03.13-04/29/94-00539

APPENDIX A

VOLUME II

SUPPLEMENTAL INVESTIGATION

INSTALLATION RESTORATION PROGRAM ACTIVITIES

NAVAL STATION ROOSEVELT ROADS CEIBA, PUERTO RICO

CONTRACT TASK ORDER 0007

APRIL 29, 1994

Prepared For:

DEPARTMENT OF THE NAVY
ATLANTIC DIVISION
NAVAL FACILITIES
ENGINEERING COMMAND
Norfolk, Virginia

Under the:

LANTDIV CLEAN Program
Contract N62470-89-D-4814

Prepared By:

BAKER ENVIRONMENTAL, INC.
Coraopolis, Pennsylvania

TABLE OF CONTENTS

3.A	Photo-Interpretation Report
3.B	Report of the Geophysical Investigation
3.C	Calculation of Hydraulic Conductivity
3.D	Confirmation Study Data
3.E	Chronologic Log of Field Activities
3.F	Mapping by Global Positioning System
4.A	Index of Data Stations and Sample Numbers
4.B	Reports of Chemical Analyses - Supplemental Investigation

APPENDIX 3.A

PHOTO-INTERPRETATION REPORT

Geo Decisions, Inc.

118 Boalsburg Road
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AIRPHOTO ANALYSIS OF SUSPECTED WASTE DISPOSAL SITES IN AND NEAR ROOSEVELT ROADS NAVAL RESERVE

Submitted to:

Baker Environmental, Inc.
420 Rouser Road
Coraopolis, PA 15108

January 20, 1993

Geo Decisions, Inc.

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January 28, 1993

Mr. John Barone
Baker Environmental, Inc.
420 Rouser Road
Coraoplis, PA 15108

Dear John:

Per our recent conversation, enclosed are revised pages for the Puerto Rico airphoto analysis report. In most cases, the revisions were fairly minor; however, I believe that the report will be a little easier to read because of them.

As always, if you have any comments or questions, please do not hesitate to call.

Sincerely,

Barry M. Evans
President

BME/jmp

Enclosures

INTRODUCTION

This report presents airphoto analyses of suspected waste disposal sites in or near the Roosevelt Roads Naval Reserve in Puerto Rico. The locations of the these sites are depicted in Figures 1 and 2. The focus of the analyses was to note the nature and location of historical changes, particularly with respect to waste disposal activities, in or adjacent to each of the sites. As part of the analyses, GDI assessed features and conditions including, but not necessarily limited to: 1) observable waste disposal activities, 2) locations of pertinent structures, 3) distance to sensitive receptors (e.g., inhabited areas, wetlands, surface waters, etc.), 4) adjacent land use/cover, and 5) indications of vegetative stress and other similar damage characteristics.

Historical black-and-white photographs from 1951, 1958, 1959, 1964, 1967, 1972, and 1977 were analyzed for this report. Descriptions of these photographs are provided in Table 1. Results of the analyses for sites 1 and 6 are annotated on copies of site maps supplied by Baker Environmental. Results of the Site 5, 7, 10, 13, 18 and 21 analyses are annotated on enlargements of 1:24,000-scale USGS topographic maps. A list of the annotations used for the map overlays is given in Table 2. Photographic enlargements have also been provided for sites 5, 7, 10, 13 and 21 for June 18, 1958 and December 20, 1977, and can be found in the folder attached to the back of this report. Key features annotated on overlays to the photo enlargements correspond to those annotated on overlays to the topographic map enlargements. The site boundaries correspond to those delineated on the site maps provided by Baker Environmental and do not constitute legal property boundaries. A general lack of activity over time was observed for sites 2, 3, and 14. Therefore, no description of these sites have been provided in this report.

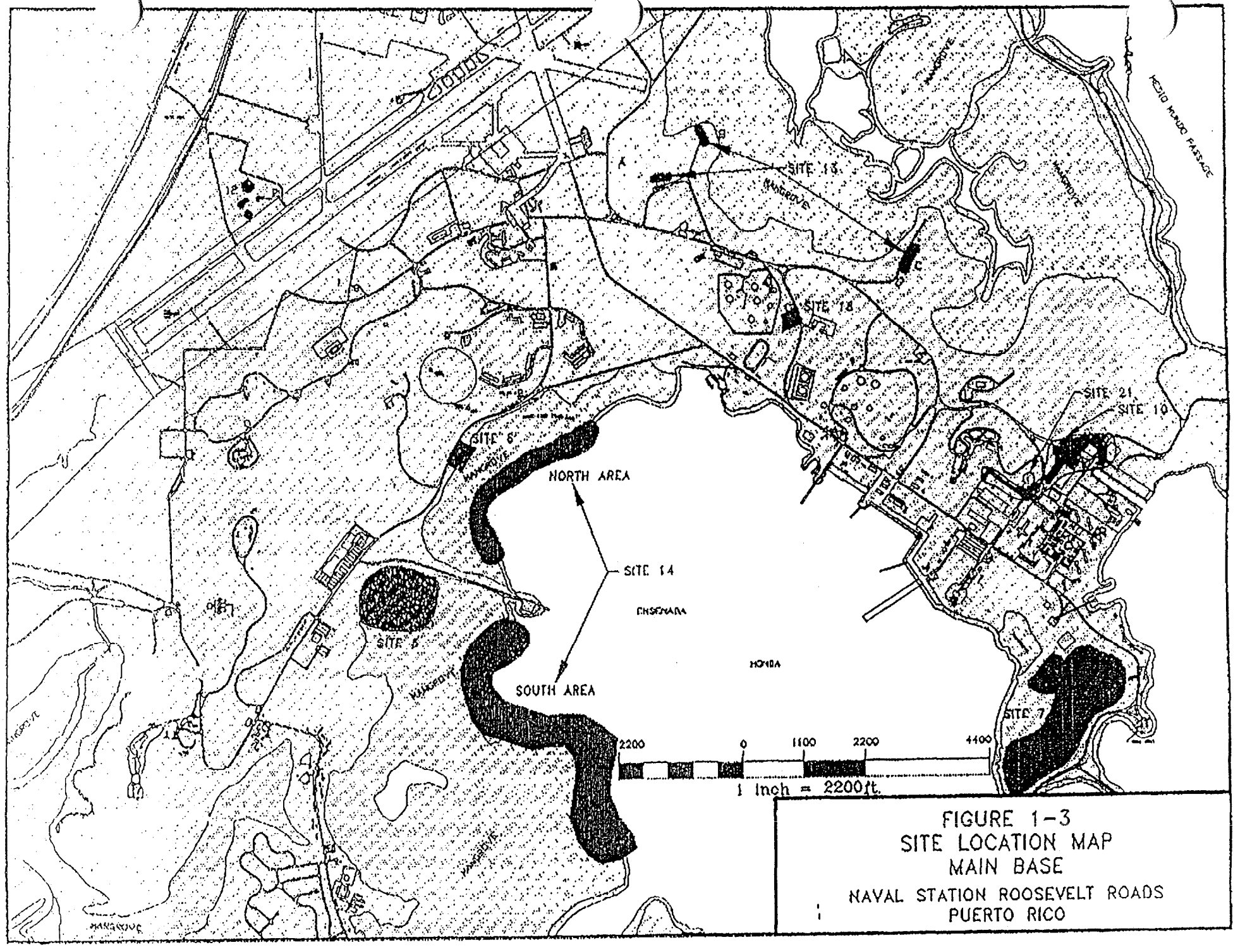


FIGURE 1-3
SITE LOCATION MAP
MAIN BASE
NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

FIGURE 1

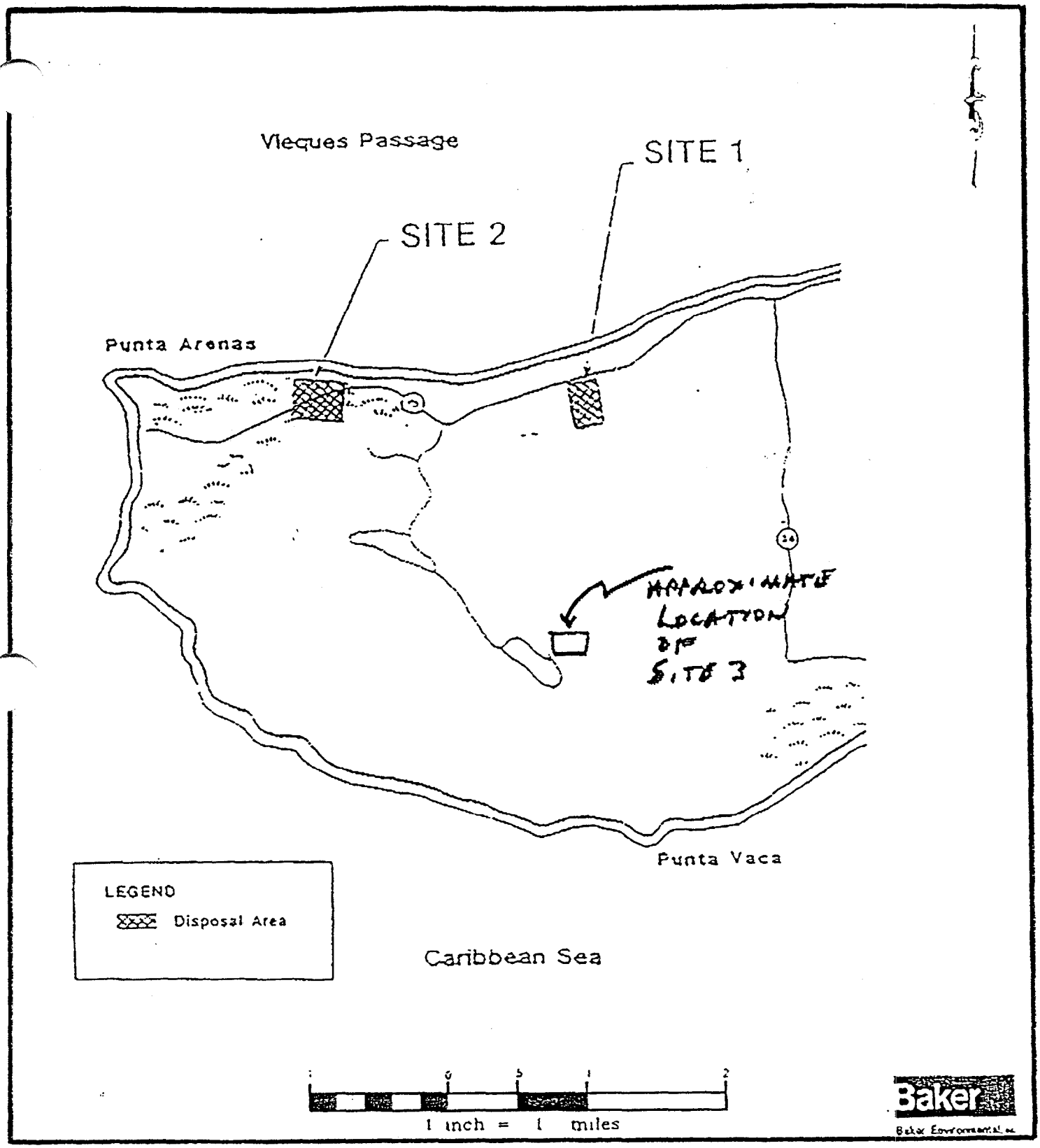

Vieques Passage
SITE 1
SITE 2
Punta Arenas
APPROXIMATE LOCATION OF SITE 3
Punta Vaca
LEGEND
Disposal Area
Caribbean Sea
1 inch = 1 miles
Baker

FIGURE 2

Table 1. Airphoto Descriptions

Date	Source	Scale	Project	Frames
1951	USGS	1:20,000	GS-LR	149,150
1958	DIA	1:6,100	H02277	10-13
1958	DIA	1:6,100	H002300	9,9A,10,10A
1959	DIA	1:6,100	H02303	29-31
1964	ASCS	1:20,000	ELT-11DD	93-95
1967	ASCS	1:20,000	ELT-22DD	164-166
1972	Unknown	1:20,000		
1977	NOS	1:34,400	77E	6268,6269, 6232,6233

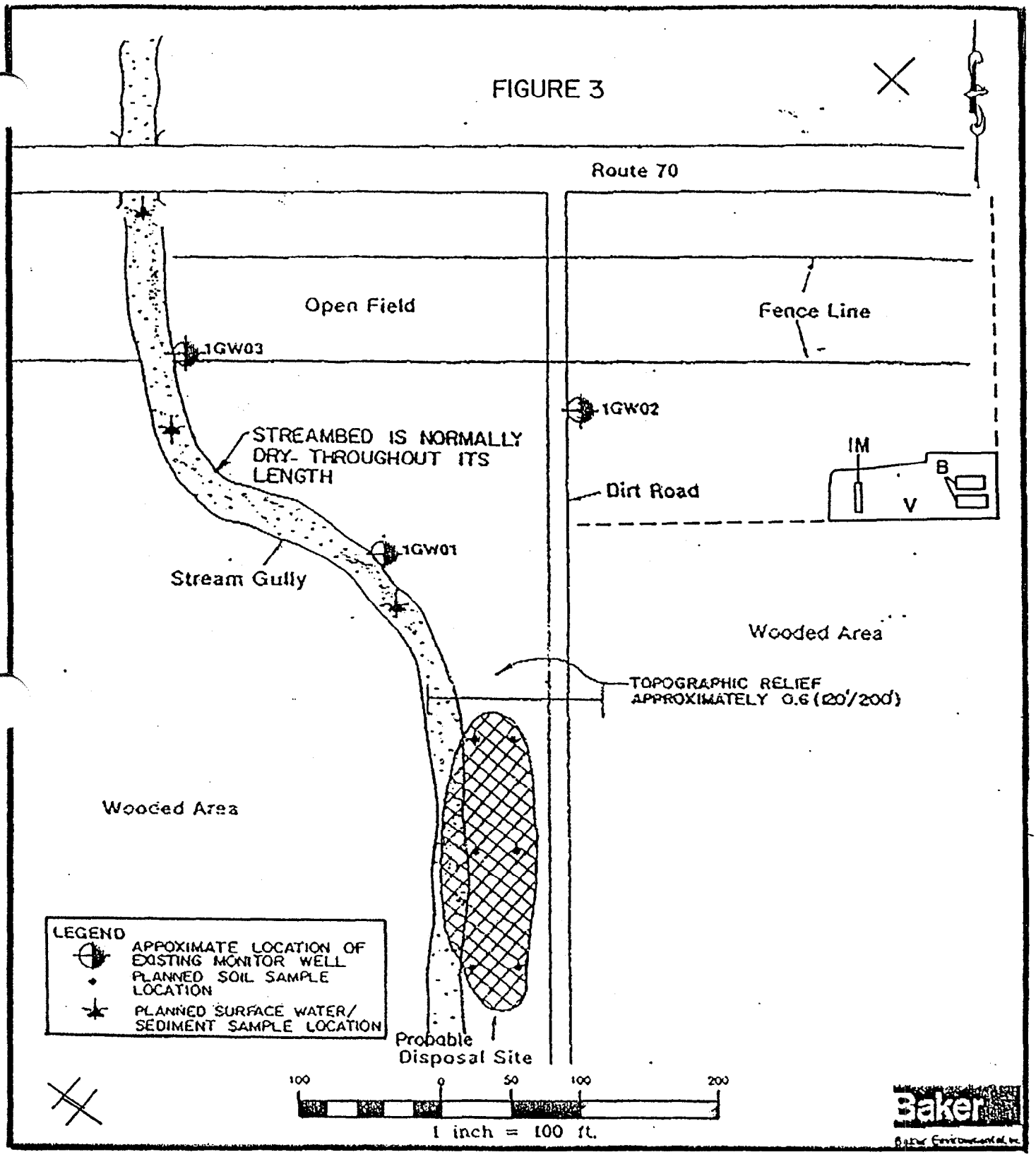
Table 2. Map Annotations

B - Building
C - Container
CA - Cleared Area
DB - Debris
DK - Dark-toned
EX - Excavation
FA - Fill Area
GA - Graded Area
IM - Impoundment
LT - Light-toned
MM - Mounded Material
OS - Open Storage
S - Structure
V - Vehicle
VS - Vehicle Storage

RESULTS OF AIRPHOTO ANALYSES

Site 1: March 18, 1967

No activity could be observed on the March 1, 1959 airphotos acquired over this site. However, the access road (see Figure 3) appeared to be used frequently. Two buildings (B) are evident in a cleared area east of the site. Several vehicles (V) are located west of the buildings, and appear to be trucks with trailers. A rectangular impoundment (IM) is visible west of the tracks, and there appears to be liquid in the bottom. An area of alternating strips of vegetation and bare soil (not annotated) is visible south of the buildings, but the origin of this phenomenon could not be determined. A dirt access road connects the cleared area with the access road linking Site 1 with Route 70. On the 1972 photos, a cleared area with light-toned material (probably debris) was visible west of the buildings. These same features, with little change, were also evident on the 1977 aerial photos of the site.

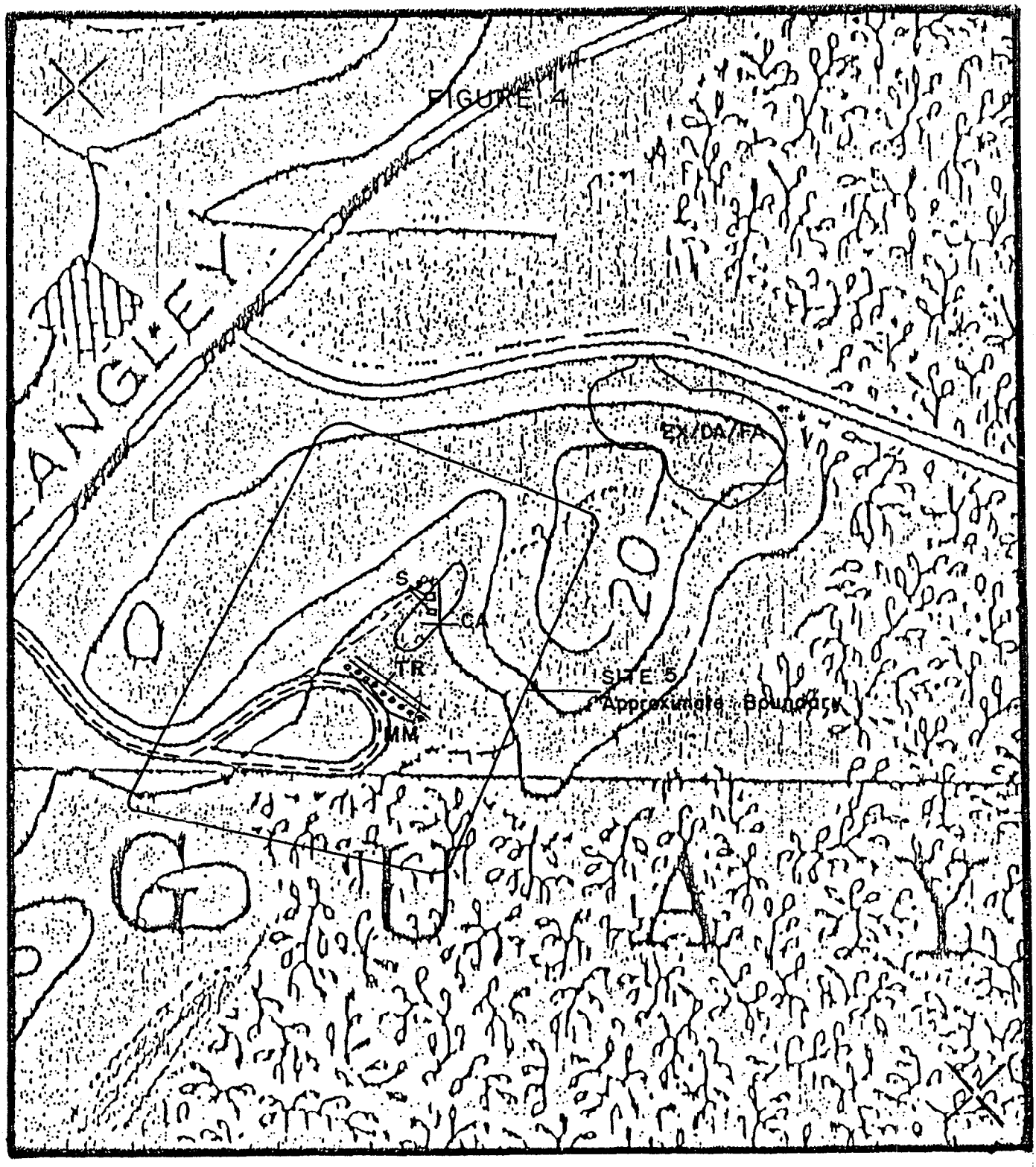


SITE I

MARCH 18, 1967

Site 5: January 8, 1951

A trench (TR) with an associated vehicle are visible near an access road as depicted in Figure 4. The bottom of this trench appears dark in tone, suggesting the presence of possible wet or burned material. To the north of the site an area (denoted as "EX/DA/FA") is disturbed and covered with a large amount of earthen material. Part of this area appears to have been excavated. Structures (S) are visible in a cleared area (CA) near an access road north of the trench. (See Figures A-1 and A-2 in the Appendix for aerial photographic prints of this site in 1958 and 1977).

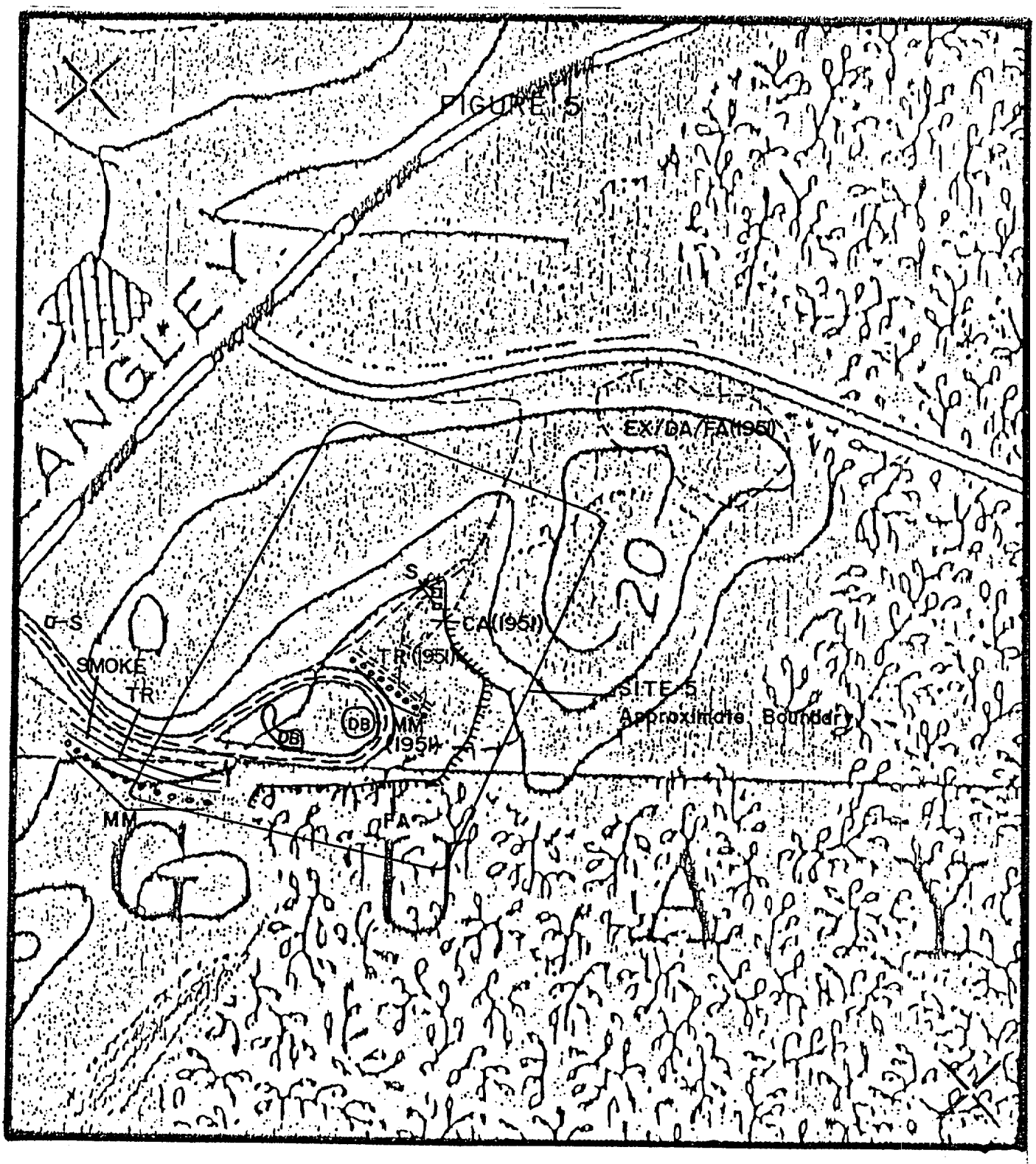


SITE 5

JANUARY 8, 1951

Site 5: June 18, 1958

A deep trench is visible in the western portion of the site (see Figure 5). The mounded material (MM) along the southwest side of the trench possibly came from its excavation. Smoke, evidence of burning, is visible in the northern end of the trench, and an access road leads to the southern end. An area of piled debris (DB) is visible on the southern side of an access road that originates from the northern part of the site. Two structures can be seen northeast of the piled debris. The historical features seen in 1951 are annotated with a thin dashed line. Further excavation has been undertaken on the area north of the site boundary since 1951. Also noted on Figure 5 is the extent of the fill area (FA) associated with the site.

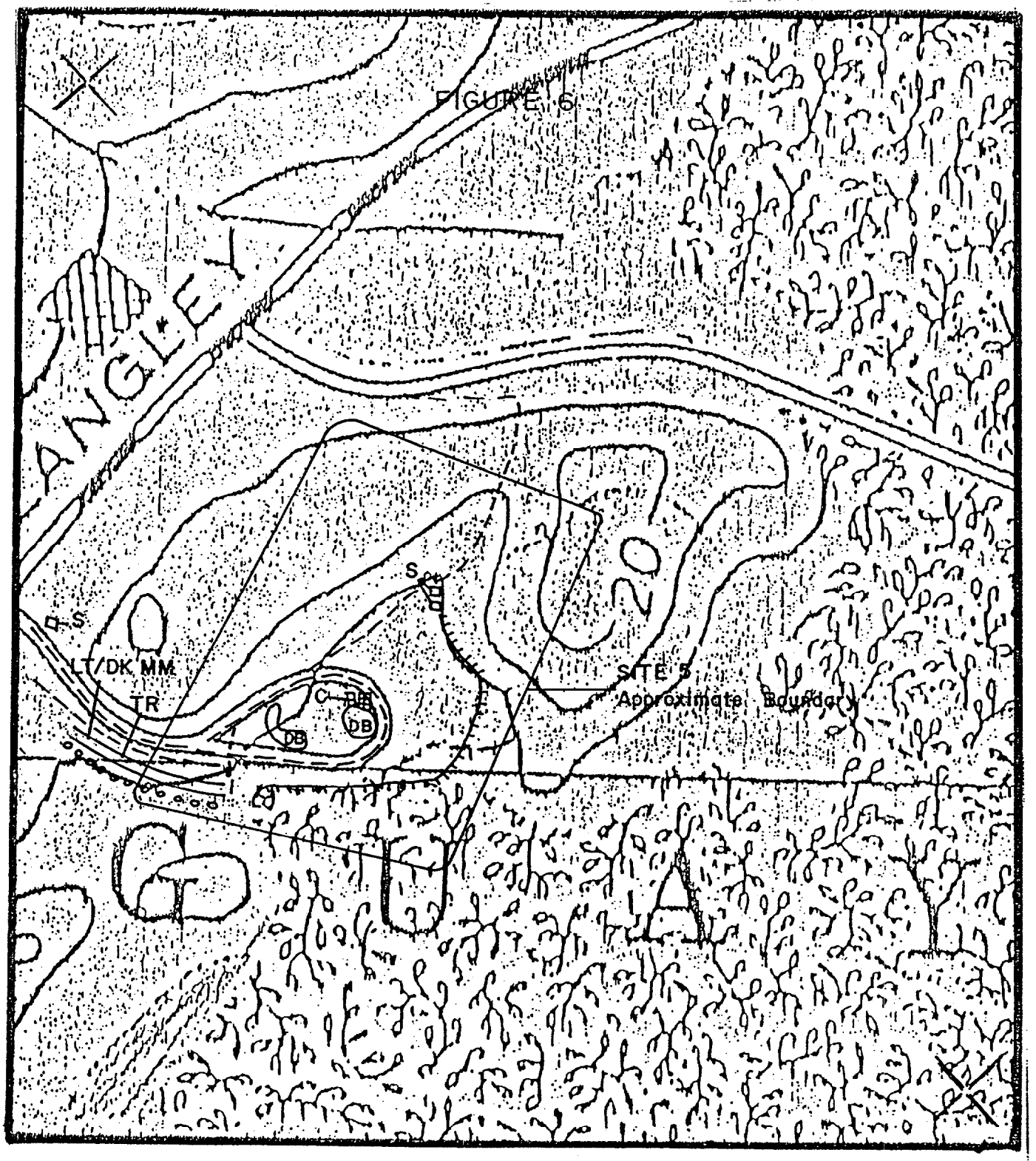


SITE 5

JUNE 18, 1958

Site 5: October 29, 1958

As shown in Figure 6, the overall condition of this site does not appear to differ significantly from that depicted in the previous figure. The trench visible in the western part of the site appears to be unchanged except for the presence of light-toned (LT) and dark-toned (DK) mounded material visible in the location where smoke could be seen on June 18, 1958. Possible containers (C) can be seen at the base of the fill area on the north side of piled debris, which was seen in June. The containers are rectangular in shape and appear to be tightly grouped. All structures and access roads appear to be unchanged from June 18, 1958.



SITE 5

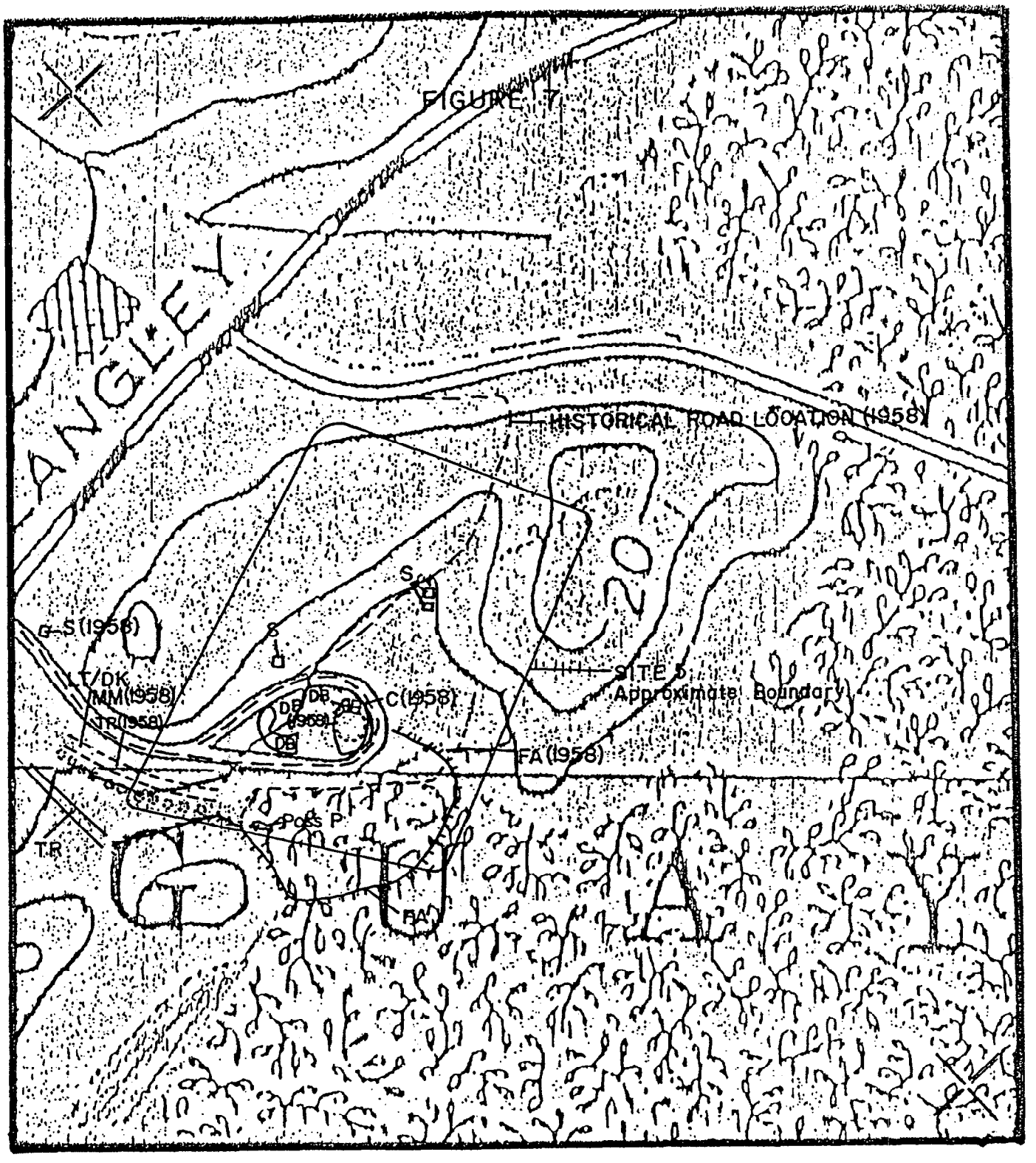
OCTOBER 29, 1958

Site 5: November 15, 1964

In the 1964 aerial photos over the area, the western access road is still visible (see Figure 7). The trench noted in 1951 and 1958 south of this road is no longer evident, and a new trench or ditch is visible further south of the access road. The new trench is seen at the edge of the area that was filled and graded to cover the trench seen in 1958, indicating that it could be for drainage rather than waste disposal, but this could not be established through interpretation of the aerial photography. The new trench is linked with the bay to the east by a drainage channel. The fill area east of the new trench has been expanded to the south into the bay. The area of piled debris seen north of the new fill area has increased in size since 1958, covering the area where containers were seen in October, 1958. A new structure can be seen northwest of the debris area. In addition, a drainage channel leading from this fill area to the bay (Ensenada Honda) is visible. The historical features seen in October 29, 1958 are annotated with a thin dashed line.

Site 5: December 20, 1977

By 1977 the site had completely re-vegetated, and no additional activity could be observed.



SITE 5

JANUARY 15, 1964

Site 6: January 8, 1951

Much of the hatched area depicted in Figure 8 was cleared, and filling activity was evident on aerial photographs taken at that time. An access road could be seen leading to a fill face, and some kind of material, possibly debris, appeared to be located along the bottom edge of the fill face. On the 1964 photos, the same features evident in 1951 and 1958 (with the exception of the possible debris) were still visible. By 1977 no activity could be seen, and the site had completely re-vegetated.

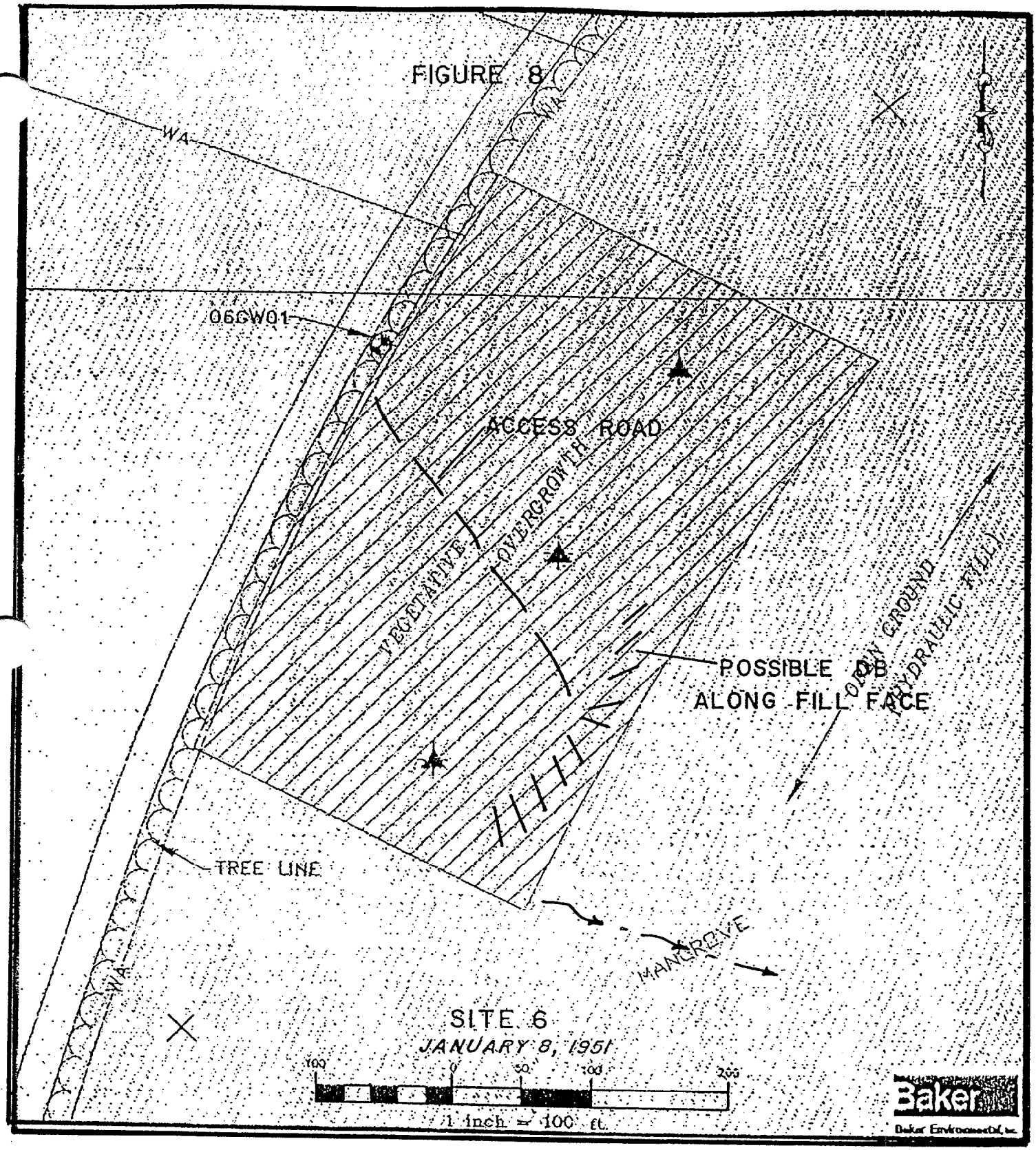
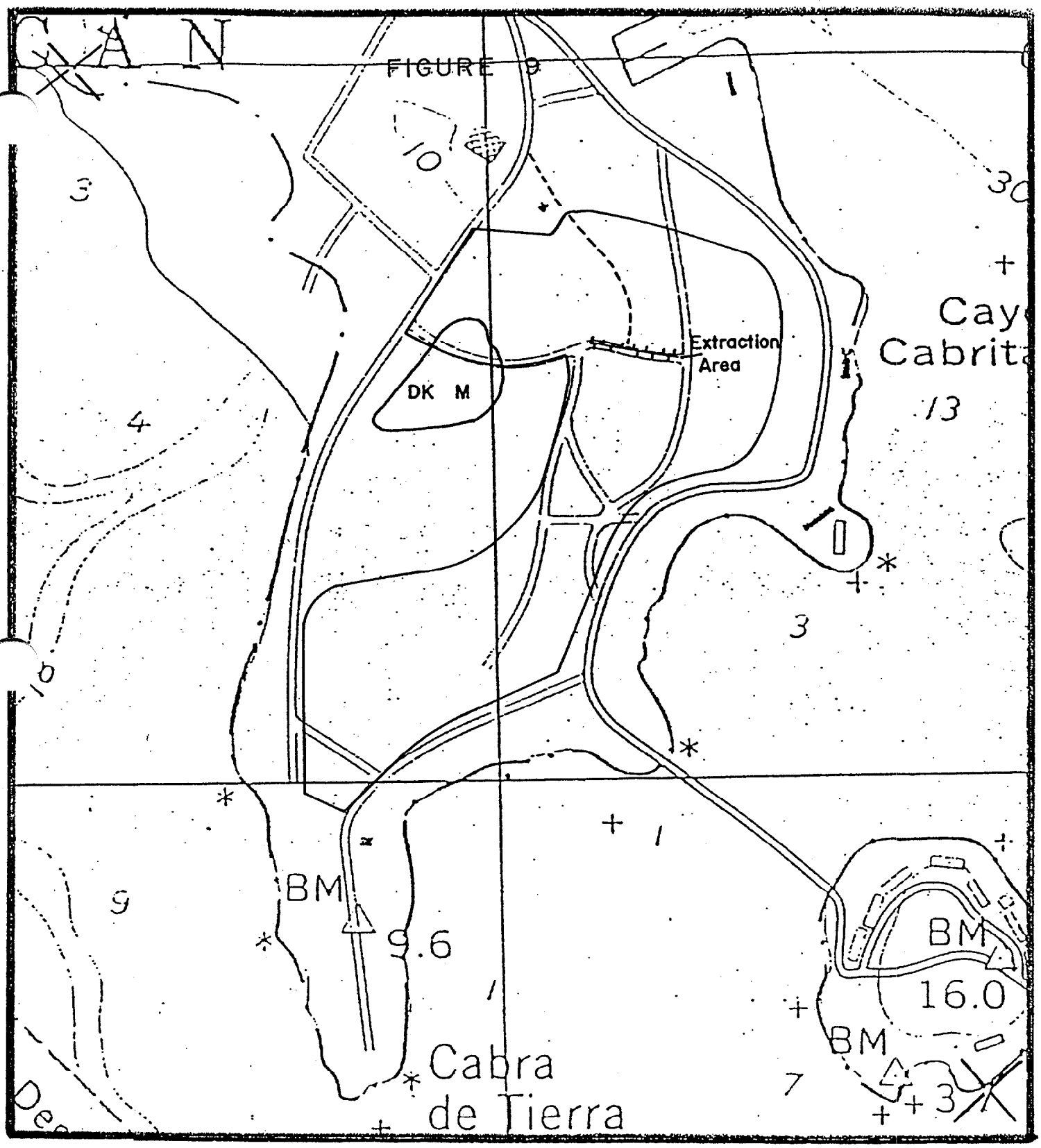


FIGURE 8
WA
WA
WA
WA
06GW01
ACCESS ROAD
VEGETATIVE OVERGROWTH
POSSIBLE DB
ALONG FILL FACE
OLDER GROUND
HYDRAULIC FILL
TREE LINE
MANGROVE
SITE 6
JANUARY 8, 1951
100
0
50
100
200
1 inch = 100 ft.
Baker
Baker Environmental, Inc.

Site 7: January 8, 1951

A small sand extraction operation is active in 1951 in the center of the site (see Figure 9). The operation is accessed by a road from the northwest. Located on the western edge of the site is an area of gray material (DK M) that apparently had been spread across the surface, suggesting possible liquid disposal. (See Figures A-3 and A-4 in the Appendix for aerial photographic prints of this site in 1958 and 1977).

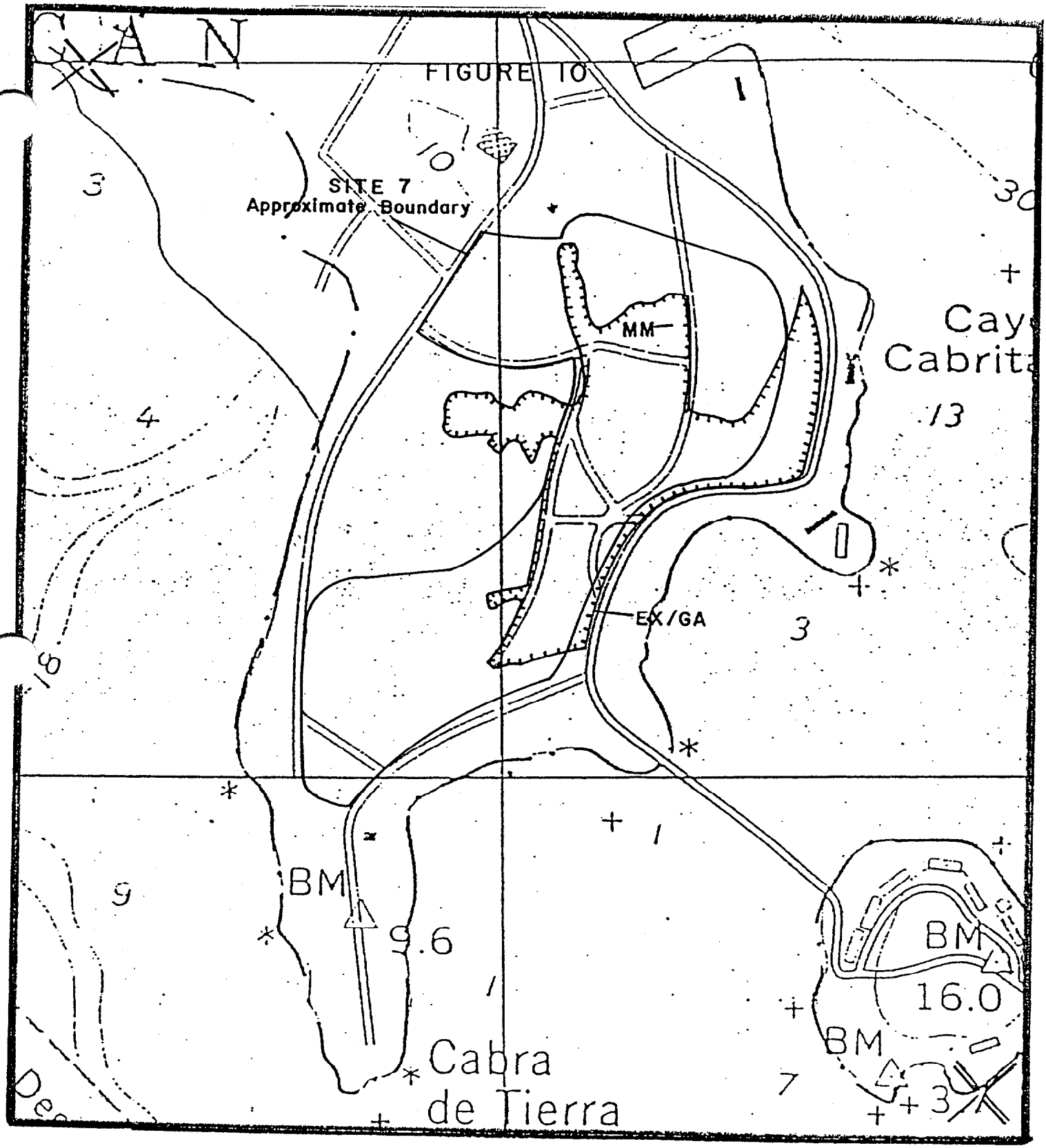


SITE 7

JANUARY 8, 1951

Site 7: June 18, 1958

The analysis of aerial photography dated June, 1958 revealed that the extraction operation had expanded to the extraction and graded area delineated on the overlay to Figure 10. An area of mounded material (MM) is visible on the north side of the excavation/graded area. The material probably had been recently excavated.



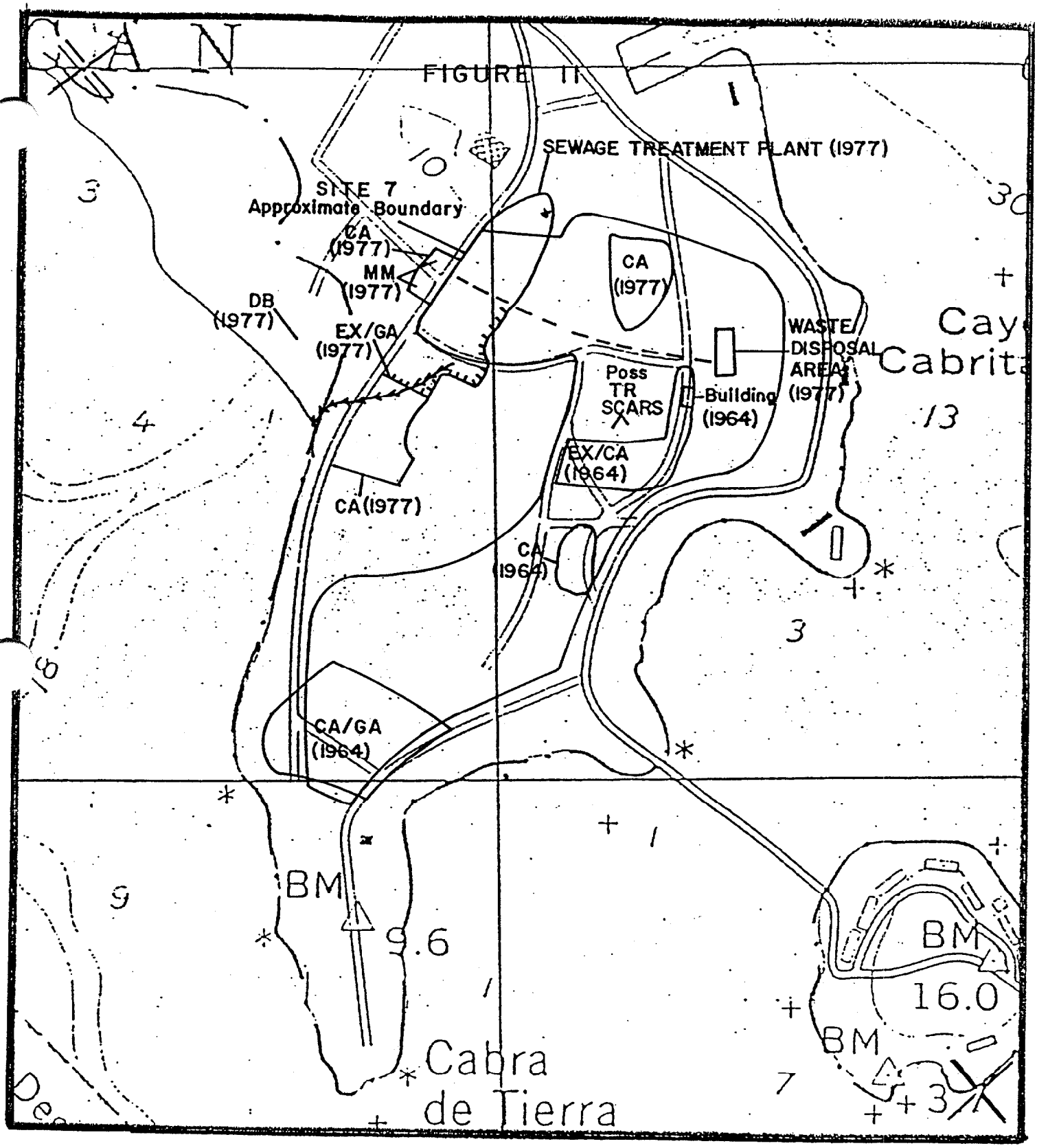
SITE 7

JUNE 18, 1958

Site 7: November 15, 1964 and December 20, 1977

The results of the analyses of aerial photography dated 1964 and 1977 are depicted on an overlay to Figure 11. By 1964 the whole site was vegetated except for three cleared areas. The northernmost area had a building on it and two possible trench scars indicative of filling. Berms (not annotated) on this cleared area suggest heavy earthmoving machinery had been operating in this area.

On the 1977 photos a rectangular-shaped waste disposal area is visible in the center of the site. The area is accessed by a road from the west. Piled debris is evident in the disposal area, and large cleared areas are visible in the northwest. Dump truck-sized mounds of material are stored at the western-most cleared area. The material is probably cover for the disposal area. Debris, an excavation/graded area and a cleared area with mounded material can be seen on the west side of the site.



