214-114-03

INSTALLATION RESTORATION PROGRAM
PHASE II - CONFIRMATION/QUANTIFICATION
STAGE I - FINAL REPORT
VOLUME II

SHEPPARD AIR FORCE BASE, TEXAS 76311

X-Ref SA Vol #1

TX 3571524161

Contractor: Radian Corporation
Post Office Box 9948
8501 Mopac Blvd.
Austin, Texas 78766-0948

April 1987

Final Report, October 1984 - June 1985

APPROVED FOR PUBLIC RELEASE:
DISTRIBUTION UNLIMITED

PREPARED FOR:

HEADQUARTERS, AIR TRAINING COMMAND
COMMAND SURGEON'S OFFICE (HQ ATC/SGPB)
BIOENVIRONMENTAL ENGINEERING DIVISION
RANDOLPH AIR FORCE BASE, TEXAS 78150

SUPERFUND FILE

JUN 12 1992

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UNITED STATES AIR FORCE
OCCUPATIONAL & ENVIRONMENTAL HEALTH LABORATORY (USAFOEHL)
BROOKS AIR FORCE BASE, TEXAS 78235-5501

9337802

RADIAN
CORPORATION

DCN 84-214-114-03-01

INSTALLATION RESTORATION PROGRAM
PHASE II - CONFIRMATION/QUANTIFICATION
STAGE 1

FINAL REPORT
Volume 2

FOR

SHEPPARD AFB, TEXAS 76311

HEADQUARTERS, AIR TRAINING COMMAND
RANDOLPH AIR FORCE BASE, TEXAS 78150

April 1987

Prepared by

Radian Corporation
8501 Mo-Pac Boulevard
Post Office Box 9948
Austin, TX 78766-0948

USAF Contract No. F33615-84-D-4402, DELIVERY ORDER NO. 3
RADIAN CONTRACT NO. 214-114-03

APPROVED FOR PUBLIC RELEASE
DISTRIBUTION UNLIMITED

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BROOKS AIR FORCE BASE, TEXAS 78235-5501

RADIAN CORPORATION

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Cameron Station
Alexandria, Virginia 22314

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A

APPENDIX A

DEFINITIONS, NOMENCLATURE & UNITS

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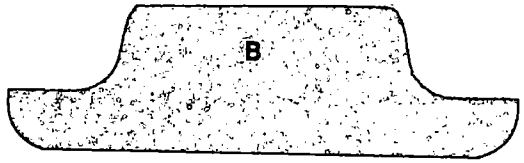
APPENDIX A

Definitions, Nomenclature, and Units

- AFB - Air Force Base
- AFFF - Aqueous Film Forming Foam
- AGL - Above Ground Level
- ~ - Approximate (symbol)
- APX - Approximate (abbreviation)
- Aquifer - Geologic Unit Capable of Storing and Transmitting Significant Quantities of Water
- B - Boring
- BG - Background
- BGL - Below Ground Level
- C - Coring
- DOD - Department of Defense
- EM - Electromagnetic
- EPA - Environmental Protection Agency
- G - Grab Sample
- GC - Gas Chromatography
- GC-MS - Gas Chromatography/Mass Spectrometry
- IRP - Installation Restoration Program
- mg/L - Milligrams Per Liter
- MSL - Mean Sea Level
- MW - Monitor Well
- N/A - Not Applicable
- NR - No Reading
- O&G - Oil and Grease
- PPM - Parts Per Million
- PVC - Polyvinyl Chloride
- RCRA - Resource Conservation and Recovery Act
- SS - Split Spoon Sample
- ST - Shelby Tube Sample
- SW - Surface Water
- SWL - Static Water Level

- TOC - Total Organic Carbon
- TOX - Total Organic Halogens
- ug/L - Micrograms Per Liter
- ug/ml - Micrograms Per Milliliter
- USAF - United States Air Force
- VOC - Volatile Organic Compound


B

APPENDIX B

SCOPE OF WORK

RADIAN CORPORATION

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not included in page count]

REF 55XX (dlh) 55X

ORDER FOR SUPPLIES OR SERVICES

1. PAGE 1 OF 13

2. PROC INSTRUMENT ID NO. (PIIN): F33615-84-D-4402
Mark all packages & papers with this number.

3. CALL/ORDER NO.: 0003

4. DATE OF ORDER*: 84SEP20

5. REQUISITION/PURCHASE REQUEST PROJECT NO.: FY7624-84-01829

6. CERTIFIED FOR NATIONAL DEFENSE UNDER DO-C9
BDC REG 2/DMS REG 1 RATING

7. ISSUED BY CODE FQ8419
DEPARTMENT OF THE AIR FORCE
AIR FORCE SYSTEMS COMMAND
AERONAUTICAL SYSTEMS DIV/PMRSC
WRIGHT-PATTERSON AFB OH 45433
BUYER: DIANE C. CARSELLO
PHONE: (513) 255-3042

8. ADMINISTERED BY CODE S4404A
DCASMA SAN ANTONIO
615 EAST HOUSTON ST.
P.O. BOX 1040
SAN ANTONIO TX 78294

9. CONTRACTOR NAME AND ADDRESS CODE 3B126 FACILITY CODE
RADIAN CORPORATION
8501 MO-PAC BLVD.
P.O. BOX 9948
AUSTIN TX 78766
(TRAVIS COUNTY)
(512) 454-4797

MAILING DATE
SEP 20 1984
DUPLICATE ORIGINAL

IF "9" FOR MULTIPLE FACILITIES SEE SECT "K"

10. MAIL INVOICES TO

11. DISCOUNT FOR PROMPT PAYMENT
1ST N % DAYS NET DAYS
2ND % DAYS OTHER IF "9" SEE SECT "E"
3RD % DAYS

12A. PURCHASE OFFICE POINT OF CONTACT
LQB/L58/LQB

12B. RESERVED FOR SERVICE/AGENCY USE

13. PAYMENT WILL BE MADE BY CODE S4403A IF "9" SEE SECT "K"
DCASR DALLAS
500 SOUTH ERVAY ST.
DALLAS TX 75201

14. TYPE CONTRACTOR: A

15. SECURITY A. CLAS: U
B. DATE OF DD 254

16. CONTRACT ADMINISTRATION DATA
A. FAST PAY
B. CONTRACT (1) KIND (2) TYPE: 0 Y
C. ABSTRACT RECIP ADP POINT
D. SPL CONT PROVISIONS
E. CONT ADMIN FUNC LMT

17. (RESERVED)

18. SVC/AGENCY USE

19. SURV CRIT: C

20. TOTAL AMOUNT
NOT-TO-EXCEED
$ 253,394.66

21. APPROPRIATION AND ACCOUNTING DATA
A. SCTY CLAS: U
B. ACRN: AA
C. APPROPRIATION: 9740810.200
D. LIMIT SUBHEAD
E. SUPPLEMENTAL ACCOUNTING CLASSIFICATION: E74 4308 P820 503701
F. CPN RECIPIENT DODAAD
G. OBLIGATION AMOUNT: 253,394.66
H. NON-CLIN/ELIN PAYMENT PROV
I. SVC AGENCY USE: FY7624-84-01829

22A. TYPE OF ORDER
DELIVERY [ ]
PURCHASE [X]

B. NON-DOD CONTRACT NO.
This delivery order is subject to instructions contained on this side of form only and is issued in accordance with and subject to terms and conditions of above numbered contract, or Non-DOD Contract No.

Reference your CONTRACT CATEGORY CODE: FAZ

Furnish the following on terms specified herein, including, for U.S. purchases, General Provisions of Purchase Order on DD Form 1155* (EXCEPT CLAUSE NO. 13 APPLIES ONLY IF THIS BOX [ ] IS CHECKED, AND NO 15 IN THIS BOX [ ] IS CHECKED), special provisions _____ and delivery as indicated. This purchase is negotiated under authority of 10 USC 2304(a)( ) or as specified in the schedule if within the U.S., its possessions or Puerto Rico; if otherwise, under 2304(a)(6).

[ ] If checked, Additional General Provisions apply, supplier shall sign "Acceptance" on DD form 1155, and return _____ copies

*If quantity accepted by the Government is same as quantity ordered, indicated by ✓ mark. If different enter actual quantity accepted below quantity ordered and encircle.

23. UNITED STATES OF AMERICA
Christopher D. Miller 84 Sep 12 (YYMMMDD)
CHRISTOPHER D. MILLER
BY: NAME OF CONTRACTING/ORDERING OFFICER AND DATE

24. TOTAL

28. DIFFERENCES

25. QUANTITY ORDERED HAS BEEN
[ ] INSPECTED [ ] RECEIVED [ ] ACCEPTED, AND CONFORMS TO THE CONTRACT EXCEPT AS STATED

26. SHIP NO.
[ ] PARTIAL
[ ] FINAL

27. D.O. VOUCHER NO.

29. INITIALS

31. PAID BY

32. Amount Verified Correct For

DATE SIGNATURE OF AUTHORIZED GOVERNMENT REPRESENTATIVE

30. PAYMENT
[ ] COMPLETE
[ ] PARTIAL
[ ] FINAL

33. CHECK NUMBER

35. I CERTIFY THIS AMOUNT IS CORRECT AND PROPER FOR PAYMENT

34. BILL OF LADING NO.

SIGNATURE AND TITLE OF CERTIFYING OFFICER

36. RECEIVED AT

37. RECEIVED BY

38. DATE RECEIVED

39. TOTAL CONTAINERS

40. S/R ACCOUNT NUMBER

41. S/R VOUCHER NO.

AFSC FORM NOV 75 700

*When used as a formal contract this will be the effective date.

** 1947 HSG/FMC, Pentagon, WASH DC 20330
AF Form 402, #E7-0A84-03 DTD 20Jul84, CH4

PART I SECTION B OF THE SCHEDULE **SUPPLIES LINE ITEM DATA**	1. PROC INSTRUMENT ID NO. (PIIN) F33615-84-D-4402	2. SPIIN 0003	3. PAGE 2 OF

4. ITEM NO.	5. QUANTITY*	6. PURCH UNIT	7. UNIT PRICE	8. TOTAL ITEM AMOUNT*
0001	1	LO	$	$E108,678.91

9. SCTY CLAS	10. ACRN	11. NSN	12. FSCM AND PART NUMBER	13. CIRR
U	AA	N		

14. SITE CODES A.PQA	B.ACP	C.FOB	15. NOUN	16. SVC/AGENCY USE
D	D	D	LABOR PH II, IRP STAGE 1, SHEPPARD AFB, TX	

17. PR/MIPR DATA	18. AUTHORIZED RATE A.PROGRESS PAY	B.RECOUP	19. CONTRACT PERCENT FEE	20. SVC ID NO.	21. ITEM/PROJ MGR
FY7624-84-01829-0001	%	%	%		FY7624

22. 1ST DISCOUNT A.	B.DAYS	23. 2ND DISCOUNT A.	B.DAYS	24. 3RD DISCOUNT A.	B.DAYS	25. NET DAYS	26. QUANTITY VARIANCE A. OVER	B. UNDER	27. TYPE CONTRACT	28. OPR
%		%		%			%	%		

29. DESCRIPTIVE DATA

CONFIRMATION AND QUANTIFICATION, PH II, IRP STAGE 1, SHEPPARD AFB TX, IN ACCORDANCE WITH THE TASK DESCRIPTION AS SET FORTH ON PAGE 4-12 HEREOF AND SECTION C, DESCRIPTION/SPECIFICATIONS OF THE BASIC CONTRACT, AND SUBMIT DATA IN ACCORDANCE WITH ATTACHMENT #1, THE CONTRACT DATA REQUIREMENTS LIST, OF THE BASIC CONTRACT AS IMPLEMENTED ON PAGE 10 BY PARAGRAPH VI HEREOF.

IN NO EVENT SHALL THE AMOUNT PAID FOR THIS ITEM EXCEED THE AMOUNT IN BLOCK 8 ABOVE.

4. ITEM NO.	5. QUANTITY*	6. PURCH UNIT	7. UNIT PRICE	8. TOTAL ITEM AMOUNT*
0002	1	LO	$	$E138,616.09

9. SCTY CLAS	10. ACRN	11. NSN	12. FSCM AND PART NUMBER	13. CIRR
U	AA	N		

14. SITE CODES A.PQA	B.ACP	C.FOB	15. NOUN	16. SVC/AGENCY USE
D	D	D	SUPPORT PH II, IRP STAGE 1, SHEPPARD AFB TX	

17. PR/MIPR DATA	18. AUTHORIZED RATE A.PROGRESS PAY	B.RECOUP	19. CONTRACT PERCENT FEE	20. SVC ID NO.	21. ITEM/PROJ MGR
FY7624-84-01829-0002	%	%	%		FY7624

22. 1ST DISCOUNT A.	B.DAYS	23. 2ND DISCOUNT A.	B.DAYS	24. 3RD DISCOUNT A.	B.DAYS	25. NET DAYS	26. QUANTITY VARIANCE A. OVER	B. UNDER	27. TYPE CONTRACT	28. OPR
%		%		%			%	%		

29. DESCRIPTIVE DATA

SUPPORT ITEM 0001 ABOVE.

IN NO EVENT SHALL THE TOTAL AMOUNT PAID FOR THIS ITEM EXCEED THE AMOUNT IN BLOCK 8 ABOVE.

*REPRESENTS NET AMOUNT OF INCREASE/DECREASE WHEN MODIFYING EXISTING ITEM NO.

N = NOT APPLICABLE
U = UNDEFINITIZED
NSP = NOT SEPARATELY PRICED

E = ESTIMATED
− (IN QTY AND $) = DECREASE
+ OR − (IN ITEM NO.) = ADDITION OR DELETION
CIRR: CONTROLLED ITEM RPT RQMT

SITE CODES: S = SOURCE, D = DESTINATION, O = INTERMEDIATE

AFSC FORM JAN 80 705 PREVIOUS EDITION WILL BE USED. AFSC—Andrews AFB Md 1980

PART I SECTION B OF THE SCHEDULE
SUPPLIES LINE ITEM DATA

1. PROC INSTRUMENT ID NO. (PIIN)	2. SPIIN	3.
F33615-84-D-4402	0003	PAGE 3 OF

4. ITEM NO.	5. QUANTITY*	6. PURCH UNIT	7. UNIT PRICE	8. TOTAL ITEM AMOUNT*
0004	1	LO	$	$E 6,099.66

9. SCTY CLAS	10. ACRN	11. NSN	12. FSCM AND PART NUMBER	13. CIRR
U	AA	N		

14. SITE CODES A.PQA	B.ACP	C.FOB	15. NOUN	16. SVC/AGENCY USE
D	D	D	CHEMICAL ANALYSIS	

17. PR/MIPR DATA	18. AUTHORIZED RATE A.PROGRESS PAY	B.RECOUP	19. CONTRACT PERCENT FEE	20. SVC ID NO.	21. ITEM/PROJ MGR
FY7624-84-01829-0004	%	%	%		FY7624

22. 1ST DISCOUNT A.	B.DAYS	23. 2ND DISCOUNT A.	B.DAYS	24. 3RD DISCOUNT A.	B.DAYS	25. NET DAYS	26. QUANTITY VARIANCE A. OVER	B. UNDER	27. TYPE CONTRACT	28. OPR
%		%		%			%	%		

29. DESCRIPTIVE DATA

PERFORM CHEMICAL ANALYSIS IN ACCORDANCE WITH THE TASK DESCRIPTION AS SET FORTH ON PAGE 4 THRU 12 HEREOF AND SECTION C, DESCRIPTION/ SPECIFICATIONS OF THE BASIC CONTRACT, AND SUBMIT DATA IN ACCORDANCE WITH ATTACHMENT #1, THE CONTRACT DATA REQUIREMENTS LIST, OF THE BASIC CONTRACT AS IMPLEMENTED ON PAGE 10 BY PARAGRAPH VI HEREOF.

IN NO EVENT SHALL THE AMOUNT PAID FOR THIS ITEM EXCEED THE AMOUNT IN BLOCK 8 ABOVE.

4. ITEM NO.	5. QUANTITY*	6. PURCH UNIT	7. UNIT PRICE	8. TOTAL ITEM AMOUNT*
			$	$

9. SCTY CLAS	10. ACRN	11. NSN	12. FSCM AND PART NUMBER	13. CIRR

14. SITE CODES A.PQA	B.ACP	C.FOB	15. NOUN	16. SVC/AGENCY USE

17. PR/MIPR DATA	18. AUTHORIZED RATE A.PROGRESS PAY	B.RECOUP	19. CONTRACT PERCENT FEE	20. SVC ID NO.	21. ITEM/PROJ MGR
	%	%	%		

22. 1ST DISCOUNT A.	B.DAYS	23. 2ND DISCOUNT A.	B.DAYS	24. 3RD DISCOUNT A.	B.DAYS	25. NET DAYS	26. QUANTITY VARIANCE A. OVER	B. UNDER	27. TYPE CONTRACT	28. OPR
%		%		%			%	%		

29. DESCRIPTIVE DATA

*REPRESENTS NET AMOUNT OF INCREASE/DECREASE WHEN MODIFYING EXISTING ITEM NO.

N = NOT APPLICABLE
U = UNDEFINITIZED
NSP = NOT SEPARATELY PRICED

E = ESTIMATED
− (IN QTY AND $) = DECREASE
+ OR − (IN ITEM NO.) = ADDITION OR DELETION
CIRR: CONTROLLED ITEM RPT RQMT

SITE CODES: S = SOURCE, D = DESTINATION, O = INTERMEDIATE

AFSC FORM JAN 80 705

PREVIOUS EDITION WILL BE USED.

AFSC—Andrews AFB Md 1980

INSTALLATION RESTORATION PROGRAM
PHASE II - CONFIRMATION/QUANTIFICATION (STAGE 1)
SHEPPARD AFB, TEXAS

I. DESCRIPTION OF WORK

The purpose of this task is to undertake a field investigation at Sheppard AFB TX to determine the presence or absence of contamination within the specified areas of investigation; if contamination exists, determine the potential for migration of those contaminants in the various environmental media; identify additional investigations necessary to determine the magnitude, extent, direction and rate of migration of discovered contaminants; and identify potential environmental consequences and health risks of migrating pollutants.

The Phase I IRP Report (mailed under separate cover) incorporates the background and description of the sites for this task. To accomplish this survey effort, the contractor shall take the following actions:

A. General

1. The contractor shall monitor all exploratory well drilling and borehole operations with a photoionization meter or equivalent organic vapor detection device to identify potential generation of hazardous and/or toxic materials. In addition, the contractor shall monitor drill cuttings for discoloration and odor. During drilling operations, if soil cuttings are suspected to be hazardous, the contractor will place them in proper containers and test them for EP Toxicity and Ignitibility. Results of monitoring shall be included in boring logs. A maximum of six samples shall be collected for EP Toxicity and Ignitibility testing.

2. All water samples collected shall be analyzed on site by the contractor for pH, temperature, and specific conductance. Sampling, maximum holding time, and preservation of samples shall strictly comply with the following references: Standard Methods for The Examination of Water and Wastewater, 15th Ed. (1980), pp. 35-42; ASTM, Part 31, pp. 76-86, (1980), Method D-3370; and Methods for Chemical Analysis of Waters and Wastes, EPA Manual 600/4-79-020, pp. xiii to xix (1979). All chemical analyses (water and soil) shall meet the required limits of detection for the applicable EPA method identified in Attachment 1.

3. Locations where surface water or sediment samples are taken or where soil exploratory borings are drilled shall be marked with a permanent marker and the location marked on a project map of the site.

4. Field data collected for each site shall be plotted and mapped. The nature, magnitude and potential for contaminant flow within each zone to receiving streams and groundwaters shall be estimated. Upon completion of the sampling and analysis, the data shall be tabulated in the next R&D Status report as specified in Item VI below.

5. Determine the areal extent of the sites by reviewing available aerial photos of the base, both historical and the most recent panchromatic and infrared.

6. Split all water and soil samples as part of the contractor's specific Quality Assurance/Quality Control (QA/QC) protocols and procedures. One set of samples shall be analyzed by the contractor and the other set of samples shall be forwarded for analysis through overnight delivery to:

USAF OEHL/SA
Bldg 140
Brooks AFB TX 78235

The samples sent to the USAF OEHL/SA shall be accompanied by the following information:

a. Purpose of sample (analyte)

b. Installation name (base)

c. Sample number (on containers)

d. Source/location of sample

e. Contract Task Numbers and Title of Project

f. Method of collection (bailer, suction pump, air-lift pump etc.)

g. Volumes removed before sample taken

h. Special Conditions (use of surrogate standard, special nonstandard preservations, etc.)

i. Preservatives used

(1) This information shall be forwarded with each sample by properly completing an AF Form 2752 (copy of form and instruction on proper completion mailed under separate cover). In addition, copies of field logs documenting sample collection should accompany the samples.

(2) Chain-of-custody records for all samples, field blanks and quality control duplicates shall be maintained.

7. An additional 10% of all samples for each parameter shall be analyzed for quality control purposes, as indicated in Attachment 1. These QA/QC sample analyses results shall be included in the draft final report.

8. For groundwater monitoring wells, comply with the U.S. EPA Publication 330/9-S1-002, NEIC Manual for Groundwater/Subsurface Investigators at Hazardous Waste Sites for monitoring well installation. Only screw type joints shall be used.

9. Wells shall be of sufficient depth to collect samples representative of aquifer quality and to intercept contaminants if they are present. Well development shall proceed until the discharge water is clear and free of sediment to the fullest extent possible.

10. Elevations of all newly installed monitoring wells shall be surveyed with respect to bench mark on base to an accuracy of ± 0.05 feet. Horizontally locate the new wells to an accuracy of ± 10 feet and record on site maps.

11. Water levels shall be measured at all contractor installed wells to the nearest 0.01 foot and locations recorded on a project map and specific site maps.

12. All monitor wells shall be drilled using the following specifications:

a. Each well shall be drilled with a 7 1/2-inch outside diameter drill bit using hollow-stem auger equipment. Samples shall be taken for stratigraphic control purposes at 5-foot intervals. Each pilot boring log and well completion summaries shall be included in the Final Report (as specified in Item VI below).

b. The average depth of each of these wells shall be 40 feet. A total of 14 wells shall be drilled; therefore, total footage of wells shall not exceed 560 linear feet. Each well shall be constructed of Schedule 40 PVC casing using threaded, nonglued fittings. Each well shall be screened to a maximum of 10 feet resulting in a total screening of 140 feet. The screen shall consist of two-inch diameter, stainless steel with up to 0.020-inch slots. The screen shall be capped at the bottom. All connections shall be flush-joint threaded. Each well shall be gravel-packed with washed and bagged rounded sand or gravel with a grain size distribution compatible with the screen and the formation. The pack will be emplaced from the bottom of the borehole to 2 feet above the top of the screen. Granulated or pelletized bentonite shall be tremied above the sand/gravel pack to a minimum thickness of two feet. Type I Portland cement grout shall be emplaced from above the top of the bentonite seal to the land surface. Each well shall be completed with installation of a cap and locking hasp and shall be clearly numbered with an exterior paint. If well stick-up is of concern in an area (i.e., golf course), the area will be completed flush with the land surface.

13. Each well shall be developed with a PVC or stainless steel bailer until clean of suspended solids.

14. Wells shall be purged prior to sampling. Purging will be complete when three well volumes of water have been displaced or until the pH, temperature, specific conductance, color and odor of the discharge is noted to stabilize. Purging operations shall be conducted using a stainless steel bottom-discharge bailer or bladder pump. All sampling shall be conducted using a 2-inch stainless steel Kemmerer sampler or bladder pump. As the first step of groundwater sampling operations at each well, water level measurements shall be taken to the nearest 0.01 foot with respect to an established surveyed mark-point on top of the well casing.

15. Second column confirmation shall be required when detection limits exceed values identified in Attachment 1, for EPA Methods 601 and 602. Second column confirmation shall be conducted on a maximum of 50% of the samples collected for these analyses. Total number of samples for Methods 601 and 602 in Attachment 1 include these confirmation analyses.

16. Shallow soil augering will be performed using a hand auger. A total of four shallow soil augerings shall be performed. Total footage shall not exceed 20 feet.

17. The average depth of soil borings, excluding shallow soil augering, shall be 30 feet. A total of three borings shall be performed; therefore, total footage shall not exceed 90 feet. Where required, a 7 1/2-inch hollow stem auger shall be used. Split-spoon samples shall be obtained.

18. Upon completion of each boring, the borehole will be grouted from the bottom of the hole to the land surface in order to prevent cross-aquifer contamination.

B. In addition to items delineated in A above, conduct the following specific actions at the following sites on Sheppard AFB:

1. Waste Pits

a. Conduct resistivity soundings at six locations about the site to define local stratigraphy and detect presence and possible contamination of groundwater to locate positions for installing monitoring wells.

b. Conduct electromagnetic profiling to confirm waste pit locations and detect contamination plume migration for ensuring monitor well emplacement is outside pit areas.

c. Install one well upgradient and two wells downgradient to characterize groundwater quality, flow direction and contaminant migration. One set of water samples shall be collected during two sampling episodes from each monitor well for a total of six groundwater samples. Analyze the samples for the parameters listed in Attachment 2, List A, excluding total dissolved solids (TDS) analyses.

d. Install 3 soil borings (average of 30 feet each), one in each pit to collect a total of 18 soil samples from the pit area for definition of any vertical migration and characterization of contamination. Analyze the samples for the parameters listed in Attachment 2, List A. If the creek is dry, TDS will be omitted. Attachment 1 assumes that sediment samples will be collected.

e. One set of water samples shall be collected during two sampling episodes from Bear Creek, one upstream and the other immediately downstream of the pits for a total of four samples. If the creek is dry during sampling, sediment analyses shall be taken from the stream bed by using a hand auger. Analyze either set of samples for the parameters listed in Attachment 2, List A.

2. Landfill No. 3 and Hardfill Areas

a. Conduct resistivity soundings on and around the landfill and hardfill areas to define landfill depths and stratigraphy.

b. Conduct electromagnetic profiling to determine locations of disposal trenches and landfill areas for ensuring monitor well placement will be outside of disposal areas.

c. Conduct a magnetometry survey to determine the location of ferromagnetic material.

d. Install one well upgradient and three wells downgradient to determine groundwater flow direction and identify the presence of contaminants. One set of water samples shall be collected during two sampling episodes from each monitor well for a total of eight groundwater samples. Analyze the samples for the parameters listed in Attachment 2, List B.

e. One set of water samples shall be collected during two sampling episodes from the stream flowing through the site for a total of two water samples. If the stream is dry during sampling, stream bed sediment samples shall be obtained at the same locations. Analyze either set of samples for the parameters listed in Attachment 2, List B. If the creek is dry, TDS will be omitted. Attachment 1 assumes that sediment samples will be collected.

3. Fire Protection Training Area No. 3

a. Conduct electromagnetic profiling to detect any ground/leachate plumes and the extent of such plumes.

b. Install one well upgradient and two wells downgradient to characterize groundwater quality and identify any contaminant migration. One set of water samples shall be collected during two sampling episodes from each monitor well and from the nearby oil/water separator pond for a total of eight samples. Analyze the samples for the parameters listed in Attachment 2, List B.

4. Fire Protection Training Area No. 1

a. Conduct electromagnetic profiling to determine location of the site and possible groundwater contamination plumes.

b. Hand auger samples shall be collected at four locations to confirm the site. The depths shall average 5 feet. A total of four soil samples will be obtained. Analyze the samples for the parameters listed in Attachment 2, List A, excluding TDS analyses.

c. Install one well upgradient and three wells downgradient to determine groundwater flow direction and identify the presence of contaminants. One set of water samples shall be collected during two sampling episodes from each monitor well for a total of eight groundwater samples. Analyze the samples for the parameters listed in Attachment 2, List A.

d. One set of water samples shall be collected during two sampling episodes from the pond and stream in the vicinity of Green No. 3 and downstream in the vicinity of Green No. 6 for a total of six water samples. If the stream and/or pond is dry, then respective sediment samples shall be collected. Analyze the samples for the parameters listed in Attachment 2, List A. If the creek is dry, TDS will be omitted. Attachment 1 assumes that sediment samples will be collected.

C. Well and Borehole Cleanup

All well and boring area drill cuttings shall be removed and the general area cleaned following the completion of each well and boring. Only

those drill cuttings suspected as being a hazardous waste (based on discoloration, odor, or organic vapor detection instrument) shall be properly containerized (according to local civil engineering office requirements, assumed to consist of drill site containerization in reconditioned 17H open-top 55-gallon drums) by the contractor for eventual government disposal. The suspected hazardous waste shall be tested by the contractor for EP toxicity and Ignitibility. The contractor is not responsible for ultimate disposal of the drill cuttings. Disposal will be conducted by base personnel.

D. Data Review

Results of sampling and analysis shall be tabulated and incorporated in the Informal Technical Information Report (as specified in Item VI below) and forwarded to the USAF OEHL for review. Results shall also be forwarded as available in the next monthly R&D status report.

E. Reporting

1. A draft report delineating all findings of this field investigation shall be prepared and forwarded to the USAF OEHL (as specified in Item VI below) for Air Force review and comment. This report shall include a discussion of the regional/site specific hydrogeology, well and boring logs, data from water level surveys, groundwater surface and gradient maps, water quality and soil analysis results, available geohydrologic cross sections, and laboratory quality assurance information. The report shall follow the USAF OEHL supplied format (mailed under separate cover).

2. The recommendation section will address each site and list them by categories. Category I will consist of sites where no further action (including remedial action) is required. Data for these sites are considered sufficient to rule out unacceptable health or environmental risks. Category II sites are those requiring additional monitoring or work to quantify or further assess the extent of current or future contamination. Category III sites are sites that will require remedial actions (ready for IRP Phase IV actions). In each case, the contractor will summarize or present the results of field data, environmental or regulatory criteria, or other pertinent information supporting these conclusions.

F. Meetings

The contractor's project leader shall attend one meeting with Air Force headquarters and regulatory agency personnel to take place at a time to be specified by the USAF OEHL. The meeting shall take place at Sheppard AFB for a duration of one day (eight hours).

II. SITE LOCATION AND DATES:

Sheppard AFB TX
Date to be established

III. BASE SUPPORT: Storage area will be available on base.

IV. GOVERNMENT FURNISHED PROPERTY: None

V. GOVERNMENT POINTS OF CONTACT:

1. Maj Dennis D. Brownley
USAF OEHL/TSS
Brooks AFB TX 78235
(512) 536-2158
AV 240-2158

2. 1Lt Thomas A. Puckett
USAF Regional Hospital Sheppard
Sheppard AFB TX 76311
(817) 851-2271
AV 736-2271

2. Lt Col Ronald L. Schiller
HQ ATC/SGPB
Randolph AFB TX 78150
(512) 652-5271
AV 487-5271

VI. In addition to sequence numbers 1*, 5, and 10 in Attachment 1 to the contract, which are applicable to all orders, the sequence numbers listed below are applicable to this order. Also shown are data applicable to this order.

*Forward a copy of the R&D Status Report to all government POC's identified in Section V.

Sequence No.	Block 10	Block 11	Block 12	Block 13	Block 14
3	O/Time	*	*		
4	One/R	13 Jan 85	15 Feb 85	16 Jul 85	**
		Sunday	Fri	Tue	

* Upon completion of analytical effort before submission of 1st draft report.

** Two draft reports will be required. After incorporating Air Force comments concerning the first draft report, the contractor shall supply the USAF OEHL with one copy of the second draft report. Upon acceptance of the second draft, the USAF OEHL will furnish a Distribution List for the remaining 24 copies of the second draft. The contractor shall supply 50 copies plus the original camera ready copy of the final report.

F33615-84-D-4402, 0003

Attachment 1

Analytical Methods, Detection Limits and Number of Samples
(For Water Unless Otherwise Shown)

PARAMETER	METHOD	DETECTION LIMIT	NO. OF SAMPLES	QA	TOTAL SAMPLES
*Total Organic Carbon (TOC)	EPA 415.1	1000 µg/L (1000 µg/g sediment)	30 water, 34 soil	3,4	33 water, 38 soil
Purgeable: Halocarbons and Aromatics	EPA 601 and 602	**	30 water, 34 soil	3,4	50 water, 57 soil*****
Oil and Grease (using IR)	EPA 413.2	100 µg/L (100 µg/g, sediment)	30 water, 34 soil	3,4	33 water, 38 soil
Total Dissolved Solids (TDS)	EPA 160.1	1000 µg/L	30 water	3	33 water
Lead	EPA 239.2	20 µg/L (2 µg/g, sediment)	16 water, 2 soil	2,1	18 water, 3 soil
Chromium	EPA 218.1	50 µg/L (5 µg/g, sediment)	16 water, 2 soil	2,1	18 water, 3 soil
Mercury	EPA 245.1 and 245.5 (soils)	1 µg/L (0.1 µg/g, sediment)	16 water, 2 soil	2,1	18 water, 3 soil
Phenol	EPA 420.1	1 µg/L (1 µg/g, sediment)	14 water, 32 soil	2,4	16 water, 36 soil
pH	-	-	30 water, 34 soil	3,4	33 water, 38 soil
EP Toxicity	40 CFR 261.24	***	5	1	6
Ignitibility	40 CFR 261.21	****	5	1	6

*Detection limit for TOC must be three times the noise level of the instrument. Laboratory distilled water must show no response; if it shows a response, corrections of positive results must be made.

**Detection limits for Volatile Organic Compounds shall be as specified for the compounds by EPA Methods 601-602. Method: Federal Register, Vol. 44, No. 233, pp. 69468-69473. This method should be strictly followed including these items:

Item 1.4 - This method is recommended by EPA for use only by experienced residue analysts or under the close supervision of such qualified persons.

Item 2.2 - This is most important. If interferences are encountered (as in early peaks such as vinyl chloride), the method provides a secondary chromatographic column that will be helpful in resolving the compounds of interest from interferences. This must be done in the case of vinyl chloride and so noted in analysis report.

Items 3.3, 7.1-7.3 - These sections must be analyzed within the recommended holding times.

Item 8.3 - All samples must be analyzed within the recommended holding times. This must be followed without exception.

If questions are encountered about certain contaminants, you may be asked to show both chromatograms used to rule out possible interferences.

***Metal	µg/L of solution
As	10
Ba	200
Cd	10
Cr	50
Pb	20
Hg	1
Se	10
Ag	10

****Find if sample is ignitible at 140°F or below. If so, it is a hazardous waste.

*****Totals of 50 and 57 include second column confirmation for 50% of the samples (17 and 19, respectively).

Attachment 2

LIST OF ANALYTICAL PARAMETERS AT SHEPPARD AFB

List A

Purgeable Halocarbons and Aromatics
Phenol
Total Organic Carbon
Oil and Grease
Total Dissolved Solids*
pH

List B

Purgeable Halocarbons and Aromatics
Total Organic Carbon
Oil and Grease
Total Dissolved Solids*
pH
Lead
Chromium
Mercury

*Omit for soils analyses.

PART I SECTION F OF THE SCHEDULE SUPPLIES SCHEDULE DATA	1. PROC INSTRUMENT ID NO. (PIIN) F33615-84-D-4402	2. SPIIN 0003	3. PAGE 13 OF

4. ITEM NO.	5. ACRN	6. TSP PRI	7. MILSTRIP DOC NO. AND SUFFIX	8. CON ITEM SERIAL NO.	9. ENDING SERIAL NO. (WHEN APPL)	10. CLIN IDENT EXHIBIT
0001	AA					

11. DEL SCHED DATE	12. ENDING DATE (WHEN APPL)	13. DEL SCHEDULE QTY*	14. SCTY CLAS	15. SHIP TO	16. MARK FOR
A. 86FEB28	A.	A. 1	U	FY7624	
B.	B.	B.	11. DEL SCHED DATE D.	12. ENDING DATE (WHEN APPL) D.	13. DEL SCHEDULE QTY* D.
C.	C.	C.	E.	E.	E.

17. DESCRIPTIVE DATA

SEE SECTION H 4 AND 5 OF THE BASIC CONTRACT FOR FY7624 ADDRESS.

TECHNICAL EFFORT IS TO BE COMPLETED NO LATER THAN 85 JAN 13.

DATA TO BE DELIVERED IN ACCORDANCE WITH ATTACHMENT #1, DD FORM 1423, AS IMPLEMENTED BY PARAGRAPH VI, PAGE 10 HEREOF, NO LATER THAN 85 JUL 16

4. ITEM NO.	5. ACRN	6. TSP PRI	7. MILSTRIP DOC NO. AND SUFFIX	8. CON ITEM SERIAL NO.	9. ENDING SERIAL NO. (WHEN APPL)	10. CLIN IDENT EXHIBIT
0002	AA					

11. DEL SCHED DATE	12. ENDING DATE (WHEN APPL)	13. DEL SCHEDULE QTY*	14. SCTY CLAS	15. SHIP TO	16. MARK FOR
A. 85JAN13	A.	A. 1	U	FY7624	
B.	B.	B.	11. DEL SCHED DATE D.	12. ENDING DATE (WHEN APPL) D.	13. DEL SCHEDULE QTY* D.
C.	C.	C.	E.	E.	E.

17. DESCRIPTIVE DATA

SEE SECTION H 4 AND 5 OF BASIC CONTRACT FOR FY7624 ADDRESS.

4. ITEM NO.	5. ACRN	6. TSP PRI	7. MILSTRIP DOC NO. AND SUFFIX	8. CON ITEM SERIAL NO.	9. ENDING SERIAL NO. (WHEN APPL)	10. CLIN IDENT EXHIBIT
0004	AA					

11. DEL SCHED DATE	12. ENDING DATE (WHEN APPL)	13. DEL SCHEDULE QTY*	14. SCTY CLAS	15. SHIP TO	16. MARK FOR
A. 85JAN13	A.	A. 1	U	FY7624	
B.	B.	B.	11. DEL SCHED DATE D.	12. ENDING DATE (WHEN APPL) D.	13. DEL SCHEDULE QTY* D.
C.	C.	C.	E.	E.	E.

17. DESCRIPTIVE DATA

SEE SECTION H 4 AND 5 OF BASIC CONTRACT FOR FY7624 ADDRESS.

*REPRESENTS A NET INCREASE/DECREASE WHEN NO + OR − APPEARS AFTER THE ITEM NO.
E = ESTIMATED
− (IN QTY) = DECREASE
+ OR − (IN ITEM NO.) = ADDITION OR DELETION

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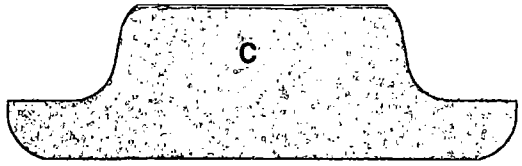
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APPENDIX C

WELL-NUMBERING SYSTEM

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APPENDIX C

WELL NUMBERING SYSTEM

The wells and borings drilled at Sheppard AFB during the Phase II (Stage 1) investigation are identified by an alpha-numeric label. Monitoring wells are labeled with the letters MW followed by a dash and then an Arabic numeral (e.g., MW-9). The core holes are labeled with the letter C followed by a dash and then an Arabic numeral (e.g., C-3). Surface water samples bear a two letter label (SW) followed by a dash and an Arabic numeral (e.g., SW-2).

All samples obtained for chemical analyses were given a unique number for sample inventory control. The sample control numbers provided by the Base SGB consist of a six digit number (i.e., 850079) where the first two digits are for the year (i.e., 1985 = 85). The remaining digits represent the sample control number in numerical sequence (i.e., 1, 2, 3, 4, ..., etc.)

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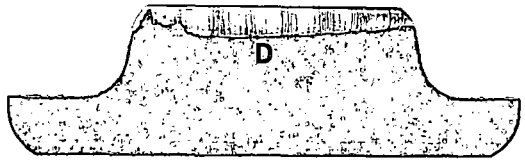
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APPENDIX D

WELL COMPLETION LOGS & GEOLOGICAL DRILLING LOGS

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The following comments and abbreviations are provided to define data entries used in conjunction with the well completion logs and geological drilling logs.

Samples are identified by either a six-digit number (e.g., 840154) which was provided by the BioEnvironmental Engineers, Sheppard AFB, or by another type number (e.g., MW-4(3)) which was established by Radian.

~	Approximate (symbol)
AGL	Above Ground Level
APX	Approximate (abbreviation)
B	Boring
BG	Background
BGL	Below Ground Level
C	Coring
DRAGER	Brand Name of a Type of Chemical Compound Detection Device
G	Grab Sample
HNU	Brand Name of a Type of Photoionization Analyzer
MSL	Mean Sea Level
MW	Monitor Well
N/A	Not Applicable
NR	No Reading
PPM	Parts per Million
PVC	Polyvinylchloride
SS	Split Spoon Sample
ST	Shelby Tube Sample
SWL	Static Water Level

Examples of detection equipment readings:

1) HNU - 0.6/0.4 BG (HNU reading of 0.6 ppm with a 0.4 ppm background.)

2) Drager polytest - Neg. (No indication of contamination using the polytest, a test for a wide variety of organic compounds.)

RADIAN CORPORATION

Drilling Log

Boring or Well No. MW-4
Sheet 1 of 1

Location Landfill No. 3
Ground Level Elev.: 992.01 ft.MSL(topo)
Log Recorded by P.A. Waterreus
Comments:

G:Grab/SS:Split Spoon/ST:Shelby Tube

Project Sheppard AFB IRP Phase II Stage 1
Beginning 1/29/85 and end 1/29/85 of drilling operation
Sampling Interval (Estimated) 5 (ft)
Drill Rig Mobile B-53
Drill Operator Pat Goodson/Jose Landeros

Depth (ft)	Sample Zone	Sample Type	Sample ID#	Graphic Log	Lithologic Description	Completion Schematic
+5						
0		G			CLAY; silty, dark reddish brown, soft, moist, roots.	Protective Steel Casing; SWL; Grout
5		ST	MW-4(1)		CLAY; silty, dark red, soft, moist, also noted limonite and black organic (?) material. Surface water was infiltrating during drilling (Drager polytest-NEG).	Schedule 80 PVC Casing; Bentonite
10		ST	MW-4(2)		SILT; sandy, dark red with some limonite. (Drager polytest-slight tan ring). Drilling hard at 10 ft. Drilling soft at 13.5 ft - cuttings confirmed a saturated zone.	Schedule 80 PVC Screen; Sand Pack
15		ST	MW-4(3)		SILT; clayey, mottled dark red and maroon, some small white fine grained sand bodies, some limonite and minor black organic (?) material. (Drager polytest-NEG)	Slough
20		ST	MW-4(4)		SILT; same as above except more white sand and no black material. (Drager polytest-NEG)	

Total Depth: 20 feet.

RADIAN CORPORATION

Drilling Log

Boring or Well No. MW-7
Sheet 1 of 1

Location Landfill Area No. 3
Ground Level Elev.: 1027.01 ft.MSL(topo)
Log Recorded by P.A. Waterreus
Comments:

G:Grab/SS:Split Spoon/ST:Shelby Tube

Project Sheppard AFB IRP Phase II Stage 1
Beginning 11/13/84 and end 11/13/84 of drilling operation
Sampling Interval (Estimated) 5 (ft)
Drill Rig Mobile B-53
Drill Operator Pat Goodson/Jose Landeros

Depth (ft)	Sample Zone	Sample Type	Sample ID#	Graphic Log	Lithologic Description	Completion Schematic
+5						
0		G			(TOPSOIL)SILTY; dark reddish brown.	Protective Steel Casing; Grout
5		ST	MW-7(1)		SILT; dark reddish brown, some (5%) fine grain white sand bodies and trace of carbonate clasts. (HNU-0.1/0.0 BG)	SWL; Bentonite
10		ST	MW-7(2)		SILT; clayey, dark reddish brown, some (10%) fine grain white sand bodies. Silt is compact and dry. (HNU-NR)	Schedule 80 PVC Casing
15		ST	MW-7(3)		SILT; dark reddish brown, compact and dry; some (10%) fine grain white sand bodies. Drilling becomes harder at 19 ft. (HNU-NR)	
20		ST	MW-7(4)		SILT; dark reddish brown, compact and dry; some (10%) fine grained white sand, trace of limonite. Drill is sticking at 22 ft. (HNU-0.1/0.0BG)	Sand Pack; Schedule 80 PVC Screen
25		ST	MW-7(5)		SILT; reddish brown, hard and dry, mottled with limonite. Some (20%) fine grained white sand bodies, moist. Trace of carbonate (?) clasts. Drill is sticking at 26 ft. (HNU-0.8-0.0 BG)	
30		ST	MW-7(6)		CLAY; silty, dark reddish brown, hard and dry mottled with limonite. Some (10%) white silt streaks. Trace of carbonate (?) clasts. (HNU-0.4/0.0 BG)	
35		ST	MW-7(7)		CLAY; reddish brown, hard and dry. Some (10%) white silt bodies. (HNU-0.9/0.0 BG)	Slough
40		ST	MW-7(8)		SILT; reddish brown, hard and dry. Some (5%) white silt bodies. (HNU-0.7/0.0 BG)	

TD: 40 feet.

RADIAN CORPORATION

Drilling Log

Boring or Well No. MW-8

Sheet 1 of 1

Location FPTA No. 3

Ground Level Elev.: 998.54 ft.MSL(topo)

Log Recorded by P.A. Waterreus

Comments:

G:Grab/SS:Split Spoon/ST:Shelby Tube

Project Sheppard AFB IRP Phase II Stage 1

Beginning 1/30/85 and end 1/30/85 of drilling operation

Sampling Interval (Estimated) 5 (ft)

Drill Rig Mobile B-53

Drill Operator Pat Goodson/Jose Landeros

Depth (ft)	Sample Zone	Sample Type	Sample ID#	Graphic Log	Lithologic Description	Completion Schematic
+5						
0		G			CLAY; slightly silty and sandy, brownish red, soft, moist, roots.	Protective Steel Casing
5	I	ST	MW-8(1)		SILT; clayey, dark reddish brown, soft, moist (Drager polytest-NEG).	SWL; Grout
10	I	ST	MW-8(2)		SILT; clayey, dark reddish brown, some small greenish gray fine grained sand bodies, hard, dry. (Drager polytest-slightly tan ring.)	Schedule 80 PVC Casing
15	I	ST	MW-8(3)		SILT; same as above except damp. (Drager polytest-slight tan ring.)	Bentonite
20	I	ST	MW-8(4)		SILT; same as above except softer and damper. Drilling hard at 21 ft. (Drager polytest-NEG.)	Sand Pack
25	I	ST	MW-8(5)		SILT; sandy, mottled red and greenish gray, crumbly, damp. (Drager polytest-slight tan ring.)	Stainless Steel Screen
30	I	ST	MW-8(6)		SILT; clayey, layered-very thin, red and gray layers, hard, dry. (Drager polytest-slight tan ring.)	Slough

TD: 30 feet.

As cuttings were coming to the surface there was noted to be a saturated zone between 20 and 30 feet.

RADIAN CORPORATION

Drilling Log

Boring or Well No. MW-9
Sheet 1 of 1

Location FPTA No. 3
Ground Level Elev.: 993.16 ft.MSL(topo)
Log Recorded by P.A. Waterreus
Comments:

G:Grab/SS:Split Spoon/ST:Shelby Tube

Project Sheppard AFB IRP Phase II Stage 1
Beginning 11/15/84 and end 1/30/85 of drilling operation
Sampling Interval (Estimated) 5 (ft)
Drill Rig Mobile B-53
Drill Operator Pat Goodson/Jose Landeros

Depth (ft)	Sample Zone	Sample Type	Sample ID#	Graphic Log	Lithologic Description	Completion Schematic
+5						Protective Steel Casing
0		G			CLAY; reddish brown, soft. 0-3 ft.	
		G			SILT; yellowish brown, moist, soft. (Hydrocarbon odor)	
5	I	ST	MW-9(1)		SILT; yellowish brown, stiff, dry.	SWL
					CLAY; silty, reddish brown, compact, damp. (HNU-110.0/0.2 BG)	Grout
10	I	SS	MW-9(2)		CLAY; sandy, reddish brown, compact, damp. Some moist white sand bodies. (HNU 1.6/0.2 BG)	Schedule 80 PVC Casing
15	I	SS	MW-9(3)		SAND; fine grained, clayey, red, compact, moist. (HNU 1.0/0.2 BG)	Bentonite
20	I	SS	MW-9(4)		SAND; clay, light red, damp. (HNU 0.8/0.2 BG)	
25	I	SS	Mw-9(5)		CLAY; gray, stiff, moist. (HNU 0.6/0.2 BG)	
		G			SAND; gray to white, fine grain, consolidated, moist.	Collapse
30	I	SS	MW-9(6)		SAND; gray to white, fine grained, consolidated, saturated. (HNU 1.4/0.2 BG)	Stainless Steel Casing
35	I	SS	MW-9(7)		CLAY; gray and red mottling, hard, dry.	
					TD: 35 feet	

RADIAN CORPORATION

Drilling Log

Boring or Well No. MW-10
Sheet 1 of 1

Location FPTA No. 3
Ground Level Elev.: 992.45 ft.MSL(topo)
Log Recorded by P.A. Waterreus
Comments:

G:Grab/SS:Split Spoon/ST:Shelby Tube

Project Sheppard AFB IRP Phase II Stage 1
Beginning 11/17/84 and end 1/30/85 of drilling operation
Sampling Interval (Estimated) 5 (ft)
Drill Rig Mobile B-53
Drill Operator Pat Goodson/Jose Landeros

Depth (ft)	Sample Zone	Sample Type	Sample ID#	Graphic Log	Lithologic Description	Completion Schematic
+5						
0		G			SILT; clayey, reddish brown mottled with yellowish silt. Soft, damp. Contains black clasts.	Protective Steel Casing
5	I	ST	MW-10(1)		SILT; clayey, reddish brown mottled with an increase in yellowish silt. Soft, slightly damp. Contains fewer black clasts. (HNU-0.8/0.2 BG)	SWL; Grout
10	I	ST	MW-10(2)		SAND; fine grained, red, mottled with yellowish silt to sand. Consolidated, damp. (HNU-0.6/0.2 BG)	Schedule 80 PVC Casing; Bentonite
15	I	SS	MW-10(3)		SAND; fine grained, reddish brown, mottled with some gray sand. Consolidated, damp. (HNU-0.5/0.2 BG)	Sand and Collapse
20	I	SS	MW-10(4)		SILT; clayey, red. Contains white silt layers. Hard, dry. (HNU-NR)	
25	I	SS	MW-10(5)		SAND; fine grained, tan, loose, saturated. (HNU-NR)	Stainless Steel Screen; Collapse
30	I	SS	MW-10(6)		SAND; same as above. (HNU-NR)	

TD: 30 feet

RADIAN CORPORATION

Drilling Log

Boring or Well No. MW-11
Sheet 1 of 1

Location FPTA No. 1
Ground Level Elev.: 1016.87 ft.MSL(topo)
Log Recorded by P.A. Waterreus
Comments:

G:Grab/SS:Split Spoon/ST:Shelby Tube

Project Sheppard AFB IRP Phase II Stage 1
Beginning 11/16/84 and end 11/16/84 of drilling operation
Sampling Interval (Estimated) 5 (ft)
Drill Rig Mobile B-53
Drill Operator Pat Goodson/Jose Landeros

Depth (ft)	Sample Zone	Sample Type	Sample ID#	Graphic Log	Lithologic Description	Completion Schematic
+5						
0		ST	MW-11(1)		CLAY; silty, black to brown, brown, damp, roots present. (HNU-NR)	Meter Box; Sand
		ST	MW-11(2)		CLAY; silty, yellowish brown to black, mottled, damp. Some black clasts, roots present. (HNU-NR)	
		ST	MW-11(3)		SAND; fine grained, yellowish gray, consolidated, damp. (HNU-NR)	SWL
5		SS	MW-11(4)		SAND; fine grained, yellowish gray, consolidated, damp. (HNU-NR)	Schedule 80 PVC Casing; Grout
10		SS	MW-11(5)		SAND; same as above except for a fine grained thin black sandy layer. (HNU-NR)	
15		SS	MW-11(6)		SAND; fine grained, yellowish gray to yellowish brown, consolidated, damp. (HNU-NR)	Bentonite
20		SS	MW-11(7)		SAND; fine grained, light grayish green, consolidated, damp. (HNU-0.6/0.4 BG)	Sand Pack; Stainless Steel Screen
25		SS	MW-11(8)		SAND; same as above except that the sand is saturated. (HNU-0.7/0.4 BG)	Slough
30		SS	MW-11(9)		SAND; same as above. (HNU-0.6/0.4BG)	

TD: 30 feet

RADIAN CORPORATION

Drilling Log

Boring or Well No. MW-12
Sheet 1 of 1

Location FPTA No. 1
Ground Level Elev.: 1007.79 ft.MSL(topo)
Log Recorded by P.A. Waterreus
Comments:

G:Grab/SS:Split Spoon/ST:Shelby Tube

Project Sheppard AFB IRP Phase II Stage 1
Beginning 11/29/84 and end 11/29/84 of drilling operation
Sampling Interval (Estimated) 5 (ft)
Drill Rig Mobile B-53
Drill Operator Pat Goodson/Jose Landeros

Depth (ft)	Sample Zone	Sample Type	Sample ID#	Graphic Log	Lithologic Description	Completion Schematic
+5						
0		G			SILT; dark brown, soft, damp, roots present.	Meter box; Sand
		G			SILT and SAND; fine grained at 2.7 ft, semi-layered with different colors, white, yellow, orange.	SWL
5	I	ST	MW-12(1)		SILT; sandy, mottled orange and gray, roots present, damp, grading to a mottled yellow and black sandy silt. (Drager Polytest - NEG)	Grout; Schedule 80 PVC Casing
10	I	SS	MW-12(2)		SAND; silty, yellow, consolidated, saturated with perched (?) water. (Drager Polytest - NEG)	Bentonite
15	I	SS	MW-12(3)		SAND; same as above except only moist. (Drager Polytest - NEG)	Sand Pack
20	I	SS	MW-12(4)		SAND; same as above except saturated. (Drager Polytest - NEG)	Stainless Steel Casing
25	I	SS	MW-12(5)		CLAY; mottled brown and grayish black. Slightly damp. (Drager Polytest - NEG)	Slough

TD: 25 feet

RADIAN CORPORATION

Drilling Log

Boring or Well No. MW-13
Sheet 1 of 1

Location FPTA No. 1
Ground Level Elev.: 1009.82 ft.MSL(topo)
Log Recorded by P.A. Waterreus
Comments:

G:Grab/SS:Split Spoon/ST:Shelby Tube

Project Sheppard AFB IRP Phase II Stage 1
Beginning 11/29/84 and end 11/29/84 of drilling operation
Sampling Interval (Estimated) 5 (ft)
Drill Rig Mobile B-53
Drill Operator Pat Goodson/Jose Landeros

Depth (ft)	Sample Zone	Sample Type	Sample ID#	Graphic Log	Lithologic Description	Completion Schematic
+5						
0		G			TOPSOIL; <2.0 ft.	Meter box
					SILT; sandy, yellowish orange, damp 2.0 ft and 3.5 ft.	Sand; SWL
					SAND; fine grained, tan to yellow, consolidated, damp.	Grout
5	I	SS	MW-13(1)		SAND; fine grained, tan to yellow, consolidated, damp. (Drager Polytest - NEG)	Bentonite; Schedule 80 PVC Casing
10	I	SS	MW-13(2)		SAND; silty, fine grained, tan, moist, consolidated, mottled with a dry reddish clayey silt. (Drager Polytest - NEG)	Sand Pack; Stainless Steel Screen
15	I	SS	MW-13(3)		SAND; silty, fine grained, tan, saturated. (Drager Polytest - NEG)	
20	I	SS	MW-13(4)		SAND; same as above. (Drager Polytest - NEG)	Slough
					TD: 20 feet	

RADIAN CORPORATION

Drilling Log

Boring or Well No. MW-14
Sheet 1 of 1

Location FPTA No. 1
Ground Level Elev.: 998.47 ft.MSL(topo)
Log Recorded by P.A. Waterreus
Comments:

G:Grab/SS:Split Spoon/ST:Shelby Tube

Project Sheppard AFB IRP Phase II Stage 1
Beginning 11/30/84 and end 11/30/84 of drilling operation
Sampling Interval (Estimated) 5 (ft)
Drill Rig Mobile B-53
Drill Operator Pat Goodson/Jose Landeros

Depth (ft)	Sample Zone	Sample Type	Sample ID#	Graphic Log	Lithologic Description	Completion Schematic
+5						
0		G			SILT; clayey, reddish brown topsoil <3.2 ft, soft, damp.	Meter box; SWL; Sand
					SAND; fine grained mottled tan and black, consolidated, damp.	Grout; Schedule 80 PVC Casing
5		SS	MW-14(1)		SAND; fine grained, tan, mottled with black silt. Consolidated and damp. (Drager Polytest-tannish ring; Hydrocarbon Test-NEG)	Bentonite
10		SS	MW-14(2)		SAND; fine grained, tan, damp. (Drager Polytest - Slight tannish ring; Hydrocarbon Test-NEG)	Sand Pack; Stainless Steel Screen
15		ST	MW-14(3)		SAND; fine grained, tan, saturated. (Drager Polytest - NEG)	
		ST	MW-14(4)		CLAY; mottled red and gray, hard, damp. (Drager Polytest - NEG)	Soil
20						

TD: 18.2 feet

NOTE: Screen slid down Shelby tube hole to a depth of 19.6 feet.

RADIAN CORPORATION

Drilling Log

Boring or Well No. B-1
Sheet 1 of 2

Location Waste Pits
Ground Level Elev.: ≈997 ft.MSL(topo)
Log Recorded by P.A. Waterreus
Comments:

G:Grab/SS:Split Spoon/ST:Shelby Tube

Project Sheppard AFB IRP Phase II Stage 1
Beginning 11/14/84 and end 11/14/84 of drilling operation
Sampling Interval (Estimated) 5 (ft)
Drill Rig Mobile B-53
Drill Operator Pat Goodson/Jose Landeros

Depth (ft)	Sample Zone	Sample Type	Sample ID#	Graphic Log	Lithologic Description	Remarks
+5						
0		G			SILT; clayey, reddish brown, top 2 ft moist then became dry.	
5		ST	B-1 (1)		SILT; clayey, reddish brown, damp and mottled with limonite. Also noted black organic (?) streaks.	(HNU-NR)
10		ST	B-1 (2)		CLAY; silty, reddish brown, damp and mottled with limonite. Some (10%) white, silt bodies.	(HNU-NR)
15		ST	B-1 (3)		CLAY; silty, reddish brown, dry and mottled with limonite. Some (20%) white silt bodies.	(HNU-NR)
20		ST	B-1 (4)		CLAY; same as above.	(HNU-NR)
25		ST	B-1 (5)		CLAY; silty, reddish brown to brown, dry crumbly. Some (15%) white silt bodies.	(HNU-NR)
30		ST	B-1 (6)		CLAY; dark reddish brown, very hard, dry, crumbly, some dry gray silty clay mineralization along failure planes.	(HNU-NR)
35		ST	B-1 (7)		CLAY; reddish brown, very hard, dry and mottled with some (15%) hard, dry gray clay.	(HNU-NR)
40		ST	B-1 (8)		CLAY; same as above but noted failure planes.	(HNU-NR)

RADIAN CORPORATION

Drilling Log

Boring or Well No. B-1
Sheet 2 of 2

Location Waste Pits
Ground Level Elev.: ≈997 ft.MSL(topo)
Log Recorded by P.A. Waterreus
Comments:

G:Grab/SS:Split Spoon/ST:Shelby Tube

Project Sheppard AFB IRP Phase II Stage 1
Beginning 11/14/84 and end 11/14/84 of drilling operation
Sampling Interval (Estimated) 5 (ft)
Drill Rig Mobile B-53
Drill Operator Pat Goodson/Jose Landeros

Depth (ft)	Sample Zone	Sample Type	Sample ID#	Graphic Log	Lithologic Description	Remarks
40-						
45-	I	ST	B-1 (9)		CLAY; same as above.	(HNU-NR)
					TD: 45 feet.	Abandonment of the boring is as follows: 0.0-5.0 ft - Grout. 5.0-35.0 ft - Mixture of cuttings, bentonite and water. 35.0-45.0 ft - Slough.

RADIAN CORPORATION

Drilling Log

Boring or Well No. B-3
Sheet 1 of 2

Location Waste Pit
Ground Level Elev.: ≈ 980.0 ft.MSL(topo)
Log Recorded by Pat Goodson
Comments:

G:Grab/SS:Split Spoon/ST:Shelby Tube

Project Sheppard AFB IRP Phase II Stage 1
Beginning 12/11/84 and end 12/11/84 of drilling operation
Sampling Interval (Estimated) 5 (ft)
Drill Rig Mobile B-53
Drill Operator Pat Goodson/Jose Landeros

Depth (ft)	Sample Zone	Sample Type	Sample ID#	Graphic Log	Lithologic Description	Remarks
+5						
0		G			SAND; clayey, tan to red, fine grained, moist to wet.	
5		ST	B-3 (1)		SAND; slight clay, gray, uniform fine to very fine grained, wet.	Drager polytest-NEG.
10		ST	B-3 (2)		CLAY; maroon with gray, plastic, stiff, damp.	Drager polytest-NEG.
15		ST	B-3 (3)		CLAY; same as above but dry.	Drager polytest-NEG.
20		ST	B-3 (4)		CLAY; same as above.	Drager polytest-NEG.
25		ST	B-3 (5)		CLAY; red and maroon, dry, hard, crumbles. Noted failure planes. Pockets of very fine grained greenish sand.	Drager polytest-NEG.
30		ST	B-3 (6)		CLAY; red and maroon, dry, hard, crumbles. Gray layers of silt.	Drager polytest-NEG.
35		ST	B-3 (7)		CLAY; same as above.	Drager polytest-NEG.
40		ST	B-3 (8)		CLAY; same as above.	Drager polytest-NEG.

TD: 40 feet.

RADIAN CORPORATION

Drilling Log

Boring or Well No. B-3

Sheet 2 of 2

Location Waste Pit

Ground Level Elev.: ≈ 980.0 ft.MSL(topo)

Log Recorded by Pat Goodson

Comments:

G:Grab/SS:Split Spoon/ST:Shelby Tube

Project Sheppard AFB IRP Phase II Stage 1

Beginning 12/11/84 and end 12/11/84 of drilling operation

Sampling Interval (Estimated) 5 (ft)

Drill Rig Mobile B-53

Drill Operator Pat Goodson/Jose Landeros

Depth (ft)	Sample Zone	Sample Type	Sample ID#	Graphic Log	Lithologic Description	Completion Schematic
						Abandonment of the boring is as follows: 0.0-32.5 - Grout; 32.5-40.0 - Slough.

RADIAN CORPORATION

Drilling Log

Boring or Well No. B-5
Sheet 1 of 2

Location Landfill Area No. 3
Ground Level Elev.: ≈ 1005.0ft.MSL(topo)
Log Recorded by P.A. Waterreus
Comments:

G:Grab/SS:Split Spoon/ST:Shelby Tube

Project Sheppard AFB IRP Phase II Stage 1
Beginning 11/27/84 and end 11/27/84 of drilling operation
Sampling Interval (Estimated) 5 (ft)
Drill Rig Mobile B-53
Drill Operator Pat Goodson/Jose Landeros

Depth (ft)	Sample Zone	Sample Type	Sample ID#	Graphic Log	Lithologic Description	Remarks
+5						
0		G			SILT; slight clay, brown, moist, some small gravel size black mineralized nodules, roots present.	
5	I	ST	B-5 (1)		SILT; clayey, yellowish brown to brown, moist. Small gravel size black nodules.	(HNU-NR)
10	I	ST	B-5 (2)		CLAY; silty, dark reddish brown, mottled with some clayey limonite, damp. Black nodules and some greenish gray silt bodies.	(HNU-NR)
15	I	ST	B-5 (3)		CLAY; slight silt, dark reddish brown with some yellowish clay streaks. Hard, dry. Less black nodules and an increase in the greenish gray silt bodies.	(HNU-NR)
20	I	ST	B-5 (4)		CLAY; same as above except there are no black nodules.	(HNU-NR)
25	I	ST	B-5 (5)		CLAY; same as above.	(HNU-0.6/0.4 BG)
30	I	ST	B-5 (6)		CLAY; same as above.	(HNU-0.6/0.4 BG)
35	I	SS	B-5 (7)		CLAY; same as above.	(HNU-NR)
40	I	SS	B-5 (8)		CLAY; same as above.	(HNU-NR)

RADIAN CORPORATION

Drilling Log

Boring or Well No. B-5

Sheet 2 of 2

Location Landfill Area No. 3

Ground Level Elev.: ≈ 1005.0ft.MSL(topo)

Log Recorded by P.A. Waterreus

Comments:

G:Grab/SS:Split Spoon/ST:Shelby Tube

Project Sheppard AFB IRP Phase II Stage 1

Beginning 11/27/84 and end 11/27/84 of drilling operation

Sampling Interval (Estimated) 5 (ft)

Drill Rig Mobile B-53

Drill Operator Pat Goodson/Jose Landeros

Depth (ft)	Sample Zone	Sample Type	Sample ID#	Graphic Log	Lithologic Description	Remarks
45-	I	SS	B-5 (9)		CLAY; same as above.	(HNU-NR)
50-	I	SS	B-5 (10)		CLAY; same as above.	(HNU-NR)
					TD: 51 feet	Abandonment of the boring is as follows: 0.0-46.0 ft - Grout. 46.0-51.0 ft - Slough, this is estimated, not measured.

RADIAN CORPORATION

Drilling Log

Boring or Well No. B-6
Sheet 1 of 2

Location Landfill Area No. 3
Ground Level Elev.: ≈ 1008.0 ft. MSL (topo)
Log Recorded by P.A. Waterreus
Comments:

G:Grab/SS:Split Spoon/ST:Shelby Tube

Project Sheppard AFB IRP Phase II Stage 1
Beginning 11/14/84 and end 11/14/84 of drilling operation
Sampling Interval (Estimated) 5 (ft)
Drill Rig Mobile B-53
Drill Operator Pat Goodson/Jose Landeros

Depth (ft)	Sample Zone	Sample Type	Sample ID#	Graphic Log	Lithologic Description	Remarks
+5						
0		G			CLAY; dark reddish brown, moist and mottled with limonite. Trace of carbonate (?) clasts.	
5	I	ST	B-6 (1)		CLAY; dark reddish brown, damp and mottled with limonite. Trace of carbonate (?) clasts.	(HNU-NR)
10	I	ST	B-6 (2)		CLAY; dark reddish brown, dry and mottled with limonite. Some (15%) white sand bodies. Trace of carbonate (?) clasts.	(HNU-0.5/0.2 BG) (Drager Polytest-Neg)
15	I	ST	B-6 (3)		CLAY; silty, reddish brown, dry and mottled with an increase in limonite some (20%) white silt bodies.	(HNU-0.5/0.2 BG)
20	I	ST	B-6 (4)		CLAY; silty, reddish brown, hard, dry and mottled with limonite. Some (20%) white silt bodies.	(HNU-0.3/0.2 BG)
25	I	SS	B-6 (5)		CLAY; silty, reddish, brown, hard, dry and mottled with limonite. Some (10%) white silt bodies.	(HNU-NR)
30	I	SS	B-6 (6)		CLAY; same as above.	(HNU-NR) (Drager Polytest-Neg)
35	I	SS	B-6 (7)		CLAY; silty, reddish brown, hard, dry mottled with limonite. Some (20%) white silt bodies.	(HNU-NR)
40	I	SS	B-6 (8)		SHALE; gray, hard, dry. Some (20%) reddish brown clay and some (15%) white silt bodies.	(HNU-NR)

TD: 40 feet.

RADIAN CORPORATION

Drilling Log

Boring or Well No. B-6

Sheet 2 of 2

Location Landfill Area No. 3

Ground Level Elev.: ≈1008.0ft.MSL(topo)

Log Recorded by P.A. Waterreus

Comments:

G:Grab/SS:Split Spoon/ST:Shelby Tube

Project Sheppard AFB IRP Phase II Stage 1

Beginning 11/14/84 and end 11/14/84 of drilling operation

Sampling Interval (Estimated) 5 (ft)

Drill Rig Mobile B-53

Drill Operator Pat Goodson/Jose Landeros

Depth (ft)	Sample Zone	Sample Type	Sample ID#	Graphic Log	Lithologic Description	Remarks
40						Abandonment of the boring is as follows: 0.0-5.0 ft - Grout. 5.0-32.0 ft - Mixture of cuttings, bentonite, and water. 32.0-40.0 ft - Slough.

RADIAN CORPORATION

Drilling Log

Boring or Well No. C-1
Sheet 1 of 1

Location Waste Pits
Ground Level Elev.: ≈984 ft.MSL(topo)
Log Recorded by P.A. Waterreus
Comments:

G:Grab/SS:Split Spoon/ST:Shelby Tube

Project Sheppard AFB IRP Phase II Stage 1
Beginning 11/15/84 and end 12/11/84 of drilling operation
Sampling Interval (Estimated) 5 (ft)
Drill Rig Mobile B-53
Drill Operator Pat Goodson/Jose Landeros

Depth (ft)	Sample Zone	Sample Type	Sample ID#	Graphic Log	Lithologic Description	Remarks
+5						
0		G			CLAY; dark red, damp, soft. Small inclusions of gray sand.	
5		ST	840149		CLAY; red with maroon mottling, hard, dry. Limonite inclusions.	
10		ST	840150		CLAY; red with maroon mottling, moist, stiff, also some reddish brown silt.	(HNU-2.0/0.5 BG)
15		ST	840151		CLAY; red with maroon and gray mottling. Nodules and oxidized material, moist, stiff.	(HNU-30.0/0.5 BG)
20		ST	840152		CLAY; maroon and red with gray mottling. Moist, stiff. Gray material also noted in inclusions, slightly silty.	(HNU-110.0/0.5 BG) (Drager Polytest-POS; Trichloroethylene-NEG)
25		ST	840153		CLAY; red with maroon mottling, dry, hard, failure planes.	(HNU-0.8/0.5 BG)
30		ST	840154		CLAY; red with maroon mottling, dry, hard, some inclusions of gray material.	(HNU-NR)
					TD: 30 feet.	Abandonment of the boring is as follows: 0.0-21.0 ft - grout 21.0-30.0 ft - slough

RADIAN CORPORATION

Drilling Log

Boring or Well No. C-2

Sheet 1 of 1

Location Waste Pit

Ground Level Elev.: ≈983 ft.MSL(topo)

Log Recorded by Pat Goodson

Comments:

G:Grab/SS:Split Spoon/ST:Shelby Tube

Project Sheppard AFB IRP Phase II Stage 1

Beginning 12/11/84 and end 12/11/84 of drilling operation

Sampling Interval (Estimated) Variable(ft)

Drill Rig Mobile B-53

Drill Operator Pat Goodson/Jose Landeros

Depth (ft)	Sample Zone	Sample Type	Sample ID#	Graphic Log	Lithologic Description	Remarks
+5						
0		G			SAND; clayey, tan, fine grained, damp.	
		ST	840163		CLAY; sandy, tan, soft, damp, fine grained sand.	Drager Polytest: Negative.
5		ST	840164		CLAY; sandy, red and gray mottling, iron stains, fine grained sand.	Drager Polytest: Positive - slight tan ring.
		ST	840166		CLAY; maroon with gray mottling, iron stains, plastic, stiff, dry, minor failure planes.	Drager Polytest: Negative.
10		ST	840167		CLAY; same as above except crumbly texture.	Drager Polytest: Negative.
15		G			CLAY;	no sample collected
20		G			CLAY;	no sample collected
25		ST	840169		CLAY; maroon and gray mottling, hard, dry.	Drager Polytest: Positive-slight tan ring.
30		ST	840170		CLAY; maroon, hard, dry, failure planes.	Drager Polytest: Negative
					TD: 30 feet.	Abandonment of the boring is as follows: 0.0-25.5 ft - Grout 25.5-30.0 ft - Slough

RADIAN CORPORATION

Drilling Log

Boring or Well No. C-3
Sheet 1 of 1

Location Waste Pit
Ground Level Elev.: ≈982 ft.MSL(topo)
Log Recorded by Pat Goodson
Comments:

G:Grab/SS:Split Spoon/ST:Shelby Tube

Project Sheppard AFB IRP Phase II Stage 1
Beginning 12/11/84 and end 12/11/84 of drilling operation
Sampling Interval (Estimated) Variable(ft)
Drill Rig Mobile B-53
Drill Operator Pat Goodson/Jose Landeros

Depth (ft)	Sample Zone	Sample Type	Sample ID#	Graphic Log	Lithologic Description	Remarks
+5						
0					CLAY; silty and sandy, dark red, stiff, slightly moist.	
5		ST	840156		CLAY; sandy, dark red, stiff, slightly moist.	Drager Polytest: Negative.
10		ST	840158		CLAY; dark red and maroon, damp, some iron staining. Some silt pockets.	Drager Polytest: Positive - slight tan ring.
15		ST	840159		CLAY; maroon and red, stiff, dry, some iron stains and some gray silt.	Drager Polytest: Negative.
		ST	840160		CLAY; red and maroon mottled with gray clay, stiff, dry.	Drager Polytest: Positive - slight tan ring.
20						
25		ST	840161		CLAY; same as above.	Drager Polytest: Negative.
30		ST	840162		CLAY; same as above.	Drager Polytest: Negative.
					TD: 30 feet.	Abandonment of the boring is as follows: 0.0-25.5 ft - Grout 25.5-30.0 ft - Slough

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CORPORATION

Boring Completion Log: Sheet 1 of 1

Boring or Well No. MW-4 Project Sheppard AFB IRP 214-114-03
Location Landfill NO. 3 and Hardfill Area Log Recorded by Peter A. Waterreus

Construction

Construction Started 1/29/85 Completed 1/29/85
Total Depth Drilled (ft) 20.0 Hole Diameter 8-inch
Drilling Method Free flight hollow-stem auger (Mobile B-53 rig)
Problems encountered during drilling/completion None

Water source for drilling and completion procedures Sheppard AFB potable supply

Sampling

Number, type and disposition of samples collected 4 Shelby tube

Sample interval (ft-ft) 5.0-6.3, 10.0-11.5, 15.0-15.25, 20.0-20.25

Storage and/or preservation method(s) Clear glass quart jar and lid

Materials

Casing type Schedule 80 PVC Diameter 2-inch (internal)
Top of well casing (ft-AGL/BGL) 2.8 AGL Elevation (ft-msl) 994.81
Depth of casing (ft) 10.0
Screen type Schedule 80 PVC Diameter 2-inch (internal)
Slot size 0.010 inch Screen interval (ft-ft) 10.0-20.0

Type(s) of glue used to join casing None - threaded flush joint couplings
Type of gravel/sand pack used Clemtex No. 2 (8-40 mesh)
Amount of gravel pack used 3 sacks
Grain size distribution of gravel pack Retained #8 (2.0%), #16 (51.2%), #20 (62.8%)[1]
Lithology of gravel pack Mostly silica (94%)
Source (company and quarry/pit) Clemtex, Inc., Houston, Texas

Interval of gravel pack (ft-ft) 8.0-19.6 (Slough 19.6-20.0)
Interval of bentonite seal (ft-ft) 6.0-8.0
Interval of grouting (ft-ft) 0.0-6.0

Comments

Type of bentonite - Economy Mud Products Co., Houston , TX - pellets)
Type of grout - Portland Type 1 (neat cement)
[1]#30 (78.4%), #40 (91.2%), #50 (98.9%), #100 (100.0%)

Description of Security Measures

Padlock

Padlock ID No. 767 Location of key(s) Bio/Env. Engineers, Sheppard AFB

RADIAN CORPORATION

Boring Completion Log: Sheet 1 of 2

Boring or Well No. MW-7 Project Sheppard AFB IRP 214-114-03
Location Landfill No. 3 and Hardfill Area Log Recorded by Peter Waterreus

Construction

Construction Started 11/13/84 Completed 11/29/84
Total Depth Drilled (ft) 40.0 Hole Diameter 8-inch
Drilling Method Free flight hollow-stem auger (Mobile B-53 rig)
Problems encountered during drilling/completion During Completion the sand pack was bridging

Water source for drilling and completion procedures Sheppard AFB potable supply

Sampling

Number, type and disposition of samples collected 7 Shelby tube and 1 split-spoon

Sample interval (ft-ft) 5.0-6.5, 10.0-11.5, 15.0-16.5, 20.0-20.3, 25.0-26.5, 30.0-30.5, 35.0-35.3, 40.0-40.3
Storage and/or preservation method(s) Clear glass quart jar and lid

Materials

Casing type Schedule 80 PVC Diameter 2-inch (internal)
Top of well casing (ft-AGL/BGL) 2.8 AGL Elevation (ft-msl) 1029.81
Depth of casing (ft) 15.0
Screen type Schedule 80 PVC Diameter 2-inch (internal)
Slot size 0.010 inch Screen interval (ft-ft) 15.0-40.0

Type(s) of glue used to join casing None - threaded flush joint couplings
Type of gravel/sand pack used Clemtex No. 2 (8-40 mesh)
Amount of gravel pack used 9 sacks
Grain size distribution of gravel pack Retained #8 (2.0%), #16 (51.2%), #20 (62.8%)[1]
Lithology of gravel pack Mostly silica (94%)
Source (company and quarry/pit) Clemtex, Inc., Houston, Texas

Interval of gravel pack (ft-ft) 8.0-37.5 (Slough 37.5-40.0)
Interval of bentonite seal (ft-ft) 5.8-8.0
Interval of grouting (ft-ft) 0.0-5.8

Comments

Type of bentonite - Economy Mud Products Co., Houston, TX - pellets
Type of grout - Portland Type 1 (neat cement)
[1]#30 (78.4%), #40 (91.2%), #50 (98.9%), #100 (100.0%)
Placed filter cloth around PVC screen

Description of Security Measures

Padlock

Padlock ID No. 767 Location of key(s) Bio/Env.Engineers, Sheppard AFB

RADIAN CORPORATION

Boring Completion Log: Sheet 1 of 2

Boring or Well No. MW-8 Project Sheppard AFB IRP 214-114-03
Location Fire Protection Training Area No.3 Log Recorded by Peter A. Waterreus

Construction

Construction Started 1/30/85 Completed 1/30/85
Total Depth Drilled (ft) 30.0 Hole Diameter 8-inch
Drilling Method Free flight hollow-stem auger (Mobile B-53 rig)
Problems encountered during drilling/completion None

Water source for drilling and completion procedures Sheppard AFB potable supply

Sampling

Number, type and disposition of samples collected 6 Shelby tube

Sample interval (ft-ft) 5.0-5.7, 10.0-10.7, 15.0-15.4, 20.0-20.3, 25.0-25.3, 30.0-30.3

Storage and/or preservation method(s) Clear glass quart jar and lid

Materials

Casing type Schedule 80 PVC Diameter 2-inch (internal)
Top of well casing (ft-AGL/BGL) 2.8 AGL Elevation (ft-msl) 1001.34
Depth of casing (ft) 20.0
Screen type Stainless steel wrap Diameter 2-inch (internal)
Slot size 0.010 inch Screen interval (ft-ft) 20.0-30.0

Type(s) of glue used to join casing None - threaded flush joint couplings
Type of gravel/sand pack used Clemtex No. 2 (8-40 mesh)
Amount of gravel pack used 3.5 sacks
Grain size distribution of gravel pack Retained #8 (2.0%), #16 (51.2%), #20 (62.8%)[1]
Lithology of gravel pack Mostly silica (94%)
Source (company and quarry/pit) Clemtex, Inc., Houston, Texas

Interval of gravel pack (ft-ft) 18.0-27.5 (Slough 27.5-30.0)
Interval of bentonite seal (ft-ft) 16.0-18.0
Interval of grouting (ft-ft) 0.0-16.0

Comments

Type of bentonite - Economy Mud Products Co., Houston, TX - pellets
Type of grout - Portland Type 1 (neat cement)
[1]#30 (78.4%), #40 (91.2%), #50 (98.9%), #100 (100.0%)

Description of Security Measures

Padlock

Padlock ID No. 767 Location of key(s) Bio/Env.Engineers, Sheppard AFB

RADIAN CORPORATION

Boring Completion Log: Sheet 1 of 1

Boring or Well No. MW-9 Project Sheppard AFB IRP 214-114-03
Location Fire Protection Training Area No.3 Log Recorded by Peter A. Waterreus

Construction

Construction Started 11/15/84 Completed 1/30/85
Total Depth Drilled (ft) 35.0 Hole Diameter 8-inch
Drilling Method Free flight hollow-stem auger (Mobile B-53 rig)
Problems encountered during drilling/completion Collapse of material

Water source for drilling and completion procedures Sheppard AFB potable supply

Sampling

Number, type and disposition of samples collected 3 Shelby and 4 split-spoon

Sample interval (ft-ft) 5.0-6.5, 10.0-10.3, 15.0-15.5, 20.0-20.5, 25.0-25.8, 30.0-30.6, 35.0-35.6
Storage and/or preservation method(s) Clear glass quart jar and lid

Materials

Casing type Schedule 80 PVC Diameter 2-inch (internal)
Top of well casing (ft-AGL/BGL) 2.7 AGL Elevation (ft-msl) 995.86
Depth of casing (ft) 25.0
Screen type Stainless steel wrap Diameter 2-inch (internal)
Slot size 0.010 inch Screen interval (ft-ft) 25.0-35.0

Type(s) of glue used to join casing None - threaded flush joint couplings
Type of gravel/sand pack used None
Amount of gravel pack used None
Grain size distribution of gravel pack N/A
Lithology of gravel pack N/A
Source (company and quarry/pit) N/A

Interval of gravel pack (ft-ft) No gravel pack (Slough 20.0-35.0)
Interval of bentonite seal (ft-ft) 17.0-20.0
Interval of grouting (ft-ft) 0.0-17.0

Comments

Type of bentonite - Economy Mud Products Co., Houston, TX - pellets
Type of grout - Portland Type 1 (neat cement)

Description of Security Measures

Padlock

Padlock ID No. 767 Location of key(s) Bio/Env.Engineers, Sheppard AFB

RADIAN CORPORATION

Boring Completion Log: Sheet 1 of 1

Boring or Well No. MW-10 Project Sheppard AFB IRP 214-114-03
Location Fire Protection Training Area No.3 Log Recorded by Peter A. Waterreus

Construction

Construction Started 11/17/84 Completed 1/30/85
Total Depth Drilled (ft) 30.0 Hole Diameter 8-inch
Drilling Method Free flight hollow-stem auger (Mobile B-53 rig)
Problems encountered during drilling/completion Collapse of material during completion

Water source for drilling and completion procedures Sheppard AFB potable supply

Sampling

Number, type and disposition of samples collected 2 Shelby tube and 4 split-spoon

Sample interval (ft-ft) 5.0-6.5, 10.0-11.5, 15.0-15.5, 20.0-20.5, 25.0-25.3, 29.5-30.0
Storage and/or preservation method(s) Clear glass quart jar and lid

Materials

Casing type Schedule 80 PVC Diameter 2-inch (internal)
Top of well casing (ft-AGL/BGL) 3.0 AGL Elevation (ft-msl) 995.45
Depth of casing (ft) 20.0
Screen type Stainless steel wrap Diameter 2-inch (internal)
Slot size 0.010 inch Screen interval (ft-ft) 20.0-30.0

Type(s) of glue used to join casing None - threaded flush joint couplings
Type of gravel/sand pack used Clemtex No. 2 (8-40 mesh)
Amount of gravel pack used 3 sacks
Grain size distribution of gravel pack Retained #8 (2.0%), #16 (51.2%), #20 (62.8%)[1]
Lithology of gravel pack Mostly silica (94%)
Source (company and quarry/pit) Clemtex, Inc., Houston, Texas

Interval of gravel pack (ft-ft) 13.0-20.0 (mixture of sand and collapse)(slough 20.0-30.0)
Interval of bentonite seal (ft-ft) 12.0-13.0
Interval of grouting (ft-ft) 0.0-12.0

Comments

Type of bentonite - Economy Mud Products Co., Houston, TX - pellets and granule
Type of grout - Portland Type 1 (neat cement)
[1] #30 (78.4%), #40 (91.2%), #50 (98.9%), #100 (100.0%)

Description of Security Measures

Padlock

Padlock ID No. 767 Location of key(s) Bio/Env. Engineers, Sheppard AFB

RADIAN CORPORATION

Boring Completion Log: Sheet 1 of 1

Boring or Well No. MW-11 Project Sheppard AFB IRP 214-114-03
Location Fire Protection Training Area No.1 Log Recorded by Peter Waterreus

Construction

Construction Started 11/16/84 Completed 11/30/84
Total Depth Drilled (ft) 30.0 Hole Diameter 8-inch
Drilling Method Free flight hollow-stem auger (Mobile B-53 rig)
Problems encountered during drilling/completion None

Water source for drilling and completion procedures Sheppard AFB potable supply

Sampling

Number, type and disposition of samples collected 3 Shelby tube, and 6 split-spoon

Sample interval (ft-ft) 0.0-2.0, 2.0-4.0, 4.0-4.5, 5.0-5.5, 10.0-10.5, 15-16.5, 20.0-20.4, 25.0-25.5, 30.0-30.5
Storage and/or preservation method(s) Clear glass quart jar and lid

Materials

Casing type Schedule 80 PVC Diameter 2-inch (internal)
Top of well casing (ft-AGL/BGL) 0.6 BGL Elevation (ft-msl) 1016.27
Depth of casing (ft) 19.4
Screen type Stainless steel wrap Diameter 2-inch (internal)
Slot size 0.010 inch Screen interval (ft-ft) 19.4-29.4

Type(s) of glue used to join casing None - threaded flush joint couplings
Type of gravel/sand pack used Clemtex No. 2 (8-40 mesh)
Amount of gravel pack used 2 sacks
Grain size distribution of gravel pack Retained #8 (2.0%), #16 (51.2%), #20 (62.8%)[1]
Lithology of gravel pack Mostly silica (94%)
Source (company and quarry/pit) Clemtex, Inc., Houston, Texas

Interval of gravel pack (ft-ft) 17.0-27.0 (Slough 27.0-30.0)
Interval of bentonite seal (ft-ft) 15.0-17.0
Interval of grouting (ft-ft) 1.5-15.0

Comments

Type of bentonite - Economy Mud Products Co., Houston, TX - pellets
Type of grout - Portland Type 1 (neat cement)
[1] #30 (78.4%), #40 (91.2%), #50 (98.9%), #100 (100.0%)

Description of Security Measures

Padlock

Padlock ID No. 2001 Location of key(s) Bio/Env. Engineers, Sheppard AFB

RADIAN CORPORATION

Boring Completion Log: Sheet 1 of 2

Boring or Well No. MW-12 Project Sheppard AFB IRP 214-114-03
Location Fire Protection Training Area No.1 Log Recorded by Peter Waterreus

Construction

Construction Started 11/29/84 Completed 11/30/84
Total Depth Drilled (ft) 25.0 Hole Diameter 8-inch
Drilling Method Free flight hollow-stem auger (Mobile B-53 rig)
Problems encountered during drilling/completion None

Water source for drilling and completion procedures Sheppard AFB potable supply

Sampling

Number, type and disposition of samples collected 1 Shelby tube, and 4 split-spoon

Sample interval (ft-ft) 5.0-6.7, 10.0-10.9, 15.0-15.6, 20.0-20.5, 25.0-26.5

Storage and/or preservation method(s) Clear glass quart jar and lid

Materials

Casing type Schedule 80 PVC Diameter 2-inch (internal)
Top of well casing (ft-AGL/BGL) 0.2 BGL Elevation (ft-msl) 1007.59
Depth of casing (ft) 15.0
Screen type Stainless steel wrap Diameter 2-inch (internal)
Slot size 0.010 inch Screen interval (ft-ft) 15.0-25.0

Type(s) of glue used to join casing None - threaded flush joint couplings
Type of gravel/sand pack used Clemtex No. 2 (8-40 mesh)
Amount of gravel pack used 4 sacks
Grain size distribution of gravel pack Retained #8 (2.0%), #16 (51.2%), #20 (62.8%)[1]
Lithology of gravel pack Mostly silica (94%)
Source (company and quarry/pit) Clemtex, Inc., Houston, Texas

Interval of gravel pack (ft-ft) 13.5-24.3 (Slough 24.3-25.0)
Interval of bentonite seal (ft-ft) 11.5-13.5
Interval of grouting (ft-ft) 1.5-11.5

Comments

Type of bentonite - Economy Mud Products Co., Houston, TX - pellets
Type of grout - Portland Type 1 (neat cement)
[1] #30 (78.4%), #40 (91.2%), #50 (98.9%), #100 (100.0%)

Description of Security Measures

Padlock

Padlock ID No. 2001 Location of key(s) Bio/Env. Engineers, Sheppard AFB

RADIAN CORPORATION

Boring Completion Log: Sheet 1 of 2

Boring or Well No. MW-13 Project Sheppard AFB IRP 214-114-03
Location Fire Protection Training Area No.1 Log Recorded by Peter Waterreus

Construction

Construction Started 11/29/84 Completed 11/30/84
Total Depth Drilled (ft) 20.0 Hole Diameter 8-inch
Drilling Method Free flight hollow-stem auger (Mobile B-53 rig)
Problems encountered during drilling/completion None

Water source for drilling and completion procedures Sheppard AFB potable supply

Sampling

Number, type and disposition of samples collected 4 Split-spoon

Sample interval (ft-ft) 5.0-5.6, 10.0-11.0, 15.0-15.4, 20.0-20.4

Storage and/or preservation method(s) Clear glass quart jar and lid

Materials

Casing type Schedule 80 PVC Diameter 2-inch (internal)
Top of well casing (ft-AGL/BGL) 0.4 BGL Elevation (ft-msl) 1009.42
Depth of casing (ft) 10.0
Screen type Stainless steel wrap Diameter 2-inch (internal)
Slot size 0.010 inch Screen interval (ft-ft) 10.0-20.0

Type(s) of glue used to join casing None - threaded flush joint couplings
Type of gravel/sand pack used Clemtex No. 2 (8-40 mesh)
Amount of gravel pack used 4 sacks
Grain size distribution of gravel pack Retained #8 (2.0%), #16 (51.2%), #20 (62.8%)[1]
Lithology of gravel pack Mostly silica (94%)
Source (company and quarry/pit) Clemtex, Inc., Houston, Texas

Interval of gravel pack (ft-ft) 7.5-18.5 (Slough 18.5-20.0)
Interval of bentonite seal (ft-ft) 5.6-7.5
Interval of grouting (ft-ft) 1.5-5.6

Comments

Type of bentonite - Economy Mud Produts Co., Houston, TX - pellets
Type of grout - Portland Type 1 (neat cement)
[1]#30 (78.4%), #40 (91.2%), #50 (98.9%), #100 (100.0%)

Description of Security Measures

Padlock

Padlock ID No. 2001 Location of key(s) Bio/Env. Engineers, Sheppard AFB

RADIAN
CORPORATION

Boring Completion Log: Sheet 1 of 2

Boring or Well No. MW-14 Project Sheppard AFB IRP 214-114-03
Location Fire Protection Training Area No.1 Log Recorded by Peter Waterreus

Construction

Construction Started 11/30/84 Completed 11/30/84
Total Depth Drilled (ft) 18.2 ft Hole Diameter 8-inch
Drilling Method Free flight hollow-stem auger (Mobile B-53 rig)
Problems encountered during drilling/completion Rig broke down during drilling process. The well was completed at this depth.

Water source for drilling and completion procedures Sheppard AFB potable supply

Sampling

Number, type and disposition of samples collected 2 split-spoon and 2 Shelby tube

Sample interval (ft-ft) 5.0-6.0, 10.0-10.8, 15.0-16.5, 18.0-20.0

Storage and/or preservation method(s) Clear glass quart jar and lid

Materials

Casing type Schedule 80 PVC Diameter 2-inch (internal)
Top of well casing (ft-AGL/BGL) 0.3 BGL Elevation (ft-msl) 998.17
Depth of casing (ft) 9.6
Screen type Stainless steel wrap screen Diameter 2-inch (internal)
Slot size 0.010 Screen interval (ft-ft) 9.6-19.6

Type(s) of glue used to join casing None - threaded flush joint couplings
Type of gravel/sand pack used Clemtex No. 2 (8-40 mesh)
Amount of gravel pack used 4 sacks
Grain size distribution of gravel pack Retained #8 (2.0%), #16 (51.2%), #20 (62.8%)[1]
Lithology of gravel pack Mostly silica (94%)
Source (company and quarry/pit) Clemtex, Inc., Houston, Texas

Interval of gravel pack (ft-ft) 7.5-18.0 (Slough 18.0-18.2)
Interval of bentonite seal (ft-ft) 5.8-7.5
Interval of grouting (ft-ft) 1.5-5.8

Comments

Type of bentonite - Economy Mud Products Co., Houston, TX - pellets
Type of grout - Portland Type 1 (neat cement)
[1]#30 (78.4%), #40 (91.2%), #50 (98.9%), #100 (100.0%)

Description of Security Measures

Padlock

Padlock ID No. 2001 Location of key(s) Bio/Env. Engineers, Sheppard AFB

RADIAN
CORPORATION

Boring Completion Log: Sheet 1 of 1

Boring or Well No. B-1 Project Sheppard AFB IRP 214-114-03
Location Waste Pits Log Recorded by Peter Waterreus

Construction

Construction Started 11/14/84 Completed 11/18/84
Total Depth Drilled (ft) 45.0 Hole Diameter 8-inch
Drilling Method Free flight hollow-stem auger (Mobile B-53 rig)
Problems encountered during drilling/completion None

Water source for drilling and completion procedures Sheppard AFB potable supply

Sampling

Number, type and disposition of samples collected 9 Shelby tube

Sample interval (ft-ft) 5.0-6.5, 10.0-11.5, 15.0-16.5, 20.0-21.5, 25.0-25.8, 30.0-31.4, 35.0-35.8, 40.0-41.5, 45.0-45.3
Storage and/or preservation method(s) Clear glass quart jar and lid

Materials

Casing type N/A Diameter N/A
Top of well casing (ft-AGL/BGL) N/A Elevation (ft-msl) apx. 997
Depth of casing (ft) N/A
Screen type N/A Diameter N/A
Slot size N/A Screen interval (ft-ft) N/A

Type(s) of glue used to join casing N/A
Type of gravel/sand pack used N/A
Amount of gravel pack used N/A
Grain size distribution of gravel pack N/A
Lithology of gravel pack N/A
Source (company and quarry/pit) N/A

Interval of gravel pack (ft-ft) N/A
Interval of bentonite seal (ft-ft) N/A
Interval of grouting (ft-ft) 0.0-5.0

Comments

We backfilled B-1 from 5.0-35.0 ft with a mixture of clay cuttings, bentonite and water. Slough is noted from 35.0-45.0 ft.
Type of grout - Portland Type 1 (neat cement).
Elevation approximated from Base topographic map.

Description of Security Measures

N/A

Padlock ID No. N/A Location of key(s) N/A

RADIAN
CORPORATION

Boring Completion Log: Sheet 1 of 1

Boring or Well No. B-3 Project Sheppard AFB IRP 214-114-03
Location Waste Pit Log Recorded by Pat Goodson

Construction

Construction Started 12/11/84 Completed 12/11/84
Total Depth Drilled (ft) Hole Diameter 8-inch
Drilling Method Free flight hollow-stem auger (Mobile B-53 rig)
Problems encountered during drilling/completion None

Water source for drilling and completion procedures Sheppard AFB potable supply

Sampling

Number, type and disposition of samples collected 8 Shelby tube

Sample interval (ft-ft) 5.0-6.5, 10.0-11.5, 15.0-16.5, 20.0-21.5, 25.0-26.5, 30.0-31.5, 35.0-35.5, 40.0-40.5
Storage and/or preservation method(s) Clear glass quart jar and lid

Materials

Casing type N/A Diameter N/A
Top of well casing (ft-AGL/BGL) N/A Elevation (ft-msl) apx.980.00
Depth of casing (ft) N/A
Screen type N/A Diameter N/A
Slot size N/A Screen interval (ft-ft) N/A

Type(s) of glue used to join casing N/A
Type of gravel/sand pack used N/A
Amount of gravel pack used N/A
Grain size distribution of gravel pack N/A
Lithology of gravel pack N/A
Source (company and quarry/pit) N/A

Interval of gravel pack (ft-ft) N/A
Interval of bentonite seal (ft-ft) N/A
Interval of grouting (ft-ft) 0.0-32.5 (Slough 32.5-40.0)

Comments

Type of grout - Portland Type 1 (neat cement).
Elevation approximated from Base topographic map.

Description of Security Measures

N/A

Padlock ID No. N/A Location of key(s) N/A

RADIAN CORPORATION

Boring Completion Log: Sheet 1 of 1

Boring or Well No. B-5 Project Sheppard AFB IRP 214-114-03
Location Landfill No. 3 and Hardfill Area Log Recorded by Peter Waterreus

Construction

Construction Started 11/27/84 Completed 11/28/84
Total Depth Drilled (ft) 51.0 Hole Diameter 8-inch
Drilling Method Free flight hollow-stem auger (Mobile B-53 rig)
Problems encountered during drilling/completion The desired depth was 60.0 ft but the clay was extremely hard and therefore we stopped short of 60.0 ft. It took approximately 50 minutes to drill from 50.0 to 51.0 ft.
Water source for drilling and completion procedures Sheppard AFB potable supply

Sampling

Number, type and disposition of samples collected 5 Shelby tube and 5 split-spoon

Sample interval (ft-ft) 5.0-6.5, 10.0-11.5, 15.0-16.4, 20.0-21.5, 25.0-26.0, 30.0-31.0, 35.0-36.0, 40.0-41.0, 45.0-45.9, 50.0-50.5
Storage and/or preservation method(s) Clear glass quart jar and lid

Materials

Casing type N/A Diameter N/A
Top of well casing (ft-AGL/BGL) N/A Elevation (ft-msl) apx.1005.00
Depth of casing (ft) N/A
Screen type N/A Diameter N/A
Slot size N/A Screen interval (ft-ft) N/A

Type(s) of glue used to join casing N/A
Type of gravel/sand pack used N/A
Amount of gravel pack used N/A
Grain size distribution of gravel pack N/A
Lithology of gravel pack N/A
Source (company and quarry/pit) N/A

Interval of gravel pack (ft-ft) N/A
Interval of bentonite seal (ft-ft) N/A
Interval of grouting (ft-ft) 0.0-46.0 (Slough 46.0-51.0)

Comments

The amount of slough was not measured and I estimate 5.0 ft based on other borings.
Type of grout - Portland Type 1 (neat cement).
Elevation approximated from Base topographic map.

Description of Security Measures

N/A

Padlock ID No. N/A Location of key(s) N/A

RADIAN CORPORATION

Boring Completion Log: Sheet 1 of 1

Boring or Well No. B-6 Project Sheppard AFB IRP 214-114-03
Location Landfill No. 3 and Hardfill Area Log Recorded by Peter Waterreus

Construction

Construction Started 11/14/84 Completed 11/18/84
Total Depth Drilled (ft) 40.0 Hole Diameter 8-inch
Drilling Method Free flight hollow-stem auger (Mobile B-53 rig)
Problems encountered during drilling/completion None

Water source for drilling and completion procedures Sheppard AFB potable supply

Sampling

Number, type and disposition of samples collected 4 Shelby tube and 4 split-spoon

Sample interval (ft-ft) 5.0-6.5, 10.0-11.5, 15.0-16.5, 20.0-20.2, 25.0-25.5, 30.0-30.5, 35.0-36.0, 40.0-40.9
Storage and/or preservation method(s) Clear glass quart jar and lid

Materials

Casing type N/A Diameter N/A
Top of well casing (ft-AGL/BGL) N/A Elevation (ft-msl) apx.1008.00
Depth of casing (ft) N/A
Screen type N/A Diameter N/A
Slot size N/A Screen interval (ft-ft) N/A

Type(s) of glue used to join casing N/A
Type of gravel/sand pack used N/A
Amount of gravel pack used N/A
Grain size distribution of gravel pack N/A
Lithology of gravel pack N/A
Source (company and quarry/pit) N/A

Interval of gravel pack (ft-ft) N/A
Interval of bentonite seal (ft-ft) N/A
Interval of grouting (ft-ft) 0.0-5.0

Comments

We backfilled B-6 from 5.0 to 32.0 ft with a mixture of clay cuttings, bentonite and water. Slough is noted from 32.0 to 40.0 ft.
Type of grout - Portland Type 1 (neat cement).
Elevation approximated from Base topographic map.

Description of Security Measures

N/A

Padlock ID No. N/A Location of key(s) N/A

RADIAN
CORPORATION

Boring Completion Log: Sheet 1 of 1

Boring or Well No. C-1 Project Sheppard AFB IRP 214-114-03
Location Waste Pits Log Recorded by Peter A. Waterreus

Construction

Construction Started 11/15/84 Completed 12/11/84
Total Depth Drilled (ft) 30.0 Hole Diameter 8-inch
Drilling Method Free flight hollow-stem auger (Mobile B-53 rig)
Problems encountered during drilling/completion Grout had to be tremied into the hole due to the rain water encountered.

Water source for drilling and completion procedures Sheppard AFB potable supply

Sampling

Number, type and disposition of samples collected 6 Shelby Tube

Sample interval (ft-ft) 5.0-6.5, 10.0-11.5, 15.0-15.5, 20.0-21.0, 25.0-26.0, 30.0-30.6
Storage and/or preservation method(s) Clear glass quart jar and lid, 4°C

Materials

Casing type N/A Diameter N/A
Top of well casing (ft-AGL/BGL) N/A Elevation (ft-msl) apx. 984
Depth of casing (ft) N/A
Screen type N/A Diameter N/A
Slot size N//A Screen interval (ft-ft) N/A

Type(s) of glue used to join casing N/A
Type of gravel/sand pack used N/A
Amount ot gravel pack used N/A
Grain size distribution of gravel pack N/A
Lithology of gravel pack N/A
Source (company and quarry/pit) N/A

Interval of gravel pack (ft-ft) N/A
Interval of bentonite seal (ft-ft) N/A
Interval of grouting (ft-ft) 0.0-21.0 (Slough 21.0-30.0)

Comments

Type of grout - Portland Type 1 (neat cement).
Elevation approximated from a Base topographic map.

Description of Security Measures

N/A

Padlock ID No. N/A Location of key(s) N/A

RADIAN
CORPORATION

Boring Completion Log: Sheet 1 of 1

Boring or Well No. C-2 Project Sheppard AFB IRP 214-114-03
Location Waste Pits Log Recorded by Pat Goodson

Construction

Construction Started 12/11/84 Completed 12/11/84
Total Depth Drilled (ft) 30.0 Hole Diameter 8-inch
Drilling Method Free flight hollow-stem auger (Mobile B-53 rig)
Problems encountered during drilling/completion None

Water source for drilling and completion procedures Sheppard AFB potable supply

Sampling

Number, type and disposition of samples collected 6 Shelby tube

Sample interval (ft-ft) 2.5-3.5, 5.0-6.5, 7.5-8.0, 10.0-11.5, 25.0-26.5, 30.0-30.5

Storage and/or preservation method(s) Clear glass quart jar and lid, 4°C

Materials

Casing type N/A Diameter N/A
Top of well casing (ft-AGL/BGL) N/A Elevation (ft-msl) apx. 983
Depth of casing (ft) N/A
Screen type N/A Diameter N/A
Slot size N/A Screen interval (ft-ft) N/A

Type(s) of glue used to join casing N/A
Type of gravel/sand pack used N/A
Amount of gravel pack used N/A
Grain size distribution of gravel pack N/A
Lithology of gravel pack N/A
Source (company and quarry/pit) N/A

Interval of gravel pack (ft-ft) N/A
Interval of bentonite seal (ft-ft) N/A
Interval of grouting (ft-ft) 0.0-25.5 (Slough 25.5-30.0)

Comments

Type of grout - Portland Type 1 (neat cement).
Elevation aproximated from a Base topographic map.

Description of Security Measures

N/A

Padlock ID No. N/A Location of key(s) N/A

RADIAN CORPORATION

Boring Completion Log: Sheet 1 of 1

Boring or Well No. C-3 Project Sheppard AFB IRP 214-114-03
Location Waste Pits Log Recorded by Pat Goodson

Construction

Construction Started 12/11/84 Completed 12/11/84
Total Depth Drilled (ft) Hole Diameter 8-inch
Drilling Method Free flight hollow-stem auger (Mobile B-53 rig)
Problems encountered during drilling/completion None

Water source for drilling and completion procedures Sheppard AFB potable supply

Sampling

Number, type and disposition of samples collected 6 Shelby tube

Sample interval (ft-ft) 5.0-6.5, 10.0-11.5, 15.0-16.5, 17.5-18.0, 25.0-25.5, 30.0-30.5
Storage and/or preservation method(s) Clear glass quart jar and lid, 4°C

Materials

Casing type N/A Diameter N/A
Top of well casing (ft-AGL/BGL) N/A Elevation (ft-msl) apx. 982
Depth of casing (ft) N/A
Screen type N/A Diameter N/A
Slot size N/A Screen interval (ft-ft) N/A

Type(s) of glue used to join casing N/A
Type of gravel/sand pack used N/A
Amount of gravel pack used N/A
Grain size distribution of gravel pack N/A
Lithology of gravel pack N/A
Source (company and quarry/pit) N/A

Interval of gravel pack (ft-ft) N/A
Interval of bentonite seal (ft-ft) N/A
Interval of grouting (ft-ft) 0.0-25.5 (Slough 25.0-30.0)

Comments

Type of grout - Portland Type 1 (neat cement).
Elevation approximated from Base topographic map.

Description of Security Measures

N/A

Padlock ID No. N/A Location of key(s) N/A

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E

APPENDIX E

RAW FIELD DATA

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not included in page count]

ENVIRONMENTAL SAMPLING DATA

(Use this space for mechanical imprint)

OEHL USE ONLY

SAMPLING SITE IDENTIFIER (AFR 19-7)

BASE WHERE SAMPLE COLLECTED: SHEPPARD AFB TX 76311-5300

SAMPLING SITE DESCRIPTION: CORE HOLE # 2 2.5 ft

DATE COLLECTION BEGAN (YYMMDD): 840112

TIME COLLECTION BEGAN (24 hour clock): 1545

COLLECTION METHOD: [X] GRAB [ ] COMPOSITE _____ HOURS

MAIL REPORTS TO (circle if changed)
- ORIGINAL: RADIAN CORP. P.O. BOX 9948 AUSTIN TX 78766
- COPY 1: USAF Rgn HOSPITAL SHEPPARD SGPB AFB, TX
- COPY 2:

SAMPLE COLLECTED BY (Name, Grade, AFSC): P WATERREUS (RADIAN)

SIGNATURE: Pat A Waterreus

AUTOVON: (2)7364429

REASON FOR SUBMISSION: O

A-ACCIDENT/INCIDENT
R-ROUTINE/PERIODIC
C-COMPLAINT
N-NPDES
F-FOLLOWUP/CLEANUP
O-OTHER (specify) IRP

BASE SAMPLE NUMBER: GS 84 0163

OEHL PID:

ANALYSES REQUESTED (check appropriate blocks)

	GROUP A		Hardness	00900		Residue, Settleable	50086		GROUP T
	Ammonia	00610	Iron	01045		Residue, Volatile	00505		Bromoform 32104
	Chemical Oxygen Demand	00340	Lead	01051		Silica	00955		Bromodichloromethane 32101
	Kjeldahl Nitrogen	00625	Magnesium	00927		Specific Conductance	00095		Carbon Tetrachloride 32102
	Nitrate	00620	Manganese	01055		Sulfate	00945		Chloroform 32106
	Nitrite	00615	Mercury	71900		Sulfite	00740		Chloromethane 34418
X	Oil & Grease	00560	Nickel	01067		Surfactants -MBAS	38260		Dibromochloromethane 32105
X	Organic Carbon	00680	Potassium	00937		Turbidity	00076		Methylene Chloride 34423
	Orthophosphate	00671	Selenium	01147					Tetrachloroethylene 34475
	Phosphorus, Total	00665	Silver	01077					1,1,1-Trichloroethane 34506
			Sodium	00929		GROUP H			Trichloroethylene 39180
	GROUP D		Thallium	01059		BHC Isomers	39340		Trihalomethanes 82080
	Cyanide, Total	00720	Zinc	01092		Chlordane	39350		PCBs 39516
	Cyanide, Free	00722				DDT Isomers	39370		
						Dieldrin	39380		
	GROUP E		GROUP G			Endrin	39390		
X	Phenols	32730	Acidity, Total	70508		Heptachlor	39410		
			Alkalinity, Total	00410		Heptachlor Epoxide	39420		
	GROUP F		Alkalinity, Bicarbonate	00425		Lindane	39782		
	Antimony	01097	Bromide	71870		Methoxychlor	39480		
	Arsenic	01002	Carbon Dioxide	00405		Toxaphene	39400		
	Barium	01007	Chloride	00940		2,4-D	39730		
	Beryllium	01012	Color	00080		2,4,5-TP-Silvex	39760		
	Boron	01022	Fluoride	00951		2,4,5-T	39740		
	Cadmium	01027	Iodide	71865					
	Calcium	00916	Odor	00086					
	Chromium, Total	01034	Residue, Total	00500					
	Chromium VI	01032	Residue, Filterable (TDS)	70300		GROUP J			
	Copper	01042	Residue, Nonfilterable	00530		Sulfides	00745		

ON SITE ANALYSES

Parameter		Value
Flow	50050	mgd
Chlorine, Total	50060	mg/l
Dissolved Oxygen	00300	mg/l
pH	00400	units
Temperature	00010	°C

COMMENTS: ALSO ANALYSE FOR pH, TOTAL ORGANIC HALOGEN AND VOLATILE AROMATICS

AF FORM JAN 81 2752

ENVIRONMENTAL SAMPLING DATA

(Use this space for mechanical imprint)

OEHL USE ONLY

SAMPLING SITE IDENTIFIER (AFR 19-7)

BASE WHERE SAMPLE COLLECTED: SHEPPARD AFB TX 76311-5300

SAMPLING SITE DESCRIPTION: CORE HOLE # 2 (5.0 ft)

DATE COLLECTION BEGAN (YYMMDD): 840112

TIME COLLECTION BEGAN (24 hour clock): 1547

COLLECTION METHOD: [X] GRAB [ ] COMPOSITE _____ HOURS

MAIL REPORTS TO (circle if changed)
- ORIGINAL: RADIAN CORP. PO BOX 9948 AUSTIN TX 78766
- COPY 1: USAF Rgn HOSPITAL SHEPPARD SGPB AFB TX
- COPY 2:

SAMPLE COLLECTED BY (Name, Grade, AFSC): P. WATERBEUS (RADIAN)

SIGNATURE: Peter A Waterbeus

AUTOVON: (1) 736 4429

REASON FOR SUBMISSION: O

A-ACCIDENT/INCIDENT
R-ROUTINE/PERIODIC
C-COMPLAINT
N-NPDES
F-FOLLOWUP/CLEANUP
O-OTHER (specify) IRP

BASE SAMPLE NUMBER: GS 84 0164

OEHL PID:

ANALYSES REQUESTED (check appropriate blocks)

	GROUP A		Hardness	00900		Residue, Settleable	50086		GROUP T		
	Ammonia	00610	Iron	01045		Residue, Volatile	00505		Bromoform	32104
	Chemical Oxygen Demand	00340	Lead	01051		Silica	00955		Bromodichloromethane	32101
	Kjeldahl Nitrogen	00625	Magnesium	00927		Specific Conductance	00095		Carbon Tetrachloride	32102
	Nitrate	00620	Manganese	01055		Sulfate	00945		Chloroform	32106
	Nitrite	00615	Mercury	71900		Sulfite	00740		Chloromethane	34418
X	Oil & Grease	00560	Nickel	01067		Surfactants -MBAS	38260		Dibromochloromethane	32105
X	Organic Carbon	00680	Potassium	00937		Turbidity	00076		Methylene Chloride	34423
	Orthophosphate	00671	Selenium	01147					Tetrachloroethylene	34475
	Phosphorus, Total	00665	Silver	01077					1,1,1-Trichloroethane	34506
			Sodium	00929		GROUP H			Trichloroethylene	39180
	GROUP D		Thallium	01059		BHC Isomers	39340		Trihalomethanes	82080
	Cyanide, Total	00720	Zinc	01092		Chlordane	39350		PCBs	39516
	Cyanide, Free	00722				DDT Isomers	39370			
						Dieldrin	39380			
	GROUP E		GROUP G			Endrin	39390			
X	Phenols	32730	Acidity, Total	70508		Heptachlor	39410			
			Alkalinity, Total	00410		Heptachlor Epoxide	39420			
	GROUP F		Alkalinity, Bicarbonate	00425		Lindane	39782			
	Antimony	01097	Bromide	71870		Methoxychlor	39480			
	Arsenic	01002	Carbon Dioxide	00405		Toxaphene	39400			
	Barium	01007	Chloride	00940		2,4-D	39730		ON SITE ANALYSES	
	Beryllium	01012	Color	00080		2,4,5-TP-Silvex	39760		Parameter	Value
	Boron	01022	Fluoride	00951		2,4,5-T	39740		Flow 50050	mgd
	Cadmium	01027	Iodide	71865					Chlorine, Total 50060	mg/l
	Calcium	00916	Odor	00086					Dissolved Oxygen 00300	mg/l
	Chromium, Total	01034	Residue, Total	00500					pH 00400	units
	Chromium VI	01032	Residue, Filterable (TDS)	70300		GROUP J			Temperature 00010	°C
	Copper	01042	Residue, Nonfilterable	00530		Sulfides	00745			

COMMENTS: ALSO ANALYSE FOR pH, HALOGEN, VOLATILE AROMATICS, EP TOXICITY AND TOTAL ORGANIC IGNITABILITY

AF FORM JAN 81 2752

ENVIRONMENTAL SAMPLING DATA

(Use this space for mechanical imprint)

OEHL USE ONLY

SAMPLING SITE IDENTIFIER (AFR 19-7)

BASE WHERE SAMPLE COLLECTED: SHEPPARD AFB TX 76311-5300

SAMPLING SITE DESCRIPTION: CORE HOLE # 2 (7.5 ft)

DATE COLLECTION BEGAN (YYMMDD): 8 4 1 2 1 1

TIME COLLECTION BEGAN (24 hour clock): DID NOT NOTE TIME

COLLECTION METHOD: [X] GRAB [ ] COMPOSITE _____ HOURS

MAIL REPORTS TO (circle if changed):
- ORIGINAL: RADIAN CORP PO BOX 9948 AUSTIN TX 78766
- COPY 1: USAF Rgn HOSPITAL SHEPPARD SGPB AFB, TX
- COPY 2:

SAMPLE COLLECTED BY (Name, Grade, AFSC): P. WATERREUS (RADIAN)

SIGNATURE: Peter A Waterreus

AUTOVON: (8) 736 4429

REASON FOR SUBMISSION: 0

A-ACCIDENT/INCIDENT
R-ROUTINE/PERIODIC
C-COMPLAINT
N-NPDES
F-FOLLOWUP/CLEANUP
O-OTHER (specify) IRP

BASE SAMPLE NUMBER: 6 9 8 4 0 1 6 6

OEHL PID

ANALYSES REQUESTED (check appropriate blocks)

	GROUP A		Hardness 00900		Residue, Settleable 50086		GROUP T
	Ammonia 00610		Iron 01045		Residue, Volatile 00505		Bromoform 32104
	Chemical Oxygen Demand 00340		Lead 01051		Silica 00955		Bromodichloromethane 32101
	Kjeldahl Nitrogen 00625		Magnesium 00927		Specific Conductance 00095		Carbon Tetrachloride 32102
	Nitrate 00620		Manganese 01055		Sulfate 00945		Chloroform 32106
	Nitrite 00615		Mercury 71900		Sulfite 00740		Chloromethane 34418
X	Oil & Grease 00560		Nickel 01067		Surfactants -MBAS 38260		Dibromochloromethane 32105
X	Organic Carbon 00680		Potassium 00937		Turbidity 00076		Methylene Chloride 34423
	Orthophosphate 00671		Selenium 01147				Tetrachloroethylene 34475
	Phosphorus, Total 00665		Silver 01077				1,1,1-Trichloroethane 34506
			Sodium 00929		GROUP H		Trichloroethylene 39180
	GROUP D		Thallium 01059		BHC Isomers 39340		Trihalomethanes 82080
	Cyanide, Total 00720		Zinc 01092		Chlordane 39350		PCBs 39516
	Cyanide, Free 00722				DDT Isomers 39370		
					Dieldrin 39380		
	GROUP E		GROUP G		Endrin 39390		
X	Phenols 32730		Acidity, Total 70508		Heptachlor 39410		
			Alkalinity, Total 00410		Heptachlor Epoxide 39420		
	GROUP F		Alkalinity, Bicarbonate 00425		Lindane 39782		
	Antimony 01097		Bromide 71870		Methoxychlor 39480		
	Arsenic 01002		Carbon Dioxide 00405		Toxaphene 39400		
	Barium 01007		Chloride 00940		2,4-D 39730		
	Beryllium 01012		Color 00080		2,4,5-TP-Silvex 39760		
	Boron 01022		Fluoride 00951		2,4,5-T 39740		
	Cadmium 01027		Iodide 71865				
	Calcium 00916		Odor 00086				
	Chromium, Total 01034		Residue, Total 00500				
	Chromium VI 01032		Residue, Filterable (TDS) 70300		GROUP J		
	Copper 01042		Residue, Nonfilterable 00530		Sulfides 00745		

ON SITE ANALYSES

Parameter	Value
Flow 50050	mgd
Chlorine, Total 50060	mg/l
Dissolved Oxygen 00300	mg/l
pH 00400	units
Temperature 00010	°C

COMMENTS: ALSO ANALYSE FOR pH, TOTAL ORGANIC HALOGEN AND VOLATILE AROMATICS

AF FORM JAN 81 2752

..NMENTAL SAMPLING DATA

(..se this space for mechanical imprint)

OEHL USE ONLY

SAMPLING SITE IDENTIFIER (AFR 19-7)

BASE WHERE SAMPLE COLLECTED: SHEPPARD AFB Tx 76311-5300

SAMPLING SITE DESCRIPTION: CORE HOLE #2 (10.0 ft)

DATE COLLECTION BEGAN (YYMMDD): 84 12 11

TIME COLLECTION BEGAN (24 hour clock): 1603

COLLECTION METHOD: [X] GRAB [ ] COMPOSITE _____ HOURS

MAIL REPORTS TO (circle if changed):
- ORIGINAL: RADIAN CORP PO BOX 9948 AUSTIN Tx 78766
- COPY 1: USAF Rgn HOSPITAL SHEPPARD SGPB AFB, Tx
- COPY 2:

SAMPLE COLLECTED BY (Name, Grade, AFSC): P. WATERREUS (RADIAN)

SIGNATURE: Peter A Waterreus

AUTOVON: (C) 7364429

REASON FOR SUBMISSION: 0

A-ACCIDENT/INCIDENT R-ROUTINE/PERIODIC C-COMPLAINT N-NPDES F-FOLLOWUP/CLEANUP O-OTHER (specify) IRP

BASE SAMPLE NUMBER: GS 84 0167

OEHL PID:

ANALYSES REQUESTED (check appropriate blocks)

	GROUP A		Hardness	00900	Residue, Settleable	50086	GROUP T
	Ammonia	00610	Iron	01045	Residue, Volatile	00505	Bromoform 32104
	Chemical Oxygen Demand	00340	Lead	01051	Silica	00955	Bromodichloromethane 32101
	Kjeldahl Nitrogen	00625	Magnesium	00927	Specific Conductance	00095	Carbon Tetrachloride 32102
	Nitrate	00620	Manganese	01055	Sulfate	00945	Chloroform 32106
	Nitrite	00615	Mercury	71900	Sulfite	00740	Chloromethane 34418
X	Oil & Grease	00560	Nickel	01067	Surfactants -MBAS	38260	Dibromochloromethane 32105
X	Organic Carbon	00680	Potassium	00937	Turbidity	00076	Methylene Chloride 34423
	Orthophosphate	00671	Selenium	01147			Tetrachloroethylene 34475
	Phosphorus, Total	00665	Silver	01077			1,1,1-Trichloroethane 34506
			Sodium	00929	GROUP H		Trichloroethylene 39180
	GROUP D		Thallium	01059	BHC Isomers	39340	Trihalomethanes 82080
	Cyanide, Total	00720	Zinc	01092	Chlordane	39350	PCBs 39516
	Cyanide, Free	00722			DDT Isomers	39370	
					Dieldrin	39380	
	GROUP E		GROUP G		Endrin	39390	
X	Phenols	32730	Acidity, Total	70508	Heptachlor	39410	
			Alkalinity, Total	00410	Heptachlor Epoxide	39420	
	GROUP F		Alkalinity, Bicarbonate	00425	Lindane	39782	
	Antimony	01097	Bromide	71870	Methoxychlor	39480	
	Arsenic	01002	Carbon Dioxide	00405	Toxaphene	39400	
	Barium	01007	Chloride	00940	2,4-D	39730	
	Beryllium	01012	Color	00080	2,4,5-TP-Silvex	39760	
	Boron	01022	Fluoride	00951	2,4,5-T	39740	
	Cadmium	01027	Iodide	71865			
	Calcium	00916	Odor	00086			
	Chromium, Total	01034	Residue, Total	00500			
	Chromium VI	01032	Residue, Filterable (TDS)	70300	GROUP J		
	Copper	01042	Residue, Nonfilterable	00530	Sulfides	00745	

ON SITE ANALYSES

Parameter		Value
Flow	50050	mgd
Chlorine, Total	50060	mg/l
Dissolved Oxygen	00300	mg/l
pH	00400	units
Temperature	00010	°C

COMMENTS: ALSO ANALYSE FOR pH, TOTAL ORGANIC HALOGEN AND VOLATILE AROMATICS

AF FORM JAN 81 2752

ENVIRONMENTAL SAMPLING DATA

(Use this space for mechanical imprint)

OEHL USE ONLY

SAMPLING SITE IDENTIFIER (AFR 19-7)

BASE WHERE SAMPLE COLLECTED: SHEPPARD AFB TX 76311-5300

SAMPLING SITE DESCRIPTION: CORE HOLE # 2 (25.0 ft)

DATE COLLECTION BEGAN (YYMMDD): 840112

TIME COLLECTION BEGAN (24 hour clock): 1627

COLLECTION METHOD: [X] GRAB [ ] COMPOSITE _____ HOURS

MAIL REPORTS TO (circle if changed)

ORIGINAL	RADIAN CORP PO BOX 9948 AUSTIN TX 78766
COPY 1	USAF Rgn HOSPITAL SHEPPARD SGPB AFB TX
COPY 2	

SAMPLE COLLECTED BY (Name, Grade, AFSC): P. WATERBEUS (RADIAN)

SIGNATURE: Peter A Waterbeus

AUTOVON: (1) 736 4479

REASON FOR SUBMISSION: O

A-ACCIDENT/INCIDENT
R-ROUTINE/PERIODIC
C-COMPLAINT
N-NPDES
F-FOLLOWUP/CLEANUP
O-OTHER (specify) IRP

BASE SAMPLE NUMBER: G S 8 4 0 1 6 9

OEHL PID

ANALYSES REQUESTED (check appropriate blocks)

	GROUP A		Hardness	00900		Residue, Settleable	50086		GROUP T
	Ammonia	00610	Iron	01045		Residue, Volatile	00505		Bromoform 32104
	Chemical Oxygen Demand	00340	Lead	01051		Silica	00955		Bromodichloromethane 32101
	Kjeldahl Nitrogen	00625	Magnesium	00927		Specific Conductance	00095		Carbon Tetrachloride 32102
	Nitrate	00620	Manganese	01055		Sulfate	00945		Chloroform 32106
	Nitrite	00615	Mercury	71900		Sulfite	00740		Chloromethane 34418
X	Oil & Grease	00560	Nickel	01067		Surfactants -MBAS	38260		Dibromochloromethane 32105
X	Organic Carbon	00680	Potassium	00937		Turbidity	00076		Methylene Chloride 34423
	Orthophosphate	00671	Selenium	01147					Tetrachloroethylene 34475
	Phosphorus, Total	00665	Silver	01077					1,1,1-Trichloroethane 34506
			Sodium	00929		GROUP H			Trichloroethylene 39180
	GROUP D		Thallium	01059		BHC Isomers	39340		Trihalomethanes 82080
	Cyanide, Total	00720	Zinc	01092		Chlordane	39350		PCBs 39516
	Cyanide, Free	00722				DDT Isomers	39370		
						Dieldrin	39380		
	GROUP E		GROUP G			Endrin	39390		
X	Phenols	32730	Acidity, Total	70508		Heptachlor	39410		
			Alkalinity, Total	00410		Heptachlor Epoxide	39420		
	GROUP F		Alkalinity, Bicarbonate	00425		Lindane	39782		
	Antimony	01097	Bromide	71870		Methoxychlor	39480		
	Arsenic	01002	Carbon Dioxide	00405		Toxaphene	39400		
	Barium	01007	Chloride	00940		2,4-D	39730		
	Beryllium	01012	Color	00080		2,4,5-TP-Silvex	39760		
	Boron	01022	Fluoride	00951		2,4,5-T	39740		
	Cadmium	01027	Iodide	71865					
	Calcium	00916	Odor	00086					
	Chromium, Total	01034	Residue, Total	00500					
	Chromium VI	01032	Residue, Filterable (TDS)	70300		GROUP J			
	Copper	01042	Residue, Nonfilterable	00530		Sulfides	00745		

ON SITE ANALYSES

Parameter		Value
Flow	50050	mgd
Chlorine, Total	50060	mg/l
Dissolved Oxygen	00300	mg/l
pH	00400	units
Temperature	00010	°C

COMMENTS: ALSO ANALYSE FOR pH, TOTAL ORGANIC HALOGEN AND VOLATILE AROMATICS

AF FORM JAN 81 2752

SW:1

FIRST SAMPLING

ENVIRONMENTAL SAMPLING DATA

(Use this space for mechanical imprint)

OEHL USE ONLY

SAMPLING SITE IDENTIFIER (AFR 19-7)

BASE WHERE SAMPLE COLLECTED: SHEPPARD AFB TX 76311-5300

SAMPLING SITE DESCRIPTION: (SW-1) Surface Water Point #1

DATE COLLECTION BEGAN (YYMMDD): 841121

TIME COLLECTION BEGAN (24 hour clock): 1640

COLLECTION METHOD: [X] GRAB [ ] COMPOSITE _____ HOURS

MAIL REPORTS TO (circle if changed)
- ORIGINAL: RADIAN CORP P.O Box 9948 Austin TX 78766
- COPY 1: USAF Rgn Hospital Sheppard SGPB AFB, TX
- COPY 2:

SAMPLE COLLECTED BY (Name, Grade, AFSC): RICK BELAN (RADIAN CORP.)

