

→ File Boeing MAC

SOIL GAS/GROUNDWATER SURVEY
INDUSTRIAL WASTE TREATMENT PLANT
BOEING FACILITY
WICHITA, KANSAS

PROJECT NO. 52915054
JUNE 23, 1992

Terracon

ENVIRONMENTAL, INC.

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June 23, 1992

Mr. Mike Spain
Boeing Commercial Airplane Group
P.O. Box 7730
M/S K11-65
Wichita, Kansas 67277-7730

Re: Soil Gas/Groundwater Survey
Industrial Waste Treatment Plant
Boeing Facility
Wichita, Kansas
Project No. 52915054

Dear Mr. Spain:

Terracon Environmental, Inc. (Terracon) has completed activities associated with performance of a soil/gas groundwater survey at the above referenced site (Figure 1) in general accordance with our proposal dated April 4, 1991. Preliminary results of this investigation were previously transmitted to Boeing (June, 1991), pending Boeing's directions relative to a second phase. Subsequently, as requested by Boeing, this report has been prepared to summarize the results of the initial phase of activities performed, and to develop recommendations for further evaluation.

BACKGROUND INFORMATION

Twelve monitor wells (MW-83 through MW-91) and nine soil borings (B-83A through B-83K) were previously installed/performed west of Boeing's Industrial Wastewater Treatment Plant (IWTP) and along the west side of K-15 Highway (Project No. 52905062). The purpose of that investigation was to evaluate whether volatile organic

contaminants from the Boeing Facility had reached K-15 Highway. The results obtained from that investigation were presented in our report dated February 15, 1991. As indicated therein, laboratory chemical analyses of groundwater samples obtained from several of these wells indicated trichloroethylene (TCE) and 1,2-dichloroethylene (1,2-DCA) concentrations in excess of the Kansas Notification Levels (KNL) and Kansas Action Levels (KAL). The highest concentrations of TCE and 1,2-DCA were observed in the vicinities of monitor wells MW-80 and MW-81 located just west of the IWTP Pond and monitor wells MW-82 and MW-83 located just north of K-15 Highway and I-135.

Based on the results of the groundwater investigation referenced above, Boeing Commercial Airplane Group (Boeing) requested that additional investigative activities (Project No. 52915005) be performed in the vicinity of the IWTP Pond. The objective of these investigative activities were to evaluate the groundwater quality in the vicinity of the IWTP Pond and to develop information concerning the potential for off-site migration of contaminants. Field activities associated with this investigation include installation of five groundwater recovery wells (RW-53 through RW-57) and one monitor well (MW-96) along the west side of the IWTP Pond. The results of these investigative activities were outlined in our report dated July 18, 1991. As discussed therein, elevated levels of volatile organic compounds (primarily TCE) were detected generally northwest and southwest of the IWTP Pond, with lower levels of VOC's immediately west of the pond.

Based on the findings of Project Nos. 52905062 and 52915005 described above, Boeing directed Terracon to perform a soil gas/groundwater survey to delineate the contaminants previously observed. The soil gas/groundwater survey was to be conducted in the area bounded by the IWTP on the east and K-15 Highway on the

west. The purpose of the soil gas/groundwater survey was to develop information concerning the distribution of VOC contamination and to evaluate the potential contaminant migration pathways. Terracon implemented the activities described in our proposal dated April 4, 1991.

SCOPE OF WORK

In general accordance with our proposal dated January 4, 1991, the following activities were performed at the subject site:

- o Performance of 58 soil probes.
- o Collection of saturated soil samples and groundwater samples and field analysis of the samples obtained for trichloroethylene (TCE), perchlorethylene (PCE), and carbon tetrachloride (CCl₄) using heated headspace procedures.
- o Plug each soil/groundwater probe with bentonite chips.
- o Preparation of a summary report.

FIELD ACTIVITIES

Field Supervision

Field activities were supervised by an environmental geologist experienced in conducting similar investigations. The environmental geologist was responsible for determining the appropriate location and depth of soil/groundwater probes, selecting samples for field analysis, and monitoring the workspace environment for health and safety purposes.

Soil/Groundwater Sampling Procedures

Initially, soil gas samples were to be obtained from each probe performed. However, due to the cohesive nature of the soils encountered, groundwater samples were obtained in lieu of soil gas samples. At locations where groundwater samples could not be collected from the probe holes, due to the low permeability of the cohesive soils, saturated soil samples were collected in lieu of groundwater samples.

