptable to the TNRCC if the current owners and lessees give their concurrence in writing. The ESI indicates that the site is currently owned by the Northside Independent School District No. 905 of Vernon, Texas. The school district reportedly allows other organizations to use the site; however, the ESI does not indicate whether the other organizations are lessees. Regardless, the TNRCC requires that owner/operators agree in writing with any closure/remediation standard in excess of Risk Reduction Standard 1 (RRS 1, background/PQL) and a non-residential land use.
- 2. We agree with the conclusion on page 5-11 that additional testing to establish background is appropriate. In fact, background must be established for both soils and groundwater.

As stated in the June 28, 2000 TNRCC Interoffice Memorandum, background must be set site-specifically. The background soil values listed in the Texas Risk Reduction Program (TRRP, 30 Texas Administrative Code (TAC) § 350) cannot be used at a site closing under the Risk Reduction Rules (RRR, 30 TAC §335, Subchapter S). Use of the background values listed in the table is for sites closing under the Risk Reduction Rules (RRR) that cannot establish site-specific background because all soils have been impacted by site activities. That is not the case at this site.

- 3. The extent of contamination in excess of background or Practical Quantitation Limits (PQL) must be defined under the RRR. The owner/operators and the TNRCC may accept that the entire site has been impacted; however, USACE must still establish that Constituents of Concern (COC) do not extend off-site in excess of background/PQL without consent of the adjacent landowner.
- 4. PQLs are still in excess of health-based limits for some constituents, particularly benzo(a)anthracene, benzo(a)pyrene, benzo(b)fhuoranthene. These COCs were seen in borehole BH07-S-00 in excess of the Method Detection Limit (MDL) and RRS 2 values. Other sample results were not reported down to the MDL as discussed in the TNRCC's last letter (screening procedure). As a result, the USACE cannot verify that the site meets the cleanup criteria for these COCs unless the lab still can provide estimated analytical results down to the MDL.

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TNRCC letter dated September 24, 2001 ENCLOSURE TNRCC Facility ID No. T1641

> Regardless, the USACE must continue to test for the SVOCs listed in the Appendix H.2 table using analytical methods capable of attaining the lowest PQL possible. (See next Comment.)

- 5. In addition to the constituents listed as detected in soils on page 5-3, the USACE must define the extent of any COC in excess of RRS 1.
- 6. The extent of groundwater contamination, particularly TCE in the upper aquifer, is essential for compliance. The USACE must drill additional wells upgradient and downgradient of MW-08 to find not only the downgradient extent, but also the source of the contamination. The nearby cooling towers are an unlikely source for significant VOCs.
- 7. The deep well must be downgradient of the missile silo to provide any significant conclusions regarding the potential releases from the bottom of the silo. Geologic and hydrogeologic literature may present local groundwater flow trends for the San Angelos Formation (deep aquifer). It is likely even the deep aquifer is influenced by the Red River a few miles to the north.
- 8. The TNRCC suggests that the USACE consider leachate tests to determine site-specific soil to groundwater protection values (GWP), in accordance with 30 TAC §335.559(g).
- 9. Please conduct a survey of all wells within one half mile of the site. The survey should describe the location, well owners, well construction details, depth of well and screened interval(s), producing aquifer(s), and current status of the well. A map depicting the well locations should accompany the report.
- 10. Please depict the former missile site's drinking water supply well on subsequent maps, including all groundwater related maps. In addition, please indicate what the status of the well is.
- 11. The discovery of 140 micrograms per liter (ug/l) TCE in the upper aquifer is a very significant finding, particularly when the aquifer is a major drinking water supply for the area with wells at or near the site. Because of the potential immediate impact to human health and the environment, the TNRCC is requesting the following quick action:
 - a. Immediately begin quarterly sampling of existing wells.
 - b. Immediately sample any water supply wells for the site or immediately downgradient from the site.

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TNRCC letter dated September 24, 2001 ENCLOSURE TNRCC Facility ID No. T1641

- c. Report groundwater sampling results to the TNRCC within 7 days of receipt of the laboratory results until further notice.
- 12. Please keep the Northside Independent School District No. 905 appraised of the situation as it develops.
- 13. Further analyses of groundwater may be limited to those analytes previously detected in soils and groundwater and their degradation products.
- 14. Groundwater monitoring wells are necessary directly downgradient from the sources. The current monitor well array ended up being either side-gradient of upgradient of the sources.
- 15. Please submit a schedule to complete characterization of the groundwater and any groundwater contaminant plume within 45 days after receipt of the first sampling results mentioned in Comment No. 11, above. TNRCC request that USACE give this site the priority needed to quickly define any threat posed by the groundwater contamination and to implement corrective action to mitigate that threat, as necessary.
- 16. The septic system should be considered a source of contamination requiring characterization. Please indicate whether the system is still in use.
- 17. The maximum chromium concentration was reported to be only 17.9 milligrams per kilogram (mg/kg) in Table 5-1, 12.4 mg/kg in Table I-3 (Appendix I) and 124 mg/kg in Table H.1. Lead, however, was consistently reported through the report. Please study your data and report it correctly and consistently.
- 18. We agree with the ESIs recommendation to define the extent of contamination. However, the USACE's proposal to define the extent using process knowledge and field screening must be verified by samples and analyses of sufficient high quality.
 - 19. The TNRCC agrees with the ESI Recommendation to include previous data in the final report. The TNRCC's limited resources constrain us from compiling data from previous reports so that the facility can fully support its work and conclusions.

Ms. Lisa Lawson September 24, 2001 Page 2

Questions concerning this letter should be directed to me at (512) 239-2577. When responding by mail, please submit an original and one copy of all correspondence and reports to the Corrective Action Section at Mail Code MC-127 with an additional copy submitted to the TNRCC Region 3 Office. The TNRCC Facility No. T1641 should be referenced in all submittals.

Sincerely,

Geoffrey E. Meyer, Senior Project Manager Team IV, Corrective Action Section Remediation Division. Texas Natural Resource Conservation Commission

512-239-2577 127

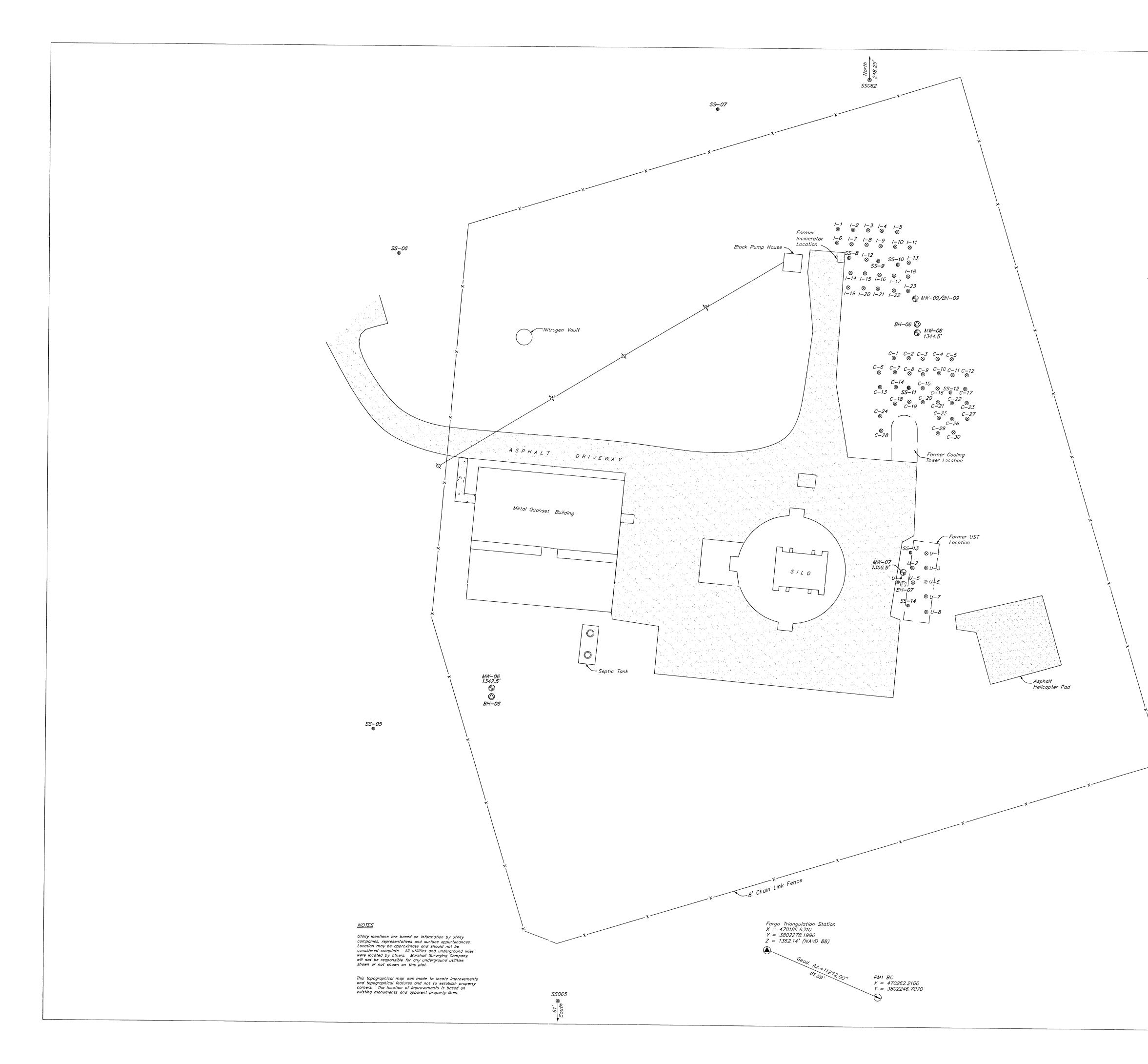
GM/gm

Enclosure

cc: Waste Program Manager, TNRCC Region 3 Office - Abilene

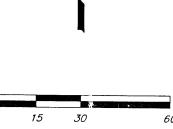
Appendix J

Detailed Site Feature Map



		SOIL SAMPL	E LOCA	TIONS	
/-1	X = 470230.944	Y = 3802772.103	C-1	X = 470269.899	Y = 3802684.003
1-2	X = 470241.321	Y = 3802771.633	C-2	X = 470280.261	Y = 3802683.943
/-3	X = 470251.623	Y = 3802771.454	C-3	X = 470289.889	Y = 3802683.695
/4	X = 470260.965	Y = 3802771.230	C-4	X = 470300.156	Y = 3802683.629
1–5	X = 470271.708	Y = 3802770.472	C-5	X = 470310.111	Y = 3802683.374
1-6	X = 470230.524	Y = 3802762.801	С-6	X = 470259.803	Y = 3802674.018
1-7	X = 470240.353	Y = 3802761.902	C-7	X = 470270.673	Y = 3802674.328
/-8	X = 470250.653	Y = 3802761.607	C-8	X = 470280.874	Y = 3802673.509
/-9	X = 470260.266	Y = 3802760.740	С-9	X = 470290.159	Y = 3802673.013
1–10	X = 470270.330	Y = 3802760.406	C-10	X = 470301.187	Y = 3802673.895
/11	X = 470280.465	Y = 3802759.889	C-11	X = 470310.758	Y = 3802672.684
1-12	X = 470250.657	Y = 3802751.349	C-12	X = 470320.514	Y = 3802672.562
/-13	X = 470279.825	Y = 3802749.464	C-13	X = 470260.526	Y = 3802664.158
/-14	X = 470239.842	Y = 3802742.135	C-14	X = 470271.385	Y = 3802664.241
/-15	X = 470249.723	Y = 3802741.848	C-15	X = 470290.104	Y = 3802663.674
1–16	X = 470259.599	Y = 3802741.016	C-16	X = 470300.198	Y = 3802663.502
1-17	X = 470269.657	Y = 3802740.495	C-17	X = 470319.438	Y = 3802663.278
1–18	X = 470279.435	Y = 3802739.947	C-18	X = 470270.891	Y = 3802652.861
/-19	X = 470238.297	Y = 3802732.016	C-19	X = 470280.828	Y = 3802654.276
1-20	X = 470248.788	Y = 3802731.681	C-20	X = 470290.136	Y = 3802654.091
/-21	X = 470258.616	Y = 3802731.369	C-21	X = 470300.554	Y = 3802654.051
1–22	X = 470269.631	Y = 3802730.170	C-22	X = 470310.432	Y = 3802653.697
1-23	X = 470279.552	Y = 3802730.005	C-23	X = 470320.570	Y = 3802653.693
U-1	X = 470293.255	Y = 3802550.714	C-24	X = 470260.708	Y = 3802644.265
U-2	X = 470283.723	Y = 3802540.613	C25	X = 470301.165	Y = 3802643.410
U-3	X = 470293.148	Y = 3802540.785	C-26	X = 470310.655	Y = 3802642.635
U-4	X = 470273.604	Y = 3802530.995	C-27	X = 470321.008	Y = 3802642.949
U-5	X = 470284.189	Y = 3802530.671	С-28	X = 470261.455	Y = 3802634.293
U-6	X = 470293.072	Y = 3802531.094	C-29	X = 470300.565	Y = 3802632.832
U-7	X = 470293.191	Y = 3802521.198	C-30	X = 470311.652	Y = 3802633.518
U-8	X = 470293.403	Y = 3802510.480	ΜΟΝΙΤ	ORING WELL	LOCATIONS
SS062	X = 470252.4425	Y = 3803060.4067	MW-06	X = 469996.9898	Y = 3802455.8655
<i>SS063</i>	X = 470448.810	Y = 3802744.568	MW-07	X = 470277.3748	Y = 3802537.5825
<i>SS064</i>	X = 470483.526	Y = 3802318.260	MW-08	X = 470286.1375	Y = 3802701.3908
\$\$065	X = 470044.185	Y = 3802181.213	MW-09	X = 470284.7852	Y = 3802724.6432