SITE 7

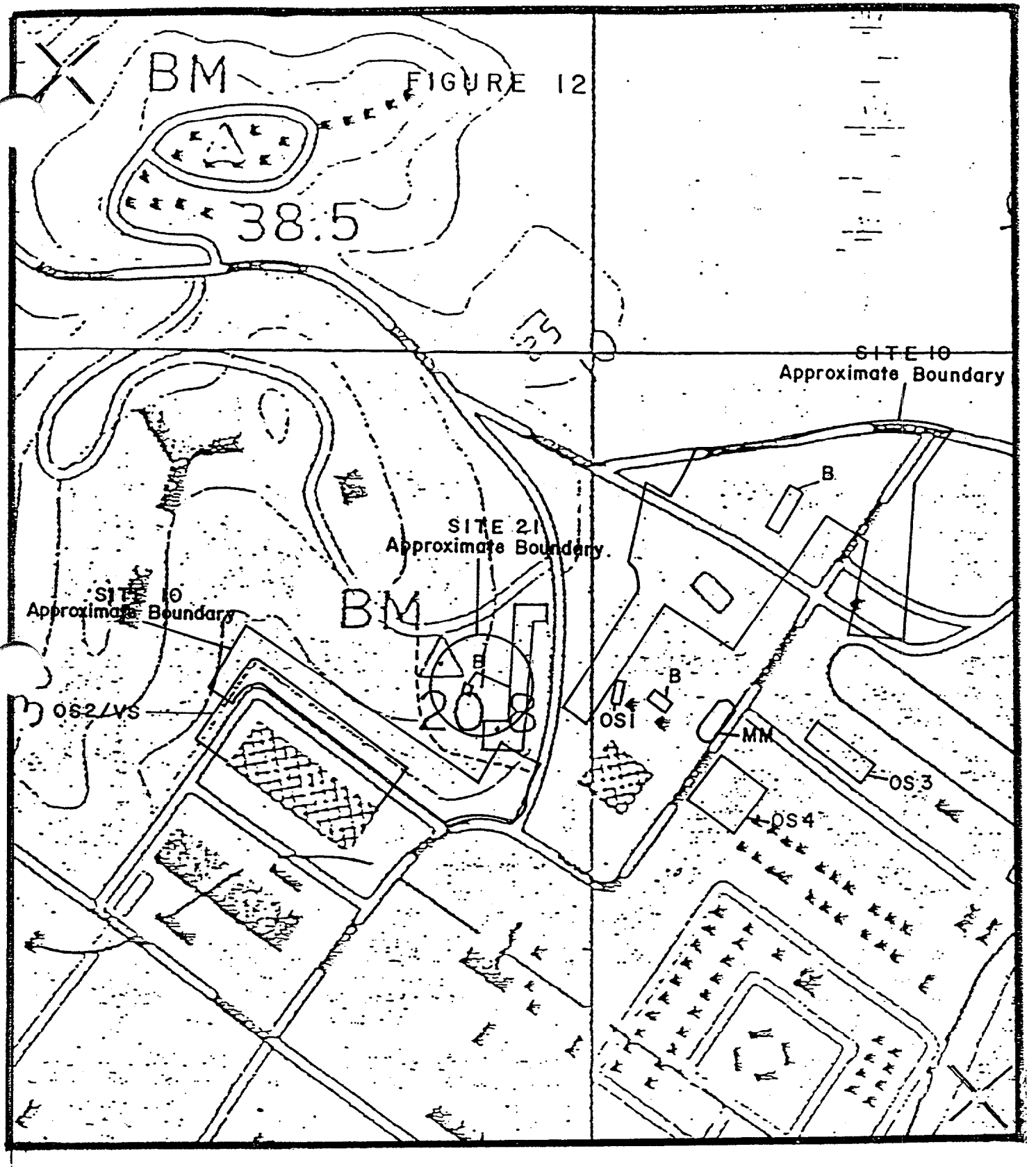
NOVEMBER 15, 1964 and DECEMBER 20, 1977

Site 10: January 8, 1951

All buildings depicted on the USGS quadrangle map, as seen in Figure 12, and two additional buildings delineated on the overlay, are in place in 1951. Open storage (OS) areas are numbered sequentially from north to south and west to east to aid in their description and tracking. The numbers are unique so that open storage areas seen in subsequent years can be individually identified. Open storage areas 1, 3 and 4 contain possible crates or drums. Open storage area 2 appears to be for vehicle parking/storage. A mound of dark-toned material (MM) is visible in the southern section of the site. (See Figures A-5 and A-6 in the Appendix for aerial photographic prints of Sites 10 and 31 in 1958 and 1977).

Site 21: January 8, 1951

In 1951 a large multi-storied building and a small structure were visible on or near the approximate Site 21 boundary. The area around the buildings appears vegetated. An access road winds around the site and connects with a network of roads that link a group of other buildings scattered across the hill.



SITES 10 & 21

JANUARY 8, 1951

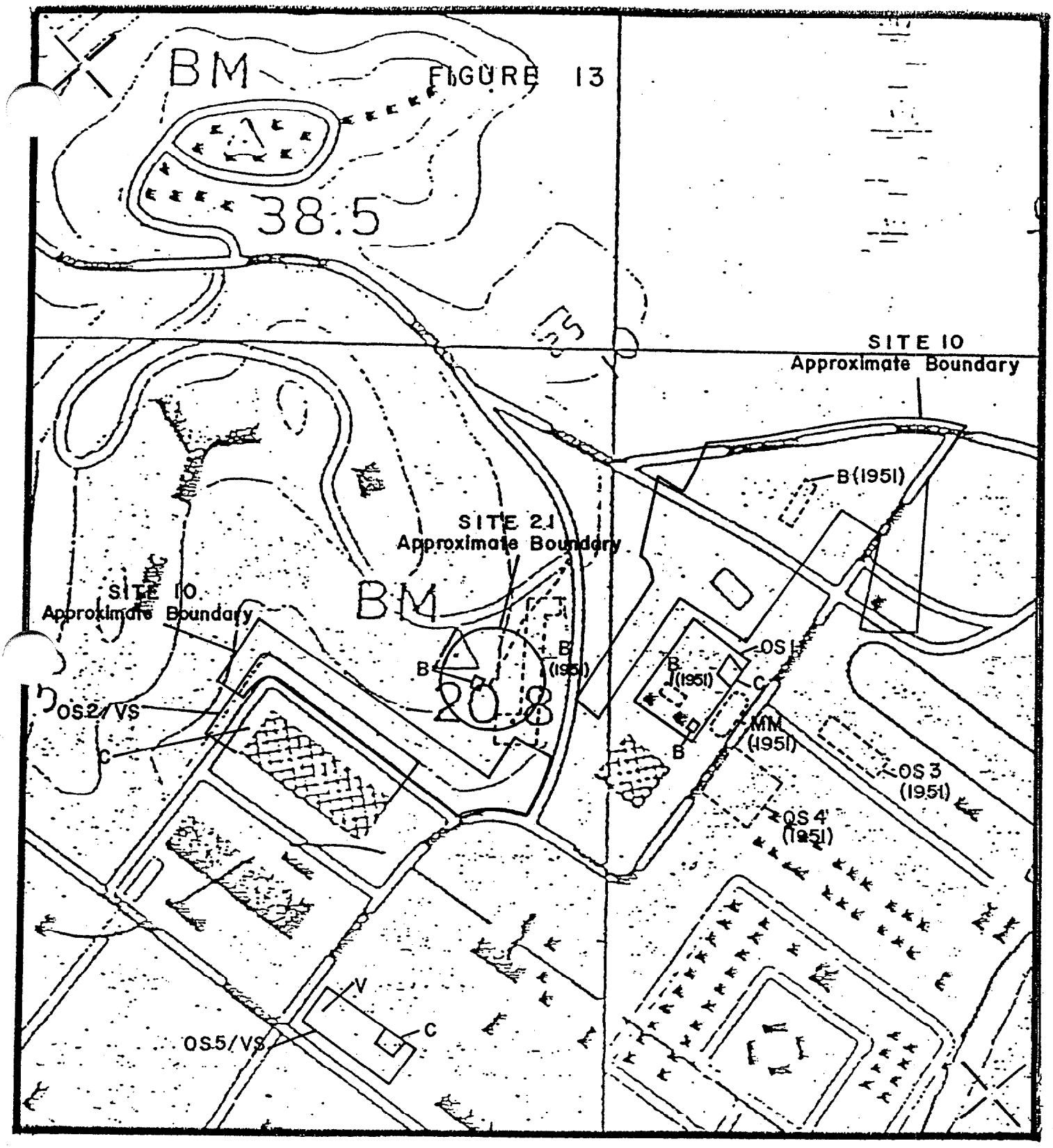
Site 10: June 18, 1958

Site activity, annotated on an overlay to Figure 13, has increased significantly since 1951. OS1 has increased in size with containers, crates or drums, and equipment is visible within its boundaries. One building has been removed from OS1 and another has been added. The removed building and other historical features are delineated with a thin dashed line. OS2 has vehicles and equipment stored within its boundaries and containers can be seen on its west side. An area of debris is visible south of OS2. Also south of OS2 is a new open storage area, OS5, which contains vehicles and containers. The containers appear to be either crates or drums. Features no longer visible from 1951 include mounded material, OS3 and OS4 previously seen southeast of OS1, and a building north of OS1.

Site 21: June 18, 1958

By June 1958, the larger of the two buildings had been removed and the area had begun to revegetate. The historical location of the large building is delineated on the overlay to Figure 13. An access road originates from the north and terminates at the small building, still visible in the center of the site.

The site continued to revegetate through 1977, the time when the west side of the site appears to have been mowed.



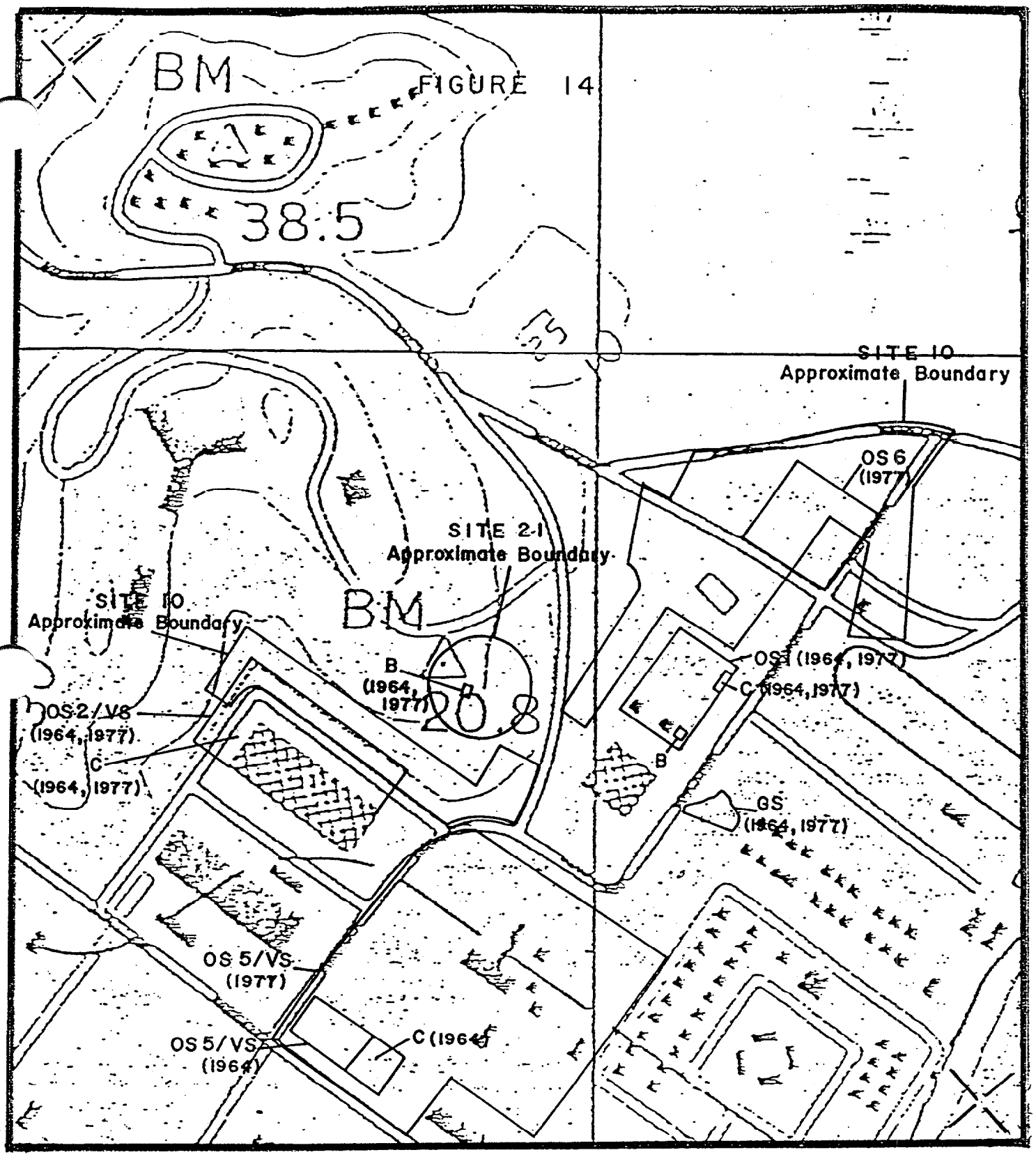
SITES 10 & 21

JUNE 18, 1958

Site 10: November 15, 1964 and December 20, 1977

Findings for 1964 and 1977 are delineated on an overlay to Figure 14. Site activity did not change significantly from 1958 to 1964. A ground scar (GS) is visible where open storage OS4 was visible in 1951.

Site activity in 1977 increased significantly from 1964. Almost all of this increase was associated with the open storage areas. There appears to be more equipment and containers visible within OS2 than was seen in 1964. OS5 expanded greatly since 1964, and much of the area appears to be for parking. A new open storage area, OS6, is visible northeast of OS1. It contains equipment and containers. The ground scar seen in 1964 is still visible.



SITES 10 & 21

NOVEMBER 15, 1964 and DECEMBER 20, 1977

Site 13: June 18, 1958

Few significant changes occurred at this site between 1951 and 1958. An overlay to Figure 15 depicts the three areas that comprise Site 13 as seen on the 1958 aerial photography. The eastemmost area appears to be a large excavation operation, with eight earthmoving vehicles (V) visible. An open storage area of vehicles and equipment can be seen on the southwest side of this area. (See Figures A-7, A-8 and A-9 in the Appendix for aerial photographic prints of the site in 1958 and 1977).

The two western areas of Site 13 were created with a combination of clearing, filling and grading. These areas were indicated as sites for wells which could be the structures/buildings delineated on the overlay. No obvious sources of contamination could be seen on the photography.

The three areas began to revegetate after 1958, and so no further discussion is presented.

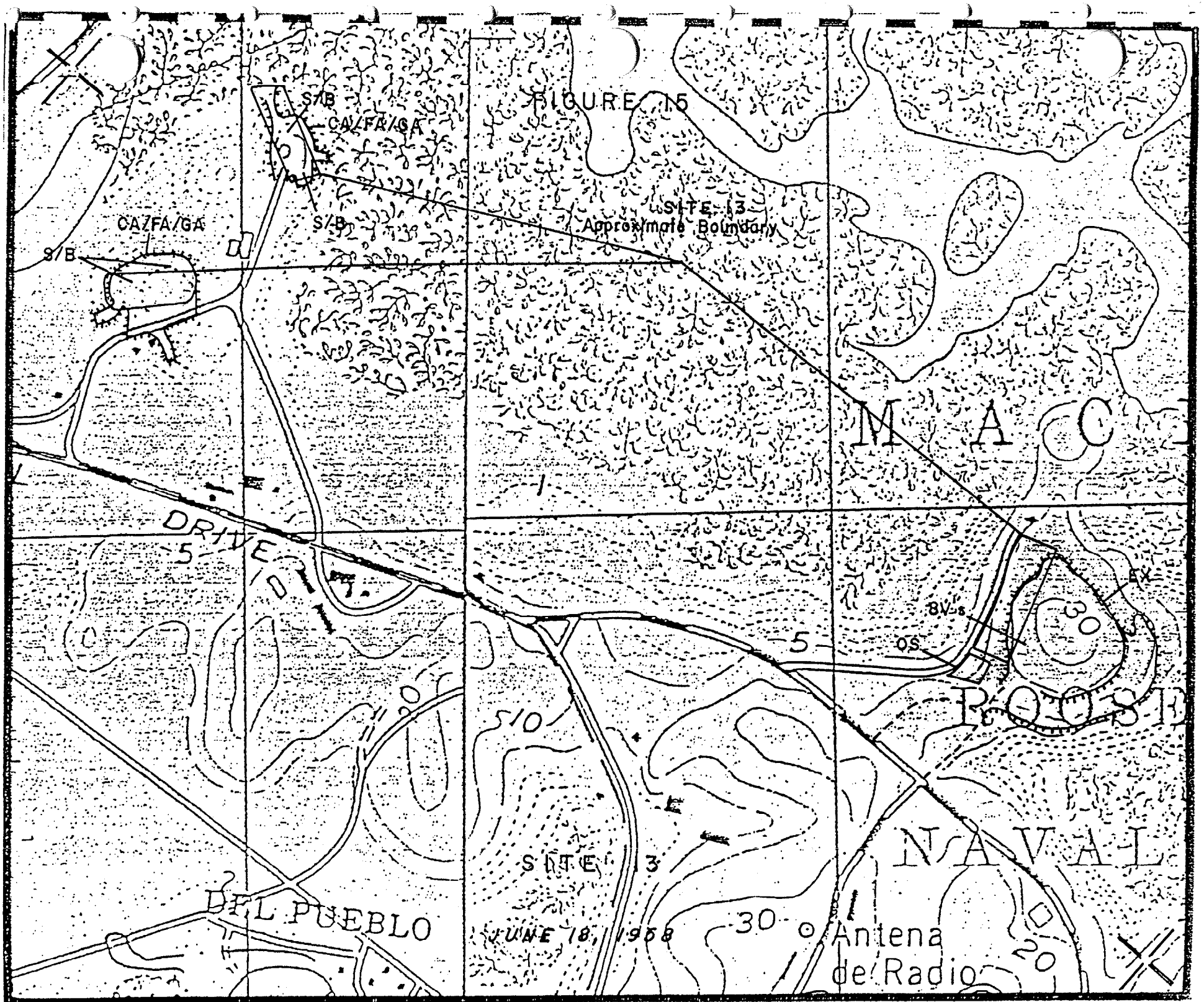
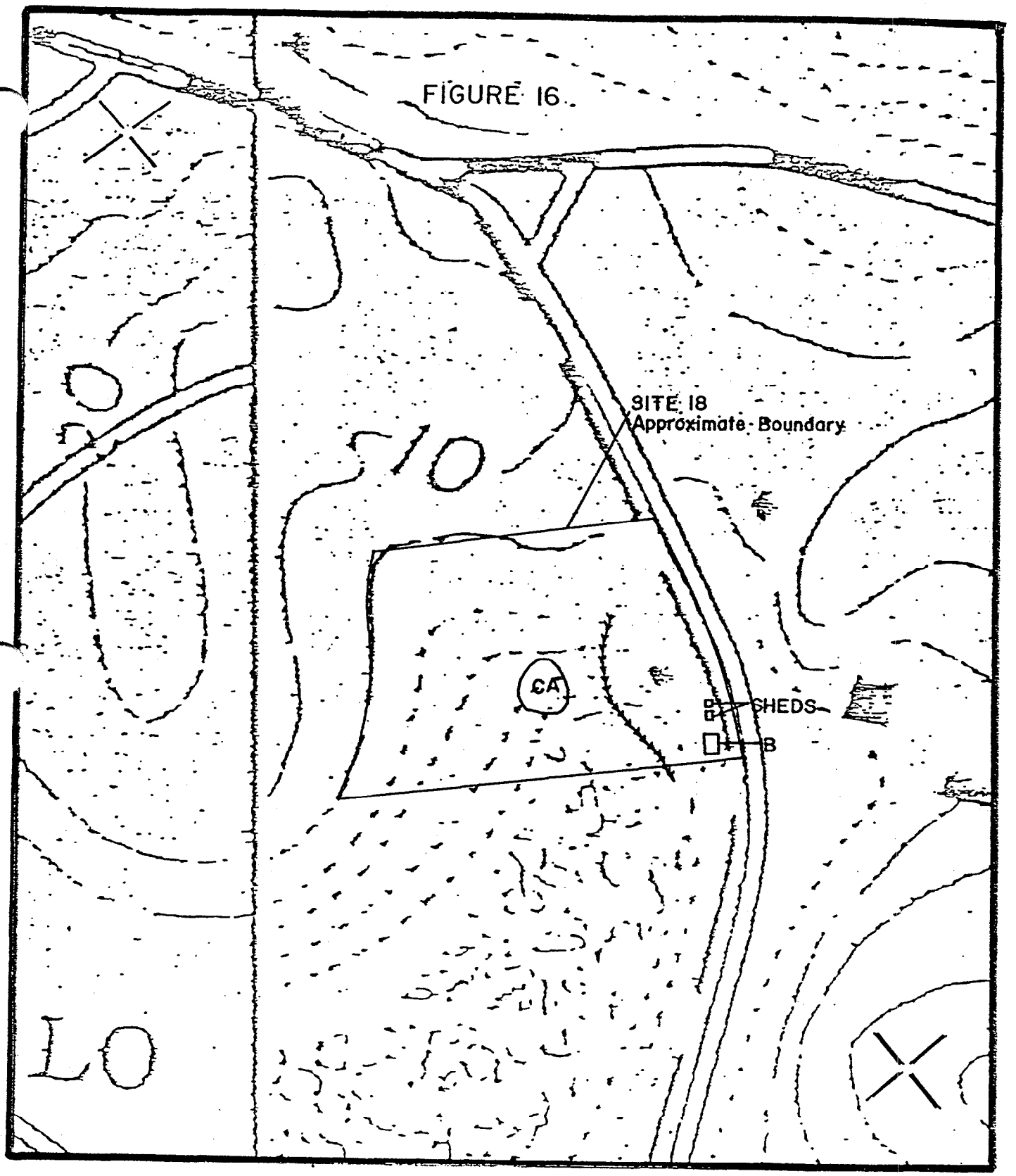


FIGURE 15
S/B
CA/FA/GA
CA/FA/GA
S/B
S/B
SITE 13
Approximate Boundary
M A C
DRIVE
5
5
510
30
OS
R O O S T
SITE 3
N A V A L
DEL PUEBLO
JUNE 18, 1958
30
Antena de Radio
20

Site 18: January 8, 1951

As evident on airphotos acquired in 1951, this site was devoid of vegetation during this time period. A building can be seen in the southeast corner of the site. Two sheds, annotated in Figure 16, are directly north of the building. A drainage channel, west of the building, bisects the southern boundary of the site. A circular cleared area is also visible in the center of the site. (See Figures A-8 and A-9 in the Appendix for aerial photographic prints of this site in 1958 and 1977).

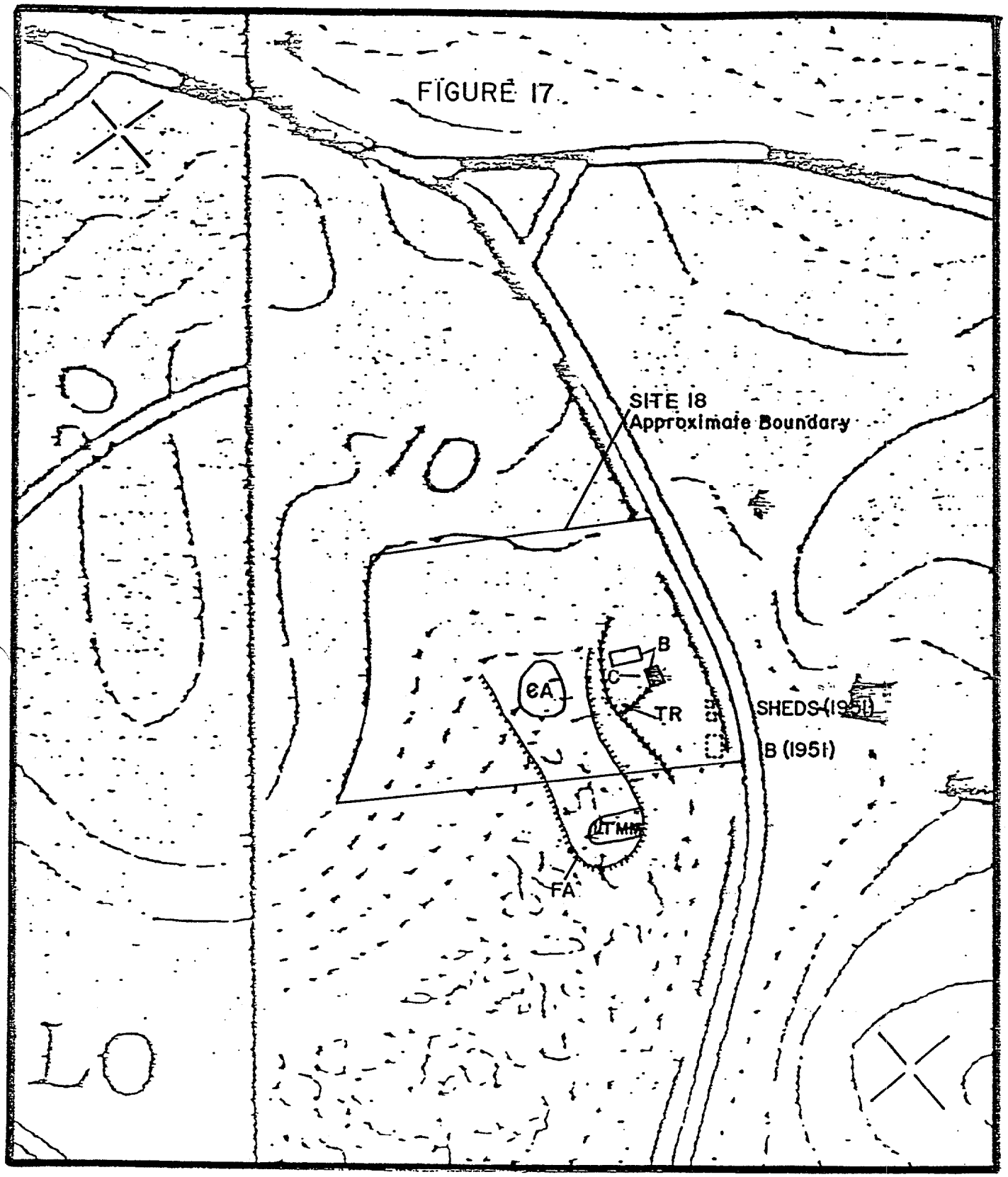


SITE 18

JANUARY 8, 1951

Site 18: June 18, 1958

The building and sheds seen in 1951 are not present on the 1958 photos (see Figure 17). Two new buildings, however, are visible at the site. The easternmost building has containers on its west side, but the identification of these containers could not be determined from the photography. A drainage ditch/trench originates from the south-west side of the building and terminates at the drainage ditch to the west, which was visible in 1951. Located on the west side of the drainage ditch is a possible fill area. Light-toned mounded material (LTMM) can be seen on the southeast side of the fill area. The cleared area was visible in 1951.



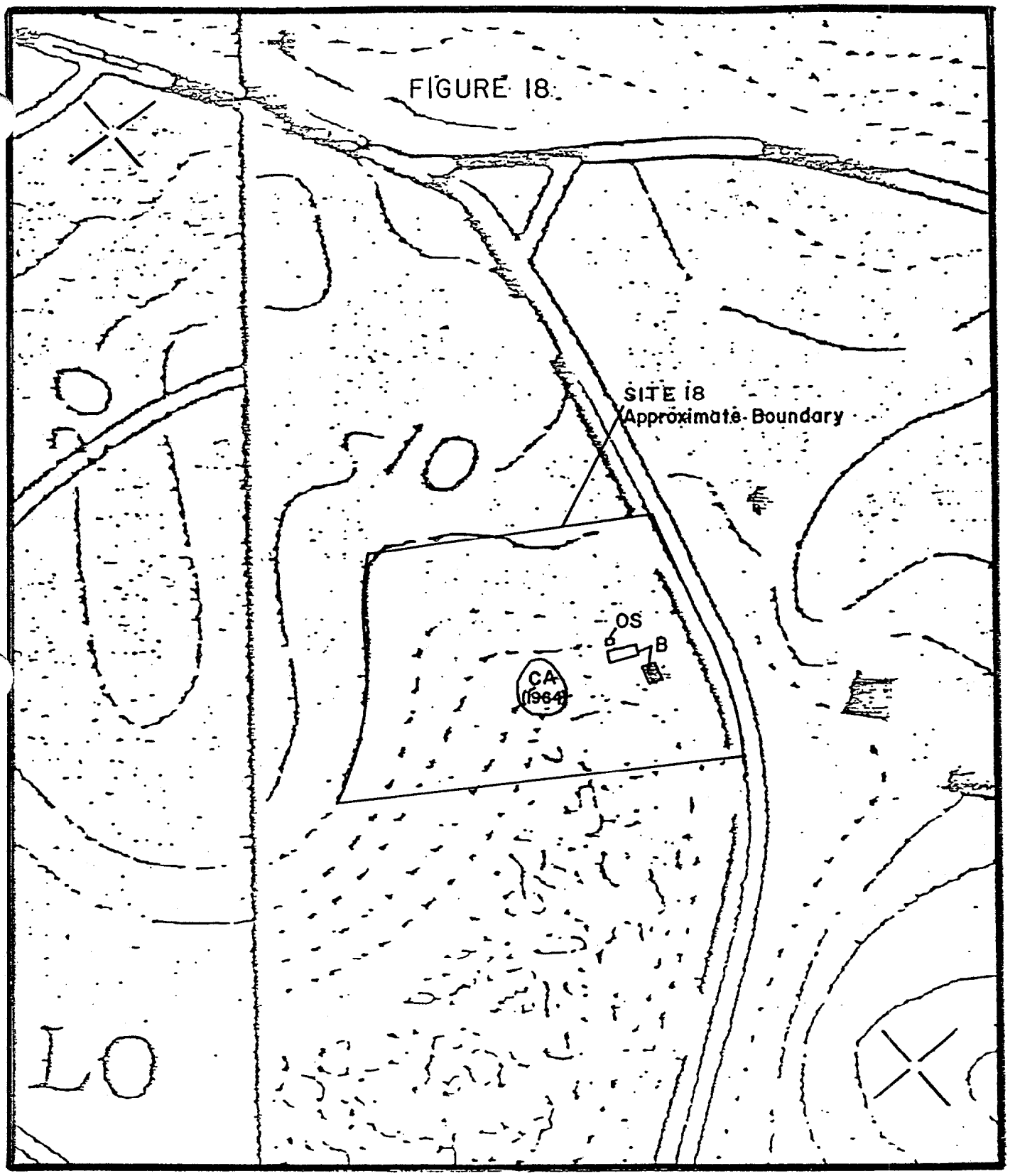
SITE 18

JUNE 18, 1958

Site 18: November 15, 1964 and December 20, 1977

Due to a lack of significant changes, features for both 1964 and 1977 are annotated on the overlay to Figure 18. By 1964, vegetation had encroached on the sites western and southern boundaries. Possible crates can be seen in an open storage (OS) area northwest of the northernmost building. Much of the possible fill area seen in 1958 had vegetated except for a cleared area which was visible in 1958.

The site did not change significantly by 1977. The circular cleared area visible in 1964 had revegetated, and a possible trench can be seen on the site's eastern side.



SITE 18

NOVEMBER 15, 1964 and DECEMBER 20, 1977

FIGURE A-1

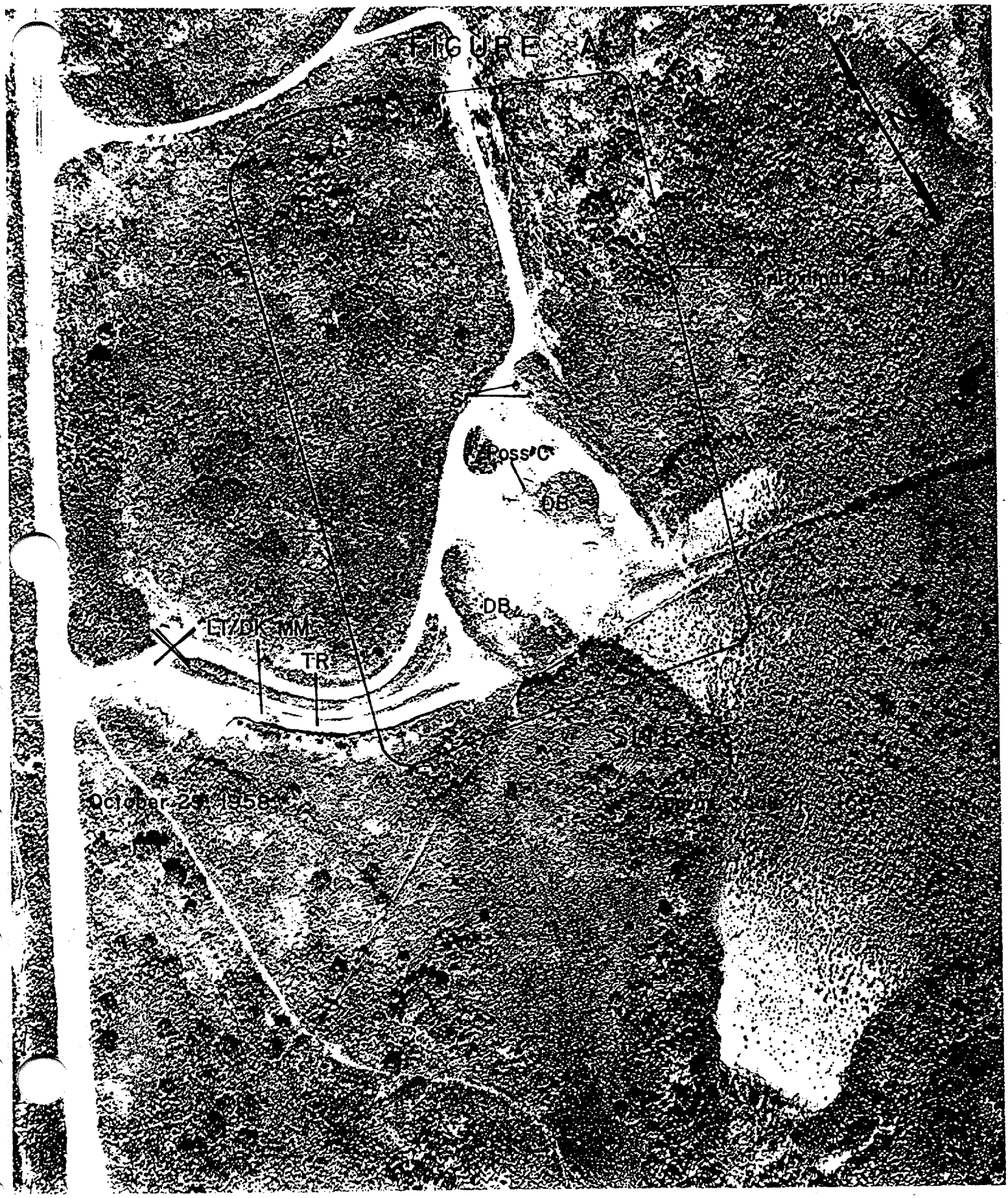
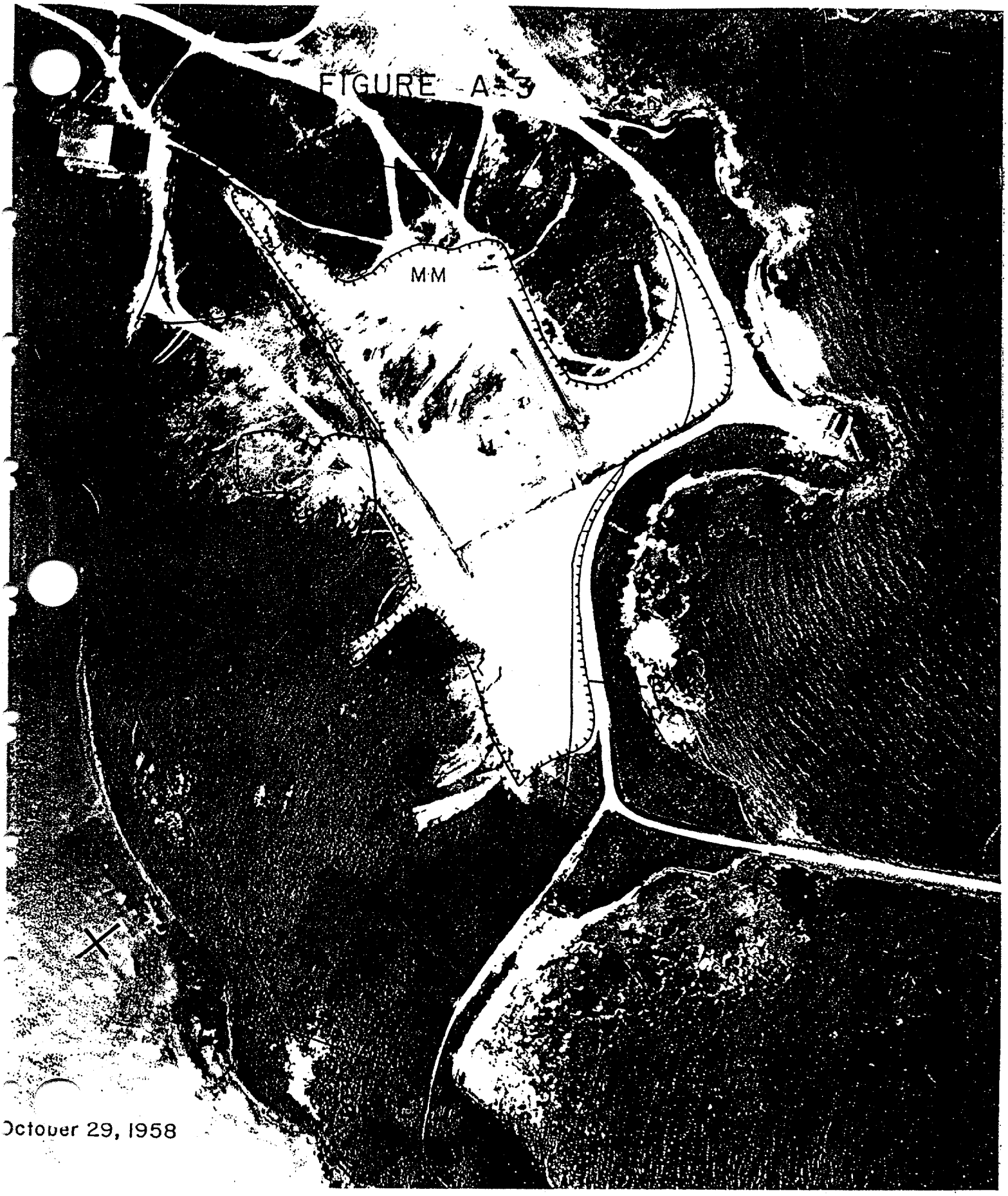


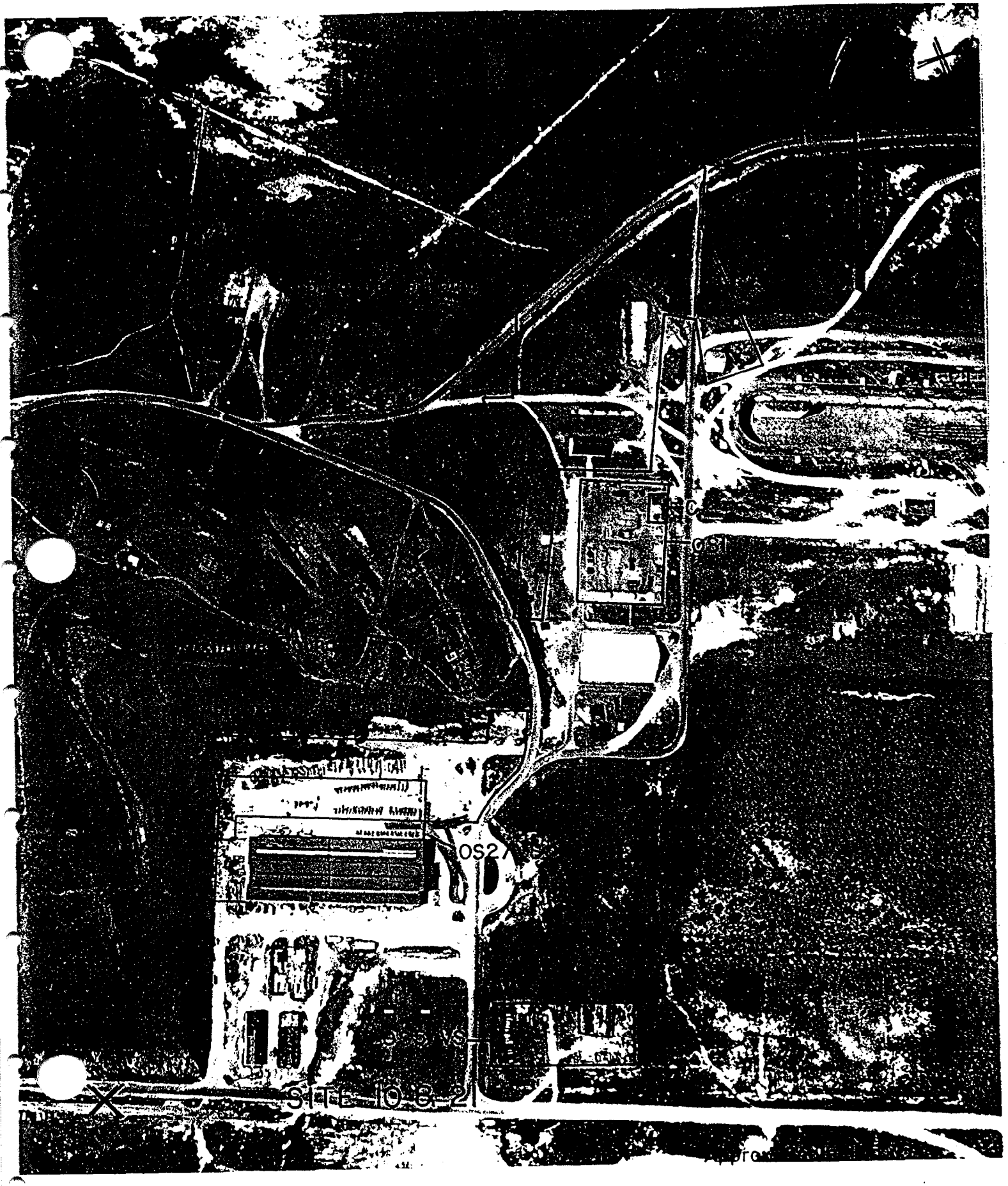
FIGURE A-2

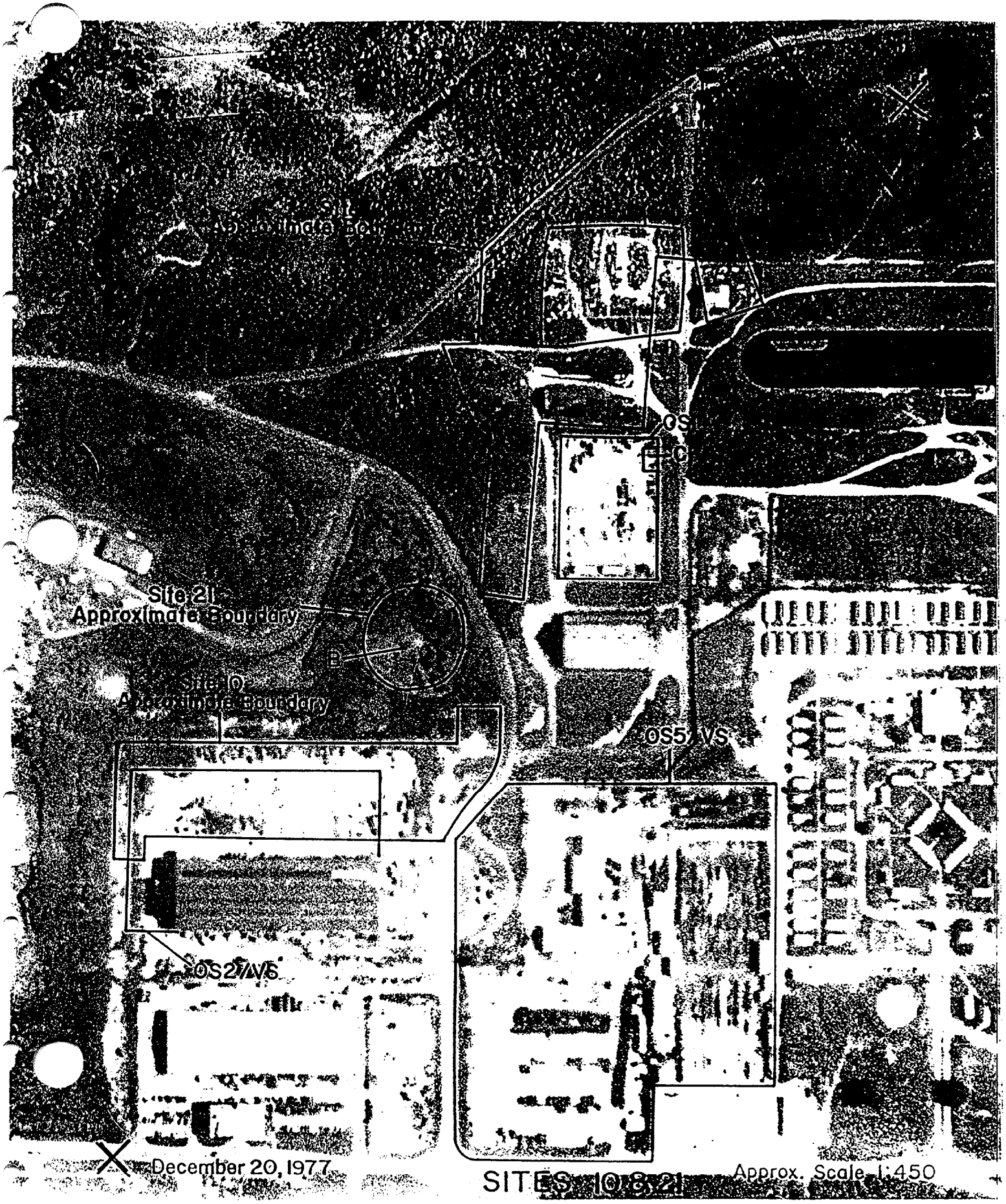
Aerial Photo, 20, 1977



October 29, 1958

FIGURE A-4


OS1
OS2
SITE 10-8-2



December 20, 1977

SITES 10 & 21

Approx. Scale 1:450

FIGURE
EX
8V's
OS
13
June 18,

N
Site 18
Approximate Boundary
B
CA
C
S/B
SITES 13 (Western Areas) & 18

SITE 13818
December 20, 197
Approx. Scale 1:1,000

APPENDIX 3.B

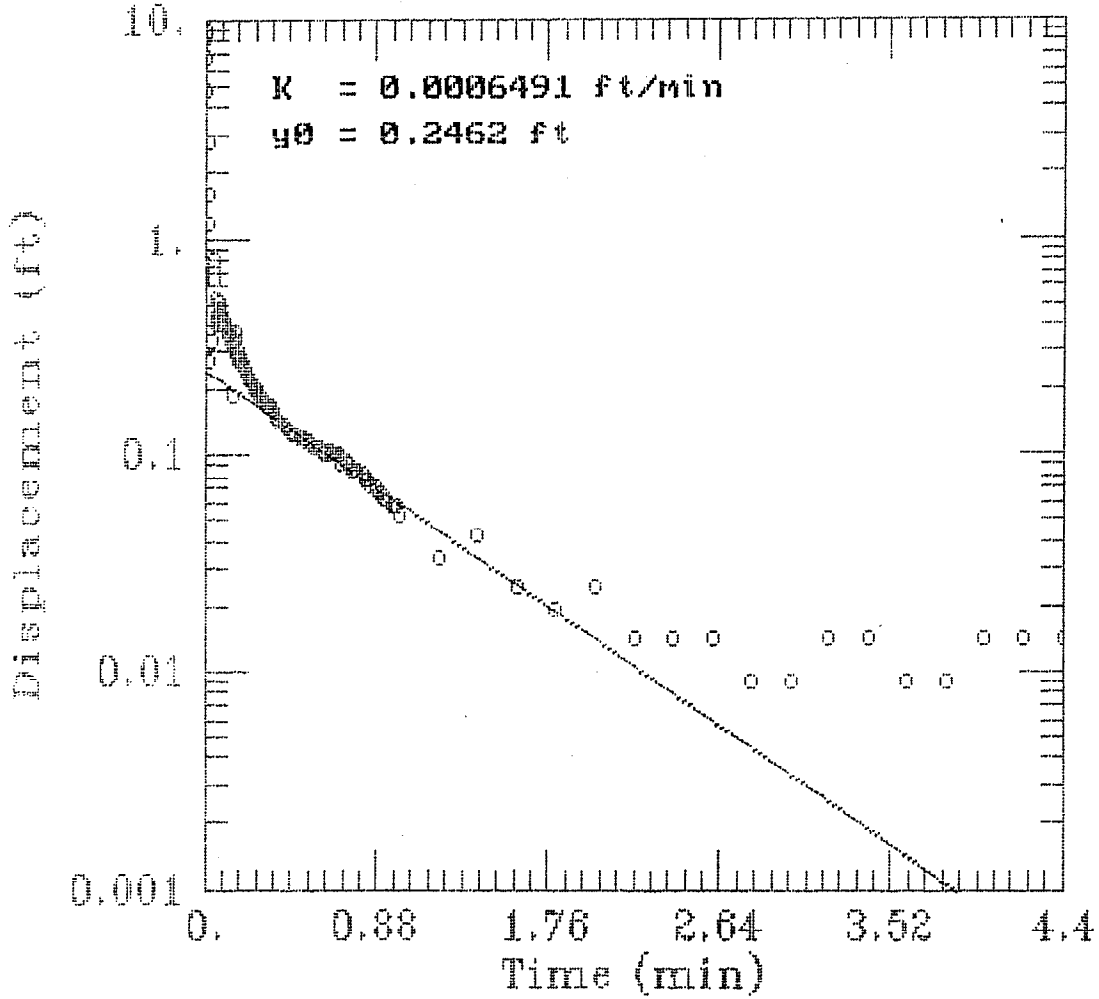
REPORT OF THE GEOPHYSICAL INVESTIGATION

Report pending

APPENDIX 3.C

CALCULATION OF HYDRAULIC CONDUCTIVITY

R7GW08 FALLING HEAD TEST



AQTESOLV

GERAGHTY & MILLER, INC.

