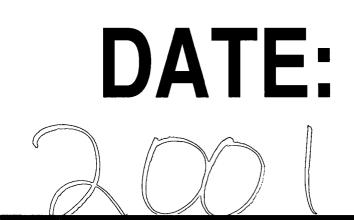
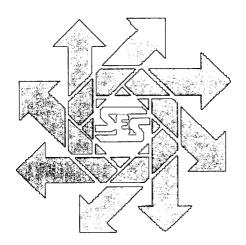


# REPORTS



# **Chevron USA Schubert Site Investigation Lea County, New Mexico**

March 9, 2001





**Prepared for:** 

Chevron USA Permian Basin Business Unit P.O. Box 1949 Eunice, New Mexico 88231

### By:

Safety & Environmental Solutions, Inc. 703 E. Clinton, Suite 102 Hobbs, New Mexico 88240 (505) 397-0510

## TABLE OF CONTENTS

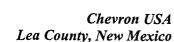
Background	L
Work Performed Soil Boring and Sampling	
Results of Soil Testing Soil Sampling Results – Area 1, Production Pit Soil Sampling Results – Area 2, Tank Battery Area	2
VADSAT Modeling of Chloride Contaminant Movement Chloride Simulations	
Conclusions and Recommendations	7
References	8
Report Figures	9
Report Appendices Appendix A. Borehole Lithologies Appendix B. Laboratory Analytical Reports Appendix C. VADSAT Model Simulation Results	16 16
	Work Performed

## LIST OF TABLES

Table 1. Borehole Soil Sampling Results, Area 1 (Production Pit) Schubert Site Investigation,
Lea County, New Mexico
Table 2. Borehole Soil Sampling Results, Area 2 (Tank Battery) Schubert Site Investigation, Lea
County, New Mexico

## **LIST OF FIGURES**

Figure 1. Vicinity Map	10
Figure 2. Site Survey	11
Figure 3. Borehole Locations, Production Pit (Area 1)	12
Figure 4. Borehole Locations, Tank Battery (Area 2)	13
Figure 5. Chloride Simulation, Production Pit (Area 1), 0.5 in./yr. Recharge	14
Figure 6. Chloride Simulation, Production Pit (Area 1), 5.0 in./yr. Recharge	15



1

#### I. Background

In December 2000 Safety & Environmental Solutions, Inc. (SESI) was engaged by Chevron USA, West Permian Basin Unit, to perform a site investigation at a location where oil and gas production had occurred in the past. The investigation was conducted voluntarily by Chevron at the request of the landowner, Mr. Gary Schubert, and not in response to regulatory directives. The subject area is identified as the Schubert property and is located in Unit M of Section 21, Township 18 S, Range 38 E in Lea County, New Mexico. The area is north and east of the intersection of Bender Blvd. and French Dr. The site is approximately one mile west of the Lovington Highway (NM 18) in Hobbs (Figure 1). The property is currently being cultivated and is irrigated with water from nearby wells.

Previously the subject area contained a production tank battery and an associated pit. The pit was located about 1,300 ft. north and east of the Bender-French intersection. It was relatively large (size approximately 200 x 300 ft. sq.) and was in use for an unknown period prior to 1978. Available aerial photographs clearly show the pit in 1964 but only a barely discernible outline is seen on the 1978 photograph. The pit shows two cells, but in the 1964 photograph it appears dry. The production battery is about 800 ft north and east of the intersection. Four tanks appear on the 1964 photograph; although the 1978 photo is unclear, it appears that at most only one tank remains.

The purpose of the investigation was two-fold. First, the investigation was performed to delineate the horizontal and vertical extent of any remaining hydrocarbon and/or salt materials at the pit and battery. Secondly, analytical data collected from the sampling effort was to be used as inputs to the American Petroleum Institute's (API) VADSAT model to assess the potential effects on groundwater quality from subsurface petroleum hydrocarbon releases.

VADSAT is an interactive program to simulate the movement of conservative inorganic or reactive organic species present in land-disposed waste. Program output is used to assess effects of land disposal practices on groundwater quality. Compounds considered include organic species that dissolve from oily wastes, and inorganic salts that migrate by convection and dispersion in the aqueous phase. Adsorption, biodecay and volatilization at the ground surface are considered for organic species, while salts are considered nonreactive. Release scenarios that may be modeled include both surface and subsurface releases. The latter are distinguished by the presence of overlying soil cover, which acts to impede evaporation losses of volatile compounds. The program can also model effectiveness of clay and synthetic liners.

VADSAT is based on coupled analytical solutions of the unsaturated and saturated zone flow and transport equations, which can be solved with minimal computational effort. It is well suited for conducting uncertainty analyses to assess effects of variable soil and waste characteristics on the risk of groundwater contamination at land-disposal sites. Environmental Systems and Technologies, Inc., of Blacksburg, Virginia, developed the VADSAT model in 1995 under contract from the API, and use of the model by SESI is by license from the API.

#### II. Work Performed

#### Soil Boring and Sampling

It was necessary to use the services of a land surveyor to locate the old pit and battery area because the surface has been leveled for agricultural use. Figure 2 is a copy of site survey produced by John West Engineering to locate the site of the production pit and the tank battery. Borehole locations were staked at 75 ft. north-south intervals and 50 ft. east-west intervals at Area 1 (the production pit area), and at 50 ft. intervals at Area 2 (the tank battery location).

Drilling began on February 4, 2001, using SESI personnel from Hobbs. Drilling was completed on February 16. A Giddings trailer-mounted drill, Model 25-SCT was used to bore test holes with a 4-in. hollow-stem auger. Samples from the test holes generally were collected in thin-walled sampling tubes using SOPs found in <u>Environmental Protection Agency</u>, 1984, Characterization of Hazardous Waste Site - A Methods Manual: Vol. II. Initially, soil samples were collected at 0-2 ft. and 2-5 ft. intervals. Due to the presence of cemented caliche at 3 ft., some sample boreholes at Area 1 did not penetrate below that depth. However, sufficient boreholes were drilled in the center of pit to provide confidence in the results. At Area 2, all holes were drilled to five feet. Locations of the boreholes at Areas 1 and 2 are shown in Figures 3 and 4, respectively. A table showing borehole lithologies is presented in Appendix A. At the completion of drilling, the boreholes were backfilled with drill cuttings.

Field-testing for Total Petroleum Hydrocarbons (TPH) was performed on most soil samples (EPA Method 418.1) using a GAC Mega Total Petroleum Hydrocarbon analyzer. The samples were preserved on ice and delivered along with Chain of Custody to Cardinal Laboratories for testing. Laboratory samples were analyzed for Total Petroleum Hydrocarbons (EPA Method SW 846 418.1), BTEX (EPA Method SW-846-8260) and Chlorides (EPA Method 600/4-79-020 325.3). Copies of the analytical results are found in Appendix B.

#### III. Results of Soil Testing

#### Soil Sampling Results – Area 1, Production Pit

Soil sampling results for TPH, BTEX and chlorides from the 17 boreholes at Area 1 are tabulated in Table 1.

Laboratory TPH concentrations ranged from less than 10 mg/Kg in six boreholes to 9,440 mg/Kg in BH 5-1 at a depth of 0-2 ft. The average TPH, calculated for all Area 1 samples, was 1,504 mg/Kg. The highest TPH concentrations are in boreholes BH 3, 4, 5, 6, and 8, which are within the center of the Area 1 investigation grid (Figure 3).

					Concentrat	tion (mg/Kg)	)	
Location, Borehole, and		Sample					Total	
Sample #	Depth (ft.)	Date	TPH	Benzene	Toluene	E-benzene	Xylenes	Cl
Area 1, BH 1-1	2-5	02/04/01	<10	< 0.005	0.007	< 0.005	0.018	128
Area 1, BH 2-1	3-5	02/04/01	<10	< 0.005	< 0.005	< 0.005	< 0.015	192
Area 1, BH 3-1	0-2	02/05/01	3,540	< 0.005	0.008	< 0.005	< 0.015	145
Area 1, BH 3-2	2-5	02/05/01	165	< 0.005	0.010	< 0.005	0.017	162
Area 1, BH 4-1	0-2	02/06/01	1,400	< 0.005	0.006	< 0.005	0.016	129
Area 1, BH 4-2	2-5	02/06/01	15.8	< 0.005	< 0.005	< 0.005	< 0.015	145
Area 1, BH 5-1	0-2	02/06/01	9,440	< 0.005	< 0.005	< 0.005	< 0.015	291
Area 1, BH 5-2	2-5	02/06/01	220	< 0.005	< 0.005	< 0.005	< 0.015	129
Area 1, BH 6-1	0-2	02/06/01	3,550	< 0.005	< 0.005	< 0.005	< 0.015	113
Area 1, BH 6-2	2-5	02/06/01	388	< 0.005	< 0.005	< 0.005	< 0.015	162
Area 1, BH 7	0-2	02/06/01	119	< 0.005	< 0.005	< 0.005	< 0.015	242
Area 1, BH 8	0-2	02/06/01	1,490	< 0.005	< 0.005	< 0.005	< 0.015	129
Area 1, BH 9	0-2	02/06/01	154	< 0.005	< 0.005	< 0.005	< 0.015	129
Area 1, BH 10	0-3	02/06/01	60.2	< 0.005	< 0.005	< 0.005	< 0.015	113
Area 1, BH 11	0-3	02/06/01	491	< 0.005	< 0.005	< 0.005	< 0.015	210
Area 1, BH 12	0-3	02/06/01	18.5	< 0.005	< 0.005	< 0.005	< 0.015	145
Area 1, BH 13	0-2	02/06/01	<10	< 0.005	< 0.005	< 0.005	< 0.015	81
Area 1, BH 14	0-1.5	02/06/01	<10	< 0.005	< 0.005	< 0.005	< 0.015	356
Area 1, BH 15	0-1.5	02/06/01	<10	< 0.005	< 0.005	< 0.005	< 0.015	129
Area 1, BH 16	0-2	02/06/01	<10	< 0.005	< 0.005	< 0.005	< 0.015	1,617
Area 1, BH 17	0-2	02/06/01	<10	< 0.005	< 0.005	< 0.005	< 0.015	129
						1		
		All Samples:				A	Il Samples:	
	Area	1 TPH Mean:	1,504			Area 1 Chlo	oride Mean:	232
Ar	ea 1 TPH Geo	metric Mean:	357		Area 1 Ch	loride Geom	etric Mean:	171
······································	Area	a 1 TPH Max:	9,440	1		Area 1 Chl	loride Max:	1,617
	Are	a 1 TPH Min:	<10	1		Area 1 Ch	loride Min:	81
				1				
	"Shallow" Sar	nples (≤3 ft.):			"Sh	allow" Samp	les (≤3 ft.):	
Area 1 Sh	allow Sample	s TPH Mean:	2,026	1	Area 1 Sha	llow Sample	s Cl Mean:	264
Area 1 Shallow Sam	ples TPH Geo	metric Mean:	549	Area		amples Cl Ge		180
	hallow Samp		9,440			hallow Samp		1,617
	Shallow Samp		<10			hallow Samp		81
	1	Γ		1				
	"Deep" Sar	nples (>3 ft.):				"Deep" Samp	oles (>3 ft.):	
Area 1	Deep Sample		197	-		Deep Sample		153
Area 1 Deep Sam			122	Area 1		oles Cl Geom		151
	1 Deep Samp		388			Deep Samp		192
	1 Deep Samp		<10			1 Deep Samp		128
		i		1			i	
	i	<u>+</u>			1	· · · · · · · · · · · · · · · · · · ·		

# Table 1. Borehole Soil Sampling Results, Area 1 (Production Pit) Schubert SiteInvestigation, Lea County, New Mexico

To further assist in interpretation, average TPH values were recalculated based on whether the sample was a "shallow" (0-3 ft.) or "deep" sample (>3 ft.). The mean TPH for the shallow samples was 2,026 mg/Kg, while the mean for the deep samples was only 197 mg/Kg. Lithologically, all the shallow samples except one were a brown or gray cohesive clay (BH 12 had a mixture of pink sand and brown clay). However, this type of clay is not characteristically present in the area, which may indicate that the old pit was clay-lined. Further, the soil TPH values were not excessively elevated compared to those found in other abandoned production pits in the Hobbs area.

BTEX constituent sampling showed essentially no volatile hydrocarbons present in the shallow or deep samples at very low detection limits (usually 0.005 mg/Kg). No benzene was detected in any Area 1 sample.

Chloride levels ranged from 81 mg/Kg in BH 13 to a maximum of 1,617 mg/Kg in BH 16. The latter was the only sample that exceeded 1,000 mg/Kg; the next highest sample was 356 mg/Kg in BH 14. There was only a relatively small decrease in chloride levels in the "deep" samples from levels in the upper 3 ft.; the average of the shallow samples was 264 mg/Kg while the deeper samples had a chloride mean of 153 mg/Kg. Again, the soil chloride concentrations were not excessively elevated compared to those commonly found in abandoned pits in the region. Also, except for the value of 1,617 mg/Kg in BH 16 (which is likely production related), the other chloride values may well be due to irrigation leaching of the surface since the area is currently under cultivation.