Soil/groundwater probes were performed at a total of 58 locations. The probes were advanced using a Geoprobe soil gas van equipped with a hydraulic/percussion drive. The 1-inch diameter hollow steel rods were advanced to depths required to intersect the groundwater table, on the order of 3 to 36 feet below ground surface. At the appropriate depths, saturated soil samples were obtained by hydraulically advancing a Kansas Sampler a distance of approximately 0.5 feet. The soil samples recovered were extruded in the field, placed in 40 milliliter (ml) glass VOA vials, and analyzed in the field using heated headspace methodology as described below.

In order to obtain groundwater samples from select probes, the rods were withdrawn slightly at total depth and polyethylene tubing was inserted through the rods. A vacuum was subsequently applied to the polyethylene tubing and a groundwater sample obtained. The groundwater samples obtained were placed in 40 ml VOA vials and analyzed in the field using heated headspace methodology as described below.

Field Analytical Procedures

Saturated soil and groundwater samples obtained were analyzed in the field using the soil gas van's onboard gas chromatograph (GC) equipped with a photoionization detector (PID) and an electron capture detector (ECD). Samples were analyzed using heated headspace methodology. Saturated soil samples obtained were placed in 40 ml glass VOA vials, filled with approximately 15 to 20 millimeters of distilled water, sealed, and allowed to equilibrate to approximately 90°F. Groundwater samples obtained were placed in 40 ml glass VOA vials, sealed, and heated as described above.

Following heating, approximately 1 ml of the headspace gas was obtained through the teflon septum of the VOA vials using a disposable syringe. The headspace gas was subsequently injected directly into the soil gas van's GC. The gas samples were analyzed for TCE, PCE, and CCl₄ relative to calibrated standards.

Quality Control

Prior to performing each soil probe, the probe rods and the Kansas sampler were cleaned with a tap water/Alconox solution wash followed by a clean water rinse. Cleaning water was discarded on site. Samples, of the headspace gas were obtained with 1 ml disposable sterile syringes. To reduce the potential for cross-contamination between probes, new polyethylene tubing was used to collect each groundwater sample obtained.

TCE, PCE, and CCl₄ calibration standards were prepared in the laboratory. The calibration data was input and stored in the on-board computer for reference. Daily calibration consisted of analysis of a minimum of three calibration standard samples. In

addition, calibration standards and rod blanks were run for 10% of the samples collected and analyzed.

Surveying

Following completion of the field activities, the location and elevations of the soil/groundwater probes were determined by a registered land surveyor (Moehring and Associates). The probe locations and elevations were referenced to State Plane coordinates. The coordinates and elevations of the probes are presented in Table 1.

FIELD ANALYTICAL RESULTS

The results of the heated headspace analysis performed on saturated soil/groundwater samples obtained are presented in Table 2. As indicated therein, the maximum detected concentrations 47 micrograms per liter of air (ug/L-A) TCE at probe F-3, 22.70 ug/L-A PCE at probe E-9, and 4.2 ug/L-A CCl₄ at probe E-5. The total ECD response (a summation of all peaks detected by the electron capture detector) is included in Table 2. As indicated therein, the maximum ECD response of 120 mg/l was detected at probe E-9.

A total ECD Isoconcentration Diagram is included as Figure 2. As indicated therein, two areas of elevated concentration are noted generally north and south of the IWTP Pond. The northern area of elevated concentrations extends generally west from the northern end of the IWTP Pond across I-35. The general trend of the northern contaminant area then shifts slightly to the west/northwest. Based on Figure 2, the northern area of contamination appears to extend into the area occupied by a mobile home park.

The southern area of contamination extends generally southwest of the southern end of the IWTP pond roughly parallel to Turnpike Drive. Based on the information presented in Figure 2, the southern area of contamination appears to spread to the northwest as it approaches K-15 Highway, and likely extends off site.

The development of the two distinct areas of contamination described above may be related to variations in hydrologic conditions. The potential exists that the IWTP pond may be recharging the groundwater in this area, thus separating the contaminants into two distinct areas. The migration of contaminants from the south end of the IWTP pond generally southwest, roughly parallel to Turnpike Drive, may be related to influence created by the groundwater recovery system along Turnpike Drive. Multiple sources of the observed contaminants may also have contributed to the observed separation.

SUMMARY

A total of 58 probes were performed in the study area using Terracon's Geoprobe van, at the approximate locations requested by Boeing. Due to the cohesive nature of the soil encountered, saturated soil or groundwater samples were tested in the field using the soil chromatograph onboard the Geoprobe van. The samples collected were analyzed for trichloroethylene (TCE), perchloroethylene (PCE), and carbon tetrachloride (CCl₄). Carbon tetrachloride was detected only at probes E-5 through E-8, in the area of the southbound entrance/exit ramps. However, TCE and PCE were detected at most of the probe locations, with maximum concentrations of 47 ug/L-A and 22.70 ug/L-A, respectively. To reduce variations caused by the cohesive nature of the soils encountered, the data was contoured as total ECD response.