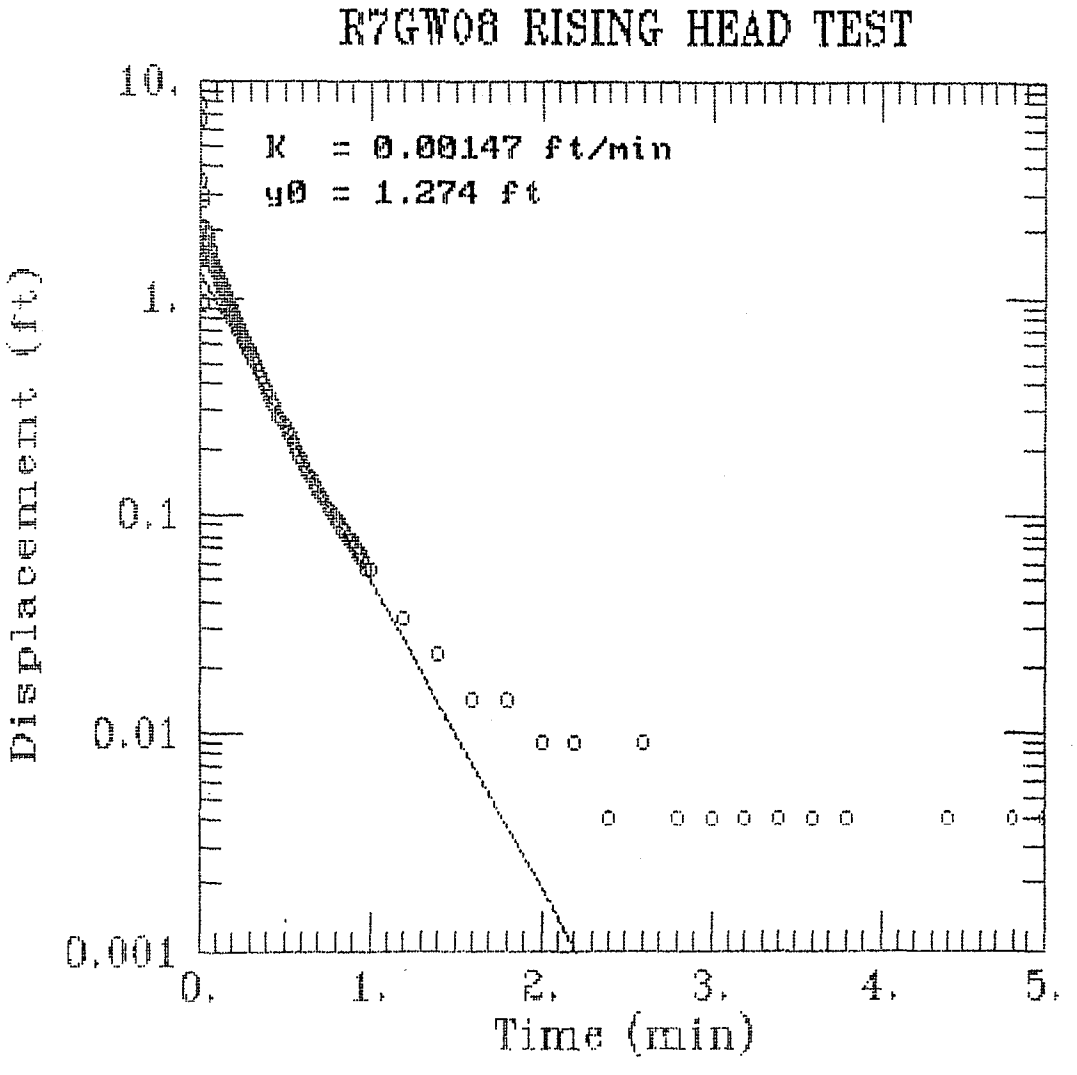
Modeling Group

0	7.601	1
0.0033	8.897	1
0.0066	8.459	1
0.01	6.772	1
0.0133	4.782	1
0.0166	2.751	1
0.02	1.582	1
0.0233	1.149	1
0.0266	0.275	1
0.03	-0.741	1
0.0333	-0.408	1
0.0366	-0.09	1
0.04	0.337	1
0.0433	0.646	1
0.0466	0.788	1
0.05	0.755	1
0.0533	0.65	1
0.0566	0.527	1
0.06	0.446	1
0.0633	0.413	1
0.0666	0.399	1
0.07	0.465	1
0.0733	0.508	1
0.0766	0.508	1
0.08	0.484	1
0.0833	0.451	1
0.0866	0.432	1
0.09	0.418	1
0.0933	0.413	1
0.0966	0.413	1
0.1	0.408	1
0.1033	0.404	1
0.1066	0.394	1
0.11	0.389	1
0.1133	0.38	1
0.1166	0.375	1
0.12	0.366	1
0.1233	0.361	1
0.1266	0.356	1
0.13	0.347	1
0.1333	0.332	1
0.1366	0.337	1
0.14	0.337	1
0.1433	0.337	1
0.1466	0.327	1
0.15	0.19	1
0.1533	0.294	1
0.1566	0.361	1
0.16	0.375	1
0.1633	0.342	1
0.1666	0.304	1
0.17	0.28	1
0.1733	0.271	1
0.1766	0.275	1
0.18	0.28	1
0.1833	0.275	1
0.1866	0.275	1
0.19	0.266	1
0.1933	0.261	1

0.2	0.252	1
0.2033	0.252	1
0.2066	0.247	1
0.21	0.242	1
0.2133	0.242	1
0.2166	0.237	1
0.22	0.237	1
0.2233	0.233	1
0.2266	0.228	1
0.23	0.223	1
0.2333	0.223	1
0.2366	0.218	1
0.24	0.218	1
0.2433	0.214	1
0.2466	0.214	1
0.25	0.209	1
0.2533	0.209	1
0.2566	0.204	1
0.26	0.204	1
0.2633	0.199	1
0.2666	0.199	1
0.27	0.195	1
0.2733	0.195	1
0.2766	0.19	1
0.28	0.19	1
0.2833	0.185	1
0.2866	0.185	1
0.29	0.18	1
0.2933	0.18	1
0.2966	0.18	1
0.3	0.175	1
0.3033	0.175	1
0.3066	0.175	1
0.31	0.171	1
0.3133	0.171	1
0.3166	0.171	1
0.32	0.166	1
0.3233	0.166	1
0.3266	0.166	1
0.33	0.166	1
0.3333	0.161	1
0.35	0.157	1
0.3666	0.147	1
0.3833	0.142	1
0.4	0.138	1
0.4166	0.133	1
0.4333	0.128	1
0.45	0.123	1
0.4666	0.123	1
0.4833	0.119	1
0.5	0.119	1
0.5166	0.114	1
0.5333	0.114	1
0.55	0.109	1
0.5666	0.109	1
0.5833	0.109	1
0.6	0.104	1
0.6166	0.1	1
0.6333	0.104	1

0.6666	0.1	1
0.6833	0.1	1
0.7	0.09	1
0.7166	0.095	1
0.7333	0.09	1
0.75	0.085	1
0.7666	0.085	1
0.7833	0.085	1
0.8	0.081	1
0.8166	0.076	1
0.8333	0.076	1
0.85	0.071	1
0.8666	0.071	1
0.8833	0.066	1
0.9	0.066	1
0.9166	0.062	1
0.9333	0.062	1
0.95	0.057	1
0.9666	0.057	1
0.9833	0.057	1
1	0.052	1
1.2	0.033	1
1.4	0.043	1
1.6	0.024	1
1.8	0.019	1
2	0.024	1
2.2	0.014	1
2.4	0.014	1
2.6	0.014	1
2.8	0.009	1
3	0.009	1
3.2	0.014	1
3.4	0.014	1
3.6	0.009	1
3.8	0.009	1
4	0.014	1
4.2	0.014	1
4.4	0.014	1
4.6	0.009	1
4.8	0.014	1
5	0.014	1
5.2	0.019	1
5.4	0.014	1
5.6	0.019	1
5.8	0.038	1
6	0.052	1
6.2	0.033	1
6.4	0.019	1
6.6	0.019	1
6.8	0.019	1
7	0.019	1
7.2	0.014	1
7.4	0.014	1
7.6	0.014	1
7.8	0.014	1
8	0.014	1
8.2	0.014	1
8.4	0.014	1
8.6	0.014	1

9	0.009	1
9.2	0.014	1
9.4	0.014	1
9.6	0.014	1
9.8	0.014	1
10	0.014	1
12	0.009	1
14	0.009	1
16	0.009	1
18	0.005	1
20	0.005	1
22	0.005	1
24	0	1



AQTESOLV

GERAGHTY & MILLER, INC.

Modeling Group

A Q T E S O L V

A Program for

Automatic Estimation of Aquifer Coefficients

From Aquifer Test Data

By:

Glenn M. Duffield
and
James O. Rumbaugh, III

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A Q T E S O L V   R E S U L T S

Version 1.10

05/12/92 07:54:55

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TEST DESCRIPTION

Data set........... r7gw08r.dsk
Data set title..... R7GW08 RISING HEAD TEST

Knowns and Constants:
No. of data points.................. 157
Radius of well casing............... 0.083
Radius of well...................... 0.66
Aquifer saturated thickness......... 22
Well screen length.................. 20
Static height of water in well...... 22
Log(Re/Rw).......................... 2.639
A, B, C............................. 0.000, 0.000, 1.979

==

ANALYTICAL METHOD

Bouwer-Rice (Unconfined Aquifer Slug Test)

==

RESULTS FROM STATISTICAL CURVE MATCHING

STATISTICAL MATCH PARAMETER ESTIMATES

	Estimate		Std. Error
K =	1.4695E-003	+/-	1.7706E-005
y0 =	1.2738E+000	+/-	2.9918E-002

ANALYSIS OF MODEL RESIDUALS

residual = calculated - observed
weighted residual = residual * weight

Weighted Residual Statistics:
Number of residuals............... 33
Number of estimated parameters.... 2
Degrees of freedom................ 31
Residual mean..................... 0.0003885
Residual standard deviation....... 0.004022
Residual variance................. 1.617E-005

Model Residuals:

Time	Observed	Calculated	Residual	Weight
0.4666	0.288	0.28173	0.0062721	1
0.4833	0.274	0.26693	0.0070837	1

0.5166	0.241	0.23967	0.0013316	1
0.5333	0.227	0.22707	-6.8858E-005	1
0.55	0.212	0.21513	-0.0031317	1
0.5666	0.203	0.20389	-0.00088799	1
0.5833	0.189	0.19317	-0.0041695	1
0.6	0.179	0.18301	-0.0040144	1
0.6166	0.17	0.17345	-0.0034493	1
0.6333	0.16	0.16433	-0.0043309	1
0.65	0.151	0.15569	-0.004692	1
0.6666	0.146	0.14755	-0.0015548	1
0.6833	0.137	0.1398	-0.0027978	1
0.7	0.127	0.13245	-0.0054485	1
0.7166	0.123	0.12553	-0.0025262	1
0.7333	0.118	0.11893	-0.00092718	1
0.75	0.108	0.11268	-0.0046751	1
0.7666	0.104	0.10679	-0.0027862	1
0.7833	0.099	0.10117	-0.0021724	1
0.8	0.094	0.095854	-0.0018537	1
0.8166	0.094	0.090844	0.003156	1
0.8333	0.085	0.086068	-0.0010682	1
0.85	0.085	0.081544	0.0034564	1
0.8666	0.08	0.077282	0.0027182	1
0.8833	0.075	0.073219	0.001781	1
0.9	0.075	0.06937	0.0056302	1
0.9166	0.071	0.065744	0.0052557	1
0.9333	0.066	0.062288	0.003712	1
0.95	0.066	0.059014	0.0069865	1
0.9666	0.061	0.055929	0.0050708	1
0.9833	0.056	0.052989	0.003011	1
1	0.056	0.050203	0.0057967	1

==

RESULTS FROM VISUAL CURVE MATCHING

VISUAL MATCH PARAMETER ESTIMATES

	Estimate
K =	1.4695E-003
y0 =	1.2738E+000

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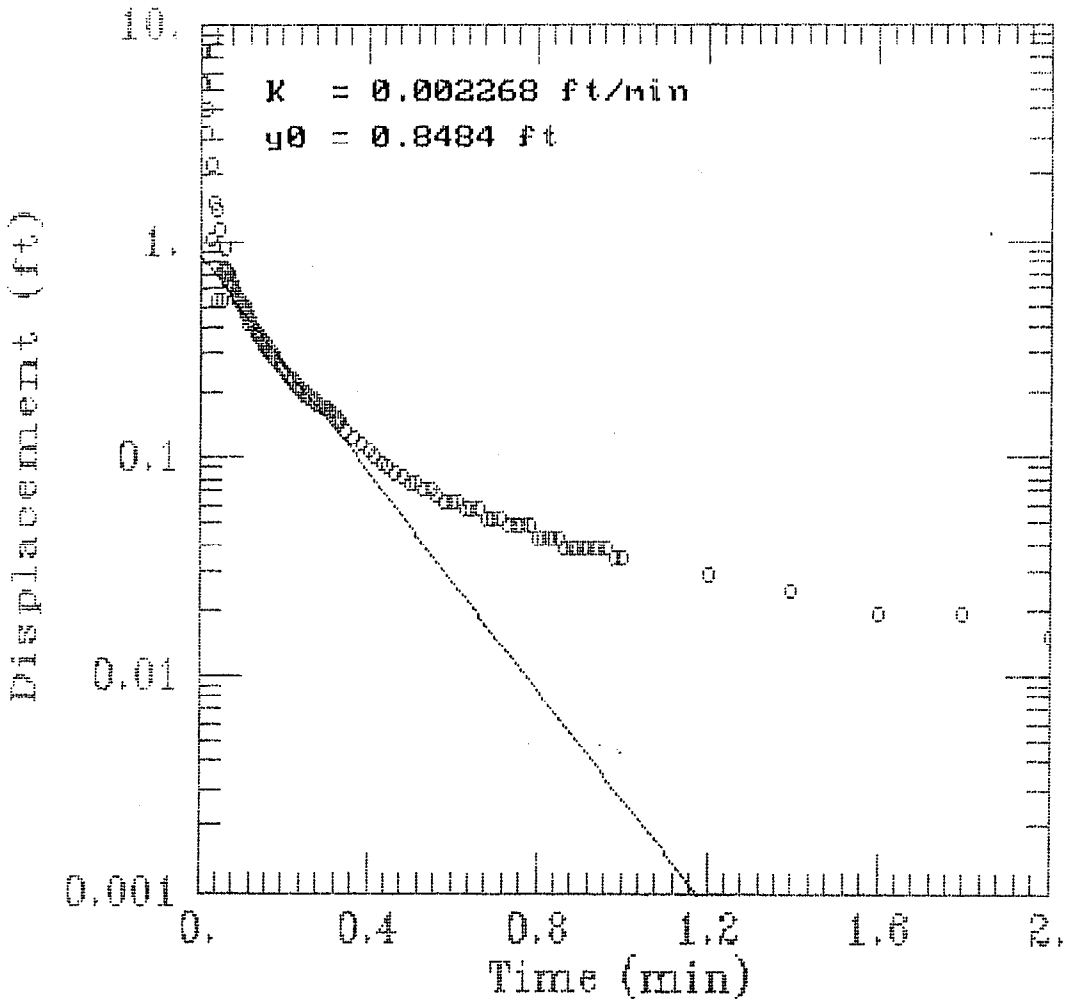
R7GW07 Falling Head Test



AQTESOLV

GERAGHTY & MILLER, INC.

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A Q T E S O L V   R E S U L T S

Version 1.10

05/12/92 09:56:41

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TEST DESCRIPTION

Data set........... B:r7gw07f.dsk
Data set title..... R7GW07 Falling Head Test

Knowns and Constants:
- No. of data points.................. 162
- Radius of well casing............... 0.083
- Radius of well...................... 0.66
- Aquifer saturated thickness......... 13
- Well screen length.................. 20
- Static height of water in well...... 13
- Log(Re/Rw).......................... 2.302
- A, B, C............................. 0.000, 0.000, 1.979

===

ANALYTICAL METHOD

Bouwer-Rice (Unconfined Aquifer Slug Test)

===

RESULTS FROM STATISTICAL CURVE MATCHING

STATISTICAL MATCH PARAMETER ESTIMATES

	Estimate		Std. Error
K =	2.2675E-003	+/-	4.3692E-005
y0 =	8.4842E-001	+/-	1.6019E-002

ANALYSIS OF MODEL RESIDUALS

residual = calculated - observed
weighted residual = residual * weight

Weighted Residual Statistics:
- Number of residuals............... 87
- Number of estimated parameters.... 2
- Degrees of freedom................ 85
- Residual mean..................... 0.002379
- Residual standard deviation....... 0.01846
- Residual variance................. 0.0003406

Model Residuals:

Time	Observed	Calculated	Residual	Weight
0.0866	0.563	0.51704	0.04596	1

0.0966	0.511	0.4883	0.022699	1
0.1	0.502	0.4789	0.023102	1
0.1033	0.488	0.46994	0.018055	1
0.1066	0.488	0.46116	0.026841	1
0.11	0.459	0.45228	0.0067211	1
0.1133	0.459	0.44382	0.015177	1
0.1166	0.421	0.43553	-0.014526	1
0.12	0.431	0.42714	0.0038605	1
0.1233	0.426	0.41915	0.006846	1
0.1266	0.407	0.41132	-0.0043179	1
0.13	0.403	0.4034	-0.00039742	1
0.1333	0.393	0.39586	-0.0028558	1
0.1366	0.379	0.38846	-0.0094552	1
0.14	0.369	0.38098	-0.011975	1
0.1433	0.36	0.37385	-0.013853	1
0.1466	0.355	0.36686	-0.011863	1
0.15	0.327	0.3598	-0.032799	1
0.1533	0.346	0.35307	-0.0070724	1
0.1566	0.332	0.34647	-0.014472	1
0.16	0.317	0.3398	-0.0228	1
0.1633	0.317	0.33345	-0.016447	1
0.1666	0.308	0.32721	-0.019213	1
0.17	0.303	0.32091	-0.017912	1
0.1733	0.294	0.31491	-0.020913	1
0.1766	0.289	0.30903	-0.020026	1
0.18	0.284	0.30307	-0.019075	1
0.1833	0.275	0.29741	-0.022409	1
0.1866	0.27	0.29185	-0.021849	1
0.19	0.265	0.28623	-0.021229	1
0.1933	0.261	0.28088	-0.019878	1
0.1966	0.256	0.27563	-0.019627	1
0.2	0.251	0.27032	-0.019319	1
0.2033	0.246	0.26527	-0.019265	1
0.2066	0.242	0.26031	-0.018306	1
0.21	0.237	0.25529	-0.018294	1
0.2133	0.232	0.25052	-0.018521	1
0.2166	0.227	0.24584	-0.018837	1
0.22	0.227	0.2411	-0.014103	1
0.2233	0.223	0.2366	-0.013596	1
0.2266	0.218	0.23217	-0.014173	1
0.23	0.213	0.2277	-0.014702	1
0.2333	0.213	0.22345	-0.010445	1
0.2366	0.209	0.21927	-0.010268	1
0.24	0.209	0.21505	-0.0060454	1
0.2433	0.204	0.21103	-0.0070251	1
0.2466	0.194	0.20708	-0.01308	1
0.25	0.199	0.20309	-0.0040924	1
0.2533	0.199	0.1993	-0.00029551	1
0.2566	0.194	0.19557	-0.0015696	1
0.26	0.19	0.1918	-0.0018037	1
0.2633	0.19	0.18822	0.0017821	1
0.2666	0.185	0.1847	0.0003009	1
0.27	0.185	0.18114	0.0038575	1
0.2733	0.18	0.17776	0.002244	1
0.2766	0.18	0.17443	0.0055672	1
0.28	0.175	0.17107	0.0039261	1
0.2833	0.175	0.16788	0.0071244	1
0.2866	0.175	0.16474	0.010263	1
0.29	0.171	0.16156	0.0094351	1
0.2933	0.171	0.15854	0.012456	1
0.2966	0.171	0.15558	0.01542	1
0.3	0.166	0.15258	0.013415	1
0.3033	0.166	0.14973	0.016268	1
0.3066	0.161	0.14693	0.014067	1

0.3166	0.157	0.13877	0.018234	1
0.32	0.152	0.13609	0.015907	1
0.3233	0.152	0.13355	0.018451	1
0.3266	0.152	0.13105	0.020948	1
0.33	0.147	0.12853	0.018471	1
0.3333	0.147	0.12613	0.020874	1
0.35	0.133	0.11464	0.018362	1
0.3666	0.123	0.10426	0.018745	1
0.3833	0.114	0.094759	0.019241	1
0.4	0.109	0.086128	0.022872	1
0.4166	0.1	0.078328	0.021672	1
0.4333	0.095	0.071193	0.023807	1
0.45	0.09	0.064708	0.025292	1
0.4666	0.086	0.058848	0.027152	1
0.4833	0.081	0.053488	0.027512	1
0.5	0.076	0.048616	0.027384	1
0.5166	0.076	0.044213	0.031787	1
0.5333	0.071	0.040186	0.030814	1

==

RESULTS FROM VISUAL CURVE MATCHING

VISUAL MATCH PARAMETER ESTIMATES

	Estimate
K =	2.2675E-003
y0 =	8.4842E-001

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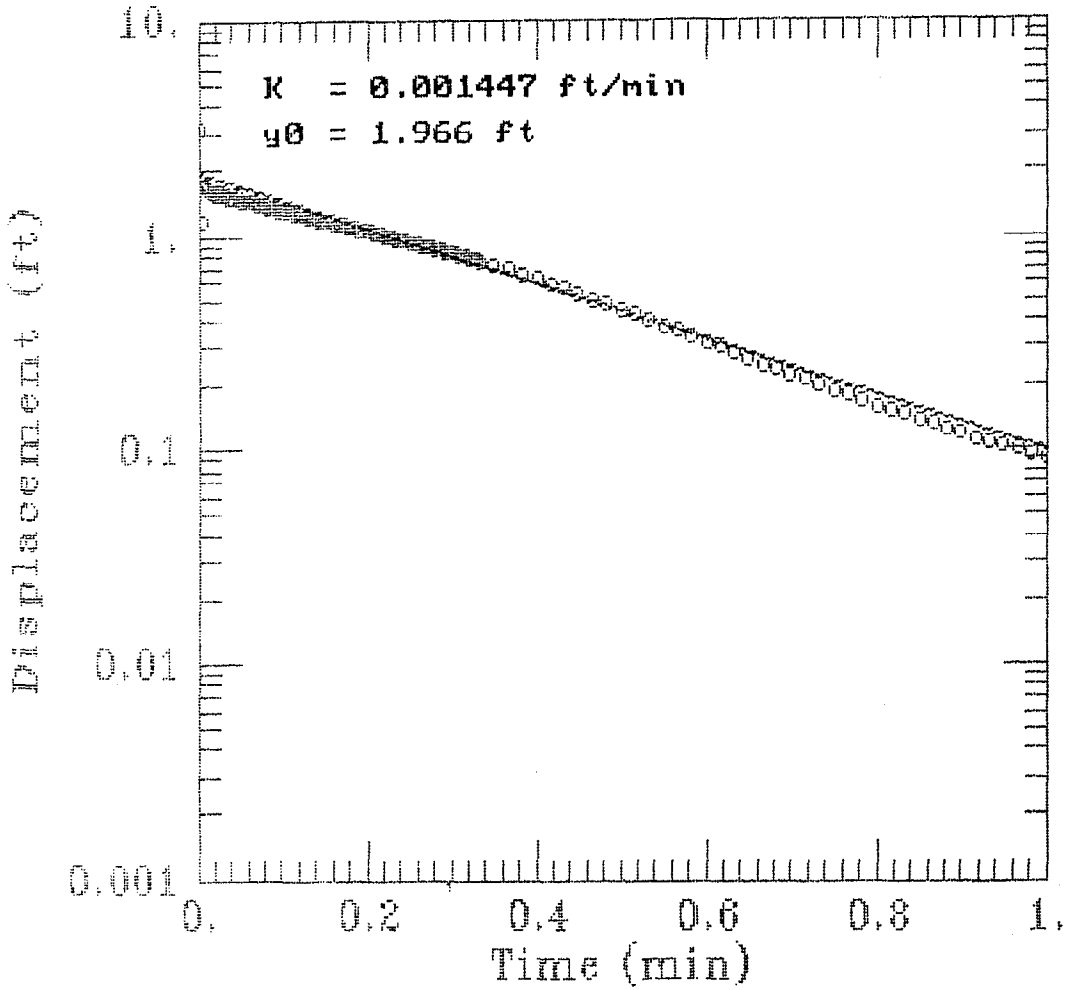
R07GW06 RISING SLUG TEST



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A Q T E S O L V   R E S U L T S

Version 1.10

05/11/92 12:24:51

TEST DESCRIPTION

Data set........... B:r07gw06r.dsk
Data set title..... R07GW06 RISING SLUG TEST

Knowns and Constants:

- No. of data points.................. 154
- Radius of well casing............... 0.083
- Radius of well...................... 0.66
- Aquifer saturated thickness......... 4
- Well screen length.................. 10
- Static height of water in well...... 4
- Log(Re/Rw).......................... 1.409
- A, B, C............................. 0.000, 0.000, 1.504

ANALYTICAL METHOD

Bouwer-Rice (Unconfined Aquifer Slug Test)

RESULTS FROM STATISTICAL CURVE MATCHING

STATISTICAL MATCH PARAMETER ESTIMATES

	Estimate		Std. Error
K =	1.4468E-003	+/-	1.3095E-005
y0 =	1.9659E+000	+/-	1.6154E-002

ANALYSIS OF MODEL RESIDUALS

residual = calculated - observed
weighted residual = residual * weight

Weighted Residual Statistics:

- Number of residuals............... 95
- Number of estimated parameters.... 2
- Degrees of freedom................ 93
- Residual mean..................... -0.001296
- Residual standard deviation....... 0.01682
- Residual variance................. 0.0002829

Time	Observed	Calculated	Residual	Weight
0.2	1.046	1.083	-0.036998	1
0.2033	1.041	1.0724	-0.031396	1
0.2066	1.032	1.0619	-0.029898	1
0.21	1.023	1.0512	-0.028189	1
0.2133	1.013	1.0409	-0.027899	1
0.2166	1.008	1.0307	-0.022709	1
0.22	0.999	1.0203	-0.021315	1
0.2233	0.99	1.0103	-0.020327	1
0.2266	0.985	1.0004	-0.015437	1
0.23	0.975	0.99035	-0.015348	1
0.2333	0.966	0.98065	-0.014653	1
0.2366	0.961	0.97105	-0.010053	1
0.24	0.952	0.96126	-0.009261	1
0.2433	0.947	0.95185	-0.004851	1
0.2466	0.938	0.94253	-0.0045331	1
0.25	0.928	0.93303	-0.0050282	1
0.2533	0.924	0.92389	0.00010544	1
0.2566	0.914	0.91485	-0.00085033	1
0.26	0.909	0.90562	0.0033754	1
0.2633	0.9	0.89676	0.0032408	1
0.2666	0.891	0.88798	0.0030194	1
0.27	0.886	0.87903	0.0069741	1
0.2733	0.881	0.87042	0.010579	1
0.2766	0.872	0.8619	0.0101	1
0.28	0.862	0.85321	0.0087916	1
0.2833	0.858	0.84486	0.013144	1
0.2866	0.848	0.83659	0.011414	1
0.29	0.844	0.82815	0.015851	1
0.2933	0.834	0.82004	0.013958	1
0.2966	0.829	0.81201	0.016985	1
0.3	0.82	0.80383	0.016174	1
0.3033	0.815	0.79596	0.019043	1
0.3066	0.806	0.78817	0.017835	1
0.31	0.801	0.78022	0.020783	1
0.3133	0.792	0.77258	0.019421	1
0.3166	0.787	0.76502	0.021984	1
0.32	0.782	0.7573	0.024698	1
0.3233	0.773	0.74989	0.023112	1
0.3266	0.768	0.74255	0.025453	1
0.33	0.759	0.73506	0.023941	1
0.3333	0.754	0.72786	0.026136	1
0.35	0.721	0.69252	0.028485	1
0.3666	0.688	0.65908	0.02892	1
0.3833	0.655	0.62707	0.027928	1
0.4	0.622	0.59662	0.025382	1
0.4166	0.589	0.56781	0.021187	1
0.4333	0.561	0.54024	0.020763	1
0.45	0.528	0.514	0.013999	1
0.4666	0.5	0.48918	0.010816	1
0.4833	0.476	0.46543	0.010573	1
0.5	0.448	0.44282	0.0051761	1
0.5166	0.424	0.42144	0.0025561	1
0.5333	0.401	0.40098	2.3398E-005	1
0.55	0.377	0.3815	-0.0045033	1
0.5666	0.358	0.36308	-0.0050839	1
0.5833	0.339	0.34545	-0.0064509	1
0.6	0.316	0.32867	-0.012674	1
0.6166	0.302	0.31281	-0.010805	1
0.6333	0.283	0.29761	-0.014614	1
0.65	0.269	0.28316	-0.014161	1
0.6666	0.25	0.26949	-0.019489	1

0.7166	0.212	0.23217	-0.020171	1
0.7333	0.198	0.2209	-0.022896	1
0.75	0.189	0.21017	-0.021168	1
0.7666	0.179	0.20002	-0.021021	1
0.7833	0.17	0.19031	-0.020307	1
0.8	0.16	0.18107	-0.021065	1
0.8166	0.151	0.17232	-0.021323	1
0.8333	0.146	0.16395	-0.017954	1
0.85	0.137	0.15599	-0.018992	1
0.8666	0.132	0.14846	-0.01646	1
0.8833	0.123	0.14125	-0.01825	1
0.9	0.118	0.13439	-0.016391	1
0.9166	0.113	0.1279	-0.014902	1
0.9333	0.109	0.12169	-0.012691	1
0.95	0.104	0.11578	-0.011781	1
0.9666	0.099	0.11019	-0.011191	1
0.9833	0.094	0.10484	-0.010839	1
1	0.09	0.099748	-0.0097479	1
1.2	0.047	0.054951	-0.0079506	1
1.4	0.033	0.030272	0.002728	1
1.6	0.024	0.016677	0.0073233	1
1.8	0.014	0.0091871	0.0048129	1
2	0.01	0.0050611	0.0049389	1
2.2	0.01	0.0027882	0.0072118	1
2.4	0.01	0.001536	0.008464	1
2.6	0.005	0.00084617	0.0041538	1
2.8	0.005	0.00046615	0.0045339	1
3	0.005	0.0002568	0.0047432	1
16	0.005	3.7938E-021	0.005	1
18	0.005	9.7672E-024	0.005	1
20	0.005	2.5145E-026	0.005	1
22	0.005	6.4737E-029	0.005	1

==

RESULTS FROM VISUAL CURVE MATCHING

VISUAL MATCH PARAMETER ESTIMATES

	Estimate
K =	1.4468E-003
y0 =	1.9659E+000

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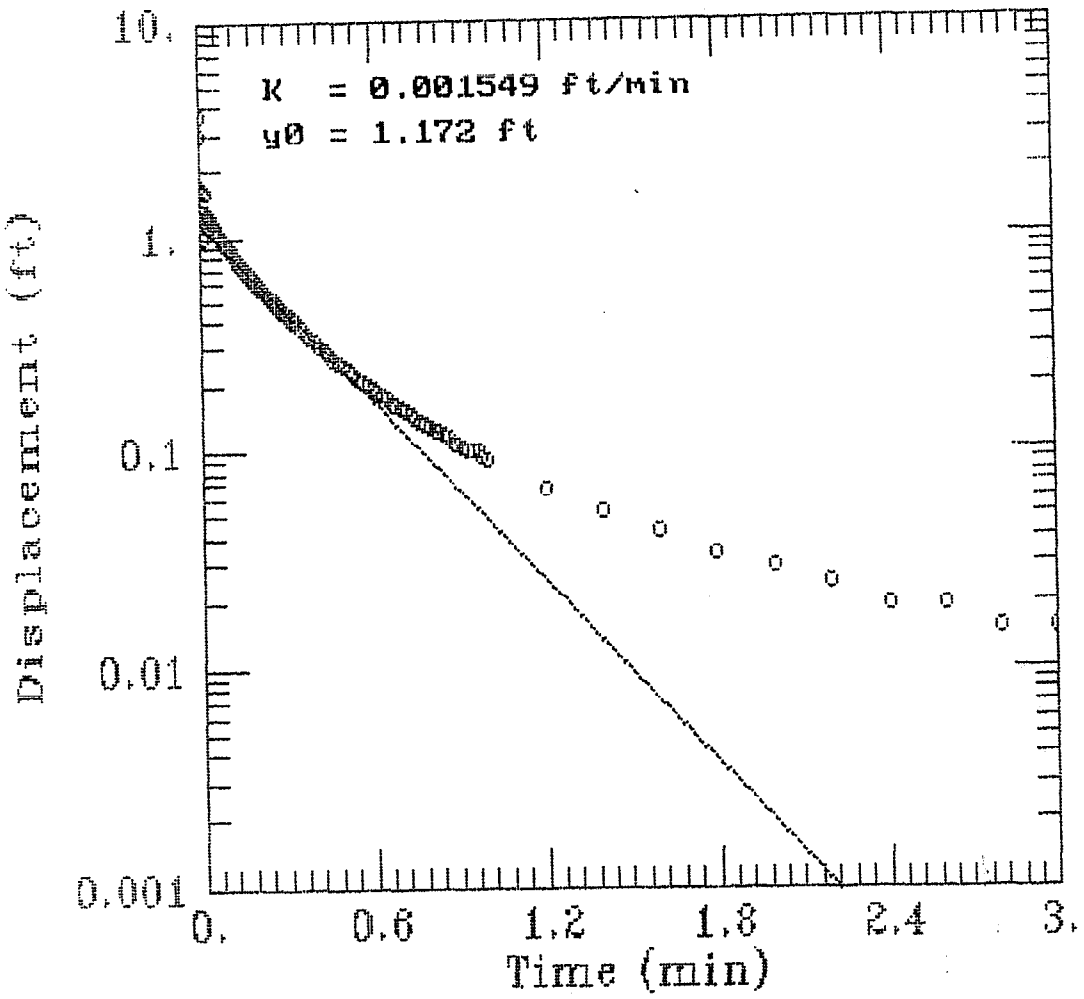
R7GW06 Falling Head Test



AQTESOLV

GERAGHTY & MILLER, INC.

Modeling Group

A Q T E S O L V

A Program for

Automatic Estimation of Aquifer Coefficients

From Aquifer Test Data

By:

Glenn M. Duffield
and
James O. Rumbaugh, III

Geraghty & Miller Modeling Group
1895 Preston White Drive, Suite 301
Reston, VA 22091

(703) 476 - 0335

A Q T E S O L V is a user-friendly program designed to analyze data from aquifer tests automatically. Aquifer coefficients for a variety of aquifer test conditions can be estimated by A Q T E S O L V , including the following:

- o confined aquifers, unconfined aquifers, and leaky aquifers
- o pumping tests, injection tests, recovery tests, and slug tests

Features:

- o Interactive, menu-driven program design
- o Nonlinear least-squares estimation of aquifer coefficients
- o Statistical analysis of results
- o Complete graphical display of results

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A Q T E S O L V   R E S U L T S

Version 1.10

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TEST DESCRIPTION

Data set........... B:r7gw06f.dsk
Data set title..... R7GW06 Falling Head Test

Knowns and Constants:
- No. of data points.................. 163
- Radius of well casing............... 0.083
- Radius of well...................... 0.66
- Aquifer saturated thickness......... 4
- Well screen length.................. 10
- Static height of water in well...... 4
- Log(Re/Rw).......................... 1.409
- A, B, C............................. 0.000, 0.000, 1.504

==

ANALYTICAL METHOD

Bouwer-Rice (Unconfined Aquifer Slug Test)

==

RESULTS FROM STATISTICAL CURVE MATCHING

STATISTICAL MATCH PARAMETER ESTIMATES

	Estimate		Std. Error
K =	1.5492E-003	+/-	2.2528E-005
y0 =	1.1725E+000	+/-	1.1799E-002

ANALYSIS OF MODEL RESIDUALS

residual = calculated - observed
weighted residual = residual * weight

Weighted Residual Statistics:
- Number of residuals............... 121
- Number of estimated parameters.... 2
- Degrees of freedom................ 119
- Residual mean..................... 0.006184
- Residual standard deviation....... 0.02468
- Residual variance................. 0.0006093

Model Residuals:

Time	Observed	Calculated	Residual	Weight
0.09	0.934	0.87972	0.054284	1

0.1	0.896	0.85208	0.043923	1
0.1033	0.882	0.84315	0.038851	1
0.1066	0.868	0.83431	0.033686	1
0.11	0.858	0.82531	0.032692	1
0.1133	0.844	0.81666	0.027341	1
0.1166	0.835	0.8081	0.026898	1
0.12	0.825	0.79938	0.025621	1
0.1233	0.811	0.791	0.019998	1
0.1266	0.802	0.78271	0.019286	1
0.13	0.792	0.77426	0.017735	1
0.1333	0.778	0.76615	0.011849	1
0.1366	0.769	0.75812	0.010877	1
0.14	0.755	0.74994	0.0050605	1
0.1433	0.745	0.74208	0.0029189	1
0.1466	0.736	0.73431	0.0016949	1
0.15	0.726	0.72638	-0.00037858	1
0.1533	0.717	0.71877	-0.0017671	1
0.1566	0.703	0.71124	-0.0082353	1
0.16	0.698	0.70356	-0.0055579	1
0.1633	0.689	0.69619	-0.0071855	1
0.1666	0.679	0.68889	-0.0098904	1
0.17	0.67	0.68145	-0.011454	1
0.1733	0.66	0.67431	-0.014313	1
0.1766	0.656	0.66725	-0.011247	1
0.18	0.646	0.66004	-0.014045	1
0.1833	0.637	0.65313	-0.016128	1
0.1866	0.627	0.64628	-0.019284	1
0.19	0.623	0.63931	-0.016308	1
0.1933	0.613	0.63261	-0.019609	1
0.1966	0.608	0.62598	-0.01798	1
0.2	0.599	0.61922	-0.020223	1
0.2033	0.594	0.61273	-0.018734	1
0.2066	0.585	0.60631	-0.021314	1
0.21	0.58	0.59977	-0.019769	1
0.2133	0.575	0.59348	-0.018484	1
0.2166	0.566	0.58726	-0.021265	1
0.22	0.561	0.58093	-0.019926	1
0.2233	0.557	0.57484	-0.017838	1
0.2266	0.547	0.56881	-0.021815	1
0.23	0.542	0.56267	-0.020675	1
0.2333	0.538	0.55678	-0.018779	1
0.2366	0.533	0.55094	-0.017944	1
0.24	0.524	0.545	-0.020997	1
0.2433	0.519	0.53929	-0.020286	1
0.2466	0.514	0.53364	-0.019635	1
0.25	0.509	0.52787	-0.018875	1
0.2533	0.505	0.52234	-0.017343	1
0.2566	0.495	0.51687	-0.02187	1
0.26	0.491	0.51129	-0.020291	1
0.2633	0.486	0.50593	-0.019933	1
0.2666	0.481	0.50063	-0.019631	1
0.27	0.476	0.49523	-0.019227	1
0.2733	0.472	0.49004	-0.018038	1
0.2766	0.467	0.4849	-0.017903	1
0.28	0.462	0.47967	-0.017669	1
0.2833	0.458	0.47464	-0.016642	1
0.2866	0.453	0.46967	-0.016669	1
0.29	0.448	0.4646	-0.016599	1
0.2933	0.443	0.45973	-0.01673	1
0.2966	0.443	0.45491	-0.011913	1
0.3	0.434	0.45	-0.016002	1
0.3033	0.429	0.44529	-0.016287	1
0.3066	0.429	0.44062	-0.011621	1
0.31	0.425	0.43586	-0.010865	1

0.32	0.41	0.42217	-0.012171	1
0.3233	0.406	0.41775	-0.011747	1
0.3266	0.401	0.41337	-0.01237	1
0.33	0.396	0.40891	-0.012908	1
0.3333	0.396	0.40462	-0.0086229	1
0.35	0.373	0.38362	-0.010618	1
0.3666	0.354	0.36382	-0.0098195	1
0.3833	0.34	0.34493	-0.0049327	1
0.4	0.321	0.32703	-0.0060264	1
0.4166	0.307	0.31015	-0.0031486	1
0.4333	0.293	0.29405	-0.0010481	1
0.45	0.283	0.27878	0.0042167	1
0.4666	0.269	0.2644	0.0046046	1
0.4833	0.255	0.25067	0.00433	1
0.5	0.245	0.23766	0.0073429	1
0.5166	0.236	0.22539	0.010608	1
0.5333	0.227	0.21369	0.013309	1
0.55	0.217	0.2026	0.014402	1
0.5666	0.208	0.19214	0.015858	1
0.5833	0.203	0.18217	0.020833	1
0.6	0.194	0.17271	0.02129	1
0.6166	0.189	0.1638	0.025203	1
0.6333	0.18	0.15529	0.024706	1
0.65	0.175	0.14723	0.027768	1
0.6666	0.165	0.13963	0.025366	1
0.6833	0.161	0.13238	0.028615	1
0.7	0.156	0.12551	0.030488	1
0.7166	0.151	0.11903	0.031965	1
0.7333	0.146	0.11286	0.033145	1
0.75	0.142	0.107	0.035003	1
0.7666	0.137	0.10147	0.035525	1
0.7833	0.132	0.096207	0.035793	1
0.8	0.128	0.091213	0.036787	1
0.8166	0.123	0.086505	0.036495	1
0.8333	0.123	0.082014	0.040986	1
0.85	0.118	0.077757	0.040243	1
0.8666	0.114	0.073744	0.040256	1
0.8833	0.109	0.069916	0.039084	1
0.9	0.109	0.066286	0.042714	1
0.9166	0.104	0.062865	0.041135	1
0.9333	0.099	0.059602	0.039398	1
0.95	0.099	0.056508	0.042492	1
0.9666	0.099	0.053591	0.045409	1
0.9833	0.095	0.050809	0.044191	1
1	0.09	0.048172	0.041828	1
1.2	0.066	0.025441	0.040559	1
1.4	0.052	0.013436	0.038564	1
1.6	0.043	0.0070957	0.035904	1
1.8	0.033	0.0037474	0.029253	1
2	0.029	0.0019791	0.027021	1
2.2	0.024	0.0010452	0.022955	1
2.4	0.019	0.000552	0.018448	1

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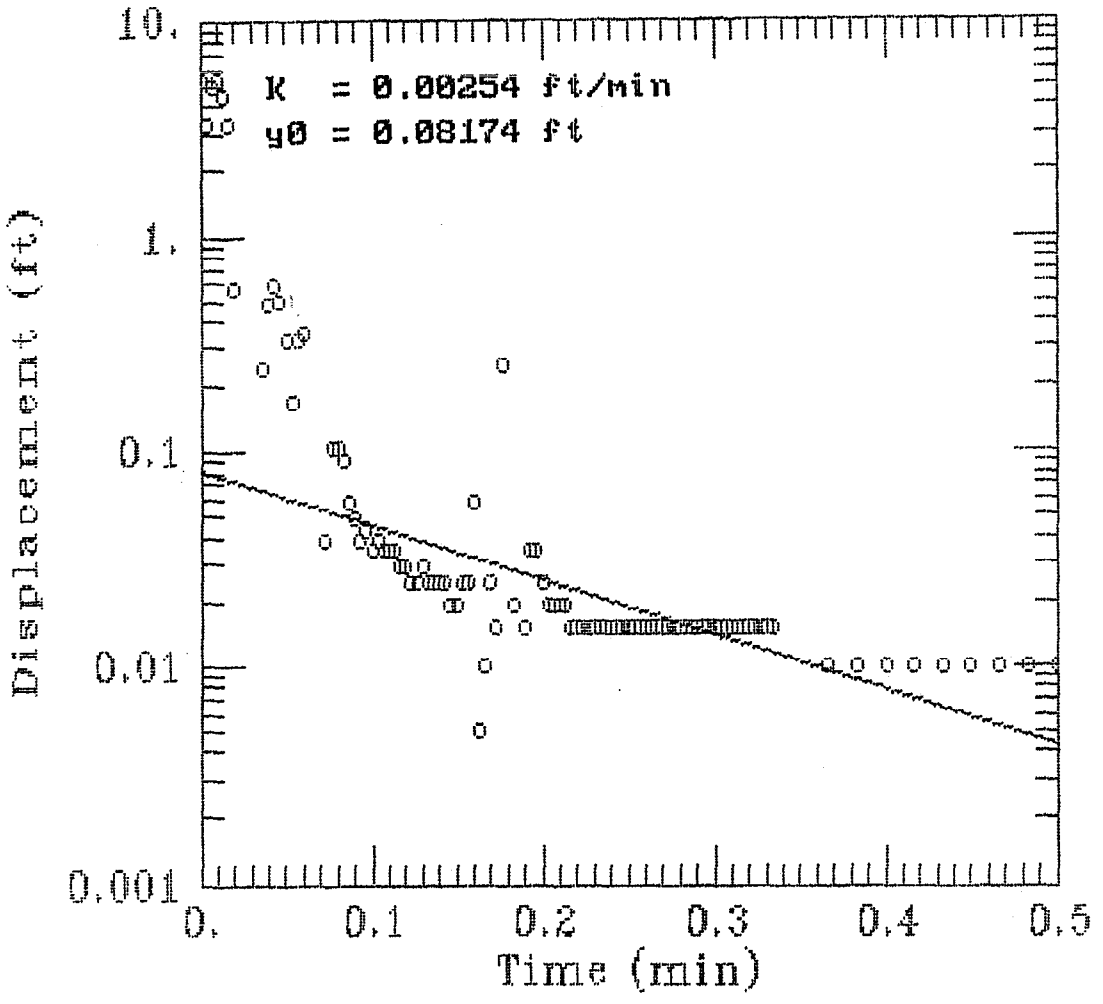
RESULTS FROM VISUAL CURVE MATCHING

VISUAL MATCH PARAMETER ESTIMATES

	Estimate
K =	1.5492E-003
y0 =	1.1725E+000

R7GW05 FALING HEAD TEST



AQTESOLV

GERAGHTY & MILLER, INC.

Modeling Group

A Q T E S O L V

A Program for

Automatic Estimation of Aquifer Coefficients

From Aquifer Test Data

By:

Glenn M. Duffield
and
James O. Rumbaugh, III

Geraghty & Miller Modeling Group
1895 Preston White Drive, Suite 301
Reston, VA 22091

(703) 476 - 0335

A Q T E S O L V is a user-friendly program designed to analyze data from aquifer tests automatically. Aquifer coefficients for a variety of aquifer test conditions can be estimated by A Q T E S O L V , including the following:

- confined aquifers, unconfined aquifers, and leaky aquifers
- pumping tests, injection tests, recovery tests, and slug tests

Features:

- Interactive, menu-driven program design
- Nonlinear least-squares estimation of aquifer coefficients
- Statistical analysis of results
- Complete graphical display of results

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A Q T E S O L V   R E S U L T S
Version 1.10

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TEST DESCRIPTION

Data set........... y
Data set title..... R7GW05 FALING HEAD TEST

Knowns and Constants:
No. of data points.................. 140
Radius of well casing............... 0.083
Radius of well...................... 0.66
Aquifer saturated thickness......... 18
Well screen length.................. 20
Static height of water in well...... 18
Log(Re/Rw).......................... 2.512
A, B, C............................. 0.000, 0.000, 1.979

==

ANALYTICAL METHOD

Bouwer-Rice (Unconfined Aquifer Slug Test)

==

RESULTS FROM STATISTICAL CURVE MATCHING

STATISTICAL MATCH PARAMETER ESTIMATES

	Estimate		Std. Error
K =	2.5399E-003	+/-	6.6407E-004
y0 =	8.1736E-002	+/-	2.0599E-002

ANALYSIS OF MODEL RESIDUALS

residual = calculated - observed
weighted residual = residual * weight

Weighted Residual Statistics:
Number of residuals............... 94
Number of estimated parameters.... 2
Degrees of freedom................ 92
Residual mean..................... 0.0009411
Residual standard deviation....... 0.02521
Residual variance................. 0.0006354

Model Residuals:

Time	Observed	Calculated	Residual	Weight
0.08	0.105	0.051105	0.053895	1

0.09	0.048	0.048192	-0.00019165	1
0.0933	0.038	0.047267	-0.0092671	1
0.0966	0.043	0.04636	-0.0033603	1
0.1	0.034	0.045444	-0.011444	1
0.1033	0.038	0.044572	-0.0065723	1
0.1066	0.034	0.043717	-0.0097172	1
0.11	0.034	0.042853	-0.0088533	1
0.1133	0.034	0.042031	-0.0080312	1
0.1166	0.029	0.041225	-0.012225	1
0.12	0.029	0.04041	-0.01141	1
0.1233	0.024	0.039635	-0.015635	1
0.1266	0.024	0.038875	-0.014875	1
0.13	0.029	0.038106	-0.0091064	1
0.1333	0.024	0.037375	-0.013375	1
0.1366	0.024	0.036658	-0.012658	1
0.14	0.024	0.035934	-0.011934	1
0.1433	0.024	0.035244	-0.011244	1
0.1466	0.019	0.034568	-0.015568	1
0.15	0.019	0.033885	-0.014885	1
0.1533	0.024	0.033235	-0.0092351	1
0.1566	0.024	0.032598	-0.0085975	1
0.16	0.057	0.031953	0.025047	1
0.1633	0.005	0.03134	-0.02634	1
0.1666	0.01	0.030739	-0.020739	1
0.17	0.024	0.030132	-0.0061317	1
0.1733	0.015	0.029554	-0.014554	1
0.1766	0.247	0.028987	0.21801	1
0.1833	0.019	0.027869	-0.0088687	1
0.19	0.015	0.026794	-0.011794	1
0.1933	0.034	0.02628	0.0077201	1
0.1966	0.034	0.025776	0.0082243	1
0.2	0.024	0.025266	-0.0012664	1
0.2033	0.019	0.024782	-0.0057816	1
0.2066	0.019	0.024306	-0.0053062	1
0.21	0.019	0.023826	-0.0048259	1
0.2133	0.019	0.023369	-0.0043688	1
0.2166	0.015	0.02292	-0.0079205	1
0.22	0.015	0.022468	-0.0074675	1
0.2233	0.015	0.022037	-0.0070365	1
0.2266	0.015	0.021614	-0.0066137	1
0.23	0.015	0.021187	-0.0061866	1
0.2333	0.015	0.02078	-0.0057802	1
0.2366	0.015	0.020382	-0.0053815	1
0.24	0.015	0.019979	-0.0049788	1
0.2433	0.015	0.019595	-0.0045955	1
0.2466	0.015	0.01922	-0.0042195	1
0.25	0.015	0.01884	-0.0038397	1
0.2533	0.015	0.018478	-0.0034783	1
0.2566	0.015	0.018124	-0.0031238	1
0.26	0.015	0.017766	-0.0027657	1
0.2633	0.015	0.017425	-0.0024248	1
0.2666	0.015	0.017091	-0.0020905	1
0.27	0.015	0.016753	-0.0017528	1
0.2733	0.015	0.016431	-0.0014314	1
0.2766	0.015	0.016116	-0.0011162	1
0.28	0.015	0.015798	-0.00079772	1
0.2833	0.015	0.015495	-0.00049464	1
0.2866	0.015	0.015197	-0.00019737	1
0.29	0.015	0.014897	0.00010293	1
0.2933	0.015	0.014611	0.00038873	1
0.2966	0.015	0.014331	0.00066905	1
0.3	0.015	0.014048	0.00095224	1
0.3033	0.015	0.013778	0.0012217	1
0.3066	0.015	0.013514	0.0014861	1

0.3166	0.015	0.012743	0.0022565	1
0.32	0.015	0.012492	0.0025083	1
0.3233	0.015	0.012252	0.002748	1
0.3266	0.015	0.012017	0.002983	1
0.33	0.015	0.011779	0.0032205	1
0.3333	0.015	0.011554	0.0034465	1
0.3666	0.01	0.0095021	0.00049789	1
0.3833	0.01	0.0086148	0.0013852	1
0.4	0.01	0.0078104	0.0021896	1
0.4166	0.01	0.0070852	0.0029148	1
0.4333	0.01	0.0064236	0.0035764	1
0.45	0.01	0.0058238	0.0041762	1
0.4666	0.01	0.005283	0.004717	1
0.4833	0.01	0.0047897	0.0052103	1
0.5	0.01	0.0043425	0.0056575	1
0.5166	0.015	0.0039393	0.011061	1
0.5333	0.01	0.0035714	0.0064286	1
0.55	0.01	0.0032379	0.0067621	1
0.5666	0.01	0.0029373	0.0070627	1
0.5833	0.01	0.002663	0.007337	1
0.6	0.01	0.0024144	0.0075856	1
0.8	0.01	0.00074633	0.0092537	1
0.8166	0.01	0.00067703	0.009323	1
0.8333	0.01	0.00061381	0.0093862	1
0.85	0.01	0.0005565	0.0094435	1

==

RESULTS FROM VISUAL CURVE MATCHING

VISUAL MATCH PARAMETER ESTIMATES

	Estimate
K =	2.5399E-003
y0 =	8.1736E-002

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A Q T E S O L V R E S U L T S
Version 1.10

05/12/92 11:06:34

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TEST DESCRIPTION

Data set........... y
Data set title..... R7GW05 FALING HEAD TEST

Knowns and Constants:
- No. of data points.................. 140
- Radius of well casing............... 0.083
- Radius of well...................... 0.66
- Aquifer saturated thickness......... 18
- Well screen length.................. 20
- Static height of water in well...... 18
- Log(Re/Rw).......................... 2.512
- A, B, C............................. 0.000, 0.000, 1.979

==

ANALYTICAL METHOD

Bouwer-Rice (Unconfined Aquifer Slug Test)

==

RESULTS FROM STATISTICAL CURVE MATCHING

STATISTICAL MATCH PARAMETER ESTIMATES

	Estimate		Std. Error
K =	2.5399E-003	+/-	6.6407E-004
y0 =	8.1736E-002	+/-	2.0599E-002

ANALYSIS OF MODEL RESIDUALS

residual = calculated - observed
weighted residual = residual * weight

Weighted Residual Statistics:
- Number of residuals............... 94
- Number of estimated parameters.... 2
- Degrees of freedom................ 92
- Residual mean..................... 0.0009411
- Residual standard deviation....... 0.02521
- Residual variance................. 0.0006354

Model Residuals:

Time	Observed	Calculated	Residual	Weight
0.08	0.105	0.051105	0.053895	1
[illegible]	[illegible]	[illegible]	[illegible]	1

0.09	0.048	0.048192	-0.00019165	1
0.0933	0.038	0.047267	-0.0092671	1
0.0966	0.043	0.04636	-0.0033603	1
0.1	0.034	0.045444	-0.011444	1
0.1033	0.038	0.044572	-0.0065723	1
0.1066	0.034	0.043717	-0.0097172	1
0.11	0.034	0.042853	-0.0088533	1
0.1133	0.034	0.042031	-0.0080312	1
0.1166	0.029	0.041225	-0.012225	1
0.12	0.029	0.04041	-0.01141	1
0.1233	0.024	0.039635	-0.015635	1
0.1266	0.024	0.038875	-0.014875	1
0.13	0.029	0.038106	-0.0091064	1
0.1333	0.024	0.037375	-0.013375	1
0.1366	0.024	0.036658	-0.012658	1
0.14	0.024	0.035934	-0.011934	1
0.1433	0.024	0.035244	-0.011244	1
0.1466	0.019	0.034568	-0.015568	1
0.15	0.019	0.033885	-0.014885	1
0.1533	0.024	0.033235	-0.0092351	1
0.1566	0.024	0.032598	-0.0085975	1
0.16	0.057	0.031953	0.025047	1
0.1633	0.005	0.03134	-0.02634	1
0.1666	0.01	0.030739	-0.020739	1
0.17	0.024	0.030132	-0.0061317	1
0.1733	0.015	0.029554	-0.014554	1
0.1766	0.247	0.028987	0.21801	1
0.1833	0.019	0.027869	-0.0088687	1
0.19	0.015	0.026794	-0.011794	1
0.1933	0.034	0.02628	0.0077201	1
0.1966	0.034	0.025776	0.0082243	1
0.2	0.024	0.025266	-0.0012664	1
0.2033	0.019	0.024782	-0.0057816	1
0.2066	0.019	0.024306	-0.0053062	1
0.21	0.019	0.023826	-0.0048259	1
0.2133	0.019	0.023369	-0.0043688	1
0.2166	0.015	0.02292	-0.0079205	1
0.22	0.015	0.022468	-0.0074675	1
0.2233	0.015	0.022037	-0.0070365	1
0.2266	0.015	0.021614	-0.0066137	1
0.23	0.015	0.021187	-0.0061866	1
0.2333	0.015	0.02078	-0.0057802	1
0.2366	0.015	0.020382	-0.0053815	1
0.24	0.015	0.019979	-0.0049788	1
0.2433	0.015	0.019595	-0.0045955	1
0.2466	0.015	0.01922	-0.0042195	1
0.25	0.015	0.01884	-0.0038397	1
0.2533	0.015	0.018478	-0.0034783	1
0.2566	0.015	0.018124	-0.0031238	1
0.26	0.015	0.017766	-0.0027657	1
0.2633	0.015	0.017425	-0.0024248	1
0.2666	0.015	0.017091	-0.0020905	1
0.27	0.015	0.016753	-0.0017528	1
0.2733	0.015	0.016431	-0.0014314	1
0.2766	0.015	0.016116	-0.0011162	1
0.28	0.015	0.015798	-0.00079772	1
0.2833	0.015	0.015495	-0.00049464	1
0.2866	0.015	0.015197	-0.00019737	1
0.29	0.015	0.014897	0.00010293	1
0.2933	0.015	0.014611	0.00038873	1
0.2966	0.015	0.014331	0.00066905	1
0.3	0.015	0.014048	0.00095224	1
0.3033	0.015	0.013778	0.0012217	1
0.3066	0.015	0.013514	0.0014861	1

0.3166	0.015	0.012743	0.0022565	1
0.32	0.015	0.012492	0.0025083	1
0.3233	0.015	0.012252	0.002748	1
0.3266	0.015	0.012017	0.002983	1
0.33	0.015	0.011779	0.0032205	1
0.3333	0.015	0.011554	0.0034465	1
0.3666	0.01	0.0095021	0.00049789	1
0.3833	0.01	0.0086148	0.0013852	1
0.4	0.01	0.0078104	0.0021896	1
0.4166	0.01	0.0070852	0.0029148	1
0.4333	0.01	0.0064236	0.0035764	1
0.45	0.01	0.0058238	0.0041762	1
0.4666	0.01	0.005283	0.004717	1
0.4833	0.01	0.0047897	0.0052103	1
0.5	0.01	0.0043425	0.0056575	1
0.5166	0.015	0.0039393	0.011061	1
0.5333	0.01	0.0035714	0.0064286	1
0.55	0.01	0.0032379	0.0067621	1
0.5666	0.01	0.0029373	0.0070627	1
0.5833	0.01	0.002663	0.007337	1
0.6	0.01	0.0024144	0.0075856	1
0.8	0.01	0.00074633	0.0092537	1
0.8166	0.01	0.00067703	0.009323	1
0.8333	0.01	0.00061381	0.0093862	1
0.85	0.01	0.0005565	0.0094435	1

==

RESULTS FROM VISUAL CURVE MATCHING

VISUAL MATCH PARAMETER ESTIMATES

	Estimate
K =	2.5399E-003
y0 =	8.1736E-002

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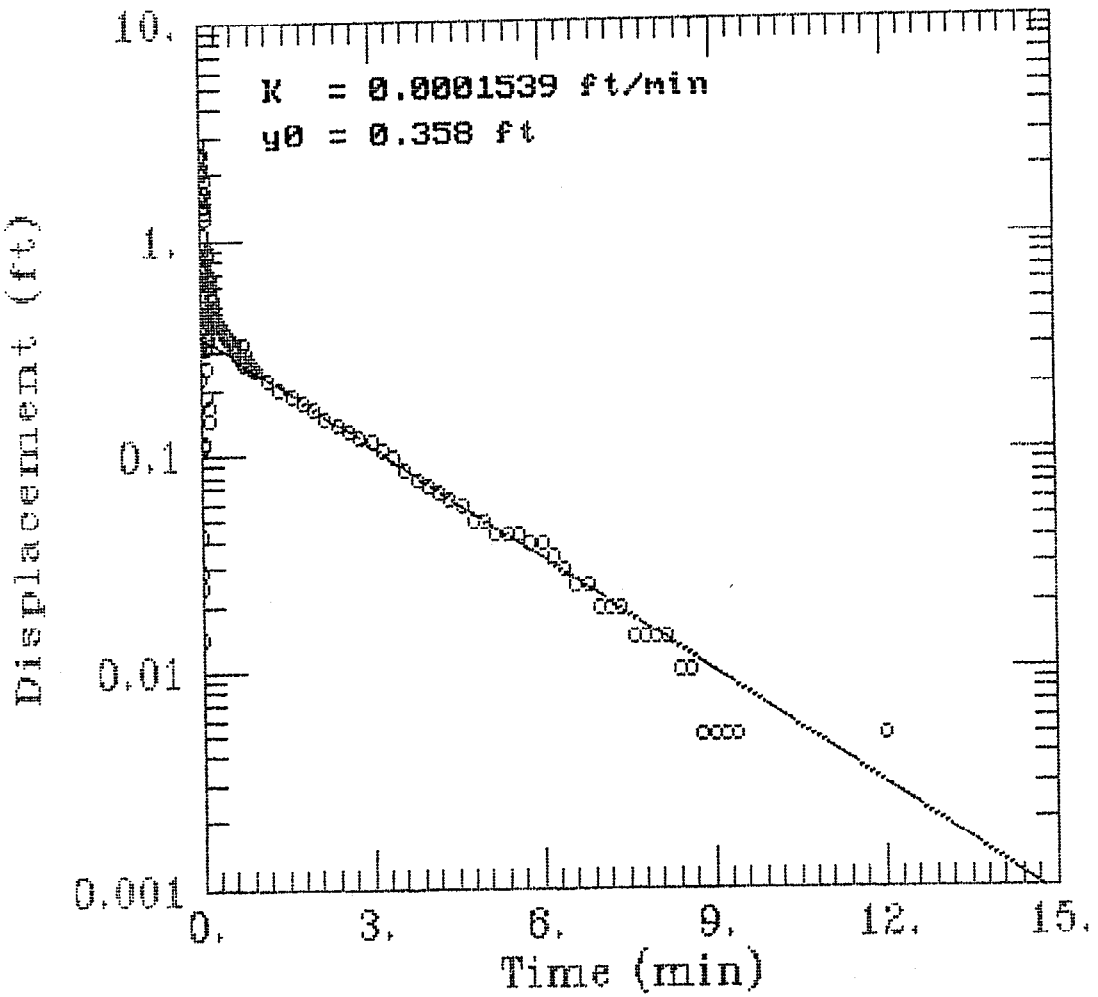
R7GW04 FALLING HEAD TEST



AQTESOLV

GERAGHTY & MILLER, INC.