The lack of significant residual hydrocarbon or highly elevated produced water constituents in the soil samples indicates that either the pit was not in continuous use for placement of production wastes, or that it was cleaned before closure. Based on the presence of relatively clean and continuous clay at all but one borehole, and the lack of significant TPH concentrations in the underlying caliche, it is likely that the pit was not extensively used for disposal purposes. Supporting evidence for this hypothesis is the 1964 aerial photograph, which shows an apparent dry pond.

#### Soil Sampling Results – Area 2, Tank Battery Area

Soil sampling results for TPH, BTEX and chlorides from the 11 boreholes at Area 2 are tabulated in Table 2.

Laboratory TPH concentrations ranged from less than 10 mg/Kg in four boreholes to 1,890 mg/Kg in BH 1-1 at a depth of 0-3 ft. The average TPH, calculated for all Area 2 samples, was 445 mg/Kg. The highest TPH concentrations are in boreholes BH 1, 2, and 6, which are generally within the center of the Area 2 investigation grid (Figure 4).

As at Area 1, the TPH values were recalculated based on whether the sample was a "shallow" (0-3 ft.) or "deep" sample (>3 ft.). The mean TPH for the shallow samples was 731 mg/Kg, while the mean for the deep samples was only 112 mg/Kg. Lithologically, the shallow samples were a mixture of topsoil, clay and sandy clay. Again, the soil TPH values were not excessively elevated compared to those found in other abandoned production sites in the Hobbs area.

Table 2. Borehole Soil Sampling Results, Area 2 (Tank Battery) Schubert Site
Investigation, Lea County, New Mexico

					Concentrat	tion (mg/Kg)		
Location, Borehole, and		Sample					Total	
Sample #	Depth (ft.)	Date	TPH	Benzene	Toluene	E-benzene	Xylenes	Cl
Area 2, BH 1-1	0-3	02/07/01	1,890	< 0.005	0.058	0.034	0.171	81
Area 2, BH 1-2	5-5.5	02/08/01	167	< 0.005	< 0.005	< 0.005	< 0.015	113
Area 2, BH 2-1	0-2	02/08/01	911	< 0.005	< 0.005	< 0.005	< 0.015	81
Area 2, BH 2-2	3-3.5	02/08/01	18.4	< 0.005	< 0.005	< 0.005	< 0.015	65
Area 2, BH 3-1	0-3.25	02/08/01	86.6	< 0.005	0.006	0.007	< 0.015	178
Area 2, BH 3-2	5-5.5	02/08/01	110	< 0.005	< 0.005	< 0.005	< 0.015	162
Area 2, BH 4-1	0-2.5	02/08/01	117	< 0.005	0.005	< 0.005	< 0.015	97
Area 2, BH 4-2	5-5.5	02/08/01	47.4	< 0.005	< 0.005	< 0.005	< 0.015	81
Area 2, BH 5-1	0-2.5	02/08/01	372	< 0.005	< 0.005	< 0.005	< 0.015	113
Area 2, BH 5-2	5-5.5	02/08/01	107	< 0.005	< 0.005	< 0.005	< 0.015	97
Area 2, BH 6-1	0-2.5	02/08/01	1,650	< 0.005	< 0.005	< 0.005	< 0.015	65
Area 2, BH 6-2	5-6	02/08/01	221	< 0.005	< 0.005	< 0.005	< 0.015	145
Area 2, BH 7-1	2-3	02/16/01	<10	< 0.002	0.002	< 0.002	< 0.006	63
Area 2, BH 7-2	4-5	02/16/01	<10	< 0.002	< 0.002	< 0.002	< 0.006	63
Area 2, BH 8-1	0-3	02/09/01	<10	< 0.005	< 0.005	< 0.005	< 0.015	226
Area 2, BH 8-2	3-5	02/09/01	<10	< 0.005	< 0.005	< 0.005	< 0.015	178
Area 2, BH 9-1	2-3	02/16/01	92.9	< 0.002	0.01	0.004	0.01	110
Area 2, BH 9-2	4-5	02/16/01	<10	< 0.002	< 0.002	< 0.002	< 0.006	94
Area 2, BH 10-1	2-3	02/16/01	<10	0.003	< 0.002	< 0.002	< 0.006	173
Area 2, BH 10-2	4-5	02/16/01	<10	< 0.002	< 0.002	< 0.002	< 0.006	204
Area 2, BH 11-1	2-3	02/16/01	<10	< 0.002	< 0.002	< 0.002	< 0.006	141
Area 2, BH 11-2	4-5	02/16/01	<10	< 0.002	< 0.002	< 0.002	< 0.006	220
		All Samples:				A	Il Samples:	
	Area	2 TPH Mean:	445			Area 2 Chlo	oride Mean:	125
Ar	ea 2 TPH Geo	metric Mean:	188		Area 2 Ch	loride Geom		115
	Area	a 2 TPH Max:	1,890			Area 2 Ch	loride Max:	226
	Are	a 2 TPH Min:	<10			Area 2 Ch	loride Min:	63
	"Shallow" Sar	nples (≤3 ft.):				allow" Samp		
Area 2 Sh	allow Sample	s TPH Mean:	731	<u> </u>		llow Sample		121
Area 2 Shallow Sam	<u></u>		372	Area	2 Shallow S	amples Cl Ge	eom. Mean:	111
Area 2 S	Shallow Samp	les TPH Max:	1,890		Area 2 SI	hallow Samp	les Cl Max:	226
Area 2	Shallow Samp	les TPH Min:	<10		Area 2 S	hallow Samp	oles Cl Min:	63
	the second s	nples (>3 ft.):			the second se	'Deep" Samp	the second s	
	2 Deep Sample		112		Area 2	Deep Sample	es Cl Mean:	129
Area 2 Deep Sam			85	Area 2		oles Cl Geom		118
	2 Deep Samp		221			2 Deep Samp		220
Area	2 Deep Samp	les TPH Min:	<10		Area	2 Deep Samp	oles Cl Min:	63
		ļ						
Background								
H.P. (oily hardpan)	(Area 2)	02/09/01	48,600	< 0.005	0.007	< 0.005	< 0.015	48
W. Bender 1 (south)	0.5-0.8	03/06/01						50
W. Bender 2 (south)	2-2.4	03/06/01						112

BTEX constituent sampling showed only a few volatile hydrocarbons present in the shallow at very low detection limits (usually 0.005 mg/Kg). Benzene at 0.003 mg/Kg was detected in only one Area 2 sample. At that level the value is not significant, especially for any groundwater impact. The highest BTEX values were toluene at 0.058 mg/Kg, ethylbenzene at 0.034 mg/Kg, and total xylenes at 0.171 mg/Kg. All three samples were from borehole BH 1-1 located at the center of the Area 2 grid.

Chloride levels ranged from 63 mg/Kg in BH 7 to a maximum of 226 mg/Kg in BH 8. There was essentially no difference in chloride levels in the "deep" samples from levels in the upper 3 ft.; the average of the shallow samples was 121 mg/Kg while the deeper samples had a chloride mean of 129 mg/Kg. Again, the soil chloride concentrations were not excessively elevated compared to those commonly found in abandoned pits in the region.

For those constituents sampled in soil at the production battery, the location does not pose a threat to groundwater due to the lack of significant residual hydrocarbon or highly elevated produced water contaminants.

A sample of "oily hardpan" was collected at the location of the former tank battery. Although it had a TPH of 48,600 mg/Kg, BTEX was essentially absent and chloride concentration was less than 50 mg/Kg. This material does not pose a threat to groundwater.

For comparison purposes, a background soil sample was collected for chloride analysis. The sample was collected from an uncultivated open field on the south side of Bender Blvd. east of French Drive just across from the Schubert site. The shallow sample reported 50 mg/Kg chloride while the sample at 2.4 ft. (at the top of the caliche) had a concentration of 112 mg/Kg. This value probably represents background in the vicinity of the investigation area.

#### IV. VADSAT Modeling of Chloride Contaminant Movement

The VADSAT model was utilized to simulate contaminate transport of chloride from the vicinity of the production pit through the vadose (unsaturated) zone to the groundwater. No organics were modeled because benzene was absent, and the low levels of other volatiles detected would be attenuated before reaching groundwater. The length of time chosen for model simulation is important because the NMOCD is looking at a minimum time period of 200 years for protection of groundwater from constituents that might be leached from the pit.

Over 40 physical and chemical variables are required to be determined prior to running the VADSAT model. Many of these are site specific (e.g. constituent concentration, waste area and thickness, depth to groundwater), while others are characteristic of the pit locale (e.g. soil type, infiltration rate, hydraulic conductivity, aquifer thickness and gradient). Some variables are essentially generic to the model and generally do not need to be changed unless there is site-specific data showing a need to modify the variables (e.g. constituent physical and chemical properties for the BTEX contaminants).

#### **Chloride Simulations**

Chloride is a very conservative contaminant (i.e. does not degrade or combine with other chemicals in the subsurface to decrease its concentration). When modeling chloride, the initial concentration and net infiltration (recharge) rate are the main drivers of contamination to the water table.

At the Schubert site, the average chloride value of 232 mg/Kg at Area 1 (the production pit) was used in the model. It was not adjusted for background concentration, nor was the geometric mean used in the simulation. Hypothetical receptors were placed at a location 10 feet downgradient from the pit at depths of 1, 5 and 10 feet below the water table. An infiltration rate of 0.5 inches per year was used in the simulation; this is the rate of recharge (under natural conditions) estimated by Nickolson and Clebsch (1961). Chloride first appears at the downgradient receptors about 180 years into the simulation, but the maximum increase in concentration at the end of 200 years is about 0.1 mg/L, which is an insignificant increase (Figure 5).

Since the area is under cultivation, a further simulation was made with a net infiltration rate of 5 inches per year, a chloride concentration of 120 mg/Kg (adjusted for background), and taking into consideration the clay beneath the site that would act as a "leaky" liner. With this scenario, chloride appears at the receptors about 110 years into the simulation. The maximum chloride concentration increase is 50 mg/L at 1 ft. depth and about 7 mg/L at 10 ft. depth (Figure 6). Although this scenario appears to pose groundwater problems, large-scale irrigated agriculture in the area is unlikely to continue past 40 years due to dropping of water levels in the Ogallala Formation below where pumping for agriculture is economical. Further, the subject property may be sold and taken out of agricultural production within the next two to three years.

Although the WQCC Regulations do not directly apply to the groundwater contamination at the site, the NMOCD is applying the methodology of the WQCC regulations in evaluating the future risk to groundwater. The regulations allow degradation of the groundwater up to the listed standard, but once reached no further degradation is allowed. At the Schubert site, the chloride concentration in the groundwater is unknown, but it is unlikely that it exceeds the New Mexico groundwater standard of 250 mg/L. Therefore it is likely that some small chloride increase would be allowed due to leaching from irrigation recharge at the production pit location. Due to the uncertainties of future use of the property for agriculture and/or the availability of irrigation water, and the lack of a current background water quality sample, further modeling efforts at the site would not be productive at this time.

#### V. Conclusions and Recommendations

Results of the soil sampling program show no risk to groundwater from any hydrocarbon material remaining at the site of the production pit and the tank battery. Although several samples have elevated TPH concentrations, measurable BTEX is missing from virtually all samples. Because of this, BTEX modeling was not performed at either of these sites.

Chloride modeling shows negligible increases in chloride groundwater concentrations for a modeling scenario that utilizes natural recharge as the mechanism for moving chloride

to the groundwater. However, a maximum increase of 50 mg/L in chloride in the groundwater is predicted if the area were irrigated for the next 100 years or longer and net recharge increased to 5 inches per year. The latter scenario is unlikely given the constraints expected to occur as water for irrigated agriculture becomes prohibitively expensive as water levels drop and it is diverted to beneficial uses that are more economically valuable.

Based on evaluation of the soil sampling results and simulation of contaminant movement in the subsurface, SESI believes that no further investigation or remedial action is necessary or needed at either of the two sites (production pit and tank battery) investigated at the Schubert property.

#### VI. References

Nicholson, A. N., Jr., and Clebsch, A., Jr., 1961. *Geology and Ground-water Conditions in Southern Lea County, New Mexico*. Ground-Water Report 6, New Mexico Bureau of Mines and Mineral Resources, Socorro, New Mexico, 120 p.