& SS063



0 15 30 Scale In Feet

LEGEND —_____X___ Fence Line —_____M____ Overhead Electric Ø Power Pole Man Hole 0 Control Monument (Fargo) Reference Mark Soil Sample (DEMS 2001) \oslash Sorehole Monitoring Well Location 6 Soil Sample (MK 2000) **6**2 Asphalt

Concrete

⊗ SS064

Surveying & Mapping By MARSHALL SURVEYING COMPANY P.O. Box 1221 Seminole , Oklahoma 74868 (405) CA 2261 LS Expires June 30, 201)3 (405) 382-4488

	ITE INVESTIGA MISSILE SITE	
Monitoring Well, I	Borehole, and Surface	Sampling Locations
CONTRACT No.	DACA 56-01-D-2005 1	ASK ORDER No.1
WILL	BARGER COUNTY, TE	EXAS
	CORPS OF EN ULSA DISTRIC	· · · ·
	Dist EAST AVENUE, 1	
DEERINWATER ENVIRO	ONMENTAL MANAGEM	ENT SERVICES, INC.
Drawn By: JLA & SRR	Checked By: JBM	Date: DECEMBER 30, 2001
SHEET 1 OF 1	Job No. 47401	Revised:

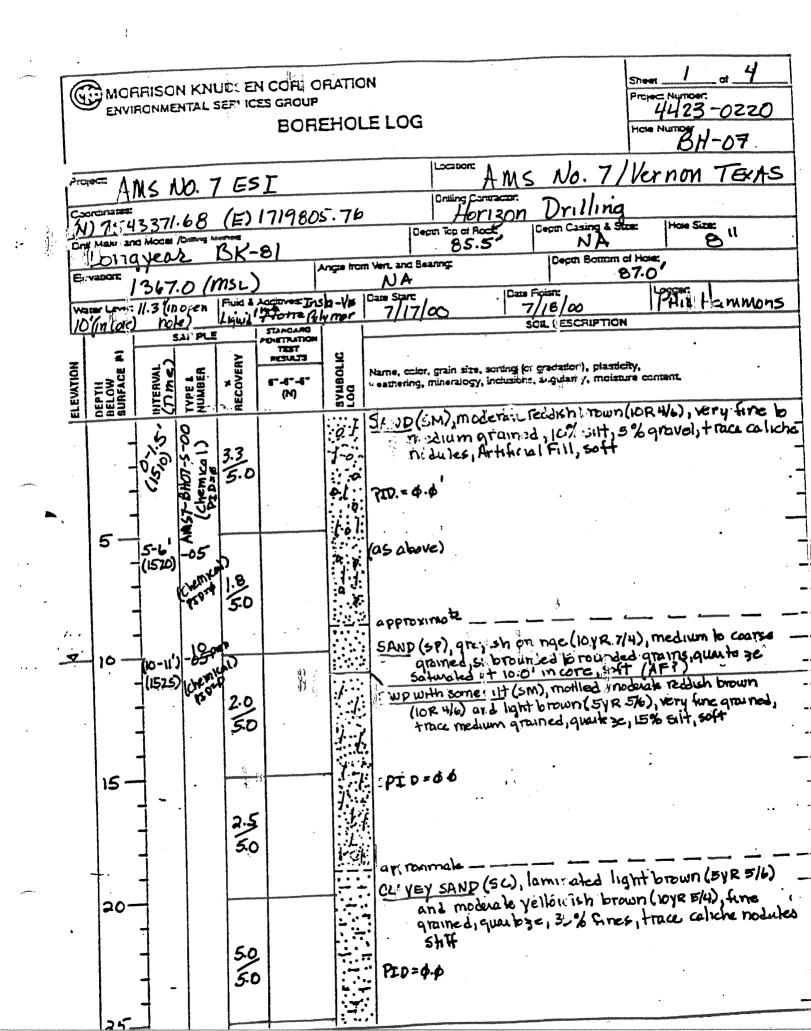
Appendix K

Well Bore And Completion Diagrams For Monitoring Wells

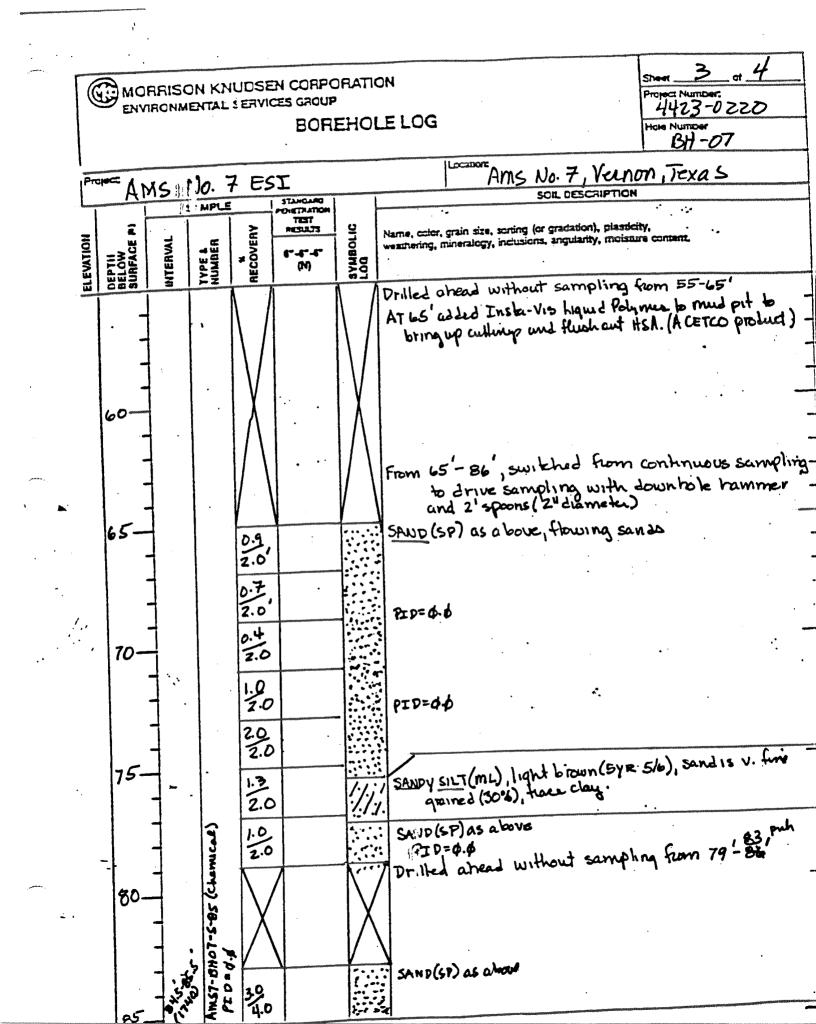
3 MORRISUN KNUDSEN CORPORATION Sheet ENVIRONM INTAL SERVICES GROUP Protect Number 4423-0220 BOREHOLE LOG Hole Numbe 06 Location AMS NO. 7 ESI MS Na 7, Vernon Proper 1eras 4.5 Crailing Ca Capronates (E) 1719524.29 N) 7543291.90 Hosizon Drilline How Size: // Death Top: Rope 76.7 Depth Casing & Size: U Unil Make and Model HSA BK-81 NA long year 8 Angle from Vert, and Bearing: Depth Bottom of Holes Fevalor 79.0' 1365.0 (MSL) ٨YA Dame Starty IDam Figism Fuid & Additives PHIL HAMMONS 21.5 Water Level 18.3 (incore) (in open hole) Mud (200% ben lonik) 19 100 7/19/00 7/ SOIL ! ESCRIPTION STANDAR SAMPLE TRATIC TEST . SVUBOLIC LOG * RECOVERY MESULTS ELEVATION DEPTH BELOW SURFACE (Time) YYPE & NUMBER Name, color, grain size, sorting (or gradation), plasticity, weathering, mineralogy, inclusions, angularity, moisture content. (N)SAND WITH SOME SILT (SM), moderate brown (SYR414), 10-05 8 V. finegrained , quartoze, 15% Silt, dry (Upper surval ft 1200 , jo chemican PIDEd. probable AF due to chose activities). 5.0 PID=0.6 5.0 yrodes to grayish orange (10YR7/4) ·05 5 (5.0-1 -0 prord & 1405 5.0 PID= d.6 to and hold laminated moderale reddich brown (10F 4/6) and very pale. 10 OTAT 1 (10 y E 0/2) 5.0 6 PID=0.0 SAND(SP), modderati reddest brown (1083/4), v fur granned quantage, no silt grada fromal -18(04/9c) chemical PED=0.d 15 50 PIDO Very silty sand (sm), moluste reddier brown (102 4/6), very fine grained, qui toze, 20% silt, schuraled 183 3 (mare) 20.5 grades to sitty San (sn.), Ight & town (5 yz 5/6), 15-20% silt 20 950=0-6 3.0 5.0 SANDY CLAY (CL), pale y 110 sish brown (10yR6/2), 20% v fine grained sand, low placticity, saturated 25.