Modeling Group

A Q T E S O L V

A Program for

Automatic Estimation of Aquifer Coefficients

From Aquifer Test Data

By:

Glenn M. Duffield
and
James O. Rumbaugh, III

Geraghty & Miller Modeling Group
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A Q T E S O L V   R E S U L T S
Version 1.10

05/12/92 08:41:04

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TEST DESCRIPTION

Data set........... B:r7gw04f.dsk
Data set title..... R7GW04 FALLING HEAD TEST

Knowns and Constants:
- No. of data points.................. 176
- Radius of well casing............... 0.083
- Radius of well...................... 0.66
- Aquifer saturated thickness......... 12
- Well screen length.................. 20
- Static height of water in well...... 12
- Log(Re/Rw).......................... 2.249
- A, B, C............................. 0.000, 0.000, 1.979

==

ANALYTICAL METHOD

Bouwer-Rice (Unconfined Aquifer Slug Test)

==

RESULTS FROM STATISTICAL CURVE MATCHING

STATISTICAL MATCH PARAMETER ESTIMATES

	Estimate		Std. Error
K =	1.5393E-004	+/-	2.4381E-006
y0 =	3.5797E-001	+/-	4.9098E-003

ANALYSIS OF MODEL RESIDUALS

residual = calculated - observed
weighted residual = residual * weight

Weighted Residual Statistics:
- Number of residuals............... 20
- Number of estimated parameters.... 2
- Degrees of freedom................ 18
- Residual mean..................... -4.828E-005
- Residual standard deviation....... 0.00354
- Residual variance................. 1.253E-005

Model Residuals:

Time	Observed	Calculated	Residual	Weight
1	0.248	0.2406	0.0073972	1

1.6	0.186	0.18957	-0.0035701	1
1.8	0.172	0.17509	-0.0030893	1
2	0.162	0.16171	0.00028538	1
2.2	0.148	0.14936	-0.0013616	1
2.4	0.138	0.13795	4.7766E-005	1
2.6	0.129	0.12741	0.0015856	1
2.8	0.119	0.11768	0.0013185	1
3	0.115	0.10869	0.0063079	1
3.2	0.105	0.10039	0.0046107	1
3.4	0.096	0.092721	0.0032792	1
3.6	0.086	0.085638	0.00036189	1
3.8	0.076	0.079096	-0.0030964	1
4	0.072	0.073054	-0.0010544	1
4.2	0.067	0.067474	-0.00047397	1
4.4	0.062	0.06232	-0.00031979	1
4.6	0.057	0.057559	-0.00055933	1
4.8	0.048	0.053163	-0.0051625	1

==

RESULTS FROM VISUAL CURVE MATCHING

VISUAL MATCH PARAMETER ESTIMATES

	Estimate
K =	1.5393E-004
y0 =	3.5797E-001

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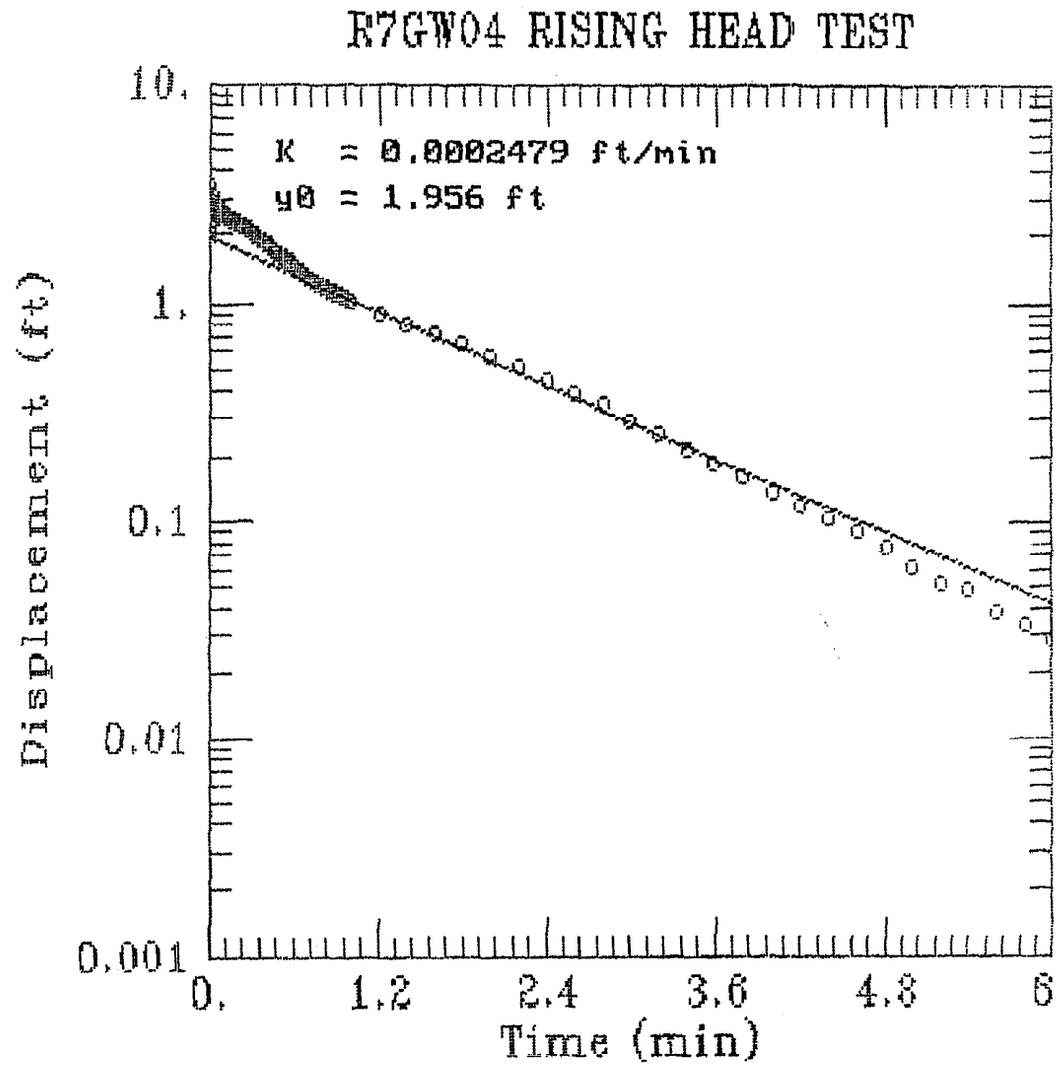

AQTESOLV

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A Q T E S O L V R E S U L T S
Version 1.10

05/11/92 15:10:13

==

TEST DESCRIPTION

Data set........... b:R7GW04R.DSK
Data set title..... R7GW04 RISING HEAD TEST

Knowns and Constants:
- No. of data points.................. 179
- Radius of well casing............... 0.083
- Radius of well...................... 0.66
- Aquifer saturated thickness......... 12
- Well screen length.................. 20
- Static height of water in well...... 12
- Log(Re/Rw).......................... 2.249
- A, B, C............................. 0.000, 0.000, 1.979

==

ANALYTICAL METHOD

Bouwer-Rice (Unconfined Aquifer Slug Test)

==

RESULTS FROM STATISTICAL CURVE MATCHING

STATISTICAL MATCH PARAMETER ESTIMATES

	Estimate		Std. Error
K =	2.4794E-004	+/-	2.6388E-006
y0 =	1.9564E+000	+/-	1.9675E-002

ANALYSIS OF MODEL RESIDUALS

residual = calculated - observed
weighted residual = residual * weight

Weighted Residual Statistics:
- Number of residuals............... 44
- Number of estimated parameters.... 2
- Degrees of freedom................ 42
- Residual mean..................... -0.004367
- Residual standard deviation....... 0.01354
- Residual variance................. 0.0001833

Model Residuals:

Time	Observed	Calculated	Residual	Weight

0.9666	1.05	1.0539	-0.0038826	1
0.9833	1.035	1.0427	-0.0076789	1
1	1.026	1.0316	-0.0055944	1
1.2	0.878	0.90765	-0.029654	1
1.4	0.797	0.7986	-0.0016049	1
1.6	0.716	0.70266	0.013343	1
1.8	0.639	0.61824	0.020763	1
2	0.568	0.54396	0.024041	1
2.2	0.506	0.47861	0.027394	1
2.4	0.444	0.4211	0.022896	1
2.6	0.386	0.37051	0.015489	1
2.8	0.343	0.326	0.017004	1
3	0.296	0.28683	0.0091705	1
3.2	0.253	0.25237	0.00063137	1
3.4	0.215	0.22205	-0.007048	1
3.6	0.186	0.19537	-0.0093702	1
3.8	0.162	0.1719	-0.0098976	1
4	0.138	0.15125	-0.013245	1
4.2	0.119	0.13307	-0.014074	1
4.4	0.105	0.11709	-0.012086	1
4.6	0.091	0.10302	-0.012019	1
4.8	0.076	0.090642	-0.014642	1
5	0.062	0.079751	-0.017751	1
5.2	0.052	0.07017	-0.01817	1
5.4	0.048	0.061739	-0.013739	1
5.6	0.038	0.054322	-0.016322	1
5.8	0.033	0.047795	-0.014795	1
6	0.028	0.042053	-0.014053	1
6.2	0.024	0.037001	-0.013001	1
6.4	0.024	0.032555	-0.0085551	1
6.6	0.019	0.028644	-0.0096438	1
6.8	0.014	0.025202	-0.011202	1
7	0.014	0.022174	-0.0081745	1
7.2	0.009	0.01951	-0.01051	1
7.4	0.009	0.017166	-0.0081663	1
7.6	0.005	0.015104	-0.010104	1
7.8	0.005	0.013289	-0.0082892	1
8	0.005	0.011693	-0.0066926	1
8.2	0.005	0.010288	-0.0052878	1
8.4	0.005	0.0090518	-0.0040518	1
8.6	0.005	0.0079643	-0.0029643	1
12	0.005	0.00090394	0.0040961	1

==

RESULTS FROM VISUAL CURVE MATCHING

VISUAL MATCH PARAMETER ESTIMATES

	Estimate
K =	2.4794E-004
y0 =	1.9564E+000

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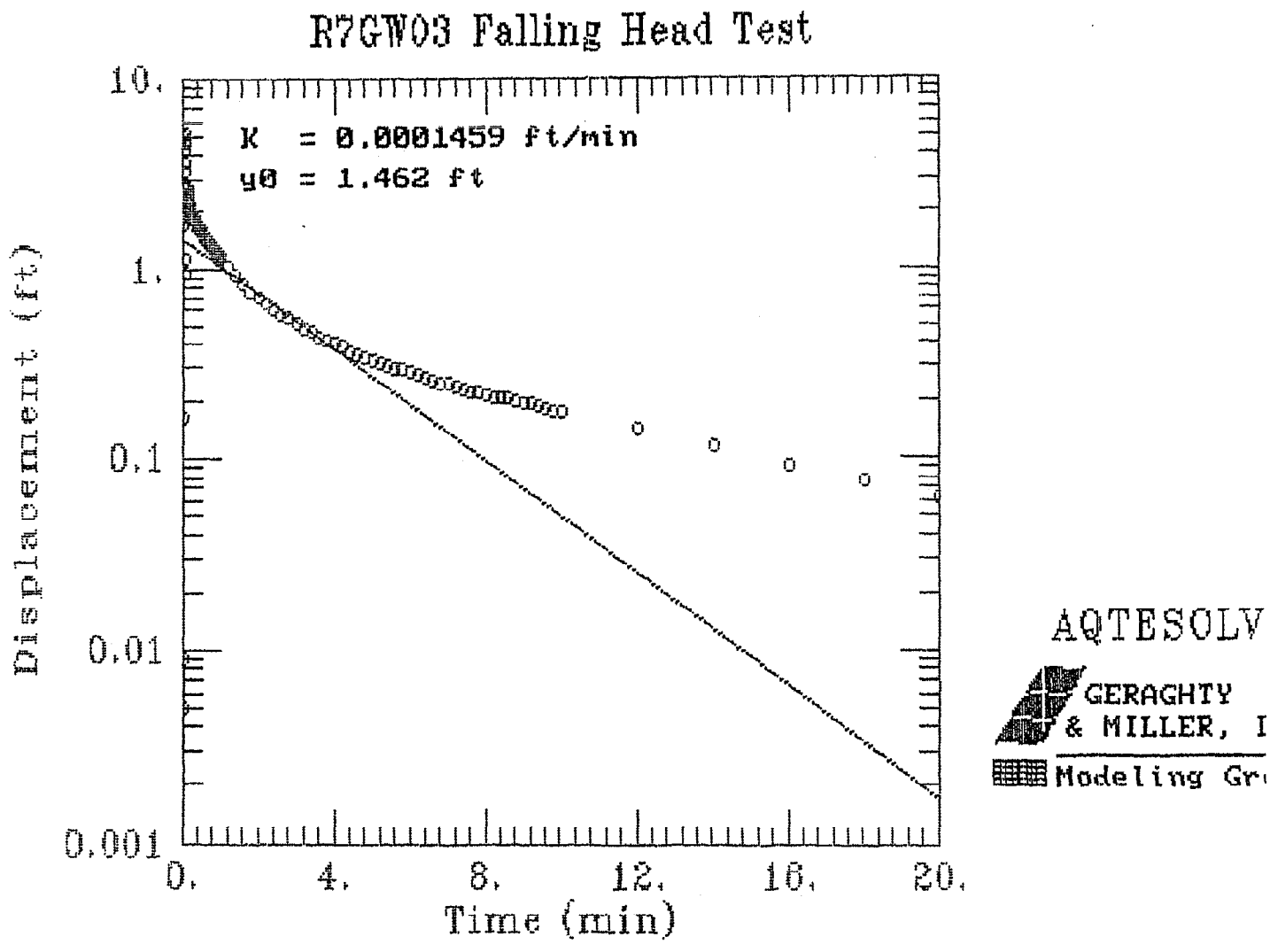
R7GW03 Falling Head Test
K = 0.0001459 ft/min
y0 = 1.462 ft
Displacement (ft)
10.
1.
0.1
0.01
0.001
0.
4.
8.
12.
16.
20.
Time (min)
AQTESOLV
GERAGHTY
& MILLER, I
Modeling Gr

A Q T E S O L V

A Program for

Automatic Estimation of Aquifer Coefficients

From Aquifer Test Data

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- Statistical analysis of results

- Complete graphical display of results

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A Q T E S O L V   R E S U L T S
Version 1.10

05/12/92 09:04:27

==

TEST DESCRIPTION

Data set........... r7gw03f.dsk
Data set title..... R7GW03 Falling Head Test

Knowns and Constants:
- No. of data points.................. 190
- Radius of well casing............... 0.083
- Radius of well...................... 0.66
- Aquifer saturated thickness......... 18
- Well screen length.................. 20
- Static height of water in well...... 18
- Log(Re/Rw).......................... 2.512
- A, B, C............................. 0.000, 0.000, 1.979

==

ANALYTICAL METHOD

Bouwer-Rice (Unconfined Aquifer Slug Test)

==

RESULTS FROM STATISTICAL CURVE MATCHING

STATISTICAL MATCH PARAMETER ESTIMATES

	Estimate		Std. Error
K =	1.4585E-004	+/-	6.4332E-006
y0 =	1.4616E+000	+/-	5.0830E-002

ANALYSIS OF MODEL RESIDUALS

residual = calculated - observed
weighted residual = residual * weight

Weighted Residual Statistics:
- Number of residuals............... 21
- Number of estimated parameters.... 2
- Degrees of freedom................ 19
- Residual mean..................... 0.002673
- Residual standard deviation....... 0.04249
- Residual variance................. 0.001805

Model Residuals:

Time	Observed	Calculated	Residual	Weight
1	1.154	1.0433	0.11066	1
[illegible]	[illegible]	[illegible]	[illegible]	1

1.6	0.825	0.8523	-0.027296	1
1.8	0.758	0.79673	-0.038732	1
2	0.701	0.74479	-0.043791	1
2.2	0.653	0.69624	-0.043235	1
2.4	0.606	0.65085	-0.044846	1
2.6	0.567	0.60841	-0.041415	1
2.8	0.539	0.56875	-0.02975	1
3	0.51	0.53167	-0.021672	1
3.2	0.482	0.49701	-0.015011	1
3.4	0.458	0.46461	-0.0066089	1
3.6	0.434	0.43432	-0.00031959	1
3.8	0.415	0.406	0.0089951	1
4	0.396	0.37954	0.016464	1
4.2	0.381	0.35479	0.026207	1
4.4	0.367	0.33166	0.035337	1
4.6	0.353	0.31004	0.042959	1
4.8	0.339	0.28983	0.049172	1
5	0.329	0.27093	0.058066	1

==

RESULTS FROM VISUAL CURVE MATCHING

VISUAL MATCH PARAMETER ESTIMATES

	Estimate
K =	1.4585E-004
y0 =	1.4616E+000

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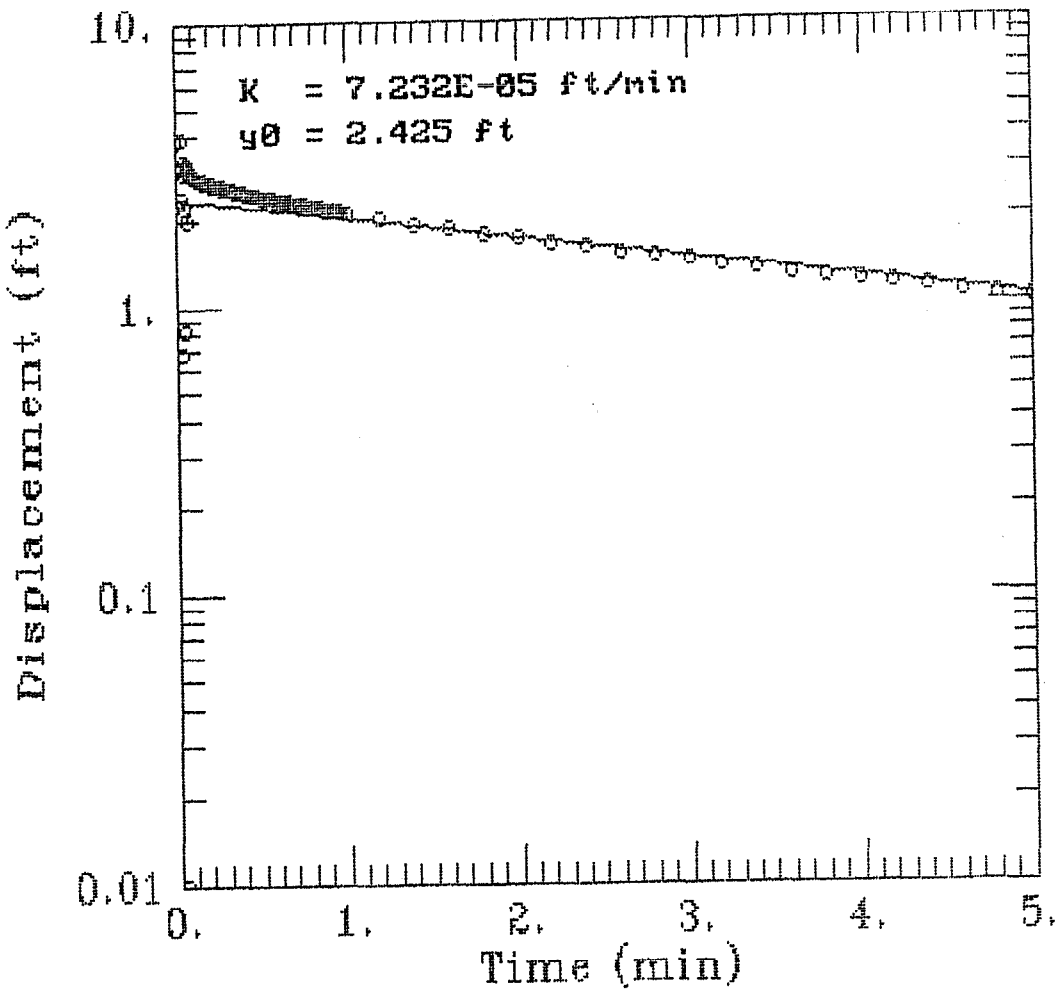
R7GW03 RISING HEAD TEST



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<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<>>

A Q T E S O L V   R E S U L T S

Version 1.10

05/11/92 14:37:16

TEST DESCRIPTION

Data set........... B:r7gw03r.dat
Data set title..... R7GW03 RISING HEAD TEST

Knowns and Constants:
No. of data points.................. 186
Radius of well casing............... 0.083
Radius of well...................... 0.66
Aquifer saturated thickness......... 18
Well screen length.................. 20
Static height of water in well...... 18
Log(Re/Rw).......................... 2.512
A, B, C............................. 0.000, 0.000, 1.979

ANALYTICAL METHOD

Bouwer-Rice (Unconfined Aquifer Slug Test)

RESULTS FROM STATISTICAL CURVE MATCHING

STATISTICAL MATCH PARAMETER ESTIMATES

	Estimate		Std. Error
K =	7.2320E-005	+/-	1.2582E-006
y0 =	2.4254E+000	+/-	2.4733E-002

ANALYSIS OF MODEL RESIDUALS

residual = calculated - observed
weighted residual = residual * weight

Weighted Residual Statistics:
Number of residuals............... 62
Number of estimated parameters.... 2
Degrees of freedom................ 60
Residual mean..................... 0.01509
Residual standard deviation....... 0.06006
Residual variance................. 0.003608

Time	Observed	Calculated	Residual	Weight
0.9	2.169	2.0867	0.082348	1
0.9166	2.159	2.0809	0.07813	1
0.9333	2.15	2.0751	0.07493	1
0.95	2.14	2.0693	0.070714	1
0.9666	2.136	2.0636	0.072447	1
0.9833	2.126	2.0578	0.068199	1
1	2.117	2.0521	0.064935	1
1.2	1.997	1.9846	0.012397	1
1.4	1.912	1.9194	-0.0073582	1
1.6	1.835	1.8563	-0.021259	1
1.8	1.764	1.7952	-0.031233	1
2	1.697	1.7362	-0.039214	1
2.2	1.631	1.6791	-0.048136	1
2.4	1.569	1.6239	-0.054933	1
2.6	1.511	1.5705	-0.059546	1
2.8	1.464	1.5189	-0.054914	1
3	1.411	1.469	-0.057979	1
3.2	1.359	1.4207	-0.061686	1
3.4	1.316	1.374	-0.05798	1
3.6	1.268	1.3288	-0.06081	1
3.8	1.226	1.2851	-0.059125	1
4	1.187	1.2429	-0.055876	1
4.2	1.149	1.202	-0.053016	1
4.4	1.116	1.1625	-0.046499	1
4.6	1.078	1.1243	-0.046281	1
4.8	1.044	1.0873	-0.04332	1
5	1.011	1.0516	-0.040574	1
5.2	0.982	1.017	-0.035003	1
5.4	0.954	0.98357	-0.029569	1
5.6	0.92	0.95123	-0.031234	1
5.8	0.892	0.91996	-0.027961	1
6	0.868	0.88972	-0.021717	1
6.2	0.844	0.86047	-0.016468	1
6.4	0.82	0.83218	-0.012179	1
6.6	0.797	0.80482	-0.0078211	1
6.8	0.773	0.77836	-0.0053623	1
7	0.754	0.75277	0.0012267	1
7.2	0.73	0.72803	0.0019744	1
7.4	0.711	0.70409	0.0069085	1
7.6	0.692	0.68094	0.011056	1
7.8	0.673	0.65856	0.014442	1
8	0.654	0.63691	0.017092	1
8.2	0.639	0.61597	0.023031	1
8.4	0.625	0.59572	0.029281	1
8.6	0.611	0.57613	0.034866	1
8.8	0.592	0.55719	0.034806	1
9	0.577	0.53888	0.038124	1
9.2	0.563	0.52116	0.04184	1
9.4	0.549	0.50403	0.044973	1
9.6	0.534	0.48746	0.046543	1
9.8	0.525	0.47143	0.053569	1
10	0.51	0.45593	0.054067	1
12	0.41	0.32638	0.083619	1
14	0.334	0.23364	0.10036	1
16	0.272	0.16725	0.10475	1
18	0.229	0.11973	0.10927	1
20	0.196	0.085708	0.11029	1
22	0.172	0.061355	0.11065	1
24	0.153	0.043921	0.10908	1
26	0.139	0.031441	0.10756	1
28	0.129	0.022507	0.10649	1

==

RESULTS FROM VISUAL CURVE MATCHING

VISUAL MATCH PARAMETER ESTIMATES

	Estimate
K =	7.2320E-005
y0 =	2.4254E+000

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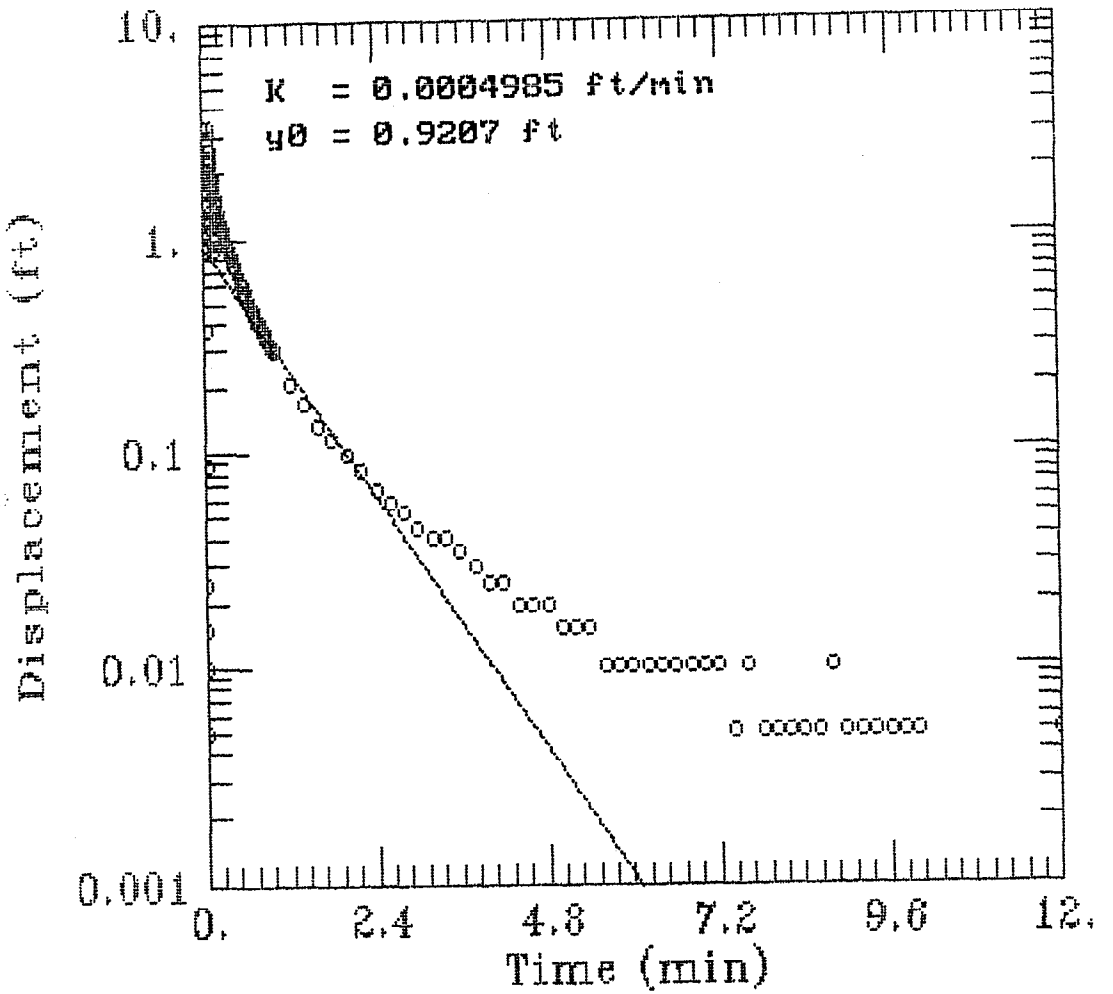
R7GW02 Falling Head Test



AQTESOLV

GERAGHTY & MILLER, INC.

Modeling Group

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<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<>>>

AQTESOLV RESULTS
Version 1.10

05/12/92 09:19:51

==

TEST DESCRIPTION

Data set........... B:r7gw02f.dsk
Data set title..... R7GW02 Falling Head Test

Knowns and Constants:
No. of data points.................. 184
Radius of well casing............... 0.083
Radius of well...................... 0.66
Aquifer saturated thickness......... 20
Well screen length.................. 20
Static height of water in well...... 20
Log(Re/Rw).......................... 2.579
A, B, C............................. 0.000, 0.000, 1.979

==

ANALYTICAL METHOD

Bouwer-Rice (Unconfined Aquifer Slug Test)

==

RESULTS FROM STATISTICAL CURVE MATCHING

STATISTICAL MATCH PARAMETER ESTIMATES

	Estimate		Std. Error
K =	4.9846E-004	+/-	1.9682E-005
y0 =	9.2066E-001	+/-	4.1301E-002

ANALYSIS OF MODEL RESIDUALS

residual = calculated - observed
weighted residual = residual * weight

Weighted Residual Statistics:
Number of residuals............... 32
Number of estimated parameters.... 2
Degrees of freedom................ 30
Residual mean..................... 0.004813
Residual standard deviation....... 0.01319
Residual variance................. 0.000174

Model Residuals:

Time	Observed	Calculated	Residual	Weight
0.8333	0.379	0.36138	0.017621	1

0.8833	0.35	0.34166	0.0083408	1
0.9	0.34	0.33532	0.0046844	1
0.9166	0.331	0.32913	0.0018733	1
0.9333	0.321	0.32302	-0.0020158	1
0.95	0.316	0.31702	-0.0010184	1
0.9666	0.307	0.31117	-0.0041673	1
0.9833	0.302	0.30539	-0.0033898	1
1	0.292	0.29972	-0.0077197	1
1.2	0.211	0.23946	-0.028463	1
1.4	0.168	0.19132	-0.02332	1
1.6	0.134	0.15286	-0.018857	1
1.8	0.115	0.12213	-0.0071257	1
2	0.096	0.097573	-0.0015731	1
2.2	0.082	0.077957	0.0040434	1
2.4	0.067	0.062284	0.0047161	1
2.6	0.058	0.049762	0.0082379	1
2.8	0.053	0.039758	0.013242	1
3	0.044	0.031765	0.012235	1
3.2	0.039	0.025379	0.013621	1
3.4	0.039	0.020276	0.018724	1
3.6	0.034	0.0162	0.0178	1
3.8	0.029	0.012943	0.016057	1
4	0.024	0.010341	0.013659	1
4.2	0.024	0.008262	0.015738	1
4.4	0.019	0.0066009	0.012399	1
4.6	0.019	0.0052739	0.013726	1
4.8	0.019	0.0042136	0.014786	1
5	0.015	0.0033665	0.011634	1
5.2	0.015	0.0026897	0.01231	1

==

RESULTS FROM VISUAL CURVE MATCHING

VISUAL MATCH PARAMETER ESTIMATES

	Estimate
K =	4.9846E-004
y0 =	9.2066E-001

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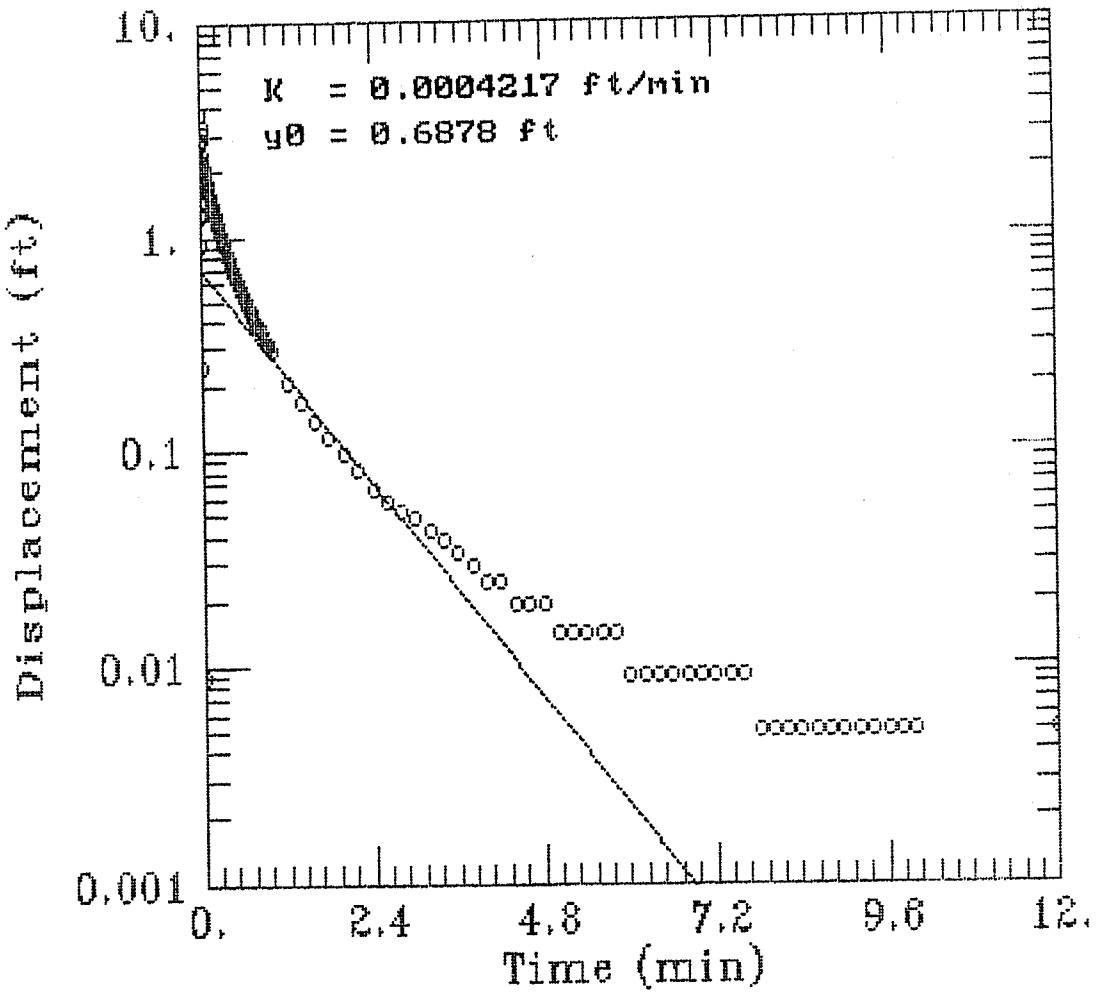
R7GW02 RISING HEAD TEST



AQTESOLV

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<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<>>

A Q T E S O L V   R E S U L T S

Version 1.10

05/11/92 14:16:00

==

TEST DESCRIPTION

Data set........... r7gw02r.dsk
Data set title..... R7GW02 RISING HEAD TEST

Knowns and Constants:
- No. of data points.................. 185
- Radius of well casing............... 0.083
- Radius of well...................... 0.66
- Aquifer saturated thickness......... 20
- Well screen length.................. 20
- Static height of water in well...... 20
- Log(Re/Rw).......................... 2.579
- A, B, C............................. 0.000, 0.000, 1.979

==

ANALYTICAL METHOD

Bouwer-Rice (Unconfined Aquifer Slug Test)

==

RESULTS FROM STATISTICAL CURVE MATCHING

STATISTICAL MATCH PARAMETER ESTIMATES

	Estimate		Std. Error
K =	4.2169E-004	+/-	2.0908E-005
y0 =	6.8778E-001	+/-	4.8761E-002

ANALYSIS OF MODEL RESIDUALS

residual = calculated - observed
weighted residual = residual * weight

Weighted Residual Statistics:
- Number of residuals............... 19
- Number of estimated parameters.... 2
- Degrees of freedom................ 17
- Residual mean..................... 0.003043
- Residual standard deviation....... 0.01123
- Residual variance................. 0.0001261

Time	Observed	Calculated	Residual	Weight
1	0.292	0.26615	0.025854	1
1.2	0.211	0.22012	-0.0091177	1
1.4	0.168	0.18205	-0.01405	1
1.6	0.139	0.15057	-0.011565	1
1.8	0.115	0.12453	-0.0095256	1
2	0.096	0.10299	-0.0069896	1
2.2	0.081	0.085178	-0.0041781	1
2.4	0.067	0.070447	-0.003447	1
2.6	0.057	0.058264	-0.0012635	1
2.8	0.052	0.048187	0.0038128	1
3	0.048	0.039853	0.0081465	1
3.2	0.043	0.032961	0.010039	1
3.4	0.038	0.027261	0.010739	1
3.6	0.033	0.022546	0.010454	1
3.8	0.029	0.018647	0.010353	1
4	0.024	0.015422	0.0085781	1
4.2	0.024	0.012755	0.011245	1
4.4	0.019	0.010549	0.0084511	1
4.6	0.019	0.0087245	0.010275	1

==

RESULTS FROM VISUAL CURVE MATCHING

VISUAL MATCH PARAMETER ESTIMATES

	Estimate
K =	4.2169E-004
y0 =	6.8778E-001

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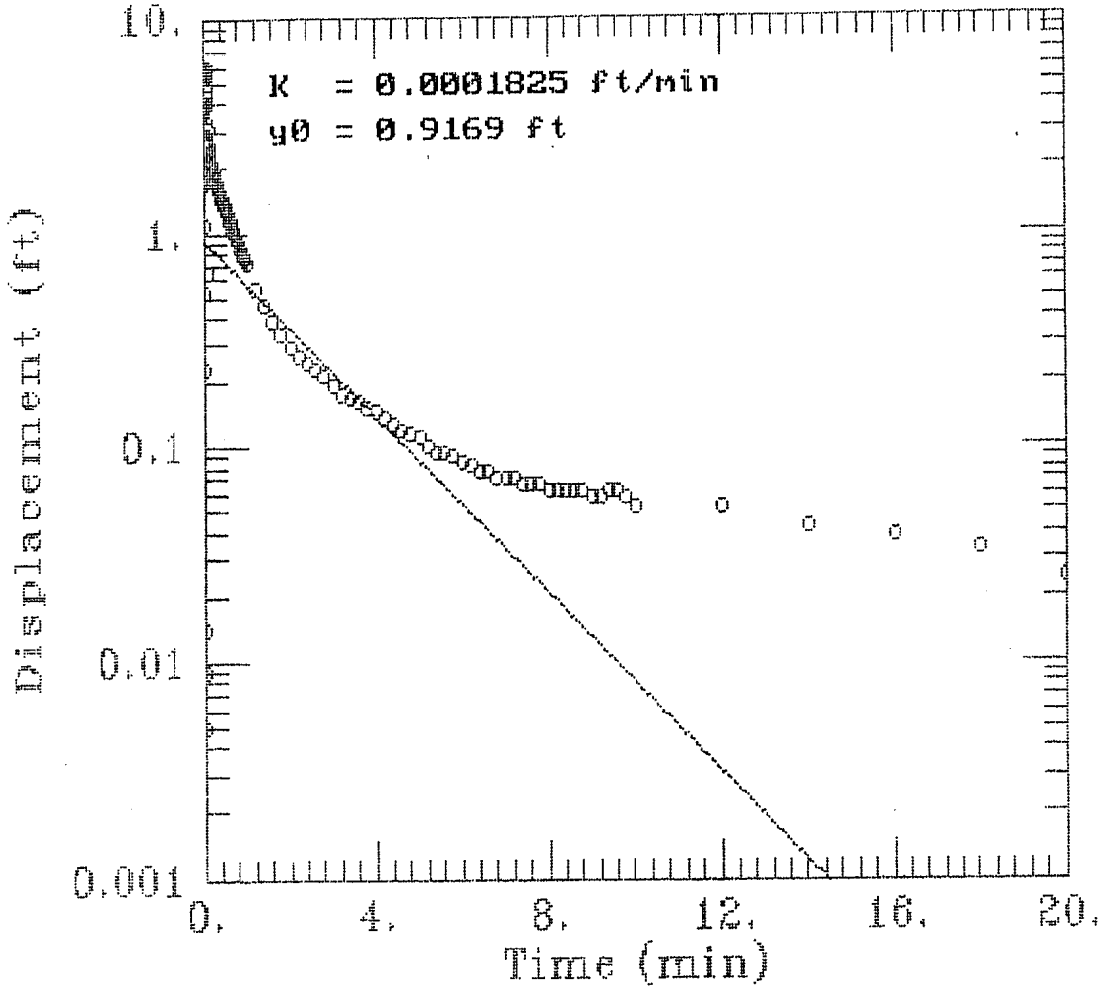
R7GW01 Falling Head Test



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<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<>>

A Q T E S O L V   R E S U L T S
Version 1.10

05/12/92 09:41:20

==

TEST DESCRIPTION

Data set........... B:r7gw01f.dsk
Data set title..... R7GW01 Falling Head Test

Knowns and Constants:
No. of data points.................. 189
Radius of well casing............... 0.083
Radius of well...................... 0.66
Aquifer saturated thickness......... 11.9
Well screen length.................. 20
Static height of water in well...... 11.9
Log(Re/Rw).......................... 2.244
A, B, C............................. 0.000, 0.000, 1.979

==

ANALYTICAL METHOD

Bouwer-Rice (Unconfined Aquifer Slug Test)

==

RESULTS FROM STATISTICAL CURVE MATCHING

STATISTICAL MATCH PARAMETER ESTIMATES

	Estimate		Std. Error
K =	1.8249E-004	+/-	1.1827E-005
y0 =	9.1688E-001	+/-	6.1581E-002

ANALYSIS OF MODEL RESIDUALS

residual = calculated - observed
weighted residual = residual * weight

Weighted Residual Statistics:
Number of residuals............... 37
Number of estimated parameters.... 2
Degrees of freedom................ 35
Residual mean..................... 0.01116
Residual standard deviation....... 0.04296
Residual variance................. 0.001846

Model Residuals:

Time	Observed	Calculated	Residual	Weight
1	0.722	0.57179	0.15021	1

1.6	0.387	0.43071	-0.043713	1
1.8	0.335	0.3919	-0.056898	1
2	0.296	0.35658	-0.060581	1
2.2	0.268	0.32445	-0.056446	1
2.4	0.244	0.29521	-0.051207	1
2.6	0.229	0.2686	-0.039603	1
2.8	0.215	0.2444	-0.029397	1
3	0.196	0.22237	-0.026372	1
3.2	0.177	0.20233	-0.025333	1
3.4	0.167	0.1841	-0.017099	1
3.6	0.162	0.16751	-0.0055078	1
3.8	0.153	0.15241	0.0005878	1
4	0.148	0.13868	0.009323	1
4.2	0.138	0.12618	0.01182	1
4.4	0.129	0.11481	0.014192	1
4.6	0.119	0.10446	0.014538	1
4.8	0.115	0.095048	0.019952	1
5	0.11	0.086482	0.023518	1
5.2	0.1	0.078689	0.021311	1
5.4	0.095	0.071597	0.023403	1
5.6	0.095	0.065145	0.029855	1
5.8	0.091	0.059274	0.031726	1
6	0.086	0.053933	0.032067	1
6.2	0.081	0.049072	0.031928	1
6.4	0.076	0.04465	0.03135	1
6.6	0.076	0.040626	0.035374	1
6.8	0.072	0.036965	0.035035	1
7	0.072	0.033634	0.038366	1
7.2	0.072	0.030603	0.041397	1
7.4	0.067	0.027845	0.039155	1
7.6	0.067	0.025335	0.041665	1
7.8	0.067	0.023052	0.043948	1
8	0.062	0.020975	0.041025	1
8.2	0.062	0.019085	0.042915	1

==

RESULTS FROM VISUAL CURVE MATCHING

VISUAL MATCH PARAMETER ESTIMATES

Estimate
K = 1.8249E-004
y0 = 9.1688E-001

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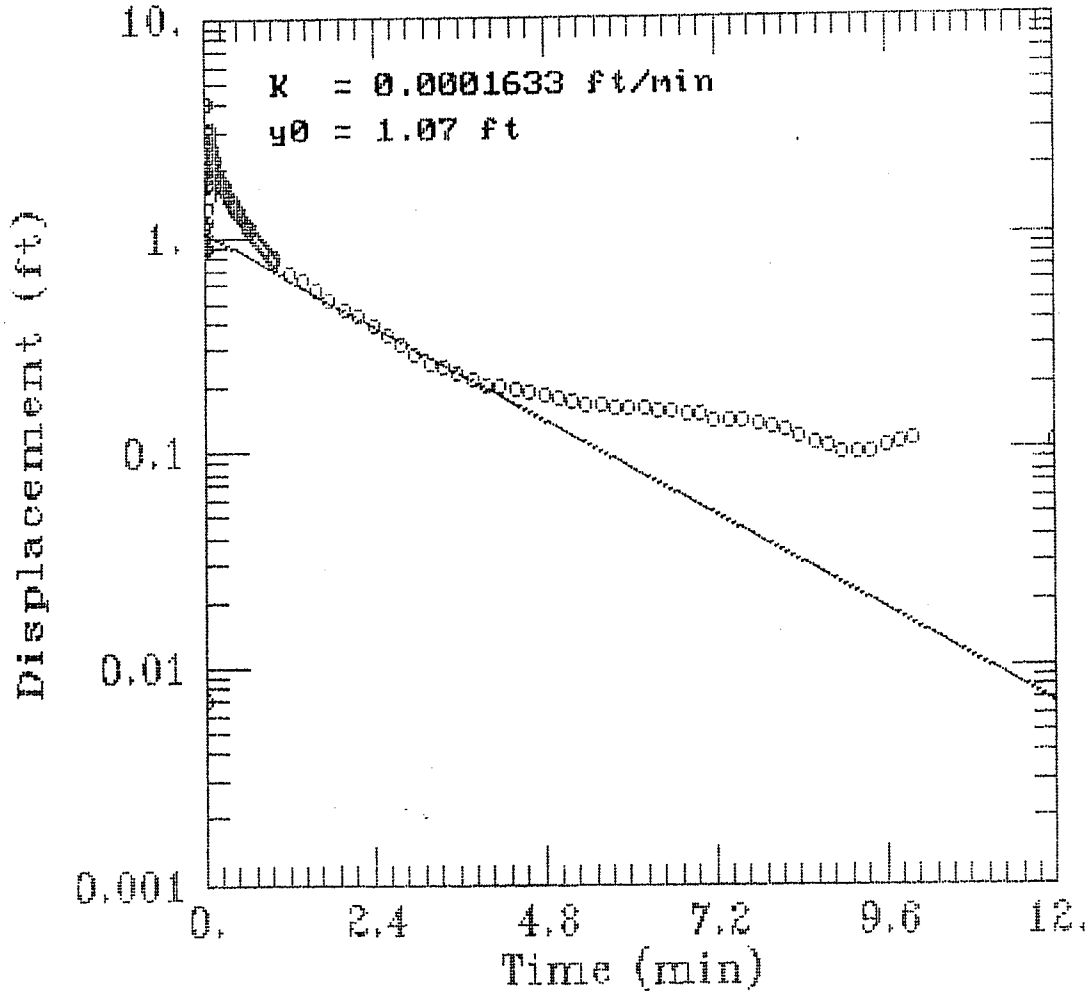
R7GW01 RISING HEAD TEST



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<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<>>

A Q T E S O L V R E S U L T S

Version 1.10

05/11/92 13:25:36

==

TEST DESCRIPTION

Data set........... y
Data set title..... R7GW01 RISING HEAD TEST

Knowns and Constants:
- No. of data points.................. 193
- Radius of well casing............... 0.083
- Radius of well...................... 0.66
- Aquifer saturated thickness......... 11.9
- Well screen length.................. 20
- Static height of water in well...... 11.9
- Log(Re/Rw).......................... 2.244
- A, B, C............................. 0.000, 0.000, 1.979