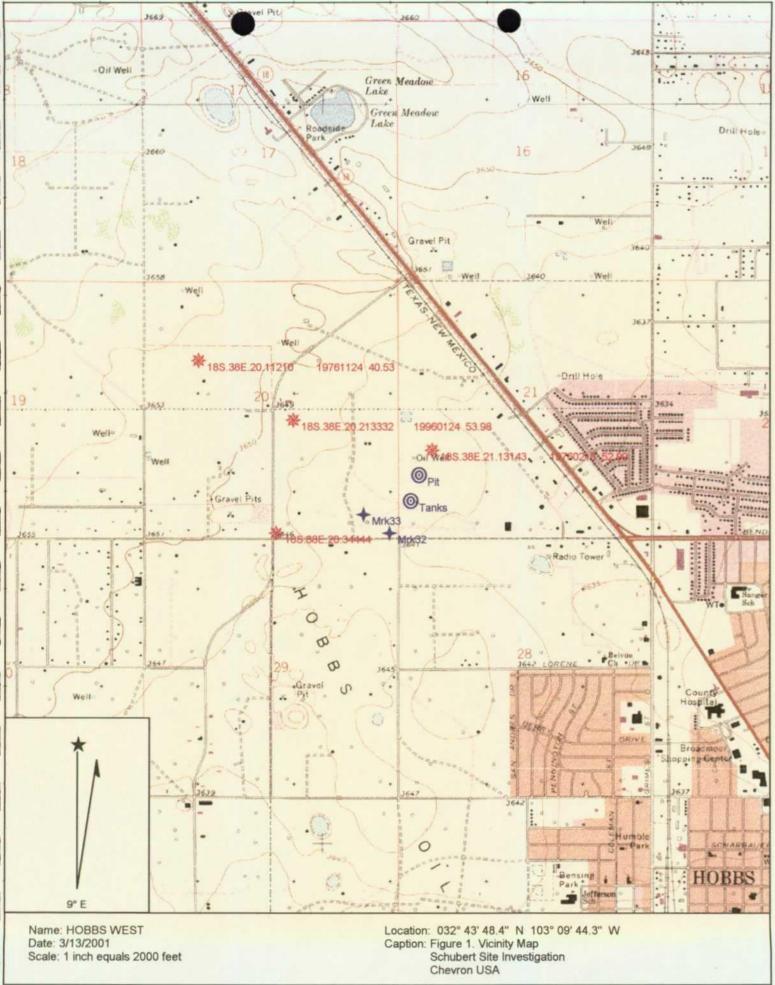
Chevron USA Lea County, New Mexico

VII. Report Figures



Chevron USA Lea County, New Mexico

# Figure 1. Vicinity Map

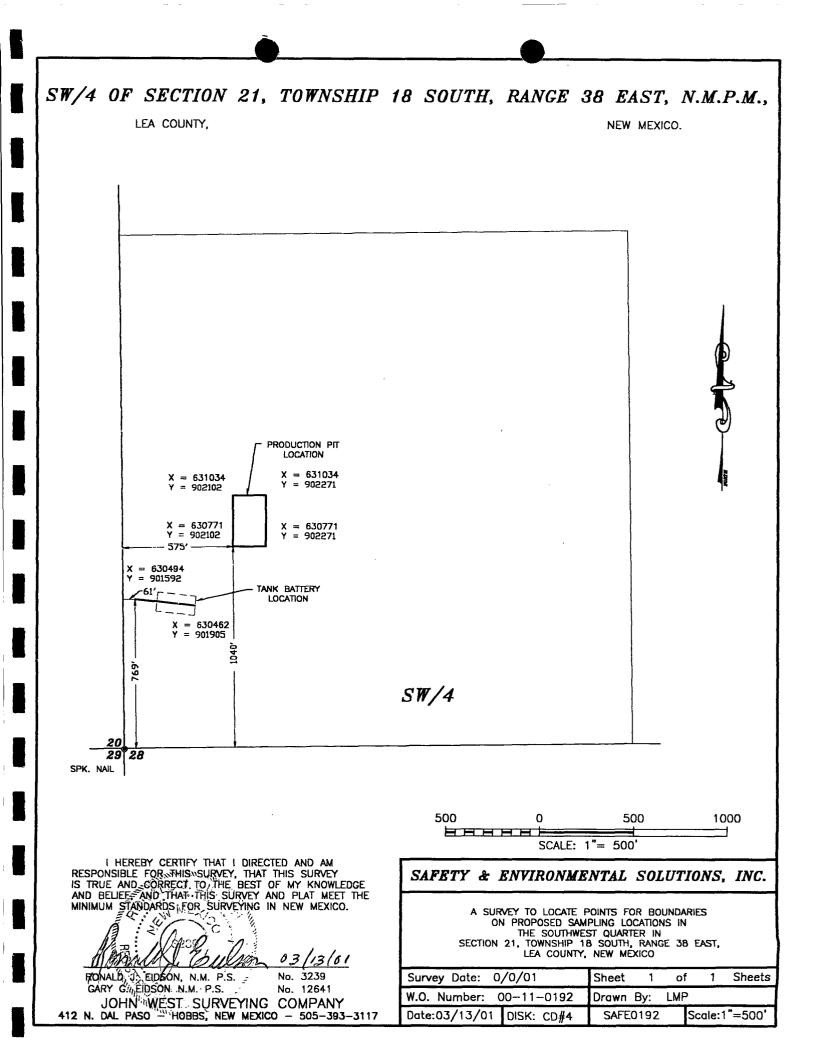


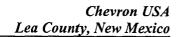
Copyright (C) 1997, Maptech, Inc.