The results of the groundwater study indicated that the contaminants extend west and southwest of the Kansas Turnpike, beyond the study area. The contamination appears to be separated into two zones, possibly due to the effect of recharge from the IWTP pond, the effect of groundwater recovery along Turnpike Drive, and/or the presence of multiple sources. The northern zone appears to extend into the residential area beyond the Kansas Turnpike, while the southern zone may extend to or beyond K-15 Highway.

RECOMMENDATIONS

Additional work would be required to determine the extent of the groundwater contamination west and southwest of the Kansas Turnpike (in the mobile home park area). Further work would also be required to determine whether the southern zone of contaminants observed in this study were linked to the contamination previously observed in the springs along K-15 Highway, or whether other contaminant pathways exist.

It appears that the delineation would be most economically performed by continuing to map total ECD response and incorporating new data with that obtained as part of this study. The use of auger drilling methods may be required to collect samples in those areas where the overburden prevents advancing the probes to groundwater. However, the groundwater or soil samples collected from either the Geoprobe or the auger drill rig should be subjected to heated headspace analyses to map total ECD response.

Following delineation of the contaminants with total ECD response, monitor wells should be installed in the areas of concern to evaluate subsurface hydrogeology, contaminant migration pathways, contaminant concentrations in the groundwater, and aquifer parameters. The information developed would be used to determine

whether the concentrations in the areas of higher ECD response exceed Kansas Action levels for groundwater, and to determine remedial activities, if required by the KDHE.

GENERAL COMMENTS

The client must recognize the limitations of the methods used. Collection and analysis of water samples obtained from properly installed and developed monitor wells may indicate different results. Comparison of field analytical data of saturated soil samples versus groundwater samples obtained from select probes should be used as an indicator of the presence or absence of contamination only. Soil borings would be required to evaluate the subsurface geology.

The above discussion of contaminants and recommendations for further action are based on the results of the soil/groundwater probes performed at the locations indicated. Varying conditions should be anticipated at different sample intervals or locations and at other times.

This report has been prepared for the exclusive use of our client for specific application to this project within constraints of the client's directives. This report has been prepared in accordance with generally accepted environmental engineering practices; no other warranty is expressed or implied.

Project No. 52915054
June 23, 1992
Page 10

Terracon

Should you have any questions about this report, or if we may be of further service to you in any other way, please do not hesitate to contact us.

Sincerely,

TERRACON ENVIRONMENTAL, INC.,

Jerry W. Haile (sa)

Jerry W. Haile
Project Geologist

Douglas A. Aldrich

Douglas A. Aldrich, P.E.
Principal Engineer

JWH/DAA:sa(4)