SIGNATURE: Rick Belan

AUTOVON: (8) 736 4489

REASON FOR SUBMISSION: O — A-ACCIDENT/INCIDENT, R-ROUTINE/PERIODIC, C-COMPLAINT, N-NPDES, F-FOLLOWUP/CLEANUP, O-OTHER (specify) IRP

BASE SAMPLE NUMBER: GS 84 0190

OEHL PID:

ANALYSES REQUESTED (check appropriate blocks)

	GROUP A		Hardness	00900		Residue, Settleable	50086		GROUP T
	Ammonia	00610	Iron	01045		Residue, Volatile	00505		Bromoform 32104
	Chemical Oxygen Demand	00340	Lead	01051		Silica	00955		Bromodichloromethane 32101
	Kjeldahl Nitrogen	00625	Magnesium	00927		Specific Conductance	00095		Carbon Tetrachloride 32102
	Nitrate	00620	Manganese	01055		Sulfate	00945		Chloroform 32106
	Nitrite	00615	Mercury	71900		Sulfite	00740		Chloromethane 34418
X	Oil & Grease	00560	Nickel	01067		Surfactants -MBAS	38260		Dibromochloromethane 32105
X	Organic Carbon	00680	Potassium	00937		Turbidity	00076		Methylene Chloride 34423
	Orthophosphate	00671	Selenium	01147					Tetrachloroethylene 34475
	Phosphorus, Total	00665	Silver	01077					1,1,1-Trichloroethane 34506
			Sodium	00929		GROUP H			Trichloroethylene 39180
	GROUP D		Thallium	01059		BHC Isomers	39340		Trihalomethanes 82080
	Cyanide, Total	00720	Zinc	01092		Chlordane	39350		PCBs 39516
	Cyanide, Free	00722				DDT Isomers	39370		
						Dieldrin	39380		
	GROUP E		GROUP G			Endrin	39390		
X	Phenols	32730	Acidity, Total	70508		Heptachlor	39410		
			Alkalinity, Total	00410		Heptachlor Epoxide	39420		
	GROUP F		Alkalinity, Bicarbonate	00425		Lindane	39782		
	Antimony	01097	Bromide	71870		Methoxychlor	39480		
	Arsenic	01002	Carbon Dioxide	00405		Toxaphene	39400		
	Barium	01007	Chloride	00940		2,4-D	39730		
	Beryllium	01012	Color	00080		2,4,5-TP-Silvex	39760		
	Boron	01022	Fluoride	00951		2,4,5-T	39740		
	Cadmium	01027	Iodide	71865					
	Calcium	00916	Odor	00086					
	Chromium, Total	01034	Residue, Total	00500					
	Chromium VI	01032	X Residue, Filterable (TDS)	70300		GROUP J			
	Copper	01042	Residue, Nonfilterable	00530		Sulfides	00745		

ON SITE ANALYSES

Parameter		Value
Flow	50050	mgd
Chlorine, Total	50060	mg/l
Dissolved Oxygen	00300	mg/l
pH	00400	units
Temperature	00010	°C

COMMENTS: Also analyze for pH / Total organic halogen + volatile aromatics

AF FORM JAN 81 2752

ENVIRONMENTAL SAMPLING DATA

(Use this space for mechanical imprint)

OEHL USE ONLY

SAMPLING SITE IDENTIFIER (AFR 19-7)

BASE WHERE SAMPLE COLLECTED: SHEPPARD AFB TX 76311-5300

SAMPLING SITE DESCRIPTION: CORE HOLE #2 (30.0 ft)

DATE COLLECTION BEGAN (YYMMDD): 84 12 11

TIME COLLECTION BEGAN (24 hour clock): 1645

COLLECTION METHOD: [X] GRAB [ ] COMPOSITE _____ HOURS

MAIL REPORTS TO (circle if changed)
- ORIGINAL: RADIAN CORP PO BOX 9947 AUSTIN TX 77766
- COPY 1: USAF Rgn HOSPITAL SHEPPARD SGPB AFB TX
- COPY 2:

SAMPLE COLLECTED BY (Name, Grade, AFSC): P. WATERBEUS (RADIAN)

SIGNATURE: P. A. Waterbeus

AUTOVON: (8) 736 4419

REASON FOR SUBMISSION: O

A-ACCIDENT/INCIDENT
R-ROUTINE/PERIODIC
C-COMPLAINT
N-NPDES
F-FOLLOWUP/CLEANUP
O-OTHER (specify) IRP

BASE SAMPLE NUMBER: 6 S 8 4 0 1 7 0

OEHL PID

ANALYSES REQUESTED (check appropriate blocks)

	GROUP A		Hardness	00900		Residue, Settleable	50086		GROUP T		
	Ammonia	00610	Iron	01045		Residue, Volatile	00505		Bromoform	32104
	Chemical Oxygen Demand	00340	Lead	01051		Silica	00955		Bromodichloromethane	32101
	Kjeldahl Nitrogen	00625	Magnesium	00927		Specific Conductance	00095		Carbon Tetrachloride	32102
	Nitrate	00620	Manganese	01055		Sulfate	00945		Chloroform	32106
	Nitrite	00615	Mercury	71900		Sulfite	00740		Chloromethane	34418
X	Oil & Grease	00560	Nickel	01067		Surfactants -MBAS	38260		Dibromochloromethane	32105
X	Organic Carbon	00680	Potassium	00937		Turbidity	00076		Methylene Chloride	34423
	Orthophosphate	00671	Selenium	01147					Tetrachloroethylene	34475
	Phosphorus, Total	00665	Silver	01077					1,1,1-Trichloroethane	34506
			Sodium	00929		GROUP H			Trichloroethylene	39180
	GROUP D		Thallium	01059		BHC Isomers	39340		Trihalomethanes	82080
	Cyanide, Total	00720	Zinc	01092		Chlordane	39350		PCBs	39516
	Cyanide, Free	00722				DDT Isomers	39370			
						Dieldrin	39380			
	GROUP E		GROUP G			Endrin	39390			
X	Phenols	32730	Acidity, Total	70508		Heptachlor	39410			
			Alkalinity, Total	00410		Heptachlor Epoxide	39420			
	GROUP F		Alkalinity, Bicarbonate	00425		Lindane	39782			
	Antimony	01097	Bromide	71870		Methoxychlor	39480			
	Arsenic	01002	Carbon Dioxide	00405		Toxaphene	39400			
	Barium	01007	Chloride	00940		2,4-D	39730			
	Beryllium	01012	Color	00080		2,4,5-TP-Silvex	39760			
	Boron	01022	Fluoride	00951		2,4,5-T	39740			
	Cadmium	01027	Iodide	71865						
	Calcium	00916	Odor	00086						
	Chromium, Total	01034	Residue, Total	00500						
	Chromium VI	01032	Residue, Filterable (TDS)	70300		GROUP J				
	Copper	01042	Residue, Nonfilterable	00530		Sulfides	00745			

ON SITE ANALYSES

Parameter		Value
Flow	50050	mgd
Chlorine, Total	50060	mg/l
Dissolved Oxygen	00300	mg/l
pH	00400	units
Temperature	00010	°C

COMMENTS: ALSO ANALYSE FOR pH, TOTAL ORGANIC HALOGEN AND VOLATILE AROMATICS

AF FORM JAN 81 2752

ENVIRONMENTAL SAMPLING DATA

(Use this space for mechanical imprint)

OEHL USE ONLY

SAMPLING SITE IDENTIFIER (AFR 19-7)

BASE WHERE SAMPLE COLLECTED: SHEPPARD AFB TX 76311-5300

SAMPLING SITE DESCRIPTION: (SW2) Surface Water Point #2

DATE COLLECTION BEGAN (YYMMDD): 840121

TIME COLLECTION BEGAN (24 hour clock): 1815

COLLECTION METHOD: [X] GRAB [ ] COMPOSITE _____ HOURS

MAIL REPORTS TO (circle if changed)
- ORIGINAL: RADIAN CORP P.O. Box 9948 Austin, TX 78766
- COPY 1: USAF Rgn Hospital Sheppard SGPB AFB, TX
- COPY 2:

SAMPLE COLLECTED BY (Name, Grade, AFSC): RICK BELAN (RADIAN CORP)

SIGNATURE: Rick Belan

AUTOVON: (8) 736 4489

REASON FOR SUBMISSION: O

A-ACCIDENT/INCIDENT
R-ROUTINE/PERIODIC
C-COMPLAINT
N-NPDES
F-FOLLOWUP/CLEANUP
O-OTHER (specify) IRP

BASE SAMPLE NUMBER: GS 84 0191

OEHL PID:

ANALYSES REQUESTED (check appropriate blocks)

		GROUP A		Hardness	00900		Residue, Settleable	50086	GROUP T
		Ammonia	00610	Iron	01045		Residue, Volatile	00505	Bromoform 32104
		Chemical Oxygen Demand	00340	X Lead	01051		Silica	00955	Bromodichloromethane 32101
		Kjeldahl Nitrogen	00625	Magnesium	00927		Specific Conductance	00095	Carbon Tetrachloride 32102
		Nitrate	00620	Manganese	01055		Sulfate	00945	Chloroform 32106
		Nitrite	00615	X Mercury	71900		Sulfite	00740	Chloromethane 34418
X		Oil & Grease	00560	Nickel	01067		Surfactants -MBAS	38260	Dibromochloromethane 32105
X		Organic Carbon	00680	Potassium	00937		Turbidity	00076	Methylene Chloride 34423
		Orthophosphate	00671	Selenium	01147				Tetrachloroethylene 34475
		Phosphorus, Total	00665	Silver	01077				1,1,1-Trichloroethane 34506
				Sodium	00929		GROUP H		Trichloroethylene 39180
		GROUP D		Thallium	01059		BHC Isomers	39340	Trihalomethanes 82080
		Cyanide, Total	00720	Zinc	01092		Chlordane	39350	PCBs 39516
		Cyanide, Free	00722				DDT Isomers	39370	
							Dieldrin	39380	
		GROUP E		GROUP G			Endrin	39390	
		Phenols	32730	Acidity, Total	70508		Heptachlor	39410	
				Alkalinity, Total	00410		Heptachlor Epoxide	39420	
		GROUP F		Alkalinity, Bicarbonate	00425		Lindane	39782	
		Antimony	01097	Bromide	71870		Methoxychlor	39480	
		Arsenic	01002	Carbon Dioxide	00405		Toxaphene	39400	
		Barium	01007	Chloride	00940		2,4-D	39730	
		Beryllium	01012	Color	00080		2,4,5-TP-Silvex	39760	
		Boron	01022	Fluoride	00951		2,4,5-T	39740	
		Cadmium	01027	Iodide	71865				
		Calcium	00916	Odor	00086				
X		Chromium, Total	01034	X Residue, Total	00500				
		Chromium VI	01032	X Residue, Filterable (TDS)	70300		GROUP J		
		Copper	01042	Residue, Nonfilterable	00530		Sulfides	00745	

RAD

ON SITE ANALYSES			
Parameter		Value	
Flow	50050	mgd	
Chlorine, Total	50060	mg/l	
Dissolved Oxygen	00300	mg/l	
pH	00400	units	
Temperature	00010	°C	

COMMENTS: Also analyze for pH / Total Organic Halogen & Volatile Aromatics.

AF FORM JAN 81 2752

SW 5

ENVIRONMENTAL SAMPLING DATA

(Use this space for mechanical imprint)

OEHL USE ONLY

SAMPLING SITE IDENTIFIER (AFR 19-7)

BASE WHERE SAMPLE COLLECTED: SHEPPARD AFB TX 76311-5300

SAMPLING SITE DESCRIPTION: (SW-5) Surface Water Point #5

DATE COLLECTION BEGAN (YYMMDD): 84 12 12

TIME COLLECTION BEGAN (24 hour clock): 1145

COLLECTION METHOD: [X] GRAB [ ] COMPOSITE _____ HOURS

MAIL REPORTS TO (circle if changed):
- ORIGINAL: RADIAN CORP. P.O. Box 9948 AUSTIN, TX 78766
- COPY 1: USAF Rgn Hospital Sheppard SGPB AFB TX 76311-5300
- COPY 2:

SAMPLE COLLECTED BY (Name, Grade, AFSC): RICK BELAN (RADIAN)

SIGNATURE: Rick Belan

AUTOVON: (8) 736 4489

REASON FOR SUBMISSION: 0

A-ACCIDENT/INCIDENT
R-ROUTINE/PERIODIC
C-COMPLAINT
N-NPDES
F-FOLLOWUP/CLEANUP
O-OTHER (specify) IRP

BASE SAMPLE NUMBER: GS 84 0192

OEHL PID

ANALYSES REQUESTED (check appropriate blocks)

	GROUP A		Hardness	00900		Residue, Settleable	50086		GROUP T
	Ammonia	00610	Iron	01045		Residue, Volatile	00505		Bromoform 32104
	Chemical Oxygen Demand	00340	X Lead	01051		Silica	00955		Bromodichloromethane 32101
	Kjeldahl Nitrogen	00625	Magnesium	00927		Specific Conductance	00095		Carbon Tetrachloride 32102
	Nitrate	00620	Manganese	01055		Sulfate	00945		Chloroform 32106
	Nitrite	00615	X Mercury	71900		Sulfite	00740		Chloromethane 34418
X	Oil & Grease	00560	Nickel	01067		Surfactants -MBAS	38260		Dibromochloromethane 32105
X	Organic Carbon	00680	Potassium	00937		Turbidity	00076		Methylene Chloride 34423
	Orthophosphate	00671	Selenium	01147					Tetrachloroethylene 34475
	Phosphorus, Total	00665	Silver	01077					1,1,1-Trichloroethane 34506
			Sodium	00929		GROUP H			Trichloroethylene 39180
	GROUP D		Thallium	01059		BHC Isomers	39340		Trihalomethanes 82080
	Cyanide, Total	00720	Zinc	01092		Chlordane	39350		PCBs 39516
	Cyanide, Free	00722				DDT Isomers	39370		
						Dieldrin	39380		
	GROUP E		GROUP G			Endrin	39390		
X	Phenols	32730	Acidity, Total	70508		Heptachlor	39410		
			Alkalinity, Total	00410		Heptachlor Epoxide	39420		
	GROUP F		Alkalinity, Bicarbonate	00425		Lindane	39782		
	Antimony	01097	Bromide	71870		Methoxychlor	39480		
	Arsenic	01002	Carbon Dioxide	00405		Toxaphene	39400		
	Barium	01007	Chloride	00940		2,4-D	39730		
	Beryllium	01012	Color	00080		2,4,5-TP-Silvex	39760		
	Boron	01022	Fluoride	00951		2,4,5-T	39740		
	Cadmium	01027	Iodide	71865					
	Calcium	00916	Odor	00086					
X	Chromium, Total	01034	Residue, Total	00500					
	Chromium VI	01032	X Residue, Filterable (TDS)	70300		GROUP J			
	Copper	01042	Residue, Nonfilterable	00530		Sulfides	00745		

ON SITE ANALYSES

Parameter		Value
Flow	50050	mgd
Chlorine, Total	50060	mg/l
Dissolved Oxygen	00300	mg/l
pH	00400	units
Temperature	00010	°C

COMMENTS: Also Analyze for purgeable halocarbons + aromatics, pH.

AF FORM JAN 81 2752

SW 6

ENVIRONMENTAL SAMPLING DATA

(Use this space for mechanical imprint)

OEHL USE ONLY

SAMPLING SITE IDENTIFIER (AFR 19-7)

BASE WHERE SAMPLE COLLECTED: SHEPPARD AFB TX 76311-5300

SAMPLING SITE DESCRIPTION: (SW-6) Surface Water Point #6 (Fig 3)

DATE COLLECTION BEGAN (YYMMDD): 840121

TIME COLLECTION BEGAN (24 hour clock): 1308

COLLECTION METHOD: [X] GRAB [ ] COMPOSITE ____ HOURS

MAIL REPORTS TO (circle if changed)
- ORIGINAL: RADIAN CORP P.O. Box 9948 AUSTIN, TX 78766
- COPY 1: USAF Rgn Hospital Sheppard AFB SGPB AFB TX
- COPY 2:

SAMPLE COLLECTED BY (Name, Grade, AFSC): Rick BELAN (RADIAN)

SIGNATURE: Rick Belan

AUTOVON: (8) 736 4499

REASON FOR SUBMISSION: O

A-ACCIDENT/INCIDENT
R-ROUTINE/PERIODIC
C-COMPLAINT
N-NPDES
F-FOLLOWUP/CLEANUP
O-OTHER (specify): IRP

BASE SAMPLE NUMBER: 6S 84 01 93

OEHL PID: —

ANALYSES REQUESTED (check appropriate blocks)

		GROUP A		Hardness	00900		Residue, Settleable	50086	GROUP T
		Ammonia	00610	Iron	01045		Residue, Volatile	00505	Bromoform 32104
		Chemical Oxygen Demand	00340	X Lead	01051		Silica	00955	Bromodichloromethane 32101
		Kjeldahl Nitrogen	00625	Magnesium	00927		Specific Conductance	00095	Carbon Tetrachloride 32102
		Nitrate	00620	Manganese	01055		Sulfate	00945	Chloroform 32106
		Nitrite	00615	X Mercury	71900		Sulfite	00740	Chloromethane 34418
	X	Oil & Grease	00560	Nickel	01067		Surfactants -MBAS	38260	Dibromochloromethane 32105
	X	Organic Carbon	00680	Potassium	00937		Turbidity	00076	Methylene Chloride 34423
		Orthophosphate	00671	Selenium	01147				Tetrachloroethylene 34475
		Phosphorus, Total	00665	Silver	01077				1,1,1-Trichloroethane 34506
				Sodium	00929		GROUP H		Trichloroethylene 39180
		GROUP D		Thallium	01059		BHC Isomers	39340	Trihalomethanes 82080
		Cyanide, Total	00720	Zinc	01092		Chlordane	39350	PCBs 39516
		Cyanide, Free	00722				DDT Isomers	39370	
							Dieldrin	39380	
		GROUP E		GROUP G			Endrin	39390	
		Phenols	32730	Acidity, Total	70508		Heptachlor	39410	
				Alkalinity, Total	00410		Heptachlor Epoxide	39420	
		GROUP F		Alkalinity, Bicarbonate	00425		Lindane	39782	
		Antimony	01097	Bromide	71870		Methoxychlor	39480	
		Arsenic	01002	Carbon Dioxide	00405		Toxaphene	39400	
		Barium	01007	Chloride	00940		2,4-D	39730	ON SITE ANALYSES
		Beryllium	01012	Color	00080		2,4,5-TP-Silvex	39760	Parameter / Value
		Boron	01022	Fluoride	00951		2,4,5-T	39740	Flow 50050 mgd
		Cadmium	01027	Iodide	71865				Chlorine, Total 50060 mg/l
		Calcium	00916	Odor	00086				Dissolved Oxygen 00300 mg/l
	X	Chromium, Total	01034	Residue, Total	00500				pH 00400 units
		Chromium VI	01032	X Residue, Filterable (TDS)	70300		GROUP J		Temperature 00010 °C
		Copper	01042	Residue, Nonfilterable	00530		Sulfides	00745	

COMMENTS: Also add purgeable halocarbons + Aromatics, pH.

AF FORM JAN 81 2752

SW 7

ENVIRONMENTAL SAMPLING DATA

(Use this space for mechanical imprint)

OEHL USE ONLY

SAMPLING SITE IDENTIFIER (AFR 19-7)

BASE WHERE SAMPLE COLLECTED: SHEPPARD AFB TX

SAMPLING SITE DESCRIPTION: (SW1-7) Surface Water Point #7 (FPTA I)

DATE COLLECTION BEGAN (YYMMDD): 840712

TIME COLLECTION BEGAN (24 hour clock): 1512

COLLECTION METHOD: [X] GRAB [ ] COMPOSITE _____ HOURS

MAIL REPORTS TO (circle if changed)
- ORIGINAL: RADIAN P.O. Box 9948 Austin, TX 78766
- COPY 1: USAF Rgn Hospital SHEPPARD AFB, TX 76311-5300
- COPY 2:

SAMPLE COLLECTED BY (Name, Grade, AFSC): RICK BUCKLAN (RADIAN)

SIGNATURE: [illegible]

AUTOVON: (8) 736 4489

REASON FOR SUBMISSION: O

A-ACCIDENT/INCIDENT
R-ROUTINE/PERIODIC
C-COMPLAINT
N-NPDES
F-FOLLOWUP/CLEANUP
O-OTHER (specify): IRP

BASE SAMPLE NUMBER: GS 84 0194

OEHL PID:

ANALYSES REQUESTED (check appropriate blocks)

	GROUP A			Hardness	00900		Residue, Settleable	50086		GROUP T	
	Ammonia	00610		Iron	01045		Residue, Volatile	00505		Bromoform	32104
	Chemical Oxygen Demand	00340		Lead	01051		Silica	00955		Bromodichloromethane	32101
	Kjeldahl Nitrogen	00625		Magnesium	00927		Specific Conductance	00095		Carbon Tetrachloride	32102
	Nitrate	00620		Manganese	01055		Sulfate	00945		Chloroform	32106
	Nitrite	00615		Mercury	71900		Sulfite	00740		Chloromethane	34418
X	Oil & Grease	00560		Nickel	01067		Surfactants -MBAS	38260		Dibromochloromethane	32105
X	Organic Carbon	00680		Potassium	00937		Turbidity	00076		Methylene Chloride	34423
	Orthophosphate	00671		Selenium	01147					Tetrachloroethylene	34475
	Phosphorus, Total	00665		Silver	01077					1,1,1-Trichloroethane	34506
				Sodium	00929		GROUP H			Trichloroethylene	39180
	GROUP D			Thallium	01059		BHC Isomers	39340		Trihalomethanes	82080
	Cyanide, Total	00720		Zinc	01092		Chlordane	39350		PCBs	39516
	Cyanide, Free	00722					DDT Isomers	39370			
							Dieldrin	39380			
	GROUP E			GROUP G			Endrin	39390			
X	Phenols	32730		Acidity, Total	70508		Heptachlor	39410			
				Alkalinity, Total	00410		Heptachlor Epoxide	39420			
	GROUP F			Alkalinity, Bicarbonate	00425		Lindane	39782			
	Antimony	01097		Bromide	71870		Methoxychlor	39480			
	Arsenic	01002		Carbon Dioxide	00405		Toxaphene	39400			
	Barium	01007		Chloride	00940		2,4-D	39730			
	Beryllium	01012		Color	00080		2,4,5-TP-Silvex	39760			
	Boron	01022		Fluoride	00951		2,4,5-T	39740			
	Cadmium	01027		Iodide	71865						
	Calcium	00916		Odor	00086						
	Chromium, Total	01034		Residue, Total	00500						
	Chromium VI	01032	X	Residue, Filterable (TDS)	70300		GROUP J				
	Copper	01042		Residue, Nonfilterable	00530		Sulfides	00745			

ON SITE ANALYSES			
Parameter		Value	
Flow	50050	mgd	
Chlorine, Total	50060	mg/l	
Dissolved Oxygen	00300	mg/l	
pH	00400	units	
Temperature	00010	°C	

COMMENTS: Also add purgeable Halocarbons + Aromatics, pH.

AF FORM JAN 81 2752

SW 8

ENVIRONMENTAL SAMPLING DATA

(Use this space for mechanical imprint)

OEHL USE ONLY

SAMPLING SITE IDENTIFIER (AFR 19-7)

BASE WHERE SAMPLE COLLECTED: SHEPPARD AFB TX

SAMPLING SITE DESCRIPTION: (SW-8) Surface Water Pot #8 (FPTN I)

DATE COLLECTION BEGAN (YYMMDD): 840121

TIME COLLECTION BEGAN (24 hour clock): 1534

COLLECTION METHOD: [X] GRAB [ ] COMPOSITE ____ HOURS

MAIL REPORTS TO (circle if changed)
- ORIGINAL: RADIAN CORP P.O. Box 9948 Austin TX 78766
- COPY 1: USAF Rgn Hospital SHEPPARD AFB, TX 76311-5300
- COPY 2:

SAMPLE COLLECTED BY (Name, Grade, AFSC): RICK BELAN (RADIAN)

SIGNATURE: Rick Belan

AUTOVON: (8) 736 4429

REASON FOR SUBMISSION: O

A-ACCIDENT/INCIDENT
R-ROUTINE/PERIODIC
C-COMPLAINT
N-NPDES
F-FOLLOWUP/CLEANUP
O-OTHER (specify) IRP

BASE SAMPLE NUMBER: GS 84 01 95

OEHL PID

ANALYSES REQUESTED (check appropriate blocks)

		GROUP A		Hardness	00900		Residue, Settleable	50086	GROUP T
		Ammonia	00610	Iron	01045		Residue, Volatile	00505	Bromoform 32104
		Chemical Oxygen Demand	00340	Lead	01051		Silica	00955	Bromodichloromethane 32101
		Kjeldahl Nitrogen	00625	Magnesium	00927		Specific Conductance	00095	Carbon Tetrachloride 32102
		Nitrate	00620	Manganese	01055		Sulfate	00945	Chloroform 32106
		Nitrite	00615	Mercury	71900		Sulfite	00740	Chloromethane 34418
	X	Oil & Grease	00560	Nickel	01067		Surfactants -MBAS	38260	Dibromochloromethane 32105
	X	Organic Carbon	00680	Potassium	00937		Turbidity	00076	Methylene Chloride 34423
		Orthophosphate	00671	Selenium	01147				Tetrachloroethylene 34475
		Phosphorus, Total	00665	Silver	01077				1,1,1-Trichloroethane 34506
				Sodium	00929		GROUP H		Trichloroethylene 39180
		GROUP D		Thallium	01059		BHC Isomers	39340	Trihalomethanes 82080
		Cyanide, Total	00720	Zinc	01092		Chlordane	39350	PCBs 39516
		Cyanide, Free	00722				DDT Isomers	39370	
							Dieldrin	39380	
		GROUP E		GROUP G			Endrin	39390	
	X	Phenols	32730	Acidity, Total	70508		Heptachlor	39410	
				Alkalinity, Total	00410		Heptachlor Epoxide	39420	
		GROUP F		Alkalinity, Bicarbonate	00425		Lindane	39782	
		Antimony	01097	Bromide	71870		Methoxychlor	39480	
		Arsenic	01002	Carbon Dioxide	00405		Toxaphene	39400	
		Barium	01007	Chloride	00940		2,4-D	39730	
		Beryllium	01012	Color	00080		2,4,5-TP-Silvex	39760	
		Boron	01022	Fluoride	00951		2,4,5-T	39740	
		Cadmium	01027	Iodide	71865				
		Calcium	00916	Odor	00086				
		Chromium, Total	01034	Residue, Total	00500				
		Chromium VI	01032	X Residue, Filterable (TDS)	70300		GROUP J		
		Copper	01042	Residue, Nonfilterable	00530		Sulfides	00745	

ON SITE ANALYSES

Parameter		Value
Flow	50050	mgd
Chlorine, Total	50060	mg/l
Dissolved Oxygen	00300	mg/l
pH	00400	units
Temperature	00010	°C

COMMENTS: Also Add purgeable Halocarbons + Aromatics, pH.

AF FORM JAN 81 2752

SW 9

ENVIRONMENTAL SAMPLING DATA

(Use this space for mechanical imprint)

OEHL USE ONLY

SAMPLING SITE IDENTIFIER (AFR 19-7)

BASE WHERE SAMPLE COLLECTED: SHEPPARD AFB TX

SAMPLING SITE DESCRIPTION: (SW-9) Surface Water Pnt #9 (FPTA 1)

DATE COLLECTION BEGAN (YYMMDD): 84 12 12

TIME COLLECTION BEGAN (24 hour clock): 1620

COLLECTION METHOD: [X] GRAB [ ] COMPOSITE _____ HOURS

MAIL REPORTS TO (circle if changed):
- ORIGINAL: RADIAN CORP P.O. Box 9948 AUSTIN TX 78766
- COPY 1: USAF Rgn Hospital Sheppard AFB, TX 76311-5300
- COPY 2:

SAMPLE COLLECTED BY (Name, Grade, AFSC): RICK BELAN (RADIAN)

SIGNATURE: [signature]

AUTOVON: (P) 736 4491

REASON FOR SUBMISSION: 0

A-ACCIDENT/INCIDENT
R-ROUTINE/PERIODIC
C-COMPLAINT
N-NPDES
F-FOLLOWUP/CLEANUP
O-OTHER (specify) 1RP

BASE SAMPLE NUMBER: GS 84 0196

OEHL PID:

ANALYSES REQUESTED (check appropriate blocks)

	GROUP A		GROUP D		GROUP E		GROUP F		GROUP G		GROUP H		GROUP J		GROUP T	
	Ammonia	00610	Cyanide, Total	00720	Phenols	32730	Antimony	01097	Acidity, Total	70508	BHC Isomers	39340	Sulfides	00745	Bromoform	32104
	Chemical Oxygen Demand	00340	Cyanide, Free	00722			Arsenic	01002	Alkalinity, Total	00410	Chlordane	39350			Bromodichloromethane	32101
	Kjeldahl Nitrogen	00625					Barium	01007	Alkalinity, Bicarbonate	00425	DDT Isomers	39370			Carbon Tetrachloride	32102
	Nitrate	00620					Beryllium	01012	Bromide	71870	Dieldrin	39380			Chloroform	32106
	Nitrite	00615					Boron	01022	Carbon Dioxide	00405	Endrin	39390			Chloromethane	34418
X	Oil & Grease	00560					Cadmium	01027	Chloride	00940	Heptachlor	39410			Dibromochloromethane	32105
X	Organic Carbon	00680					Calcium	00916	Color	00080	Heptachlor Epoxide	39420			Methylene Chloride	34423
	Orthophosphate	00671					Chromium, Total	01034	Fluoride	00951	Lindane	39782			Tetrachloroethylene	34475
	Phosphorus, Total	00665					Chromium VI	01032	Iodide	71865	Methoxychlor	39480			1,1,1-Trichloroethane	34506
							Copper	01042	Odor	00086	Toxaphene	39400			Trichloroethylene	39180
									Residue, Total	00500	2,4-D	39730			Trihalomethanes	82080
									X Residue, Filterable (TDS)	70300	2,4,5-TP-Silvex	39760			PCBs	39516
									Residue, Nonfilterable	00530	2,4,5-T	39740				

ON SITE ANALYSES

Parameter		Value
Flow	50050	mgd
Chlorine, Total	50060	mg/l
Dissolved Oxygen	00300	mg/l
pH	00400	units
Temperature	00010	°C

COMMENTS: Also add purgeable halocarbons + Aromatics, pH.

AF FORM JAN 81 2752

MW-11

ENVIRONMENTAL SAMPLING DATA

(Use this space for mechanical imprint)

OEHL USE ONLY

SAMPLING SITE IDENTIFIER (AFR 19-7)

BASE WHERE SAMPLE COLLECTED: SHEPPARD AFB TX 76311-5300

SAMPLING SITE DESCRIPTION: MW-11 (MONITOR WELL #11)

DATE COLLECTION BEGAN (YYMMDD): 850205

TIME COLLECTION BEGAN (24 hour clock): 1045

COLLECTION METHOD: [X] GRAB [ ] COMPOSITE _____ HOURS

MAIL REPORTS TO (circle if changed)
- ORIGINAL: RADIAN CORP PO BOX 9948 AUSTIN TX 78766
- COPY 1: USAF Rgn HOSPITAL SHEPPARD SGPB AFB, TX
- COPY 2:

SAMPLE COLLECTED BY (Name, Grade, AFSC): P. WATERBEUS / R. BELAN (RADIAN)

SIGNATURE: Pat M Waterbeus

AUTOVON: (8) 736 4419

REASON FOR SUBMISSION: O

A-ACCIDENT/INCIDENT R-ROUTINE/PERIODIC C-COMPLAINT N-NPDES F-FOLLOWUP/CLEANUP O-OTHER (specify) IRP

BASE SAMPLE NUMBER: GS 85 0001

OEHL PID:

ANALYSES REQUESTED (check appropriate blocks)

		GROUP A		Hardness	00900		Residue, Settleable	50086	GROUP T
		Ammonia	00610	Iron	01045		Residue, Volatile	00505	Bromoform 32104
		Chemical Oxygen Demand	00340	Lead	01051		Silica	00955	Bromodichloromethane 32101
		Kjeldahl Nitrogen	00625	Magnesium	00927		Specific Conductance	00095	Carbon Tetrachloride 32102
		Nitrate	00620	Manganese	01055		Sulfate	00945	Chloroform 32106
		Nitrite	00615	Mercury	71900		Sulfite	00740	Chloromethane 34418
	X	Oil & Grease	00560	Nickel	01067		Surfactants -MBAS	38260	Dibromochloromethane 32105
	X	Organic Carbon	00680	Potassium	00937		Turbidity	00076	Methylene Chloride 34423
		Orthophosphate	00671	Selenium	01147				Tetrachloroethylene 34475
		Phosphorus, Total	00665	Silver	01077				1,1,1-Trichloroethane 34506
				Sodium	00929		GROUP H		Trichloroethylene 39180
		GROUP D		Thallium	01059		BHC Isomers	39340	Trihalomethanes 82080
		Cyanide, Total	00720	Zinc	01092		Chlordane	39350	PCBs 39516
		Cyanide, Free	00722				DDT Isomers	39370	
							Dieldrin	39380	
		GROUP E		GROUP G			Endrin	39390	
	X	Phenols	32730	Acidity, Total	70508		Heptachlor	39410	
				Alkalinity, Total	00410		Heptachlor Epoxide	39420	
		GROUP F		Alkalinity, Bicarbonate	00425		Lindane	39782	
		Antimony	01097	Bromide	71870		Methoxychlor	39480	
		Arsenic	01002	Carbon Dioxide	00405		Toxaphene	39400	
		Barium	01007	Chloride	00940		2,4-D	39730	
		Beryllium	01012	Color	00080		2,4,5-TP-Silvex	39760	
		Boron	01022	Fluoride	00951		2,4,5-T	39740	
		Cadmium	01027	Iodide	71865				
		Calcium	00916	Odor	00086				
		Chromium, Total	01034	Residue, Total	00500				
		Chromium VI	01032	X Residue, Filterable (TDS)	70300		GROUP J		
		Copper	01042	Residue, Nonfilterable	00530		Sulfides	00745	

ON SITE ANALYSES

Parameter		Value
Flow	50050	mgd
Chlorine, Total	50060	mg/l
Dissolved Oxygen	00300	mg/l
pH	00400	units
Temperature	00010	°C

COMMENTS: ALSO ANALYSE FOR pH, TOTAL ORGANIC HALOCARBONS, VOLATILE AROMATICS ~~AND TOTAL DISSOLVED SOLIDS~~

AF FORM JAN 81 2752

MW-12

ENVIRONMENTAL SAMPLING DATA

(Use this space for mechanical imprint)

OEHL USE ONLY

SAMPLING SITE IDENTIFIER (AFR 19-7)

BASE WHERE SAMPLE COLLECTED: SHEPPARD AFB Tx 76311-5300

SAMPLING SITE DESCRIPTION: MW-12 (MONITOR WELL #12)

DATE COLLECTION BEGAN (YYMMDD): 850105

TIME COLLECTION BEGAN (24 hour clock): 1605

COLLECTION METHOD: [X] GRAB [ ] COMPOSITE _____ HOURS

MAIL REPORTS TO (circle if changed):
- ORIGINAL: RADIAN CORP PO BOX 9948 AUSTIN Tx 78766
- COPY 1: USAF Rgn HOSPITAL SHEPPARD SGPB AFB Tx
- COPY 2:

SAMPLE COLLECTED BY (Name, Grade, AFSC): R. WATERREUS / R. DELAN (RADIAN)

SIGNATURE: [signature]

AUTOVON: (8) 736 4479

REASON FOR SUBMISSION: O

A-ACCIDENT/INCIDENT
R-ROUTINE/PERIODIC
C-COMPLAINT
N-NPDES
F-FOLLOWUP/CLEANUP
O-OTHER (specify) IRP

BASE SAMPLE NUMBER: 6S 85 0002

OEHL PID:

ANALYSES REQUESTED (check appropriate blocks)

	GROUP A		Hardness	00900		Residue, Settleable	50086		GROUP T
	Ammonia	00610	Iron	01045		Residue, Volatile	00505		Bromoform 32104
	Chemical Oxygen Demand	00340	Lead	01051		Silica	00955		Bromodichloromethane 32101
	Kjeldahl Nitrogen	00625	Magnesium	00927		Specific Conductance	00095		Carbon Tetrachloride 32102
	Nitrate	00620	Manganese	01055		Sulfate	00945		Chloroform 32106
	Nitrite	00615	Mercury	71900		Sulfite	00740		Chloromethane 34418
X	Oil & Grease	00560	Nickel	01067		Surfactants -MBAS	38260		Dibromochloromethane 32105
X	Organic Carbon	00680	Potassium	00937		Turbidity	00076		Methylene Chloride 34423
	Orthophosphate	00671	Selenium	01147					Tetrachloroethylene 34475
	Phosphorus, Total	00665	Silver	01077					1,1,1-Trichloroethane 34506
			Sodium	00929		GROUP H			Trichloroethylene 39180
	GROUP D		Thallium	01059		BHC Isomers	39340		Trihalomethanes 82080
	Cyanide, Total	00720	Zinc	01092		Chlordane	39350		PCBs 39516
	Cyanide, Free	00722				DDT Isomers	39370		
						Dieldrin	39380		
	GROUP E		GROUP G			Endrin	39390		
X	Phenols	32730	Acidity, Total	70508		Heptachlor	39410		
			Aikalinity, Total	00410		Heptachlor Epoxide	39420		
	GROUP F		Alkalinity, Bicarbonate	00425		Lindane	39782		
	Antimony	01097	Bromide	71870		Methoxychlor	39480		
	Arsenic	01002	Carbon Dioxide	00405		Toxaphene	39400		
	Barium	01007	Chloride	00940		2,4-D	39730		
	Beryllium	01012	Color	00080		2,4,5-TP-Silvex	39760		
	Boron	01022	Fluoride	00951		2,4,5-T	39740		
	Cadmium	01027	Iodide	71865					
	Calcium	00916	Odor	00086					
	Chromium, Total	01034	Residue, Total	00500					
	Chromium VI	01032	X Residue, Filterable (TDS)	70300		GROUP J			
	Copper	01042	Residue, Nonfilterable	00530		Sulfides	00745		

ON SITE ANALYSES		
Parameter		Value
Flow	50050	mgd
Chlorine, Total	50060	mg/l
Dissolved Oxygen	00300	mg/l
pH	00400	units
Temperature	00010	°C

COMMENTS: ALSO ANALYSE FOR pH, TOTAL ORGANIC HALOCARBONS, VOLATILE AROMATICS ~~AND TOTAL DISSOLVED SOLIDS~~

AF FORM JAN 81 2752

MW-13

ENVIRONMENTAL SAMPLING DATA

(Use this space for mechanical imprint)

OEHL USE ONLY

SAMPLING SITE IDENTIFIER (AFR 19-7)

BASE WHERE SAMPLE COLLECTED: SHEPPARD AFB TX 76311-5300

SAMPLING SITE DESCRIPTION: MW-13 (MONITOR WELL #13)

DATE COLLECTION BEGAN (YYMMDD): 850120 15

TIME COLLECTION BEGAN (24 hour clock): 1635

COLLECTION METHOD: [X] GRAB [ ] COMPOSITE _____ HOURS

MAIL REPORTS TO (circle if changed)
- ORIGINAL: RADIAN CORP PO BOX 9948 AUSTIN TX 78766
- COPY 1: USAF Rgn HOSPITAL SHEPPARD SGPB AFB TX
- COPY 2:

SAMPLE COLLECTED BY (Name, Grade, AFSC): R. WATERREUS / R. AELAN (RADIAN)

SIGNATURE: Peter A Waterreus

AUTOVON: (X) 736 4489

REASON FOR SUBMISSION: O — A-ACCIDENT/INCIDENT, R-ROUTINE/PERIODIC, C-COMPLAINT, N-NPDES, F-FOLLOWUP/CLEANUP, O-OTHER (specify) IRP

BASE SAMPLE NUMBER: G S 8 5 0 0 0 3

OEHL PID: —

ANALYSES REQUESTED (check appropriate blocks)

	GROUP A		Hardness 00900		Residue, Settleable 50086		GROUP T
	Ammonia 00610		Iron 01045		Residue, Volatile 00505		Bromoform 32104
	Chemical Oxygen Demand 00340		Lead 01051		Silica 00955		Bromodichloromethane 32101
	Kjeldahl Nitrogen 00625		Magnesium 00927		Specific Conductance 00095		Carbon Tetrachloride 32102
	Nitrate 00620		Manganese 01055		Sulfate 00945		Chloroform 32106
	Nitrite 00615		Mercury 71900		Sulfite 00740		Chloromethane 34418
X	Oil & Grease 00560		Nickel 01067		Surfactants -MBAS 38260		Dibromochloromethane 32105
X	Organic Carbon 00680		Potassium 00937		Turbidity 00076		Methylene Chloride 34423
	Orthophosphate 00671		Selenium 01147				Tetrachloroethylene 34475
	Phosphorus, Total 00665		Silver 01077				1,1,1-Trichloroethane 34506
			Sodium 00929		GROUP H		Trichloroethylene 39180
	GROUP D		Thallium 01059		BHC Isomers 39340		Trihalomethanes 82080
	Cyanide, Total 00720		Zinc 01092		Chlordane 39350		PCBs 39516
	Cyanide, Free 00722				DDT Isomers 39370		
					Dieldrin 39380		
	GROUP E		GROUP G		Endrin 39390		
X	Phenols 32730		Acidity, Total 70508		Heptachlor 39410		
			Alkalinity, Total 00410		Heptachlor Epoxide 39420		
	GROUP F		Alkalinity, Bicarbonate 00425		Lindane 39782		
	Antimony 01097		Bromide 71870		Methoxychlor 39480		
	Arsenic 01002		Carbon Dioxide 00405		Toxaphene 39400		
	Barium 01007		Chloride 00940		2,4-D 39730		
	Beryllium 01012		Color 00080		2,4,5-TP-Silvex 39760		
	Boron 01022		Fluoride 00951		2,4,5-T 39740		
	Cadmium 01027		Iodide 71865				
	Calcium 00916		Odor 00086				
	Chromium, Total 01034		Residue, Total 00500				
	Chromium VI 01032	X	Residue, Filterable (TDS) 70300		GROUP J		
	Copper 01042		Residue, Nonfilterable 00530		Sulfides 00745		

ON SITE ANALYSES

Parameter	Value
Flow 50050	mgd
Chlorine, Total 50060	mg/l
Dissolved Oxygen 00300	mg/l
pH 00400	units
Temperature 00010	°C

COMMENTS: ALSO ANALYSE FOR pH, TOTAL ORGANIC HALOCARBONS, AND VOLATILE AROMATICS

AF FORM JAN 81 2752

MW-14

ENVIRONMENTAL SAMPLING DATA

(Use this space for mechanical imprint)

OEHL USE ONLY

SAMPLING SITE IDENTIFIER (AFR 19-7)

BASE WHERE SAMPLE COLLECTED: SHEPPARD AFB TX 76311-5300

SAMPLING SITE DESCRIPTION: MW-14 (MONITOR WELL # 14)

DATE COLLECTION BEGAN (YYMMDD): 850120

TIME COLLECTION BEGAN (24 hour clock): 1710

COLLECTION METHOD: [X] GRAB [ ] COMPOSITE _____ HOURS

MAIL REPORTS TO (circle if changed)
- ORIGINAL: RADIAN CORP PO BOX 9947 AUSTIN TX 78766
- COPY 1: USAF Rgn HOSPITAL SHEPPARD SGPB AFB TX
- COPY 2:

SAMPLE COLLECTED BY (Name, Grade, AFSC): P. WATERBRUS / A. BELAN (RADIAN)

SIGNATURE: Pat A Waterbrus

AUTOVON: (2) 7364489

REASON FOR SUBMISSION: O

A-ACCIDENT/INCIDENT
R-ROUTINE/PERIODIC
C-COMPLAINT
N-NPDES
F-FOLLOWUP/CLEANUP
O-OTHER (specify) IRP

BASE SAMPLE NUMBER: 6S 85 0004

OEHL PID:

ANALYSES REQUESTED (check appropriate blocks)

	GROUP A		Hardness	00900		Residue, Settleable	50086		GROUP T		
	Ammonia	00610	Iron	01045		Residue, Volatile	00505		Bromoform	32104
	Chemical Oxygen Demand	00340	Lead	01051		Silica	00955		Bromodichloromethane	32101
	Kjeldahl Nitrogen	00625	Magnesium	00927		Specific Conductance	00095		Carbon Tetrachloride	32102
	Nitrate	00620	Manganese	01055		Sulfate	00945		Chloroform	32106
	Nitrite	00615	Mercury	71900		Sulfite	00740		Chloromethane	34418
X	Oil & Grease	00560	Nickel	01067		Surfactants -MBAS	38260		Dibromochloromethane	32105
X	Organic Carbon	00680	Potassium	00937		Turbidity	00076		Methylene Chloride	34423
	Orthophosphate	00671	Selenium	01147					Tetrachloroethylene	34475
	Phosphorus, Total	00665	Silver	01077					1,1,1-Trichloroethane	34506
			Sodium	00929		GROUP H			Trichloroethylene	39180
	GROUP D		Thallium	01059		BHC Isomers	39340		Trihalomethanes	82080
	Cyanide, Total	00720	Zinc	01092		Chlordane	39350		PCBs	39516
	Cyanide, Free	00722				DDT Isomers	39370			
						Dieldrin	39380			
	GROUP E		GROUP G			Endrin	39390			
X	Phenols	32730	Acidity, Total	70508		Heptachlor	39410			
			Alkalinity, Total	00410		Heptachlor Epoxide	39420			
	GROUP F		Alkalinity, Bicarbonate	00425		Lindane	39782			
	Antimony	01097	Bromide	71870		Methoxychlor	39480			
	Arsenic	01002	Carbon Dioxide	00405		Toxaphene	39400			
	Barium	01007	Chloride	00940		2,4-D	39730			
	Beryllium	01012	Color	00080		2,4,5-TP-Silvex	39760			
	Boron	01022	Fluoride	00951		2,4,5-T	39740			
	Cadmium	01027	Iodide	71865						
	Calcium	00916	Odor	00086						
	Chromium, Total	01034	Residue, Total	00500						
	Chromium VI	01032	X Residue, Filterable (TDS)	70300		GROUP J				
	Copper	01042	Residue, Nonfilterable	00530		Sulfides	00745			

ON SITE ANALYSES

Parameter		Value
Flow	50050	mgd
Chlorine, Total	50060	mg/l
Dissolved Oxygen	00300	mg/l
pH	00400	units
Temperature	00010	°C

COMMENTS: ALSO ANALYSE FOR pH, TOTAL ORGANIC HALOCARBON AND VOLATILE AROMATICS

AF FORM JAN 81 2752

ENVIRONMENTAL SAMPLING DATA

(Use this space for mechanical imprint)

OEHL USE ONLY

SAMPLING SITE IDENTIFIER (AFR 19-7)

BASE WHERE SAMPLE COLLECTED: Sheppard AFB, TX 76311-5300

SAMPLING SITE DESCRIPTION: Mon-4 at LANDFILL #3

DATE COLLECTION BEGAN (YYMMDD): 850207

TIME COLLECTION BEGAN (24 hour clock): 0945

COLLECTION METHOD: [X] GRAB [ ] COMPOSITE _____ HOURS

MAIL REPORTS TO (circle if changed)

ORIGINAL	Radian Corp., P.O.Box 9948, Austin, TX 78766
COPY 1	USAF Rgn Hospital Sheppard SGPB AFB, TX 76311-5300
COPY 2	

SAMPLE COLLECTED BY (Name, Grade, AFSC): R.A. Belan/P.A. Waterreus

SIGNATURE: P.A. Waterreus

AUTOVON: (8)7364489

REASON FOR SUBMISSION: 0 — A-ACCIDENT/INCIDENT, R-ROUTINE/PERIODIC, C-COMPLAINT, N-NPDES, F-FOLLOWUP/CLEANUP, O-OTHER (specify): IRP

BASE SAMPLE NUMBER: GS85 00110

OEHL PID:

ANALYSES REQUESTED (check appropriate blocks)

	GROUP A			Hardness	00900		Residue, Settleable	50086		GROUP T	
	Ammonia	00610		Iron	01045		Residue, Volatile	00505		Bromoform	32104
	Chemical Oxygen Demand	00340	X	Lead	01051		Silica	00955		Bromodichloromethane	32101
	Kjeldahl Nitrogen	00625		Magnesium	00927		Specific Conductance	00095		Carbon Tetrachloride	32102
	Nitrate	00620		Manganese	01055		Sulfate	00945		Chloroform	32106
	Nitrite	00615	X	Mercury	71900		Sulfite	00740		Chloromethane	34418
X	Oil & Grease	00560		Nickel	01067		Surfactants -MBAS	38260		Dibromochloromethane	32105
X	Organic Carbon	00680		Potassium	00937		Turbidity	00076		Methylene Chloride	34423
	Orthophosphate	00671		Selenium	01147					Tetrachloroethylene	34475
	Phosphorus, Total	00665		Silver	01077					1,1,1-Trichloroethane	34506
				Sodium	00929		GROUP H			Trichloroethylene	39180
	GROUP D			Thallium	01059		BHC Isomers	39340		Trihalomethanes	82080
	Cyanide, Total	00720		Zinc	01092		Chlordane	39350		PCBs	39516
	Cyanide, Free	00722					DDT Isomers	39370			
							Dieldrin	39380			
	GROUP E			GROUP G			Endrin	39390			
X	~~Phenols~~ PAH	32730		Acidity, Total	70508		Heptachlor	39410			
				Alkalinity, Total	00410		Heptachlor Epoxide	39420			
	GROUP F			Alkalinity, Bicarbonate	00425		Lindane	39782			
	Antimony	01097		Bromide	71870		Methoxychlor	39480			
	Arsenic	01002		Carbon Dioxide	00405		Toxaphene	39400			
	Barium	01007		Chloride	00940		2,4-D	39730		ON SITE ANALYSES	
	Beryllium	01012		Color	00080		2,4,5-TP-Silvex	39760		Parameter	Value
	Boron	01022		Fluoride	00951		2,4,5-T	39740		Flow 50050	mgd
	Cadmium	01027		Iodide	71865					Chlorine, Total 50060	mg/l
	Calcium	00916		Odor	00086					Dissolved Oxygen 00300	mg/l
X	Chromium, Total	01034		Residue, Total	00500					pH 00400	units
	Chromium VI	01032	X	Residue, Filterable (TDS)	70300		GROUP J			Temperature 00010	°C
	Copper	01042		Residue, Nonfilterable	00530		Sulfides	00745			

COMMENTS: Also analyze for purgeable halocarbons, aromatics, and pH.

AF FORM JAN 81 2752

ENVIRONMENTAL SAMPLING DATA

OEHL USE ONLY

(Use this space for mechanical imprint)

SAMPLING SITE IDENTIFIER (AFR 19-7)

BASE WHERE SAMPLE COLLECTED: Sheppard AFB, TX 76311-5300

SAMPLING SITE DESCRIPTION: MW-7 at LANDFILL E ?

DATE COLLECTION BEGAN (YYMMDD): 8 5 0 2 0 7

TIME COLLECTION BEGAN (24 hour clock): 1025

COLLECTION METHOD: [X] GRAB [ ] COMPOSITE _____ HOURS

MAIL REPORTS TO (circle if changed)

ORIGINAL	Radian Corp., P.O.Box 9948, Austin, TX 78766
COPY 1	USAF Rgn Hospital Sheppard SGPB AFB, TX 76311-5300
COPY 2	

SAMPLE COLLECTED BY (Name, Grade, AFSC): R.A. Belan/P.A. Waterreus

SIGNATURE: [illegible]

AUTOVON: (8)7364489

REASON FOR SUBMISSION: 0

A-ACCIDENT/INCIDENT R-ROUTINE/PERIODIC C-COMPLAINT N-NPDES F-FOLLOWUP/CLEANUP O-OTHER (specify) IRP

BASE SAMPLE NUMBER: G S 8 5 0 0 0 X

OEHL PID

ANALYSES REQUESTED (check appropriate blocks)

	GROUP A			Hardness	00900			Residue, Settleable	50086		GROUP T
	Ammonia	00610		Iron	01045			Residue, Volatile	00505		Bromoform 32104
	Chemical Oxygen Demand	00340	X	Lead	01051			Silica	00955		Bromodichloromethane 32101
	Kjeldahl Nitrogen	00625		Magnesium	00927			Specific Conductance	00095		Carbon Tetrachloride 32102
	Nitrate	00620		Manganese	01055			Sulfate	00945		Chloroform 32106
	Nitrite	00615	X	Mercury	71900			Sulfite	00740		Chloromethane 34418
X	Oil & Grease	00560		Nickel	01067			Surfactants -MBAS	38260		Dibromochloromethane 32105
X	Organic Carbon	00680		Potassium	00937			Turbidity	00076		Methylene Chloride 34423
	Orthophosphate	00671		Selenium	01147						Tetrachloroethylene 34475
	Phosphorus, Total	00665		Silver	01077						1,1,1-Trichloroethane 34506
				Sodium	00929			GROUP H			Trichloroethylene 39180
	GROUP D			Thallium	01059			BHC Isomers	39340		Trihalomethanes 82080
	Cyanide, Total	00720		Zinc	01092			Chlordane	39350		PCBs 39516
	Cyanide, Free	00722						DDT Isomers	39370		
								Dieldrin	39380		
	GROUP E			GROUP G				Endrin	39390		
X	~~Phenols~~ 420	32730		Acidity, Total	70508			Heptachlor	39410		
				Alkalinity, Total	00410			Heptachlor Epoxide	39420		
	GROUP F			Alkalinity, Bicarbonate	00425			Lindane	39782		
	Antimony	01097		Bromide	71870			Methoxychlor	39480		
	Arsenic	01002		Carbon Dioxide	00405			Toxaphene	39400		
	Barium	01007		Chloride	00940			2,4-D	39730		ON SITE ANALYSES
	Beryllium	01012		Color	00080			2,4,5-TP-Silvex	39760		Parameter / Value
	Boron	01022		Fluoride	00951			2,4,5-T	39740		Flow 50050 mgd
	Cadmium	01027		Iodide	71865						Chlorine, Total 50060 mg/l
	Calcium	00916		Odor	00086						Dissolved Oxygen 00300 mg/l
X	Chromium, Total	01034		Residue, Total	00500						pH 00400 units
	Chromium VI	01032	X	Residue, Filterable (TDS)	70300			GROUP J			Temperature 00010 °C
	Copper	01042		Residue, Nonfilterable	00530			Sulfides	00745		

COMMENTS: Also analyze for purgeable halocarbons, aromatics, and pH.

AF FORM JAN 81 2752

ENVIRONMENTAL SAMPLING DATA

OEHL USE ONLY

(Use this space for mechanical imprint)

SAMPLING SITE IDENTIFIER (AFR 19-7)

BASE WHERE SAMPLE COLLECTED: Sheppard AFB, TX 76311-5300

SAMPLING SITE DESCRIPTION: MW-8 at FPTA #3

DATE COLLECTION BEGAN (YYMMDD): 8 5 0 2 0 7

TIME COLLECTION BEGAN (24 hour clock): 1335

COLLECTION METHOD: [X] GRAB [ ] COMPOSITE _____ HOURS

MAIL REPORTS TO (circle if changed):
- ORIGINAL: Radian Corp., P.O.Box 9948, Austin, TX 78766
- COPY 1: USAF Rgn Hospital Sheppard SGPB AFB, TX 76311-5300
- COPY 2:

SAMPLE COLLECTED BY (Name,Grade,AFSC): R.A. Belan/P.A. Waterreus

SIGNATURE: [signature]

AUTOVON: (8)7364489

REASON FOR SUBMISSION: 0

A-ACCIDENT/INCIDENT R-ROUTINE/PERIODIC C-COMPLAINT N-NPDES F-FOLLOWUP/CLEANUP O-OTHER (specify) IRP

BASE SAMPLE NUMBER: G S 8 5 0 0 0 9

OEHL PID

ANALYSES REQUESTED (check appropriate blocks)

	GROUP A								GROUP T	
			Hardness	00900		Residue, Settleable	50086			
	Ammonia	00610	Iron	01045		Residue, Volatile	00505		Bromoform	32104
	Chemical Oxygen Demand	00340	X Lead	01051		Silica	00955		Bromodichloromethane	32101
	Kjeldahl Nitrogen	00625	Magnesium	00927		Specific Conductance	00095		Carbon Tetrachloride	32102
	Nitrate	00620	Manganese	01055		Sulfate	00945		Chloroform	32106
	Nitrite	00615	X Mercury	71900		Sulfite	00740		Chloromethane	34418
X	Oil & Grease	00560	Nickel	01067		Surfactants -MBAS	38260		Dibromochloromethane	32105
X	Organic Carbon	00680	Potassium	00937		Turbidity	00076		Methylene Chloride	34423
	Orthophosphate	00671	Selenium	01147					Tetrachloroethylene	34475
	Phosphorus, Total	00665	Silver	01077					1,1,1-Trichloroethane	34506
			Sodium	00929		GROUP H			Trichloroethylene	39180
	GROUP D		Thallium	01059		BHC Isomers	39340		Trihalomethanes	82080
	Cyanide, Total	00720	Zinc	01092		Chlordane	39350		PCBs	39516
	Cyanide, Free	00722				DDT Isomers	39370			
						Dieldrin	39380			
	GROUP E		GROUP G			Endrin	39390			
X	~~Phenols~~	32730	Acidity, Total	70508		Heptachlor	39410			
			Alkalinity, Total	00410		Heptachlor Epoxide	39420			
	GROUP F		Alkalinity, Bicarbonate	00425		Lindane	39782			
	Antimony	01097	Bromide	71870		Methoxychlor	39480			
	Arsenic	01002	Carbon Dioxide	00405		Toxaphene	39400			
	Barium	01007	Chloride	00940		2,4-D	39730			
	Beryllium	01012	Color	00080		2,4,5-TP-Silvex	39760			
	Boron	01022	Fluoride	00951		2,4,5-T	39740			
	Cadmium	01027	Iodide	71865						
	Calcium	00916	Odor	00086						
X	Chromium, Total	01034	Residue, Total	00500						
	Chromium VI	01032	X Residue, Filterable (TDS)	70300		GROUP J				
	Copper	01042	Residue, Nonfilterable	00530		Sulfides	00745			

ON SITE ANALYSES

Parameter		Value
Flow	50050	mgd
Chlorine, Total	50060	mg/l
Dissolved Oxygen	00300	mg/l
pH	00400	units
Temperature	00010	°C

COMMENTS: Also analyze for purgeable halocarbons, aromatics, and pH.

AF FORM JAN 81 2752

MW-10

...AL SAMPLING DATA

(...space for mechanical imprint)

OEHL USE ONLY

SAMPLING SITE IDENTIFIER (AFR 19-7)

BASE WHERE SAMPLE COLLECTED: SHEPPARD AFB TX 76311-5300

SAMPLING SITE DESCRIPTION: MW-10 (MONITOR WELL #10)

DATE COLLECTION BEGAN (YYMMDD): 8 5 0 2 0 7

TIME COLLECTION BEGAN (24 hour clock): 1525

COLLECTION METHOD: [X] GRAB [ ] COMPOSITE _____ HOURS

MAIL REPORTS TO (circle if changed):
- ORIGINAL: RADIAN CORP PO BOX 9948 AUSTIN TX 72766
- COPY 1: USAF Rgn HOSPITAL SHEPPARD SGPB AFB TX
- COPY 2:

SAMPLE COLLECTED BY (Name, Grade, AFSC): P. WATERREUS / R. BELAN

SIGNATURE: Peter A Waters

AUTOVON: (7) 7364489

REASON FOR SUBMISSION: 0

A-ACCIDENT/INCIDENT
R-ROUTINE/PERIODIC
C-COMPLAINT
N-NPDES
F-FOLLOWUP/CLEANUP
O-OTHER (specify) IRP

BASE SAMPLE NUMBER: G S 8 5 0 0 0 7

OEHL PID: —

ANALYSES REQUESTED (check appropriate blocks)

	GROUP A							GROUP T	
	Ammonia	00610		Hardness	00900		Residue, Settleable	50086	Bromoform	32104
	Chemical Oxygen Demand	00340	X	Iron	01045		Residue, Volatile	00505	Bromodichloromethane	32101
	Kjeldahl Nitrogen	00625		Lead	01051		Silica	00955	Carbon Tetrachloride	32102
	Nitrate	00620		Magnesium	00927		Specific Conductance	00095	Chloroform	32106
	Nitrite	00615	X	Manganese	01055		Sulfate	00945	Chloromethane	34418
X	Oil & Grease	00560		Mercury	71900		Sulfite	00740	Dibromochloromethane	32105
X	Organic Carbon	00680		Nickel	01067		Surfactants -MBAS	38260	Methylene Chloride	34423
	Orthophosphate	00671		Potassium	00937		Turbidity	00076	Tetrachloroethylene	34475
	Phosphorus, Total	00665		Selenium	01147				1,1,1-Trichloroethane	34506
				Silver	01077				Trichloroethylene	39180
				Sodium	00929		GROUP H		Trihalomethanes	82080
	GROUP D			Thallium	01059		BHC Isomers	39340	PCBs	39516
	Cyanide, Total	00720		Zinc	01092		Chlordane	39350		
	Cyanide, Free	00722					DDT Isomers	39370		
							Dieldrin	39380		
	GROUP E			GROUP G			Endrin	39390		
	Phenols	32730		Acidity, Total	70508		Heptachlor	39410		
				Alkalinity, Total	00410		Heptachlor Epoxide	39420		
	GROUP F			Alkalinity, Bicarbonate	00425		Lindane	39782		
	Antimony	01097		Bromide	71870		Methoxychlor	39480		
	Arsenic	01002		Carbon Dioxide	00405		Toxaphene	39400		
	Barium	01007		Chloride	00940		2,4-D	39730		
	Beryllium	01012		Color	00080		2,4,5-TP-Silvex	39760		
	Boron	01022		Fluoride	00951		2,4,5-T	39740		
	Cadmium	01027		Iodide	71865					
	Calcium	00916		Odor	00086					
X	Chromium, Total	01034		Residue, Total	00500					
	Chromium VI	01032	X	Residue, Filterable (TDS)	70300		GROUP J			
	Copper	01042		Residue, Nonfilterable	00530		Sulfides	00745		

ON SITE ANALYSES

Parameter		Value
Flow	50050	mgd
Chlorine, Total	50060	mg/l
Dissolved Oxygen	00300	mg/l
pH	00400	units
Temperature	00010	°C

COMMENTS: ALSO ANALYSE FOR pH, TOTAL ORGANIC HALOCARBONS AND VOLATILE AROMATICS

AF FORM JAN 81 2752

MW-9

ENVIRONMENTAL SAMPLING DATA

(Use this space for mechanical imprint)

OEHL USE ONLY

SAMPLING SITE IDENTIFIER (AFR 19-7)

BASE WHERE SAMPLE COLLECTED: SHEPPARD AFB Tx 76311-5300

SAMPLING SITE DESCRIPTION: MW-9 (MONITOR WELL #9)

DATE COLLECTION BEGAN (YYMMDD): 85 02 07

TIME COLLECTION BEGAN (24 hour clock): 1620

COLLECTION METHOD: [X] GRAB [ ] COMPOSITE _____ HOURS

MAIL REPORTS TO (circle if changed):
- ORIGINAL: RADIAN CORP PO BOX 9948 AUSTIN Tx 78766
- COPY 1: USAF Rgn HOSPITAL SHEPPARD SGPB AFB Tx
- COPY 2:

SAMPLE COLLECTED BY (Name, Grade, AFSC): P. WATERREUS / RICK BELAN

SIGNATURE: Peter A Waterreus

AUTOVON: (X) 7364489

REASON FOR SUBMISSION: 0

A-ACCIDENT/INCIDENT R-ROUTINE/PERIODIC C-COMPLAINT N-NPDES F-FOLLOWUP/CLEANUP O-OTHER (specify) IRP

BASE SAMPLE NUMBER: GS 85 0006

OEHL PID:

ANALYSES REQUESTED (check appropriate blocks)

	GROUP A							GROUP T	
	Ammonia	00610		Hardness	00900		Residue, Settleable	50086	Bromoform	32104
	Chemical Oxygen Demand	00340	X	Iron	01045		Residue, Volatile	00505	Bromodichloromethane	32101
	Kjeldahl Nitrogen	00625		Lead	01051		Silica	00955	Carbon Tetrachloride	32102
	Nitrate	00620		Magnesium	00927		Specific Conductance	00095	Chloroform	32106
	Nitrite	00615	X	Manganese	01055		Sulfate	00945	Chloromethane	34418
X	Oil & Grease	00560		Mercury	71900		Sulfite	00740	Dibromochloromethane	32105
X	Organic Carbon	00680		Nickel	01067		Surfactants -MBAS	38260	Methylene Chloride	34423
	Orthophosphate	00671		Potassium	00937		Turbidity	00076	Tetrachloroethylene	34475
	Phosphorus, Total	00665		Selenium	01147				1,1,1-Trichloroethane	34506
				Silver	01077				Trichloroethylene	39180
				Sodium	00929		GROUP H		Trihalomethanes	82080
	GROUP D			Thallium	01059		BHC Isomers	39340	PCBs	39516
	Cyanide, Total	00720		Zinc	01092		Chlordane	39350		
	Cyanide, Free	00722					DDT Isomers	39370		
							Dieldrin	39380		
	GROUP E			GROUP G			Endrin	39390		
	Phenols	32730		Acidity, Total	70508		Heptachlor	39410		
				Alkalinity, Total	00410		Heptachlor Epoxide	39420		
	GROUP F			Alkalinity, Bicarbonate	00425		Lindane	39782		
	Antimony	01097		Bromide	71870		Methoxychlor	39480		
	Arsenic	01002		Carbon Dioxide	00405		Toxaphene	39400		
	Barium	01007		Chloride	00940		2,4-D	39730		
	Beryllium	01012		Color	00080		2,4,5-TP-Silvex	39760		
	Boron	01022		Fluoride	00951		2,4,5-T	39740		
	Cadmium	01027		Iodide	71865					
	Calcium	00916		Odor	00086					
X	Chromium, Total	01034		Residue, Total	00500					
	Chromium VI	01032	X	Residue, Filterable (TDS)	70300		GROUP J			
	Copper	01042		Residue, Nonfilterable	00530		Sulfides	00745		

ON SITE ANALYSES

Parameter		Value
Flow	50050	mgd
Chlorine, Total	50060	mg/l
Dissolved Oxygen	00300	mg/l
pH	00400	units
Temperature	00010	°C

COMMENTS: ALSO ANALYSE FOR pH, TOTAL ORGANIC HALOCARBONS AND VOLATILE AROMATICS

AF FORM JAN 81 2752

SIRP 2nd Sampling

ENVIRONMENTAL SAMPLING DATA

(Use this space for mechanical imprint)

OEHL USE ONLY

SAMPLING SITE IDENTIFIER (AFR 19-7)

BASE WHERE SAMPLE COLLECTED: Sheppard AFB, TX

SAMPLING SITE DESCRIPTION: SW-7 @ FPTA #1

DATE COLLECTION BEGAN (YYMMDD): 8 5 0 2 1 3

TIME COLLECTION BEGAN (24 hour clock): 0945

COLLECTION METHOD: [X] GRAB [ ] COMPOSITE _____ HOURS

MAIL REPORTS TO (circle if changed)

ORIGINAL	Radian Corp., P.O.Box 9948, Austin, TX 78766
COPY 1	USAF Rgn Hospital Sheppard AFB, TX 76311-5300
COPY 2	

SAMPLE COLLECTED BY (Name, Grade, AFSC): R.A. Belan/~~P.A. Waterreus~~ N.H. Lund

SIGNATURE: [illegible]

AUTOVON: (8)7364489

REASON FOR SUBMISSION: 0 — A-ACCIDENT/INCIDENT, R-ROUTINE/PERIODIC, C-COMPLAINT, N-NPDES, F-FOLLOWUP/CLEANUP, O-OTHER (specify): IRP

BASE SAMPLE NUMBER: G S 8 5 0 2 1

OEHL PID:

ANALYSES REQUESTED (check appropriate blocks)

	GROUP A		Hardness	00900		Residue, Settleable	50086		GROUP T		
	Ammonia	00610	Iron	01045		Residue, Volatile	00505		Bromoform	32104	
	Chemical Oxygen Demand	00340	Lead	01051		Silica	00955		Bromodichloromethane	32101	
	Kjeldahl Nitrogen	00625	Magnesium	00927		Specific Conductance	00095		Carbon Tetrachloride	32102	
	Nitrate	00620	Manganese	01055		Sulfate	00945		Chloroform	32106	
	Nitrite	00615	Mercury	71900		Sulfite	00740		Chloromethane	34418	
X	Oil & Grease	00560	Nickel	01067		Surfactants -MBAS	38260		Dibromochloromethane	32105	
X	Organic Carbon	00680	Potassium	00937		Turbidity	00076		Methylene Chloride	34423	
	Orthophosphate	00671	Selenium	01147					Tetrachloroethylene	34475	
	Phosphorus, Total	00665	Silver	01077					1,1,1-Trichloroethane	34506	
			Sodium	00929		GROUP H			Trichloroethylene	39180	
	GROUP D		Thallium	01059		BHC Isomers	39340		Trihalomethanes	82080	
	Cyanide, Total	00720	Zinc	01092		Chlordane	39350		PCBs	39516	
	Cyanide, Free	00722				DDT Isomers	39370				
						Dieldrin	39380				
	GROUP E		GROUP G			Endrin	39390				
X	Phenols	32730	Acidity, Total	70508		Heptachlor	39410				
			Alkalinity, Total	00410		Heptachlor Epoxide	39420				
	GROUP F		Alkalinity, Bicarbonate	00425		Lindane	39782				
	Antimony	01097	Bromide	71870		Methoxychlor	39480				
	Arsenic	01002	Carbon Dioxide	00405		Toxaphene	39400				
	Barium	01007	Chloride	00940		2,4-D	39730				
	Beryllium	01012	Color	00080		2,4,5-TP-Silvex	39760				
	Boron	01022	Fluoride	00951		2,4,5-T	39740				
	Cadmium	01027	Iodide	71865							
	Calcium	00916	Odor	00086							
	Chromium, Total	01034	Residue, Total	00500							
	Chromium VI	01032	X Residue, Filterable (TDS)	70300		GROUP J					
	Copper	01042	Residue, Nonfilterable	00530		Sulfides	00745				

ON SITE ANALYSES

Parameter		Value
Flow	50050	mgd
Chlorine, Total	50060	mg/l
Dissolved Oxygen	00300	mg/l
pH	00400	units
Temperature	00010	°C

COMMENTS: Also, add purgeable halocarbons, aromatics, and pH, TOX

AF FORM JAN 81 2752

ENVIRONMENTAL SAMPLING DATA

(Use this space for mechanical imprint)

OEHL USE ONLY

SAMPLING SITE IDENTIFIER (AFR 19-7)

BASE WHERE SAMPLE COLLECTED: Sheppard AFB, TX

SAMPLING SITE DESCRIPTION: SW-B FPTA No. 1

DATE COLLECTION BEGAN (YYMMDD): 8 5 0 2 1 3

TIME COLLECTION BEGAN (24 hour clock): 0915

COLLECTION METHOD: [X] GRAB [ ] COMPOSITE _____ HOURS

MAIL REPORTS TO (circle if changed)
- ORIGINAL: Radian Corp., P.O.Box 9948, Austin, TX 78766
- COPY 1: USAF Rgn Hospital Sheppard AFB, TX 76311-5300
- COPY 2:

SAMPLE COLLECTED BY (Name,Grade,AFSC): R.A. Belan/~~P.A. Waterreus~~ N.H Cund

SIGNATURE: [illegible]

AUTOVON: (8)7364489

REASON FOR SUBMISSION: 0 — A-ACCIDENT/INCIDENT, R-ROUTINE/PERIODIC, C-COMPLAINT, N-NPDES, F-FOLLOWUP/CLEANUP, O-OTHER (specify): IRP

BASE SAMPLE NUMBER: G S 8 5 0 0 7 3

OEHL PID

ANALYSES REQUESTED (check appropriate blocks)

	GROUP A			Hardness	00900			Residue, Settleable	50086		GROUP T
	Ammonia	00610		Iron	01045			Residue, Volatile	00505		Bromoform 32104
	Chemical Oxygen Demand	00340		Lead	01051			Silica	00955		Bromodichloromethane 32101
	Kjeldahl Nitrogen	00625		Magnesium	00927			Specific Conductance	00095		Carbon Tetrachloride 32102
	Nitrate	00620		Manganese	01055			Sulfate	00945		Chloroform 32106
	Nitrite	00615		Mercury	71900			Sulfite	00740		Chloromethane 34418
X	Oil & Grease	00560		Nickel	01067			Surfactants -MBAS	38260		Dibromochloromethane 32105
X	Organic Carbon	00680		Potassium	00937			Turbidity	00076		Methylene Chloride 34423
	Orthophosphate	00671		Selenium	01147						Tetrachloroethylene 34475
	Phosphorus, Total	00665		Silver	01077						1,1,1-Trichloroethane 34506
				Sodium	00929			GROUP H			Trichloroethylene 39180
	GROUP D			Thallium	01059			BHC Isomers	39340		Trihalomethanes 82080
	Cyanide, Total	00720		Zinc	01092			Chlordane	39350		PCBs 39516
	Cyanide, Free	00722						DDT Isomers	39370		
								Dieldrin	39380		
	GROUP E			GROUP G				Endrin	39390		
X	Phenols	32730		Acidity, Total	70508			Heptachlor	39410		
				Alkalinity, Total	00410			Heptachlor Epoxide	39420		
	GROUP F			Alkalinity, Bicarbonate	00425			Lindane	39782		
	Antimony	01097		Bromide	71870			Methoxychlor	39480		
	Arsenic	01002		Carbon Dioxide	00405			Toxaphene	39400		
	Barium	01007		Chloride	00940			2,4-D	39730		ON SITE ANALYSES
	Beryllium	01012		Color	00080			2,4,5-TP-Silvex	39760		Parameter / Value
	Boron	01022		Fluoride	00951			2,4,5-T	39740		Flow 50050 mgd
	Cadmium	01027		Iodide	71865						Chlorine, Total 50060 mg/l
	Calcium	00916		Odor	00086						Dissolved Oxygen 00300 mg/l
	Chromium, Total	01034		Residue, Total	00500						pH 00400 units
	Chromium VI	01032	X	Residue, Filterable (TDS)	70300			GROUP J			Temperature 00010 °C
	Copper	01042		Residue, Nonfilterable	00530			Sulfides	00745		

COMMENTS: Also, add purgeable halocarbons, aromatics, and pH, TOX

AF FORM JAN 81 2752

ENVIRONMENTAL SAMPLING DATA

OEHL USE ONLY

(Use this space for mechanical imprint)

SAMPLING SITE IDENTIFIER (AFR 19-7)

BASE WHERE SAMPLE COLLECTED: Sheppard AFB, TX

SAMPLING SITE DESCRIPTION: SW-9 @ FPTA No. 2

DATE COLLECTION BEGAN (YYMMDD): 8 5 0 2 1 3

TIME COLLECTION BEGAN (24 hour clock): 0940

COLLECTION METHOD: [X] GRAB [ ] COMPOSITE _____ HOURS

MAIL REPORTS TO (circle if changed)

ORIGINAL	Radian Corp., P.O.Box 9948, Austin, TX 78766
COPY 1	USAF Rgn Hospital Sheppard AFB, TX 76311-5300
COPY 2	

SAMPLE COLLECTED BY (Name, Grade, AFSC): R.A. Belan/~~P.A. Waterreus~~ M.H. Lund

SIGNATURE: [illegible]

AUTOVON: (8)7364489

REASON FOR SUBMISSION: 0

A-ACCIDENT/INCIDENT
R-ROUTINE/PERIODIC
C-COMPLAINT
N-NPDES
F-FOLLOWUP/CLEANUP
O-OTHER (specify): IRP

BASE SAMPLE NUMBER: G S 8 5 0 0 7 4

OEHL PID

ANALYSES REQUESTED (check appropriate blocks)

	GROUP A		Hardness	00900		Residue, Settleable	50086		GROUP T
	Ammonia	00610	Iron	01045		Residue, Volatile	00505		Bromoform 32104
	Chemical Oxygen Demand	00340	Lead	01051		Silica	00955		Bromodichloromethane 32101
	Kjeldahl Nitrogen	00625	Magnesium	00927		Specific Conductance	00095		Carbon Tetrachloride 32102
	Nitrate	00620	Manganese	01055		Sulfate	00945		Chloroform 32106
	Nitrite	00615	Mercury	71900		Sulfite	00740		Chloromethane 34418
X	Oil & Grease	00560	Nickel	01067		Surfactants -MBAS	38260		Dibromochloromethane 32105
X	Organic Carbon	00680	Potassium	00937		Turbidity	00076		Methylene Chloride 34423
	Orthophosphate	00671	Selenium	01147					Tetrachloroethylene 34475
	Phosphorus, Total	00665	Silver	01077					1,1,1-Trichloroethane 34506
			Sodium	00929		GROUP H			Trichloroethylene 39180
	GROUP D		Thallium	01059		BHC Isomers	39340		Trihalomethanes 82080
	Cyanide, Total	00720	Zinc	01092		Chlordane	39350		PCBs 39516
	Cyanide, Free	00722				DDT Isomers	39370		
						Dieldrin	39380		
	GROUP E		GROUP G			Endrin	39390		
X	Phenols	32730	Acidity, Total	70508		Heptachlor	39410		
			Alkalinity, Total	00410		Heptachlor Epoxide	39420		
	GROUP F		Alkalinity, Bicarbonate	00425		Lindane	39782		
	Antimony	01097	Bromide	71870		Methoxychlor	39480		
	Arsenic	01002	Carbon Dioxide	00405		Toxaphene	39400		
	Barium	01007	Chloride	00940		2,4-D	39730		
	Beryllium	01012	Color	00080		2,4,5-TP-Silvex	39760		
	Boron	01022	Fluoride	00951		2,4,5-T	39740		
	Cadmium	01027	Iodide	71865					
	Calcium	00916	Odor	00086					
	Chromium, Total	01034	Residue, Total	00500					
	Chromium VI	01032	X Residue, Filterable (TDS)	70300		GROUP J			
	Copper	01042	Residue, Nonfilterable	00530		Sulfides	00745		

ON SITE ANALYSES

Parameter		Value
Flow	50050	mgd
Chlorine, Total	50060	mg/l
Dissolved Oxygen	00300	mg/l
pH	00400	units
Temperature	00010	°C

COMMENTS: Also, add purgeable halocarbons, aromatics, and pH, TOX

AF FORM JAN 81 2752

ENVIRONMENTAL SAMPLING DATA

OEHL USE ONLY

(Use this space for mechanical imprint)

SAMPLING SITE IDENTIFIER (AFR 19-7)

BASE WHERE SAMPLE COLLECTED: Sheppard AFB, TX

SAMPLING SITE DESCRIPTION: MW-14 FPTA No. 1

DATE COLLECTION BEGAN (YYMMDD): 8 5 0 2 1 3

TIME COLLECTION BEGAN (24 hour clock): 1030

COLLECTION METHOD: [X] GRAB [ ] COMPOSITE _____ HOURS

MAIL REPORTS TO (circle if changed)

ORIGINAL	Radian Corp., P.O.Box 9948, Austin, TX 78766
COPY 1	USAF Rgn Hospital Sheppard AFB, TX 76311-5300
COPY 2	

SAMPLE COLLECTED BY (Name, Grade, AFSC): R.A. Belan/~~P.A. Waterreus~~ N.H. Lund

SIGNATURE: [illegible]

AUTOVON: (8)7364489

REASON FOR SUBMISSION: 0 — A-ACCIDENT/INCIDENT, R-ROUTINE/PERIODIC, C-COMPLAINT, N-NPDES, F-FOLLOWUP/CLEANUP, O-OTHER (specify): IRP

BASE SAMPLE NUMBER: G S 8 5 0 0 7 8

OEHL PID

ANALYSES REQUESTED (check appropriate blocks)

	GROUP A		Hardness	00900		Residue, Settleable	50086		GROUP T
	Ammonia	00610	Iron	01045		Residue, Volatile	00505		Bromoform 32104
	Chemical Oxygen Demand	00340	Lead	01051		Silica	00955		Bromodichloromethane 32101
	Kjeldahl Nitrogen	00625	Magnesium	00927		Specific Conductance	00095		Carbon Tetrachloride 32102
	Nitrate	00620	Manganese	01055		Sulfate	00945		Chloroform 32106
	Nitrite	00615	Mercury	71900		Sulfite	00740		Chloromethane 34418
X	Oil & Grease	00560	Nickel	01067		Surfactants -MBAS	38260		Dibromochloromethane 32105
X	Organic Carbon	00680	Potassium	00937		Turbidity	00076		Methylene Chloride 34423
	Orthophosphate	00671	Selenium	01147					Tetrachloroethylene 34475
	Phosphorus, Total	00665	Silver	01077					1,1,1-Trichloroethane 34506
			Sodium	00929		GROUP H			Trichloroethylene 39180
	GROUP D		Thallium	01059		BHC Isomers	39340		Trihalomethanes 82080
	Cyanide, Total	00720	Zinc	01092		Chlordane	39350		PCBs 39516
	Cyanide, Free	00722				DDT Isomers	39370		
						Dieldrin	39380		
	GROUP E		GROUP G			Endrin	39390		
X	Phenols	32730	Acidity, Total	70508		Heptachlor	39410		
			Alkalinity, Total	00410		Heptachlor Epoxide	39420		
	GROUP F		Alkalinity, Bicarbonate	00425		Lindane	39782		
	Antimony	01097	Bromide	71870		Methoxychlor	39480		
	Arsenic	01002	Carbon Dioxide	00405		Toxaphene	39400		
	Barium	01007	Chloride	00940		2,4-D	39730		ON SITE ANALYSES
	Beryllium	01012	Color	00080		2,4,5-TP-Silvex	39760		Parameter / Value
	Boron	01022	Fluoride	00951		2,4,5-T	39740		Flow 50050 mgd
	Cadmium	01027	Iodide	71865					Chlorine, Total 50060 mg/l
	Calcium	00916	Odor	00086					Dissolved Oxygen 00300 mg/l
	Chromium, Total	01034	Residue, Total	00500					pH 00400 units
	Chromium VI	01032	X Residue, Filterable (TDS)	70300		GROUP J			Temperature 00010 °C
	Copper	01042	Residue, Nonfilterable	00530		Sulfides	00745		

COMMENTS: Also, add purgeable halocarbons, aromatics, and pH, TOX

AF FORM JAN 81 2752

ENVIRONMENTAL SAMPLING DATA

(Use this space for mechanical imprint)

OEHL USE ONLY

SAMPLING SITE IDENTIFIER (AFR 19-7)

BASE WHERE SAMPLE COLLECTED: Sheppard AFB, TX

SAMPLING SITE DESCRIPTION: MW-11 @ FPTA No 2

DATE COLLECTION BEGAN (YYMMDD): 8 5 0 2 1 3

TIME COLLECTION BEGAN (24 hour clock): 1400

COLLECTION METHOD: [X] GRAB [ ] COMPOSITE _____ HOURS

MAIL REPORTS TO (circle if changed)
- ORIGINAL: Radian Corp., P.O.Box 9948, Austin, TX 78766
- COPY 1: USAF Rgn Hospital Sheppard AFB, TX 76311-5300
- COPY 2:

SAMPLE COLLECTED BY (Name, Grade, AFSC): R.A. Belan/~~P.A. Waterreus~~ N.H. Lund

SIGNATURE: R. A. Belan

AUTOVON: (8)7364489

REASON FOR SUBMISSION: 0

A-ACCIDENT/INCIDENT
R-ROUTINE/PERIODIC
C-COMPLAINT
N-NPDES
F-FOLLOWUP/CLEANUP
O-OTHER (specify) IRP

BASE SAMPLE NUMBER: G S 8 5 0 0 7 5

OEHL PID

ANALYSES REQUESTED (check appropriate blocks)

		GROUP A		Hardness	00900		Residue, Settleable	50086			GROUP T
		Ammonia	00610	Iron	01045		Residue, Volatile	00505		Bromoform	32104
		Chemical Oxygen Demand	00340	Lead	01051		Silica	00955		Bromodichloromethane	32101
		Kjeldahl Nitrogen	00625	Magnesium	00927		Specific Conductance	00095		Carbon Tetrachloride	32102
		Nitrate	00620	Manganese	01055		Sulfate	00945		Chloroform	32106
		Nitrite	00615	Mercury	71900		Sulfite	00740		Chloromethane	34418
X		Oil & Grease	00560	Nickel	01067		Surfactants -MBAS	38260		Dibromochloromethane	32105
X		Organic Carbon	00680	Potassium	00937		Turbidity	00076		Methylene Chloride	34423
		Orthophosphate	00671	Selenium	01147					Tetrachloroethylene	34475
		Phosphorus, Total	00665	Silver	01077					1,1,1-Trichloroethane	34506
				Sodium	00929			GROUP H		Trichloroethylene	39180
		GROUP D		Thallium	01059		BHC Isomers	39340		Trihalomethanes	82080
		Cyanide, Total	00720	Zinc	01092		Chlordane	39350		PCBs	39516
		Cyanide, Free	00722				DDT Isomers	39370			
							Dieldrin	39380			
		GROUP E		GROUP G			Endrin	39390			
X		Phenols	32730	Acidity, Total	70508		Heptachlor	39410			
				Alkalinity, Total	00410		Heptachlor Epoxide	39420			
		GROUP F		Alkalinity, Bicarbonate	00425		Lindane	39782			
		Antimony	01097	Bromide	71870		Methoxychlor	39480			
		Arsenic	01002	Carbon Dioxide	00405		Toxaphene	39400			
		Barium	01007	Chloride	00940		2,4-D	39730		ON SITE ANALYSES	
		Beryllium	01012	Color	00080		2,4,5-TP-Silvex	39760		Parameter	Value
		Boron	01022	Fluoride	00951		2,4,5-T	39740		Flow 50050	mgd
		Cadmium	01027	Iodide	71865					Chlorine, Total 50060	mg/l
		Calcium	00916	Odor	00086					Dissolved Oxygen 00300	mg/l
		Chromium, Total	01034	Residue, Total	00500					pH 00400	units
		Chromium VI	01032	X Residue, Filterable (TDS)	70300			GROUP J		Temperature 00010	°C
		Copper	01042	Residue, Nonfilterable	00530		Sulfides	00745			

COMMENTS: Also, add purgeable halocarbons, aromatics, and pH, TOX

AF FORM JAN 81 2752

ENVIRONMENTAL SAMPLING DATA

OEHL USE ONLY

(Use this space for mechanical imprint)

SAMPLING SITE IDENTIFIER (AFR 19-7)

BASE WHERE SAMPLE COLLECTED: Sheppard AFB, TX

SAMPLING SITE DESCRIPTION: MW-12 - FPTA No. 1

DATE COLLECTION BEGAN (YYMMDD): 8 5 0 2 1 3

TIME COLLECTION BEGAN (24 hour clock): 1445

COLLECTION METHOD: [X] GRAB [ ] COMPOSITE _____ HOURS

MAIL REPORTS TO (circle if changed)
- ORIGINAL: Radian Corp., P.O.Box 9948, Austin, TX 78766
- COPY 1: USAF Rgn Hospital Sheppard AFB, TX 76311-5300
- COPY 2:

SAMPLE COLLECTED BY (Name, Grade, AFSC): R.A. Belan/~~P.A. Waterreus~~ R.V.H. Luni

SIGNATURE: [illegible]

AUTOVON: (8)7364489

REASON FOR SUBMISSION: 0 — A-ACCIDENT/INCIDENT, R-ROUTINE/PERIODIC, C-COMPLAINT, N-NPDES, F-FOLLOWUP/CLEANUP, O-OTHER (specify): IRP

BASE SAMPLE NUMBER: G S 8 5 2 0 7 6

OEHL PID:

ANALYSES REQUESTED (check appropriate blocks)

	GROUP A		Hardness	00900		Residue, Settleable	50086		GROUP T		
	Ammonia	00610	Iron	01045		Residue, Volatile	00505		Bromoform	32104	
	Chemical Oxygen Demand	00340	Lead	01051		Silica	00955		Bromodichloromethane	32101	
	Kjeldahl Nitrogen	00625	Magnesium	00927		Specific Conductance	00095		Carbon Tetrachloride	32102	
	Nitrate	00620	Manganese	01055		Sulfate	00945		Chloroform	32106	
	Nitrite	00615	Mercury	71900		Sulfite	00740		Chloromethane	34418	
X	Oil & Grease	00560	Nickel	01067		Surfactants -MBAS	38260		Dibromochloromethane	32105	
X	Organic Carbon	00680	Potassium	00937		Turbidity	00076		Methylene Chloride	34423	
	Orthophosphate	00671	Selenium	01147					Tetrachloroethylene	34475	
	Phosphorus, Total	00665	Silver	01077					1,1,1-Trichloroethane	34506	
			Sodium	00929		GROUP H			Trichloroethylene	39180	
	GROUP D		Thallium	01059		BHC Isomers	39340		Trihalomethanes	82080	
	Cyanide, Total	00720	Zinc	01092		Chlordane	39350		PCBs	39516	
	Cyanide, Free	00722				DDT Isomers	39370				
						Dieldrin	39380				
	GROUP E		GROUP G			Endrin	39390				
X	Phenols	32730	Acidity, Total	70508		Heptachlor	39410				
			Alkalinity, Total	00410		Heptachlor Epoxide	39420				
	GROUP F		Alkalinity, Bicarbonate	00425		Lindane	39782				
	Antimony	01097	Bromide	71870		Methoxychlor	39480				
	Arsenic	01002	Carbon Dioxide	00405		Toxaphene	39400				
	Barium	01007	Chloride	00940		2,4-D	39730		ON SITE ANALYSES		
	Beryllium	01012	Color	00080		2,4,5-TP-Silvex	39760		Parameter		Value
	Boron	01022	Fluoride	00951		2,4,5-T	39740		Flow	50050	mgd
	Cadmium	01027	Iodide	71865					Chlorine, Total	50060	mg/l
	Calcium	00916	Odor	00086					Dissolved Oxygen	00300	mg/l
	Chromium, Total	01034	Residue, Total	00500					pH	00400	units
	Chromium VI	01032	X Residue, Filterable (TDS)	70300		GROUP J			Temperature	00010	°C
	Copper	01042	Residue, Nonfilterable	00530		Sulfides	00745				

COMMENTS: Also, add purgeable halocarbons, aromatics, and pH, TOC

AF FORM JAN 81 2752

ENVIRONMENTAL SAMPLING DATA

OEHL USE ONLY

(Use this space for mechanical imprint)

SAMPLING SITE IDENTIFIER (AFR 19-7)

BASE WHERE SAMPLE COLLECTED: Sheppard AFB, TX

SAMPLING SITE DESCRIPTION: MW-12, FPTA No 1

DATE COLLECTION BEGAN (YYMMDD): 8 5 0 2 1 3

TIME COLLECTION BEGAN (24 hour clock): 1515

COLLECTION METHOD: [X] GRAB [ ] COMPOSITE _____ HOURS

MAIL REPORTS TO (circle if changed):
- ORIGINAL: Radian Corp., P.O.Box 9948, Austin, TX 78766
- COPY 1: USAF Rgn Hospital Sheppard AFB, TX 76311-5300
- COPY 2:

SAMPLE COLLECTED BY (Name, Grade, AFSC): R.A. Belan/~~P.A. Waterreus~~ N.H. Lund

SIGNATURE: [illegible]

AUTOVON: (8)7364489

REASON FOR SUBMISSION: 0

A-ACCIDENT/INCIDENT R-ROUTINE/PERIODIC C-COMPLAINT N-NPDES F-FOLLOWUP/CLEANUP O-OTHER (specify) IRP

BASE SAMPLE NUMBER: G S 8 5 0 0 7 7

OEHL PID:

ANALYSES REQUESTED (check appropriate blocks)

	GROUP A								GROUP T	
	Ammonia	00610		Hardness	00900		Residue, Settleable	50086	Bromoform	32104
	Chemical Oxygen Demand	00340		Iron	01045		Residue, Volatile	00505	Bromodichloromethane	32101
	Kjeldahl Nitrogen	00625		Lead	01051		Silica	00955	Carbon Tetrachloride	32102
	Nitrate	00620		Magnesium	00927		Specific Conductance	00095	Chloroform	32106
	Nitrite	00615		Manganese	01055		Sulfate	00945	Chloromethane	34418
X	Oil & Grease	00560		Mercury	71900		Sulfite	00740	Dibromochloromethane	32105
X	Organic Carbon	00680		Nickel	01067		Surfactants -MBAS	38260	Methylene Chloride	34423
	Orthophosphate	00671		Potassium	00937		Turbidity	00076	Tetrachloroethylene	34475
	Phosphorus, Total	00665		Selenium	01147				1,1,1-Trichloroethane	34506
				Silver	01077				Trichloroethylene	39180
				Sodium	00929		GROUP H		Trihalomethanes	82080
	GROUP D			Thallium	01059		BHC Isomers	39340	PCBs	39516
	Cyanide, Total	00720		Zinc	01092		Chlordane	39350		
	Cyanide, Free	00722					DDT Isomers	39370		
							Dieldrin	39380		
	GROUP E			GROUP G			Endrin	39390		
X	Phenols	32730		Acidity, Total	70508		Heptachlor	39410		
				Alkalinity, Total	00410		Heptachlor Epoxide	39420		
	GROUP F			Alkalinity, Bicarbonate	00425		Lindane	39782		
	Antimony	01097		Bromide	71870		Methoxychlor	39480		
	Arsenic	01002		Carbon Dioxide	00405		Toxaphene	39400		
	Barium	01007		Chloride	00940		2,4-D	39730		
	Beryllium	01012		Color	00080		2,4,5-TP-Silvex	39760		
	Boron	01022		Fluoride	00951		2,4,5-T	39740		
	Cadmium	01027		Iodide	71865					
	Calcium	00916		Odor	00086					
	Chromium, Total	01034		Residue, Total	00500					
	Chromium VI	01032	X	Residue, Filterable (TDS)	70300		GROUP J			
	Copper	01042		Residue, Nonfilterable	00530		Sulfides	00745		

ON SITE ANALYSES

Parameter		Value
Flow	50050	mgd
Chlorine, Total	50060	mg/l
Dissolved Oxygen	00300	mg/l
pH	00400	units
Temperature	00010	°C

COMMENTS: Also, add purgeable halocarbons, aromatics, and pH, TOX

AF FORM JAN 81 2752

ENVIRONMENTAL SAMPLING DATA

(Use this space for mechanical imprint)

OEHL USE ONLY

SAMPLING SITE IDENTIFIER (AFR 19-7)

BASE WHERE SAMPLE COLLECTED: Sheppard AFB, TX

SAMPLING SITE DESCRIPTION: SW-1 Waste Pits

DATE COLLECTION BEGAN (YYMMDD): 8 5 0 2 1 4

TIME COLLECTION BEGAN (24 hour clock): 1300

COLLECTION METHOD: [X] GRAB [ ] COMPOSITE _____ HOURS

MAIL REPORTS TO (circle if changed)

ORIGINAL	Radian Corp., P.O.Box 9948, Austin, TX 78766
COPY 1	USAF Rgn Hospital Sheppard AFB, TX 76311-5300
COPY 2	

SAMPLE COLLECTED BY (Name, Grade, AFSC): R.A. Belan/~~P.A. Waterreus~~ N.H. Lund

SIGNATURE: R.H. [illegible]

AUTOVON: (8)7364489

REASON FOR SUBMISSION: 0

A-ACCIDENT/INCIDENT
R-ROUTINE/PERIODIC
C-COMPLAINT
N-NPDES
F-FOLLOWUP/CLEANUP
O-OTHER (specify): IRP

BASE SAMPLE NUMBER: G S 8 5 0 0 1 2

OEHL PID:

ANALYSES REQUESTED (check appropriate blocks)

		GROUP A		Hardness	00900		Residue, Settleable	50086		GROUP T	
		Ammonia	00610	Iron	01045		Residue, Volatile	00505		Bromoform	32104
		Chemical Oxygen Demand	00340	Lead	01051		Silica	00955		Bromodichloromethane	32101
		Kjeldahl Nitrogen	00625	Magnesium	00927		Specific Conductance	00095		Carbon Tetrachloride	32102
		Nitrate	00620	Manganese	01055		Sulfate	00945		Chloroform	32106
		Nitrite	00615	Mercury	71900		Sulfite	00740		Chloromethane	34418
X		Oil & Grease	00560	Nickel	01067		Surfactants -MBAS	38260		Dibromochloromethane	32105
X		Organic Carbon	00680	Potassium	00937		Turbidity	00076		Methylene Chloride	34423
		Orthophosphate	00671	Selenium	01147					Tetrachloroethylene	34475
		Phosphorus, Total	00665	Silver	01077					1,1,1-Trichloroethane	34506
				Sodium	00929		GROUP H			Trichloroethylene	39180
		GROUP D		Thallium	01059		BHC Isomers	39340		Trihalomethanes	82080
		Cyanide, Total	00720	Zinc	01092		Chlordane	39350		PCBs	39516
		Cyanide, Free	00722				DDT Isomers	39370			
							Dieldrin	39380			
		GROUP E		GROUP G			Endrin	39390			
X		Phenols	32730	Acidity, Total	70508		Heptachlor	39410			
				Alkalinity, Total	00410		Heptachlor Epoxide	39420			
		GROUP F		Alkalinity, Bicarbonate	00425		Lindane	39782			
		Antimony	01097	Bromide	71870		Methoxychlor	39480			
		Arsenic	01002	Carbon Dioxide	00405		Toxaphene	39400			
		Barium	01007	Chloride	00940		2,4-D	39730		ON SITE ANALYSES	
		Beryllium	01012	Color	00080		2,4,5-TP-Silvex	39760		Parameter	Value
		Boron	01022	Fluoride	00951		2,4,5-T	39740		Flow 50050	mgd
		Cadmium	01027	Iodide	71865					Chlorine, Total 50060	mg/l
		Calcium	00916	Odor	00086					Dissolved Oxygen 00300	mg/l
		Chromium, Total	01034	Residue, Total	00500					pH 00400	units
		Chromium VI	01032	X Residue, Filterable (TDS)	70300		GROUP J			Temperature 00010	°C
		Copper	01042	Residue, Nonfilterable	00530		Sulfides	00745			

COMMENTS: Also, add purgeable halocarbons, aromatics, and pH, TOX

AF FORM JAN 81 2752

ENVIRONMENTAL SAMPLING DATA

(Use this space for mechanical imprint)

OEHL USE ONLY

SAMPLING SITE IDENTIFIER (AFR 19-7)

BASE WHERE SAMPLE COLLECTED: Sheppard AFB, TX 76311-5300

SAMPLING SITE DESCRIPTION: SW-2 Landfill No 3

DATE COLLECTION BEGAN (YYMMDD): 8 5 0 2 1 4

TIME COLLECTION BEGAN (24 hour clock): 1515

COLLECTION METHOD: [X] GRAB [ ] COMPOSITE ____ HOURS

MAIL REPORTS TO (circle if changed)

ORIGINAL	Radian Corp., P.O.Box 9948, Austin, TX 78766
COPY 1	USAF Rgn Hospital Sheppard SGPB AFB, TX 76311-5300
COPY 2	

SAMPLE COLLECTED BY (Name, Grade, AFSC): R.A. Belan/~~P.A. Waterreus~~ N.H. Lund

SIGNATURE: R.A. Belan

AUTOVON: (8)7364489

REASON FOR SUBMISSION: 0 — A-ACCIDENT/INCIDENT, R-ROUTINE/PERIODIC, C-COMPLAINT, N-NPDES, F-FOLLOWUP/CLEANUP, O-OTHER (specify): IRP

BASE SAMPLE NUMBER: G S 8 5 0 0 1 4

OEHL PID:

ANALYSES REQUESTED (check appropriate blocks)

	GROUP A			Hardness	00900			Residue, Settleable	50086		GROUP T
	Ammonia	00610		Iron	01045			Residue, Volatile	00505		Bromoform 32104
	Chemical Oxygen Demand	00340	X	Lead	01051			Silica	00955		Bromodichloromethane 32101
	Kjeldahl Nitrogen	00625		Magnesium	00927			Specific Conductance	00095		Carbon Tetrachloride 32102
	Nitrate	00620		Manganese	01055			Sulfate	00945		Chloroform 32106
	Nitrite	00615	X	Mercury	71900			Sulfite	00740		Chloromethane 34418
X	Oil & Grease	00560		Nickel	01067			Surfactants -MBAS	38260		Dibromochloromethane 32105
X	Organic Carbon	00680		Potassium	00937			Turbidity	00076		Methylene Chloride 34423
	Orthophosphate	00671		Selenium	01147						Tetrachloroethylene 34475
	Phosphorus, Total	00665		Silver	01077						1,1,1-Trichloroethane 34506
				Sodium	00929			GROUP H			Trichloroethylene 39180
	GROUP D			Thallium	01059			BHC Isomers	39340		Trihalomethanes 82080
	Cyanide, Total	00720		Zinc	01092			Chlordane	39350		PCBs 39516
	Cyanide, Free	00722						DDT Isomers	39370		
								Dieldrin	39380		
	GROUP E			GROUP G				Endrin	39390		
X	Phenols	32730		Acidity, Total	70508			Heptachlor	39410		
				Alkalinity, Total	00410			Heptachlor Epoxide	39420		
	GROUP F			Alkalinity, Bicarbonate	00425			Lindane	39782		
	Antimony	01097		Bromide	71870			Methoxychlor	39480		
	Arsenic	01002		Carbon Dioxide	00405			Toxaphene	39400		
	Barium	01007		Chloride	00940			2,4-D	39730		ON SITE ANALYSES
	Beryllium	01012		Color	00080			2,4,5-TP-Silvex	39760		Parameter / Value
	Boron	01022		Fluoride	00951			2,4,5-T	39740		Flow 50050 mgd
	Cadmium	01027		Iodide	71865						Chlorine, Total 50060 mg/l
	Calcium	00916		Odor	00086						Dissolved Oxygen 00300 mg/l
X	Chromium, Total	01034		Residue, Total	00500						pH 00400 units
	Chromium VI	01032	X	Residue, Filterable (TDS)	70300			GROUP J			Temperature 00010 °C
	Copper	01042		Residue, Nonfilterable	00530			Sulfides	00745		

COMMENTS: Also analyze for purgeable halocarbons, aromatics, and pH, TOX

AF FORM JAN 81 2752

ENVIRONMENTAL SAMPLING DATA

OEHL USE ONLY

(Use this space for mechanical imprint)

SAMPLING SITE IDENTIFIER (AFR 19-7)

BASE WHERE SAMPLE COLLECTED: Sheppard AFB, TX 76311-5300

SAMPLING SITE DESCRIPTION: SW-5 Land Fill No. 3

DATE COLLECTION BEGAN (YYMMDD): 8 5 0 2 1 4

TIME COLLECTION BEGAN (24 hour clock): 1615

COLLECTION METHOD: [X] GRAB [ ] COMPOSITE _____ HOURS

MAIL REPORTS TO (circle if changed):
- ORIGINAL: Radian Corp., P.O.Box 9948, Austin, TX 78766
- COPY 1: USAF Rgn Hospital Sheppard SGPB AFB, TX 76311-5300
- COPY 2:

SAMPLE COLLECTED BY (Name, Grade, AFSC): R.A. Belan/~~P.A. Waterreus~~ V.H. Lund

SIGNATURE: R.A. B[illegible]

AUTOVON: (8)7364489

REASON FOR SUBMISSION: 0

A-ACCIDENT/INCIDENT R-ROUTINE/PERIODIC C-COMPLAINT N-NPDES F-FOLLOWUP/CLEANUP O-OTHER (specify) IRP

BASE SAMPLE NUMBER: G S 8 5 0 0 1 6

OEHL PID

ANALYSES REQUESTED (check appropriate blocks)

	GROUP A								GROUP T	
			Hardness	00900		Residue, Settleable	50086			
	Ammonia	00610	Iron	01045		Residue, Volatile	00505		Bromoform	32104
	Chemical Oxygen Demand	00340	X Lead	01051		Silica	00955		Bromodichloromethane	32101
	Kjeldahl Nitrogen	00625	Magnesium	00927		Specific Conductance	00095		Carbon Tetrachloride	32102
	Nitrate	00620	Manganese	01055		Sulfate	00945		Chloroform	32106
	Nitrite	00615	X Mercury	71900		Sulfite	00740		Chloromethane	34418
X	Oil & Grease	00560	Nickel	01067		Surfactants -MBAS	38260		Dibromochloromethane	32105
X	Organic Carbon	00680	Potassium	00937		Turbidity	00076		Methylene Chloride	34423
	Orthophosphate	00671	Selenium	01147					Tetrachloroethylene	34475
	Phosphorus, Total	00665	Silver	01077					1,1,1-Trichloroethane	34506
			Sodium	00929		GROUP H			Trichloroethylene	39180
	GROUP D		Thallium	01059		BHC Isomers	39340		Trihalomethanes	82080
	Cyanide, Total	00720	Zinc	01092		Chlordane	39350		PCBs	39516
	Cyanide, Free	00722				DDT Isomers	39370			
						Dieldrin	39380			
	GROUP E		GROUP G			Endrin	39390			
X	Phenols	32730	Acidity, Total	70508		Heptachlor	39410			
			Alkalinity, Total	00410		Heptachlor Epoxide	39420			
	GROUP F		Alkalinity, Bicarbonate	00425		Lindane	39782			
	Antimony	01097	Bromide	71870		Methoxychlor	39480			
	Arsenic	01002	Carbon Dioxide	00405		Toxaphene	39400			
	Barium	01007	Chloride	00940		2,4-D	39730			
	Beryllium	01012	Color	00080		2,4,5-TP-Silvex	39760			
	Boron	01022	Fluoride	00951		2,4,5-T	39740			
	Cadmium	01027	Iodide	71865						
	Calcium	00916	Odor	00086						
X	Chromium, Total	01034	Residue, Total	00500						
	Chromium VI	01032	X Residue, Filterable (TDS)	70300		GROUP J				
	Copper	01042	Residue, Nonfilterable	00530		Sulfides	00745			

ON SITE ANALYSES

Parameter		Value
Flow	50050	mgd
Chlorine, Total	50060	mg/l
Dissolved Oxygen	00300	mg/l
pH	00400	units
Temperature	00010	°C

COMMENTS: Also analyze for purgeable halocarbons, aromatics, and pH, TOX

AF FORM JAN 81 2752

ENVIRONMENTAL SAMPLING DATA

(Use this space for mechanical imprint)

OEHL USE ONLY

SAMPLING SITE IDENTIFIER (AFR 19-7)

BASE WHERE SAMPLE COLLECTED: Sheppard AFB, TX 76311-5300

SAMPLING SITE DESCRIPTION: MW-7 [illegible]

DATE COLLECTION BEGAN (YYMMDD): 8 5 0 2 1 4

TIME COLLECTION BEGAN (24 hour clock): 1615

COLLECTION METHOD: [X] GRAB [ ] COMPOSITE ____ HOURS

MAIL REPORTS TO (circle if changed)
- ORIGINAL: Radian Corp., P.O.Box 9948, Austin, TX 78766
- COPY 1: USAF Rgn Hospital Sheppard SGPB AFB, TX 76311-5300
- COPY 2:

SAMPLE COLLECTED BY (Name, Grade, AFSC): R.A. Belan/~~P.A. Waterreus~~ N.H. Lind

SIGNATURE: R.A. Belan

AUTOVON: (8)7364489

REASON FOR SUBMISSION: 0 — A-ACCIDENT/INCIDENT, R-ROUTINE/PERIODIC, C-COMPLAINT, N-NPDES, F-FOLLOWUP/CLEANUP, O-OTHER (specify): IRP

BASE SAMPLE NUMBER: G S 8 5 0 0 1 7

OEHL PID:

ANALYSES REQUESTED (check appropriate blocks)

	GROUP A			Hardness	00900		Residue, Settleable	50086		GROUP T	
	Ammonia	00610		Iron	01045		Residue, Volatile	00505		Bromoform	32104
	Chemical Oxygen Demand	00340	X	Lead	01051		Silica	00955		Bromodichloromethane	32101
	Kjeldahl Nitrogen	00625		Magnesium	00927		Specific Conductance	00095		Carbon Tetrachloride	32102
	Nitrate	00620		Manganese	01055		Sulfate	00945		Chloroform	32106
	Nitrite	00615	X	Mercury	71900		Sulfite	00740		Chloromethane	34418
X	Oil & Grease	00560		Nickel	01067		Surfactants -MBAS	38260		Dibromochloromethane	32105
X	Organic Carbon	00680		Potassium	00937		Turbidity	00076		Methylene Chloride	34423
	Orthophosphate	00671		Selenium	01147					Tetrachloroethylene	34475
	Phosphorus, Total	00665		Silver	01077					1,1,1-Trichloroethane	34506
				Sodium	00929		GROUP H			Trichloroethylene	39180
	GROUP D			Thallium	01059		BHC Isomers	39340		Trihalomethanes	82080
	Cyanide, Total	00720		Zinc	01092		Chlordane	39350		PCBs	39516
	Cyanide, Free	00722					DDT Isomers	39370			
							Dieldrin	39380			
	GROUP E			GROUP G			Endrin	39390			
	Phenols	32730		Acidity, Total	70508		Heptachlor	39410			
				Alkalinity, Total	00410		Heptachlor Epoxide	39420			
	GROUP F			Alkalinity, Bicarbonate	00425		Lindane	39782			
	Antimony	01097		Bromide	71870		Methoxychlor	39480			
	Arsenic	01002		Carbon Dioxide	00405		Toxaphene	39400			
	Barium	01007		Chloride	00940		2,4-D	39730		ON SITE ANALYSES	
	Beryllium	01012		Color	00080		2,4,5-TP-Silvex	39760		Parameter	Value
	Boron	01022		Fluoride	00951		2,4,5-T	39740		Flow 50050	mgd
	Cadmium	01027		Iodide	71865					Chlorine, Total 50060	mg/l
	Calcium	00916		Odor	00086					Dissolved Oxygen 00300	mg/l
X	Chromium, Total	01034		Residue, Total	00500					pH 00400	units
	Chromium VI	01032	X	Residue, Filterable (TDS)	70300		GROUP J			Temperature 00010	°C
	Copper	01042		Residue, Nonfilterable	00530		Sulfides	00745			

COMMENTS: Also analyze for purgeable halocarbons, aromatics, and pH, TOX

AF FORM JAN 81 2752

MW-3

ENVIRONMENTAL SAMPLING DATA

OEHL USE ONLY

(Use this space for mechanical imprint)

SAMPLING SITE IDENTIFIER (AFR 19-7)

BASE WHERE SAMPLE COLLECTED: Sheppard AFB, TX 76311-5300

SAMPLING SITE DESCRIPTION: MW-8 @ FPTA No-3

DATE COLLECTION BEGAN (YYMMDD): 8 5 0 2 1 4

TIME COLLECTION BEGAN (24 hour clock): 1720

COLLECTION METHOD: [X] GRAB [ ] COMPOSITE _____ HOURS

MAIL REPORTS TO (circle if changed):
- ORIGINAL: Radian Corp., P.O.Box 9948, Austin, TX 78766
- COPY 1: USAF Rgn Hospital Sheppard SGPB AFB, TX 76311-5300
- COPY 2:

SAMPLE COLLECTED BY (Name, Grade, AFSC): R.A. Belan/~~P.A. Waterreus~~ N.H. Cyn

SIGNATURE: R. A. Belan

AUTOVON: (8)7364489

REASON FOR SUBMISSION: 0

A-ACCIDENT/INCIDENT R-ROUTINE/PERIODIC C-COMPLAINT N-NPDES F-FOLLOWUP/CLEANUP O-OTHER (specify) IRP

BASE SAMPLE NUMBER: G S 8 5 0 1 8

OEHL PID

ANALYSES REQUESTED (check appropriate blocks)