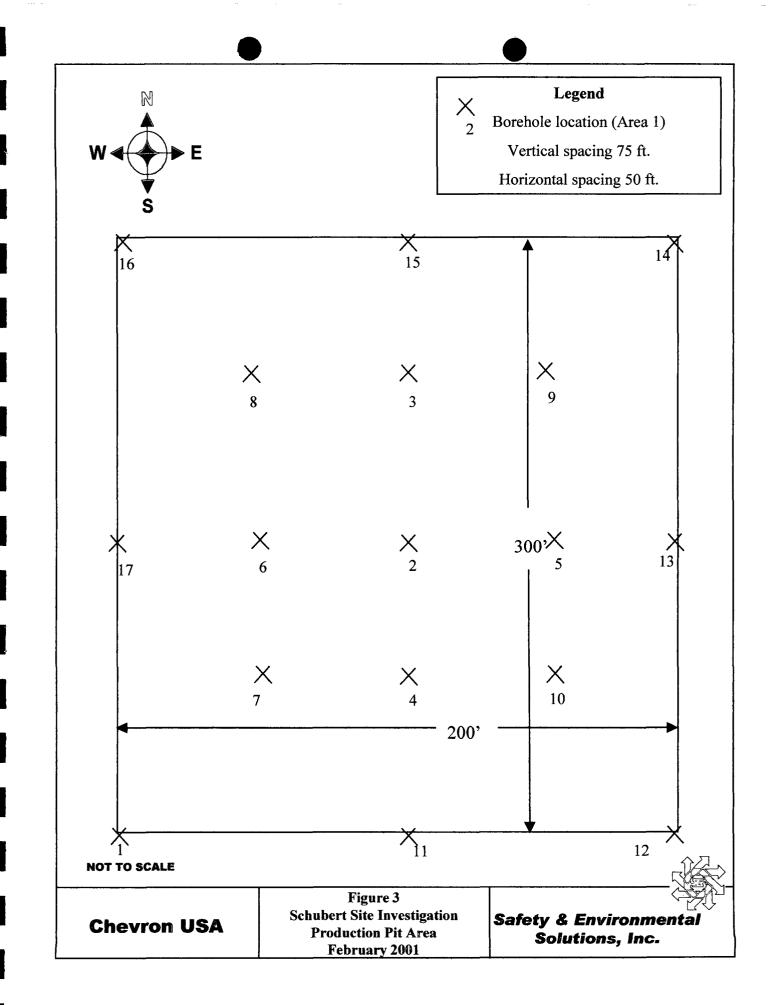
Chevron USA Lea County, New Mexico

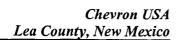
# Figure 2. Site Survey



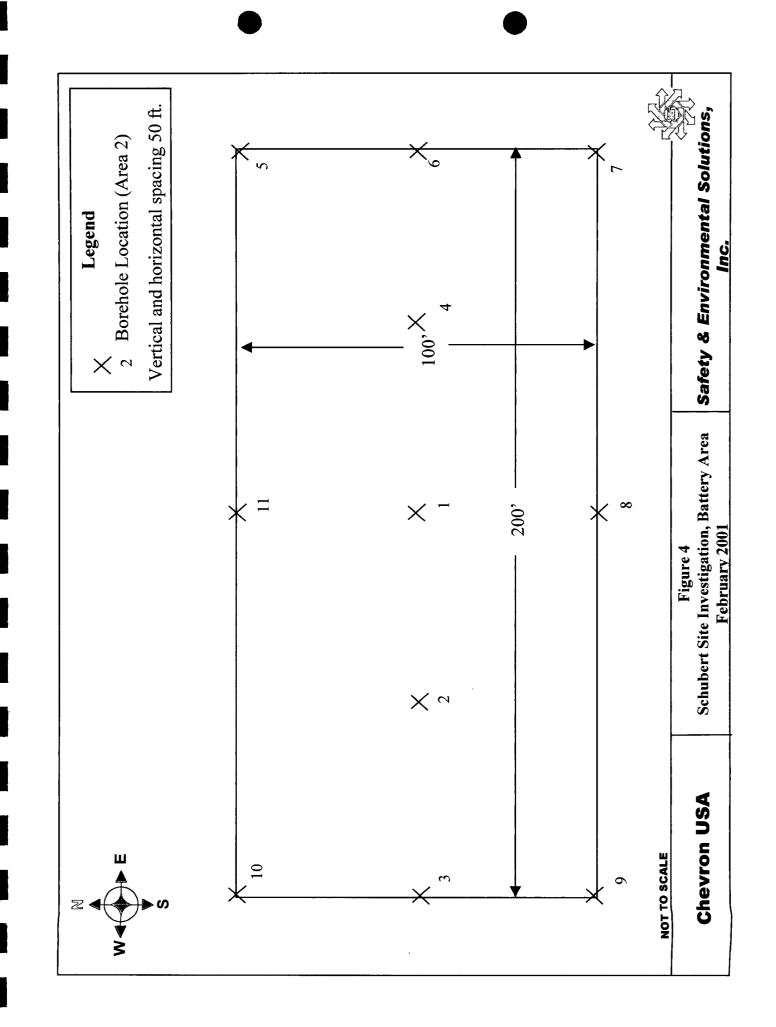


# Figure 3. Borehole Locations, Production Pit (Area 1)

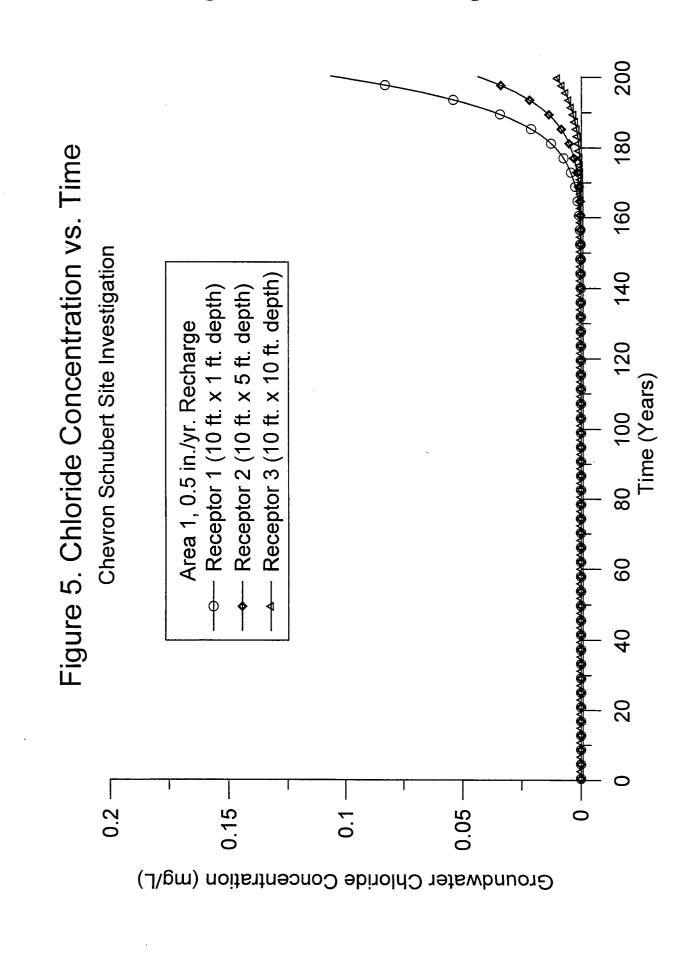




## Figure 4. Borehole Locations, Tank Battery (Area 2)

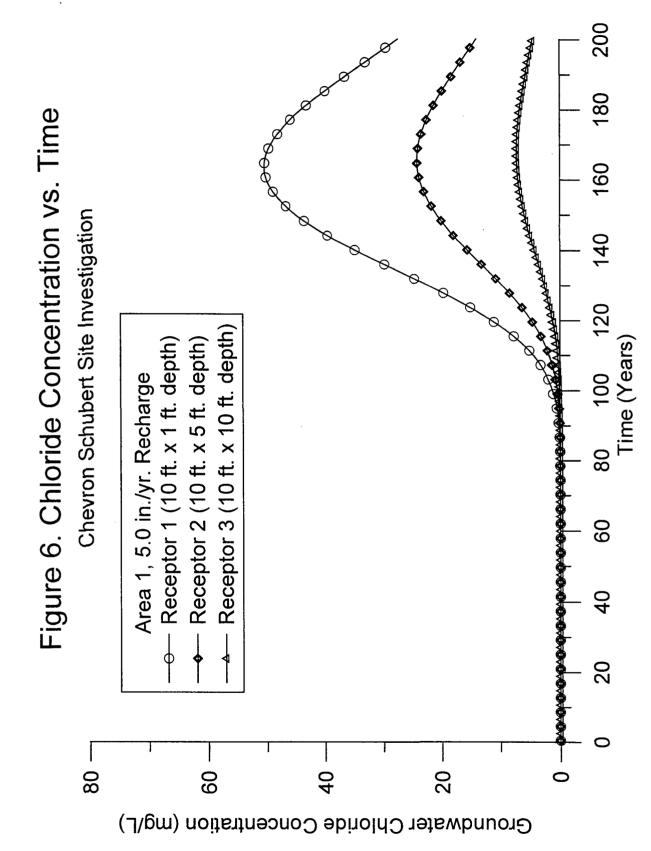


## Figure 5. Chloride Simulation, Production Pit (Area 1), 0.5 in./yr. Recharge



Chevron USA Lea County, New Mexico

## Figure 6. Chloride Simulation, Production Pit (Area 1), 5.0 in./yr. Recharge



Chevron USA Lea County, New Mexico

VIII. Report Appendices

Appendix A. Borehole Lithologies

Appendix B. Laboratory Analytical Reports

Appendix C. VADSAT Model Simulation Results

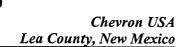
## Appendix A Borehole Lithologies



## Appendix A. Borehole Lithologies

Location, Borehole, and Sample #	Donth (ft)	Decovietion
Area 1, BH 1	<b>Depth (ft.)</b> 0-2	Description Clay, brown-gray
Area 1, DH 1	2-5	
Area 1, BH 2	0-2	Caliche, indurated Clay, brown-gray
Alta I, DII 2	2-5	Caliche, indurated
Area 1, BH 3	0-2	Clay, brown-gray
Alea 1, DII 5	2-5	Caliche, indurated
Area 1, BH 4	0-2	Clay, brown
Alta I, DII 4	2-5	Caliche
Area 1, BH 5	0-2	Clay, brown
	2-5	Caliche
Area 1, BH 6	0-2	Clay, brown
	2-5	Caliche, soft
Area 1, BH 7	0-2	Clay, brown
Area 1, BH 8	0-2	Clay, brown
Area 1, BH 9	0-2	Clay, brown
Area 1, BH 10	0-3	Clay, gray
Area 1, BH 11	0-3	Clay, gray
Area 1, BH 12	0-3	Sand, pink, and clay, brown
Area 1, BH 13	0-2	Clay, brown
Area 1, BH 14	0-1.5	Clay, brown
Area 1, BH 15	0-1.5	Clay, brown
Area 1, BH 16	0-2	Clay, brown
Area 1, BH 17	0-2	Clay, brown
Area 2, BH 1	0-3	Clay, sandy, gray
	4.5	Caliche, hard, white
	5-5.5	Caliche, white
Area 2, BH 2	0-2	Clay, sandy, brown
	3-3.5	Caliche, white
Area 2, BH 3	0-3.25	Clay, sandy, gray
······································	5-5.5	Caliche, white
Area 2, BH 4	0-1	Topsoil, sandy
	1-2.5	Clay
	5-5.5	Caliche, white
Area 2, BH 5	0-2.5	Topsoil, clay, gray
	5-5.5	Caliche, white
Area 2, BH 6	0-1	Topsoil
	1-6	Clay, tan-gray
Area 2, BH 7-1	2-3	Clay
	4-5	Clay, gray, and caliche
Area 2, BH 8-1	0-3	Clay
	3-5	Clay, gray, and caliche
Area 2, BH 9-1	2-3	Clay, gray
	4-5	Clay, gray, and caliche
Area 2, BH 10-1	2-3	Clay, brown
	4-5	Clay, brown, and caliche
Area 2, BH 11-1	2-3	
	4-5	••
Background		
H.P. (oily hardpan)		
W. Bender 1 (south)	0.5-0.8	Silt, sandy, brown with roots and some clay
W. Bender 2 (south)	2-2.4	Silt, light brown with clay and caliche fragments,
		auger refusal at 2.4 ft.

L



## Appendix B Laboratory Analytical Reports





PHONE (915) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603

PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

ANALYTICAL RESULTS FOR SAFETY & ENVIRONMENTAL SOLUTIONS, INC. ATTN: BOB ALLEN 703 E. CLINTON, #103 HOBBS, NM 88240 FAX TO: (505) 393-4388

Receiving Date: 02/05/01 Reporting Date: 02/07/01 Project Owner: CHEVRON Project Name: SCHUBART ASSESSMENT Project Location: HOBBS, NM

Sampling Date: 02/04 & 02/05/01 Sample Type: SOIL Sample Condition: COOL & INTACT Sample Received By: GP Analyzed By: BC/AH

LAB NUMBER	SAMPLE ID	TPH (mg/Kg)	Cl* (mg/Kg)	BENZENE (mg/Kg)	TOLUENE (mg/Kg)	ETHYL BENZENE (mg/Kg)	TOTAL XYLENES (mg/Kg)
ANALYSIS DA	TE:	02/06/01	02/05/01	02/06/01	02/06/01	02/06/01	02/06/01
H5579-1	AREA 1 BH 1-1	<10	128	< 0.005	0.007	<0.005	0.018
H5579-2	AREA 1 BH 2-1	<10	192	< 0.005	<0.005	< 0.005	<0.015
H5579-3	AREA 1 BH 3-1	3540	145	<0.005	0.008	< 0.005	<0.015
H5579-4	AREA 1 BH 3-2	165	162	<0.005	0.010	< 0.005	0.017
Quality Contro	<u> </u>	230	980	0.102	0.103	0.098	0.291
True Value QC	,	240	1000	0.100	0.100	0.100	0.300
% Recovery		95.9	98.0	102	103	98.3	97.0
<b>Relative Perce</b>	nt Difference	2.9	7.2	9.7	8.3	3.7	3.5

METHODS:

TRPHC-EPA 600/4-79-020 418.1;CI-Std. Methods 4500-CI'B; BTEX-EPA SW-846 8260 \*Analyses performed on 1:4 w:v aqueous extracts.

2/7/01

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for registree and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall **Cardinal** be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profils incurred by client, its subsidiaries, affiliates correspondences arising out of or related to the performance of services hereunder by **Cardinal**, regardless of whether such claim is based upon any of the above-stated reasons or otherwise.

		CHAIN-OF-CLISTODY AND ANALYSIS REQUEST	
ARDINAL LABORATORIES, INC. 2111 Beechwood, Abilene, TX 79603 101 East (915) 673-7001 Fax (915) 673-7020 (505) 39	: Marland, Hobbs, NM 88240 3-2326 Fax (505) 393-2476		
		ANALYSIS REQUEST	
Project Manager: AI/K~	BILL 10 PO#:		
Address: 703 E. CLINTON, #103	Company: SAME		
City: HOBBS State: NM ZIp: 88240	Attn:		
Phone #: (505) 397-0510	Address:		
Fax #: (505) 393-4388	City:		
Project #: Project Owner:	State: Zlp:		
Project Name: SChubert Assessment	Phone #:		
Project Location:	Fax#:		
FOR LAB USE ONLY MATRIX	PRES. SAMPLING		
ਦ ਨੂੰ ਇ			•
LABI.D. Sample I.D. G)RABOR (C BROUNDWAT SOIL SOIL		. 75 	
	1000 X-401 11:00		<del></del>
· BH 2-1 61	2,00	<b>ト</b>	·
11. E. 1. S. MOTEL I. I. M.			
recess Motion to use of the second state state with the demode whether the second with the second of the second state of the s	a sed in verting and reached by Cardnal within 30 theys after our or one of de in writing and received by Cardnal within 30 theys after completio s interruptions, loss of use, or loss of profils incurred by clerk, its su	itement of the applicable and a structure structure in the way of the applicable and a structure from the original date of involve, such a structure from the original date of involve, such a structure from the original date of involve, such as to be detioner, including attorney's freet.	
amiates or accessors arising out of or haladed the partomance of services hereucker by Cardnal, regarderss of whether such calm is based upon any of the above stated ressons or chemister  Sampler Relinguished:  Phone Result X 4	ether such ctaim is based upon any of the above stated ressons or c Phone Result.	or athendis. It 🕱 Yes 🖆 Nol Additional Fax #:	
Time: 1/1.	Fax Result REMARKS	X Yes D No	
	(Lab Staff)	are men CI ASAIN & Carx NOD.	
LT		Semplet Te Ken From 5-6 FT)	
Cool Intac Cool Intac X-Ves V	CHECKED BY: (Initials)		
t Cardinal cannot accept verbal changes. Please fax written changes	nges to 915-873-7020.		-

P				CHAIN	I-OF-CUSTODY /	CHAIN-OF-CUSTODY AND ANALYSIS REQUEST	
R R S	ARDINAL LABORATORIES, INC. 2111 Beechwood, Abilene, TX 79603 101 E	), INC. 3 101 East Marland, Hobbs, NM 88240	Hobbs, NM E				
Company Name:	(915) 673-7001 Fax (915) 673-7020 ドレート・シート	) (505) 393-2326 Fax (505) 393-2476	(505) 393-2476	176 32 <b>3</b> 2 33 33 33 33 33 33 33 33 33 33 33 33 33	A	ANALYSIS REQUEST	Г
Project Manager:	Allen		P.O. #:				Ţ
Address:			Company:		······		
City:	State:	Zip:	Attn:				
Phone #:	Fax #:		Address:				
Project #:	Project Owner:	Chevron	city:				
Project Name:	Sily hart ASSC	5 C. 55 M C W T	State:	Zlp:	5		
Project Location:	Hobs		Phone #:		5		
Sampler Name:	Dre black	21	Fex #:		) >),		
FOR LAB USE ONLY		MATRIX	PRESERV.	SAMPLING	27 ) }		
~	\	SS TER			101 2 = 2 11		
Lab I.D.	Sample I.D.	AJNI FAWC JIC	סר פנ:		7 7_ 7_		
		6)RAB C 2 CONTA 2 CONTA 2 CONTE 2 CON	: ЯЗНТС (CID/BAS (CID/BAS (CE / COC	DATE	) [9 []		
15579-3	\$ Acce # 1 B.H.# 3-1	2 2 2	1	1.		Ţ	
	B.H.#3-2			2-5-01 4:30			
					•		
PLEASE NOTE: Unbility and Damage and Nees. All deims Inchafter three to	dent's exclusive remody for any ( or cause whetboover shell be deer	dem shing whether bened in contract or tort, nod writed stross made in writing and rocolve	rt, aind be limbed to the a hed by Cardinal within 30	amount paid by the client for the days after completion of the appl	A	Terms and Conditions: Intervet will be drarged on all accounts more from 30 days past date at the rate of 24% per arrunt from the orighted date of heats	] ;
sorvice. In no event shall Ca affiliates or successions arising	for incidential or consequential demagn sted to the performance of services he	Tupbio Buch c	uptions, loss of use, or loss of profile incurred by such daim is based upon any of the shove stated	client, Its reserve		and all costs of collections, including attorney's fees.	l
Sampler Relinquished:	Date:	C-7/ Received By:		Phone Result	IN: DYes DNo	Add'I Phone #: Add'I Fax #:	
N.C.	- WAY TIME:			REMARKS:			
Relinquished By:	Date: // Time:	Received By: (Lab Staff)					
Dalivated Bu		Samula Conditi	ON CHECKED BY:	en av.			
Delivered by: (Circle One) Sampler JUPS - Bus - Other:	. (Circle One) - Bus - Other:	Cool Intact EXes EVes					
+ Cardinal	for the second	av uritten change to 505	E 202 947E				]

Į.

† Cardinal cannot accept verbal changes. Please fax written changes to 505-393-2476.