==

ANALYTICAL METHOD

Bouwer-Rice (Unconfined Aquifer Slug Test)

==

RESULTS FROM STATISTICAL CURVE MATCHING

STATISTICAL MATCH PARAMETER ESTIMATES

	Estimate		Std. Error
K =	1.6331E-004	+/-	5.9464E-006
y0 =	1.0704E+000	+/-	4.4039E-002

ANALYSIS OF MODEL RESIDUALS

residual = calculated - observed
weighted residual = residual * weight

Weighted Residual Statistics:
- Number of residuals................ 14
- Number of estimated parameters.... 2
- Degrees of freedom................ 12
- Residual mean..................... 0.0005734
- Residual standard deviation....... 0.01299
- Residual variance................. 0.0001688

Time	Observed	Calculated	Residual	Weight
1.8	0.514	0.50025	0.013753	1
2	0.466	0.4597	0.0062951	1
2.2	0.423	0.42245	0.00055156	1
2.4	0.385	0.38821	-0.0032114	1
2.6	0.351	0.35675	-0.0057491	1
2.8	0.318	0.32784	-0.0098366	1
3	0.284	0.30127	-0.017267	1
3.2	0.26	0.27685	-0.016851	1
3.4	0.246	0.25441	-0.0084141	1
3.6	0.232	0.2338	-0.0017953	1
3.8	0.217	0.21485	0.0021525	1
4	0.203	0.19744	0.0055646	1
4.2	0.198	0.18143	0.016566	1
4.4	0.193	0.16673	0.02627	1

==

RESULTS FROM VISUAL CURVE MATCHING

VISUAL MATCH PARAMETER ESTIMATES

	Estimate
K =	1.6331E-004
y0 =	1.0704E+000

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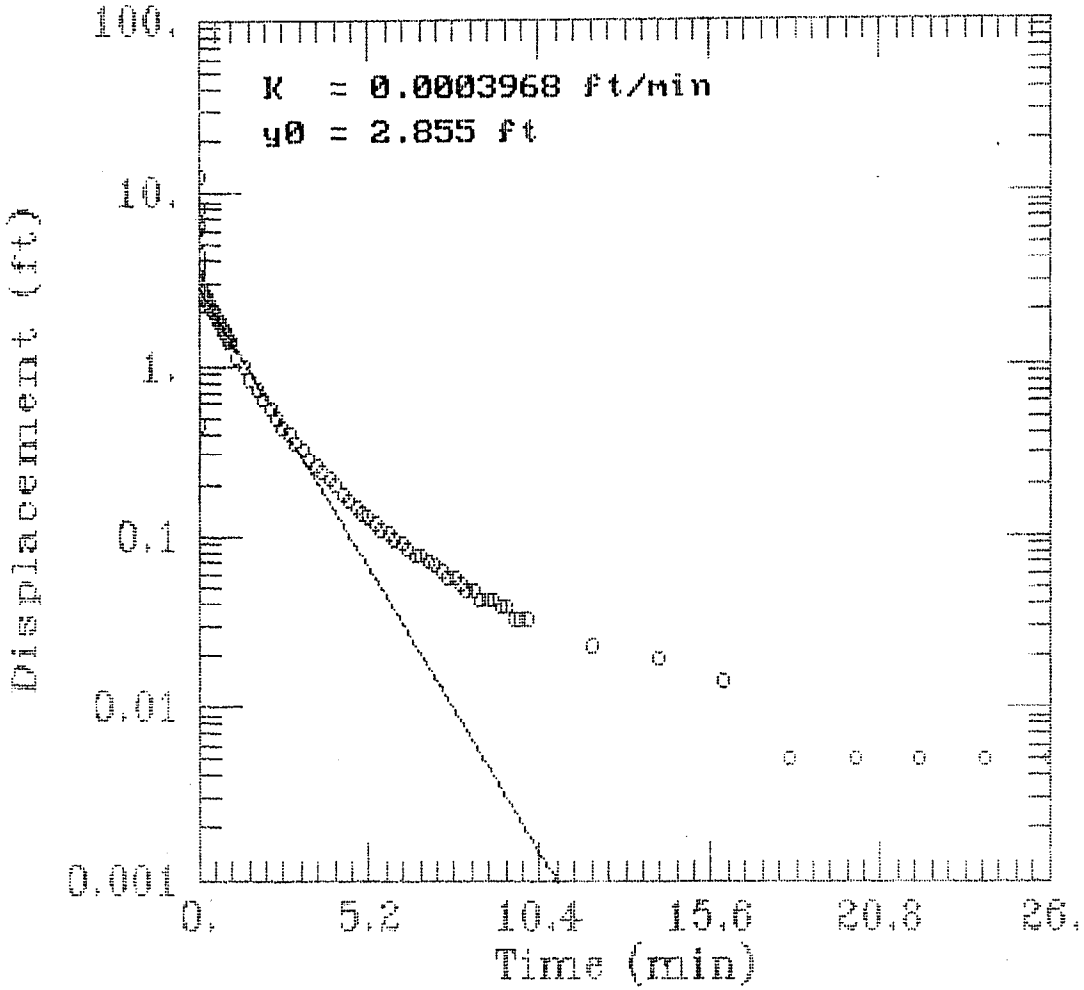
6GW01 FALLING HEAD TEST



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A Q T E S O L V   R E S U L T S
Version 1.10

05/12/92 11:33:23

==

TEST DESCRIPTION

Data set........... B:6gw01f.dsk
Data set title..... 6GW01 FALLING HEAD TEST

Knowns and Constants:
   No. of data points.................. 192
   Radius of well casing.............. 0.083
   Radius of well...................... 0.66
   Aquifer saturated thickness......... 16
   Well screen length.................. 15
   Static height of water in well...... 16
   Log(Re/Rw).......................... 2.371
   A, B, C............................. 0.000, 0.000, 1.744

==

ANALYTICAL METHOD

Bouwer-Rice (Unconfined Aquifer Slug Test)

==

RESULTS FROM STATISTICAL CURVE MATCHING

STATISTICAL MATCH PARAMETER ESTIMATES

	Estimate		Std. Error
K =	3.9675E-004	+/-	5.7783E-006
y0 =	2.8545E+000	+/-	2.5620E-002

ANALYSIS OF MODEL RESIDUALS

residual = calculated - observed
weighted residual = residual * weight

Weighted Residual Statistics:
   Number of residuals............... 51
   Number of estimated parameters.... 2
   Degrees of freedom................ 49
   Residual mean..................... 0.007594
   Residual standard deviation....... 0.03342
   Residual variance................. 0.001117

Model Residuals:

Time	Observed	Calculated	Residual	Weight
0.5	2.023	1.9829	0.040125	1

0.55	1.937	1.9119	0.025071	1
0.5666	1.914	1.8889	0.02506	1
0.5833	1.885	1.8661	0.018908	1
0.6	1.862	1.8435	0.01848	1
0.6166	1.833	1.8214	0.011646	1
0.6333	1.809	1.7993	0.0096762	1
0.65	1.786	1.7776	0.0084403	1
0.6666	1.762	1.7562	0.0058132	1
0.6833	1.738	1.7349	0.0030555	1
0.7	1.715	1.714	0.0010409	1
0.7166	1.691	1.6934	-0.002351	1
0.7333	1.672	1.6729	-0.00086872	1
0.75	1.648	1.6526	-0.0046342	1
0.7666	1.629	1.6328	-0.0037634	1
0.7833	1.606	1.613	-0.007014	1
0.8	1.582	1.5935	-0.011503	1
0.8166	1.563	1.5743	-0.011344	1
0.8333	1.544	1.5553	-0.011301	1
0.85	1.525	1.5365	-0.011488	1
0.8666	1.506	1.518	-0.012014	1
0.8833	1.487	1.4997	-0.012653	1
0.9	1.468	1.4815	-0.013513	1
0.9166	1.449	1.4637	-0.0147	1
0.9333	1.43	1.446	-0.015996	1
0.95	1.411	1.4285	-0.017505	1
0.9666	1.392	1.4113	-0.019329	1
0.9833	1.378	1.3943	-0.016258	1
1	1.359	1.3774	-0.018394	1
1.2	1.122	1.1906	-0.068593	1
1.4	0.966	1.0291	-0.063125	1
1.6	0.838	0.88956	-0.051556	1
1.8	0.734	0.76892	-0.034915	1
2	0.639	0.66464	-0.025635	1
2.2	0.563	0.5745	-0.011498	1
2.4	0.497	0.49659	0.00041493	1
2.6	0.44	0.42924	0.010761	1
2.8	0.393	0.37103	0.021974	1
3	0.35	0.32071	0.029293	1
3.2	0.317	0.27721	0.039787	1
3.4	0.284	0.23962	0.044382	1
3.6	0.26	0.20712	0.052879	1
3.8	0.232	0.17903	0.052969	1
4	0.213	0.15475	0.058249	1
4.2	0.194	0.13376	0.060236	1
4.4	0.175	0.11562	0.059377	1
4.6	0.161	0.099942	0.061058	1
4.8	0.147	0.086388	0.060612	1
5	0.137	0.074672	0.062328	1

==

RESULTS FROM VISUAL CURVE MATCHING

VISUAL MATCH PARAMETER ESTIMATES

	Estimate
K =	3.9675E-004
y0 =	2.8545E+000

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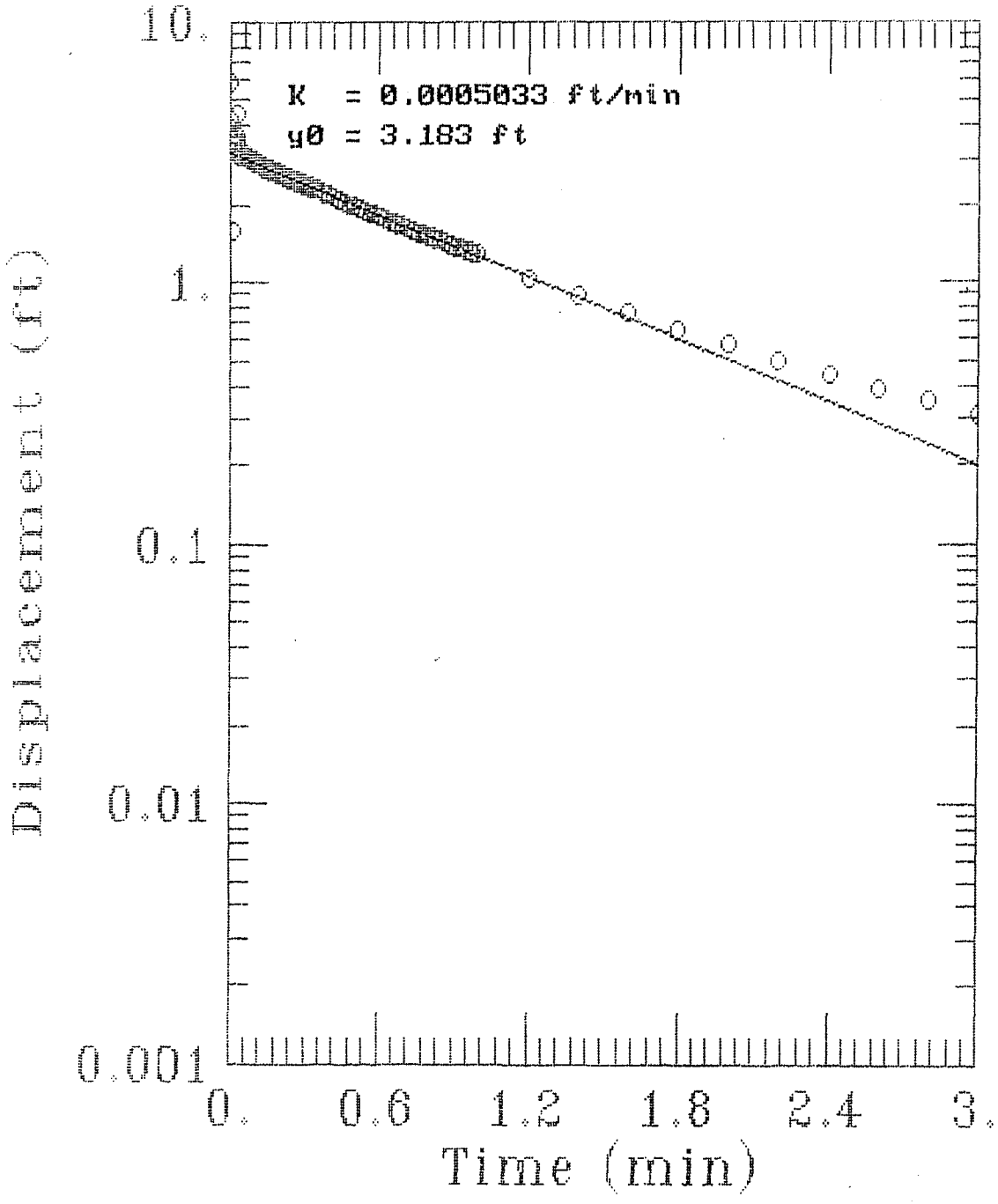

AQTESOLV

GERAGHTY & MILLER, INC.

Modeling Group

A Q T E S O L V

A Program for

Automatic Estimation of Aquifer Coefficients

From Aquifer Test Data

By:

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and
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- pumping tests, injection tests, recovery tests, and slug tests

Features:

- Interactive, menu-driven program design

- Nonlinear least-squares estimation of aquifer coefficients

- Statistical analysis of results

- Complete graphical display of results

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A Q T E S O L V   R E S U L T S
Version 1.10

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TEST DESCRIPTION

Data set........... B:6gw01r.dsk
Data set title..... 6GW01 RISING HEAD TEST

Knowns and Constants:
- No. of data points.................. 189
- Radius of well casing............... 0.083
- Radius of well...................... 0.66
- Aquifer saturated thickness......... 16
- Well screen length.................. 15
- Static height of water in well...... 16
- Log(Re/Rw)........................... 2.371
- A, B, C............................. 0.000, 0.000, 1.744

==

ANALYTICAL METHOD

Bouwer-Rice (Unconfined Aquifer Slug Test)

==

RESULTS FROM STATISTICAL CURVE MATCHING

STATISTICAL MATCH PARAMETER ESTIMATES

	Estimate		Std. Error
K =	5.0333E-004	+/-	4.1440E-006
y0 =	3.1827E+000	+/-	8.0885E-003

ANALYSIS OF MODEL RESIDUALS

residual = calculated - observed
weighted residual = residual * weight

Weighted Residual Statistics:
- Number of residuals............... 176
- Number of estimated parameters.... 2
- Degrees of freedom................ 174
- Residual mean..................... 0.01539
- Residual standard deviation....... 0.04528
- Residual variance................. 0.002051

Model Residuals:

Time	Observed	Calculated	Residual	Weight
0.0466	3.128	3.0485	0.07948	1
0.05	3.118	3.039	0.079047	1

0.06	3.076	3.011	0.065011	1
0.0633	3.066	3.0018	0.064183	1
0.0666	3.057	2.9927	0.064327	1
0.07	3.043	2.9833	0.059719	1
0.0733	3.029	2.9742	0.054806	1
0.0766	3.019	2.9651	0.053866	1
0.08	3.005	2.9558	0.049171	1
0.0833	2.991	2.9468	0.044175	1
0.0866	2.981	2.9378	0.043151	1
0.09	2.967	2.9286	0.038371	1
0.0933	2.958	2.9197	0.038292	1
0.0966	2.948	2.9108	0.037186	1
0.1	2.929	2.9017	0.02732	1
0.1033	2.92	2.8928	0.027159	1
0.1066	2.915	2.884	0.030971	1
0.11	2.896	2.875	0.021022	1
0.1133	2.891	2.8662	0.024779	1
0.1166	2.877	2.8575	0.01951	1
0.12	2.863	2.8485	0.014478	1
0.1233	2.854	2.8398	0.014155	1
0.1266	2.839	2.8312	0.007805	1
0.13	2.83	2.8223	0.00769	1
0.1333	2.816	2.8137	0.002287	1
0.1366	2.806	2.8051	0.00085782	1
0.14	2.787	2.7963	-0.0093389	1
0.1433	2.773	2.7878	-0.014821	1
0.1466	2.783	2.7793	0.003671	1
0.15	2.778	2.7706	0.0073932	1
0.1533	2.759	2.7622	-0.0031673	1
0.1566	2.745	2.7538	-0.0087535	1
0.16	2.735	2.7451	-0.010111	1
0.1633	2.735	2.7367	-0.0017496	1
0.1666	2.716	2.7284	-0.012413	1
0.17	2.712	2.7199	-0.0078507	1
0.1733	2.702	2.7116	-0.0095658	1
0.1766	2.693	2.7033	-0.010306	1
0.18	2.683	2.6948	-0.011822	1
0.1833	2.674	2.6866	-0.012614	1
0.1866	2.669	2.6784	-0.0094301	1
0.19	2.655	2.67	-0.015025	1
0.1933	2.646	2.6619	-0.015891	1
0.1966	2.641	2.6538	-0.012783	1
0.2	2.631	2.6455	-0.014455	1
0.2033	2.622	2.6374	-0.015396	1
0.2066	2.612	2.6294	-0.017363	1
0.21	2.603	2.6211	-0.018111	1
0.2133	2.594	2.6131	-0.019127	1
0.2166	2.584	2.6052	-0.021167	1
0.22	2.579	2.597	-0.017991	1
0.2233	2.57	2.5891	-0.019081	1
0.2266	2.56	2.5812	-0.021194	1
0.23	2.556	2.5731	-0.017094	1
0.2333	2.546	2.5653	-0.019256	1
0.2366	2.537	2.5574	-0.020442	1
0.24	2.527	2.5494	-0.022416	1
0.2433	2.518	2.5417	-0.02365	1
0.2466	2.513	2.5339	-0.020908	1
0.25	2.504	2.526	-0.021956	1
0.2533	2.499	2.5183	-0.019262	1
0.2566	2.489	2.5106	-0.021591	1
0.26	2.48	2.5027	-0.022712	1
0.2633	2.475	2.4951	-0.020088	1
0.2666	2.466	2.4875	-0.021488	1
0.27	2.456	2.4797	-0.023682	1
[illegible]	[illegible]	[illegible]	-0.020128	1

0.28	2.433	2.4569	-0.023864	1
0.2833	2.428	2.4494	-0.02138	1
0.2866	2.418	2.4419	-0.023919	1
0.29	2.414	2.4343	-0.020255	1
0.2933	2.404	2.4268	-0.02284	1
0.2966	2.395	2.4194	-0.024448	1
0.3	2.39	2.4119	-0.021855	1
0.3033	2.381	2.4045	-0.023508	1
0.3066	2.376	2.3972	-0.021184	1
0.31	2.366	2.3897	-0.023661	1
0.3133	2.357	2.3824	-0.025382	1
0.3166	2.352	2.3751	-0.023125	1
0.32	2.343	2.3677	-0.024671	1
0.3233	2.338	2.3605	-0.022459	1
0.3266	2.333	2.3533	-0.020269	1
0.33	2.324	2.3459	-0.021884	1
0.3333	2.314	2.3387	-0.024738	1
0.35	2.281	2.3029	-0.021908	1
0.3666	2.243	2.2678	-0.024837	1
0.3833	2.21	2.2331	-0.023094	1
0.4	2.173	2.1989	-0.025883	1
0.4166	2.135	2.1654	-0.030396	1
0.4333	2.106	2.1322	-0.026222	1
0.45	2.073	2.0996	-0.026556	1
0.4666	2.04	2.0676	-0.027582	1
0.4833	2.007	2.0359	-0.028907	1
0.5	1.979	2.0047	-0.025717	1
0.5166	1.945	1.9742	-0.029187	1
0.5333	1.917	1.9439	-0.026942	1
0.55	1.889	1.9142	-0.025161	1
0.5666	1.86	1.885	-0.02501	1
0.5833	1.832	1.8561	-0.024132	1
0.6	1.804	1.8277	-0.023696	1
0.6166	1.775	1.7999	-0.024862	1
0.6333	1.751	1.7723	-0.021288	1
0.65	1.723	1.7451	-0.022136	1
0.6666	1.699	1.7186	-0.019559	1
0.6833	1.676	1.6922	-0.016231	1
0.7	1.652	1.6663	-0.014306	1
0.7166	1.624	1.6409	-0.01693	1
0.7333	1.6	1.6158	-0.015791	1
0.75	1.581	1.591	-0.010037	1
0.7666	1.557	1.5668	-0.0098068	1
0.7833	1.534	1.5428	-0.0088032	1
0.8	1.51	1.5192	-0.0091674	1
0.8166	1.491	1.496	-0.005032	1
0.8333	1.468	1.4731	-0.0051127	1
0.85	1.449	1.4505	-0.0015446	1
0.8666	1.43	1.4285	0.0015458	1
0.8833	1.411	1.4066	0.0044298	1
0.9	1.387	1.385	0.0019785	1
0.9166	1.368	1.3639	0.004071	1
0.9333	1.349	1.343	0.0059665	1
0.95	1.33	1.3225	0.0075418	1
0.9666	1.316	1.3023	0.013682	1
0.9833	1.297	1.2824	0.014633	1
1	1.278	1.2627	0.015279	1
1.2	1.037	1.0496	-0.012565	1
1.4	0.89	0.87239	0.017609	1
1.6	0.762	0.72512	0.036875	1
1.8	0.658	0.60272	0.055282	1
2	0.573	0.50098	0.072025	1
2.2	0.502	0.41641	0.085593	1
2.4	0.44	0.34611	0.093886	1
[illegible]	[illegible]	[illegible]	0.10031	1

3	0.308	0.19876	0.10924	1
3.2	0.279	0.16521	0.11379	1
3.4	0.251	0.13732	0.11368	1
3.6	0.227	0.11414	0.11286	1
3.8	0.208	0.094871	0.11313	1
4	0.189	0.078856	0.11014	1
4.2	0.171	0.065544	0.10546	1
4.4	0.161	0.05448	0.10652	1
4.6	0.147	0.045283	0.10172	1
4.8	0.133	0.037639	0.095361	1
5	0.128	0.031285	0.096715	1
5.2	0.119	0.026004	0.092996	1
5.4	0.109	0.021615	0.087385	1
5.6	0.1	0.017966	0.082034	1
5.8	0.095	0.014933	0.080067	1
6	0.085	0.012412	0.072588	1
6.2	0.081	0.010317	0.070683	1
6.4	0.081	0.0085754	0.072425	1
6.6	0.071	0.0071278	0.063872	1
6.8	0.071	0.0059246	0.065075	1
7	0.066	0.0049245	0.061076	1
7.2	0.062	0.0040932	0.057907	1
7.4	0.057	0.0034022	0.053598	1
7.6	0.052	0.0028279	0.049172	1
7.8	0.052	0.0023505	0.049649	1
8	0.052	0.0019538	0.050046	1
8.2	0.047	0.0016239	0.045376	1
8.4	0.043	0.0013498	0.04165	1
8.6	0.043	0.001122	0.041878	1
8.8	0.043	0.00093256	0.042067	1
9	0.038	0.00077514	0.037225	1
9.2	0.038	0.00064429	0.037356	1
9.4	0.033	0.00053553	0.032464	1
9.6	0.033	0.00044513	0.032555	1
9.8	0.033	0.00036999	0.03263	1
10	0.029	0.00030753	0.028692	1
12	0.019	4.8407E-005	0.018952	1
14	0.014	7.6194E-006	0.013992	1
16	0.005	1.1993E-006	0.0049988	1
18	0.005	1.8878E-007	0.0049998	1

==

RESULTS FROM VISUAL CURVE MATCHING

VISUAL MATCH PARAMETER ESTIMATES

Estimate
K = 5.0333E-004
y0 = 3.1827E+000

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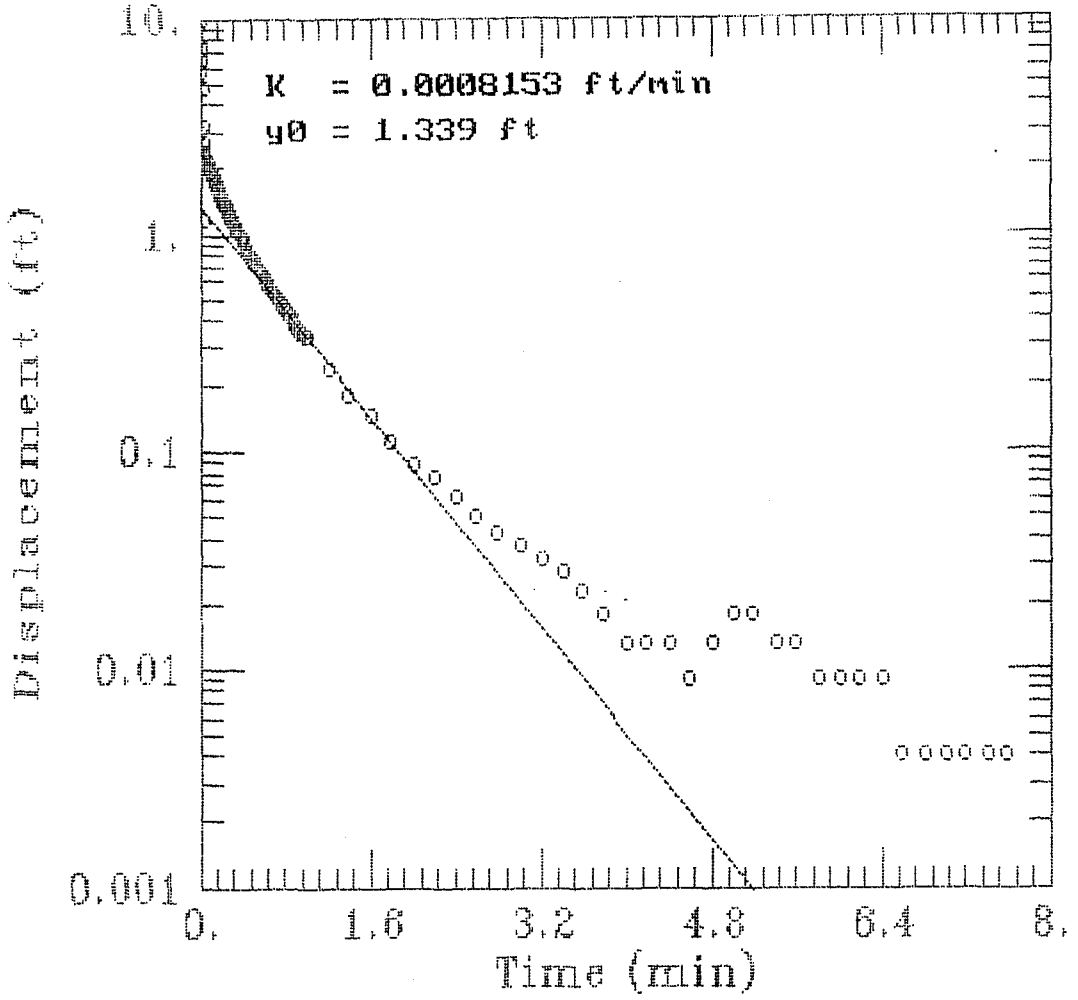
5GW01 Falling Head Test



AQTESOLV

GERAGHTY & MILLER, INC.

Modeling Group

A Q T E S O L V

A Program for

Automatic Estimation of Aquifer Coefficients

From Aquifer Test Data

By:

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and
James O. Rumbaugh, III

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- pumping tests, injection tests, recovery tests, and slug tests

Features:

- Interactive, menu-driven program design
- Nonlinear least-squares estimation of aquifer coefficients
- Statistical analysis of results
- Complete graphical display of results

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A Q T E S O L V   R E S U L T S

Version 1.10

05/12/92 11:52:07

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TEST DESCRIPTION

Data set........... 5gw01f.dsk
Data set title..... 5GW01 Falling Head Test

Knowns and Constants:
No. of data points.................. 172
Radius of well casing............... 0.083
Radius of well...................... 0.66
Aquifer saturated thickness......... 22
Well screen length.................. 15
Static height of water in well...... 22
Log(Re/Rw).......................... 2.561
A, B, C............................. 0.000, 0.000, 1.744

==

ANALYTICAL METHOD

Bouwer-Rice (Unconfined Aquifer Slug Test)

==

RESULTS FROM STATISTICAL CURVE MATCHING

STATISTICAL MATCH PARAMETER ESTIMATES

	Estimate		Std. Error
K =	8.1527E-004	+/-	1.7994E-005
y0 =	1.3388E+000	+/-	3.5496E-002

ANALYSIS OF MODEL RESIDUALS

residual = calculated - observed
weighted residual = residual * weight

Weighted Residual Statistics:
Number of residuals............... 32
Number of estimated parameters.... 2
Degrees of freedom................ 30
Residual mean..................... 0.002797
Residual standard deviation....... 0.009722
Residual variance................. 9.452E-005

Model Residuals:

Time	Observed	Calculated	Residual	Weight
0.7	0.522	0.50735	0.014649	1

0.75	0.479	0.47338	0.0056213	1
0.7666	0.465	0.46261	0.0023894	1
0.7833	0.455	0.45202	0.0029752	1
0.8	0.441	0.44168	-0.0006812	1
0.8166	0.431	0.43163	-0.00063414	1
0.8333	0.422	0.42176	0.00024284	1
0.85	0.408	0.41211	-0.0041062	1
0.8666	0.398	0.40273	-0.0047319	1
0.8833	0.389	0.39352	-0.0045163	1
0.9	0.379	0.38451	-0.0055115	1
0.9166	0.37	0.37576	-0.0057649	1
0.9333	0.36	0.36717	-0.0071664	1
0.95	0.351	0.35876	-0.0077646	1
0.9666	0.346	0.3506	-0.0046037	1
0.9833	0.336	0.34258	-0.0065809	1
1	0.332	0.33474	-0.0027417	1
1.2	0.237	0.25369	-0.016694	1
1.4	0.184	0.19227	-0.0082701	1
1.6	0.146	0.14572	0.0002822	1
1.8	0.113	0.11044	0.0025633	1
2	0.089	0.083698	0.0053021	1
2.2	0.075	0.063433	0.011567	1
2.4	0.061	0.048075	0.012925	1
2.6	0.051	0.036435	0.014565	1
2.8	0.042	0.027613	0.014387	1
3	0.037	0.020928	0.016072	1
3.2	0.032	0.015861	0.016139	1
3.4	0.028	0.01202	0.01598	1
3.6	0.023	0.0091101	0.01389	1

==

RESULTS FROM VISUAL CURVE MATCHING

VISUAL MATCH PARAMETER ESTIMATES

	Estimate
K =	8.1527E-004
y0 =	1.3388E+000

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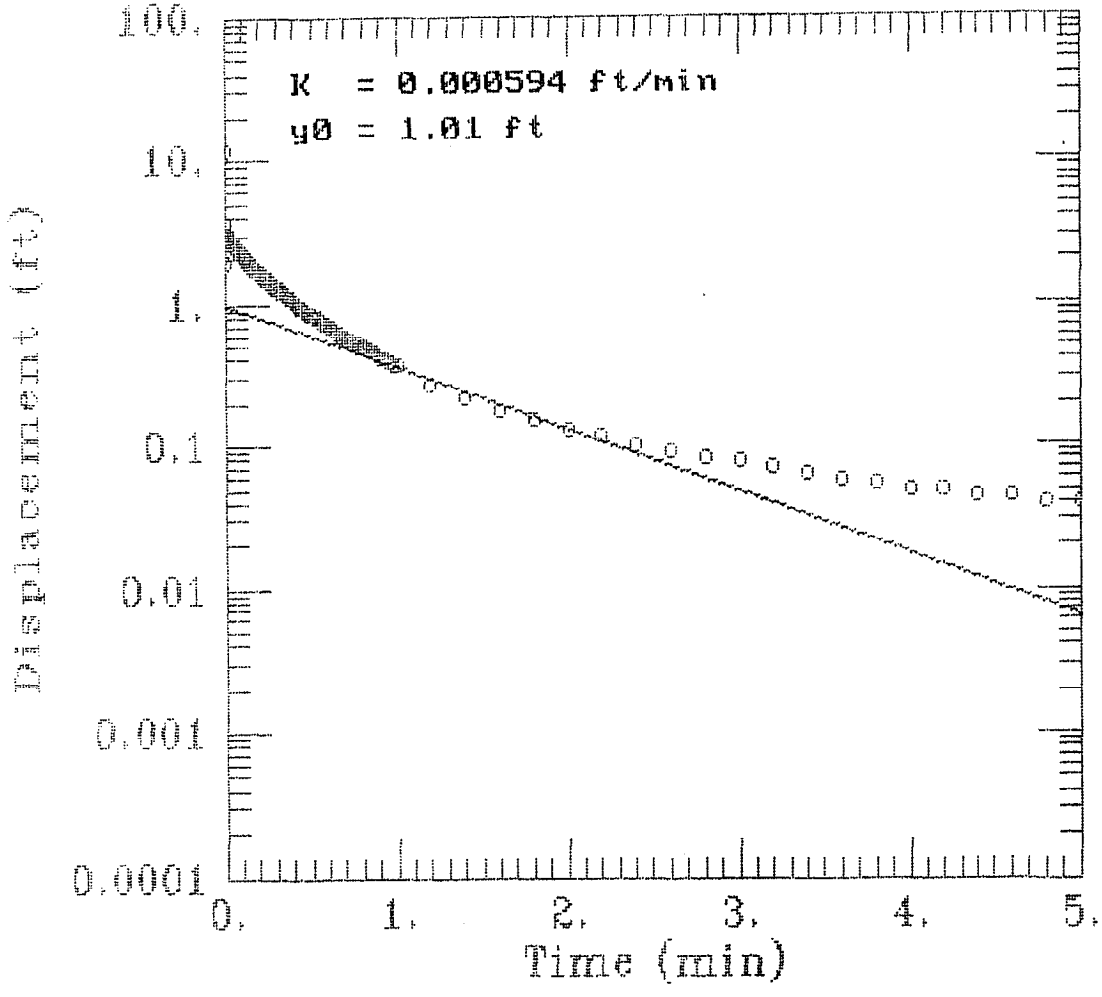
5GW01 RISING HEAD TEST



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Features:

- Interactive, menu-driven program design

- Nonlinear least-squares estimation of aquifer coefficients

- Statistical analysis of results

- Complete graphical display of results

A Q T E S O L V   R E S U L T S
Version 1.10

05/10/92 14:52:19

TEST DESCRIPTION

Data set........... B:5gw01r.dsk
Data set title..... 5GW01 RISING HEAD TEST

Knowns and Constants:
- No. of data points.................. 187
- Radius of well casing............... 0.083
- Radius of well...................... 0.66
- Aquifer saturated thickness......... 22
- Well screen length.................. 15
- Static height of water in well...... 22
- Log(Re/Rw).......................... 2.561
- A, B, C............................. 0.000, 0.000, 1.744

ANALYTICAL METHOD

Bouwer-Rice (Unconfined Aquifer Slug Test)

RESULTS FROM STATISTICAL CURVE MATCHING

STATISTICAL MATCH PARAMETER ESTIMATES

	Estimate		Std. Error
K =	5.9397E-004	+/-	2.7507E-005
y0 =	1.0096E+000	+/-	5.2407E-002

ANALYSIS OF MODEL RESIDUALS

residual = calculated - observed
weighted residual = residual * weight

Weighted Residual Statistics:
- Number of residuals............... 17
- Number of estimated parameters.... 2
- Degrees of freedom................ 15
- Residual mean..................... 0.002167
- Residual standard deviation....... 0.01645
- Residual variance................. 0.0002705

Model Residuals:

Time	Observed	Calculated	Residual	Weight
0.9	0.414	0.40682	0.0071788	1
0.9166	0.409	0.40006	0.0089419	1
0.9333	0.399	0.39337	0.0056324	1

0.9666	0.385	0.38036	0.004641	1
0.9833	0.376	0.374	0.002002	1
1	0.371	0.36774	0.0032567	1
1.2	0.271	0.30049	-0.029488	1
1.4	0.219	0.24553	-0.026533	1
1.6	0.181	0.20063	-0.019628	1
1.8	0.153	0.16394	-0.010936	1
2	0.134	0.13395	4.5558E-005	1
2.2	0.115	0.10946	0.005544	1
2.4	0.1	0.089438	0.010562	1
2.6	0.091	0.073081	0.017919	1
2.8	0.081	0.059715	0.021285	1
3	0.077	0.048794	0.028206	1

==

RESULTS FROM VISUAL CURVE MATCHING

VISUAL MATCH PARAMETER ESTIMATES

	Estimate
K =	5.9397E-004
y0 =	1.0096E+000

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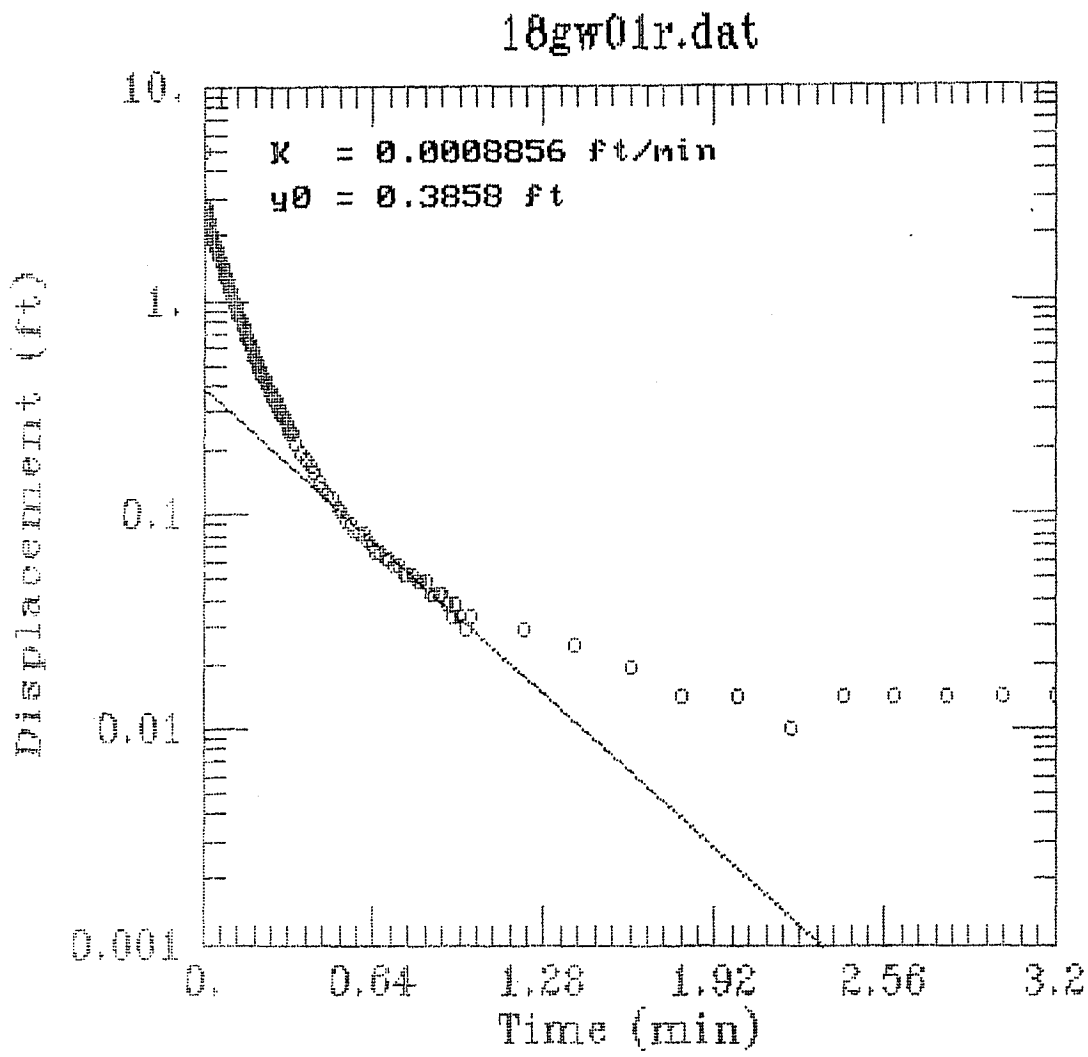

AQTESOLV

GERAGHTY & MILLER, INC.

Modeling Group

A Q T E S O L V

A Program for

Automatic Estimation of Aquifer Coefficients

From Aquifer Test Data

By:

Glenn M. Duffield
and
James O. Rumbaugh, III

Geraghty & Miller Modeling Group
1895 Preston White Drive, Suite 301
Reston, VA 22091

(703) 476 - 0335

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Features:

- o Interactive, menu-driven program design

- o Nonlinear least-squares estimation of aquifer coefficients

- o Statistical analysis of results

- o Complete graphical display of results

<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<>>

A Q T E S O L V   R E S U L T S

Version 1.10

05/09/92 13:11:35

==

TEST DESCRIPTION

Data set........... B:18gw01rs.dat
Data set title..... 18gw01r.dat

Knowns and Constants:
No. of data points.................. 187
Radius of well casing............... 0.083
Radius of well...................... 0.66
Aquifer saturated thickness......... 16.75
Well screen length.................. 25
Static height of water in well...... 16.75
Log(Re/Rw).......................... 2.507
A, B, C............................. 0.000, 0.000, 2.225

==

ANALYTICAL METHOD

Bouwer-Rice (Unconfined Aquifer Slug Test)

==

RESULTS FROM STATISTICAL CURVE MATCHING

STATISTICAL MATCH PARAMETER ESTIMATES

	Estimate		Std. Error
K =	8.8559E-004	+/-	3.5159E-005
y0 =	3.8583E-001	+/-	2.4222E-002

ANALYSIS OF MODEL RESIDUALS

residual = calculated - observed
weighted residual = residual * weight

Weighted Residual Statistics:
Number of residuals............... 39
Number of estimated parameters.... 2
Degrees of freedom................ 37
Residual mean..................... 0.001152
Residual standard deviation....... 0.005824
Residual variance................. 3.392E-005

Model Residuals:

Time	Observed	Calculated	Residual	Weight
0.45	0.133	0.12171	0.011292	1
0.4666	0.123	0.11664	0.0063633	1
0.4833	0.119	0.11175	0.0072521	1

0.5166	0.104	0.1026	0.0013971	1
0.5333	0.095	0.098302	-0.0033024	1
0.55	0.09	0.094182	-0.0041821	1
0.5666	0.085	0.090258	-0.0052577	1
0.5833	0.081	0.086475	-0.0054746	1
0.6	0.081	0.08285	-0.0018501	1
0.6166	0.076	0.079398	-0.0033978	1
0.6333	0.071	0.07607	-0.0050699	1
0.65	0.067	0.072882	-0.0058815	1
0.6666	0.067	0.069845	-0.0028446	1
0.6833	0.062	0.066917	-0.0049172	1
0.7	0.062	0.064112	-0.0021124	1
0.7166	0.057	0.061441	-0.0044409	1
0.7333	0.057	0.058866	-0.0018657	1
0.75	0.052	0.056398	-0.0043983	1
0.7666	0.052	0.054048	-0.0020483	1
0.7833	0.052	0.051783	0.00021708	1
0.8	0.048	0.049612	-0.0016125	1
0.8166	0.048	0.047545	0.00045481	1
0.8333	0.048	0.045552	0.0024476	1
0.85	0.043	0.043643	-0.00064308	1
0.8666	0.043	0.041825	0.0011755	1
0.8833	0.043	0.040071	0.0029285	1
0.9	0.043	0.038392	0.0046081	1
0.9166	0.038	0.036792	0.0012078	1
0.9333	0.033	0.03525	-0.0022501	1
0.95	0.038	0.033773	0.0042274	1
0.9666	0.033	0.032365	0.00063466	1
0.9833	0.029	0.031009	-0.0020088	1
1	0.033	0.029709	0.0032909	1
1.2	0.029	0.01779	0.01121	1
1.4	0.024	0.010653	0.013347	1
1.6	0.019	0.0063794	0.012621	1
1.8	0.014	0.0038202	0.01018	1
2	0.014	0.0022876	0.011712	1

==

RESULTS FROM VISUAL CURVE MATCHING

VISUAL MATCH PARAMETER ESTIMATES

		Estimate
K	=	8.8559E-004
y0	=	3.8583E-001

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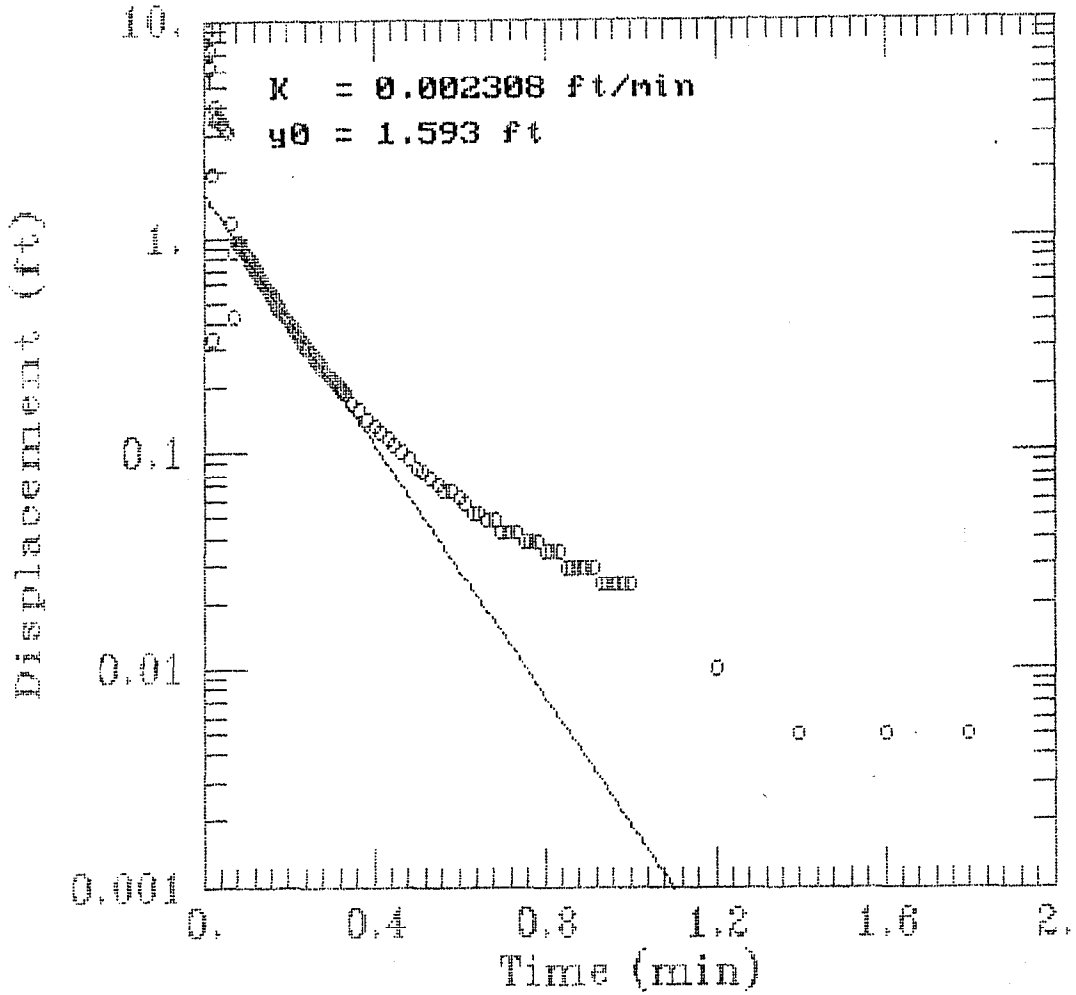
18GW01 Falling Head Test



AQTESOLV

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A Q T E S O L V   R E S U L T S

Version 1.10

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TEST DESCRIPTION

Data set........... B:18gw01f.dsk
Data set title..... 18GW01 Falling Head Test

Knowns and Constants:
- No. of data points................. 150
- Radius of well casing.............. 0.083
- Radius of well..................... 0.66
- Aquifer saturated thickness......... 16.75
- Well screen length................. 25
- Static height of water in well...... 16.75
- Log(Re/Rw)......................... 2.507
- A, B, C............................ 0.000, 0.000, 2.225

==

ANALYTICAL METHOD

Bouwer-Rice (Unconfined Aquifer Slug Test)

==

RESULTS FROM STATISTICAL CURVE MATCHING

STATISTICAL MATCH PARAMETER ESTIMATES

	Estimate		Std. Error
K =	2.3076E-003	+/-	2.3572E-005
y0 =	1.5927E+000	+/-	1.8282E-002

ANALYSIS OF MODEL RESIDUALS

residual = calculated - observed
weighted residual = residual * weight

Weighted Residual Statistics:
- Number of residuals............... 89
- Number of estimated parameters.... 2
- Degrees of freedom................ 87
- Residual mean..................... 0.00356
- Residual standard deviation....... 0.0162
- Residual variance................. 0.0002624

Model Residuals:

Time	Observed	Calculated	Residual	Weight
0.0933	0.888	0.85396	0.034043	1

0.1033	0.817	0.79877	0.01823	1
0.1066	0.798	0.78135	0.016648	1
0.11	0.779	0.7638	0.015196	1
0.1133	0.76	0.74715	0.012851	1
0.1166	0.741	0.73086	0.010143	1
0.12	0.722	0.71444	0.0075575	1
0.1233	0.703	0.69886	0.0041363	1
0.1266	0.684	0.68362	0.00037543	1
0.13	0.669	0.66827	0.00072886	1
0.1333	0.65	0.6537	-0.0036991	1
0.1366	0.636	0.63944	-0.0034448	1
0.14	0.622	0.62508	-0.0030836	1
0.1433	0.603	0.61145	-0.0084533	1
0.1466	0.589	0.59812	-0.0091202	1
0.15	0.574	0.58469	-0.010687	1
0.1533	0.56	0.57194	-0.011938	1
0.1566	0.546	0.55947	-0.013466	1
0.16	0.536	0.5469	-0.010901	1
0.1633	0.522	0.53498	-0.012976	1
0.1666	0.508	0.52331	-0.01531	1
0.17	0.499	0.51156	-0.012557	1
0.1733	0.484	0.5004	-0.016403	1
0.1766	0.475	0.48949	-0.014491	1
0.18	0.465	0.4785	-0.013498	1
0.1833	0.451	0.46806	-0.017064	1
0.1866	0.442	0.45786	-0.015857	1
0.19	0.432	0.44757	-0.015574	1
0.1933	0.423	0.43781	-0.014815	1
0.1966	0.413	0.42827	-0.015268	1
0.2	0.404	0.41865	-0.01465	1
0.2033	0.394	0.40952	-0.015521	1
0.2066	0.385	0.40059	-0.015591	1
0.21	0.38	0.39159	-0.011594	1
0.2133	0.37	0.38306	-0.013055	1
0.2166	0.361	0.3747	-0.013702	1
0.22	0.351	0.36629	-0.015287	1
0.2233	0.347	0.3583	-0.0113	1
0.2266	0.342	0.35049	-0.008487	1
0.23	0.332	0.34262	-0.010615	1
0.2333	0.328	0.33514	-0.0071445	1
0.2366	0.318	0.32784	-0.0098365	1
0.24	0.313	0.32047	-0.0074737	1
0.2433	0.309	0.31349	-0.0044855	1
0.2466	0.299	0.30665	-0.0076498	1
0.25	0.294	0.29976	-0.0057628	1
0.2533	0.29	0.29323	-0.0032263	1
0.2566	0.285	0.28683	-0.0018324	1
0.26	0.275	0.28039	-0.0053904	1
0.2633	0.271	0.27428	-0.0032764	1
0.2666	0.266	0.2683	-0.0022956	1
0.27	0.261	0.26227	-0.00127	1
0.2733	0.257	0.25655	0.00044895	1
0.2766	0.252	0.25096	0.0010432	1
0.28	0.247	0.24532	0.0016794	1
0.2833	0.242	0.23997	0.0020288	1
0.2866	0.238	0.23474	0.0032615	1
0.29	0.233	0.22947	0.0035334	1
0.2933	0.228	0.22446	0.0035371	1
0.2966	0.223	0.21957	0.0034316	1
0.3	0.219	0.21464	0.0043629	1
0.3033	0.219	0.20996	0.0090431	1
0.3066	0.214	0.20538	0.0086214	1
0.31	0.209	0.20077	0.0082339	1
0.3133	0.204	0.19639	0.0076118	1
0.3166	0.204	0.19211	0.011894	1

0.3233	0.195	0.1837	0.011303	1
0.3266	0.195	0.17969	0.015309	1
0.33	0.19	0.17566	0.014345	1
0.3333	0.185	0.17182	0.013175	1
0.35	0.171	0.15369	0.017315	1
0.3666	0.157	0.13755	0.019448	1
0.3833	0.143	0.12303	0.019969	1
0.4	0.133	0.11004	0.022958	1
0.4166	0.124	0.098491	0.025509	1
0.4333	0.114	0.088093	0.025907	1
0.45	0.109	0.078793	0.030207	1
0.4666	0.1	0.070522	0.029478	1
0.4833	0.095	0.063077	0.031923	1
0.5	0.086	0.056417	0.029583	1
0.5166	0.081	0.050495	0.030505	1
0.5333	0.076	0.045164	0.030836	1
0.55	0.071	0.040396	0.030604	1
0.5666	0.067	0.036156	0.030844	1
0.5833	0.067	0.032339	0.034661	1
0.6	0.062	0.028925	0.033075	1