	GROUP A								GROUP T	
	Ammonia	00610		Hardness	00900		Residue, Settleable	50086	Bromoform	32104
	Chemical Oxygen Demand	00340	X	Iron	01045		Residue, Volatile	00505	Bromodichloromethane	32101
	Kjeldahl Nitrogen	00625		Lead	01051		Silica	00955	Carbon Tetrachloride	32102
	Nitrate	00620		Magnesium	00927		Specific Conductance	00095	Chloroform	32106
	Nitrite	00615	X	Manganese	01055		Sulfate	00945	Chloromethane	34418
X	Oil & Grease	00560		Mercury	71900		Sulfite	00740	Dibromochloromethane	32105
X	Organic Carbon	00680		Nickel	01067		Surfactants -MBAS	38260	Methylene Chloride	34423
	Orthophosphate	00671		Potassium	00937		Turbidity	00076	Tetrachloroethylene	34475
	Phosphorus, Total	00665		Selenium	01147				1,1,1-Trichloroethane	34506
				Silver	01077				Trichloroethylene	39180
				Sodium	00929		GROUP H		Trihalomethanes	82080
	GROUP D			Thallium	01059		BHC Isomers	39340	PCBs	39516
	Cyanide, Total	00720		Zinc	01092		Chlordane	39350		
	Cyanide, Free	00722					DDT Isomers	39370		
							Dieldrin	39380		
	GROUP E			GROUP G			Endrin	39390		
X	Phenols	32730		Acidity, Total	70508		Heptachlor	39410		
				Alkalinity, Total	00410		Heptachlor Epoxide	39420		
	GROUP F			Alkalinity, Bicarbonate	00425		Lindane	39782		
	Antimony	01097		Bromide	71870		Methoxychlor	39480		
	Arsenic	01002		Carbon Dioxide	00405		Toxaphene	39400		
	Barium	01007		Chloride	00940		2,4-D	39730		
	Beryllium	01012		Color	00080		2,4,5-TP-Silvex	39760		
	Boron	01022		Fluoride	00951		2,4,5-T	39740		
	Cadmium	01027		Iodide	71865					
	Calcium	00916		Odor	00086					
X	Chromium, Total	01034		Residue, Total	00500					
	Chromium VI	01032	X	Residue, Filterable (TDS)	70300		GROUP J			
	Copper	01042		Residue, Nonfilterable	00530		Sulfides	00745		

ON SITE ANALYSES

Parameter		Value
Flow	50050	mgd
Chlorine, Total	50060	mg/l
Dissolved Oxygen	00300	mg/l
pH	00400	units
Temperature	00010	°C

COMMENTS: Also analyze for purgeable halocarbons, aromatics, and pH, TOX

AF FORM JAN 81 2752

ENVIRONMENTAL SAMPLING DATA

(Use this space for mechanical imprint)

OEHL USE ONLY

SAMPLING SITE IDENTIFIER (AFR 19-7)

BASE WHERE SAMPLE COLLECTED: Sheppard AFB, TX 76311-5300

SAMPLING SITE DESCRIPTION: MW-1[illegible], FPTA No. 3

DATE COLLECTION BEGAN (YYMMDD): 8 5 0 2 1 4

TIME COLLECTION BEGAN (24 hour clock): 1210

COLLECTION METHOD: [X] GRAB [ ] COMPOSITE _____ HOURS

MAIL REPORTS TO (circle if changed):
- ORIGINAL: Radian Corp., P.O.Box 9948, Austin, TX 78766
- COPY 1: USAF Rgn Hospital Sheppard SGPB AFB, TX 76311-5300
- COPY 2:

SAMPLE COLLECTED BY (Name, Grade, AFSC): R.A. Belan/~~P.A. Waterreus~~ N.H. Lund

SIGNATURE: [signature]

AUTOVON: (8)7364489

REASON FOR SUBMISSION: 0

A-ACCIDENT/INCIDENT R-ROUTINE/PERIODIC C-COMPLAINT N-NPDES F-FOLLOWUP/CLEANUP O-OTHER (specify) IRP

BASE SAMPLE NUMBER: G S 8 5 0 0 2 0

OEHL PID:

ANALYSES REQUESTED (check appropriate blocks)

	GROUP A								GROUP T	
			Hardness	00900		Residue, Settleable	50086			
	Ammonia	00610	Iron	01045		Residue, Volatile	00505		Bromoform	32104
	Chemical Oxygen Demand	00340	X Lead	01051		Silica	00955		Bromodichloromethane	32101
	Kjeldahl Nitrogen	00625	Magnesium	00927		Specific Conductance	00095		Carbon Tetrachloride	32102
	Nitrate	00620	Manganese	01055		Sulfate	00945		Chloroform	32106
	Nitrite	00615	X Mercury	71900		Sulfite	00740		Chloromethane	34418
X	Oil & Grease	00560	Nickel	01067		Surfactants -MBAS	38260		Dibromochloromethane	32105
X	Organic Carbon	00680	Potassium	00937		Turbidity	00076		Methylene Chloride	34423
	Orthophosphate	00671	Selenium	01147					Tetrachloroethylene	34475
	Phosphorus, Total	00665	Silver	01077					1,1,1-Trichloroethane	34506
			Sodium	00929		GROUP H			Trichloroethylene	39180
	GROUP D		Thallium	01059		BHC Isomers	39340		Trihalomethanes	82080
	Cyanide, Total	00720	Zinc	01092		Chlordane	39350		PCBs	39516
	Cyanide, Free	00722				DDT Isomers	39370			
						Dieldrin	39380			
	GROUP E		GROUP G			Endrin	39390			
X	Phenols	32730	Acidity, Total	70508		Heptachlor	39410			
			Alkalinity, Total	00410		Heptachlor Epoxide	39420			
	GROUP F		Alkalinity, Bicarbonate	00425		Lindane	39782			
	Antimony	01097	Bromide	71870		Methoxychlor	39480			
	Arsenic	01002	Carbon Dioxide	00405		Toxaphene	39400			
	Barium	01007	Chloride	00940		2,4-D	39730			
	Beryllium	01012	Color	00080		2,4,5-TP-Silvex	39760			
	Boron	01022	Fluoride	00951		2,4,5-T	39740			
	Cadmium	01027	Iodide	71865						
	Calcium	00916	Odor	00086						
X	Chromium, Total	01034	Residue, Total	00500						
	Chromium VI	01032	X Residue, Filterable (TDS)	70300		GROUP J				
	Copper	01042	Residue, Nonfilterable	00530		Sulfides	00745			

ON SITE ANALYSES

Parameter		Value
Flow	50050	mgd
Chlorine, Total	50060	mg/l
Dissolved Oxygen	00300	mg/l
pH	00400	units
Temperature	00010	°C

COMMENTS: Also analyze for purgeable halocarbons, aromatics, and pH, TOX

AF FORM JAN 81 2752

MW-1

ENVIRONMENTAL SAMPLING DATA

(Use this space for mechanical imprint)

OEHL USE ONLY

SAMPLING SITE IDENTIFIER (AFR 19-7)

BASE WHERE SAMPLE COLLECTED: Sheppard AFB, TX 76311-5300

SAMPLING SITE DESCRIPTION: MW-9 - FPTA No. 3

DATE COLLECTION BEGAN (YYMMDD): 8 5 1 0 2 1 5

TIME COLLECTION BEGAN (24 hour clock): 0930

COLLECTION METHOD: [X] GRAB [ ] COMPOSITE _____ HOURS

MAIL REPORTS TO (circle if changed):
- ORIGINAL: Radian Corp., P.O.Box 9948, Austin, TX 78766
- COPY 1: USAF Rgn Hospital Sheppard SGPB AFB, TX 76311-5300
- COPY 2:

SAMPLE COLLECTED BY (Name, Grade, AFSC): R.A. Belan/~~P.A. Waterreus~~ W.M. Lind

SIGNATURE: R.A. Belan

AUTOVON: (8)7364489

REASON FOR SUBMISSION: 0 — A-ACCIDENT/INCIDENT, R-ROUTINE/PERIODIC, C-COMPLAINT, N-NPDES, F-FOLLOWUP/CLEANUP, O-OTHER (specify) IRP

BASE SAMPLE NUMBER: G S 8 5 0 0 1 9

OEHL PID

ANALYSES REQUESTED (check appropriate blocks)

	GROUP A			Hardness	00900		Residue, Settleable	50086		GROUP T	
	Ammonia	00610		Iron	01045		Residue, Volatile	00505		Bromoform	32104
	Chemical Oxygen Demand	00340	X	Lead	01051		Silica	00955		Bromodichloromethane	32101
	Kjeldahl Nitrogen	00625		Magnesium	00927		Specific Conductance	00095		Carbon Tetrachloride	32102
	Nitrate	00620		Manganese	01055		Sulfate	00945		Chloroform	32106
	Nitrite	00615	X	Mercury	71900		Sulfite	00740		Chloromethane	34418
X	Oil & Grease	00560		Nickel	01067		Surfactants -MBAS	38260		Dibromochloromethane	32105
X	Organic Carbon	00680		Potassium	00937		Turbidity	00076		Methylene Chloride	34423
	Orthophosphate	00671		Selenium	01147					Tetrachloroethylene	34475
	Phosphorus, Total	00665		Silver	01077					1,1,1-Trichloroethane	34506
				Sodium	00929		GROUP H			Trichloroethylene	39180
	GROUP D			Thallium	01059		BHC Isomers	39340		Trihalomethanes	82080
	Cyanide, Total	00720		Zinc	01092		Chlordane	39350		PCBs	39516
	Cyanide, Free	00722					DDT Isomers	39370			
							Dieldrin	39380			
	GROUP E			GROUP G			Endrin	39390			
X	Phenols	32730		Acidity, Total	70508		Heptachlor	39410			
				Alkalinity, Total	00410		Heptachlor Epoxide	39420			
	GROUP F			Alkalinity, Bicarbonate	00425		Lindane	39782			
	Antimony	01097		Bromide	71870		Methoxychlor	39480			
	Arsenic	01002		Carbon Dioxide	00405		Toxaphene	39400			
	Barium	01007		Chloride	00940		2,4-D	39730		ON SITE ANALYSES	
	Beryllium	01012		Color	00080		2,4,5-TP-Silvex	39760		Parameter	Value
	Boron	01022		Fluoride	00951		2,4,5-T	39740		Flow 50050	mgd
	Cadmium	01027		Iodide	71865					Chlorine, Total 50060	mg/l
	Calcium	00916		Odor	00086					Dissolved Oxygen 00300	mg/l
X	Chromium, Total	01034		Residue, Total	00500					pH 00400	units
	Chromium VI	01032	X	Residue, Filterable (TDS)	70300		GROUP J			Temperature 00010	°C
	Copper	01042		Residue, Nonfilterable	00530		Sulfides	00745			

COMMENTS: Also analyze for purgeable halocarbons, aromatics, and pH, TOX

AF FORM JAN 81 2752

ENVIRONMENTAL SAMPLING DATA

OEHL USE ONLY

(Use this space for mechanical imprint)

SAMPLING SITE IDENTIFIER (AFR 19-7)

BASE WHERE SAMPLE COLLECTED: Sheppard AFB, TX 76311-5300

SAMPLING SITE DESCRIPTION: SW-6 @ FPTA No. 3

DATE COLLECTION BEGAN (YYMMDD): 8 5 0 2 1 5

TIME COLLECTION BEGAN (24 hour clock): 0915

COLLECTION METHOD: [X] GRAB [ ] COMPOSITE ____ HOURS

MAIL REPORTS TO (circle if changed):
- ORIGINAL: Radian Corp., P.O.Box 9948, Austin, TX 78766
- COPY 1: USAF Rgn Hospital Sheppard SGPB AFB, TX 76311-5300
- COPY 2:

SAMPLE COLLECTED BY (Name, Grade, AFSC): R.A. Belan/~~P.A. Waterreus~~ N.H. [illegible]

SIGNATURE: [illegible]

AUTOVON: (8)7364489

REASON FOR SUBMISSION: 0

A-ACCIDENT/INCIDENT R-ROUTINE/PERIODIC C-COMPLAINT N-NPDES F-FOLLOWUP/CLEANUP O-OTHER (specify) IRP

BASE SAMPLE NUMBER: G S 8 5 0 0 0 5

OEHL PID:

ANALYSES REQUESTED (check appropriate blocks)

	GROUP A			Hardness	00900		Residue, Settleable	50086		GROUP T	
	Ammonia	00610		Iron	01045		Residue, Volatile	00505		Bromoform	32104
	Chemical Oxygen Demand	00340	X	Lead	01051		Silica	00955		Bromodichloromethane	32101
	Kjeldahl Nitrogen	00625		Magnesium	00927		Specific Conductance	00095		Carbon Tetrachloride	32102
	Nitrate	00620		Manganese	01055		Sulfate	00945		Chloroform	32106
	Nitrite	00615	X	Mercury	71900		Sulfite	00740		Chloromethane	34418
X	Oil & Grease	00560		Nickel	01067		Surfactants -MBAS	38260		Dibromochloromethane	32105
X	Organic Carbon	00680		Potassium	00937		Turbidity	00076		Methylene Chloride	34423
	Orthophosphate	00671		Selenium	01147					Tetrachloroethylene	34475
	Phosphorus, Total	00665		Silver	01077					1,1,1-Trichloroethane	34506
				Sodium	00929		GROUP H			Trichloroethylene	39180
	GROUP D			Thallium	01059		BHC Isomers	39340		Trihalomethanes	82080
	Cyanide, Total	00720		Zinc	01092		Chlordane	39350		PCBs	39516
	Cyanide, Free	00722					DDT Isomers	39370			
							Dieldrin	39380			
	GROUP E			GROUP G			Endrin	39390			
X	Phenols	32730		Acidity, Total	70508		Heptachlor	39410			
				Alkalinity, Total	00410		Heptachlor Epoxide	39420			
	GROUP F			Alkalinity, Bicarbonate	00425		Lindane	39782			
	Antimony	01097		Bromide	71870		Methoxychlor	39480			
	Arsenic	01002		Carbon Dioxide	00405		Toxaphene	39400			
	Barium	01007		Chloride	00940		2,4-D	39730			
	Beryllium	01012		Color	00080		2,4,5-TP-Silvex	39760			
	Boron	01022		Fluoride	00951		2,4,5-T	39740			
	Cadmium	01027		Iodide	71865						
	Calcium	00916		Odor	00086						
X	Chromium, Total	01034		Residue, Total	00500						
	Chromium VI	01032	X	Residue, Filterable (TDS)	70300		GROUP J				
	Copper	01042		Residue, Nonfilterable	00530		Sulfides	00745			

ON SITE ANALYSES

Parameter		Value
Flow	50050	mgd
Chlorine, Total	50060	mg/l
Dissolved Oxygen	00300	mg/l
pH	00400	units
Temperature	00010	°C

COMMENTS: Also analyze for purgeable halocarbons, aromatics, and pH, TOX

AF FORM JAN 81 2752

C-5

ENVIRONMENTAL SAMPLING DATA

(Use this space for mechanical imprint)

OEHL USE ONLY

SAMPLING SITE IDENTIFIER (AFR 19-7)

BASE WHERE SAMPLE COLLECTED: SHEPPARD AFB TX

SAMPLING SITE DESCRIPTION: C-5 @ FPTA No. 1

DATE COLLECTION BEGAN (YYMMDD): 850215

TIME COLLECTION BEGAN (24 hour clock): ~1530

COLLECTION METHOD: [X] GRAB [ ] COMPOSITE ____ HOURS

MAIL REPORTS TO (circle if changed)
- ORIGINAL: RADIAN CORP, P.O. BOX 9948, Austin, TX 78766
- COPY 1: USAF Rgn Hosp, SHEPPARD SGPB AFB, TX 76311-5300
- COPY 2:

SAMPLE COLLECTED BY (Name, Grade, AFSC): R. ABELAR / NH Lunt

SIGNATURE: R.A. Bel

AUTOVON: (8) 736-4P9

REASON FOR SUBMISSION: O

A-ACCIDENT/INCIDENT
R-ROUTINE/PERIODIC
C-COMPLAINT
N-NPDES
F-FOLLOWUP/CLEANUP
O-OTHER (specify): IRP

BASE SAMPLE NUMBER: 85 85 0090

OEHL PID:

ANALYSES REQUESTED (check appropriate blocks)

	GROUP A		Hardness	00900		Residue, Settleable	50086		GROUP T
	Ammonia	00610	Iron	01045		Residue, Volatile	00505		Bromoform 32104
	Chemical Oxygen Demand	00340	Lead	01051		Silica	00955		Bromodichloromethane 32101
	Kjeldahl Nitrogen	00625	Magnesium	00927		Specific Conductance	00095		Carbon Tetrachloride 32102
	Nitrate	00620	Manganese	01055		Sulfate	00945		Chloroform 32106
	Nitrite	00615	Mercury	71900		Sulfite	00740		Chloromethane 34418
	Oil & Grease	00560	Nickel	01067		Surfactants -MBAS	38260		Dibromochloromethane 32105
	Organic Carbon	00680	Potassium	00937		Turbidity	00076		Methylene Chloride 34423
	Orthophosphate	00671	Selenium	01147					Tetrachloroethylene 34475
	Phosphorus, Total	00665	Silver	01077					1,1,1-Trichloroethane 34506
			Sodium	00929		GROUP H			Trichloroethylene 39180
	GROUP D		Thallium	01059		BHC Isomers	39340		Trihalomethanes 82080
	Cyanide, Total	00720	Zinc	01092		Chlordane	39350		PCBs 39516
	Cyanide, Free	00722				DDT Isomers	39370		
						Dieldrin	39380		
	GROUP E		GROUP G			Endrin	39390		
	Phenols	32730	Acidity, Total	70508		Heptachlor	39410		
			Alkalinity, Total	00410		Heptachlor Epoxide	39420		
	GROUP F		Alkalinity, Bicarbonate	00425		Lindane	39782		
	Antimony	01097	Bromide	71870		Methoxychlor	39480		
	Arsenic	01002	Carbon Dioxide	00405		Toxaphene	39400		
	Barium	01007	Chloride	00940		2,4-D	39730		
	Beryllium	01012	Color	00080		2,4,5-TP-Silvex	39760		
	Boron	01022	Fluoride	00951		2,4,5-T	39740		
	Cadmium	01027	Iodide	71865					
	Calcium	00916	Odor	00086					
	Chromium, Total	01034	Residue, Total	00500					
	Chromium VI	01032	Residue, Filterable (TDS)	70300		GROUP J			
	Copper	01042	Residue, Nonfilterable	00530		Sulfides	00745		

ON SITE ANALYSES	
Parameter	Value
Flow 50050	mgd
Chlorine, Total 50060	mg/l
Dissolved Oxygen 00300	mg/l
pH 00400	units
Temperature 00010	°C

COMMENTS: Analyze for EP Toxicity + Ignitability

AF FORM JAN 81 2752

Form.8

IRP FIELD WATER SAMPLING FORM

RADIAN CORPORATION
(DISCLAIMER: Data en+-
form was obta:-
sampl:-
- Field Sampling Notes Accepted 3/6/85
..uc represent
..sessment and maybe
..u revision at any time.)

SAMP.POINT: MW-11
LOCATION: Golf Course Test 1

PROJECT: SHEPPARD AFB
214-114-03
CONTRACT: F33615-84-D-4402,
003

Sampler RAB/PAW

Sheet 1 of 1

Date/time	Discharge (GPM/Bail(s)) Note SWL start/ End. (1)	Field Measurements Temp. (2)	Conduc- tivity. (3)	pH	Remarks (Note bailer capacity)
	FIRST SAMPLING				0.32
02/5/85 Monday	SWL = 6.15' BMP (5 + 1.15) (EL)				
9:23 am	START BAILING				
	5 Bails	7°C	2,000	7.4	CLEAR
	10 "	9°C	1,900	7.0	CLOUDY
	15 "	10°C	1,800	6.6	CLOUDY - INCREASE OVER LAST
	20 "	10°C	1,800	6.6	CLOUDY " " "
	25 "	11°C	1,800	6.6	CLOUDY decrease over last
	30 "	13°C	1,800	6.6	CLOUDY " " "
	33 "	13°C	1,800	6.6	CLOUDY SAME AS LAST
9:40	END BAILING				
1045	Collect Sample.	-	-	-	Sample No. 25001I.
1120	End sample collection.				Used re-sampler.

Note: (1) Depth measurements made by Steel Tape (ST); Rope & Bailer (R/B) and Electric Line (EL).
(2) Temperature in degrees celsius.
(3) Conductivity in micromhos/centimeter at field temperature.

Form.8

IRP FIELD WATER SAMPLING FORM

RADIAN CORPORATION
(DISCLAIMER: Data ... is
form was ob...
sampl... ...e-
... not represent
... assessment and maybe
... to revision at any time.)

- Field Sampling Notes Accepted 3/6/85

Sampler RAB/PAW

SAMP.POINT: MW-12
LOCATION: EPTA No 1

PROJECT: SHEPPARD AFB
214-114-03
CONTRACT: F33615-84-D-4402, 003

Sheet 1 of 1

Date/time	Discharge (GPM/Bail(s)) Note SWL start/ End.(1)	Field Measurements Temp. (2)	Conductivity. (3)	pH	Remarks (Note bailer capacity)
	FIRST SAMPLING				
2/5/85					
TUESDAY					
1140	WL=2.90 BMP(5-2...) (EL)				
1145	Begin bailing				
	5 Bails	13°C	3000	7.2	CLOUDY TAN SILTY.
	10	12°C	2400	6.8	CLOUDY Tan SILTY.
	15	12°C	2000	6.8	" " "
	20	12°C	1800	6.8	" " "
	25	12°C	1500	6.6	" " "
	30	13°C	1400	6.4	" " "
	35	13°C	1200	6.4	" " "
	40	15°C	1200	6.4	" " "
1223	WL=19.03 (20-0.97)	BMP (EL)			
	45 Bail	15.5°C	1100	6.0	" " "
	50	15.5°C	1150	6.0	
	55	16.0	1150	6.0	
~1240	End bailing				moved to MW-13 for bailing.
1605	Collect sampler				[illegible] 850002.
1624	End sample coll...				Used to sampler:

Note: (1) Depth measurements made by Steel Tape (ST); Rope & Bailer (R/B) and Electric Line (EL).
(2) Temperature in degrees celsius.
(3) Conductivity in micromhos/centimeter at field temperature.

Form.8

IRP FIELD WATER SAMPLING FORM

RADIAN CORPORATION
(DISCLAIMER: Data ent- ...is
form was obtai-
sampli-
...ot represent
...ssessment and maybe
... revision at any time.)

- Field Sampling Notes Accepted 3/6/85

...mpler RAB/PAW

SAMP.POINT: MW-13
LOCATION: FPTA #1

PROJECT: SHEPPARD AFB
214-114-03
CONTRACT: F33615-84-D-4402, 003

Sheet 1 of 1

Date/time	Discharge (GPM/Bail(s)) Note SWL start/ End.(1)	Field Measurements Temp. (2)	Conductivity. (3)	pH	Remarks (Note bailer capacity)
	FIRST SAMPLING				
2/5/85 1255	SWL=2.60 BMP(ST)				Bail capacity 0.284 gal.
	5 Bails	13°C	1700	5.8	a little cloudy tan.
	10 Bails	13	1700	5.8	cloudier than above tan.
	15	13	1750	5.8	" " " Silty.
	20	13	1700	5.8	" " " Silty.
	25	13	1750	5.8	" " " Silty.
	30	13	1800	5.8	" " " Silty.
1316	SWL (5+1.82) 6.72 BMP (EL)				Moved to MW-14 to bail.
1635	Coll. [illegible]				Sample No. 8[illegible]003.
1652	End Sampling				Used [illegible] Sampler.

Note: (1) Depth measurements made by Steel Tape (ST); Rope & Bailer (R/B) and Electric Line (EL).
(2) Temperature in degrees celsius.
(3) Conductivity in micromhos/centimeter at field temperature.

Form.8

IRP FIELD WATER SAMPLING FORM

RADIAN CORPORATION
(DISCLAIMER: Data - ... is
form was ...
- Field Sampling Notes Accepted 3/6/85
... not represent
...al assessment and maybe
...ject to revision at any time.)
Sampler RAB/PAN

SAMP.POINT: MW-14
LOCATION: FPTA No. 1

PROJECT: SHEPPARD AFB
214-114-03
CONTRACT: F33615-84-D-4402,
003
Sheet 1 of 1

Date/time	Discharge (GPM/Bail(s)) Note SWL start/ End. (1)	Field Measurements Temp. (2)	Conductivity. (3)	pH	Remarks (Note bailer capacity)
	FIRST SAMPLING				0.28 [illegible]
2/5/85					Extreme cold [illegible]
1337	-	-	-	-	Water [illegible]
					[illegible]
					[illegible]
1342	SWL=1.26 BMP (ST)				plastic cover.
	5	10°C	2500	5.6	cloudy tan silty
	10	12°C	2600	5.6	" " "
	15	12°C	2600	5.8	" " "
	20	12	2600	5.8	" " "
	25	12	2600	5.8	" " "
	30	12	2600	5.8	
1405	WL = 5.36 BMP (EL) (5+0.36)				Went to MW-13 to begin take samples.
1700	Returned to MW-14.				Water in flush [illegible]
1710	Begin Sampling				[illegible]
1739	End Sampling.				[illegible] soft + wet. Sample No. 8500[illegible]4. [illegible] used [illegible] samples.
					Extremely cold [illegible] and winds

Note: (1) Depth measurements made by Steel Tape (ST); Rope & Bailer (R/B) and Electric Line (EL).
(2) Temperature in degrees celsius.
(3) Conductivity in micromhos/centimeter at field temperature.

Form.8

IRP FIELD WATER SAMPLING FORM

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Field Sampling Notes Accepted 3/6/85
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Sampler PAW / RAB

SAMP.POINT: MW-8
LOCATION: FPTA #3
PROJECT: SHEPPARD AFB
214-114-03
CONTRACT: F33615-84-D-4402, 003
Sheet 1 of 2

Date/time	Discharge (GPM/Bail(s)) Note SWL start/ End. (1)	Field Measurements Temp. (2)	Conductivity. (3)	pH	Remarks (Note bailer capacity)
		First [illegible]			0.28 [illegible]
2/6/85 MP = 2.8' ABOVE GROUND Top of 2" PVC casing.					EXTREMELY COLD [illegible] (ARTIC AIR MASS) and windy, difficult to do field work.
Diameter of protective casing 3.5"					
1058	SWL=8.77 (10 - 1.23') BMP(ST)				
	5 Bails	10°C	>10,000	7.0	Clear.
	10	11°C	>10,000	6.6	red tint silt.
	15	12°C	>10,000	6.6	darker red more silt.
	20	14°C	>10,000	6.4	" " "
	25	15°C	>10,000	6.4	" " "
	30	15°C	>10,000	6.4	" " "
	35	16°C	>10,000	6.4	" " "
	40	14	>[illegible]	6.0	from 30 → 35 bails we had half bails.
1130	45	16	>10,000	6.2	
	50	17	>[illegible]	6.2	
WL=0.5' off Bottom of well					Move to MW-10 to bail.
1730	SWL=11.00 (10 + 1.00) BMP (ST)				
1741	40				Clear except last, [illegible]
					[illegible]
					Move to MW-10.

Note: (1) Depth measurements made by Steel Tape (ST); Rope & Bailer (R/B) and Electric Line (EL).
(2) Temperature in degrees celsius.
(3) Conductivity in micromhos/centimeter at field temperature.

Form.8

IRP FIELD WATER SAMPLING FORM

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Field Sampling Notes Accepted 3/6/85

SAMP.POINT: MW-4
LOCATION: LANDFILL #3

PROJECT: SHEPPARD AFB 214-114-03
CONTRACT: F33615-84-D-4402, 003

Sampler RAB / PAW

Sheet 1 of 1

Date/time	Discharge (GPM/Bail(s)) Note SWL start/ End. (1)	Field Measurements Temp. (2)	Conductivity. (3)	pH	Remarks (Note bailer capacity)
2/6/85					Extremely cold ... (Brtic air mass) difficult to conduct field activities
MP 2.1' 4GL					
SWL 5 + .86	= 5.86 BMP (EL)				
START 2150 =	1450				
	5 BAILS	12	7,000	6.6	Cloudy Bail with
END 1505	10	15	6,[illegible]	7.2	" " " [illegible]
START 1519 END 1524	13 Bails				[illegible]
START 1536 END 1540	15 Bails	16	7,600	6.8	[illegible]
START 1550 END 1552	2 Bails total 17				
START 1558 END 1602	3 Bails total 20	15	8,600	7.4	
2/7/85 0855	SWL 5 + 0.98 = 5.98' BMP (EL)	9	7,200	6.2	Extremely cold wx, same as 2/6/85
0945	End sampling				Sample #[illegible] used R-sampler.

Note: (1) Depth measurements made by Steel Tape (ST); Rope & Bailer (R/B) and Electric Line (EL).
(2) Temperature in degrees celsius.
(3) Conductivity in micromhos/centimeter at field temperature.

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IRP FIELD WATER SAMPLING FORM

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Field Sampling Notes Accepted 3/6/85

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SAMP.POINT: MW-7
LOCATION: FPTA No 3

PROJECT: SHEPPARD AFB
214-114-03
CONTRACT: F33615-84-D-4402,
003
Sheet 2 of 2

Date/time	Discharge (GPM/Bail(s)) Note SWL start/ End.(1)	Field Measurements Temp. (2)	Conduc- tivity. (3)	pH	Remarks (Note bailer capacity)
	FIRST SAMPLING				0.28 gallon
2/7/85 (TH)					
1325	SWL: 10.10 BMP (10+0.10) (ST)				Prepary To sample.
1335	SAMPLE @ 1335	13	>10,000	6.2	
1355	End sampling				Sample No. 850009. Used k-samples.

Note: (1) Depth measurements made by Steel Tape (ST); Rope & Bailer (R/B) and Electric Line (EL).
(2) Temperature in degrees celsius.
(3) Conductivity in micromhos/centimeter at field temperature.

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IRP FIELD WATER SAMPLING FORM

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Field Sampling Notes Accepted 3/6/85

SAMP.POINT: MW-10
LOCATION: FPTA No3

PROJECT: SHEPPARD AFB
214-114-03
CONTRACT: F33615-84-D-4402,
003
Sheet 1 of 1

Date/time	Discharge (GPM/Bail(s)) Note SWL start/ End. (1)	Field Measurements Temp. (2)	Conductivity. (3)	pH	Remarks (Note bailer capacity)
2/6/85 WED					Weather extremely [illegible]
1150	SWL=9.86 (10-0.14) BMP				
	5 Bails	15°C	4150	7.2	Cloudy, TAN slight foam
	10 Bails	16°C	3600	7.2	very cloudy, tan, sandy.
1205	[illegible] (R/B)				Moved to MW-9 to bail.
2/6/85 ~1810	SWL (25+2.67)=27.67 BMP (EL)				
1814	12 Bails	15	4000	7.2	
1825	[illegible]				went to MW-9.
2/7/85 1515	SWL=18.57 (20-1.43) BMP (EL)				
1525	Begin sampling	15	3600	7.2	slight foam. Sample #850007.
1600	End sampling.				Used h-samples.

Note: (1) Depth measurements made by Steel Tape (ST); Rope & Bailer (R/B) and Electric Line (EL).
(2) Temperature in degrees celsius.
(3) Conductivity in micromhos/centimeter at field temperature.

Form.8

IRP FIELD WATER SAMPLING FORM

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- Field Sampling Notes Accepted 3/6/85

SAMP.POINT: MW-9
LOCATION: FPTA #3

PROJECT: SHEPPARD AFB
214-114-03
CONTRACT: F33615-84-D-4402,
003
Sheet 1 of 1

Date/time	Discharge (GPM/Bail(s)) Note SWL start/ End. (1)	Field Measurements Temp. (2)	Conductivity. (3)	pH	Remarks (Note bailer capacity)
		FIRST	SAMPLE		0.[illegible] gal.
6/6/85					
1225	SWL: 9.23' BMP (10-0.77) (EL)				
	5 Bails	16°C	2,400	7.2	Cloudy reddish tan color
	10	17°C	2,500	7.0	very cloudy dark tan sandy [illegible] Hydrocarbon odor
1240	end bailing, W.L. [illegible] off bottom (R/B)				Took 10 Bails to Bottom Break left [illegible] area to allow [illegible] to [illegible] MW-4.
8/6/85	SWL (30+1.3) = 31.3 BMP (EL)				
1840 1845	12 Bail	17	2,600	7.0	—
7/7/85					
1610	SWL: 19.32 BMP (20-0.68) (EL)	15	2,[illegible]	6.8	[illegible]
1620	Begin Sampling				Used K-Samples.
~1700	[illegible] activities.				

Note: (1) Depth measurements made by Steel Tape (ST); Rope & Bailer (R/B) and Electric Line (EL).
(2) Temperature in degrees celsius.
(3) Conductivity in micromhos/centimeter at field temperature.

Form.5

IRP FIELD WATER SAMPLING FORM

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[illegible] R.A. BELAN

- Field Sampling Notes Accepted 3/6/85 -

SAMP.POINT: SW-1
LOCATION: Waste Pits

PROJECT: SHEPPARD AFB
214-114-03
CONTRACT: F33615-84-D-4402, 003
Sheet 1 of —

Date/time	Discharge (GPM ~~(Bail(c))~~ Note SWL start/ End.	Field Measurements Temp. (1)	Conductivity. (2)	pH	Remarks (Note bailer capacity)
12/11/84					
1640-1700	Bail [illegible] (<50GPM)	14.2	1,900	6.4	Creek flow [illegible] underground culvert near Waste Pits collected a sample for 1st round of sampling. [illegible] No. [illegible]
~1720					End of Sampling

Note: (1) Temperature in degrees celsius.
(2) Conductivity in michromhos/centimeter.

Form.5

IRP FIELD WATER SAMPLING FORM

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- Field Sampling Notes Accepted 3/6/85 -

SAMP.POINT: SW-2
LOCATION: Landfill No. 3

PROJECT: SHEPPARD AFB
214-114-03
CONTRACT: F33615-84-D-4402, 003
Sheet 1 of 1

Date/time	Discharge (GPM/~~Bail(s)~~) Note SWL start/ End.	Field Measurements Temp. (1)	Conductivity. (2)	pH	Remarks (Note bailer capacity)
12/11/84					
1815-1830	Base stream flow (< 1 GPM)		—		Sample No. 840191
1859	—	15	1,100	7.0	
~1905					End of Sampling.

Note: (1) Temperature in degrees celsius.
(2) Conductivity in michromhos/centimeter.

Form.5

IRP FIELD WATER SAMPLING FORM

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R.A. BELAN

- Field Sampling Notes Accepted 3/6/85 -

SAMP.POINT: SW-5
LOCATION: LANDFILL No. 3
Vic. MW-7
PROJECT: SHEPPARD AFB
214-114-03
CONTRACT: F33615-84-D-4402,
003
Sheet 1 of 1

Date/time	Discharge (GPM/~~Bail(s)~~) Note SWL start/ End.	Field Measurements Temp. (1)	Conductivity. (2)	pH	Remarks (Note bailer capacity)
12/11/84 1913 ~1930	Base stream flow.	14.5	900	3.1	Field sampled only. Clear. End of Sampling
12/12/84 1145-1152 ~1200	Base stream flow (~20 GPM)	14.0	1,000	9.0	Clear. Sample No. 840192. End of Sampling.

Note: (1) Temperature in degrees celsius.
(2) Conductivity in michromhos/centimeter.

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IRP FIELD WATER SAMPLING FORM

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- Field Sampling Notes Accepted 3/6/85 -

SAMP.POINT: SW-6
LOCATION: FPTA No. 3
AT EVAPOR. POND
PROJECT: SHEPPARD AFB
214-114-03
CONTRACT: F33615-84-D-4402,
003
Sheet 1 of 1

...ce/time	Discharge ~~(GPM/Bail(s))~~ Note SWL start/ End.	Field Measurements Temp. (1)	Conduc- tivity. (2)	pH	Remarks (Note bailer capacity)
12/12/84					
1308-	Pond Water	15.2	2,050	8.9	Water murky
1321	(no movement)				light yellow, slight
					frothing. Sample
					No. 340193.
~1330					End of Sampling.

Note: (1) Temperature in degrees celsius.
(2) Conductivity in michromhos/centimeter.

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IRP FIELD WATER SAMPLING FORM

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- Field Sampling Notes Accepted 3/6/85 -

SAMP.POINT: SW-7
LOCATION: EPTA 1 AREA

PROJECT: SHEPPARD AFB
214-114-03
CONTRACT: F33615-84-D-4402, 003
Sheet 1 of

Date/time	Discharge (GPM/~~Bail(s)~~) Note SWL start/ End.	Field Measurements Temp. (1)	Conductivity. (2)	pH	Remarks (Note bailer capacity)
12/12/84					
1500	WL: 7.35' BMP				
1512	Base stream flow (<5 GPM).	15.2	3,250	8.1	Clear. Sample No. 840194.
~1525					End of Sampling.

Note: (1) Temperature in degrees celsius.
(2) Conductivity in michromhos/centimeter.

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IRP FIELD WATER SAMPLING FORM

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- Field Sampling Notes Accepted 3/6/85 -

SAMP.POINT: SW-8
LOCATION: FPTA 1 AREA

PROJECT: SHEPPARD AFB
214-114-03
CONTRACT: F33615-84-D-4402,
003
Sheet 1 of

Date/time	Discharge (GPM/~~Bail(s)~~) Note SWL start/ End.	Field Measurements Temp. (1)	Conductivity. (2)	pH	Remarks (Note bailer capacity)
12/12/84					
1534-	Pond Water				
~1545	flow (<1GPM).	14.0	1,050	9.3	Cloudy. Sample
					No. 840195.
~1550	WL: 4.57' BMP				End of Sampling.

Note: (1) Temperature in degrees celsius.
(2) Conductivity in michromhos/centimeter.

Form.5

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R.A. BELAN

- Field Sampling Notes Accepted 3/6/85 -

SAMP.POINT: SW-9
LOCATION: EPTA 1 AREA

PROJECT: SHEPPARD AFB
214-114-03
CONTRACT: F33615-84-D-4402, 003
Sheet 1 of [illegible]

Date/time	Discharge (GPM/Bail(s)) Note SWL start/ End.	Field Measurements Temp. (1)	Conduc- tivity. (2)	pH	Remarks (Note bailer capacity)
12/12/84					
1620-	WL: 5.08' BMP				Clear. Sample
1630		18.5	1,150	7.6	No. 840196.
~1635					End of Sampling

Note: (1) Temperature in degrees celsius.
(2) Conductivity in michromhos/centimeter.

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IRP FIELD WATER SAMPLING FORM

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-Field Sampling Notes Accepted 3/6/85

SAMP.POINT: SU-7
LOCATION: FPTA No 2

PROJECT: SHEPPARD AFB
214-114-03
CONTRACT: F33615-84-D-4402,
003
Sheet 1 of 1

Date/time	Discharge (GPM/Bail(s)) Note SWL start/ End.(1)	Field Measurements Temp. (2)	Conductivity. (3)	pH	Remarks (Note bailer capacity)
	Second Sampling				N/A
2/12/85 Tuesday 1715	W.L = 7.36' (BMP) (ST)				
3 Feb 85 0845	—	3°C	3,000	5.2	Water, clear Sample # 850021,

Note: (1) Depth measurements made by Steel Tape (ST); Rope & Bailer (R/B) and Electric Line (EL).
(2) Temperature in degrees celsius.
(3) Conductivity in micromhos/centimeter at field temperature.

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-Field Sampling Notes Accepted 3/6/85

Sampler NFC/RAB

SAMP.POINT: SW-8
LOCATION: FPTA No. 1

PROJECT: SHEPPARD AFB
214-114-03
CONTRACT: F33615-84-D-4402,
003
Sheet 1 of 1

Date/time	Discharge (GPM/Bail(s)) Note SWL start/ End.(1)	Field Measurements Temp. (2)	Conductivity. (3)	pH	Remarks (Note bailer capacity)
	Second Sampling				N/A
2/12/85 Tuesd. 1719	W.L = 4.59' DMP(ST)				
13 Feb 85 Wed 0915	—	5°C	1,400	5.4	Slightly cloudy, Sample # 850073.

Note: (1) Depth measurements made by Steel Tape (ST); Rope & Bailer (R/B) and Electric Line (EL).
(2) Temperature in degrees celsius.
(3) Conductivity in micromhos/centimeter at field temperature.

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NHL/RAB

Field Sampling Notes Accepted 3/6/85

SAMP.POINT: SG-9
LOCATION: FPTA No. 1

PROJECT: SHEPPARD AFB
214-114-03
CONTRACT: F33615-84-D-4402,
003
Sheet 1 of 7

Date/time	Discharge (GPM/Bail(s)) Note SWL start/ End.(1)	Field Measurements Temp. (2)	Conductivity. (3)	pH	Remarks (Note bailer capacity)
		SECOND SAMPLING			
2/12/85 Tuesd. 1725	WL = 5.09' BMP (ST)				
13 Feb 85 Wed 0940	—	11°C	1,300	5.1	Sample # 850074 Clear, slight froth.

Note: (1) Depth measurements made by Steel Tape (ST); Rope & Bailer (R/B) and Electric Line (EL).
(2) Temperature in degrees celsius.
(3) Conductivity in micromhos/centimeter at field temperature.

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Sampler RAB/NHC

SAMP.POINT: SW-10
LOCATION: FPTA No. 1

PROJECT: SHEPPARD AFB
214-114-03
CONTRACT: F33615-84-D-4402,
003
Sheet 1 of 1

Date/time	Discharge (GPM/Bail(s)) Note SWL start/ End.(1)	Field Measurements Temp. (2)	Conduc- tivity. (3)	pH	Remarks (Note bailer capacity)
	SECOND SAMPLING				N/A
2/13/85 wed					Sample for field Comparisons
1340	—	7	220	6.8	Clear

Note: (1) Depth measurements made by Steel Tape (ST); Rope & Bailer (R/B) and Electric Line (EL).
(2) Temperature in degrees celsius.
(3) Conductivity in micromhos/centimeter at field temperature.

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Field Sampling Notes Accepted 3/6/85

SAMP.POINT: MW-11
LOCATION: Golf Course FPTA 1
PROJECT: SHEPPARD AFB 214-114-03
CONTRACT: F33615-84-D-4402, 003
Sheet 1 of 1

Date/time	Discharge (GPM/Bail(s)) Note SWL start/ End.(1)	Field Measurements Temp. (2)	Conductivity. (3)	pH	Remarks (Note bailer capacity)
		SECOND SAMLPLING			0.28 gpd
12 Feb 85 Tues	SWL = 6.29 BMP (5 + 1.29) (EL)				Sand inside flush box 1.1 below top of box, 0.5 ft BMP.
1140	5 bails	17°C	660	6.3	Cloudy, brown.
1144	10 bails	17°C	740	6.4	Very cloudy, brown.
1147	15 bails	18°C	740	6.5	" " " silt.
1153	20 bails	16°C	810	6.4	Much clearer than last
1200	10 - half bails, bailing off bottom (25 total)	17°C	810	6.1	Same as last bailing. (cloudy, brown)
1208	15 - third bails bailing off btm (30 total bails)	17°C	800	6.1	" " " "
13 Feb 85 Wed					
1400	SWL = 6.12 BMP (EL) (5+1.12) Collect Sample.	17 °C	790	6.5	Sample # 850075. Used K-sampler.

Note: (1) Depth measurements made by Steel Tape (ST); Rope & Bailer (R/B) and Electric Line (EL).
(2) Temperature in degrees celsius.
(3) Conductivity in micromhos/centimeter at field temperature.

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IRP FIELD WATER SAMPLING FORM

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- Field Sampling Notes Accepted 3/6/85

Sampler RAD/NHL

SAMP.POINT: MW-12
LOCATION: Gulf Cr - FPTA#1
PROJECT: SHEPPARD AFB 214-114-03
CONTRACT: F33615-84-D-4402, 003
Sheet 1 of 2

Date/time	Discharge (GPM/Bail(s)) Note SWL start/ End.(1)	Field Measurements Temp. (2)	Conductivity. (3)	pH	Remarks (Note bailer capacity)
	SECOND SAMPLING				0.28 gal
12 Feb 85 Tues	SWL = 1.61 BMP (ST) Top of box to top of sand = 0.9' in box.				Weather cool & mild.
1235	5 bails	15°C	1,200	5.4	Slightly cloudy.
1237	10 bails	16°C	1,200	5.5	Slight increase in cloudiness
1241	15 bails	17°C	1,200	5.7	" " " "
1243	20 bails	17°C	1,100	5.9	Same as last.
1246	25 bails	17°C	1,100	5.9	" " "
1248	30 bails	17°C	1,200	6.0	" " "
1250	35 bails	17°C	1,200	6.2	" " "
1254	40 bails	17°C	1,100	6.2	" " "
13 Feb 85 Wed. 1445	SWL = 1.58 BMP (ST) Collect sample.	13°C	1,200	6.2	Sample # 850076 Clear. Used K-sampler.

Note: (1) Depth measurements made by Steel Tape (ST); Rope & Bailer (R/B) and Electric Line (EL).
(2) Temperature in degrees celsius.
(3) Conductivity in micromhos/centimeter at field temperature.

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IRP FIELD WATER SAMPLING FORM

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- Field Sampling Notes Accepted 3/6/85 -

Sampler RAB/NHL

SAMP.POINT: MW-13
LOCATION: FPTA No. 1

PROJECT: SHEPPARD AFB
214-114-03
CONTRACT: F33615-84-D-4402, 003

Sheet 1 of 1

Date/time	Discharge (GPM/Bail(s)) Note SWL start/ End. (1)	Field Measurements Temp. (2)	Conductivity. (3)	pH	Remarks (Note bailer capacity)
	SECOND SAMPLING				0.28 gallon
12 Feb 85 Tues	SWL = 2.03 BMP (ST)				Water in box 0.52' BMP; Sand in box 0.9' below top box.
1315	5	13	1,500	6.0	Brown, Cloudy.
1317	10	15	1,800	6.2	Slight decrease in cloudiness.
1322	15	15	1,700	6.6	Brown, cloudy again.
1325	20	15	1,800	6.8	" "
1327	25	15	1,800	6.8	" " w/some silt.
1330	30	15	1,800	6.8	" " " ".
13 Feb 85 Wed					
1515	SWL: 1.95 BMP (ST) Took sample.	13	1,700	7.8	Sample #850077, cloudy Used K-Samples.

Note: (1) Depth measurements made by Steel Tape (ST); Rope & Bailer (R/B) and Electric Line (EL).
(2) Temperature in degrees celsius.
(3) Conductivity in micromhos/centimeter at field temperature.

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IRP FIELD WATER SAMPLING FORM

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SAMP.POINT: MW-14
LOCATION: Golf Cr FPTA #1
PROJECT: SHEPPARD AFB 214-114-03
CONTRACT: F33615-84-D-4402, 003
Sheet 1 of 2

Date/time	Discharge (GPM/Bail(s)) Note SWL start/ End. (1)	Field Measurements Temp. (2)	Conductivity. (3)	pH	Remarks (Note bailer capacity)
	SECOND SAMPLING				0.28 gal
12 Feb 85 Tues	SWL = 0.43' BMP (ST)				Water in box is 0.4' below top of box. Top of sand 0.35' to top of box
1355	5 bails	13°C	2500	6.2	Cloudy, tan, silty
1357	10 bails	13°C	2600	6.2	" " "
1400	15 bails	13°C	2500	6.5	" " "
1402	20 bails	13°C	2500	6.7	Cloudy, tan, silt increases slightly
1405	25 bails	13°C	2500	6.8	Same as last
1407	30 bails	13°C	2500	6.8	Same as last
13 Feb 85 Wed 1620	SWL = 0.59' BMP (ST)	11°C	2500	6.0	Sample # 850078 Very slight cloudiness used K-Sampler.

Note: (1) Depth measurements made by Steel Tape (ST); Rope & Bailer (R/B) and Electric Line (EL).
(2) Temperature in degrees celsius.
(3) Conductivity in micromhos/centimeter at field temperature.

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SAMP.POINT: SW-1
LOCATION: Waste Pits

PROJECT: SHEPPARD AFB
214-114-03
CONTRACT: F33615-84-D-4402, 003
Sheet 1 of 1

Date/time	Discharge (GPM/Bail(s)) Note SWL start/ End.(1)	Field Measurements Temp. (2)	Conductivity. (3)	pH	Remarks (Note bailer capacity)
	SECOND SAMPLING				N/A
2/11/85					
1835	WL: 7.34 BMP(ST)				
14 Feb 1300	—	8°C	1,800	8.1	~~SW~~ Sample # 850012. Clear.

Note: (1) Depth measurements made by Steel Tape (ST); Rope & Bailer (R/B) and Electric Line (EL).
(2) Temperature in degrees celsius.
(3) Conductivity in micromhos/centimeter at field temperature.

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SAMP.POINT: MW-4
LOCATION: Landfill No.3
PROJECT: SHEPPARD AFB 214-114-03
CONTRACT: F33615-84-D-4402, 003
Sampler NHL/RAB
Sheet 1 of 2

Date/time	Discharge (GPM/Bail(s)) Note SWL start/ End. (1)	Field Measurements Temp. (2)	Conductivity. (3)	pH	Remarks (Note bailer capacity)
		SECOND SAMPLING			0.28 gal
2/11/85 Mond 1735	MP = 2.80' above ground level (ST) SWL = 5.45' BMP (EL) (5+0.45)				Weather cold and [illegible] much improved over last week.
1745	5 bails	14°C	6,600	6.0	Very red, silty, cloudy.
1755	10 bails	14°C	6,400	6.2	" " " "
1800	16 bails	15°C	6,200	6.4	" " " "
1802	20 bails	15°C	6,700	6.5	" " " "
1805	removed 3 additional bails to bottom of well.				
12 Feb 85 Tues	SWL = 5.38' (5+0.38) BMP (EL)				
0820	5 bails	12°C	6,000	5.8	Very red, silty, cloudy.
0823	10 bails	13°C	6,700	6.7	" " " "
0825	15 bails	15°C	6,800	6.4	" " " "
0827	20 bails	15°C	6,800	6.7	" " more silty
0833	25 bails	15°C	6,800	6.6	" " " " "
0836	28 bails to bottom of well.	15°C	6,700	6.4	" " " " "

Note: (1) Depth measurements made by Steel Tape (ST); Rope & Bailer (R/B) and Electric Line (EL).
(2) Temperature in degrees celsius.
(3) Conductivity in micromhos/centimeter at field temperature.

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IRP FIELD WATER SAMPLING FORM

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SAMP.POINT: MW-4
LOCATION: Landfill N-3
PROJECT: SHEPPARD AFB 214-114-03
CONTRACT: F33615-84-D-4402, 003
Sampler RETB/NHL
Sheet 2 of 2

Date/time	Discharge (GPM/Bails) Note SWL start/End. (1)	Field Measurements Temp. (2)	Conductivity. (3)	pH	Remarks (Note bailer capacity)
	CONT'd: SECOND SAMPLING				0.22 gal
12 Feb Tue	SWL = 5.29 BMP (EL) (5.00+0.29)				Water cold + clear.
1805	5 bails	15°C	6,600	6.2	Red silty, cloudy, not as red as morning sample.
1807	10 bails	15°C	6,400	6.4	Very red, silty, cloudy.
1810	15 bails	15°C	6,400	6.4	" ", increased silt, "
1813	20 bails	15°C	6,400	6.6	" " " " "
1816	25 bails	15°C	6,600	6.4	" " " " "
1820	4 bails to bottom of well.	15°C	6,600	6.1	Slight reduction in silt.
14 Feb 85 (Th) 1420	SWL = 5.42 BMP (EL)	15°C	6,200	7.2	Sample #850015 Clear to very red, silty cloudy. Used K-sampler.

Note: (1) Depth measurements made by Steel Tape (ST); Rope & Bailer (R/B) and Electric Line (EL).
(2) Temperature in degrees celsius.
(3) Conductivity in micromhos/centimeter at field temperature.

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SAMP.POINT: SW-2
LOCATION: Landfill No.3

PROJECT: SHEPPARD AFB
214-114-03
CONTRACT: F33615-84-D-4402,
003
Sheet 1 of 1

Date/time	Discharge (GPM/Bail(s)) Note SWL start/ End.(1)	Field Measurements Temp. (2)	Conductivity. (3)	pH	Remarks (Note bailer capacity)
	SECOND SAMPLING				N/A
2/11/85 hon.					
1745	SWL = 3.33' BMP(ST)				
14 Feb 85 Thurs					
1515	—	10°C	1,900	8.0	Sample # 850014.

Note: (1) Depth measurements made by Steel Tape (ST); Rope & Bailer (R/B) and Electric Line (EL).
(2) Temperature in degrees celsius.
(3) Conductivity in micromhos/centimeter at field temperature.

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SAMP.POINT: SW-3
LOCATION: Landfill No 3

PROJECT: SHEPPARD AFB
214-114-03
CONTRACT: F33615-84-D-4402,
003
Sheet 1 of 1

Date/time	Discharge (GPM/Bail(s)) Note SWL start/ End. (1)	Field Measurements Temp. (2)	Conductivity. (3)	pH	Remarks (Note bailer capacity)
					N/A
2/14/85 TH.					
1545	—	11°C	1,800	8.8	Collected for field data only.

Note: (1) Depth measurements made by Steel Tape (ST); Rope & Bailer (R/B) and Electric Line (EL).
(2) Temperature in degrees celsius.
(3) Conductivity in micromhos/centimeter at field temperature.

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SAMP.POINT: SG-4
LOCATION: Landfill No 3

PROJECT: SHEPPARD AFB
214-114-03
CONTRACT: F33615-84-D-4402, 003
Sheet 1 of 1

Date/time	Discharge (GPM/Bail(s)) Note SWL start/ End.(1)	Field Measurements Temp. (2)	Conductivity. (3)	pH	Remarks (Note bailer capacity) N/A
2/14/85 TH. 1550	—	10°C	750	8.2	Collected for field data only

Note: (1) Depth measurements made by Steel Tape (ST); Rope & Bailer (R/B) and Electric Line (EL).
(2) Temperature in degrees celsius.
(3) Conductivity in micromhos/centimeter at field temperature.

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SAMP.POINT: SW-5
LOCATION: Landfill No 3

PROJECT: SHEPPARD AFB
214-114-03
CONTRACT: F33615-84-D-4402,
003
Sheet 1 of 1

Date/time	Discharge (GPM/Bail(s)) Note SWL start/ End.(1)	Field Measurements Temp. (2)	Conductivity. (3)	pH	Remarks (Note bailer capacity)
	SECOND SAMPLING				N/A
2/11/85 Mon					
1245 (UP)	WL = 4.11' BMP (ST)				
1247 (DN)	WL = 7.96 (BMP) (ST)				
14 Feb 85 Thur 1615	—	11°C	1,800	8.0	Sample # 850016. Clear.

Note: (1) Depth measurements made by Steel Tape (ST); Rope & Bailer (R/B) and Electric Line (EL).
(2) Temperature in degrees celsius.
(3) Conductivity in micromhos/centimeter at field temperature.

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SAMP.POINT: MW-7
LOCATION: Landfill #3

PROJECT: SHEPPARD AFB
214-114-03
CONTRACT: F33615-84-D-4402,
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Sheet 1 of 1

Date/time	Discharge (GPM/Bail(s)) Note SWL start/ End. (1)	Field Measurements Temp. (2)	Conductivity. (3)	pH	Remarks (Note bailer capacity)
	Second Sampling				0.28 gal
11 Feb 85 1900	SWL=9.50' (10-0.50) BMP (EL) (MP=2.8' AGL(ST) Top of 2" PVC casing.				Weather cool + mild.
1910	5 bails	15°C	>10,000	5.6	Red, silty, cloudy.
1913	10 bails	16°C	>10,000	5.7	Very red, silty, cloudy.
1917	15 bails to bottom	16°C	>10,000	5.8	" " more silt, cloudy.
12 Feb 85	SWL=13.56 BMP (15-1.44) (EL)				
0900	5 bails	15°C	>10,000	5.6	Red, silty, cloudy
0906	10 bails	17°C	>10,000	5.8	" " "
0910	15 bails to bottom of well.	17°C	>10,000	6.2	Very red, much silt + cloudy
12 Feb Thru (cont)	SWL=17.99' BMP (15.00+2.99') (EL)				
1845	5 bails	15 °C	>10,000	5.6	Red, silty, cloudy.
1848	10 bails to bottom of well.	16 °C	>10,000	5.8	Very red, silty, cloudy.
14 Feb 85 Thru 1615	Collect sample	16°C	>10,000 -	6.1	Sample # 850017. Sampled to well bottom. Very red, silty, cloudy. used K-samples

Note: (1) Depth measurements made by Steel Tape (ST); Rope & Bailer (R/B) and Electric Line (EL).
(2) Temperature in degrees celsius.
(3) Conductivity in micromhos/centimeter at field temperature.

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IRP FIELD WATER SAMPLING FORM

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Field Sampling Notes Accepted 3/6/85

SAMP.POINT: MW-8
LOCATION: FPTA No 3

PROJECT: SHEPPARD AFB
214-114-03
CONTRACT: F33615-84-D-4402,
003

Sampler RAB/NHC

Sheet 1 of 2

Date/time	Discharge (GPM/Bail(s)) Note SWL start/ End. (1)	Field Measurements Temp. (2)	Conductivity. (3)	pH	Remarks (Note bailer capacity)
	SECOND SAMPLING				0.28 gal
2/11/85 Monday					Weather much better than last week.
1425	SWL=9.47 (10-0.53) BMP (EL)				
1440	5 bails	16°C	>10,000	6.4	4 bails clear, slightly
1450	10 "	14°C	>10,000	6.4	cloudy on 5th bail
1455	15 bails	15°C	>10,000	6.4	10 bails - cloudy, murky red silt
1458	20 bails	18°C	>10,000	6.4	15 bails - darker red, more sil
1503	25 bails to near bottom.	17°C	>10,000	6.4	20 bails - " " " " 25 bails " " " "
2 Feb 85 Tues	SWL=9.66 BMP(EL) (10.00 - 0.34)				
0935	5 bails	16°C	>10,000	6.2	4 bails clear, slightly cloud on 5th bail.
0940	10 bails	18°C	>10,000	6.4	Slight cloudy, red, murky
0944	15 bails	18°C	>10,000	6.5	Cloudy, murky red.
0947	20 bails	18°C	>10,000	6.5	" " darker red
0950	25 bails	18°C	>10,000	6.7	" , silty, " "
0954	30 bails to near bottom of well.	17°C	>10,000	7.0	" " " "

Note: (1) Depth measurements made by Steel Tape (ST); Rope & Bailer (R/B) and Electric Line (EL).
(2) Temperature in degrees celsius.
(3) Conductivity in micromhos/centimeter at field temperature.

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IRP FIELD WATER SAMPLING FORM

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Field Sampling Notes Accepted 3/6/85

SAMP.POINT: MW-8
LOCATION: FPTA No. 3
PROJECT: SHEPPARD AFB 214-114-03
CONTRACT: F33615-84-D-4402, 003
Sheet 2 of 2

Date/time	Discharge (GPM/Bail(s)) Note SWL start/ End. (1)	Field Measurements Temp. (2)	Conductivity. (3)	pH	Remarks (Note bailer capacity)
	SECOND SAMPLING (cont'd)				0.28 gal
13 Feb 85 Wed	SWL = 9.43' BMP (EL) (10-0.57)				
1604	5 bails	17°C	>10,000	6.4	Slightly cloudy.
1606	10 bails	17°C	>10,000	6.4	" "
1609	15 bails	18°C	>10,000	6.6	Red silty, cloudy.
1611	20 bails	18°C	>10,000	7.7	Increased red silt.
1615	25 bails hitting bottom	18°C	>10,000	8.0	Very silty (red silt).
1619	30 bails off bottom & well.	18°C	>10,000	8.0	Very silty (red silt
14 Feb Thurs 1720	collect sample.	16°C	>10,000	6.0	Sample # 850018. Used K-samplers.

Note: (1) Depth measurements made by Steel Tape (ST); Rope & Bailer (R/B) and Electric Line (EL).
(2) Temperature in degrees celsius.
(3) Conductivity in micromhos/centimeter at field temperature.

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SAMP.POINT: MW-10
LOCATION: FPTA No 3

PROJECT: SHEPPARD AFB
214-114-03
CONTRACT: F33615-84-D-4402, 003
Sheet 1 of 1

Date/time	Discharge (GPM/Bail(s)) Note SWL start/ End.(1)	Field Measurements Temp. (2)	Conductivity. (3)	pH	Remarks (Note bailer capacity)
		Second Sampling			0.28 gal
11 Feb 85 Mon					
1323	SWL = 9.86 (10-0.14) BMP (EL)				
1345	5 bails	17°C	3400	7.4	Slightly cloudy.
1350	9½ bails to bottom	17°C	3400	7.8	Very cloudy, tan, silty + ~~for~~ slightly foamy.
12 Feb 85 Tues	SWL = 14.04 BMP (EL) (15.00-0.96)				
1015	5 bails	17 °C	3200	6.9	Slightly cloudy little tan silt, slight foam
1020	9 bails to bottom	17 °C	2200	7.1	Slight foam, very tan + much silt/sand.
13 Feb 85 Wed	SWL = 10.57 BMP EL (10.00+0.57)				
1630	5 bails	15 °C	2800	7.6	Very slight cloudiness, slight foam
1635	10 bails to ~~bot~~ bottom of well.	17°C	3000	7.8	Very tan w/ ~~much~~ much silt, slight foam.
14 Feb 85 Thurs 1810	collect sample.	15°C	2600	6.2	Sample # 8500206 Used/k-sample

Note: (1) Depth measurements made by Steel Tape (ST); Rope & Bailer (R/B) and Electric Line (EL).
(2) Temperature in degrees celsius.
(3) Conductivity in micromhos/centimeter at field temperature.

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SAMP.POINT: MW-9
LOCATION: FPTA-No 1
PROJECT: SHEPPARD AFB 214-114-03
CONTRACT: F33615-84-D-4402, 003
Sheet 1 of 2

Date/time	Discharge (GPM/Bail(s)) Note SWL start/ End.(1)	Field Measurements Temp. (2)	Conductivity. (3)	pH	Remarks (Note bailer capacity)
		Second Sampling			Oil 8 gal
11 Feb 85					Wea Tue cold but mild
1600 hrs	SWL=9.07 (10-0.93) BMP (EL)				
1615	5 bails	17°C	2,000	6.6	- Odor of hydrocarbon Clear.
1622	10 bails	17°C	2,000	6.6	10 bails Dark Brownish red, silty, sheen on top of sample. Slight increase in hydrocarbon odor.
1625	12 bails to bottom.	16°C	2,000	5.5	12 bails - Darker red, more silt, sheen on top of sample. HC odor same as @ 10 bail.
12 Feb 85 Tue	SWL=18.88 BMP (EL) (20.00-1.12)				
1037	5 bails	18°C	1,700	7.2	Slight hydrocarbon odor, cloudy.
1043	10 bails to bottom of well.	18°C	2,000	7.4	Increase of HC odor, slight sheen on top of sample. Brownish red, silty.

Note: (1) Depth measurements made by Steel Tape (ST); Rope & Bailer (R/B) and Electric Line (EL).
(2) Temperature in degrees celsius.
(3) Conductivity in micromhos/centimeter at field temperature.

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Field Sampling Notes

SAMP.POINT: MW-9
LOCATION: FPTA-MW-3

PROJECT: SHEPPARD AFB
214-114-03
CONTRACT: F33615-84-D-4402,
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Sheet 2 of 2

Date/time	Discharge (GPM/Bail(s)) Note SWL start/ End.(1)	Field Measurements Temp. (2)	Conductivity. (3)	pH	Remarks (Note bailer capacity)
	SECOND SAMPLING (con't)				0.2 gal.
13 Feb 85 Wed	SWL = 15.38 BMP (EL) (15.00 + 0.38)				
1648	5 bails	18 °C	2,000	7.2	Slight hydrocarbon odor cloudy.
1655	10 bails to bottom of well	18 °C	2,000	7.5	Very brown/red silt HC odor, slight sheen on top of sample.
15 Feb Friday 0830	—	15 °C	2,000	7.1	Sample # 850019. Used K-sampler.

Note: (1) Depth measurements made by Steel Tape (ST); Rope & Bailer (R/B) and Electric Line (EL).
(2) Temperature in degrees celsius.
(3) Conductivity in micromhos/centimeter at field temperature.

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Field Sampling Notes Accepted 3/6/85

SAMP.POINT: SW-6
LOCATION: FPTA No 3

PROJECT: SHEPPARD AFB
214-114-03
CONTRACT: F33615-84-D-4402, 003
Sheet 1 of 1

Date/time	Discharge (GPM/Bail(s)) Note SWL start/ End.(1)	Field Measurements Temp. (2)	Conductivity. (3)	pH	Remarks (Note bailer capacity)
		SECOND SAMPLING			N/A
2/14/85 1530	SWL = 2.46' BMP(ST)		—		WL noticeably up from last time measured, recent snow & rains.
15 Feb 85 0915	—	7°C	1,000	6.1	Foamy Sample # 850005.

Note: (1) Depth measurements made by Steel Tape (ST); Rope & Bailer (R/B) and Electric Line (EL).
(2) Temperature in degrees celsius.
(3) Conductivity in micromhos/centimeter at field temperature.

F

APPENDIX F

SAMPLING & ANALYTICAL PROCEDURES

- Field Investigation Quality Control Plan
- Quality Assurance/Quality Control Program for Radian Analytical Services

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SHEPPARD AFB IRP PHASE II STAGE 1

FIELD INVESTIGATION SAMPLING

QUALITY CONTROL PLAN

Prepared by:

Radian Corporation
8501 Mo-Pac Blvd.
Austin, Texas 78766

31 October 1984

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1.0 INTRODUCTION

Field investigations under the US Air Force Installation Restoration Program generate a large number of soil, waste and/or water samples for chemical analyses. The analytical results are then used to interpret the impact of a waste site upon the local hydrogeologic system(s). Since each analyses forms a foundation for interpretation, it is important that each sample is representative of a particular situation.

A quality control (QC) plan provides a guideline through which field samples can be obtained, preserved and controlled. This will ensure that the integrity of the sample is maintained and that no contamination or cross contamination will occur.

The remainder of this QC plan describes the general collection of soil, waste and water samples. Additionally methods of preservation, shipping and administrative controls are discussed.

1.1 Analytical Parameters and Sample Submission Quantities

The number of samples to be collected and the analytical parameters an shown in Table 1-1.

TABLE 1-1

Projected RAS Analytical

Requirements Sheppard AFB IRP

214-114-03

Sample Submission 1. Arrive O/A 16 November. Analyses requested by 29 November.

22 soil samples, analyze for:

- Purgeable Halocarbon and Aromatics
- Phenol
- TOC
- Oil and Grease
- TDS
- pH

0 to 5 soil samples, analyze for:

- EP Toxicity
- Ignitibility

Sample Submission 2. Arrive O/A 5 December. Analyses requested by 23 December.

7 water samples and 5 soil* samples, analyze for:

- Purgeable Halocarbon and Aromatics
- Phenol
- TOC
- Oil and Grease
- TDS
- pH

8 water samples and 1 soil* sample, analyze for:

- Purgeable Halocarbon and Aromatic
- TOC
- Oil and Grease
- TDS
- pH
- Lead
- Chromium
- Mercury

*The soil samples listed in Sample Submissions 2 and 3 are scheduled to be taken from stream and creek beds assuming the creeks and streams are dry. In the event any or all creeks or streams contain water, a water sample will be substituted for a soil sample on a one for one basis.

Sample Submission 3. Arrive O/A 23 December. Analyses requested by 7 January 1985.

Same quantities and same analyses as Submission 2.

Analytical methodology is shown in Table 2-1.

Water analyses for TOC, Oil and Grease and Purgeable Organics are scheduled analyses as listed under CLIN 0004 of the DO. These should be billed under charge number 214-114-03-40 (RAS) not to exceed $6,099.66.

All other analyses are classified as analytical support billable under 214-114-03-30 (ODC) not to exceed $18,255.40.

2.0 QUALITY CONTROL PROCEDURES FOR SOIL AND WASTE SAMPLING AND ANALYSIS

Based upon the sampling scheme as discussed in the Statement of Work, soil and possibly waste samples will be collected from the following areas:

- Waste Pits
- Fire Protection Training Area No. 1
- Fire Protection Training Area No. 3
- Landfill No. 3 and Hardfill Area.

Analytical methods for the soil and waste samples are summarized in Table 2-1. Field collection procedures are described in Table 2-2. Quality control procedures for sample collection and analysis are discussed below.

2.1 Collection of Soil and Waste Samples

Quality control procedures associated with soil and waste sampling will be an integral part of the sampling methodology. These procedures focus upon ensuring the collection of representative samples which are free from external contamination. Documentation and chain-of-custody procedures are also an important part of the sample collection QC effort, which include the following procedures:

- Split-spoon and hand auger sampling will be used to obtain representative samples from depth specific points, as opposed to sample cuttings which may originate at different points and be cross-contaminated.

TABLE 2-1

Analytical Methods, Detection Limits and Number of Samples
(For Water Unless Otherwise Shown)*

PARAMETER	METHOD	DETECTION LIMIT	NO. OF SAMPLES	QA	TOTAL SAMPLES
*Total Organic Carbon (TOC)	EPA 415.1	1000 µg/L (1000 µg/g sediment)	30 water, 34 soil	3,4	33 water, 38 soil
Purgeable: Halocarbons and Aromatics	EPA 601 and 602	**	30 water, 34 soil	3,4	50 water, 57 soil*****
Oil and Grease (using IR)	EPA 413.2	100 µg/L (100 µg/g, sediment)	30 water, 34 soil	3,4	33 water, 38 soil
Total Dissolved Solids (TDS)	EPA 160.1	1000 µg/L	30 water	3	33 water
Lead	EPA 239.2	20 µg/L (2 µg/g, sediment)	16 water, 2 soil	2,1	18 water, 3 soil
Chromium	EPA 218.1	50 µg/L (5 µg/g, sediment)	16 water, 2 soil	2,1	18 water, 3 soil
Mercury	EPA 245.1 and 245.5 (soils)	1 µg/L (0.1 µg/g, sediment)	16 water, 2 soil	2,1	18 water, 3 soil
Phenol	EPA 420.1	1 µg/L (1 µg/g, sediment)	14 water, 32 soil	2,4	16 water, 36 soil
pH	-	-	30 water, 34 soil	3,4	33 water, 38 soil
EP Toxicity	40 CFR 261.24	***	5	1	6
Ignitibility	40 CFR 261.21	****	5	1	6

*Detection limit for TOC must be three times the noise level of the instrument. Laboratory distilled water must show no response; if it shows a response, corrections of positive results must be made.

**Detection limits for Volatile Organic Compounds shall be as specified for the compounds by EPA Methods 601-602. Method: Federal Register, Vol. 44, No. 233, pp. 69468-69473. This method should be strictly followed including these items:

Item 1.4 - This method is recommended by EPA for use only by experienced residue analysts or under the close supervision of such qualified persons.

Item 2.2 - This is most important. If interferences are encountered (as in early peaks such as vinyl chloride), the method provides a secondary chromatographic column that will be helpful in resolving the compounds of interest from interferences. This must be done in the case of vinyl chloride and so noted in analysis report.

Items 3.3, 7.1-7.3 - These sections must be analyzed within the recommended holding times.

Item 8.3 - All samples must be analyzed within the recommended holding times. This must be followed without exception.

If questions are encountered about certain contaminants, you may be asked to show both chromatograms used to rule out possible interferences.

***Metal	µg/L of solution
As	10
Ba	200
Cd	10
Cr	50
Pb	20
Hg	1
Se	10
Ag	10

****Find if sample is ignitible at 140°F or below. If so, it is a hazardous waste.

*****Totals of 50 and 57 include second column confirmation for 50% of the samples (17 and 19, respectively).

*Extracted from USAF AFSC Form 700 regarding Sheppard AFB DO F33615-84-D-4402,0003.

TABLE 2-2: FIELD COLLECTION OF SAMPLES

Following guidance is provided field survey personnel to assist them in collecting, preparing and perserving samples.

Soil Sample Collection

Soil samples will be placed in containers as described below:

Analysis Required	Field Procedure
Purgeable Halocarbons and Aromatics	Prepare a homogeneous soil mixture and fill 4 each 40 ml VOA vials. (2 vials for RAS, 2 vials for OEHL.) Keep samples chilled to 4°C.
All other parameters	Prepare a homogeneous soil mixture and fill 2 each 1-quart glass jar (1 jar for RAS, 1 for OEHL.) Note: One jar provides RAS with sufficient soil to perform any or all requested analyses. Keep samples chilled.

Water Sample Collection

Analysis Required	Field Procedure
TOC and/or phenol	Collect sufficient water and fill 2 each 500 ml glass jars. Add 2 ml (1 plastic pipet full) of Sulfuric Acid to each jar. (1 jar for RAS, 1 for OEHL.) Keep samples chilled to 4°C.
Purgeable Halocarbons and Aromatics	Collect sufficient water and fill 4 each 40 ml VOA vials to the top (no air bubbles present). Cap and seal the vials. No air bubbles should be present. (2 vials for RAS, 2 for OEHL.) Keep samples chilled to 4'C.

Total Dissolved Solids and/or pH	Collect sufficient water and fill 2 each 500 ml plastic bottles nearly full of water. No preservation required. Cap bottles and keep samples chilled to 4'C. (1 bottle for RAS, 1 for OEHL).
Lead, Chromium and Mercury	Collect sufficient water and fill 2 each 500 ml plastic bottles. Add 2 ml (1 plastic pipet full) of Nitric Acid to each bottle (1 bottle for RAS, 1 for OEHL). Keep samples chilled.
Oil and Grease	Collect sufficient water and fill 2 each 1-quart galss bottle nearly to the top. Add 2 ml (1 plastic pipet full) of Sulfuric Acid to each bottle (1 bottle for RAS, 1 for OEHL). Keep samples chilled.

- During the drilling, the on site geologist will ensure that cuttings coming to the surface on the auger flights are accurately described. This will serve as a general log to be confirmed by split-spoon samples.

- The split-spoon or hand auger sampler will be cleaned between each sampling to prevent cross-contamination of the samples in accordance with the safety plan.

- All soil and waste samples will be collected in duplicate so that one can be analyzed by RAS and the other sent to OEHL.

- In addition to the number of samples collected for analyses, the Radian hydrogeologist will also collect additional blind duplicate samples for QA purposes. Quantities of samples required for QA are listed in Table 2-1.

- After sample collection, each sample will be logged into a master sample logbook (bound, paginated, laboratory notebook) which as a minimum indicates the date and time of sample collection, sample type, and initials of the person who collected the sample.

- Soil samples will be chilled to 4°C for preservation until analyses.

- Chain-of-custody forms, Figure 2-1 will be used to document all Radian and USAF transfers of sample possession from initial preparation of the sample container to final disposition of the sample.

- Samples shipped to OEHL require additional information which must accompany each sample. Figure 2-2 shows a list of

RADIAN CORPORATION

Figure 2-1

CHAIN OF CUSTODY RECORD

Field Sample No. _____

Company Sampled/Address _____

Sample Point Description _____

Stream Characteristics:

Temperature _____ Flow _____ pH _____

Visual Observations/Comments _____

_____

Collector's Name _____ Date/Time Sampled _____

Amount of Sample Collected _____

Sample Description _____

Store at: ☐ Ambient ☐ 5°C ☐ −10°C ☐ Other _____

☐ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards _____

_____

_____

☐ Hazardous sample (see below) ☐ Non-hazardous sample

☐ Toxic	☐ Skin irritant	☐ Flammable (FP< 40°C)
☐ Pyrophoric	☐ Lachrymator	☐ Shock sensitive
☐ Acidic	☐ Biological	☐ Carcinogenic - suspect
☐ Caustic	☐ Peroxide	☐ Radioactive

☐ Other _____

Sample Allocation/Chain of Possession:

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Information to Accompany Samples Forward to OEHL

1. Installation name (base)
2. Purpose of sample (analyte)
3. Sample Number (on containers)
4. Source/location of sample
5. Contract Task Number and Title of Project
6. Method of collection (i.e., bailer, suction pump, air-lift pump, split spoon etc.)
7. Volumes removed before sampling
8. Special conditions (use of surrogate standard, speical nonstandard preservation, etc.)

Figure 2-2

information, most of which could be provided on the sample label. Figure 2-3 shows Air Force Form 2752 that also needs to accompany the samples. Instructions for filling out AF Form 2752 are provided. A Skeleton form for each type sample should be made to reduce field writing.

2.2 Analytical Quality Control for Soil and Waste Samples

In addition to the general sampling QC procedures described above, specific QC procedures and criteria are associated with various analyses and described below:

2.2.1 Metals

Heavy metals will be determined after acid extraction in accordance with EPA methods. Determination for these metals will involve both inductively coupled plasma emission spectrometry (ICPES) and atomic absorption spectroscopy (AAS). The metals to be analyzed, the analytical method for each metal, and EPA method references are presented in Table 2-1. Calibration and QC procedures for metals analyses are discussed below. These procedures are based upon EPA recommended procedures for the 200 Series Methods.

2.2.2 Calibration

Calibration curves will be generated daily for each metal species using a reagent blank and a minimum of three upscale concentrations. A calibration curve will be considered acceptable if the correlation coefficient, r, is ≥ 0.995. A new calibration curve will be generated after analysis of no more than 20 samples. the new curve will be acceptable if it meets the linearity criterion above, and if the slope agrees with that of the previous curve within $\pm 10\%$.

ENVIRONMENTAL SAMPLING DATA

(Use this space for mechanical imprint)

OEHL USE ONLY

SAMPLING SITE IDENTIFIER (AFR 19-7)

BASE WHERE SAMPLE COLLECTED

SAMPLING SITE DESCRIPTION

DATE COLLECTION BEGAN (YYMMDD)

TIME COLLECTION BEGAN (24 hour clock)

COLLECTION METHOD ☐ GRAB ☐ COMPOSITE _____ HOURS

MAIL REPORTS TO (circle if changed): ORIGINAL / COPY 1 / COPY 2

SAMPLE COLLECTED BY (Name, Grade, AFSC)

SIGNATURE

AUTOVON

REASON FOR SUBMISSION: A-ACCIDENT/INCIDENT, R-ROUTINE/PERIODIC, C-COMPLAINT, N-NPDES, F-FOLLOWUP/CLEANUP, O-OTHER (specify)

BASE SAMPLE NUMBER

OEHL PID

ANALYSES REQUESTED (check appropriate blocks)

GROUP A						GROUP T	
Ammonia	00610	Hardness	00900	Residue, Settleable	50086	Bromoform	32104
Chemical Oxygen Demand	00340	Iron	01045	Residue, Volatile	00505	Bromodichloromethane	32101
Kjeldahl Nitrogen	00625	Lead	01051	Silica	00955	Carbon Tetrachloride	32102
Nitrate	00620	Magnesium	00927	Specific Conductance	00095	Chloroform	32106
Nitrite	00615	Manganese	01055	Sulfate	00945	Chloromethane	34418
Oil & Grease	00560	Mercury	71900	Sulfite	00740	Dibromochloromethane	32105
Organic Carbon	00680	Nickel	01067	Surfactants -MBAS	38260	Methylene Chloride	34423
Orthophosphate	00671	Potassium	00937	Turbidity	00076	Tetrachloroethylene	34475
Phosphorus, Total	00665	Selenium	01147			1,1,1-Trichloroethane	34506
		Silver	01077			Trichloroethylene	39180
GROUP D		Sodium	00929	GROUP H		Trihalomethanes	82080
Cyanide, Total	00720	Thallium	01059	BHC Isomers	39340	PCBs	39516
Cyanide, Free	00722	Zinc	01092	Chlordane	39350		
				DDT Isomers	39370		
				Dieldrin	39380		
GROUP E		GROUP G		Endrin	39390		
Phenols	32730	Acidity, Total	70508	Heptachlor	39410		
		Alkalinity, Total	00410	Heptachlor Epoxide	39420		
GROUP F		Alkalinity, Bicarbonate	00425	Lindane	39782		
Antimony	01097	Bromide	71870	Methoxychlor	39480		
Arsenic	01002	Carbon Dioxide	00405	Toxaphene	39400		
Barium	01007	Chloride	00940	2,4-D	39730		
Beryllium	01012	Color	00080	2,4,5-TP-Silvex	39760		
Boron	01022	Fluoride	00951	2,4,5-T	39740		
Cadmium	01027	Iodide	71865				
Calcium	00916	Odor	00086				
Chromium, Total	01034	Residue, Total	00500				
Chromium VI	01032	Residue, Filterable (TDS)	70300	GROUP J			
Copper	01042	Residue, Nonfilterable	00530	Sulfides	00745		

ON SITE ANALYSES

Parameter		Value
Flow	50050	mgd
Chlorine, Total	50060	mg/
Dissolved Oxygen	00300	mg
pH	00400	units
Temperature	00010	°C

COMMENTS

AF FORM JAN 81 2752

Figure 2-3.

INSTRUCTIONS FOR COMPLETING AF FORM 2752,
ENVIRONMENTAL SAMPLING DATA

The purpose of this form is to record environmental and drinking water sampling information. The form will be used for submitting environmental and drinking water samples (except radiological samples) to the USAF Occupational and Environmental Health Laboratory (USAF OEHL). Use AF Form 2753 for radiological sampling data.

1. Identification Data. Plastic embossed cards for recording identification data may be used in lieu of the following handwritten entries:

a. Sampling Site Identifier. Enter code for Sampling Site Identifier (see page 3).

b. Base. Enter name of base where sample is collected.

c. Sampling Site Description. Enter name of sampling site.

2. Date Collection Began. Enter date sample collection began (e.g., if Jan 14, 1981, enter 81/01/14).

3. Time Collection Began. Enter time (24-hour clock) sample collection began.

4. Collection Method. Check whether sample was a grab sample or a composite sample. If a composite sample, enter number of hours from beginning to the completion of compositing.

5. Mail Reports To. Enter four-digit base code in small boxes (same code as first four digits of environmental identifier if same base). Enter mailing addresses where analysis results will be sent. Include unit designation, office symbol, base, state, and ZIP code.

6. Sample Collected By. Enter name (last name only), grade and AFSC of individual collecting sample.

7. Signature. Enter signature of individual collecting sample.

8. AUTOVON. Enter AUTOVON number of responsible individual who can answer questions from the laboratory concerning the sample.

9. Reasons for Submission. Enter code (in the box to the right of shaded "E") indicating reason for submitting sample.

10. Base Sample Number. Enter eight-digit coded base sample number for each sample. See pages 4-5.

11. OEHL PID. Leave blank.

12. Analysis Requested. Check the block to the left of the analyses desired. For parameters not listed, enter parameter name and number in the blank spaces provided under the appropriate preservation group. Continue in the Comments Section if required.

13. On-Site Analyses. Enter results of any on-site analyses. For parameters not listed, enter parameter name, number, value and unit in the blank spaces provided.

14. Preserve a one liter (one quart) sample as shown in page 7 for each group in which an analysis is requested.

15. Submit one copy of the completed form in a waterproof envelope with the sample to USAF OEHL/SA, Building 140, Brooks AFB TX 78235.

THE SAMPLING SITE IDENTIFIER

1. All environmental monitoring and drinking water sampling sites must be identified in a standardized manner. The sampling site identifier will be used for local identification purposes and will be the primary identifier for environmental data stored in a central Automatic Data Processing (ADP) repository.

2. The sampling site identifier is nine alphanumeric characters made up of the installation code, followed by the sampling site type code and the sampling location number.

a. Installation Code. The four-digit number now used for the film dosimetry program with a zero prefix (available from project monitor or base bioenvironmental engineer).

b. Sampling Site Type. A two-letter code to identify the source of the sample (see para 5 of this attachment for the complete list).

c. Sample Location Number. A three-digit number assigned locally.

3. The code formed when the three elements are combined is unique for a particular sampling point. If the sampling location is taken out of service, destroyed or no longer used, the code will not be reassigned to another sampling site nor used again.

4. The new code will look like this:

Installation Code	Sample Type	Sample Location
0 1 2 3	AB	4 5 6

5. Sample Type Codes:

Sampling Site Type	Code
Air	AO
Nonpotable water, source (effluent)	NS
Nonpotable water, process	NP
Nonpotable water, ambient	NA
Potable water, distribution system	PD
Potable water, ground water (untreated)	PG
Potable water, surface water (untreated)	PS
Potable water, other	PO
Solid	SO

CODED BASE SAMPLE NUMBER

This section contains accepted environmental sampling methods recommended by the USAF OEHL. The basis for any monitoring program rests upon information obtained from sampling. Improper sampling can negate even the most careful and accurate work performed by the remainder of the monitoring team. Therefore, the proper selection, collection, identification and shipment of environmental samples are paramount for a successful monitoring program. (General instructions for packaging and shipping samples are contained in Section V). Additional information can be obtained from:

USAF OEHL/ECA AUTOVON 240-2891 or (512) 536-2891
USAF OEHL/ECW AUTOVON 240-3305 or (512) 536-3305
USAF OEHL/ECE AUTOVON 240-3667 or (512) 536-3667

ASSIGNMENT OF BASE SAMPLE NUMBERS

Environmental samples that are collected at base level must be assigned a sample number, regardless of whether they are analyzed locally or at a central laboratory such as the USAF OEHL. This coded sample number will enable the analysis results to be ultimately stored in and retrieved from a central data repository. A sample number code consists of eight digits. The first two digits classify the sample as to the method and type of sample. The next two digits identify the calendar year that the sample was taken and the last four digits identify the locally assigned sample number, progressing in numerical sequence from sample number 0001 to sample number 9999. Sample number codes follow:

a. First 2 digits

(1) Digit #1 -

Sample Method	Code
Grab Sample	G
Composite Sample	C

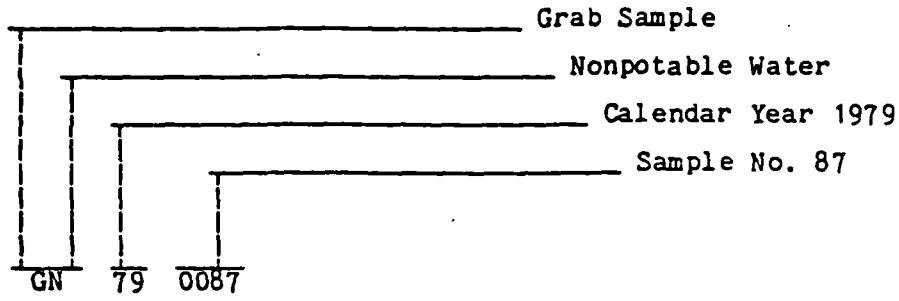
(2) Digit #2 -

Sample Type	Code
Nonpotable	N
Potable Water	P
Residue (Incinerator Ash)	D
Sludge (Wet or Dry)	L
Soil	S
Unclassified	C
Vegetation	V

b. Next 2 digits - Code for sample year using last two numbers of calendar year in which sample was taken. Example: Code for CY 1981 is 81.

c. Last 4 digits - Code for locally assigned, numerically sequenced sample number. Example: Code for thirteenth sample taken during a calendar year is 0013.

Completed Base Sample Number. To illustrate a completed code, consider an environmental water sample taken to characterize storm water runoff. The sample was a grab sample taken from a storm drain. Eighty-six other samples had already been taken at the base that year (CY 1979). The sample would be:



USAF OEHL WORK CENTER CODES

	Analysis of Industrial Hygiene Samples	
1XX	Liquid Media or Eluent for Tube Analysis	
2XX	Liquid Media or Eluent for Pesticide Type Analysis	
3XX	Eluent or Solvent for Metals Analysis	
4XX	Collection Media Colorimetric Analysis	
5XX	Media for Gravimetric/Physical Observations	
6XX	Media for Volumetric/Electrometric AN	
7XX	Media for Liquid Chromatography	
9XX	Special Modification	
1XXX	Special Analysis (Bulk Industrial Products)	
9XXX	Analysis of Biological Materials	
1XXXX	Analysis of Water or Soil (Environmental) Samples	
	10100-10199	A Preservation Group
	10300-10399	D Preservation Group (Cyanides)
	10400-10499	E Preservation Group (Phenols)
	10500-10599	F Preservation Group (Metals)
	10600-10699	G Preservation Group (Unpreserved)
	10600	J Preservation Group (Sulfides)
	10700-10799	H Preservation Group (Pesticides)
	10800-10899	T Preservation Group (Trace Organics)
2XXXX	Radioassay of Materials	

PRESERVATION METHODS*

NOTE: A preservative must be added immediately after collection unless the sample is to be analyzed for dissolved materials. For dissolved materials analysis, filter as soon as possible, and then add the preservative.

GROUP		DESCRIPTION
A	(A1XX)	Cool to 4°C; add sulfuric acid to pH <2; submit 1 liter in a polyethylene or glass container.
	(A2XX)	Same as Group A1XX except that a separate 1 liter individual sample must be submitted in a glass container.
D	(D1XX)	Cool to 4°C; add sodium hydroxide to pH >12; add sodium thiosulfate if residual chlorine exists in the sample. Submit 1 liter in a polyethylene or glass container.
E	(E1XX)	Cool to 4°C; add sulfuric acid to pH <2; submit 1 liter in a polyethylene or glass container.
F	(F1XX)	Add nitric acid to pH <2; submit 1 liter in a polyethylene or glass container.
	(F2XX)	This group is for boron. Do not add nitric acid to this group--no preservative is necessary. Do not, under any circumstances, submit sample in a glass container.
G	(G1XX)	Cool to 4°C; add no other preservative; submit 1 liter in a glass or polyethylene container.
	(G3XX)	This group is for asbestos. No other preservative is necessary.
H	(H1XX)	Cool to 4°C; add sodium thiosulfate if residual chlorine exists in sample; submit 1 liter in glass container with Teflon[R] lined cap.
	(H2XX)	These analytes degrade rapidly and it is generally not feasible to submit samples for this analyte. If it is necesary call USAF OEHL/SAN [AUTOVON 240-3626 or (512) 536-3626/Mr Nishioka].
J	(J1XX)	This sample is for sulfides. Cool to 4°C; add 2 ml of a 22% zinc acetate solution per liter of sample. Submit 1 liter in a glass or polyethylene container.
T	(T1XX)	Submit only in special containers obtained from USAF OEHL/SAN [AUTOVON 240-3626 or (512) 536-3626/Mr Rodriguez].
	(T4XX)	Cool to 4°C; add sodium thiosulfate if residual chlorine exists in sample; submit 1 liter in glass container with Teflon lined cap.

*These instructions supersede all previously issued preservation instructions.

RECOMMENDED ENVIRONMENTAL SAMPLING METHODS

STORET #	NAME	PRESERVATIVE WORK CENTER	NOTES	REF.
34205	ACENAPHTHENE	T4XX-10820	C	E610
34200	ACENAPHTHYLENE	T4XX-10820	C	E610
1001462AD	ACID EXTRACT. PRIORITY POLLUTANT	T4XX-10810	C	E625
00436	ACIDITY (MINERAL)	G1XX-10610	A	E305
70508	ACIDITY (TOTAL)	G1XX-10610	A	E305
34210	ACROLEIN	T4XX-10820	C	E603
34215	ACRYLONITRILE	T4XX-10820	C	E603
70312	AGGRESSIVE INDEX	G1XX-10000		
39330	ALDRIN	H1XX-10700	C	E608
00425	ALKALINITY (BICARBONATE)	G1XX-10610	A	A403
00430	ALKALINITY (CARBONATE)	G1XX-10610	A	A403
00420	ALKALINITY (HYDROXIDE)	G1XX-10610	A	A403
00415	ALKALINITY (PHENOLTHALEIN)	G1XX-10610	A	A403
00410	ALKALINITY (TOTAL)	G1XX-10610	A	A403
01106	ALUMINUM (DISSOLVED)	F1XX-10500	A	E202
01105	ALUMINUM (TOTAL)	F1XX-10500	A	E202
00610	AMMONIA (NITROGEN)	A1XX-10110	A	E350
34420	ANTHRACENE	T4XX-10820	C	E610
34556	DIBENZO(a,h)ANTHRACENE	T4XX-10820	C	E610
01095	ANTIMONY (DISSOLVED)	F1XX-10520	A	E204
01097	ANTIMONY (TOTAL)	F1XX-10510	A	E204
01000	ARSENIC (DISSOLVED)	F1XX-10520	A	E206

RECOMMENDED ENVIRONMENTAL SAMPLING METHODS

STORET #	NAME	PRESERVATIVE WORK CENTER	NOTES	REF.
01002	ARSENIC (TOTAL)	F1XX-10510	A	E206
34225	ASBESTOS	G3XX-10000	C	C
01005	BARIUM (DISSOLVED)	F1XX-10520	A	E208
01007	BARIUM (TOTAL)	F1XX-10510	A	E208
1001463BE	BASE/NEUTRAL EXTR. PRI. POLLUT.	T4XX-10820	C	E625
34030	BENZENE (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10850	F	E503
39120	BENZIDINE	T4XX-10820	C	E605
34526	BENZO(a)ANTHRACENE	T4XX-10820	C	E610
34230	BENZO(b)FLUORANTHENE	T4XX-10820	C	E610
34242	BENZO(k)FLUORANTHENE	T4XX-10820	C	E610
34247	BENZO(a)PYRENE	T4XX-10820	C	E610
34521	BENZO(ghi)PERYLENE	T4XX-10820	C	E610
01010	BERYLLIUM (DISSOLVED)	F1XX-10520	A	E210
01012	BERYLLIUM (TOTAL)	F1XX-10510	A	E210
39340	BHC ISOMERS	H1XX-10700	C	E608
39337	a-BHC	H1XX-10700	C	E608
39338	b-BHC	H1XX-10700	C	E608
34259	d-BHC	H1XX-10700	C	E608
00310	*BOD (BIOCHEMICAL OXYGEN DEMAND)	G1XX-10000	AX	
01020	BORON (DISSOLVED)	F1XX-10500	B	A404B
01022	BORON (TOTAL)	F1XX-10500	B	A404B

RECOMMENDED ENVIRONMENTAL SAMPLING METHODS

STORET #	NAME	PRESERVATIVE WORK CENTER	NOTES	REF.
71870	BROMIDES	G1XX-10630	A	A405
32101	BROMODICHLOROMETHANE (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10860	D	E501
32104	BROMOFORM (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10860	D	E501
34413	BROMOMETHANE (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10860	D	E501
01025	CADMIUM (DISSOLVED)	F1XX-10520	A	E213
01027	CADMIUM (TOTAL)	F1XX-10510	A	E213
00915	CALCIUM (DISSOLVED)	F1XX-10520	A	E215
00916	CALCIUM (TOTAL)	F1XX-10510	A	E215
00405	CARBON DIOXIDE (CALCULATED)	G1XX-10610	A	A406
32102	CARBON TETRACHLORIDE (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10860	D	E601
00340	CHEMICAL OXYGEN DEMAND (COD)	A1XX-10130	A	A508A
39350	CHLORDANE	H1XX-10700	C	A509
00940	CHLORIDES	G1XX-10630	A	E325
50064	*CHLORINE (FREE AVAILABLE)	G1XX-10000	X	
50066	*CHLORINE (COMBINED AVAILABLE)	G1XX-10000	X	
50060	*CHLORINE (TOTAL RESIDUAL)	G1XX-10000	X	
34301	CHLOROBENZENE (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10850	F	E601
32106	CHLOROFORM (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10800	D	E601

RECOMMENDED ENVIRONMENTAL SAMPLING METHODS

STORET #	NAME	PRESERVATIVE WORK CENTER	NOTES	REF.
34311	CHLOROETHANE (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10860	D	E601
34273	BIS(2-CHLOROETHYL) ETHER	T4XX-10820	C	E611
34278	BIS(2-CHLOROETHOXY)METHANE	T4XX-10820	C	E611
34283	BIS(2-CHLOROISOPROPYL)ETHER	T4XX-10820	C	E611
34576	CHLOROETHYLVINYL ETHER (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10860	D	E602
34418	CHLOROMETHANE (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10860	D	E602
34518	2-CHLORONAPHTHALENE	T4XX-10820	C	E612
01030	CHROMIUM (DISSOLVED)	F1XX-10520	A	E218
01032	CHROMIUM (HEXAVALENT)	F1XX-10510	AX	A312B
01034	CHROMIUM (TOTAL)	F1XX-10510	A	E218
34320	CHRYSENE	T4XX-10820	C	E610
01035	COBALT (DISSOLVED)	F1XX-10500	A	E219
01037	COBALT (TOTAL)	F1XX-10500	A	E219
31501	*COLIFORM (TOTAL)	G1XX-10000	X	
00080	COLOR	G1XX-10620	A	E110
01040	COPPER (DISSOLVED)	F1XX-10520	A	E220
01042	COPPER (TOTAL)	F1XX-10510	A	E220
00720	CYANIDES (TOTAL)	D1XX-10300	A	A412D
00722	CYANIDES (AMENABLE TO CHLORINE)	D1XX-10300	A	A412D
39730	2,4-D	H1XX-10700	C	A509

RECOMMENDED ENVIRONMENTAL SAMPLING METHODS

STORET #	NAME	PRESERVATIVE WORK CENTER	NOTES	REF.
39310	4,4'-DDD	H1XX-10700	C	E608
39320	4,4'-DDE	H1XX-10700	C	E608
39300	4,4'-DDT	H1XX-10700	C	E608
39370	DDT ISOMERS	H1XX-10700	C	A509
39570	DIAZINON	H2XX-10700	C	A509
32105	DIBROMOCHLOROMETHANE (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10860	D	E501
34536	1,2-DICHLOROBENZENE (ORTHO) (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10850	F	E602
34566	1,3-DICHLOROBENZENE (META) (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10850	F	E602
34571	1,4-DICHLOROBENZENE (PARA) (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10850	F	E602
34631	3,3'-DICHLOROBENZIDENE	T4XX-10820	C	E605
34668	DICHLORODIFLUOROMETHANE (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10860	D	E601
34496	1,1-DICHLOROETHANE (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10860	D	E601
32103	1,2-DICHLOROETHANE (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10860	D	E601
34501	1,1-DICHLOROETHENE (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10860	D	E601
34546	1,2-DICHLOROETHYLENE (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10860	D	E601
34423	DICHLOROMETHANE (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10860	D	E601

RECOMMENDED ENVIRONMENTAL SAMPLING METHODS

STORET #	NAME	PRESERVATIVE WORK CENTER	NOTES	REF.
34451	1,2-DICHLOROPROPANE (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10860	D	E601
34704	CIS-1,3-DICHLOROPROPENE (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10860	D	E601
34699	TRANS-1,3-DICHLOROPROPENE (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10860	D	E601
39380	DIELDRIN	H1XX-10700	C	E608
34611	2,4-DINITROTOLUENE	T4XX-10820	C	E609
34626	2,6-DINITROTOLUENE	T4XX-10820	C	E609
00300	*DISSOLVED OXYGEN	G1XX-10000	CX	
34641	DURSBAN	H1XX-10700	C	E611
34361	ENDOSULFAN I	H1XX-10700	C	E608
34356	ENDOSULFAN II	H1XX-10700	C	E608
34351	ENDOSULFAN SULFATE	H1XX-10700	C	E608
39390	ENDRIN	H1XX-10700	C	E608
34366	ENDRIN ALDEHYDE	H1XX-10700	C	E608
34371	ETHYLBENZENE (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10850	F	E602
31613	*FECAL COLIFORM	G1XX-10000	X	
31673	*FECAL STREPTOCOCCI	G1XX-10000	X	
34376	FLUOROANTHENE	T4XX-10820	C	E610
34381	FLUORENE	T4XX-10820	C	E610
00951	FLUORIDES	G1XX-10630	B	E340
38260	FOAMING AGENTS (SEE SURFACTANTS)	G1XX-10620	AX	E425

RECOMMENDED ENVIRONMENTAL SAMPLING METHODS

STORET #	NAME	PRESERVATIVE WORK CENTER	NOTES	REF.
00901	HARDNESS (CARBONATE)	G1XX-10600	A	A314A
00902	HARDNESS (NONCARBONATE)	G1XX-10600		
00900	HARDNESS (TOTAL)	F1XX-10510	A	A314A
39410	HEPTACHLOR	H1XX-10700	C	A509
39420	HEPTACHLOR EPOXIDE	H1XX-10700	C	E608
39700	HEXACHLOROBENZENE	T4XX-10820	C	E608
34391	HEXACHLOROBUTADIENE	T4XX-10820	C	E612
34386	HEXACHLOROCYCLOPENTADIENE	T4XX-10820	C	E612
34396	HEXACHLOROETHANE	T4XX-10820	C	E612
00400	*HYDROGEN ION (pH)	G1XX-10000	AX	E150
34403	INDENO(1,3-CD)PYRENE	T4XX-10820	C	E610
71865	IODIDES	G1XX-10630	AX	E345
01046	IRON (DISSOLVED)	F1XX-10520	A	E236
01045	IRON (TOTAL)	F1XX-10510	A	E236
34408	ISOPHORONE	T4XX-10820	C	E609
00625	KJELDAHL NITROGEN (TOTAL)	A1XX-10110	A	E351
70311	LANGLIER INDEX	G1XX-10000	A	A203
01049	LEAD (DISSOLVED)	F1XX-10520	A	E239
01051	LEAD (TOTAL)	F1XX-10510	A	E239
39782	LINDANE	H1XX-10700	C	E608
00925	MAGNESIUM (DISSOLVED)	F1XX-10520	A	E242
00927	MAGNESIUM (TOTAL)	F1XX-10510	A	E242

RECOMMENDED ENVIRONMENTAL SAMPLING METHODS

STORET #	NAME	PRESERVATIVE WORK CENTER	NOTES	REF.
01056	MANGANESE (DISSOLVED)	F1XX-10520	A	E243
01055	MANGANESE (TOTAL)	F1XX-10510	A	E243
1001465MT	MAXIMUM TRIHALOMETHANE POTENTIAL (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10830	E	E501
38260	MBAS (SEE SURFACTANTS)	G1XX-10620	AX	E425
71890	MERCURY (DISSOLVED)	F1XX-10520	A	E245
71900	MERCURY (TOTAL)	F1XX-10510	A	E245
39480	METHOXYCHLOR	H1XX-10700	C	E608
34423	METHYLENE CHLORIDE (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10800	D	E601
81595	METHYL ETHYL KETONE (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10850	D	E503
81596	METHYL ISOBUTYL KETONE (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10850	D	E503
01060	MOLYBDENUM (DISSOLVED)	F1XX-10500	A	E246
01062	MOLYBDENUM (TOTAL)	F1XX-10500	A	E246
34301	MONOCHLOROBENZENE (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10800	F	E602
34696	NAPHTHALENE	T4XX-10820	C	E610
01065	NICKEL (DISSOLVED)	F1XX-10520	A	E249
01067	NICKEL (TOTAL)	F1XX-10510	A	E249
00620	NITRATES (AS NITROGEN)	A1XX-10110	AX	E353
00630	NITRATES-NITRITES	A1XX-10100	AX	E353
00615	NITRITES (AS NITROGEN)	A1XX-10110	AX	E353

RECOMMENDED ENVIRONMENTAL SAMPLING METHODS

STORET #	NAME	PRESERVATIVE WORK CENTER	NOTES	REF.
34447	NITROBENZENE	T4XX-10820	C	E609
00625	NITROGEN (TOTAL KJELDAHL)	A1XX-10110	A	E351
34438	N-NITROSODIMETHYLAMINE	T4XX-10820	C	E607
34428	N-NITROSODI-N-PROPYLAMINE	T4XX-10820	C	E607
34433	N-NITROSODIPHENYLAMINE	T4XX-10820	C	E607
00086	*ODOR	G1XX-10620	X	
00560	OIL & GREASE	A2XX-10120	CJ	E413
00680	ORGANIC CARBON	A1XX-10130	A	E415
00671	ORTHO PHOSPHATE (DISSOLVED)	A1XX-10110	AX	E365
00300	*OXYGEN (DISSOLVED)	G1XX-10000	X	
39516	PCB (POLYCHLORINATED BIPHENYLS)	T4XX-10850	C	E608
00400	*pH (HYDROGEN ION)	G1XX-10000	X	
34461	PHENANTHRENE	T4XX-10820	C	E610
32730	PHENOLS	E1XX-10400	A	E420
34452	4-CHLORO-3-METHYLPHENOL	T4XX-10810	C	E604
34586	2-CHLOROPHENOL	T4XX-10810	C	E604
34601	2,4-DICHLOROPHENOL	T4XX-10810	C	E604
34606	2,4-DIMETHYLPHENOL	T4XX-10810	C	E604
34606	2,4-DINITROPHENOL	T4XX-10810	C	E604
34657	2-METHYL-4,6-DINITROPHENOL	T4XX-10810	C	E604
34591	2-NITROPHENOL	T4XX-10810	C	E604
34646	4-NITROPHENOL	T4XX-10810	C	E604

RECOMMENDED ENVIRONMENTAL SAMPLING METHODS

STORET #	NAME	PRESERVATIVE WORK CENTER	NOTES	REF.
34694	PENTACHLOROPHENOL	T4XX-10810	C	E604
34621	2,4,6-TRICHLOROPHENOL	T4XX-10810	C	E604
34636	4-BROMOPHENYL PHENYLETHER	T4XX-10820	C	E611
34641	4-CHLOROPHENYL PHENYLETHER	T4XX-10820	C	E611
00671	PHOSPHATES ORTHO (DISSOLVED)	A1XX-10110	AX	E365
70507	PHOSPHATES ORTHO (TOTAL)	A1XX-10100	A	E365
00665	PHOSPHORUS (TOTAL)	A1XX-10110	A	E365
1000069PH	PHTHALATE ESTER SCREEN	T4XX-10820	C	E606
39100	BIS(2-ETHYLHEXYL)PHTHALATE	T4XX-10820	C	E606
34292	BUTYLBENZYL PHTHALATE	T4XX-10820	C	E606
39110	DI-N-BUTYL PHTHALATE	T4XX-10820	C	E606
34336	DIETHYL PHTHALATE	T4XX-10820	C	E606
34341	DIMETHYL PHTHALATE	T4XX-10820	C	E606
34596	DI-N-OCTYL PHTHALATE	T4XX-10820	C	E606
31751	*PLATE COUNT, TOTAL	G1XX-10000	X	
00935	POTASSIUM (DISSOLVED)	F1XX-10520	A	E258
00937	POTASSIUM (TOTAL)	F1XX-10510	A	E258
1001462AE	PRIORITY POLLUTANT-ACID EXTR.	T4XX-10810	C	E625
1001463BE	PRIORITY POLLUTANT - BASE/NEUT. EXT	T4XX-10820	C	E625
1001465MT	PRIORITY POLLUTANT - MAX.TRIHALO.PO (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10830	E	E501
82080	PRIORITY POLLUTANT - TOT.TRIHALOMET (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10840	D	E501

RECOMMENDED ENVIRONMENTAL SAMPLING METHODS

STORET #	NAME	PRESERVATIVE WORK CENTER	NOTES	REF.
1001461PA	PRIORITY POLLUTANT - VOL. AROMATICS (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10850	F	E602
1001460PH	PRIORITY POLLUTANT-VOLATILE HALOCAR (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10860	D	E601
71220	*PSEUDOMONAS, AERUGINOSA	G1XX-10000	X	
34469	PYRENE	T4XX-10820	C	E610
00500	RESIDUE (TOTAL)	G1XX-10642	A	E160
70300	RESIDUE FILTERABLE (TDS)	G1XX-10640	AX	E160
00530	RESIDUE NON-FILTERABLE (SS)	G1XX-10640	AX	E160
50086	RESIDUE (SETTLEABLE)	G1XX-10600	A	E160
00520	RESIDUE (VOLATILE FILTERABLE)	G1XX-10600	AX	E160
00535	RESIDUE (VOLATILE NON-FILTERABLE)	G1XX-10600	AX	E160
00505	RESIDUE VOLATILE (TOTAL)	G1XX-10642	AX	E160
00480	SALINITY	G1XX-10600	A	A210A
01145	SELENIUM (DISSOLVED)	F1XX-10520	A	E270
01147	SELENIUM (TOTAL)	F1XX-10510	A	E270
39750	SEVIN	H2XX-10700	C	A509
00955	SILICA	G1XX-10600	B	E370
01075	SILVER (DISSOLVED)	F1XX-10520	A	E272
01077	SILVER (TOTAL)	F1XX-10510	A	E272
39760	SILVEX (2,4,5-TP)	H1XX-10700	C	A509
00930	SODIUM (DISSOLVED)	F1XX-10520	A	E273
00929	SODIUM (TOTAL)	F1XX-10510	A	E273

RECOMMENDED ENVIRONMENTAL SAMPLING METHODS

STORET #	NAME	PRESERVATIVE WORK CENTER	NOTES	REF.
00095	SPECIFIC CONDUCTANCE	G1XX-10620	A	E120
80110	SPECIFIC GRAVITY	G1XX-10600	A	A213
00945	SULFATES	G1XX-10630	A	E375
00745	SULFIDES	J1XX-10600	AX	E376
00740	SULFITES	G1XX-10600	AX	E377
38260	SURFACTANTS (MBAS AS LAS)	G1XX-10620	AX	E425
39740	2,4,5-T	H1XX-10700	C	A509
32240	TANNINS & LIGNINS	G1XX-10600	A	A513
00010	*TEMPERATURE (^{o}C)	G1XX-10000	X	
34516	TETRACHLOROETHANE (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10860	D	E601
34475	TETRACHLOROETHYLENE (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10860	D	E601
00730	THIOCYANATES	D1XX-10300	A	A412K
01057	THALLIUM (DISSOLVED)	F1XX-10520	A	E279
01059	THALLIUM (TOTAL)	F1XX-10510	A	E279
01100	TIN (DISSOLVED)	F1XX-10500	A	E282
01102	TIN (TOTAL)	F1XX-10500	A	E282
01150	TITANIUM (DISSOLVED)	F1XX-10500	A	E283
34506	1,1,1-TRICHLOROETHANE (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10860	D	E601
34511	1,1,2-TRICHLOROETHANE (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10860	D	E601

RECOMMENDED ENVIRONMENTAL SAMPLING METHODS

STORET #	NAME	PRESERVATIVE WORK CENTER	NOTES	REF.
39180	TRICHLOROETHYLENE (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10860	D	E601
34488	TRICHLOROFLUOROMETHANE (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10860	D	E601
82080	TRIHALOMETHANES (TOTAL) (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10840	D	E501
00076	TURBIDITY	G1XX-10620	AX	E180
39175	VINYL CHLORIDE (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10860	D	E601
81710	M-XYLENE (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10850	F	E503
81711	O-XYLENE (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10850	F	E503
78132	P-XYLENE (OBTAIN SPECIAL CONTAINER FORM LAB)	T1XX-10850	F	E503
01090	ZINC (DISSOLVED)	F1XX-10500	A	E289
01092	ZINC (TOTAL)	F1XX-10510	A	E289

3.0 QUALITY CONTROL PROCEDURES FOR GROUNDWATER SAMPLING AND ANALYSIS

During characterization of the Sheppard AFB sites, monitoring well drilling and development will be conducted in two phases. Groundwater samples from the second phase wells will be analyzed, at a minimum, for the constituents identified above. Quality control procedures for sample collection and analysis are described below. Creek and stream bed water samples will also be collected, provided there is water in the creeks and streams. If dry, soil samples will be collected in lieu of water samples. Refer to paragraph 2.0 for soil sample collection procedures.

3.1 Sampling Quality Control for Groundwater Samples

Quality control efforts associated with groundwater sampling are primarily procedural quality control activities which are an integral part of the monitoring well development and sampling methodology. These procedures focus upon ensuring that the samples are representative of the specified depth and as free as possible from external and/or cross-contamination. Examples of the QC aspects of the groundwater sampling effort include the following:

- Initially, after completion, all wells will be pumped or bail-developed in order to remove all fines within the well and, to the extent possible, remove any drilling fluid, if used, which may have penetrated the formation during the drilling.

- Groundwater levels will be measured to the nearest 0.01 foot and recorded before any groundwater disturbances.

- All wells that are sampled will be evacuated with a stainless steel bailer or bladder pump until the pH and specific conductance of the groundwater stabilizes or until three well volumes of water have been displaced.

- Following evacuation, wells will be allowed to recover prior to sampling.

- Depth-discrete samples will be obtained utilizing a Kemmerer-type sampler constructed of inert materials to minimize the potential for sample contamination. If well conditions do not permit the use of a Kemmerer sampler then a Teflon bailer will be used.

- Samples must be transferred to sample jars with a minimum of agitation and disturbance in order to prevent stripping volatile organics from the water sample.

- All sampling equipment will be thoroughly cleaned and/or replaced prior to the start of work and between wells.

- Upgradient wells will be sampled first in order to minimize possible transfer of any contaminants among the wells.

- A sufficient volume of groundwater will be collected at each depth-discrete sampling point so that samples can be split with OEHL and a replicate of each retained for Radian Analytical Services for confirmation of initial analytical results or for subsequent detailed analyses.

- All samples will be chilled to 4°C during transportation and storage.

- In addition to the number of samples collected for analyses, the Radian hydrogeologist will also collect additional blind duplicate samples for QA purposes. Quantities of samples required for QA are listed in Table 2-1.

- Field blanks will be prepared at the start and completion of the sampling operation and at several points during the course of sampling.

3.2 Chain of Custody

Chain of custody documentation must accompany all samples. The chain of custody records will contain, at a minimum, the following information:

- Time, date, and location of sampling, and name of person performing sampling;
- Number, depth, and type of sample;
- Conditions encountered during well evacuation and water sample collection;
- The signature of the responsible on-site hydrogeologist, and the time and date he relinquished the samples to either the field laboratory technician or the transporter who will deliver samples to the analytical laboratory.

3.3 Analytical Quality Control for Groundwater Samples

In addition to the general QC procedures described above, specific QC procedures and criteria are associated with groundwater analyses. These are described below.

3.4 Purgeable Aromatics

Purgeable aromatics in the groundwater samples will be determined by a purged-cryotrap GC/PID method similar in some respects to EPA Method 602.

Quality control procedures for this method are based on recommended procedures for Method 602 analyses.

3.5 Acceptability Tests

Section 8.2 of Method 602 describes the procedures for demonstrating ability to generate data of acceptable precision and accuracy. Briefly, this involves quadruplicate analyses of reagent water spiked with a "quality control check sample concentrate" and a "surrogate standard." Average percent recoveries and standard deviations are then calculated for each compound and compared to EPA values (Table 2, Method 602) to determine acceptability. These data should be available for inspection, but the acceptability test need not be repeated specifically for this project.

RADIAN
CORPORATION

Quality Assurance/Quality Control Program for Radian Analytical Services

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THE QUALITY ASSURANCE/QUALITY CONTROL PROGRAM FOR RADIAN ANALYTICAL SERVICES

Radian Analytical Services' (RAS) objective is to provide high quality chemical analyses to all clients regardless of the size of the analytical task. To aid in achieving this goal, a strong quality assurance program and rigid quality control practices are integral parts of all analyses. This document describes these quality assurance/quality control protocols for the Radian Analytical Services laboratories.

The basic quality control program includes procedures for sample handling, calibration, spiking and replicate analyses, analysis of QC test samples, equipment maintenance, and supplies control. These procedures can be integrated with a client's additional requirements, such as spiking studies, analysis of replicate samples, linearity determinations, and stability studies.

The quality assurance program consists of the frequent submission of blind QA samples, duplicates, and spiked sample splits. Also included are personnel training, analytical methodologies, sample control procedures, data handling, and equipment maintenance and calibrations.

1.0 QA Organization/Policy

The objective of Radian's quality assurance/quality control program is to assure, assess, and document the precision, accuracy, and adequacy of data obtained from chemical analysis and to assure the technical accuracy of the results obtained for all samples.

Radian has organized the quality assurance function within the company to allow complete independence of program review. Radian's Quality Assurance Director reports directly to the Vice President of the Technical Staff. This position provides independent reviews at all levels of the technical staff and laboratory organization and allows immediate access to Radian's top management on QA-related matters.

The QA Director's involvement may be limited to a review of quality control practices or as extensive as active development and implementation of quality control procedures and statistical data analysis. The QA Director may be asked to contribute expertise and assistance when a need is perceived by either the client, the technical staff, or the management staff.

Because of the large number of samples analyzed by RAS, a QA coordinator has been assigned to monitor and maintain an effective QA/QC program for these laboratories. The RAS Quality Assurance Coordinator, directly responsible to the Corporate QA Director, serves as an independent auditor of all RAS laboratories. The responsibilities of the RAS QA Coordinator are as follows:

- Monitor QA/QC within RAS laboratories,
- Supervise the preparation of blind audit samples,

- inform the Director of RAS and the corporate QA Director of quality assurance problems,
- summarize and report QA activities in the laboratories,
- document all QA and QC procedures within RAS,
- act as liaison between the corporate QA Director and RAS,
- provide QA data to the corporate QA Director for inclusion in the corporate QA reports.

The RAS laboratory managers function as the quality control coordinators in each particular analytical area. Their efforts are coordinated and monitored by the QA Coordinator.

Quality control coordinators serve as a focal point for all QC activities pertaining to each RAS laboratory. They work as a committee coordinated by the RAS Quality Assurance Coordinator. Their activities include the following:

- monitor the QA/QC activities of the laboratory area,
- inform the Director of Analytical Services and the QA coordinator of QC problems and needs.
- summarize, document, and report quality control activities and data generated in the laboratory,

- provide documentation of all QC procedures in the laboratory,

- maintains summaries of QC activities and data in a form suitable for client review upon request.

2.0 Quality Control for Laboratory Analyses

Radian Analytical Services has developed and implemented quality control procedures for all of the analyses performed in the laboratory. The laboratory quality control program provides an effective and efficient laboratory protocol for QC regardless of the size or scope of the analytical requirements. Approved analytical methods are used whenever available. When approved methods are not available, a method is developed by the Radian technical staff, and a technical note written describing the method. The quality control procedures are designed to insure that the standard operating procedures and quality control protocols are being followed and accurate results are obtained.

The general quality control program utilized in each laboratory includes consideration of the following areas:

- personnel training and certification,
- analytical methodology documentation,
- sample handling and control,
- laboratory facilities and equipment,
- calibration and standards,
- data handling and documentation,
- quality control check samples,

The general approach to quality control in each of these areas is discussed in the remainder of this section.

2.1 Personnel Training and Certification

The successful implementation of any QA/QC program is determined by the training and dedication of the laboratory personnel. The quality and consistency of data should be independent of the analyst. With the proper training and supervision, an analyst will be able to obtain quality data by the use of proven methodology. Periodic assessment of training requirements and certification are performed to maintain a high level of laboratory awareness.

The training and certification methods employed in the RAS laboratories are briefly described below:

- study of laboratory standard operating procedures,
- study of QA manual,
- observation of experienced operators/analysts,
- study of operating manuals,
- instruction by the laboratory manager on all aspects of the analysis,
- perform the analysis under the direct supervision of the laboratory manager,
- perform analysis under supervision of experienced personnel,
- analysis of blind QC samples prepared by laboratory QC coordinator,
- participation in in-house seminars on laboratory methods and procedures.

RADIAN CORPORATION

PERSONNEL TRAINING RECORD

Employee _____

Employee Number _____

Date of Employment _____

Laboratory Orientation:

Upon completion of each phase of personnel training the employee and Laboratory Manager will initial and date the step completed.

- The RAS laboratory Standard Operating Procedures have been read and understood.

  Employee Lab Mgr. Date

- The RAS Quality Assurance manual has been read and the procedures for the laboratory in which the employee worker have been explained.