~

l I





PHONE (915) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603

PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

ANALYTICAL RESULTS FOR SAFETY & ENVIRONMENTAL SOLUTIONS, INC. ATTN: BOB ALLEN 703 E. CLINTON HOBBS, NM 88240 FAX TO: (505) 393-4388

Receiving Date: 02/06/01 Reporting Date: 02/09/01 Project Owner: CHEVRON Project Name: SCHUBART ASSESSMENT Project Location: AREA #1

Sampling Date: 02/06/01 Sample Type: SOIL Sample Condition: COOL & INTACT Sample Received By: BC Analyzed By: BC/AH

LAB NUMBER	SAMPLE ID	TPH (mg/Kg)	CI* (mg/Kg)	BENZENE (mg/Kg)	TOLUENE (mg/Kg)	ETHYL BENZENE (mg/Kg)	TOTAL XYLENES (mg/Kg)
ANALYSIS DAT	TE:	02/07/01	02/07/01	02/07/01	02/07/01	02/07/01	02/07/01
H5585-1	AREA 1 B.H. 4-1	1400	129	< 0.005	0.006	< 0.005	0.016
H5585-2	AREA 1 B.H. 4-2	15.8	145	< 0.005	<0.005	< 0.005	< 0.015
H5585-3	AREA 1 B.H. 5-1	9440	291	<0.005	< 0.005	< 0.005	< 0.015
H5585-4	AREA 1B.H. 5-2	220	129	<0.005	< 0.005	<0.005	< 0.015
H5585-5	AREA 1 B.H. 6-1	3550	113	< 0.005	< 0.005	< 0.005	< 0.015
H5585-6	AREA 1 B.H. 6-2	388	162	<0.005	<0.005	< 0.005	<0.015
H5585-7	AREA 1 B.H. 7	119	242	<0.005	<0.005	< 0.005	<0.015
H5585-8	AREA 1 B.H. 8	1490	129	< 0.005	<0.005	< 0.005	<0.015
H5585-9	AREA 1 B.H. 9	154	129	<0.005	< 0.005	<0.005	< 0.015
H5585-10	AREA 1 B.H. 10	60.2	113	<0.005	<0.005	<0.005	< 0.015
H5585-11	AREA 1 B.H. 11	491	210	<0.005	<0.005	<0.005	< 0.015
H5585-12	AREA 1 B.H. 12	18.5	145	< 0.005	< 0.005	<0.005	<0.015
H5585-13	AREA 1 B.H. 13	<10	81	<0.005	<0.005	<0.005	<0.015
H5585-14	AREA 1 B.H. 14	<10	356	<0.005	<0.005	<0.005	<0.015
H5585-15	AREA 1 B.H. 15	<10	129	<0.005	<0.005	<0.005	<0.015
H5585-16	AREA 1 B.H. 16	<10	1617	<0.005	< 0.005	< 0.005	< 0.015
H5585-17	AREA 1 B.H. 17	<10	129	<0.005	< 0.005	<0.005	<0.015
Quality Control	·····	240	980	0.108	0.109	0.111	0.328
True Value QC	<u> </u>	240	1000	0.100	0.100	0.100	0.300
% Recovery		100	98.0	108	109	111	109
Relative Percer	nt Difference	1.8	7.2	6.2	5.2	9.6	11.4

METHODS:

TRPHC-EPA 600/4-79-020 418.1;CI-Std. Methods 4500-CI'B; BTEX-EPA SW-846 8260 \*Analyses performed on 1:4 w:v aqueous extracts.

ske. Ph. D

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates represent arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above-stated reasons or otherwise.

		1 East Marland, Hobbs, NM 8824       15) 393-2326 Fax (505) 393-2476       15) 393-2326 Fax (505) 393-2476       16) Attn:       17       16) Attn:       16) Attn:       17       16) Attn:       16) Attn:       17       16) Attn:       16) Attn:       17       16) Attn:       16) Attn:       17       16) Attn:       16) Attn:       16) Attn:       17       18) Attn:       18) Attn: <th>Abilene, TX 79603           ax (915) 673-7020           ax (915) 673-7020           Fax #:           Project Owner:           Project Owner:</th> <th>2111 2111 Project Manager: Project Manager: City: Project Manager: Project Location: Project Project Pro</th>	Abilene, TX 79603           ax (915) 673-7020           ax (915) 673-7020           Fax #:           Project Owner:           Project Owner:	2111 2111 Project Manager: Project Manager: City: Project Manager: Project Location: Project Project Pro
Time: DUALDAATE OR A		Received By: (Lab Staff)	San	Relinquished By:
		vgd By: (Lab Staff)	Som	Relinquished By:
Date:		2 - 7 4 H	Sm	
1 Data: /			Time:	
LATT The System	D Yes D No	•	10-0-51 1	
Fax Result: 7es 00 REMARKS:	Phone Result: CYes DNo	ved By:	led: Date: / A/ Received	Sampler Relinquis
Phone Result: <u>UYes</u> <u>DNo</u> Fax Result: <u>UYes</u> <u>DNo</u> REMARKS:		a, business memorone, nos of use, or use or proma mumora and or or a less of whether such daim is based upon any of the above stated	be lable for indicental or consequentia conneges, intakang walnuk minakan of or related to the performance of services hareunder by Cardinal, regard	service. In no event shall Cercens affiliates or successors arising out
Date: Contracting the contracting of whether each data is based upon any of the above stated reasons or otherwise. Date: Contracting and a contracting of the above stated reasons or otherwise. These the contracting and the co	_		r cause whatsoever st	analyses. As claims including the
u and received by Cardinal within 30 days after compretent of the applicable low, lows of use, or tess of profits incurred by dent, its advectables, is a based upon any of the above stated reasons as of her when Faix Result; TYes TNO REMARKS:			ingee. Ce ditai's lability and clearts exclusive remedy for any claim artiaing	PLEASE NOTE: Limbly and Day
destructions remark for any dumine integrit whether based in contrast of sort, shall be initiad to the amount paid by the day if but the requested demarks, that have writted areas the remarks of the received by Carried and the applicable sequential demarks. That have writted in the second open any of the above stated reasons of otherwise.           Date:         Phone Result:         Type:           Date:         Phone Result:         Type:           Time:         Phone Result:         Type:			-	40
Austic remarks or remark for any define theored in contrast or fort, shall be helded to the mount put by the dark for the cause withshore remarks of the method of the mount put of the dark for the dark for the cause advancement of the control when the method of the structure of by the dark for the cause advancement of the control when a for the dark is to be advance of the dark at the subsidied, the dark method of the structure of the structure of the dark is the structure of the dark for the term of services here under a fraction, believes the dark is based upon any of the above struct instances of other darks. Date:			BH 7	J
Addit attable remoty for any definer based in contract of out, that be initiad to the amount paid by the day for the formation of the attable remoty for any definer based in contract of out, a mount paid by the day for the formation of the attable attab			011 0	
H     Control of the angle data without white based in contrast of out, at the balled to the amount put by the day for the control of the control of the amount put by the day for the control of the control			BHB	2
H     E       H     E       H     E       Image: a contract of the contract of out, that be initiad to the amount paid by the day for the contract of the contra			BH 7 111	ſ
H     Employee       H     Employee       H     Employee       H     Employee       Interview     Employee		┼─┠╾┼╌┼╌╂╌╂╌┼╌┼		2
H     E     I     I     I     I       H     B     I     I     I     I       H     B     I     I     I     I       H     B     I     I     I     I       H     B     I     I     I     I       H     B     I     I     I     I       H     B     I     I     I     I       H     B     I     I     I     I       H     B     I     I     I     I       H     B     I     I     I     I       H     B     I     I     I     I	/ /		1 2-2 49	Ţ
H     6 - 2     I     I     I       H     2     I     I     I       H     3     I     I     I       H     3     I     I     I       H     3     I     I     I       H     3     I     I     I       H     3     I     I     I       H     3     I     I     I       H     3     I     I     I       H     3     I     I     I       H     3     I     I     I       H     3     I     I     I       H     3     I     I     I       H     3     I     I     I       H     3     I     I     I       H     1     I     I     I     I       H     1     I     I     I     I       H     1     I     I     I     I       H     1     I     I     I     I       H     I     I     I     I     I       H     I     I     I     I     I       H     I     I	7		BH 6-1 11	Y
H     E     I     I     I       H     E     I     I     I       H     E     I     I     I       H     E     I     I     I       H     E     I     I     I       H     E     I     I     I       H     E     I     I     I       H     E     I     I     I       H     E     I     I     I       H     E     I     I     I       H     E     I     I     I       H     E     I     I     I		)	BH 3-2 11	-
H			1.	
H     S-2     I       H     S-2     I       H     S-2     I       H     S     I       S     S     I       S     S     I       S     S     I       S     S     I <td></td> <td></td> <td>1.</td> <td>er.</td>			1.	er.
H. SZ.     I     I     I       H. SS.     I     I     I       H. S.     I     I     I       H.	2			ب ب
3. H. YZ.     1     1     1       1. H. SZ.     1     1     1     1       1. H. S.     1     1     1     1 <td>5.75 10</td> <td>1 20</td> <td>1 BH 4</td> <td>Ń</td>	5.75 10	1 20	1 BH 4	Ń
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	щ	680 801 801 801 801 801 801 801 801 801 8		
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	17. 17. 18.	VUDWA STEWATE DGE DGE ER : ER : ER :	)) 위O 원A	Lab I.D.
I.D.     I.D.       П.D.     П. (G)RAB OR (G)RAB OR (G)RAB OR (G)RAB OR (C)G       П. (G)RAB OR (G)RAB OR (G)RAB OR (G)RAB OR (C)G       П. (G)RAB OR (G)RAB OR (G)RAB OR (G)       П. (G)RAB OR (G)RAB OR (G)RAB OR (G)       П. (G)RAB OR (G)       П. (G)RAB OR (G)RAB OR (G)       П. (G)RAB OR (G)RAB OR (G)       П. (G)RAB OR (G)R		Я		
П.	P X SMPLING	RIX PRESERV.		FOR LAB USE ONLY
PRESERV SAMPLING MATRIX PRESERV SAMPLING PRESERV SAMPLING PRES	200	Fax #:	A rechtather	Sampler Name:
ПЛИКИ СТАТИТИИ ПО	5	Phone#:		Project Location:
Phone #:     Phone #:       ID     ID				
Phone #: Phone		State:	Sil 40 hart Arescen	Project Name:
Image: State:     Zip:       I.D.     Rate:       Zip:     I.D.       Right H-1     G(G)RAB OR (C)OMP.       Right H-2     C(G)RAB OR (C)OMP.		101	5	Project #:
Project Owner:     Clip:       Project Owner:     Clip: <td></td> <td>Address:</td> <td>Fax #:</td> <td>Phone #:</td>		Address:	Fax #:	Phone #:
Far #:     Far #:       Project Owner:     Current of the state o		Attn:		City:
State:     ZIP:     Attri-       Fax #     Fax #       Fax #     Fax #       Project Owner:     Address:       Project Owner:     Address:       Project Owner:     Address:       Project Owner:     Chy:       Project Owner:     Chy:       Project Owner:     Chy:       Project Owner:     Project Owner:       Project Owner:     Project Owner: </td <td></td> <td>Company:</td> <td></td> <td>Address:</td>		Company:		Address:
State:     ZIp:     Company:       Fate:     Zip:     Aur:       Fate:     Zip:     Aur:       Fate:     Zip:     Aur:       Projoct Owner:     Cr.     Company:       Projoct Owner:     Cr.     Company:       Projoct Owner:     Cr.     Chr:       Projoct Owner:     Cr.     Cr.       Projoct Owner:     Cr		P.O.#:	Bob Aller	Project Manager:
Alter     Project Owner:     Alter       Fate:     Zip:     Alteres:       Fate:     Zip:     Alteres:       Froject Owner:     Alteres:     Zip:       Project Owner:     Alteres:     Zip:       Alteres:     Project Owner:     Alteres:       Project Owner:     Alteres:     Zip:       Project Owner:     Alteres:     Zip:       Alteres:     Alteres:     Alteres:       Alteres:     Alteres:     Zip:       Alteres:     Alteres:     Zip:       Alteres:     Alteres:     Alteres:	TO ANALYSIS			company name:
Bitler     Project Omner:     ZIP:     Alth:       Fate:     ZIP:     Alth:     Company:     State:     ZIP:       Fate:     ZIP:     Alth:     Company:     State:     ZIP:       Froject Omner:     Alth:     Company:     ZIP:     Alth:       Froject Omner:     Alth:     Company:     ZIP:     Alth:       Froject Omner:     Alth:     Company:     ZIP:     Alth:       Alth:     Fate:     ZIP:     ZIP:     Alth:       Alth:     Fate:     ZIP:     Alth:     Alth:       Alth:     Alth:     Contrients:     ZIP:     Alth:       Alth:     Alth:     Alth:     Alth:     Alth: <td>Page</td> <td>5) 393-2326 Fax (505) 393-2476</td> <td></td> <td>6)</td>	Page	5) 393-2326 Fax (505) 393-2476		6)
at (915) 673-7020 (505) 393-2236 Fat (505) 393-2476 Attric State: Zlu: Attric Company:		I Fast Martand, Hobbs, NM, 8824	Beechwood Abilene TX 79603 104	
Notion     XY YAGC     XY YAGC       Value     XY YAGC     XY YAGC       Ax (915) 673-7020     (605) 393-2235 Fax (505) 393-2475       Ax (915) 673-7020     (605) 393-2235 Fax (505) 393-2475       Ax (915) 673-7020     (605) 393-2475       Batter:     Zip:       Fax fr:     Auto:       Fax fr:     Auto:       State:     Zip:       Attr:     Auto:       State:     Zip:       Attr:     Auto:       State:     Zip:       Attr:     Auto:       Attr:     Au		\$		
ORATORIES, INC.     CHAIN-OF-CUSTODY A       Wallene, TX 79603     101 East Martand, Hobbs, NM 8324       Wile     7.12       Mile     7.12       Mile     7.12       Mile     7.12       Mile     7.12       Mile     7.12       Mile     7.11       Mile     7.12       Mile     7.12 <td></td> <td>G</td> <td>INI ARORATORIES INI</td> <td>Z</td>		G	INI ARORATORIES INI	Z

f Cardinal cannot accept verbal changes. Please fax written changes to 505-393-2476.