2. 3 MORRISON KNUDSEN CORPORATION She at ... ENVIRONMENTAL SERVICES GROUP Project Number: 4423-0220 BOREHOLE | OG Hole Number BH 06 ocabon Project Ams No.7 ESI MAS No.7 IJ] Vernon lexas 17240440 SOIL DESCRIPTION SAMPLE ONTATO TEST ... ã SYMBOLIC LOG * RECOVERY RESULTS ELEVATION Name, color, grain size, sorting (or gradation), plassicity, DEPTH BELOW BURFACE TYPE & NUMBER NTERVAL weathening, mineralogy, inclusions, angularity, moisture coment. F-F-F **C**1) CL (as above) grade tunal CLAYEY SAND (: C), light brown (SYR 5/0), v. fungramed, quartose, 5-40 % clay, soft, saturated. 5:0 PID=0.0 30 SANDY CLAY (22), very pok orange (10) 82, 25-30% v. fine grained savid, shiff, abundant calicine notices (2-3 mm dam.) 4.8 PID=4.0 Silty SAND(SM), moltled light brown 12 56) and Engrale 35 orange (10y & 8/2), v. fine grainee, que by 10-20% sitt, soft. flowing sand 4.0 5.0 PID=4.6 40 SAND (SR), 'ight brown (SYR 5/6), v. fine grained, sub punded to Sybe rgular, soft, flowing same 2.1 710-0.6 45 1.0 PED= 0.0 - grodes to rounded grains 50 1.3 PID=00

3 3 MORRISON KNUDSEN CORPORATION đ Sheet G Propert Number: ENVIRONMENTAL SERVICES GROUP 4423-0220 BOREHOLE LOG HONE NUTTION Locabor Vernon, Texas AMS NO.7 AMS NO.7 EST Project SOL DESCRIPTION SAMPLE STANCARD TEST SYMBOLIC LOQ Name, color, grain size, soning (or gradation), plasticity, weathering, mineralogy, inclusions, angularity, moissure content, *. RECOVERY ST 113 T Ξ DEPTN BELOW BURFACE TYPE & NUMBER ELEVATION INTERVAL DINE 6-2-2 09 SAND (SP) as above 17 5.0 PID=0.0 60 1.6 PID=4.6 65 PID=0.0 SILT(ML), light brown (SYR 6/4), hard" :.0 5.0 SAND (SP) as above 70 24 ÷, PID=0.0 75 5.5r% (201) Ams7-BHO Topof Redrock at 76.7' SA DSTONE, may rak reddish brown (10x4/6), very fine grained, trace sitt faint lowy rake x-bodding, highly weathered. 32 T.D. at 79.0' 80



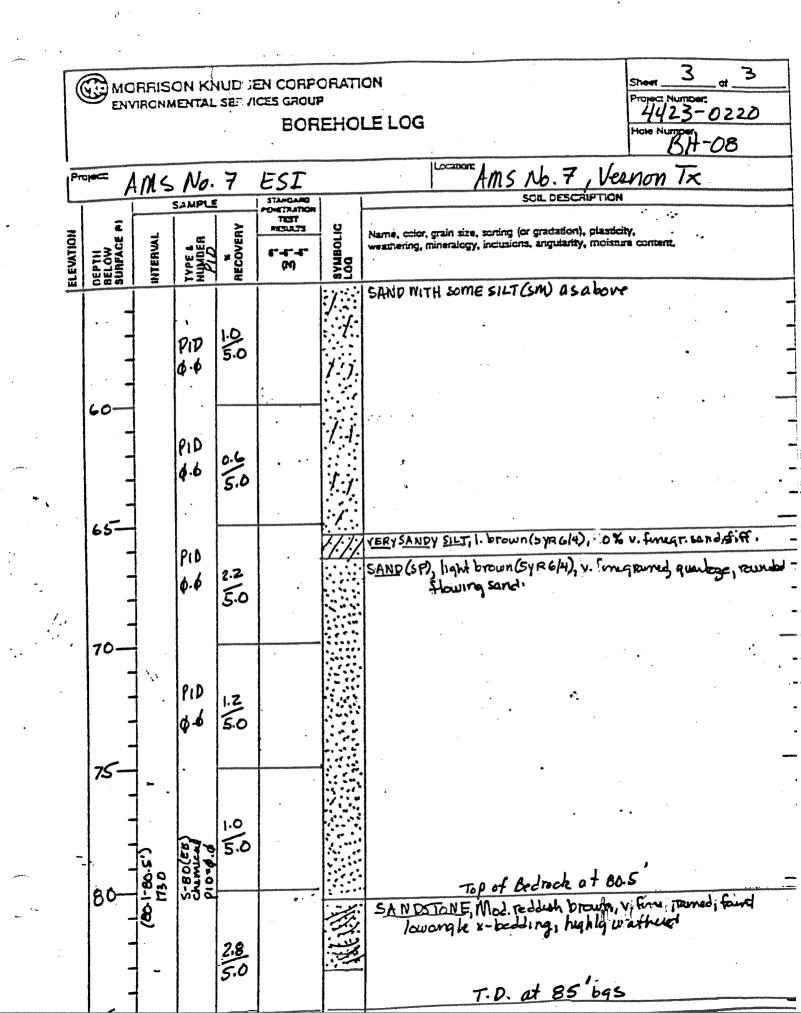
4 Z MORRISON KNUDSEN CORPORATION ~* Sheet ENVIRONMENTAL SERVICES GROUP Provent Number 4423-0220 **BOREHOLE LOG** Hole Number BH-07 Locaborz AMS No. 7, Vernon Texas Project AMS No. 7 ESI SOIL DESCRIPTION DRADHATZ SAMPLE ONTATION TEST ĩ RECOVERY RESILT Q Name, color, grain size, sorting (or gradation), plasticity, DEPTN BELOW SURFACE SYMBOLN LOG ELEVATION HTERVAL TYPE A NUMBER weathering, mineralogy, inclusions, angularity, moistura content, 6-5-5 (M) • • • (as above) 5.0 50 PI D= 4.4 30 trace gravel (up to 1" dis neterly, some caliche nodules and layers 5.9 5.0 7ID=41 35 SAND with some grevel (SW), moderate yellowish brown (Kyr 5)4), firequined, q-avel up to 15" durretul -foft. (360-768) 3.8 CLAYEY (AND (Sc), latinated ; ale of ve (by 6/2) and moderate N ٠., SAND WITH Some SILT (SW), rothind light brown (EVR 56) 40 and inayish orar: c (101 R 14), v. fine grained, + toa day, Howin sames 4.0 PID=4.0 :1: appreximate SIND(SP) h ht brown (SYR 6/4), fine grained, poorly grai ed, trace sitt, quartoze, flowing sands 45 3 3.8 5.0 PID=00 50 Esabore) Core barre ! shuck in augers due to flowing sand on 50-55 run. Could not disladge. Had to put augeur und rods auf g hote to disladge end go back in. 40 55



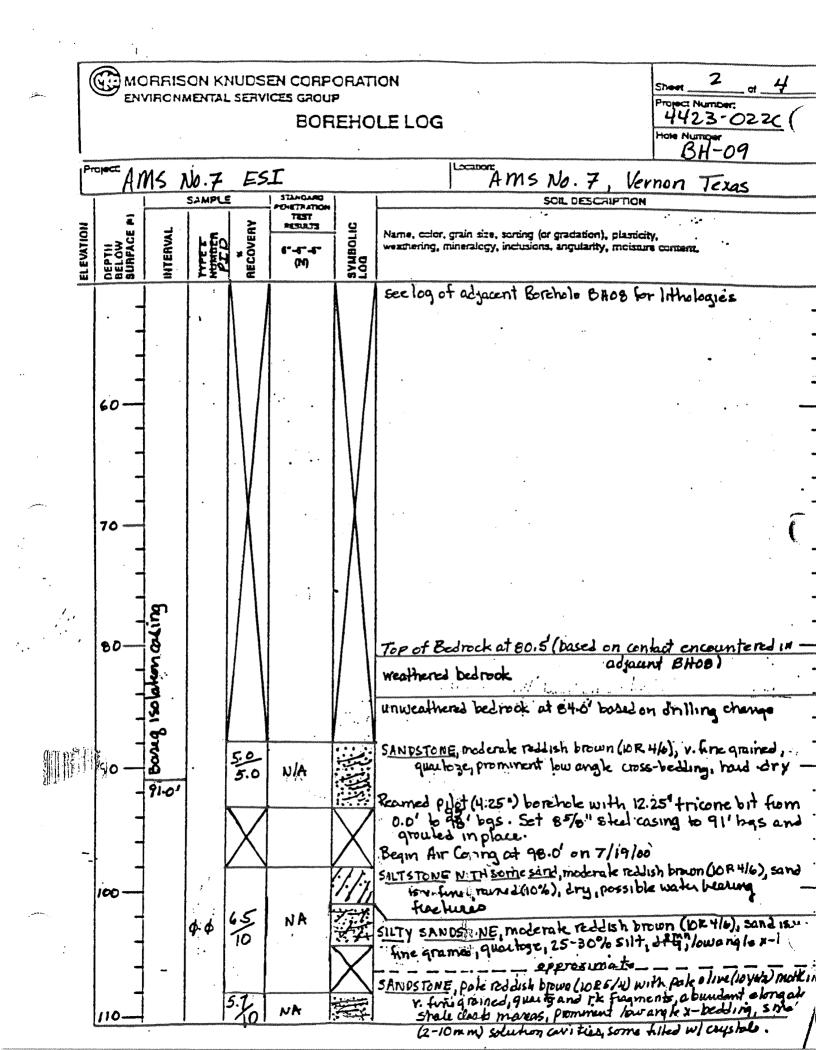
¢ MORRISON KNUDSEN CORPORATION Sheet ENVIRONMENTAL SERVICES GROUP Proper Number: 4423-0221 BOREHOLE LOG Hole Num -07 LOCADOR AMS No. 7 Vernon, Texas Project AMS NO. 7 ESI SOIL DESC HIPTION STANDARD PENETRATION TEST MESUJIS ĩ * RECOVERY SVMBOLIC LOQ Name, color, grain size, sorting (or gradation), plassicity, weathering, mineralogy, inclusions, angularity, moissure content, ELEVATION DEPTN BELOW SURFACE TYPE L NUMBER INTERVAL **6-5-5** 09 :::::: SAND (ST) as a bout SAND(SP) & s a bow TOP OF BEDROCK OT BS.S SANDSTONE, modulate reddich brown (NR 416), silty, hand 3/4 بند: . من ونيا موسر ونيا T.D.C 87.0' 90 ٠. 95 4

3 MORRISON KNUDSEN CORPORATION (\mathbf{G}) Sheet at ENVIRONMENTAL SERVICES GROUP Protect Number: 4423-0220 BOREHOLE LOG H -08 В Locations MS NO. 7, Vornon Texas AMS NO. 7 EST 200 Brilling Convactor. (V)7543550.53 Dulling (=) 1719815.19 Hole Size: Deom Casing & Size Depth Top of Root Drill Make and Model /Drillion <u>45</u>A 80.5 8 BK 81 one ven Depth Bottom of Hole:, Angue from Vers and Seannot Firvator 1362.5 (msc) N/4 85.0 Water Law: 150 (in Fluid & society at 100%) Pare Starte 18.5 in core openhole) Mule / Jankonike (100%) 7/20/00 PHILHAM MONS Date Finish: 7/20/00 SOIL DESCRIPTION · STAMOAAO SAMPLE HINETRATION THEFT ĩ SYMBOLIC LOG * RECOVERY NETURA T ELEVATION DELOW BELOW SURFACE INTERVAL (TIME TYPE L NUMBER Name, color, grain size, sorting (or gradation), plasticity, 5-5-5" weathening, mineralogy, inclusions, angularity, moisture content. (N)SAND (SP), light brown (SY \$ 5/6), v. fine grained, tick sitt ş dry. 2-80H8-72M Chemical 7/0/00 (1205) PLD=6.6 3.0 5.0 12 approximate ILTY SAND, (SM), mod. red is h brown (10# 4/6), v. fine grand 15% silt, here gravel (rounded ~1"diometer), abundant coliche rolules (2-4"diam.). Z 07-0-5 (0220 apreli C-05 A 5 Som 5-15' slight oil ofor 40/00 Ex 01/ S-10 e hemica | 11 . (002) 11-0-01 D rades to light brown (syrs 16) with some very pale orange (10) R & mothing -/ 5.0 5.0 frace coluche notules (2-4 mm) MICO silt concleur increases to 30% 15 12-17 P. D. 24 ງຈົ 5.0 S-13 L 15.0 ANDY CLAY (CL), light brown (54256), V. fine grained sand (35%) 5! 9 Some caliche natulas, low plasticity. 20 35 PID=4.0 25