  Employee Lab Mgr. Date

- Operation manuals for instruments with which the employee performs analyses have been studied and the procedures for operation and maintenance are understood.

Instrument	Employee	Lab Mgr.	Date	Instrument	Employee	Lab Mgr.	Date

Figure 2-1.

Test Specific Training:

Each specific test performed in the RAS laboratories involves procedures which may be unique. The steps involved in training an employee are:

- Instruction by the Laboratory Manager on all aspects of the analysis,
- Observation of experienced operators/analysts,
- Perform the analysis under supervision of the laboratory manager,
- Perform analysis of QA samples submitted by the QA coordinator, and
- Participation in in-house seminars on laboratory methods and procedures.

The following table is to be completed by dating and initialing by the employee and Laboratory Manager upon completion of each step.

Method	Instruction	Observation	Perform the Analysis	Analysis of QA samples	Seminars

Figure 2-1. (Cont'd)

All RAS personnel must complete a quality control training program. This system includes motivation toward producing data of acceptable quality and involves "practice work" by new employees. New personnel are made aware of the quality standards established by RAS and the reasons for those standards. They are made aware of the various ways of achieving and maintaining quality data. After an employee has been trained to use a method and the work validated by the laboratory manager, the employee is certified to perform the analysis. As these people progress to higher degrees of proficiency, their accomplishments are reviewed and then documented. Documentation of proficiency training is maintained by the QC Coordinator for each laboratory technician using the two-page form shown in Figure 2-1.

2.2 Analytical Methodologies

All analytical procedures followed in the RAS laboratories are documented in a methods manual for the specific laboratory. A set of standard operating procedures (SOP) has been established for each analysis to insure consistency. Most methods used are directly from an approved analytical manual, e.g., EPA methods, APHA Standard Methods for Water and Wastewater, ASTM, etc.

Methodologies may contain the following information:

- method title,
- scope of method,
- summary of interferences, and applications,
- concentration ranges and detection limits,
- safety precautions,
- required equipment and materials,
- standardization directions,
- detailed analytical procedure,
- calculations, with examples,
- reporting method,
- precision and accuracy statement,
- references.

2.3 Sample Control and Record Keeping

The Radian Analytical Services Sample Control Center is a controlled access area. Only employees of the Sample Control Center have access to sample receiving, sample storage, documentation files, and the computer terminals. Analysts check out samples under the supervision of the sample control personnel. All samples are stored in locked storage areas. Sample tracking is maintained by a computerized laboratory management system and a sample checkout logbook. The RAS Sacramento laboratory is linked to the central processing unit of the computer in Austin via a dedicated phone line. This insures that the laboratories are in constant communication. All sample information and data entries can be immediately accessed at either location.

Detailed record keeping and control of samples are essential for effective laboratory operation. All samples received for analysis in the Radian Analytical Service laboratories are processed through the Sample and Analysis Management System (SAM). Radian Corporation's SAM is a software and hardware system for controlling and handling information for the analytical laboratory. SAM provides a dynamic, easy-to-use method for tracking, scheduling, reporting, and laboratory management. The system has been designed to accommodate and promote good laboratory management practices by providing high visibility of the information laboratory managers need to make good decisions regarding schedules and priority. The system is designed around a Data General Nova-IV computer with a 64K-byte memory. It also includes a 65M-byte disk drive and a line printer with plotting capabilities. Data is entered via a TEC terminal and CRT. All data stored on the disk is backed up on magnetic tape to prevent loss in the event of a system malfunction. The system is designed so that an individual designated as the principal operator can process the required paperwork for a large laboratory with little difficulty. The approach centralizes information input and data retrieval, and provides the mechanism for organized, up-to-date laboratory performance monitoring.

SAM maintains complete client information files, generates laboratory status reports, flags sample analyses which are overdue, accepts analysis results manually or automatically, and generates reports and invoices.

The Sample Control Center and SAM have six basic functions:

- sample receipt and logging,
- sample storage and maintenance of sample integrity,
- laboratory status reporting,
- document control,
- data compilation and reporting, and
- invoicing

In order to assure the integrity of a sample and the accompanying documentation, a security plan has been established. This plan consists of three parts:

- chain or custody,
- secured refrigerated storage, and
- document control.

The progression of samples and documentation through the Sample Control Center and the analytical laboratories is presented in Figure 2-2. Detailed descriptions of each sample control function are presented below:

- Samples are received from the commercial carrier at Radian's shipping and receiving facilities by the receiving clerk.

- Within one hour of arrival, the samples are accepted by RAS sample control personnel.

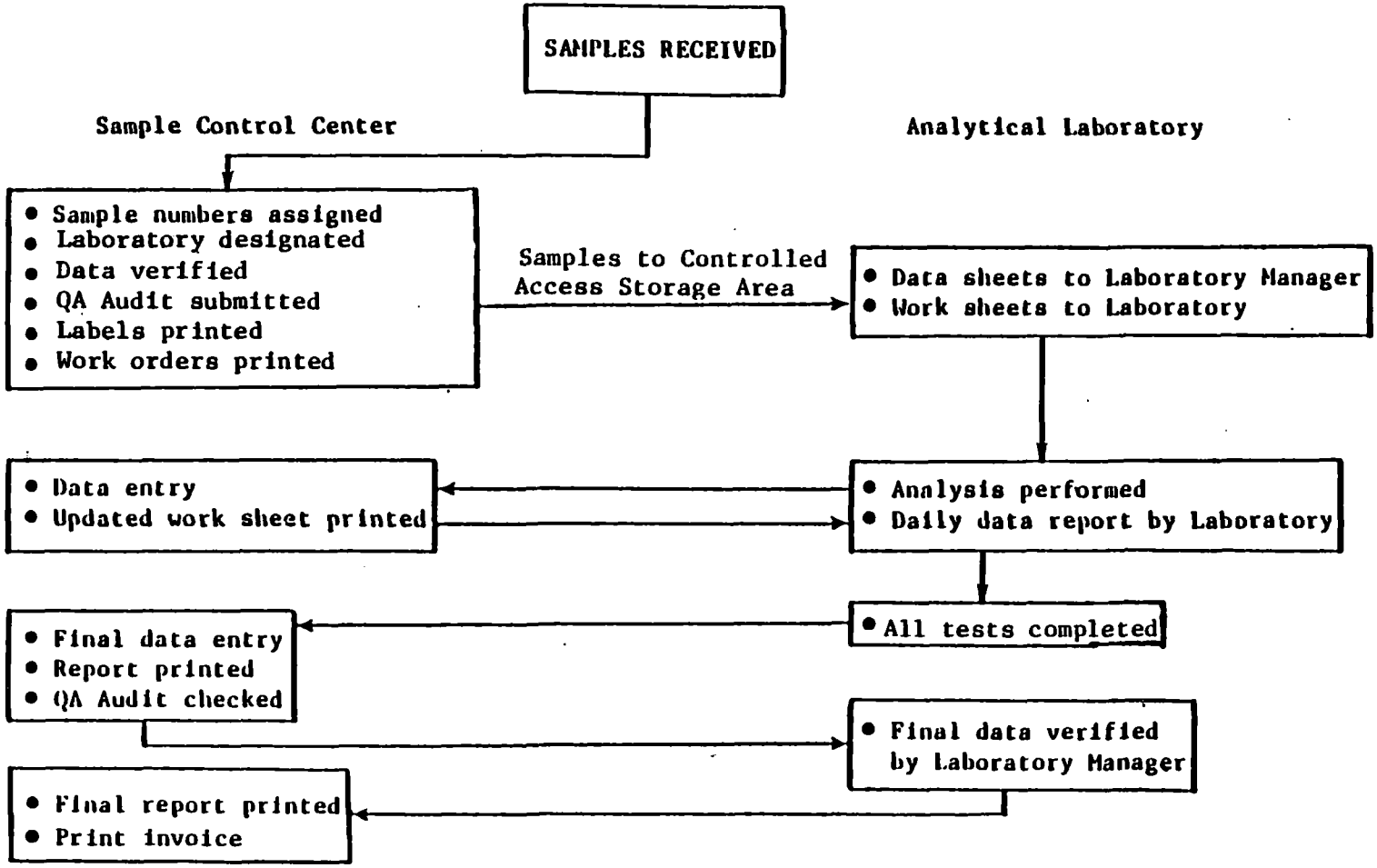

Figure 2-2. SAM Laboratory Management System

- All shipping containers and security seals, when appropriate, are inspected for physical damage or evidence of tampering.

- The samples are unpacked in the sample receiving area by the RAS sample custodian. The method of shipment, shipping container integrity, condition of samples, the number of samples/container, integrity of the security seal, and accompanying documentation are noted. Sample identification is verified against custody documents. The enclosed chain-of-custody forms, Figure 2-3, when required, are completed and filed with the shipping and receiving documentation. In the event that peculiarities are noted, the project officer or client is immediately advised of the irregularity.

- Samples are logged into a bound sample logbook, Figure 2-4. Again, sample identity is verified. All discrepancies are noted in the logbook.

- The handwritten logbook and all documentation are transferred to the Sample Control Center.

- The samples are logged into the SAM system. Each batch of samples is assigned a consecutive work order number by the system. Analytical requirements for each sample are entered into the computer.

- Hard copy of the work order and other information is printed and filed with the received documentation in the Sample Control Center.

- Labels are printed and secured to each sample. Label information includes sample number, identification, storage location, and analytical requirements.

RADIAN
CORPORATION

CHAIN OF CUSTODY RECORD

Field Sample No. _____

Company Sampled/Address _____
Sample Point Description _____

Stream Characteristics:
Temperature _____ Flow _____ pH _____
Visual Observations/Comments _____

Collector's Name _____ Date/Time Sampled _____
Amount of Sample Collected _____
Sample Description _____
Store at: ☐ Ambient ☐ 5°C ☐ −10°C ☐ Other _____

☐ Caution · No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions · Special Handling · Hazards _____

☐ Hazardous sample (see below) ☐ Non-hazardous sample

☐ Toxic	☐ Skin irritant	☐ Flammable (FP< 40°C)
☐ Pyrophoric	☐ Lachrymator	☐ Shock sensitive
☐ Acidic	☐ Biological	☐ Carcinogenic · suspect
☐ Caustic	☐ Peroxide	☐ Radioactive

☐ Other _____

Sample Allocation/Chain of Possession:
Organization Name _____
Received By _____ Date Received _____ Time _____
Transported By _____ Lab Sample No. _____
Comments _____
Inclusive Dates of Possession _____

Organization Name _____
Received By _____ Date Received _____ Time _____
Transported By _____ Lab Sample No. _____
Comments _____
Inclusive Dates of Possession _____

Organization Name _____
Received By _____ Date Received _____ Time _____
Transported By _____ Lab Sample No. _____
Comments _____
Inclusive Dates of Possession _____

Figure 2-3. Chain or Custody Record

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Lab No. _____

Company _____
Facility _____
_____
Rep _____
Phone _____
Report _____
to _____
_____
_____
Attn _____
Inv _____
to _____
_____
_____
Attn _____
P.O. # _____
Expires _____

Quoted $ _____
Sample $ _____
Misc $ _____
Total $ _____
Inv by (CPR) _____
% Surcharge _____
% Disc: All _____

Contact _____
Received _____
Date Due _____
Samples _____
Keep for _____
Keep til _____
Disp (RD) _____

Reports _____
Invoices _____
Work ID _____
Taken _____
Trans _____
Type _____
Condition _____
Comments:

Location: _____

Dash No.	Sample Description	Analysis Required	QA

Figure 2-4. Sample Log Sheet

- Data sheets and work sheets are printed for each batch of samples and distributed to the appropriate laboratory managers. The work sheets list sample numbers, sample identification, storage location, and analytical requirements. Data sheets are for results and contain only the parameters to be determined by a given laboratory.

- Following sample logging, the samples are placed in the designated locked storage area.

- Subsequent sample custody is documented and all transactions witnessed by sample control personnel.

- The analyst retrieves the samples from the Sample Control Center by sample number and storage location.

- The Sample checkout log (Figure 2-5) is completed by the analyst, noting the laboratory to which the sample is being removed.

- After analysis, or when the required aliquot is removed, the sample is returned to the Sample Control Center and return is noted in the sample checkout log.

- The sample is returned to the designated storage location.

- When requested, addition chain-of-custody documentation can be provided using a SAM-generated document (Figure 2-6). This document can be retained by sample control to provide a more easily retrievable record of sample custody within the analytical laboratory.

- The sample is stored until the assigned time or written permission is given to either properly dispose of or return the sample to the client.

RAS SAMPLE CHECK OUT LOG

WORK ORDER	SPLITS REMOVED	CHECK-OUT INFORMATION				RETURN INFORMATION		
		DATE	TIME	DESTINATION	INITIALS	DATE	TIME	INITIALS

7S/196 (Water and Prep. Labs)

7S/194 (Extraction & Water Labs

7S/180 (ICP and AA Labs)

7S/191 (TOX, TOC)

7S/195 (Technician)

7S/171 (GC)

Figure 2-5. Sample Checkout Log

PAGE 1 CORPORATION Analytical Serv CHAIN OF CUSTODY LAB # 83-02-A67

RCVD: 02/26/83 DUE: 03/19/83 04/21/83 09:56:49 KEEP: 05/09/83 DISP: D

DASH	SAMPLE IDENTIFICATION	LOCATION	TESTS						
01A-B	Number 001	Ref 2	CAUSTY	CO3_A	HARD_B	HCO3_A	MHO_A	ONG_A	PH_A
			PO4_B	SO3_TA	TANNIN				
02A	Number 002	Ref 2	ACFS						
02B	Number 002	Ref 2	ICP_40						
03A	Super soil	Ref 2	ANFS						
04A	Boiler scale 222	Ref 2	CA_E	CL_TA	CO3_A	FE_E	HCO3_A	MG_E	NA_E
			P_E	SO4_NA	S_E	ZN_E			
05A	Sample AV56	Shelf 13	B_MET	C_MET					
06A	Water #164	Ref. 023	AG_E	AS_HA	BA_E	CD_E	CR_E	FE_E	HG_CA
			MN_E	NA_E	PB_GA	SE_HA			
06B	Water #164	Ref. 023	CL_TA	F_SIEA	MHO_A	NO3_A	PH_A	SO4_NA	TDS_A
06C	Water #164	Ref. 023	H1RCRA	P1RCRA					
06D	Water #164	Ref. 023	ALPHA	BETA	RA_TOT				

RECEIVED BY	DATE	RETURNED TO	DATE	FRACTION NUMBERS.

Figure F-6. Laboratory Chain of Custody

- All documentation, including shipping documents, field sampling documents, computer-generated log sheets, chain-of-custody forms, laboratory data sheets, final computer reports, and other documents, are maintained in the sample control area. All reports are kept in locked filing cabinets. As with the sample storage area, the document storage area is limited-access.

All storage areas are within the Sample Control Center and are locked when not in use. Access to the storage area is limited to sample control personnel or other RAS employees accompanied by sample control personnel. There are four storage locations that are used depending on the sample and the required analyses. They are:

- ambient storage for samples that do not require refrigeration,
- $4^{o}C$ storage for most samples requiring water quality analysis and extractable organics,
- $4^{o}C$ storage for samples requiring volatile organic analysis, and
- $-20^{o}C$ storage for extracts and samples that require freezing.

A temperature log is maintained to monitor the cold storage facilities.

2.4 Laboratory Facilities and Equipment

A clean well-lighted, and well maintained laboratory is essential for accurate analytical results. Each laboratory is well-lighted, air conditioned and equipped with chemical fume hoods. Instrumentation that may emit noxious odors is vented externally.

Quality Control of Equipment and Supplies

Each laboratory QC program includes detailed requirements for equipment and supplies. Reagents, solvents, and standards with specific levels of purity are used as specified by the analytical protocol. Specific GC column materials, glassware and sample handling equipment are also specified. The quality control procedures for equipment and supplies generally include the following items:

- operator checklists for required supplies,
- documentation and reporting of all deviations from specified instrument performance,
- procedures for testing for purity of reagents,
- tolerances for calibrated glassware where applicable,
- monitoring of refrigerated storage space,
- maintenance logbooks,
- service contracts on analytical instrumentation.

Quality control procedures during sample preparation include the preparation of reagent or solvent blanks. Additional quality control techniques implemented in sample preparation include:

- deionized water piped into all laboratories, monitored daily,
- purchasing high purity distilled-in-glass solvents in large quantities from a single lot,

- use of Ultrex acids in trace metal digestion,
- cleaning of organic glassware with chromic acid or firing in a kiln at 450°C,
- cleaning of trace metal glassware with nitric acid,
- use of organic-free water prepared at Radian by distillation over alkaline permanganate under nitrogen atomsphere in all-glass still,
- use of volatile-free water prepared by purging organic-free water with nitrogen,
- sample preparation performed by experienced technical personnel under the supervision of senior level analysts.

2.5 Quality Control for Standards and Calibration

The quality of all test results is greatly impacted by the calibration procedures used. Calibration procedures and standards should be specified for all equipment and supplies used in the test procedure. Traceability to common standards is essential for test procedures to be used in multiple laboratories. Quality control procedures for standards and calibrations include the following considerations:

- written, detailed calibration instructions,
- preparation procedures for secondary standards, when applicable,
- requirements for frequency of calibration,
- recordkeeping of all calibrations and standards used,

- quality control charts for recording results from multiple calibrations,
- evaluation of internal standards, and
- tolerances for calibration requirements.

All calibration standards are prepared from NBS-traceable, EPA certified, or primary standard materials. Daily logs are maintained to monitor instrument response to a given standard.

Quality Control Test Samples

Routine quality control samples to be analyzed concurrently with client samples are a significant portion of the RAS laboratory quality control programs. The purpose of these checks is twofold: 1) to assure that samples being analyzed satisfy predetermined standards of accuracy, and 2) to measure and document achieved levels of accuracy and precision.

There are many different types of quality control samples which could be used for these purposes. The correct combination of these will depend on the complexity of the test method and the desired degree of accuracy. The following quality control parameters are general considerations for Radian's quality control for test methods.

Interferences

The analytical results of a test method might be affected by interferences from the glassware, solvents, reagents, or the sample matrix. Blank samples which are subjected to conditions similar to samples being analyzed are used to evaluate the purity of laboratory reagents. The frequency of blank analysis is method dependent. For example, a laboratory or field blank is analyzed after each GC/MS volatile organic analysis with high levels for any of the pollutants. Ten percent of the samples from a

given sample batch are spiked with a known standard. Spike recovery data are calculated to determine matrix interference.

Precision

The precision or repeatability of a test method is required for proper interpretation and weighting of the data. Replicate samples or standards are used to determine the precision on a regular basis. The precision of multiple analyses are compared against predetermined precision limits to determine their acceptability. The precision is usually reported as a standard deviation or repeatability statistic and often depends on the concentration of the parameters analyzed. Replicate analyses are defined as separate digestions or extractions of the same sample, when possible. The percentage difference or range between replicate analyses is also used to monitor precision.

Reproducibility

The reproducibility of a test method refers to the repeatability over a period of time. How well will analytical results repeated a month later agree with today's results? Reproducibility can be measured by the repeated analysis of samples from a previous time period or by analysis by more than one laboratory or laboratory technician.

Qualitative Specificity

In the analysis of complex sample matrices containing multiple components, the use of a single method can lead to misidentification of compounds. The misidentification can be detected by repeated analysis of standards containing the compounds of interest or by independent analysis by a more specific method. For example, mass spectral confirmation can be used to evaluate misidentification problems in the GC laboratory.

2.6 Documentation and Data Handling

Documentation of methods, procedures, and results is an essential aspect of a QA/QC program.

Adequate documentation is required for an instrument maintenance system. RAS laboratories use an individual logbook, which is kept at each instrument, to record all calibration and maintenance activities. This logbook gives a chronology of that instrument's installation, operation, calibrations, maintenance, malfunction, and repairs. An accompanying binder includes all pertinent manufacturing information, service manuals, and similar reference materials.

Directions for calibrations and maintenance, along with appropriate forms and checklists, are maintained in a manual accompanying the logbook. The directions specify the required frequency for calibrations and maintenance, the tolerances for calibrations, and the action to be taken when calibration requirements are not met.

In this system, there is a single source for reference purposes as well as record keeping. All the instrument logbooks are reviewed periodically by the quality assurance coordinator and laboratory manager. A record of these logbook checks is maintained by the QA coordinator.

Work sheets have been developed to insure consistent laboratory data entry for most parameters determined in the laboratories. These sheets are designed to organize the data in a clear and logical manner, and to simplify calculations. The work sheets are divided into various sections including a section for reporting calibration standards and blank values and a section for plotting calibration curves. These work sheets are usually a standard data entry form which the laboratory technician enters in his/her bound lab notebook. When automated calibration is not applicable, electronic calculators are available in the laboratories to generate calibration curves by the method of least squates. Thus errors in reading calibration curves and calculating data are minimized. After an analysis

is completed and a data sheet filled out, the laboratory manager checks the data for completeness and approves the data sheet. After the data have been entered into the SAM system, an updated data sheet is issued to the laboratory manager. When the work is complete, a preliminary report is printed and distributed to the contributing laboratory managers for the final data check and approval. A final report is printed, certified by the laboratory manager, and forwarded to the client.

Proper documentation of quality assurance and quality control activities is an essential requirement. Documentation is needed to demonstrate that quality control activities were completed as scheduled and to communicate the results of the QC tests to laboratory managers and clients. Documentation of QA results is required to provide feedback for improvement of quality control programs.

Quality control documentation should be timely in order for feedback to occur. Daily reporting to laboratory managers is mandatory. Forms are designed to organize the QC data in a clear and logical manner, and to simplify calculations. Control charts are another excellent tool for summarizing quality control test results.

As part of Radian's QA audit program weekly reports summarizing audit results in the laboratories are prepared and distributed to QC coordinators.

3.0 Quality Assurance Audits

The quality assurance audit program of the RAS laboratories is conducted by the RAS QA Coordinator in conjunction with the corporate QA Director. The program consists of the following:

- QA standards are prepared using EPA certified standards, NBS standards, primary standard materials, and NBS-traceable compounds. All standards preparations are recorded in the QA Sample logbook (Figure 3-1).

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Standard No. QAS _____

QA type _____

Prep date _____ Prepared by _____ Verified by _____

Standard source _____

_____

Sample matrix _____

Parameters

Preparation method

Final vol _____

Figure 3-1. Standards preparation logbook

RADIAN CORPORATION

QAS _____

Prep method (con't)

Calculations

Sample Distribution

Date	SAM No.	Client	Remarks

Figure 3-1. (Cont.)

- An inventory of stock standards is maintained within the limits of published stability data. This decreases the time required for daily standard preparation.

- Duplicate samples are requested from clients. These are blind to the laboratory and the client is not billed for the duplicate.

- Blind QA samples are submitted through the Sample Control Center to all laboratories. The parameters and concentration levels are selected by the RAS Quality Assurance Coordinator.

- Laboratory managers submit, via a "QA Alert Form" (Figure 3-2). a list of the types of QA samples needed the following week. This insures that the parameters with which there have been problems are included in the sample.

- Monthly reports are issued from the RAS QA Coordinator (Fig. 3-3). These are submitted to the corporate QA Director, laboratory managers and Director of RAS. Managers are notified immediately of major problems with the results of analysis of a QA sample.

- The results of the program are summarized on a quarterly basis for Radian's management.

In addition to the continuous audit program, provisions for third party review are made with each client's work. Radian Analytical Services welcomes onsite audits, performance samples, and independent evaluations.

RADIAN CORPORATION

QA ALERT FORM

QA standard for the week of _____

NPDES
Form A water __
Form B water __
metals __
Form C water __
metals __
organics __

RCRA metals __
anions __
pesticide
OC __ OP __
herbicide __

EPA 601 __
602 __
624 __
625 __

B/N __ Acids __ A/N __

TOC __ TOX __

MS VOA __ GC VOA __

PCB __

Matrix requirements: _____

Concentration requirements: _____

Special Standards/Instructions	Individual Parameters

Date _____ Mgr _____

Figure 3-2. QA alert form

RADIAN CORPORATION

ANALYTICAL SERVICES
MONTHLY QA REPORT

QA prep report for the month of _____

Order No.	Lab	Parameter	Certified Value	Analyzed Value	% Recovery	Date Reported

Figure 3-3. Monthly QA Report

3.1 Data Review and Validation

All analysis results are entered into the SAM computer system. Following completion of the analyses, a preliminary report is printed and returned to the appropriate laboratory manager for review and validation. A final report is printed after the certification by the manager. This report is signed and approved by the laboratory manager before being forwarded to the client. The following diagram (Fig. 3-4) illustrates the data flow for a typical sample analysis.

Upon completion of the analysis and before the final data are issued, the results of the QA audit samples are compared to the certified values. These results are plotted on control charts. Separate control charts are maintained for each analysis. If results are outside the accepted control limits, the analytical results are held until the problem is resolved.

3.2 Control Charts

Quality control charts are maintained for both accuracy and precision. Both charts are structured as shown in Figure 3-5. The main portions of the chart are the center line and the two control limits. The center line is the 100% or total recovery/total agreement of analytical results. The upper and lower control limits are calculated from historical data.

Control charts for accuracy are constructed as follows:

Precent recovery of standards (P_{ST}):

$$P_{ST} = 100 \times \frac{\text{analyzed value}}{\text{certified value}}$$

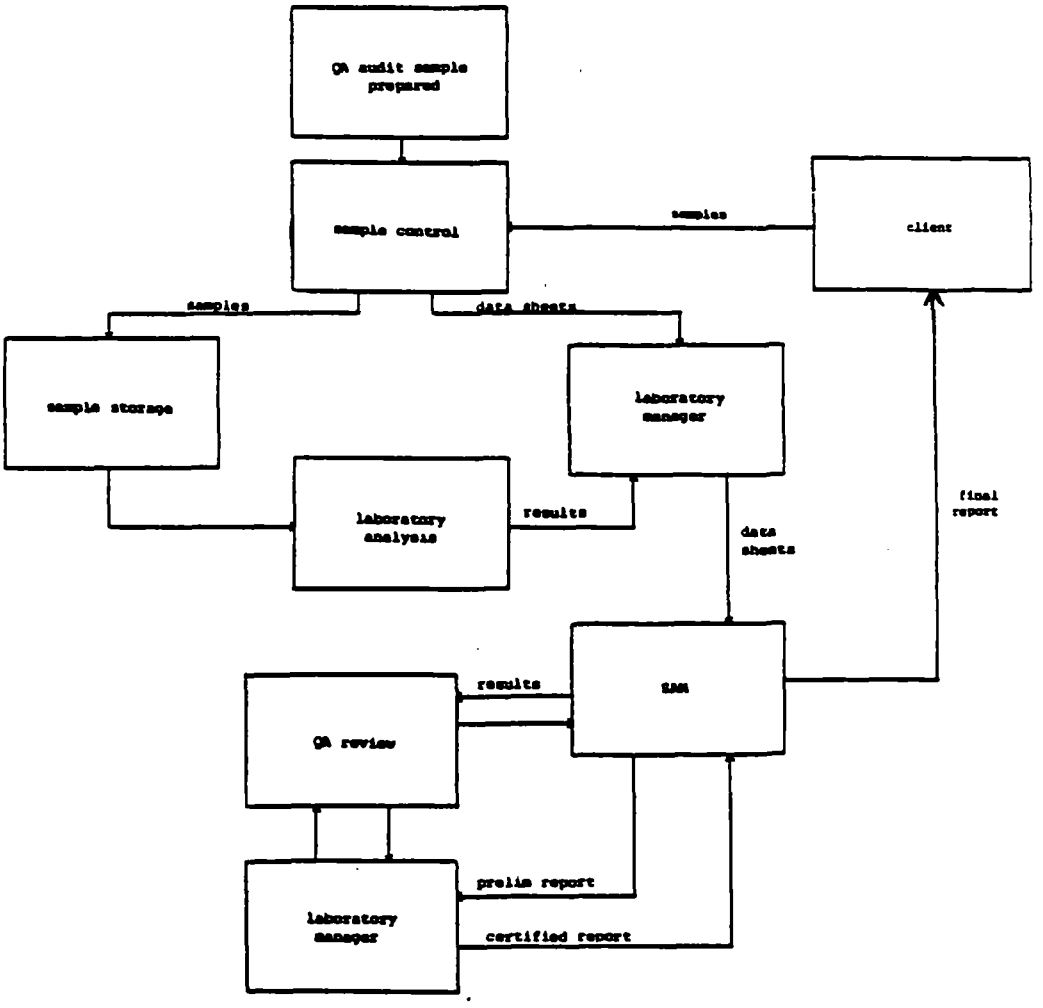

Figure 3-4. Data Flow

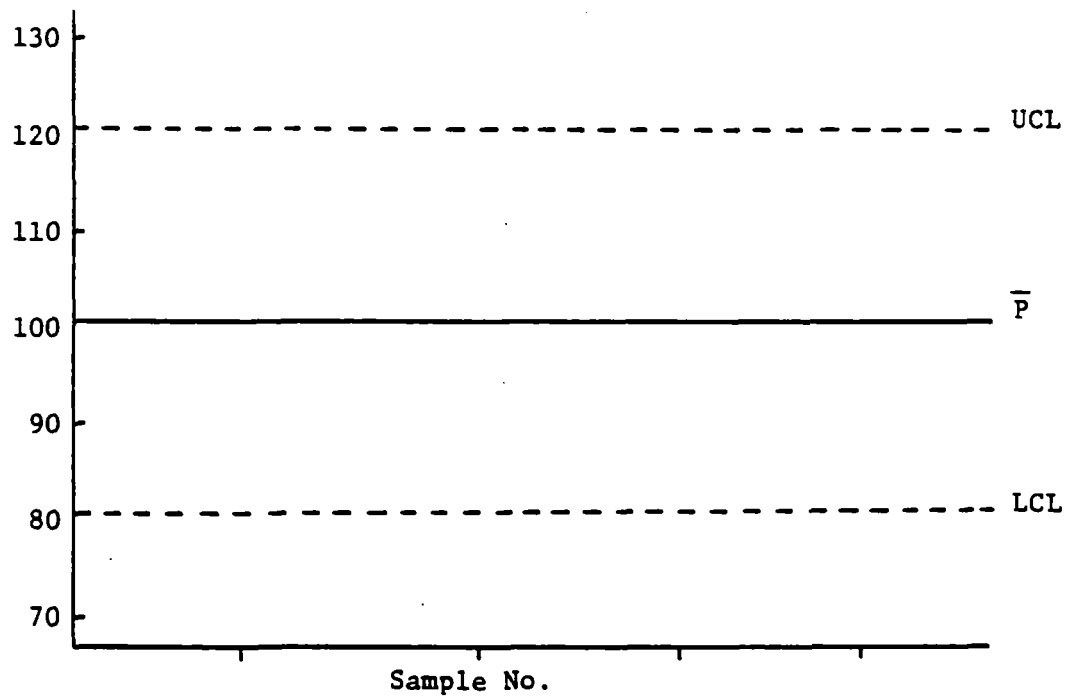

Figure 3-5. Control Chart

Percent recovery of spikes in samples (P_{SP}):

$$P_{SP} = 100 \times \frac{\text{analyzed value - background value}}{\text{spike}}$$

From a set of analyses, the average percent recovery ($\overline{P}$):

$$\overline{P} = \frac{\sum_{i=1}^{n} P_i}{n}$$

The standard deviation for percent recovery (S_R):

$$S_R = \sqrt{\frac{\sum_{i=1}^{n} P_i^2 - \left(\sum_{i=1}^{n} P_i\right)^2 / n}{n-1}}$$

The upper and lower control limits are therefore

$$UCL = \overline{P} + 3S_R$$
$$LCL = \overline{P} - 3S_R$$

An analysis is out of control when either of the two conditions apply:

1) Any results outside the control limits
2) Seven successive results on the same side of the control line.

Control charts for precision are also constructed. Precision is a function of the concentration range of the analyte. The closer the result is to the analytical detection limit, the more imprecise the data become on a percentage scale. Figure 3-6 illustrates the relationship between detection limit and precision for a typical methodology. Because of this concentration dependence, precision control charts need to be developed for specific concentration ranges for each analyte. For duplicate samples A and B, the ratio of the values of A and B are plotted.

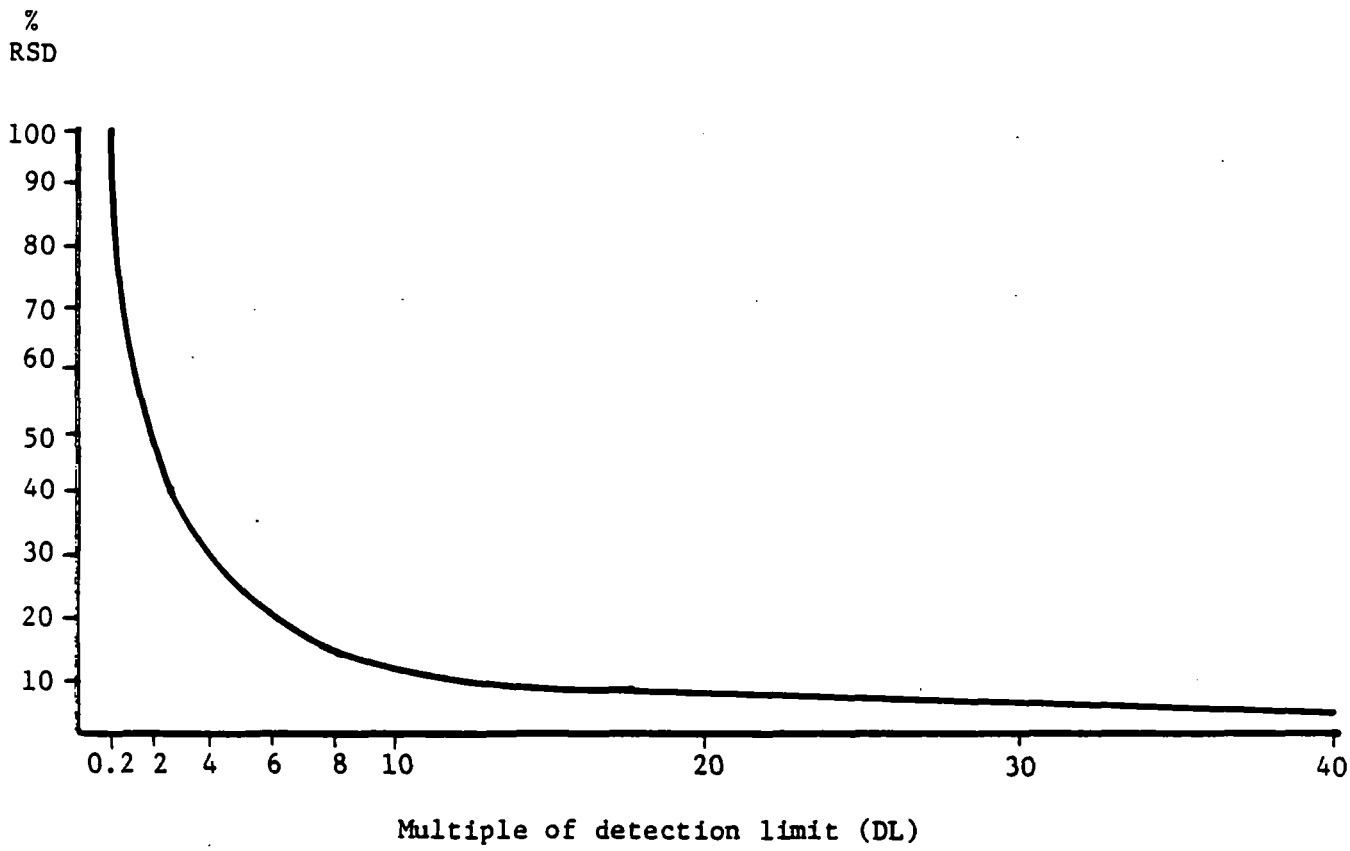

Figure 3-6. Relationship between Detection Limit and Precision

3.3 Concurrent Review

Upon review of analytical results of QA audit samples, the QA Coordinator will schedule a meeting with the laboratory manager if there are any tests out of control or which are deviant from an expected precision/accuracy norm. The purpose of this meeting is to:

- review raw data and determine if there is an explanation for the deviance.
- outline analyses of quality control and/or quality assurance samples to further define the problem and its solution.
- establish a schedule for monitoring the analysis after a solution is implemented, to assure that the problem does not recur.

Involvement of the laboratory manager in the problem assessment and solution is essential to a mutual committment to a quality analytical laboratory.

APPENDIX G

CHAIN OF CUSTODY FORMS

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APPENDIX G

CHAIN OF CUSTODY FORMS

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APPENDIX G

CHAIN OF CUSTODY FORMS

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RADIAN
CORPORATION

CHAIN OF CUSTODY RECORD

Field Sample No(s) GS840149 → GS840154

Company Sampled/Address SHEPPARD AFB Tx 76311-5300

Sample Point Description CORE HOLE #1, WASTE PIT, 5 – 30 ft depth

Stream Characteristics: N/A

Temperature _____ Flow _____ pH _____

Visual Observations/Comments SAMPLES (840151 and 840152) SUSPECTED HYDROCARBONS / SOLVENTS

Collector's Name PETER A WATERREUS Date/Time Sampled 11/15/84

Amount of Sample Collected ONE QUART JAR AND TWO VOA VIALS FOR EACH SAMPLE

Sample Description SOILS

Store at: ☐ Ambient ☐ 5°C ☐ – 10°C ☒ Other 4°C

☒ Caution - No more sample available ☒ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards _____

☐ Hazardous sample (see below) ☐ Non-hazardous sample

☐ Toxic	☐ Skin irritant	☐ Flammable (FP< 40°C)
☐ Pyrophoric	☐ Lachrymator	☐ Shock sensitive
☐ Acidic	☐ Biological	☐ Carcinogenic - suspect
☐ Caustic	☐ Peroxide	☐ Radioactive

☐ Other SUSPECTED HAZARDOUS MATERIAL

Sample Allocation/Chain of Possession:

Organization Name RAS

Received By [signature] Date Received 11-20-84 Time 1100

Transported By [signature] Lab Sample No. 841130

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

RADIAN
CORPORATION

CHAIN OF CUSTODY RECORD

Field Sample No. CS840155

Company Sampled/Address SHEPPARD AFB TX 76311-5300
Sample Point Description MW9, FPTA #3, COMPOSITE SAMPLE 0-35 ft depth
Stream Characteristics: N/A
Temperature _____ Flow _____ pH _____
Visual Observations/Comments SUSPECTED HYDROCARBONS

Collector's Name PETER A WATERBEUS Date/Time Sampled 11/19/84 0815
Amount of Sample Collected ONE QUART JAR
Sample Description SOIL
Store at: ☐ Ambient ☐ 5°C ☐ −10°C ☒ Other 4°C

☒ Caution - No more sample available ☒ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards _____

☐ Hazardous sample (see below) ☐ Non-hazardous sample

☐ Toxic	☐ Skin irritant	☐ Flammable (FP< 40°C)
☐ Pyrophoric	☐ Lachrymator	☐ Shock sensitive
☐ Acidic	☐ Biological	☐ Carcinogenic - suspect
☐ Caustic	☐ Peroxide	☐ Radioactive

☐ Other SUSPECTED HAZARDOUS MATERIAL

Sample Allocation/Chain of Possession:
Organization Name RAS -
Received By [illegible] Date Received 11-20-84 Time 1100
Transported By Fed Ex Lab Sample No. 8411128
Comments _____
Inclusive Dates of Possession _____

Organization Name _____
Received By _____ Date Received _____ Time _____
Transported By _____ Lab Sample No. _____
Comments _____
Inclusive Dates of Possession _____

Organization Name _____
Received By _____ Date Received _____ Time _____
Transported By _____ Lab Sample No. _____
Comments _____
Inclusive Dates of Possession _____

RADIAN CORPORATION

CHAIN OF CUSTODY RECORD

Field Sample No(s) GS840149 → GS840154

Company Sampled/Address SHEPPARD AFB Tx 76311-5300

Sample Point Description CORE HOLE #1, WASTE PIT, 5 – 30 ft depth

Stream Characteristics: N/A

Temperature _____ Flow _____ pH _____

Visual Observations/Comments SAMPLES (840151 and 840152) SUSPECTED HYDROCARBONS / SOLVENTS

Collector's Name PETER A WATERREUS Date/Time Sampled 11/15/84

Amount of Sample Collected ONE QUART JAR AND TWO VOA VIALS FOR EACH SAMPLE

Sample Description SOILS

Store at: ☐ Ambient ☐ 5°C ☐ – 10°C ☒ Other 4°C

☒ Caution - No more sample available ☒ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards _____

☐ Hazardous sample (see below) ☐ Non-hazardous sample

☐ Toxic	☐ Skin irritant	☐ Flammable (FP< 40°C)
☐ Pyrophoric	☐ Lachrymator	☐ Shock sensitive
☐ Acidic	☐ Biological	☐ Carcinogenic - suspect
☐ Caustic	☐ Peroxide	☐ Radioactive

☐ Other SUSPECTED HAZARDOUS MATERIAL

Sample Allocation/Chain of Possession:

Organization Name RAS

Received By [signature] Date Received 11-20-84 Time 1100

Transported By [signature] Lab Sample No. 8411130

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

RADIAN
CORPORATION

CHAIN OF CUSTODY RECORD

Field Sample No. CS840155

Company Sampled/Address SHEPPARD AFB TX 76311-5300
Sample Point Description MW9, FPTA #3, COMPOSITE SAMPLE 0-35 ft depth
Stream Characteristics: N/A
Temperature _____ Flow _____ pH _____
Visual Observations/Comments SUSPECTED HYDROCARBONS

Collector's Name PETER A WATERBEUS Date/Time Sampled 11/19/84 0815
Amount of Sample Collected ONE QUART JAR
Sample Description SOIL
Store at: ☐ Ambient ☐ 5°C ☐ −10°C ☒ Other 4°C

☒ Caution - No more sample available ☒ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards _____

☐ Hazardous sample (see below) ☐ Non-hazardous sample

☐ Toxic	☐ Skin irritant	☐ Flammable (FP< 40°C)
☐ Pyrophoric	☐ Lachrymator	☐ Shock sensitive
☐ Acidic	☐ Biological	☐ Carcinogenic - suspect
☐ Caustic	☐ Peroxide	☐ Radioactive

☐ Other SUSPECTED HAZARDOUS MATERIAL

Sample Allocation/Chain of Possession:
Organization Name RAS -
Received By [illegible] Date Received 11-20-84 Time 1100
Transported By Fed Ex Lab Sample No. 841128
Comments _____
Inclusive Dates of Possession _____

Organization Name _____
Received By _____ Date Received _____ Time _____
Transported By _____ Lab Sample No. _____
Comments _____
Inclusive Dates of Possession _____

Organization Name _____
Received By _____ Date Received _____ Time _____
Transported By _____ Lab Sample No. _____
Comments _____
Inclusive Dates of Possession _____

RADIAN CORPORATION

CHAIN OF CUSTODY RECORD

Field Sample No. S 84 0156 – 84 0162

Company Sampled/Address SHEPPARD AFB

Sample Point Description CORE HOLE #3, WASTE PIT

Stream Characteristics: N/A

Temperature _____ Flow — pH —

Visual Observations/Comments _____

Collector's Name PETER A WATERREUS Date/Time Sampled 12/11/84

Amount of Sample Collected 1 quart jar and 2 VOA vials for each sample EXCEPT FOR 0157 WHICH HAS 1 qt ONLY

Sample Description SOILS

Store at: ☐ Ambient ☐ 5°C ☐ – 10°C ☒ Other 4°C

☒ Caution - No more sample available ☒ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards _____

☐ Hazardous sample (see below) ☐ Non-hazardous sample

☐ Toxic	☐ Skin irritant	☐ Flammable (FP< 40°C)
☐ Pyrophoric	☐ Lachrymator	☐ Shock sensitive
☐ Acidic	☐ Biological	☐ Carcinogenic - suspect
☐ Caustic	☐ Peroxide	☐ Radioactive

☐ Other SUSPECTED HAZARDOUS MATERIAL

Sample Allocation/Chain of Possession:

Organization Name RAS-

Received By [signature] Date Received 12-13-84 Time 1130

Transported By [signature] Lab Sample No. 8412112

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

RADIAN CORPORATION

CHAIN OF CUSTODY RECORD

Field Sample No. S84 0156 – 84 0162

Company Sampled/Address SHEPPARD AFB

Sample Point Description CORE HOLE #3, WASTE PIT

Stream Characteristics: N/A

Temperature _____ Flow — pH —

Visual Observations/Comments _____

Collector's Name PETER A WATERREUS Date/Time Sampled 12/11/84

Amount of Sample Collected 1 quart jar and 2 VOA vials for each sample EXCEPT FOR 0157 WHICH HAS 1 of ONE

Sample Description SOILS

Store at: ☐ Ambient ☐ 5°C ☐ – 10°C ☒ Other 4°C

☒ Caution - No more sample available ☒ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards _____

☐ Hazardous sample (see below) ☐ Non-hazardous sample

☐ Toxic	☐ Skin irritant	☐ Flammable (FP< 40°C)
☐ Pyrophoric	☐ Lachrymator	☐ Shock sensitive
☐ Acidic	☐ Biological	☐ Carcinogenic - suspect
☐ Caustic	☐ Peroxide	☐ Radioactive

☐ Other SUSPECTED HAZARDOUS MATERIAL

Sample Allocation/Chain of Possession:

Organization Name RAS-

Received By [illegible] Date Received 12-13-84 Time 1130

Transported By [illegible] Lab Sample No. 8412112

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

RADIAN
CORPORATION

CHAIN OF CUSTODY RECORD

Field Sample Nos 84 0163 → 84 0170

Company Sampled/Address SHEPPARD AFB

Sample Point Description CORE HOLE #2, WASTE PIT

Stream Characteristics: N/A

Temperature — Flow — pH —

Visual Observations/Comments

Collector's Name PETER A WATERREUS Date/Time Sampled 12/11/84

Amount of Sample Collected 1 qt JAR AND 2 VOA VIALS FOR EACH SAMPLE EXCEPT FOR 0165 1 qt 0168 1 qt

Sample Description SOILS

Store at: ☐ Ambient ☐ 5°C ☐ −10°C ☒ Other 4°C

☒ Caution - No more sample available ☒ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards

☐ Hazardous sample (see below) ☐ Non-hazardous sample

☐ Toxic	☐ Skin irritant	☐ Flammable (FP< 40°C)
☐ Pyrophoric	☐ Lachrymator	☐ Shock sensitive
☐ Acidic	☐ Biological	☐ Carcinogenic - suspect
☐ Caustic	☐ Peroxide	☐ Radioactive

☐ Other SUSPECTED HAZARDOUS MATERIAL

Sample Allocation/Chain of Possession:

Organization Name RAS

Received By [signature] Date Received 12-13-84 Time 1130

Transported By Fed Ex Lab Sample No. 8412112

Comments

Inclusive Dates of Possession

Organization Name

Received By Date Received Time

Transported By Lab Sample No.

Comments

Inclusive Dates of Possession

Organization Name

Received By Date Received Time

Transported By Lab Sample No.

Comments

Inclusive Dates of Possession

RADIAN CORPORATION

CHAIN OF CUSTODY RECORD

Field Sample No. S 84 0156 – 84 0162

Company Sampled/Address SHEPPARD AFB

Sample Point Description CORE HOLE #3, WASTE PIT

Stream Characteristics: N/A

Temperature _____ Flow — pH —

Visual Observations/Comments _____

Collector's Name PETER A WATERREUS Date/Time Sampled 12/11/84

Amount of Sample Collected 1 quart jar and 2 VOA vials for each sample EXCEPT FOR 0157 WHICH HAS 1 of ONE

Sample Description SOILS

Store at: ☐ Ambient ☐ 5°C ☐ – 10°C ☒ Other 4°C

☒ Caution · No more sample available ☒ Return unused portion of sample ☐ Discard unused portions

Other Instructions · Special Handling · Hazards _____

☐ Hazardous sample (see below) ☐ Non-hazardous sample

☐ Toxic	☐ Skin irritant	☐ Flammable (FP< 40°C)
☐ Pyrophoric	☐ Lachrymator	☐ Shock sensitive
☐ Acidic	☐ Biological	☐ Carcinogenic · suspect
☐ Caustic	☐ Peroxide	☐ Radioactive

☐ Other SUSPECTED HAZARDOUS MATERIAL

Sample Allocation/Chain of Possession:

Organization Name RAS-

Received By [signature] Date Received 12-13-84 Time 1130

Transported By [signature] Lab Sample No. 8412112

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

RADIAN
CORPORATION

CHAIN OF CUSTODY RECORD

Field Sample Nos 84 0163 → 84 0170

Company Sampled/Address SHEPPARD AFB

Sample Point Description CORE HOLE #2, WASTE PIT

Stream Characteristics: N/A

Temperature — Flow — pH —

Visual Observations/Comments

Collector's Name PETER A WATERREUS Date/Time Sampled 12/11/84

Amount of Sample Collected 1 qt JAR AND 2 VOA VIALS FOR EACH SAMPLE EXCEPT FOR 0165, 14, 14

Sample Description SOILS

Store at: ☐ Ambient ☐ 5°C ☐ −10°C ☒ Other 4°C

☒ Caution - No more sample available ☒ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards

☐ Hazardous sample (see below) ☐ Non-hazardous sample

☐ Toxic	☐ Skin irritant	☐ Flammable (FP< 40°C)
☐ Pyrophoric	☐ Lachrymator	☐ Shock sensitive
☐ Acidic	☐ Biological	☐ Carcinogenic - suspect
☐ Caustic	☐ Peroxide	☐ Radioactive

☐ Other SUSPECTED HAZARDOUS MATERIAL

Sample Allocation/Chain of Possession:

Organization Name RAS

Received By [illegible] Date Received 12-13-84 Time 1130

Transported By Fed Ex Lab Sample No. 8412112

Comments

Inclusive Dates of Possession

Organization Name

Received By Date Received Time

Transported By Lab Sample No.

Comments

Inclusive Dates of Possession

Organization Name

Received By Date Received Time

Transported By Lab Sample No.

Comments

Inclusive Dates of Possession

RAS

RADIAN CORPORATION

CHAIN OF CUSTODY RECORD

Field Sample No. 840190 thru 840196

Company Sampled/Address SHEPPARD AFB TX

Sample Point Description SW-1, SW-2, SW-5, SW-6, SW-7, SW-8, SW-9

Stream Characteristics:

Temperature 14.0-18.5°C Flow BASE pH 6.4-9.3

Visual Observations/Comments SURFACE WATER SAMPLES - FIRST ROUND OF IRP SAMPLING AT SHEPPARD AFB, TX

Collector's Name RICK BELAN Date/Time Sampled 12/11/84 @ 1640-1815 12/12/84 @ 1145-1620

Amount of Sample Collected 14-VOA *

Sample Description SURFACE WATER

Store at: ☐ Ambient ☐ 5°C ☐ -10°C ☒ Other 4°C

☒ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards

* 7-500 ml glass brown w/ H_2SO_4 / 7-Qt Mason w/ H_2SO_4 / 7-500 ml plastic / 3-500 ml w/ HNO_3 plastic.

☒ Hazardous sample (see below) ☐ Non-hazardous sample

☐ Toxic	☐ Skin irritant	☐ Flammable (FP< 40°C)
☐ Pyrophoric	☐ Lachrymator	☐ Shock sensitive
☐ Acidic	☐ Biological	☐ Carcinogenic - suspect
☐ Caustic	☐ Peroxide	☐ Radioactive

☒ Other Possible contaminated water

Sample Allocation/Chain of Possession:

Organization Name RAS

Received By Jane Lundsey Date Received 12-14-84 Time 1030

Transported By Fed Ex Lab Sample No. 841205

Comments

Inclusive Dates of Possession

Organization Name

Received By Date Received Time

Transported By Lab Sample No.

Comments

Inclusive Dates of Possession

Organization Name

Received By Date Received Time

Transported By Lab Sample No.

Comments

Inclusive Dates of Possession

RADIAN CORPORATION

CHAIN OF CUSTODY RECORD

850001
850002
850003
850004
850009
850010
850011

Field Sample No.

Company Sampled/Address SHEPPARD AFB

Sample Point Description MW-11, MW-12, MW-13, MW-14, MW-8, MW-4, MW-4

Stream Characteristics: N/A

Temperature — Flow — pH 1045 1605 1635 1710

Visual Observations/Comments

Collector's Name PETER A WATERBEUS Date/Time Sampled 2/5/85, 2/7/85 1335 0445

Amount of Sample Collected 2 VOA, 2 500ml Plastic, 1(500)ml bottle, MASON at par per sample number

Sample Description WATER

Store at: ☐ Ambient ☐ 5°C ☐ −10°C ☒ Other 4°C some have H_2SO_4, some HNO_3

☐ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards First round of sampling of monitor wells at Sheppard AFB

☑ Hazardous sample (see below) ☐ Non-hazardous sample

☐ Toxic	☐ Skin irritant	☐ Flammable (FP< 40°C)
☐ Pyrophoric	☐ Lachrymator	☐ Shock sensitive
☐ Acidic	☐ Biological	☐ Carcinogenic - suspect
☐ Caustic	☐ Peroxide	☐ Radioactive

☑ Other SUSPECTED HAZARDOUS MATERIAL

Sample Allocation/Chain of Possession:

Organization Name RAS

Received By [signature] Date Received 2-8-85 Time 1000

Transported By Fed Ex Lab Sample No. 8502063, 064

Comments

Inclusive Dates of Possession

Organization Name

Received By Date Received Time

Transported By Lab Sample No.

Comments

Inclusive Dates of Possession

Organization Name

Received By Date Received Time

Transported By Lab Sample No.

Comments

Inclusive Dates of Possession

RAS

RADIAN CORPORATION

CHAIN OF CUSTODY RECORD

Field Sample No. 840190 thru 840196

Company Sampled/Address SHEPPARD AFB TX

Sample Point Description SW-1, SW-2, SW-5, SW-6, SW-7, SW-8, SW-9

Stream Characteristics:

Temperature 14.0-18.5°C Flow BASE pH 6.4-9.3

Visual Observations/Comments SURFACE WATER SAMPLES - FIRST ROUND OF IRP SAMPLING AT SHEPPARD AFB, TX

Collector's Name RICK BELAN Date/Time Sampled 12/11/84 @ 1640-1815 12/12/84 @ 1145-1620

Amount of Sample Collected 14-VOA *

Sample Description SURFACE WATER

Store at: ☐ Ambient ☐ 5°C ☐ -10°C ☒ Other 4°C

☒ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards

* 7-500 ml glass brown w/ H_2SO_4 / 7-Qt Mason w/ H_2SO_4 / 7-500 ml plastic / 3-500 ml w/ HNO_3 plastic.

☒ Hazardous sample (see below) ☐ Non-hazardous sample

☐ Toxic	☐ Skin irritant	☐ Flammable (FP< 40°C)
☐ Pyrophoric	☐ Lachrymator	☐ Shock sensitive
☐ Acidic	☐ Biological	☐ Carcinogenic - suspect
☐ Caustic	☐ Peroxide	☐ Radioactive

☒ Other possible contaminated water

Sample Allocation/Chain of Possession:

Organization Name RAS

Received By Jane Lundsey Date Received 12-14-84 Time 1030

Transported By Fed Ex Lab Sample No. 841205

Comments

Inclusive Dates of Possession

Organization Name

Received By Date Received Time

Transported By Lab Sample No.

Comments

Inclusive Dates of Possession

Organization Name

Received By Date Received Time

Transported By Lab Sample No.

Comments

Inclusive Dates of Possession

RADIAN CORPORATION

CHAIN OF CUSTODY RECORD

850001
850002
850003
850004
850009
850010
850011

Field Sample No.

Company Sampled/Address SHEPPARD AFB

Sample Point Description MW-11, MW-12, MW-13, MW-14, MW-8, MW-4, MW-4

Stream Characteristics: N/A

Temperature — Flow — pH 1045 1605 1635 1710

Visual Observations/Comments

Collector's Name PETER A WATERBEUS Date/Time Sampled 2/5/85, 2/7/85 1335 0945

Amount of Sample Collected 2 VOA, 2 500ml Plastic, 1(500)ml bottle, MASON at far per sample number

Sample Description WATER

Store at: ☐ Ambient ☐ 5°C ☐ −10°C ☒ Other 4°C some have H_2SO_4, some HNO_3

☐ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards First round of sampling of monitor wells at Sheppard AFB

☑ Hazardous sample (see below) ☐ Non-hazardous sample

☐ Toxic	☐ Skin irritant	☐ Flammable (FP< 40°C)
☐ Pyrophoric	☐ Lachrymator	☐ Shock sensitive
☐ Acidic	☐ Biological	☐ Carcinogenic - suspect
☐ Caustic	☐ Peroxide	☐ Radioactive

☑ Other SUSPECTED HAZARDOUS MATERIAL

Sample Allocation/Chain of Possession:

Organization Name RAS

Received By [signature] Date Received 2-8-85 Time 1000

Transported By Fed Ex Lab Sample No. 8502063, 064

Comments

Inclusive Dates of Possession

Organization Name

Received By Date Received Time

Transported By Lab Sample No.

Comments

Inclusive Dates of Possession

Organization Name

Received By Date Received Time

Transported By Lab Sample No.

Comments

Inclusive Dates of Possession

RAS

RADIAN CORPORATION

CHAIN OF CUSTODY RECORD

Field Sample No. 840190 thru 840196

Company Sampled/Address SHEPPARD AFB TX

Sample Point Description SW-1, SW-2, SW-5, SW-6, SW-7, SW-8, SW-9

Stream Characteristics:

Temperature 14.0-18.5°C Flow BASE pH 6.4-9.3

Visual Observations/Comments SURFACE WATER SAMPLES - FIRST ROUND OF IRP SAMPLING AT SHEPPARD AFB, TX

Collector's Name RICK BELAN Date/Time Sampled 12/11/84 @ 1640-1915 12/12/84 @ 1145-1620

Amount of Sample Collected 14-VOA *

Sample Description SURFACE WATER

Store at: ☐ Ambient ☐ 5°C ☐ -10°C ☒ Other 4°C

☒ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards

* 7-500 ml glass brown w/ H_2SO_4 / 7-Qt Mason w/ H_2SO_4 / 7-500 ml plastic / 3-500 ml w/ HNO_3 plastic.

☒ Hazardous sample (see below) ☐ Non-hazardous sample

☐ Toxic	☐ Skin irritant	☐ Flammable (FP< 40°C)
☐ Pyrophoric	☐ Lachrymator	☐ Shock sensitive
☐ Acidic	☐ Biological	☐ Carcinogenic - suspect
☐ Caustic	☐ Peroxide	☐ Radioactive

☒ Other possible contaminated water

Sample Allocation/Chain of Possession:

Organization Name RAS

Received By [illegible] Date Received 12-14-84 Time 1030

Transported By Fed Ex Lab Sample No. 841205

Comments

Inclusive Dates of Possession

Organization Name

Received By Date Received Time

Transported By Lab Sample No.

Comments

Inclusive Dates of Possession

Organization Name

Received By Date Received Time

Transported By Lab Sample No.

Comments

Inclusive Dates of Possession

RADIAN CORPORATION

CHAIN OF CUSTODY RECORD

850001
850002
850003
850004
850009
850010
850011

Field Sample No.

Company Sampled/Address SHEPPARD AFB

Sample Point Description MW-11, MW-12, MW-13, MW-14, MW-8, MW-4, MW-4

Stream Characteristics: N/A

Temperature — Flow — pH 1045 1605 1635 1710

Visual Observations/Comments

Collector's Name PETER A WATERBEKS Date/Time Sampled 2/5/85, 2/7/85 1335 0945

Amount of Sample Collected 2 VOA, 1 500 ml Plastic, 1(500) ml bottle, MASON at par per sample number

Sample Description WATER

Store at: ☐ Ambient ☐ 5°C ☐ −10°C ☒ Other 4°C some have H_2SO_4; some HNO_3

☐ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards First round of sampling of monitor wells at Sheppard AFB

☑ Hazardous sample (see below) ☐ Non-hazardous sample

☐ Toxic	☐ Skin irritant	☐ Flammable (FP< 40°C)
☐ Pyrophoric	☐ Lachrymator	☐ Shock sensitive
☐ Acidic	☐ Biological	☐ Carcinogenic - suspect
☐ Caustic	☐ Peroxide	☐ Radioactive

☑ Other SUSPECTED HAZARDOUS MATERIAL

Sample Allocation/Chain of Possession:

Organization Name RAS

Received By [signature] Date Received 2-8-85 Time 1000

Transported By Fed Ex Lab Sample No. 8502063, 064

Comments

Inclusive Dates of Possession

Organization Name

Received By Date Received Time

Transported By Lab Sample No.

Comments

Inclusive Dates of Possession

Organization Name

Received By Date Received Time

Transported By Lab Sample No.

Comments

Inclusive Dates of Possession

RADIAN CORPORATION

CHAIN OF CUSTODY RECORD

850006
850007
Field Sample No. 850009

Company Sampled/Address SHEPPARD AFB
Sample Point Description MW-9, MW-10, MW-8 at FPTA No. 3

Stream Characteristics: N/A
Temperature — Flow — pH —
Visual Observations/Comments
Time 1620, 1525, 1335

Collector's Name PETER A WATERBEUS Date/Time Sampled 2/7/85
Amount of Sample Collected 1 MASON jar, 2 VOA VIALS, 2 500ml Plastic, 1 500ml glass
Sample Description WATER
Store at: ☐ Ambient ☐ 5°C ☐ −10°C ☒ Other 4°C some have H_2SO_4, HNO_3

☑ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards First round of samples from monitor wells at Sheppard AFB

☑ Hazardous sample (see below) ☐ Non-hazardous sample

☐ Toxic	☐ Skin irritant	☐ Flammable (FP< 40°C)
☐ Pyrophoric	☐ Lachrymator	☐ Shock sensitive
☐ Acidic	☐ Biological	☐ Carcinogenic - suspect
☐ Caustic	☐ Peroxide	☐ Radioactive

☑ Other SUSPECTED HAZARDOUS MATERIAL

Sample Allocation/Chain of Possession:
Organization Name RAS
Received By [illegible] Date Received 2-8-85 Time 1000
Transported By Fed Ex Lab Sample No. 850206F
Comments
Inclusive Dates of Possession

Organization Name
Received By Date Received Time
Transported By Lab Sample No.
Comments
Inclusive Dates of Possession

Organization Name
Received By Date Received Time
Transported By Lab Sample No.
Comments
Inclusive Dates of Possession

RADIA

RADIAN
CORPORATION

CHAIN OF CUSTODY RECORD

Field Sample No. 850021; 850073 thru 850078 & 850079

Company Sampled/Address SHEPPARD AFB, TX
Sample Point Description Monitor Well + Sui

Stream Characteristics:
Temperature 3 to 17 °C Flow — pH 5.1 to 7.8
Visual Observations/Comments —

Collector's Name D.A. DELAN/NHLund Date/Time Sampled 2/13/85 noted on sample containers
Amount of Sample Collected 1-Qrt, 1-500ml (brown), 1-500ml plastic and 2-VOA's VIALS
Sample Description Ground or Surface Water
Store at: ☐ Ambient ☐ 5°C ☐ −10°C ☒ Other 4°C and/or sulfuric acid in Qrt and 500ml brown Jars.

☒ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards —

☒ Hazardous sample (see below) ☐ Non-hazardous sample

☐ Toxic	☐ Skin irritant	☐ Flammable (FP< 40°C)
☐ Pyrophoric	☐ Lachrymator	☐ Shock sensitive
☐ Acidic	☐ Biological	☐ Carcinogenic - suspect
☐ Caustic	☐ Peroxide	☐ Radioactive

☒ Other suspected contamination

Sample Allocation/Chain of Possession:
Organization Name RAS
Received By Jane Lindsey Date Received 2-14-85 Time 0900
Transported By Fed Ex Lab Sample No. 8502080
Comments
Inclusive Dates of Possession

Organization Name
Received By Date Received Time
Transported By Lab Sample No.
Comments
Inclusive Dates of Possession

Organization Name
Received By Date Received Time
Transported By Lab Sample No.
Comments
Inclusive Dates of Possession

RAD: SW-1

RADIAN CORPORATION

CHAIN OF CUSTODY RECORD

Field Sample No. 850012 and 850013

Company Sampled/Address SHEPPARD AFB

Sample Point Description Surface water Post SW-1

Stream Characteristics:

Temperature 8°C Flow — pH 8.1

Visual Observations/Comments —

Collector's Name D.A. DELAN / W.H. Lund Date/Time Sampled 2/4/85 1300/each

Amount of Sample Collected 1-Qrt glass/1 Qrt w/H_2SO_4/2-VOAs/1-500ml glass brown w/H_2SO_4 1-500ml plastic

Sample Description Surface water

Store at: ☐ Ambient ☐ 5°C ☐ −10°C ☒ Other 4°C

☒ Caution · No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions · Special Handling · Hazards

☒ Hazardous sample (see below) ☐ Non-hazardous sample

☐ Toxic	☐ Skin irritant	☐ Flammable (FP< 40°C)
☐ Pyrophoric	☐ Lachrymator	☐ Shock sensitive
☐ Acidic	☐ Biological	☐ Carcinogenic · suspect
☐ Caustic	☐ Peroxide	☐ Radioactive

☒ Other Suspected only

Sample Allocation/Chain of Possession:

Organization Name RAS

Received By [illegible] Date Received 2-18-85 Time 1500

Transported By RAB Lab Sample No. 8502101

Comments

Inclusive Dates of Possession

Organization Name

Received By Date Received Time

Transported By Lab Sample No.

Comments

Inclusive Dates of Possession

Organization Name

Received By Date Received Time

Transported By Lab Sample No.

Comments

Inclusive Dates of Possession

RAD: 50-2, MW-4, [illegible]-5
MW-7, MW-8, [illegible]-1

RADIAN CORPORATION

CHAIN OF CUSTODY RECORD

Field Sample No. 850014, 850015

Company Sampled/Address SHEPPARD AFB [850016, 850017, 850018, 850020.

Sample Point Description Surface & Ground water Samples

Stream Characteristics:

Temperature 8-16 **Flow** — **pH** 6.0-8.8

Visual Observations/Comments —

Collector's Name R.A. Belan / N.H. Lund **Date/Time Sampled** 2/14/85 all day, see bottles

Amount of Sample Collected 1-Qrt / 1-Qrt w/ H_2SO_4 / 1-500ml bcn w/ H_2SO_4 / 1-500ml plastic /

Sample Description Water 1-500ml plastic w/ HNO_3 / 2 VOAs.

Store at: ☐ Ambient ☐ 5°C ☐ −10°C ☒ Other 4°C

☒ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards

☒ Hazardous sample (see below) ☐ Non-hazardous sample

☐ Toxic	☐ Skin irritant	☐ Flammable (FP< 40°C)
☐ Pyrophoric	☐ Lachrymator	☐ Shock sensitive
☐ Acidic	☐ Biological	☐ Carcinogenic - suspect
☐ Caustic	☐ Peroxide	☐ Radioactive

☒ Other Suspected.

Sample Allocation/Chain of Possession:

Organization Name RAS

Received By [illegible] **Date Received** 2-18-85 **Time** 1500

Transported By RAB **Lab Sample No.** 8502101, 102

Comments

Inclusive Dates of Possession

Organization Name

Received By **Date Received** **Time**

Transported By **Lab Sample No.**

Comments

Inclusive Dates of Possession

Organization Name

Received By **Date Received** **Time**

Transported By **Lab Sample No.**

Comments

Inclusive Dates of Possession

RAD: SW-1

RADIAN CORPORATION

CHAIN OF CUSTODY RECORD

Field Sample No. 850012 and 850013

Company Sampled/Address SHEPPARD AFB

Sample Point Description Surface water Point SW-1

Stream Characteristics:

Temperature 8°C Flow — pH 8.1

Visual Observations/Comments —

Collector's Name D.A. DELAN/WHLund Date/Time Sampled 2/4/85 1300/each

Amount of Sample Collected 2-Qrt glass/1 Qrt w/H_2SO_4/2-VOAs/1-500ml glass brown w/H_2SO_4 1-500ml plastic

Sample Description Surface water

Store at: ☐ Ambient ☐ 5°C ☐ −10°C ☒ Other 4°C

☒ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards

☒ Hazardous sample (see below) ☐ Non-hazardous sample

☐ Toxic	☐ Skin irritant	☐ Flammable (FP< 40°C)
☐ Pyrophoric	☐ Lachrymator	☐ Shock sensitive
☐ Acidic	☐ Biological	☐ Carcinogenic - suspect
☐ Caustic	☐ Peroxide	☐ Radioactive

☒ Other Suspected only

Sample Allocation/Chain of Possession:

Organization Name RAS

Received By [signature] Date Received 2-18-85 Time 1500

Transported By RAB Lab Sample No. 850210I

Comments

Inclusive Dates of Possession

Organization Name

Received By Date Received Time

Transported By Lab Sample No.

Comments

Inclusive Dates of Possession

Organization Name

Received By Date Received Time

Transported By Lab Sample No.

Comments

Inclusive Dates of Possession

RAD: SW-2, MW-4, SW-5
MW-7, MW-8, MW-1

RADIAN CORPORATION

CHAIN OF CUSTODY RECORD

Field Sample No. 850014, 850015

Company Sampled/Address SHEPPARD AFB [850016, 850017, 850018, 850020.
Sample Point Description Surface & Ground water Samples

Stream Characteristics:
Temperature 8-16 Flow — pH 6.0-8.8
Visual Observations/Comments —

Collector's Name R.A. Belan / N.H. Lund Date/Time Sampled 2/14/85 all day see bottles
Amount of Sample Collected 1-Qrt / 1-Qrt w/ H_2SO_4 / 1-500ml bcn w/ H_2SO_4 / 1-500ml plstc /
Sample Description Water } 1-500ml plstc w/ HNO_3 / 2 VOAS.
Store at: ☐ Ambient ☐ 5°C ☐ −10°C ☒ Other 4°C

☒ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards

☒ Hazardous sample (see below) ☐ Non-hazardous sample

☐ Toxic	☐ Skin irritant	☐ Flammable (FP< 40°C)
☐ Pyrophoric	☐ Lachrymator	☐ Shock sensitive
☐ Acidic	☐ Biological	☐ Carcinogenic - suspect
☐ Caustic	☐ Peroxide	☐ Radioactive
☒ Other Suspected.		

Sample Allocation/Chain of Possession:
Organization Name RAS
Received By [signature] Date Received 2-18-85 Time 1500
Transported By RAB Lab Sample No. 8502101, 102
Comments
Inclusive Dates of Possession

Organization Name
Received By Date Received Time
Transported By Lab Sample No.
Comments
Inclusive Dates of Possession

Organization Name
Received By Date Received Time
Transported By Lab Sample No.
Comments
Inclusive Dates of Possession

C-5 + C-7

RADIAN
CORPORATION

CHAIN OF CUSTODY RECORD

Field Sample No. 850005, 850019

Company Sampled/Address SHEPPARD AFB TX 850080 and 850081

Sample Point Description Monitor Well, Surface Water and soil samples.

Stream Characteristics:

Temperature — Flow — pH —

Visual Observations/Comments 850080 is obviously contaminated

Collector's Name R.A. Bolan / NH Lund Date/Time Sampled 2/15/85 - 850005 (0915)

Amount of Sample Collected ~1 Qrt Jar Fin soils; [850019 (6830), 850080 (~1530) + 850081 (1700)

Sample Description

Store at: ☐ Ambient ☐ 5°C ☐ −10°C ☒ Other 4°C

☒ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards Strong odors from sample # 850080

WATER: 1 Qrt w/ H_2SO_4; 1-500 ml brown w/ H_2SO_4; 2-VOAs; 1-500 ml plastic; 1-500 ml plastic w/ HNO_3.

☒ Hazardous sample (see below) ☐ Non-hazardous sample

☐ Toxic	☐ Skin irritant	☐ Flammable (FP< 40°C)
☐ Pyrophoric	☐ Lachrymator	☐ Shock sensitive
☐ Acidic	☐ Biological	☐ Carcinogenic - suspect
☐ Caustic	☐ Peroxide	☐ Radioactive

☒ Other Soil w/ hydrocarbons // Water is suspected.

Sample Allocation/Chain of Possession:

Organization Name RAS

Received By [signature] Date Received 2-18-85 Time 1500

Transported By RAB Lab Sample No. ~~85020~~ 8502100, 101, 102

Comments

Inclusive Dates of Possession

Organization Name

Received By Date Received Time

Transported By Lab Sample No.

Comments

Inclusive Dates of Possession

Organization Name

Received By Date Received Time

Transported By Lab Sample No.

Comments

Inclusive Dates of Possession

RADIAN
CORPORATION

CHAIN OF CUSTODY RECORD

Field Sample No. 850082 — 850089

Company Sampled/Address SHEPPARD AFB
Sample Point Description FPTA#1, LANDFILL #3, WASTE PITS

Stream Characteristics:
Temperature _____ Flow _____ pH _____
Visual Observations/Comments ~~[illegible]~~ Unnamed creek flowing, Bear Creek flowing

Collector's Name PAW Date/Time Sampled 5/20 – 5/21
Amount of Sample Collected 4 pint jars, 2 – 1 liter, 4 VOAS
Sample Description SOIL, WATER
Store at: ☐ Ambient ☐ 5°C ☐ – 10°C ☒ Other 4°C

☒ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards analyze VOA's using EPA 602
1 liter are for phenol

☐ Hazardous sample (see below) ☐ Non-hazardous sample

☐ Toxic	☐ Skin irritant	☐ Flammable (FP< 40°C)
☐ Pyrophoric	☐ Lachrymator	☐ Shock sensitive
☐ Acidic	☐ Biological	☐ Carcinogenic - suspect
☐ Caustic	☐ Peroxide	☐ Radioactive

☐ Other SUSPECTED HAZARDOUS MATERIAL

Sample Allocation/Chain of Possession:
Organization Name RAS
Received By [illegible] Date Received 5-22-85 Time 0930
Transported By Fed Ex Lab Sample No. 8505152
Comments _____
Inclusive Dates of Possession _____

Organization Name _____
Received By _____ Date Received _____ Time _____
Transported By _____ Lab Sample No. _____
Comments _____
Inclusive Dates of Possession _____

Organization Name _____
Received By _____ Date Received _____ Time _____
Transported By _____ Lab Sample No. _____
Comments _____
Inclusive Dates of Possession _____

RAS: MW-9, SW-6
C-5 + C-7

RADIAN
CORPORATION

CHAIN OF CUSTODY RECORD

Field Sample No. 850005, 850019

Company Sampled/Address SHEPPARD AFB TX 850080 and 850081

Sample Point Description Monitor Well, Surface Water and soil samples.

Stream Characteristics:

Temperature — **Flow** — **pH** —

Visual Observations/Comments 850080 is obviously contaminated

Collector's Name R.A. Beland / NH Lund **Date/Time Sampled** 2/15/85 - 850005 (0915)

Amount of Sample Collected ~1 Qrt Jar for soils; [850019 (6830), 850080 (~1530) + 850081 (1700)

Sample Description

Store at: ☐ Ambient ☐ 5°C ☐ −10°C ☒ Other 4°C

☒ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards Strong odors from sample #850080
WATER: 1 Qrt w/ H_2SO_4; 1-500 ml brown w/ H_2SO_4; 2-VOAs; 1-500 ml plastic; 1-500 ml plastic w/ HNO_3.

☒ Hazardous sample (see below) ☐ Non-hazardous sample

☐ Toxic	☐ Skin irritant	☐ Flammable (FP< 40°C)
☐ Pyrophoric	☐ Lachrymator	☐ Shock sensitive
☐ Acidic	☐ Biological	☐ Carcinogenic - suspect
☐ Caustic	☐ Peroxide	☐ Radioactive

☒ Other Soil w/ hydrocarbons // Water is suspected.

Sample Allocation/Chain of Possession:

Organization Name RAS

Received By [signature] **Date Received** 2-18-85 **Time** 1500

Transported By RAB **Lab Sample No.** ~~85020~~ 8502100, 101, 102

Comments

Inclusive Dates of Possession

Organization Name

Received By **Date Received** **Time**

Transported By **Lab Sample No.**

Comments

Inclusive Dates of Possession

Organization Name

Received By **Date Received** **Time**

Transported By **Lab Sample No.**

Comments

Inclusive Dates of Possession

RADIAN
CORPORATION

CHAIN OF CUSTODY RECORD

850082 —
Field Sample No. 850089

Company Sampled/Address SHEPPARD AFB
Sample Point Description FPTA #1, LANDFILL # 3, WASTE PITS

Stream Characteristics:
Temperature _____ Flow _____ pH _____
Visual Observations/Comments ~~[illegible]~~ Unnamed creek flowing, Bear Creek flowing
Collector's Name PAW Date/Time Sampled 5/20 – 5/21
Amount of Sample Collected 4 pint jars, 2 – 1 liter, 4 VOAS
Sample Description SOIL, WATER
Store at: ☐ Ambient ☐ 5°C ☐ – 10°C ☒ Other 4°C

☒ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards analyze VOA's using EPA 602
1 liter are for phenol

☐ Hazardous sample (see below) ☐ Non-hazardous sample

☐ Toxic	☐ Skin irritant	☐ Flammable (FP< 40°C)
☐ Pyrophoric	☐ Lachrymator	☐ Shock sensitive
☐ Acidic	☐ Biological	☐ Carcinogenic - suspect
☐ Caustic	☐ Peroxide	☐ Radioactive

☐ Other SUSPECTED HAZARDOUS MATERIAL

Sample Allocation/Chain of Possession:
Organization Name RAS
Received By [illegible] Date Received 5-22-85 Time 0930
Transported By Fed Ex Lab Sample No. 8505152
Comments
Inclusive Dates of Possession

Organization Name
Received By Date Received Time
Transported By Lab Sample No.
Comments
Inclusive Dates of Possession

Organization Name
Received By Date Received Time
Transported By Lab Sample No.
Comments
Inclusive Dates of Possession

H

APPENDIX H

ANALYTICAL DATA

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not included in page count]

RADIAN CORPORATION

APPENDIX "H" SHEPPARD AFB IRP SAMPLE NUMBER CROSS INDEX TABLE

BASE SAMPLE NUMBER	SITE	LOCATION NUMBER	TYPE SAMPLE	SAMPLE DEPTH (FEET)
840149	Waste Pits	C-1	soil	5
840150	Waste Pits	C-1	soil	10
840151	Waste Pits	C-1	soil	15
840152	Waste Pits	C-1	soil	20
840153	Waste Pits	C-1	soil	25
840154	Waste Pits	C-1	soil	30
840156	Waste Pits	C-3	soil	5
840157	Waste Pits	C-3	soil	5 QC
840158	Waste Pits	C-3	soil	10
840159	Waste Pits	C-3	soil	15
840160	Waste Pits	C-3	soil	17.5
840161	Waste Pits	C-3	soil	25
840162	Waste Pits	C-3	soil	30
840163	Waste Pits	C-2	soil	2.5
840164	Waste Pits	C-2	soil	5
840165	Waste Pits	C-2	soil	5 QC
840166	Waste Pits	C-2	soil	7.5
840167	Waste Pits	C-2	soil	10
840168	Waste Pits	C-2	soil	10 QC
840169	Waste Pits	C-2	soil	25
840170	Waste Pits	C-2	soil	30
840190	W.Pits/LF3	SW-1	water	-
840191	W.Pits/LF3	SW-2	water	-
840192	W.Pits/LF3	SW-5	water	-
840193	FPTA No.3	SW-6	water	-
840194	FPTA No.1	SW-7	water	-
840195	FPTA No.1	SW-8	water	-
840196	FPTA No.1	SW-9	water	-
850001	FPTA No.1	MW-11	water	-
850002	FPTA No.1	MW-12	water	-
850003	FPTA No.1	MW-13	water	-
850004	FPTA No.1	MW-14	water	-
850005	FPTA No.3	SW-6	water	-
850006	FPTA No.3	MW-9	water	-
850007	FPTA No.3	MW-10	water	-
850008	W.Pits/LF3	MW-7	water	-
850009	FPTA No.3	MW-8	water	-
850010	W.Pits/LF3	MW-4	water	-
850011	W.Pits/LF3	MW-4 QC	water	-
850012	W.Pits/LF3	SW-1	water	-
850013	W.Pits/LF3	SW-1 QC	water	-
850014	W.Pits/LF3	SW-2	water	-
850015	W.Pits/LF3	MW-4	water	-

(Continued)

APPENDIX "H" SHEPPARD AFB IRP SAMPLE NUMBER CROSS INDEX TABLE (Continued)

BASE SAMPLE NUMBER	SITE	LOCATION NUMBER	TYPE SAMPLE	SAMPLE DEPTH (FEET)
850016	W.Pits/LF3	SW-5	water	-
850017	W.Pits/LF3	MW-7	water	-
850018	FPTA No.3	MW-8	water	-
850019	FPTA No.3	MW-9	water	-
850020	FPTA No.3	MW-10	water	-
850021	FPTA No.1	SW-7	water	-
850073	FPTA No.1	SW-8	water	-
850074	FPTA No.1	SW-9	water	-
850075	FPTA No.1	MW-11	water	-
850076	FPTA No.1	MW-12	water	-
850077	FPTA No.1	MW-13	water	-
850078	FPTA No.1	MW-14	water	-
850079	FPTA No.1	MW-14 QC	water	-
850082	FPTA No.1	C-6	soil/waste	2
850083	FPTA No.1	C-5	soil/waste	2
850084	FPTA No.1	C-4	soil	3.5
850085	FPTA No.1	C-7	soil	2
850086	Landfill No.3	SW-5	water resamp.	-
850087	Landfill No.3	SW-2	water resamp.	-
850088	Landfill No.3	MW-4	water resamp.	-
850089	Waste Pits	SW-1	water resamp.	-

RADIAN CORPORATION

PAGE 1 Analytical Serv REPORT LAB # 84-11-128

RECEIVED: 11/20/84 12/21/84 00:00:37

REPORT TO: Radian
Bl. 7
Austin

ATTEN: Nelson Lund

CLIENT: SHEPPARD SAMPLES: 1
COMPANY: Sheppard AFB
FACILITY:

PREPARED BY: Radian Analytical Services
8501 MoPac Blvd.
P.O. Box 9948
Austin, Texas 78766

ATTEN:
PHONE: (512) 454-4797

CERTIFIED BY

CONTACT: CONOVER

WORK ID: MW9,FPTA#3 composite
TAKEN: PAW
TRANS: Fed Ex
TYPE:
P.O. #: 214-114-03-30
INV. #: 4841

Footnotes and Comments

* Indicates a value less than 5 times the detection limit. Potential error for such low values ranges between 50 and 100%.

@ Indicates that spike recovery for this analysis on the specific matrix was not within acceptable limits indicating an interferent present.

SAMPLE IDENTIFICATION

01 GS840155

Analytical Serv TEST CODES and NAMES used on this report

EP EXT RCRA Extraction Procedure
EP MET RCRA Metals
IGNIT Ignitability

RADIAN CORPORATION

 Analytical Serv REPORT LAB # 84-11-128

RECEIVED: 11/20/84 Results by Sample

SAMPLE ID GS840155 SAMPLE # 01 FRACTIONS: A, B

Date & Time Collected 11/19/84 08:15:00 Category

EP_EXT 11/27/84 IGNIT >212

date completed degrees F

RADIAN CORPORATION

 Analytical Serv REPORT LAB # 84-11-128

RECEIVED: 11/20/84 Results by Sample

SAMPLE ID GS840155 FRACTION 01B TEST CODE EP MET NAME RCRA Metals

Date & Time Collected 11/19/84 08:15:00 Category

DATE ANALYZED 12/19/84 VERIFIED BY DLH

Analyzed by ICPES

CODE	METAL	RESULT
AG	Silver	<.002
BA	Barium	0.25
CD	Cadmium	<.002
CR	Chromium	<.001

Analyzed by AA

CODE	METAL	RESULT
AS	Arsenic	<.002
HG	Mercury	<.0002
PB	Lead	<.002
SE	Selenium	<.002

NOTES AND DEFINITIONS FOR THIS REPORT

All results reported in ug/ml unless otherwise specified.
NA = not analyzed
* = less that 5 times the detection limit.

CORPORATION

PAGE 1 Analytical Serv REPORT LAB # 84-11-130

RECEIVED: 11/20/84 01/29/85 08:49:27

REPORT TO: Radian
Bl. 7
Austin

ATTEN: Nelson Lund

CLIENT: SHEPPARD SAMPLES: 6
COMPANY: Sheppard AFB
FACILITY:

WORK ID: core hole #1, waste pit
TAKEN: PAW
TRANS: Fed Ex
TYPE:
P.O. #: 214-114-03-30
INV. #: 4842

PREPARED BY: Radian Analytical Services
8501 MoPac Blvd.
P.O. Box 9948
Austin, Texas 78766

ATTEN:
PHONE: (512) 454-4797

CERTIFIED BY:

CONTACT: CONOVER

Note: pH measurements: 10g soil/100 mL DI water
Note: Detection limits for 8010 and 8020 are 20 ug/kg and 250 ug/kg respectively.

Footnotes and Comments

* Indicates a value less than 5 times the detection limit. Potential error for such low values ranges between 50 and 100%.

@ Indicates that spike recovery for this analysis on the specific matrix was not within acceptable limits indicating an interferent present.

SAMPLE IDENTIFICATION

01	GS840149
02	GS840150
03	GS840151
04	GS840152
05	GS840153
06	GS840154

Analytical Serv TEST CODES and NAMES used on this report

EP EXT	RCRA Extraction Procedure
EP MET	RCRA Metals
IGNIT	Ignitability
ONG IR	Oil and Grease, Infrared
PHEN A	Total Phenolics
PH A	pH
PREP W	Special Digestion Method
SW8010	GC-HECD Halog. Vol. - SW846
SW8020	GC-PID Arom. Vol. - SW846
TOCSOL	TOC in solids

CORPORATION

PAGE 2 Analytical Serv REPORT LAB # 84-11-130

RECEIVED: 11/20/84 Results by Sample

SAMPLE ID GS840149 SAMPLE # 01 FRACTIONS: A,B,C

Date & Time Collected 11/15/84 09:15:00 Category

ONG_IR	PHEN_A	PH_A	PREP_W	TOCSOL
<500 ug/g	9.7 ug/g	8.05 pH units	12/03/84 date complete	0.10 %

CORPORATION

PAGE 3 Analytical Serv REPORT LAB # 84-11-130

RECEIVED: 11/20/84 Results by Sample

SAMPLE ID GS840149 FRACTION 01B TEST CODE SW8010 NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 11/15/84 09:15:00 Category

DATA FILE B DATE INJECTED 11/27/84 ANALYST MCL VERIFIED BY JSG

CONC. FACTOR INSTRUMENT b COMPOUNDS DETECTED 1

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Chloromethane	ND		Trichloroethene	ND
	Bromomethane	ND		Dibromochloromethane	ND
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND
	Chloroethane	ND		cis-1,3-Dichloropropene	ND
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND
	Trichlorofluoromethane	ND		Bromoform	ND
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	ND
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND
	Chloroform	ND		1,3-Dichlorobenzene	ND
	1,2-Dichloroethane	ND	1	1,2-Dichlorobenzene	440
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND
	Carbon Tetrachloride	ND			
	Bromodichloromethane	ND			
	1,2-Dichloropropane	ND			
	trans-1,3-Dichloropropene	ND			

SAMPLE ID GS840149 FRACTION 01B TEST CODE SW8010 NAME GC-HECD Halog. Vol.- SW846
Date & Time Collected 11/15/84 09:15:00 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

RADIAN CORPORATION

PAGE 5 Analytical Serv REPORT LAB # 84-11-130

RECEIVED: 11/20/84 Results by Sample

SAMPLE ID GS840149 FRACTION 01B TEST CODE SW8020 NAME GC-PID Arom. Vol. - SW846

Date & Time Collected 11/15/84 09:15:00 Category

DATA FILE D DATE INJECTED 11/28/84 ANALYST MCL VERIFIED BY JSG

CONC. FACTOR INSTRUMENT d COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Benzene	ND		1,3-Dichlorobenzene	ND
	Toluene	ND		1,2-Dichlorobenzene	ND
	Ethyl Benzene	ND		1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

CORPORATION

 Analytical Serv REPORT LAB # 84-11-130

RECEIVED: 11/20/84 Results by Sample

SAMPLE ID GS840150 SAMPLE # 02 FRACTIONS: A,B,C

Date & Time Collected 11/15/84 09:40:00 Category

ONG_IR	<500 ug/g	PHEN_A	5.0 ug/g	PH_A	7.56 pH units	PREP_W	12/03/84 date complete	TOCSOL	0.24 %

CORPORATION

PAGE 7 | Analytical Serv | REPORT | LAB # 84-11-130

RECEIVED: 11/20/84

Results by Sample

SAMPLE ID GS840150 FRACTION 02B TEST CODE SW8010 NAME GC-HECD Haloq. Vol. - SW846

Date & Time Collected 11/15/84 09:40:00 Category

DATA FILE B DATE INJECTED 11/27/84 ANALYST MCL VERIFIED BY JSG

CONC. FACTOR INSTRUMENT b COMPOUNDS DETECTED 4

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
	Methylene Chloride	ND
	Trichlorofluoromethane	ND
	1,1-Dichloroethene	ND
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
	1,2-Dichloroethane	ND
	1,1,1-Trichloroethane	ND
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
	Trichloroethene	ND
	Dibromochloromethane	ND
	1,1,2-Trichloroethane	ND
	cis-1,3-Dichloropropene	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane	ND
	Tetrachloroethylene	ND
1	Chlorobenzene	175
2	1,3-Dichlorobenzene	816
3	1,2-Dichlorobenzene	4920
4	1,4-Dichlorobenzene	2710

SAMPLE ID GS840150 FRACTION 02B TEST CODE SW8010 NAME GC-HECD Haloq. Vol. - SW846
Date & Time Collected 11/15/84 09:40:00 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

CORPORATION

PAGE 9 Analytical Serv REPORT LAB # 84-11-130
RECEIVED: 11/20/84 Results by Sample

SAMPLE ID GS840150 FRACTION 02B TEST CODE SW8020 NAME GC-PID Arom. Vol. - SW846
Date & Time Collected 11/15/84 09:40:00 Category

DATA FILE D DATE INJECTED 11/27/84 ANALYST RAA VERIFIED BY JSG
CONC. FACTOR INSTRUMENT d COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Benzene	ND		1,3-Dichlorobenzene	ND
	Toluene	ND		1,2-Dichlorobenzene	ND
	Ethyl Benzene	ND		1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT.
SCAN = scan number or retention time on chromatogram.
All results reported in ug/kg unless otherwise specified.
ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

Analytical Serv REPORT LAB # 84-11-130

RECEIVED: 11/20/84

Results by Sample

SAMPLE ID GS840151 SAMPLE # 03 FRACTIONS: A,B,C,D,E

Date & Time Collected 11/15/84 09:45:00 Category

EP_EXT	12/13/84	IGNIT	>150	ONG_IR	<500	PHEN_A	1.3	PH_A	8.51	PREP_W	12/03/84
date completed		degrees F		ug/g		ug/g		pH units		date complete	

TOCSOL 0.27 %

CORPORATION

PAGE 11 Analytical Serv REPORT LAB # 84-11-130
RECEIVED: 11/20/84 Results by Sample

SAMPLE ID GS840151 FRACTION 03E TEST CODE EP MET NAME RCRA Metals
Date & Time Collected 11/15/84 09:45:00 Category

DATE ANALYZED 12/20/84 VERIFIED BY DLH

Analyzed by ICPES

CODE	METAL	RESULT
AG	Silver	<.002
BA	Barium	0.006
CD	Cadmium	<.002
CR	Chromium	<.001

Analyzed by AA

CODE	METAL	RESULT
AS	Arsenic	<.06
HG	Mercury	<.0002
PB	Lead	<.08
SE	Selenium	<.08

NOTES AND DEFINITIONS FOR THIS REPORT

All results reported in ug/ml unless otherwise specified.
NA = not analyzed
* = less that 5 times the detection limit.

RECEIVED: 11/20/84

Analytical Serv REPORT LAB # 84-11-130
Results by Sample

SAMPLE ID GS840151 FRACTION 03B TEST CODE SW8010 NAME GC-HECD Haloq. Vol. - SW846
Date & Time Collected 11/15/84 09:45:00 Category

DATA FILE B DATE INJECTED 11/27/84 ANALYST MCL VERIFIED BY JSG
CONC. FACTOR INSTRUMENT b COMPOUNDS DETECTED 4

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
	Methylene Chloride	ND
	Trichlorofluoromethane	ND
	1,1-Dichloroethene	ND
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
	1,2-Dichloroethane	ND
	1,1,1-Trichloroethane	ND
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
	Trichloroethene	ND
	Dibromochloromethane	ND
	1,1,2-Trichloroethane	ND
	cis-1,3-Dichloropropene	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane	ND
	Tetrachloroethylene	ND
1	Chlorobenzene	277
2	1,3-Dichlorobenzene	1890
3	1,2-Dichlorobenzene	9360
4	1,4-Dichlorobenzene	5080

CORPORATION

PAGE 13 | Analytical Serv | REPORT | LAB # 84-11-130
RECEIVED: 11/20/84 | Results by Sample | Continued From Above

SAMPLE ID GS840151 FRACTION 03B TEST CODE SW8010 NAME GC-HECD Haloq. Vol. - SW846
Date & Time Collected 11/15/84 09:45:00 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

CORPORATION

PAGE 14 Analytical Serv REPORT LAB # 84-11-130
RECEIVED: 11/20/84 Results by Sample

SAMPLE ID GS840151 FRACTION 03B TEST CODE SW8020 NAME GC-PID Arom. Vol.- SW846
Date & Time Collected 11/15/84 09:45:00 Category

DATA FILE D DATE INJECTED 11/27/84 ANALYST RAA VERIFIED BY JSG
CONC. FACTOR INSTRUMENT d COMPOUNDS DETECTED 3

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Benzene	ND	1	1,3-Dichlorobenzene	1960
	Toluene	ND	2	1,2-Dichlorobenzene	9260
	Ethyl Benzene	ND	3	1,4-Dichlorobenzene	6550

NOTES AND DEFINITIONS FOR THIS REPORT.
SCAN = scan number or retention time on chromatogram.
All results reported in ug/kg unless otherwise specified.
ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

CORPORATION

 Analytical Serv REPORT LAB # 84-11-130

RECEIVED: 11/20/84 Results by Sample

SAMPLE ID GS840152 SAMPLE # 04 FRACTIONS: A,B,C

Date & Time Collected 11/15/84 09:51:00 Category

ONG_IR	PHEN_A	PH_A	PREP_W	TOCSOL
<500	<.1	8.79	12/03/84	0.19
ug/g	ug/g	pH units	date complete	%

RECEIVED: 11/20/84

Analytical Serv REPORT LAB # 84-11-130

Results by Sample

SAMPLE ID GS840152 FRACTION 04B TEST CODE SW8010 NAME GC-HECD Haloq. Vol. - SW846

Date & Time Collected 11/15/84 09:51:00 Category

DATA FILE B DATE INJECTED 11/27/84 ANALYST RAA VERIFIED BY JSG

CONC. FACTOR INSTRUMENT b COMPOUNDS DETECTED 4

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
	Methylene Chloride	ND
	Trichlorofluoromethane	ND
	1,1-Dichloroethene	ND
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
	1,2-Dichloroethane	ND
	1,1,1-Trichloroethane	ND
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
	Trichloroethene	ND
	Dibromochloromethane	ND
	1,1,2-Trichloroethane	ND
	cis-1,3-Dichloropropene	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane	ND
	Tetrachloroethylene	ND
1	Chlorobenzene	257
2	1,3-Dichlorobenzene	1200
3	1,2-Dichlorobenzene	5590
4	1,4-Dichlorobenzene	3560

RECEIVED: 11/20/84

Analytical Serv REPORT
Results by Sample

LAB # 84-11-130
Continued From Above

SAMPLE ID GS840152 FRACTION 04B TEST CODE SW8010 NAME GC-HECD Haloq. Vol. - SW846
Date & Time Collected 11/15/84 09:51:00 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

CORPORATION

PAGE 18 Analytical Serv REPORT LAB # 84-11-130
RECEIVED: 11/20/84 Results by Sample

SAMPLE ID GS840152 FRACTION 04B TEST CODE SW8020 NAME GC-PID Arom. Vol. - SW846
Date & Time Collected 11/15/84 09:51:00 Category

DATA FILE D DATE INJECTED 11/27/84 ANALYST RAA VERIFIED BY JSG
CONC. FACTOR INSTRUMENT d COMPOUNDS DETECTED 3

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Benzene	ND	1	1,3-Dichlorobenzene	1110
	Toluene	ND	2	1,2-Dichlorobenzene	4080
	Ethyl Benzene	ND	3	1,4-Dichlorobenzene	3060

NOTES AND DEFINITIONS FOR THIS REPORT.
SCAN = scan number or retention time on chromatogram.
All results reported in ug/kg unless otherwise specified.
ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

CORPORATION

RECEIVED: 11/20/84

Analytical Serv REPORT LAB # 84-11-130
Results by Sample

SAMPLE ID GS840153 SAMPLE # 05 FRACTIONS: A,B,C
Date & Time Collected 11/15/84 10:06:00 Category

ONG_IR	<500	PHEN_A	<.1	PH_A	7.82	PREP_W	12/03/84	TOCSOL	0.06
	ug/g		ug/g		pH units		date complete		%

RADIAN CORPORATION

Analytical Serv REPORT LAB # 84-11-130

RECEIVED: 11/20/84

Results by Sample

SAMPLE ID GS840153 FRACTION 05B TEST CODE SW8010 NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 11/15/84 10:06:00 Category

DATA FILE B DATE INJECTED 11/27/84 ANALYST RAA VERIFIED BY JSG

CONC. FACTOR INSTRUMENT b COMPOUNDS DETECTED 2

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
	Methylene Chloride	ND
	Trichlorofluoromethane	ND
	1,1-Dichloroethene	ND
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
	1,2-Dichloroethane	ND
	1,1,1-Trichloroethane	ND
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
	Trichloroethene	ND
	Dibromochloromethane	ND
	1,1,2-Trichloroethane	ND
	cis-1,3-Dichloropropene	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane	ND
	Tetrachloroethylene	ND
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
1	1,2-Dichlorobenzene	507
2	1,4-Dichlorobenzene	253

SAMPLE ID GS840153 FRACTION 05B TEST CODE SW8010 NAME GC-HECD Halog. Vol. - SW846
Date & Time Collected 11/15/84 10:06:00 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

CORPORATION

PAGE 22 Analytical Serv REPORT LAB # 84-11-130
RECEIVED: 11/20/84 Results by Sample

SAMPLE ID GS840153 FRACTION 05B TEST CODE SW8020 NAME GC-PID Arom. Vol. - SW846
Date & Time Collected 11/15/84 10:06:00 Category

DATA FILE D DATE INJECTED 11/27/84 ANALYST RAA VERIFIED BY JSG
CONC. FACTOR INSTRUMENT d COMPOUNDS DETECTED 1

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Benzene	ND		1,3-Dichlorobenzene	ND
	Toluene	ND	1	1,2-Dichlorobenzene	731
	Ethyl Benzene	ND		1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT.
SCAN = scan number or retention time on chromatogram.
All results reported in ug/kg unless otherwise specified.
ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

RECEIVED: 11/20/84

Analytical Serv REPORT
Results by Sample

LAB # 84-11-130

SAMPLE ID GS840154 SAMPLE # 06 FRACTIONS: A,B,C
Date & Time Collected 11/15/84 10:20:00 Category

ONG_IR	1600 ug/g	PHEN_A	<.1 ug/g	PH_A	8.27 pH units	PREP_W	12/03/84 date complete	TOCSOL	0.08 %

RECEIVED: 11/20/84

Analytical Serv REPORT LAB # 84-11-130

Results by Sample

SAMPLE ID GS840154 FRACTION 06B TEST CODE SW8010 NAME GC-HECD Haloq. Vol. - SW846

Date & Time Collected 11/15/84 10:20:00 Category

DATA FILE B DATE INJECTED 11/27/84 ANALYST RAA VERIFIED BY JSG

CONC. FACTOR INSTRUMENT b COMPOUNDS DETECTED 1

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Chloromethane	ND		Trichloroethene	ND
	Bromomethane	ND		Dibromochloromethane	ND
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND
	Chloroethane	ND		cis-1,3-Dichloropropene	ND
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND
	Trichlorofluoromethane	ND		Bromoform	ND
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	ND
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND
	Chloroform	ND		1,3-Dichlorobenzene	ND
	1,2-Dichloroethane	ND	1	1,2-Dichlorobenzene	165
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND
	Carbon Tetrachloride	ND			
	Bromodichloromethane	ND			
	1,2-Dichloropropane	ND			
	trans-1,3-Dichloropropene	ND			

CORPORATION

RECEIVED: 11/20/84

Analytical Serv REPORT
Results by Sample

LAB # 84-11-130
Continued From Above

SAMPLE ID GS840154 FRACTION 06B TEST CODE SW8010 NAME GC-HECD Halog. Vol. - SW846
Date & Time Collected 11/15/84 10:20:00 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

CORPORATION

PAGE 26 Analytical Serv REPORT LAB # 84-11-130
RECEIVED: 11/20/84 Results by Sample

SAMPLE ID GS840154 FRACTION 06B TEST CODE SW8020 NAME GC-PID Arom. Vol. - SW846
Date & Time Collected 11/15/84 10:20:00 Category

DATA FILE D DATE INJECTED 11/28/84 ANALYST MCL VERIFIED BY JSG
CONC. FACTOR INSTRUMENT d COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Benzene	ND		1,3-Dichlorobenzene	ND
	Toluene	ND		1,2-Dichlorobenzene	ND
	Ethyl Benzene	ND		1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT.
SCAN = scan number or retention time on chromatogram.
All results reported in ug/kg unless otherwise specified.
ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

CORPORATION

PAGE 1 Analytical Serv REPORT LAB # 84-12-105

RECEIVED: 12/14/84 01/10/85 09:39:16

REPORT TO: Radian
Bl. 7
Austin

ATTEN: Nelson Lund

CLIENT: SHEPPARD SAMPLES: 7
COMPANY: Sheppard AFB
FACILITY:

WORK ID: water
TAKEN: RAB
TRANS: Fed Ex
TYPE:
P.O. #: 214-114-03-30
INVOICE: under separate cover

PREPARED BY: Radian Analytical Services
8501 MoPac Blvd.
P.O. Box 9948
Austin, Texas 78766

ATTEN:
PHONE: (512) 454-4797

CERTIFIED BY

CONTACT: CONOVER

when reported, invoice also 8412181
Note: detection limits for sample 07 are 1 ug/L and 10 ug/L for EPA 601 and 602, respectively, due to nature of sample (foamy).

Footnotes and Comments

* Indicates a value less than 5 times the detection limit. Potential error for such low values ranges between 50 and 100%.

@ Indicates that spike recovery for this analysis on the specific matrix was not within acceptable limits indicating an interferent present.

SAMPLE IDENTIFICATION

01	840190
02	840191
03	840192
04	840193
05	840194
06	840195
07	840196

Analytical Serv TEST CODES and NAMES used on this report

CR E	Chromium, ICPES
GC 601	EPA Method 601/GC
GC 602	EPA Method 602/GC
HG CA	Mercury, Cold Vapor
ONG A	Oil and Grease
PB GA	Lead, low level
PHEN A	Total Phenolics
PH A	pH
TDS A	Total Dissolved Solids
TOC	Total Organic Carbon

CORPORATION

PAGE 2 Analytical Serv REPORT LAB # 84-12-105

RECEIVED: 12/14/84 Results by Sample

SAMPLE ID 840190 SAMPLE # 01 FRACTIONS: A,B,C,D,E

Date & Time Collected 12/11/84 16:40:00 Category

ONG_A 6 mg/L	PHEN_A 0.07 mg/L	PH_A 7.62 pH units	TDS_A 510 mg/L	TOC 12 mg/L

CORPORATION

PAGE 3 Analytical Serv REPORT LAB # 84-12-105

RECEIVED: 12/14/84 Results by Sample

SAMPLE ID 840190 FRACTION 01D TEST CODE GC 601 NAME EPA Method 601/GC

Date & Time Collected 12/11/84 16:40:00 Category

DATA FILE B DATE INJECTED 12/19/84 ANALYST MCL VERIFIED BY JSG

CONC. FACTOR INSTRUMENT b COMPOUNDS DETECTED 5

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Chloromethane	ND		Trichloroethene	ND
	Bromomethane	ND	4	Dibromochloromethane *	3.4
	Vinyl Chloride	ND		1,1,2-Trichloroethane *	ND
	Chloroethane	ND		cis-1,3-Dichloropropene *	ND
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND
1	Trichlorofluoromethane	0.3	5	Bromoform	5.5
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane #	ND
	1,1-Dichloroethane	ND		Tetrachloroethylene #	ND
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND
	Chloroform	ND		1,3-Dichlorobenzene	ND
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND
2	1,1,1-Trichloroethane	0.6		1,4-Dichlorobenzene	ND
	Carbon Tetrachloride	ND			
3	Bromodichloromethane	1.3			
	1,2-Dichloropropane	ND			
	trans-1,3-Dichloropropene	ND			

CORPORATION

PAGE 4 Analytical Serv REPORT LAB # 84-12-105
RECEIVED: 12/14/84 Results by Sample Continued From Above

SAMPLE ID 840190 FRACTION 01D TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 12/11/84 16:40:00 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

CORPORATION

PAGE 5 Analytical Serv REPORT LAB # 84-12-105
RECEIVED: 12/14/84 Results by Sample

SAMPLE ID 840190 FRACTION 01E TEST CODE GC 602 NAME EPA Method 602/GC
Date & Time Collected 12/11/84 16:40:00 Category

DATA FILE D DATE INJECTED 12/18/84 ANALYST RAA VERIFIED BY JSG
CONC. FACTOR INSTRUMENT d COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Benzene	ND		1,3-Dichlorobenzene	ND
	Toluene	ND		1,2-Dichlorobenzene	ND
	Ethyl Benzene	ND		1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT.
SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 602, (Federal Register, 12/3/79).

CORPORATION

PAGE 6 Analytical Serv REPORT LAB # 84-12-105

RECEIVED: 12/14/84 Results by Sample

SAMPLE ID 840191 SAMPLE # 02 FRACTIONS: A,B,C,D,E,F

Date & Time Collected 12/11/84 18:15:00 Category

CR_E	<.001 ug/ml	HG_CA	<.0002 ug/ml	ONG_A	<1 mg/L	PB_GA	0.002 ug/ml	PHEN_A	<.02 mg/L	PH_A	7.89 pH units
TDS_A	340 mg/L	TOC	9 mg/L								

CORPORATION

PAGE 7 | Analytical Serv | REPORT | LAB # 84-12-105

RECEIVED: 12/14/84 | Results by Sample

SAMPLE ID 840191 | FRACTION 02D | TEST CODE GC 601 | NAME EPA Method 601/GC

Date & Time Collected 12/11/84 18:15:00 | Category

DATA FILE B | DATE INJECTED 12/13/84 | ANALYST JCT | VERIFIED BY JSG

CONC. FACTOR | INSTRUMENT b | COMPOUNDS DETECTED 1

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Chloromethane	ND		Trichloroethene	ND
	Bromomethane	ND		Dibromochloromethane *	ND
	Vinyl Chloride	ND		1,1,2-Trichloroethane *	ND
	Chloroethane	ND		cis-1,3-Dichloropropene *	ND
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND
1	Trichlorofluoromethane	0.6		Bromoform	ND
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane #	ND
	1,1-Dichloroethane	ND		Tetrachloroethylene #	ND
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND
	Chloroform	ND		1,3-Dichlorobenzene	ND
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND
	Carbon Tetrachloride	ND			
	Bromodichloromethane	ND			
	1,2-Dichloropropane	ND			
	trans-1,3-Dichloropropene	ND			

CORPORATION

Analytical Serv REPORT

LAB # 84-12-105

RECEIVED: 12/14/84

Results by Sample

Continued From Above

SAMPLE ID 840191

FRACTION 02D TEST CODE GC 601 NAME EPA Method 601/GC

Date & Time Collected 12/11/84 18:15:00 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

CORPORATION

PAGE 9 Analytical Serv REPORT LAB # 84-12-105
RECEIVED: 12/14/84 Results by Sample

SAMPLE ID 840191 FRACTION 02E TEST CODE GC 602 NAME EPA Method 602/GC
Date & Time Collected 12/11/84 18:15:00 Category

DATA FILE D DATE INJECTED 12/18/84 ANALYST RAA VERIFIED BY JSG
CONC. FACTOR INSTRUMENT d COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Benzene	ND		1,3-Dichlorobenzene	ND
	Toluene	ND		1,2-Dichlorobenzene	ND
	Ethyl Benzene	ND		1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT.
SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 602, (Federal Register, 12/3/79).

CORPORATION

 Analytical Serv REPORT LAB # 84-12-105

RECEIVED: 12/14/84 Results by Sample

SAMPLE ID 840192 SAMPLE # 03 FRACTIONS: A,B,C,D,E,F

Date & Time Collected 12/12/84 11:45:00 Category

CR_E	<.001 ug/ml	HG_CA	0.0003 ug/ml	ONG_A	1 mg/L	PB_GA	0.005 ug/ml	PH_A	8.36 pH units	TDS_A	245 mg/L
TOC	5 mg/L										

CORPORATION

PAGE 11 Analytical Serv REPORT LAB # 84-12-105
RECEIVED: 12/14/84 Results by Sample

SAMPLE ID 840192 FRACTION 03D TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 12/12/84 11:45:00 Category

DATA FILE B DATE INJECTED 12/18/84 ANALYST RAA VERIFIED BY JSG
CONC. FACTOR INSTRUMENT b COMPOUNDS DETECTED 1

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Chloromethane	ND		Trichloroethene	ND
	Bromomethane	ND		Dibromochloromethane *	ND
	Vinyl Chloride	ND		1,1,2-Trichloroethane *	ND
	Chloroethane	ND		cis-1,3-Dichloropropene *	ND
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND
1	Trichlorofluoromethane	2.2		Bromoform	ND
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane #	ND
	1,1-Dichloroethane	ND		Tetrachloroethylene #	ND
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND
	Chloroform	ND		1,3-Dichlorobenzene	ND
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND
	Carbon Tetrachloride	ND			
	Bromodichloromethane	ND			
	1,2-Dichloropropane	ND			
	trans-1,3-Dichloropropene	ND			

CORPORATION

RECEIVED: 12/14/84

Analytical Serv REPORT
Results by Sample

LAB # 84-12-105
Continued From Above

SAMPLE ID 840192 FRACTION 03D TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 12/12/84 11:45:00 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

CORPORATION

PAGE 13 Analytical Serv REPORT LAB # 84-12-105
RECEIVED: 12/14/84 Results by Sample

SAMPLE ID 840192 FRACTION 03E TEST CODE GC 602 NAME EPA Method 602/GC
Date & Time Collected 12/12/84 11:45:00 Category

DATA FILE D DATE INJECTED 12/18/84 ANALYST RAA VERIFIED BY JSG
CONC. FACTOR INSTRUMENT d COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Benzene	ND		1,3-Dichlorobenzene	ND
	Toluene	ND		1,2-Dichlorobenzene	ND
	Ethyl Benzene	ND		1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT.
SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 602, (Federal Register, 12/3/79).

CORPORATION

Analytical Serv REPORT LAB # 84-12-105

RECEIVED: 12/14/84

Results by Sample

SAMPLE ID 840193 SAMPLE # 04 FRACTIONS: A,B,C,D,E,F

Date & Time Collected 12/12/84 13:08:00 Category

CR_E	<.001 ug/ml	HG_CA	<.0002 ug/ml	ONG_A	10 mg/L	PB_GA	0.004 ug/ml	PH_A	7.72 pH units	TDS_A	1000 mg/L
TOC	180 mg/L										

CORPORATION

PAGE 15 Analytical Serv REPORT LAB # 84-12-105

RECEIVED: 12/14/84 Results by Sample

SAMPLE ID 840193 FRACTION 04D TEST CODE GC 601 NAME EPA Method 601/GC

Date & Time Collected 12/12/84 13:08:00 Category

DATA FILE B DATE INJECTED 12/19/84 ANALYST RAA VERIFIED BY JSG

CONC. FACTOR INSTRUMENT b COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Chloromethane	ND		Trichloroethene	ND
	Bromomethane	ND		Dibromochloromethane *	ND
	Vinyl Chloride	ND		1,1,2-Trichloroethane *	ND
	Chloroethane	ND		cis-1,3-Dichloropropene *	ND
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND
	Trichlorofluoromethane	ND		Bromoform	ND
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane #	ND
	1,1-Dichloroethane	ND		Tetrachloroethylene #	ND
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND
	Chloroform	ND		1,3-Dichlorobenzene	ND
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND
	Carbon Tetrachloride	ND			
	Bromodichloromethane	ND			
	1,2-Dichloropropane	ND			
	trans-1,3-Dichloropropene	ND			

CORPORATION

Analytical Serv REPORT

LAB # 84-12-105

RECEIVED: 12/14/84

Results by Sample

Continued From Above

SAMPLE ID 840193

FRACTION 04D TEST CODE GC 601 NAME EPA Method 601/GC

Date & Time Collected 12/12/84 13:08:00 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

CORPORATION

PAGE 17 Analytical Serv REPORT LAB # 84-12-105
RECEIVED: 12/14/84 Results by Sample

SAMPLE ID 840193 FRACTION 04E TEST CODE GC 602 NAME EPA Method 602/GC
Date & Time Collected 12/12/84 13:08:00 Category

DATA FILE D DATE INJECTED 12/18/84 ANALYST RAA VERIFIED BY JSG
CONC. FACTOR INSTRUMENT d COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Benzene	ND		1,3-Dichlorobenzene	ND
	Toluene	ND		1,2-Dichlorobenzene	ND
	Ethyl Benzene	ND		1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT.
SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 602, (Federal Register, 12/3/79).

CORPORATION

 Analytical Serv REPORT LAB # 84-12-105

RECEIVED: 12/14/84 Results by Sample

SAMPLE ID 840194 SAMPLE # 05 FRACTIONS: A,B,C,D,E

Date & Time Collected 12/12/84 15:00:00 Category

ONG_A	PHEN_A	PH_A	TDS_A	TOC
5 mg/L	0.07 mg/L	8.00 pH units	1400 mg/L	10 mg/L

CORPORATION

PAGE 19 Analytical Serv REPORT LAB # 84-12-105

RECEIVED: 12/14/84 Results by Sample

SAMPLE ID 840194 FRACTION 05D TEST CODE GC 601 NAME EPA Method 601/GC

Date & Time Collected 12/12/84 15:00:00 Category

DATA FILE B DATE INJECTED 12/18/84 ANALYST RAA VERIFIED BY JSG

CONC. FACTOR INSTRUMENT b COMPOUNDS DETECTED 1

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Chloromethane	ND		Trichloroethene	ND
	Bromomethane	ND		Dibromochloromethane *	ND
	Vinyl Chloride	ND		1,1,2-Trichloroethane *	ND
	Chloroethane	ND		cis-1,3-Dichloropropene *	ND
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND
1	Trichlorofluoromethane	0.8		Bromoform	ND
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane #	ND
	1,1-Dichloroethane	ND		Tetrachloroethylene #	ND
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND
	Chloroform	ND		1,3-Dichlorobenzene	ND
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND
	Carbon Tetrachloride	ND			
	Bromodichloromethane	ND			
	1,2-Dichloropropane	ND			
	trans-1,3-Dichloropropene	ND			

CORPORATION

 Analytical Serv REPORT LAB # 84-12-105

RECEIVED: 12/14/84 Results by Sample Continued From Above

SAMPLE ID 840194 FRACTION 05D TEST CODE GC 601 NAME EPA Method 601/GC

Date & Time Collected 12/12/84 15:00:00 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

CORPORATION

PAGE 21 Analytical Serv REPORT LAB # 84-12-105
RECEIVED: 12/14/84 Results by Sample

SAMPLE ID 840194 FRACTION 05E TEST CODE GC 602 NAME EPA Method 602/GC
Date & Time Collected 12/12/84 15:00:00 Category

DATA FILE D DATE INJECTED 12/18/84 ANALYST RAA VERIFIED BY JSG
CONC. FACTOR INSTRUMENT d COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Benzene	ND		1,3-Dichlorobenzene	ND
	Toluene	ND		1,2-Dichlorobenzene	ND
	Ethyl Benzene	ND		1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT.
SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 602, (Federal Register, 12/3/79).

CORPORATION

PAGE 22 Analytical Serv REPORT LAB # 84-12-105

RECEIVED: 12/14/84 Results by Sample

SAMPLE ID 840195 SAMPLE # 06 FRACTIONS: A,B,C,D,E

Date & Time Collected 12/12/84 15:34:00 Category

ONG_A	3 mg/L	PHEN_A	<.01 mg/L	PH_A	8.17 pH units	TDS_A	270 mg/L	TOC	8 mg/L

CORPORATION

PAGE 23 Analytical Serv REPORT LAB # 84-12-105
RECEIVED: 12/14/84 Results by Sample

SAMPLE ID 840195 FRACTION 06D TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 12/12/84 15:34:00 Category

DATA FILE B DATE INJECTED 12/19/84 ANALYST MCL VERIFIED BY JSG
CONC. FACTOR INSTRUMENT b COMPOUNDS DETECTED 1

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Chloromethane	ND		Trichloroethene	ND
	Bromomethane	ND		Dibromochloromethane *	ND
	Vinyl Chloride	ND		1,1,2-Trichloroethane *	ND
	Chloroethane	ND		cis-1,3-Dichloropropene *	ND
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND
1	Trichlorofluoromethane	2.0		Bromoform	ND
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane #	ND
	1,1-Dichloroethane	ND		Tetrachloroethylene #	ND
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND
	Chloroform	ND		1,3-Dichlorobenzene	ND
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND
	Carbon Tetrachloride	ND			
	Bromodichloromethane	ND			
	1,2-Dichloropropane	ND			
	trans-1,3-Dichloropropene	ND			

CORPORATION

PAGE 24 Analytical Serv REPORT LAB # 84-12-105
RECEIVED: 12/14/84 Results by Sample Continued From Above

SAMPLE ID 840195 FRACTION 06D TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 12/12/84 15:34:00 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

CORPORATION

PAGE 25 Analytical Serv REPORT LAB # 84-12-105
RECEIVED: 12/14/84 Results by Sample

SAMPLE ID 840195 FRACTION 06E TEST CODE GC 602 NAME EPA Method 602/GC
Date & Time Collected 12/12/84 15:34:00 Category

DATA FILE D DATE INJECTED 12/18/84 ANALYST RAA VERIFIED BY JSG
CONC. FACTOR INSTRUMENT d COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Benzene	ND		1,3-Dichlorobenzene	ND
	Toluene	ND		1,2-Dichlorobenzene	ND
	Ethyl Benzene	ND		1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT.
SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 602, (Federal Register, 12/3/79).