.

i

t

e											ប	HAIN	Ч О	D C	STC	Ž	AND A	CHAIN-OF-CUSTODY AND ANALYSIS REQUEST	
RY J	ARDINAL LABORATORIES, INC 2111 Beechwood, Abilene, TX 79603 1011	S, II S, I	S <sup>2</sup>	Eas	it Ma	rlan	d, H	iqqc	ž,	INC. 101 East Marland, Hobbs, NM 88240								r r	
	(915) 673-7001 Fax (915) 673-7020		505	(505) 393-2	3-23	126	ax (	505)	393	326 Fax (505) 393-2476								Page	ſ
Company Name:	555										ΠO						ANAL YSIS	sis request	Τ
Project Manager:	At 110						-	P.O. #:	مد										
Address:								dmo	Company:										;
city:	State:	zip:					-	Attn:											
Phone #:	Fax #:						4	Address:	88:										
Project #:	Project Owner:	1	1	20	1	しょう		Clty:					/						
Project Name:	Set bart ASESSMEN	415	3	X			0)	State:		äiz			"S						
Project Location:	Arca #1		2			1		Phone #:	ŧ				?/ <sub>/</sub>		5				
Sampler Name:	Dec Ulith	$\ $	1					Fax #:					Ь		2/				
FOR LAB USE ONLY		F	E		Į≨	<b>IATRIX</b>	]	K	PRESERV		SAMPLING			$\checkmark$	2				
Lab I.D.	Sample I.D.	AMO(D) AO B	<b>SABNIATN</b>	ABTAWGNU	REWATER			:3SA8	000	: 23			HA	318	1 JOLY			······································	
MRCKell	A.e., 1 J. U. # 11		وبمساعلتها وسكان				SLUD SLUD		/ ICE /	энто U U	DATE	TIME 4.45	, j	$\mathbb{Z}$	21				T
	CI # H & JI I II			+	15		+		$\overline{\mathbf{h}}$		+	-	7	1	1				
a a	1 R.H.#13	-		+		L	1-		2			-	7	}	1				
-/-	RH. # 14			-	<u> </u>	L_	+	<u> </u>	Ň	<u> </u>			7	/	7				
Y	BH # 15	-		1	17		<u> </u>		$\sum$				1	١	1				
7	B.H.# 16				<u>}</u>				2				)	)	)				
	1 BH.#17				)				$\sum$				7	)	)				
<u>}</u>					-+			_											
				-+		$\square$						-							
PLEASE NOTE: Liability and	y EASE NOTE: Liability and Damages. Cardinate liability and cleart's carbaine remech for any claim arising whather based	y dalm ar				contros	- Ioi			o the emount	In contract or tort, sind be limited to the ensuret paid by the client for the	lend for the					Terms and Conc	d Conditioner Interest will be charged on all accents more if	], {
melyses. Al claims including service. In no event shaff Cas	ershoes. At cheine including those for negloance and any other cause whatboever strail be doemed where made in while and received by Cardinal which 30 days after comparison of the applicable service. In neveral stat Cardinal for the Andreian of compare, including whoul instante hearinghour, lose of use of the above above the Machinal service.	eemed wah Mithout Amb Gerdheit Ter		busines busines	ede h w e hteru vether a	Ming an Plione, i rhicheir	Trecelve Ma of u In brace	d by Car e, er ber inson s	dhel wi s of pro st lo	hin 30 days : Ris incurred   r above state	willing and received by Cardinal within 30 days after completion of the a ruptions, loss of use, or loss of profits incurred by client, its subsidiaries such cheim is breach upon any of the above stabuld reasons or officervise.	n of the applic beidiaries, otherwhae,	atte				30 days pa	30 days past one at the fate of 24% per arrun are organal care of aver and all costs of collections, including sticmery's free.	
Samoler Relingu	Date:	Rec	ĮŠ	Received By:								Phone Result:	suit:	<u>Π</u> Υев	1	ON0	Add'l Phone #:	ne #:	
	1						2					Fax Result: REMARKS:		<del>۵</del>			Add'l Fax	÷	
Relinquished By:	: Date:	<b>8</b>	Nex	Received By:		1 DI A		2	2 del	$\sim$									
Delivered By: (Circle One) Samplar - Libe - Pue - Other	: (Circle One) Bus - Other	-	1	300	<u>.</u>		ndition Ict		5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	CHECKED BY: (Initials)	۲								
סמוואושר - כרט	- BUS - Vune.		-1		ž		2 ]□	_			-						/		٦

f Cardinal cannot accept verbal changes. Please fax written changes to 505-393-2476.

i

2\* 1

ł





PHONE (915) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603

PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

ANALYTICAL RESULTS FOR SAFETY & ENVIRONMENTAL SOLUTIONS, INC. ATTN: BOB ALLEN 703 E. CLINTON, #103 HOBBS, NM 88240 FAX TO: (505) 393-4388

Receiving Date: 02/09/01 Reporting Date: 02/13/01 Project Owner: CHEVRON Project Name: SCHUBART ASSESSMENT Project Location: AREA #2

Sampling Date: 02/09/01 Sample Type: SOIL Sample Condition: COOL & INTACT Sample Received By: BC Analyzed By: BC/AH

TOTAL

ETHVI

LAB NUMB	ER SAMPLE ID	TPH (mg/Kg)	Cl* (mg/Kg)	BENZENE (mg/Kg)	TOLUENE (mg/Kg)	BENZENE (mg/Kg)	XYLENES (mg/Kg)
ANALYSIS	DATE:	02/12/01	02/13/01	02/12/01	02/12/01	02/12/01	02/12/01
H5596-1	AREA 2 8-1	<10	226	< 0.005	<0.005	< 0.005	< 0.015
H5596-2	AREA 2 8-2	<10	178	< 0.005	<0.005	< 0.005	<0.015
H5596-3	BACKGROUND H.P.	48600	48	<0.005	0.007	< 0.005	<0.015
Quality Cor	itrol	229	1051	0.096	0.096	0.100	0.286
True Value	QC	240	1000	0.100	0.100	0.100	0.300
% Recover	у	95.6	105	96.3	96.3	99.8	95.1
<b>Relative</b> Pe	rcent Difference	9.8	6.8	3.4	2.9	6.3	2.1

TRPHC-EPA 600/4-79-020 418.1;CI-Std. Methods 4500-CI'B; BTEX-EPA SW-846 8260 METHODS: \*Analyses performed on 1:4 w:v aqueous extracts.

Burgess J

2/13/01 Date

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by **Cardinal** within thirth (30) days after completion of the applicable service. In no event shall **Cardinal** be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates the performance of services hereunder by **Cardinal**, regardless of whether such claim is based upon any of the above-stated reasons or otherwise.

				CHAIN-O	CHAIN-OF-CUSTODY AND ANALYSIS REQUEST	D ANALYSIS RE	QUEST
AR	ARUINAL LABURA I URES, INC. 2111 Beechwood, Abilene, TX 79603 (915) 673-7001 Fax (915) 673-7020	•	101 East Marland, Hobbs, NM  88240 (505) 393-2326 Fax (505) 393-2476	VM 88240 33-2476		Pageof	1
Company Name:	SEST				ANALYSIS RE	REQUEST	
Project Manager:	Allen		BILL TO PO#:	;			
Address:			Company:				
City:	State: Zlp:		Attn:				
Phone #:			Address:			· · · · · · · · · · · · · · · · · · ·	 
Fax #:			City:				
Project #:	Project Owner:	Levror!	State: Zip:				
Project Name:	Schubart Assi	SSCSS Ment	Phone #:	-8	5		
Project Location:	Arca #2		Fax #:	0			
FOR LAB USE ONLY		MATRIX	PRES. SAMPLING				
LAB I.D.	Sample I.D. G)RAB OR (C)OMP.	F CONTRIVERS SROUNDWATER SOIL DIL DIL SLUDGE	ру ССЕ / ССОГ ССЕ / ССОГ ИНЕВ : ОДНЕВ :	TIUE TIG AJI	1.0147	· · · · · · · · · · · · · · · · · · ·	
HSSTET			$\frac{1}{2}$	2:2 m 1 1 1			
₹ <u>~</u>	Arge #2 8-2 6		20201	1 1 meters			
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	Backglowed H.P. 6		10402	2 Jun 1 1			
-		· · · · · · · · · · · · · · · · · · ·				· · · · · · · · · · · · · · · · · · ·	
PLEASE NOTE: LIBURY and Dar analyses. Al claims including thos service. In no event shall Cardinal	PLEASE NOTS: Labity and Damages. Cardnaf's labity and clerit exclusive ramedy for any claim stiainy whether based in contract or for, shall be finited to the amount paid by the clerit for the analyses. At datims including those for negfigence and any other cause whateoewar shall be used on the verse made in writing and received by Cardnal within 30 days after completion of the applicable service. In no event shall cardnal be labe for incidental or occusent and any avford without limitation, busines in the made on any laber and reconsidered or the applicable service. In no event shall cardnal be labe for incidental or occusent and damages, including which limitation, busines in themptions, loss of use, or loss of profils incurred by fash, is a used datase,	or any daim stainy whether base be deemed walved unless made i dng without imitation, business in	od in contract or fort, shall be limited to the n writing and received by Cardnal within Astructions, lose of use, or lose of profits	e amount paid by the client for the 30 days after completion of the applicable i incurred by client, its subsidiaries,	Terms and Conditions 30 days past due at the and all costs of collectio	Terms and Conditions: interest will be charged on all accounts more than 30 days past due at the rate of 24% per annun from the original date of involce and at costs of collections, including attorney's fees.	re than a of invoice,
Sampler Relinguished		Received By:	Date: Phone Result I yer the set of the set		D No Additional Fax #: D No		
Relinguished RV	Time: 2(32) Date:	Received Bv: (Lab	Lab Staff)	REMARKS:			
		Kundel	1				<u> </u>
Delivered By: (Circle One) Sampler - UPS - Bus - Other:	(Circle One) Bus - Other:	Sample Condition Cool Intact Z Yes Z Yes	CINECKED BY: (Initials)		·.		
+ Cardinat can	+ Cardinal cannot accept verbal changes. Please fax written changes	se fax written chanc	tes to 915-673-7020.				





PHONE (915) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603

PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

ANALYTICAL RESULTS FOR: SAFETY AND ENVIRONMENTAL SOLUTIONS, INC. ATTN: BOB ALLEN 703 E. CLINTON, SUITE 103 HOBBS, NM 88240 FAX TO: 505-393-4308

Receiving Date: 02/16/01 Reporting Date: 02/20/01 Project Number: NOT GIVEN Project Name: SCHUBART ASSESSMENT Project Location: AREA #2 Sampling Date: 02/16/01 Sample Type: SOIL Sample Condition: COOL, INTACT Sample Received By: AH Analyzed By: JA

LAB NUMBER	SAMPLE ID	BENZENE (mg/Kg)	TOLUENE (mg/Kg)	ETHYL BENZENE (mg/Kg)	TOTAL XYLENES (mg/Kg)
		(	(	(	(
ANALYSIS DAT		02/19/01	02/19/01	02/19/01	02/19/01
H5624-1	AREA #2 7-1	< 0.002	0.002	< 0.002	< 0.006
H5624-2	AREA #2 7-2	< 0.002	< 0.002	< 0.002	< 0.006
H5624-3	AREA #2 9-1	< 0.002	0.010	0.004	0.010
H5624-4	AREA #2 9-2	< 0.002	<0.002	<0.002	< 0.006
H5624-5	AREA #2 10-1	0.003	< 0.002	< 0.002	< 0.006
H5624-6	AREA #2 10-2	< 0.002	< 0.002	< 0.002	<0.006
H5624-7	AREA #2 11-1	< 0.002	< 0.002	< 0.002	< 0.006
H5624-8	AREA #2 11-2	<0.002	<0.002	<0.002	< 0.006
Quality Control		0.097	0.100	0.088	0.275
True Value QC		0.100	0.100	0.100	0.300
% Accuracy		97	100	88	92
<b>Relative Percent</b>	Difference	4.1	0.7	1.6	0.2

METHOD: EPA SW 846-8020, 5030, Gas Chromatography

Chemis

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profils incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above-stated reasons or otherwise. H5624SSESIHOBBSBTEXONLY

ARDINAL LABORATORIES, INC.         2111 Beechwood, Abilene, TX 79603         1015 673-7001 Fax (915) 673-7020         5053         Company Name:         1015 673-7001 Fax (915) 673-7020         Froject Manager:         Project Manager:         Redutess:         City:         State:         City:         State:         City:         State:         City:         Project Manager:         Address:         City:         State:         City:         Project Name:         City:         State:         City:         State:         City:         State:         City:         State:         State:         City:         State:         State:
--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

i

İ

i

† Cardinal cannot accept verbal changes. Please fax written changes to 505-393-2476.