MORRISON KNUDSEN CORPORATION 3 (\mathbf{G}) Sheet of . ENVIRONMENTAL SERVICES GROUP Project Number 4423-0220 BOREHOLE LOG tole Number H-08 Locabon AMS. No. 7, Vornon AMS No.7 IX . Project ESI SOIL DISCRIPTION STANCARD SAMPLE IN TARTSHOP 11.51 Ē * RECOVERY g 811313173 Name, color, grain size, sorting (or gradition), plasticity, ELEVATION DEPTH BELOW SURFACE SYMBOLI LOG HTERVAL weathering, mineralogy, inclusions, angularity, moisture content. NUNDER NUNDER e-2-2 09 SANDY CLAY (LL) as a bore 25.27'- grayish orange (1047 7/4) with abundant caliche notelles (3-7m 5.0 5.0 grades to light brown (548 5/6) without coliche PIP 6.6 30.0-32.2 grayish orange (104 7/4), abundant coliche notula 30 (3-7mm) 920 5.0 5.0 - gra Leo to 1. brown (5485/6) 4.6 quedational 35. EILTY SAUD (SM), light brown (Syx 5K), v. fine ground, quarloge well rounded, 20% sill, frace clay, Soft, flowing same 4.0 fid Pr 44 5.0 40 RD 1.3 ••• φø 45 SAUDY SILJ (ML) mod. Orange pink (SYR 0/4), 15% v. for sead, hard 12P ¢.6 SANDWITH SOME SILT (SM), I. brown (SYR 5/6), v. for quined, quiets, well rounded, 10% silt, flowing sond, soft 1.0 50 15P 4<u>.</u> 5.0 4.4 55

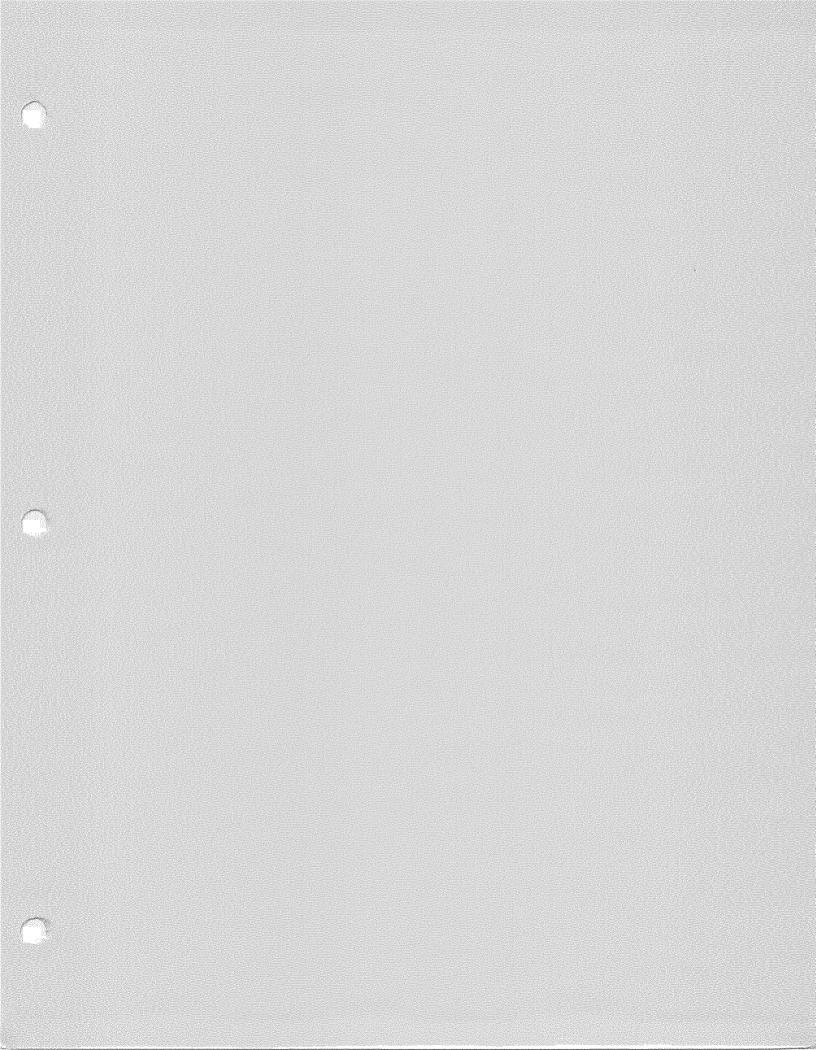


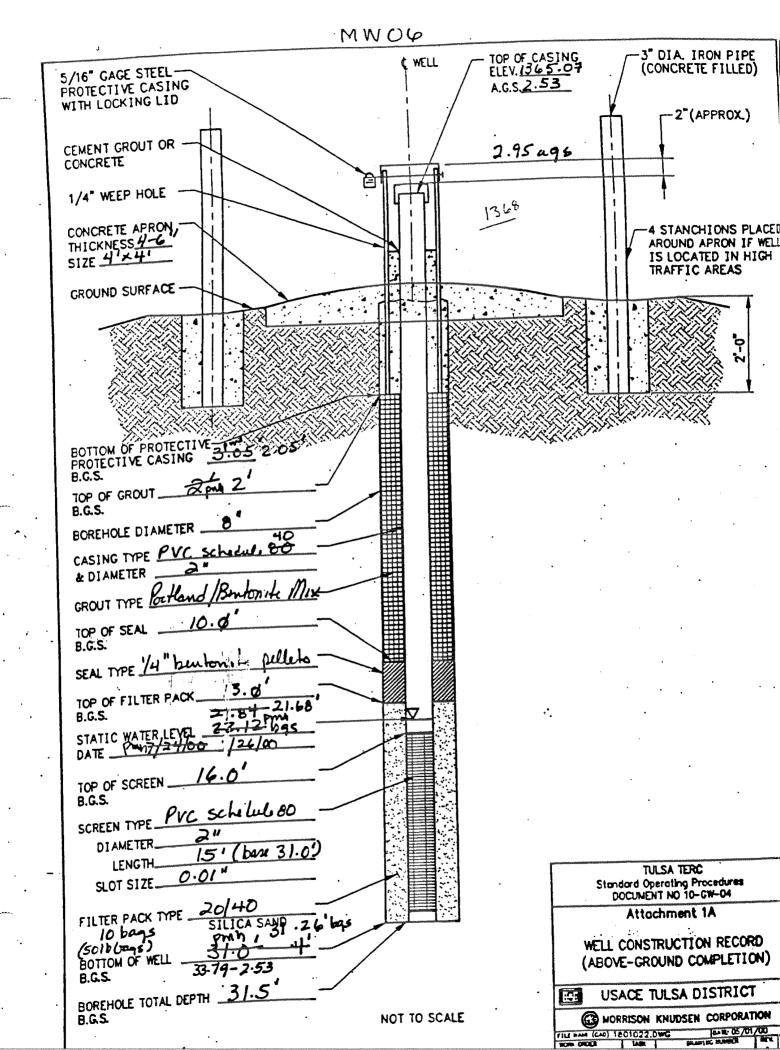
MORRISON KNUDSEN CORPORATION 4 Sheet G ENVIRONMENTAL SERVICES GROUP Protect Number 4423-0220 BOREHOLE LOG Hole Nutrider BH-09 noteoe Ams No. 7, Veron Taxas AMS NO.7 ESI 21010 Onilling Contractor Petuson Prizon Drilling Drilling E) 1719814.85 7543566.68 Kongyeer BK-B1/Air Dect Top of Rose Rotary/Mue Rotary Pro 84 80 Home Size: 0-95' (12/4 Casing & Sizer a furn Cusing B \$/p "(stral) Cnil Maxe and Model /On 95'-シャッ Gardner- Denver 1500/ Mud Rohi-80.5 Dean Battom of Holes We added Ange from Vert and Searing Errabort pMh Boschole Ra med w/ 210 d/teck D40Kl 362.82 NK Thur PHIL HAMMONS Data Finish: 8/03/00 你下了 1/12/00 Byonik Mud Water Level None SOIL DESCRIPTION STANCARD S. S. LAPET 14 DIETRATIO TEST SVMBOLIC LOG ĩ * RECOVERY ELEVATION DEPTH BELOW BURFACE NUMBER Name, color, grain size, sorting (or gradation), plasticity, weathering, mineralogy, inclusions, angularity, moisture content, HTERVAL 6-5-5 (N)Drilled from 0.0' to 88' bgs with 4.25" tricone; logged Cuttings (see log of adjacent Borehole Bitos for lithologies) 10 1. , I approxumate depth to groundwates 10 শু হ 52 Ž 30 40 50