CORPORATION

 Analytical Serv REPORT LAB # 84-12-105

RECEIVED: 12/14/84 Results by Sample

SAMPLE ID 840196 SAMPLE # 07 FRACTIONS: A,B,C,D,E

Date & Time Collected 12/12/84 16:20:00 Category

ONG_A	PHEN_A	PH_A	TDS_A	TOC
9 mg/L	0.03 mg/L	7.36 pH units	310 mg/L	20 mg/L

CORPORATION

PAGE 27 Analytical Serv REPORT LAB # 84-12-105
RECEIVED: 12/14/84 Results by Sample

SAMPLE ID 840196 FRACTION 07D TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 12/12/84 16:20:00 Category

DATA FILE B DATE INJECTED 12/19/84 ANALYST MCL VERIFIED BY JSG
CONC. FACTOR INSTRUMENT b COMPOUNDS DETECTED 2

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Chloromethane	ND		Trichloroethene	ND
	Bromomethane	ND	2	Dibromochloromethane *	0.5
	Vinyl Chloride	ND		1,1,2-Trichloroethane *	ND
	Chloroethane	ND		cis-1,3-Dichloropropene *	ND
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND
1	Trichlorofluoromethane	0.9		Bromoform	ND
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane #	ND
	1,1-Dichloroethane	ND		Tetrachloroethylene #	ND
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND
	Chloroform	ND		1,3-Dichlorobenzene	ND
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND
	Carbon Tetrachloride	ND			
	Bromodichloromethane	ND			
	1,2-Dichloropropane	ND			
	trans-1,3-Dichloropropene	ND			

CORPORATION

PAGE 28 Analytical Serv REPORT LAB # 84-12-105
RECEIVED: 12/14/84 Results by Sample Continued From Above

SAMPLE ID 840196 FRACTION 07D TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 12/12/84 16:20:00 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

CORPORATION

PAGE 29 Analytical Serv REPORT LAB # 84-12-105
RECEIVED: 12/14/84 Results by Sample

SAMPLE ID 840196 FRACTION 07E TEST CODE GC 602 NAME EPA Method 602/GC
Date & Time Collected 12/12/84 16:20:00 Category

DATA FILE D DATE INJECTED 12/19/84 ANALYST RAA VERIFIED BY JSG
CONC. FACTOR INSTRUMENT d COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Benzene	ND		1,3-Dichlorobenzene	ND
	Toluene	ND		1,2-Dichlorobenzene	ND
	Ethyl Benzene	ND		1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT.
SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 602, (Federal Register, 12/3/79).

CORPORATION

PAGE 1 Analytical Serv REPORT LAB # 84-12-111

RECEIVED: 12/13/84 01/25/85 10:22:02

REPORT TO: Radian
Bl. 7
Austin

ATTEN: Nelson Lund

CLIENT: SHEPPARD SAMPLES: 15
COMPANY: Sheppard AFB
FACILITY:

PREPARED BY: Radian Analytical Services
8501 MoPac Blvd.
P.O. Box 9948
Austin, Texas 78766

ATTEN:
PHONE: (512) 454-4797

CERTIFIED BY

CONTACT: CONOVER

WORK ID: soil
TAKEN: PAW
TRANS: Fed Ex
TYPE:
P.O. #: 214-114-03-30
INVOICE: under separate cover

Footnotes and Comments

* Indicates a value less than 5 times the detection limit. Potential error for such low values ranges between 50 and 100%.

@ Indicates that spike recovery for this analysis on the specific matrix was not within acceptable limits indicating an interferent present.

SAMPLE IDENTIFICATION

01	840156
02	840157
03	840158
04	840159
05	840160
06	840161
07	840162
08	840163
09	840164
10	840165
11	840166
12	840167
13	840168
14	840169
15	840170

Analytical Serv TEST CODES and NAMES used on this report

EP EXT	RCRA Extraction Procedure
EP MET	RCRA Metals
IGNIT	Ignitability
ONG A	Oil and Grease
PHEN A	Total Phenolics
PH A	pH
PREP W	Special Digestion Method
TOCSOL	TOC in solids

CORPORATION

Analytical Serv REPORT LAB # 84-12-111

RECEIVED: 12/13/84

RESULTS BY TEST

TEST CODE default units	Sample 01 (entered units)	Sample 02 (entered units)	Sample 03 (entered units)	Sample 04 (entered units)	Sample 05 (entered units)
EP_EXT date completed			12/19/84		
IGNIT degrees F			>145		
ONG_A mg/L	500 ug/g	500 ug/g	<500 ug/g	<500 ug/g	20,000 ug/g
PHEN_A mg/L	<.2 ug/g	<.2 ug/g	<.2 ug/g	<.2 ug/g	<.2 ug/g
PH_A pH units	9.79	9.26	9.33	9.61	9.85
PREP_W date complete	01/03/85	01/03/85	01/03/85	01/03/85	01/03/85
TOCSOL %	0.07	0.06	0.11	0.28	0.17

TEST CODE default units	Sample 06 (entered units)	Sample 07 (entered units)	Sample 08 (entered units)	Sample 09 (entered units)	Sample 10 (entered units)
EP_EXT date completed				12/19/84	
IGNIT degrees F				>145	
ONG_A mg/L	14,000 ug/g	<500 ug/g	<500 ug/g	<500 ug/g	<500 ug/g
PHEN_A mg/L	<.2 ug/g	6.4 ug/g	4.5 ug/g	<.2 ug/g	3.5 ug/g
PH_A pH units	10.04	9.93	9.84	9.32	9.52

CORPORATION

Analytical Serv REPORT

LAB # 84-12-111

RECEIVED: 12/13/84

RESULTS BY TEST

CONTINUED FROM ABOVE

PREP_W date complete	01/03/85	01/04/85	01/04/85	01/04/85	01/04/85
TOCSOL %	0.17	0.09	0.10	0.12	0.07

TEST CODE default units	Sample 11 (entered units)	Sample 12 (entered units)	Sample 13 (entered units)	Sample 14 (entered units)	Sample 15 (entered units)
ONG_A mg/L	<500 ug/g	600 ug/g	800 ug/g	900 ug/g	900 ug/g
PHEN_A mg/L	<.2 ug/g	<.2 ug/g	<.2 ug/g	<.2 ug/g	<.2 ug/g
PH_A pH units	9.64	9.50	9.45	9.86	9.92
PREP_W date complete	01/04/85	01/07/85	01/07/85	01/07/85	01/07/85
TOCSOL %	0.16	0.25	0.25	0.08	0.06

CORPORATION

PAGE 4 Analytical Serv REPORT LAB # 84-12-111

RECEIVED: 12/13/84 Results by Sample

SAMPLE ID 840158 FRACTION 03D TEST CODE EP MET NAME RCRA Metals

Date & Time Collected 12/11/84 12:55:00 Category

DATE ANALYZED 01/19/85 VERIFIED BY DLH

Analyzed by ICPES

CODE	METAL	RESULT
AG	Silver	<.002
BA	Barium	0.008
CD	Cadmium	<.002
CR	Chromium	<.001

Analyzed by AA

CODE	METAL	RESULT
AS	Arsenic	<.057
HG	Mercury	<.0002
PB	Lead	<.084
SE	Selenium	0.21

NOTES AND DEFINITIONS FOR THIS REPORT

All results reported in ug/ml unless otherwise specified.
NA = not analyzed
* = less that 5 times the detection limit.

RADIAN CORPORATION

Analytical Serv REPORT LAB # 84-12-111

RECEIVED: 12/13/84

Results by Sample

SAMPLE ID 840164 FRACTION 09D TEST CODE EP MET NAME RCRA Metals

Date & Time Collected 12/11/84 15:47:00 Category

DATE ANALYZED 01/19/85 VERIFIED BY DLH

Analyzed by ICPES

CODE	METAL	RESULT
AG	Silver	<.002
BA	Barium	0.21
CD	Cadmium	<.002
CR	Chromium	<.001

Analyzed by AA

CODE	METAL	RESULT
AS	Arsenic	<.057
HG	Mercury	<.0002
PB	Lead	<.084
SE	Selenium	0.20

NOTES AND DEFINITIONS FOR THIS REPORT

All results reported in ug/ml unless otherwise specified.
NA = not analyzed
* = less that 5 times the detection limit.

CORPORATION

PAGE 1 Analytical Serv REPORT LAB # 84-12-112

RECEIVED: 12/13/84 01/09/85 15:16:59

REPORT TO: Radian
Bl. 7
Austin

ATTEN: Nelson Lund

CLIENT: SHEPPARD SAMPLES: 15
COMPANY: Sheppard AFB
FACILITY:

PREPARED BY: Radian Analytical Services
8501 MoPac Blvd.
P.O. Box 9948
Austin, Texas 78766

ATTEN:
PHONE: (512) 454-4797

CERTIFIED BY

CONTACT: CONOVER

WORK ID: soil
TAKEN: PAW
TRANS: Fed Ex
TYPE:
P.O. #: 214-114-03-30
INVOICE: under separate cover

Footnotes and Comments

* Indicates a value less than 5 times the detection limit. Potential error for such low values ranges between 50 and 100%.

@ Indicates that spike recovery for this analysis on the specific matrix was not within acceptable limits indicating an interferent present.

SAMPLE IDENTIFICATION

01 840156
02 840157
03 840158
04 840159
05 840160
06 840161
07 840162
08 840163
09 840164
10 840165
11 840166
12 840167
13 840168
14 840169
15 840170

Analytical Serv TEST CODES and NAMES used on this report

SW8010 GC-HECD Halog. Vol. - SW846
SW8020 GC-PID Arom. Vol. - SW846

CORPORATION

PAGE 2 Analytical Serv REPORT LAB # 84-12-112

RECEIVED: 12/13/84 Results by Sample

SAMPLE ID 840156 FRACTION 01A TEST CODE SW8010 NAME GC-HECD Haloq. Vol. - SW846

Date & Time Collected 12/11/84 12:45:00 Category

DATA FILE B DATE INJECTED 12/19/84 ANALYST RAA VERIFIED BY JSG

CONC. FACTOR INSTRUMENT b COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Chloromethane	ND		Trichloroethene	ND
	Bromomethane	ND		Dibromochloromethane	ND
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND
	Chloroethane	ND		cis-1,3-Dichloropropene	ND
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND
	Trichlorofluoromethane	ND		Bromoform	ND
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	ND
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND
	Chloroform	ND		1,3-Dichlorobenzene	ND
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND
	Carbon Tetrachloride	ND			
	Bromodichloromethane	ND			
	1,2-Dichloropropane	ND			
	trans-1,3-Dichloropropene	ND			

CORPORATION

PAGE 3 Analytical Serv REPORT LAB # 84-12-112
RECEIVED: 12/13/84 Results by Sample Continued From Above

SAMPLE ID 840156 FRACTION 01A TEST CODE SW8010 NAME GC-HECD Haloq. Vol. - SW846
Date & Time Collected 12/11/84 12:45:00 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

CORPORATION

PAGE 4 Analytical Serv REPORT LAB # 84-12-112

RECEIVED: 12/13/84 Results by Sample

SAMPLE ID 840156 FRACTION 01A TEST CODE SW8020 NAME GC-PID Arom. Vol. - SW846

Date & Time Collected 12/11/84 12:45:00 Category

DATA FILE D DATE INJECTED 12/19/84 ANALYST MCL VERIFIED BY JSG

CONC. FACTOR INSTRUMENT d COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Benzene	ND		1,3-Dichlorobenzene	ND
	Toluene	ND		1,2-Dichlorobenzene	ND
	Ethyl Benzene	ND		1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

CORPORATION

PAGE 5 Analytical Serv REPORT LAB # 84-12-112
RECEIVED: 12/13/84 Results by Sample

SAMPLE ID 840157 FRACTION 02A TEST CODE SW8010 NAME GC-HECD Haloq. Vol. - SW846
Date & Time Collected 12/11/84 12:45:00 Category

DATA FILE B DATE INJECTED 12/19/84 ANALYST RAA VERIFIED BY JSG
CONC. FACTOR INSTRUMENT b COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Chloromethane	ND		Trichloroethene	ND
	Bromomethane	ND		Dibromochloromethane	ND
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND
	Chloroethane	ND		cis-1,3-Dichloropropene	ND
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND
	Trichlorofluoromethane	ND		Bromoform	ND
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	ND
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND
	Chloroform	ND		1,3-Dichlorobenzene	ND
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND
	Carbon Tetrachloride	ND			
	Bromodichloromethane	ND			
	1,2-Dichloropropane	ND			
	trans-1,3-Dichloropropene	ND			

CORPORATION

PAGE 6 Analytical Serv REPORT LAB # 84-12-112
RECEIVED: 12/13/84 Results by Sample Continued From Above

SAMPLE ID 840157 FRACTION 02A TEST CODE SW8010 NAME GC-HECD Halog. Vol. - SW846
Date & Time Collected 12/11/84 12:45:00 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

CORPORATION

PAGE 7 Analytical Serv REPORT LAB # 84-12-112
RECEIVED: 12/13/84 Results by Sample

SAMPLE ID 840157 FRACTION 02A TEST CODE SW8020 NAME GC-PID Arom. Vol.- SW846
Date & Time Collected 12/11/84 12:45:00 Category

DATA FILE D DATE INJECTED 12/19/84 ANALYST RAA VERIFIED BY JSG
CONC. FACTOR INSTRUMENT d COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Benzene	ND		1,3-Dichlorobenzene	ND
	Toluene	ND		1,2-Dichlorobenzene	ND
	Ethyl Benzene	ND		1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT.
SCAN = scan number or retention time on chromatogram.
All results reported in ug/kg unless otherwise specified.
ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

CORPORATION

PAGE 8 Analytical Serv REPORT LAB # 84-12-112
RECEIVED: 12/13/84 Results by Sample

SAMPLE ID 840158 FRACTION 03A TEST CODE SW8010 NAME GC-HECD Haloq. Vol. - SW846
Date & Time Collected 12/11/84 12:55:00 Category

DATA FILE B DATE INJECTED 12/19/84 ANALYST RAA VERIFIED BY JSG
CONC. FACTOR INSTRUMENT b COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Chloromethane	ND		Trichloroethene	ND
	Bromomethane	ND		Dibromochloromethane	ND
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND
	Chloroethane	ND		cis-1,3-Dichloropropene	ND
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND
	Trichlorofluoromethane	ND		Bromoform	ND
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	ND
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND
	Chloroform	ND		1,3-Dichlorobenzene	ND
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND
	Carbon Tetrachloride	ND			
	Bromodichloromethane	ND			
	1,2-Dichloropropane	ND			
	trans-1,3-Dichloropropene	ND			

CORPORATION

PAGE 9 | Analytical Serv | REPORT | LAB # 84-12-112
RECEIVED: 12/13/84 | Results by Sample | Continued From Above

SAMPLE ID 840158 FRACTION 03A . TEST CODE SW8010 NAME GC-HECD Haloq. Vol. - SW846
Date & Time Collected 12/11/84 12:55:00 Category _____

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

CORPORATION

PAGE 10 Analytical Serv REPORT LAB # 84-12-112
RECEIVED: 12/13/84 Results by Sample

SAMPLE ID 840158 FRACTION 03A TEST CODE SW8020 NAME GC-PID Arom. Vol.- SW846
Date & Time Collected 12/11/84 12:55:00 Category

DATA FILE D DATE INJECTED 12/19/84 ANALYST RAA VERIFIED BY JSG
CONC. FACTOR INSTRUMENT d COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Benzene	ND		1,3-Dichlorobenzene	ND
	Toluene	ND		1,2-Dichlorobenzene	ND
	Ethyl Benzene	ND		1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT.
SCAN = scan number or retention time on chromatogram.
All results reported in ug/kg unless otherwise specified.
ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

CORPORATION

PAGE 11 Analytical Serv REPORT LAB # 84-12-112
RECEIVED: 12/13/84 Results by Sample

SAMPLE ID 840159 FRACTION 04A TEST CODE SW8010 NAME GC-HECD Halog. Vol. - SW846
Date & Time Collected 12/11/84 13:12:00 Category

DATA FILE B DATE INJECTED 12/19/84 ANALYST RAA VERIFIED BY JSG
CONC. FACTOR INSTRUMENT b COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Chloromethane	ND		Trichloroethene	ND
	Bromomethane	ND		Dibromochloromethane	ND
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND
	Chloroethane	ND		cis-1,3-Dichloropropene	ND
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND
	Trichlorofluoromethane	ND		Bromoform	ND
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	ND
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND
	Chloroform	ND		1,3-Dichlorobenzene	ND
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND
	Carbon Tetrachloride	ND			
	Bromodichloromethane	ND			
	1,2-Dichloropropane	ND			
	trans-1,3-Dichloropropene	ND			

CORPORATION

 Analytical Serv REPORT LAB # 84-12-112

RECEIVED: 12/13/84 Results by Sample Continued From Above

SAMPLE ID 840159 FRACTION 04A TEST CODE SW8010 NAME GC-HECD Haloq. Vol.- SW846

Date & Time Collected 12/11/84 13:12:00 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

CORPORATION

PAGE 13 Analytical Serv REPORT LAB # 84-12-112
RECEIVED: 12/13/84 Results by Sample

SAMPLE ID 840159 FRACTION 04A TEST CODE SW8020 NAME GC-PID Arom. Vol. - SW846
Date & Time Collected 12/11/84 13:12:00 Category

DATA FILE D DATE INJECTED 12/19/84 ANALYST RAA VERIFIED BY JSG
CONC. FACTOR INSTRUMENT d COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Benzene	ND		1,3-Dichlorobenzene	ND
	Toluene	ND		1,2-Dichlorobenzene	ND
	Ethyl Benzene	ND		1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT.
SCAN = scan number or retention time on chromatogram.
All results reported in ug/kg unless otherwise specified.
ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

CORPORATION

PAGE 14 Analytical Serv REPORT LAB # 84-12-112

RECEIVED: 12/13/84 Results by Sample

SAMPLE ID 840160 FRACTION 05A TEST CODE SW8010 NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 12/11/84 13:19:00 Category

DATA FILE B DATE INJECTED 12/19/84 ANALYST RAA VERIFIED BY JSG

CONC. FACTOR INSTRUMENT b COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Chloromethane	ND		Trichloroethene	ND
	Bromomethane	ND		Dibromochloromethane	ND
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND
	Chloroethane	ND		cis-1,3-Dichloropropene	ND
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND
	Trichlorofluoromethane	ND		Bromoform	ND
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	ND
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND
	Chloroform	ND		1,3-Dichlorobenzene	ND
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND
	Carbon Tetrachloride	ND			
	Bromodichloromethane	ND			
	1,2-Dichloropropane	ND			
	trans-1,3-Dichloropropene	ND			

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RECEIVED: 12/13/84

Analytical Serv REPORT
Results by Sample

LAB # 84-12-112
Continued From Above

SAMPLE ID 840160 FRACTION 05A TEST CODE SW8010 NAME GC-HECD Haloq. Vol. - SW846
Date & Time Collected 12/11/84 13:19:00 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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PAGE 16 Analytical Serv REPORT LAB # 84-12-112
RECEIVED: 12/13/84 Results by Sample

SAMPLE ID 840160 FRACTION 05A TEST CODE SW8020 NAME GC-PID Arom. Vol. - SW846
Date & Time Collected 12/11/84 13:19:00 Category

DATA FILE D DATE INJECTED 12/19/84 ANALYST RAA VERIFIED BY JSG
CONC. FACTOR INSTRUMENT d COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Benzene	ND		1,3-Dichlorobenzene	ND
	Toluene	ND		1,2-Dichlorobenzene	ND
	Ethyl Benzene	ND		1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT.
SCAN = scan number or retention time on chromatogram.
All results reported in ug/kg unless otherwise specified.
ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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PAGE 17 Analytical Serv REPORT LAB # 84-12-112
RECEIVED: 12/13/84 Results by Sample

SAMPLE ID 840161 FRACTION 06A TEST CODE SW8010 NAME GC-HECD Halog. Vol. - SW846
Date & Time Collected 12/11/84 13:35:00 Category

DATA FILE B DATE INJECTED 12/19/84 ANALYST RAA VERIFIED BY JSG
CONC. FACTOR INSTRUMENT b COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Chloromethane	ND		Trichloroethene	ND
	Bromomethane	ND		Dibromochloromethane	ND
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND
	Chloroethane	ND		cis-1,3-Dichloropropene	ND
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND
	Trichlorofluoromethane	ND		Bromoform	ND
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	ND
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND
	Chloroform	ND		1,3-Dichlorobenzene	ND
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND
	Carbon Tetrachloride	ND			
	Bromodichloromethane	ND			
	1,2-Dichloropropane	ND			
	trans-1,3-Dichloropropene	ND			

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RECEIVED: 12/13/84

Analytical Serv REPORT
Results by Sample

LAB # 84-12-112
Continued From Above

SAMPLE ID 840161 FRACTION 06A TEST CODE SW8010 NAME GC-HECD Haloq. Vol. - SW846
Date & Time Collected 12/11/84 13:35:00 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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PAGE 19 Analytical Serv REPORT LAB # 84-12-112
RECEIVED: 12/13/84 Results by Sample

SAMPLE ID 840161 FRACTION 06A TEST CODE SW8020 NAME GC-PID Arom. Vol. - SW846
Date & Time Collected 12/11/84 13:35:00 Category

DATA FILE D DATE INJECTED 12/19/84 ANALYST RAA VERIFIED BY JSG
CONC. FACTOR INSTRUMENT d COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Benzene	ND		1,3-Dichlorobenzene	ND
	Toluene	ND		1,2-Dichlorobenzene	ND
	Ethyl Benzene	ND		1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT.
SCAN = scan number or retention time on chromatogram.
All results reported in ug/kg unless otherwise specified.
ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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Analytical Serv REPORT LAB # 84-12-112

RECEIVED: 12/13/84

Results by Sample

SAMPLE ID 840162 FRACTION 07A TEST CODE SW8010 NAME GC-HECD Haloq. Vol. - SW846

Date & Time Collected 12/11/84 13:50:00 Category

DATA FILE B DATE INJECTED 12/20/84 ANALYST MCL VERIFIED BY JSG

CONC. FACTOR INSTRUMENT b COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Chloromethane	ND		Trichloroethene	ND
	Bromomethane	ND		Dibromochloromethane	ND
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND
	Chloroethane	ND		cis-1,3-Dichloropropene	ND
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND
	Trichlorofluoromethane	ND		Bromoform	ND
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	ND
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND
	Chloroform	ND		1,3-Dichlorobenzene	ND
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND
	Carbon Tetrachloride	ND			
	Bromodichloromethane	ND			
	1,2-Dichloropropane	ND			
	trans-1,3-Dichloropropene	ND			

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PAGE 21 | Analytical Serv REPORT | LAB # 84-12-112
RECEIVED: 12/13/84 | Results by Sample | Continued From Above

SAMPLE ID 840162 FRACTION 07A TEST CODE SW8010 NAME GC-HECD Halog. Vol. - SW846
Date & Time Collected 12/11/84 13:50:00 Category _____

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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Analytical Serv REPORT LAB # 84-12-112

RECEIVED: 12/13/84

Results by Sample

SAMPLE ID 840162 FRACTION 07A TEST CODE SW8020 NAME GC-PID Arom. Vol.- SW846

Date & Time Collected 12/11/84 13:50:00 Category

DATA FILE D DATE INJECTED 12/19/84 ANALYST RAA VERIFIED BY JSG

CONC. FACTOR INSTRUMENT d COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Benzene	ND		1,3-Dichlorobenzene	ND
	Toluene	ND		1,2-Dichlorobenzene	ND
	Ethyl Benzene	ND		1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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PAGE 23 Analytical Serv REPORT LAB # 84-12-112
RECEIVED: 12/13/84 Results by Sample

SAMPLE ID 840163 FRACTION 08A TEST CODE SW8010 NAME GC-HECD Haloq. Vol. - SW846
Date & Time Collected 12/11/84 15:45:00 Category

DATA FILE B DATE INJECTED 12/20/84 ANALYST MCL VERIFIED BY JSG
CONC. FACTOR INSTRUMENT b COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Chloromethane	ND		Trichloroethene	ND
	Bromomethane	ND		Dibromochloromethane	ND
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND
	Chloroethane	ND		cis-1,3-Dichloropropene	ND
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND
	Trichlorofluoromethane	ND		Bromoform	ND
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	ND
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND
	Chloroform	ND		1,3-Dichlorobenzene	ND
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND
	Carbon Tetrachloride	ND			
	Bromodichloromethane	ND			
	1,2-Dichloropropane	ND			
	trans-1,3-Dichloropropene	ND			

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RECEIVED: 12/13/84

Analytical Serv REPORT
Results by Sample

LAB # 84-12-112
Continued From Above

SAMPLE ID 840163 FRACTION 08A TEST CODE SW8010 NAME GC-HECD Haloq. Vol. - SW846
Date & Time Collected 12/11/84 15:45:00 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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PAGE 25 Analytical Serv REPORT LAB # 84-12-112

RECEIVED: 12/13/84 Results by Sample

SAMPLE ID 840163 FRACTION 08A TEST CODE SW8020 NAME GC-PID Arom. Vol. - SW846

Date & Time Collected 12/11/84 15:45:00 Category

DATA FILE D DATE INJECTED 12/19/84 ANALYST RAA VERIFIED BY JSG

CONC. FACTOR INSTRUMENT d COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Benzene	ND		1,3-Dichlorobenzene	ND
	Toluene	ND		1,2-Dichlorobenzene	ND
	Ethyl Benzene	ND		1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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Analytical Serv REPORT LAB # 84-12-112

RECEIVED: 12/13/84

Results by Sample

SAMPLE ID 840164 FRACTION 09A TEST CODE SW8010 NAME GC-HECD Haloq. Vol. - SW846

Date & Time Collected 12/11/84 15:47:00 Category

DATA FILE B DATE INJECTED 12/20/84 ANALYST MCL VERIFIED BY JSG

CONC. FACTOR INSTRUMENT b COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Chloromethane	ND		Trichloroethene	ND
	Bromomethane	ND		Dibromochloromethane	ND
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND
	Chloroethane	ND		cis-1,3-Dichloropropene	ND
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND
	Trichlorofluoromethane	ND		Bromoform	ND
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	ND
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND
	Chloroform	ND		1,3-Dichlorobenzene	ND
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND
	Carbon Tetrachloride	ND			
	Bromodichloromethane	ND			
	1,2-Dichloropropane	ND			
	trans-1,3-Dichloropropene	ND			

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PAGE 27 | Analytical Serv REPORT | LAB # 84-12-112
RECEIVED: 12/13/84 | Results by Sample | Continued From Above

SAMPLE ID 840164 FRACTION 09A TEST CODE SW8010 NAME GC-HECD Halog. Vol. - SW846
Date & Time Collected 12/11/84 15:47:00 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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PAGE 28 Analytical Serv REPORT LAB # 84-12-112
RECEIVED: 12/13/84 Results by Sample

SAMPLE ID 840164 FRACTION 09A TEST CODE SW8020 NAME GC-PID Arom. Vol. - SW846
Date & Time Collected 12/11/84 15:47:00 Category

DATA FILE D DATE INJECTED 12/19/84 ANALYST RAA VERIFIED BY JSG
CONC. FACTOR INSTRUMENT d COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Benzene	ND		1,3-Dichlorobenzene	ND
	Toluene	ND		1,2-Dichlorobenzene	ND
	Ethyl Benzene	ND		1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT.
SCAN = scan number or retention time on chromatogram.
All results reported in ug/kg unless otherwise specified.
ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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PAGE 29 Analytical Serv REPORT LAB # 84-12-112
RECEIVED: 12/13/84 Results by Sample

SAMPLE ID 840165 FRACTION 10A TEST CODE SW8010 NAME GC-HECD Haloq. Vol. - SW846
Date & Time Collected 12/11/84 15:47:00 Category

DATA FILE B DATE INJECTED 12/20/84 ANALYST CAC VERIFIED BY JSG
CONC. FACTOR INSTRUMENT b COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Chloromethane	ND		Trichloroethene	ND
	Bromomethane	ND		Dibromochloromethane	ND
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND
	Chloroethane	ND		cis-1,3-Dichloropropene	ND
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND
	Trichlorofluoromethane	ND		Bromoform	ND
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	ND
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND
	Chloroform	ND		1,3-Dichlorobenzene	ND
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND
	Carbon Tetrachloride	ND			
	Bromodichloromethane	ND			
	1,2-Dichloropropane	ND			
	trans-1,3-Dichloropropene	ND			

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RECEIVED: 12/13/84

Analytical Serv REPORT
Results by Sample

LAB # 84-12-112
Continued From Above

SAMPLE ID 840165 FRACTION 10A TEST CODE SW8010 NAME GC-HECD Haloq. Vol. - SW846
Date & Time Collected 12/11/84 15:47:00 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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PAGE 31 Analytical Serv REPORT LAB # 84-12-112
RECEIVED: 12/13/84 Results by Sample

SAMPLE ID 840165 FRACTION 10A TEST CODE SW8020 NAME GC-PID Arom. Vol. - SW846
Date & Time Collected 12/11/84 15:47:00 Category

DATA FILE D DATE INJECTED 12/20/84 ANALYST MCL VERIFIED BY JSG
CONC. FACTOR INSTRUMENT d COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Benzene	ND		1,3-Dichlorobenzene	ND
	Toluene	ND		1,2-Dichlorobenzene	ND
	Ethyl Benzene	ND		1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT.
SCAN = scan number or retention time on chromatogram.
All results reported in ug/kg unless otherwise specified.
ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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PAGE 32 Analytical Serv REPORT LAB # 84-12-112
RECEIVED: 12/13/84 Results by Sample

SAMPLE ID 840166 FRACTION 11A TEST CODE SW8010 NAME GC-HECD Halog. Vol.- SW846
Date & Time Collected 12/11/84 Category

DATA FILE B DATE INJECTED 12/20/84 ANALYST CAC VERIFIED BY JSG
CONC. FACTOR INSTRUMENT b COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Chloromethane	ND		Trichloroethene	ND
	Bromomethane	ND		Dibromochloromethane	ND
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND
	Chloroethane	ND		cis-1,3-Dichloropropene	ND
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND
	Trichlorofluoromethane	ND		Bromoform	ND
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	ND
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND
	Chloroform	ND		1,3-Dichlorobenzene	ND
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND
	Carbon Tetrachloride	ND			
	Bromodichloromethane	ND			
	1,2-Dichloropropane	ND			
	trans-1,3-Dichloropropene	ND			

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PAGE 33 | Analytical Serv REPORT | LAB # 84-12-112
RECEIVED: 12/13/84 | Results by Sample | Continued From Above

SAMPLE ID 840166 FRACTION 11A TEST CODE SW8010 NAME GC-HECD Haloq. Vol. - SW846
Date & Time Collected 12/11/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

CORPORATION

PAGE 34 Analytical Serv REPORT LAB # 84-12-112
RECEIVED: 12/13/84 Results by Sample

SAMPLE ID 840166 FRACTION 11A TEST CODE SW8020 NAME GC-PID Arom. Vol. - SW846
Date & Time Collected 12/11/84 Category

DATA FILE D DATE INJECTED 12/20/84 ANALYST MCL VERIFIED BY JSG
CONC. FACTOR INSTRUMENT d COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Benzene	ND		1,3-Dichlorobenzene	ND
	Toluene	ND		1,2-Dichlorobenzene	ND
	Ethyl Benzene	ND		1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT.
SCAN = scan number or retention time on chromatogram.
All results reported in ug/kg unless otherwise specified.
ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

CORPORATION

RECEIVED: 12/13/84

Analytical Serv REPORT LAB # 84-12-112

Results by Sample

SAMPLE ID 840167 FRACTION 12A TEST CODE SW8010 NAME GC-HECD Haloq. Vol. - SW846

Date & Time Collected 12/11/84 16:03:00 Category

DATA FILE B DATE INJECTED 12/21/84 ANALYST MCL VERIFIED BY JSG

CONC. FACTOR INSTRUMENT b COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
	Methylene Chloride	ND
	Trichlorofluoromethane	ND
	1,1-Dichloroethene	ND
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
	1,2-Dichloroethane	ND
	1,1,1-Trichloroethane	ND
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
	Trichloroethene	ND
	Dibromochloromethane	ND
	1,1,2-Trichloroethane	ND
	cis-1,3-Dichloropropene	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane	ND
	Tetrachloroethylene	ND
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

CORPORATION

 Analytical Serv REPORT LAB # 84-12-112

RECEIVED: 12/13/84 Results by Sample Continued From Above

SAMPLE ID 840167 FRACTION 12A TEST CODE SW8010 NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 12/11/84 16:03:00 Category _____

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

CORPORATION

PAGE 37 Analytical Serv REPORT LAB # 84-12-112
RECEIVED: 12/13/84 Results by Sample

SAMPLE ID 840167 FRACTION 12A TEST CODE SW8020 NAME GC-PID Arom. Vol. - SW846
Date & Time Collected 12/11/84 16:03:00 Category

DATA FILE D DATE INJECTED 12/20/84 ANALYST MCL VERIFIED BY JSG
CONC. FACTOR INSTRUMENT d COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Benzene	ND		1,3-Dichlorobenzene	ND
	Toluene	ND		1,2-Dichlorobenzene	ND
	Ethyl Benzene	ND		1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT.
SCAN = scan number or retention time on chromatogram.
All results reported in ug/kg unless otherwise specified.
ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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CORPORATION

PAGE 38 Analytical Serv REPORT LAB # 84-12-112
RECEIVED: 12/13/84 Results by Sample

SAMPLE ID 840168 FRACTION 13A TEST CODE SW8010 NAME GC-HECD Haloq. Vol. - SW846
Date & Time Collected 12/11/84 16:03:00 Category

DATA FILE B DATE INJECTED 12/21/84 ANALYST MCL VERIFIED BY JSG
CONC. FACTOR INSTRUMENT b COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Chloromethane	ND		Trichloroethene	ND
	Bromomethane	ND		Dibromochloromethane	ND
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND
	Chloroethane	ND		cis-1,3-Dichloropropene	ND
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND
	Trichlorofluoromethane	ND		Bromoform	ND
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	ND
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND
	Chloroform	ND		1,3-Dichlorobenzene	ND
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND
	Carbon Tetrachloride	ND			
	Bromodichloromethane	ND			
	1,2-Dichloropropane	ND			
	trans-1,3-Dichloropropene	ND			

SAMPLE ID 840168 FRACTION 13A TEST CODE SW8010 NAME GC-HECD Halog. Vol. - SW846
Date & Time Collected 12/11/84 16:03:00 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

CORPORATION

 Analytical Serv REPORT LAB # 84-12-112

RECEIVED: 12/13/84 Results by Sample

SAMPLE ID 840168 FRACTION 13A TEST CODE SW8020 NAME GC-PID Arom. Vol. - SW846

Date & Time Collected 12/11/84 16:03:00 Category

DATA FILE D DATE INJECTED 12/20/84 ANALYST MCL VERIFIED BY JSG

CONC. FACTOR INSTRUMENT d COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Benzene	ND		1,3-Dichlorobenzene	ND
	Toluene	ND		1,2-Dichlorobenzene	ND
	Ethyl Benzene	ND		1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

CORPORATION

PAGE 41 Analytical Serv REPORT LAB # 84-12-112

RECEIVED: 12/13/84 Results by Sample

SAMPLE ID 840169 FRACTION 14A TEST CODE SW8010 NAME GC-HECD Haloq. Vol. - SW846

Date & Time Collected 12/11/84 16:27:00 Category

DATA FILE B DATE INJECTED 12/21/84 ANALYST MCL VERIFIED BY JSG

CONC. FACTOR INSTRUMENT b COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Chloromethane	ND		Trichloroethene	ND
	Bromomethane	ND		Dibromochloromethane	ND
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND
	Chloroethane	ND		cis-1,3-Dichloropropene	ND
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND
	Trichlorofluoromethane	ND		Bromoform	ND
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	ND
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND
	Chloroform	ND		1,3-Dichlorobenzene	ND
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND
	Carbon Tetrachloride	ND			
	Bromodichloromethane	ND			
	1,2-Dichloropropane	ND			
	trans-1,3-Dichloropropene	ND			

CORPORATION

RECEIVED: 12/13/84

Analytical Serv REPORT
Results by Sample

LAB # 84-12-112
Continued From Above

SAMPLE ID 840169

FRACTION 14A TEST CODE SW8010 NAME GC-HECD Halog. Vol. - SW846
Date & Time Collected 12/11/84 16:27:00 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

CORPORATION

PAGE 43 Analytical Serv REPORT LAB # 84-12-112
RECEIVED: 12/13/84 Results by Sample

SAMPLE ID 840169 FRACTION 14A TEST CODE SW8020 NAME GC-PID Arom. Vol.- SW846
Date & Time Collected 12/11/84 16:27:00 Category

DATA FILE D DATE INJECTED 12/20/84 ANALYST CAC VERIFIED BY JSG
CONC. FACTOR INSTRUMENT d COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Benzene	ND		1,3-Dichlorobenzene	ND
	Toluene	ND		1,2-Dichlorobenzene	ND
	Ethyl Benzene	ND		1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT.
SCAN = scan number or retention time on chromatogram.
All results reported in ug/kg unless otherwise specified.
ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

CORPORATION

 Analytical Serv REPORT LAB # 84-12-112

RECEIVED: 12/13/84 Results by Sample

SAMPLE ID 840170 FRACTION 15A TEST CODE SW8010 NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 12/11/84 16:45:00 Category

DATA FILE B DATE INJECTED 12/21/84 ANALYST MCL VERIFIED BY JSG

CONC. FACTOR INSTRUMENT b COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Chloromethane	ND		Trichloroethene	ND
	Bromomethane	ND		Dibromochloromethane	ND
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND
	Chloroethane	ND		cis-1,3-Dichloropropene	ND
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND
	Trichlorofluoromethane	ND		Bromoform	ND
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	ND
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND
	Chloroform	ND		1,3-Dichlorobenzene	ND
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND
	Carbon Tetrachloride	ND			
	Bromodichloromethane	ND			
	1,2-Dichloropropane	ND			
	trans-1,3-Dichloropropene	ND			

SAMPLE ID 840170 FRACTION 15A TEST CODE SW8010 NAME GC-HECD Halog. Vol. - SW846
Date & Time Collected 12/11/84 16:45:00 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

CORPORATION

PAGE 46 Analytical Serv REPORT LAB # 84-12-112

RECEIVED: 12/13/84 Results by Sample

SAMPLE ID 840170 FRACTION 15A TEST CODE SW8020 NAME GC-PID Arom. Vol. - SW846

Date & Time Collected 12/11/84 16:45:00 Category

DATA FILE D DATE INJECTED 12/20/84 ANALYST CAC VERIFIED BY JSG

CONC. FACTOR INSTRUMENT d COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Benzene	ND		1,3-Dichlorobenzene	ND
	Toluene	ND		1,2-Dichlorobenzene	ND
	Ethyl Benzene	ND		1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

CORPORATION

PAGE 1 Analytical Serv REPORT LAB # 85-02-063

RECEIVED: 02/08/85 03/18/85 12:13:23

REPORT TO: Radian
Bl. 7
Austin

ATTEN: Nelson Lund

CLIENT: SHEPPARD SAMPLES: 4
COMPANY: Sheppard AFB
FACILITY:

WORK ID: water, MW11-MW14
TAKEN: PAW, RAB
TRANS: Fed Ex
TYPE:
P.O. #: 214-114-03-40
INVOICE: under separate cover

PREPARED BY: Radian Analytical Services
8501 MoPac Blvd.
P.O. Box 9948
Austin, Texas 78766

ATTEN:
PHONE: (512) 454-4797

CERTIFIED BY

CONTACT: CONOVER

Note: Second column confirmation performed for EPA 601, splits 01 to 04. EPA 602 run at 1/50 dilution due to interference present.

Footnotes and Comments

* Indicates a value less than 5 times the detection limit. Potential error for such low values ranges between 50 and 100%.

@ Indicates that spike recovery for this analysis on the specific matrix was not within acceptable limits indicating an interferent present.

SAMPLE IDENTIFICATION

01	850001
02	850002
03	850003
04	850004

Analytical Serv TEST CODES and NAMES used on this report

GC 601	EPA Method 601/GC
GC 602	EPA Method 602/GC
ONG IR	Oil and Grease, Infrared
PHEN A	Total Phenolics
PH A	pH
TDS A	Total Dissolved Solids
TOC	Total Organic Carbon

CORPORATION

PAGE 2 Analytical Serv REPORT LAB # 85-02-063

RECEIVED: 02/08/85 RESULTS BY TEST

TEST CODE default units	Sample 01 (entered units)	Sample 02 (entered units)	Sample 03 (entered units)	Sample 04 (entered units)
ONG_IR mg/L	6	6	6	5
PHEN_A mg/L	0.072	0.072	0.029	0.026
PH_A pH units	6.70	6.64	6.57	6.80
TDS_A mg/L	530	850	1200	1900
TOC mg/L	94	40	51	22

CORPORATION

PAGE 3 Analytical Serv REPORT LAB # 85-02-063

RECEIVED: 02/08/85 Results by Sample

SAMPLE ID 850001 FRACTION 01D TEST CODE GC 601 NAME EPA Method 601/GC

Date & Time Collected 02/05/85 Category

DATA FILE G DATE INJECTED 02/13/85 ANALYST RAA VERIFIED BY JSG

CONC. FACTOR INSTRUMENT q COMPOUNDS DETECTED 3

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
	Methylene Chloride	ND
	Trichlorofluoromethane	ND
	1,1-Dichloroethene	ND
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
1	Chloroform	2.0
	1,2-Dichloroethane	ND
	1,1,1-Trichloroethane	ND
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
2	Trichloroethene	1.5
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
3	Tetrachloroethylene #	2.5
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

CORPORATION

PAGE 4 | Analytical Serv | REPORT | LAB # 85-02-063
RECEIVED: 02/08/85 | Results by Sample | Continued From Above

SAMPLE ID 850001 FRACTION 01D TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 02/05/85 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

CORPORATION

PAGE 5 Analytical Serv REPORT LAB # 85-02-063

RECEIVED: 02/08/85 Results by Sample

SAMPLE ID 850001 FRACTION 01E TEST CODE GC 602 NAME EPA Method 602/GC

Date & Time Collected 02/05/85 Category

DATA FILE D DATE INJECTED 02/18/85 ANALYST RAA VERIFIED BY JSG

CONC. FACTOR INSTRUMENT d COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Benzene	ND		1,3-Dichlorobenzene	ND
	Toluene	ND		1,2-Dichlorobenzene	ND
	Ethyl Benzene	ND		1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified

ND = not detected at EPA detection limit [illegible] (Federal [illegible] 12/3/79)

CORPORATION

PAGE 6 | Analytical Serv | REPORT | LAB # 85-02-063

RECEIVED: 02/08/85

Results by Sample

SAMPLE ID 850002 FRACTION 02D TEST CODE GC 601 NAME EPA Method 601/GC

Date & Time Collected 02/05/85 Category

DATA FILE G DATE INJECTED 02/13/85 ANALYST RAA VERIFIED BY JSG

CONC. FACTOR INSTRUMENT q COMPOUNDS DETECTED 4

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
	Methylene Chloride	ND
	Trichlorofluoromethane	ND
	1,1-Dichloroethene	ND
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
1	Chloroform	2.9
2	1,2-Dichloroethane	2.8
	1,1,1-Trichloroethane	ND
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
3	Trichloroethene	5.5
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
4	Tetrachloroethylene #	1.9
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

CORPORATION

Analytical Serv REPORT

LAB # 85-02-063

RECEIVED: 02/08/85

Results by Sample

Continued From Above

SAMPLE ID 850002 FRACTION 02D TEST CODE GC 601 NAME EPA Method 601/GC

Date & Time Collected 02/05/85 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

CORPORATION

PAGE 8 Analytical Serv REPORT LAB # 85-02-063
RECEIVED: 02/08/85 Results by Sample

SAMPLE ID 850002 FRACTION 02E TEST CODE GC 602 NAME EPA Method 602/GC
Date & Time Collected 02/05/85 Category

DATA FILE D DATE INJECTED 02/18/85 ANALYST RAA VERIFIED BY JSG
CONC. FACTOR INSTRUMENT d COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Benzene	ND		1,3-Dichlorobenzene	ND
	Toluene	ND		1,2-Dichlorobenzene	ND
	Ethyl Benzene	ND		1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT.
SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified
ND = not detected at EPA detection limit method 602, (Federal Register, 12/3/79).

CORPORATION

PAGE 9 Analytical Serv REPORT LAB # 85-02-083

RECEIVED: 02/08/85 Results by Sample

SAMPLE ID 850003 FRACTION 03D TEST CODE GC 601 NAME EPA Method 601/GC

Date & Time Collected 02/05/85 Category

DATA FILE G DATE INJECTED 02/13/85 ANALYST RAA VERIFIED BY JSG

CONC. FACTOR INSTRUMENT 9 COMPOUNDS DETECTED 2

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Chloromethane	ND	1	Trichloroethene	1.2
	Bromomethane	ND		Dibromochloromethane *	ND
	Vinyl Chloride	ND		1,1,2-Trichloroethane *	ND
	Chloroethane	ND		cis-1,3-Dichloropropene *	ND
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND
	Trichlorofluoromethane	ND		Bromoform	ND
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane #	ND
	1,1-Dichloroethane	ND	2	Tetrachloroethylene #	1.4
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND
	Chloroform	ND		1,3-Dichlorobenzene	ND
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND
	Carbon Tetrachloride	ND			
	Bromodichloromethane	ND			
	1,2-Dichloropropane	ND			
	trans-1,3-Dichloropropene	ND			

CORPORATION

PAGE 10 | Analytical Serv | REPORT | LAB # 85-02-063
RECEIVED: 02/08/85 | Results by Sample | Continued From Above

SAMPLE ID 850003 FRACTION 03D TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 02/05/85 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

CORPORATION

PAGE 11 Analytical Serv REPORT LAB # 85-02-063

RECEIVED: 02/08/85 Results by Sample

SAMPLE ID 850003 FRACTION 03E TEST CODE GC 602 NAME EPA Method 602/GC

Date & Time Collected 02/05/85 Category

DATA FILE D DATE INJECTED 02/18/85 ANALYST RAA VERIFIED BY JSG

CONC. FACTOR INSTRUMENT d COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Benzene	ND		1,3-Dichlorobenzene	ND
	Toluene	ND		1,2-Dichlorobenzene	ND
	Ethyl Benzene	ND		1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified

ND = not detected at EPA detection limit method 602 (Federal Register 10/26/79)

CORPORATION

PAGE 12 Analytical Serv REPORT LAB # 85-02-063
RECEIVED: 02/08/85 Results by Sample

SAMPLE ID 850004 FRACTION 04D TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 02/05/85 Category

DATA FILE G DATE INJECTED 02/13/85 ANALYST RAA VERIFIED BY JSG
CONC. FACTOR INSTRUMENT g COMPOUNDS DETECTED 3

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
	Methylene Chloride	ND
	Trichlorofluoromethane	ND
	1,1-Dichloroethene	ND
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
	1,2-Dichloroethane	ND
1	1,1,1-Trichloroethane	1.7
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
2	Trichloroethene	1.2
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
3	Tetrachloroethylene #	1.5
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

CORPORATION

Analytical Serv REPORT

LAB # 85-02-063

RECEIVED: 02/08/85

Results by Sample

Continued From Above

SAMPLE ID 850004

FRACTION 04D TEST CODE GC 601 NAME EPA Method 601/GC

Date & Time Collected 02/05/85 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

CORPORATION

PAGE 14 Analytical Serv REPORT LAB # 85-02-063
RECEIVED: 02/08/85 Results by Sample

SAMPLE ID 850004 FRACTION 04E TEST CODE GC 602 NAME EPA Method 602/GC
Date & Time Collected 02/05/85 Category

DATA FILE D DATE INJECTED 02/18/85 ANALYST RAA VERIFIED BY JSG
CONC. FACTOR INSTRUMENT d COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Benzene	ND		1,3-Dichlorobenzene	ND
	Toluene	ND		1,2-Dichlorobenzene	ND
	Ethyl Benzene	ND		1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT.
SCAN = scan number or retention time on chromatogram
All results reported in ug/L unless otherwise specified
ND = not detected at EPA detection limit method 602 (Federal [illegible] 12/3/79).

CORPORATION

PAGE 1 Analytical Serv REPORT LAB # 85-02-064

RECEIVED: 02/08/85 03/21/85 13:10:00

REPORT TO: Radian
Bl. 7
Austin

ATTEN: Nelson Lund

CLIENT: SHEPPARD SAMPLES: 6
COMPANY: Sheppard AFB
FACILITY:

WORK ID: water, MW4, MW7-MW10
TAKEN: PAW, RAB
TRANS: Fed Ex
TYPE:
P.O. #: 214-114-03-40
INVOICE: under separate cover

PREPARED BY: Radian Analytical Services
8501 MoPac Blvd.
P.O. Box 9948
Austin, Texas 78766

ATTEN:
PHONE: (512) 454-4797

CERTIFIED BY

CONTACT: CONOVER

Note: Second column confirmation performed for EPA 601, splits 01,02,04,05,06. EPA 602 run at 1/50 due to interference present.

Footnotes and Comments

* Indicates a value less than 5 times the detection limit. Potential error for such low values ranges between 50 and 100%.

@ Indicates that spike recovery for this analysis on the specific matrix was not within acceptable limits indicating an interferent present.

SAMPLE IDENTIFICATION

01	850006
02	850007
03	850008
04	850009
05	850010
06	850011

Analytical Serv TEST CODES and NAMES used on this report

CR E	Chromium, ICPES
GC 601	EPA Method 601/GC
GC 602	EPA Method 602/GC
HG CA	Mercury, Cold Vapor
ONG IR	Oil and Grease, Infrared
PB GA	Lead, low level
PH A	pH
TDS A	Total Dissolved Solids
TOC	Total Organic Carbon

CORPORATION

PAGE 2 Analytical Serv REPORT LAB # 85-02-064

RECEIVED: 02/08/85 RESULTS BY TEST

TEST CODE default units	Sample 01 (entered units)	Sample 02 (entered units)	Sample 03 (entered units)	Sample 04 (entered units)	Sample 05 (entered units)
CR_E ug/ml	<.005	0.009	0.030	0.041	0.026
HG_CA ug/ml	0.0007	0.0015	0.0036	0.0014	0.0066
ONG_IR mg/L	7	1	<1	<1	<1
PB_GA ug/ml	0.013	0.058	0.033	0.009	0.037
PH_A pH units	7.97	7.97	7.37	7.48	7.65
TDS_A mg/L	1500	2700	12,000	9100	5800
TOC mg/L	230	49	80	45	7

TEST CODE default units	Sample 06 (entered units)
CR_E ug/ml	0.032
HG_CA ug/ml	0.0038
ONG_IR mg/L	<1
PB_GA ug/ml	0.039
PH_A pH units	7.41

CORPORATION

Analytical Serv REPORT

LAB # 85-02-064

RECEIVED: 02/08/85

RESULTS BY TEST

CONTINUED FROM ABOVE

TDS_A mg/L	5600
TOC mg/L	10

CORPORATION

PAGE 4 Analytical Serv REPORT LAB # 85-02-064
RECEIVED: 02/08/85 Results by Sample

SAMPLE ID 850006 FRACTION 01D TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 02/07/85 Category

DATA FILE A DATE INJECTED 02/12/85 ANALYST RAA VERIFIED BY JSG
CONC. FACTOR INSTRUMENT a COMPOUNDS DETECTED 2

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
	Methylene Chloride	ND
	Trichlorofluoromethane	ND
	1,1-Dichloroethene	ND
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
	1,2-Dichloroethane	ND
	1,1,1-Trichloroethane	ND
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
1	Trichloroethene	4.0
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
2	Tetrachloroethylene #	4.1
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

CORPORATION

PAGE 5 | Analytical Serv | REPORT | LAB # 85-02-064
RECEIVED: 02/08/85 | Results by Sample | Continued From Above

SAMPLE ID 850006 FRACTION 01D TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 02/07/85 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

CORPORATION

PAGE 6 Analytical Serv REPORT LAB # 85-02-064
RECEIVED: 02/08/85 Results by Sample

SAMPLE ID 850006 FRACTION 01E TEST CODE GC 602 NAME EPA Method 602/GC
Date & Time Collected 02/07/85 Category

DATA FILE D DATE INJECTED 02/18/85 ANALYST RAA VERIFIED BY JSG
CONC. FACTOR INSTRUMENT d COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Benzene	ND		1,3-Dichlorobenzene	ND
	Toluene	ND		1,2-Dichlorobenzene	ND
	Ethyl Benzene	ND		1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT.
SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 602, (Federal Register, 12/3/79).

CORPORATION

PAGE 7 Analytical Serv REPORT LAB # 85-02-064
RECEIVED: 02/08/85 Results by Sample

SAMPLE ID 850007 FRACTION 02D TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 02/07/85 Category

DATA FILE A DATE INJECTED 02/12/85 ANALYST RAA VERIFIED BY JSG
CONC. FACTOR INSTRUMENT a COMPOUNDS DETECTED 2

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Chloromethane	ND	1	Trichloroethene	4.0
	Bromomethane	ND		Dibromochloromethane *	ND
	Vinyl Chloride	ND		1,1,2-Trichloroethane *	ND
	Chloroethane	ND		cis-1,3-Dichloropropene *	ND
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND
	Trichlorofluoromethane	ND		Bromoform	ND
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane #	ND
	1,1-Dichloroethane	ND	2	Tetrachloroethylene #	3.9
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND
	Chloroform	ND		1,3-Dichlorobenzene	ND
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND
	Carbon Tetrachloride	ND			
	Bromodichloromethane	ND			
	1,2-Dichloropropane	ND			
	trans-1,3-Dichloropropene	ND			

CORPORATION

PAGE 8 Analytical Serv REPORT LAB # 85-02-064
RECEIVED: 02/08/85 Results by Sample Continued From Above

SAMPLE ID 850007 FRACTION 02D TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 02/07/85 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

CORPORATION

PAGE 9 Analytical Serv REPORT LAB # 85-02-064
RECEIVED: 02/08/85 Results by Sample

SAMPLE ID 850007 FRACTION 02E TEST CODE GC 602 NAME EPA Method 602/GC
Date & Time Collected 02/07/85 Category

DATA FILE D DATE INJECTED 02/19/85 ANALYST MCL VERIFIED BY JSG
CONC. FACTOR INSTRUMENT d COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Benzene	ND		1,3-Dichlorobenzene	ND
	Toluene	ND		1,2-Dichlorobenzene	ND
	Ethyl Benzene	ND		1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT.
SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 602, (Federal Register, 12/3/79).

CORPORATION

PAGE 10 Analytical Serv REPORT LAB # 85-02-064
RECEIVED: 02/08/85 Results by Sample

SAMPLE ID 850008 FRACTION 03D TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 02/07/85 Category

DATA FILE A DATE INJECTED 02/12/85 ANALYST RAA VERIFIED BY JSG
CONC. FACTOR INSTRUMENT a COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Chloromethane	ND		Trichloroethene	ND
	Bromomethane	ND		Dibromochloromethane *	ND
	Vinyl Chloride	ND		1,1,2-Trichloroethane *	ND
	Chloroethane	ND		cis-1,3-Dichloropropene *	ND
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND
	Trichlorofluoromethane	ND		Bromoform	ND
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane #	ND
	1,1-Dichloroethane	ND		Tetrachloroethylene #	ND
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND
	Chloroform	ND		1,3-Dichlorobenzene	ND
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND
	Carbon Tetrachloride	ND			
	Bromodichloromethane	ND			
	1,2-Dichloropropane	ND			
	trans-1,3-Dichloropropene	ND			

CORPORATION

PAGE 11 | Analytical Serv | REPORT | LAB # 85-02-064
RECEIVED: 02/08/85 | Results by Sample | Continued From Above

SAMPLE ID 850008 FRACTION 03D TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 02/07/85 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

CORPORATION

PAGE 12 Analytical Serv REPORT LAB # 85-02-064
RECEIVED: 02/08/85 Results by Sample

SAMPLE ID 850008 FRACTION 03E TEST CODE GC 602 NAME EPA Method 602/GC
Date & Time Collected 02/07/85 Category

DATA FILE D DATE INJECTED 02/19/85 ANALYST MCL VERIFIED BY JSG
CONC. FACTOR INSTRUMENT d COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Benzene	ND		1,3-Dichlorobenzene	ND
	Toluene	ND		1,2-Dichlorobenzene	ND
	Ethyl Benzene	ND		1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT.
SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 602, (Federal Register, 12/3/79).

CORPORATION

PAGE 13 | Analytical Serv | REPORT | LAB # 85-02-064

RECEIVED: 02/08/85 | Results by Sample

SAMPLE ID 850009 | FRACTION 04D | TEST CODE GC 601 | NAME EPA Method 601/GC

Date & Time Collected 02/07/85 | Category

DATA FILE G | DATE INJECTED 02/13/85 | ANALYST RAA | VERIFIED BY JSG

CONC. FACTOR | INSTRUMENT q | COMPOUNDS DETECTED 3

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Chloromethane	ND	2	Trichloroethene	1.5
	Bromomethane	ND		Dibromochloromethane *	ND
	Vinyl Chloride	ND		1,1,2-Trichloroethane *	ND
	Chloroethane	ND		cis-1,3-Dichloropropene *	ND
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND
	Trichlorofluoromethane	ND		Bromoform	ND
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane #	ND
	1,1-Dichloroethane	ND	3	Tetrachloroethylene #	1.3
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND
	Chloroform	ND		1,3-Dichlorobenzene	ND
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND
1	1,1,1-Trichloroethane	9.0		1,4-Dichlorobenzene	ND
	Carbon Tetrachloride	ND			
	Bromodichloromethane	ND			
	1,2-Dichloropropane	ND			
	trans-1,3-Dichloropropene	ND			

CORPORATION

Analytical Serv REPORT

LAB # 85-02-064

RECEIVED: 02/08/85

Results by Sample

Continued From Above

SAMPLE ID 850009

FRACTION 04D TEST CODE GC 601 NAME EPA Method 601/GC

Date & Time Collected 02/07/85 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

CORPORATION

PAGE 15 Analytical Serv REPORT LAB # 85-02-064

RECEIVED: 02/08/85 Results by Sample

SAMPLE ID 850009 FRACTION 04E TEST CODE GC 602 NAME EPA Method 602/GC

Date & Time Collected 02/07/85 Category

DATA FILE D DATE INJECTED 02/19/85 ANALYST MCL VERIFIED BY JSG

CONC. FACTOR INSTRUMENT d COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Benzene	ND		1,3-Dichlorobenzene	ND
	Toluene	ND		1,2-Dichlorobenzene	ND
	Ethyl Benzene	ND		1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 602, (Federal Register, 12/3/79).

CORPORATION

PAGE 16 Analytical Serv REPORT LAB # 85-02-064

RECEIVED: 02/08/85 Results by Sample

SAMPLE ID 850010 FRACTION 05D TEST CODE GC 601 NAME EPA Method 601/GC

Date & Time Collected 02/07/85 Category

DATA FILE G DATE INJECTED 02/13/85 ANALYST RAA VERIFIED BY JSG

CONC. FACTOR INSTRUMENT q COMPOUNDS DETECTED 2

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Chloromethane	ND	1	Trichloroethene	1.6
	Bromomethane	ND		Dibromochloromethane *	ND
	Vinyl Chloride	ND		1,1,2-Trichloroethane *	ND
	Chloroethane	ND		cis-1,3-Dichloropropene *	ND
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND
	Trichlorofluoromethane	ND		Bromoform	ND
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane #	ND
	1,1-Dichloroethane	ND	2	Tetrachloroethylene #	1.2
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND
	Chloroform	ND		1,3-Dichlorobenzene	ND
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND
	Carbon Tetrachloride	ND			
	Bromodichloromethane	ND			
	1,2-Dichloropropane	ND			
	trans-1,3-Dichloropropene	ND			

CORPORATION

RECEIVED: 02/08/85

Analytical Serv REPORT

Results by Sample

LAB # 85-02-064

Continued From Above

SAMPLE ID 850010

FRACTION 05D TEST CODE GC 601 NAME EPA Method 601/GC

Date & Time Collected 02/07/85 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

CORPORATION

PAGE 18 Analytical Serv REPORT LAB # 85-02-064
RECEIVED: 02/08/85 Results by Sample

SAMPLE ID 850010 FRACTION 05E TEST CODE GC 602 NAME EPA Method 602/GC
Date & Time Collected 02/07/85 Category

DATA FILE D DATE INJECTED 02/19/85 ANALYST MCL VERIFIED BY JSG
CONC. FACTOR INSTRUMENT d COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Benzene	ND		1,3-Dichlorobenzene	ND
	Toluene	ND		1,2-Dichlorobenzene	ND
	Ethyl Benzene	ND		1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT.
SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 602, (Federal Register, 12/3/79).

CORPORATION

PAGE 19 Analytical Serv REPORT LAB # 85-02-064

RECEIVED: 02/08/85 Results by Sample

SAMPLE ID 850011 FRACTION 06D TEST CODE GC 601 NAME EPA Method 601/GC

Date & Time Collected 02/07/85 Category

DATA FILE G DATE INJECTED 02/13/85 ANALYST RAA VERIFIED BY JSG

CONC. FACTOR INSTRUMENT q COMPOUNDS DETECTED 2

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Chloromethane	ND	1	Trichloroethene	1.7
	Bromomethane	ND		Dibromochloromethane *	ND
	Vinyl Chloride	ND		1,1,2-Trichloroethane *	ND
	Chloroethane	ND		cis-1,3-Dichloropropene *	ND
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND
	Trichlorofluoromethane	ND		Bromoform	ND
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane #	ND
	1,1-Dichloroethane	ND	2	Tetrachloroethylene #	1.2
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND
	Chloroform	ND		1,3-Dichlorobenzene	ND
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND
	Carbon Tetrachloride	ND			
	Bromodichloromethane	ND			
	1,2-Dichloropropane	ND			
	trans-1,3-Dichloropropene	ND			

CORPORATION

RECEIVED: 02/08/85

Analytical Serv REPORT
Results by Sample

LAB # 85-02-064
Continued From Above

SAMPLE ID 850011

FRACTION 06D TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 02/07/85 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

CORPORATION

PAGE 21 Analytical Serv REPORT LAB # 85-02-064
RECEIVED: 02/08/85 Results by Sample

SAMPLE ID 850011 FRACTION 06D TEST CODE GC 602 NAME EPA Method 602/GC
Date & Time Collected 02/07/85 Category

DATA FILE D DATE INJECTED 02/19/85 ANALYST MCL VERIFIED BY JSG
CONC. FACTOR INSTRUMENT d COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Benzene	ND		1,3-Dichlorobenzene	ND
	Toluene	ND		1,2-Dichlorobenzene	ND
	Ethyl Benzene	ND		1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT.
SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 602, (Federal Register, 12/3/79).

CORPORATION

PAGE 1 Analytical Serv REPORT LAB # 85-02-080
RECEIVED: 02/14/85 03/18/85 12:19:50

REPORT TO: Radian
B1 7
Austin

ATTEN: Nelson Lund

CLIENT: SHEPPARD SAMPLES: 8
COMPANY: Sheppard AFB
FACILITY:

WORK ID: water
TAKEN: RAD, NHL
TRANS: Fed Ex
TYPE:
P.O. #: 214-114-03-40
INVOICE: under separate cover

PREPARED BY: Radian Analytical Services
8501 MoPac Blvd.
P.O. Box 9948
Austin, Texas 78766
ATTEN:
PHONE: (512) 454-4797

CERTIFIED BY

CONTACT: CONOVER

Note: Second column confirmation performed for EPA 601, splits 01,02,03, and 05. EPA 602 run at 1/50 for splits 04 to 08 due to interference present.

Footnotes and Comments

* Indicates a value less than 5 times the detection limit. Potential error for such low values ranges between 50 and 100%.

@ Indicates that spike recovery for this analysis on the specific matrix was not within acceptable limits indicating an interferent present.

SAMPLE IDENTIFICATION

01	850021
02	850073
03	850074
04	850075
05	850076
06	850077
07	850078
08	850079

Analytical Serv TEST CODES and NAMES used on this report

GC 601	EPA Method 601/GC
GC 602	EPA Method 602/GC
ONG IR	Oil and Grease, Infrared
PHEN A	Total Phenolics
PH A	pH
TDS A	Total Dissolved Solids
TOC	Total Organic Carbon

CORPORATION

Analytical Serv REPORT LAB # 85-02-080

RECEIVED: 02/14/85

RESULTS BY TEST

TEST CODE default units	Sample 01 (entered units)	Sample 02 (entered units)	Sample 03 (entered units)	Sample 04 (entered units)	Sample 05 (entered units)
ONG_IR mg/L	1	<1	<1	<1	1
PHEN_A mg/L	0.16	0.038	0.041	0.091	0.086
PH_A pH units	8.54	8.03	7.52	7.53	7.34
TDS_A mg/L	1800	950	760	480	760
TOC mg/L	42	11	25	22	23

TEST CODE default units	Sample 06 (entered units)	Sample 07 (entered units)	Sample 08 (entered units)
ONG_IR mg/L	<1	<1	<1
PHEN_A mg/L	0.065	0.022	0.083
PH_A pH units	7.05	7.09	7.09
TDS_A mg/L	1200	1800	1700
TOC mg/L	23	13	15

CORPORATION

PAGE 3 Analytical Serv REPORT LAB # 85-02-080

RECEIVED: 02/14/85 Results by Sample

SAMPLE ID 850021 FRACTION 01D TEST CODE GC 601 NAME EPA Method 601/GC

Date & Time Collected 02/13/85 Category

DATA FILE G DATE INJECTED 02/14/85 ANALYST RAA VERIFIED BY JSG

CONC. FACTOR INSTRUMENT g COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Chloromethane	ND		Trichloroethene	ND
	Bromomethane	ND		Dibromochloromethane *	ND
	Vinyl Chloride	ND		1,1,2-Trichloroethane *	ND
	Chloroethane	ND		cis-1,3-Dichloropropene *	ND
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND
	Trichlorofluoromethane	ND		Bromoform	ND
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane #	ND
	1,1-Dichloroethane	ND		Tetrachloroethylene #	ND
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND
	Chloroform	ND		1,3-Dichlorobenzene	ND
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND
	Carbon Tetrachloride	ND			
	Bromodichloromethane	ND			
	1,2-Dichloropropane	ND			
	trans-1,3-Dichloropropene	ND			

CORPORATION

PAGE 4 | Analytical Serv | REPORT | LAB # 85-02-080
RECEIVED: 02/14/85 | Results by Sample | Continued From Above

SAMPLE ID 850021 FRACTION 01D TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 02/13/85 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

CORPORATION

PAGE 5 Analytical Serv REPORT LAB # 85-02-080

RECEIVED: 02/14/85 Results by Sample

SAMPLE ID 850021 FRACTION 01E TEST CODE GC 602 NAME EPA Method 602/GC

Date & Time Collected 02/13/85 Category

DATA FILE D DATE INJECTED 02/19/85 ANALYST RAA VERIFIED BY JSG

CONC. FACTOR INSTRUMENT d COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Benzene	ND		1,3-Dichlorobenzene	ND
	Toluene	ND		1,2-Dichlorobenzene	ND
	Ethyl Benzene	ND		1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified

ND = not detected at EPA detection limit method 602 (Federal Register 12/3/79).

CORPORATION

PAGE 6 | Analytical Serv | REPORT | LAB # 85-02-080

RECEIVED: 02/14/85

Results by Sample

SAMPLE ID 850073 FRACTION 02D TEST CODE GC 601 NAME EPA Method 601/GC

Date & Time Collected 02/13/85 Category

DATA FILE G DATE INJECTED 02/14/85 ANALYST RAA VERIFIED BY JSG

CONC. FACTOR INSTRUMENT q COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Chloromethane	ND		Trichloroethane	ND
	Bromomethane	ND		Dibromochloromethane *	ND
	Vinyl Chloride	ND		1,1,2-Trichloroethane *	ND
	Chloroethane	ND		cis-1,3-Dichloropropene *	ND
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND
	Trichlorofluoromethane	ND		Bromoform	ND
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane #	ND
	1,1-Dichloroethane	ND		Tetrachloroethylene #	ND
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND
	Chloroform	ND		1,3-Dichlorobenzene	ND
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND
	Carbon Tetrachloride	ND			
	Bromodichloromethane	ND			
	1,2-Dichloropropane	ND			
	trans-1,3-Dichloropropene	ND			

CORPORATION

Analytical Serv REPORT

LAB # 85-02-080

RECEIVED: 02/14/85

Results by Sample

Continued From Above

SAMPLE ID 850073

FRACTION 02D TEST CODE GC 601 NAME EPA Method 601/GC

Date & Time Collected 02/13/85 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

CORPORATION

PAGE 8 Analytical Serv REPORT LAB # 85-02-080
RECEIVED: 02/14/85 Results by Sample

SAMPLE ID 850073 FRACTION 02E TEST CODE GC 602 NAME EPA Method 602/GC
Date & Time Collected 02/13/85 Category

DATA FILE D DATE INJECTED 02/19/85 ANALYST RAA VERIFIED BY JSG
CONC. FACTOR INSTRUMENT d COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Benzene	ND		1,3-Dichlorobenzene	ND
	Toluene	ND		1,2-Dichlorobenzene	ND
	Ethyl Benzene	ND		1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT.
SCAN = scan number or retention time on chromatogram
All results reported in ug/L unless otherwise specified
ND = not detected at EPA detection limit method 602, (Federal Register, 12/3/79).

CORPORATION

Analytical Serv REPORT LAB # 85-02-080

RECEIVED: 02/14/85

Results by Sample

SAMPLE ID 850074 FRACTION 03D TEST CODE GC 601 NAME EPA Method 601/GC

Date & Time Collected 02/13/85 Category

DATA FILE G DATE INJECTED 02/14/85 ANALYST RAA VERIFIED BY JSG

CONC. FACTOR INSTRUMENT q COMPOUNDS DETECTED 3

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
1	Methylene Chloride	7.1
	Trichlorofluoromethane	ND
	1,1-Dichloroethene	ND
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
2	Chloroform	3.9
	1,2-Dichloroethane	ND
	1,1,1-Trichloroethane	ND
	Carbon Tetrachloride	ND
3	Bromodichloromethane	3.9
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
	Trichloroethene	ND
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
	Tetrachloroethylene #	ND
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

CORPORATION

Analytical Serv REPORT

LAB # 85-02-080

RECEIVED: 02/14/85

Results by Sample

Continued From Above

SAMPLE ID 850074 FRACTION 03D TEST CODE GC 601 NAME EPA Method 601/GC

Date & Time Collected 02/13/85 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

CORPORATION

PAGE 11 Analytical Serv REPORT LAB # 85-02-080

RECEIVED: 02/14/85 Results by Sample

SAMPLE ID 850074 FRACTION 03E TEST CODE GC 602 NAME EPA Method 602/GC

Date & Time Collected 02/13/85 Category

DATA FILE D DATE INJECTED 02/21/85 ANALYST RAA VERIFIED BY JSG

CONC. FACTOR INSTRUMENT d COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Benzene	ND		1,3-Dichlorobenzene	ND
	Toluene	ND		1,2-Dichlorobenzene	ND
	Ethyl Benzene	ND		1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram

All results reported in ug/L unless otherwise specified

ND = not detected at EPA detection limit method 602 (Federal Register, 12/3/79).

CORPORATION

PAGE 12 Analytical Serv REPORT LAB # 85-02-080

RECEIVED: 02/14/85 Results by Sample

SAMPLE ID 850075 FRACTION 04D TEST CODE GC 601 NAME EPA Method 601/GC

Date & Time Collected 02/13/85 Category

DATA FILE A DATE INJECTED 02/15/85 ANALYST RAA VERIFIED BY JSG

CONC. FACTOR INSTRUMENT a COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Chloromethane	ND		Trichloroethene	ND
	Bromomethane	ND		Dibromochloromethane *	ND
	Vinyl Chloride	ND		1,1,2-Trichloroethane *	ND
	Chloroethane	ND		cis-1,3-Dichloropropene *	ND
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND
	Trichlorofluoromethane	ND		Bromoform	ND
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane #	ND
	1,1-Dichloroethane	ND		Tetrachloroethylene #	ND
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND
	Chloroform	ND		1,3-Dichlorobenzene	ND
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND
	Carbon Tetrachloride	ND			
	Bromodichloromethane	ND			
	1,2-Dichloropropane	ND			
	trans-1,3-Dichloropropene	ND			

CORPORATION

PAGE 13 Analytical Serv REPORT LAB # 85-02-080
RECEIVED: 02/14/85 Results by Sample Continued From Above

SAMPLE ID 850075 FRACTION 04D TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 02/13/85 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

CORPORATION

PAGE 14 Analytical Serv REPORT LAB # 85-02-080

RECEIVED: 02/14/85 Results by Sample

SAMPLE ID 850075 FRACTION 04E TEST CODE GC 602 NAME EPA Method 602/GC

Date & Time Collected 02/13/85 Category

DATA FILE D DATE INJECTED 02/21/85 ANALYST RAA VERIFIED BY JSG

CONC. FACTOR INSTRUMENT d COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Benzene	ND		1,3-Dichlorobenzene	ND
	Toluene	ND		1,2-Dichlorobenzene	ND
	Ethyl Benzene	ND		1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT:

SCAN = scan number or retention time on chromatogram

All results reported in ug/L unless otherwise specified

ND = not detected at EPA detection limit [illegible] 12/3/79)

CORPORATION

PAGE 15 Analytical Serv REPORT LAB # 85-02-080
RECEIVED: 02/14/85 Results by Sample

SAMPLE ID 850076 FRACTION 05D TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 02/13/85 Category

DATA FILE A DATE INJECTED 02/15/85 ANALYST MCL VERIFIED BY JSG
CONC. FACTOR INSTRUMENT a COMPOUNDS DETECTED 3

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
	Methylene Chloride	ND
	Trichlorofluoromethane	ND
	1,1-Dichloroethene	ND
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
1	Chloroform	4.7
2	1,2-Dichloroethane	4.0
	1,1,1-Trichloroethane	ND
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
3	Trichloroethene	10.3
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
	Tetrachloroethylene #	ND
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

CORPORATION

RECEIVED: 02/14/85

Analytical Serv REPORT
Results by Sample

LAB # 85-02-080
Continued From Above

SAMPLE ID 850076

FRACTION 05D TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 02/13/85 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

CORPORATION

Analytical Serv REPORT LAB # 85-02-080

RECEIVED: 02/14/85

Results by Sample

SAMPLE ID 850076 FRACTION 05E TEST CODE GC 602 NAME EPA Method 602/GC

Date & Time Collected 02/13/85 Category

DATA FILE B DATE INJECTED 02/21/85 ANALYST RAA VERIFIED BY JSG

CONC. FACTOR INSTRUMENT d COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Benzene	ND		1,3-Dichlorobenzene	ND
	Toluene	ND		1,2-Dichlorobenzene	ND
	Ethyl Benzene	ND		1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram

All results reported in ug/L unless otherwise specified

ND = not detected at EPA detection limit [illegible] (Federal Register [illegible] 12/3/79).

CORPORATION

PAGE 18 Analytical Serv REPORT LAB # 85-02-080
RECEIVED: 02/14/85 Results by Sample

SAMPLE ID 850077 FRACTION 08D TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 02/13/85 Category

DATA FILE A DATE INJECTED 02/15/85 ANALYST RAA VERIFIED BY JSG
CONC. FACTOR INSTRUMENT a COMPOUNDS DETECTED 1

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Chloromethane	ND		Trichloroethene	ND
	Bromomethane	ND		Dibromochloromethane *	ND
	Vinyl Chloride	ND		1,1,2-Trichloroethane *	ND
	Chloroethane	ND		cis-1,3-Dichloropropene *	ND
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND
	Trichlorofluoromethane	ND		Bromoform	ND
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane #	ND
	1,1-Dichloroethane	ND	1	Tetrachloroethylene #	3.8
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND
	Chloroform	ND		1,3-Dichlorobenzene	ND
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND
	Carbon Tetrachloride	ND			
	Bromodichloromethane	ND			
	1,2-Dichloropropane	ND			
	trans-1,3-Dichloropropene	ND			

CORPORATION

Analytical Serv REPORT

LAB # 85-02-080

RECEIVED: 02/14/85

Results by Sample

Continued From Above

SAMPLE ID 850077 FRACTION 06D TEST CODE GC 601 NAME EPA Method 601/GC

Date & Time Collected 02/13/85 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

CORPORATION

PAGE 20 | Analytical Serv | REPORT | LAB # 85-02-080

RECEIVED: 02/14/85 | Results by Sample

SAMPLE ID 850077 | FRACTION 06E | TEST CODE GC 602 | NAME EPA Method 602/GC

Date & Time Collected 02/13/85 | Category

DATA FILE D | DATE INJECTED 02/21/85 | ANALYST RAA | VERIFIED BY JSG

CONC. FACTOR | INSTRUMENT d | COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Benzene	ND		1,3-Dichlorobenzene	ND
	Toluene	ND		1,2-Dichlorobenzene	ND
	Ethyl Benzene	ND		1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram

All results reported in ug/l unless otherwise specified

ND = not detected at EPA detection limits [illegible]

CORPORATION

PAGE 21 Analytical Serv REPORT LAB # 85-02-080
RECEIVED: 02/14/85 Results by Sample

SAMPLE ID 850078 FRACTION 07D TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 02/13/85 Category

DATA FILE A DATE INJECTED 02/15/85 ANALYST RAA VERIFIED BY JSG
CONC. FACTOR INSTRUMENT a COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Chloromethane	ND		Trichloroethene	ND
	Bromomethane	ND		Dibromochloromethane *	ND
	Vinyl Chloride	ND		1,1,2-Trichloroethane *	ND
	Chloroethane	ND		cis-1,3-Dichloropropene *	ND
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND
	Trichlorofluoromethane	ND		Bromoform	ND
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane #	ND
	1,1-Dichloroethane	ND		Tetrachloroethylene #	ND
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND
	Chloroform	ND		1,3-Dichlorobenzene	ND
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND
	Carbon Tetrachloride	ND			
	Bromodichloromethane	ND			
	1,2-Dichloropropane	ND			
	trans-1,3-Dichloropropene	ND			

CORPORATION

PAGE 32 | Analytical Serv | REPORT | LAB # 85-02-080
RECEIVED: 02/14/85 | Results by Sample | Continued From Above

SAMPLE ID 850078 FRACTION 07D TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 02/13/85 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

CORPORATION

PAGE 23 Analytical Serv REPORT LAB # 85-02-080
RECEIVED: 02/14/85 Results by Sample

SAMPLE ID 850078 FRACTION 07E TEST CODE GC 602 NAME EPA Method 602/GC
Date & Time Collected 02/13/85 Category

DATA FILE D DATE INJECTED 02/21/85 ANALYST RAA VERIFIED BY JEG
CONC. FACTOR INSTRUMENT d COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Benzene	ND		1,3-Dichlorobenzene	ND
	Toluene	ND		1,2-Dichlorobenzene	ND
	Ethyl Benzene	ND		1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT:
SCAN = scan number or retention time on chromatogram
All results reported in ug/L unless otherwise specified
ND = not detected at EPA detection limit [illegible]

CORPORATION

PAGE 24 Analytical Serv REPORT LAB # 85-02-080
RECEIVED: 02/14/85 Results by Sample

SAMPLE ID 850079 FRACTION OBD TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 02/13/85 Category

DATA FILE A DATE INJECTED 02/15/85 ANALYST RAA VERIFIED BY JSG
CONC. FACTOR INSTRUMENT a COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Chloromethane	ND		Trichloroethene	ND
	Bromomethane	ND		Dibromochloromethane *	ND
	Vinyl Chloride	ND		1,1,2-Trichloroethane *	ND
	Chloroethane	ND		cis-1,3-Dichloropropene *	ND
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND
	Trichlorofluoromethane	ND		Bromoform	ND
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane *	ND
	1,1-Dichloroethane	ND		Tetrachloroethylene #	ND
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND
	Chloroform	ND		1,3-Dichlorobenzene	ND
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND
	Carbon Tetrachloride	ND			
	Bromodichloromethane	ND			
	1,2-Dichloropropane	ND			
	trans-1,3-Dichloropropene	ND			

CORPORATION

PAGE 35 | Analytical Serv | REPORT | LAB # 85-02-080
RECEIVED: 02/14/85 | Results by Sample | Continued From Above

SAMPLE ID 850079 FRACTION OBD TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 02/13/85 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

CORPORATION

PAGE 26 | Analytical Serv | REPORT | LAB # 85-02-080

RECEIVED: 02/14/85

Results by Sample

SAMPLE ID 850079 FRACTION 08E TEST CODE GC 602 NAME EPA Method 602/GC

Date & Time Collected 02/13/85 Category

DATA FILE D DATE INJECTED 02/21/85 ANALYST RAA VERIFIED BY JSG

CONC. FACTOR INSTRUMENT d COMPOUNDS DETECTED

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Benzene	ND		1,3-Dichlorobenzene	ND
	Toluene	ND		1,2-Dichlorobenzene	ND
	Ethyl Benzene	ND		1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram

All results reported in ug/L unless otherwise [illegible]

ND = not detected at EPA detection limit [illegible]

RADIAN CORPORATION

PAGE 1 Analytical Serv REPORT LAB # 85-02-100

RECEIVED: 02/18/85 04/09/85 16:20:18

REPORT TO: Radian
Bl. 7
Austin

ATTEN: Nelson Lund

CLIENT: SHEPPARD SAMPLES: 2
COMPANY: Sheppard AFB
FACILITY:

PREPARED BY: Radian Analytical Services
8501 MoPac Blvd.
P.O. Box 9948
Austin, Texas 78766

ATTEN:
PHONE: (512) 454-4797

CERTIFIED BY

CONTACT: CONOVER

WORK ID: soil, EP and ignit
TAKEN: RAB
TRANS: RAB
TYPE:
P.O. #: 214-114-03-30
INV. #: 5300

Footnotes and Comments

* Indicates a value less than 5 times the detection limit. Potential error for such low values ranges between 50 and 100%.

@ Indicates that spike recovery for this analysis on the specific matrix was not within acceptable limits indicating an interferent present.

SAMPLE IDENTIFICATION

01 850080
02 850081

Analytical Serv TEST CODES and NAMES used on this report

EP EXT	RCRA Extraction Procedure
EP MET	RCRA Metals
IGNIT	Ignitability

RADIAN CORPORATION

 Analytical Serv REPORT LAB # 85-02-100

RECEIVED: 02/18/85

RESULTS BY TEST

TEST CODE default units	Sample 01 (entered units)	Sample 02 (entered units)
EP_EXT date completed	02/26/85	02/26/85
IGNIT degrees F	>150	>150

RADIAN CORPORATION

PAGE 3 Analytical Serv REPORT LAB # 85-02-100

RECEIVED: 02/18/85 Results by Sample

SAMPLE ID 850080 FRACTION 01B TEST CODE EP MET NAME RCRA Metals

Date & Time Collected 02/15/85 Category

DATE ANALYZED 02/28/85 VERIFIED BY GMC

CODE	METAL	RESULT	CODE	METAL	RESULT
AG	Silver	<.002	AS	Arsenic	<.060
BA	Barium	0.62	HG	Mercury	0.0002
CD	Cadmium	0.011	PB	Lead	<.080
CR	Chromium	<.005	SE	Selenium	<.080

NOTES AND DEFINITIONS FOR THIS REPORT

All results reported in ug/ml unless otherwise specified.
NA = not analyzed
* = less that 5 times the detection limit.
All elements determined by ICPES except Hg.

RADIAN CORPORATION

Analytical Serv REPORT LAB # 85-02-100

RECEIVED: 02/18/85

Results by Sample

SAMPLE ID 850081 FRACTION 02B TEST CODE EP MET NAME RCRA Metals

Date & Time Collected 02/15/85 Category

DATE ANALYZED 02/28/85 VERIFIED BY GMC

CODE	METAL	RESULT	CODE	METAL	RESULT
AG	Silver	<.002	AS	Arsenic	<.060
BA	Barium	0.034	HG	Mercury	0.0004
CD	Cadmium	0.005	PB	Lead	<.080
CR	Chromium	<.005	SE	Selenium	<.080

NOTES AND DEFINITIONS FOR THIS REPORT

All results reported in ug/ml unless otherwise specified.
NA = not analyzed
* = less that 5 times the detection limit.
All elements determined by ICPES except Hg.

CORPORATION

PAGE 1 Analytical Serv REPORT LAB # 85-02-101

RECEIVED: 02/18/85 04/03/85 14:01:15

REPORT TO: Radian
Bl. 7
Austin

ATTEN: Nelson Lund

CLIENT: SHEPPARD SAMPLES: 6
COMPANY: Sheppard AFB
FACILITY:

WORK ID: water
TAKEN: RAB/NAL
TRANS: RAB
TYPE:
P.O. #: 214-114-03-40
INVOICE: under separate cover

PREPARED BY: Radian Analytical Services
8501 MoPac Blvd.
P.O. Box 9948
Austin, Texas 78766

ATTEN:
PHONE: (512) 454-4797

CERTIFIED BY

CONTACT: CONOVER

Note: Detection limit for EPA 601 was 2 ug/L due to foamy nature of sample.

Footnotes and Comments

* Indicates a value less than 5 times the detection limit. Potential error for such low values ranges between 50 and 100%.

@ Indicates that spike recovery for this analysis on the specific matrix was not within acceptable limits indicating an interferent present.

SAMPLE IDENTIFICATION

01	850005 ✓
02	850012
03	850013
04	850014
05	850015
06	850016

Analytical Serv TEST CODES and NAMES used on this report

CR E	Chromium, ICPES
GC 601	EPA Method 601/GC
GC 602	EPA Method 602/GC
HG CA	Mercury, Cold Vapor
ONG IR	Oil and Grease, Infrared
PB GA	Lead, low level
PHEN A	Total Phenolics
PH A	pH
TDS A	Total Dissolved Solids
TOC	Total Organic Carbon
TOX 1	TOX Single Analysis

CORPORATION

 Analytical Serv REPORT LAB # 85-02-101

RECEIVED: 02/18/85 RESULTS BY TEST

TEST CODE default units	Sample 01 (entered units)	Sample 02 (entered units)	Sample 03 (entered units)	Sample 04 (entered units)	Sample 05 (entered units)
CR_E ug/ml	<.005			<.005	0.013
HG_CA ug/ml	0.0004			0.0008	0.0012
ONG_IR mg/L	2	<1	<1	<1	<1
PB_GA ug/ml	0.005			<.002	0.013
PHEN_A mg/L		0.014	0.009	0.026	
PH_A pH units	6.77	7.26	7.28	7.57	7.39
TDS_A mg/L	330	1000	1000	1200	4000
TOC mg/L	130	10	10	6	<1
TOX_1 mg/L	0.50	0.07	0.05	<.01	0.03

TEST CODE default units	Sample 06 (entered units)
CR_E ug/ml	<.005
HG_CA ug/ml	0.0006
ONG_IR mg/L	<1

CORPORATION

RECEIVED: 02/18/85

Analytical Serv REPORT

RESULTS BY TEST

LAB # 85-02-101

CONTINUED FROM ABOVE

PB_GA ug/ml	<.002
PH_A pH units	7.76
TDS_A mg/L	1100
TOC mg/L	3
TOX_1 mg/L	<.01

CORPORATION

PAGE 4 Analytical Serv REPORT LAB # 85-02-101

RECEIVED: 02/18/85 Results by Sample

SAMPLE ID 850005 FRACTION 01E TEST CODE GC 601 NAME EPA Method 601/GC

Date & Time Collected 02/14/85 Category

DATA FILE G DATE INJECTED 02/21/85 ANALYST CAC VERIFIED BY JSG

CONC. FACTOR INSTRUMENT g COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Chloromethane	ND		Trichloroethene	ND
	Bromomethane	ND		Dibromochloromethane *	ND
	Vinyl Chloride	ND		1,1,2-Trichloroethane *	ND
	Chloroethane	ND		cis-1,3-Dichloropropene *	ND
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND
	Trichlorofluoromethane	ND		Bromoform	ND
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane #	ND
	1,1-Dichloroethane	ND		Tetrachloroethylene #	ND
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND
	Chloroform	ND		1,3-Dichlorobenzene	ND
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND
	Carbon Tetrachloride	ND			
	Bromodichloromethane	ND			
	1,2-Dichloropropane	ND			
	trans-1,3-Dichloropropene	ND			

CORPORATION

PAGE 5 | Analytical Serv | REPORT | LAB # 85-02-101

RECEIVED: 02/18/85 | Results by Sample | Continued From Above

SAMPLE ID 850005 FRACTION 01E TEST CODE GC 601 NAME EPA Method 601/GC

Date & Time Collected 02/14/85 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

CORPORATION

PAGE 6 Analytical Serv REPORT LAB # 85-02-101

RECEIVED: 02/18/85 Results by Sample

SAMPLE ID 850005 FRACTION 01F TEST CODE GC 602 NAME EPA Method 602/GC

Date & Time Collected 02/14/85 Category

DATA FILE D DATE INJECTED 02/28/85 ANALYST MCL VERIFIED BY JSG

CONC. FACTOR INSTRUMENT d COMPOUNDS DETECTED 2

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
1	Benzene	10.0		1,3-Dichlorobenzene	ND
2	Toluene	2.8		1,2-Dichlorobenzene	ND
	Ethyl Benzene	ND		1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 602, (Federal Register, 12/3/79).

CORPORATION

PAGE 7 Analytical Serv REPORT LAB # 85-02-101

RECEIVED: 02/18/85 Results by Sample

SAMPLE ID 850012 FRACTION 02E TEST CODE GC 601 NAME EPA Method 601/GC

Date & Time Collected 02/14/85 Category

DATA FILE G DATE INJECTED 02/21/85 ANALYST CAC VERIFIED BY JSG

CONC. FACTOR INSTRUMENT g COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Chloromethane	ND		Trichloroethene	ND
	Bromomethane	ND		Dibromochloromethane *	ND
	Vinyl Chloride	ND		1,1,2-Trichloroethane *	ND
	Chloroethane	ND		cis-1,3-Dichloropropene *	ND
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND
	Trichlorofluoromethane	ND		Bromoform	ND
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane #	ND
	1,1-Dichloroethane	ND		Tetrachloroethylene #	ND
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND
	Chloroform	ND		1,3-Dichlorobenzene	ND
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND
	Carbon Tetrachloride	ND			
	Bromodichloromethane	ND			
	1,2-Dichloropropane	ND			
	trans-1,3-Dichloropropene	ND			

CORPORATION

PAGE 8 | Analytical Serv REPORT | LAB # 85-02-101
RECEIVED: 02/18/85 | Results by Sample | Continued From Above

SAMPLE ID 850012 FRACTION 02E TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 02/14/85 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

CORPORATION

PAGE 9 Analytical Serv REPORT LAB # 85-02-101

RECEIVED: 02/18/85 Results by Sample

SAMPLE ID 850012 FRACTION 02F TEST CODE GC 602 NAME EPA Method 602/GC

Date & Time Collected 02/14/85 Category

DATA FILE D DATE INJECTED 02/28/85 ANALYST MCL VERIFIED BY JSG

CONC. FACTOR INSTRUMENT d COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Benzene	ND		1,3-Dichlorobenzene	ND
	Toluene	ND		1,2-Dichlorobenzene	ND
	Ethyl Benzene	ND		1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 602, (Federal Register, 12/3/79).

CORPORATION

PAGE 10 Analytical Serv REPORT LAB # 85-02-101

RECEIVED: 02/18/85 Results by Sample

SAMPLE ID 850013 FRACTION 03E TEST CODE GC 601 NAME EPA Method 601/GC

Date & Time Collected 02/14/85 Category

DATA FILE G DATE INJECTED 02/21/85 ANALYST CAC VERIFIED BY JSG

CONC. FACTOR INSTRUMENT g COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Chloromethane	ND		Trichloroethene	ND
	Bromomethane	ND		Dibromochloromethane *	ND
	Vinyl Chloride	ND		1,1,2-Trichloroethane *	ND
	Chloroethane	ND		cis-1,3-Dichloropropene *	ND
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND
	Trichlorofluoromethane	ND		Bromoform	ND
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane #	ND
	1,1-Dichloroethane	ND		Tetrachloroethylene #	ND
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND
	Chloroform	ND		1,3-Dichlorobenzene	ND
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND
	Carbon Tetrachloride	ND			
	Bromodichloromethane	ND			
	1,2-Dichloropropane	ND			
	trans-1,3-Dichloropropene	ND			

CORPORATION

 Analytical Serv REPORT LAB # 85-02-101

RECEIVED: 02/18/85 Results by Sample Continued From Above

SAMPLE ID 850013 FRACTION 03E TEST CODE GC 601 NAME EPA Method 601/GC

Date & Time Collected 02/14/85 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

CORPORATION

PAGE 12 Analytical Serv REPORT LAB # 85-02-101

RECEIVED: 02/18/85 Results by Sample

SAMPLE ID 850013 FRACTION 03F TEST CODE GC 602 NAME EPA Method 602/GC

Date & Time Collected 02/14/85 Category

DATA FILE D DATE INJECTED 02/28/85 ANALYST MCL VERIFIED BY JSG

CONC. FACTOR INSTRUMENT d COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Benzene	ND		1,3-Dichlorobenzene	ND
	Toluene	ND		1,2-Dichlorobenzene	ND
	Ethyl Benzene	ND		1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 602, (Federal Register, 12/3/79).

CORPORATION

PAGE 13 Analytical Serv REPORT LAB # 85-02-101

RECEIVED: 02/18/85 Results by Sample

SAMPLE ID 850014 FRACTION 04E TEST CODE GC 601 NAME EPA Method 601/GC

Date & Time Collected 02/14/85 Category

DATA FILE G DATE INJECTED 02/21/85 ANALYST RAA VERIFIED BY JSG

CONC. FACTOR INSTRUMENT g COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Chloromethane	ND		Trichloroethene	ND
	Bromomethane	ND		Dibromochloromethane *	ND
	Vinyl Chloride	ND		1,1,2-Trichloroethane *	ND
	Chloroethane	ND		cis-1,3-Dichloropropene *	ND
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND
	Trichlorofluoromethane	ND		Bromoform	ND
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane #	ND
	1,1-Dichloroethane	ND		Tetrachloroethylene #	ND
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND
	Chloroform	ND		1,3-Dichlorobenzene	ND
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND
	Carbon Tetrachloride	ND			
	Bromodichloromethane	ND			
	1,2-Dichloropropane	ND			
	trans-1,3-Dichloropropene	ND			

SAMPLE ID 850014 FRACTION 04E TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 02/14/85 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

CORPORATION

PAGE 15 Analytical Serv REPORT LAB # 85-02-101

RECEIVED: 02/18/85 Results by Sample

SAMPLE ID 850014 FRACTION 04F TEST CODE GC 602 NAME EPA Method 602/GC

Date & Time Collected 02/14/85 Category

DATA FILE D DATE INJECTED 02/28/85 ANALYST RAA VERIFIED BY JSG

CONC. FACTOR INSTRUMENT d COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Benzene	ND		1,3-Dichlorobenzene	ND
	Toluene	ND		1,2-Dichlorobenzene	ND
	Ethyl Benzene	ND		1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 602, (Federal Register, 12/3/79).

CORPORATION

PAGE 16 | Analytical Serv | REPORT | LAB # 85-02-101

RECEIVED: 02/18/85 | Results by Sample

SAMPLE ID 850015 FRACTION 05E TEST CODE GC 601 NAME EPA Method 601/GC

Date & Time Collected 02/14/85 Category

DATA FILE G DATE INJECTED 02/21/85 ANALYST RAA VERIFIED BY JSG

CONC. FACTOR INSTRUMENT g COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Chloromethane	ND		Trichloroethene	ND
	Bromomethane	ND		Dibromochloromethane *	ND
	Vinyl Chloride	ND		1,1,2-Trichloroethane *	ND
	Chloroethane	ND		cis-1,3-Dichloropropene *	ND
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND
	Trichlorofluoromethane	ND		Bromoform	ND
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane #	ND
	1,1-Dichloroethane	ND		Tetrachloroethylene #	ND
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND
	Chloroform	ND		1,3-Dichlorobenzene	ND
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND
	Carbon Tetrachloride	ND			
	Bromodichloromethane	ND			
	1,2-Dichloropropane	ND			
	trans-1,3-Dichloropropene	ND			

CORPORATION

RECEIVED: 02/18/85

Analytical Serv REPORT
Results by Sample

LAB # 85-02-101
Continued From Above

SAMPLE ID 850015

FRACTION 05E TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 02/14/85 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

CORPORATION

PAGE 18 Analytical Serv REPORT LAB # 85-02-101

RECEIVED: 02/18/85 Results by Sample

SAMPLE ID 850015 FRACTION 05F TEST CODE GC 602 NAME EPA Method 602/GC

Date & Time Collected 02/14/85 Category

DATA FILE D DATE INJECTED 03/01/85 ANALYST RAA VERIFIED BY JSG

CONC. FACTOR INSTRUMENT d COMPOUNDS DETECTED 1

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Benzene	ND		1,3-Dichlorobenzene	ND
1	Toluene	1.9		1,2-Dichlorobenzene	ND
	Ethyl Benzene	ND		1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 602, (Federal Register, 12/3/79).

CORPORATION

PAGE 19 Analytical Serv REPORT LAB # 85-02-101

RECEIVED: 02/18/85 Results by Sample

SAMPLE ID 850016 FRACTION 06E TEST CODE GC 601 NAME EPA Method 601/GC

Date & Time Collected 02/14/85 Category

DATA FILE Q DATE INJECTED 02/21/85 ANALYST RAA VERIFIED BY JSG

CONC. FACTOR INSTRUMENT q COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Chloromethane	ND		Trichloroethene	ND
	Bromomethane	ND		Dibromochloromethane *	ND
	Vinyl Chloride	ND		1,1,2-Trichloroethane *	ND
	Chloroethane	ND		cis-1,3-Dichloropropene *	ND
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND
	Trichlorofluoromethane	ND		Bromoform	ND
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane #	ND
	1,1-Dichloroethane	ND		Tetrachloroethylene #	ND
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND
	Chloroform	ND		1,3-Dichlorobenzene	ND
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND
	Carbon Tetrachloride	ND			
	Bromodichloromethane	ND			
	1,2-Dichloropropane	ND			
	trans-1,3-Dichloropropene	ND			

CORPORATION

PAGE 20 Analytical Serv REPORT LAB # 85-02-101
RECEIVED: 02/18/85 Results by Sample Continued From Above

SAMPLE ID 850016 FRACTION 06E TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 02/14/85 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

CORPORATION

PAGE 21 Analytical Serv REPORT LAB # 85-02-101
RECEIVED: 02/18/85 Results by Sample

SAMPLE ID 850016 FRACTION 06F TEST CODE GC 602 NAME EPA Method 602/GC
Date & Time Collected 02/14/85 Category

DATA FILE D DATE INJECTED 03/01/85 ANALYST RAA VERIFIED BY JSG
CONC. FACTOR INSTRUMENT d COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Benzene	ND		1,3-Dichlorobenzene	ND
	Toluene	ND		1,2-Dichlorobenzene	ND
	Ethyl Benzene	ND		1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT.
SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 602, (Federal Register, 12/3/79).

RADIAN CORPORATION

PAGE 1 Analytical Serv REPORT LAB # 85-02-102

RECEIVED: 02/18/85 04/18/85 11:14:31

REPORT TO: Radian
Bl. 7
Austin

ATTEN: Nelson Lund

CLIENT: SHEPPARD SAMPLES: 4
COMPANY: Sheppard AFB
FACILITY:

WORK ID: water
TAKEN: RAB/NAL
TRANS: RAB
TYPE:
P.O. #: 214-114-03-40
INVOICE: under separate cover

PREPARED BY: Radian Analytical Services
8501 MoPac Blvd.
P.O. Box 9948
Austin, Texas 78766

ATTEN:
PHONE: (512) 454-4797

CERTIFIED BY

CONTACT: CONOVER

Note: Detection limit for 601, split 01 is 3 ug/L due to foamy nature. Splits 03 & 04 analyzed for 602 at 1/5 dilution due to interferences present. 2nd column information performed for EPA 602, split 04.

Footnotes and Comments

* Indicates a value less than 5 times the detection limit. Potential error for such low values ranges between 50 and 100%.

@ Indicates that spike recovery for this analysis on the specific matrix was not within acceptable limits indicating an interferent present.

SAMPLE IDENTIFICATION

01	850017
02	850018
03	850019
04	850020

Analytical Serv TEST CODES and NAMES used on this report

CR E	Chromium, ICPES
GC 601	EPA Method 601/GC
GC 602	EPA Method 602/GC
HG CA	Mercury, Cold Vapor
ONG IR	Oil and Grease, Infrared
PB GA	Lead, low level
PH A	pH
TDS A	Total Dissolved Solids
TOC	Total Organic Carbon
TOX 1	TOX Single Analysis

RADIAN CORPORATION

 Analytical Serv REPORT LAB # 85-02-102

RECEIVED: 02/18/85

RESULTS BY TEST

TEST CODE default units	Sample 01 (entered units)	Sample 02 (entered units)	Sample 03 (entered units)	Sample 04 (entered units)
CR_E ug/ml	0.022	0.016	<.005	<.005
HG_CA ug/ml	0.0013	0.0014	0.0012	0.0014
ONG_IR mg/L	<1	<1	<1	<1
PB_GA ug/ml	<.002	<.002	<.002	<.002
PH_A pH units	7.38	7.53	7.59	7.45
TDS_A mg/L	1500	1200	7800	12,000
TOC mg/L	26	44	43	66
TOX_1 mg/L	0.07	0.04	0.04	0.02

RADIAN CORPORATION

PAGE 3 | Analytical Serv | REPORT | LAB # 85-02-102

RECEIVED: 02/18/85 | Results by Sample

SAMPLE ID 850017 | FRACTION 01E | TEST CODE GC 601 | NAME EPA Method 601/GC

Date & Time Collected 02/14/85 | Category

DATA FILE G | DATE INJECTED 02/21/85 | ANALYST RAA | VERIFIED BY JSG

CONC. FACTOR | INSTRUMENT q | COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Chloromethane	ND		Trichloroethene	ND
	Bromomethane	ND		Dibromochloromethane *	ND
	Vinyl Chloride	ND		1,1,2-Trichloroethane *	ND
	Chloroethane	ND		cis-1,3-Dichloropropene *	ND
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND
	Trichlorofluoromethane	ND		Bromoform	ND
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane #	ND
	1,1-Dichloroethane	ND		Tetrachloroethylene #	ND
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND
	Chloroform	ND		1,3-Dichlorobenzene	ND
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND
	Carbon Tetrachloride	ND			
	Bromodichloromethane	ND			
	1,2-Dichloropropane	ND			
	trans-1,3-Dichloropropene	ND			

RADIAN CORPORATION

PAGE 4 | Analytical Serv | REPORT | LAB # 85-02-102

RECEIVED: 02/18/85 | Results by Sample | Continued From Above

SAMPLE ID 850017 | FRACTION Q1E | TEST CODE GC 601 | NAME EPA Method 601/GC

Date & Time Collected 02/14/85 | Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

RADIAN CORPORATION

PAGE 5 Analytical Serv REPORT LAB # 85-02-102
RECEIVED: 02/18/85 Results by Sample

SAMPLE ID 850017 FRACTION 01F TEST CODE GC 602 NAME EPA Method 602/GC
Date & Time Collected 02/14/85 Category

DATA FILE D DATE INJECTED 02/28/85 ANALYST RAA VERIFIED BY JSG
CONC. FACTOR INSTRUMENT d COMPOUNDS DETECTED 1

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Benzene	ND		1,3-Dichlorobenzene	ND
	Toluene	ND		1,2-Dichlorobenzene	ND
1	Ethyl Benzene	2.7		1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT.
SCAN = scan number or retention time on chromatogram
All results reported in ug/L unless otherwise specified
ND = not detected at EPA detection limit method [illegible] (Federal [illegible] 12/3/79).

RADIAN CORPORATION

Analytical Serv REPORT LAB # 85-02-102

RECEIVED: 02/18/85

Results by Sample

SAMPLE ID 850018 FRACTION 02E TEST CODE GC 601 NAME EPA Method 601/GC

Date & Time Collected 02/14/85 Category

DATA FILE A DATE INJECTED 02/25/85 ANALYST MSF VERIFIED BY JSG

CONC. FACTOR INSTRUMENT a COMPOUNDS DETECTED 1

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
	Methylene Chloride	ND
	Trichlorofluoromethane	ND
	1,1-Dichloroethene	ND
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
	1,2-Dichloroethane	ND
1	1,1,1-Trichloroethane	7.5
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
	Trichloroethene	ND
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
	Tetrachloroethylene #	ND
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

RADIAN CORPORATION

PAGE 7 | Analytical Serv REPORT | LAB # 85-02-102
RECEIVED: 02/18/85 | Results by Sample | Continued From Above

SAMPLE ID 850018 FRACTION 02E TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 02/14/85 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

RADIAN CORPORATION

Analytical Serv REPORT LAB # 85-02-102

RECEIVED: 02/18/85

Results by Sample

SAMPLE ID 850018 FRACTION 02F TEST CODE GC 602 NAME EPA Method 602/GC

Date & Time Collected 02/14/85 Category

DATA FILE D DATE INJECTED 02/28/85 ANALYST RAA VERIFIED BY JSG

CONC. FACTOR INSTRUMENT d COMPOUNDS DETECTED 2

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Benzene	ND	2	1,3-Dichlorobenzene	5.5
	Toluene	ND		1,2-Dichlorobenzene	ND
1	Ethyl Benzene	3.4		1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 602. (Federal Register, 12/3/79).

RADIAN CORPORATION

PAGE 9 | Analytical Serv | REPORT | LAB # 85-02-102

RECEIVED: 02/18/85 | Results by Sample

SAMPLE ID 850019 | FRACTION 03E | TEST CODE GC 601 | NAME EPA Method 601/GC

Date & Time Collected 02/14/85 | Category

DATA FILE A | DATE INJECTED 02/25/85 | ANALYST RAA | VERIFIED BY JSG

CONC. FACTOR | INSTRUMENT a | COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Chloromethane	ND		Trichloroethene	ND
	Bromomethane	ND		Dibromochloromethane *	ND
	Vinyl Chloride	ND		1,1,2-Trichloroethane *	ND
	Chloroethane	ND		cis-1,3-Dichloropropene *	ND
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND
	Trichlorofluoromethane	ND		Bromoform	ND
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane #	ND
	1,1-Dichloroethane	ND		Tetrachloroethylene #	ND
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND
	Chloroform	ND		1,3-Dichlorobenzene	ND
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND
	Carbon Tetrachloride	ND			
	Bromodichloromethane	ND			
	1,2-Dichloropropane	ND			
	trans-1,3-Dichloropropene	ND			

RADIAN CORPORATION

 Analytical Serv REPORT LAB # 85-02-102

RECEIVED: 02/18/85 Results by Sample Continued From Above

SAMPLE ID B50019 FRACTION 03E TEST CODE GC 601 NAME EPA Method 601/GC

Date & Time Collected 02/14/85 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

RADIAN CORPORATION

RECEIVED: 02/18/85

Analytical Serv REPORT
Results by Sample

LAB # 85-02-102

SAMPLE ID 850019 FRACTION 03F TEST CODE GC 602 NAME EPA Method 602/GC
Date & Time Collected 02/14/85 Category

DATA FILE D DATE INJECTED 03/01/85 ANALYST MSF VERIFIED BY JSG
CONC. FACTOR INSTRUMENT d COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Benzene	ND		1,3-Dichlorobenzene	ND
	Toluene	ND		1,2-Dichlorobenzene	ND
	Ethyl Benzene	ND		1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT.
SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 602, (Federal Register, 12/3/79).

RADIAN CORPORATION

Analytical Serv REPORT LAB # 85-02-102

RECEIVED: 02/18/85

Results by Sample

SAMPLE ID 850020 FRACTION 04E TEST CODE GC 601 NAME EPA Method 601/GC

Date & Time Collected 02/14/85 Category

DATA FILE A DATE INJECTED 02/26/85 ANALYST RAA VERIFIED BY JSG

CONC. FACTOR INSTRUMENT a COMPOUNDS DETECTED 1

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
	Methylene Chloride	ND
	Trichlorofluoromethane	ND
	1,1-Dichloroethene	ND
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
	1,2-Dichloroethane	ND
	1,1,1-Trichloroethane	ND
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
	Trichloroethene	ND
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
1	Tetrachloroethylene #	3.9
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

RADIAN CORPORATION

RECEIVED: 02/18/85

Analytical Serv REPORT
Results by Sample

LAB # 85-02-102
Continued From Above

SAMPLE ID 850020 FRACTION 04E TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 02/14/85 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

RADIAN CORPORATION

PAGE 14 Analytical Serv REPORT LAB # 85-02-102

RECEIVED: 02/18/85 Results by Sample

SAMPLE ID 850020 FRACTION 04F TEST CODE GC 602 NAME EPA Method 602/GC

Date & Time Collected 02/14/85 Category

DATA FILE D DATE INJECTED 02/28/85 ANALYST RAA VERIFIED BY JSG

CONC. FACTOR INSTRUMENT d COMPOUNDS DETECTED 2

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Benzene	ND		1,3-Dichlorobenzene	ND
1	Toluene	18.3		1,2-Dichlorobenzene	ND
2	Ethyl Benzene	24.9		1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 602, (Federal Register, 12/3/79).

Page H-211 Not Used.

Page H-212 Not Used.

Page H-213 Not Used.

RADIAN CORPORATION

PAGE 1 Analytical Serv REPORT LAB # 85-05-152

RECEIVED: 05/22/85 01/14/86 16:50:26

REPORT TO: Radian
Bl. 7
Austin

ATTEN: Nelson Lund

CLIENT: SHEPPARD SAMPLES: 8
COMPANY: Sheppard AFB
FACILITY:

WORK ID: water, soil
TAKEN: PAW
TRANS: Fed Ex
TYPE:
P.O. #: 214-114-03-30
INV. #: 5968

PREPARED BY: Radian Analytical Services
8501 MoPac Blvd.
P.O. Box 9948
Austin, Texas 78766

ATTEN:
PHONE: (512) 454-4797

CERTIFIED BY

CONTACT: CONOVER

Detection limits for 8010 and 8020 were 10 ug/kg and 150 ug/kg respectively, except for splits -01 and -02 for which the 8020 detection limit was 2500 ug/kg due to the presence of interferences.

Duplicate of report of 06/26/85.

Footnotes and Comments

* Indicates a value less than 5 times the detection limit. Potential error for such low values ranges between 50 and 100%.

@ Indicates that spike recovery for this analysis on the specific matrix was not within acceptable limits indicating an interferent present.

SAMPLE IDENTIFICATION

01	850082
02	850083
03	850084
04	850085
05	850086
06	850087
07	850088
08	850089

Analytical Serv TEST CODES and NAMES used on this report

GC 602	EPA Method 602/GC
ONG IR	Oil and Grease, Infrared
PHEN A	Total Phenolics
PH A	pH
PREP W	Special Digestion Method
SW8010	GC-HECD Halog. Vol. - SW846
SW8020	GC-PID Arom. Vol. - SW846
TOCSOL	TOC in solids

RADIAN CORPORATION

Analytical Serv REPORT LAB # 85-05-152

RECEIVED: 05/22/85

RESULTS BY TEST

TEST CODE default units	Sample 01 (entered units)	Sample 02 (entered units)	Sample 03 (entered units)	Sample 04 (entered units)	Sample 06 (entered units)
ONG_IR mg/L	76,000 ug/g	72,000 ug/g	710 ug/g	360 ug/g	
PHEN_A mg/L	1.2 ug/g	1.1 ug/g	<.25 ug/g	<.25 ug/g	<.005
PH_A pH units	7.23	8.12	8.53	8.02	
PREP_W date complete	05/29/85	05/29/85	05/29/85	05/29/85	
TOCSOL %	<.01	<.01	0.50	0.73	

TEST CODE default units	Sample 08 (entered units)
PHEN_A mg/L	<.005

RADIAN CORPORATION

PAGE 3 | Analytical Serv | REPORT | LAB # 85-05-152

RECEIVED: 05/22/85 | Results by Sample

SAMPLE ID 850082 | FRACTION 01A | TEST CODE SW8010 | NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 05/20/85 | Category

DATA FILE G | DATE INJECTED 05/29/85 | ANALYST RAA | VERIFIED BY JSG

CONC. FACTOR | INSTRUMENT q | COMPOUNDS DETECTED 1

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Chloromethane	ND		Trichloroethene	ND
	Bromomethane	ND		Dibromochloromethane	ND
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND
	Chloroethane	ND		cis-1,3-Dichloropropene	ND
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND
1	Trichlorofluoromethane	88		Bromoform	ND
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	ND
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND
	Chloroform	ND		1,3-Dichlorobenzene	ND
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND
	Carbon Tetrachloride	ND			
	Bromodichloromethane	ND			
	1,2-Dichloropropane	ND			
	trans-1,3-Dichloropropene	ND			

RADIAN CORPORATION

Analytical Serv REPORT

LAB # 85-05-152

RECEIVED: 05/22/85

Results by Sample

Continued From Above

SAMPLE ID 850082 FRACTION 01A TEST CODE SW8010 NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 05/20/85 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

RADIAN CORPORATION

Analytical Serv REPORT LAB # 85-05-152

RECEIVED: 05/22/85

Results by Sample

SAMPLE ID 850082 FRACTION 01A TEST CODE SW8020 NAME GC-PID Arom. Vol. - SW846

Date & Time Collected 05/20/85 Category

DATA FILE D DATE INJECTED 05/30/85 ANALYST RAA VERIFIED BY JSG

CONC. FACTOR INSTRUMENT d COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Benzene	ND		1,3-Dichlorobenzene	ND
	Toluene	ND		1,2-Dichlorobenzene	ND
	Ethyl Benzene	ND		1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

RADIAN CORPORATION

RECEIVED: 05/22/85

Analytical Serv REPORT

Results by Sample

LAB # 85-05-152

SAMPLE ID 850083 FRACTION 02A TEST CODE SW8010 NAME GC-HECD Haloq. Vol. - SW846

Date & Time Collected 05/20/85 Category

DATA FILE G DATE INJECTED 05/29/85 ANALYST RAA VERIFIED BY JSG

CONC. FACTOR INSTRUMENT q COMPOUNDS DETECTED 1

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Chloromethane	ND		Trichloroethene	ND
	Bromomethane	ND		Dibromochloromethane	ND
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND
	Chloroethane	ND		cis-1,3-Dichloropropene	ND
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND
1	Trichlorofluoromethane	92		Bromoform	ND
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	ND
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND
	Chloroform	ND		1,3-Dichlorobenzene	ND
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND
	Carbon Tetrachloride	ND			
	Bromodichloromethane	ND			
	1,2-Dichloropropane	ND			
	trans-1,3-Dichloropropene	ND			

SAMPLE ID 850083 FRACTION 02A TEST CODE SW8010 NAME GC-HECD Halog. Vol. - SW846
Date & Time Collected 05/20/85 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

RADIAN CORPORATION

Analytical Serv REPORT LAB # 85-05-152

RECEIVED: 05/22/85

Results by Sample

SAMPLE ID 850083 FRACTION 02A TEST CODE SW8020 NAME GC-PID Arom. Vol. - SW846

Date & Time Collected 05/20/85 Category

DATA FILE D DATE INJECTED 05/30/85 ANALYST RAA VERIFIED BY JSG

CONC. FACTOR INSTRUMENT d COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Benzene	ND		1,3-Dichlorobenzene	ND
	Toluene	ND		1,2-Dichlorobenzene	ND
	Ethyl Benzene	ND		1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

RADIAN CORPORATION

PAGE 9 | Analytical Serv REPORT | LAB # 85-05-152

RECEIVED: 05/22/85 | Results by Sample

SAMPLE ID 850084 FRACTION 03A TEST CODE SW8010 NAME GC-HECD Haloq. Vol. - SW846

Date & Time Collected 05/20/85 Category

DATA FILE G DATE INJECTED 05/29/85 ANALYST RAA VERIFIED BY JSG

CONC. FACTOR INSTRUMENT g COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Chloromethane	ND		Trichloroethene	ND
	Bromomethane	ND		Dibromochloromethane	ND
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND
	Chloroethane	ND		cis-1,3-Dichloropropene	ND
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND
	Trichlorofluoromethane	ND		Bromoform	ND
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	ND
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND
	Chloroform	ND		1,3-Dichlorobenzene	ND
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND
	Carbon Tetrachloride	ND			
	Bromodichloromethane	ND			
	1,2-Dichloropropane	ND			
	trans-1,3-Dichloropropene	ND			

RADIAN CORPORATION

RECEIVED: 05/22/85

Analytical Serv REPORT
Results by Sample

LAB # 85-05-152
Continued From Above

SAMPLE ID 850084 FRACTION 03A TEST CODE SW8010 NAME GC-HECD Halog. Vol. - SW846
Date & Time Collected 05/20/85 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

RADIAN CORPORATION

PAGE 11 Analytical Serv REPORT LAB # 85-05-152
RECEIVED: 05/22/85 Results by Sample

SAMPLE ID 850084 FRACTION 03A TEST CODE SW8020 NAME GC-PID Arom. Vol. - SW846
Date & Time Collected 05/20/85 Category

DATA FILE D DATE INJECTED 05/31/85 ANALYST MSF VERIFIED BY JSG
CONC. FACTOR INSTRUMENT d COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Benzene	ND		1,3-Dichlorobenzene	ND
	Toluene	ND		1,2-Dichlorobenzene	ND
	Ethyl Benzene	ND		1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT.
SCAN = scan number or retention time on chromatogram.
All results reported in ug/kg unless otherwise specified.
ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

RADIAN CORPORATION

RECEIVED: 05/22/85

Analytical Serv REPORT

Results by Sample

LAB # 85-05-152

SAMPLE ID 850085 FRACTION 04A TEST CODE SW8010 NAME GC-HECD Haloq. Vol. - SW846

Date & Time Collected 05/20/85 Category

DATA FILE B DATE INJECTED 05/29/85 ANALYST RAA VERIFIED BY JSG

CONC. FACTOR INSTRUMENT b COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Chloromethane	ND		Trichloroethene	ND
	Bromomethane	ND		Dibromochloromethane	ND
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND
	Chloroethane	ND		cis-1,3-Dichloropropene	ND
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND
	Trichlorofluoromethane	ND		Bromoform	ND
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	ND
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND
	Chloroform	ND		1,3-Dichlorobenzene	ND
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND
	Carbon Tetrachloride	ND			
	Bromodichloromethane	ND			
	1,2-Dichloropropane	ND			
	trans-1,3-Dichloropropene	ND			

RADIAN CORPORATION

RECEIVED: 05/22/85

Analytical Serv REPORT
Results by Sample

LAB # 85-05-152
Continued From Above

SAMPLE ID 850085 FRACTION 04A TEST CODE SW8010 NAME GC-HECD Halog. Vol. - SW846
Date & Time Collected 05/20/85 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

RADIAN CORPORATION

RECEIVED: 05/22/85

Analytical Serv REPORT

Results by Sample

LAB # 85-05-152

SAMPLE ID 850085 FRACTION 04A TEST CODE SW8020 NAME GC-PID Arom. Vol. - SW846

Date & Time Collected 05/20/85 Category

DATA FILE D DATE INJECTED 05/31/85 ANALYST RAA VERIFIED BY JSG

CONC. FACTOR INSTRUMENT d COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Benzene	ND		1,3-Dichlorobenzene	ND
	Toluene	ND		1,2-Dichlorobenzene	ND
	Ethyl Benzene	ND		1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

RADIAN CORPORATION

Analytical Serv REPORT LAB # 85-05-152

RECEIVED: 05/22/85

Results by Sample

SAMPLE ID 850086 FRACTION 05A TEST CODE GC 602 NAME EPA Method 602/GC

Date & Time Collected 05/21/85 Category

DATA FILE D DATE INJECTED 05/22/85 ANALYST RAA VERIFIED BY JSG

CONC. FACTOR INSTRUMENT d COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Benzene	ND		1,3-Dichlorobenzene	ND
	Toluene	ND		1,2-Dichlorobenzene	ND
	Ethyl Benzene	ND		1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 602, (Federal Register, 12/3/79).