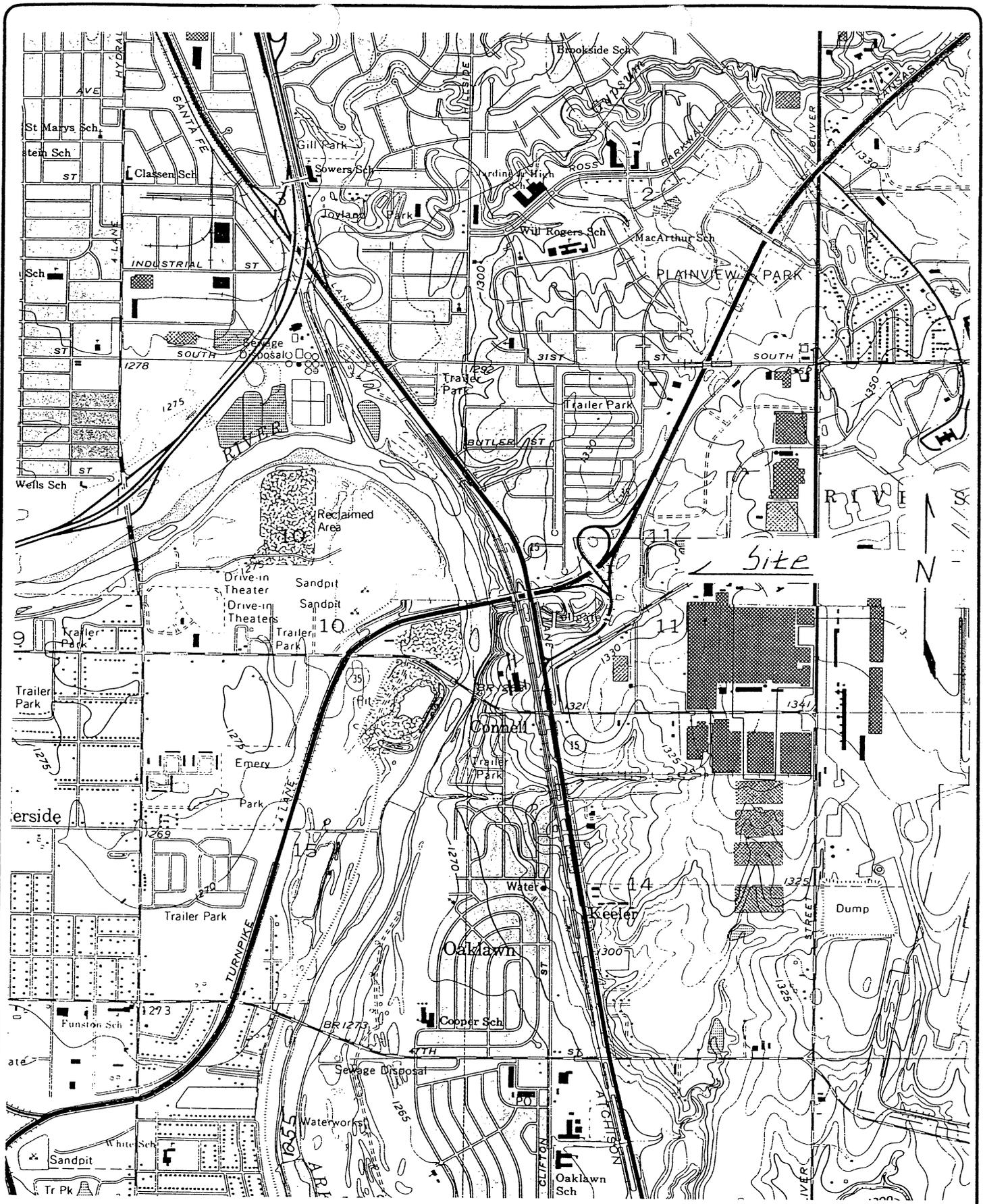


FIGURE 1. SITE DIAGRAM
 BOEING IWTP
 BOEING FACILITY
 WICHITA, KS

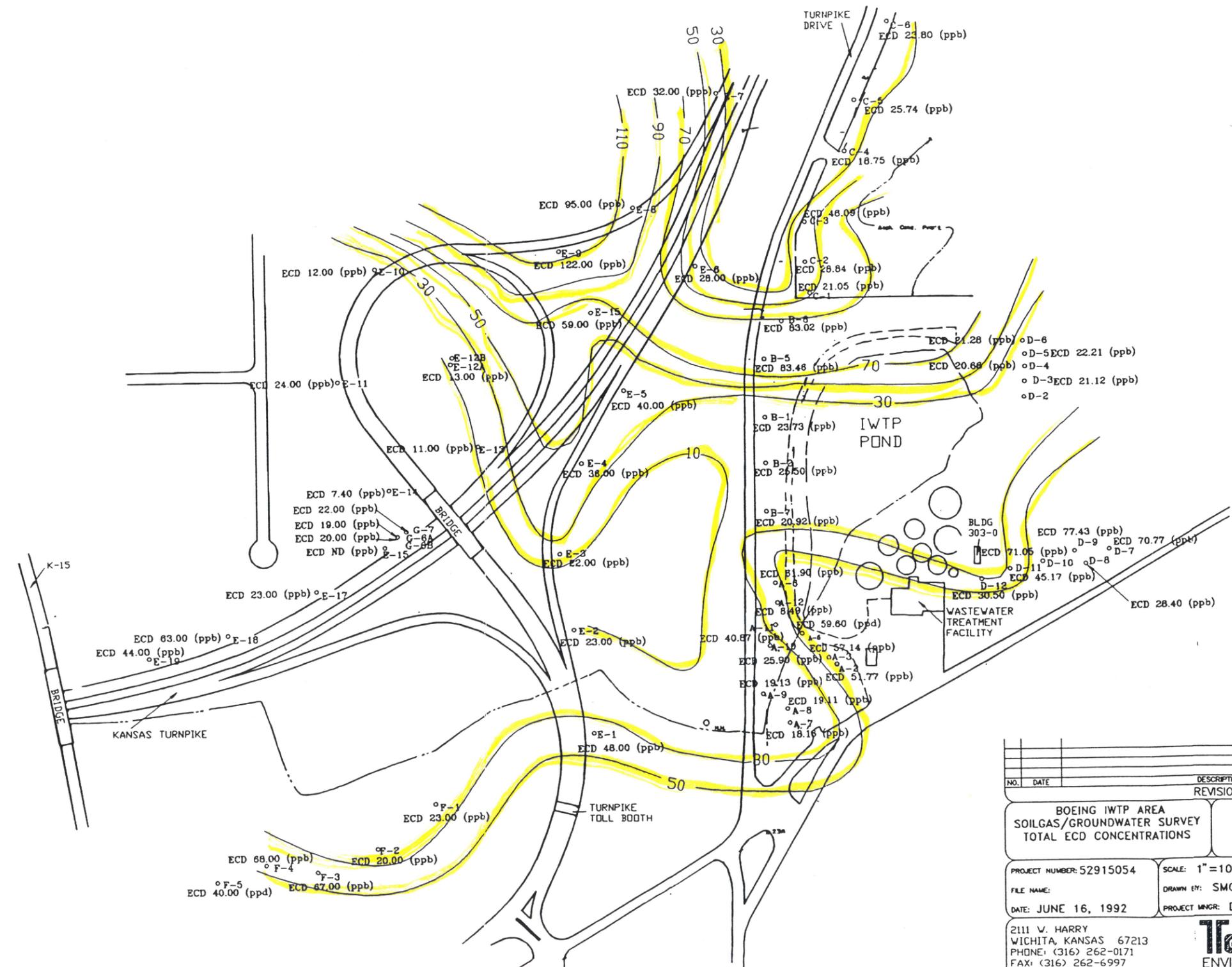
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Date June, 1992