===

RESULTS FROM VISUAL CURVE MATCHING

VISUAL MATCH PARAMETER ESTIMATES

	Estimate
K =	2.3076E-003
y0 =	1.5927E+000

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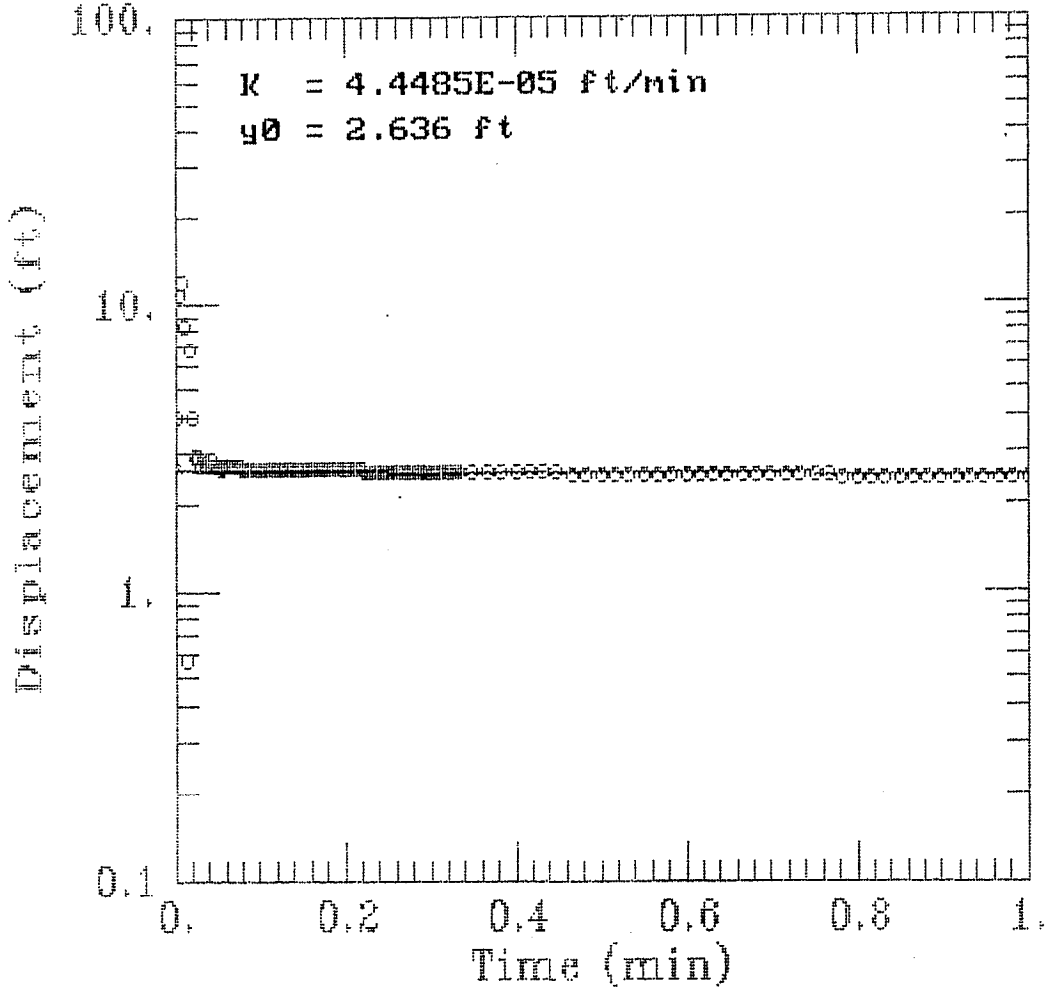
18GW03 RISING HEAD TEST



AQTESOLV

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A Q T E S O L V   R E S U L T S
Version 1.10

05/10/92 14:36:30

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TEST DESCRIPTION

Data set........... B:18gw03r.dsk
Data set title..... 18GW03 RISING HEAD TEST

Knowns and Constants:
- No. of data points.................. 203
- Radius of well casing............... 0.083
- Radius of well...................... 0.66
- Aquifer saturated thickness......... 16
- Well screen length.................. 10
- Static height of water in well...... 16
- Log(Re/Rw).......................... 2.251
- A, B, C............................. 0.000, 0.000, 1.504

==

ANALYTICAL METHOD

Bouwer-Rice (Unconfined Aquifer Slug Test)

==

RESULTS FROM STATISTICAL CURVE MATCHING

STATISTICAL MATCH PARAMETER ESTIMATES

	Estimate		Std. Error
K =	4.4485E-005	+/-	3.4489E-007
y0 =	2.6359E+000	+/-	3.4302E-003

ANALYSIS OF MODEL RESIDUALS

residual = calculated - observed
weighted residual = residual * weight

Weighted Residual Statistics:
- Number of residuals............... 189
- Number of estimated parameters.... 2
- Degrees of freedom................ 187
- Residual mean..................... 0.001761
- Residual standard deviation....... 0.03764
- Residual variance................. 0.001416

Model Residuals:

Time	Observed	Calculated	Residual	Weight
0.05	2.726	2.6283	0.097694	1
0.0533	2.683	2.6278	0.055191	1

0.0633	2.702	2.6263	0.075699	1
0.0666	2.698	2.6258	0.072196	1
0.07	2.688	2.6253	0.062708	1
0.0733	2.693	2.6248	0.068205	1
0.0766	2.688	2.6243	0.063702	1
0.08	2.683	2.6238	0.059214	1
0.0833	2.683	2.6233	0.059711	1
0.0866	2.683	2.6228	0.060207	1
0.09	2.679	2.6223	0.056719	1
0.0933	2.679	2.6218	0.057215	1
0.0966	2.674	2.6213	0.052712	1
0.1	2.674	2.6208	0.053223	1
0.1033	2.669	2.6203	0.048719	1
0.1066	2.669	2.6198	0.049215	1
0.11	2.665	2.6193	0.045726	1
0.1133	2.665	2.6188	0.046222	1
0.1166	2.66	2.6183	0.041718	1
0.12	2.66	2.6178	0.042229	1
0.1233	2.655	2.6173	0.037724	1
0.1266	2.655	2.6168	0.03822	1
0.13	2.655	2.6163	0.03873	1
0.1333	2.65	2.6158	0.034226	1
0.1366	2.65	2.6153	0.034721	1
0.14	2.646	2.6148	0.031231	1
0.1433	2.646	2.6143	0.031726	1
0.1466	2.646	2.6138	0.032221	1
0.15	2.641	2.6133	0.027731	1
0.1533	2.641	2.6128	0.028226	1
0.1566	2.641	2.6123	0.02872	1
0.16	2.636	2.6118	0.02423	1
0.1633	2.636	2.6113	0.024724	1
0.1666	2.636	2.6108	0.025219	1
0.17	2.636	2.6103	0.025728	1
0.1733	2.631	2.6098	0.021222	1
0.1766	2.631	2.6093	0.021716	1
0.18	2.631	2.6088	0.022225	1
0.1833	2.627	2.6083	0.018719	1
0.1866	2.627	2.6078	0.019213	1
0.19	2.627	2.6073	0.019722	1
0.1933	2.627	2.6068	0.020215	1
0.1966	2.627	2.6063	0.020709	1
0.2	2.622	2.6058	0.016217	1
0.2033	2.622	2.6053	0.016711	1
0.2066	2.622	2.6048	0.017204	1
0.21	2.617	2.6043	0.012712	1
0.2133	2.617	2.6038	0.013205	1
0.2166	2.617	2.6033	0.013698	1
0.22	2.617	2.6028	0.014206	1
0.2233	2.612	2.6023	0.0096986	1
0.2266	2.612	2.6018	0.010191	1
0.23	2.612	2.6013	0.010699	1
0.2333	2.612	2.6008	0.011191	1
0.2366	2.608	2.6003	0.0076837	1
0.24	2.608	2.5998	0.008191	1
0.2433	2.608	2.5993	0.0086832	1
0.2466	2.608	2.5988	0.0091753	1
0.25	2.608	2.5983	0.0096822	1
0.2533	2.603	2.5978	0.0051742	1
0.2566	2.603	2.5973	0.005666	1
0.26	2.603	2.5968	0.0061726	1
0.2633	2.603	2.5963	0.0066643	1
0.2666	2.598	2.5958	0.0021559	1
0.27	2.598	2.5953	0.0026622	1
0.2733	2.598	2.5948	0.0031536	1

0.2833	2.594	2.5934	0.000642	1
0.2866	2.594	2.5929	0.001133	1
0.29	2.594	2.5924	0.0016388	1
0.2933	2.594	2.5919	0.0021296	1
0.2966	2.594	2.5914	0.0026203	1
0.3	2.589	2.5909	-0.0018742	1
0.3033	2.589	2.5904	-0.0013837	1
0.3066	2.589	2.5899	-0.00089328	1
0.31	2.589	2.5894	-0.00038809	1
0.3133	2.589	2.5889	0.00010215	1
0.3166	2.584	2.5884	-0.0044077	1
0.32	2.584	2.5879	-0.0039028	1
0.3233	2.584	2.5874	-0.0034128	1
0.3266	2.584	2.5869	-0.002923	1
0.33	2.584	2.5864	-0.0024184	1
0.3333	2.584	2.5859	-0.0019287	1
0.35	2.579	2.5835	-0.004452	1
0.3666	2.575	2.581	-0.0059926	1
0.3833	2.57	2.5785	-0.0085206	1
0.4	2.565	2.5761	-0.011051	1
0.4166	2.56	2.5736	-0.013599	1
0.4333	2.556	2.5711	-0.015134	1
0.45	2.551	2.5687	-0.017671	1
0.4666	2.546	2.5662	-0.020226	1
0.4833	2.546	2.5638	-0.017768	1
0.5	2.542	2.5613	-0.019313	1
0.5166	2.537	2.5589	-0.021874	1
0.5333	2.532	2.5564	-0.024424	1
0.55	2.532	2.554	-0.021975	1
0.5666	2.527	2.5515	-0.024544	1
0.5833	2.523	2.5491	-0.0261	1
0.6	2.518	2.5467	-0.028659	1
0.6166	2.513	2.5442	-0.031234	1
0.6333	2.513	2.5418	-0.028798	1
0.65	2.508	2.5394	-0.031363	1
0.6666	2.504	2.5369	-0.032946	1
0.6833	2.499	2.5345	-0.035516	1
0.7	2.499	2.5321	-0.033089	1
0.7166	2.494	2.5297	-0.035678	1
0.7333	2.489	2.5273	-0.038255	1
0.75	2.485	2.5248	-0.039835	1
0.7666	2.485	2.5224	-0.037431	1
0.7833	2.48	2.52	-0.040015	1
0.8	2.475	2.5176	-0.042602	1
0.8166	2.475	2.5152	-0.040205	1
0.8333	2.471	2.5128	-0.041796	1
0.85	2.466	2.5104	-0.044389	1
0.8666	2.466	2.508	-0.041999	1
0.8833	2.461	2.5056	-0.044597	1
0.9	2.456	2.5032	-0.047198	1
0.9166	2.456	2.5008	-0.044815	1
0.9333	2.452	2.4984	-0.04642	1
0.95	2.452	2.496	-0.044027	1
0.9666	2.447	2.4937	-0.04665	1
0.9833	2.442	2.4913	-0.049262	1
1	2.442	2.4889	-0.046876	1
1.2	2.4	2.4605	-0.060478	1
1.4	2.371	2.4324	-0.061405	1
1.6	2.343	2.4047	-0.061651	1
1.8	2.314	2.3772	-0.063215	1
2	2.286	2.3501	-0.064091	1
2.2	2.258	2.3233	-0.065277	1
2.4	2.234	2.2968	-0.062768	1
2.6	2.21	2.2706	-0.060563	1
2.8	2.187	2.2447	-0.057656	1

3.2	2.139	2.1931	-0.054726	1
3.4	2.116	2.1687	-0.052696	1
3.6	2.092	2.144	-0.051951	1
3.8	2.068	2.1195	-0.051489	1
4	2.045	2.0953	-0.050306	1
4.2	2.026	2.0714	-0.045399	1
4.4	2.002	2.0478	-0.045764	1
4.6	1.978	2.0244	-0.0464	1
4.8	1.959	2.0013	-0.042302	1
5	1.941	1.9785	-0.037467	1
5.2	1.917	1.9559	-0.038893	1
5.4	1.893	1.9336	-0.040576	1
5.6	1.874	1.9115	-0.037515	1
5.8	1.855	1.8897	-0.034705	1
6	1.836	1.8681	-0.032143	1
6.2	1.817	1.8468	-0.029828	1
6.4	1.799	1.8258	-0.026756	1
6.6	1.78	1.8049	-0.024924	1
6.8	1.765	1.7843	-0.01933	1
7	1.746	1.764	-0.017971	1
7.2	1.728	1.7438	-0.015845	1
7.4	1.713	1.7239	-0.010948	1
7.6	1.69	1.7043	-0.014278	1
7.8	1.675	1.6848	-0.0098322	1
8	1.657	1.6656	-0.0086085	1
8.2	1.642	1.6466	-0.0046041	1
8.4	1.628	1.6278	0.00018339	1
8.6	1.609	1.6092	-0.00024345	1
8.8	1.595	1.5909	0.0041178	1
9	1.576	1.5727	0.0032695	1
9.2	1.562	1.5548	0.0072142	1
9.4	1.543	1.537	0.0059541	1
9.6	1.529	1.5195	0.0094915	1
9.8	1.515	1.5022	0.012829	1
10	1.5	1.485	0.014968	1
12	1.349	1.324	0.024968	1
14	1.221	1.1805	0.040513	1
16	1.103	1.0525	0.050496	1
18	0.998	0.9384	0.059603	1
20	0.904	0.83666	0.067339	1
22	0.814	0.74595	0.068046	1
24	0.733	0.66508	0.067918	1
26	0.662	0.59298	0.069023	1
28	0.596	0.52869	0.067311	1
30	0.53	0.47137	0.058629	1
32	0.473	0.42027	0.052732	1
34	0.425	0.3747	0.050296	1
36	0.378	0.33408	0.043919	1
38	0.331	0.29786	0.033139	1
40	0.293	0.26557	0.027431	1
42	0.26	0.23678	0.023223	1
44	0.227	0.21111	0.015893	1
46	0.193	0.18822	0.0047802	1

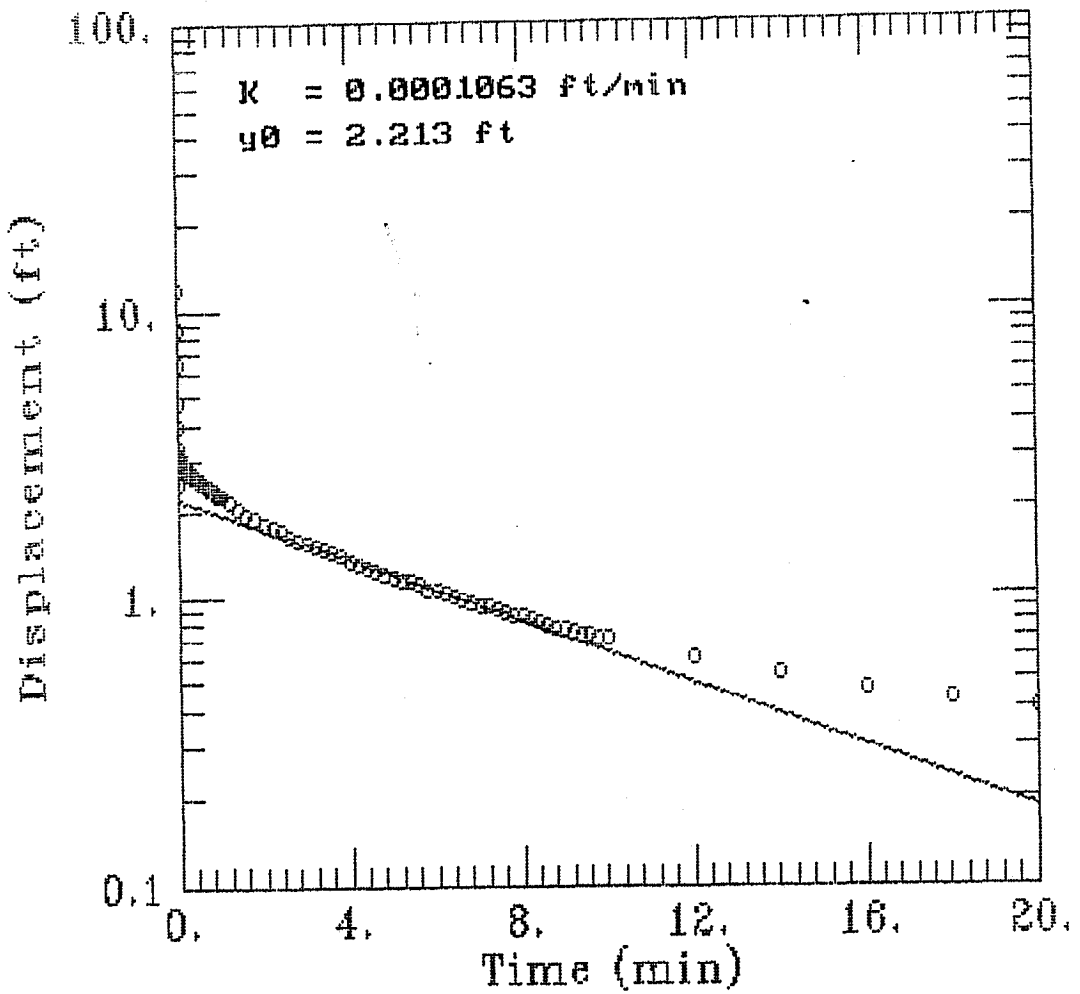
==========

RESULTS FROM VISUAL CURVE MATCHING

VISUAL MATCH PARAMETER ESTIMATES

	Estimate
K =	4.4485E-005
y0 =	2.6359E+000

18GW02 RISING SLUG TEST



AQTESOLV

GERAGHTY & MILLER, INC.

Modeling Group

A Q T E S O L V

A Program for

Automatic Estimation of Aquifer Coefficients

From Aquifer Test Data

By:

Glenn M. Duffield
and
James O. Rumbaugh, III

Geraghty & Miller Modeling Group
1895 Preston White Drive, Suite 301
Reston, VA 22091

(703) 476 - 0335

A Q T E S O L V is a user-friendly program designed to analyze data from aquifer tests automatically. Aquifer coefficients for a variety of aquifer test conditions can be estimated by A Q T E S O L V , including the following:

- o confined aquifers, unconfined aquifers, and leaky aquifers
- o pumping tests, injection tests, recovery tests, and slug tests

Features:

- o Interactive, menu-driven program design
- o Nonlinear least-squares estimation of aquifer coefficients
- o Statistical analysis of results
- o Complete graphical display of results

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A Q T E S O L V   R E S U L T S
Version 1.10

05/09/92 13:37:24

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TEST DESCRIPTION

Data set........... 18gw02r.dsk
Data set title..... 18GW02 RISING SLUG TEST

Knowns and Constants:
No. of data points.................. 202
Radius of well casing............... 0.083
Radius of well...................... 0.66
Aquifer saturated thickness......... 24.5
Well screen length.................. 10
Static height of water in well...... 24.5
Log(Re/Rw).......................... 2.478
A, B, C............................. 0.000, 0.000, 1.504

==

ANALYTICAL METHOD

Bouwer-Rice (Unconfined Aquifer Slug Test)

==

RESULTS FROM STATISTICAL CURVE MATCHING

STATISTICAL MATCH PARAMETER ESTIMATES

	Estimate		Std. Error
K =	1.0635E-004	+/-	1.4608E-006
y0 =	2.2130E+000	+/-	1.9318E-002

ANALYSIS OF MODEL RESIDUALS

residual = calculated - observed
weighted residual = residual * weight

Weighted Residual Statistics:
Number of residuals............... 31
Number of estimated parameters.... 2
Degrees of freedom................ 29
Residual mean..................... 0.0003892
Residual standard deviation....... 0.01848
Residual variance................. 0.0003417

Model Residuals:

Time	Observed	Calculated	Residual	Weight
2.6	1.64	1.6006	0.039435	1
2.8	1.588	1.5612	0.026832	1

3.4	1.455	1.4467	0.0082966	1
3.6	1.412	1.413	-0.0010426	1
3.8	1.37	1.3783	-0.0082616	1
4	1.327	1.3443	-0.017337	1
4.2	1.293	1.3112	-0.018247	1
4.4	1.26	1.279	-0.018971	1
4.6	1.227	1.2475	-0.02049	1
4.8	1.198	1.2168	-0.018784	1
5	1.17	1.1868	-0.016834	1
5.2	1.141	1.1576	-0.016621	1
5.4	1.113	1.1291	-0.016127	1
5.6	1.084	1.1013	-0.017334	1
5.8	1.056	1.0742	-0.018226	1
6	1.032	1.0478	-0.015784	1
6.2	1.008	1.022	-0.013994	1
6.4	0.989	0.99684	-0.0078384	1
6.6	0.965	0.9723	-0.0073019	1
6.8	0.946	0.94837	-0.0023694	1
7	0.927	0.92503	0.001974	1
7.2	0.908	0.90226	0.0057429	1
7.4	0.889	0.88005	0.0089513	1
7.6	0.866	0.85839	0.0076131	1
7.8	0.851	0.83726	0.013742	1
8	0.837	0.81665	0.02035	1
8.2	0.823	0.79655	0.026451	1
8.4	0.804	0.77694	0.027058	1
8.6	0.79	0.75782	0.032182	1

==

RESULTS FROM VISUAL CURVE MATCHING

VISUAL MATCH PARAMETER ESTIMATES

	Estimate
K =	1.0635E-004
y0 =	2.2130E+000

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R7GW05R.N
(POOR TEST)

0.0000	16.022
0.0033	17.364
0.0066	15.695
0100	13.774
0133	12.160
0.0166	11.345
0.0200	11.932
0.0233	12.600
0.0266	13.145
0.0300	13.249
0.0333	13.045
0.0366	12.794
0.0400	12.652
0.0433	12.581
0.0466	12.619
0.0500	12.676
0.0533	12.714
0.0566	12.733
0.0600	13.363
0.0633	15.265
0.0666	14.588
0.0700	12.960
0.0733	12.235
0.0766	12.359
0.0800	12.941
0.0833	13.405
0.0866	13.774
0.0900	13.523
0933	13.396
.0966	13.292
0.1000	13.197
0.1033	13.116
0.1066	13.026
0.1100	13.003
0.1133	12.946
0.1166	12.899
0.1200	12.875
0.1233	12.846
0.1266	12.837
0.1300	12.832
0.1333	12.823
0.1366	12.790
0.1400	12.794
0.1433	12.785
0.1466	12.771
0.1500	12.761
0.1533	12.785
0.1566	12.771
0.1600	12.761
0.1633	12.766
0.1666	12.728
0.1700	12.728
0.1733	12.733
1766	12.709
1800	12.719
0.1833	12.695
0.1866	12.695
0.1900	12.685
0.1933	12.695
0.1966	12.695

0.2000	12.695
0.2033	12.690
0.2066	12.681
2100	12.671
2133	12.681
0.2166	12.685
0.2200	12.676
0.2233	12.681
0.2266	12.690
0.2300	12.700
0.2333	12.700
0.2366	12.685
0.2400	12.685
0.2433	12.685
0.2466	12.685
0.2500	12.690
0.2533	12.685
0.2566	12.695
0.2600	12.690
0.2633	12.685
0.2666	12.690
0.2700	12.690
0.2733	12.690
0.2766	12.690
0.2800	12.690
0.2833	12.690
0.2866	12.690
0.2900	12.690
2933	12.690
.2966	12.690
0.3000	12.685
0.3033	12.685
0.3066	12.685
0.3100	12.685
0.3133	12.685
0.3166	12.685
0.3200	12.685
0.3233	12.685
0.3266	12.685
0.3300	12.685
0.3333	12.685
0.3500	12.690
0.3666	12.685
0.3833	12.685
0.4000	12.685
0.4166	12.685
0.4333	12.685
0.4500	12.685
0.4666	12.685
0.4833	12.685
0.5000	12.685
0.5166	12.685
0.5333	12.685
500	12.685
.5666	12.685
0.5833	12.685
0.6000	12.685
0.6166	12.685
0.6333	12.685
0.6500	12.685

0.6666	12.685
0.6833	12.685
0.7000	12.685
7166	12.685
7333	12.685
0.7500	12.685
0.7666	12.685
0.7833	12.685
0.8000	12.685
0.8166	12.685
0.8333	12.685
0.8500	12.685
0.8666	12.685
0.8833	12.685
0.9000	12.685
0.9166	12.685
0.9333	12.685
0.9500	12.685
0.9666	12.685
0.9833	12.681
1.0000	12.685
1.2000	29.626
1.4000	29.626
1.6000	29.626
1.8000	29.626
2.0000	29.626
2.2000	29.626
2.4000	29.626
6000	29.626
.8000	29.626
3.0000	29.626
3.2000	29.626
3.4000	29.626
3.6000	29.626
3.8000	29.626
4.0000	29.626
4.2000	29.626
4.4000	29.626
4.6000	29.626
4.8000	29.626
5.0000	29.626
5.2000	29.626
5.4000	29.626
5.6000	29.626
5.8000	29.626
6.0000	29.626
6.2000	29.626
6.4000	29.626
6.6000	29.626
6.8000	29.626
7.0000	29.626
7.2000	29.626
4000	29.626
5000	29.626
.8000	29.626
8.0000	29.626
8.2000	29.626
8.4000	29.626
8.6000	29.626
8.8000	29.626

9.0000	29.626
9.2000	29.626
9.4000	29.626
6000	29.626
.8000	29.626
10.0000	29.626
12.0000	29.626
14.0000	29.626
16.0000	29.626
18.0000	29.626
20.0000	29.626
22.0000	29.626
24.0000	29.626
26.0000	29.626
28.0000	29.626
30.0000	29.626
32.0000	29.626
34.0000	29.626
36.0000	29.626
38.0000	29.626
40.0000	29.626
42.0000	29.626
44.0000	29.626
46.0000	29.626
48.0000	29.626
50.0000	29.626
52.0000	29.626
.0000	29.626
0000	29.626
.0000	29.626
60.0000	29.626
62.0000	29.626
64.0000	29.626
66.0000	29.626
68.0000	29.626
70.0000	29.626
72.0000	29.626
74.0000	29.626
76.0000	29.626
78.0000	29.626
80.0000	29.626
82.0000	29.626
84.0000	29.626
86.0000	29.626
88.0000	29.626
90.0000	29.626
92.0000	29.626
94.0000	29.626
96.0000	29.626
98.0000	29.626
100.000	29.626
120.000	29.626
.000	29.626
.000	29.626
.000	29.626
200.000	29.626
220.000	29.626
240.000	29.626
260.000	29.626
280.000	29.626

300.000	29.626
320.000	29.626
340.000	29.626
.000	29.626
.000	29.626
400.000	29.626
420.000	29.626
440.000	29.626
460.000	29.626
480.000	29.626
500.000	29.626
520.000	29.626
540.000	29.626
560.000	29.626
580.000	29.626
600.000	29.626
620.000	29.626
640.000	29.626
660.000	29.626
680.000	29.626
700.000	29.626
720.000	29.626
740.000	29.626
760.000	29.626
780.000	29.626
800.000	29.626
820.000	29.626
840.000	29.626
.000	29.626
0.000	29.626
900.000	29.626
920.000	29.626
940.000	29.626
960.000	29.626
980.000	29.626

R7GW04F.Num

0.0000	15.267
0.0033	15.258
0.0066	15.248
0100	15.243
0133	15.291
0.0166	15.281
0.0200	15.272
0.0233	15.229
0.0266	13.687
0.0300	12.531
0.0333	13.744
0.0366	15.043
0.0400	13.162
0.0433	12.870
0.0466	14.370
0.0500	15.162
0.0533	14.938
0.0566	13.821
0.0600	13.166
0.0633	13.090
0.0666	13.811
0.0700	14.227
0.0733	15.157
0.0766	15.281
0.0800	14.699
0.0833	13.228
0.0866	12.770
0.0900	13.205
.0933	13.615
.0966	14.924
0.1000	15.449
0.1033	14.962
0.1066	14.551
0.1100	13.649
0.1133	13.367
0.1166	13.835
0.1200	15.019
0.1233	15.468
0.1266	15.520
0.1300	15.086
0.1333	14.355
0.1366	13.930
0.1400	14.016
0.1433	14.389
0.1466	14.828
0.1500	15.124
0.1533	15.105
0.1566	14.852
0.1600	14.570
0.1633	14.403
0.1666	14.432
0.1700	14.608
0.1733	14.814
1766	14.928
.1800	14.914
0.1833	14.795
0.1866	14.671
0.1900	14.613
0.1933	14.632
0.1966	14.714

0.2000	14.804
0.2033	14.852
0.2066	14.838
2100	14.790
2133	14.737
0.2166	14.714
0.2200	14.728
0.2233	14.771
0.2266	14.819
0.2300	14.828
0.2333	14.823
0.2366	14.752
0.2400	14.776
0.2433	14.780
0.2466	14.795
0.2500	14.814
0.2533	14.819
0.2566	14.819
0.2600	14.809
0.2633	14.804
0.2666	14.804
0.2700	14.809
0.2733	14.819
0.2766	14.823
0.2800	14.828
0.2833	14.828
0.2866	14.828
0.2900	14.823
2933	14.823
0.2966	14.828
0.3000	14.833
0.3033	14.838
0.3066	14.842
0.3100	14.842
0.3133	14.842
0.3166	14.842
0.3200	14.842
0.3233	14.847
0.3266	14.847
0.3300	14.852
0.3333	14.852
0.3500	14.862
0.3666	14.871
0.3833	14.876
0.4000	14.885
0.4166	14.890
0.4333	14.900
0.4500	14.904
0.4666	14.909
0.4833	14.914
0.5000	14.919
0.5166	14.924
0.5333	14.928
5500	14.938
0.5666	14.943
0.5833	14.943
0.6000	14.947
0.6166	14.952
0.6333	14.957
0.6500	14.962

0.6666	14.966
0.6833	14.971
0.7000	14.971
7166	14.976
7333	14.995
0.7500	14.947
0.7666	14.995
0.7833	15.009
0.8000	14.981
0.8166	14.995
0.8333	15.000
0.8500	15.000
0.8666	15.000
0.8833	15.005
0.9000	15.009
0.9166	15.014
0.9333	15.014
0.9500	15.019
0.9666	15.019
0.9833	15.024
1.0000	15.024
1.2000	15.052
1.4000	15.072
1.6000	15.086
1.8000	15.100
2.0000	15.110
2.2000	15.124
.4000	15.134
6000	15.143
.8000	15.153
3.0000	15.157
3.2000	15.167
3.4000	15.176
3.6000	15.186
3.8000	15.196
4.0000	15.200
4.2000	15.205
4.4000	15.210
4.6000	15.215
4.8000	15.224
5.0000	15.224
5.2000	15.229
5.4000	15.229
5.6000	15.229
5.8000	15.234
6.0000	15.234
6.2000	15.239
6.4000	15.243
6.6000	15.248
6.8000	15.248
7.0000	15.253
7.2000	15.253
.4000	15.253
6000	15.258
.8000	15.258
8.0000	15.258
8.2000	15.258
8.4000	15.262
8.6000	15.262
8.8000	15.267

9.0000	15.267
9.2000	15.267
9.4000	15.267
6000	15.272
8000	15.272
10.0000	15.272
12.0000	15.267
14.0000	15.272

R07 GW07 F.NUM

0.0000	9.370
0.0033	8.132
0.0066	8.117
0100	10.523
.0133	11.665
0.0166	12.575
0.0200	15.888
0.0233	18.139
0.0266	14.758
0.0300	13.522
0.0333	14.313
0.0366	15.874
0.0400	15.245
0.0433	14.379
0.0466	14.639
0.0500	15.250
0.0533	15.065
0.0566	14.862
0.0600	15.042
0.0633	15.122
0.0666	15.065
0.0700	15.094
0.0733	15.146
0.0766	15.160
0.0800	15.174
0.0833	15.198
0.0866	15.217
.0900	15.235
.0933	15.250
0.0966	15.269
0.1000	15.278
0.1033	15.292
0.1066	15.292
0.1100	15.321
0.1133	15.321
0.1166	15.359
0.1200	15.349
0.1233	15.354
0.1266	15.373
0.1300	15.377
0.1333	15.387
0.1366	15.401
0.1400	15.411
0.1433	15.420
0.1466	15.425
0.1500	15.453
0.1533	15.434
0.1566	15.448
0.1600	15.463
0.1633	15.463
0.1666	15.472
0.1700	15.477
.1733	15.486
1766	15.491
0.1800	15.496
0.1833	15.505
0.1866	15.510
0.1900	15.515
0.1933	15.519
0.1966	15.524

0.2000	15.529
0.2033	15.534
0.2066	15.538
2100	15.543
2133	15.548
0.2166	15.553
0.2200	15.553
0.2233	15.557
0.2266	15.562
0.2300	15.567
0.2333	15.567
0.2366	15.571
0.2400	15.571
0.2433	15.576
0.2466	15.586
0.2500	15.581
0.2533	15.581
0.2566	15.586
0.2600	15.590
0.2633	15.590
0.2666	15.595
0.2700	15.595
0.2733	15.600
0.2766	15.600
0.2800	15.605
0.2833	15.605
0.2866	15.605
0.2900	15.609
2933	15.609
.2966	15.609
0.3000	15.614
0.3033	15.614
0.3066	15.619
0.3100	15.619
0.3133	15.623
0.3166	15.623
0.3200	15.628
0.3233	15.628
0.3266	15.628
0.3300	15.633
0.3333	15.633
0.3500	15.647
0.3666	15.657
0.3833	15.666
0.4000	15.671
0.4166	15.680
0.4333	15.685
0.4500	15.690
0.4666	15.694
0.4833	15.699
0.5000	15.704
0.5166	15.704
0.5333	15.709
5500	15.709
.5666	15.713
0.5833	15.718
0.6000	15.718
0.6166	15.718
0.6333	15.723
0.6500	15.723

0.6666	15.723
0.6833	15.728
0.7000	15.728
7166	15.728
7333	15.732
0.7500	15.732
0.7666	15.732
0.7833	15.732
0.8000	15.737
0.8166	15.737
0.8333	15.737
0.8500	15.737
0.8666	15.742
0.8833	15.742
0.9000	15.742
0.9166	15.742
0.9333	15.742
0.9500	15.742
0.9666	15.742
0.9833	15.746
1.0000	15.746
1.2000	15.751
1.4000	15.756
1.6000	15.761
1.8000	15.761
2.0000	15.765
2.2000	15.765
2.4000	15.765
.6000	15.770
.8000	15.770
3.0000	15.770
3.2000	15.770
3.4000	15.770
3.6000	15.775
3.8000	15.775
4.0000	15.775
4.2000	15.775
4.4000	15.775
4.6000	15.775
4.8000	15.775
5.0000	15.775
5.2000	15.775
5.4000	15.775
5.6000	15.775
5.8000	15.775
6.0000	15.780
6.2000	15.780
6.4000	15.780
6.6000	15.775
6.8000	15.780
7.0000	15.780
7.2000	15.780
7.4000	15.780
6000	15.780
.8000	15.780
8.0000	15.780
8.2000	15.780
8.4000	15.780
8.6000	15.780
8.8000	15.780

9.0000	15.780
9.2000	15.780
9.4000	15.780
6000	15.780
8000	15.780
10.0000	15.780
12.0000	15.780
14.0000	15.784
16.0000	15.784
18.0000	15.784
20.0000	15.784
22.0000	15.784

R7GW03F.NUM

0.0000	17.037
0.0033	17.037
0.0066	17.037
0100	17.032
0133	17.032
0.0166	17.037
0.0200	17.037
0.0233	17.032
0.0266	17.032
0.0300	17.042
0.0333	17.028
0.0366	16.875
0.0400	15.134
0.0433	14.398
0.0466	14.919
0.0500	14.966
0.0533	14.842
0.0566	14.690
0.0600	15.329
0.0633	14.924
0.0666	14.546
0.0700	14.637
0.0733	14.752
0.0766	14.990
0.0800	13.696
0.0833	12.445
0.0866	11.914
0.0900	11.943
0933	12.421
.0966	12.832
0.1000	13.367
0.1033	14.184
0.1066	14.747
0.1100	16.078
0.1133	15.067
0.1166	15.902
0.1200	15.086
0.1233	14.513
0.1266	14.523
0.1300	14.322
0.1333	14.651
0.1366	14.995
0.1400	15.114
0.1433	15.105
0.1466	14.933
0.1500	14.780
0.1533	14.737
0.1566	14.799
0.1600	14.914
0.1633	15.000
0.1666	15.014
0.1700	14.962
1733	14.914
.766	14.900
1800	14.928
0.1833	14.971
0.1866	15.005
0.1900	15.005
0.1933	14.995
0.1966	14.981

0.2000	14.986
0.2033	14.995
0.2066	15.019
.2100	15.052
.2133	15.052
0.2166	15.038
0.2200	15.029
0.2233	15.038
0.2266	15.057
0.2300	15.067
0.2333	14.857
0.2366	15.143
0.2400	15.114
0.2433	15.205
0.2466	15.138
0.2500	15.095
0.2533	15.067
0.2566	15.072
0.2600	15.114
0.2633	15.143
0.2666	15.153
0.2700	15.143
0.2733	15.129
0.2766	15.129
0.2800	15.143
0.2833	15.157
0.2866	15.167
0.2900	15.172
.2933	15.172
0.2966	15.172
0.3000	15.181
0.3033	15.186
0.3066	15.196
0.3100	15.200
0.3133	15.200
0.3166	15.205
0.3200	15.210
0.3233	15.215
0.3266	15.219
0.3300	15.229
0.3333	15.229
0.3500	15.258
0.3666	15.281
0.3833	15.301
0.4000	15.320
0.4166	15.348
0.4333	15.372
0.4500	15.396
0.4666	15.415
0.4833	15.434
0.5000	15.453
0.5166	15.472
0.5333	15.491
5500	15.511
.5666	15.530
0.5833	15.544
0.6000	15.563
0.6166	15.577
0.6333	15.596
0.6500	15.620

0.6666	15.582
0.6833	15.630
0.7000	15.654
7166	15.697
7333	15.711
0.7500	15.711
0.7666	15.716
0.7833	15.730
0.8000	15.740
0.8166	15.754
0.8333	15.768
0.8500	15.787
0.8666	15.797
0.8833	15.806
0.9000	15.797
0.9166	15.854
0.9333	15.826
0.9500	15.892
0.9666	15.883
0.9833	15.878
1.0000	15.883
1.2000	16.035
1.4000	16.131
1.6000	16.212
1.8000	16.279
2.0000	16.336
2.2000	16.384
2.4000	16.431
6000	16.470
.8000	16.498
3.0000	16.527
3.2000	16.555
3.4000	16.579
3.6000	16.603
3.8000	16.622
4.0000	16.641
4.2000	16.656
4.4000	16.670
4.6000	16.684
4.8000	16.698
5.0000	16.708
5.2000	16.722
5.4000	16.732
5.6000	16.741
5.8000	16.746
6.0000	16.756
6.2000	16.765
6.4000	16.770
6.6000	16.780
6.8000	16.789
7.0000	16.794
7.2000	16.799
7.4000	16.803
6000	16.813
8000	16.818
8.0000	16.822
8.2000	16.827
8.4000	16.832
8.6000	16.832
8.8000	16.837

9.0000	16.842
9.2000	16.846
9.4000	16.851
6000	16.856
8000	16.861
10.0000	16.865
12.0000	16.894
14.0000	16.923
16.0000	16.946
18.0000	16.961
20.0000	16.975
22.0000	16.980
24.0000	16.994
26.0000	17.008
28.0000	17.018
30.0000	17.023

R7GW08R.NM
(POOR TEST)

0.0000	13.635
0.0033	17.240
0.0066	18.569
0100	14.140
.0133	12.728
0.0166	11.622
0.0200	11.797
0.0233	12.818
0.0266	13.630
0.0300	13.432
0.0333	12.723
0.0366	12.237
0.0400	12.161
0.0433	12.463
0.0466	12.733
0.0500	12.685
0.0533	12.430
0.0566	12.246
0.0600	12.222
0.0633	12.303
0.0666	12.364
0.0700	12.293
0.0733	12.203
0.0766	12.151
0.0800	12.147
0.0833	12.142
0.0866	12.123
0.0900	12.071
.0933	12.048
.0966	12.019
0.1000	12.005
0.1033	11.996
0.1066	11.972
0.1100	11.939
0.1133	11.925
0.1166	11.906
0.1200	11.892
0.1233	11.873
0.1266	11.854
0.1300	11.830
0.1333	11.816
0.1366	11.797
0.1400	11.783
0.1433	11.764
0.1466	11.750
0.1500	11.731
0.1533	11.717
0.1566	11.702
0.1600	11.688
0.1633	11.669
0.1666	11.655
0.1700	11.646
0.1733	11.632
1766	11.617
.1800	11.603
0.1833	11.594
0.1866	11.580
0.1900	11.565
0.1933	11.551
0.1966	11.542

0.2000	11.528
0.2033	11.518
0.2066	11.504
2100	11.494
2133	11.485
0.2166	11.471
0.2200	11.461
0.2233	11.452
0.2266	11.438
0.2300	11.428
0.2333	11.419
0.2366	11.409
0.2400	11.400
0.2433	11.390
0.2466	11.381
0.2500	11.372
0.2533	11.362
0.2566	11.353
0.2600	11.343
0.2633	11.334
0.2666	11.329
0.2700	11.320
0.2733	11.310
0.2766	11.301
0.2800	11.296
0.2833	11.286
0.2866	11.282
2900	11.272
2933	11.268
.2966	11.258
0.3000	11.249
0.3033	11.239
0.3066	11.234
0.3100	11.230
0.3133	11.220
0.3166	11.211
0.3200	11.206
0.3233	11.201
0.3266	11.197
0.3300	11.187
0.3333	11.182
0.3500	11.154
0.3666	11.121
0.3833	11.093
0.4000	11.069
0.4166	11.041
0.4333	11.022
0.4500	11.003
0.4666	10.979
0.4833	10.965
0.5000	10.946
0.5166	10.932
5333	10.918
500	10.903
.5666	10.894
0.5833	10.880
0.6000	10.870
0.6166	10.861
0.6333	10.851
0.6500	10.842

0.6666	10.837
0.6833	10.828
0.7000	10.818
.7166	10.814
.7333	10.809
0.7500	10.799
0.7666	10.795
0.7833	10.790
0.8000	10.785
0.8166	10.785
0.8333	10.776
0.8500	10.776
0.8666	10.771
0.8833	10.766
0.9000	10.766
0.9166	10.762
0.9333	10.757
0.9500	10.757
0.9666	10.752
0.9833	10.747
1.0000	10.747
1.2000	10.724
1.4000	10.714
1.6000	10.705
1.8000	10.705
2.0000	10.700
2.2000	10.700
2.4000	10.695
.6000	10.700
.8000	10.695
3.0000	10.695
3.2000	10.695
3.4000	10.695
3.6000	10.695
3.8000	10.695
4.0000	10.691
4.2000	10.691
4.4000	10.695
4.6000	10.691
4.8000	10.695
5.0000	10.695
5.2000	10.691
5.4000	10.691
5.6000	10.691
5.8000	10.691
6.0000	10.691
6.2000	10.691
6.4000	10.691
6.6000	10.691
6.8000	10.691
7.0000	10.691
7.2000	10.691
7.4000	10.691
6000	10.691
.8000	10.691
8.0000	10.691
8.2000	10.691
8.4000	10.691
8.6000	10.691
8.8000	10.691

9.0000	10.691
9.2000	10.686
9.4000	10.691
.6000	10.691
.8000	10.691
10.0000	10.691
12.0000	10.686
14.0000	10.686

R7GW01F.NUM

0.0000	10.695
0.0033	10.695
0.0066	10.695
0100	10.690
0133	10.690
0.0166	10.681
0.0200	10.686
0.0233	10.700
0.0266	10.700
0.0300	10.681
0.0333	10.767
0.0366	10.461
0.0400	8.408
0.0433	8.973
0.0466	10.164
0.0500	9.619
0.0533	8.030
0.0566	6.818
0.0600	7.043
0.0633	8.901
0.0666	8.150
0.0700	6.080
0.0733	5.050
0.0766	4.882
0.0800	4.858
0.0833	5.146
0.0866	6.032
0900	6.717
0933	6.406
0966	6.056
0.1000	5.246
0.1033	5.428
0.1066	6.578
0.1100	12.798
0.1133	8.777
0.1166	10.035
0.1200	8.839
0.1233	7.393
0.1266	7.618
0.1300	8.140
0.1333	8.676
0.1366	8.906
0.1400	8.638
0.1433	8.365
0.1466	8.274
0.1500	8.379
0.1533	8.533
0.1566	8.600
0.1600	8.566
0.1633	8.513
0.1666	8.499
0.1700	8.537
1733	8.576
1766	8.595
.1800	8.595
0.1833	8.595
0.1866	8.604
0.1900	8.619
0.1933	8.633
0.1966	8.643

F.01

0.2000	8.652
0.2033	8.662
0.2066	8.671
2100	8.681
.2133	8.691
0.2166	8.700
0.2200	8.710
0.2233	8.719
0.2266	8.733
0.2300	8.738
0.2333	8.753
0.2366	8.762
0.2400	8.767
0.2433	8.777
0.2466	8.791
0.2500	8.796
0.2533	8.805
0.2566	8.815
0.2600	8.824
0.2633	8.834
0.2666	8.844
0.2700	8.853
0.2733	8.858
0.2766	8.868
0.2800	8.877
0.2833	8.887
0.2866	8.896
.2900	8.906
2933	8.911
0.2966	8.920
0.3000	8.930
0.3033	8.934
0.3066	8.944
0.3100	8.954
0.3133	8.963
0.3166	8.968
0.3200	8.978
0.3233	8.982
0.3266	8.997
0.3300	9.002
0.3333	9.011
0.3500	9.054
0.3666	9.093
0.3833	9.131
0.4000	9.169
0.4166	9.203
0.4333	9.241
0.4500	9.274
0.4666	9.303
0.4833	9.337
0.5000	9.370
0.5166	9.399
5333	9.428
5500	9.456
.5666	9.480
0.5833	9.504
0.6000	9.533
0.6166	9.557
0.6333	9.581
0.6500	9.605

0.6666	9.628
0.6833	9.648
0.7000	9.671
7166	9.691
7333	9.710
0.7500	9.734
0.7666	9.748
0.7833	9.767
0.8000	9.786
0.8166	9.805
0.8333	9.825
0.8500	9.839
0.8666	9.858
0.8833	9.873
0.9000	9.887
0.9166	9.901
0.9333	9.915
0.9500	9.930
0.9666	9.944
0.9833	9.959
1.0000	9.973
1.2000	10.140
1.4000	10.236
1.6000	10.308
1.8000	10.360
2.0000	10.399
2.2000	10.427
2.4000	10.451
6000	10.466
.8000	10.480
3.0000	10.499
3.2000	10.518
3.4000	10.528
3.6000	10.533
3.8000	10.542
4.0000	10.547
4.2000	10.557
4.4000	10.566
4.6000	10.576
4.8000	10.580
5.0000	10.585
5.2000	10.595
5.4000	10.600
5.6000	10.600
5.8000	10.604
6.0000	10.609
6.2000	10.614
6.4000	10.619
6.6000	10.619
6.8000	10.623
7.0000	10.623
7.2000	10.623
7.4000	10.628
5000	10.628
.8000	10.628
8.0000	10.633
8.2000	10.633
8.4000	10.633
8.6000	10.633
8.8000	10.633

9.0000	10.638
9.2000	10.638
9.4000	10.633
6000	10.633
8000	10.638
10.0000	10.643
12.0000	10.643
14.0000	10.652
16.0000	10.657
18.0000	10.662
20.0000	10.671
22.0000	10.671
24.0000	10.676
26.0000	10.647
28.0000	10.676
30.0000	10.671

R7 GW 0/2 F. NUM

0.0000	7.738
0.0033	7.733
0.0066	7.723
0.0100	7.728
0.0133	7.742
0.0166	7.742
0.0200	7.728
0.0233	7.733
0.0266	7.728
0.0300	7.714
0.0333	7.733
0.0366	7.714
0.0400	7.651
0.0433	7.359
0.0466	6.861
0.0500	6.578
0.0533	6.674
0.0566	6.842
0.0600	6.641
0.0633	6.301
0.0666	6.037
0.0700	6.305
0.0733	6.473
0.0766	5.912
0.0800	5.524
0.0833	5.337
0.0866	5.711
0.0900	5.375
0.0933	4.786
0.0966	4.397
0.1000	4.767
0.1033	5.122
0.1066	5.817
0.1100	6.301
0.1133	5.965
0.1166	5.850
0.1200	6.512
0.1233	6.411
0.1266	5.864
0.1300	5.467
0.1333	5.457
0.1366	5.308
0.1400	5.165
0.1433	5.510
0.1466	6.564
0.1500	6.842
0.1533	6.770
0.1566	6.703
0.1600	6.440
0.1633	6.128
0.1666	5.927
0.1700	5.812
0.1733	5.793
0.1766	5.888
0.1800	5.984
0.1833	6.104
0.1866	6.123
0.1900	6.463
0.1933	6.535
0.1966	6.626

0.2000	6.550
0.2033	6.416
0.2066	6.305
0.2100	6.224
0.2133	6.195
0.2166	6.229
0.2200	6.301
0.2233	6.387
0.2266	6.463
0.2300	6.512
0.2333	6.521
0.2366	6.502
0.2400	6.473
0.2433	6.449
0.2466	6.444
0.2500	6.458
0.2533	6.487
0.2566	6.516
0.2600	6.535
0.2633	6.559
0.2666	6.574
0.2700	6.578
0.2733	6.583
0.2766	6.583
0.2800	6.588
0.2833	6.598
0.2866	6.607
0.2900	6.622
0.2933	6.636
0.2966	6.646
0.3000	6.655
0.3033	6.665
0.3066	6.674
0.3100	6.679
0.3133	6.689
0.3166	6.693
0.3200	6.703
0.3233	6.713
0.3266	6.722
0.3300	6.727
0.3333	6.737
0.3500	6.780
0.3666	6.818
0.3833	6.856
0.4000	6.875
0.4166	6.909
0.4333	6.952
0.4500	6.981
0.4666	7.000
0.4833	7.015
0.5000	7.062
0.5166	7.077
0.5333	7.110
0.5500	7.125
0.5666	7.129
0.5833	7.163
0.6000	7.177
0.6166	7.192
0.6333	7.211
0.6500	7.225

R07 GW05 F. NUM

0.0000	11.155
0.0033	9.406
0.0066	7.726
.0100	7.289
.0133	8.253
0.0166	9.463
0.0200	12.141
0.0233	13.542
0.0266	13.997
0.0300	13.642
0.0333	13.135
0.0366	12.463
0.0400	12.221
0.0433	12.112
0.0466	12.202
0.0500	12.373
0.0533	12.534
0.0566	12.378
0.0600	12.349
0.0633	12.880
0.0666	12.790
0.0700	12.780
0.0733	12.662
0.0766	12.595
0.0800	12.595
0.0833	12.610
0.0866	12.643
0.0900	12.652
.0933	12.662
.0966	12.657
0.1000	12.666
0.1033	12.662
0.1066	12.666
0.1100	12.666
0.1133	12.666
0.1166	12.671
0.1200	12.671
0.1233	12.676
0.1266	12.676
0.1300	12.671
0.1333	12.676
0.1366	12.676
0.1400	12.676
0.1433	12.676
0.1466	12.681
0.1500	12.681
0.1533	12.676
0.1566	12.676
0.1600	12.643
0.1633	12.695
0.1666	12.690
0.1700	12.676
0.1733	12.685
.1766	12.453
.1800	12.875
0.1833	12.681
0.1866	12.756
0.1900	12.685
0.1933	12.666
0.1966	12.666

0.6666	7.240
0.6833	7.259
0.7000	7.273
7166	7.283
7333	7.297
0.7500	7.311
0.7666	7.321
0.7833	7.331
0.8000	7.340
0.8166	7.354
0.8333	7.359
0.8500	7.374
0.8666	7.383
0.8833	7.388
0.9000	7.398
0.9166	7.407
0.9333	7.417
0.9500	7.422
0.9666	7.431
0.9833	7.436
1.0000	7.446
1.2000	7.527
1.4000	7.570
1.6000	7.604
1.8000	7.623
2.0000	7.642
2.2000	7.656
.4000	7.671
6000	7.680
.8000	7.685
3.0000	7.694
3.2000	7.699
3.4000	7.699
3.6000	7.704
3.8000	7.709
4.0000	7.714
4.2000	7.714
4.4000	7.719
4.6000	7.719
4.8000	7.719
5.0000	7.723
5.2000	7.723
5.4000	7.723
5.6000	7.728
5.8000	7.728
6.0000	7.728
6.2000	7.728
6.4000	7.728
6.6000	7.728
6.8000	7.728
7.0000	7.728
7.2000	7.728
4000	7.733
5000	7.728
.8000	7.733
8.0000	7.733
8.2000	7.733
8.4000	7.733
8.6000	7.733
8.8000	7.728

9.0000	7.733
9.2000	7.733
9.4000	7.733
6000	7.733
3000	7.733
10.0000	7.733
12.0000	7.733
14.0000	7.738

0.2000	12.676
0.2033	12.681
0.2066	12.681
2100	12.681
2133	12.681
0.2166	12.685
0.2200	12.685
0.2233	12.685
0.2266	12.685
0.2300	12.685
0.2333	12.685
0.2366	12.685
0.2400	12.685
0.2433	12.685
0.2466	12.685
0.2500	12.685
0.2533	12.685
0.2566	12.685
0.2600	12.685
0.2633	12.685
0.2666	12.685
0.2700	12.685
0.2733	12.685
0.2766	12.685
0.2800	12.685
0.2833	12.685
0.2866	12.685
0.2900	12.685
2933	12.685
.2966	12.685
0.3000	12.685
0.3033	12.685
0.3066	12.685
0.3100	12.685
0.3133	12.685
0.3166	12.685
0.3200	12.685
0.3233	12.685
0.3266	12.685
0.3300	12.685
0.3333	12.685
0.3500	12.700
0.3666	12.690
0.3833	12.690
0.4000	12.690
0.4166	12.690
0.4333	12.690
0.4500	12.690
0.4666	12.690
0.4833	12.690
0.5000	12.690
0.5166	12.685
0.5333	12.690
500	12.690
5666	12.690
0.5833	12.690
0.6000	12.690
0.6166	12.690
0.6333	12.690
0.6500	12.690

0.6666	12.690
0.6833	12.690
0.7000	12.690
.7166	12.690
.7333	12.690
0.7500	12.690
0.7666	12.690
0.7833	12.690
0.8000	12.690
0.8166	12.690
0.8333	12.690
0.8500	12.690
0.8666	12.690
0.8833	12.690
0.9000	12.690
0.9166	12.690
0.9333	12.690
0.9500	12.690
0.9666	12.690
0.9833	12.690
1.0000	12.690
1.2000	12.695
1.4000	12.695
1.6000	12.695
1.8000	12.695
2.0000	12.695
2.2000	12.695
2.4000	12.695
.6000	12.700
.8000	12.695
3.0000	12.695
3.2000	12.695
3.4000	12.700
3.6000	12.700
3.8000	12.700
4.0000	12.700
4.2000	12.700
4.4000	12.700
4.6000	12.700
4.8000	12.700
5.0000	12.700
5.2000	12.700
5.4000	12.700
5.6000	12.700
5.8000	12.700
6.0000	12.700
6.2000	12.700
6.4000	12.700
6.6000	12.700
6.8000	12.700
7.0000	12.700
7.2000	12.700
7.4000	12.700
6000	12.700
.8000	12.700
8.0000	12.700
8.2000	12.700
8.4000	12.700
8.6000	12.700
8.8000	12.700

9.0000	12.700
9.2000	12.700
9.4000	12.700
6000	12.700
3000	12.700
10.0000	12.700
12.0000	12.700
14.0000	12.700

R76W08R2.NUM
FALLING?