RADIAN CORPORATION

RECEIVED: 05/22/85

Analytical Serv REPORT

Results by Sample

LAB # 85-05-152

SAMPLE ID 850088 FRACTION 07A TEST CODE GC 602 NAME EPA Method 602/GC

Date & Time Collected 05/21/85 Category

DATA FILE D DATE INJECTED 05/22/85 ANALYST RAA VERIFIED BY JSG

CONC. FACTOR INSTRUMENT d COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Benzene	ND		1,3-Dichlorobenzene	ND
	Toluene	ND		1,2-Dichlorobenzene	ND
	Ethyl Benzene	ND		1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 602, (Federal Register, 12/3/79).

FRACTION AND TEST CODES FOR WORK NOT REPORTED ELSEWHERE

05B : DUP602
07B : DUP602

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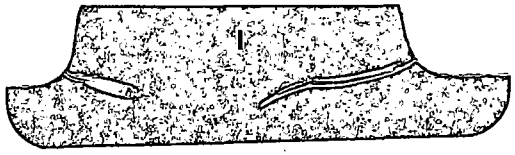

APPENDIX I

CORRESPONDENCE WITH FEDERAL, STATE, AND/OR LOCAL REGULATORY AUTHORITIES

Radian did not have a need or requirement to correspond with regulatory authorities during the conduct of this IRP.

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J

APPENDIX J

REFERENCES

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not included in page count]

APPENDIX J
References

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Smith, W. 1984. Personnel Communication, Sheppard AFB Civil Engineers (Environmental Division), Sheppard AFB, Texas.

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APPENDIX K

BIOGRAPHIES OF KEY PERSONNEL

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FRANCIS J. SMITH

EDUCATION:

M.S., Sanitary Engineering, Massachusetts Institute of Technology, 1954.

B.S., Civil Engineering, University of Michigan, 1950.

EXPERIENCE:

Senior Program Manager, Research and Engineering Operations, Radian Corporation, McLean, VA, 1985-Present.

Program Manager, Research and Engineering Operations, Radian Corporation, McLean, VA, 1981-1985.

Senior Associate, Occupational Health and Safety and Environmental Engineering, A.T. Kearney Management Consultants, Alexandria, VA, 1980-1981.

Acting Chief Environmental Planning, Logistics and Engineering, Headquarters USAF, Washington, DC, 1979-1980.

Chief Environmental Policy, Logistics and Engineering, Headquarters USAF, Washington, DC, 1976-1979.

Director Environmental Protection, Air Force Systems Command (AFSC), Andrews Air Force Base, MD, 1972-1976.

Chief Bioenvironmental Engineering, Headquarters Pacific Air Force, Hickam Air Force Base, HI, 1968-1972.

Similar assignments at Headquarters Alaskan Air Command, Headquarters Tactical Air Command, and at Subcommands of Strategic Air Command, 1951-1968.

Junior Industrial Waste Engineer, Lederle Division, American Cyanamide, Pearl River, NY, 1950-1951.

FIELDS OF EXPERIENCE:

Mr. Smith has had 35 years experience in all aspects of environmental engineering. This experience ranges from carrying out the routine environmental and occupational health operations at individual installations to running the environmental activities of a major federal agency. He is a registered professional engineer, certified industrial hygienist, certified safety professional and is a diplomate of the American Academy of Environmental Engineers.

Mr. Smith is the program manager for the confirmation study of the Marine Corps Training Base at Quantico, Virginia. This is the second phase of the

Francis J. Smith

Navy assessment and control of installation pollutants (NACIP) program for the base. It includes three phases: verification of the existence of groundwater contamination; further characterization, as needed; and preparation of remedial plans and specifications. He was the program manager on the Air Force Engineering and Services Center (AFESC) basic ordering agreement. Mr. Smith was the program manager for four USAF IRP phase 1 record searches. He is also the program manager for the preparation of a hazardous waste management plan, SPCC and other related environmental plans for a Naval air station. He manages a subcontract with a major USA architect-engineer firm for the provision of analytical and technical services in support of groundwater investigations.

He is a section manager in the solid and hazardous waste management business unit of the research and engineering division. Mr. Smith assists the Radian staff in the identification of business opportunities across the seven business units that comprise Radian services. In addition he coordinates all Radian business with DOD in the environmental and occupational health areas. He also participates in the marketing of Radian services to federal agencies and trade associations.

Since retiring from the USAF, Mr. Smith has been involved in a variety of projects including both environmental and health work. The emphasis has been on hazardous waste. They have included assistance in the quality review of reports; health and safety evaluation of cement plants seeking permits to burn chemical wastes; draft environmental impact statement (EIS) on the thermal destruction of chemical wastes; review of the treatment of photographic chemical manufacturing wastes; groundwater contamination studies; RCRA impacts; and an R&D study of truck tire noise for the National Highway Safety Transportation Agency.

He was the certified industrial hygienist (IH) and an environmental consultant for A.T. Kearney Management Consultants. In addition to the routine occupational safety and health activities he specialized in the interpretation and response to the EPA RCRA regulations.

For three of the last four years in his assignment with Headquarters USAF, he was responsible for air, land, and water pollution management programs. This included programming an average of $19 million per year. Also included were: the implementation of RCRA; the initial USAF Installation Restoration Program (IRP, equivalent to CERCLA-Superfund); management of 17 million acres of natural resources; and the National Environmental Policy Act (NEPA) environmental impact analysis program. In addition to these activities, he assumed responsibility for one year for all of Enviromental Planning. This included: comprehensive base planning; the Air Installation Compatibility Use Zone plans for acquiring land near bases with high noise or accident potential; and the development of environmental methodologies.

At the Air Force Systems Command, Mr. Smith organized an office to address effects of the federal environmental laws on the Research, Development and Acquisition programs. (This office was the highest level environmental

activity ever established at a USAF major command.) He directed almost all of the EIS's issued by the USAF in this period. He was an expert witness for the federal government. One was a suit over the health hazards associated with the siting of new type radar stations in California and Massachusetts. The other pertained to an EIS for new facilities in Colorado. Additionally, he was responsible for advising on the industrial hygiene and environmental needs of government owned contractor operated (GOCO) industrial plants.

During his assignment to the Pacific Air Force, Mr. Smith provided environmental and industrial hygiene guidance to USAF activities in Korea, Japan, Taiwan, Vietnam, Thailand, Philippine Islands, Guam, Trust Territories, and Hawaii. This included the traditional areas of sanitary engineering (water supply, treatment, and distribution; waste collection, treatment, and disposal; and pest control). It also included more modern problems, such as LASER equipment calibration, maintenance, and use; handling of large volumes of herbicides; noise control; industrial hygiene; heat and cold extremes; decontamination and quarantine of equipment to prevent introduction of foreign fauna or flora into the U.S. from Asia. For four years, Mr. Smith was a member of the United States delegation to the South East Asia Treaty Organization (SEATO) Military Committee. He represented the U.S. with regard to public health engineering policies. Mr. Smith also evaluated USAF civic action programs to provide basic water and waste disposal to rural Thai villages.

Other USAF assignments in various commands provided environmental engineering and industrial hygiene support for the combat Air Force. Many of the previously mentioned activities were carried out as well as support for the current priority preventive medical activities. Some examples of the latter would be: defense against accidental release or delivery and use of chemical agents; improved water treatment plant operations; improved wastewater facilities and operations; conversion of dumps to sanitary fills; substitution of less toxic materials; and engineering control of working exposures.

CERTIFICATIONS/REGISTRATIONS AND PROFESSIONAL SOCIETIES:

Certified Industrial Hygienist by the American Board of Industrial Hygiene, 1971, No. 690
Certified Safety Professional by the Board of Safety Professionals of the Americas, 1972, No. 2103
Registered Professional Engineer, State of Massachusetts, 1963, No. 19021
Diplomate, American Academy of Environmental Engineers, 1980.

American Industrial Hygiene Association (National and Baltimore-Washington)
American Conference of Government Industrial Hygienists
National (and Maryland) Society of Professional Engineers
American Academy of Industrial Hygiene
American Academy of Environmental Engineers
American Defense Preparedness Association
Air Force Association
Society of Military Engineers

NELSON H. LUND

EDUCATION:

M.P.H., Environmental Health and Engineering, University of Minnesota, Minneapolis, MN, 1965.

B.S., Civil Engineering, Michigan Technological University, Houghton, MI, 1960.

Graduate (Professional Military Degree), U.S. Army Command and General Staff College, Ft. Leavenworth, KS, 1972.

Mr. Lund joined Radian Corporation in July 1984 as a Senior Environmental Engineer and a recent addition to the Radian staff after completing 24 years on active duty as an Environmental Engineer with the U.S. Army. Currently he is serving as Project Director for Radian's Installation Restoration Program with the U.S. Air Force. In that capacity he directs a team of technical professionals, schedules work, reviews progress and evaluates overall project results. In addition, he has prepared RCRA Part B permit applications for petrochemical clients and is also involved in the development and implementation of remedial action initiatives at hazardous waste sites. He has also participated in the design of a hazardous waste land treatment facility. Mr. Lund has prepared specifications and contract documents for remediation of hydrocarbon contamination at a refinery and also for the anaerobic degradation of pesticide contaminated soil at a proposed housing development.

In his last position with the Army before joining Radian, Mr. Lund was responsible for the technical management of 97 engineers, scientists, technicians, and administrators providing worldwide environmental quality consultative services. Services included on-site surveys and studies, document reviews, preparation of permits and plans, and review/interpretation of sampling data. Areas of specialization were: hazardous and solid waste management, groundwater monitoring, drinking water and wastewater assessments, air pollution source surveillance, and ambient air evaluations. Clients received final reports advising them of their status of compliance with federal, state, and local environmental laws. Reports included remedial action measures and treatability determinations. He also coordinated environmental actions and trends with senior governmental officials. Mr. Lund controlled an annual budget of $6.7 million, plus $1.2 million for technical equipment purchases. He served as the Environmental Engineer Consultant to the Army Surgeon General.

During his other military assignments, Mr. Lund served in a variety of increasingly important management and technical operations positions including over seven years in foreign countries where he provided environmental engineering support to U.S. forces, both in the field and in garrison. He also

Nelson H. Lund

coordinated with foreign governments on matters of mutual environmental concern. Assignments in the U.S. included environmental engineering and industrial hygiene support to Army ammunition plants and the chemical agent demilitarization program; developing of an industrial hygiene and environmental audit program for all Army installations; managing and conducting water and wastewater surveys for major Army commands; and providing special study support to installations with unique environmental problems.

HONORARY AND PROFESSIONAL/TECHNICAL SOCIETIES:

Board Certified by the American Academy of Environmental Engineers.

Board Certified by the International Board of Hazard Control Managers.

Registered Professional Engineer in the states of Texas and Mississippi.

Member of the National Society of Professional Engineers.

Member of the Texas Society of Professional Engineers.

PUBLICATIONS:

Author and co-author of numerous military publications dealing with environmental engineering and pollution control projects and programs. Prepared training and doctrinal materials dealing with environmental and industrial hygiene programs for use by Army personnel. Author and co-author of several Radian reports dealing with RCRA Part B permit plans and remedial actions at hazardous waste sites.

WILLIAM M. LITTLE

EDUCATION:

M.S., Civil Engineering, University of California, Berkeley, 1974.

M.S., Hydrology, University of Arizona, Tucson, 1968.

B.S., Hydrology, University of Arizona, Tucson, 1967.

EXPERIENCE:

Senior Engineer and Group Leader, Radian Corporation, Austin, TX, 1982-Present.

Senior Engineer, Radian Corporation, Austin, TX, 1978-1982.

Hydrologist, U.S. Army Environmental Hygiene Agency, 1973-1978.

Research and Technical Operations Officer, U.S. Army Engineer Nuclear Cratering Group, 1969-1971.

Graduate Student in Research, University of Arizona, Tucson, 1968.

FIELDS OF EXPERIENCE:

Mr. Little is a Senior Engineer and Group Leader with a major technical specialty in ground-water pollution studies. He is currently the Project Director for hydrogeologic investigations of multiple waste disposal sites on Tinker Air Force Base, Oklahoma. He has recently completed a similar investigation for Kelly AFB, Texas. These investigations include monitoring well construction, ground-water sampling, and contaminant transport assessment. He is responsible for program design and execution, subcontractor selection, and managing and editing the final report. He is also providing technical consulting and expert witness services for a hazardous waste site cleanup case in Kansas City, Missouri.

Mr. Little has recently completed a hydrogeologic investigation of a Superfund site in western New York state. The project included monitoring well construction, definition of ground-water flow system, assessment of contaminant transport potential, and presentations to regulatory authorities. Mr. Little served as Project Director and principal investigator. He has also served as Project Director and field manager for a large, multidisciplinary characterization of an abandoned hazardous waste disposal site in southern California. The waste materials consist of acid petroleum refinery sludges. Major areas of investigation were: chemical characterization of wastes and geologic materials; quantification of sulfur dioxide and hydrocarbon emissions; and ground-water monitoring. Mr. Little was responsible for managing the field operations and supervising report preparation.

William M. Little

Mr. Little has served as assistant Project Director and field manager for an investigation of the ground-water quality impact of a spill of a coal-distillate liquid at an SRC pilot plant near Tacoma, Washington. The study involved detailed unsaturated zone coring and designing and constructing a series of ground-water monitoring wells A Remedial Measures Plan was formulated and adopted to remove contaminated materials and to prevent the further spread of ground-water contamination. Following the evaluation of the spill event, Mr. Little directed an expanded program to evaluate the ground-water quality effects of overall plant operations. The possible sources of contamination were identified and characterized. Mr. Little then developed a ground-water monitoring program and supervised the installation of the monitoring network. He designed and conducted aquifer pump tests to define aquifer performance and interpreted the results.

Mr. Little has also conducted a program to evaluate the extent of ground-water contamination by refinery operations and wastes at an oil refinery near Duncan, Oklahoma. The assessment was based on site reconnaissance, interviews with refinery personnel and a study of existing hydrogeologic and process data.

Mr. Little has recently completed two environmental/regulatory fatal flaw studies for lignite mines and associated power plants in East Texas. He was both Project Director, responsible for overall management and preparation of the final report, and hydrology task leader, responsible for assembling data on hydrologic conditions and assessing probable impacts. He has also recently served as task leader for regulations review, impact analysis and permit application preparation for a commercial-scale coal gasification facility in Wyoming and ground-water hydrology task leader for environmental analysis of a major lignite mine and associated synfuels plant in east Texas.

In another program, Mr. Little directed an evaluation of surface-water and ground-water availability in the vicinity of the proposed Solvent Refined Coal-II (SRC-II) demonstration plant and commercial facilities near Morgantown, West Virginia.

For a private industrial client, Mr. Little reviewed and evaluated the environmental monitoring data from the vicinity of an in situ coal gasification test in the Powder River Basin of Wyoming. The water quality impacts of the test burn were assessed, and a program of aquifer restoration and hydrologic testing recommended. Based on available hydrologic and geochemical data, a conceptual model of the test site was developed. He also developed a ground-water monitoring and contingency aquifer restoration program for a proposed future test. The program includes selection of well locations and parameters for monitoring and specification of restoration strategies.

Mr. Little has also participated in an assessment of the environmental behavior of fluidized bed combustion (FBC) waste for EPA, IERL. Mr. Little was responsible for the design, construction and operation of field cells for

testing FBC waste disposal alternatives and for the development of a preliminary waste transport model. He has also been project director and hydrology task leader in the evaluation of the environmental suitability of an ash/scrubber sludge disposal site. He was responsible for the overall management of the program, evaluated the laboratory and hydrogeologic data and predicted contaminant migration.

As a hydrologist with the Water Quality Engineering Division, U.S. Army Environmental Hygiene Agency, Mr. Little served as a consultant to the Office of the Surgeon General and to major commands and installations on hydrologic aspects of water supply and wastewater disposal. He prepared design criteria for programs of effluent and receiving water monitoring at Army manufacturing and research facilities, evaluated ground-water pollution potential of waste disposal practices, and reviewed draft NPDES discharge permits issued to Army installations. He performed preliminary technical feasibility studies of land treatment of wastewater including field investigations and trial systems design. He conducted environmental impact statement data requirements review and prepared and reviewed portions of environmental impact statements. Mr. Little also managed the Army Medical Department's nationwide Drinking Water Surveillance Program.

With the Corps of Engineers, Mr. Little was assigned as a Research and Technical Operations Officer, U.S. Army Engineer Nuclear Cratering Group. There he conducted a general investigation of hydrologic transport of radionuclides from Plowshare application sites. This work included literature searches, computer simulation, experimental design and conceptual modeling of transport phenomena. He also participated in final preparation of a 1971 Corps of Engineers report on Wastewater Management in the San Francisco Bay Region.

While at the University of Arizona, Mr. Little was a member of the Operations Research Study Group on the Tucson Basin, gathering background hydrologic material, and conducting a literature and data file search. He directed and participated in preliminary adaptation of a two-dimensional, finite difference model of a large, heterogeneous ground-water basin.

HONORARY AND PROFESSIONAL SOCIETIES:

American Geophysical Union, American Water Resources Association, National Water Well Association, Sigma Xi.

CERTIFICATION:

AIPG Certified Professional Geological Scientist No. 6468.

William M. Little

PUBLICATIONS/REPORTS:

Numerous technical reports in the fields of water resources development, ground-water contaminant migration, occurrence of radionuclides in ground water, land treatment feasibility and receiving water monitoring, including:

Little, W.M., et al., "Installation Restoration Program, Phase II - Confirmation/Quantification, Stage 2, Tinker AFB, Oklahoma," Radian Corporation, Draft Report to U.S. Air Force, December 1984.

Little, W.M., et al., "Installation Restoration Program, Phase II - Field Evaluation, Stage 1, Tinker AFB, Oklahoma," Radian Corporation, Draft Final Report to U.S Air Force, November 1984.

Little, W.M., et al., "Installation Restoration Program, Phase II, Stage 1, Field Evaluation, Kelly AFB, Texas," Radian Corporation, Final Report to U.S. Air Force, July 1984.

Little, W.M., "Hydrogeologic Investigations, Facet Enterprises, Inc., Elmira, New York," Radian Corporation Final Report to Facet Enterprises, Inc., September 1983.

Little, W.M., et al., "McColl Site Investigation - Phase 1," Radian Corporation Report to the Participants Committee, November 1982.

Little, W.M., et al., "Environmental Considerations and Air Quality Modeling for the Freestone County Project," Radian Corporation Report to Tenneco Coal Company, March 1982.

Grimshaw, T.W., et al., "Assessment of Fluidized-Bed Combustion Solid Wastes for Land Disposal," Draft Final Report, Radian Corporation Report to EPA Industrial Environmental Research Laboratory, December 1982.

Little, W.M., et al., "Environmental Considerations and Air Quality Modeling for the Edgewood and Mustang Creek Prospects and Associated Energy Park," Radian Corporation Report to Tenneco Coal Company, November 1981.

Little, W.M., et al., "Ground-Water Impact of SRC Pilot Plant Activities Fort Lewis, Washington," Radian Corporation report to Gulf Mineral Resources Company, January 1981.

Little, W.M., et al., "Ground Water Modeling at an In-Situ Coal Gasification Test," Radian Corporation Report to confidential industrial client, September 1980.

Little, W.M. and H.J. Williamson, "Recommended Ground-Water Monitoring and Aquifer Restoration Programs, Future In-Situ Coal Gasification Test," Radian Corporation Report to confidential industrial client, September 1980.

William M. Little

Little, W.M. and W.C. Micheletti, "Recommended Aquifer Restoration and Hydrologic Testing Program for an In-Situ Coal Gasification Test," Radian Corporation Report to confidential industrial client, August 1980.

Grimshaw, T.W. and W.M. Little, "Remedial Measures Plan for a Spill of Solvent Refined Coal Liquid at the SRC Pilot Plant, Fort Lewis, Washington," Radian Corporation Report to Gulf Mineral Resources Company, August 1980.

Little, W.M., et al., "Hydrologic Evaluation of a Combined Ash/FGD Sludge Storage Site, Craig Station," Radian Corporation Report to Colorado Ute Electric Association, July 1980.

Little, W.M., T.J. Wolterink, and M.H. McCloskey, "Water Availability Appraisal for the Proposed Solvent Refined Coal-II Demonstration Plant, Monongalia County, West Virginia," Radian Corporation Report to U.S. Department of Energy, February 1980.

Little, W.M., "Water Quality Geohydrologic Consultation No. 24-0286-77," Twin Cities Army Ammunition Plant, New Brighton, MN, 21-23 July 1976, U.S. Army Environmental Hygiene Agency, 11 January 1977 (six additional geohydrologic consultations).

Little, W.M., Drinking Water Consultation Visit No. 24-1301-77, Joliet Army Ammunition Plant, Illinois, 2-4 August 1976, USAEHA, 9 February 1977 (four additional drinking water consultations).

Little, W.M., Water Quality Geohydrologic Consultation No. 24-058-75/76, Land Disposal Feasibility Study, Fort Polk, Louisiana, 2-29 April and 9-29 October 1975, USAEHA, 19 August 1976 (three additional land treatment evaluations).

Little, W.M., Water Quality Monitoring Consultation No. 24-048-74/75, Aberdeen Proving Ground, Maryland, 25-27 February 1974, USAEHA, 17 December 1974 (three additional monitoring consultations).

Little, W.M., Water Quality Engineering Special Study No. 24-017-74, Mixing in Receiving Waters, 7 September-24 October 1973, USAEHA, 3 January 1974.

Little, W.M., Analysis of Hydrologic Transport of Tritium, U.S. Army Engineer Nuclear Cratering Group Technical Memorandum 70-7, Lawrence Radiation Laboratory, Livermore, CA, April 1971.

Little, W.M., An Engineering and Economic Feasibility Study for Diversion of Central Arizona Project Waters from Alternate Sites, M.S. Thesis, Department of Hydrology, University of Arizona, Tucson, AZ, 1968.

RADIAN
CORPORATION

ANN E. ST. CLAIR

EDUCATION:

M.A., Geological Sciences, The University of Texas at Austin, 1979.

B.A., Geology, Trinity University, 1973.

EXPERIENCE:

Department Head, Radian Corporation, Austin, TX, 1982-Present.

Group Leader, Radian Corporation, 1979-1982.

Senior Geologist, Radian Corporation, 1980-Present.

Staff Geologist, Radian Corporation, 1978-1980.

Research Scientist Associate, The University of Texas at Austin, Bureau of Economic Geology, 1975-1978.

Research Scientist Assistant, The University of Texas at Austin, Bureau of Economic Geology, 1973-1975.

FIELDS OF EXPERIENCE:

At Radian, Ms. St. Clair has had extensive experience in studies relating to ground-water geology, waste disposal, and environmental impacts. Her work has included acquisition of data on ground water, assessment of water quality impacts, and compilation and interpretation of geologic data including geophysical and core logs, and evaluation of impacts of waste disposal and other activities. In hazardous waste studies her work has also involved participation in hazardous waste permitting projects, evaluation of remedial action alternatives and interface with engineers, chemists and other specialists regarding various aspects of hazardous waste investigations including engineering design and cost of remedial action, control of emissions and odors, and waste characteristics. As Department Head at Radian Ms. St. Clair supervises the work of geologists, hydrologists, civil and environmental engineers and atmospheric scientists and has management and technical review responsibility for programs in these technical areas.

Ms. St. Clair is currently serving as a Task Leader for preparation of a RCRA Part B permit application for a large Gulf Coast petroleum refinery. In this role she is responsible for review and coordination regarding acquisition of ground-water and geology data and incorporation of this information into the permit application.

11/19/84

Ann E. St. Clair

Ms. St. Clair is Project Director for an investigation to determine site conditions and develop a plan for remedial action at a site formerly occupied by an aerial pesticide spraying operation in Arizona. The lateral and vertical extend of soil contamination has been determined by collection and analysis of nearly 100 soil cores. Plans are being evaluated for on-site treatment or recycling of the pesticide-bearing soils.

Ms. St. Clair was Project Director for the second phase of a continuing study at the McColl hazardous waste site in the Los Angeles area. In this phase, data collected in Radian's Phase 1 field investigation of the site were evaluated and used in the selection and design of the remedial action plan for the site. The site, which is located adjacent to a residential and recreational area, contains various hydrocarbon wastes, principally acidic refinery sludges and drilling muds. Control of volatile emissions, odors, and the potential for contamination of surface water and ground water were addressed in the remedial action design. The design must meet strict criteria regarding exposure to contaminants both during remedial action implementation and over the long term. Implementation of the remedial action is underway. A Radian engineer is on-site to observe and monitor the operation.

Ms. St. Clair has had major responsibility for studies performed at several uncontrolled hazardous waste sites, including sites identified as priority sites for remedial action under Superfund. She was Project Director for the first phase of a study to evaluate ground-water conditions at a Superfund site in up-state New York which was used for disposal of wastes from a metal plating operation. The study included installation of monitor wells and test borings and collection of soil and ground-water samples in order to define the presence or extent of subsurface contamination. Based on the results of the field investigation, recommendations for further study or remedial action were developed. During the course of this program, Ms. St. Clair has been involved in initial site evaluation and data collection, development of a site field program, and interface with state and federal regulatory agencies.

Ms. St. Clair has had overall technical responsibility for a variety of activities for the EPA Solid and Hazardous Waste Research Division. These studies, generally involving technical support of Superfund activities, have included a field geophysical survey, treatability studies, column absorption/desorption studies, hydrogeologic evaluations, review of feasibility studies, and evaluation of remedial action technologies for approximately ten Superfund sites. Ms. St. Clair's role included project management, technical supervision and review, and agency coordination.

For the Lipari landfill Superfund site near Pitman, New Jersey, Ms. St. Clair was responsible for coordinating a variety of technical activities as support to EPA Region II. The site contains a variety of industrial wastes, of which several volatile organic chemicals known to be extremely hazardous are of

primary concern. Leachate seeps enter surface streams adjacent to the site and have resulted in a ban on fishing and boating in a lake 1000 feet downstream. Ms. St. Clair had overall responsibility for coordinating the following activities at this site--cost-effectiveness evaluation of 32 remedial action alternatives, preparation of an Environmental Information Document assessing the environmental impacts of remedial action alternatives, definition of baseline conditions and design of a long-term monitoring program on the lake, and a treatability study of the landfill leachate. For all these activities Ms. St. Clair was the principal interface with EPA and had primary technical review and management responsibility.

In a study for the EPA Municipal Environmental Research Laboratory, Ms. St. Clair supervised development of a methodology for conducting evaluations of cost-effectiveness of remedial actions at uncontrolled hazardous waste sites. Under the Comprehensive Environmental Response, Compensation and Liability Act (Superfund), remedial actions conducted at Superfund sites must be demonstrated to be cost-effective. The study involved review of technical and cost data on remedial technologies, evaluation of methodologies for cost-effectiveness and related types of analyis, assessment of impacts of time and discount rates on the evaluation, and development of the analytical framework and guidance manual to be used by decision makers in selecting remedial measures.

Ms. St. Clair has participated in Radian's activities related to collection of insurance underwriting information for Environmental Impairment Liability (EIL) Insurance. She worked closely with Radian's parent company, Hartford Steam Boiler Inspection and Insurance Company (HSB) in developing procedures for collection of technical and engineering underwriting information and functions in a Quality Assurance role by reviewing results of all Radian investigations of this type. In 1981 Ms. St. Clair was Project Director for a risk assessment of three power plants in the Boston area. The study involved brief site visits and review of corporate and regulatory agency files in order to assess the potential for gradual environmental impairment as a result of plant activities. The study included assessment of ground-water conditions, waste management practices, hazardousness of materials used on-site, population-at-risk, and corporate approach to environmental matters. A report was prepared containing information for use in underwriting Environmental Impairment (EIL) Insurance.

During 1981, Ms. St. Clair was Project Director for a large program to develop a waste management strategy for the Wyoming Coal Gasification Project. The program involved chemical and physical analysis and regulatory classification of power plant and gasification wastes and organic by-products. Based on the results of the testing, recommendations were made for treatment and disposal of wastes to meet applicable regulatory requirements. In addition, the study included column leaching studies to assess impacts of mine disposal of plant wastes, evaluation of ground water impact of disposal facilities at the plant

site, and preparation of a state industrial siting permit application and RCRA permit application. Because the gasification project was cancelled, these permits were never submitted.

In 1980-1981, Ms. St. Clair was Project Director for a program to evaluate waste disposal practices and ground-water conditions at a large petroleum refinery in Kenai, Alaska. The study focused on development of a long-term waste management strategy for disposal of refinery wastes, principally API separator bottoms and crude tank bottoms, which have been designated as hazardous wastes under RCRA. Initially Ms. St. Clair supervised design, installation and sampling of ground-water monitoring wells in the vicinity of existing disposal sites in order to assess the water-quality impacts of past disposal practices. Samples of all refinery waste streams and wastes from existing pits were characterized for the purpose of developing a plan for closure of existing pits and an ultimate waste management plan. Options were evaluated with respect to technical feasibility (particularly in light of climatic factors), environmental acceptability, regulatory compliance, and economics. Quarterly groundwater monitoring, on compliance with RCRA, is continuing at the facility.

In 1979, Ms. St. Clair was Project Director for an investigation of soil/ground-water contamination and remedial action at a pesticide formulation facility in north Texas. The study was aimed at evaluating possible contamination from underground waste storage tanks suspected of leaking. Ms. St. Clair initially conducted sampling of soils in the vicinity of the tanks to determine if leakage had occurred. She also designed and supervised installation of a network of ground-water monitoring wells in order to evaluate ground-water flow at the site and to assess water-quality impacts of the suspected leakage. During drilling, core samples were taken in both the unsaturated and saturated zone for chemical analysis. Ms. St. Clair performed slug tests on the wells to provide data on aquifer properties. She also supervised infiltration tests in order to evaluate the surface infiltration conditions and to qualitatively assess the potential for leachate generation. Based upon the results of this study, recommendations were made for further studies and possible remedial actions.

In a study to determine impacts of a product spill at a Solvent Refined Coal-II demonstration plant in Fort Lewis, Washington, Ms. St. Clair was responsible for portions of the ground-water evaluation, including installation of monitoring wells, measurements of water levels, and interpretation of hydrologic and chemical data. She was also involved in interfacing with state regulatory agencies.

Ms. St. Clair was Project Director of a study for EPA Region III, evaluating the suitability of land around the Cheswick Power Station near Pittsburgh, Pennsylvania, for disposal of coal ash and scrubber sludge. The study was

Ann E. St. Clair

conducted as technical support for enforcement actions brought by EPA Region III concerning alleged violations of air emissions regulations from the coal-fired power plant. In the event that installation of SO_2 scrubbers was to be required by EPA, this study was underaken to document the availability of land for disposal of wastes from the scrubbers. During the study, Ms. St. Clair supervised a multidisciplinary team evaluating the hydrogeology, transportation, land use, ecology, and economic factors affecting the acceptability of sites in the vicinity of the plant for disposal of wastes.

In a study for EPA Region VII, Ms. St. Clair supervised several programs concerned with suitability of soils for septic tanks and nitrate contamination of ground water in Missouri. Ms. St. Clair supervised technical efforts on three programs. One program involved detailed soils mapping and field examination of septic tank failures in Greene County, Missouri, and in order to develop a septic-tank suitability map. Another study focused on determination of any relationships between water well construction practices and occurrence of ground water contamination in Howell County, Missouri. It involved a field survey for sampling of ground water and for obtaining information on well construction. A third program was conducted to develop a regional map of nitrate concentrations in ground water in the four-state area of EPA Region VII. In addition to development of technical reports for each of these studies, reports were prepared for lay readers.

Ms. St. Clair was Project Director for a feasibility and site selection study for an in-situ gasification project utilizing Texas lignite. The study focused on evaluation of environmental factors that might affect project feasibility. Ms. St. Clair was involved in overall project coordination as well as studies related to environmental and hydrologic conditions at several candidate sites.

As a research associate at the Bureau of Economic Geology, Ms. St. Clair was involved in numerous studies requiring collection and interpretation of geologic data, sampling and chemical analysis of ground water, and evaluation of environmental and engineering impacts of man's activities. She was responsible for the preparation of maps, technical reports, and presentations, as a part of these programs.

PROFESSIONAL/TECHNICAL SOCIETIES:

American Institute of Profession Geological Scientists, Certified Professional Geological Scientist 4741; National Water Well Association, Ground Water Technology Division; Geological Society of America; Austin Geological Society.

PUBLICATIONS:

Radian Corporation, "Cost-Effectiveness Evaluation of Remedial Action Alternatives for the McColl Site, Fullerton, California," Final Report, June 1983.

Ann E. St. Clair

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St. Clair, A.E., et al., "Environmental Compliance Review and Risk Assessment for Selected New England Electric System Power Stations," Final Report, December 1981.

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St. Clair, A.E., et al., "Evaluation of Hydrogeology and Waste Management Options at Tesoro Petroleum Corporation's Kenai, Alaska Refinery," November 1980.

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George, F.M., et al., "Assessment of Gulf Coast Lignite Marketability," Final Report, August 1980.

St. Clair. A.E., et al., "The Availability of Western Coal for California Use," Final Report to the California Energy Commission, June 1980.

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St. Clair, A.E., et al., "An Investigation of Potential Soil/Ground-Water Contamination at a Pesticide Formulation Facility in North Texas, Phase II," Draft Report, April 1980.

Ann E. St. Clair

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Radian Corporation, "Preliminary Environmental Assessment for a Proposed Olefins Complex, Brazoria County, Texas," August 1979.

Grimshaw, T.W., J.L. Machin, J.R. Mase, A.E. St. Clair, and F.H. Sheffield, "Hydrology Related Regulatory Risks for Lignite Mining at a Prospect in Eastern Texas and Western Louisiana," July 1979.

Garner, L.E., A.E. St. Clair, and T.J. Evans, "Mineral Resources of Texas (map)," Bureau of Economic Geology, University of Texas, Austin, 1979.

St. Clair, A.E., "Mineral Lands in the City of Dallas: Bureau of Economic Geology," University of Texas, Austin, Geological Circular 78-1, 1978.

St. Clair, A.E., T.J. Evans, and L.E. Garner, "Energy Resources of Texas (map)," Bureau of Economic Geology, University of Texas Austin, scale 1:1,000,000, 1976.

St. Clair, A.E., C.V. Proctor, W.L. Fisher, C.W. Kreitler, and J.H. McGowen, "Land and Water Resources, Houston-Galveston Area Council," Bureau of Economic Geology, University of Texas, Austin, Land Resources Laboratory Map Series, 25 p., 4 maps, scale 1:125,000, 1975.

RICK A. BELAN

EDUCATION:

M.S., Hydrology, University of Arizona, Tucson, 1972.

B.S., Geology, Kent State University, Ohio, 1970.

EXPERIENCE:

Staff Hydrogeologist, Radian Corporation, 1980-Present.

Groundwater Hydrologist, William F. Guyton and Associates, 1977-1980.

Captain, United States Army, 1972-1977.

Environmental Impact Assessment Officer, United States Army, 1975.

Research Associate, University of Arizona, 1970-1972.

FIELDS OF EXPERIENCE:

Mr. Belan is currently the field investigation director for the Installation Restoration program at Sheppard Air Force Base, Texas; and is also acting as the technical advisor to the overall project. The investigation is being conducted at 4 inactive hazardous waste sites, and entails the emplacement of 14 monitor wells and 3 coreholes about these sites. These are to obtain soil and groundwater samples for chemical analyses. The results will be used to determine the environmental impact of the waste sites on the local groundwater systems.

Reports indicated the possible existence of groundwater contamination off base at McClellan Air Force Base, California. This large hydrogeological program was to investigate the present groundwater conditions. As the geologic evaluation task leader for the project Mr. Belan designed, coordinated and supervised the field activities for 29 reconnaissance borings. This required the drilling and sampling (soil and groundwater) to a depth of about 200 feet at selected sites off base. Selected chemical analyses were performed to maximize the hydrogeological information under this program. These borings were successfully completed ahead of schedule under difficult field conditions and project constraints.

As the Project Director Mr. Belan assisted a commercial client as part of litigation activities in developing groundwater sampling protocols which were then implemented under the direct field supervision of him. Two groundwater sampling episodes were conducted at the client's California site. The samples were obtained from a number of monitor wells for selected organic, inorganic and bacteriological analyses.

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In Maryland an underground gasoline storage tank had leaked into the subsurface which was located in an urban downtown area. Mr. Belan as the principal investigator conducted an on-site visit and data review to confirm the nature and amount of the gasoline leak, assess the impact on the local hydrogeological setting, and possible safety implications. The results were documented along with recommendations for further evaluation of the leak.

A commercial client in southern California requested a geological evaluation of 10 inactive hazardous waste pits. Mr. Belan as the geological and safety task leader provided the coordination of coring activities through the waste bodies. This included obtaining soil, waste and air samples for chemical analyses from 10 coreholes. Full personnel protective clothing and respirator equipment were required for these activities.

Mr. Belan conducted field investigations of various hazardous waste sites at Kelly and Tinker Air Force Bases in Texas and Oklahoma, respectively. These efforts, as part of the Air Force's Installation Restoration Program (IRP), entail the installtion of monitoring wells and hazardous waste site soil sampling for chemical analysis. The results were used to define the site hydrogeology and waste site impacts, if any, on the local groundwater system.

Mr. Belan is the hydrogeological project director for an Installation Restoration Program investigating four hazardous waste disposal sites at Hill Air Force Base, Utah. The field phase entailed the direction of the investigation efforts for monitor well installation and completion, soil and groundwater sampling, geophysical resistivity surveys and chemical analysis coordination. The results of this effort were to determine the nature and extent of groundwater contamination and define the local hydrogeology.

As part of a remedial actions assessment of the McColl hazardous waste site in California, he conducted the conceptual design and evaluation of a slurry trench wall system. Containment wall materials were selected for laboratory testing. Additional wall materials and installation costing, survivability, and suitability were evaluated. Prior investigation at the site entailed the coordination and supervision of the air rotary drilling and casing drive completion of a 270-foot monitoring well. This upgradient well was drilled in difficult caving formations. The successful completion of this well permitted the location of a final downgradient monitoring well for the client.

Mr. Belan conducted, as part of a remedial actions assessment of the Lipari Superfund site in New Jersey, the conceptual design and costing of a dewatering system. This included an impact assessment of the formations dewatering on a slurry trench cutoff wall. The results of this evaluation provided discharge information for a groundwater treatability study.

He worked on three Environmental Protection Agency Superfund projects. Two projects entailed the hydrogeological evaluations of hazardous waste sites in Louisiana and New Jersey with the results developing and supporting site

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remedial measures activities. The third EPA Superfund activity was the evaluation of a new potential waste isolation technology which had been tested. The test attempted to isolate a large block of soil by slurry injection at depth areally and vertically using a patented process. Mr. Belan supervised the site investigation for determining the success of the technique to isolate the soil block. This entailed directing a geophysical survey, and confirmation soil borings to determine the soil isolation success of the test and report documentation.

In the area of solid waste management, Mr. Belan coordinated, supervised, and documented the disposal of fluidized bed combustion byproducts from a synfuels experiment sponsored by the Environmental Protection Agency. This project entailed the coordination with local agencies for the disposal at an appropriate landfill, and hydration of the wastes to neutralize its exothermic reaction prior to disposal.

Mr. Belan was instrumental in providing a hydrogeological assessment of an inactive hazardous waste site in south central New York. The site is listed by EPA as a priority site for action under Superfund. The result of the assessment was the design and costing of a monitoring well program for the client.

As the environmental baseline task leader and geological/hydrogeological team member, Mr. Belan coordinated, developed and identified environmental constraints or issues for a New Mexico Synfuels Project Feasibility Study. Analysis for this study for an industrial client permitted enumeration of groundwater and surface-water environmental issues associated with two in-mine and two plant sites disposal of hazardous/nonhazardous solid waste from a synfuels plant. The results of the study summarized the regional and site-specific geology, groundwater and surface-water. The study identified mine and plant environmental constraint areas concerning solid and liquid waste disposal and also described the waste disposal options as to which mine or plant sites the solid waste should go.

Mr. Belan conducted as part of a geothermal feasibility study a hydrogeological assessment of two aquifers for potential utilization for each of four U.S. military bases which are located in the vicinity of San Antonio, Texas. This entailed the development of conceptual well depths, productivity estimates, static water levels, water temperatures and water quality. These data were used to support benefit/cost analyses of a total geothermal systems package that included costs of well completion and production, heat extraction systems and projected heat demands.

He completed a state-of-the-art review of geopressured/geothermal fluids disposal technologies and environmental problems associated with the disposal techniques for the Texas Energy and Natural Resources Advisory Council (TENRAC). The two primary disposal methods reviewed were injection wells and

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surface discharge. From this study, Mr. Belan developed areas of geopressured/geothermal fluids gaps to commercialization. This review and subsequent recommendations provided TENRAC with a means to evaluate Texas geothermal/geopressured development especially towards commercialization and of potential technology areas that merit further study with public funds.

Mr. Belan conducted a preliminary assessment of the feasibility of utilizing a deep injection well for disposal of hazardous waste fluids from a prospective lignite gasification plant in East Texas. This entailed identifying aquifer parameters and computing long-term injection affects in order to assess two candidate aquifers for potential injection horizons.

As a staff hydrogeologist at Radian, Mr. Belan has experience in a wide range of groundwater sampling and analysis efforts. He was the field task leader and hydrogeological analyst for an environmental constraint study of a Lurgi coal gasification plant in East Texas. The study was to be the basis of a solid waste management plan for the plant site and the selection of a solid waste disposal site. It provided the client with supporting information to be used in obtaining state permits. Mr. Belan was the task leader for coordinating the air quality, ecology, surface water, and cultural impact portions of the reports, and developing future site-specific environmental studies requirements.

Mr. Belan analyzed aquifer testing methods and parameter data for an in-situ coal gasification project in Wyoming providing regional and vertical characteristics of the coal and overburden aquifers. The results became part of a relicensing application prepared for the U.S. Department of Energy, Laramie, Wyoming.

At refinery waste disposal sites in the area of Kenai, Alaska, Mr. Belan conducted a hydrogeological evaluation. This entailed the field supervision and interpretation of the drilling, geologic sampling, construction, and groundwater sampling of monitor wells in and around the disposal sites. The data obtained was used to define the local groundwater systems, subsurface geology, and establish if any groundwater contamination had occurred.

Mr. Belan directed and conducted the production and injection testing of two geothermal wells at Navarro College, Corsicana, Texas; one well was to supply geothermal fluid for heat extraction and the other will be used for disposal of the same fluid. He analyzed the test data for well performance, and aquifer parameters; providing a report and recommendations before final geothermal system design.

Mr. Belan, at Radian, conducted an impact assessment of groundwater availability and development quantitatively and qualitatively for a proposed petrochemical complex near the Texas Gulf Coast. His work involved developing

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a hypothetical well field for producing 6,900 gallons per minute and assessing the groundwater effects with time for varying aquifer conditions. Mr. Belan analyzed the local groundwater qualities to establish present baselines and if sufficient quality plant water could be available for use by the proposed plant.

He assisted in the preparation of the geology and groundwater hydrology sections of an Environmental Information Document for a proposed lignite mine in East Texas. He worked extensively on the supervision of the drilling, electrical logging, sampling, and construction of the test and monitor wells associated with this program with his former employer and, presently, with Radian prepared the study results for inclusion into the report.

As a groundwater hydrologist with W. F. Guyton and Associates, Mr. Belan provided hydrogeological field support for an overland liquid disposal facility for a client in Louisiana. In order to define the hydrogeology in and around the disposal facility, Mr. Belan provided the field supervision and interpretation of the mud rotary drilling, logging, completion, development, and groundwater sampling of a series of monitor wells. This information aided in defining what impacts, if any, the overland disposal would have on the local groundwater system.

Also while Mr. Belan was working for W. F. Guyton and Associates, his varied field tasks took him to Arizona, Nevada, and Texas. He assisted three large utility power companies in the field supervision of the drilling, geophysical logging, construction, pump and aquifer testing, and water quality sampling of over twenty large production water wells along with a number of observation wells. These wells were drilled on the different jobs by cable tool, mud rotary, and reverse drilling methods. These activities were summarized in well completion reports.

Mr. Belan completed with Mr. Guyton an in-depth analysis of the hydrogeology of the property of Texas Electric Service Company for Texas Utilities Services, Inc. for a prospective water supply, along with a well inventory of property outside the client's area of interest. During this study proposed water well field proposal consisting of 38 production water wells for a projected new electrical generating station. This study included estimated pumping rates, depths of wells, and estimated initial water quality for the well field.

As an officer in the United Stated Army stationed in West Germany in 1975, Mr. Belan initiated, developed and provided Environmental Impact Assessments (EIA) for the U.S. Frankfurt Military Community, and initiated research for 44 U.S. military installations throughout West Germany, which were to be included in the Frankfurt Master Plan. These studies were to define the environmental problems, if any, of the military installations for remedial measures planning

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and budgeting. His earlier duties included terrain/soils trafficability studies and weather analysis, and the supervision, evaluation, and distribution of tactical information.

As a Graduate Research Assistant in the Department of Soils, Water and Engineering at the University of Arizona, Mr. Belan was responsible for the planning, research, development, and quantifying of Mountain Front Recharge of the Tucson Santa Catalina Mountains under the supervision of his thesis director. The results of the study were published in an Arizona Water Resources periodical.

HONORARY AND PROFESSIONAL SOCIETIES:

Certified Professional Geological Scientist (American Institute of Professional Geologists), Technical Division National Water Well Association, Society of Petroleum Engineers, Sigma Gamma Epsilon Geology Honorary.

PUBLICATIONS/REPORTS:

Pearce, E.W., et al. Installation Restoration Program, McClellan AFB, California, Phase II, Stage 2-1, Radian Corporation, Austin, Texas, 1984 (Task leader for off base hydrogeological evaluation).

Radian Staff, Installation Restoration Program, Phase II, Stage 1, Field Evaluation, Kelly AFB, Texas, Radian Corporation, Austin, Texas, 1984.

Radian Staff, Installation Restoration Program, Phase IIB, Field Evaluation, Tinker AFB, Oklahoma, Radian Corporation, Austin, Texas, 1984.

Belan, R.A., Summary of CCSC Site Visit and Findings, Vicinity of Baltimore, Maryland, Radian Corporation, Austin, Texas, 1984 (Principal investigator).

Radian Staff, Summary of February 1984 Groundwater Sampling and Analytical Results, Radian Corporation, Austin, Texas, 1984 (Project director).

Radian Staff, Summary of March, 1984, Groundwater Sampling and Analytical Results, Radian Corporation, 1984 (Project director).

Belan, R.A., S.D. Lessley and H.P. Ross, Hill AFB, Utah, Installation Restoration Program, Phase IIB, IRP Survey - Final Report, UBTL Division of University of Utah Research Institute, Salt Lake City, Utah, 1984 (Project director for hydrogeological investigation).

Belan, R.A., Summary of Extended Water Level and Oil Thickness Measurement Program Vicinity of Chemical Disposal Pits Nos. 1 and 2 Hill AFB, Utah, Radian Corporation, Austin, TX, 1984.

Rick A. Belan

Belan, R.A., Hill Air Force Base, Utah Installation Restoration Program Phase II Hydrogeological Field Investigation, Volumes I, II, and III Draft Report, Radian Corporation, Austin, TX, 1983.

Belan, R.A., W.M. Little, and R. Glaccum, Geophysical and Soil Boring Field Test Evaluation of Block Displacement Method, Whitehouse, Florida, Radian Corporation, Austin, TX, and Technos, Inc., Miami, FL (Published and presented paper at National Water Well Association Technical Conference, St. Louis, MO, 1983).

Stein, N.P., et al., Treatability Study of Contaminated Ground Water from the Lipari Landfill, Pitman, New Jersey - Draft Report, Radian Corporation, 1983 (Developed the hydrology assessment section on the remedial action impacts and costs of a dewatering system).

Belan, R.A., W.M. Little, and R. Glaccum, Draft Report Foster-Miller Test Site Evaluation, Radian Corporation, Austin, TX, and Technos, Inc., Miami, FL, 1982.

Radian Staff, Remedial Action Alternatives for the McColl Site, Fullerton, California, Radian Corporation, Austin, TX, 1983 (Conducted the remedial action assessment and materials selection for a slurry trench wall system).

Radian Staff, Geothermal Resource Evaluation in the Area of Coso Hot Springs KGRA (exact title client confidential), Radian Corporation, Austin, TX, 1983 (Evaluated geothermal reservoir testing results).

Radian Staff, Technical Review of Reports on Two Hazardous Waste Sites Near Baton Rouge, Louisiana, Austin, TX, 1982 (Developed report evaluation criteria and reviewed reports on hydrogeological investigation results.)

Ajmera, K.T., W.F. Holland, N.P. Stein, R.A. Belan, and L.J. Holcombe, A Report on Waste Disposal/Hydrology Study New Mexico Synfuels Project, Radian Corporation, Austin, TX, 1982 (Environmental task leader, document editior, authored activity impacts and hydrogeological sections).

Belan, R.A., J.C. Lippe, and J.P. Rossi, An Overview of Regional Geology and Hydrology for Solid Waste Disposal Study, Radian Corporation, Austin, TX, 1982 (Environmental task leader and authored geological and ground-water sections and document editor).

Radian Staff, Volume I Final Report Life Cycle Cost-Effectiveness Studies for Direct Utilization of Geothermal Energy at Four Military Installations in South-Central Texas, Austin, TX, 1982 (Authored hydrogeological parameter development and environmental considerations).

Rick A. Belan

Belan, R.A., K.T. Ajmera, An Overview of Earth Resistivity Surveys - Technical Memorandum, Radian Corporation, Austin, TX, 1982.

Belan, R.A., Technical Note, ETSP Soil Samples for Attenuation Capacity Analysis, Radian Corporation, Austin, TX, 1981.

Belan, R.A. and K.T. Ajmera, Technical Note, ETSP Preliminary Geotechnical and Surface Water SWMP Related Field Studies and Preliminary Layout of Solid Waste Disposal Site, Radian Corporation, Austin, TX, 1981.

Belan, R.A. and A.F. Ferguson, Geothermal Injection and Production Well Test Results: Project Title - Water and Space Heating for a College and Hospital by Utilizing Geothermal Energy, Radian Corporation, Austin, TX, 1981.

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Belan, R.A., et al., Summary of Findings for the Fatal Flaw Assessment of the Northern Area, Radian Corporation, Austin, TX, 1981.

Belan, R.A. et al., Technical Note, Environmental Constraint Screening of Mine Property and Surrounding Areas for Solid Waste Disposal Siting near Troup, Texas, (Environmental section Task Leader and authored ground-water section), Radian Corporation, Austin, TX, 1981.

Radian Staff, Relicensing Application - Hanna Experimental In-situ Coal Gasification Project, Hanna, Wyoming, (Provided analysis of supplied aquifer parameter values pertaining to regional and vertical distributions and ranges of applicability), Radian Corporation, Austin, TX, 1981.

Radian Staff, Compilation of Environmental Information for a Proposed Olefins Complex, Brazoria County, Texas, (Author of ground-water baseline and development), Austin, TX, 1981.

Radian Staff, Evaluation of Hydrogeology and Waste Management Options at Tesoro Alaska Petroleum Company's Kenai, Alaska Refinery, (Author of hydrogeology section), Austin, TX, 1980.

Guyton, W.F., R.A. Belan, and W. Stevens, Report on the Ground-Water Availability for Prospective Coal-Fueled Electric Generating Station in Ward County, Texas, W. F. Guyton and Associates, Austin, TX.

R.A. Belan authored a number of Environmental Impact Assessments for U.S. Military Installations for the Department of the Army, Federal Republic of Germany.

PETER ALEXANDER WATERREUS

EDUCATION:

B.S., Geology, The University of Texas at San Antonio, San Antonio, TX, 1984.

EXPERIENCE:

Geologist, Radian Corporation, Austin, TX, 1984-Present.

Mud Logger, Precision Well Logging, Houston, TX, 1984.

FIELDS OF EXPERIENCE:

Mr. Waterreus is currently involved in the investigation and determination of a JP-4 fuel leak from existing underground pipelines at Bergstrom AFB, Austin, Texas. As supervising geologist, activities include safety supervision, logging borings, collection of soil samples, installation of monitor wells, collection of water samples, and reporting.

Mr. Waterrus also is currently involved in the investigation of hazardous waste contamination at Sheppard AFB, Wichita Falls, Texas. As a supervising geologist, activities include safety supervision, logging borings, collection of soil samples, installation of monitor wells, collection of water samples, monitoring possible types of contamination by use of a photo-ionizer and drager tubes, and reporting.

Mr. Waterreus was involved in the investigation of environmental impact related to gas and oil production in the Big Thicket area of East Texas. Activities includes delineation and mapping of active and non-active gas and oil well sites as well as damaged areas outside the site area.

At Precision Well Logging, he performed analyses of rock cuttings with respect to lithology and oil content as well as gas monitoring and identification.

He has also been involved in field mapping and property investigation in Uvalde County, Texas.

PUBLICATIONS:

Waterreus, P.A. and R.A. Wooster, "A Feasibility Study of Inducing Artificial Recharge to the Edwards Aquifer by Diversion of Floodwaters in Uvalde County, Texas," on record at the Edwards Underground Water District, San Antonio, Texas.

HONORARY AND PROFESSIONAL SOCIETIES:

Geologic Society of America.
Association of Ground Water Scientists and Engineers.

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KEVIN L. ZONANA

EDUCATION:

Presently pursuing M.A., Geography (Remote Sensing), The University of Texas at Austin.

B.S., Geology, The University of Texas at Austin, 1982.

EXPERIENCE:

Cartographer, Research Assistant, Engineering and Environmental Analysis Division, Radian Corporation, Austin, TX, 1984-Present.

Teaching Assistant, Austin Community College, Austin, TX, 1981-Present.

Lab Research Assistant, Bureau of Economic Geology, Well Sample Core Library, Balcones Research Center, Austin, TX, September-November 1984.

Student Assistant, Department of Geological Sciences, The University of Texas at Austin, September-December 1982.

Geology Field Assistant, Durango, CO, Summer 1980.

FIELDS OF EXPERIENCE:

At Radian, Mr. Zonana assists in producing maps, coordinating graphics, and researching various topics for the Engineering and Environmental Analysis Division. He has been responsible for work in the following projects:

- Draft maps of oil and gas development features within the Big Thicket National Preserve for the National Park Service;
- Draft a series of locator maps for Radian offices in Salt Lake City, Utah, and Sacramento and Santa Barbara, California;
- Develop a series of figures used as illustrations in a manual for the Civil Engineering Department of Kelly AFB, Texas for a Storm Sewer Inflow Study;
- Create base and thematic maps for Air Force Installation Restoration Programs (Phase I and Phase II) for the following locations: Kelly AFB, Texas; Bergstrom AFB, Texas; Cannon AFB, New Mexico; Tinker AFB, Oklahoma; Carswell AFB, Texas; Sheppard AFB, Texas;
- Prepare research material from Texas Air Control Board files for confidential clients.

Kevin L. Zonana

At the Austin Community College Mr. Zonana works as a Geology Teaching Assistant. He is responsible for preparation, teaching, testing, and grading of all lab materials for courses in physical and historical geology.

While with the Bureau of Economic Geology, Mr. Zonana worked in the Well Sample Core Library where he prepared well core samples for study and admission to library collection.

As a student assistant to University of Texas geology professors, Mr. Zonana drafted geologic maps, charts, and illustrations for reports on depositional systems. He also performed administrative duties in the Geology Graduate Admissions Office.

As a geology field assistant to Dr. R.H. Blodgett of Ohio State University, Mr. Zonana's duties included all aspects of field work. He was specifically responsible for measuring and describing stratigraphic sections, and drilling oriented core samples for paleo magnetic analysis.

JILL P. ROSSI

EDUCATION:

B.A. Geography, The University of Minnesota at Minneapolis, 1972.

EXPERIENCE:

Geographer, Cartographer, Policy and Environmental Analysis Division, Radian Corporation, Austin, TX, 1980-Present.

Drafting and Graphics Assistant, Dam Safety Unit, Texas Department of Water Resources, Austin, TX, 1979-1980.

Cartographer, Continental Map Inc., Austin, TX, 1978-1979.

Teaching Assistant, University College-Geology, University of Minnesota at Minneapolis, 1972.

FIELDS OF EXPERIENCE:

At Radian, Ms. Rossi is responsible for producing maps and coordinating graphics for the Environmental Analysis Division. She utilizes data from a variety of technical disciplines (geology, hydrology, noise and air monitoring, sociology, soils, and hydrogeology) to create maps which clearly and concisely illustrate the written text. Ms. Rossi has been responsible for work in the following projects:

- Develop base maps and coordinate graphics throughout an Environmental Impact Statement prepared for the U.S. Bureau of Land Management for a central Texas lignite mine;
- Develop color overlay method of mapping for site selection process of commercial waste disposal sites in Texas and southeastern Oklahoma;
- Develop a series of figures used as illustrations in a manual for the Environmental Protection Agency on Remedial Actions at Uncontrolled Hazardous Waste Sites:
- Draft maps and coordinate the graphics for an Environmental Impact Statement for a synfuels plant in Tennessee;
- Create base and thematic maps for Air Force Installation Restoration Programs (Phase I and Phase II) for the following locations: Kelly AFB, Texas; Hill AFB, Utah; Bergstrom AFB, Texas; Cannon AFB, New Mexico; England AFB, Louisiana; Tinker AFB, Oklahoma; and Reese AFB, Texas; Carswell AFB, Texas; Sheppard AFB, Texas;

Jill P. Rossi

- Map limestone deposits, lime plants, and limestone quarries in the United States by county in a series of regional maps for the Electric Power Research Institute;
- Map compliance/non-compliance with air pollution standards for all counties in the United States in a series of EPA regional maps;
- Map concentrations of selected air pollutants in the El Paso, Texas, area for a Texas Air Control Board study in a series of quarterly and annual reports;
- Prepare aerial photography history of a wood preserving plant for a commercial client which included extensive research of available aerial photography and interpretation of those photos to determine historical features of interest;
- Prepare complex permitting schedules for proposed mines, energy facilities, and hazardous waste handling facilities;
- Preparation of base and thematic maps for various feasibility studies, fatal flaw analyses, Environmental Information Documents, and Environmental Impact Statements;
- Identify, field verify, and map oil and gas development features within the Big Thicket National Preserve for the National Park Service; and
- Research of available map resources, aerial photography, remote sensing products, and mapping technologies as required by individual client needs.

While with the Texas Department of Water Resources, Ms. Rossi worked in the graphics section of the Dam Safety Unit, a federal grant program. She prepared maps and exhibits, and laid out phototypset text into camera-ready form according to standards, developed with her assistance, for the technical reports written by the engineering section.

During her employment with Continental Map Incorporated, Ms. Rossi was involved in all phases of four color map production. These included source information procurement and classification, imaging of base maps, scribing plates, cutting specialties, sizing and adhering type, designing customer copy panels, indexing streets and points of interest, photo-lab contact reproducing of base plates, and the final compositing of the four negative plates to be sent to the printer. These maps included large metroplex areas, counties, enlarged downtown sections, and simplified principle city thoroughfares.

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Jill P. Rossi

While employed by the University of Minnesota as a Geology Teaching Assistant, Ms. Rossi taught geology laboratory sessions, prepared geology lab work materials, tutored students, and assisted the professors by preparing classroom presentations and grading and proctoring exams.

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APPENDIX L

GEOPHYSICAL TRACINGS

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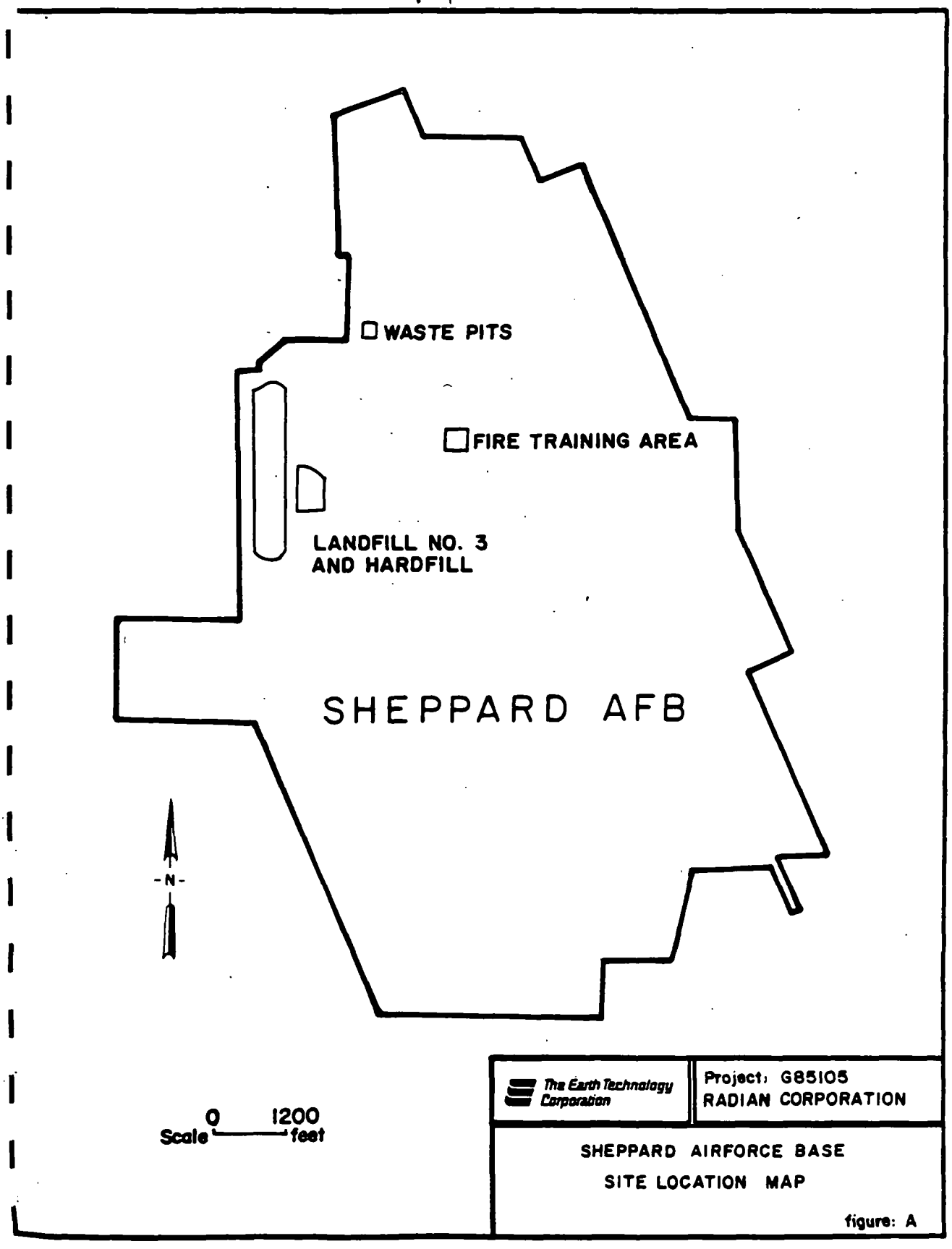
WASTE PITS
FIRE TRAINING AREA
LANDFILL NO. 3
AND HARDFILL
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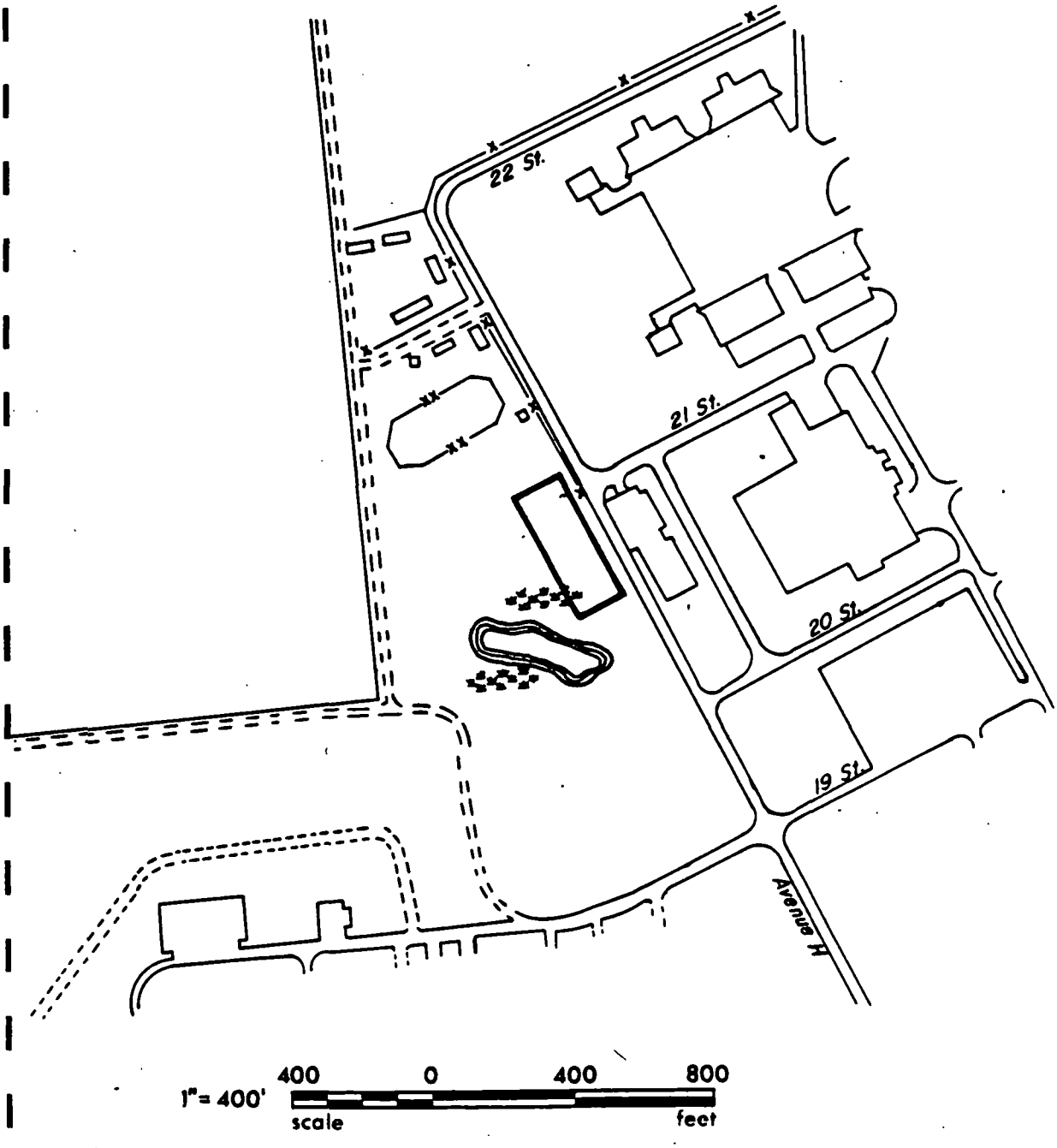
Project: G85105
RADIAN CORPORATION
SHEPPARD AIRFORCE BASE
SITE LOCATION MAP
figure: A



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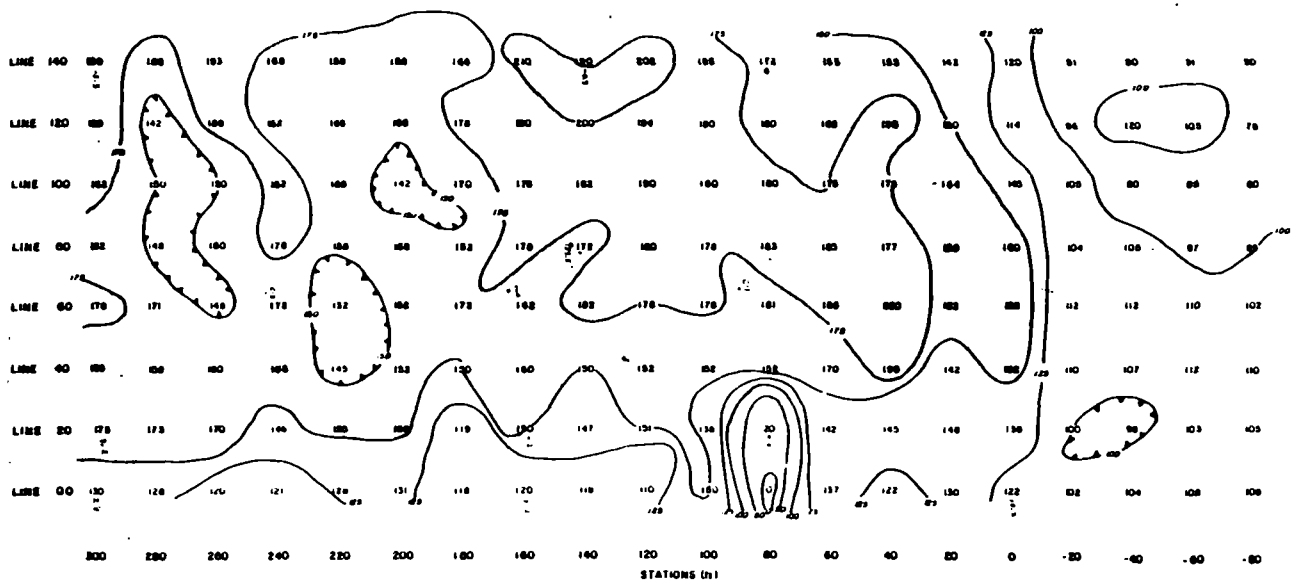
SHEPPARD AIRFORCE BASE

WASTE PITS AREA
GRID LOCATION MAP

figure: 1-1



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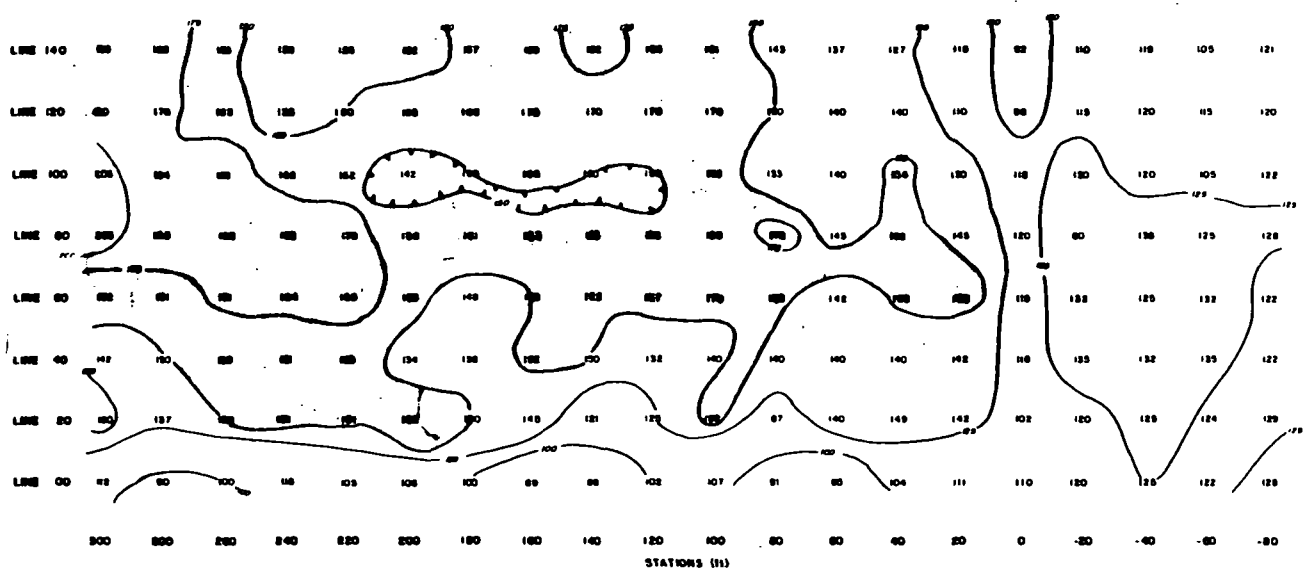
SHEPPARD AIRFORCE BASE
WASTE PIT AREA
EM-31 VERTICAL DIPOLE

Figure 1-2



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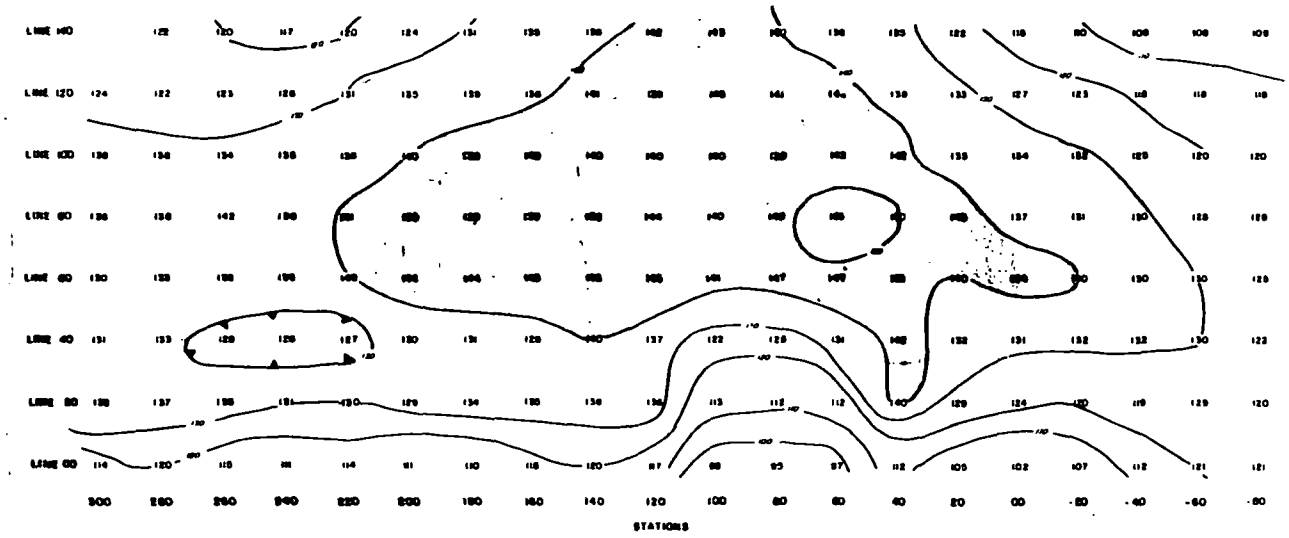
Project 085105
RADIAN CORPORATION

SHEPPARD AIRFORCE BASE
WASTE PIT AREA
EM-31 HORIZONAL DIPOLE

Figure 1-3



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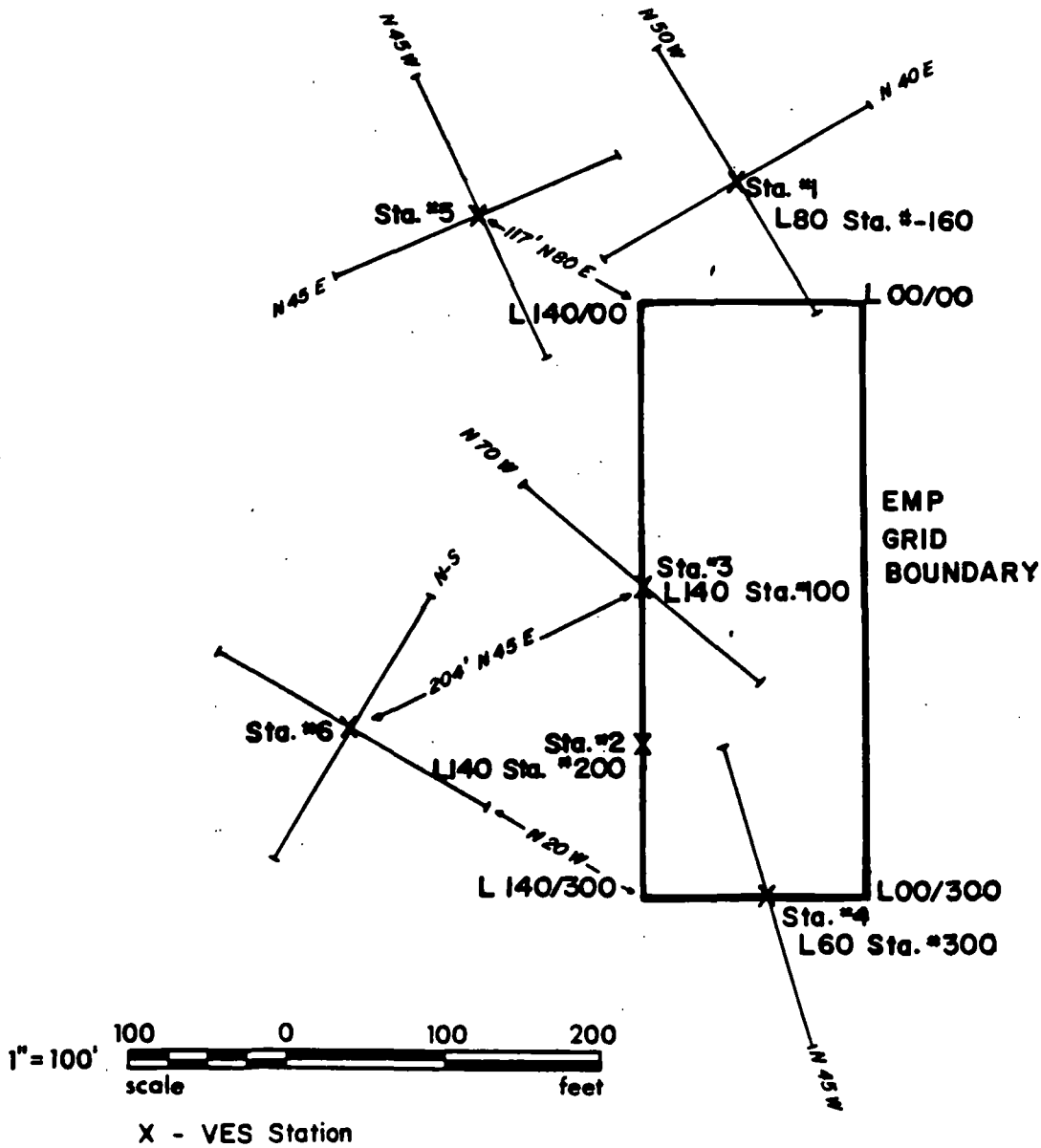
Project 68505

RADIAN CORPORATION

SHEPPARD AIRFORCE BASE
WASTE PIT AREA
EM-34, 20 meter

figure 1-4



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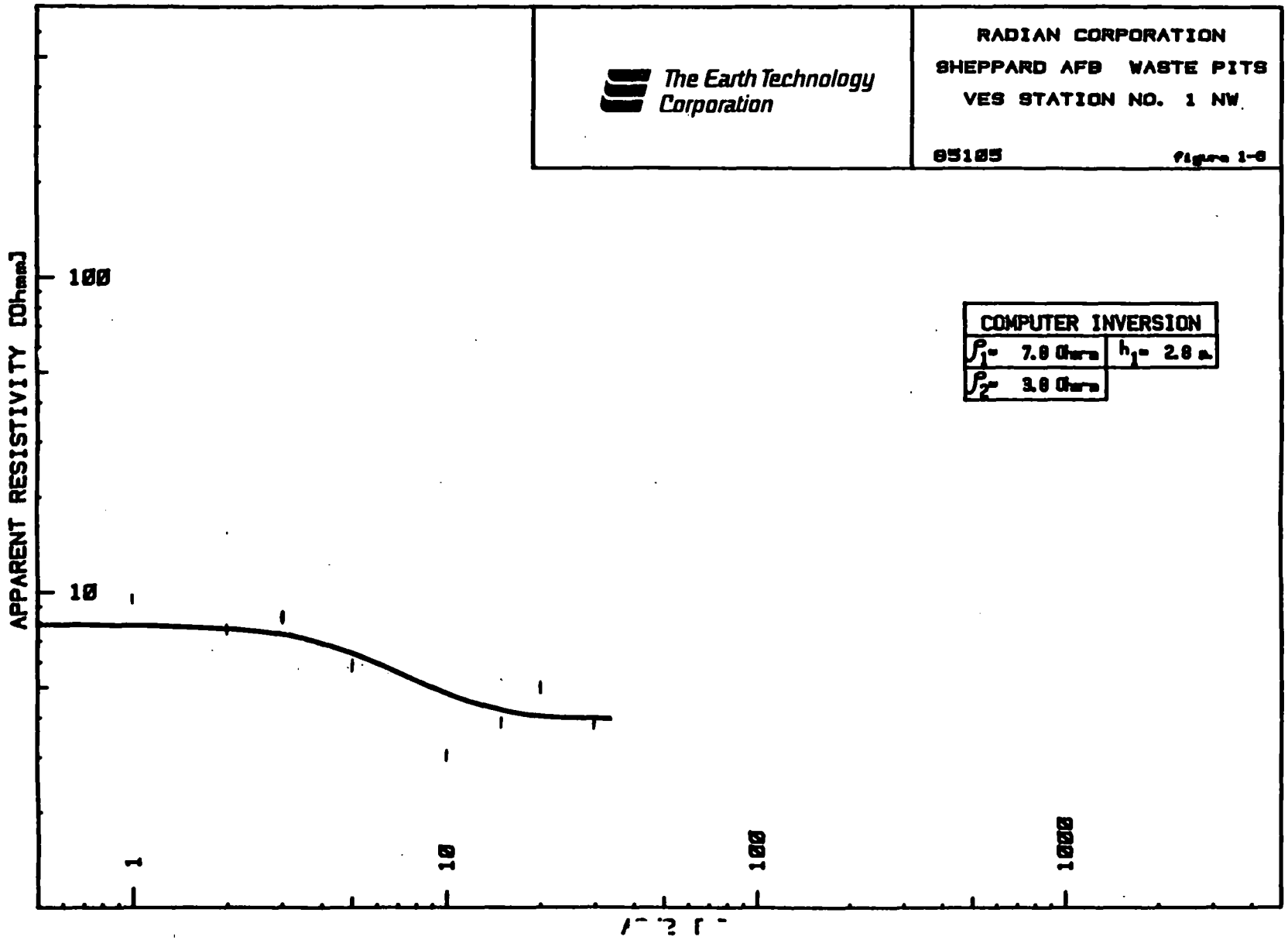
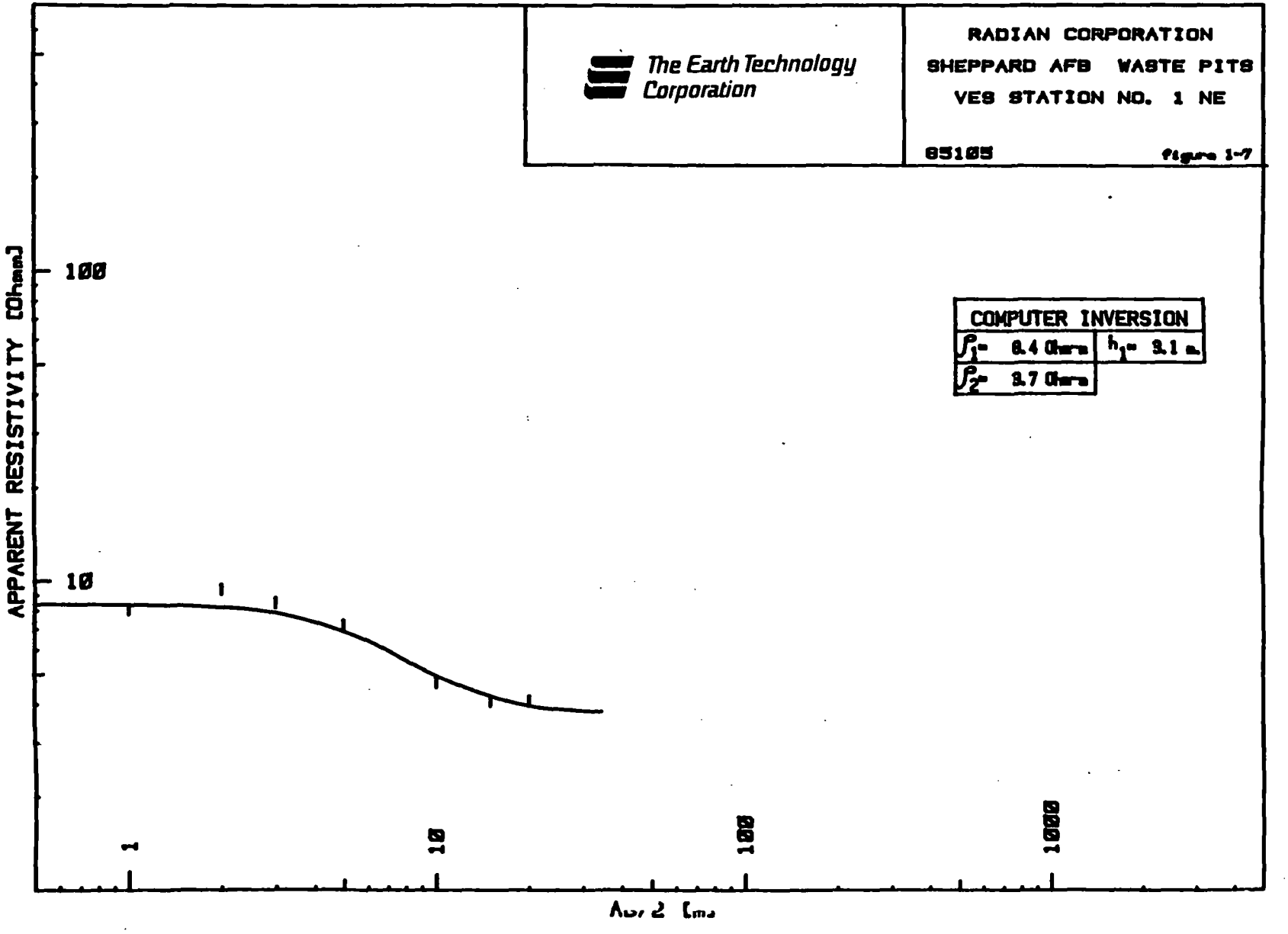
Project: G85105
RADIAN CORPORATION

SHEPPARD AIRFORCE BASE

WASTE PIT AREA
VES STATION LOCATIONS

figure: 1-5


The Earth Technology Corporation
RADIAN CORPORATION
SHEPPARD AFB WASTE PITS
VES STATION NO. 1 NW
85105
Figure 1-8
COMPUTER INVERSION
ρ_1= 7.0 Ohm-m
h_1= 2.8 m
ρ_2= 3.0 Ohm-m
APPARENT RESISTIVITY [Ohm-m]
100
10
1
10
100
1000


The Earth Technology Corporation
RADIAN CORPORATION
SHEPPARD AFB WASTE PITS
VES STATION NO. 1 NE
85105
Figure 1-7
COMPUTER INVERSION
ρ_1= 8.4 Ohm-m
h_1= 3.1 m
ρ_2= 3.7 Ohm-m
APPARENT RESISTIVITY [Ohm-m]
100
10
1
10
100
1000
AB/2 [m]

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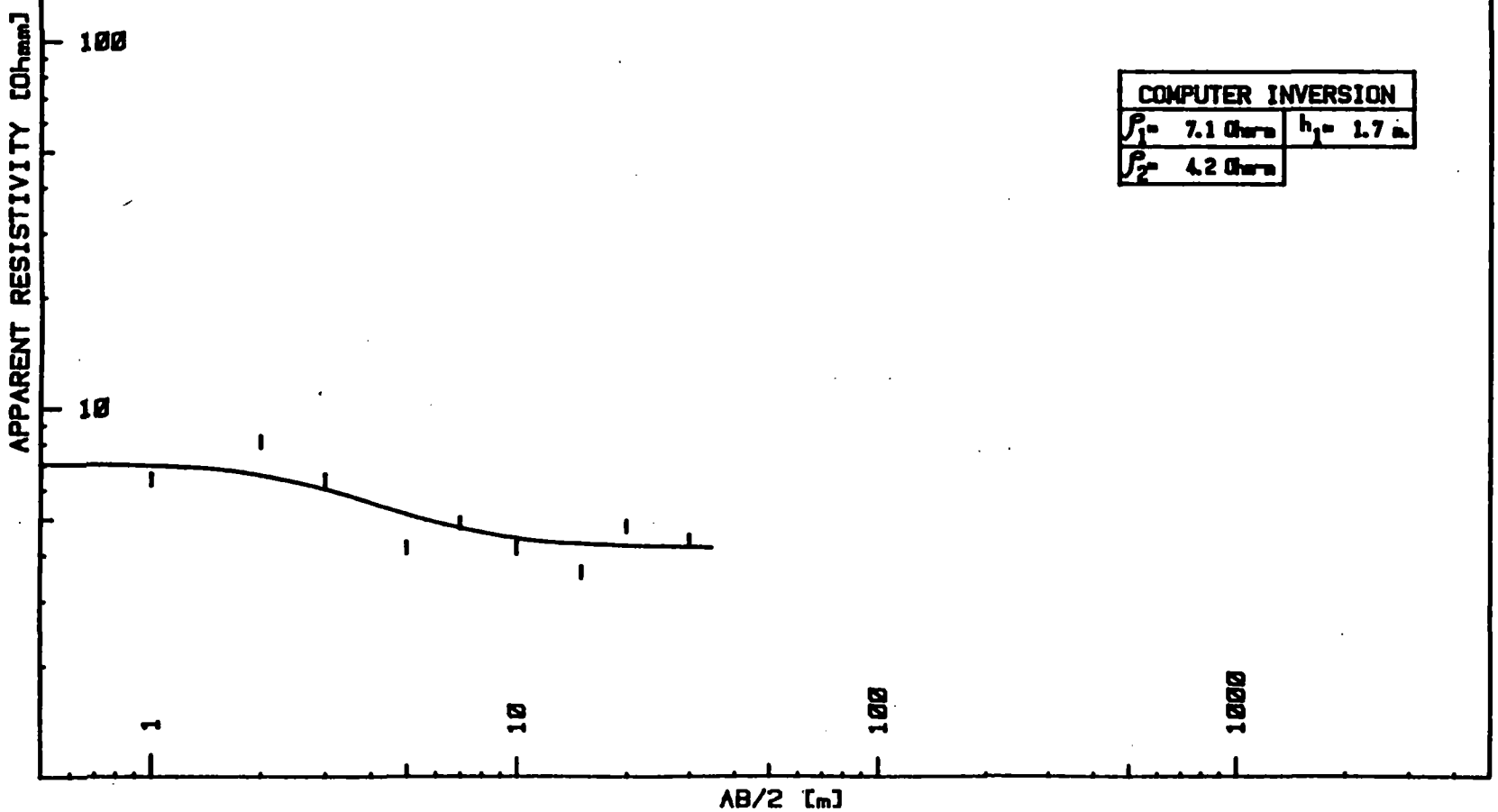
RADIAN CORPORATION
SHEPPARD AFB WASTE PITS
VES STATION NO. 2

85105 Figure 1-6



COMPUTER INVERSION	
ρ_1= 7.1 Ohm-m	h_1= 1.7 m.
ρ_2= 4.2 Ohm-m	

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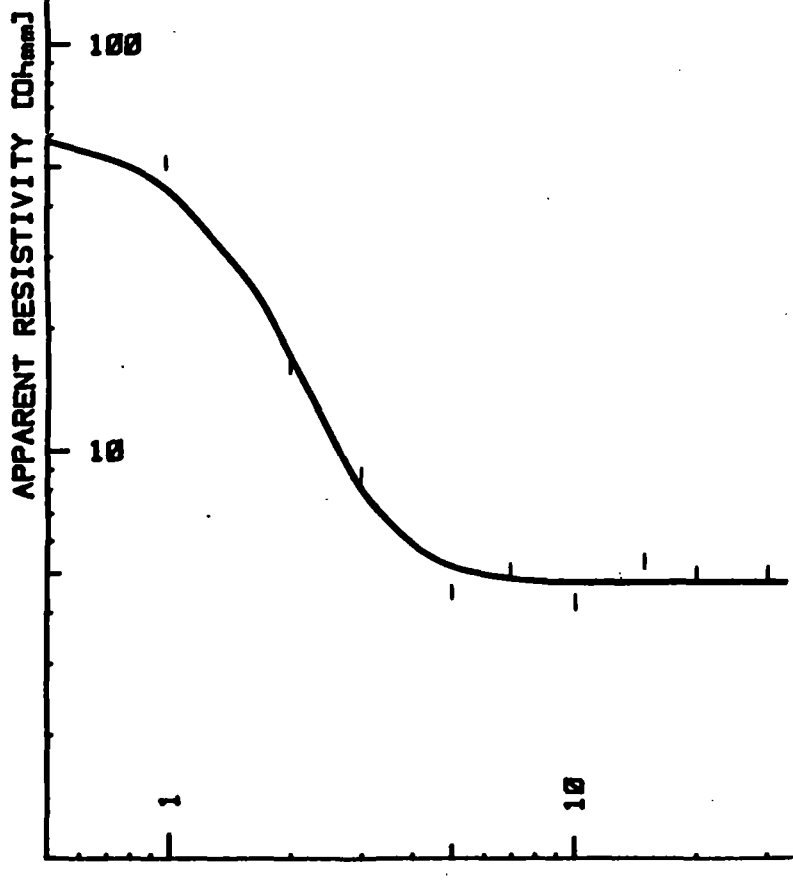
RADIAN CORPORATION
SHEPPARD AFB WASTE PITS
VES STATION NO. 3

85105 Figure 1-6



COMPUTER INVERSION	
ρ_1= 61.2 Ohm-m	h_1= .7 m
ρ_2= 4.7 Ohm-m	

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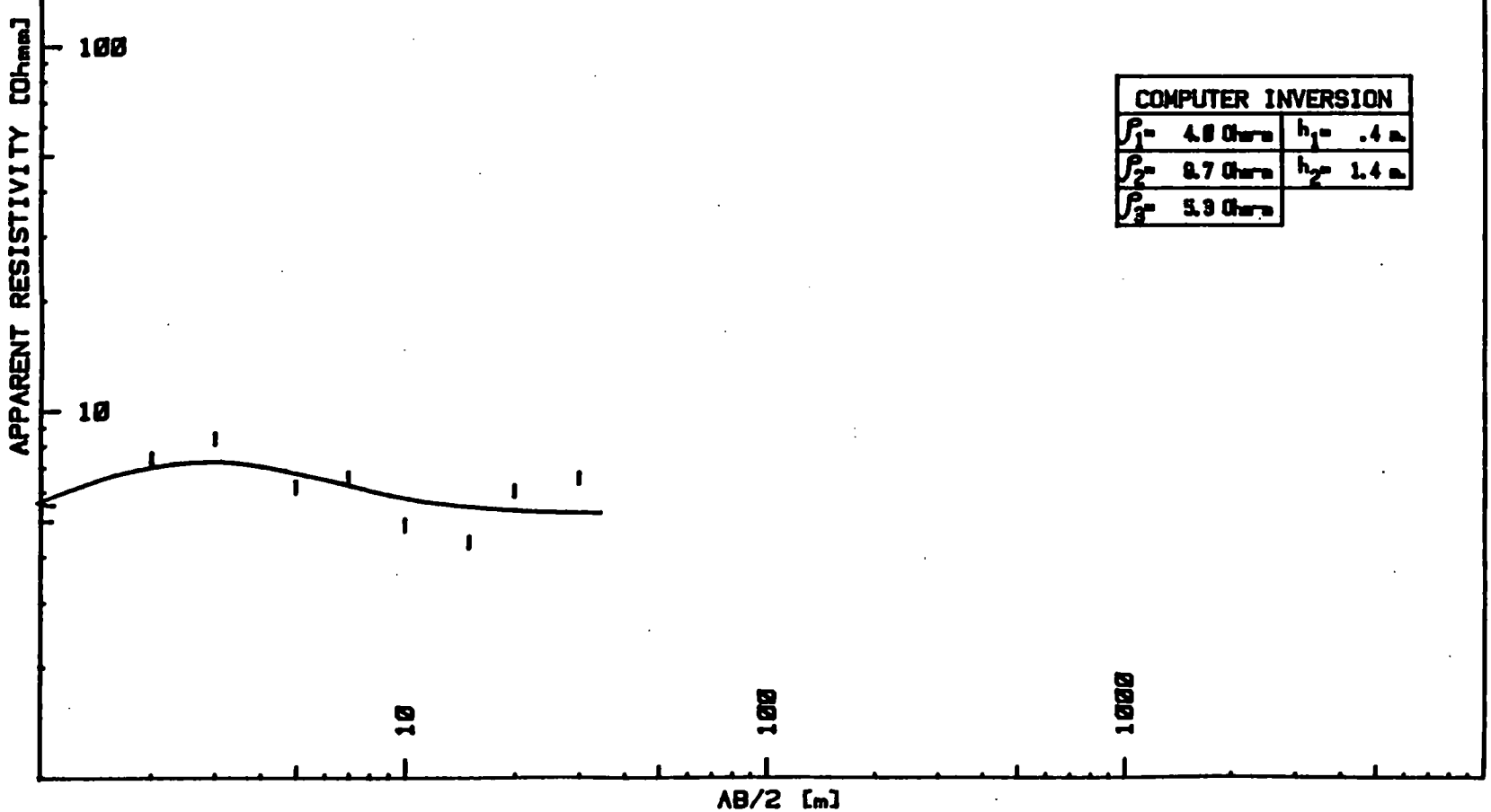
SHEPPARD AFB WASTE PITS
VES STATION NO. 4

85105 Figure 1-18



COMPUTER INVERSION	
ρ_1= 4.8 Ohm-m	h_1= .4 m
ρ_2= 8.7 Ohm-m	h_2= 1.4 m
ρ_3= 5.3 Ohm-m	

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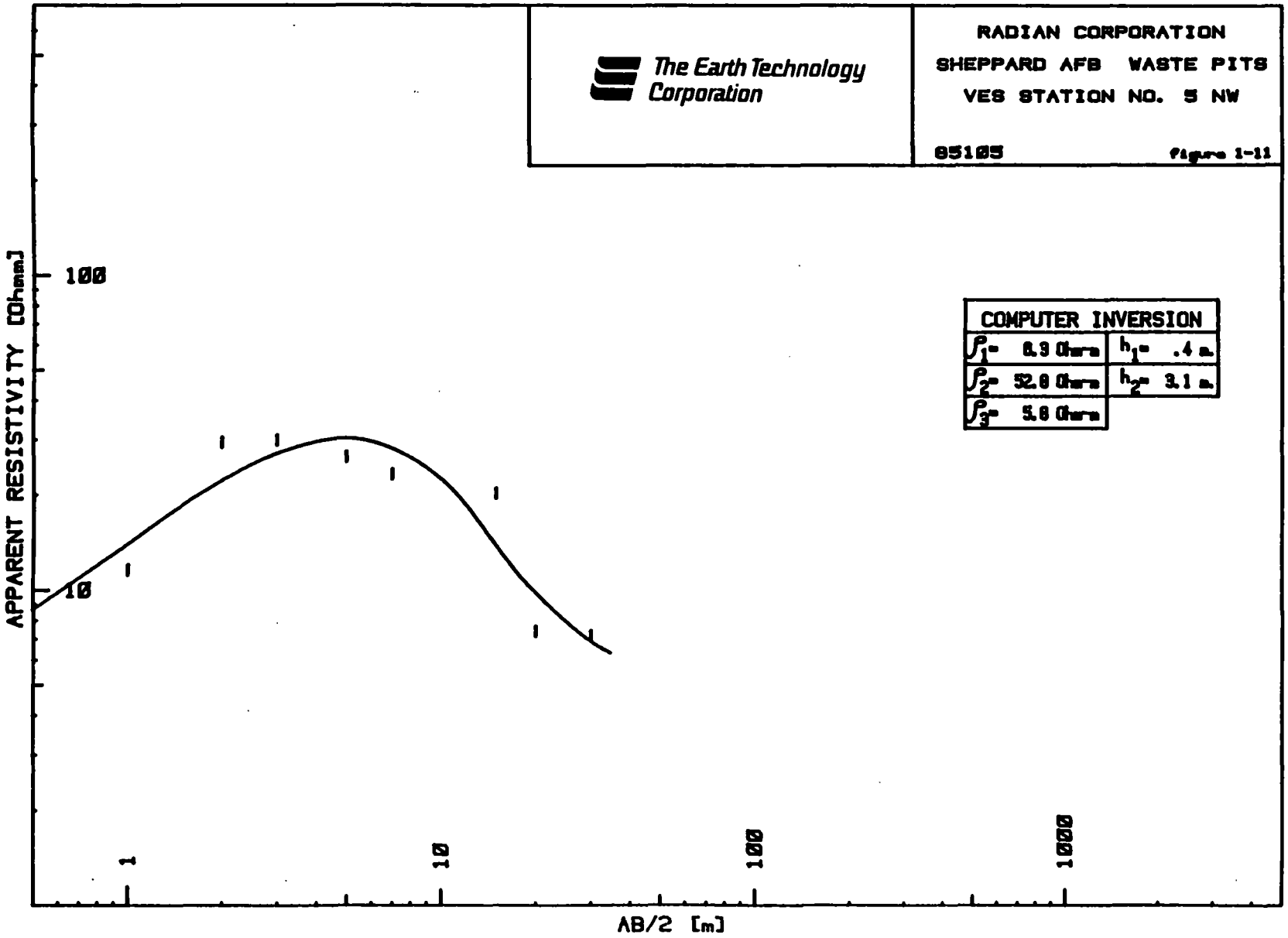
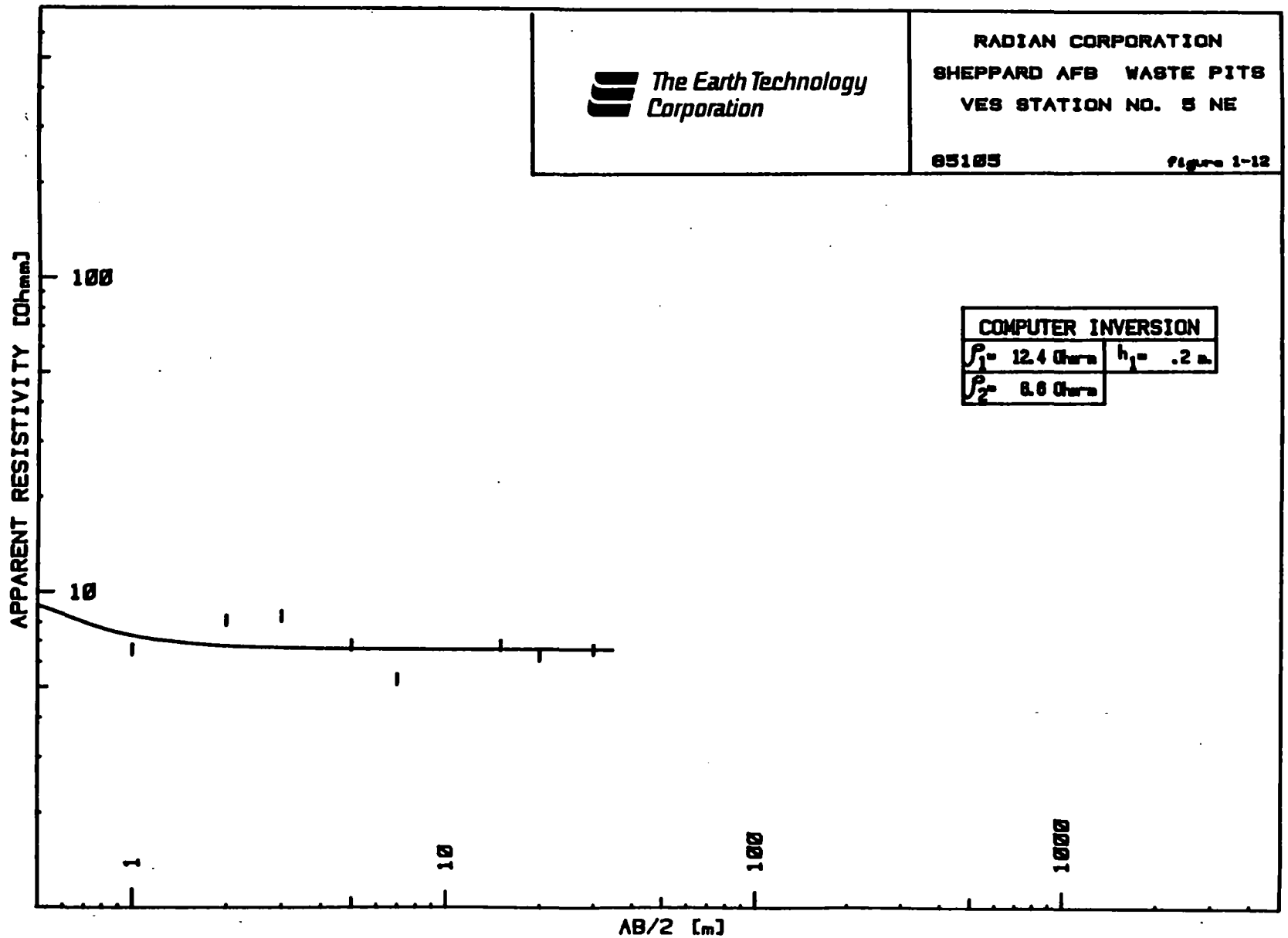
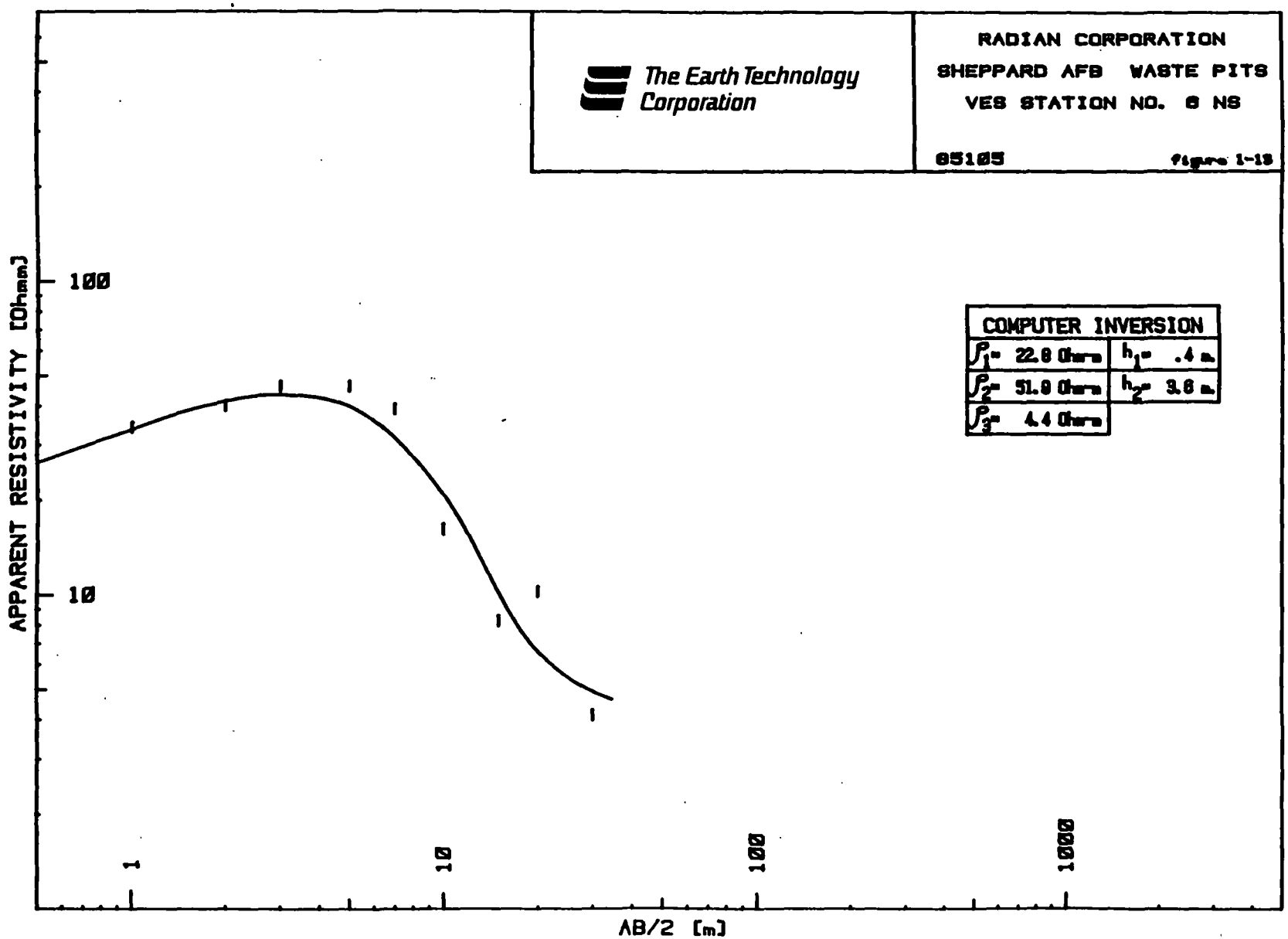
SHEPPARD AFB WASTE PITS
VES STATION NO. 5 NW

85105 Figure 1-11



COMPUTER INVERSION	
ρ_1= 8.9 Ohmm	h_1= .4 m.
ρ_2= 52.0 Ohmm	h_2= 3.1 m.
ρ_3= 5.0 Ohmm	


The Earth Technology Corporation
RADIAN CORPORATION
SHEPPARD AFB WASTE PITS
VES STATION NO. 5 NE
85105
Figure 1-12
COMPUTER INVERSION
ρ1= 12.4 Ohm-m
h1= .2 m
ρ2= 8.6 Ohm-m
APPARENT RESISTIVITY [Ohm-m]
100
10
1
10
100
1000
AB/2 [m]


The Earth Technology Corporation
RADIAN CORPORATION
SHEPPARD AFB WASTE PITS
VES STATION NO. 6 NS
85105
Figure 1-13
COMPUTER INVERSION
ρ1= 22.8 Ohm-m
h1= .4 m.
ρ2= 51.9 Ohm-m
h2= 3.6 m.
ρ3= 4.4 Ohm-m
APPARENT RESISTIVITY [Ohm-m]
100
10
1
10
100
1000
AB/2 [m]

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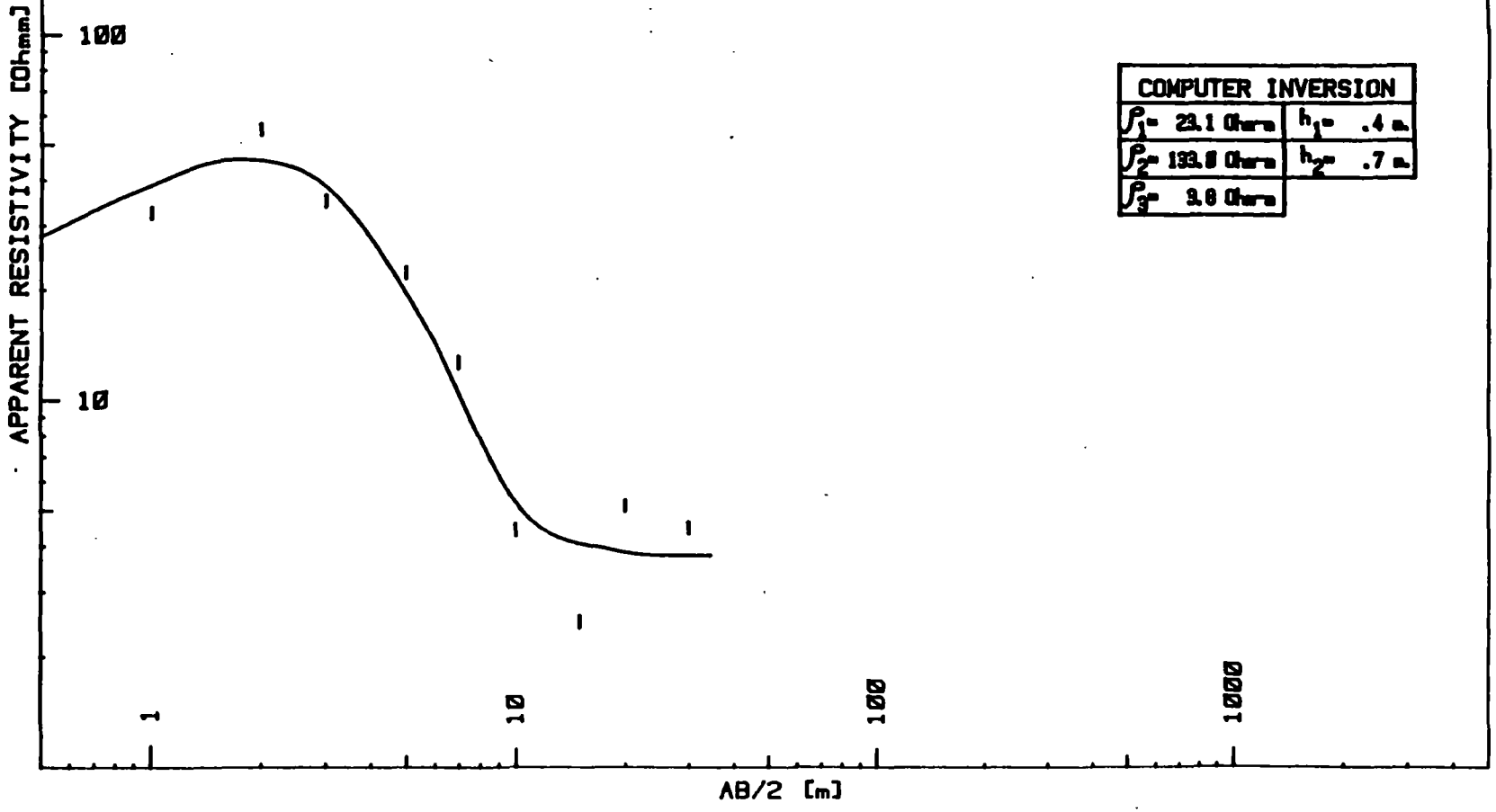
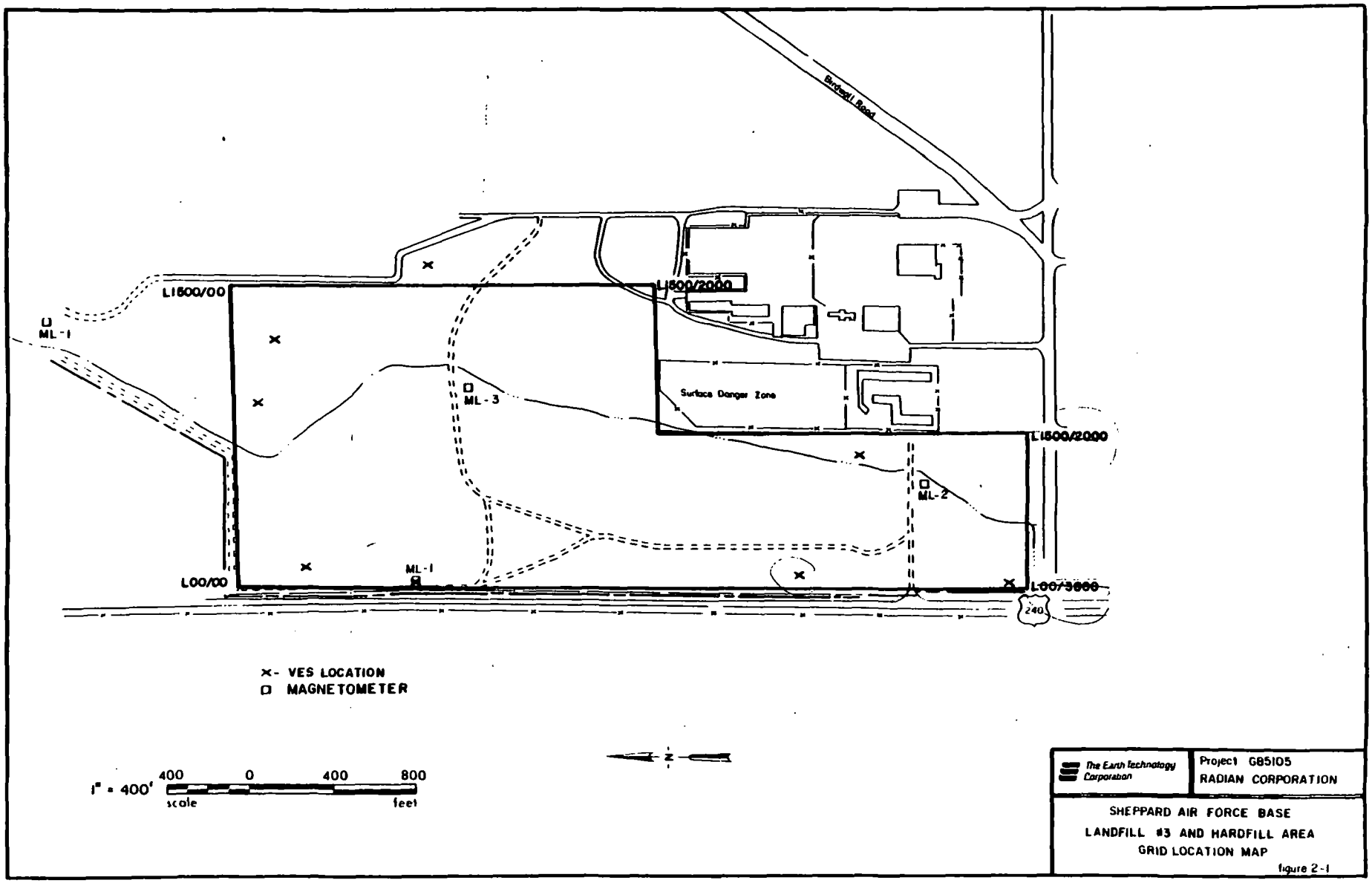
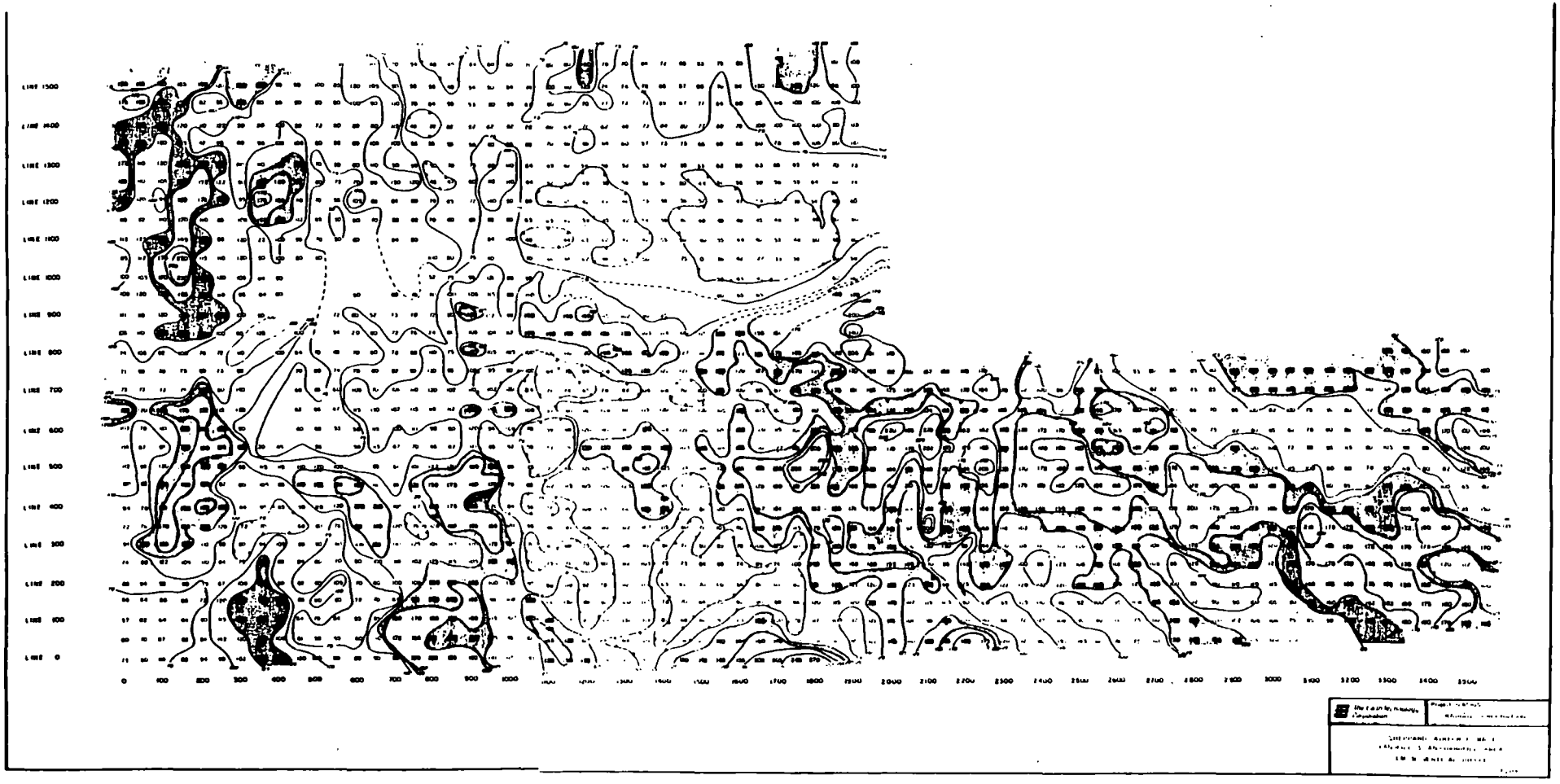
RADIAN CORPORATION
SHEPPARD AFB WASTE PITS
VES STATION NO. 6 EW