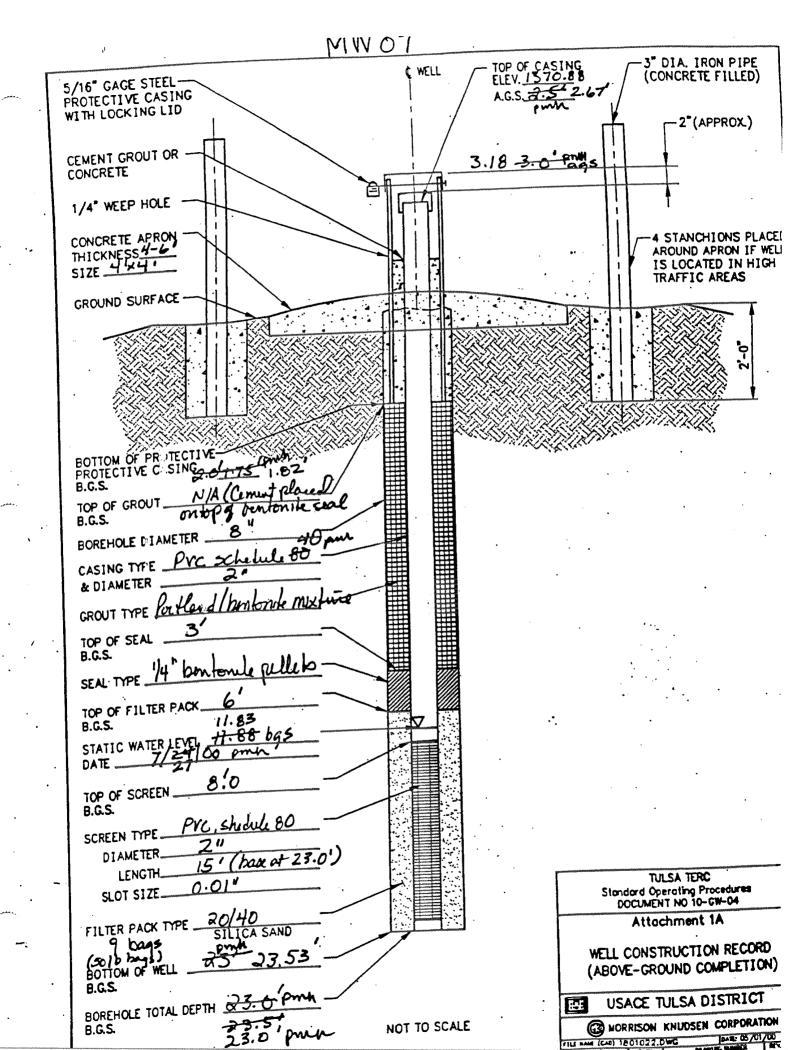


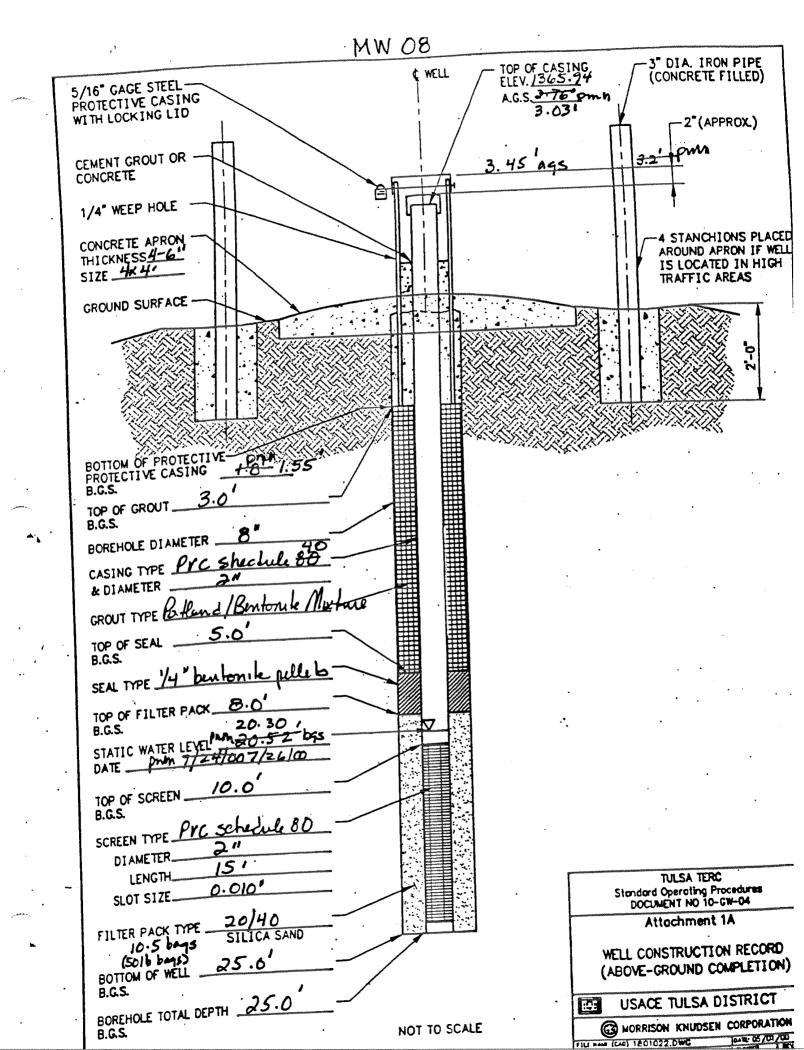
3 4 MORRISON KNUDSEN CORPORATION ~ Sheet \mathbb{C} Project Number ENVIRONMENTAL SERVICES GROUP 4423-0220 BOREHOLE LOG HONO NUTTOOR BH-09 Location Ams No.7, Vernon Project Texas NO 7 ESI Ams SOIL DESCRIPTION 573-CARD SAMPLE ONETTATION . . . TEST ĩ BU313.73 <u>0</u> * RECOVERY Name, color, grain size, sorting (or gradation), plasticity, DEPTH BELOW SURFACE SVMBOLI LOG ELEVATION **HITERVAL** weathering, mineralogy, inclusions, angularity, moisture content, In the first 6-5-5 (N) as about املا الملا SANDY SHALE, pate reddish brown (10 R 5/4) with pale dime (12 4/2) mithin Sand is yi fine grune (20-30%) 5.7 ¢:¢ NA gpproximate SANDSTONE, Bile redush brown (IOR 5/4), V. fine, rained, quartoze, las ungle X-belding, moderately committed. 120 6.\$ 122'-128' - Clayey 6.8 NA 131.5 - 134:0 mottled pole dive (104 0/2) with a bundant shale 130 clasts (from 116-138'- 100 g = 100 gallons to Fm.) 8.7 **¢.**¢ NA 10 138.5-1402' mottled pale of we (104 6/2) with a bundant shale classo 140.2 -142.9 - weakly comented 140 Ξ. ¢.¢ 4.9 AY 10 weakly commented, no no fueable x-bedding 6.0 150 3.0 NA 159.2-160.7- nottled pale dive (107 0/2) with abundant shale choke 160.7 to 4.0' - weakly comented 160 φ.φ 10 NA (from 138-168')000 2 160 gallono to Fine) Drillers added Instavis 2 your Polymen at 168'(Flushed out pit price to con 168.0-170.6 well esmenter, aburedant solution confies (1-tant prominent X-bedding (low ang te) 6.0 NA 170

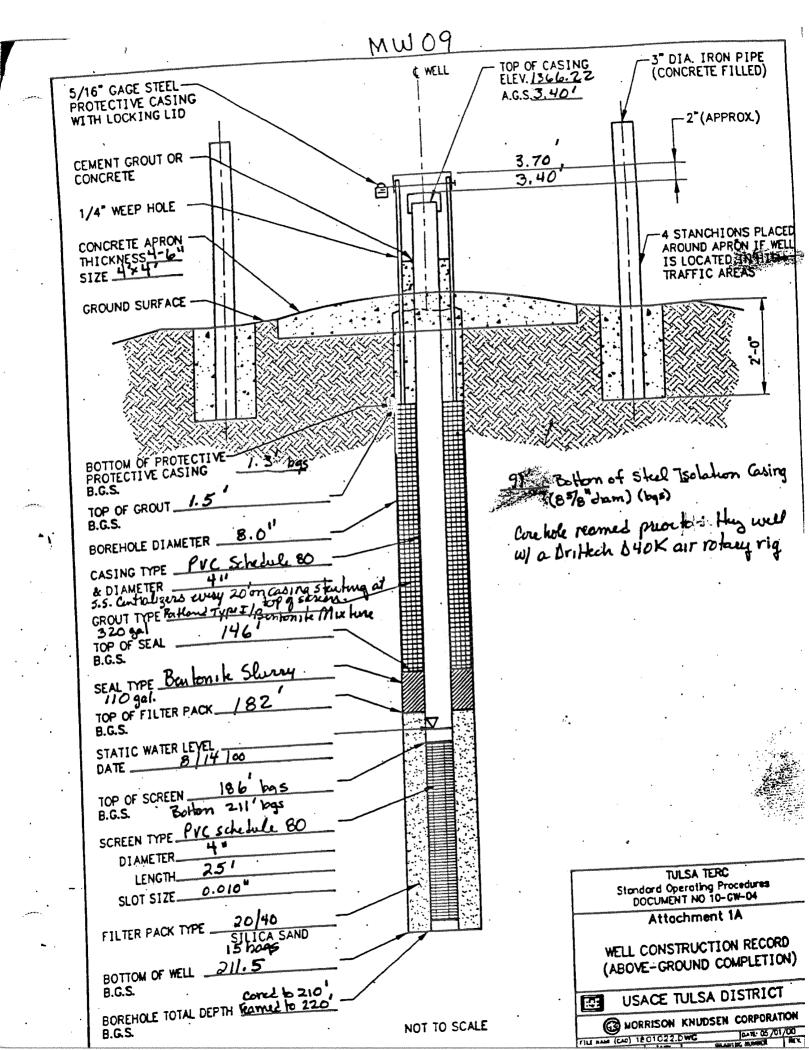
4 MORRISON KNUDSEN CORPORATION 4 E đ Sh ENVIRONMENTAL SERVICES GROUP Project Number 4423-0226 BOREHOLE LOG Hole Number . • Location Project Vernon, Ta AMS No. 7 ESI AMS No.7 17200ARD SOIL DESCRIPTION SAMPLE POIETRATION TEST SYMBOLIC LOQ ā MILTIN TS RECOVERY Name, color, grain size, sorring (or gradation), plasticity, ELEVATIO! DEPTH BELOW BURFACE -NTERVAL weathening, mineralcyy, inclusions, angutanty, moisture coment, にってって (1) 170-5-171.5- weekly comented SILTSTONE, greenish gray (566/1), shaley in areas, sand content (5%) weakly remember 6.0 0.7 NA SHALE, moderate riduch brown (ICR410) with this bands of greenish any (5Gy411) 178-180- softiwet 180-181.8' very haid, dry 181.8-184" - alternating soft and hard, don't it and dry 180 6.1 2.6 NA moderate reddich brown (10246) with occass ional greenish gray(564411) spots, very haid, dry, fractures in areas (possible water bearing). 190-2000 1-2000 5.0 31. 200 -2000 low battery on PED, lamp will not light 210 NR 14/2.0 NR T.D. of 210' bas 210 220 230











Appendix L

Record Review

Reviewer: Dave Jones, ARMY/FUDS Section Tulsa District, U.S. Army Corps of Engineers Respondent:

Page: 1

,

1. Respondent concurs (C), Does not Concur (D), or takes Exception (E). 2. Commentor Agrees (A) with response, or Does not Agree (D) with response.

Comment #	Section/Page	Paragraph/ Line	Comment	C, D, E ¹	Response	A or D ²
1	GENERAL		Proofread, spell check, word search for consistency, etc. entire document carefully.	C	Соптесted	
2	2.3.1 / 7	lst ¶/ line 4	Reword " AMS sites were declared to be excessive".	ш	Reference taken from SOW.	
3	2.4 / 10	3rd ¶/ line 3	Were water levels measured to the nearest I/10th inch or foot?	C	Corrected to 1/100th foot	
4	Figure 2	Pagel I	Label as Figure 2. Add groundwater flow direction arrow. Change MW-05(?) to MW-08. Increase font size for well names, water levels and contour intervals. Will this figure be in color for final report?	U	Corrections and arrows added. Figure will be in color.	
5	3.1	General	Number subsections as done in the rest of the report instead of using bold titles alone.	J	Subsections added.	
9	3.1	General	Add a section to briefly discuss the 1999 demolition(s).	E	Only details of demolition given in MK Expanded Site Investigation report. Information in our report reflects what was reported in MKs report.	
7	3.1	General	During discussions of previous investigations, give specific numbers of how many samples were taken.	c	Tables were added to reflect numbers of samples collected for the MK investigations. Data for previous investigations N/A.	
8	3.1 / 12	2nd ¶/ line 2	Reword to reflect " to determine if there was a release or potential of hazardous"	· C	Соптесted	
6	3.1 / 12	Last ¶	For the 1995 USACE investigation, what are the "background ranges"? Were screening levels used to help determine that "no further action " was warranted?	ш	Corrected text to reflect statement was taken from the Jan 2001 Mk report and raw data was not provided to DEMS.	
10	3.1 / 13	2nd ¶	See previous comment, how was the TRPH explained?	c	Sec response to comment no. 17	
	3.1	General	At the end of section 3.0, after discussions on past sampling results, state that complete sample results are on record and available for review at the Tulsa District COE.	C	Text was added to reflect referenced reports were available for review at the USACE, Tulsa District Office.	
12	3.1	General	On the detailed site map (APP J), which would be better in color, show all past borehole, monitoring wells, and sample locations.	Э	Not all information was provided to DEMS.	
13	4.0/16	2nd builet	Change "analyzed" to analysis and identify what metals were tested for	С	Corrected	
14	Figure 3	Page 17	From the legend, it is somewhat unclear if all the sampling points, boreholes, and wells were installed by MK 2000.	с	Соптесted	
15	4.1.1/21	1 st ¶	Explain better that each sample came from a 10 square foot area block off of the grid system.	С	Added text to reflect.	
16	4.1.2/21	lst 🕯	See previous comment. It may be clearer to refer to each sampling area as a block not a grid. (Figures 3.1, 2, 3, 3.1A, 2B, and 3C could be edited to also reflect this).	ப	All reference to sample locations, in the approved work plan, has been grids, to stay consistent it should stay grids for this report. On future work plans an adjustment can be made.	
17	4.1.4/25	2nd ¶	In the future, the water level should be measured and recorded each time stabilization parameters are recorded. Also, the flow rate needs to be recorded at each reading as well as the total volume of water remover prior to sampling.	С	Will note for future reference.	