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Terracon

NOTE: CONTOURS ARE BASED ON COMPUTER ASSISTED INTERPOLATION BETWEEN DATA POINTS; ACTUAL CONDITIONS MAY VARY. CONTOURS EXTRAPOLATED BEYOND DATA POINTS ARE SUBJECTIVE.



NO.	DATE	DESCRIPTION	BY	CHKD.
REVISIONS				
BOEING IWTP AREA SOILGAS/GROUNDWATER SURVEY TOTAL ECD CONCENTRATIONS			BOEING MILITARY AIRPLANES WICHITA, KANSAS	
PROJECT NUMBER: 52915054		SCALE: 1"=100'	DESIGNED BY:	DATE:
FILE NAME:		DRAWN BY: SMC	CHECKED BY: JH	DATE: 06/16/92
DATE: JUNE 16, 1992		PROJECT MNGR: DAA	APPROVED BY: JH	DATE: 06/16/92
2111 W. HARRY WICHITA, KANSAS 67213 PHONE: (316) 262-0171 FAX: (316) 262-6997				

TERRACON ENVIRONMENTAL, INC.

PROJECT: SOIL GAS/GROUNDWATER SURVEY
BOEING IWTP AREA
BOEING FACILITY
WICHITA, KANSAS
PROJECT NO.: 52915054

TABLE 1. PROBE LOCATION AND ELEVATIONS

PROBE NUMBER	NORTH	EAST	ELEVATION
A-2	1,663,937.919	1,663,232.866	1328.0
A-3	1,663,953.819	1,663,213.526	1328.0
A-5	1,664,010.959	1,663,145.286	1328.6
A-6	1,664,128.819	1,663,081.506	1322.6
A-7	1,663,804.899	1,663,118.746	1326.2
A-8	1,663,836.439	1,663,111.006	1326.1
A-9	1,663,871.329	1,663,052.216	1320.8
A-10	1,663,982.249	1,663,067.486	1325.8
A-11	1,664,031.19	1,663,082.996	1328.2
A-12	1,664,081.989	1,663,085.976	1325.6
B-1	1,664,515.889	1,663,053.916	1318.6
B-2	1,664,409.469	1,663,056.616	1317.9
B-5	1,664,651.419	1,663,052.036	1319.8
B-7	1,664,295.759	1,663,057.956	1318.6
B-8	1,664,741.499	1,663,094.156	1320.8
C-1	1,664,807.409	1,663,160.896	1327.51
C-2	1,664,880.659	1,663,150.876	1328.03
C-3	1,664,974.039	1,663,149.926	1328.79
C-4	1,665,138.819	1,663,247.496	1331.0
C-5	1,665,256.149	1,663,269.106	1331.59
C-6	1,665,433.289	1,663,344.736	1332.7

TERRACON ENVIRONMENTAL, INC.