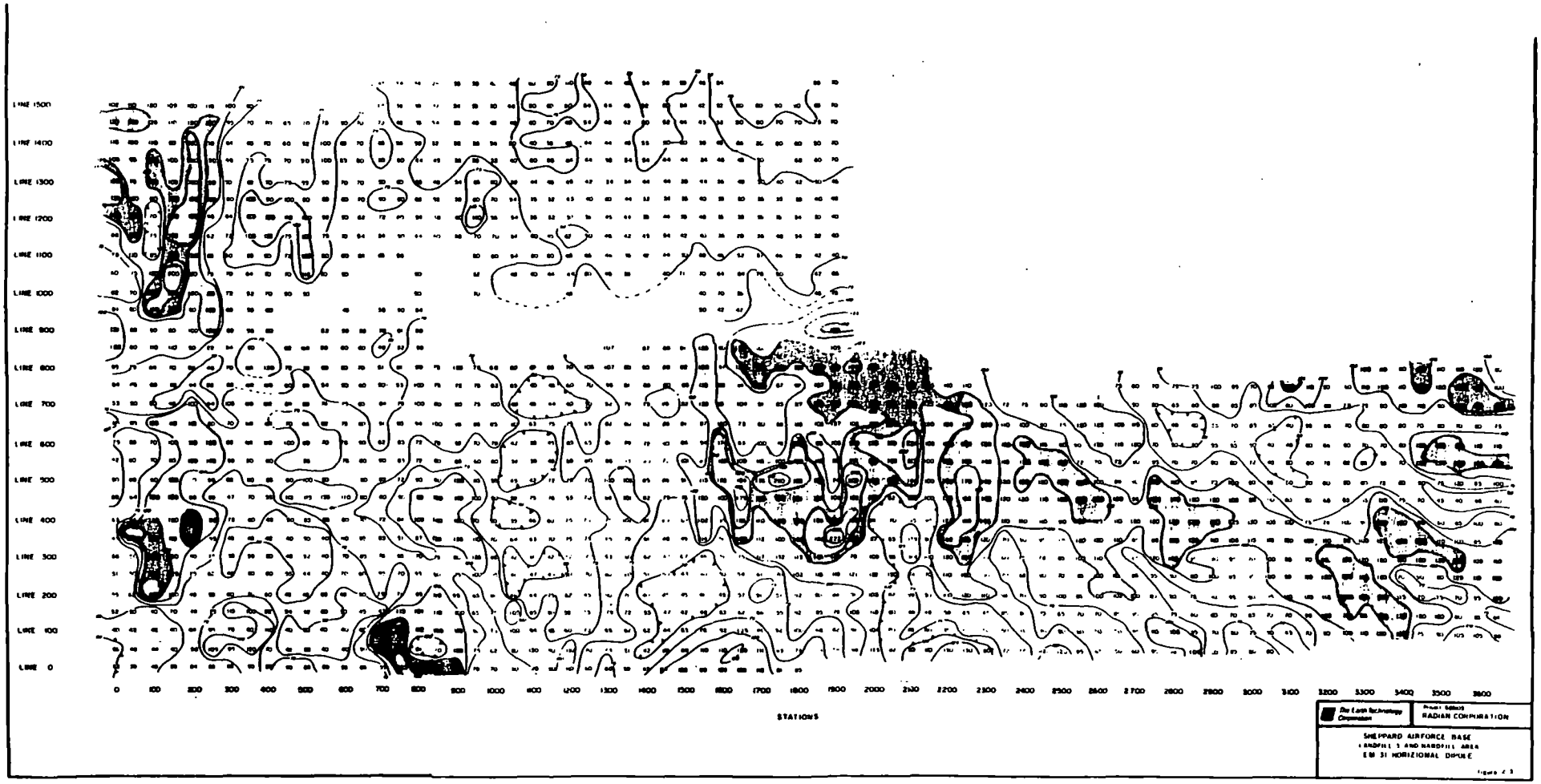
85105 Figure 1-14

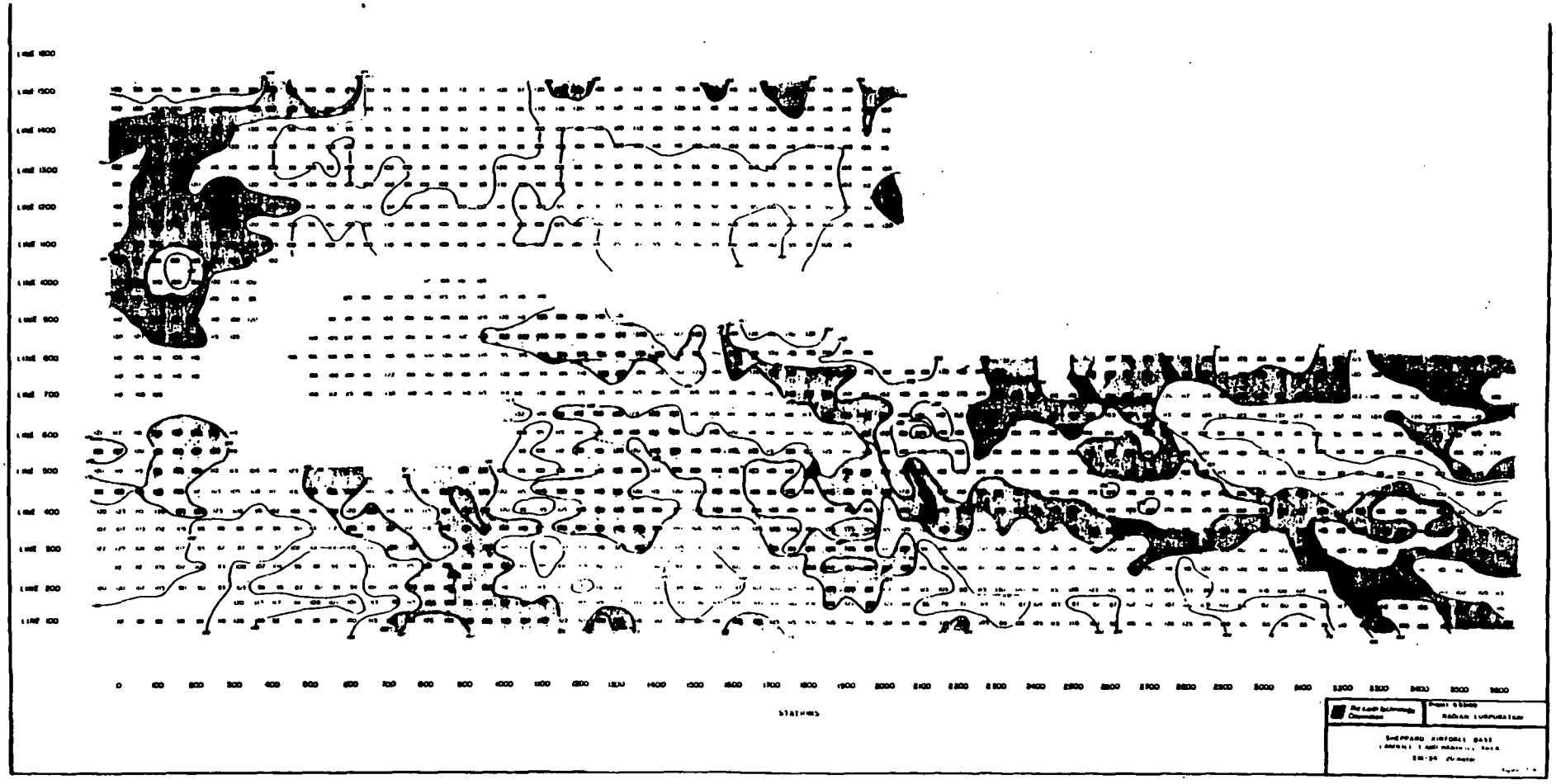


COMPUTER INVERSION	
ρ_1= 23.1 Ohm-m	h_1= .4 m.
ρ_2= 133.8 Ohm-m	h_2= .7 m.
ρ_3= 9.0 Ohm-m	

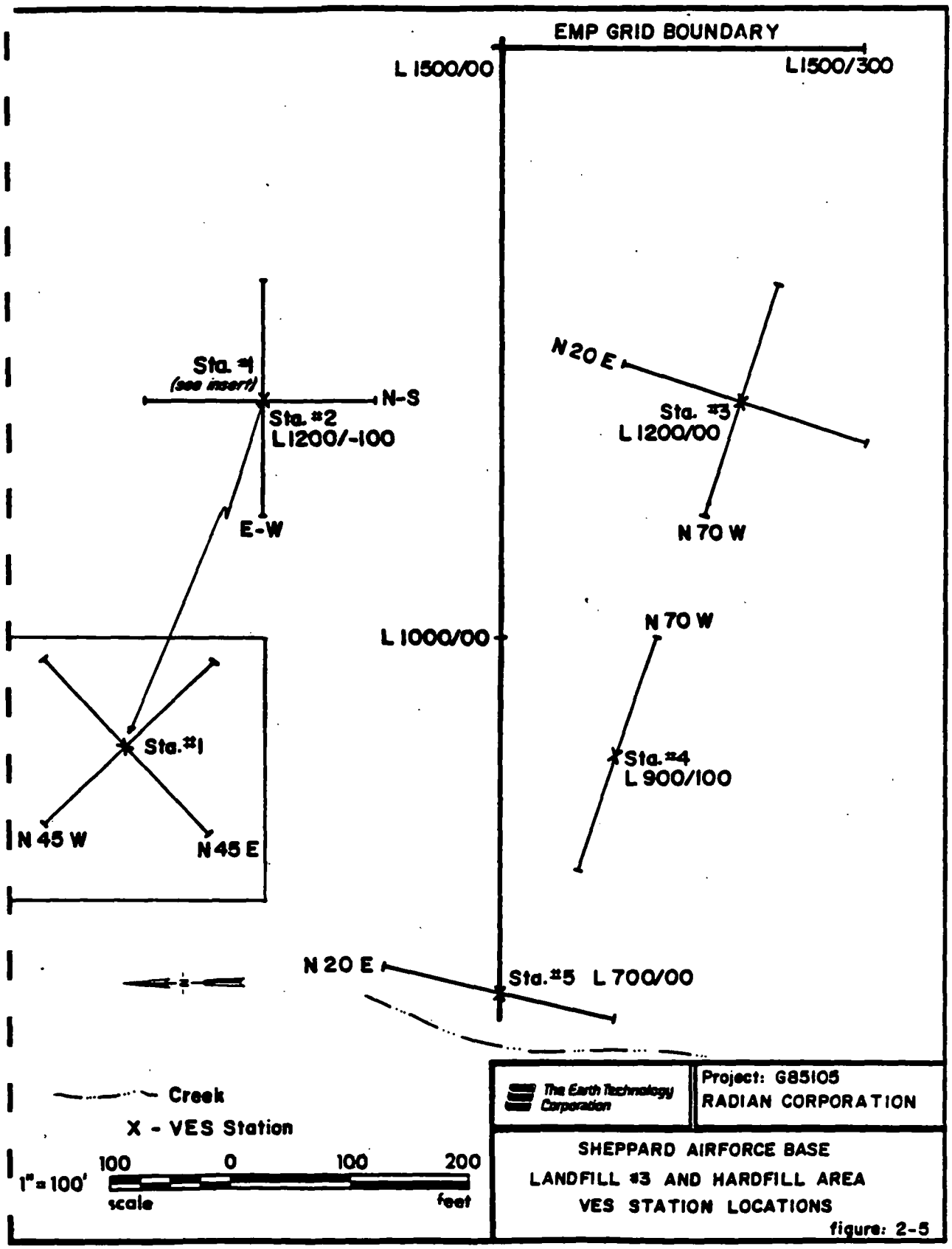

Bridwell Road
L1800/00
L1800/2000
ML-1
ML-3
Surface Danger Zone
L1800/2000
ML-2
ML-1
L00/00
L00/3000
240
x- VES LOCATION
MAGNETOMETER
N
1" = 400'
400
0
400
800
scale
feet
The Earth Technology Corporation
Project G85105
RADIAN CORPORATION
SHEPPARD AIR FORCE BASE
LANDFILL #3 AND HARDFILL AREA
GRID LOCATION MAP
figure 2-1

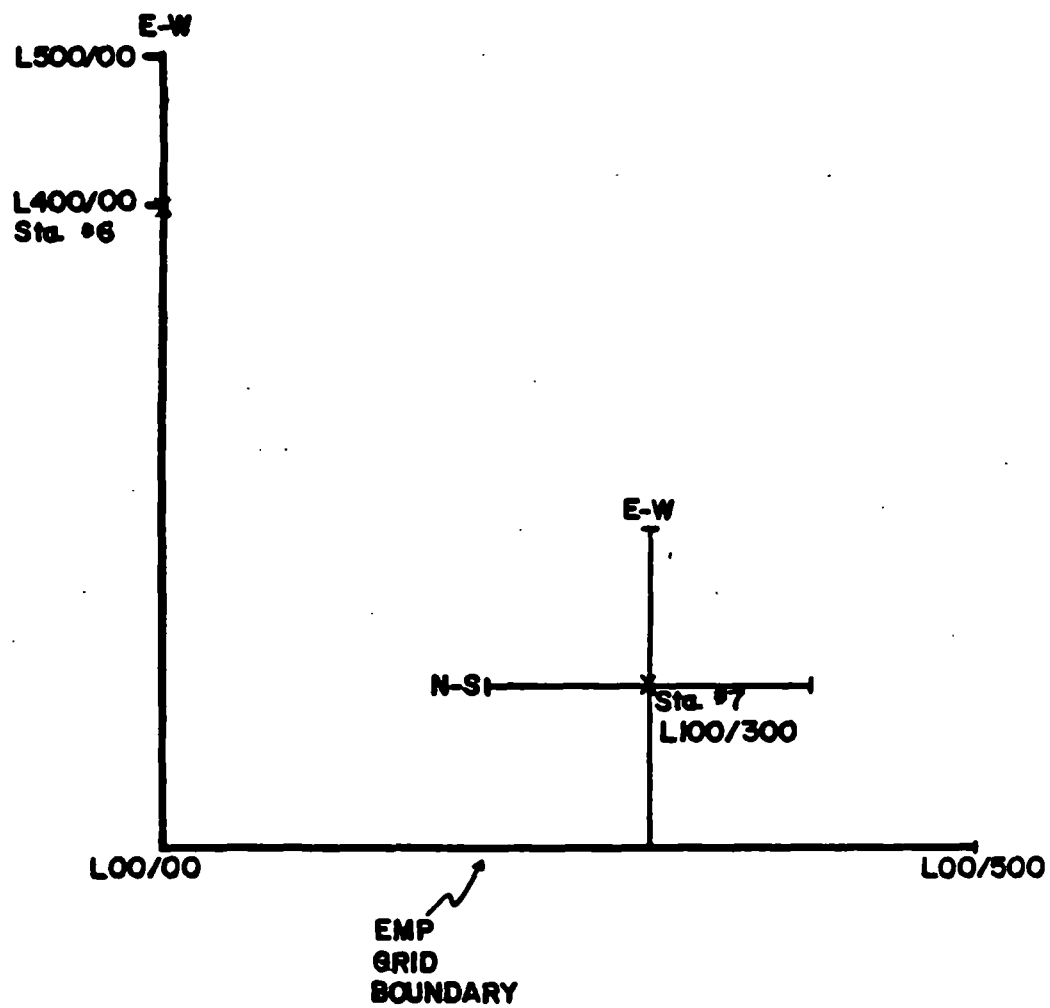



LINE 1500
LINE 1400
LINE 1300
LINE 1200
LINE 1100
LINE 1000
LINE 900
LINE 800
LINE 700
LINE 600
LINE 500
LINE 400
LINE 300
LINE 200
LINE 100
LINE 0
0 100 200 300 400 500 600 700 800 900 1000 1100 1200 1300 1400 1500 1600 1700 1800 1900 2000 2100 2200 2300 2400 2500 2600 2700 2800 2900 3000 3100 3200 3300 3400 3500 3600
STATIONS
RADIAN CORPORATION
SHEPPARD AIRFORCE BASE
LANDFILL 5 AND NARDFILL AREA
EM 31 HORIZIONAL DIPOLE



DRAFT


EMP GRID BOUNDARY
L 1500/00
L1500/300
Sta. #1
(see insert)
N-S
Sta. #2
L1200/-100
E-W
N20 E
Sta. #3
L 1200/00
N 70 W
L 1000/00
N 70 W
Sta. #4
L 900/100
Sta. #1
N 45 W
N45 E
N 20 E
Sta. #5 L 700/00
Creek
X - VES Station
1" = 100'
100
0
100
200
scale
feet
The Earth Technology Corporation
Project: G85105
RADIAN CORPORATION
SHEPPARD AIRFORCE BASE
LANDFILL #3 AND HARDFILL AREA
VES STATION LOCATIONS
figure: 2-5



X - VES Station

1" = 100'

100 0 100 200

scale feet

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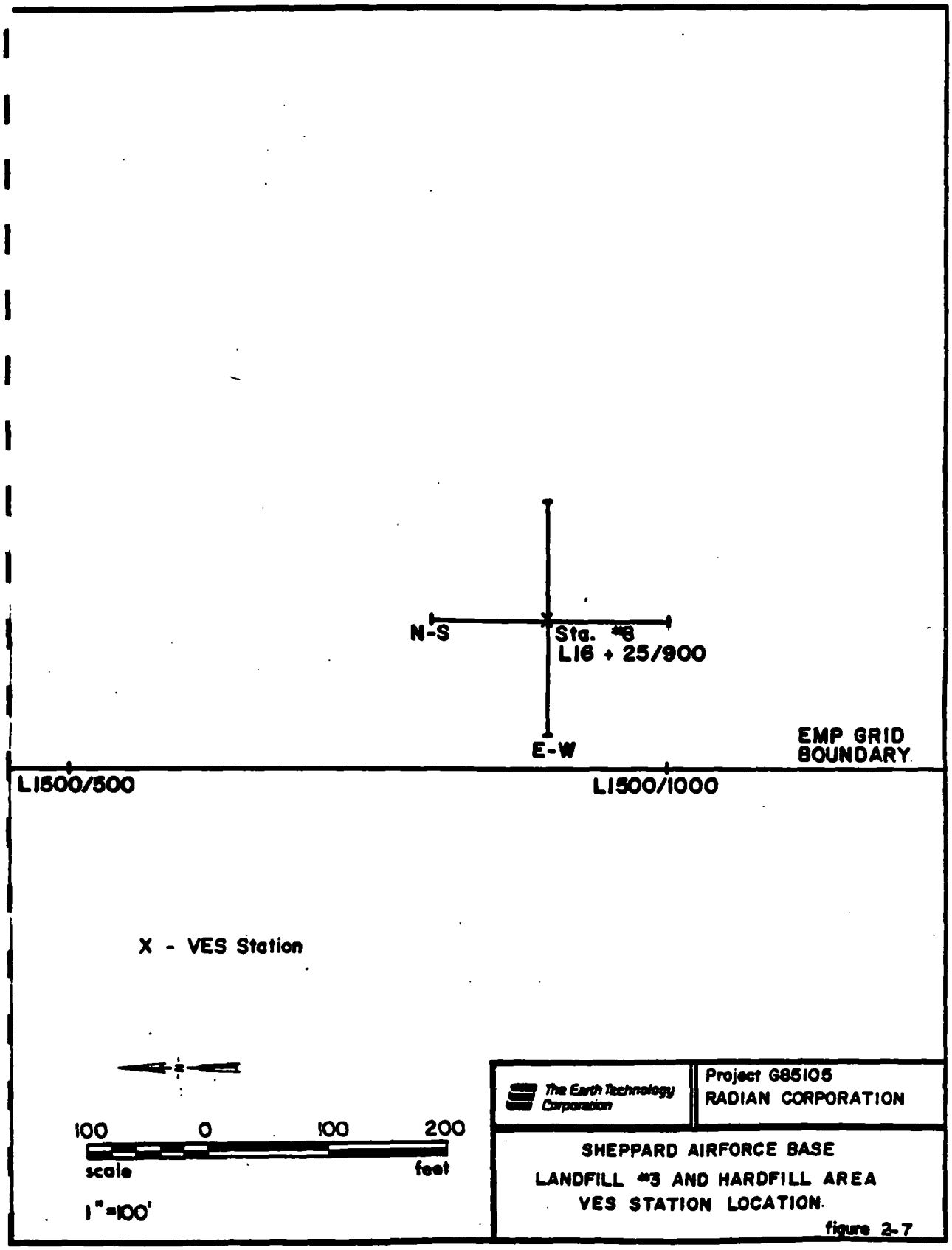
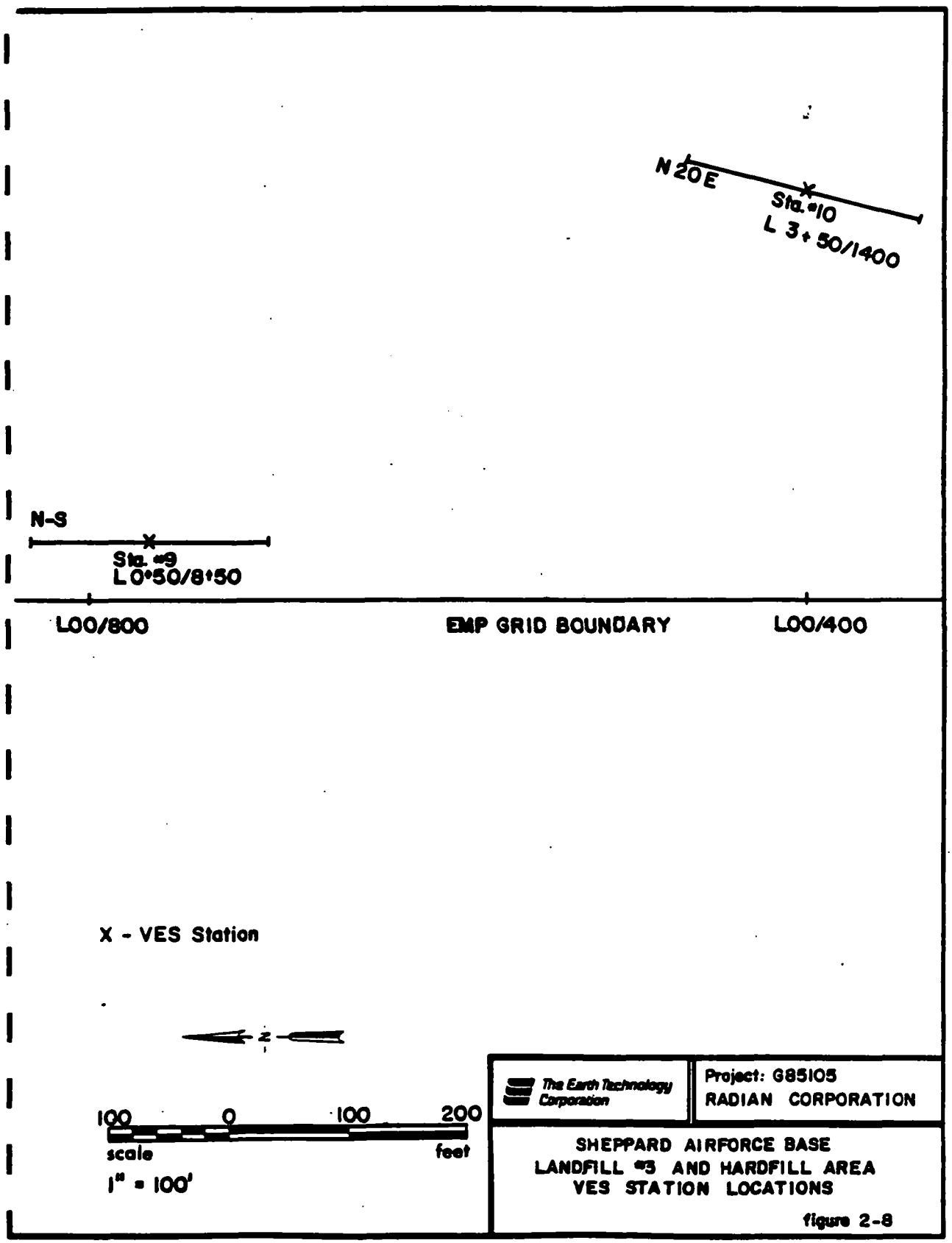
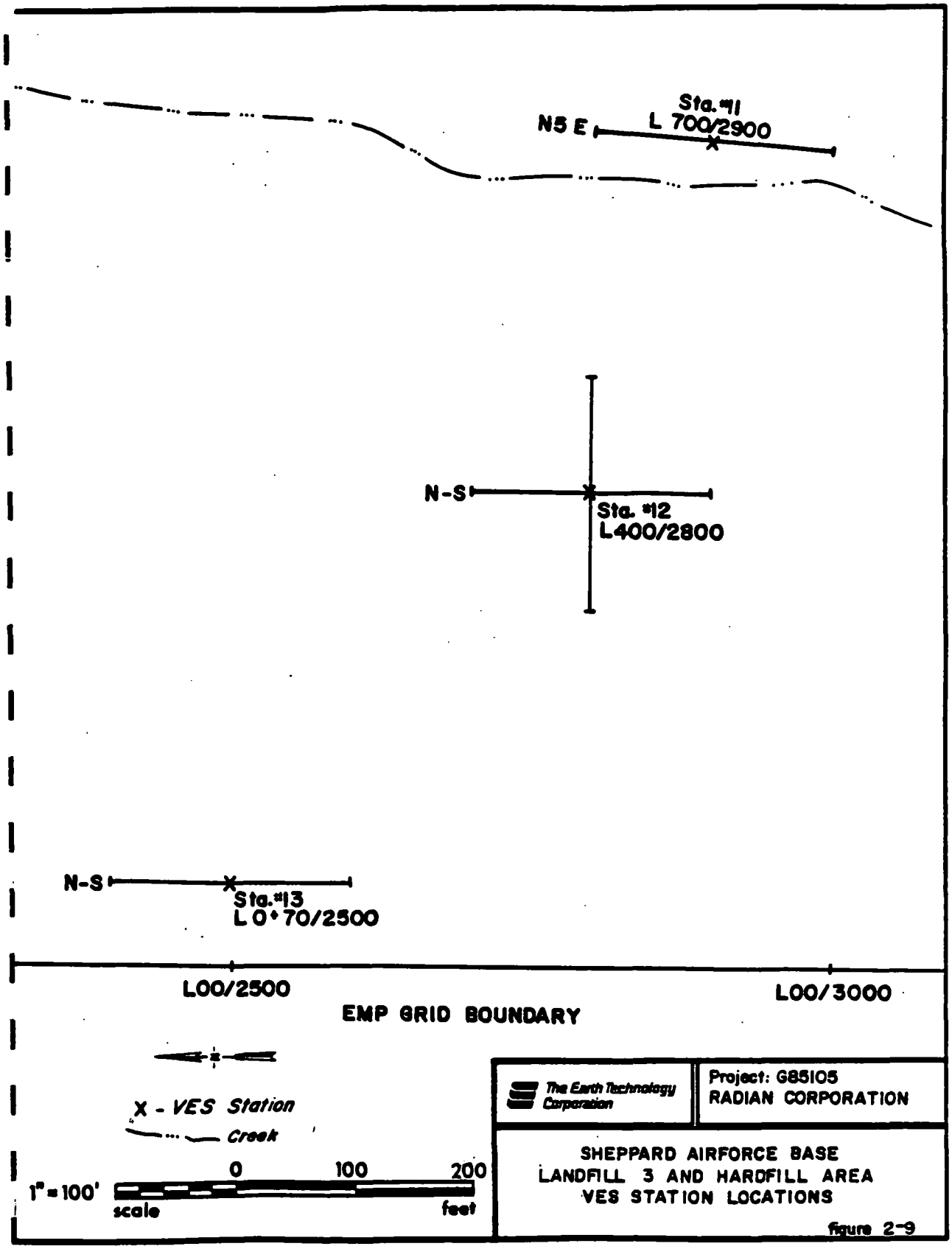
Project: G85105
RADIAN CORPORATION

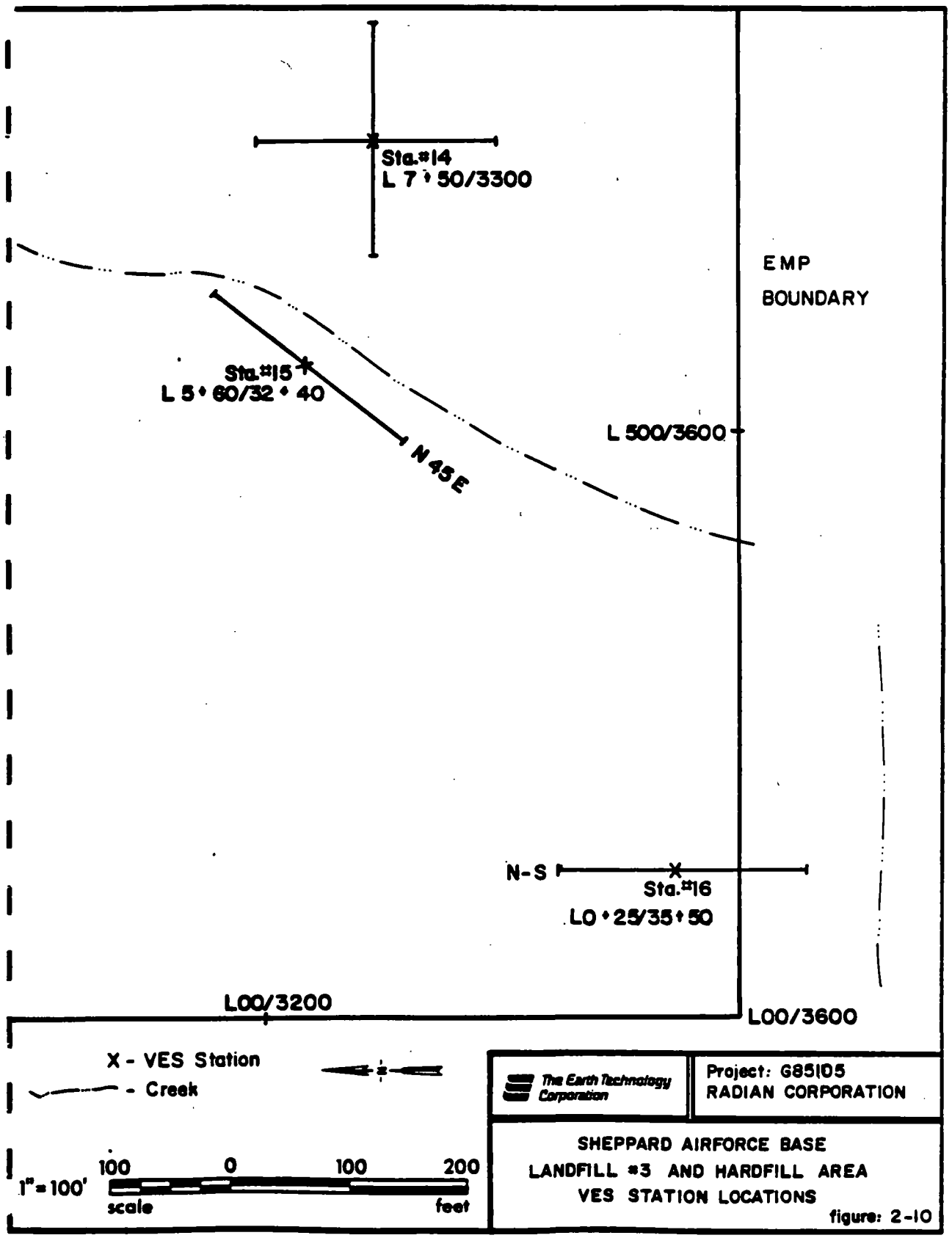
SHEPPARD AIR FORCE BASE
LANDFILL #3 AND HARDFILL AREA
VES STATION LOCATIONS

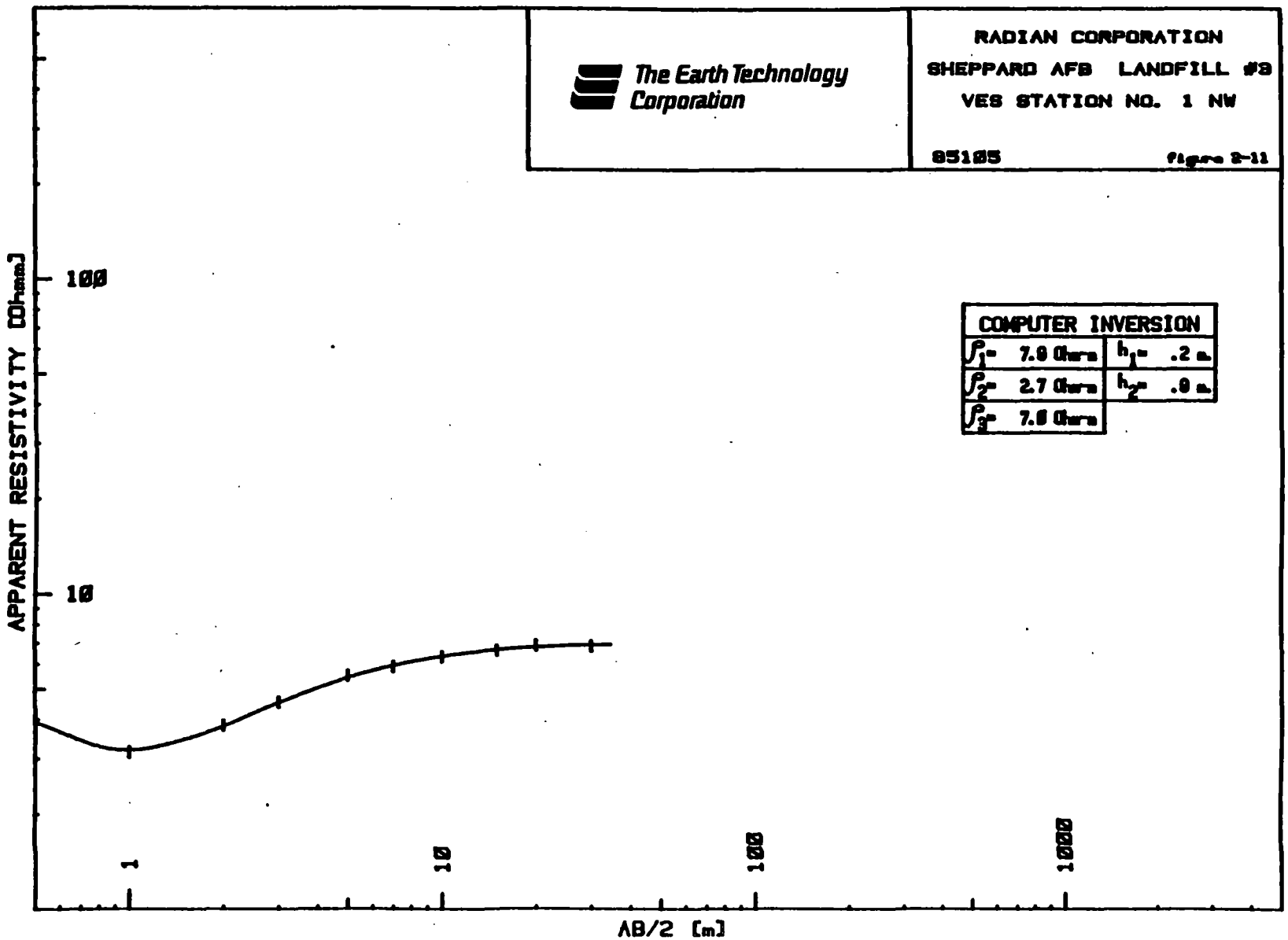
figure 2-6


N-S
Sta. #8
L16 + 25/900
E-W
EMP GRID
BOUNDARY
L1500/500
L1500/1000
X - VES Station
100
0
100
200
scale
feet
1"=100'
The Earth Technology Corporation
Project G85105
RADIAN CORPORATION
SHEPPARD AIRFORCE BASE
LANDFILL #3 AND HARDFILL AREA
VES STATION LOCATION
figure 2-7

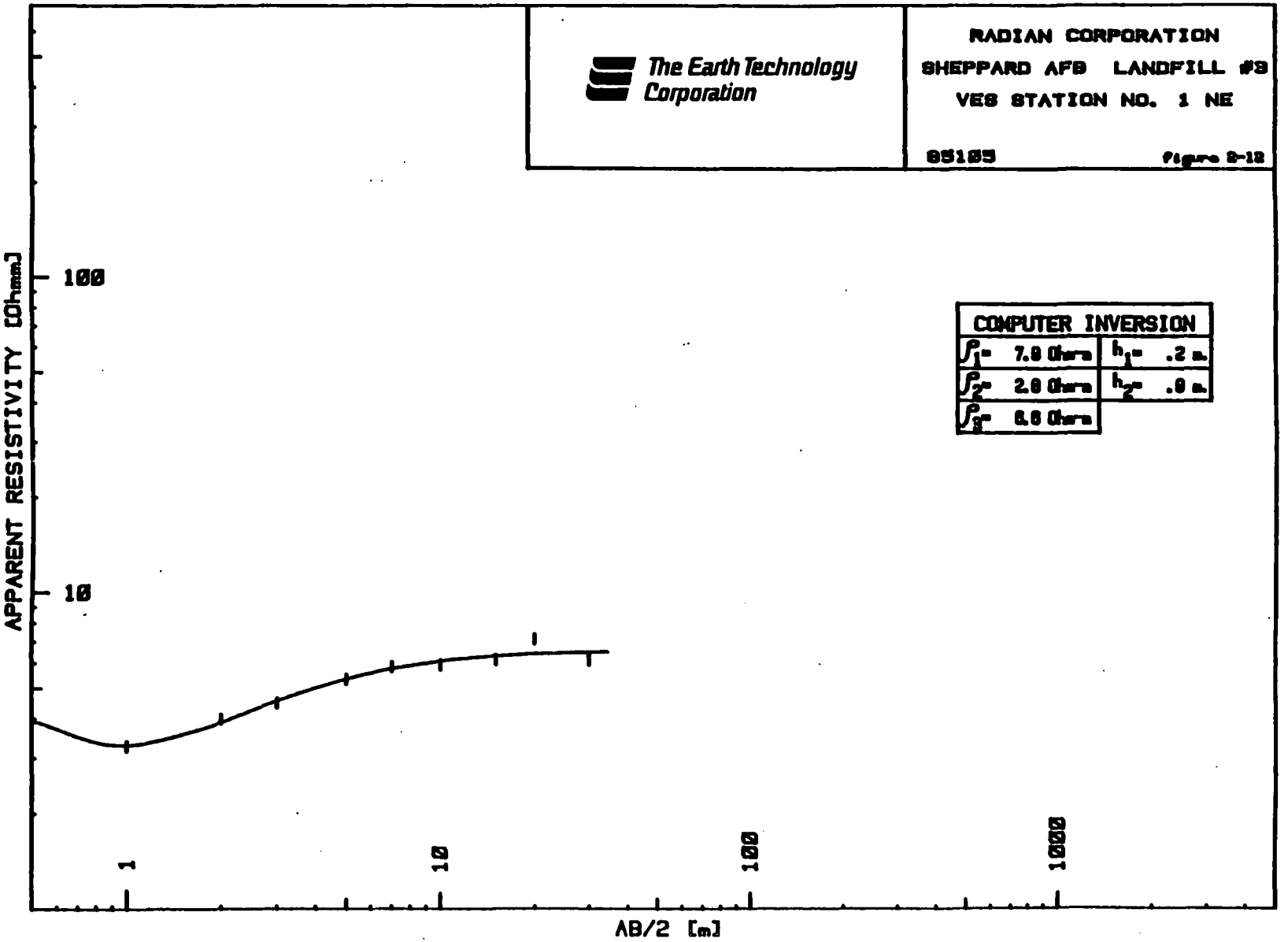

N 20 E
Sta. #10
L 3+50/1400
N-S
Sta. #9
L 0+50/8+50
L00/800
EMP GRID BOUNDARY
L00/400
X - VES Station
N
100 0 100 200
scale
feet
1" = 100'
The Earth Technology Corporation
Project: G85105
RADIAN CORPORATION
SHEPPARD AIRFORCE BASE
LANDFILL #3 AND HARDFILL AREA
VES STATION LOCATIONS
figure 2-8


Sta. #11
L 700/2900
N5 E
N-S
Sta. #12
L400/2800
N-S
Sta. #13
L 0+70/2500
L00/2500
L00/3000
EMP GRID BOUNDARY
X - VES Station
Creek
1" = 100'
0
100
200
scale
feet
The Earth Technology Corporation
Project: G85105
RADIAN CORPORATION
SHEPPARD AIRFORCE BASE
LANDFILL 3 AND HARDFILL AREA
VES STATION LOCATIONS
figure 2-9

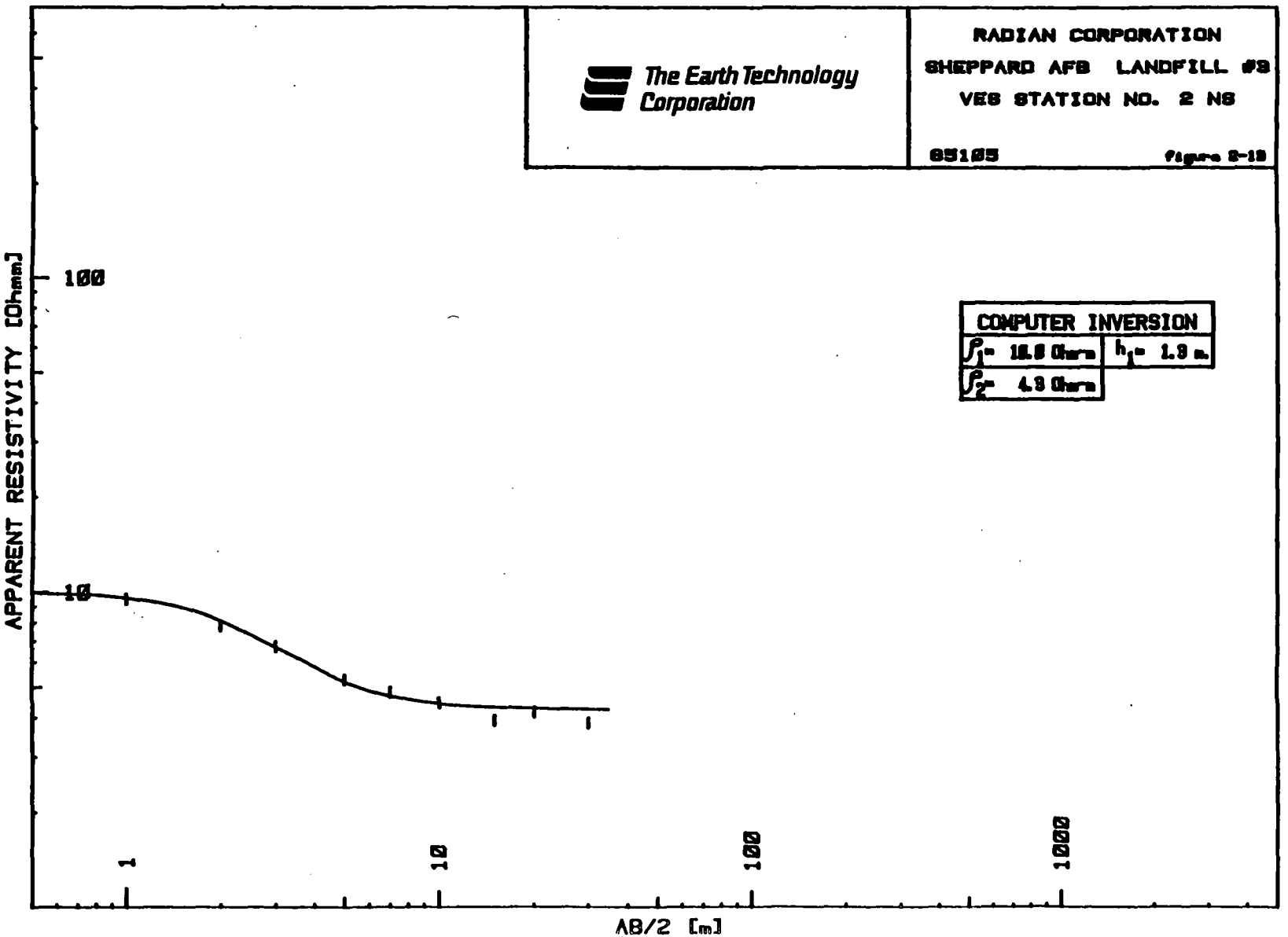

Sta.#14
L 7+50/3300
EMP
BOUNDARY
Sta.#15
L 5+60/32+40
N45E
L 500/3600
N-S
Sta.#16
L0+25/35+50
L00/3200
L00/3600
X - VES Station
- Creek
1"=100'
100
0
100
200
scale
feet
The Earth Technology Corporation
Project: G85105
RADIAN CORPORATION
SHEPPARD AIRFORCE BASE
LANDFILL #3 AND HARDFILL AREA
VES STATION LOCATIONS
figure: 2-10


The Earth Technology Corporation
RADIAN CORPORATION
SHEPPARD AFB LANDFILL #3
VES STATION NO. 1 NW
85105
Figure 2-11
COMPUTER INVERSION
ρ1= 7.0 Ohm-m
h1= .2 m
ρ2= 2.7 Ohm-m
h2= .8 m
ρ3= 7.0 Ohm-m
APPARENT RESISTIVITY [Ohm-m]
100
10
1
10
100
1000
AB/2 [m]

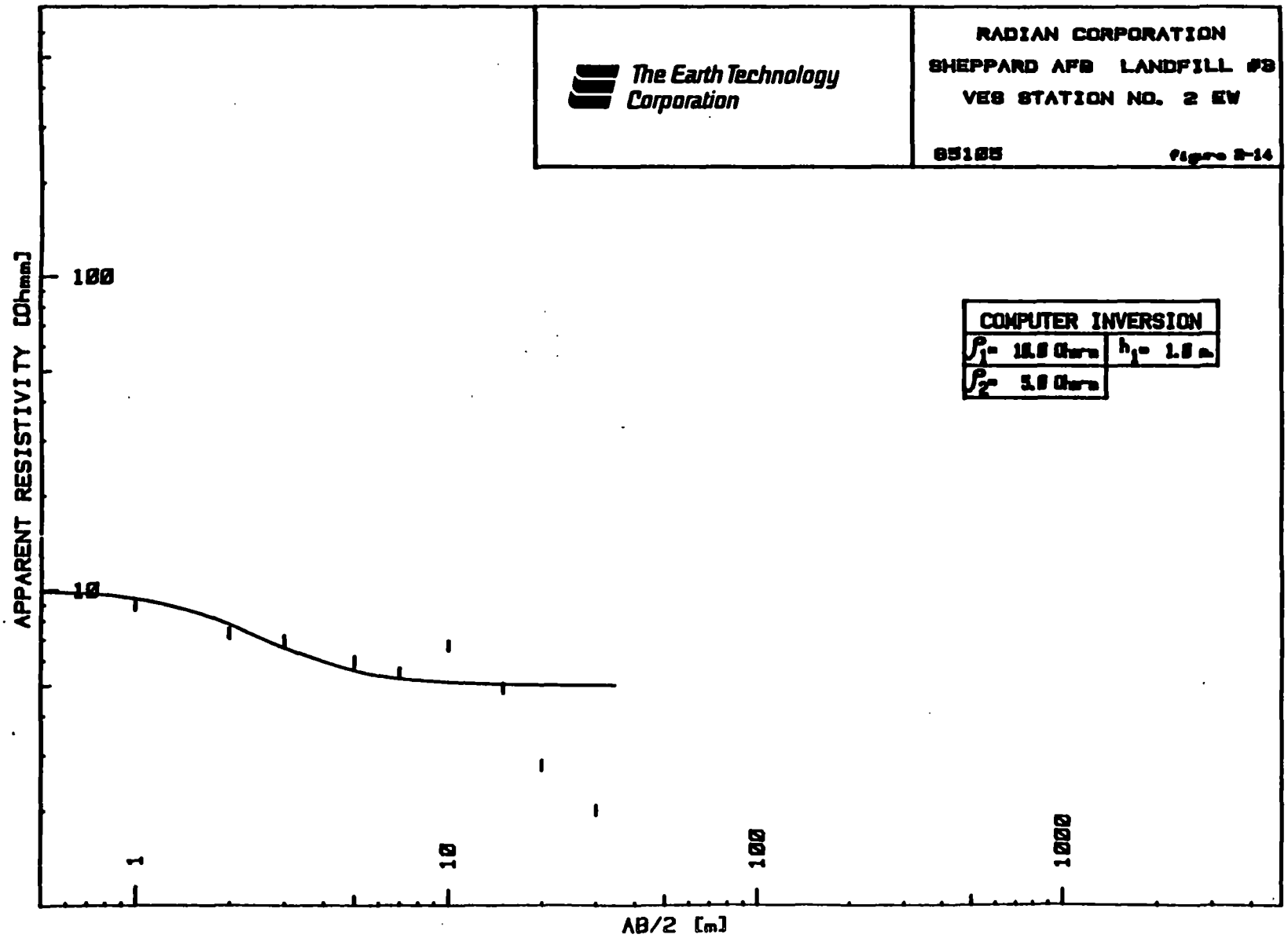
DRAFT


The Earth Technology Corporation
RADIAN CORPORATION
SHEPPARD AFB LANDFILL #3
VES STATION NO. 1 NE
85105
Figure 2-12
COMPUTER INVERSION
ρ_1= 7.0 Ohm-m
h_1= .2 m
ρ_2= 2.0 Ohm-m
h_2= .8 m
ρ_3= 6.0 Ohm-m
APPARENT RESISTIVITY [Ohm-m]
100
10
1
10
100
1000
AB/2 [m]

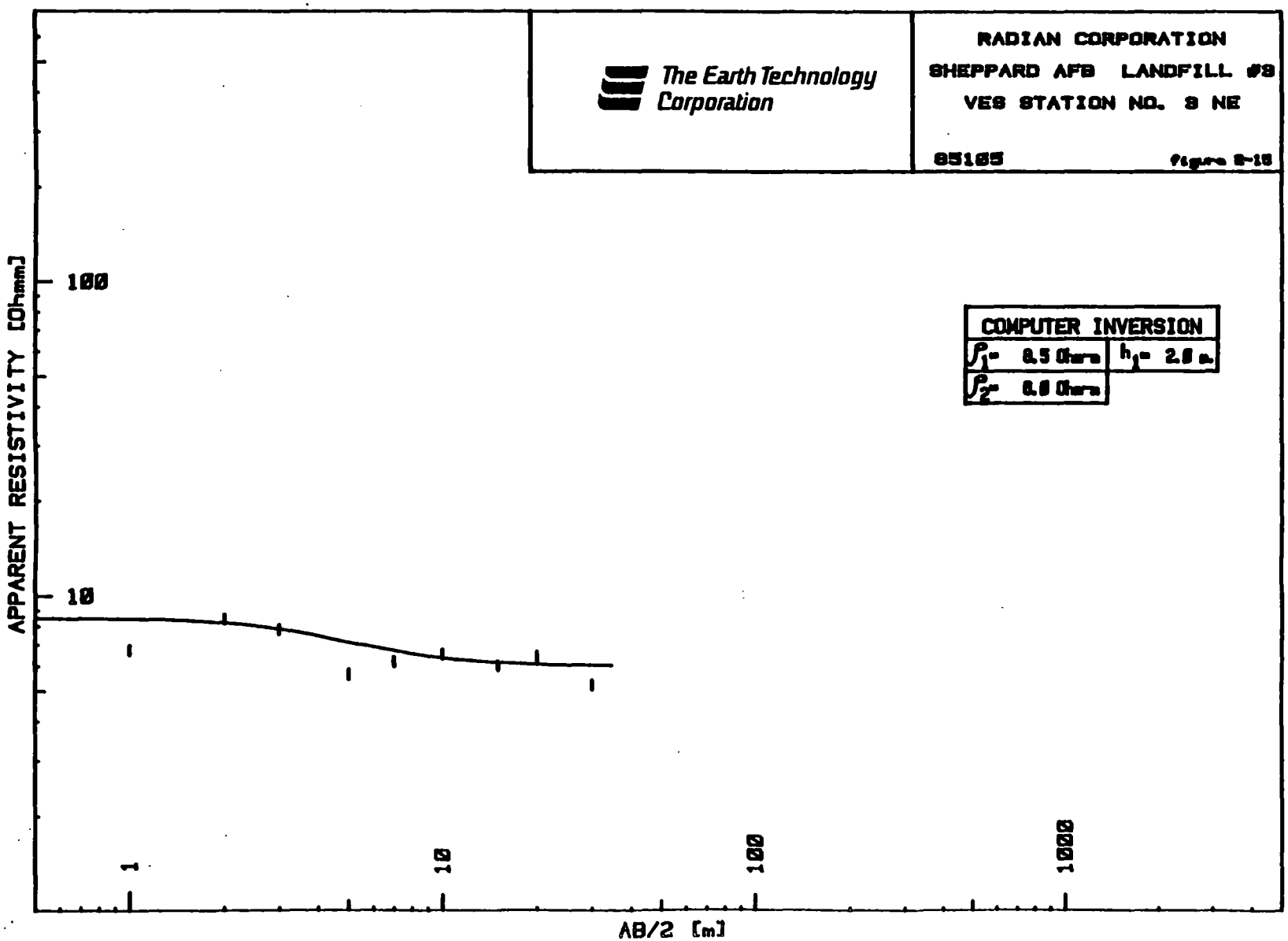
DRAFT


The Earth Technology Corporation
RADIAN CORPORATION
SHEPPARD AFB LANDFILL #3
VES STATION NO. 2 NS
85105
Figure 3-13
COMPUTER INVERSION
ρ_1= 18.8 Ohm-m
h_1= 1.3 m
ρ_2= 4.3 Ohm-m
APPARENT RESISTIVITY [Ohm-m]
100
10
1
10
100
1000
AB/2 [m]

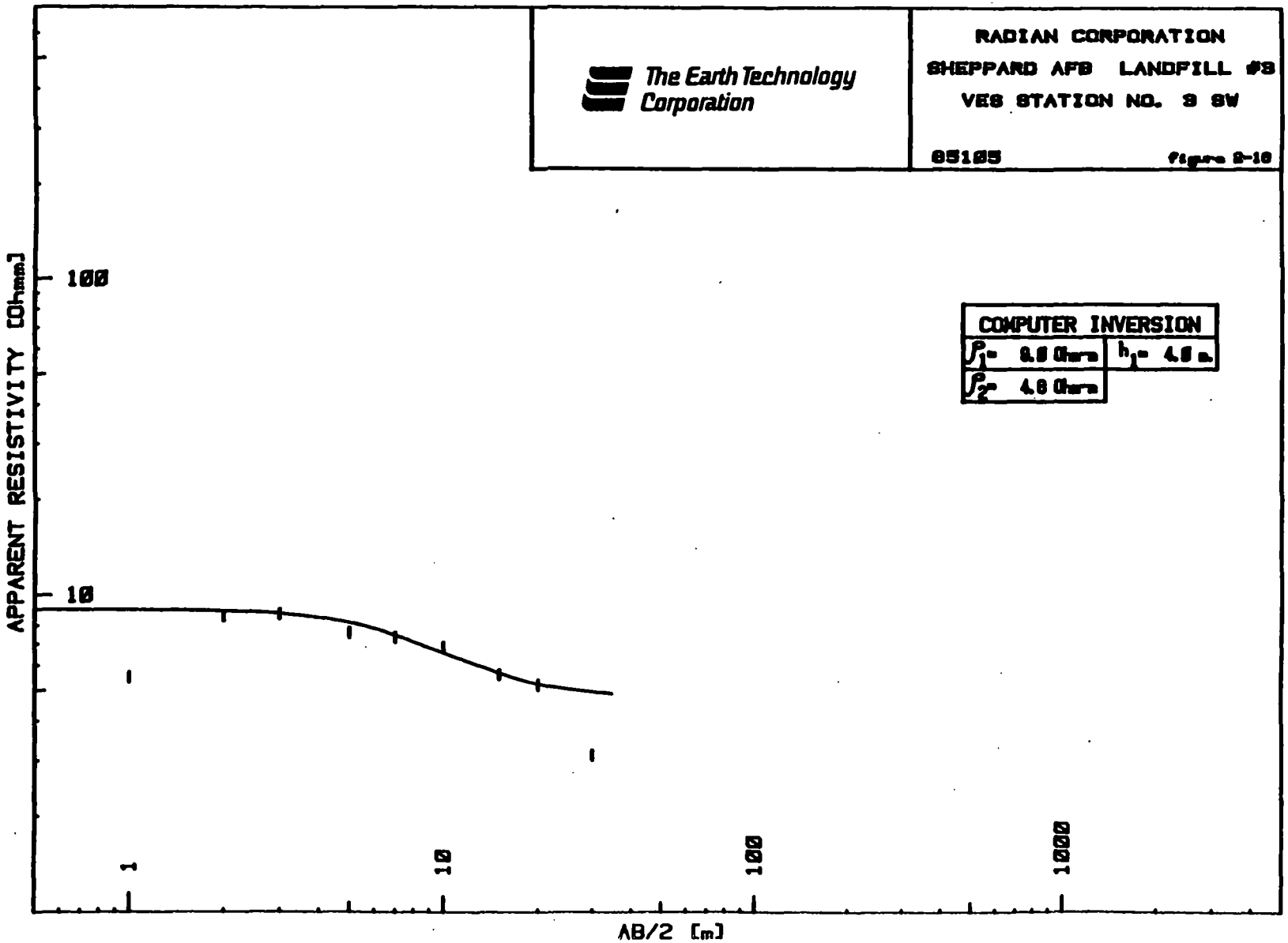
DRAFT


The Earth Technology Corporation
RADIAN CORPORATION
SHEPPARD AFB LANDFILL #3
VES STATION NO. 2 EW
85105
Figure 3-14
COMPUTER INVERSION
ρ_1= 18.8 Ohm-m
h_1= 1.8 m
ρ_2= 5.8 Ohm-m
APPARENT RESISTIVITY [Ohm-m]
100
10
1
10
100
1000
AB/2 [m]

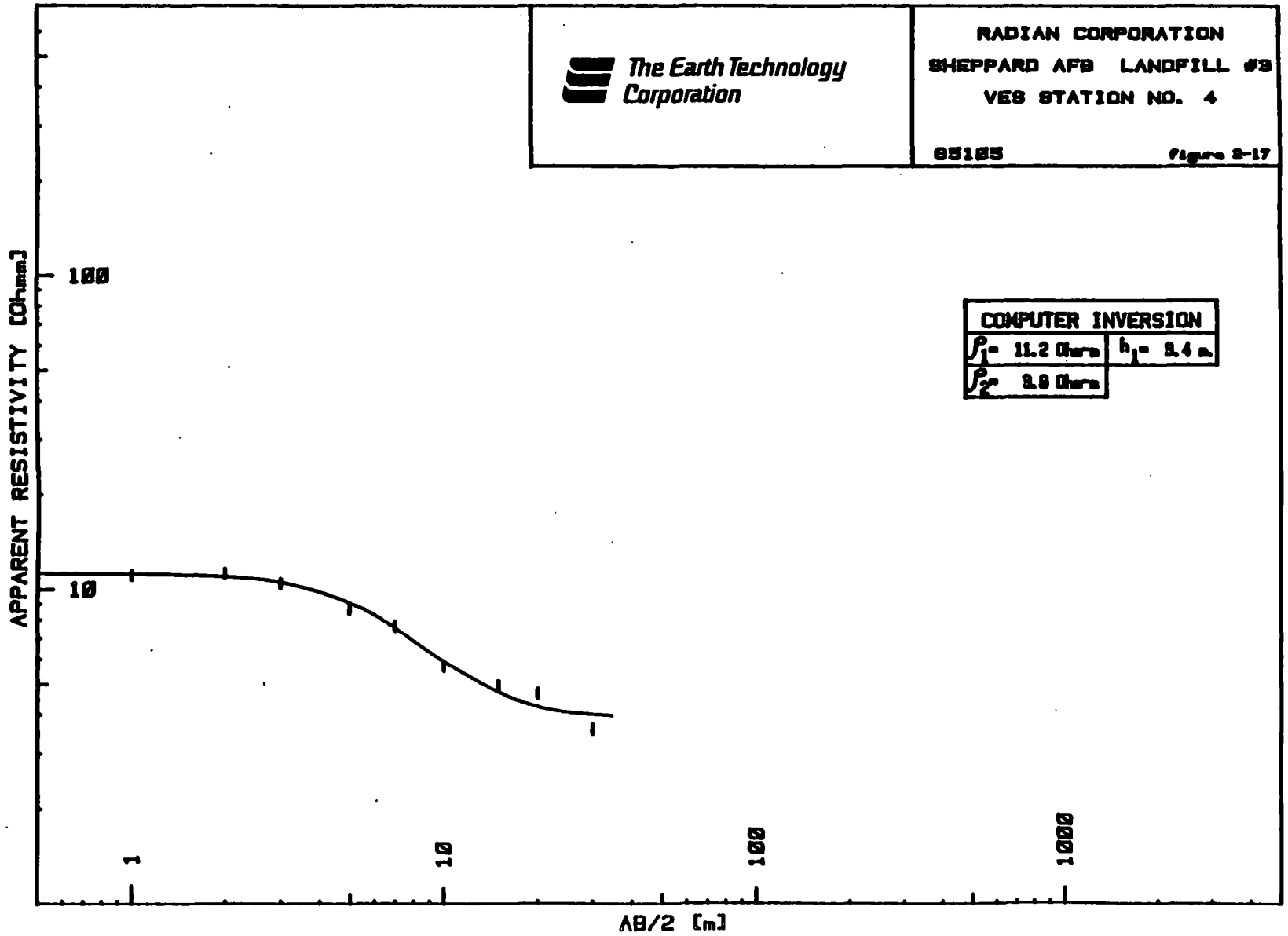
DRAFT


The Earth Technology Corporation
RADIAN CORPORATION
SHEPPARD AFB LANDFILL #9
VES STATION NO. 9 NE
85105
Figure 9-15
COMPUTER INVERSION
ρ_1= 8.5 Ohm-m
h_1= 2.8 m
ρ_2= 8.8 Ohm-m
APPARENT RESISTIVITY [Ohm-m]
100
10
1
10
100
1000
AB/2 [m]

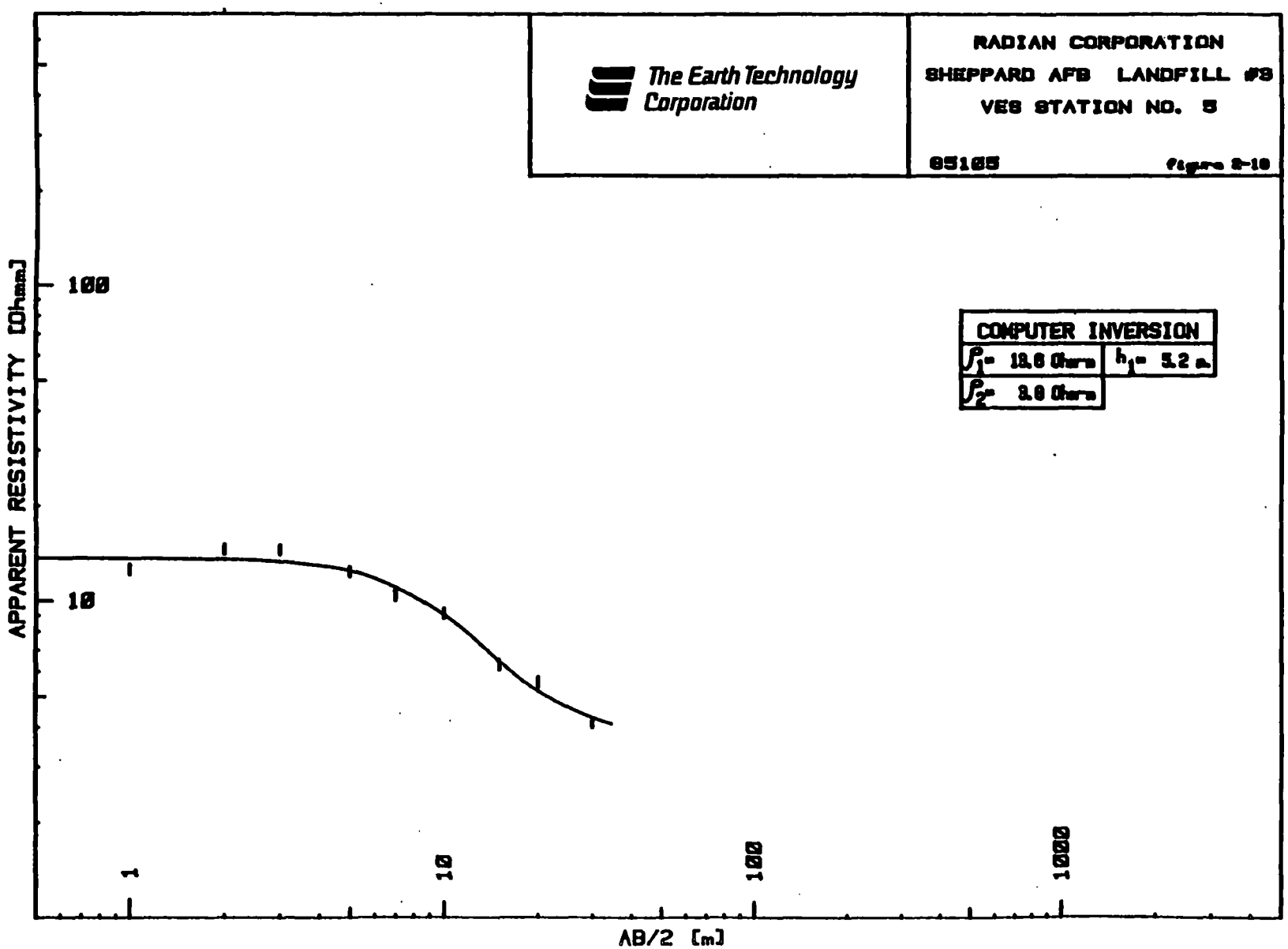
DRAFT


The Earth Technology Corporation
RADIAN CORPORATION
SHEPPARD AFB LANDFILL #3
VES STATION NO. 3 SW
85105
Figure 2-10
COMPUTER INVERSION
ρ_1= 8.8 Ohm-m
h_1= 4.8 m.
ρ_2= 4.8 Ohm-m
APPARENT RESISTIVITY [Ohm-m]
100
10
1
10
100
1000
AB/2 [m]

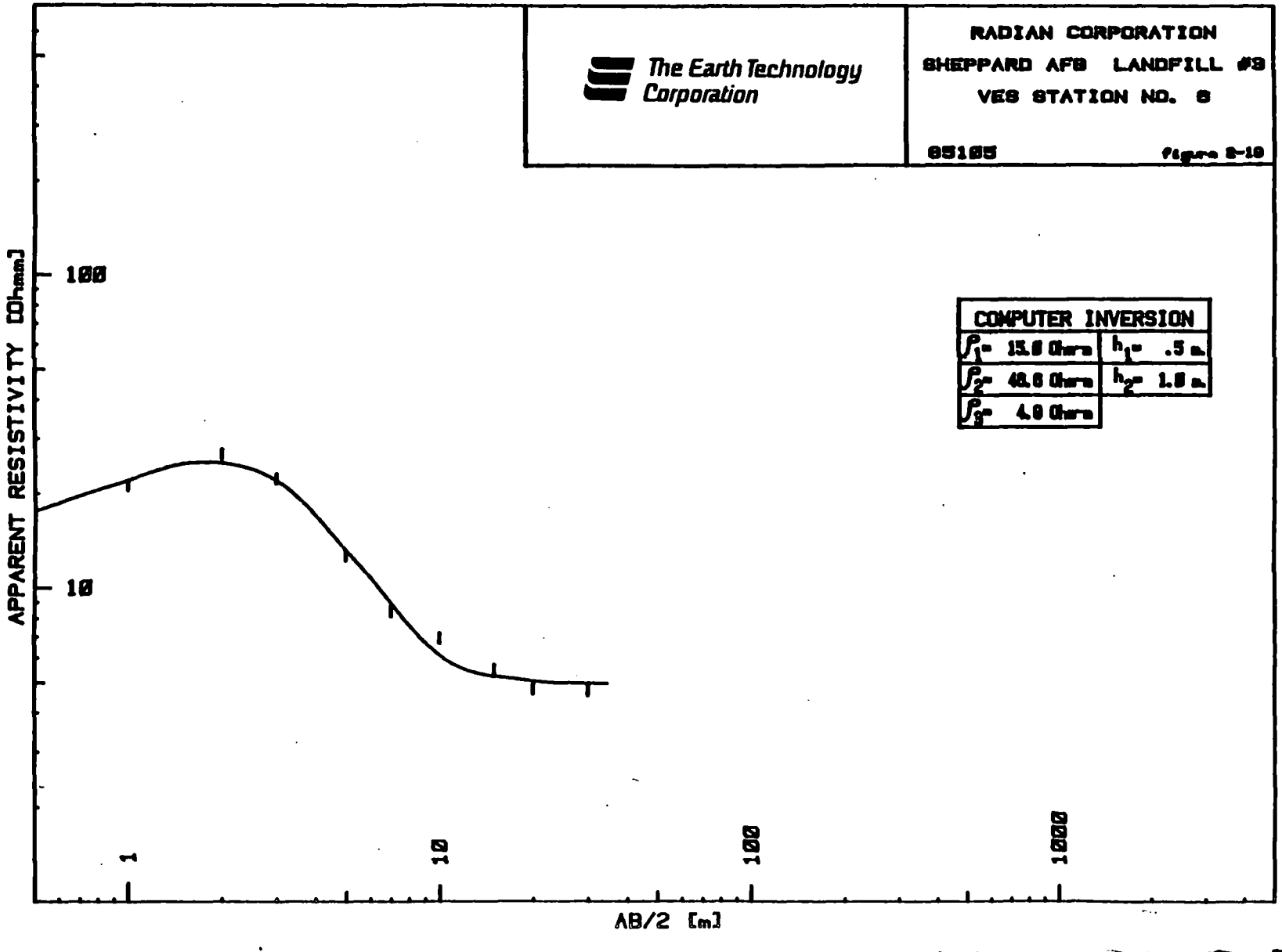
DRAFT


The Earth Technology Corporation
RADIAN CORPORATION
SHEPPARD AFB LANDFILL #8
VES STATION NO. 4
85105
Figure 2-17
COMPUTER INVERSION
ρ_1= 11.2 Ohm-m
h_1= 3.4 m
ρ_2= 3.0 Ohm-m
APPARENT RESISTIVITY [Ohm-m]
100
10
1
10
100
1000
AB/2 [m]

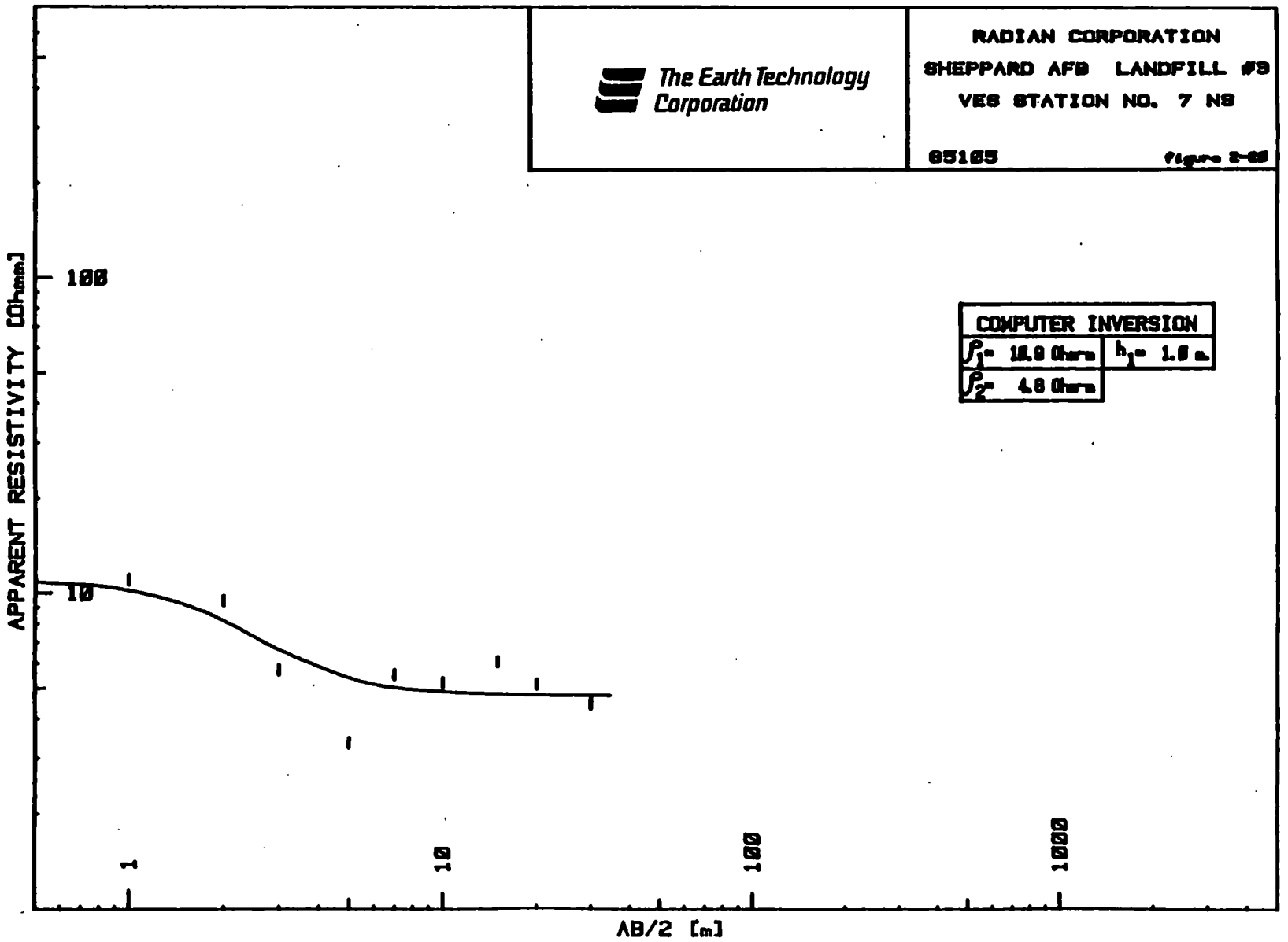
DRAFT


The Earth Technology Corporation
RADIAN CORPORATION
SHEPPARD AFB LANDFILL #8
VES STATION NO. 5
85105
Figure 2-18
COMPUTER INVERSION
ρ_1= 18.6 Ohm-m
h_1= 5.2 m
ρ_2= 3.0 Ohm-m
APPARENT RESISTIVITY [Ohm-m]
100
10
1
10
100
1000
AB/2 [m]

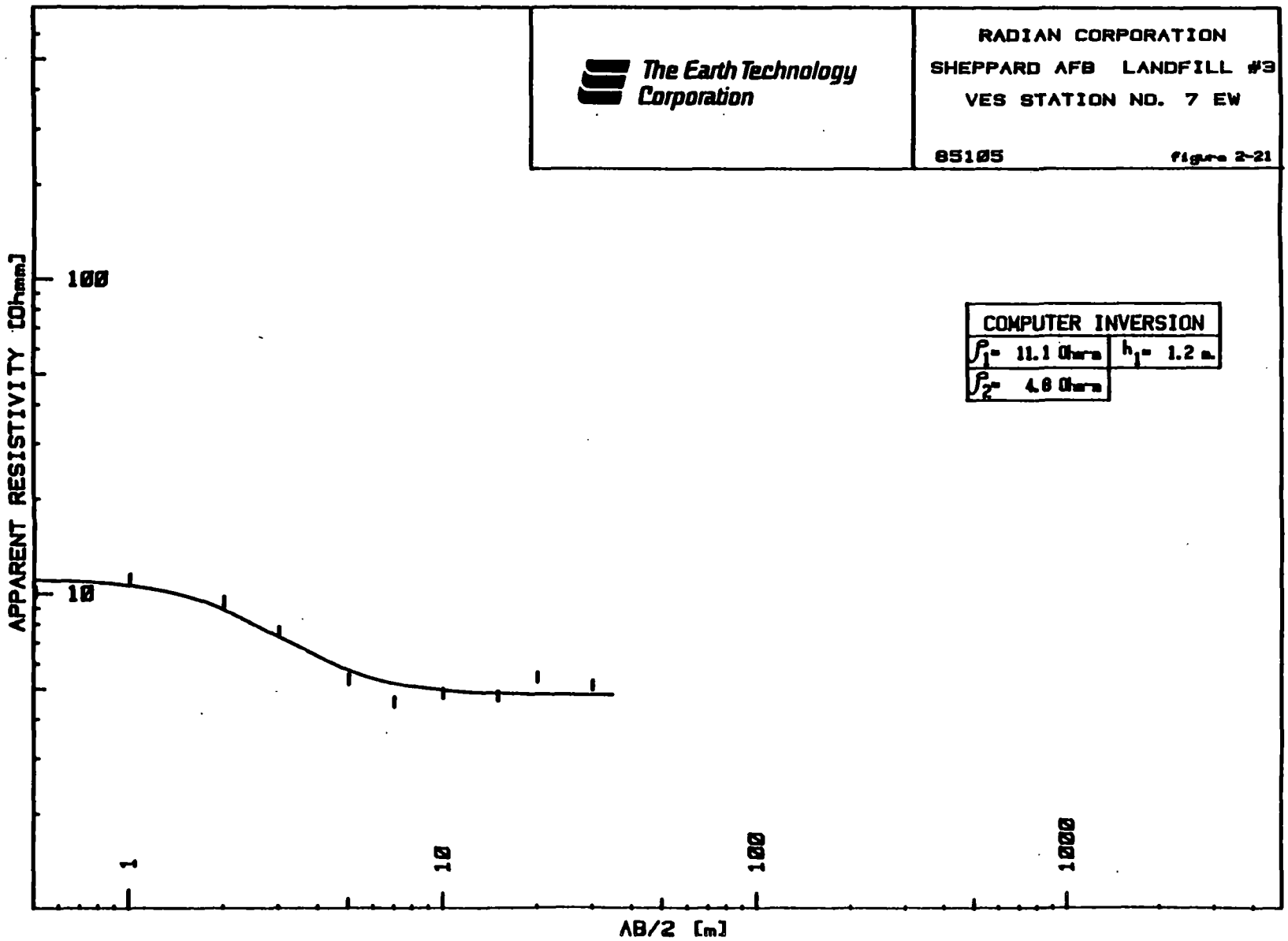
DRAFT


The Earth Technology Corporation
RADIAN CORPORATION
SHEPPARD AFB LANDFILL #3
VES STATION NO. 6
85185
Figure 2-10
COMPUTER INVERSION
ρ_1= 15.6 Ohm-m
h_1= .5 m
ρ_2= 48.6 Ohm-m
h_2= 1.5 m
ρ_3= 4.0 Ohm-m
APPARENT RESISTIVITY [Ohm-m]
100
10
1
10
100
1000
AB/2 [m]

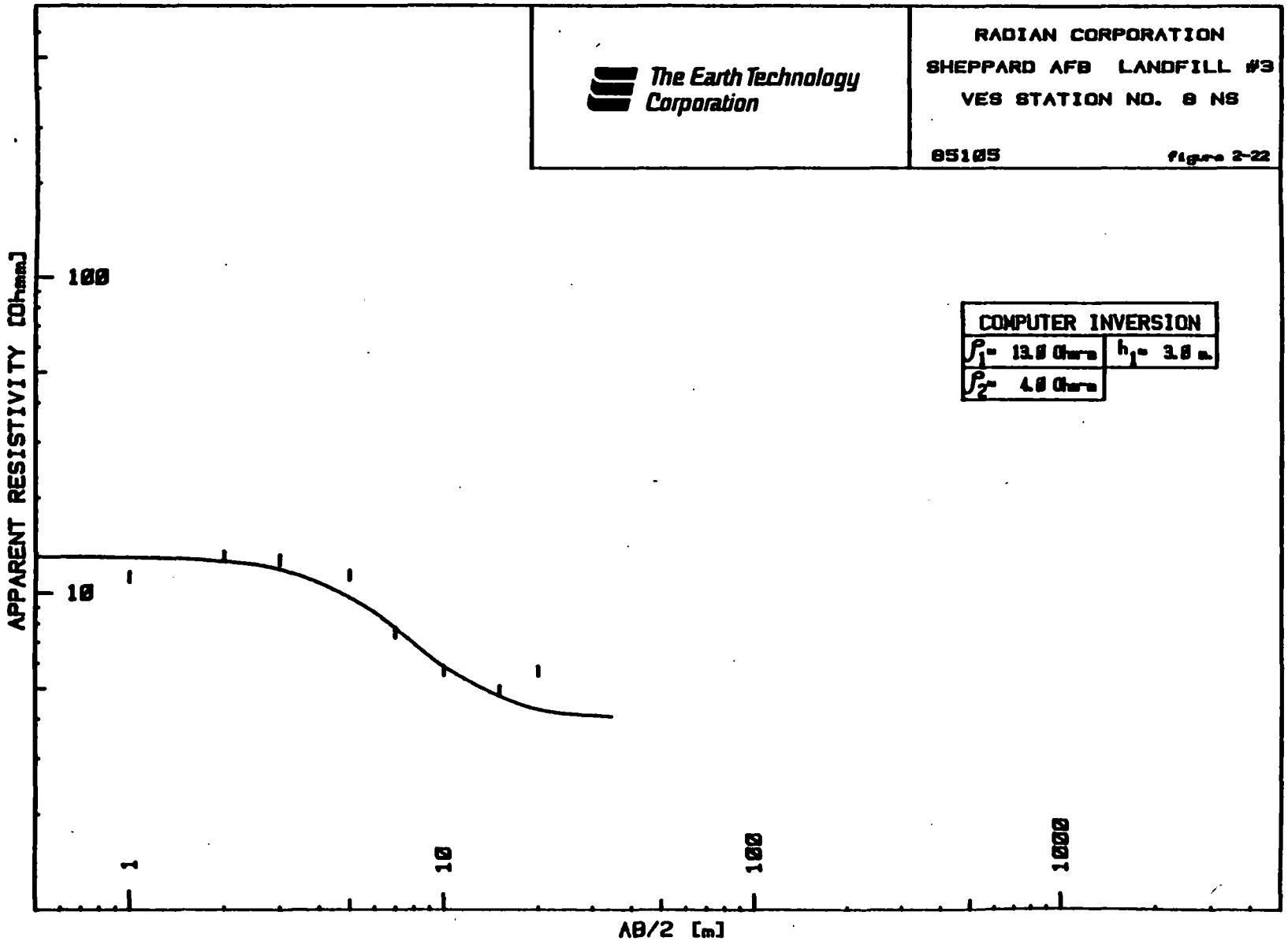
DRAFT


The Earth Technology Corporation
RADIAN CORPORATION
SHEPPARD AFB LANDFILL #3
VES STATION NO. 7 NS
85165
Figure 2-25
COMPUTER INVERSION
ρ_1= 15.9 Ohm-m
h_1= 1.6 m
ρ_2= 4.8 Ohm-m
APPARENT RESISTIVITY [Ohm-m]
100
10
1
10
100
1000
AB/2 [m]

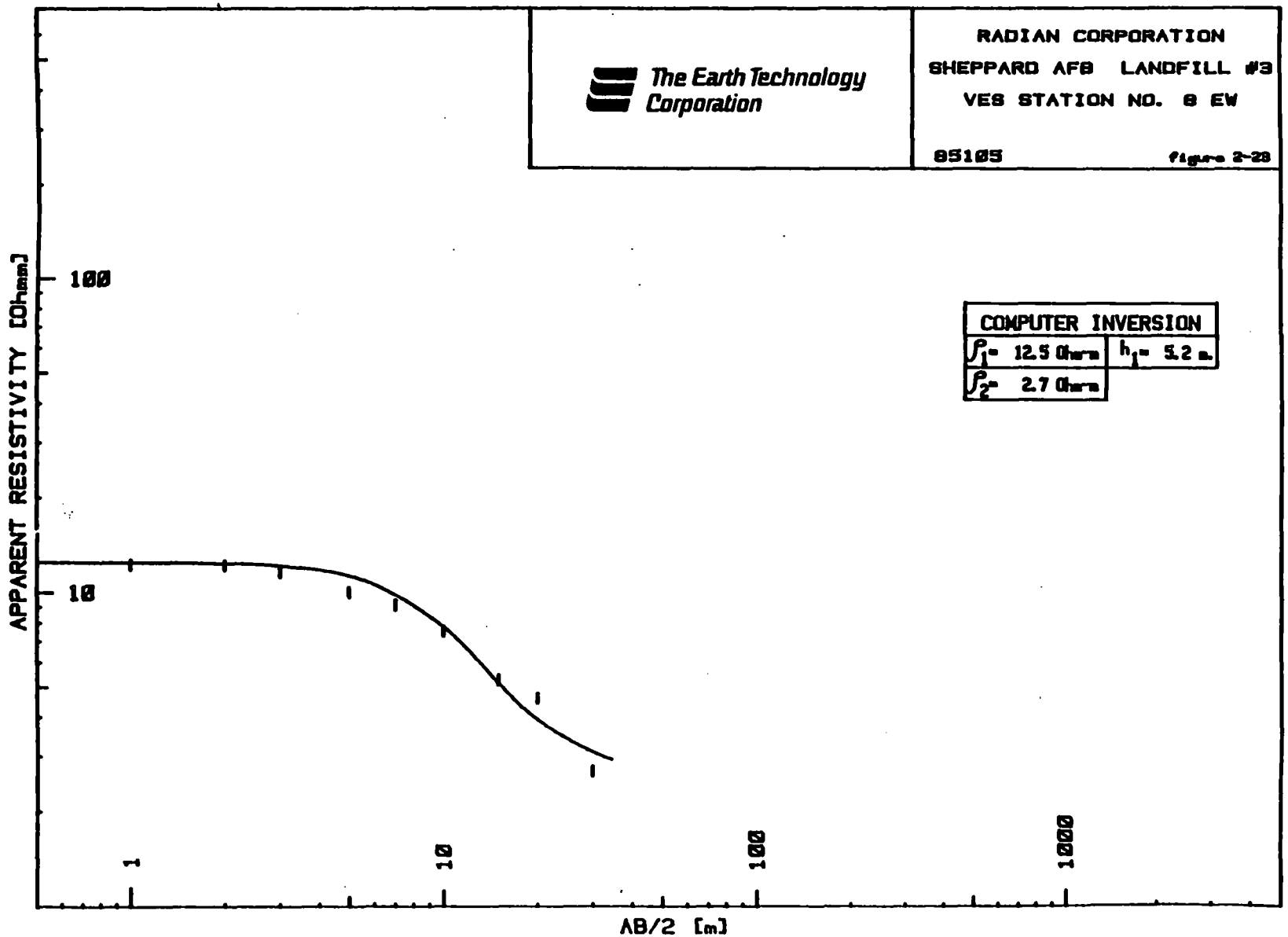
DRAFT


The Earth Technology Corporation
RADIAN CORPORATION
SHEPPARD AFB LANDFILL #3
VES STATION NO. 7 EW
85105
figure 2-21
COMPUTER INVERSION
ρ1= 11.1 Ohm-m
h1= 1.2 m
ρ2= 4.8 Ohm-m
APPARENT RESISTIVITY [Ohm-m]
100
10
1
10
100
1000
AB/2 [m]

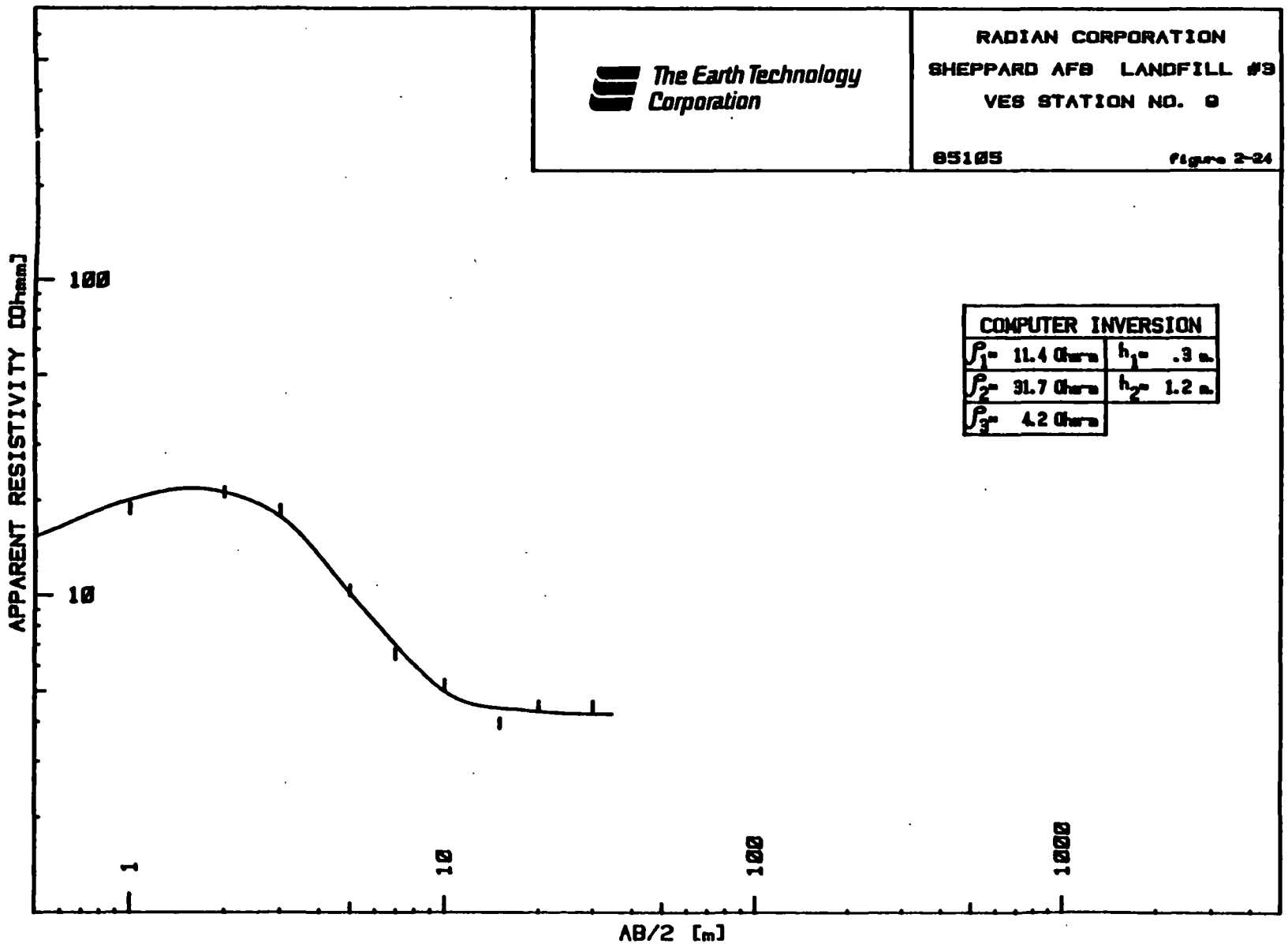
DRAFT


The Earth Technology Corporation
RADIAN CORPORATION
SHEPPARD AFB LANDFILL #3
VES STATION NO. 8 NS
85105
Figure 2-22
COMPUTER INVERSION
ρ1= 13.8 Ohm-m
h1= 3.8 m.
ρ2= 4.8 Ohm-m
APPARENT RESISTIVITY [Ohm-m]
100
10
1
10
100
1000
AB/2 [m]

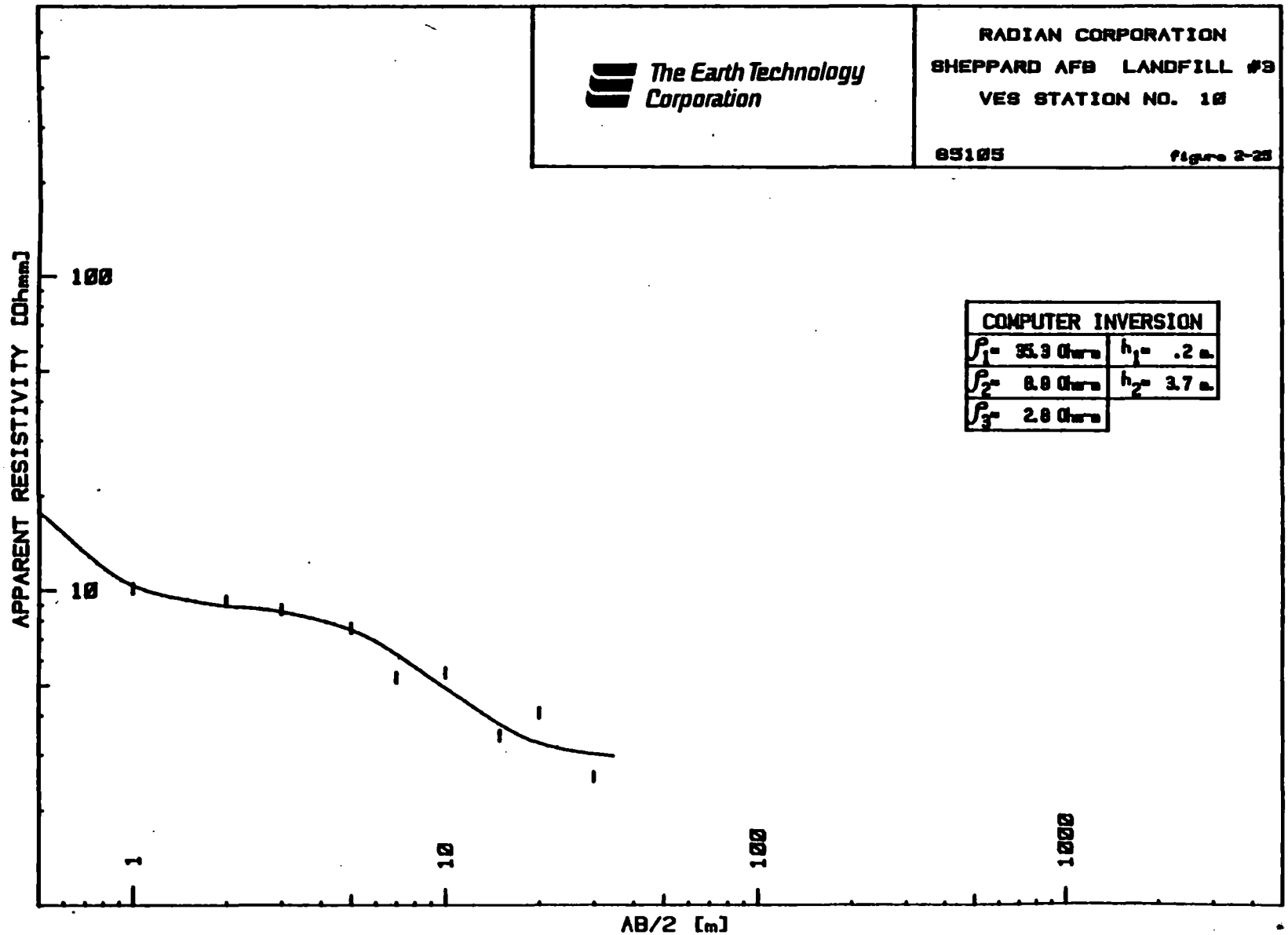
DRAFT


The Earth Technology Corporation
RADIAN CORPORATION
SHEPPARD AFB LANDFILL #3
VES STATION NO. 8 EW
85105
Figure 2-28
COMPUTER INVERSION
ρ1= 12.5 Ohm-m
h1= 5.2 m.
ρ2= 2.7 Ohm-m
APPARENT RESISTIVITY [Ohm-m]
100
10
1
10
100
1000
AB/2 [m]

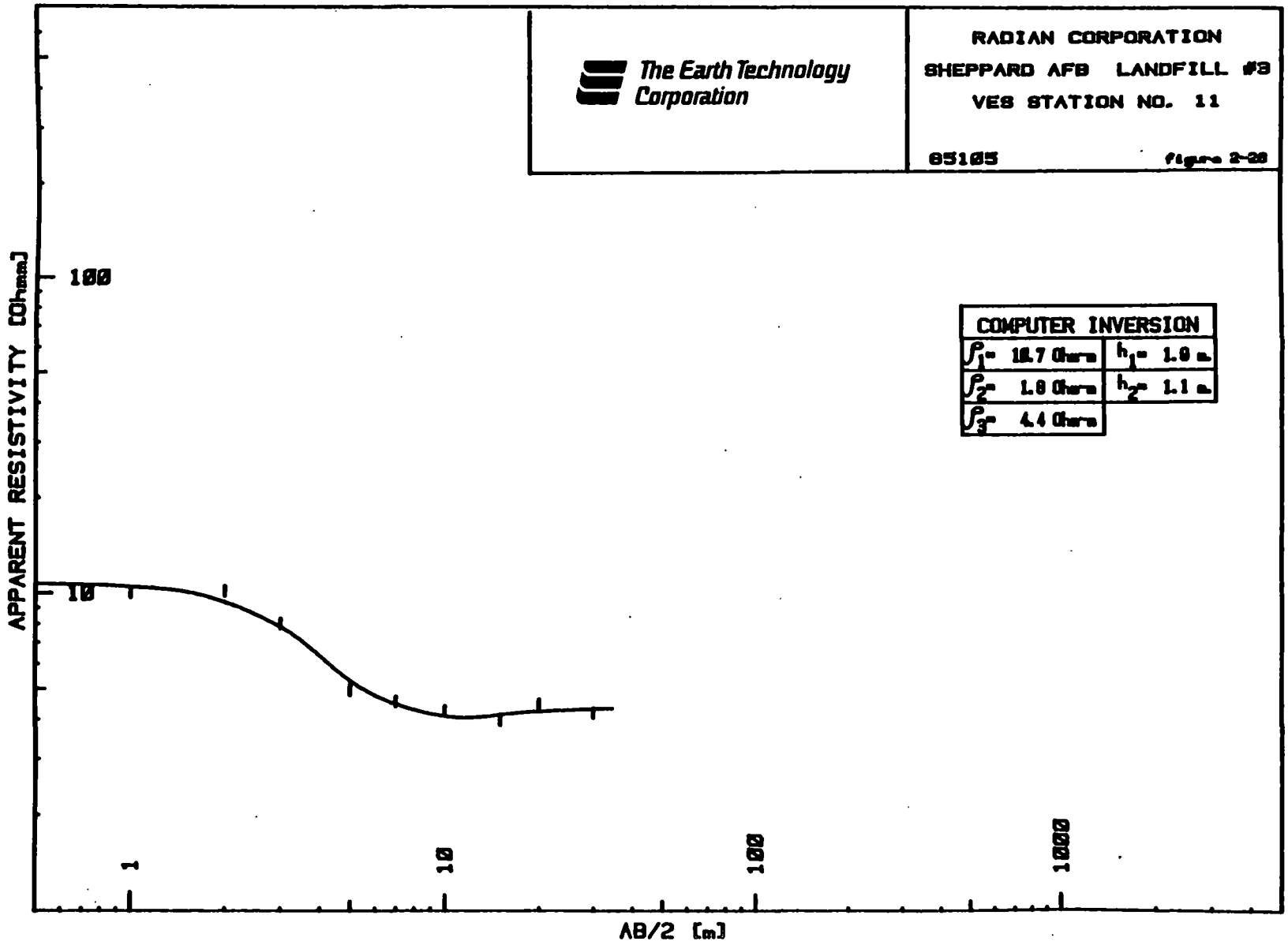
DRAFT


The Earth Technology Corporation
RADIAN CORPORATION
SHEPPARD AFB LANDFILL #3
VES STATION NO. 9
85105
Figure 2-24
COMPUTER INVERSION
ρ1= 11.4 Ohm-m
h1= .3 m.
ρ2= 31.7 Ohm-m
h2= 1.2 m.
ρ3= 4.2 Ohm-m
APPARENT RESISTIVITY [Ohm-m]
100
10
1
10
100
1000
AB/2 [m]

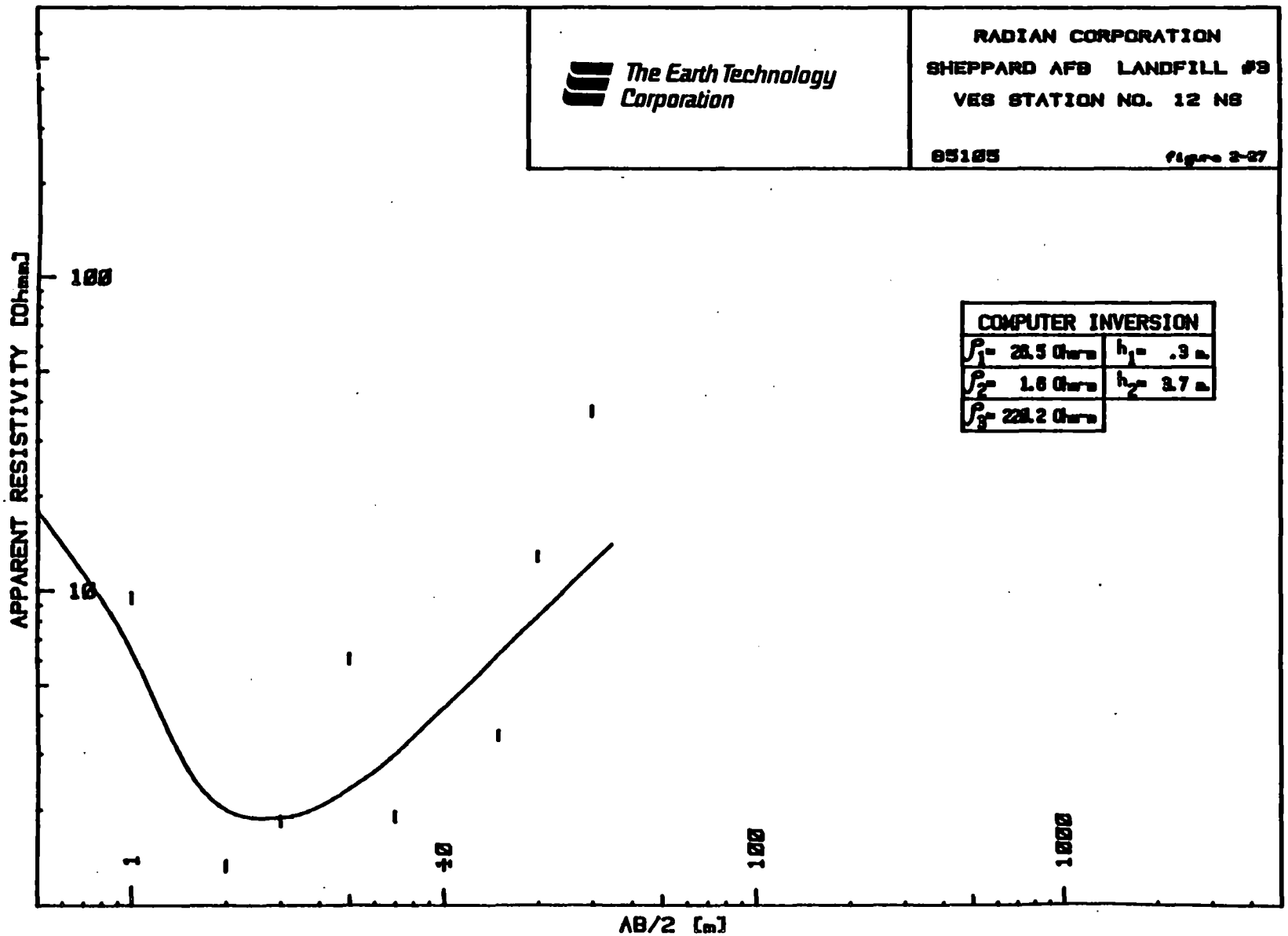
DRAFT


The Earth Technology Corporation
RADIAN CORPORATION
SHEPPARD AFB LANDFILL #3
VES STATION NO. 10
85105
figure 2-25
COMPUTER INVERSION
ρ1= 35.3 Ohm-m
h1= .2 m.
ρ2= 8.8 Ohm-m
h2= 3.7 m.
ρ3= 2.8 Ohm-m
APPARENT RESISTIVITY [Ohmm]
100
10
1
10
100
1000
AB/2 [m]

DRAFT

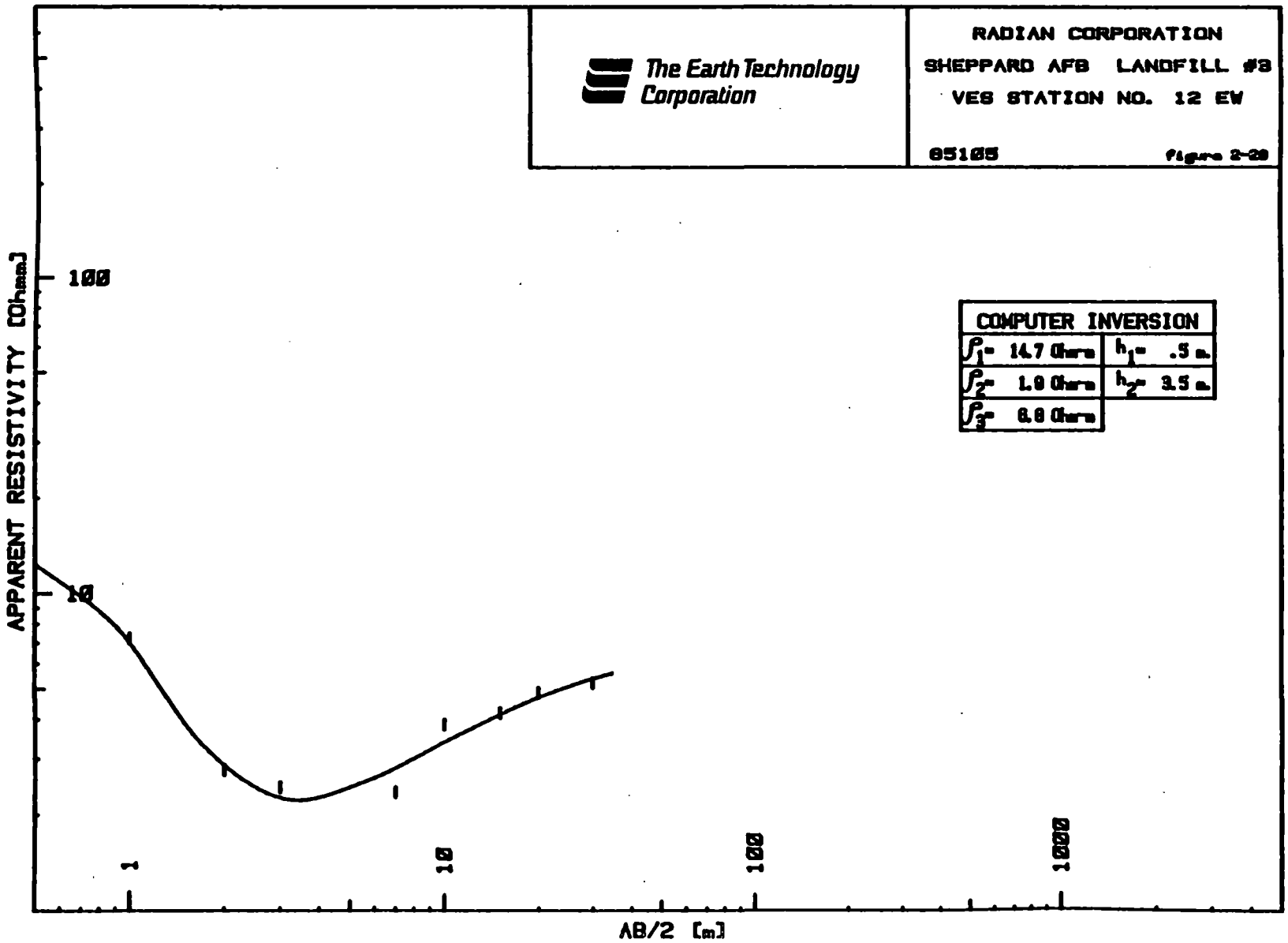

The Earth Technology Corporation
RADIAN CORPORATION
SHEPPARD AFB LANDFILL #3
VES STATION NO. 11
85105
Figure 2-28
COMPUTER INVERSION
ρ1= 18.7 Ohm-m
h1= 1.0 m
ρ2= 1.8 Ohm-m
h2= 1.1 m
ρ3= 4.4 Ohm-m
APPARENT RESISTIVITY [Ohm-m]
100
10
1
10
100
1000
AB/2 [m]

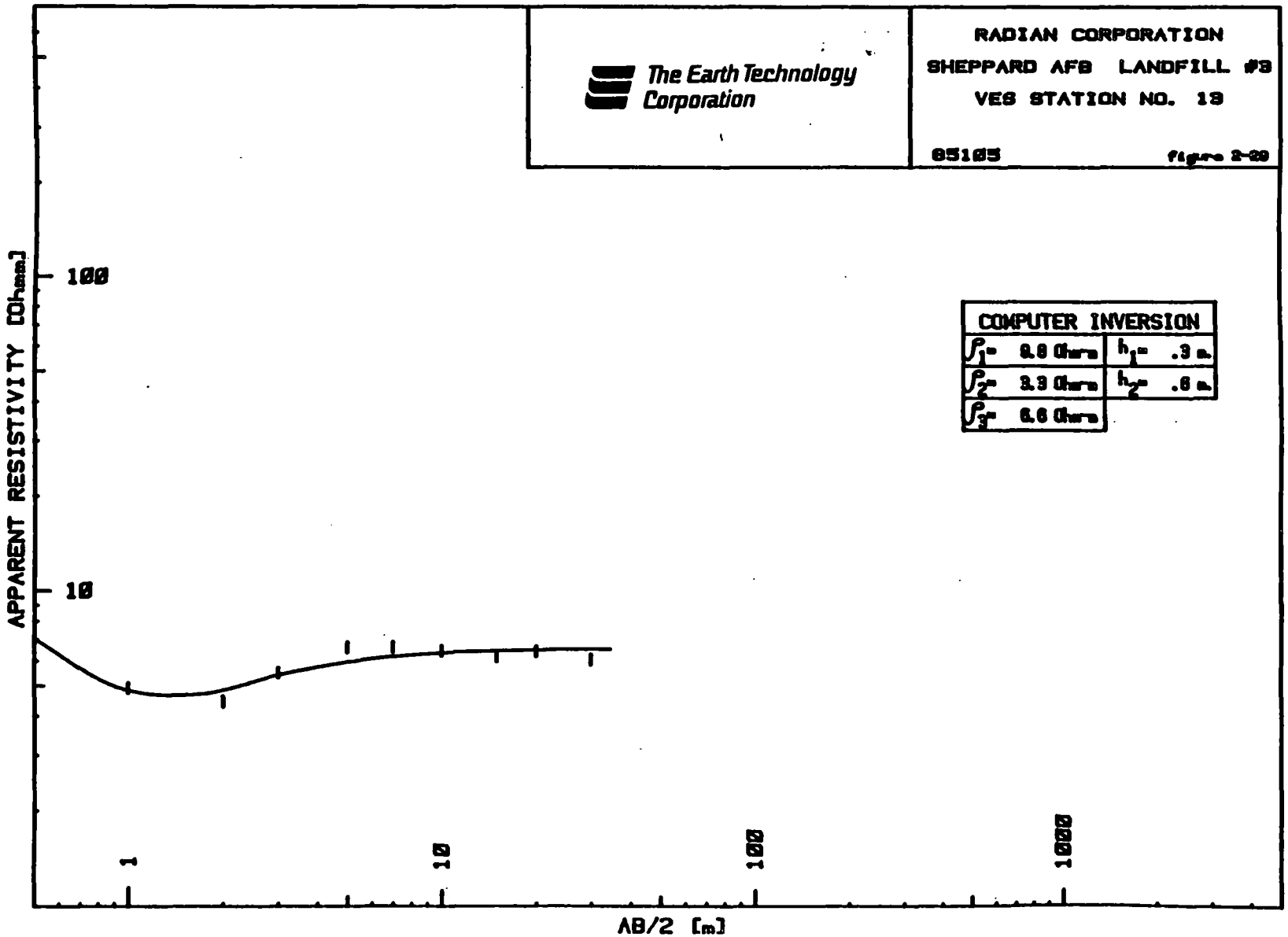
DRAFT


The Earth Technology Corporation
RADIAN CORPORATION
SHEPPARD AFB LANDFILL #3
VES STATION NO. 12 NS
85105
figure 2-27
COMPUTER INVERSION
ρ1= 26.5 Ohm-m
h1= .3 m
ρ2= 1.6 Ohm-m
h2= 3.7 m
ρ3= 220.2 Ohm-m
APPARENT RESISTIVITY [Ohmm]
100
10
1
10
100
1000
AB/2 [m]