ı.

I.

I





PHONE (915) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603

PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

ANALYTICAL RESULTS FOR SAFETY & ENVIRONMENTAL SOLUTIONS, INC. ATTN: BOB ALLEN 703 E. CLINTON, #103 HOBBS, NM 88240 FAX TO: (505) 393-4388

Receiving Date: 02/08/01 Reporting Date: 02/13/01 Project Number: NOT GIVEN Project Name: SCHUBERT Project Location: NOT GIVEN Sampling Date: 02/07 & 02/08/01 Sample Type: SOIL Sample Condition: COOL & INTACT Sample Received By: BC Analyzed By: BC/AH

LAB NUMBER	SAMPLE ID	TPH (mg/Kg)	Cl* (mg/Kg)	BENZENE (mg/Kg)	TOLUENE (mg/Kg)	ETHYL BENZENE (mg/Kg)	TOTAL XYLENES (mg/Kg)
ANALYSIS DAT	Γ <b>Ε</b> :	02/12/01	02/12/01	02/12/01	02/12/01	02/12/01	02/12/01
H5594-1	AREA 2 BH 1-1	1890	81	<0.005	0.058	0.034	0.171
H5594-2	AREA 2 BH 1-2	167	113	<0.005	< 0.005	< 0.005	<0.015
H5594-3	AREA 2 BH 2-1	911	81	<0.005	<0.005	<0.005	<0.015
H5594-4	AREA 2 BH 2-2	18.4	65	<0.005	<0.005	< 0.005	<0.015
H5594-5	AREA 2 BH 3-1	86.6	178	<0.005	0.006	0.007	<0.015
H5594-6	AREA 2 BH 3-2	110	162	< 0.005	<0.005	< 0.005	<0.015
H5594-7	AREA 2 BH 4-1	117	97	<0.005	0.005	< 0.005	<0.015
H5594-8	AREA 2 BH 4-2	47.4	81	<0.005	<0.005	<0.005	<0.015
H5594-9	AREA 2 BH 5-1	372	113	<0.005	< 0.005	< 0.005	<0.015
H5594-10	AREA 2 BH 5-2	107	97	< 0.005	<0.005	< 0.005	< 0.015
H5594-11	AREA 2 BH 6-1	1650	65	<0.005	< 0.005	<0.005	<0.015
H5594-12	AREA 2 BH 6-2	221	145	<0.005	<0.005	<0.005	<0.015
Quality Control		229	1051	0.096	0.096	0.100	0.286
True Value QC		240	1000	0.100	0.100	0.100	0.300
% Recovery	<u></u>	95.6	105	96.3	96.3	99.8	95.1
<b>Relative</b> Percer	nt Difference	9.8	6.8	3.4	2.9	6.3	2.1

METHODS:

TRPHC-EPA 600/4-79-020 418.1;CI-Std. Methods 4500-CI'B; BTEX-EPA SW-846 8260 \*Analyses performed on 1:4 w:v aqueous extracts.

Burgess JVA. Cooke. Ph. D.

2/13/01 Date

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above-stated reasons or otherwise.

CUAIN OF CUSTODY AND ANA VSIS REOLIEST	ARDINAL LABORATORIES, INC. 2111 Beechwood, Abilene, TX 79603 101 East Marland, Hobbs, NM 88240 2115 Beechwood, Abilene, TX 79503 101 East Marland, Hobbs, NM 88240 2116 Beechwood, Abilene, TX 79503 101 East Marland, Hobbs, NM 88240 2117 Beechwood, Abilene, TX 79503 101 East Marland, Hobbs, NM 88240 2118 Beechwood, Abilene, TX 79503 101 East Marland, Hobbs, NM 88240 2119 Beechwood, Abilene, TX 79503 101 East Marland, Hobbs, NM 88240 2119 Beechwood, Abilene, TX 79503 101 East Marland, Hobbs, NM 88240 2110 Beechwood, Abilene, TX 79503 101 East Marland, Hobbs, NM 88240 2111 Beechwood, Abilene, TX 79503 101 East Marland, Hobbs, NM 88240	CFCT	1	E. CLINTON, #103		397-0510	393-4388	Project Owner: State: Zlp:	ne: Schubert Phone #:	Fax #:	E ONLY PRES. SAMPLING	C C C C C C C C C C C C C C	Ares 2 BH 1-1 C V V V V V Z J-01 8	1 7 2-199	21 5 4	-2-2 C )			SH 4-2 C Y	ر ا ک ک	64554~11 (11111 11 1 1 1 1 1 1 1 1 1 1 1 1 1	225	related to the performance of services herearcost by Cardray, reparters of mether such cam is based upon any of the accord asterofesions of contractions of the second sec	REMARKS:	d By: Date: Good Received By: (Lab Stath)		- Bus - Other:	Cardinat connect occent verbal chances. Diease fax written chances to 915-873-7020.
	ARDINA 2111 10		4	۱.	city: HOBBS	Phone #: (505) 397-	Fax #: (505) 393-4		Project Name: Schul	Project Location:	FOR LAB USE ONLY	LABI.D.	WSSH-1 Are	1	. 3	) <del>t</del>	$\langle \cdot \rangle$	(2	8	i i i		PLEASE NOTE: Liability and Damages, Cardnare study unayses. Al daims including those for ney genes and any service, its no evert shall cardnel be liable for incidental o	Sampler Rellngulshed:	XA PROM	elinquished By:	Dollyorna Bur Phrole One	Sampler • UPS • Bus • C	

ABDINAL LABORATORIES, INC.       2111 Beechwood, Abliene, TX 79603     101 Eas       2111 Beechwood, Abliene, TX 79603     101 Eas       2100 East: TO3 E. CLINTON, #103     6050 33       Cilly: HOBBS     State: NM ZIP. 88240       Project Manager: A.W.     Project Manager: A.W.       Project Manager: A.W.     Project Owner:       Project Icon     Project Name: State: NM ZIP. 88240       Project Icon     Project Name: State: NM ZIP. 89240       Project Icon     Project Name: State: NM ZIP. 10       Project Icon     Project Name: State: NM ZIP. 10       Project Icon     Project Name: Name       Project Icon     Project Icon       Project Icon     Project Icon	DINAL LABORATORIES, INC. 2111 Beechwood, Abilene, TX 79603 101 East Marland, Hobbs, NM 88240 (915) 673-7001 Fax (915) 673-7020 (505) 393-2326 Fax (505) 393-2476	SFST	Project Manager: A Wer	703 E. CLINTON, #103 Company: SAME	3BS State: NM Zlp: 88240 Attn:	(505) 397–0510 Address:	۳	Project Owner:	ame: Son la Le P		I I MATRIX   PRES.   SAMPLING	Sample L.D. Sample L.D. Sample L.D. Sitcher Cook Sample L.D. Sitcher Cook Sample L.D. Sitcher Cook Sample L.D. Sitcher Cook Sample L.D. Sitcher Cook Sample L.D. Sample L.D. S		646.2 C X X						PLEASE NOTE: LIMITY and Damages. Cardinar's available remarks for any daim adainy whether beared in contract or ford, shall be findled to the amount pair by the sleet for the Territy and Damages. Cardinar's available remarks for any daim adainy whether beared in contract or ford, shall be findled to the anount pair by the sleet for the Territy and Damages. Cardinar's available remarks for any daim adainy whether beared in contract or ford, shall be findled to the amount pair by the sleet for the Territy and Damages. Cardinar's available remarks for any daim adainy whether beared in contract or ford, shall be findled to the anount for the afford for the and a study and the original date of through on the application of the application.		Sampler Relingulshed: Date: XM Received Bv: Phone Result II Yes II Ng Additional Fax #: Fax Result: II Yes II No REMARKS: REMARKS: REMARKS: Remain Rema Remain Remain Rema	hed BV: Date: And Received BV: (Lab Staff)	Delivered By: (Circle One)     Sampler Condition     Official Distribution       Sampler . UPS - Bus - Other:     Cool     Initials)
-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------	------	------------------------	------------------------------------	--------------------------------	-------------------------	---	----------------	------------------	--	-------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--	-------------	--	--	--	--	--	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------





PHONE (915) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603

PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

ANALYTICAL RESULTS FOR SAFETY & ENVIRONMENTAL SOLUTIONS, INC. ATTN: BOB ALLEN P.O. BOX 1613 HOBBS, NM 88241 FAX TO:

Receiving Date: 03/06/01 Reporting Date: 03/07/01 Project Number: NOT GIVEN Project Name: HOBBS BACKGROUND Project Location: W. BENDER

LAB NUMBER

Analysis Date: 03/07/01 Sampling Date: 03/06/01 Sample Type: SOIL Sample Condition: COOL & INTACT Sample Received By: BC Analyzed By: AH

> CI (mg/Kg)

H5679-1	W. BENDER #1, 6-10"	50
H5679-2	W. BENDER #2, 24-29"	112
Quality Control	· · · · · · · · · · · · · · · · · · ·	992
True Value QC		1000
% Recovery		99.2
<b>Relative Percent</b>	Difference	3.9

SAMPLE ID

METHOD: Standard Methods 4500-CI'B NOTE: Analyses performed on 1:4 w:v aqueous extracts.

∠Chemis

107/2001

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above-stated reasons or otherwise.

No start	ARDINAL LARORATORIES		ł		1			1	<u> </u>	CHAIN	-OF-	ISUC	λαο	AND	CHAIN-OF-CUSTODY AND ANALYSIS REQUEST	QUEST	i
3	2111 Beechwood, Abilene, TX 79603 (915) 673-7001 Fax (915) 673-7020		ast   393	101 East Marland, Hobbs, NM 882 (505) 393-2326 Fax (505) 393-2476	nd, l Fax	tobt (505	) 39; ) 39;	M 8 1-24	8240 r6			:			Page of		
Company Name:					Γ			1118	047					ANAL YSIS	<b>YSIS REQUEST</b>		
Project Manager:	a W Rob Allen					P.O. #:	¥										
Address:	D. Rox 1613					Som	Company:	マ	J.								
City: 10/1	State:	Zip:				Attn:		7									
Phone #:	Fax #:					Address:	:598										
Project #:	Project Owner:	Ç				clty:						. <u> </u>					
Project Name:	Holdis Reackground	Nor &				State:		2	Zip:		Ĵ.						
Project Location:	W. Renles					Phone #:	#				ð						
Sampler Name:	L Zoulon		·			Fax #:					P,			<u> </u>			
FOR LAB USE ONLY				MATRIX	1	Ē	PRESERV	RV	SAMPLING	ĮG	Ś						
		รษ		<u> </u>							07)	·					
Lab I.D.	Sample I.D.	) SO 8AS JNIATHO	AWGNUC TAWETS	NDE OIF	DGE	:38A9(C	1000	: 1931	1000		45					· · · ·	
1015	$\frac{n}{n} \frac{1}{n} \frac{1}$	)) #		כצר 20וו				HTO 1	DATE	TIME	7	+					
-hach	1 1/2		_	1>		-		-1-1	2	2773							
	Mr. WAWKI		-	₫	1	+		4	5	14		+					
						$\left  - \right $											
			_												-	_	
					_	+-		+				+					,
				┼╌┼		┽╍┼		++				$\frac{1}{1}$					
						+		+									
PLEASE NOTE: Libbling and Damage analyses. Al chains including these for	amages. Cardinal's lisbility and client's exclusive remo ase for regignence and any other cause whitehoever a	dalm artising wh med wates of urio	the based		In contrast or tort, shall be limited to the erroru willing and received by Cardinal within 30 days	142	the limited to the Cardinal with	8	we encurt puid by the clear for the 30 days after completion of the sy	at puid by the clast for the after completion of the applic		$\frac{1}{2}$			Terms and Conditions: latenet will be charged on all accentia more from 30 days part due at the rate of 24% per annun from the original date of breed	on al accounts more on the original date	, și
serves, in ro over and Ca sillates or successors atsit Sambler Rollingu	e performance of services here, not Deformance of services here, not	der by Cerdinel, repardices of whether / / / Rec.elved Rv.	of whether PRV-		uptions, loss of use, or loss of pro auch chaim is based upon any of the	ed upon			ruptions, how of use, or how of profits incurred by client, its subsidiaries such claim is based upon any of the shows stated reasons or otherwise Dhave a	la subsidatios, la or ofterwise. I Phoma Rossil <del>i</del> .				•••• I∆da"ID	ad a costo of concern, including standays he Add <sup>1</sup> Phome 2-		ſ
VIL I	Time.		5							Fax Result: REMARKS:			N N	Add'l Fax #:	AX 种:		
Relinquished By:		Received By:	1By:	-	Lab Staff)		~						-				
	Time:	Be	ふ	410	X	G,	Å	2							·		
Delivered By: (Circle One) Sampler - UPS - Bus - Other:	: (Circle One) - Bus - Other:		Sample Cool	i	Intract	ç	н Н С	ECKED (initials)	HECKED BY: (initials)					1			
† Cardinal c	Cardinal cannot accept verbal changes. Please fax written changes to 505-393-2476.	fax writter	chai	19es	o 505	393	2476		1								