G, D, C, D, d to this section C hat were left in each C used per well or was one C ump was moved from C ated on the map in App. C atence C atence C atence C atence C alytical							
General Attaditional prograph or loss be added to his section discussing. Were these device addicated pumps that were left in each well for future use? Was there one pump used per well on was one well for future use? Was there one pump used per well on was one well to well. with were the decisor procedimes used? C Image: Content Reference that survey coordinates are locared on the map in App. C Image: Content Reference that survey coordinates are locared on the map in App. C Image: Content C Reference that survey coordinates are locared on the map in App. C Image: Content C Reference that survey coordinates are locared on the map in App. C Image: Content C Reference that survey coordinates are locared on the map in App. C Image: Content C Reference that survey social mad contexplation. Page: Si in this social mad contexplation. C Image: Contexplation. Reference that survey social mater contexplation. Addecussion on the PCB results in this social contexplation. C Image: Contexplation. Reference that and CWPP in this necessing the interlated the metals and CWP inter necessing the science social mater and contexplation. C Image: Contexplation. Reference that survey contributing weat compare anout mater social tab more Contexplateneres science interval mater	ent #	Section/Page	Paragraph/ Line	Comment	c, ŋ	Response	A or D²
Reference thai survey coordinates are located on the map in App. C Rectaral Rectence thai survey coordinates are located on the map in App. C DEM use residential? Provide a separate table or additional columns in Table 5.1 listing C Page 28 The survey coordinates are located on the map in App. C Page 28 Provide a separate table or additional columns in Table 5.1 listing C Page 28 the sortenning levels (TMRC RRS-II residential and GWP) for C Page 28 the sortenning levels (TMRC RRS-II residential and GWP) for C Page 28 the sortenning levels (TMRC RRS-II residential and GWP) for C Additional Columns in the forten parameters (RRS-II residential and GWP) for control and out on the PCB results needs to be included in this C Additional columns for the other parameters? Addisoustion on the CPCB results needs to be included in this C Add for discussion on the CPCB results needs to be included in this C C C Add for discussion on the CPCB results needs to be included in this C C C Add for discussion on the CPCB results needs to be included in this C C C C C <td< td=""><td></td><td>4.1.4</td><td>1</td><td>An additional paragraph needs to be added to this section discussing: Were these dedicated pumps that were left in each well for future use? Was there one pump used per well or was one pump moved from well to well? If one pump was moved from well to well, what were the decon procedures used?</td><td>U</td><td>Third paragraph describes the setting of each pump. Additional text was added to discuss decon of pumps.</td><td>00000000000000000000000000000000000000</td></td<>		4.1.4	1	An additional paragraph needs to be added to this section discussing: Were these dedicated pumps that were left in each well for future use? Was there one pump used per well or was one pump moved from well to well? If one pump was moved from well to well, what were the decon procedures used?	U	Third paragraph describes the setting of each pump. Additional text was added to discuss decon of pumps.	00000000000000000000000000000000000000
General Need a brief discussion somewhere in this section discussing the schemal for this investigation. Why dd MK use indistrial and DEM use residential) for this investigation. Why dd MK use indistrial and DEM use residential) for this investigation. Why dd MK use indistrial and DEM use residential) for this investigation. Why dd MK use indistrial and the serverum glevels (TMRC RRS-II) C Page 28 the stretum glevels (TMRC RRS-II) C C Ist ¶ and Table 5.2 the stretum glevels (TMRC RRS-II) C C A classustion on the PCB results instead above screening levels (RRS-II) C C A classustion on the PCB results instead above screening levels in the 2001 ESI? I. C A classustion on the PCB results instead above screening levels in the 2001 ESI? I. C A classustion on the PCB results instead above screening levels in the 2001 ESI? I. C A classustion on the PCB results instead above screening levels in the 2001 ESI? I. C A classustion on the PCB results instead above screening level is that the above		4.1.5 / 25		Reference that survey coordinates are located on the map in App. J.	c	Соттестеd	
Page 28 Provide a separate table or additional columns in Table 5.1 listing the early of these results listed above screening levels (RRS-II C 181 F and Table 5.2 Were any of these results listed above screening levels (RRS-II C 201 Ceneral Adiscussion on the PCB results needs to be included in this section. C 201 Ceneral Adiscussion on the PCB results needs to be included in this section. C 2014 Ceneral Adiscussion on the PCB results needs to the 201 EST? It appents that was developed by the concentrations for the metals and TNRCC RRS-II (industrial) for the other parameters?? C 2.204 Adiscussion on the comparison of the analytical results to MSC. C 2.214 Adiscussion on the comparison of the analytical results and TNRCC RRS-II (industrial) for the other parameters?? C 3.218 Pages31 - 33 Section 5.1 states the adual the reported to C C 2.214 Adiscussion on the comparison of the analytical results and to C C 3.218 Pages31 - 33 Section 5.1 states the adual the reported to the number of of numbers, test is alt results as the adual the reported test. C 3.214 Adiscussion on the comparison of the analytical results and to runding of of numbers, test is alt results as the adual thereported test.		5.0/27	General	Need a brief discussion somewhere in this section discussing the rational for using the screening levels used (TNRCC RRS-II residential) for this investigation. Why did MK use industrial and DEM use residential?	υ	Added text to various sections discussing RRS-1 and RRS-II and Texas Specific Background Concentrations.	
1st ¶ and Table 5.2 Were any of these results listed above screening levels (RRS-II C and GWPy1 Fino, state so. Adiscussion on the PCB results needs to be included in this section. C and GWPy1 Fino, state so. Adiscussion on the PCB results needs to be included in this section. C and GWPy1 Fino, state so. Adiscussion on the PCB results needs to be added. C 2nd ¶ These two sections are confusing when comparing them to each or the other manufactors?? C 2nd ¶ Adiscussion on the comparison of the analytical results and "TRSCRS.II (industrial) for the analytical results and "TRSCRS.II (industrial) for the analytical results and the numbers for the meals and the numbers for the results as the actual lab reported results. C 13.1 Adiscussion on the comparison of the analytical results and "TRSCRS.II (industrial) for the analytical results and the numbers for the numbers (ist all treaults as the actual lab reported results. C 1st ¶ Also mention other parameters tested for that had no detections. C 1st ¶ Also mention other parameters tested for that had no detections. C 3rd ¥ lines 4 and 5 Vinyl Chloride would make a fifth VOC found in phase I but not C 1st ¶ Page 36 Table 5.2 and the test list toluene also in MV09. C 1st ¶ Page 36 Table 5.2 and the test li		Table 5.2	Page 28	Provide a separate table or additional columns in Table 5.1 listing the screening levels (TNRCC RRS-II residential and GWP) for each parameter.	υ	Corrected - added table.	
A discussion on the PCB results needs to be included in this C General Tese two sections are confusing when comparing them to each other. How did MK use screening levels in the 2001 ESI? It appears they used Background Concentrations for the metals and TNCE RRS-11 (industrial) for the other analytical results to MSC C 2nd 1 Tese two sections are confusing when comparison for the metals and TNCE RRS-11 (andustrial) for the other analytical results to MSC C 3.2B, Pages31 - 33 Adiscussion on the comparison of the analytical results to MSC C for GWP needs to be added. Adiscussion on the ESI - nare they? It appears only phase I is listed, but the numbers don't quite match table 5.2 probaby due to a rounding off of numbers, list all results as the actual lab reported results and rounding off of numbers, list all results as the actual lab reported results and the numbers don't quite match table 5.2 probaby due to a rounding off of numbers, list all results as the actual lab reported results and the numbers don't quite match table 5.2 probaby due to a constrained for that had no detections. C last 1 Also mention other parameters tested for. C C last 3 Also mention other parameters tested for. C C last 4 Also mention other parameters tested for. C C last 4 Also mention other parameters tested for. C C last 4 Mumb		5.2/30	Ist ¶ and Table 5.2	Were any of these results listed above screening levels (RRS-II and GWP)? If not, state so.	U	Added text to reflect results of screening levels	
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De discusseo (both restuctutat and OW 1')		6.1/37	Soil section - General	How the sample results compared to the MSCs RRS-II needs to be discussed. (Both residential and GWP)	J	Added text.	

Comment #	Section/Page	Paragraph/ Line	Comment	c, D, E ¹	Response	A or D²
36	6.1/38	lst 1/last line	Mention other parameters where no detections were the result.	c	Corrected	
37	5.0 and 6.0	General	Is there enough data to warrant a discussion concerning specific COPCs for each of the three sites within AMS #7 and/or what past practices at the cooling tower, incinerator, etc. would result in these contaminants being present - lead, zinc, PCBs, TCE, etc.	ш)	Exact activities not previously documented for each area. Adding text would only be speculation.	
38	7.0/39	2nd ¶ / line 5	Explain better what is meant by "to establish GWP".	с	Added text to Section 7.	
39	7.0/39	2nd ¶ / line 9	Explain better "greater than 3 feet".	c	Added text to Section 7.	
40	7.0/41	l st ¶	Even though closure can now be met under RRS II-Res, future investigations may discover higher concentrations of contaminants that could not meet closure under RRS II-Res but be met under RRS II-Ind. Would it not be wise to reclassify the site, especially if TNRCC would agree?	[I]	DEMS does not feel that an attempt should be made to classify this site as industrial. It is not up to the TNRCC to agree or disagree. It would have to be accepted to the current landowner. If current landowner agreed this change in land status would have to be filed at the land office thus permanently changing sites	
41	7.0	General	In TNRCC's letter (16 Jan 2001), they mention that" background must be established for both soils and groundwater". How is background for water to be accomplished?	ц.)	This activity would best be performed during the RI phase of investigation.	
42	7.0	General	In TNRCC's letter (16 Jan 2001), they mention that a "septic system should be considered as a possible source of contamination" Has this been addressed?	C	Yes the septic system should be considered as a possible source but DEMS does not recommend taking action at this time. This is due to the distance from the septic tank to Monitoring Well 08. Monitoring well MW06 is much closer to the septic tank and is unaffected.	

Reviewer Name:	Crain, Mike
Discipline	Geology
CX Project Review No.	67990
Date:	02/05/2002
Project Location	Vernon, TX
Document Name:	Draft Final Expanded Site Investigation Report, Phase II, Former Atlas Site 7
Project Location	Vernon, TX

Comment # 1: Table 2.5, pg 10 – Please clarify why the Total Depth numbers in this table are so much different that the Total Depth figures given in Table 2.4? It appears that the Total Depth figures in Table 2.5 are actually the depth to water below top of casing.

Concur - Clarified Table 2.5 to reflect last column is depth to groundwater.

Comment # 2: Sec. 4.1.4, 4th parag, 1st sentence – It appears that the first word of the first sentence should be "During" instead of "After".

Concur - Corrected

Comment # 3: Sec. 4.1.4, 5th parag, pg 25 - What was considered excessive drawdown? From the well sampling records, it appears that MW-07 had 7.49 feet of drawdown (16.65' to water before purging, 24.14' after sampling). That is a large amount of drawdown by low-flow sampling standards. The report should evaluate whether that had any effect on the quality of the data from that well. In addition, the drawdown and purge volumes for that well on the sampling record do not make sense. Based on the purge rate, approximately 2.5 gallons of water was purged prior to sampling. The amount of drawdown recorded after sampling (7.49 ft) represents about 10 gallons of water in the casing and annulus (based on a 10" boring and 30% porosity in the filter pack). The difference in those two volumes appears to be much more than what would have been pumped during the sample collection period. The significance of all this is that it appears that all the water removed from the well came from storage in the casing and filter pack and not from the formation, which raises doubt about the validity of the data from that well. Since there is going to be additional groundwater investigation done at the site, this isn't a major problem that would change the basic decisions that are being made. However, it is something that needs to be taken into consideration when planning the next phase of work. It may be necessary to use different sampling protocol for this well to get reliable results. A good alternative might be to use passive diffusion bag samplers in all the wells to overcome the problems with low recharge rates. They are inexpensive and easy and would probably work well in this situation. The HTRW-CX can provide assistance in their use if needed. Also, the area represented by MW-07 probably shouldn't be assumed to be unaffected by the chlorinated solvent plume until reliable data can be collected that shows that it is, in fact, clean.

Concur – This well did exhibit a significant draw down. The well diameter is 8" and not 10" thus reducing the total amount of water present in the filter pack and well tubing. Total sample required by the laboratory was approximately 10 liters. Regardless DEMS does concur that some of the water sampled must have come from the filter pack. The well was not recharging at a sufficient rate to keep up, even with the low flow sampling. Per the approved Work Plan if the well would have pumped completely down then the alternate sampling technique was bailing with a VOC tip. It is DEMS opinion that sampling with the low flow sampler even with the exhibited draw down was preferable to bailing. DEMS feels that the over all potential effect is reduced by the fact that VOC and SVOC samples were collected first, per the sampling and analysis plan, before the majority of the draw down occurred. Also given the fact that previous sampling events have not detected any of the primary COPCs in this well the potential that any were missed during this sampling event is reduced. DEMS agrees that examination of sampling procedures for future events should be reviewed.

Comment # 4: Table 5.2.1 - A previous Table (5.2) show toluene in MW-09 at 0.0028 mg/l during the Phase II ESI investigation but Table 5.2.1 shows that sample as ND for toluene. Please clarify and correct the table.

Concur - Corrected.

Comment # 5: Sec. 7.0, 1st bullet – Please clarify what is meant by "downgradient" in the next-to-last sentence of the bulleted section. Does it mean topographically lower or downgradient in terms of groundwater flow direction? Since these are shallow soil samples in the vadose zone, the direction of groundwater flow won't have any effect on the distribution of contaminants in the soil zone being sampled. I recommend just sampling the locations of the three or four most contaminated surface samples in each area.