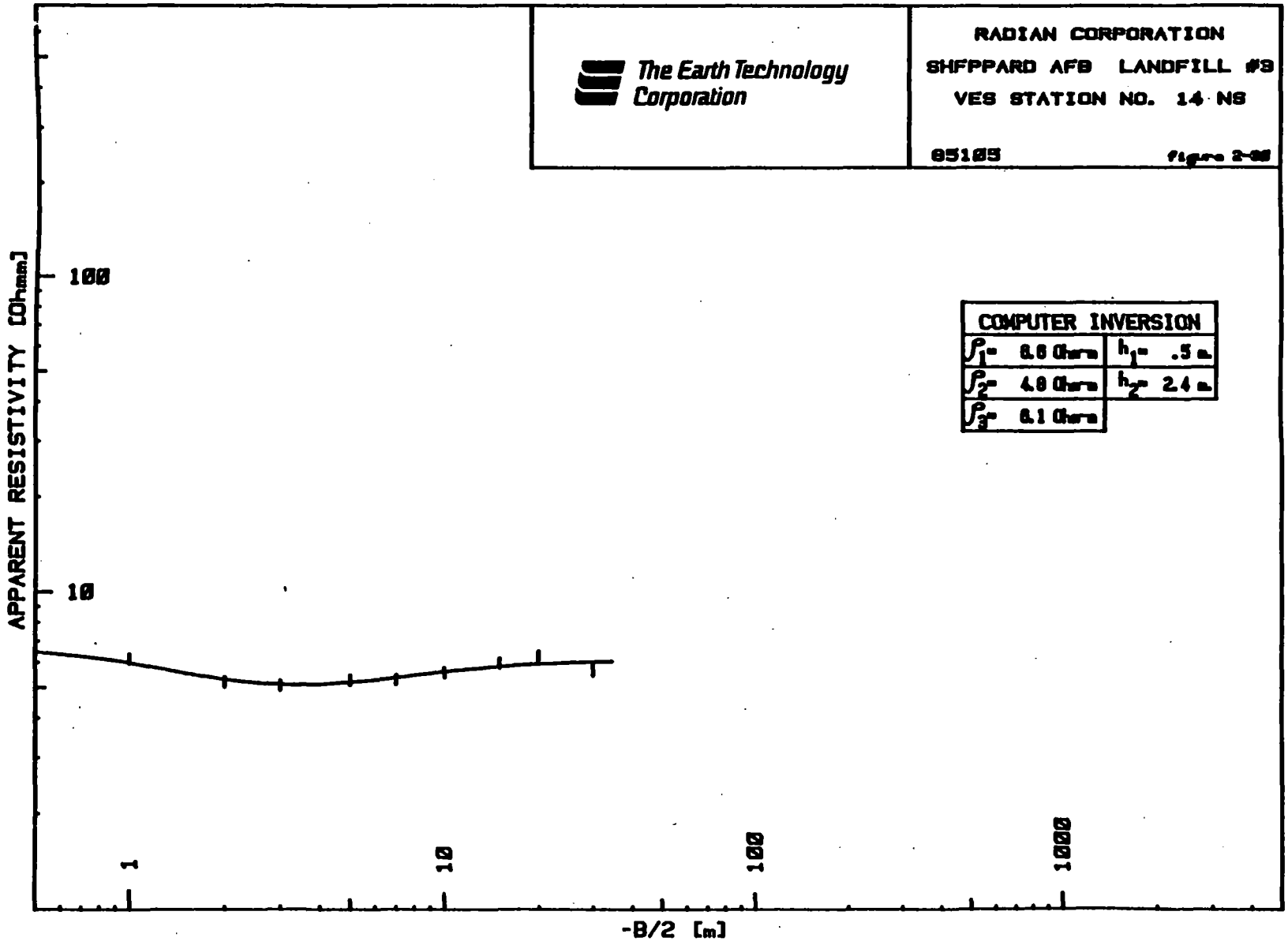
DRAFT

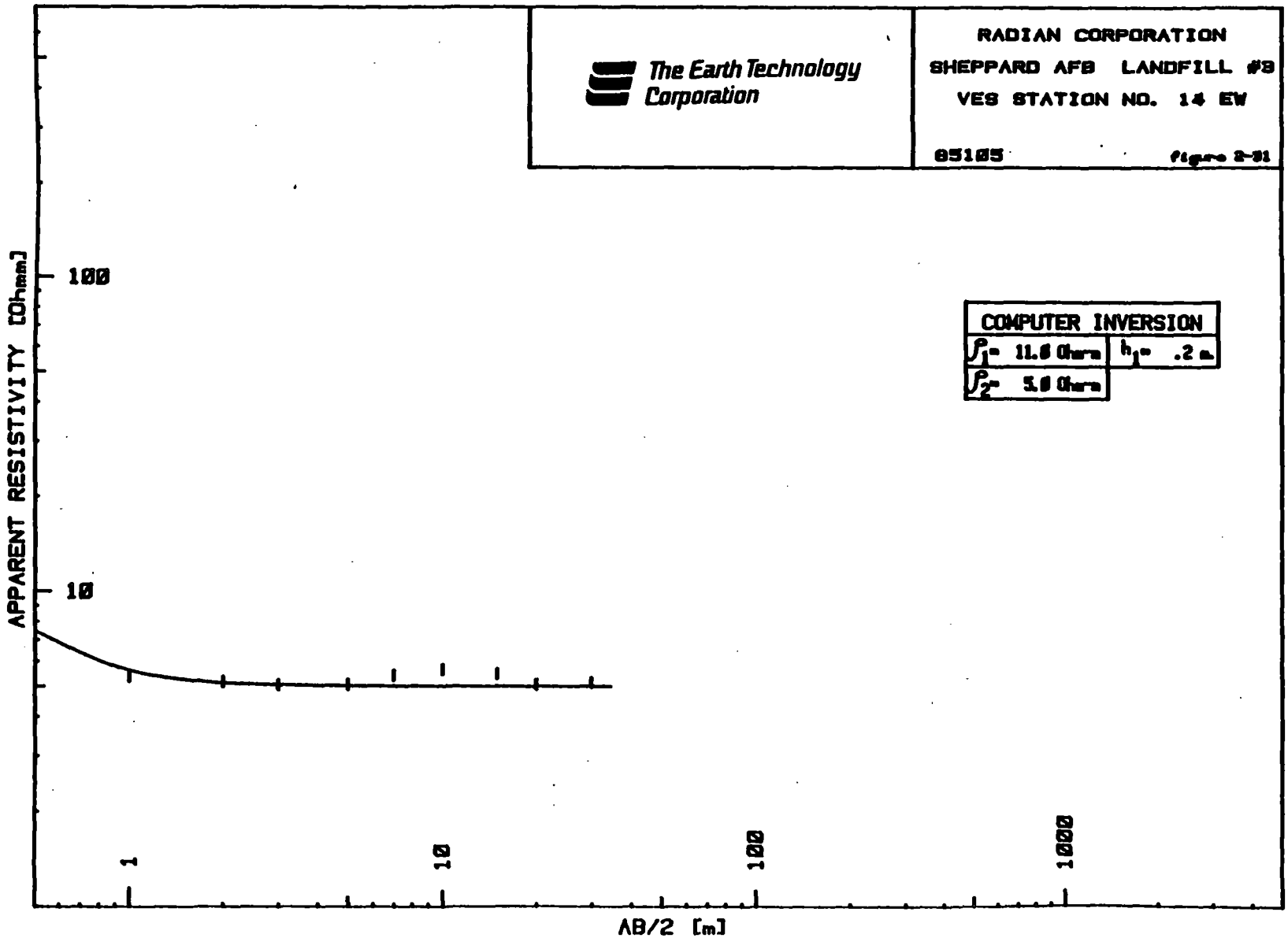
DRAFT

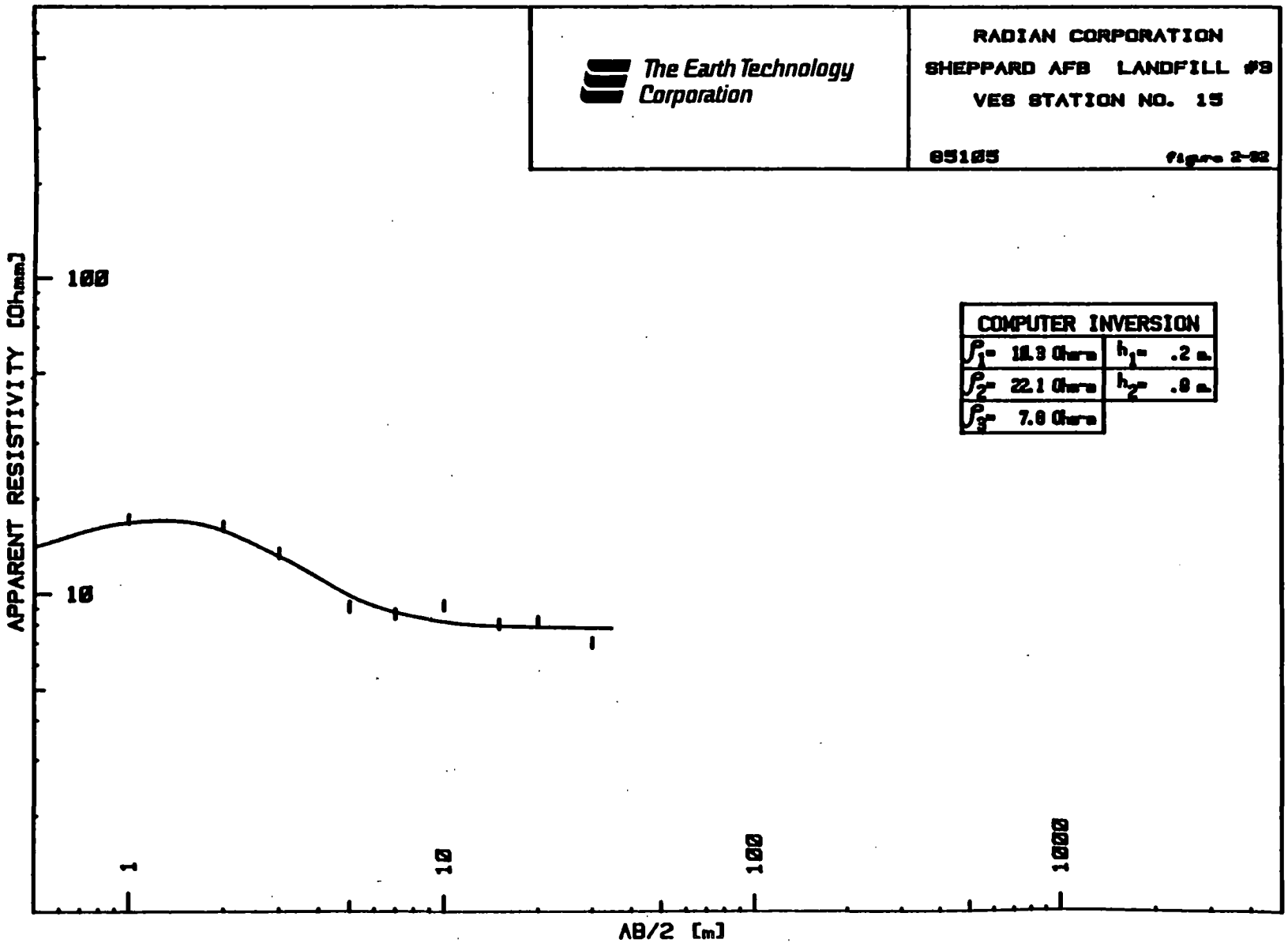

The Earth Technology Corporation
RADIAN CORPORATION
SHEPPARD AFB LANDFILL #3
VES STATION NO. 12 EW
85105
Figure 2-28
COMPUTER INVERSION
ρ1= 14.7 Ohm-m
h1= .5 m.
ρ2= 1.9 Ohm-m
h2= 3.5 m.
ρ3= 6.8 Ohm-m
APPARENT RESISTIVITY [Ohmm]
100
10
1
10
100
1000
AB/2 [m]


The Earth Technology Corporation
RADIAN CORPORATION
SHEPPARD AFB LANDFILL #3
VES STATION NO. 13
85105
figure 2-29
COMPUTER INVERSION
ρ1= 9.8 Ohm
h1= .3 m.
ρ2= 3.3 Ohm
h2= .6 m.
ρ3= 6.6 Ohm
APPARENT RESISTIVITY [Ohmm]
100
10
1
10
100
1000
AB/2 [m]

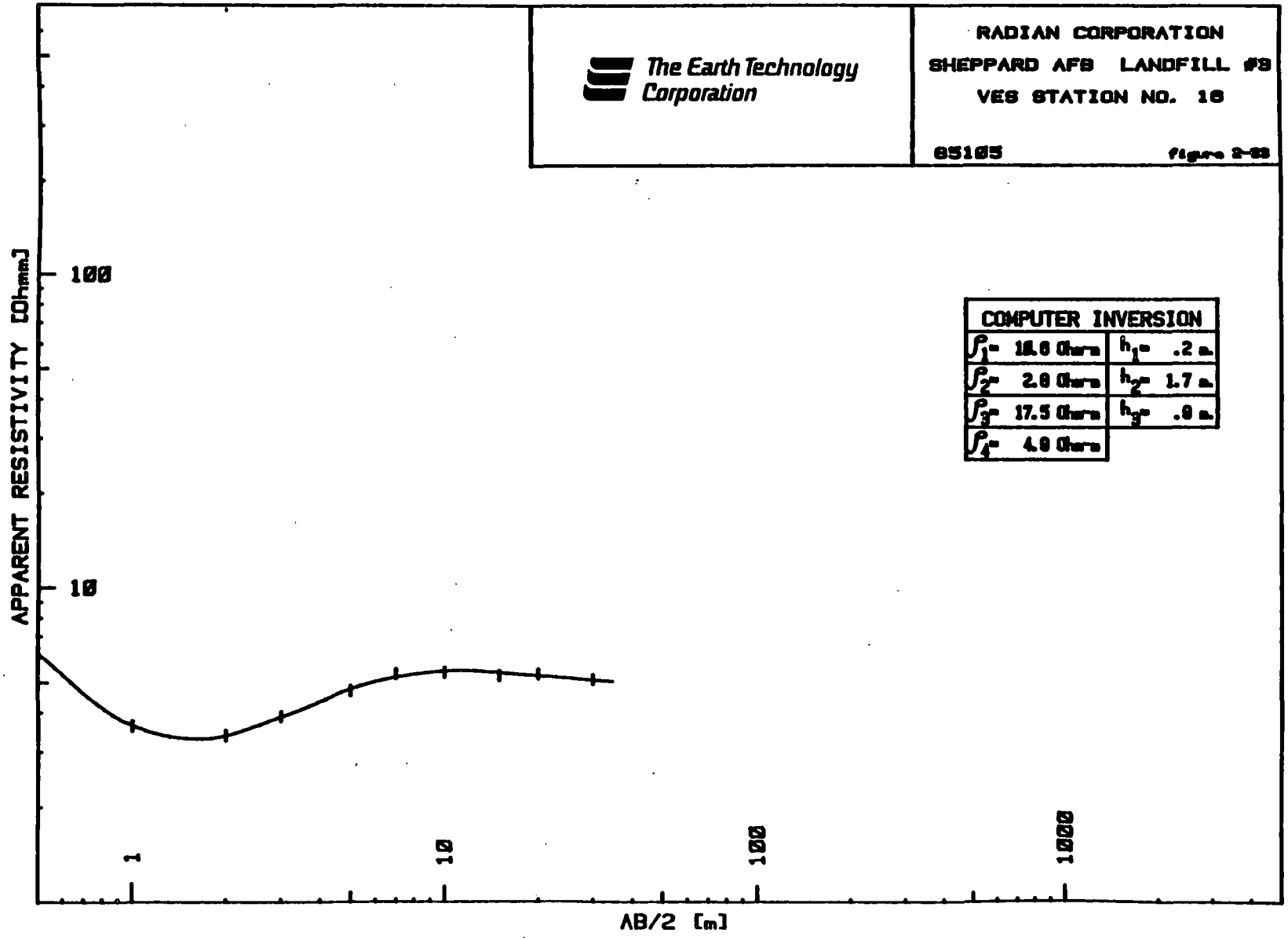
DRAFT


The Earth Technology Corporation
RADIAN CORPORATION
SHFPPARD AFB LANDFILL #3
VES STATION NO. 14 NS
05105
COMPUTER INVERSION
ρ_1= 8.6 Ohm-m
h_1= .5 m
ρ_2= 4.0 Ohm-m
h_2= 2.4 m
ρ_3= 8.1 Ohm-m
APPARENT RESISTIVITY [Ohm-m]
100
10
1
10
100
1000
-B/2 [m]

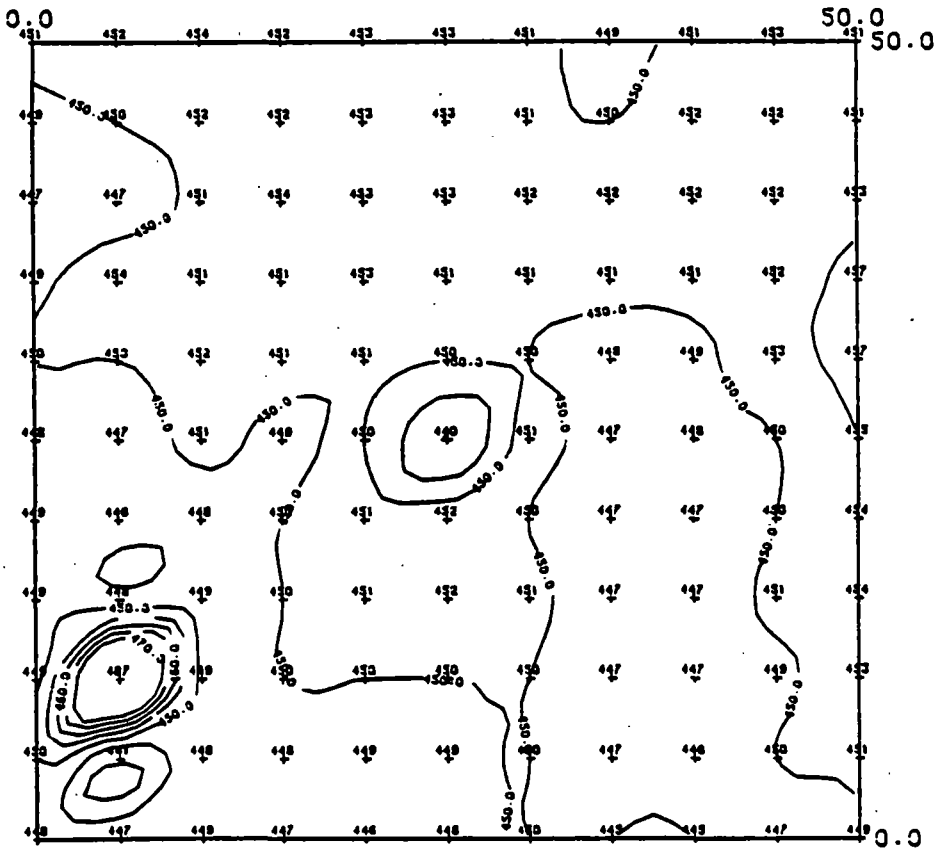

The Earth Technology Corporation
RADIAN CORPORATION
SHEPPARD AFB LANDFILL #8
VES STATION NO. 14 EW
85105
Figure 2-31
COMPUTER INVERSION
ρ_1= 11.6 Ohm-m
h_1= .2 m
ρ_2= 5.8 Ohm-m
APPARENT RESISTIVITY [Ohm-m]
100
10
1
10
100
1000
AB/2 [m]


The Earth Technology Corporation
RADIAN CORPORATION
SHEPPARD AFB LANDFILL #9
VES STATION NO. 15
85105
Figure 2-82
COMPUTER INVERSION
ρ_1= 11.3 Ohm-m
h_1= .2 m
ρ_2= 22.1 Ohm-m
h_2= .9 m
ρ_3= 7.0 Ohm-m
APPARENT RESISTIVITY [Ohm-m]
100
10
1
10
100
1000
AB/2 [m]

DRAFT


The Earth Technology Corporation
RADIAN CORPORATION
SHEPPARD AFB LANDFILL #8
VES STATION NO. 16
05105
Figure 2-88
COMPUTER INVERSION
ρ1= 18.6 Ohm-m
h1= .2 m
ρ2= 2.8 Ohm-m
h2= 1.7 m
ρ3= 17.5 Ohm-m
h3= .8 m
ρ4= 4.8 Ohm-m
APPARENT RESISTIVITY [Ohm-m]
100
10
1
10
100
1000
AB/2 [m]

DRAFT



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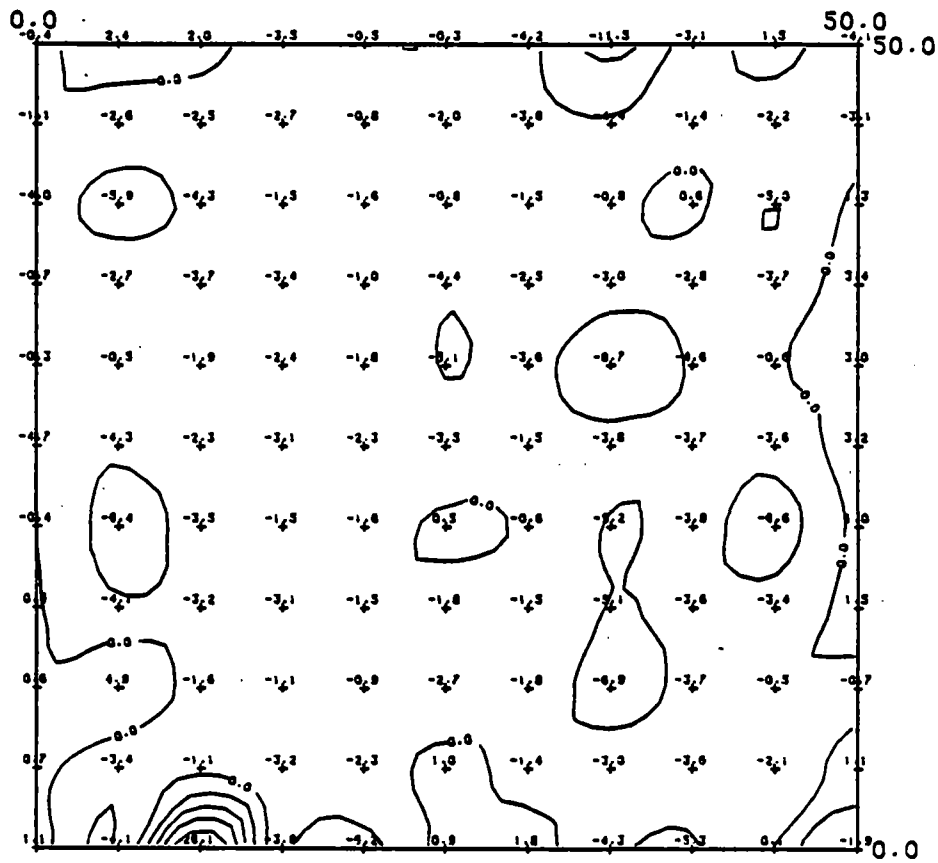
Project: G85105
RADIAN CORPORATION

SHEPPARD AIRFORCE BASE
LANDFILL 3 AND HARDFILL AREA
MAGNETOMETER LOCATION I
TOTAL FIELD

field 2-34

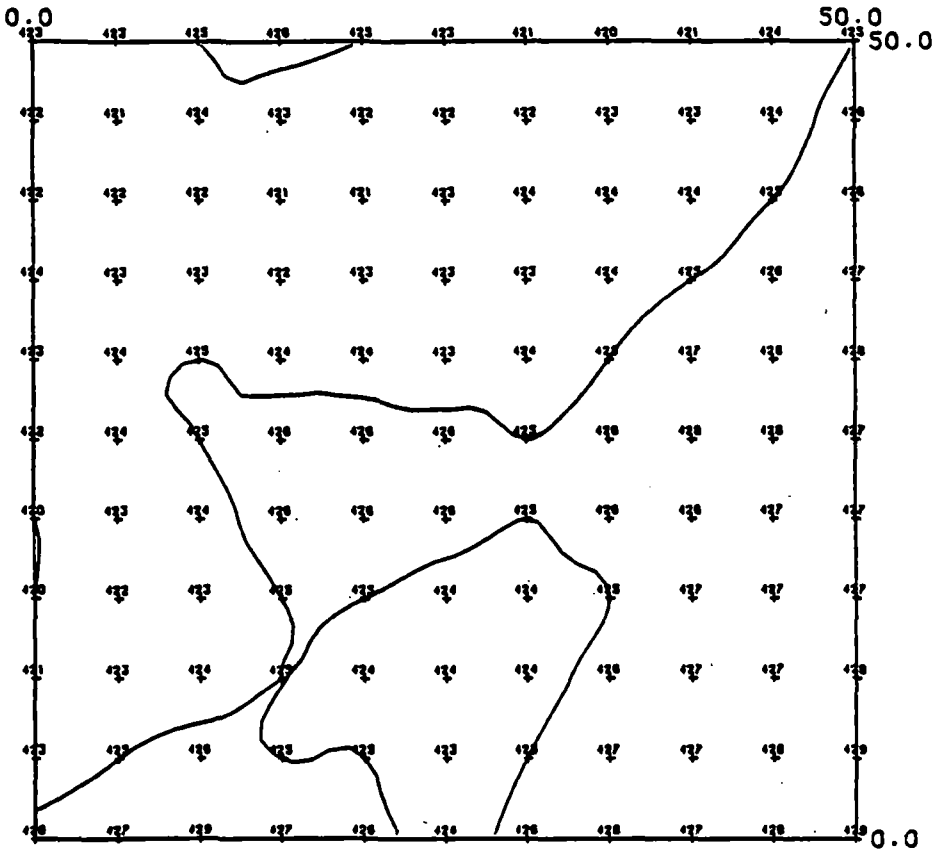


The Earth Technology Corporation

Project: 685108
RADIAN CORPORATION

SHEPPARD AIRFORCE BASE
LANDFILL 3 AND HARDFILL AREA
MAGNETOMETER LOCATION I
VERTICAL GRADIENT

figure 2-35

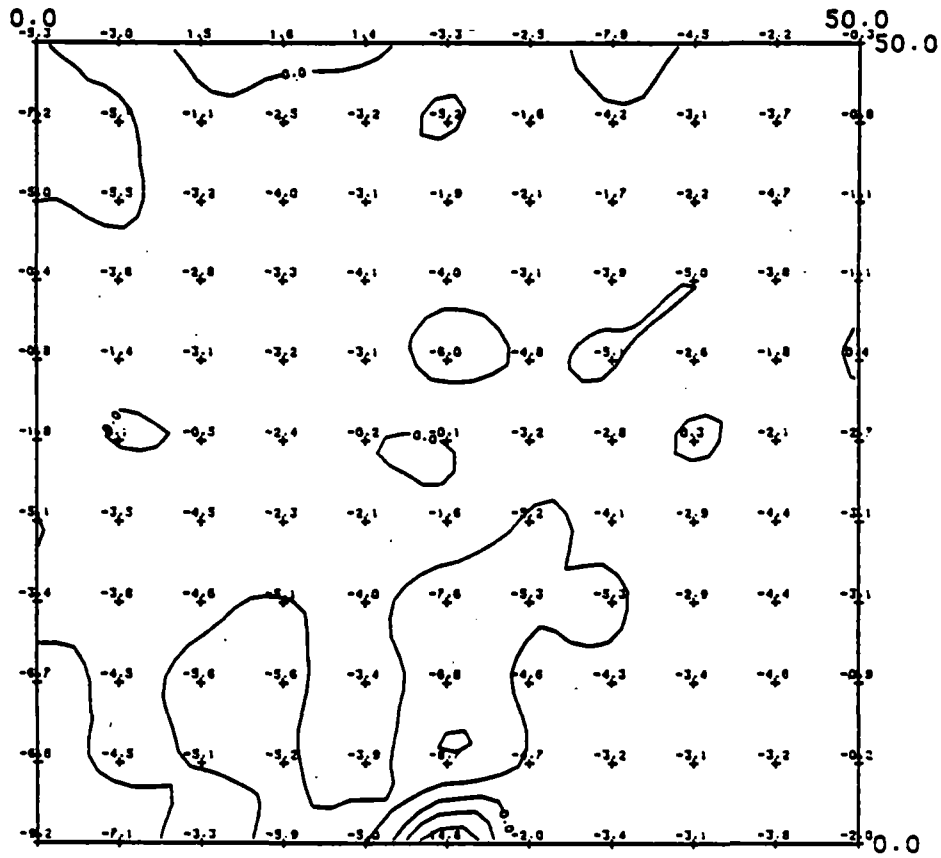


The Earth Technology Corporation

Project: G85106
RADIAN CORPORATION

SHEPPARD AIRFORCE BASE
LANDFILL 3 AND HARDFILL AREA
TOTAL FIELD

figure 2-36

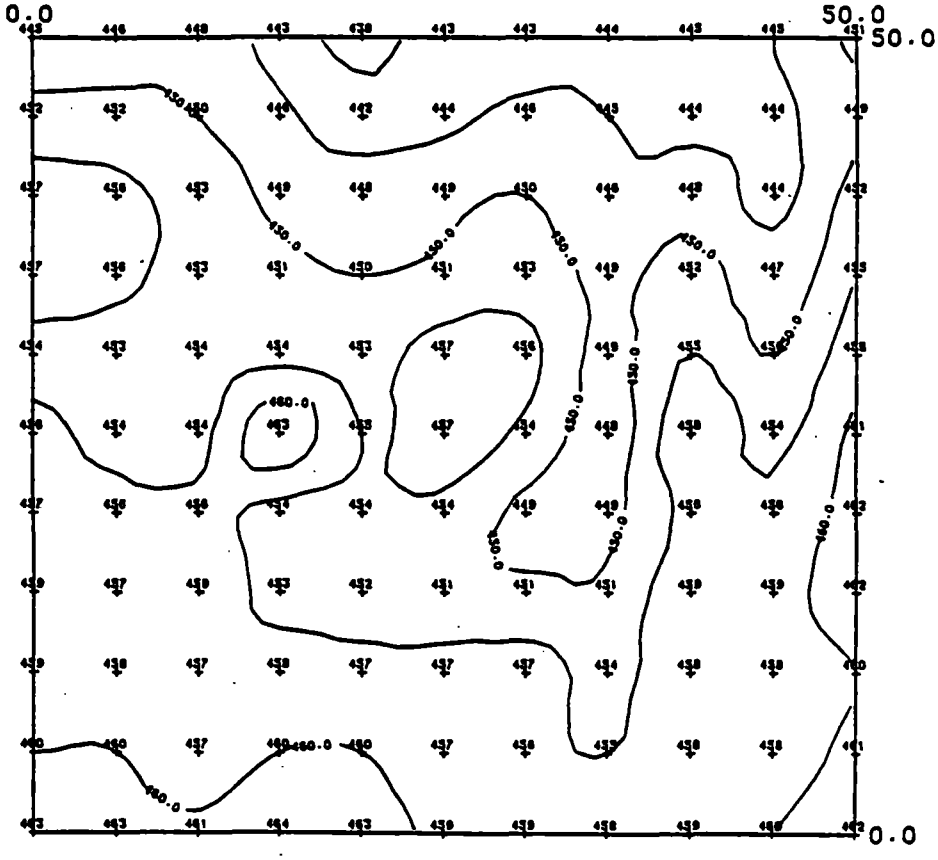


The Earth Technology Corporation

Project: 685105
RADIAN CORPORATION

SHEPPARD AIRFORCE BASE
MAGNETOMETER LOCATION 2
VERTICAL GRADIENT

figure 2-37

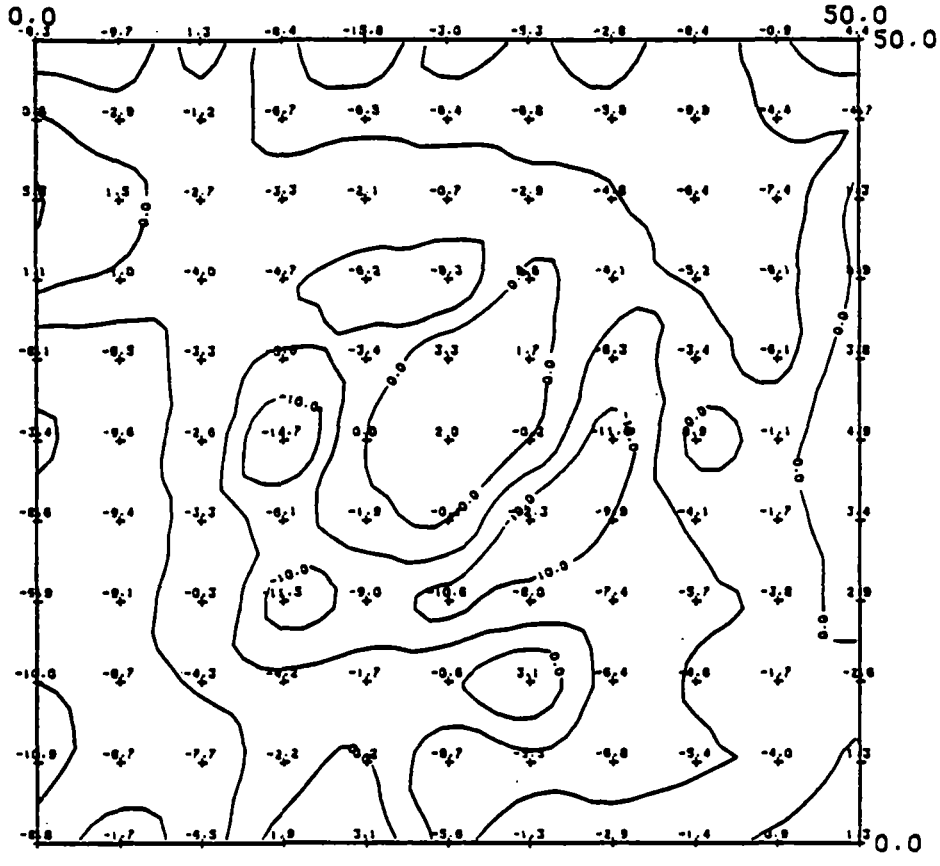


The Earth Technology Corporation

Project: 685105
RADIAN CORPORATION

SHEPPARD AIRFORCE BASE
MAGNETOMETER LOCATION 3
TOTAL FIELD

figure 2-38

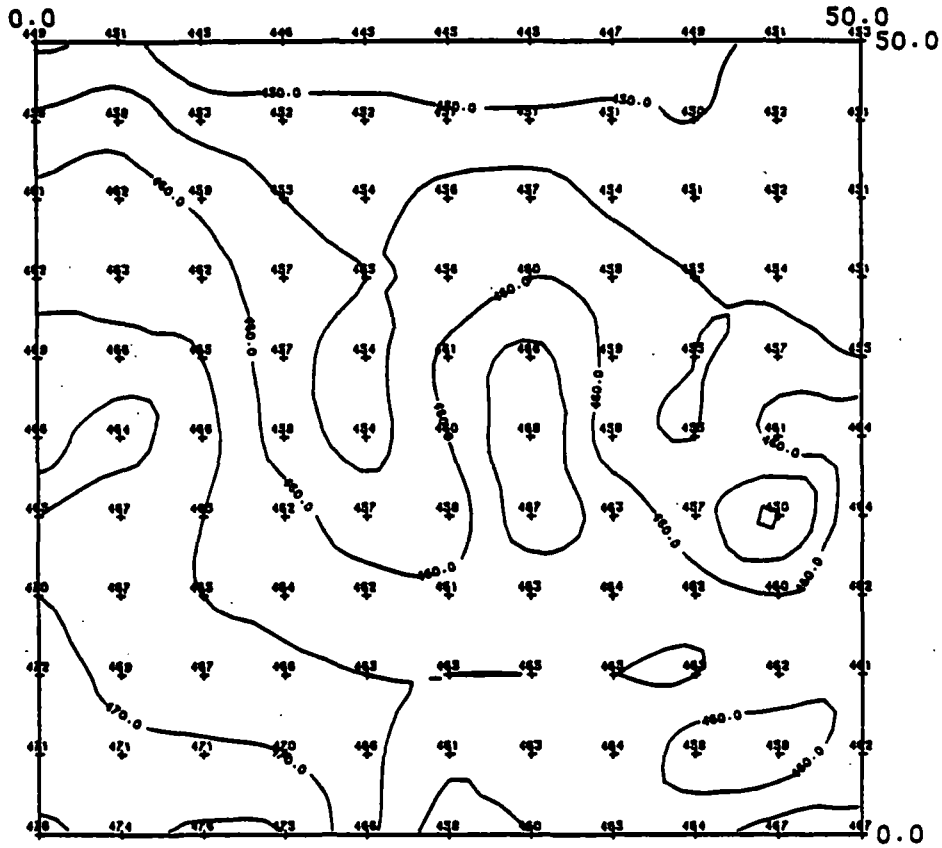


The Earth Technology Corporation

Project: 685105
RADIAN CORPORATION

SHEPPARD AIRFORCE BASE
LANDFILL 3 AND HARDFILL AREA
MAGNETOMETER LOCATION 3
VERTICAL GRADIENT

figure 2-39



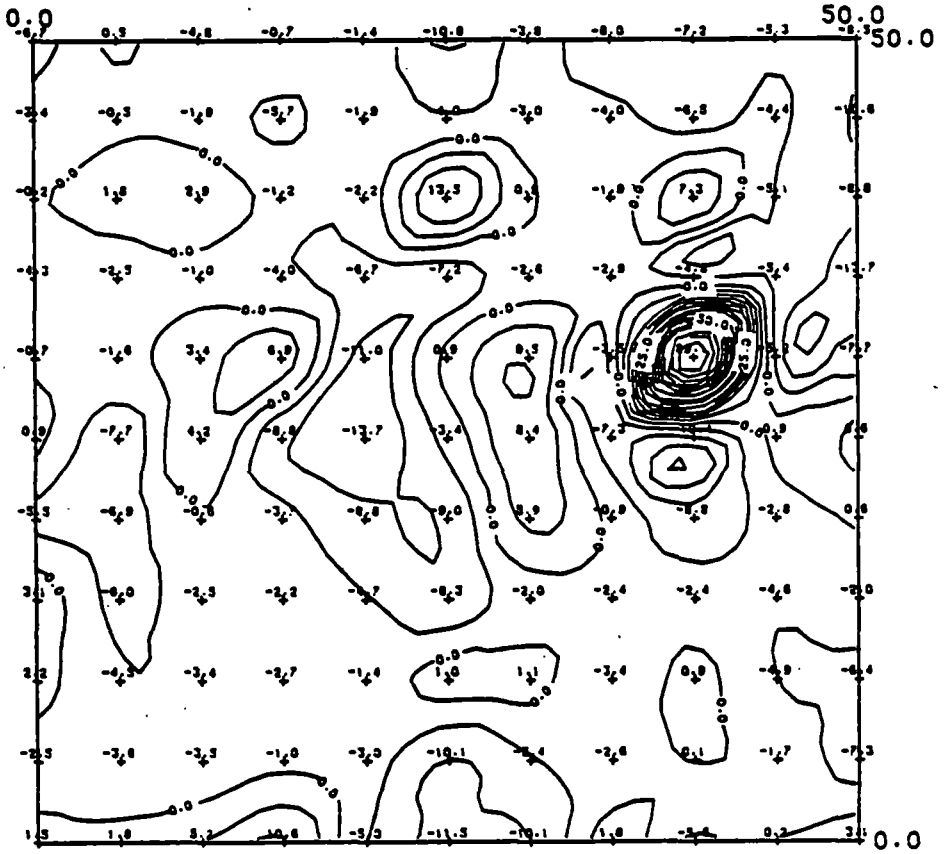
The Earth Technology Corporation

Project: 685105
RADIAN CORPORATION

SHEPPARD AIRFORCE BASE

LANDFILL 3 AND HARDFILL AREA
MAGNETOMETER LOCATION 4
TOTAL FIELD

figure 2-40

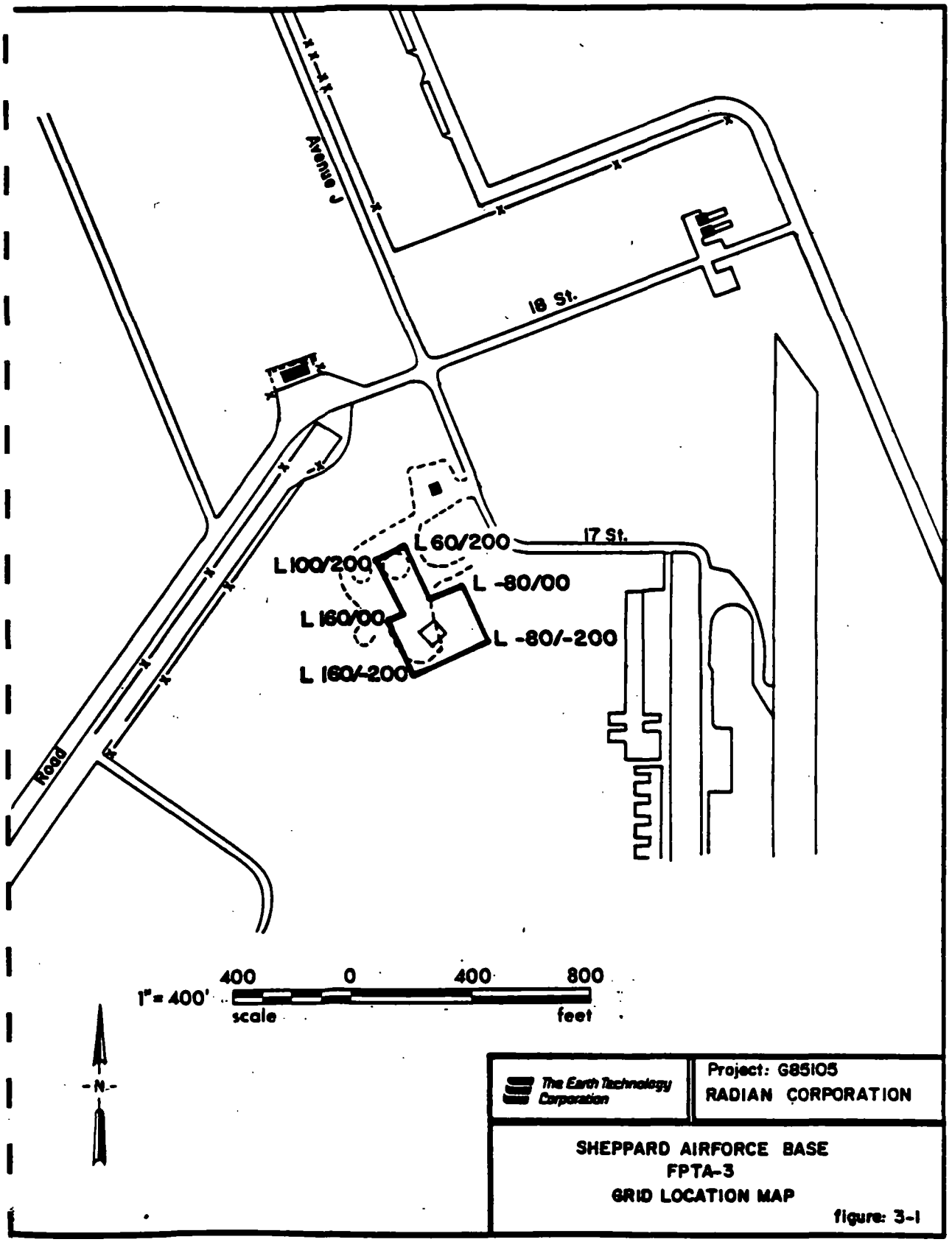


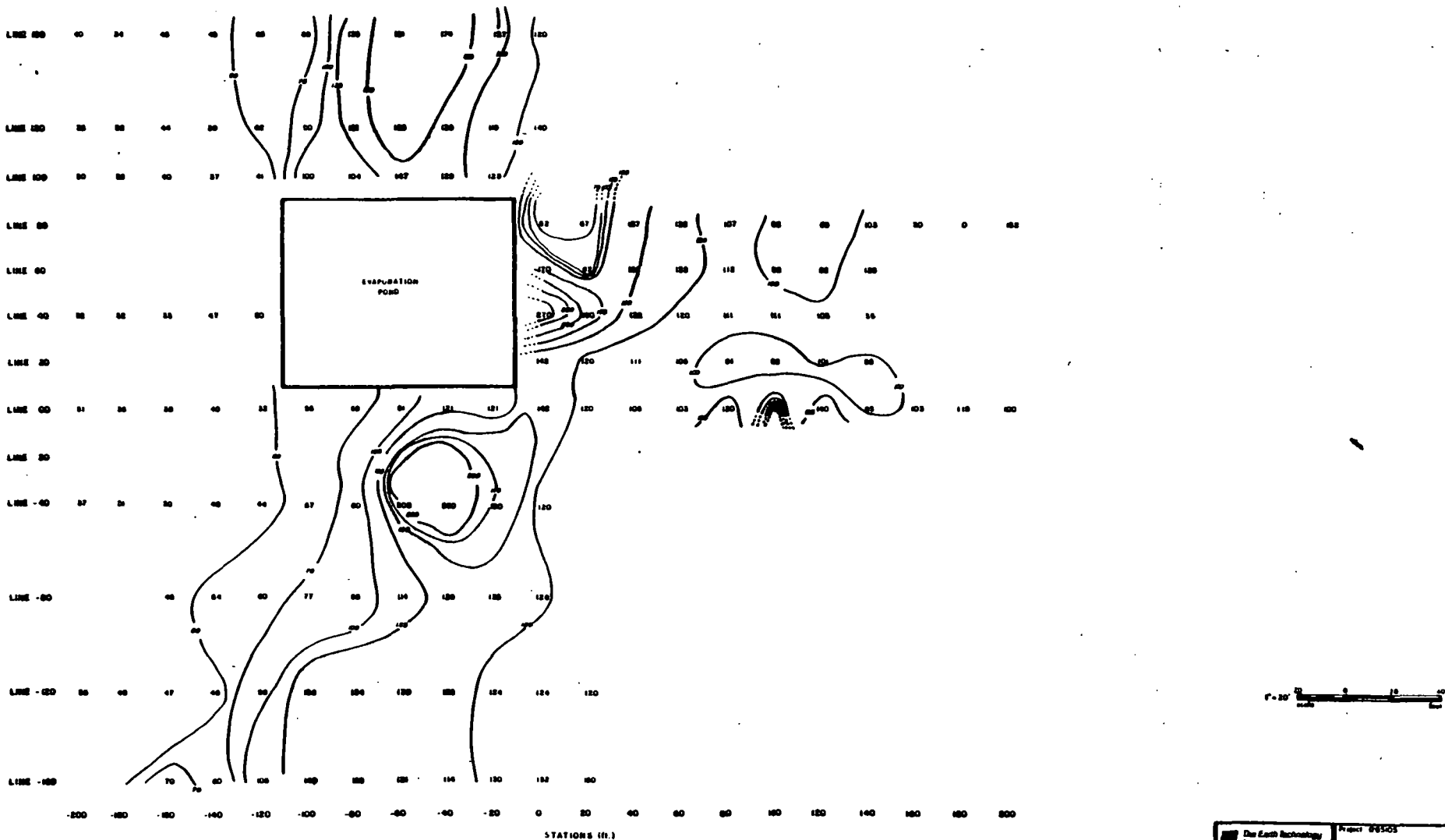
The Earth Technology Corporation

Project: 685105
RADIAN CORPORATION

SHEPPARD AIRFORCE BASE
LANDFILL 3 AND HARDFILL AREA
MAGNETOMETER LOCATION 4
VERTICAL GRADIENT

figure:2-41


Avenue J
18 St.
17 St.
L 60/200
L 100/200
L -80/00
L 160/00
L -80/-200
L 160/-200
Road
400
0
400
800
1"= 400'
scale
feet
N
The Earth Technology Corporation
Project: G85105
RADIAN CORPORATION
SHEPPARD AIRFORCE BASE
FPTA-3
GRID LOCATION MAP
figure: 3-1



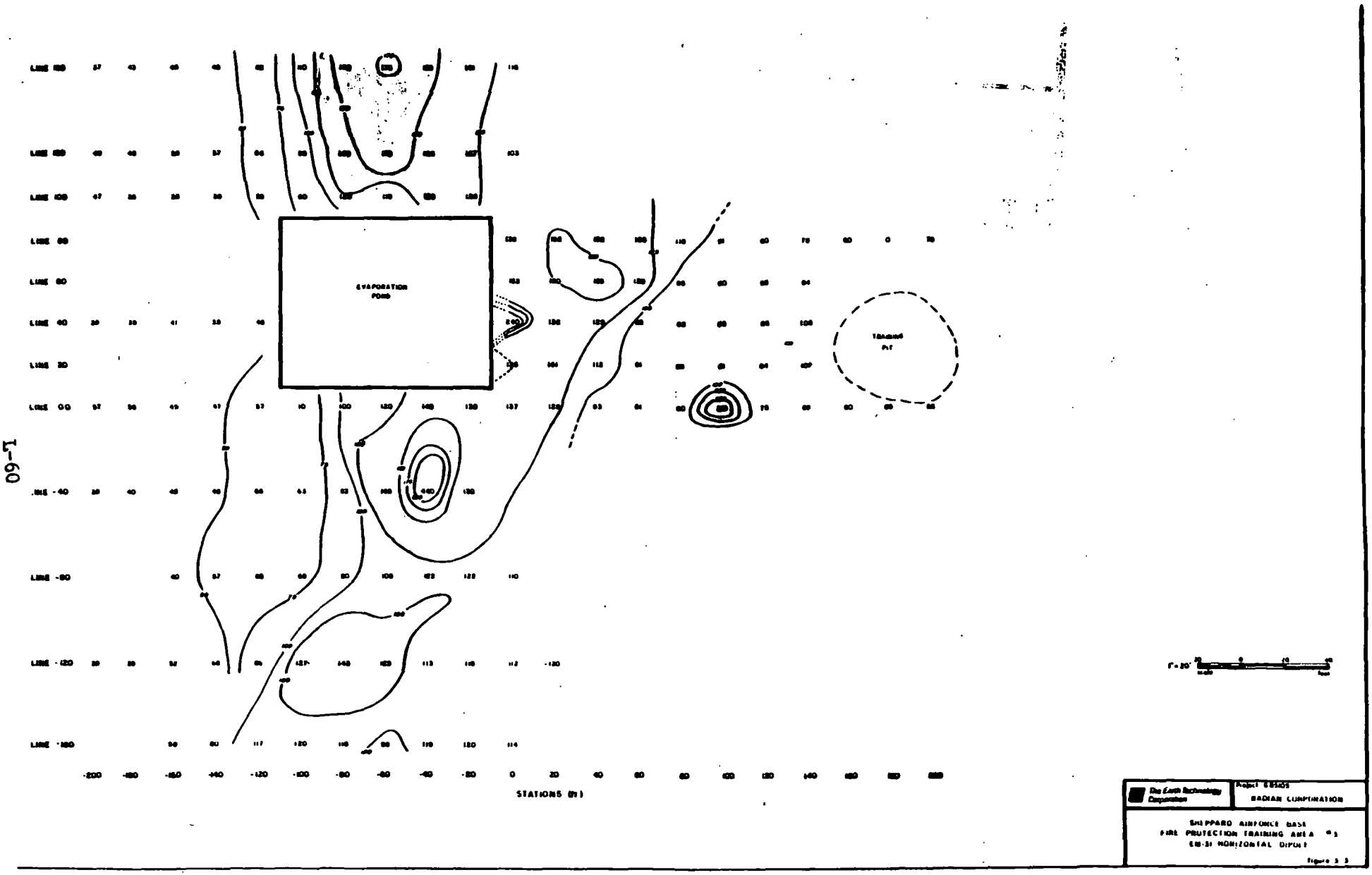
The Earth Technology Corporation

Project 8-65-05
RADIAN CORPORATION

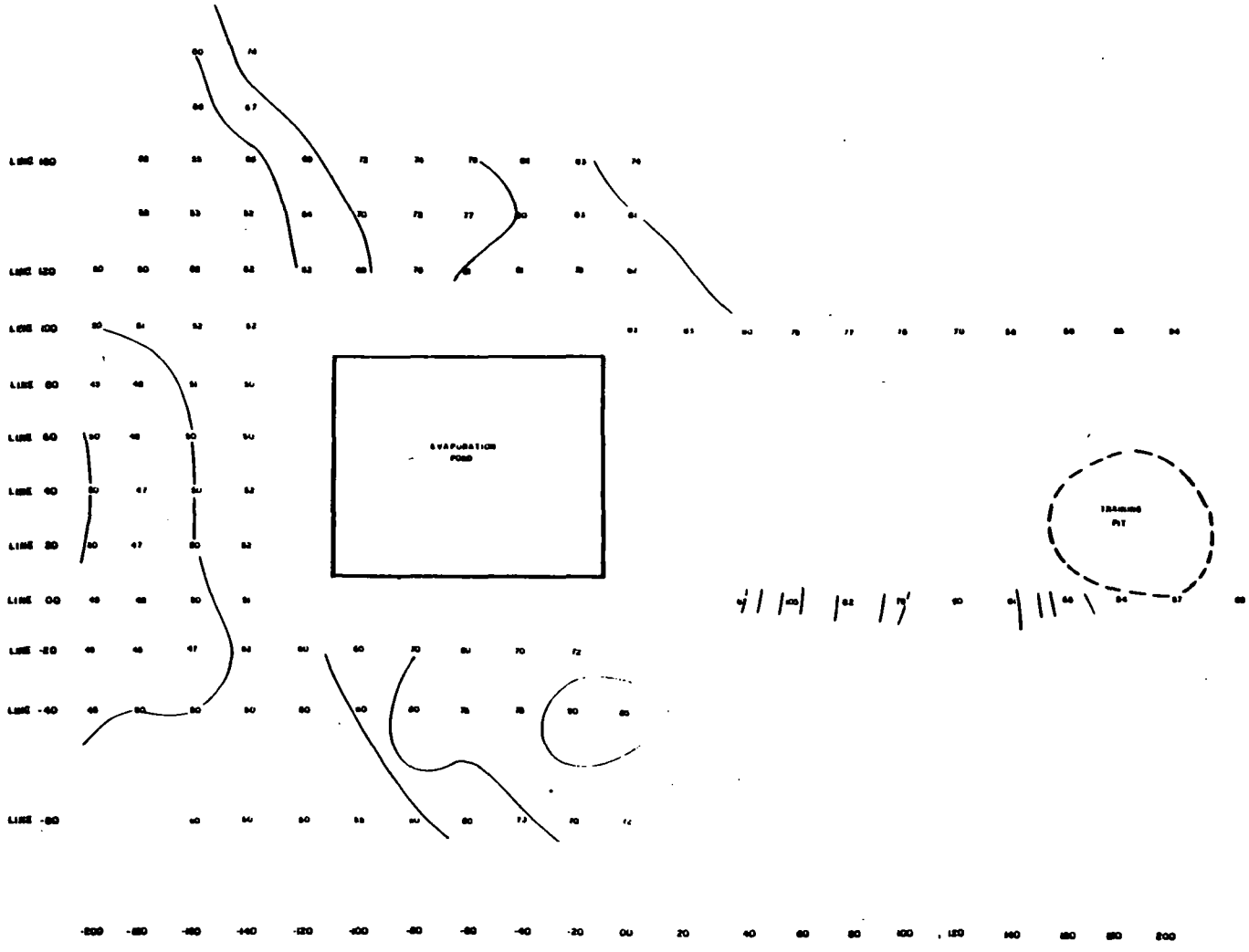
SHEPPARD AIRFORCE BASE
FIRE PROTECTION TRAINING AREA #3
EM-31 VERTICAL DIPOLE

Figure 3-2

DRAFT


EVAPORATION POND
TRAINING PIT
STATIONS (ft)
The Earth Technology Corporation
RADIAN CORPORATION
SHEPPARD AIRFORCE BASE
FIRE PROTECTION TRAINING AREA #3
EM-31 HORIZONTAL DIPOLE

DRAFT



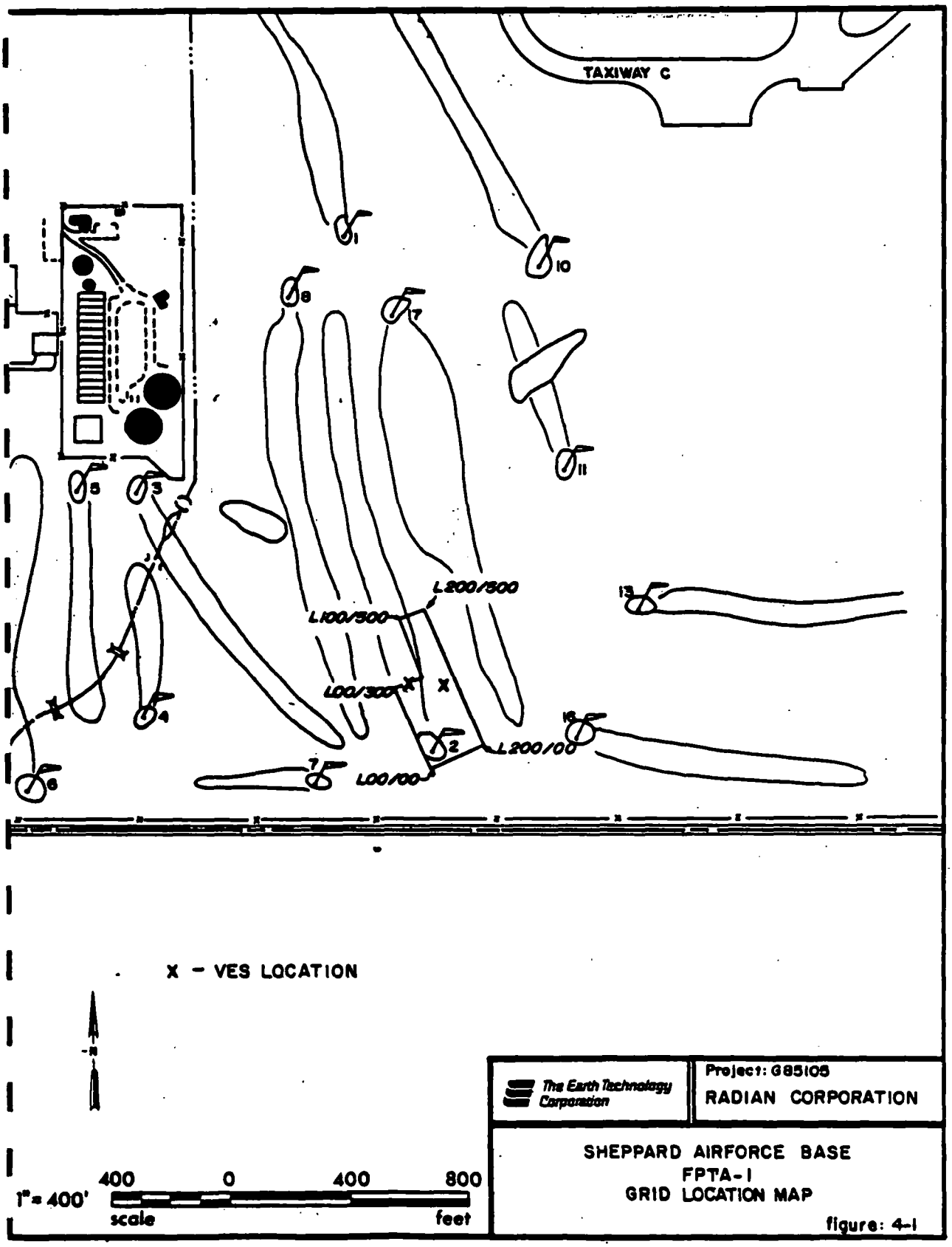
The Earth Technology Corporation

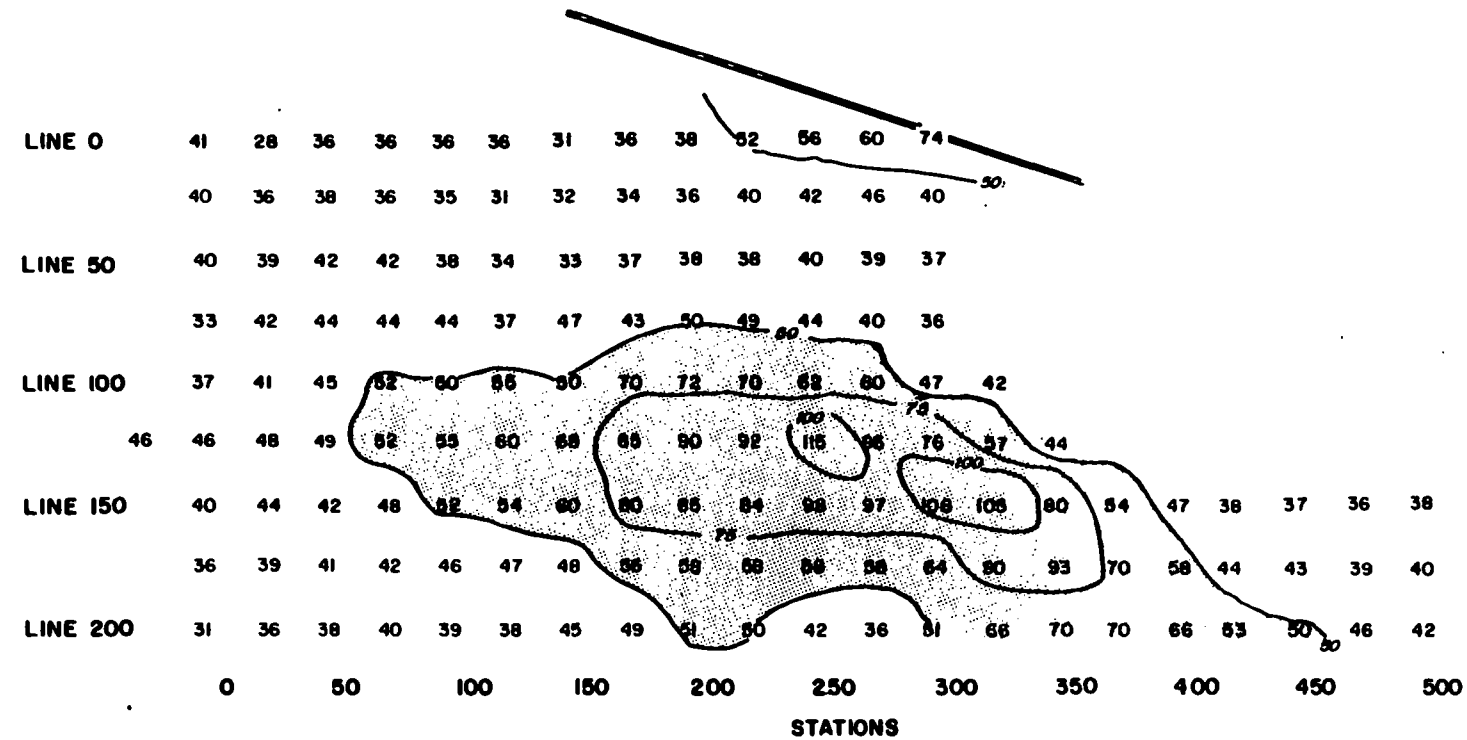
Project Gasius
RADIAN CORPORATION

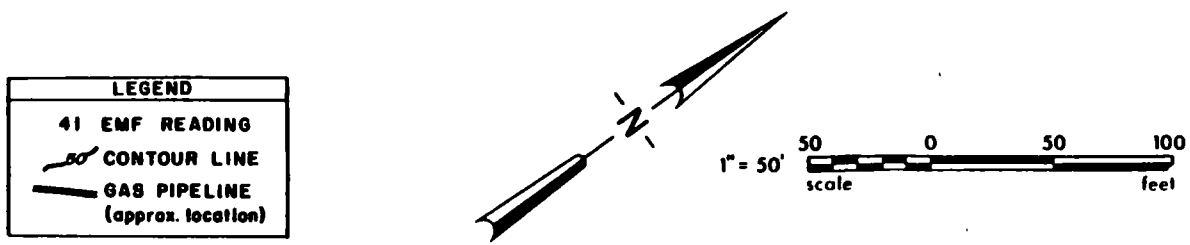
SHEPPARD AIRFORCE BASE
FIRE PROTECTION AREA 3
EM-34 20 METER

figure 3.4

DRAFT


TAXIWAY C
L200/500
L100/500
L00/300
L200/100
L00/100
X - VES LOCATION
1" = 400'
400 0 400 800
scale
feet
The Earth Technology Corporation
Project: G85105
RADIAN CORPORATION
SHEPPARD AIRFORCE BASE
FPTA-1
GRID LOCATION MAP
figure: 4-1





The Earth Technology Corporation

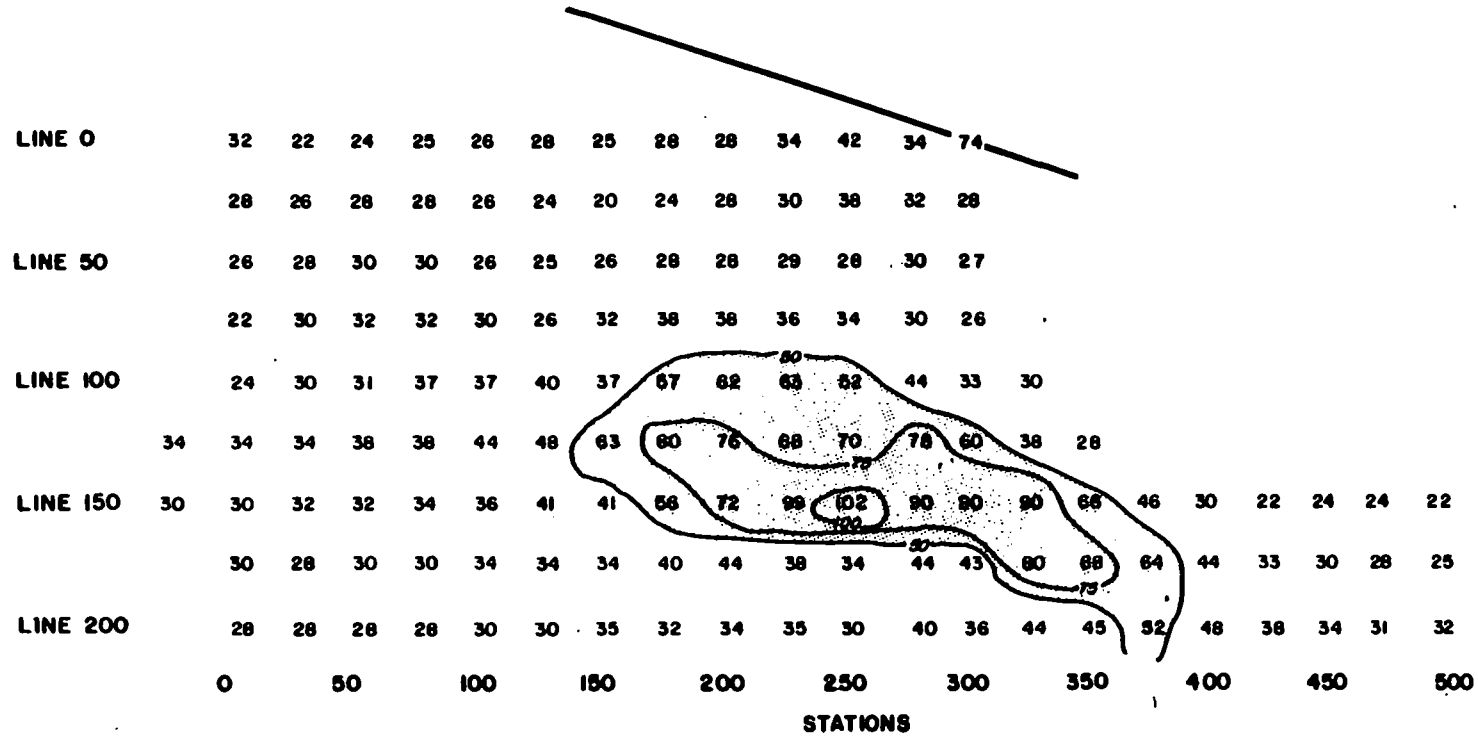
Project: G85105

RADIAN CORPORATION

SHEPPARD AIRFORCE BASE
FIRE PROTECTION SAFETY AREA #1
EM-31 VERTICAL DIPOLE

figure 4-2

DRAFT



LEGEND	
41	EMF READING
50	CONTOUR LINE
	GAS PIPELINE (approx. location)

N

1" = 50'

50 0 50 100

scale feet

The Earth Technology Corporation

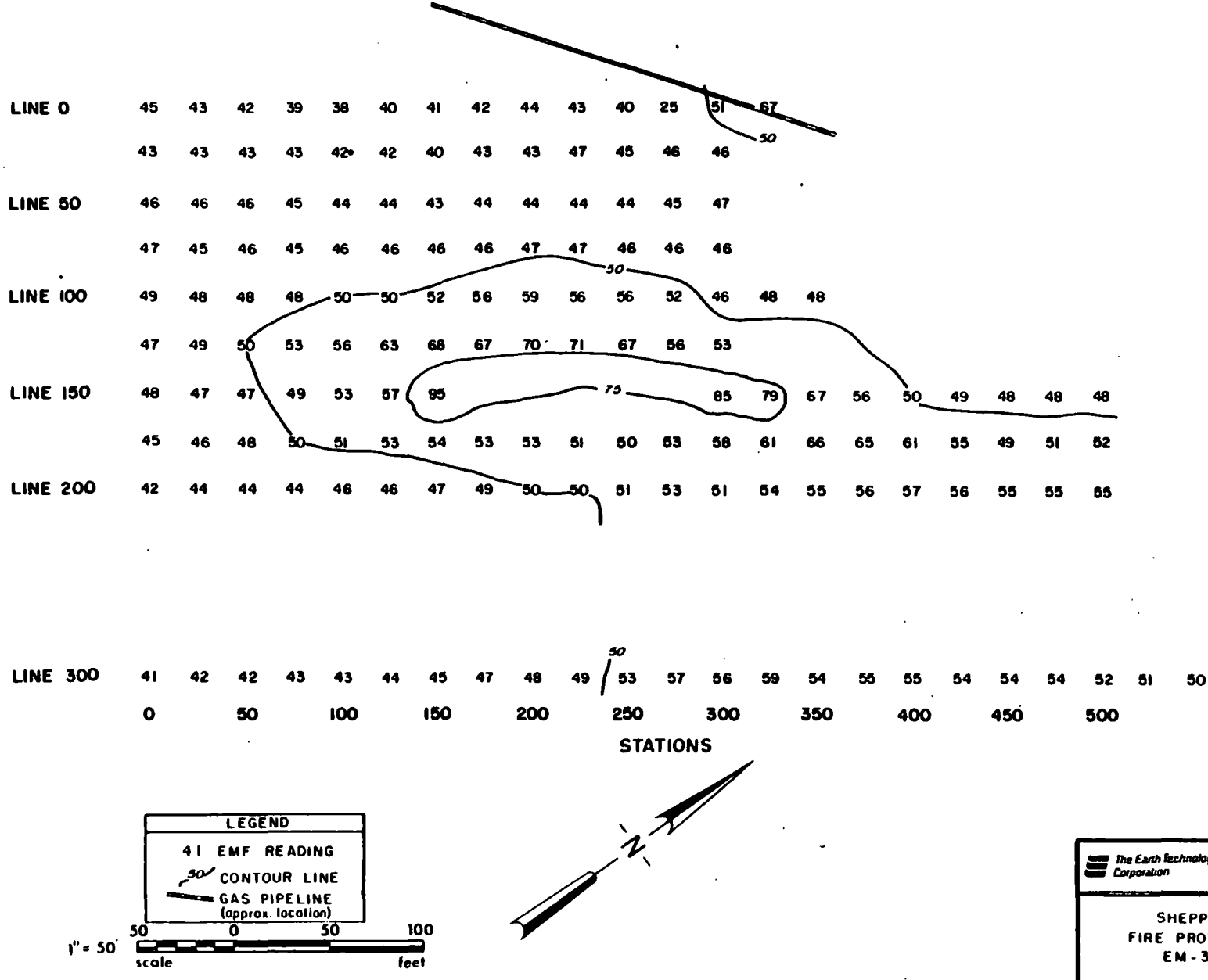
Project: 685105

RADIAN CORPORATION

SHEPPARD AIRFORCE BASE
FIRE PROTECTION SAFETY AREA #1
EM-31 HORIZONTAL DIPOLE

figure 4-3

DRAFT



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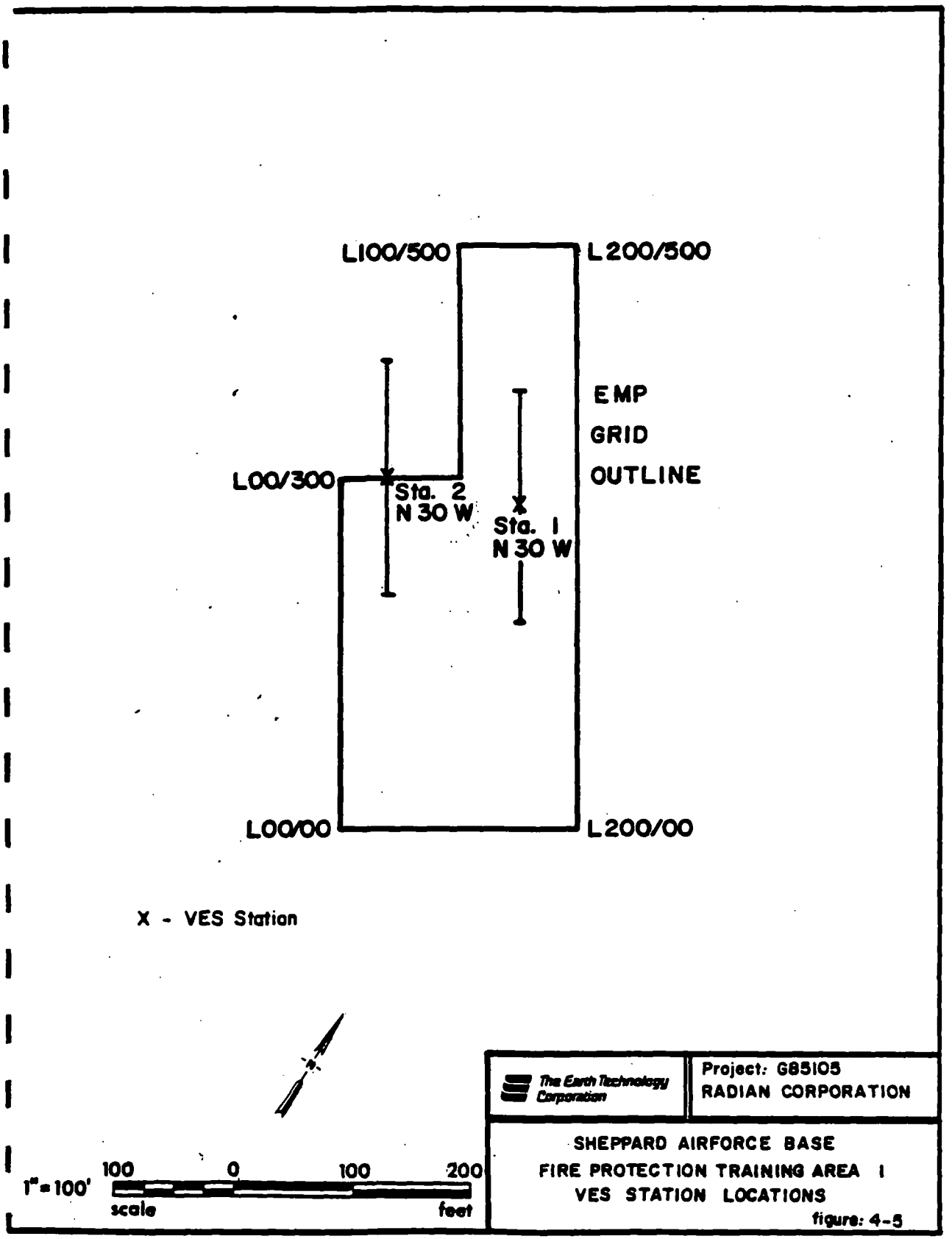
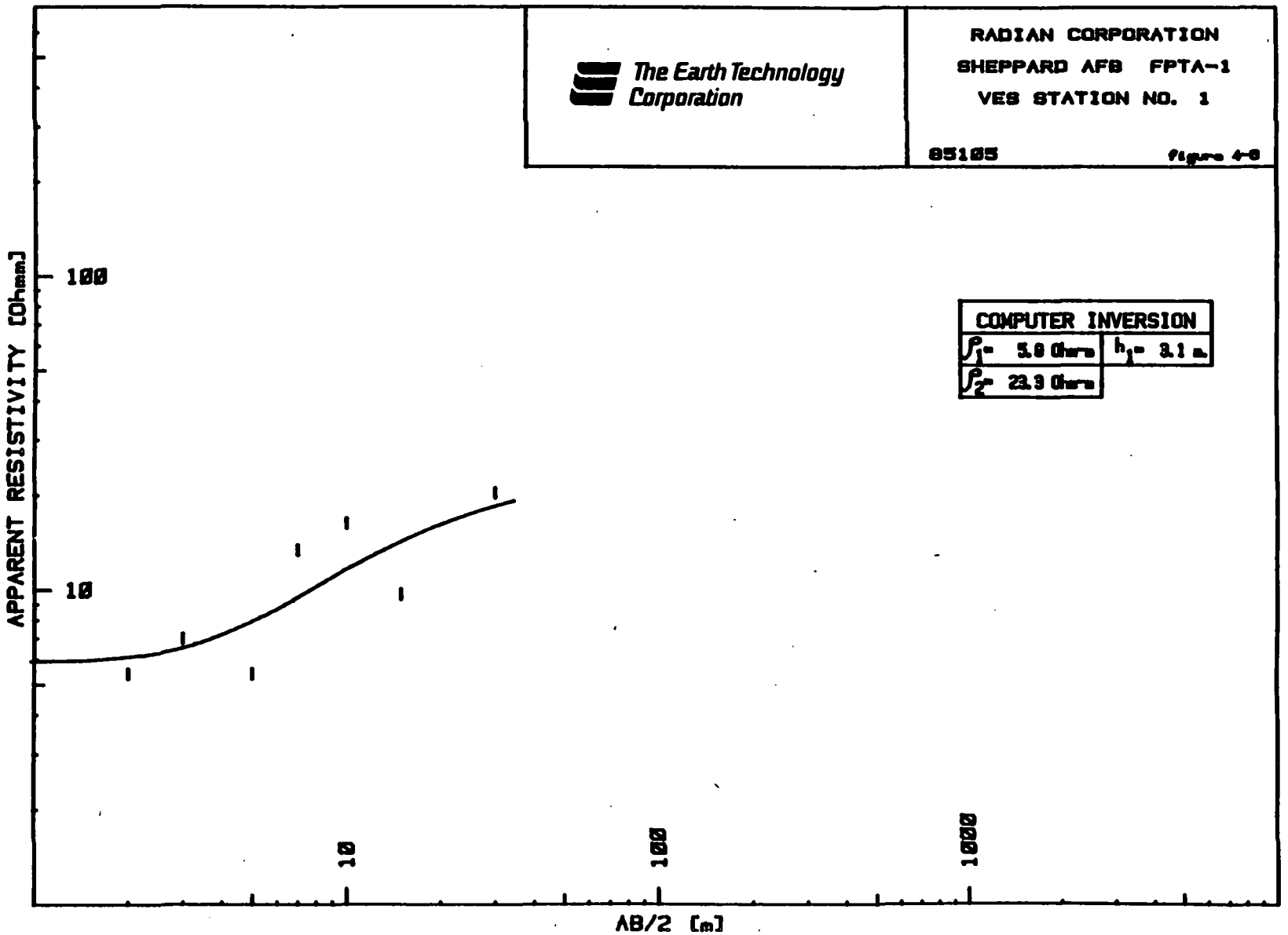
SHEPPARD AIRFORCE BASE
FIRE PROTECTION SAFETY AREA #1
EM-34 20 meter

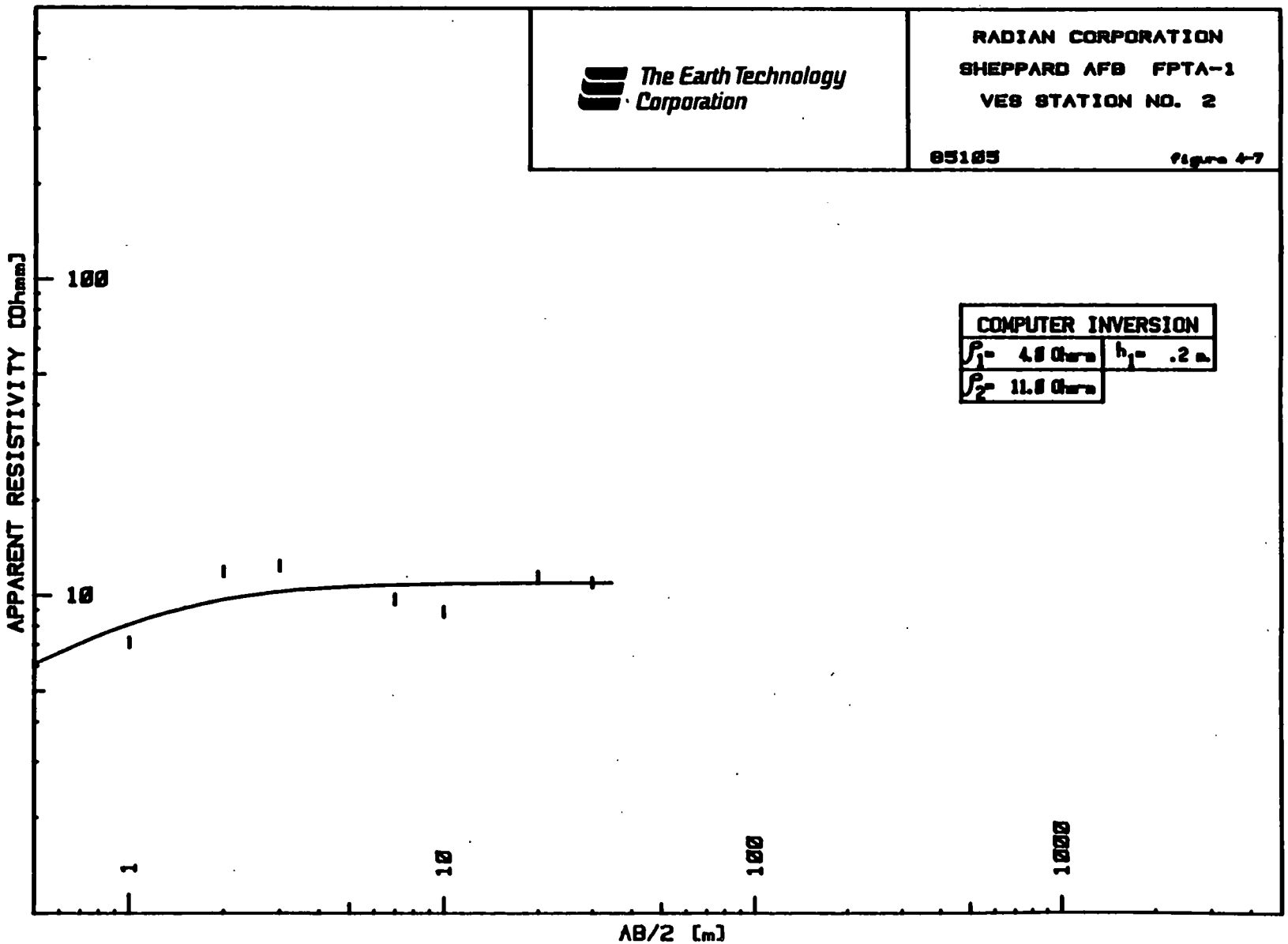
figure 4-4

DRAFT


L100/500
L200/500
EMP
GRID
OUTLINE
L00/300
Sta. 2
N 30 W
Sta. 1
N 30 W
L00/00
L200/00
X - VES Station
N
1"=100'
100
0
100
200
scale
feet
The Earth Technology Corporation
Project: G85105
RADIAN CORPORATION
SHEPPARD AIRFORCE BASE
FIRE PROTECTION TRAINING AREA 1
VES STATION LOCATIONS
figure: 4-5


The Earth Technology Corporation
RADIAN CORPORATION
SHEPPARD AFB FPTA-1
VES STATION NO. 1
85105
Figure 4-8
COMPUTER INVERSION
ρ_1= 5.8 Ohm-m
h_1= 3.1 m
ρ_2= 23.3 Ohm-m
APPARENT RESISTIVITY [Ohm-m]
100
10
10
100
1000
AB/2 [m]

DRAFT


The Earth Technology Corporation
RADIAN CORPORATION
SHEPPARD AFB FPTA-1
VES STATION NO. 2
85105
Figure 4-7
COMPUTER INVERSION
ρ_1= 4.8 Ohm-m
h_1= .2 m
ρ_2= 11.8 Ohm-m
APPARENT RESISTIVITY [Ohm-m]
100
10
1
10
100
1000
AB/2 [m]

DRAFT

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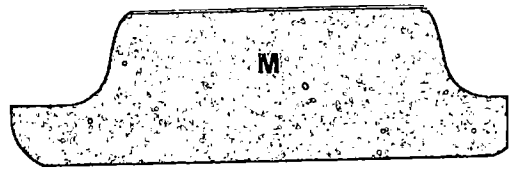
not included in page count]


M

RADIAN
CORPORATION

APPENDIX M

SHEPPARD AFB IRP PHASE II (STAGE I)
SAFETY & HEALTH PLAN

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not included in page count]

214-114-03

SHEPPARD AFB IRP PHASE II STAGE 1

SAFETY AND HEALTH PLAN

Prepared by:

C. C. Mecham

19 October 1984

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not included in page count]

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1.0 INTRODUCTION

This plan documents the safety and health procedures for the accomplishment of IRP Phase II Field Evaluation to be conducted at Sheppard AFB, TX. The procedures outlined in this document are applicable to all field team members including Radian employees and subcontractors. The Supervising Geologist at the site will be responsible for auditing compliance with this safety program and will also possess the authority to modify the plan; however, prime responsibility for employee safety will rest with: (1) Radian for its own employees, (2) Radian subcontractors for their employees, and (3) with other parties whose employees will work under Radian's technical direction on-site at Sheppard AFB, TX. Variations from the safety and health plan may become necessary depending on situations encountered in the field, but may be approved only by the Supervising Geologist.

Site activities during the Phase II evaluation will consist of:

- Geophysical surveys;
- Installation of monitoring wells;
- Water sampling of monitoring wells;
- Water sampling of nearby streams and ponds where applicable.

2.0 HISTORICAL INFORMATION

Areas being evaluated under IRP Phase II at Sheppard AFB are sites that have been or are currently being used as fire protection training areas, landfill and/or disposal areas, and waste pits. The following sub-sections briefly discuss potential waste parameters and disposal practices for each area.

2.1 FPTA-1 Fire Protection Training Area No. 1

Site FPTA-1, located adjacent to the landfill which is the present site of the base golf course, was used as a fire protection training area from the 1940's until 1957. Appendix F contains several aerial photographs which show this site during and soon after its period of use. The site consisted of a depressed burning area and three old aircraft. A drum storage area north of and adjacent to the site was used to store between 100 and 200 55-gallon drums of contaminated oils, fuels, and waste solvents from aircraft maintenance and industrial shop activities. The frequency and duration of burns during the 1940's is unknown. During the 1950's, the drums were transported by flat-bed truck from the drum storage area to the fire protection training site, the drums were drained, and burns occurred. During the 1950's, four or five burns occurred each weekend day, and each burn constituted about 400 to 500 gallons of material. As far as can be determined, no drainage collection system was operational at this site.

Visual examination of the area presently reveals no remaining sign that the site was once a fire protection training area. The site is presently well filled in and is a part of the greens of the base golf course. Due to the nature and duration of the activity at this site and the relatively shallow depth to groundwater, a potential for contaminant migration exists since much of the unburned material probably seeped into the ground.

2.2 FPTA-3 Fire Protection Training Area No. 3

Site FPTA-3, located adjacent to the northern corner of the old municipal runway (presently Bridwell Road), was activated in 1957 when FPTA-1 was closed for construction of the golf course. This site is in use at the present time. The site consists of a storage area containing three 2,000-gallon, elevated tanks, a concrete block building for structures fire training, a mock-up of a T-38 used for fire training, a C-130A aircraft for rescue training, and a waste drainage and collection system. The drainage and collection system, installed in 1982, consists of drainage collection and piping leading to an oil-water separator, and a water storage pond. The unburned fuel which drains into the oil-water separator is pumped to the storage tanks for reuse, and the water phase flows to the pond, from which it discharges to the sanitary sewer. Present burn frequency is approximately quarterly, and about 300 gallons of fuel is consumed per burn. Prior to 1982, no waste collection and separation system was in operation at this site.

Natural soils in the area of FPTA-3 are composed of silty loam with relatively low permeabilities. Groundwater may occur at less than ten feet below ground. A nearby test boring at Building 2013 encountered clay from 0 to 15 feet below ground.

Visual examination of the area during the site visit indicated only surficial contamination and a fuel odor. Due to the duration and frequency of operations and the lack of a waste oil reclamation facility until recently, a potential for contaminant migration exists for the site.

2.3 Landfill No. 3

Landfill No. 3, comprising about 60 acres at the northwest corner of the base, was operated from about 1957 until 1972. The landfill area is located east of State Highway 240, and in an area bounded approximately by Missile Road, the Motor Pool area, the Munitions Storage area, and the City of Wichita Falls treatment facility property. The material disposed of in this landfill was primarily normal base refuse and some waste treatment sludge; the operation was performed as trench and fill with east-west trenches approximately 14 feet deep. Burning of the refuse occurred until 1968, after which no further burning was performed. The pattern of use was that the landfill was opened first near the Missile Road area, and was progressively opened north to northeast, so that by the early 1970's the area of use was west of the Munitions Storage area. From about 1965 to about 1970, trenches were dug at the north area of the landfill near Munitions Storage and waste oils were dumped into the trenches along with refuse and covered. Volume estimates ranged from one 55-gallon drum of waste oil per week to one 55-gallon drum per day. A marked, low-level radioactive waste burial site is located in the landfill area, west of the south end of the Munitions Storage area.

2.4 Hardfill Disposal Area

A disposal area for hardfill and other construction rubble has been operated at a site adjacent to Landfill No. 3 and about 800 feet southwest of the southwest corner of the Munitions Storage area (see Figure 4.3). Interviews with base personnel and examination of aerial photographs provide an indication that the hardfill disposal site was used beginning in the mid 1960's and continues in limited use at the present time. When first opened, the site was used primarily for normal base refuse; after

the addition of construction rubble from the 1964 tornado damage of the Sheppard Hospital, the site was used as a hardfill area. As far as can be determined, no waste fuels, solvents, or oils were disposed of in this area. At the present time, scrap concrete, brush, tree stumps, and scrap metal are visible at the surface of the aea, and the area slopes downward to an unnamed creek on the northwest side. No vegetation is present on the site at the present time. A storage area for bulk construction and paving materials presently is situated just southwest of the area.

2.5 Waste Pits

Three waste pits were excavated to contain waste engine cleaning fluids and solvents from nearby maintenance buildings in 1966. These pits were directly across Avenue H from Building 2325 (see Figure 4.4). The pits were approximately 60 feet in diameter and 10 feet deep, and were unlined. On one occasion in the late 1960's an adjacent storm pond overflowed and carried some of the waste pit contents into the storm water system and hence into Plum Creek. The pits were most actively used from 1966 to the mid 1970's.

An earthen industrial waste pit just north of the waste treatment facility was used during the 1950's as a storage pond for waste oils and fuels from the old engine test cells. An industrial waste line ran south from the test cells to the pit. The oils in the pit were burned on at least one or two occasions during the 1950's. The pit is no longer used for industrial waste storage. The present use of the pit is as an overflow basin for the effluents from the oil-water separator.

3.0 JOB HAZARD ANALYSIS

Job hazard analyses are conducted for each job that requires exposure to waste related hazards. The purpose of the job hazard analysis is to identify the hazards associated with a job and develop ways to mitigate these hazards. The analysis involves three basic steps:

- Select the job to be analyzed and break it down into successive steps;
- Identify the potential hazards and accidents; and
- Develop ways to eliminate hazards and prevent potential accident.

A preliminary job hazard analysis has been performed for each work function at each site. Additional job hazard analyses will be performed by the Supervising Geologist to respond to inaccurately anticipated site conditions and work activities. The preliminary analyses have been used as input to the selection of procedures and precautions included in this safety plan.

3.1 Summary of Work Functions

Each site activity will pose potentially different levels of hazards to personnel conducting the site investigations. Due to these variations from site to site, each work function will be discussed individually to include potential primary hazards and required personal protective clothing and equipment.

3.1.1 Geophysical Survey

Geophysical surveys will be performed prior to selection of monitoring well locations. The surveys are conducted with specialized instruments which take electronic measurements at various points over each site of interest. The geophysical survey is a "walk-through" survey and is conducted without physical disturbance of the land. Three types of measurements are conducted during the survey which supply additional information concerning optimum monitoring well location and potential pockets of waste material. These measurements consist of:

- Resistivity survey to determine geologic formations at various depths;
- Electromagnetic survey to determine areas of higher densities which may be areas of waste material;
- Magnetometry survey to detect metal debris which may interfere with well drilling efforts.

The primary hazard associated with the geophysical survey will be potential dermal contact with waste oils, fuels, solvents, and sludge while transversing over covered waste areas.

3.1.1.1 Protective Clothing and Equipment

All aspects of geophysical survey work will be performed by persons wearing the following required personal protective equipment:

- Chemical resistant, safety toe, steel shank boots (PVC or neoprene);

- Safety helmet;
- Safety glasses or goggles;
- Long-sleeved shirt.

PVC disposable gloves should be carried with each person involved in the survey in the event exposed waste is encountered in the survey area or accidentally comes in contact with survey equipment.

3.1.2 Installation of Monitoring Wells

All of the drilling for well emplacement will be done by hollow-stem auger. Wells will be drilled to a depth of at least 10 feet below the average water table surface. Specifications for groundwater monitoring wells will be followed to comply with Environmentl Protection Agency guidelines and State of Texas requirements for monitoring well installation. Fluids will not be introduced during drilling and therefore, only dry cuttings will be produced.

The primary hazards associated with well drilling will be:

- Potential dermal/eye contact with acidic wastes, particulates, aerosols, and

- Potential inhalation contact with acid gases, volatile organic compounds, particulates, and aerosols.

3.1.2.1 Protective Clothing and Equipment

All monitoring well installation work will be performed by persons wearing the following required personal protective equipment:

- Tyvek® coveralls;
- Gauntlet style, chemical resistant, neoprene gloves;
- Chemical resistant, safety toe, steel shank boots (PVC or neoprene);
- Respirator (full-facepiece air purifying);
- Safety helmet.

Depending on site conditions and drilling conditions, other items may be used for supplemental protection. Such items may include:

- PVC bib overalls and jacket (especially for drillers handling auger flights that have contacted the waste material);

- Respirator (half-facepiece, air purifying);

- Chemical eye goggles or safety spectacles with side shields;

- PVC disposable gloves to be worn outside of neoprene gloves.

Because of the potential for migration of contaminants into and through the shallow aquifer zone, well-defined disposal site boundaries are uncertain. Several disposal sites have a high potential for migration of contaminants. The majority of monitoring wells will be installed in areas hydraulically down-gradient of known disposal sites or in areas of unknown groundwater flow direction. Since the degree of contamination and potential migration patterns of contaminants are not known, respirator use will be required as a precaution during all drilling activities and well installation work. Full-facepiece, air purifying respirators will be used with Ultra-Twin GMC

Cartridges for acid gases and organic vapors. The Supervising Geologist may decide to implement the use of half-facepiece, air purifying respirators depending on specific site and drilling conditions. Only when well installation work is being performed in areas hydraulically up-gradient of respective sites and when there is considerable confidence that well locations are outside zones of possible cross-contamination, may respirator use be discontinued.

3.1.3 Water Sampling and Development of Monitoring Wells

All installed wells will be developed, water levels measured, and locations surveyed and recorded on a project map and on a specific zone map. Following the development of the wells and acquisition of static water level measurements, water samples shall be collected and analyzed on site for pH, temperature and specific conductance. Water samples will also be collected for a more detailed analysis for total dissolved solids, phenol, total organic carbon (TOC), total organic halogens, chromium, mercury, lead, purgeable aromatic and halocarbon compounds, and oil and grease, depending on site location. Sampling, maximum holding time and preservation of samples will comply with EPA and Texas State requirements for water and wastewater sampling and analysis. Each well will be purged with a Radian submersible or bladder type pump. Based upon Phase 1 investigations, some wells will not be pumpable. Wells of this type will be purged with a PVC bailer. Actual samples will be drawn with a teflon bailer.

The primary hazards associated with well sampling will be potential dermal/eye contact with acidic aerosols and solutions and organic compounds, aerosols and solutions.

3.1.3.1 Protective Clothing and Equipment

All well development, water level measuring, purging, and water sampling activities will be performed by persons wearing the following required personal protective equipment:

- Tyvek® coveralls;
- Gauntlet style, chemical-resistant, neoprene gloves;
- Chemical-resistant, safety toe, steel shank boots (PVC or neoprene);
- Chemical eye goggles or safety spectacles with side shields;
- Safety helmet.

Depending on site conditions and weather, other items may be used for supplemental protection. Such items may include:

- Respirator (full- or half-facepiece, air purifying)
- PVC bib overalls and jacket
- PVC disposable gloves

If results of ambient air monitoring as described in Section 6.1 are not within acceptable limits, respiratory protection will become mandatory during water sampling and development of monitoring wells.

3.1.4 Water Sampling of Nearby Streams and Ponds

Streams flowing through the site will be sampled upstream and downstream of the site. Any existing ponds will also be sampled. Analyses will be performed for parameters discussed in Section 3.1.3.

Grab samples will be collected with glass or teflon receptacles. If creeks or ponds are dry, soil samples will be substituted. Soil samples will be collected with hand augers.

The primary hazards associated with stream and pond sampling will be similar to those associated with monitor well sampling.

All stream and pond water sampling activities will be performed by persons wearing the same personal protective equipment listed in Section 3.1.3.1.

3.1.4.1 Protective Clothing and Equipment

Table 3.1-1 presents a job hazard analysis summary for potential respiratory and skin contact with hazardous agents during various site activities. The footnotes to Table 3.1-1 explain the respiratory hazard ratings in relation to TLV and IDLH values.

Table 3.1-2 presents a summary of the guidelines for wearing personal protective clothing and equipment at Sheppard AFB. A self-contained breathing apparatus will be available and readily accessible to the Supervising Geologist for use during emergencies requiring high levels of respiratory protection.

3.2 Other Potential Hazards

The preliminary job hazard analyses has identified two additional potential hazards at Sheppard AFB. These hazards are currently not regarded as primary hazards, but need to be noted.

Table 3.1-1. JOB HAZARD ANALYSIS SUMMARY

Job Function	Hazard Rating (Respiratory/Skin Contact)				
	Organics Vapors	Acid Gases	Aqueous Solutions	Sludge Waste	Solid Waste[a]
1. Geophysical Survey					
- Survey Crew	L/N	L/N	L/L	L/L-M	N-L/L-M
2. Installation of Monitoring Wells					
- Drilling Crew	M-H/N	L-M/N	L-M/L-M	L-M/M	L-M/L-M
- Geologists	M-H/N	L-M/N	L-M/L-M	L-M/M	L-M/L-M
3. Water Sampling of Monitoring Wells					
- Sampling Crews	L/N	L/N	L/M	L/M	N/L-M
4. Water Sampling of Streams and Ponds					
- Sampling Crew	N-L/N	N-L/N	L/M	L/M	N/L-M

L = Low Exposure Potential
Respiratory Hazard (0 - TLV)
Skin Hazard (Slight)

M = Medium Exposure Potential
Respiratory Hazard (TLV to 10TLV)
Skin Hazard (Moderate)

H = High Exposure Potential
Respiratory Hazard (10TLV to IDLH)
Skin Hazard (Moderate)

EH = Extremely Hazardous
Respiratory Hazard (IDLH)
Skin Hazard (Extreme)

N = Negligible

TLV = Threshold Limit Value

IDLH = Concentration Immediately Dangerous to Life or Health

[a] Including airborne particulate matter.

Table 3.1-2. USE GUIDE FOR PERSONAL PROTECTIVE/SAFETY EQUIPMENT[a]

	Geophysical Survey (Survey Crew)	Installation of Monitoring Wells (Drilling Crew, Geologists)	Water Sampling of Monitoring Wells (Sampling Crew)	Water Sampling of Streams and Ponds (Sampling Crew)
Respiratory Protection				
- Full Face Air Purifying Respirator with Cartridges	A	X	A	A
- Half Face, Air Purifying Respirator with Cartridges	A	A	A	A
- SCBA (emergency use)	A	A	A	A
Dermal Protection				
- Tyvek® Coveralls	A	X	X	X
- Tyvek® Coveralls, PVC Bib Overalls	A	A	A	A
- Chemical Resistant Boots	X	X	X	X
- Neoprene Gloves	A	X	X	X
- PVC Disposable Gloves	A	A	A	A
- Long Sleeved Shirt	X			
Eye Protection	X	X	X	X

X = Required Use
A = Available if Needed

[a] Protective head gear is required at all times. Ear protection will be used if needed.

3.2.1 Low-Level Radioactive Waste

Landfill No. 3 and the Hardfill Disposal area reportedly contain some low-level radioactive waste disposal sites. These sits are clearly marked and the waste is contained in concrete vaults some 10 to 20 feet underground. These areas are not considered primary hazards and should not be of concern due to sufficient distances from areas where field evaluations are to be conducted.

3.2.2 Heat Stress

A hazard exists when employees are required to work in warm temperatures while wearing impervious protective clothing. When ambient air temperatures at the site exceed 65°F, heat stress may become a problem. If these conditions are encountered, the following precautions will be taken:

- The Supervising Geologist will regularly monitor ambient air temperatures.

- Field team members will be observed for the following signs and symptoms of heat stress:

  - Dizziness;
  - Profuse sweating;
  - Skin color;
  - Heart rate;
  - Abnormal body temperature as measured by non-invasive methods, thermometer straps placed on the individual's forehead (clinitemps®); and
  - Vision problems.

Any employee who exhibits dizziness, profuse sweating, abnormal body temperature, or vision problems will be immediately removed from field work and requested to consume 2-4 pints of electrolyte fluid or cool water every hour while resting in a shaded area until symptoms are no longer recognizable. The employee is not to return to work that day.

4.0 SAFETY TRAINING

Prior to the initiation of site activities, a training session will be held to discuss the proposed work, associated safety and health plans, and emergency response plans. All personnel assigned to drilling activities and water sampling efforts will be instructed regarding the potential health and safety hazards associated with the work and protective measures available. Specifically, the following topics will be covered in the training session:

- Potential routes of contact with toxic and/or corrosive substances
  - skin contact/adsorption
  - eye contact
  - inhalation
  - ingestion
- Types, proper use, limitations and maintenance of applicable protective clothing and equipment
  - safety helmet
  - eye protection
  - chemical resistant gloves
  - chemical resistant safety-toe boots
  - chemical resistant body coverings (Tyvek® coveralls, PVC overalls)
- Respiratory protection using full-facepiece or half-facepiece air purifying respirator with replaceable filter cartridges

- Hierarchy of protective controls: engineered, administrative, work practice, personal protective clothing and equipment.

- Forms of respiratory protection: air purifying (disposal/reusable), air supplied, self contained.

- Selection of respiratory protection based on hazard: dust, fume, mist, gas, irritant, warning properties.

- NIOSH certification/approval of respiratory protection equipment.

- Medical/physical fitness to wear respiratory protection.

- Use, limitations and maintenance of full-facepiece air-purifying respirator: qualitative fit test, routine inspection, replacement of parts, cleaning/disinfection, storage.

- Use, limitations and maintenance of half-facepiece air-purifying respirator: qualitative fit test, routine inspection, replacement of parts, cleaning/disinfection, storage.

o Proper decontamination procedures and adherence to work zone boundaries

o Reporting of accidents and availability of medical assistance.

5.0 WORK ZONES AND DECONTAMINATION PROCEDURES

To minimize the transfer of hazardous substance(s) from the site, contamination control procedures are needed. Contaminants must be removed from people and equipment prior to relocation from a work zone.

5.1 Work Zones

Prevention of exposures and spread of contamination will be controlled through the establishment of work zones. Two primary work zones will be utilized and will be referred to as the (1) Exclusion Zone and (2) Decontamination Zone.

The Exclusion Zone is the area where disturbance activities are conducted and where contaminants are or may be present. Only those properly trained individuals attired in the specific protective clothing and equipment will be allowed to enter and work in this zone.

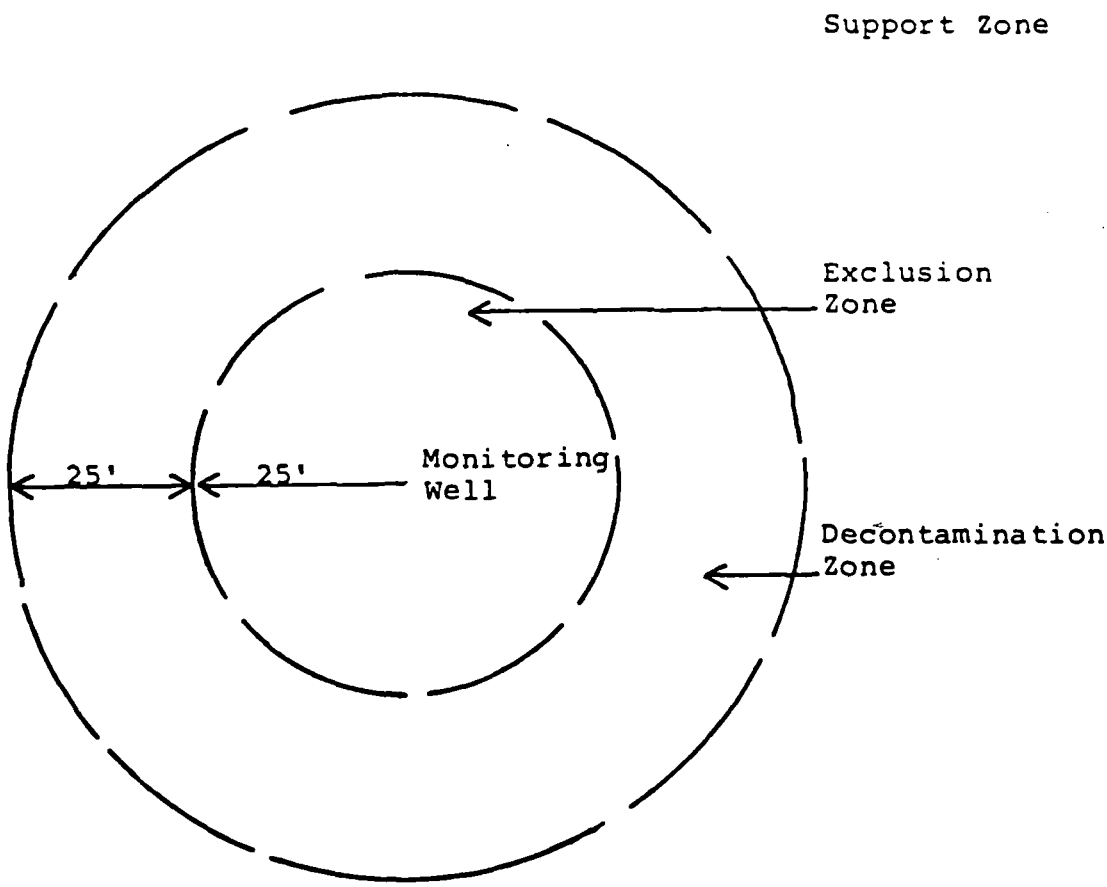
The Decontamination Zone is the area where personnel and equipment will be decontaminated before moving to the next site.

The Exclusion Zone will comprise a 25 foot radius circle around the monitoring well and the Decontamination Zone will comprise a 25-foot wide ring around the Exclusion Zone as shown in Figure 5-1.

5.2 Decontamination Procedures

Personal protective equipment and drilling/sampling equipment can become contaminated in a number of ways including:

Figure 5.1-1. MONITORING
WELL WORK ZONE



- Contacting vapors, gases, mists, or particulates in the air.

- Being splashed by materials while sampling or opening containers.

- Walking through puddles of liquids or on contaminated soil.

- Using contaminated instruments or equipment.

Protective clothing and respirators help prevent the wearer from becoming contaminated or inhaling contaminants, while good work practices help reduce contamination of protective clothing, instruments, and equipment. Even with these safeguards, contamination may occur. Harmful materials can be transferred into clean areas, exposing unprotected personnel. Or in removing contaminated clothing, personnel may contact contaminants on the clothing and/or inhale them.

Decontamination consists of physically removing contaminants. How extensive decontamination must be depends on a number of factors, the most important being the type of contaminants involved. The more harmful the contaminant, the more extensive and thorough the decontamination must be. Combining decontamination, the correct method of doffing personnel protective equipment, and the use of site work zones minimizes cross-contamination from protective clothing to wearer, equipment to personnel, and one area to another.

5.2.1 Monitoring Well Drilling/Installation and Sampling

The decontamination procedures for these activities will consist of four processes to remove contaminants from equipment,

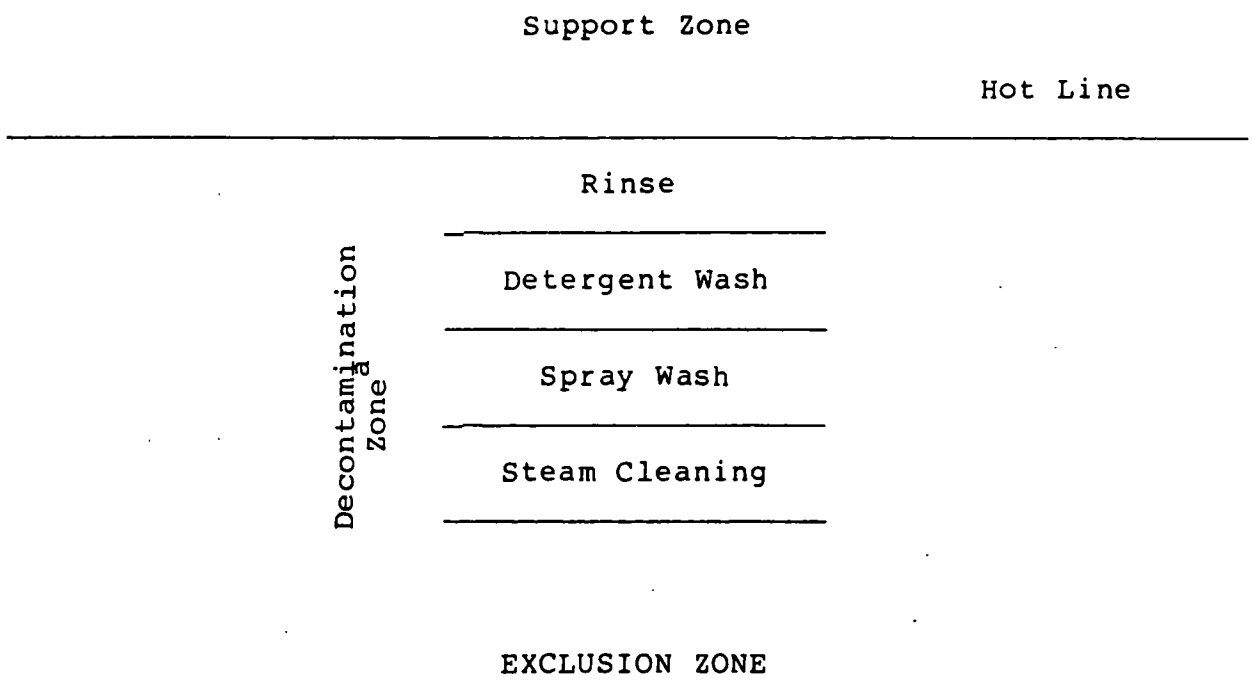
- steam cleaning,
- diesel fuel brushing,
- acetone rinse, and
- detergent washing.

The drilling rig will be steam cleaned following contact with waste/soil material. The rig will then be spray washed and detergent washed prior to leaving the decontamination zone as depicted in Figure 5.2-1. Diesel fuel brushing is only required in the event that auger flights become covered with tarry, sticky waste that steam and detergent will not remove.

Installation equipment and sampling equipment used in the exclusion zone will be decontaminated as described in Figure 5.2-2.

Personal protective equipment will be decontaminated as described in Figure 5.2-3. All disposable personal protective equipment will be discarded in waste drums or sealed plastic bags at least daily.

Figure 5.2-1. DECONTAMINATION OF THE DRILLING RIG AND AUGER FLIGHTS



[a] No containment of wash water or steam.

Figure 5.2-2. DECONTAMINATION PROCEDURES FOR EQUIPMENT[a]

SUPPORT ZONE

Hot Line

Decontamination Zone[a]

Water Rinse

Acetone Rinse

Gross Decontamination Using Water Spray

EXCLUSION ZONE

[a] Solvents will be disposed as hazardous waste. Equipment will be cleaned in buckets.

Figure 5.2-3. DECONTAMINATION PROCEDURES FOR PERSONAL PROTECTIVE EQUIPMENT (PPE)[a]

SUPPORT ZONE

Hot Line

Decontamination Zone[a]

Remove under gloves and wash exposed skin surfaces

Remove respirator

Remove coveralls and outer gloves

Rewash PPE with Detergent water and rinse well

Wash PPE with Detergent water

EXCLUSION ZONE

[a] Gross contamination will be removed in the Exclusion Zone.

6.0 SAFETY SUPPORT

In addition to the use of personal protective equipment and respirator protection, safety support plans are also necessary. At Sheppard AFB, safety support will constitute ambient air monitoring of hazardous and/or toxic materials for the protection of Radian and Air Force personnel and emergency response in the event of an employee injury or other medical emergency.

6.1 Ambient Air Monitoring

Ambient air monitoring will be performed using two techniques. One technique will use the combustible gas meter (TLV Sniffer) and the other will use colorimetric indicator tubes and the grab-sampling method.

Air monitoring will be performed during drilling activities to determine if the respiratory protection chosen affords adequate protection from contaminant concentrations found on site.

6.1.1 TLV Sniffer

A Bacharach Instruments TLV Sniffer will be used to locate on-site organic vapor concentrations that are higher than ambient outdoor air concentrations. The instrument will be used to determine general areas of elevated organic vapor concentrations, and not as a precision analytical instrument. It is an instantaneous measuring instrument and displays concentrations on a meter in parts per million (ppm), referenced to hexane.

The TLV Sniffer displays a meter reading directly in parts per million (ppm) volatile flammable vapor allowing an estimate of combustible gas concentrations. The instrument can be

calibrated to read directly in parts per million for any one of many kinds of combustible gases. Factory calibration is for hexane unless otherwise specified, though readings from other gases and vapors may be interpreted easily by means of reading conversion curves (Figure 6.1.1-1).

6.1.2 Grab-sampling Using Colorimetric Indicator Tubes

A Draeger® kit with an assortment of indicator tubes will be used to obtain quick analysis of unknown hazardous substances in air. The Draeger® tubes are colorimetric direct reading detector tubes and function as "real time" hazardous condition indicators. Samples will be collected during drilling activities. An initial screening tube (Polytest®) will be used for a general qualitative test. This tube will give a positive reaction indicating the presence of ethyl acetate, benzene, acetone, alcohol, and/or hydrocarbons. If a positive reaction does occur, more specific tests may be made using more specifically reacting Draeger® tubes. Table 5-2 lists the sampling strategy to be used when obtaining grab-samples via Draeger® tubes at Sheppard AFB. In addition to the Polytest®, any of the detector tubes listed in Table 6.1.2-1 may be used individually if the presence of that compound is suspected.

The respirators selected for use at Sheppard AFB have been assigned protection factors by the National Institute for Occupational Safety and Health (NIOSH). These respirator protection factors are listed in Table 6.1.2-2. In the event that sampling results indicate that the respective Threshold Limit Values (TLVs) may be exceeded, concentrations should be compared to the Protection Factor associated with the particular respirator in use. If the concentrations of contaminants are not conservatively within the listed Protection Factor, work activities will be terminated until satisfactory respiratory protection can be obtained.

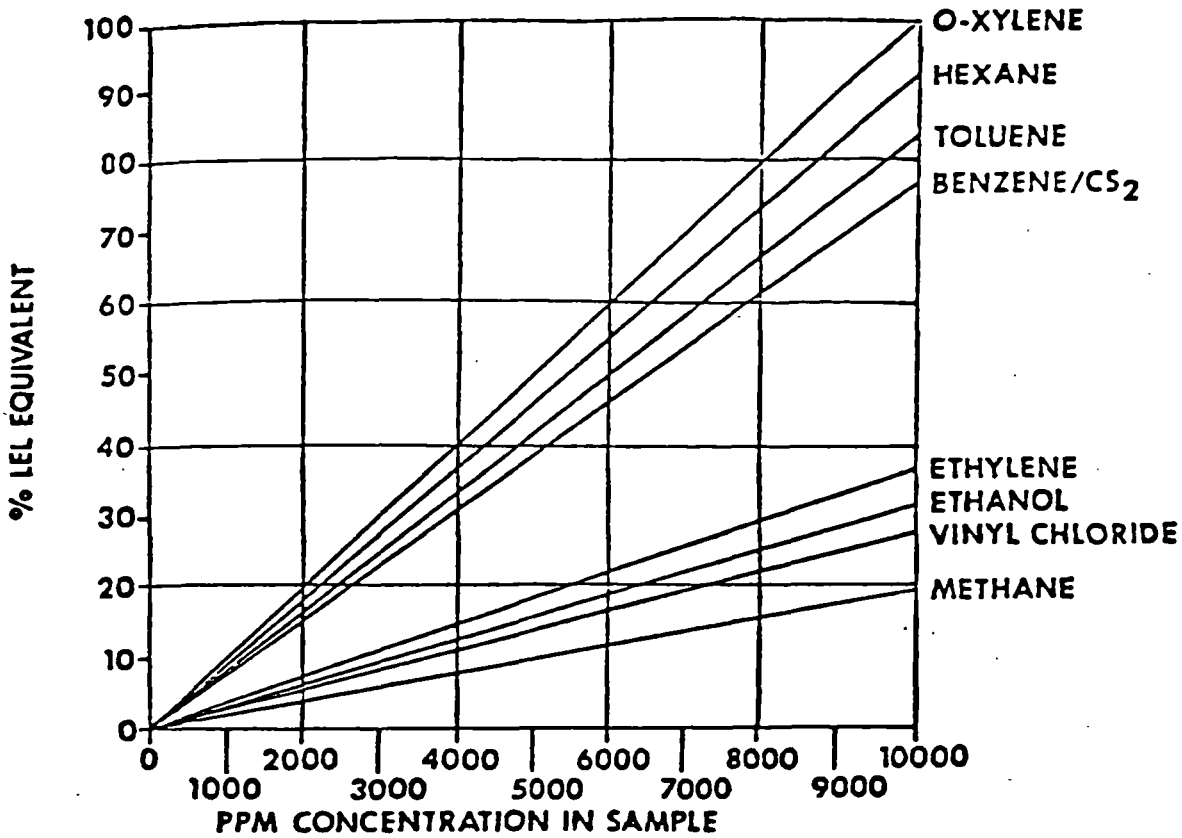


Figure 6.1.1-1. CONVERSION CURVES SHOWING RELATIONSHIP OF PPM CONCENTRATIONS OF VARIOUS GASES TO PERCENT L.E.L. EQUIVALENTS

Table 6.1.2-1. DETECTOR TUBES FOR AMBIENT AIR MONITORING

Detector Tube[1]	Positive Reaction Indicates Presence of	Detection Limit	TLV (ACGIH 1982)
1. Polytest	2, 3, 4, 5, 6*	50 ppm (benzene) 2000 ppm (acetone)	
2. Ethyl acetate 200/a	Esters, 3, 4, 5	200 ppm	400 ppm
3. Benzene 0.05	Aromatic H/C	15 ppm	10 ppm
4. Acetone 100/b	Ketones	100 ppm	750 ppm
5. Alcohol 100/a	Alcohols	100 ppm	
6. Hydrocarbon 0.1%/b	Aliphatic H/C	0.1% (butane)	
7. Sulfur dioxide 1/a	Sulfur dioxide	1 ppm	2 ppm
8. Hydrogen sulfide 1/c	Hydrogen sulfide	1 ppm	10 ppm

(1) List is a modification of the sampling strategy for unknown substances developed by National Draeger, Inc. Tubes are manufactured by National Draeger, Inc.

* A positive test also occurs for arsin, carbon disulfide, nitric oxide, carbon monoxide, and methyl bromide.

Table 6.1.2-2. RESPIRATOR PROTECTION FACTORS

Type Respirator	Facepiece Pressure	Protection Factor
Half-Mask Gas and Vapor Removing[a,b]	negative	10
Full Facepiece Gas and Vapor Removing[a,b]	negative	50

[a] The recommended respirator PF's are selection and use guides, and should only be used when establishing a minimal acceptable respirator program as defined in Section 3 of the ANSI Z88.2-1969 Standard.

[b] For gases and vapors, a PF should only be assigned when published test data indicate the cartridge or canister has adequate sorbent efficiency and service life for a specific gas or vapor. In addition, the PF should not be applied in gas or vapor concentrations that are: 1) immediately dangerous to life, 2) above the lower explosive limit, and 3) cause eye irritation when using a half-mask.

6.2 Personal/Site Hygiene

Punctured, internally contaminated, cracked, stubbornly soiled, protective items will be disposed of in waste drums or sealed plastic bags.

Paper, rags, and other disposables used on site or in equipment/sample container clean up will be disposed of in waste drums or sealed plastic bags.

No food will be consumed on the exploration site. Employees will thoroughly wash their hands, forearms and face before consuming food or beverages other than fluids contained in disposable cups. Drinking water and/or electrolyte fluid will be available at the perimeter of the site being investigated. Disposable cups will be used to consume fluids after protective gloves are removed. Smoking and use of chewing materials (tobacco and gum) will only be permitted in designated areas.

Soil cuttings from augering which display contamination will be removed from the site in suitable sealed containers for eventual disposal.

6.3 Emergency Medical Services

In the event of an employee injury or other medical emergency on site, the Supervising Geologist and other personnel trained in first aid and CPR will immediately provide assistance. An MSA model self contained breathing apparatus (SCBA) will be nearby for use by the Supervising Geologist and back-up geologist during emergency rescue situations requiring respiratory protection.

A portable eye/face wash unit will be in the immediate proximity of any field work in progress. Flushing of the eyes should be started immediately (within 15 seconds) and should continue for 15 minutes whenever hazardous gas, liquid, dust or particles that may be chemically contaminated, enter the eye.

Because contact lenses tend to hold contaminants in close proximity to the eye ball and inhibit flushing, contact lenses will not be allowed on-site.

Additional first aid supplies will be kept in close proximity to field work activities for quick, easy access.

Medical emergencies that require outside medical assistance will be treated by the medical clinic at Sheppard AFB. The clinic is in close proximity to the work site and is staffed with trained medical professionals. Pertinent communications information regarding medical services will be made available to all personnel during the safety training session.