0.0000	3.169
0.0033	1.873
0.0066	2.311
0100	3.998
0133	5.988
0.0166	8.019
0.0200	9.188
0.0233	9.621
0.0266	10.495
0.0300	11.511
0.0333	11.178
0.0366	10.860
0.0400	10.433
0.0433	10.124
0.0466	9.982
0.0500	10.015
0.0533	10.120
0.0566	10.243
0.0600	10.324
0.0633	10.357
0.0666	10.371
0.0700	10.305
0.0733	10.262
0.0766	10.262
0.0800	10.286
0.0833	10.319
0.0866	10.338
0.0900	10.352
0933	10.357
0966	10.357
0.1000	10.362
0.1033	10.366
0.1066	10.376
0.1100	10.381
0.1133	10.390
0.1166	10.395
0.1200	10.404
0.1233	10.409
0.1266	10.414
0.1300	10.423
0.1333	10.438
0.1366	10.433
0.1400	10.433
0.1433	10.433
0.1466	10.443
0.1500	10.580
0.1533	10.476
0.1566	10.409
0.1600	10.395
0.1633	10.428
0.1666	10.466
0.1700	10.490
0.1733	10.499
1766	10.495
1800	10.490
0.1833	10.495
0.1866	10.495
0.1900	10.504
0.1933	10.509
0.1966	10.514

0.2000	10.518
0.2033	10.518
0.2066	10.523
[illegible]100	10.528
.133	10.528
0.2166	10.533
0.2200	10.533
0.2233	10.537
0.2266	10.542
0.2300	10.547
0.2333	10.547
0.2366	10.552
0.2400	10.552
0.2433	10.556
0.2466	10.556
0.2500	10.561
0.2533	10.561
0.2566	10.566
0.2600	10.566
0.2633	10.571
0.2666	10.571
0.2700	10.575
0.2733	10.575
0.2766	10.580
0.2800	10.580
0.2833	10.585
0.2866	10.585
0.2900	10.590
[illegible]933	10.590
2966	10.590
0.3000	10.595
0.3033	10.595
0.3066	10.595
0.3100	10.599
0.3133	10.599
0.3166	10.599
0.3200	10.604
0.3233	10.604
0.3266	10.604
0.3300	10.604
0.3333	10.609
0.3500	10.613
0.3666	10.623
0.3833	10.628
0.4000	10.632
0.4166	10.637
0.4333	10.642
0.4500	10.647
0.4666	10.647
0.4833	10.651
0.5000	10.651
0.5166	10.656
0.5333	10.656
[illegible]00	10.661
566	10.661
0.5833	10.661
0.6000	10.666
0.6166	10.670
0.6333	10.666
0.6500	10.670

0.6666	10.670
0.6833	10.670
0.7000	10.680
7166	10.675
333	10.680
.7500	10.685
0.7666	10.685
0.7833	10.685
0.8000	10.689
0.8166	10.694
0.8333	10.694
0.8500	10.699
0.8666	10.699
0.8833	10.704
0.9000	10.704
0.9166	10.708
0.9333	10.708
0.9500	10.713
0.9666	10.713
0.9833	10.713
1.0000	10.718
1.2000	10.737
1.4000	10.727
1.6000	10.746
1.8000	10.751
2.0000	10.746
2.2000	10.756
2.4000	10.756
6000	10.756
000	10.761
3.0000	10.761
3.2000	10.756
3.4000	10.756
3.6000	10.761
3.8000	10.761
4.0000	10.756
4.2000	10.756
4.4000	10.756
4.6000	10.761
4.8000	10.756
5.0000	10.756
5.2000	10.751
5.4000	10.756
5.6000	10.751
5.8000	10.732
6.0000	10.718
6.2000	10.737
6.4000	10.751
6.6000	10.751
6.8000	10.751
7.0000	10.751
7.2000	10.756
7.4000	10.756
000	10.756
00	10.756
8.0000	10.756
8.2000	10.756
8.4000	10.756
8.6000	10.756
8.8000	10.761

9.0000	10.761
9.2000	10.756
9.4000	10.756
[illegible]6000	10.756
[illegible]000	10.756
[illegible].0000	10.756
12.0000	10.761
14.0000	10.761
16.0000	10.761
18.0000	10.765
20.0000	10.765
22.0000	10.765
24.0000	10.770

R7GW04R.Num

0.0000	17.819
0.0033	17.361
0066	18.286
100	17.495
.0133	17.833
0.0166	18.686
0.0200	18.172
0.0233	17.619
0.0266	18.029
0.0300	18.386
0.0333	18.062
0.0366	17.771
0.0400	18.043
0.0433	18.153
0.0466	18.057
0.0500	17.886
0.0533	17.933
0.0566	18.072
0.0600	17.929
0.0633	17.838
0.0666	17.910
0.0700	17.957
0.0733	17.843
0.0766	17.824
0.0800	17.843
0.0833	17.943
0.0866	17.857
0900	17.867
0933	17.824
0.0966	17.857
0.1000	17.824
0.1033	17.809
0.1066	17.814
0.1100	17.809
0.1133	17.795
0.1166	17.776
0.1200	17.776
0.1233	17.776
0.1266	17.762
0.1300	17.747
0.1333	17.747
0.1366	17.738
0.1400	17.728
0.1433	17.719
0.1466	17.714
0.1500	17.705
0.1533	17.695
0.1566	17.686
0.1600	17.681
0.1633	17.671
0.1666	17.662
0.1700	17.657
1733	17.647
1766	17.643
.1800	17.633
0.1833	17.624
0.1866	17.619
0.1900	17.609
0.1933	17.600
0.1966	17.590

~~R7 04~~
~~R~~

0.2000	17.585
0.2033	17.576
0.2066	17.571
0.2100	17.562
0.2133	17.557
0.2166	17.547
0.2200	17.538
0.2233	17.533
0.2266	17.523
0.2300	17.514
0.2333	17.509
0.2366	17.500
0.2400	17.495
0.2433	17.485
0.2466	17.481
0.2500	17.471
0.2533	17.466
0.2566	17.457
0.2600	17.447
0.2633	17.442
0.2666	17.433
0.2700	17.428
0.2733	17.419
0.2766	17.409
0.2800	17.404
0.2833	17.395
0.2866	17.390
0.2900	17.380
0.2933	17.376
0.2966	17.371
0.3000	17.361
0.3033	17.352
0.3066	17.347
0.3100	17.342
0.3133	17.333
0.3166	17.323
0.3200	17.318
0.3233	17.314
0.3266	17.304
0.3300	17.299
0.3333	17.290
0.3500	17.256
0.3666	17.218
0.3833	17.180
0.4000	17.142
0.4166	17.109
0.4333	17.075
0.4500	17.037
0.4666	17.004
0.4833	16.970
0.5000	16.937
0.5166	16.908
0.5333	16.875
0.5500	16.846
0.5666	16.818
0.5833	16.784
0.6000	16.756
0.6166	16.732
0.6333	16.708
0.6500	16.679

0.6666	16.656
0.6833	16.632
0.7000	16.608
166	16.589
,333	16.565
0.7500	16.546
0.7666	16.527
0.7833	16.508
0.8000	16.493
0.8166	16.474
0.8333	16.455
0.8500	16.441
0.8666	16.427
0.8833	16.412
0.9000	16.398
0.9166	16.384
0.9333	16.369
0.9500	16.360
0.9666	16.346
0.9833	16.331
1.0000	16.322
1.2000	16.174
1.4000	16.093
1.6000	16.012
1.8000	15.935
2.0000	15.864
2.2000	15.802
2.4000	15.740
5000	15.682
.8000	15.639
3.0000	15.592
3.2000	15.549
3.4000	15.511
3.6000	15.482
3.8000	15.458
4.0000	15.434
4.2000	15.415
4.4000	15.401
4.6000	15.387
4.8000	15.372
5.0000	15.358
5.2000	15.348
5.4000	15.344
5.6000	15.334
5.8000	15.329
6.0000	15.324
6.2000	15.320
6.4000	15.320
6.6000	15.315
6.8000	15.310
7.0000	15.310
7.2000	15.305
7.4000	15.305
5000	15.301
8000	15.301
8.0000	15.301
8.2000	15.301
8.4000	15.301
8.6000	15.301
8.8000	15.296

9.0000	15.296
9.2000	15.296
9.4000	15.296
6000	15.296
3000	15.296
10.0000	15.291
12.0000	15.301
14.0000	15.296

R7GW03R.NUM

0.0000	17.023
0.0033	17.032
0.0066	17.028
100	17.013
133	17.008
0.0166	17.008
0.0200	17.032
0.0233	17.032
0.0266	17.013
0.0300	17.013
0.0333	17.042
0.0366	19.149
0.0400	20.925
0.0433	19.411
0.0466	17.728
0.0500	17.852
0.0533	20.011
0.0566	20.296
0.0600	19.244
0.0633	19.029
0.0666	20.101
0.0700	20.182
0.0733	20.096
0.0766	20.092
0.0800	20.063
0.0833	20.058
0.0866	20.015
0.0900	20.035
0933	19.958
0966	19.992
0.1000	19.915
0.1033	19.958
0.1066	19.944
0.1100	19.920
0.1133	19.906
0.1166	19.868
0.1200	19.873
0.1233	19.877
0.1266	19.849
0.1300	19.854
0.1333	19.854
0.1366	19.835
0.1400	19.830
0.1433	19.830
0.1466	19.825
0.1500	19.811
0.1533	19.801
0.1566	19.801
0.1600	19.796
0.1633	19.787
0.1666	19.782
0.1700	19.777
0.1733	19.773
1766	19.768
1800	19.763
0.1833	19.763
0.1866	19.754
0.1900	19.749
0.1933	19.744
0.1966	19.739

0.2000	19.739
0.2033	19.734
0.2066	19.730
2100	19.725
2133	19.720
0.2166	19.715
0.2200	19.711
0.2233	19.706
0.2266	19.706
0.2300	19.701
0.2333	19.696
0.2366	19.692
0.2400	19.687
0.2433	19.687
0.2466	19.682
0.2500	19.677
0.2533	19.673
0.2566	19.668
0.2600	19.663
0.2633	19.663
0.2666	19.658
0.2700	19.654
0.2733	19.654
0.2766	19.649
0.2800	19.644
0.2833	19.644
0.2866	19.639
0.2900	19.634
2933	19.634
2966	19.630
0.3000	19.625
0.3033	19.625
0.3066	19.620
0.3100	19.615
0.3133	19.615
0.3166	19.611
0.3200	19.606
0.3233	19.606
0.3266	19.601
0.3300	19.596
0.3333	19.596
0.3500	19.582
0.3666	19.568
0.3833	19.554
0.4000	19.534
0.4166	19.520
0.4333	19.506
0.4500	19.492
0.4666	19.477
0.4833	19.468
0.5000	19.453
0.5166	19.439
0.5333	19.425
5500	19.415
5666	19.406
0.5833	19.392
0.6000	19.382
0.6166	19.368
0.6333	19.358
0.6500	19.349

0.6666	19.339
0.6833	19.325
0.7000	19.315
7166	19.301
7333	19.291
0.7500	19.287
0.7666	19.272
0.7833	19.263
0.8000	19.253
0.8166	19.244
0.8333	19.234
0.8500	19.225
0.8666	19.215
0.8833	19.206
0.9000	19.201
0.9166	19.191
0.9333	19.182
0.9500	19.172
0.9666	19.168
0.9833	19.158
1.0000	19.149
1.2000	19.029
1.4000	18.944
1.6000	18.867
1.8000	18.796
2.0000	18.729
2.2000	18.663
2.4000	18.601
6000	18.543
8000	18.496
3.0000	18.443
3.2000	18.391
3.4000	18.348
3.6000	18.300
3.8000	18.258
4.0000	18.219
4.2000	18.181
4.4000	18.148
4.6000	18.110
4.8000	18.076
5.0000	18.043
5.2000	18.014
5.4000	17.986
5.6000	17.952
5.8000	17.924
6.0000	17.900
6.2000	17.876
6.4000	17.852
6.6000	17.829
6.8000	17.805
7.0000	17.786
7.2000	17.762
7.4000	17.743
000	17.724
000	17.705
8.0000	17.686
8.2000	17.671
8.4000	17.657
8.6000	17.643
8.8000	17.624

9.0000	17.609
9.2000	17.595
9.4000	17.581
6000	17.566
8000	17.557
10.0000	17.542
12.0000	17.442
14.0000	17.366
16.0000	17.304
18.0000	17.261
20.0000	17.228
22.0000	17.204
24.0000	17.185
26.0000	17.171
28.0000	17.161
30.0000	17.151

R7GWØ2R.NUM
POOR DATA

0.0000	7.762
0.0033	7.742
0.0066	7.709
0100	7.742
0133	7.977
0.0166	9.050
0.0200	10.370
0.0233	11.522
0.0266	10.384
0.0300	8.987
0.0333	8.647
0.0366	8.643
0.0400	9.399
0.0433	10.839
0.0466	11.011
0.0500	10.623
0.0533	9.973
0.0566	9.748
0.0600	9.930
0.0633	10.174
0.0666	10.150
0.0700	9.877
0.0733	9.782
0.0766	9.767
0.0800	9.825
0.0833	9.844
0.0866	9.782
0.0900	9.705
0933	9.657
.0966	9.643
0.1000	9.638
0.1033	9.614
0.1066	9.585
0.1100	9.552
0.1133	9.523
0.1166	9.504
0.1200	9.485
0.1233	9.461
0.1266	9.437
0.1300	9.413
0.1333	9.394
0.1366	9.375
0.1400	9.356
0.1433	9.337
0.1466	9.317
0.1500	9.298
0.1533	9.279
0.1566	9.265
0.1600	9.246
0.1633	9.231
0.1666	9.212
0.1700	9.198
0.1733	9.183
1766	9.169
1800	9.150
0.1833	9.136
0.1866	9.121
0.1900	9.107
0.1933	9.093
0.1966	9.083

0.2000	9.069
0.2033	9.054
0.2066	9.040
2100	9.025
2133	9.016
0.2166	9.002
0.2200	8.992
0.2233	8.978
0.2266	8.968
0.2300	8.959
0.2333	8.944
0.2366	8.934
0.2400	8.925
0.2433	8.911
0.2466	8.901
0.2500	8.891
0.2533	8.882
0.2566	8.872
0.2600	8.863
0.2633	8.853
0.2666	8.844
0.2700	8.834
0.2733	8.824
0.2766	8.815
0.2800	8.805
0.2833	8.796
0.2866	8.786
0.2900	8.781
2933	8.772
.2966	8.762
0.3000	8.753
0.3033	8.748
0.3066	8.738
0.3100	8.729
0.3133	8.724
0.3166	8.714
0.3200	8.710
0.3233	8.700
0.3266	8.691
0.3300	8.686
0.3333	8.681
0.3500	8.638
0.3666	8.604
0.3833	8.571
0.4000	8.537
0.4166	8.509
0.4333	8.480
0.4500	8.456
0.4666	8.427
0.4833	8.408
0.5000	8.384
0.5166	8.360
0.5333	8.341
5500	8.322
5666	8.303
0.5833	8.288
0.6000	8.269
0.6166	8.255
0.6333	8.236
0.6500	8.221

0.6666	8.212
0.6833	8.197
0.7000	8.183
7166	8.173
7333	8.159
0.7500	8.150
0.7666	8.140
0.7833	8.126
0.8000	8.121
0.8166	8.107
0.8333	8.102
0.8500	8.092
0.8666	8.082
0.8833	8.073
0.9000	8.063
0.9166	8.058
0.9333	8.049
0.9500	8.044
0.9666	8.035
0.9833	8.030
1.0000	8.025
1.2000	7.944
1.4000	7.901
1.6000	7.872
1.8000	7.848
2.0000	7.829
2.2000	7.814
2.4000	7.800
6000	7.790
.8000	7.785
3.0000	7.781
3.2000	7.776
3.4000	7.771
3.6000	7.766
3.8000	7.762
4.0000	7.757
4.2000	7.757
4.4000	7.752
4.6000	7.752
4.8000	7.752
5.0000	7.747
5.2000	7.747
5.4000	7.747
5.6000	7.747
5.8000	7.747
6.0000	7.742
6.2000	7.742
6.4000	7.742
6.6000	7.742
6.8000	7.742
7.0000	7.742
7.2000	7.742
7.4000	7.742
000	7.742
3000	7.738
8.0000	7.738
8.2000	7.738
8.4000	7.738
8.6000	7.738
8.8000	7.738

9.0000	7.738
9.2000	7.738
9.4000	7.738
6000	7.738
8000	7.738
10.0000	7.738
12.0000	7.738
14.0000	7.733

R7GW01R.NUM

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0.0066	11.747
0100	11.565
0133	10.600
0.0166	11.628
0.0200	11.599
0.0233	10.389
0.0266	11.675
0.0300	12.478
0.0333	11.551
0.0366	11.766
0.0400	12.990
0.0433	12.373
0.0466	11.972
0.0500	12.364
0.0533	12.517
0.0566	11.532
0.0600	9.136
0.0633	12.416
0.0666	14.723
0.0700	13.725
0.0733	11.828
0.0766	12.187
0.0800	13.706
0.0833	13.582
0.0866	13.462
0.0900	13.434
0933	13.372
.0966	13.305
0.1000	13.276
0.1033	13.238
0.1066	13.200
0.1100	13.176
0.1133	13.138
0.1166	13.099
0.1200	13.080
0.1233	13.052
0.1266	13.013
0.1300	12.999
0.1333	12.970
0.1366	12.927
0.1400	12.918
0.1433	12.870
0.1466	12.846
0.1500	12.875
0.1533	12.813
0.1566	12.803
0.1600	12.775
0.1633	12.755
0.1666	12.736
0.1700	12.717
0.1733	12.703
1766	12.669
1800	12.646
0.1833	12.650
0.1866	12.631
0.1900	12.612
0.1933	12.440
0.1966	12.598

0.2000	12.569
0.2033	12.574
0.2066	12.555
2100	12.540
2133	12.531
0.2166	12.521
0.2200	12.512
0.2233	12.497
0.2266	12.488
0.2300	12.478
0.2333	12.469
0.2366	12.459
0.2400	12.450
0.2433	12.445
0.2466	12.435
0.2500	12.421
0.2533	12.416
0.2566	12.407
0.2600	12.397
0.2633	12.387
0.2666	12.383
0.2700	12.373
0.2733	12.364
0.2766	12.359
0.2800	12.349
0.2833	12.340
0.2866	12.335
0.2900	12.325
2933	12.321
.2966	12.306
0.3000	12.325
0.3033	12.268
0.3066	12.378
0.3100	12.287
0.3133	12.278
0.3166	12.268
0.3200	12.258
0.3233	12.254
0.3266	12.249
0.3300	12.239
0.3333	12.235
0.3500	12.196
0.3666	12.158
0.3833	12.125
0.4000	12.096
0.4166	12.063
0.4333	12.034
0.4500	12.005
0.4666	11.972
0.4833	11.948
0.5000	11.924
0.5166	11.900
0.5333	11.871
5500	11.847
5666	11.828
0.5833	11.804
0.6000	11.781
0.6166	11.761
0.6333	11.742
0.6500	11.723

0.6666	11.704
0.6833	11.685
0.7000	11.666
7166	11.647
7333	11.632
0.7500	11.618
0.7666	11.599
0.7833	11.589
0.8000	11.570
0.8166	11.556
0.8333	11.546
0.8500	11.532
0.8666	11.518
0.8833	11.508
0.9000	11.494
0.9166	11.484
0.9333	11.470
0.9500	11.460
0.9666	11.451
0.9833	11.441
1.0000	11.432
1.2000	11.331
1.4000	11.274
1.6000	11.221
1.8000	11.164
2.0000	11.116
2.2000	11.073
.4000	11.035
6000	11.001
.8000	10.968
3.0000	10.934
3.2000	10.910
3.4000	10.896
3.6000	10.882
3.8000	10.867
4.0000	10.853
4.2000	10.848
4.4000	10.843
4.6000	10.839
4.8000	10.829
5.0000	10.824
5.2000	10.820
5.4000	10.815
5.6000	10.815
5.8000	10.810
6.0000	10.810
6.2000	10.805
6.4000	10.800
6.6000	10.800
6.8000	10.796
7.0000	10.796
7.2000	10.786
7.4000	10.786
5000	10.786
8000	10.781
8.0000	10.777
8.2000	10.772
8.4000	10.767
8.6000	10.757
8.8000	10.753

9.0000	10.748
9.2000	10.748
9.4000	10.748
6000	10.753
3000	10.757
10.0000	10.762
12.0000	10.757
14.0000	10.753
16.0000	10.738
18.0000	10.738
20.0000	10.719
22.0000	10.719
24.0000	10.714
26.0000	10.714
28.0000	10.714
30.0000	10.714
32.0000	10.714

R07GW07R
NUM

POOR DATA

0.0000	11.886
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0.0066	18.917
0.0100	19.499
0.0133	16.541
0.0166	15.717
0.0200	15.399
0.0233	14.679
0.0266	14.921
0.0300	13.996
0.0333	15.276
0.0366	13.352
0.0400	12.085
0.0433	11.857
0.0466	12.332
0.0500	13.167
0.0533	13.423
0.0566	13.034
0.0600	12.934
0.0633	13.138
0.0666	13.399
0.0700	13.579
0.0733	13.574
0.0766	13.570
0.0800	13.593
0.0833	13.593
0.0866	13.555
0.0900	13.565
0.0933	13.617
0.0966	13.759
0.1000	13.921
0.1033	14.101
0.1066	14.105
0.1100	14.110
0.1133	14.162
0.1166	14.200
0.1200	14.295
0.1233	14.215
0.1266	14.181
0.1300	14.153
0.1333	14.158
0.1366	14.120
0.1400	14.044
0.1433	14.015
0.1466	14.001
0.1500	13.911
0.1533	13.821
0.1566	13.788
0.1600	13.778
0.1633	13.745
0.1666	13.897
0.1700	13.826
0.1733	13.740
0.1766	13.717
0.1800	13.698
0.1833	13.702
0.1866	13.546
0.1900	13.499
0.1933	13.494
0.1966	13.470

0.2000	13.437
0.2033	13.333
0.2066	13.195
100	13.076
2133	12.977
0.2166	12.910
0.2200	12.797
0.2233	12.730
0.2266	12.640
0.2300	12.616
0.2333	12.521
0.2366	12.327
0.2400	11.943
0.2433	12.099
0.2466	11.686
0.2500	11.701
0.2533	11.563
0.2566	11.511
0.2600	11.482
0.2633	11.530
0.2666	11.544
0.2700	11.530
0.2733	11.501
0.2766	11.473
0.2800	11.477
0.2833	11.477
0.2866	11.473
2900	11.458
2933	11.444
.2966	11.435
0.3000	11.430
0.3033	11.420
0.3066	11.411
0.3100	11.406
0.3133	11.397
0.3166	11.387
0.3200	11.383
0.3233	11.373
0.3266	11.368
0.3300	11.359
0.3333	11.354
0.3500	11.316
0.3666	11.283
0.3833	11.250
0.4000	11.221
0.4166	11.197
0.4333	11.169
0.4500	11.145
0.4666	11.122
0.4833	11.102
0.5000	11.084
0.5166	11.064
5333	11.050
500	11.031
.5666	11.022
0.5833	11.003
0.6000	10.993
0.6166	10.979
0.6333	10.970
0.6500	10.955

0.6666	10.950
0.6833	10.941
0.7000	10.932
7166	10.922
333	10.917
0.7500	10.908
0.7666	10.903
0.7833	10.893
0.8000	10.889
0.8166	10.884
0.8333	10.879
0.8500	10.875
0.8666	10.870
0.8833	10.865
0.9000	10.860
0.9166	10.856
0.9333	10.851
0.9500	10.851
0.9666	10.846
0.9833	10.841
1.0000	10.841
1.2000	10.808
1.4000	10.794
1.6000	10.784
1.8000	33.301
2.0000	33.301
2.2000	33.301
2.4000	33.301
5000	33.301
8000	33.301
3.0000	33.301
3.2000	33.301
3.4000	33.301
3.6000	33.301
3.8000	33.301
4.0000	33.301
4.2000	33.301
4.4000	33.301
4.6000	33.301
4.8000	33.301
5.0000	33.301
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5.4000	33.301
5.6000	33.301
5.8000	33.301
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6.2000	33.301
6.4000	33.301
6.6000	33.301
6.8000	33.301
7.0000	33.301
7.2000	33.301
7.4000	33.301
000	33.301
000	33.301
8.0000	33.301
8.2000	33.301
8.4000	33.301
8.6000	33.301
8.8000	33.301

9.0000	33.301
9.2000	33.301
9.4000	33.301
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[illegible]000	33.301
10.0000	33.301
12.0000	33.301
14.0000	33.301
16.0000	33.301
18.0000	33.301
20.0000	33.301
22.0000	33.301
24.0000	33.301
26.0000	33.301
28.0000	33.301
30.0000	33.301
32.0000	33.301
34.0000	19.007

RØ7GWØ6R.NUM

0.0000	16.600
0.0033	14.604
0.0066	15.136
0.0100	15.084
0.0133	15.051
0.0166	15.028
0.0200	14.995
0.0233	14.990
0.0266	15.032
0.0300	14.971
0.0333	14.962
0.0366	14.952
0.0400	14.938
0.0433	14.938
0.0466	14.962
0.0500	14.901
0.0533	14.901
0.0566	14.886
0.0600	14.877
0.0633	14.868
0.0666	14.896
0.0700	14.830
0.0733	14.830
0.0766	14.806
0.0800	14.806
0.0833	14.792
0.0866	14.792
0.0900	14.759
0.0933	14.759
0.0966	14.750
0.1000	14.745
0.1033	14.736
0.1066	14.731
0.1100	14.722
0.1133	14.707
0.1166	14.703
0.1200	14.693
0.1233	14.684
0.1266	14.674
0.1300	14.665
0.1333	14.656
0.1366	14.646
0.1400	14.637
0.1433	14.627
0.1466	14.623
0.1500	14.609
0.1533	14.604
0.1566	14.594
0.1600	14.585
0.1633	14.580
0.1666	14.571
0.1700	14.561
0.1733	14.552
0.1766	14.543
0.1800	14.538
0.1833	14.528
0.1866	14.519
0.1900	14.510
0.1933	14.505
0.1966	14.496

0.2000	14.486
0.2033	14.481
0.2066	14.472
0.2100	14.463
0.2133	14.453
0.2166	14.448
0.2200	14.439
0.2233	14.430
0.2266	14.425
0.2300	14.415
0.2333	14.406
0.2366	14.401
0.2400	14.392
0.2433	14.387
0.2466	14.378
0.2500	14.368
0.2533	14.364
0.2566	14.354
0.2600	14.349
0.2633	14.340
0.2666	14.331
0.2700	14.326
0.2733	14.321
0.2766	14.312
0.2800	14.302
0.2833	14.298
0.2866	14.288
0.2900	14.284
0.2933	14.274
0.2966	14.269
0.3000	14.260
0.3033	14.255
0.3066	14.246
0.3100	14.241
0.3133	14.232
0.3166	14.227
0.3200	14.222
0.3233	14.213
0.3266	14.208
0.3300	14.199
0.3333	14.194
0.3500	14.161
0.3666	14.128
0.3833	14.095
0.4000	14.062
0.4166	14.029
0.4333	14.001
0.4500	13.968
0.4666	13.940
0.4833	13.916
0.5000	13.888
0.5166	13.864
0.5333	13.841
0.5500	13.817
0.5666	13.798
0.5833	13.779
0.6000	13.756
0.6166	13.742
0.6333	13.723
0.6500	13.709

0.6666	13.690
0.6833	13.676
0.7000	13.662
166	13.652
/333	13.638
0.7500	13.629
0.7666	13.619
0.7833	13.610
0.8000	13.600
0.8166	13.591
0.8333	13.586
0.8500	13.577
0.8666	13.572
0.8833	13.563
0.9000	13.558
0.9166	13.553
0.9333	13.549
0.9500	13.544
0.9666	13.539
0.9833	13.534
1.0000	13.530
1.2000	13.487
1.4000	13.473
1.6000	13.464
1.8000	13.454
2.0000	13.450
2.2000	13.450
4000	13.450
6000	13.445
.8000	13.445
3.0000	13.445
3.2000	13.440
3.4000	13.440
3.6000	13.440
3.8000	13.440
4.0000	13.440
4.2000	13.440
4.4000	13.440
4.6000	13.440
4.8000	13.440
5.0000	13.440
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5.4000	13.440
5.6000	13.440
5.8000	13.440
6.0000	13.440
6.2000	13.440
6.4000	13.440
6.6000	13.440
6.8000	13.440
7.0000	13.440
7.2000	13.440
7.4000	13.435
6000	13.440
.8000	13.440
8.0000	13.440
8.2000	13.440
8.4000	13.440
8.6000	13.435
8.8000	13.440

0000	13.440
9.2000	13.440
9.4000	13.440
5000	13.440
.8000	13.440
10.0000	13.435
12.0000	13.440
14.0000	13.435
16.0000	13.445
18.0000	13.445
20.0000	13.445
22.0000	13.445
24.0000	13.435
26.0000	13.440

0.0000	11.559
0.0033	12.996
0.0066	14.659
0.0100	10.376
0.0133	12.306
0.0166	12.301
0.0200	12.207
0.0233	12.311
0.0266	12.566
0.0300	12.467
0.0333	12.287
0.0366	13.214
0.0400	11.814
0.0433	12.013
0.0466	11.928
0.0500	11.918
0.0533	11.904
0.0566	11.900
0.0600	11.876
0.0633	11.866
0.0666	11.857
0.0700	11.843
0.0733	11.829
0.0766	11.819
0.0800	11.805
0.0833	11.791
0.0866	11.781
0.0900	11.767
0.0933	11.758
0.0966	11.748
0.1000	11.729
0.1033	11.720
0.1066	11.715
0.1100	11.696
0.1133	11.691
0.1166	11.677
0.1200	11.663
0.1233	11.654
0.1266	11.639
0.1300	11.630
0.1333	11.616
0.1366	11.606
0.1400	11.587
0.1433	11.573
0.1466	11.583
0.1500	11.578
0.1533	11.559
0.1566	11.545
0.1600	11.535
0.1633	11.535
0.1666	11.516
0.1700	11.512
0.1733	11.502
0.1766	11.493
0.1800	11.483
0.1833	11.474
0.1866	11.469
0.1900	11.455
0.1933	11.446
0.1966	11.441

6GW01R.NUM

0.2000	11.431
0.2033	11.422
0.2066	11.412
.100	11.403
.133	11.394
0.2166	11.384
0.2200	11.379
0.2233	11.370
0.2266	11.360
0.2300	11.356
0.2333	11.346
0.2366	11.337
0.2400	11.327
0.2433	11.318
0.2466	11.313
0.2500	11.304
0.2533	11.299
0.2566	11.289
0.2600	11.280
0.2633	11.275
0.2666	11.266
0.2700	11.256
0.2733	11.252
0.2766	11.242
0.2800	11.233
0.2833	11.228
0.2866	11.218
.2900	11.214
.933	11.204
.2966	11.195
0.3000	11.190
0.3033	11.181
0.3066	11.176
0.3100	11.166
0.3133	11.157
0.3166	11.152
0.3200	11.143
0.3233	11.138
0.3266	11.133
0.3300	11.124
0.3333	11.114
0.3500	11.081
0.3666	11.043
0.3833	11.010
0.4000	10.973
0.4166	10.935
0.4333	10.906
0.4500	10.873
0.4666	10.840
0.4833	10.807
0.5000	10.779
0.5166	10.745
.5333	10.717
.500	10.689
.666	10.660
0.5833	10.632
0.6000	10.604
0.6166	10.575
0.6333	10.551
0.6500	10.523

0.6666	10.499
0.6833	10.476
0.7000	10.452
7166	10.424
333	10.400
0.7500	10.381
0.7666	10.357
0.7833	10.334
0.8000	10.310
0.8166	10.291
0.8333	10.268
0.8500	10.249
0.8666	10.230
0.8833	10.211
0.9000	10.187
0.9166	10.168
0.9333	10.149
0.9500	10.130
0.9666	10.116
0.9833	10.097
1.0000	10.078
1.2000	9.837
1.4000	9.690
1.6000	9.562
1.8000	9.458
2.0000	9.373
2.2000	9.302
2.4000	9.240
6000	9.188
3000	9.146
3.0000	9.108
3.2000	9.079
3.4000	9.051
3.6000	9.027
3.8000	9.008
4.0000	8.989
4.2000	8.971
4.4000	8.961
4.6000	8.947
4.8000	8.933
5.0000	8.928
5.2000	8.919
5.4000	8.909
5.6000	8.900
5.8000	8.895
6.0000	8.885
6.2000	8.881
6.4000	8.881
6.6000	8.871
6.8000	8.871
7.0000	8.866
7.2000	8.862
7.4000	8.857
000	8.852
000	8.852
8.0000	8.852
8.2000	8.847
8.4000	8.843
8.6000	8.843
8.8000	8.843

9.0000	8.838
9.2000	8.838
9.4000	8.833
9.6000	8.833
[illegible]000	8.833
[illegible]000	8.829
12.0000	8.819
14.0000	8.814
16.0000	8.805
18.0000	8.805

5GW01 R. Num

0.0000	18.271
0.0033	22.310
0.0066	13.808
0.0100	12.712
0.0133	14.434
0.0166	13.727
0.0200	13.765
0.0233	13.689
0.0266	13.613
0.0300	13.571
0.0333	13.537
0.0366	13.481
0.0400	13.447
0.0433	13.405
0.0466	13.381
0.0500	13.348
0.0533	13.310
0.0566	13.291
0.0600	13.258
0.0633	13.229
0.0666	13.196
0.0700	13.172
0.0733	13.144
0.0766	13.096
0.0800	13.101
0.0833	13.068
0.0866	13.039
0.0900	13.025
0.0933	12.992
0.0966	12.968
0.1000	12.944
0.1033	12.921
0.1066	12.902
0.1100	12.878
0.1133	12.854
0.1166	12.831
0.1200	12.807
0.1233	12.793
0.1266	12.769
0.1300	12.755
0.1333	12.717
0.1366	12.702
0.1400	12.698
0.1433	12.679
0.1466	12.655
0.1500	12.636
0.1533	12.622
0.1566	12.603
0.1600	12.584
0.1633	12.570
0.1666	12.555
0.1700	12.541
0.1733	12.522
0.1766	12.508
0.1800	12.489
0.1833	12.475
0.1866	12.460
0.1900	12.446
0.1933	12.432
0.1966	12.418

14.34
10.76
3.5

0.2000	12.404
0.2033	12.389
0.2066	12.375
0.2100	12.361
0.2133	12.347
0.2166	12.337
0.2200	12.323
0.2233	12.308
0.2266	12.294
0.2300	12.285
0.2333	12.270
0.2366	12.261
0.2400	12.247
0.2433	12.237
0.2466	12.223
0.2500	12.214
0.2533	12.199
0.2566	12.190
0.2600	12.176
0.2633	12.166
0.2666	12.157
0.2700	12.142
0.2733	12.133
0.2766	12.123
0.2800	12.114
0.2833	12.104
0.2866	12.095
0.2900	12.081
0.2933	12.071
0.2966	12.062
0.3000	12.052
0.3033	12.043
0.3066	12.033
0.3100	12.024
0.3133	12.014
0.3166	12.005
0.3200	11.995
0.3233	11.986
0.3266	11.981
0.3300	11.972
0.3333	11.962
0.3500	11.915
0.3666	11.872
0.3833	11.829
0.4000	11.791
0.4166	11.753
0.4333	11.720
0.4500	11.687
0.4666	11.653
0.4833	11.625
0.5000	11.596
0.5166	11.568
0.5333	11.544
0.5500	11.516
0.5666	11.492
0.5833	11.468
0.6000	11.449
0.6166	11.430
0.6333	11.407
0.6500	11.388

0.6666	11.373
0.6833	11.354
0.7000	11.335
0.7166	11.321
0.7333	11.307
0.7500	11.293
0.7666	11.278
0.7833	11.264
0.8000	11.250
0.8166	11.236
0.8333	11.226
0.8500	11.212
0.8666	11.202
0.8833	11.188
0.9000	11.174
0.9166	11.169
0.9333	11.159
0.9500	11.155
0.9666	11.145
0.9833	11.136
1.0000	11.131
1.2000	11.031
1.4000	10.979
1.6000	10.941
1.8000	10.913
2.0000	10.894
2.2000	10.875
2.4000	10.860
2.6000	10.851
2.8000	10.841
3.0000	10.837
3.2000	10.832
3.4000	10.822
3.6000	10.818
3.8000	10.813
4.0000	10.808
4.2000	10.808
4.4000	10.803
4.6000	10.803
4.8000	10.799
5.0000	10.799
5.2000	10.794
5.4000	10.794
5.6000	10.794
5.8000	10.789
6.0000	10.789
6.2000	10.789
6.4000	10.784
6.6000	10.784
6.8000	10.784
7.0000	10.784
7.2000	10.784
7.4000	10.780
7.6000	10.780
7.8000	10.780
8.0000	10.780
8.2000	10.780
8.4000	10.780
8.6000	10.780
8.8000	10.780

9.0000	10.775
9.2000	10.775
9.4000	10.765
9.6000	10.761
9.8000	10.761
10.0000	10.761
12.0000	10.761
14.0000	10.761

0.0000	17.514
0.0033	14.312
0.0066	11.678
0.0100	12.147
0.0133	12.001
0.0166	11.849
0.0200	11.759
0.0233	11.659
0.0266	11.564
0.0300	11.479
0.0333	11.399
0.0366	11.337
0.0400	11.256
0.0433	11.200
0.0466	11.133
0.0500	11.076
0.0533	11.024
0.0566	10.972
0.0600	10.925
0.0633	10.877
0.0666	10.830
0.0700	10.787
0.0733	10.749
0.0766	10.707
0.0800	10.664
0.0833	10.626
0.0866	10.593
0.0900	10.555
0.0933	10.522
0.0966	10.488
0.1000	10.455
0.1033	10.427
0.1066	10.394
0.1100	10.365
0.1133	10.341
0.1166	10.313
0.1200	10.284
0.1233	10.261
0.1266	10.237
0.1300	10.213
0.1333	10.190
0.1366	10.166
0.1400	10.147
0.1433	10.128
0.1466	10.104
0.1500	10.085
0.1533	10.071
0.1566	10.052
0.1600	10.033
0.1633	10.019
0.1666	10.000
0.1700	9.986
0.1733	9.971
0.1766	9.957
0.1800	9.943
0.1833	9.929
0.1866	9.915
0.1900	9.900
0.1933	9.886
0.1966	9.877

1FGW01 R. NUM

14312
9.3

0.2000	9.862
0.2033	9.848
0.2066	9.843
0.2100	9.829
0.2133	9.820
0.2166	9.810
0.2200	9.801
0.2233	9.791
0.2266	9.782
0.2300	9.772
0.2333	9.763
0.2366	9.753
0.2400	9.749
0.2433	9.739
0.2466	9.730
0.2500	9.725
0.2533	9.715
0.2566	9.706
0.2600	9.701
0.2633	9.696
0.2666	9.687
0.2700	9.682
0.2733	9.677
0.2766	9.668
0.2800	9.663
0.2833	9.658
0.2866	9.654
0.2900	9.644
0.2933	9.639
0.2966	9.635
0.3000	9.630
0.3033	9.625
0.3066	9.620
0.3100	9.616
0.3133	9.611
0.3166	9.606
0.3200	9.601
0.3233	9.597
0.3266	9.592
0.3300	9.587
0.3333	9.587
0.3500	9.564
0.3666	9.545
0.3833	9.530
0.4000	9.516
0.4166	9.507
0.4333	9.492
0.4500	9.483
0.4666	9.473
0.4833	9.469
0.5000	9.459
0.5166	9.454
0.5333	9.445
0.5500	9.440
0.5666	9.435
0.5833	9.431
0.6000	9.431
0.6166	9.426
0.6333	9.421
0.6500	9.417

0.6666	9.417
0.6833	9.412
0.7000	9.412
0.7166	9.407
0.7333	9.407
0.7500	9.402
0.7666	9.402
0.7833	9.402
0.8000	9.398
0.8166	9.398
0.8333	9.398
0.8500	9.393
0.8666	9.393
0.8833	9.393
0.9000	9.393
0.9166	9.388
0.9333	9.383
0.9500	9.388
0.9666	9.383
0.9833	9.379
1.0000	9.383
1.2000	9.379
1.4000	9.374
1.6000	9.369
1.8000	9.364
2.0000	9.364
2.2000	9.360
2.4000	9.364
2.6000	9.364
2.8000	9.364
3.0000	9.364
3.2000	9.364
3.4000	9.364
3.6000	9.364
3.8000	9.364
4.0000	9.364
4.2000	9.364
4.4000	9.364
4.6000	9.364
4.8000	9.364
5.0000	9.364
5.2000	9.364
5.4000	9.360
5.6000	9.360
5.8000	9.355
6.0000	9.355
6.2000	9.360
6.4000	9.360
6.6000	9.360
6.8000	9.360
7.0000	9.355
7.2000	9.355
7.4000	9.355
7.6000	9.355
7.8000	9.360
8.0000	9.355
8.2000	9.360
8.4000	9.360
8.6000	9.360
8.8000	9.360

9.0000	9.360
9.2000	9.355
9.4000	9.355
9.6000	9.355
9.8000	9.355
10.0000	9.355
12.0000	9.355
14.0000	9.350
16.0000	9.360
18.0000	9.336
20.0000	9.350

18GW02 R.NVM

18.744
15.395
3.4

0.0000	8.744
0.0033	15.395
0.0066	18.704
0.0100	11.546
0.0133	6.034
0.0166	13.177
0.0200	9.770
0.0233	9.214
0.0266	10.658
0.0300	9.651
0.0333	9.818
0.0366	10.007
0.0400	9.775
0.0433	9.822
0.0466	9.851
0.0500	9.794
0.0533	9.780
0.0566	9.794
0.0600	9.789
0.0633	9.761
0.0666	9.761
0.0700	9.741
0.0733	9.737
0.0766	9.741
0.0800	9.723
0.0833	9.708
0.0866	9.703
0.0900	9.699
0.0933	9.694
0.0966	9.680
0.1000	9.675
0.1033	9.670
0.1066	9.666
0.1100	9.661
0.1133	9.651
0.1166	9.646
0.1200	9.637
0.1233	9.632
0.1266	9.628
0.1300	9.623
0.1333	9.618
0.1366	9.613
0.1400	9.609
0.1433	9.604
0.1466	9.599
0.1500	9.594
0.1533	9.589
0.1566	9.585
0.1600	9.580
0.1633	9.575
0.1666	9.571
0.1700	9.566
0.1733	9.561
0.1766	9.556
0.1800	9.552
0.1833	9.547
0.1866	9.542
0.1900	9.542
0.1933	9.537
0.1966	9.532

0.2000	9.528
0.2033	9.523
0.2066	9.523
0.2100	9.518
0.2133	9.514
0.2166	9.509
0.2200	9.504
0.2233	9.504
0.2266	9.499
0.2300	9.495
0.2333	9.495
0.2366	9.490
0.2400	9.485
0.2433	9.480
0.2466	9.480
0.2500	9.475
0.2533	9.471
0.2566	9.471
0.2600	9.466
0.2633	9.461
0.2666	9.457
0.2700	9.457
0.2733	9.452
0.2766	9.452
0.2800	9.447
0.2833	9.442
0.2866	9.438
0.2900	9.438
0.2933	9.433
0.2966	9.428
0.3000	9.428
0.3033	9.423
0.3066	9.423
0.3100	9.419
0.3133	9.414
0.3166	9.414
0.3200	9.409
0.3233	9.409
0.3266	9.404
0.3300	9.400
0.3333	9.400
0.3500	9.385
0.3666	9.366
0.3833	9.352
0.4000	9.338
0.4166	9.323
0.4333	9.309
0.4500	9.295
0.4666	9.281
0.4833	9.271
0.5000	9.257
0.5166	9.248
0.5333	9.233
0.5500	9.219
0.5666	9.209
0.5833	9.195
0.6000	9.186
0.6166	9.176
0.6333	9.162
0.6500	9.152

0.6666	9.138
0.6833	9.129
0.7000	9.119
0.7166	9.110
0.7333	9.095
0.7500	9.086
0.7666	9.076
0.7833	9.067
0.8000	9.057
0.8166	9.048
0.8333	9.038
0.8500	9.029
0.8666	9.019
0.8833	9.010
0.9000	9.000
0.9166	8.991
0.9333	8.981
0.9500	8.972
0.9666	8.962
0.9833	8.958
1.0000	8.948
1.2000	8.825
1.4000	8.734
1.6000	8.649
1.8000	8.573
2.0000	8.502
2.2000	8.440
2.4000	8.383
2.6000	8.330
2.8000	8.278
3.0000	8.231
3.2000	8.188
3.4000	8.145
3.6000	8.102
3.8000	8.060
4.0000	8.017
4.2000	7.983
4.4000	7.950
4.6000	7.917
4.8000	7.888
5.0000	7.860
5.2000	7.831
5.4000	7.803
5.6000	7.774
5.8000	7.746
6.0000	7.722
6.2000	7.698
6.4000	7.679
6.6000	7.655
6.8000	7.636
7.0000	7.617
7.2000	7.598
7.4000	7.579
7.6000	7.556
7.8000	7.541
8.0000	7.527
8.2000	7.513
8.4000	7.494
8.6000	7.480
8.8000	7.461

9.0000	7.446
9.2000	7.432
9.4000	7.422
9.6000	7.413
9.8000	7.403
10.0000	7.394
12.0000	7.289
14.0000	7.218
16.0000	7.156
18.0000	7.118
20.0000	7.095
22.0000	7.061
24.0000	7.047
26.0000	7.033
28.0000	7.014
30.0000	7.009
32.0000	6.994
34.0000	6.990
36.0000	6.980
38.0000	6.976
40.0000	6.966
42.0000	6.956
44.0000	6.952
46.0000	6.947

18GW03 R. MW

0.0000	12.196
0.0033	14.747
0.0066	15.666
0.0100	12.238
0.0133	4.457
0.0166	10.728
0.0200	7.888
0.0233	6.791
0.0266	6.847
0.0300	6.620
0.0333	6.720
0.0366	6.672
0.0400	6.625
0.0433	6.724
0.0466	6.620
0.0500	6.606
0.0533	6.563
0.0566	6.582
0.0600	6.578
0.0633	6.582
0.0666	6.578
0.0700	6.568
0.0733	6.573
0.0766	6.568
0.0800	6.563
0.0833	6.563
0.0866	6.563
0.0900	6.559
0.0933	6.559
0.0966	6.554
0.1000	6.554
0.1033	6.549
0.1066	6.549
0.1100	6.545
0.1133	6.545
0.1166	6.540
0.1200	6.540
0.1233	6.535
0.1266	6.535
0.1300	6.535
0.1333	6.530
0.1366	6.530
0.1400	6.526
0.1433	6.526
0.1466	6.526
0.1500	6.521
0.1533	6.521
0.1566	6.521
0.1600	6.516
0.1633	6.516
0.1666	6.516
0.1700	6.516
0.1733	6.511
0.1766	6.511
0.1800	6.511
0.1833	6.507
0.1866	6.507
0.1900	6.507
0.1933	6.507
0.1966	6.507

0.2000	6.502
0.2033	6.502
0.2066	6.502
0.2100	6.497
0.2133	6.497
0.2166	6.497
0.2200	6.497
0.2233	6.492
0.2266	6.492
0.2300	6.492
0.2333	6.492
0.2366	6.488
0.2400	6.488
0.2433	6.488
0.2466	6.488
0.2500	6.488
0.2533	6.483
0.2566	6.483
0.2600	6.483
0.2633	6.483
0.2666	6.478
0.2700	6.478
0.2733	6.478
0.2766	6.478
0.2800	6.478
0.2833	6.474
0.2866	6.474
0.2900	6.474
0.2933	6.474
0.2966	6.474
0.3000	6.469
0.3033	6.469
0.3066	6.469
0.3100	6.469
0.3133	6.469
0.3166	6.464
0.3200	6.464
0.3233	6.464
0.3266	6.464
0.3300	6.464
0.3333	6.464
0.3500	6.459
0.3666	6.455
0.3833	6.450
0.4000	6.445
0.4166	6.440
0.4333	6.436
0.4500	6.431
0.4666	6.426
0.4833	6.426
0.5000	6.422
0.5166	6.417
0.5333	6.412
0.5500	6.412
0.5666	6.407
0.5833	6.403
0.6000	6.398
0.6166	6.393
0.6333	6.393
0.6500	6.388

0.6666	6.384
0.6833	6.379
0.7000	6.379
0.7166	6.374
0.7333	6.369
0.7500	6.365
0.7666	6.365
0.7833	6.360
0.8000	6.355
0.8166	6.355
0.8333	6.351
0.8500	6.346
0.8666	6.346
0.8833	6.341
0.9000	6.336
0.9166	6.336
0.9333	6.332
0.9500	6.332
0.9666	6.327
0.9833	6.322
1.0000	6.322
1.2000	6.280
1.4000	6.251
1.6000	6.223
1.8000	6.194
2.0000	6.166
2.2000	6.138
2.4000	6.114
2.6000	6.090
2.8000	6.067
3.0000	6.043
3.2000	6.019
3.4000	5.996
3.6000	5.972
3.8000	5.948
4.0000	5.925
4.2000	5.906
4.4000	5.882
4.6000	5.858
4.8000	5.839
5.0000	5.821
5.2000	5.797
5.4000	5.773
5.6000	5.754
5.8000	5.735
6.0000	5.716
6.2000	5.697
6.4000	5.679
6.6000	5.660
6.8000	5.645
7.0000	5.626
7.2000	5.608
7.4000	5.593
7.6000	5.570
7.8000	5.555
8.0000	5.537
8.2000	5.522
8.4000	5.508
8.6000	5.489
8.8000	5.475

9.0000	5.456
9.2000	5.442
9.4000	5.423
9.6000	5.409
9.8000	5.395
10.0000	5.380
12.0000	5.229
14.0000	5.101
16.0000	4.983
18.0000	4.878
20.0000	4.784
22.0000	4.694
24.0000	4.613
26.0000	4.542
28.0000	4.476
30.0000	4.410
32.0000	4.353
34.0000	4.305
36.0000	4.258
38.0000	4.211
40.0000	4.173
42.0000	4.140
44.0000	4.107
46.0000	4.073