PROJECT: SOIL GAS/GROUNDWATER SURVEY
BOEING IWTP AREA
BOEING FACILITY
WICHITA, KANSAS
PROJECT NO.: 52915054

TABLE 1. PROBE LOCATION AND ELEVATIONS (CONTINUED)

PROBE NUMBER	NORTH	EAST	ELEVATION
E-12	1,664,634.969	1,662,304.976	1311.4
E-13	1,664,442.579	1,662,369.016	1307.4
E-14	1,664,339.199	1,662,161.856	1322.0
E-15	1,664,758.269	1,662,634.526	1310.9
E-16	1,664,203.739	1,662,151.746	1301.8
E-17	1,664,102.339	1,661,989.096	1298.7
E-18	1,663,999.099	1,661,777.676	1293.6
E-19	1,663,945.629	1,661,593.596	1289.7
F-1	1,663,609.029	1,662,271.156	1308.6
F-2	1,663,505.599	1,662,136.996	1307.4
F-3	1,663,448.859	1,661,992.936	1309.5
F-4	1,663,467.839	1,661,872.156	1309.1
F-5	1,663,424.679	1,661,754.326	1312.6
G-6A	1,664,228.059	1,662,181.246	1302.0
G-6B	1,664,227.859	1,662,180.906	1302.1
G-7	1,664,243.069	1,662,204.406	1302.3

TERRACON ENVIRONMENTAL, INC.

PROJECT: SOIL GAS/GROUNDWATER SURVEY
 BOEING IWTP AREA
 BOEING FACILITY
 WICHITA, KANSAS
 PROJECT NO.: 52915054

TABLE 2. MEASURED VOC CONCENTRATION IN SAT. SOIL & GROUNDWATER

SAMPLE LOCATION	DATE	SAMPLE TYPE	DEPTH (FEET)	TCE ug/L-A	PCE ug/L-A	CCl ₄ ug/L-A	TOTAL ECD ug/L-A
A-2	5/08/91	Sat. Soil	24	0.31	0.16	ND	51.77
A-3	5/08/91	Sat. Soil	30	0.16	0.11	ND	57.14
A-5	5/14/91	Sat. Soil	24	5.86	0.46	ND	59.60
A-6	5/14/91	Water	21	16.04	0.11	ND	61.90
A-7	5/14/91	Sat. Soil	21	ND	0.08	ND	18.16
A-8	5/14/91	Sat. Soil	10	ND	0.11	ND	19.11
A-9	5/14/91	Sat. Soil	21	0.08	0.11	ND	19.13
A-10	5/14/91	Water	21	0.43	2.70	ND	25.90
A-11	5/14/91	Sat. Soil	24	0.68	0.27	ND	40.87
A-12	5/14/91	Water	24	2.34	0.52	ND	8.49
B-1	5/07/91	Sat. Soil	17	2.45	ND	ND	23.73
B-2	5/13/91	Water	21	0.92	0.48	ND	25.50
B-5	5/07/91	Water	24	27.15	1.90	ND	83.46
B-7	5/07/91	Water	24	ND	ND	ND	20.92
B-8	5/07/91	Water	27	29.25	1.30	ND	83.02
C-1	5/07/91	Water	30	0.80	ND	ND	21.05
C-2	5/08/91	Water	30	7.70	0.37	ND	28.84
C-3	5/07/91	Water	30	8.69	0.35	ND	46.09
C-4	5/07/91	Sat. Soil	27	ND	ND	ND	18.75
C-5	5/10/91	Sat. Soil	21	0.04	0.06	ND	25.74
C-6	5/08/91	Sat. Soil	27	ND	ND	ND	23.80

NOTES: TCE = Trichloroethylene
 PCE = Perchloroethylene
 CCl₄ = Carbon Tetrachloride
 ECD = Electron Capture Detector
 ug/L-A = Micrograms per liter of air, roughly equivalent to parts per billion.

TERRACON ENVIRONMENTAL, INC.

PROJECT: SOIL GAS/GROUNDWATER SURVEY
 BOEING IWTP AREA
 BOEING FACILITY
 WICHITA, KANSAS
 PROJECT NO.: 52915054

TABLE 2. MEASURED VOC CONCENTRATION IN SAT. SOIL & GROUNDWATER (CONTINUED)

SAMPLE LOCATION	DATE	SAMPLE TYPE	DEPTH (FEET)	TCE ug/L-A	PCE ug/L-A	CCl ₄ ug/L-A	TOTAL ECD ug/L-A
D-3	5/08/91	Sat. Soil	16	0.98	0.02	ND	21.12
D-4	5/08/91	Sat. Soil	19	ND	ND	ND	20.66
D-5	5/08/91	Sat. Soil	9	ND	ND	ND	22.21
D-6	5/08/91	Sat. Soil	9	ND	ND	ND	21.28
D-7	5/09/91	Sat. Soil	20	24.39	0.14	ND	70.77
D-8	5/10/91	Sat. Soil	24	1.25	0.14	ND	28.40
D-9	5/10/91	Sat. Soil	21	29.90	0.12	ND	77.43
D-10	5/10/91	Sat. Soil	21	0.88	0.31	ND	45.17
D-11	5/09/91	Sat. Soil	20	25.32	1.54	ND	71.05
D-12	5/09/91	Sat. Soil	20	6.20	0.20	ND	30.50
E-1	6/11/91	Water	24	0.50	0.08	ND	48.00
E-2	6/11/91	Sat. Soil	21	0.13	0.10	ND	23.00
E-3	6/11/91	Sat. Soil	21	ND	0.06	ND	22.00
E-4	6/11/91	Water	21	0.30	0.10	ND	36.00
E-5	6/12/91	Water	24	7.70	0.80	4.20	40.00
E-6	6/12/91	Sat. Soil	24	1.00	0.10	0.10	28.00
E-7	6/12/91	Sat. Soil	27	2.00	0.02	2.00	32.00
E-8	6/12/91	Water	32	13.00	18.00	2.00	95.00
E-9	6/12/91	Water	32	45.00	22.70	ND	122.00
E-10	6/12/91	Sat. Soil	36	0.20	0.20	ND	12.00