Concur - The use of the word downgradient is in reference to surface topography. Added text to reflect.

Comment # 6: Sec. 7.0, 2nd bullet - I agree with the recommendation to do additional groundwater sampling at more locations and to investigate the entire thickness of the shallow aquifer. However, there may be more efficient ways to accomplish that than to start by drilling and installing additional monitoring wells. It might be possible to use direct push methods to either collect some groundwater samples or to measure VOC concentrations in-situ. Based on the boring logs from the monitoring wells, the soil may be too hard or contain too much caliche for a direct push rig to penetrate deep enough but a DPT rig with a hammer might be able to do it. A geologist or contractor with more local knowledge might be able to make a recommendation on the feasibility of using direct push. Groundwater samples could either be collected using a groundwater sampling probe, small diameter temporary wells could be installed, or a tool such as the Hydrosparge could be used to measure VOC concentrations in-situ. The low aquifer yield may cause a problem for sample recovery but the sample volumes are very small so that aspect should work o.k. These are all screening tools that could be used to determine where permanent wells need to be located so the number of wells that have to be installed and incorporated into a monitoring program is minimized but the shallow plume is still adequately defined. Without some type of screening step such as this, there is not much to go on to locate monitoring wells and it will likely take more than one additional phase of well installation to define the plume. I would discourage the project team from focusing too much on MW-08 as the "center" of further investigation efforts because the available data doesn't do much to identify how or where the release may have occurred and some of the current data may not be too reliable (see comment 3 regarding MW-07). I think it is important that you keep a fairly broad view of the site groundwater at this point.

Concur – DEMS is currently working with the USACE on procedures to best identify the location of the TCE contamination prior to selection the locations of the addition monitoring well.

Comment # 7: Sec. 7.0, 4^{th} bullet – I agree that additional sampling of the deep aquifer is needed. However, it will be necessary to install at least two additional wells in the deep aquifer to be able to determine which direction groundwater flows. I recommend doing additional literature research and possibly contacting either the USGS or State geological survey water resources people for information on regional flow patterns in the San Angelos aquifer before locating the wells. One well should be located as close to the silo as practical since the silos themselves have been found to be the source of TCE at some other Atlas sites, presumably due to leaks from the sump at the bottom of the silo.

Concur – DEMS agrees that drilling only one additional well to the deep aquifer will not establish a gradient based solely on wells drilled on site. The primary purpose in drilling only one well, is to follow the recommendations of the TNRCC as stated in their letter dated September 24, 2001. DEMS agrees that research is need in establishing a better understanding on regional flow patterns for this aquifer. DEMS also agrees that the well should be drilled close to the silo. However, DEMS feels it important that the well not be placed within the fill material surrounding the silo. The primary purpose of this well should be the examination of the deep undisturbed aquifer directly down gradient to the silo.

Reviewer Name:Cheryl GroenjesDiscipline:ChemistryCX Project Review No.67990Date:January 15, 2002Project Location:Fmr. Atlas Missile Site No.7, Vernon, TXDocument Name:Draft Final Report for Site-Wide ESI Phase II

Comment # 1: p.15, 2nd paragraph. Define to what depth the borehole samples were sampled from.

Concur - Added table detailing subsurface sample collection depths.

Comment # 2: p.17, fig.3. Clarify the following items on the figures: Background sample locations, Ground water flow direction (NW?); two boreholes are noted as BH08 – and no BH 07.

Concur – Maps included in the text of the report do not cover a large enough area to identify the locations of the background samples. Additional text has been added stating the location of the background samples can be found on the large scale map in Appendix J. Ground water flow direction arrows has been added to Figure 2. BH numbers have been checked and corrected.

Comment #3: p.21, 4.1.2. Suggest noting depths of the surficial samples within this sampling description.

Concur - Depths have been noted.

Comment #4: p.22, 4.1.3 and p.34, 5.3. Clarify here if water measurements obtained during DEMS 2000 sampling effort confirm the GW flow direction for the shallow aquifer identified in the MK report (NW direction).

Concur - However, text was not added to section 4.1.3 or 5.3 but instead to Section 2.4, which specifically deals with the site hydrology and discusses the relationship between past gradient interpretations and results from the current study. Text was added on page 10 comparing past to current gradient directions.

Comment #5: p.28-29, tbl 5.2.

a. The values given on the tables differ slightly from those given on site figures: 3.1A, 3.2B, and 3.3C, for the same sample results. Rounding error is not applicable, for the number of significant figures given. Results should agree to avoid confusion or making it appear that there are multiple results.

Concur - Table has been corrected, data presented on figures and table match.

b. Suggest the 'ND' be expressed as < (lab reporting limit) to clarify the sensitivity achieved.

Concur - Information added to tables.

Comment #6: p.29, 1st paragraph. Identify the grid locations for these samples (C-12, and C-28).

Concur - Added text to identify grid locations with sample ID numbers.

Comment #7: p.29, 2nd paragraph. Correct sample number designations given as 'ss'.

Concur - Corrected

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Comment #8: p.34, 5.3.1 Disagree that the metals data show any trends of decreasing between the MK and DEMS sampling efforts. The differences shown here are so slight, they are basically equivalent. Suggest it be stated that data is comparable, therefore very supportive amongst the two sampling efforts.

Concur - Edited text removing reference to decreasing trend.

Comment #9: p. 34, tbl 5.2 (AGAIN?) Suggest the 'ND' be expressed as < (lab reporting limit) to clarify the sensitivity achieved.

Concur - Added information to tables

Comment #10: p.35, 5.3.1-VOCs. Disagree that the data show any trends of increasing between the MK and DEMS sampling efforts. The differences shown here are so slight, they are basically equivalent. Suggest it be stated that the VOC detections found in the MK effort was confirmed the following year with the DEMS sampling/analysis done.

Concur – Remove reference to trends.

Comment #11: p.35, 5.3.1-SVOCs. Correct typo for chemical compound: BIS (2-ethylhexyl)phthalate.

Concur - Corrected

Comment #12: p.36, tbl 5.2.1.

a. Detections noted within text are identified as 'ND' on the table: VC for MW-9 (MK), and toluene for MW-9 (DEMS).

Concur - Corrected

b. Add MSC values for cis-1,2-DCE (0.07) and trans-1,2-DCE (0.1).

Concur - Corrected

c. Typo for BIS (2-ethylhexyl)phthalate.

Concur - Corrected

d. There is no basis given within App G (data validation report) why the values for TCE, cis-1,2-DCE, trans-1,2-DCE, and toluene should be J-flagged. The detections are large enough that most are above the low level standard (PQL) also. Investigate the rationale behind this 'estimation' qualifier being applied, and summarize it within section 5.1, or delete qualifier from table.

Exception – Page 4 of the validation report under Accuracy reports that for ground water samples MW07, MW09, MW09A, and MW06 the surrogate recovery for D-8 Toluene exceeded the upper recovery limit. Per the EPA rules for data validation of detected volatile ciganics these samples were J qualified as estimated.

Comment #13: p.37, tbl 6.1. Include PCB values found in background samples that are being used as the basis for determining impact onsite.

Concur – Added line to table listing PCB background results.

Comment #14: p.38, 6.1.

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a. Refer to comment 11 as it pertains to the MSC screening levels are ALL project COPCs.

Concur - Corrected

b. Several confusing statements are noted within this paragraph that require editing. Also correct the numerous typos.

Concur - Edited text and corrected typos.

Comment #15: p.38, 6.2.

a. A background set composed of only four samples is extremely limited, and should be qualified as such.

Exception – The number of background samples collected was approved in the work plan as being sufficient for this situation. DEMS agrees this may not be sufficient in other situations.

b. Suggest emphasizing here that the results presented in figures3.1A, 3.2B, 3.3C show the extent of surficial contamination has been established and is very limited as shown in previous figures.

Concur - Text has been added to reflect suggestion.

Comment #16: p.39, 7.0, 1st bullet.

a. Suggest the leachate testing be restricted to metals analysis ONLY and be taken from the grids with higher detections: one for the incinerator (around I6 or I7) and one for the cooling tower areas (around C24 or C13). The hydrophobic nature of PCBs as well as the low levels found do not support the data need to evaluate leachability from precipitation. The lead and zinc concentrations in the UST area are much lower than the other areas and do not support this leachability assessment either.

Concur – Text is being added to reflect suggested test. Also, DEMS is working with the CORP Tulsa District in planning the next sampling event.

b. The contractor must provide the rationale to support the proposed subsurface sampling.

Concur – Additional text is being added.

c. Clarify site topography conditions that apply that would require additional surface samples to determine contaminant runoff potential. For the necessity of this should be scrutinized. The levels of lead, zinc, and PCBs and extent of the areas impacted are minor - and the mobility is being assessed from subsurface samples and leachability testing protocols already.

Concur – Much of the AMS site is elevated relative to the surrounding topography. This includes the former locations of the cooing tower, incinerator and UST sites. These are several water runoff areas that have not been examined during previous investigations.

Comment #17: p.39, 7.0, 2nd bullet. The more serious concern is the detections of TCE in the GW. Due to the lack of definitive sources for these solvents, and the limited GW data available, suggest some type of field analytics be considered for use onsite to gather some information to help direct the sampling efforts while minimizing the number of mobilizations needed to understand the N/E of the TCE contamination. The TCE levels identified (140ppb) are sufficient to allow the consideration of several varieties of field techniques for the VOC.

Concur - DEMS is working the CORP in planning the next subsurface sampling/drilling events.

Comment #18: General. Several spelling and grammatical errors were noted during the review that require a technical editor.

Concur – Correcting

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Comment #19: Appendix G. Clarify what the recovery limits for the MSD and LCS were for mercury. If the LCS failed, corrective action should have been taken to remedy the issue per method requirements. Clarify why this was not done.

Concur - Corrected Validation report to clarify that rejected mercury data was due to MS/MSD biased low.

HTRW Center of Expertise - Review Comments

Reviewer Name:	Walker, Terry L.
Discipline	Risk Assessor
CX Project Review No.	67990
Date:	02/05/2002
Project Location	Former Atlas Missile Site No. 7, Vernon, TX
Document Name:	Draft Final ESI Phase II

Comment # 1: Section 3.1. Please include references to the tables and figures in Section 5 for the results of the previous investigations. Suggest bringing relevant data into this section as several subsections indicate that they report "results."

Concur – Added additional tables to Section 3 for previous investigations and added text to section 5 referencing section three tables.

Comment # 2: Section 5.2.1, last sentence. Please revise this sentence to reflect Comment #2 from the TNRCC.

Concur – Removed last sentence completely and added text to both section 5.2 and 5.2.1 to reflect background sample information and its relationship to the Texas Specific Background concentrations.

Comment # 3: Section 6.1, page 38. On page 4 of Appendix H, the following "GW-res" values are presented: 1,1-DCE, 7.0E-03 mg/L; cis-1,2-DCE, 7.0E-02 mg/L; and trans-1,2-DCE, 1.0E-01 mg/L. This conflicts with the sentence that states non values are available. Please correct.

Concur – Corrected text to reflect screening level concentrations.

Comment # 4: General. There are numerous places with typos (most not identified via spell-check) or improper use of terms. Please carefully proof this document.

Concur – Reviewing and correcting.

Comments on DRAFT FINAL REPORT, EXPANDED SITE INVESTIGATION, PHASE II, FORMER ATLAS MISSILE SITE #7

Reviewer: Carol Wies, CESWT-EC-EF, Tulsa District, Corps of Engineers, HTRW Design Center, Engineering and Construction Division

Respondent: DEERINWATER ENVIRONMENTAL MANAGEMENT SERVICES, INC.

Responses: C=Respondent concurs, D=Respondent does not concur, E=Respondent takes exception Commentor A=Agrees with response, or D=Does not agree with response.