1

## Appendix C VADSAT Model Simulation Results

+ VADSAT Version 3.0 + + + A Monte Carlo Model for Assessing the Effects of Soil Contamination on Groundwater Quality Developed by: Environmental Systems and Technologies Inc. Blacksburg, Virginia + Tel: 703-552-0685, Fax: 703-951-5307 For The American Petroleum Institute 1995 PROJECT TITLE: Schubert Area 1, Chloride 232 mg/L, Run 1 SOURCE AND CHEMICAL DATA \*\*\*\* DEPTHM, MEAN THICKNESS OF WASTE ZONE (m) = 0.91440 0.00000 DEPSTD, STD.DEV. OF THICKNESS OF WASTE ZONE = = 5574.20020 AREAM, MEAN WASTE ZONE AREA (m<sup>2</sup>) STDA, STD.DEV. OF WASTE ZONE AREA = 0.00000 RLWM, MEAN L/W RATIO (-) = 1.00000 STDRLW, STD.DEV. OF L/W RATIO = 0.00000 CVRTHM, MEAN VALUE OF COVER THICKNESS (m) = 0.00000 CVRTHS, STD.DEV. OF COVER THICKNESS = 0.00000 MEAN MASS FRACTION OF SALT IN WASTE (mg/kg) = 231.99991 STD OF MASS FRACTION OF SALT IN WASTE = 0.00000 CZEROM, MEAN AQU. PHASE CONC OF SALT  $(g/m^3) = 961.60999$ CZEROS, STD.DEV. OF AQU. PHASE CONC. OF SALT = 0.00000 CHEMICAL SPECIES Sodium Chloride HYDROGEOLOGICAL PROPERTIES \*\* UNSATURATED ZONE INPUT PARAMETERS \*\* GAMMAM, MEAN UNSAT ZONE DECAY COEF (1/day) = 0.00000 STDGAM, STD.DEV. OF UNSAT ZONE DECAY COEF = 0.00000 UNFOCM, MEAN UNSAT ZONE ORGANIC CARBON FRACTION (-) = 0.00000 UNFOCS, STD.DEV. OF UNSAT ZONE ORGANIC CARBON FRAC. = 0.00000 FKSW, MEAN SAT. CONDUCTIVITY (m/day) = 0.02600

STDFKS, STD.DEV. OF SAT. CONDUCTIVITY	=	0.000
DISTM, MEAN DEPTH TO GROUNDWATER (m) STDDST, STD.DEV. OF DEPTH TO GROUNDWATE	= R =	21.33600 0.00000
UNPORM, MEAN VADOSE ZONE POROSITY (-) SUNPOR, STD.DEV. OF VADOSE ZONE POROSIT	= Y =	0.39000 0.00000
PARNM, MEAN VALUE OF VG PARAMETER N (-) SDPARN, STD.DEV. OF VG PARAMETER N	=	1.48000 0.00000
RESWCM, MEAN RESIDUAL WATER CONTENT (-) RESWCS, STD.DEV. OF RESIDUAL WATER CONT		
ALFINM = 0, UNSAT DISPERSIVITY CALCULATED IN ** SATURATED ZONE INPUT PARAMETERS **	TERNALLY	
LAMBW, MEAN SAT. ZONE DECAY COEFF. (1/d. SLAMB, STD.DEV. OF SAT. ZONE DECAY COEF		
PORM, MEAN SAT. ZONE POROSITY (-) STDPOR, STD.DEV. OF SAT. ZONE POROSITY		0.20000 0.00000
FOCM, MEAN SAT. ZONE ORG. CARBON FRAC. STDFOC, STD.DEV. SAT. ZONE ORG. CARBON	(-) = FRAC.=	0.00000 0.00000
ALRLTM, MEAN DISPERS, RATIO LONG/TRANSV SALRLT, STD.DEV. OF DISP. RATIO LONG/TR	. (-) = ANSV. =	3.00000 0.00000
ALRTVM, MEAN DISPERS. RATIO TRANSV/VERT SALRTV, STD.DEV. OF DISP. RATIO TRANSV/	. (-) = VERT. =	100.00000 0.00000
CONDS, SAT. HYDRAULIC COND. (m/day) SCONDS, STD.DEV. OF SAT HYDRAULIC COND.	=	1.90000 0.00000
GRADS, HYDRAULIC GRADIENT (m/m) SGRADS, STD.DEV. OF HYDRAULIC GRADIENT	=	0.00263 0.00000
HMEAN, MEAN AQUIFER THICKNESS (m) STDH, STD.DEV. OF AQUIFER THICKNESS		39.31900 0.00000
QINM, MEAN INFILTRATION RATE (m/day) QINSTD, STD.DEV. OF INFILTRATION RATE		

LOCATION OF RECEPTORS:

		X (M)	Y (M)	Z (M)
RECEPTOR (	1)	3.0	0.0	0.3
RECEPTOR (	2)	3.0	0.0	1.5
RECEPTOR (	3)	3.0	0.0	3.0
RECEPTOR (	4)	6.1	0.0	0.3
RECEPTOR (	5)	6.1	0.0	1.5
RECEPTOR (	6)	6.1	0.0	3.0

BREAKTHROUGH CURVES

.

## CONCENTRATIONS (MG/L) AT:

WATER TABLE RECEPTORS (in order) TIME (DAYS) BELOW THE SOURCE 150.0000 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 300.0000 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 450.0000 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 600.0000 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 750.0000 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 900.0000 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 1050.0000 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 1200.0000 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 1350.0000 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 1500.0000 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 1650.0000 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 1800.0000 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 1950.0000 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 2100.0000 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+002250.0000 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 2400.0000 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 2550.0000 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 2700.0000 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 2850.0000 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 3000.0000 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 3150.0000 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 3300.0000 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 3450.0000 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 3600.0000 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+003750.0000 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 3900.0000 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00

+ VADSAT Version 3.0 A Monte Carlo Model for Assessing the Effects of Soil Contamination on Groundwater Quality Developed by: Environmental Systems and Technologies Inc. Blacksburg, Virginia Tel: 703-552-0685, Fax: 703-951-5307 For The American Petroleum Institute 1995 + + + + + + + + + + PROJECT TITLE: Schubert Area 1, Chloride 120 mg/L, Run 8, 5"/yr, clay liner SOURCE AND CHEMICAL DATA \*\*\*\* FKSWM, MEAN WASTE ZONE SAT. CONDUC. (m/day) = 0.00009 SDFKSW, STD.DEV. OF WASTE ZONE SAT. CONDUC. = 0.00000 DEPTHM, MEAN THICKNESS OF WASTE ZONE (m) 0.91440 DEPSTD, STD.DEV. OF THICKNESS OF WASTE ZONE = 0.00000 AREAM, MEAN WASTE ZONE AREA (m^2) = 5574.20020 STDA, STD.DEV. OF WASTE ZONE AREA = 0.00000 RLWM, MEAN L/W RATIO (-) = 1.00000 STDRLW, STD.DEV. OF L/W RATIO = 0.00000 CVRTHM, MEAN VALUE OF COVER THICKNESS (m) = 0.00000 CVRTHS, STD.DEV. OF COVER THICKNESS = 0.00000 MEAN MASS FRACTION OF SALT IN WASTE (mg/kg) = 119.99888= STD OF MASS FRACTION OF SALT IN WASTE 0.00000 CZEROM, MEAN AQU. PHASE CONC OF SALT  $(g/m^3) = 497.38000$ CZEROS, STD.DEV. OF AQU. PHASE CONC. OF SALT = 0.00000 CHEMICAL SPECIES Sodium Chloride HYDROGEOLOGICAL PROPERTIES \*\* UNSATURATED ZONE INPUT PARAMETERS \*\* GAMMAM, MEAN UNSAT ZONE DECAY COEF (1/day) = 0.00000 STDGAM, STD.DEV. OF UNSAT ZONE DECAY COEF = 0.00000

UNFOCM, MEAN UNSAT ZONE ORGANIC CARBON FRACTION	(-) = 0.00000
UNFOCS, STD.DEV. OF UNSAT ZONE ORGANIC CARBON F	RAC. = 0.00000
FKSW, MEAN SAT. CONDUCTIVITY (m/day) = STDFKS, STD.DEV. OF SAT. CONDUCTIVITY =	0.02600
STDFRS, STD.DEV. OF SAT. CONDUCTIVITY =	0.000
DISTM, MEAN DEPTH TO GROUNDWATER (m) =	21.33600
STDDST, STD.DEV. OF DEPTH TO GROUNDWATER =	0.00000
UNPORM, MEAN VADOSE ZONE POROSITY (-) =	
SUNPOR, STD.DEV. OF VADOSE ZONE POROSITY =	0.00000
	1 (0000
PARNM, MEAN VALUE OF VG PARAMETER N (-) =	0.00000
SDPARN, STD.DEV. OF VG PARAMETER N =	0.00000
RESWCM, MEAN RESIDUAL WATER CONTENT (-) =	0.10000
RESWCS, STD.DEV. OF RESIDUAL WATER CONTENT =	
ALFINM = 0, UNSAT DISPERSIVITY CALCULATED INTERNALLY	ζ
** SATURATED ZONE INPUT PARAMETERS **	
LAMBW, MEAN SAT. ZONE DECAY COEFF. (1/day) = SLAMB, STD.DEV. OF SAT. ZONE DECAY COEFF. =	0.00000
SLAMB, STD.DEV. OF SAT. ZONE DECAY COEFF. =	0.00000
PORM, MEAN SAT. ZONE POROSITY (-) =	0 20000
STDPOR, STD.DEV. OF SAT. ZONE POROSITY =	
	0.00000
FOCM, MEAN SAT. ZONE ORG. CARBON FRAC. (-) =	0.00000
STDFOC, STD.DEV. SAT. ZONE ORG. CARBON FRAC.=	0.00000
ALRLTM, MEAN DISPERS, RATIO LONG/TRANSV. (-) =	
SALRLT, STD.DEV. OF DISP. RATIO LONG/TRANSV. =	0.00000
ALRTVM, MEAN DISPERS. RATIO TRANSV/VERT. (-) =	100 00000
SALRTV, STD.DEV. OF DISP. RATIO TRANSV/VERT. =	
CONDS, SAT. HYDRAULIC COND. (m/day) = SCONDS, STD.DEV. OF SAT HYDRAULIC COND. =	1.90000
SCONDS, STD.DEV. OF SAT HYDRAULIC COND. =	0.00000
GRADS, HYDRAULIC GRADIENT (m/m) =	
SGRADS, STD.DEV. OF HYDRAULIC GRADIENT =	0.00000
HMEAN, MEAN AQUIFER THICKNESS (m) =	39.31900
	0.00000
	0.00035
QINSTD, STD.DEV. OF INFILTRATION RATE =	0.00000
LOCATION OF RECEPTORS:	

	X (M)	Y (M)	Z (M)
RECEPTOR(1)	3.0	0.0	0.3
RECEPTOR(2)	3.0	0.0	1.5
RECEPTOR(3)	3.0	0.0	3.0
RECEPTOR(4)	6.1	0.0	0.3
RECEPTOR(5)	6.1	0.0	1.5

RECEPTOR(6) 6.1

3.0

0.0

BREAKTHROUGH CURVES

CONCENTRATIONS (MG/L) AT:

TIME WATER TABLE RECEPTORS (in order) (DAYS) BELOW THE SOURCE

150.0000 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 300.0000 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00450.0000 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 600.0000 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0,0000E+00 750.0000 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 900.0000 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 1050.0000 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 1200.0000 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 1350.0000 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 1500.0000 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 1650.0000 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 1800.0000 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 1950.0000 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 2100.0000 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 2250.0000 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 2400.0000 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+002550.0000 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 2700.0000 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 2850.0000 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 3000.0000 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 3150.0000 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 3300.0000 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 3450.0000 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+003600.0000 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00 0.0000E+00