NOTES: TCE = Trichloroethylene
 PCE = Perchloroethylene
 CCl₄ = Carbon Tetrachloride
 ECD = Electron Capture Detector
 ug/L-A = Micrograms per liter of air, roughly equivalent to parts per billion

TERRACON ENVIRONMENTAL, INC.

PROJECT: SOIL GAS/GROUNDWATER SURVEY
 BOEING IWTP AREA
 BOEING FACILITY
 WICHITA, KANSAS
 PROJECT NO.: 52915054

TABLE 2. MEASURED VOC CONCENTRATION IN SAT. SOIL & GROUNDWATER (CONTINUED)

SAMPLE LOCATION	DATE	SAMPLE TYPE	DEPTH (FEET)	TCE ug/L-A	PCE ug/L-A	CCl ₄ ug/L-A	TOTAL ECD ug/L-A
E-11	6/12/91	Sat. Soil	36	0.005	0.02	ND	24.00
E-12	6/13/91	Sat. Soil	17.5	3.00	ND	ND	13.00
E-13	6/13/91	Water	8	0.30	0.10	ND	11.00
E-14	6/13/91	Sat. Soil	35	ND	ND	ND	7.40
E-15	6/13/91	Water	17.5	28.00	4.00	ND	59.00
E-16	6/13/91	Sat. Soil	33	ND	ND	ND	ND
E-17	6/13/91	Water	33	8.00	7.00	ND	23.00
E-18	6/14/91	Water	12	30.00	15.00	ND	63.00
E-19	6/14/91	Water	3	18.00	9.00	ND	44.00
F-1	6/18/91	Sat. Soil	12	0.30	0.10	ND	23.00
F-2	6/18/91	Sat. Soil	12	0.10	0.02	ND	20.00
F-3	6/18/91	Water	28	47.00	17.00	ND	67.00
F-4	6/18/91	Water	28	19.00	12.00	ND	68.00
F-5	6/18/91	Sat. Soil	19	34.00	3.00	ND	40.00
G-6A	6/14/91	Sat. Soil	24	0.20	0.02	ND	19.00
G-6B	6/14/91	Sat. Soil	7	0.03	0.04	ND	20.00
G-7	6/14/91	Water	12	0.30	0.05	ND	22.00

NOTES: TCE = Trichloroethylene
 PCE = Perchloroethylene
 CCl₄ = Carbon Tetrachloride
 ECD = Electron Capture Detector
 ug/L-A = Micrograms per liter of air, roughly equivalent to parts per billion.

GROUNDWATER SURVEY HEATED HEADSPACE RESULTS

CLIENT: Bittersweet Environmental
ATTN: Tom Hansen

DATE REPORTED: 06/13/94
JOB: Boeing, KTA & K-15

Sample No.: Calibration Standard		Sampled and Analyzed: 06/13/94	
Analysis	Results (ug/L)	D.L. (ug/L)	Detector
TCE	2.9	1.0	ECD
1,2-cis-DCE	3.0	1.0	PID

Sample No.: Syringe Blank		Sampled and Analyzed: 06/13/94	
Analysis	Results (ug/L)	D.L. (ug/L)	Detector
TCE	ND	1.0	ECD
1,2-cis-DCE	ND	1.0	PID

Sample No.: Screen Blank		Sampled and Analyzed: 06/13/94	
Analysis	Results (ug/L)	D.L. (ug/L)	Detector
TCE	ND	1.0	ECD
1,2-cis-DCE	ND	1.0	PID

Sample No.: KTA-2		Sampled and Analyzed: 06/13/94	
Analysis	Results (ug/L)	D.L. (ug/L)	Detector
TCE	2.5	1.0	ECD
1,2-cis-DCE	ND	1.0	PID