A or D								
Response	Added an Appendix to report containing all validated data.	Added to Table of Contents	Corrected	Corrected	Changed text to read "water supply well"	Corrected	These numbers were calculated from elevations and depths given in on MKs completion diagrams. Numbers were used to figure volume of water in filter pack. They are not needed for this section of the report so they were rempved.	
C,D,or E	၁	С	С	c	c	c	U	
Comment	The laboratory reports need to be included in an appendices. I realize that it is quite monumental, but they still need to be included.	List Figures and Tables at the end of the TOC for easy reference.	Refer to the "water" samples as "groundwater". Needs changed in 2 places on this line.	There is a double period at the end of the sentence.	Is this used for a "public" water supply? What is the definition of "public"? Does the City of Vernon or other community use this? Does referring to it as "public" have regulatory implications, or definitions?	"activates" should be "activities".	I tried to determine where the elevations listed under the column "filter pack interval" were obtained. The only thing I could locate in previous reports was for MW-6, filter pack was 13 ft bgs, for MW-07, 6 ft. bgs. Please verify that the elevations listed in this table are accurate. In regards to this comment, putting well diagrams from the previous report in an appendices would be extremely helpful. In fact, I had to fax well diagrams to a couple of the reviewers.	The last sentence states that one monitor well is not sufficient to establish gradient, and this is
Paragraph/Line	Appendices		2 ND / 5 th	Last line	1 st / 9 th	2 nd / 4 th	Table 2.4	2 nd / last
Section/Page	General	Table of Contents	1.1/5	1.2/6	2.4 /9	2.4/9	<u>م</u>	2.4 / 10
Comment #	0.25	0.5		2	m	4	S	6

Detailed literature was not review for this SOW. It was not needed for this smpling event.	Corrections made to maps.	Corrected	Word misspelled. Missing a p (octylpthalate)	Added text to reflect data validation problems.	Corrected	Corrected	Sentence removed.	Corrected on ledgend	A cross reference to soil numbers is included in Table 5.1	A cross reference to soil numbers is included in Table 5.1
[II]		ပ	C		С	C It	с	с	C	С
true, but TNRCCs comment 7 to the ESI Phase I mentions that hydrogeologic literature may present local groundwater flow trends. Did DEMS look into this? This may be more of an issue for the next Phase!!	Please provide a title such as FIGURE 2, and list the figures in the table of contents. Also, well designation (i.e. MW-06) needs to be enlarged to be readable. GW contour labels also need to be enlarged. In the title block, the title "CONTOURED POTENTIOMETRIC SURFACE" needs to be larger, while the USACE and Tulsa District could be smaller. In the title "POTENTIOMETRIC" is spelled incorrectly.	"preformed" should be "performed".	Is "octylthalate" spelled correctly? I think there is an extra Y in this sentence.	No VOCs were detected in the samples, butThe VOC analysis was determined to be invalid during the data validation, due to bubbles in the water samples. This should be reported as such, due to the VOCs detected in all subsequent sample events.	If the phthalate was attributed to sampling gloves, then it should not say "site soils" it should say "soil samples".	This sentence is worded awkwardly, i.e. "from collected soil samples near", I think it would sound better if it said " from soil samples collected near"	When typing ".140", type as "0.140", this is for clarity.	Why are there 2 different symbols for borehole locations. Deep and shallow, please clarify on legend.	A cross reference to soil sample numbers would be helpful.	See comment #15.
	Figure ?-?	1 st / last	2 nd / last	5 th / 1 st	2 nd / 3 rd	Last / 1 st	Last / 3 rd	Figure 3 legend	Figure 3.1	Figure 3.2
	-	3.1/12	3.1 / 13	3.1 / 12	3.1 / 10	3.1 / 14	3.1 / 15	17	18	19
	2	8	6	10		12	13	14	15	16

17	20	Figure 3.3	See comment #15.	c	A cross reference to soil numbers is included in Table 5.1
18	4.1.2/21	1 st / 1 st	"represent" should be "represented".	С	Corrected
19	4.1.2/21	1 st / 5 th	Replace "grab" with "discrete", meaning they were not composited, if this is the case.	С	Corrected
20	4.1.3 / 22	1 st / 15 th	"accumulation" should be "accumulated".	c	Corrected
21	4.1.4/24	3 rd / 8 th	Change "every two-three minutes" to "every two to three"	С	Corrected
22	28	Table 5.2	Should be titled 5.1. As there is no previous table in Section 5. But there is another Table 5.2 on page 34.	C	Corrected
23	28	Table 5.2	Rather than "ND", the table should show less than detection limit i.e. <10. Also would like to see the concentrations that exceed the applicable regulatory limits highlighted, or bold.	с	Information added to text.
24	5.2 / 29	1 st / 1 st	"other then" should be "other than"	С	Corrected
25	5.2/29	1 st / 4 th	Change "and .2" to "and 0.2" for clarity.	U	Corrected
26	5.2/29	1 st / last	Change ".5" to "0.5"	c	Corrected
27	5.2 / 29	FYI	All 7 QA samples were below the RL 0f 0.0096 mg/kg.	С	Corrected
28	5.2/29	2 nd / last	Change "AMS0722025-032" to "AMS0722025 through 032" if this is what is meant, as it is written they look like just a long string of numbers, with not much meaning.	C	Corrected
29	5.2/30	1 st / 1 st	Change "unusable date" to "unusable data"	ပ	Corrected
30	5.2/20	1 st / 4 th	Would the non-rejected mercury data be biased low? I would be happy to provide the QA results for mercury, if this would be of value.	С	Corrected
31	5.2.1/30	2 nd / 2 nd	"elevated level" should be "elevated levels"	С	Corrected
32	5.2.1/30	2 nd / 3 rd	"COCPs" should be "COPCs".	c	Corrected
33	5.2.1/30	2 nd / 3 rd	Rather than going straight to RRS2, it should be state that the RRS 1 was exceeded, therefore the results were compared to RRS2.	C	Text added to reflect.
34	5.2.1/30	Last / last	Is the 10 mg/kg for PCB results? Please add what analyte the 10 mg/kg pertains to.	υ	Corrected
35	5.2.1/30	Last	Do groundwater protection standards need to be	C	Text added.

			discussed?		
36	31	Figure 3.1A	PCB results? Can a line showing the dded?	C	Added information.
37	34	Table 5.2	the <detection #="" be<br="" limit="" should="">all analytical results are shown, tence above should explain why esults were chosen to be se the were above regulatory porting limit? Please clarify the only results reported in this</detection>	U	Information added to tables and text.
38	36	Table 5.2.1	mment #34 <dl and="" nd="" td="" these<="" vs="" why=""><td>C</td><td>Added information. Corrected footnote to read N/A – Not Analyzed. A * symbol was added to represent not action level provided.</td></dl>	C	Added information. Corrected footnote to read N/A – Not Analyzed. A * symbol was added to represent not action level provided.
30	61/37	2 nd /2 nd	"PCP's" should be "PCBs"?	ပ	Corrected
40	6.1/38	1 st / 4 th	 Also the his was biased high. 	ပ	Added text.
41	6.2/38	1 st / 3 rd		с С	Corrected
42	7.0/39	5 nd / 9 th	This sentence states " greater than 3 d Feet." What should the depth be? 4 ft? 10 ft? Be more specific.	C	Added text to reflect a depth of 3 feet.
43	70/39	2 nd	ould be run on the soil samples?	C	Added information.
44	7.0/39	3 rd		c	Added information
45	7.0/40	Ist / 2 nd	After "well construction details" add (if available), as private wells may not have the construction details available.	U	Corrected
46	7.0 / 40		Are there any other parameters that should be checked for likenatural attenuation parameters, bio-remediation parameters?	Э	These options should be considered when the RI phase of investigation occurs.
47	7.0/40	(p	I wish DEMS would recommend analytes to be tested for.	υ	Corrected. Added text to reflect.

CESWT-EC-EF

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17 January 2002

MEMORANDUM FOR CESWT-EC-ER (C. Wies)

SUBJECT: Comments to Draft Final Report for Expanded Site Investigation Phase II at Former Atlas Missile Site No. 7, Vernon, Texas (December 2001)

1. Enclosed are comments generated from the review of the subject document listed above.

2. For additional assistance or information, please contact me at extension 7442.

GREG WILLIAMS Sr. Chemist, Army/FUDS Section

CF: CESWT-EC-E CESWT-EC-EF

Encl

Comments on Draft Final Report for Expanded Site Investigation Phase II At Former Atlas Missile Site No. 7, Vernon, Texas (December 2001)

Reviewer: Greg Williams CESWT-EC-EF Tulsa District, U.S. Army Corps of Engineers; HTRW Design Center

Respondent:

- Respondent concurs (C), Does not Concur (D), or takes Exception (E). Commentator Agrees (A) with response or Does not Agree (D) with response.

${f A}$ or ${f D}^2$							
Response	Corrected		Info mation added to tables.	Added information to tables. Added label.	Added information to Tables.	Added information to Tables.	Added text to Data Validation Report
$C,D,$ or E^{1}	C		C	с	С	ပ	ပ
Comment	Reword sentence as follows: "Polychlorinated biphenyls (PCBs) were also detected in soil samples collected from areas near the incinerator, cooling tower, and USTs locations."	Reword/clarify sentence ('The data evaluated is adequate to evaluate").	 List less than Minimum Detection Level value (use a numerical value) in table instead of ND (use < MDL value or < IDL value, when appropriate). 	See comment # 3. Also, label table as Table 5.1, as designated on bottom of p.27.	See comment # 3.	See comment # 3.	Discuss how TA-TN's control limits and method control limits compare or relate to each other and compliance issues (where appropriate throughout the document).
Paragraph/Line	Pgh. 6/In. 1	Pgh.1/In.9 – 10	General	Table 5.1	Table 5.2	Table 5.2.1	General
Section/Page	Sect. 3/p.14	Sect.5.1/pg. 27	Sect. 5/ Tables	Sect.5.2/p.28 - 29	Sect. 5.3/p. 34	Sect.5.3.1/p.36	Appendix G/
Comment #		2	3	4	5	6	7

Page: 1

A or D ² -														
Response	Corrected, added text.	Corrected, added text.	Corrected, added text.	Corrected, added text.	Corrected, added text.	Corrected, added text.	Corrected, added text.	Corrected, added text.	Corrected, added text.	Corrected, added text.	Corrected, added text.	Corrected, added text.	Corrected, added text.	Corrected, added text.
C,D, or E ⁱ	С	с	C	С	С	С	C	С	С	С	C	С	С	С
Comment	Use "data were" instead of "data was" throughout the document (data are plural).	Replace "was" with "were" in last sentence.	The definition for the "J code" in this sentence is not consistent with "J qualifier" definition on p. 2 of the report. Explain how to distinguish its use and applicability when reviewing the data.	The use of the "J code" in this sentence is not consistent with the use of "J code" on p.5. Provide a means to distinguish them when reviewing the data.	See comment # 11.	See comment # 11.	See comment # 7. Discuss how TA-TN's lower control limit, historical control limit, control limit, etc., compare with the method limits and compliance issues.	See comment # 14.						
Paragraph/Line	General	Pgh.4/ln.7	Pgh.4/ln.3 – 5	Pgh.2/In.4	Pgh.3/ln.4	Pgh.7/In.2	Accuracy	Precision	Accuracy/Precisio n	Accuracy/Precisio n	Accuracy/Precisio n	Accuracy/Precisio n	Accuracy/Precisio n	Accuracy/Precisio
Section/Page	Appendix G	App. G 3.1/p.4	App. G 3.1/p.5	App. G 3.2/p.6	App. G 3.2/p.6	App. G 3.2/p.6	App. G 3.2/p.6	App. G 3.2/p.7	App. G 3.3/ p.7 &8	App. G 3.4/p.8	App. G 3.5/p.9	App. G 3.6/p.10	App. G 3.7/p.10	App. G
Comment #	~	6	10		12	1 3	4	15	16	17	18	19	20	

	A or D ² -			
	Response		C Corrected, added text.	C Corrected, added text.
	C,D, or E^{1}		С	c
•.	Comment		Accuracy/Precisio See comment # 14. n	See comments # 10 & 11.
	Comment Section/Page Paragraph/Line #	u	Accuracy/Precisio n	Table 4 & 5
••.	Section/Page	4.1/p.11 & 12	App. G 4.2/p.13	App. G
	Comment #	21	22	23

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