Sample No.: KTA-5		Sampled and Analyzed: 06/13/94	
Analysis	Results (ug/L)	D.L. (ug/L)	Detector
TCE	70.9	1.0	ECD
1,2-cis-DCE	13.1	1.0	PID

Sample No.: K-15-4		Sampled and Analyzed: 06/13/94	
Analysis	Results (ug/L)	D.L. (ug/L)	Detector
TCE	> 105	1.0	PID
1,2-cis-DCE	13.8	1.0	PID

Sample No.: K-15-3		Sampled and Analyzed: 06/13/94	
Analysis	Results (ug/L)	D.L. (ug/L)	Detector
TCE	9.6	1.0	ECD
1,2-cis-DCE	2.0	1.0	PID

Sample No.: K-15-2		Sampled and Analyzed: 06/13/94	
Analysis	Results (ug/L)	D.L. (ug/L)	Detector
TCE	> 79	1.0	ECD
1,2-cis-DCE	12.7	1.0	PID

Sample No.: K-15-1		Sampled and Analyzed: 06/13/94	
Analysis	Results (ug/L)	D.L. (ug/L)	Detector
TCE	5.7	1.0	ECD
1,2-cis-DCE	1.8	1.0	PID

Sample No.: Standard		Sampled and Analyzed: 06/13/94	
Analysis	Results (ug/L)	D.L. (ug/L)	Detector
TCE	3.0	1.0	ECD
1,2-cis-DCE	2.5	1.0	PID

06/14/94

Sample No.: Standard		Sampled and Analyzed: 06/14/94	
Analysis	Results (ug/L)	D.L. (ug/L)	Detector
TCE	2.5	1.0	ECD
1,2-cis-DCE	2.7	1.0	PID

Sample No.: KTA-7		Sampled and Analyzed: 06/14/94	
Analysis	Results (ug/L)	D.L. (ug/L)	Detector
TCE	3.8	1.0	PID
1,2-cis-DCE	3.1	1.0	PID

Sample No.: Standard		Sampled and Analyzed: 06/14/94	
Analysis	Results (ug/L)	D.L. (ug/L)	Detector
TCE	2.1	1.0	ECD
1,2-cis-DCE	2.5	1.0	PID

D.L. = Detection Limit

Standard Concentration : TCE: = 2.5 (ug/l)
1,2-cis-DCE: = 2.5 (ug/l)

All results reported as parts per billion by volume (ppbv)

*Please note that the field analytical results are based upon heated headspace methodologies.

TERRATECH ENVIRONMENTAL SERVICE, INC.

212 S. Hydraulic, Suite #400

Wichita, Kansas 67211

JOB No.: _____ JOB NAME: Boeing, KTA, K-15, Wichita, Ks.

DATE: 06/13/94 TIME ON-SITE: _____ GC Tech: M.B.

FILE NAME: BOEIN1&2 No. OF TESTHOLES: _____

Chrom. #	TH-ID:	GW/SOIL SG	DEPTH	LITERS PURGED	Time Sampled	Comment
2	Cal. Std.	NA	NA	NA	NA	
3	Syringe Blank	NA	NA	NA	NA	
4	Screen Blank	NA	NA	NA	NA	
	KTA-1	GW	*Prb. Ref. 20.2'	NA	NA	Dry Hole
5	KTA-2	GW	17.5-18.5'	1	09:37	
	KTA-3	GW	Prb. Ref. 11'	NA	NA	Dry Hole
	KTA-4	GW	Prb. Ref. 24.63'	NA	NA	Dry Hole
	KTA-6	GW	Prb. Ref. 26'	NA	NA	Dry Hole
6	KTA-5	GW	28.5-29.5'	.5	13:00	
	KTA-8	GW	Prb. Ref. 17.36'	NA	NA	Dry Hole
7	K-15-4	GW	13-14.5'	1	14:11	
8	K-15-3	GW	13-14.5'	1	14:39	
9	K-15-2	GW	13-14.5'	1	15:00	
10	K-15-1	GW	31.5-32.5'	.5	16:25	
11	Standard	NA	NA	NA	NA	

* Prb. Ref. = Probe Refusal

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212 S. Hydraulic, Suite #400

Wichita, Kansas 67211

JOB No.: _____ JOB NAME: Boeing, KTA, K-15, Wichita, Ks.

DATE: 06/14/94 TIME ON-SITE: _____ GC Tech: R.S.

FILE NAME: BOEIN1&2 No. OF TESTHOLES: _____

Chrom. #	TH-ID:	GW/SOIL SG	DEPTH	LITERS PURGED	Time Sampled	Comment
12	Cal. Std.	NA	NA	NA	NA	
13	KTA-7	GW	33-36'	.2	10:50	
14	Standard	NA	NA	NA	NA	