R07GW06 F.NUM

0.0000	9.794
0.0033	10.450
0.0066	11.682
0.0100	13.586
0.0133	11.762
0.0166	12.422
0.0200	11.828
0.0233	12.248
0.0266	12.106
0.0300	12.177
0.0333	12.205
0.0366	12.210
0.0400	12.191
0.0433	12.295
0.0466	12.233
0.0500	12.309
0.0533	12.318
0.0566	12.332
0.0600	12.370
0.0633	12.361
0.0666	12.384
0.0700	12.398
0.0733	12.413
0.0766	12.427
0.0800	12.455
0.0833	12.455
0.0866	12.469
0.0900	12.483
0.0933	12.497
0.0966	12.512
0.1000	12.521
0.1033	12.535
0.1066	12.549
0.1100	12.559
0.1133	12.573
0.1166	12.582
0.1200	12.592
0.1233	12.606
0.1266	12.615
0.1300	12.625
0.1333	12.639
0.1366	12.648
0.1400	12.662
0.1433	12.672
0.1466	12.681
0.1500	12.691
0.1533	12.700
0.1566	12.714
0.1600	12.719
0.1633	12.728
0.1666	12.738
0.1700	12.747
0.1733	12.757
0.1766	12.761
0.1800	12.771
0.1833	12.780
0.1866	12.790
0.1900	12.794
0.1933	12.804
0.1966	12.809

0.2000	12.818
0.2033	12.823
0.2066	12.832
0.2100	12.837
0.2133	12.842
0.2166	12.851
0.2200	12.856
0.2233	12.860
0.2266	12.870
0.2300	12.875
0.2333	12.879
0.2366	12.884
0.2400	12.893
0.2433	12.898
0.2466	12.903
0.2500	12.908
0.2533	12.912
0.2566	12.922
0.2600	12.926
0.2633	12.931
0.2666	12.936
0.2700	12.941
0.2733	12.945
0.2766	12.950
0.2800	12.955
0.2833	12.959
0.2866	12.964
0.2900	12.969
0.2933	12.974
0.2966	12.974
0.3000	12.983
0.3033	12.988
0.3066	12.988
0.3100	12.992
0.3133	12.997
0.3166	13.002
0.3200	13.007
0.3233	13.011
0.3266	13.016
0.3300	13.021
0.3333	13.021
0.3500	13.044
0.3666	13.063
0.3833	13.077
0.4000	13.096
0.4166	13.110
0.4333	13.124
0.4500	13.134
0.4666	13.148
0.4833	13.162
0.5000	13.172
0.5166	13.181
0.5333	13.190
0.5500	13.200
0.5666	13.209
0.5833	13.214
0.6000	13.223
0.6166	13.228
0.6333	13.237
0.6500	13.242

0.6666	13.252
0.6833	13.256
0.7000	13.261
0.7166	13.266
0.7333	13.271
0.7500	13.275
0.7666	13.280
0.7833	13.285
0.8000	13.289
0.8166	13.294
0.8333	13.294
0.8500	13.299
0.8666	13.303
0.8833	13.308
0.9000	13.308
0.9166	13.313
0.9333	13.318
0.9500	13.318
0.9666	13.318
0.9833	13.322
1.0000	13.327
1.2000	13.351
1.4000	13.365
1.6000	13.374
1.8000	13.384
2.0000	13.388
2.2000	13.393
2.4000	13.398
2.6000	13.398
2.8000	13.402
3.0000	13.402
3.2000	13.407
3.4000	13.407
3.6000	13.407
3.8000	13.407
4.0000	13.407
4.2000	13.407
4.4000	13.412
4.6000	13.412
4.8000	13.412
5.0000	13.412
5.2000	13.412
5.4000	13.412
5.6000	13.412
5.8000	13.412
6.0000	13.417
6.2000	13.417
6.4000	13.417
6.6000	13.417
6.8000	13.417
7.0000	13.417
7.2000	13.417
7.4000	13.417
7.6000	13.417
7.8000	13.417
8.0000	13.417
8.2000	13.417
8.4000	13.417
8.6000	13.417
8.8000	13.417

9.0000	13.417
9.2000	13.417
9.4000	13.417
9.6000	13.417
9.8000	13.417
10.0000	13.417
12.0000	13.417
14.0000	13.417
16.0000	13.426
18.0000	13.426
20.0000	13.421
22.0000	13.426
24.0000	13.426
26.0000	13.431
28.0000	13.431
30.0000	13.431

K7GW08F.N

0.0000	8.287
0.0033	6.070
0.0066	4.505
0.0100	8.154
0.0133	7.728
0.0166	9.290
0.0200	10.341
0.0233	10.104
0.0266	10.615
0.0300	10.421
0.0333	10.246
0.0366	9.981
0.0400	9.560
0.0433	9.622
0.0466	9.484
0.0500	9.645
0.0533	9.768
0.0566	9.924
0.0600	10.010
0.0633	10.052
0.0666	10.033
0.0700	10.000
0.0733	9.972
0.0766	9.962
0.0800	9.976
0.0833	10.000
0.0866	10.033
0.0900	10.057
0.0933	10.071
0.0966	10.080
0.1000	10.080
0.1033	10.085
0.1066	10.090
0.1100	10.099
0.1133	10.109
0.1166	10.118
0.1200	10.128
0.1233	10.133
0.1266	10.142
0.1300	10.147
0.1333	10.151
0.1366	10.161
0.1400	10.166
0.1433	10.170
0.1466	10.180
0.1500	10.185
0.1533	10.189
0.1566	10.194
0.1600	10.203
0.1633	10.208
0.1666	10.213
0.1700	10.218
0.1733	10.222
0.1766	10.227
0.1800	10.232
0.1833	10.237
0.1866	10.241
0.1900	10.246
0.1933	10.251
0.1966	10.256

0.2000	10.260
0.2033	10.265
0.2066	10.265
0.2100	10.270
0.2133	10.274
0.2166	10.279
0.2200	10.284
0.2233	10.289
0.2266	10.293
0.2300	10.293
0.2333	10.298
0.2366	10.303
0.2400	10.308
0.2433	10.312
0.2466	10.312
0.2500	10.317
0.2533	10.322
0.2566	10.322
0.2600	10.326
0.2633	10.331
0.2666	10.336
0.2700	10.341
0.2733	10.341
0.2766	10.345
0.2800	10.350
0.2833	10.350
0.2866	10.355
0.2900	10.355
0.2933	10.355
0.2966	10.360
0.3000	10.364
0.3033	10.369
0.3066	10.369
0.3100	10.374
0.3133	10.374
0.3166	10.374
0.3200	10.378
0.3233	10.378
0.3266	10.383
0.3300	10.383
0.3333	10.388
0.3500	10.402
0.3666	10.416
0.3833	10.426
0.4000	10.435
0.4166	10.445
0.4333	10.454
0.4500	10.464
0.4666	10.473
0.4833	10.483
0.5000	10.492
0.5166	10.497
0.5333	10.506
0.5500	10.511
0.5666	10.520
0.5833	10.525
0.6000	10.530
0.6166	10.535
0.6333	10.539
0.6500	10.549

0.6666	10.554
0.6833	10.558
0.7000	10.558
0.7166	10.563
0.7333	10.568
0.7500	10.572
0.7666	10.572
0.7833	10.582
0.8000	10.582
0.8166	10.582
0.8333	10.587
0.8500	10.587
0.8666	10.587
0.8833	10.591
0.9000	10.591
0.9166	10.591
0.9333	10.591
0.9500	10.591
0.9666	10.596
0.9833	10.601
1.0000	10.601
1.2000	10.634
1.4000	10.653
1.6000	10.662
1.8000	10.667
2.0000	10.662
2.2000	10.672
2.4000	10.681
2.6000	10.681
2.8000	10.681
3.0000	10.681
3.2000	10.686
3.4000	10.686
3.6000	10.691
3.8000	10.686
4.0000	10.686
4.2000	10.686
4.4000	10.686
4.6000	10.686
4.8000	10.681
5.0000	10.681
5.2000	10.691
5.4000	10.686
5.6000	10.691
5.8000	10.691
6.0000	10.686
6.2000	10.691
6.4000	10.686
6.6000	10.691
6.8000	10.691
7.0000	10.691
7.2000	10.691
7.4000	10.691
7.6000	10.691
7.8000	10.691
8.0000	10.691
8.2000	10.691
8.4000	10.691
8.6000	10.691
8.8000	10.691

9.0000	10.691
9.2000	10.691
9.4000	10.691
9.6000	10.691
9.8000	10.691
10.0000	10.691
12.0000	10.691

6GW 01F.N

0.0000	4.221
0.0033	-3.607
0.0066	0.664
0.0100	2.165
0.0133	2.056
0.0166	1.871
0.0200	2.559
0.0233	8.322
0.0266	9.368
0.0300	4.321
0.0333	5.080
0.0366	6.592
0.0400	5.568
0.0433	5.748
0.0466	5.848
0.0500	5.791
0.0533	5.815
0.0566	5.820
0.0600	5.829
0.0633	5.839
0.0666	5.848
0.0700	5.857
0.0733	5.867
0.0766	5.881
0.0800	5.881
0.0833	5.895
0.0866	5.900
0.0900	5.914
0.0933	5.929
0.0966	5.933
0.1000	5.938
0.1033	5.948
0.1066	5.957
0.1100	5.967
0.1133	5.976
0.1166	5.986
0.1200	5.995
0.1233	6.000
0.1266	6.009
0.1300	6.019
0.1333	6.028
0.1366	6.038
0.1400	6.042
0.1433	6.052
0.1466	6.061
0.1500	6.066
0.1533	6.076
0.1566	6.085
0.1600	6.095
0.1633	6.104
0.1666	6.114
0.1700	6.118
0.1733	6.128
0.1766	6.132
0.1800	6.142
0.1833	6.151
0.1866	6.156
0.1900	6.166
0.1933	6.170
0.1966	6.180

0.2000	6.185
0.2033	6.189
0.2066	6.204
0.2100	6.208
0.2133	6.218
0.2166	6.223
0.2200	6.232
0.2233	6.237
0.2266	6.246
0.2300	6.251
0.2333	6.260
0.2366	6.265
0.2400	6.270
0.2433	6.279
0.2466	6.284
0.2500	6.294
0.2533	6.298
0.2566	6.308
0.2600	6.313
0.2633	6.317
0.2666	6.327
0.2700	6.332
0.2733	6.336
0.2766	6.346
0.2800	6.351
0.2833	6.360
0.2866	6.365
0.2900	6.370
0.2933	6.374
0.2966	6.384
0.3000	6.389
0.3033	6.398
0.3066	6.403
0.3100	6.407
0.3133	6.412
0.3166	6.422
0.3200	6.426
0.3233	6.431
0.3266	6.436
0.3300	6.445
0.3333	6.450
0.3500	6.488
0.3666	6.521
0.3833	6.550
0.4000	6.583
0.4166	6.616
0.4333	6.644
0.4500	6.673
0.4666	6.706
0.4833	6.735
0.5000	6.758
0.5166	6.787
0.5333	6.815
0.5500	6.844
0.5666	6.867
0.5833	6.896
0.6000	6.919
0.6166	6.948
0.6333	6.972
0.6500	6.995

0.6666	7.019
0.6833	7.043
0.7000	7.066
0.7166	7.090
0.7333	7.109
0.7500	7.133
0.7666	7.152
0.7833	7.175
0.8000	7.199
0.8166	7.218
0.8333	7.237
0.8500	7.256
0.8666	7.275
0.8833	7.294
0.9000	7.313
0.9166	7.332
0.9333	7.351
0.9500	7.370
0.9666	7.389
0.9833	7.403
1.0000	7.422
1.2000	7.659
1.4000	7.815
1.6000	7.943
1.8000	8.047
2.0000	8.142
2.2000	8.218
2.4000	8.284
2.6000	8.341
2.8000	8.388
3.0000	8.431
3.2000	8.464
3.4000	8.497
3.6000	8.521
3.8000	8.549
4.0000	8.568
4.2000	8.587
4.4000	8.606
4.6000	8.620
4.8000	8.634
5.0000	8.644
5.2000	8.653
5.4000	8.663
5.6000	8.672
5.8000	8.677
6.0000	8.686
6.2000	8.691
6.4000	8.696
6.6000	8.705
6.8000	8.705
7.0000	8.710
7.2000	8.715
7.4000	8.720
7.6000	8.724
7.8000	8.724
8.0000	8.729
8.2000	8.734
8.4000	8.734
8.6000	8.739
8.8000	8.739

9.0000	8.739
9.2000	8.743
9.4000	8.743
9.6000	8.748
9.8000	8.748
10.0000	8.748
12.0000	8.758
14.0000	8.762
16.0000	8.767
18.0000	8.776
20.0000	8.776
22.0000	8.776
24.0000	8.776
26.0000	8.776
28.0000	8.781
30.0000	8.781
32.0000	8.781

18GW Ø1 F. NUM

0.0000	8.145
0.0033	3.921
0.0066	-0.449
0.0100	0.413
0.0133	2.098
0.0166	3.159
0.0200	8.928
0.0233	7.328
0.0266	5.176
0.0300	5.756
0.0333	5.566
0.0366	5.689
0.0400	5.803
0.0433	5.860
0.0466	5.903
0.0500	6.036
0.0533	6.107
0.0566	6.198
0.0600	6.231
0.0633	10.199
0.0666	8.092
0.0700	8.838
0.0733	8.406
0.0766	8.306
0.0800	8.330
0.0833	8.301
0.0866	8.335
0.0900	8.358
0.0933	8.377
0.0966	8.406
0.1000	8.425
0.1033	8.448
0.1066	8.467
0.1100	8.486
0.1133	8.505
0.1166	8.524
0.1200	8.543
0.1233	8.562
0.1266	8.581
0.1300	8.596
0.1333	8.615
0.1366	8.629
0.1400	8.643
0.1433	8.662
0.1466	8.676
0.1500	8.691
0.1533	8.705
0.1566	8.719
0.1600	8.729
0.1633	8.743
0.1666	8.757
0.1700	8.766
0.1733	8.781
0.1766	8.790
0.1800	8.800
0.1833	8.814
0.1866	8.823
0.1900	8.833
0.1933	8.842
0.1966	8.852

0.2000	8.861
0.2033	8.871
0.2066	8.880
0.2100	8.885
0.2133	8.895
0.2166	8.904
0.2200	8.914
0.2233	8.918
0.2266	8.923
0.2300	8.933
0.2333	8.937
0.2366	8.947
0.2400	8.952
0.2433	8.956
0.2466	8.966
0.2500	8.971
0.2533	8.975
0.2566	8.980
0.2600	8.990
0.2633	8.994
0.2666	8.999
0.2700	9.004
0.2733	9.008
0.2766	9.013
0.2800	9.018
0.2833	9.023
0.2866	9.027
0.2900	9.032
0.2933	9.037
0.2966	9.042
0.3000	9.046
0.3033	9.046
0.3066	9.051
0.3100	9.056
0.3133	9.061
0.3166	9.061
0.3200	9.065
0.3233	9.070
0.3266	9.070
0.3300	9.075
0.3333	9.080
0.3500	9.094
0.3666	9.108
0.3833	9.122
0.4000	9.132
0.4166	9.141
0.4333	9.151
0.4500	9.156
0.4666	9.165
0.4833	9.170
0.5000	9.179
0.5166	9.184
0.5333	9.189
0.5500	9.194
0.5666	9.198
0.5833	9.198
0.6000	9.203
0.6166	9.208
0.6333	9.213
0.6500	9.213

0.6666	9.217
0.6833	9.217
0.7000	9.222
0.7166	9.222
0.7333	9.222
0.7500	9.227
0.7666	9.227
0.7833	9.227
0.8000	9.231
0.8166	9.231
0.8333	9.231
0.8500	9.236
0.8666	9.236
0.8833	9.236
0.9000	9.236
0.9166	9.236
0.9333	9.241
0.9500	9.241
0.9666	9.241
0.9833	9.241
1.0000	9.241
1.2000	9.255
1.4000	9.260
1.6000	9.260
1.8000	9.260
2.0000	9.265
2.2000	9.265
2.4000	9.265
2.6000	9.265
2.8000	9.265
3.0000	9.265
3.2000	9.265
3.4000	9.265
3.6000	9.265
3.8000	9.260
4.0000	9.260
4.2000	9.260
4.4000	9.260
4.6000	9.260
4.8000	9.260
5.0000	9.265
5.2000	9.265
5.4000	9.265
5.6000	9.269
5.8000	9.269
6.0000	9.269
6.2000	9.269
6.4000	9.269
6.6000	9.269
6.8000	9.265
7.0000	9.265
7.2000	9.265
7.4000	9.265
7.6000	9.265
7.8000	9.265
8.0000	9.265
8.2000	9.265
8.4000	9.265
8.6000	9.265
8.8000	9.265

9.0000	9.265
9.2000	9.265
9.4000	9.265
9.6000	9.265
9.8000	9.265
10.0000	9.265
12.0000	9.265
14.0000	9.255

5GW Ø1 F, Nc

0.0000	10.466
0.0033	7.785
0.0066	3.152
0.0100	0.792
0.0133	3.548
0.0166	4.996
0.0200	4.515
0.0233	4.167
0.0266	5.911
0.0300	13.561
0.0333	9.582
0.0366	7.623
0.0400	8.056
0.0433	8.375
0.0466	8.598
0.0500	8.536
0.0533	8.503
0.0566	8.522
0.0600	8.551
0.0633	8.579
0.0666	8.598
0.0700	8.622
0.0733	8.646
0.0766	8.665
0.0800	8.684
0.0833	8.708
0.0866	8.727
0.0900	8.746
0.0933	8.765
0.0966	8.784
0.1000	8.803
0.1033	8.822
0.1066	8.841
0.1100	8.860
0.1133	8.874
0.1166	8.893
0.1200	8.912
0.1233	8.926
0.1266	8.945
0.1300	8.964
0.1333	8.979
0.1366	8.993
0.1400	9.012
0.1433	9.026
0.1466	9.040
0.1500	9.055
0.1533	9.074
0.1566	9.088
0.1600	9.102
0.1633	9.116
0.1666	9.131
0.1700	9.145
0.1733	9.159
0.1766	9.173
0.1800	9.188
0.1833	9.202
0.1866	9.212
0.1900	9.226
0.1933	9.240
0.1966	9.250

0.2000	9.264
0.2033	9.278
0.2066	9.288
0.2100	9.302
0.2133	9.311
0.2166	9.326
0.2200	9.335
0.2233	9.349
0.2266	9.359
0.2300	9.373
0.2333	9.383
0.2366	9.392
0.2400	9.402
0.2433	9.416
0.2466	9.426
0.2500	9.435
0.2533	9.444
0.2566	9.459
0.2600	9.468
0.2633	9.478
0.2666	9.487
0.2700	9.497
0.2733	9.506
0.2766	9.516
0.2800	9.525
0.2833	9.535
0.2866	9.544
0.2900	9.554
0.2933	9.563
0.2966	9.573
0.3000	9.582
0.3033	9.587
0.3066	9.597
0.3100	9.606
0.3133	9.615
0.3166	9.625
0.3200	9.630
0.3233	9.639
0.3266	9.649
0.3300	9.658
0.3333	9.663
0.3500	9.706
0.3666	9.744
0.3833	9.782
0.4000	9.820
0.4166	9.853
0.4333	9.886
0.4500	9.915
0.4666	9.943
0.4833	9.972
0.5000	10.000
0.5166	10.024
0.5333	10.048
0.5500	10.072
0.5666	10.091
0.5833	10.114
0.6000	10.129
0.6166	10.152
0.6333	10.167
0.6500	10.186

0.6666	10.200
0.6833	10.219
0.7000	10.233
0.7166	10.248
0.7333	10.262
0.7500	10.276
0.7666	10.290
0.7833	10.300
0.8000	10.314
0.8166	10.324
0.8333	10.333
0.8500	10.347
0.8666	10.357
0.8833	10.366
0.9000	10.376
0.9166	10.385
0.9333	10.395
0.9500	10.404
0.9666	10.409
0.9833	10.419
1.0000	10.423
1.2000	10.518
1.4000	10.571
1.6000	10.609
1.8000	10.642
2.0000	10.666
2.2000	10.680
2.4000	10.694
2.6000	10.704
2.8000	10.713
3.0000	10.718
3.2000	10.723
3.4000	10.727
3.6000	10.732
3.8000	10.737
4.0000	10.742
4.2000	10.742
4.4000	10.742
4.6000	10.746
4.8000	10.742
5.0000	10.737
5.2000	10.737
5.4000	10.742
5.6000	10.742
5.8000	10.746
6.0000	10.746
6.2000	10.746
6.4000	10.746
6.6000	10.751
6.8000	10.751
7.0000	10.751
7.2000	10.751
7.4000	10.751
7.6000	10.751
7.8000	10.756
8.0000	10.756
8.2000	10.756
8.4000	10.761
8.6000	10.756
8.8000	10.756

9.0000	10.756
9.2000	10.761
9.4000	10.756
9.6000	10.761
9.8000	10.761
10.0000	10.761
12.0000	10.761
14.0000	10.761
16.0000	10.761
18.0000	10.765
20.0000	10.913

18GW02F.

0.0000	4.182
0.0033	-0.545
0.0066	-3.577
0.0100	-3.563
0.0133	-0.302
0.0166	1.081
0.0200	0.265
0.0233	0.275
0.0266	7.366
0.0300	6.871
0.0333	4.844
0.0366	3.444
0.0400	3.420
0.0433	3.902
0.0466	4.368
0.0500	4.416
0.0533	4.163
0.0566	4.006
0.0600	4.040
0.0633	4.139
0.0666	4.192
0.0700	4.168
0.0733	4.144
0.0766	4.135
0.0800	4.154
0.0833	4.173
0.0866	4.178
0.0900	4.173
0.0933	4.173
0.0966	4.182
0.1000	4.187
0.1033	4.192
0.1066	4.197
0.1100	4.202
0.1133	4.206
0.1166	4.206
0.1200	4.211
0.1233	4.221
0.1266	4.221
0.1300	4.225
0.1333	4.230
0.1366	4.234
0.1400	4.240
0.1433	4.240
0.1466	4.244
0.1500	4.249
0.1533	4.254
0.1566	4.258
0.1600	4.263
0.1633	4.268
0.1666	4.273
0.1700	4.273
0.1733	4.278
0.1766	4.282
0.1800	4.287
0.1833	4.292
0.1866	4.292
0.1900	4.297
0.1933	4.301
0.1966	4.306

0.2000	4.311
0.2033	4.311
0.2066	4.316
0.2100	4.321
0.2133	4.325
0.2166	4.325
0.2200	4.330
0.2233	4.335
0.2266	4.340
0.2300	4.340
0.2333	4.344
0.2366	4.349
0.2400	4.349
0.2433	4.354
0.2466	4.359
0.2500	4.359
0.2533	4.363
0.2566	4.368
0.2600	4.373
0.2633	4.373
0.2666	4.378
0.2700	4.382
0.2733	4.387
0.2766	4.387
0.2800	4.392
0.2833	4.397
0.2866	4.397
0.2900	4.401
0.2933	4.406
0.2966	4.406
0.3000	4.411
0.3033	4.416
0.3066	4.420
0.3100	4.420
0.3133	4.425
0.3166	4.430
0.3200	4.430
0.3233	4.435
0.3266	4.439
0.3300	4.439
0.3333	4.444
0.3500	4.463
0.3666	4.478
0.3833	4.497
0.4000	4.511
0.4166	4.525
0.4333	4.539
0.4500	4.554
0.4666	4.568
0.4833	4.582
0.5000	4.596
0.5166	4.611
0.5333	4.620
0.5500	4.635
0.5666	4.649
0.5833	4.658
0.6000	4.673
0.6166	4.682
0.6333	4.696
0.6500	4.706

0.6666	4.721
0.6833	4.730
0.7000	4.739
0.7166	4.749
0.7333	4.758
0.7500	4.768
0.7666	4.778
0.7833	4.787
0.8000	4.797
0.8166	4.806
0.8333	4.816
0.8500	4.825
0.8666	4.835
0.8833	4.844
0.9000	4.854
0.9166	4.863
0.9333	4.873
0.9500	4.877
0.9666	4.887
0.9833	4.897
1.0000	4.906
1.2000	5.011
1.4000	5.092
1.6000	5.158
1.8000	5.220
2.0000	5.277
2.2000	5.334
2.4000	5.382
2.6000	5.420
2.8000	5.468
3.0000	5.511
3.2000	5.553
3.4000	5.591
3.6000	5.625
3.8000	5.653
4.0000	5.687
4.2000	5.715
4.4000	5.744
4.6000	5.772
4.8000	5.806
5.0000	5.834
5.2000	5.863
5.4000	5.891
5.6000	5.910
5.8000	5.939
6.0000	5.958
6.2000	5.977
6.4000	5.996
6.6000	6.015
6.8000	6.034
7.0000	6.053
7.2000	6.072
7.4000	6.086
7.6000	6.105
7.8000	6.120
8.0000	6.134
8.2000	6.148
8.4000	6.162
8.6000	6.176
8.8000	6.196

9.0000	6.210
9.2000	6.224
9.4000	6.238
9.6000	6.253
9.8000	6.267
10.0000	6.277
12.0000	6.381
14.0000	6.471
16.0000	6.533
18.0000	6.581
20.0000	6.629
22.0000	6.676
24.0000	6.700
26.0000	6.728
28.0000	6.757

18GW03 F. Nm

0.0000	2.192
0.0033	-1.014
0.0066	-4.711
0.0100	-7.067
0.0133	-6.352
0.0166	-4.060
0.0200	-3.275
0.0233	-3.922
0.0266	-4.093
0.0300	-4.055
0.0333	-1.969
0.0366	7.429
0.0400	0.471
0.0433	-1.408
0.0466	-0.744
0.0500	0.703
0.0533	0.950
0.0566	0.361
0.0600	0.006
0.0633	-0.032
0.0666	0.243
0.0700	0.323
0.0733	0.219
0.0766	0.186
0.0800	0.219
0.0833	0.219
0.0866	0.210
0.0900	0.214
0.0933	0.214
0.0966	0.219
0.1000	0.224
0.1033	0.224
0.1066	0.205
0.1100	0.219
0.1133	0.323
0.1166	-0.302
0.1200	-0.421
0.1233	1.315
0.1266	0.888
0.1300	-0.193
0.1333	-0.326
0.1366	0.281
0.1400	0.499
0.1433	0.195
0.1466	0.157
0.1500	0.248
0.1533	0.243
0.1566	0.224
0.1600	0.233
0.1633	0.233
0.1666	0.233
0.1700	0.233
0.1733	0.238
0.1766	0.238
0.1800	0.238
0.1833	0.257
0.1866	0.333
0.1900	0.214
0.1933	0.124
0.1966	0.295

0.2000	0.252
0.2033	0.233
0.2066	0.248
0.2100	0.248
0.2133	0.248
0.2166	0.248
0.2200	0.252
0.2233	0.252
0.2266	0.252
0.2300	0.252
0.2333	0.252
0.2366	0.252
0.2400	0.257
0.2433	0.257
0.2466	0.257
0.2500	0.248
0.2533	0.271
0.2566	0.257
0.2600	0.262
0.2633	0.262
0.2666	0.262
0.2700	0.262
0.2733	0.262
0.2766	0.267
0.2800	0.267
0.2833	0.267
0.2866	0.267
0.2900	0.271
0.2933	0.267
0.2966	0.271
0.3000	0.271
0.3033	0.271
0.3066	0.276
0.3100	0.271
0.3133	0.276
0.3166	0.271
0.3200	0.281
0.3233	0.271
0.3266	0.281
0.3300	0.276
0.3333	0.276
0.3500	0.285
0.3666	0.285
0.3833	0.290
0.4000	0.295
0.4166	0.300
0.4333	0.304
0.4500	0.309
0.4666	0.309
0.4833	0.314
0.5000	0.328
0.5166	0.290
0.5333	0.295
0.5500	0.285
0.5666	0.342
0.5833	0.229
0.6000	0.229
0.6166	0.243
0.6333	0.338
0.6500	0.395

0.6666	0.357
0.6833	0.347
0.7000	0.039
0.7166	0.423
0.7333	0.371
0.7500	0.385
0.7666	-0.117
0.7833	0.243
0.8000	0.361
0.8166	0.523
0.8333	0.323
0.8500	0.267
0.8666	0.328
0.8833	0.452
0.9000	0.300
0.9166	0.575
0.9333	0.395
0.9500	0.418
0.9666	0.395
0.9833	0.466
1.0000	0.399
1.2000	0.447
1.4000	0.480
1.6000	0.513
1.8000	0.546
2.0000	0.575
2.2000	0.603
2.4000	0.632
2.6000	0.660
2.8000	0.689
3.0000	0.712
3.2000	0.741
3.4000	0.765
3.6000	0.793
3.8000	0.812
4.0000	0.841
4.2000	0.864
4.4000	0.883
4.6000	0.907
4.8000	0.931
5.0000	0.954
5.2000	0.978
5.4000	1.002
5.6000	1.026
5.8000	1.049
6.0000	1.068
6.2000	1.087
6.4000	1.111
6.6000	1.130
6.8000	1.154
7.0000	1.173
7.2000	1.187
7.4000	1.206
7.6000	1.225
7.8000	1.244
8.0000	1.267
8.2000	1.282
8.4000	1.301
8.6000	1.320
8.8000	1.339

9.0000	1.358
9.2000	1.377
9.4000	1.391
9.6000	1.405
9.8000	1.424
10.0000	1.443
12.0000	1.623
14.0000	1.770
16.0000	1.893
18.0000	2.031
20.0000	2.159
22.0000	2.249
24.0000	2.353
26.0000	2.448
28.0000	2.538
30.0000	2.619
32.0000	2.699
34.0000	2.775
36.0000	2.837
38.0000	2.908
40.0000	2.965
42.0000	3.022
44.0000	3.069
46.0000	3.116

SGW Ø1 R. Num

0.0000	18.271
0.0033	22.310
0.0066	13.808
0.0100	12.712
0.0133	14.434
0.0166	13.727
0.0200	13.765
0.0233	13.689
0.0266	13.613
0.0300	13.571
0.0333	13.537
0.0366	13.481
0.0400	13.447
0.0433	13.405
0.0466	13.381
0.0500	13.348
0.0533	13.310
0.0566	13.291
0.0600	13.258
0.0633	13.229
0.0666	13.196
0.0700	13.172
0.0733	13.144
0.0766	13.096
0.0800	13.101
0.0833	13.068
0.0866	13.039
0.0900	13.025
0.0933	12.992
0.0966	12.968
0.1000	12.944
0.1033	12.921
0.1066	12.902
0.1100	12.878
0.1133	12.854
0.1166	12.831
0.1200	12.807
0.1233	12.793
0.1266	12.769
0.1300	12.755
0.1333	12.717
0.1366	12.702
0.1400	12.698
0.1433	12.679
0.1466	12.655
0.1500	12.636
0.1533	12.622
0.1566	12.603
0.1600	12.584
0.1633	12.570
0.1666	12.555
0.1700	12.541
0.1733	12.522
0.1766	12.508
0.1800	12.489
0.1833	12.475
0.1866	12.460
0.1900	12.446
0.1933	12.432
0.1966	12.418

14.34
10.76
3.5

APPENDIX 3.D

CONFIRMATION STUDY DATA

TABLE 3.A-1

CONFIRMATION STUDY
SITE 1 - ROUND 1 DATA SUMMARY
NAVAL STATION ROOSEVELT ROADS, PUERTO RICO

PARAMETER	SURFACE WATER			SEDIMENT			SOIL					
	16W1	16W2	16W3	1SE1	1SE2	1SE3	1S1A	1S2A	1S3A	1S4A	1S5A	1S6A
1,1,2,2-Trichloroethane (µg/L)	<0.53	<0.63	1.0									
Methyl isobutyl ketone (µg/L)	<0.61	<0.77	2.5									
Chromium (total) (µg/L)	286	303	309	6.48	4.48	4.48	26.3	18.5	26.8	24.8	25.0	25.2
Oil & Grease (mg/L)	0.4	0.6	0.4	63	86	120	189	201	226	195	188	88
Chloroform (µg/L)	<0.50	2.6	<0.49									

Notes: µg/L = microgram per liter
mg/L = milligram per liter
mg/kg = milligram per kilogram

TABLE 3.A-2

CONFIRMATION STUDY
SITE 1 - ROUND 2 DATA SUMMARY
NAVAL STATION ROOSEVELT ROADS, PUERTO RICO

PARAMETER (µg/L)	SURFACE WATER		
	16W01	16W02	16W03
Cadmium (total)	13.0	6.0	6.0
Chromium (total)	512	221	173
Copper (total)	629	121	168
Nickel (total)	215	108	74.0
Zinc (total)	400	113	193
Chromium (total)	73.2	<10.0	<10.0

Note: µg/L = microgram per liter

TABLE 3.A-3

CONFIRMATION STUDY
SITE 2 - ROUND 1 DATA SUMMARY
NAVAL STATION ROOSEVELT ROADS, PUERTO RICO

PARAMETER	SURFACE WATER					SEDIMENT					SOIL							
	2SW1	2SW2	2SW3	2SW4	2SW5	2SE1	2SE2	2SE3	2SE4	2SE5	2S1N	2S2N	2S3N	2S4N	2S5N	2S6N	2S7N	2S8N
Chromium (total) (µg/L)	3.00	4.00	3.00	3.00	3.00													
Lead (mg/kg)						<2.99	<4.27	53.2	16.9	63.9	232	<3.86	10.2	345	<3.53	6.42	<3.30	<2.97
Chromium (mg/kg)						12.6	32.9	88.4	5.28	16.2	9.00	3.73	46.4	20.4	33.6	36.9	48.2	24.2

Note: µg/L = microgram per liter
mg/kg = milligram per kilogram

TABLE 3.A-4

CONFIRMATION STUDY
SITE 2 - ROUND 2 DATA SUMMARY
NAVAL STATION ROOSEVELT ROADS, PUERTO RICO

PARAMETER	SURFACE WATER (µg/L)					SEDIMENT (µg/kg)				
	2SW01	2SW02	2WS03	2SW04	2SW05	2SE01	2SE02	2SE03	2SE04	2SE05
Chromium	<7.6	<7.6	<7.6	<7.6	<7.6	36.2	9.38	16.0	8.13	8.49
Lead	<4.4	<4.4	<4.4	8.4	<4.4	2.82	3.15	25.0	219	312

Notes: µg/L = microgram per liter
µg/kg = microgram per kilogram

TABLE 3.A-5

CONFIRMATION STUDY
SITE 5 - ROUND 1 DATA SUMMARY
NAVAL STATION ROOSEVELT ROADS, PUERTO RICO

PARAMETER	GROUNDWATER (µg/L)				
	5GW1	5GW2	5GW3	5GW4	5GW5
Chromium (+6)	<20.0	<20.0	22.0	<20.0	34.6
Chloroform	0.54	<0.43	<0.46	<0.46	<0.48
1,1,2,2-Trichloroethane	1.1	<0.49	<0.52	<0.51	<0.51
Pentachlorophenol	22	11	12	25	<10
bis(2-ethylhexyl)phthalate	0.7	0.4	<1	1	2
Aldrin	0.045	<0.013	<0.013	<0.013	<0.014
beta-BHC	<0.013	0.02	<0.013	<0.013	<0.014
Arsenic (total)	20.5	<15.0	93.4	88.6	83.9
Beryllium (total)	<3.00	<3.00	<3.00	5.06	<3.00
Chromium (total)	3.25	6.05	18.1	26.9	28.4
Copper (total)	23.9	58.2	1850	113	55.8
Nickel (total)	<3.00	4.32	46.3	48.0	12.6
Thallium (total)	10.6	9.64	4310	3860	3450
Zinc (total)	33.2	55.1	124	4580	76.3

PARAMETER	SURFACE WATER (µg/L)				
	5SW1	5SW2	5SW3	5SW4	5SW5
Chromium (+6)	<20.0	31.9	<20.0	<20.0	<20.0
bis(2-ethylhexyl)phthalate	1	1	2	<1	1
Di-n-(octyl)phthalate	1	7	4	<1	2
Arsenic (total)	102	105	97.0	96.0	104
Chromium (total)	<3.00	<6.00	7.49	6.00	6.39
Copper (total)	2.00	<3.00	<3.00	<3.00	<3.00
Nickel (total)	<5.00	<6.00	<6.00	<6.00	33.6
Thallium (total)	83.3	86.7	89.1	116	111
Zinc (total)	15.0	16.1	4.31	19.9	5.01

TABLE 3.A-5 (Continued)

CONFIRMATION STUDY
SITE 5 - ROUND 1 DATA SUMMARY
NAVAL STATION ROOSEVELT ROADS, PUERTO RICO

PARAMETER	SEDIMENT (mg/kg)				
	5SE1	5SE2	5SE3	5SE4	5SE5
Bis(2-ethylhexyl)phthalate	0.1	<0.3	<0.2	<0.3	<0.2
Di-n (octyl)phthalate	1	4	0.5	<0.3	0.5
Antimony	3.8	5.2	5.1	24	7.3
Arsenic	14.1	<11.6	13.4	32.0	22.0
Beryllium	<0.415	<0.776	<0.526	1.33	0.954
Chromium	21.9	28.4	29.3	54.1	33.5
Copper	36.8	54.7	43.4	119	78.8
Lead	76.4	<24.4	21.0	<19.1	<12.5
Mercury	0.109	<0.187	<0.131	<0.174	<0.100
Nickel	6.72	11.8	8.77	22.3	15.6
Selenium	19.8	31.3	27.4	85.4	49.7
Zinc	25.9	42.8	32.8	72.8	50.8

Notes: µg/L = microgram per liter
mg/kg = milligram per kilogram

TABLE 3.A-6

CONFIRMATION STUDY
SITE 5 - ROUND 2 DATA SUMMARY
NAVAL STATION ROOSEVELT ROADS, PUERTO RICO

PARAMETER	GROUNDWATER (µg/L)					SURFACE WATER (µg/L)				
	56W01	56W02	56W03	56W04	56W05	5SW01	5SW02	5SW03	5SW04	5SW05
Bis (2-ethylhexyl)phthalate	<1.0	<1.0	1.5	1.0	22	1.7	<1.0	1.6	2.4	10
Arsenic (total)	2.5	<3.2	<3.2	<3.2	<3.2	<3.2	<3.2	<3.2	<3.2	<3.2
Chromium (total)	16.0	9.7	205	178	163	108	3.7	12.4	7.7	105
Copper (total)	<2.8	9.2	1780	<2.8	154	<2.8	<2.8	24.8	<2.8	<2.8
Nickel (total)	<8.6	<8.6	34.1	17.8	20.5	<8.6	<8.6	<8.6	<8.6	<8.6
Selenium (total)	10.5	9.5	359	310	122	181	11.0	14.9	8.0	221
Silver (total)	<3.6	3.7	37.7	24.7	37.6	28.8	<3.6	3.8	<3.6	28.9
Thallium (total)	<5.0	<5.0	<10.0	<10.0	69.4	<10.0	<5.0	<5.0	<5.0	<10.0
Zinc (total)	35.0	<1.8	222	2.0	192	<1.8	<1.8	20.8	<1.8	<1.8
Phenols	76	30	350	800	220	540	29	57	33	130
Chromium (+6)	<10.0	<10.0	<10.0	<10.0	110	<10.0	<10.0	<10.0	<10.0	<10.0

Note: µg/L = microgram per liter

TABLE 3.A-6 (Continued)

CONFIRMATION STUDY
SITE 5 - ROUND 2 DATA SUMMARY
NAVAL STATION ROOSEVELT ROADS, PUERTO RICO

PARAMETER	SEDIMENT (mg/kg)				
	5SE01	5SE02	5SE03	5SE04	5SE05
Methylene Chloride	3.6	<4.1	<4.1	<2.7	<4.5
4,4' -DDE	0.0324	<0.0571	<0.0569	0.272	<0.0626
4, 4' -DDT	<0.0435	<0.0816	0.138	<0.054	<0.0894
Arsenic	4.47	6.05	5.58	3.78	3.47
Cadmium	3.04	3.13	2.40	1.28	1.63
Chromium	51.4	23.8	19.6	10.2	34.7
Copper	72.1	97.3	73.5	36.1	54.7
Lead	10.1	19.2	21.6	11.0	<13.9
Nickel	14.4	<12.9	<13.2	8.45	<13.5
Selenium	3.47	6.50	<1.12	1.09	5.51
Silver	<0.547	<1.06	1.20	<0.691	<1.10
Zinc	75.7	98.1	89.5	51.5	50.2
Phenols	<0.073	29.8	5.98	2.50	5.71
Chromium (total)	<2.18	<10.2	13.8	<2.71	<11.2

Note: mg/kg = milligram per kilogram

TABLE 3.A-7

CONFIRMATION STUDY
SITE 6 - ROUND 1 DATA SUMMARY
NAVAL STATION ROOSEVELT ROADS

PARAMETER	SURFACE WATER (µg/L)			SEDIMENT (mg/kg)		
	R6SW1	R6SW2	R6SW3	R6SE1	R6SE2	R6SE3
Chromium (+6)	<20.0	34.4	36.7	---	---	---
bis (2-ethylhexyl)phthalate	1	1	<0.3	0.09	<0.06	<0.2
Di-n (octyl)phthalate	2	<0.2	2	0.3	0.2	0.2
Antimony	<24.0	<24.0	<24.0	5.9	6.9	7.4
Arsenic	<18.0	<18.0	<18.0	7.76	15.1	16.4
Beryllium	23.6	50.6	24.7	<0.278	0.360	0.392
Cadmium	4.42	8.40	3.35	<0.417	<0.404	<0.407
Chromium	318	611	339	6.71	11.7	18.0
Copper	354	966	516	9.10	20.4	26.4
Lead	211	526	244	<8.75	<8.49	<8.54
Mercury	0.856	0.997	0.997	<0.065	<0.067	0.084
Nickel	135	252	147	3.46	5.62	7.45
Selenium	278	<39.0	549	7.02	16.3	19.4
Thallium	29.3	28.6	19.2	<0.251	<0.216	<0.238
Zinc	558	1310	818	14.1	23.3	29.8

Notes: µg/L = microgram per liter
mg/kg = milligram per kilogram

TABLE 3.A-7 (Continued)

CONFIRMATION STUDY
SITE 6 - ROUND 1 DATA SUMMARY
NAVAL STATION ROOSEVELT ROADS, PUERTO RICO

PARAMETER	SOILS (mg/kg)														
	R651A	R652A	R653A	R654A	R655A	R656A	R657A	R658A	R659A	R6510A	R6511A	R6512A	R6513A	R6514A	56515A
Benzo(a)anthracene	<0.05	<0.06	<0.05	<0.04	0.07	0.1	<0.04	<0.04	<0.05	<0.04	<0.04	<0.04	<0.04	0.03	<0.04
Benzo(b)fluoranthene	<0.07	<0.09	<0.07	<0.04	0.06	0.2	<0.04	<0.04	<0.06	<0.04	<0.04	<0.04	<0.04	0.04	<0.04
Benzo(k)fluoranthene	<0.08	<0.09	<0.07	<0.04	0.04	0.09	<0.04	<0.04	<0.06	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Benzo(a)pyrene	<0.10	<0.1	<0.09	<0.04	0.04	0.2	<0.04	<0.04	<0.07	<0.04	<0.05	<0.04	<0.04	<0.04	<0.04
Benzo(g,h,i)perylene	<0.18	<0.20	<0.16	<0.08	<0.06	0.08	<0.07	<0.07	<0.13	<0.07	<0.09	<0.07	<0.07	<0.07	<0.07
Bis(2-ethylhexyl)phthalate	<0.05	<0.06	0.05	<0.04	0.06	0.2	0.05	<0.04	0.08	<0.04	<0.04	<0.04	<0.04	0.3	4
Chrysene	<0.05	<0.06	<0.05	<0.04	0.08	0.1	<0.04	<0.04	<0.05	<0.04	<0.04	<0.04	<0.04	0.04	<0.04
Di-n-octyl phthalate	<0.05	0.1	<0.05	<0.04	0.1	<0.04	0.1	0.2	<0.05	<0.08	<0.04	<0.04	<0.04	0.1	<0.04
Fluoranthene	<0.05	<0.06	<0.05	<0.04	0.06	0.2	0.02	<0.04	<0.05	<0.04	<0.04	<0.04	<0.04	0.03	<0.04
Indeno(1,2,3-cd)pyrene	<0.2	<0.2	<0.1	<0.07	<0.05	0.06	<0.06	<0.07	<0.1	<0.06	<0.09	<0.06	<0.06	<0.06	<0.07
Phenanthrene	<0.05	<0.06	<0.05	<0.04	<0.04	0.03	<0.04	<0.04	<0.05	<0.04	<0.05	<0.04	<0.04	<0.04	<0.04
Pyrene	<0.05	<0.06	<0.05	<0.04	0.06	0.2	0.02	<0.04	<0.05	<0.04	<0.04	<0.04	<0.04	0.03	<0.04

TABLE 3.A-7 (Continued)

CONFIRMATION STUDY
SITE 6 - ROUND 1 DATA SUMMARY
NAVAL STATION ROOSEVELT ROADS, PUERTO RICO

PARAMETER	SOILS (mg/kg)														
	R651A	R652A	R653A	R654A	R655A	R656A	R657A	R658A	R659A	R6510A	R6511A	R6512A	R6513A	R6514A	56515A
Antimony	11	10	10	9.4	18	28	27	51	15	17	9.5	9.1	20	9.4	6.5
Arsenic	16.6	57.1	15.9	22.5	35.5	12.7	134	30.9	54.1	35.7	25.5	88.2	<2.63	72.4	34.9
Beryllium	<0.221	1.01	0.276	0.623	1.11	0.289	3.31	2.18	1.17	2.52	1.59	6.14	14.9	1.61	1.39
Cadmium	<0.332	2.88	<0.361	<0.323	0.881	0.729	2.41	1.54	1.12	1.69	0.872	2.41	0.762	2.71	0.577
Chromium	16.9	23.7	17.9	17.5	34.9	13.8	39.0	36.0	78.2	39.2	50.0	58.4	75.2	35.2	18.6
Copper	22.6	50.3	20.6	26.2	380	51.0	823	163	107	383	211	527	383	332	101
Lead	<6.97	<8.62	<7.59	<6.77	222		76.5	92.8	180	3040	568	197	58.0	466	169
Mercury	0.052	<0.075	<0.061	<0.048	0.714	0.991	0.261	0.136	0.105	1.54	0.356	0.352	<0.041	0.449	0.898
Nickel	6.32	12.5	6.35	6.59	14.5	5.07	30.3	22.2	56.1	33.4	17.2	68.1	165	32.3	23.3
Selenium	13.9	55.8	16.1	21.0	49.3	13.5	80.5	65.1	44.6	93.9	65.4	426	<2.63	68.5	60.0
Zinc	28.3	71.7	31.9	48.2	329	81.5	439	520	339	758	475	949	181	426	210

Notes: mg/kg = milligram per kilogram

TABLE 3.A-8

CONFIRMATION STUDY
SITE 6 - ROUND 2 DATA SUMMARY
NAVAL STATION ROOSEVELT ROADS, PUERTO RICO

PARAMETER	GROUNDWATER	SURFACE WATER		
	R6GW01	R6SW01	R6SW02	R6SW03
Chloroform (µg/L)	1.7	<1.6	<1.6	<1.6
Bis(2-ethylhexyl)phthalate (µg/L)	1.9	1.0	2.4	1.3
Chromium (total) (mg/L)	<3.3	97.4	107	116
Copper (total) (mg/L)	6.1	<2.8	<2.8	67.8
Lead (total) (mg/L)	121	<400	<400	<400
Selenium (total) (mg/L)	<2.5	162	191	241
Silver (total) (mg/L)	<3.6	32.2	31.1	28.7
Zinc (total) (mg/L)	40.1	<1.8	<1.8	52.5
Phenols (µg/L)	58	70	40	1200

Notes: µg/L = microgram per liter
mg/L = milligram per liter

TABLE 3.A-8 (Continued)

CONFIRMATION STUDY
SITE 6 - ROUND 2 DATA SUMMARY
NAVAL STATION ROOSEVELT ROADS, PUERTO RICO

PARAMETER	SEDIMENT (mg/kg)			SOILS (mg/kg)														
	R6SE01	R6SE02	R6SE03	R6S04A	R6S05A	R6S09A	R6S010A	R6S010B	R6S010C	R6S011A	R6S012A	R6S014A	R6S015A	R6S016A	R6S017A	R6S018A	R6S019A	R6S020A
Bis(2-ethylhexyl)phthalate	13	<0.15	10	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Arsenic	3.76	1.94	4.75	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Cadmium	1.71	0.520	0.747	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Chromium	14.2	6.58	13.9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Copper	35.9	10.9	57.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Lead	12.2	6.06	21.2	316	376	988	250	199	63.6	35.1	214	236	116	71.1	79.0	46.3	233	187
Mercury	<0.144	<0.075	0.174	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Selenium	1.92	0.851	<0.742	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Zinc	53.5	22.2	67.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Phenols	6.59	3.67	5.41	---	---	---	---	---	---	---	---	---	---	---	---	---	---	--

Notes: mg/kg = milligram per kilogram

TABLE 3.A-9

CONFIRMATION STUDY
SITE 7 - ROUND 1 DATA SUMMARY
NAVAL STATION ROOSEVELT ROADS, PUERTO RICO

PARAMETER	GROUNDWATER (µg/L)							
	R7GW01	R7GW02	R7GW03	R7GW04	R7GW05	R7GW06	R7GW07	R7GW08
Chlorobenzene	<6.0	<6.0	<6.0	180	<6.0	<6.0	<6.0	<6.0
Bis(2-ethylhexyl)phthalate	21.0	1.5	<1.0	<1.0	1.7	<1.0	5.3	<1.0
1,4-Dichlorobenzenol	<1.0	<1.0	<1.0	7.3	<1.0	<1.0	<1.0	<1.0
Antimony (total)	<21.0	<21.0	<21.0	<21.0	<21.0	<21.0	1510	<18.0
Arsenic (total)	9.6	<1.6	2.2	20.9	<1.6	10.9	7.8	7.7
Beryllium (total)	<1.0	<1.0	<1.0	<1.0	<1.0	2.7	17.7	<0.7
Cadmium (total)	<2.4	<2.4	<2.4	<2.4	<2.4	<2.4	24.2	<0.9
Chromium (total)	3.6	5.3	6.1	15.5	<3.3	153	440	23.5
Copper (total)	6.3	33.6	14.9	14.8	47.0	47.7	1820	167
Nickel (total)	<8.6	<8.6	<8.6	<8.6	13.5	54.8	225	<20.0
Selenium (total)	32.0	12.4	<1.8	15.6	26.4	34.4	<8.8	<3.6
Silver (total)	39.0	12.6	<3.6	40.2	39.7	<3.6	369	<2.5
Thallium (total)	17.6	<3.4	<3.4	23.9	77.1	89.0	<38.0	58.5
Zinc (total)	62.8	<1.8	5.0	5.4	<1.8	89.7	3510	41.5
Phenols	48	100	27	30	54	36	160	16

Notes: µg/L = microgram per liter

TABLE 3.A-10

CONFIRMATION STUDY
SITE 7 - ROUND 2 DATA SUMMARY
NAVAL STATION ROOSEVELT ROADS, PUERTO RICO

PARAMETER	GROUNDWATER (µg/L)								SOIL (mg/kg)		
	R7GW1	R7GW2	R7GW3	R7GW4	R7GW5	R7GW6	R7GW7	R7GW8	R7S1N	R7S2N	R72N2
Chlorobenzene	<0.13	<0.42	<0.16	<0.15	<0.15	<0.17	89	<0.13	---	---	---
1,1-Dichloroethane	<0.19	<0.20	<0.28	2.3	<0.23	<0.26	<0.19	<0.21	---	---	---
1,2-trans-Dichloroethene	<0.38	<0.39	<0.55	1.5	<0.44	<0.52	<0.38	<0.41	---	---	---
Dichlorobenzene	<0.4	<0.4	<0.3	<0.4	<0.4	<0.5	70	<0.4	---	---	---
Butyl benzyl phthalate	17	0.3	2	5	0.6	3	1	0.7	---	---	---
Bis(2-ethylhexyl)phthalate	6	6	1	3	5	2	3	8	---	---	---
Di-n-butyl phthalate	2	0.9	<1	0.7	0.3	<1	0.3	1	---	---	---
1,3,-Dichlorobenzene	<1	<1	<1	<1	<1	<1	<1	0.7	---	---	---
1,2-Dichlorobenzene	<1	<1	<1	<1	<1	<1	<1	0.9	---	---	---
1,4-Dichlorobenzene	<1	<1	<1	1	<1	<1	<1	9	---	---	---
Diethyl phthalate	<1	<1	<1	<1	0.4	<1	<1	<1	---	---	---
Di-n-octyl phthalate	1	0.6	<1	<1	<1	<1	0.5	0.8	---	---	---
4,4'--DDE	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	0.019	<0.013	---	---	---

TABLE 3.A-10 (Continued)

CONFIRMATION STUDY
SITE 7 - ROUND 2 DATA SUMMARY
NAVAL STATION ROOSEVELT ROADS, PUERTO RICO

PARAMETER	GROUNDWATER (µg/L)								SOIL (mg/kg)	
	R7GW1	R7GW2	R7GW3	R7GW4	R7GW5	R7GW6	R7GW7	R7GW8	R7S1N	R7S2N
Arsenic (total)	73.6	58.6	121	87.0	84.9	93.9	46.1	120	---	---
Beryllium (total)	3.12	<3.00	<3.00	<3.00	<3.00	11.3	4.16	6.65	---	---
Chromium (total)	15.9	6.89	30.8	8.72	15.9	22.3	11.3	57.7	---	---
Copper (total)	42.9	5.18	73.5	4.56	23.2	135	33.0	42.8	---	---
Lead (total)	<27.0	<27.0	<27.0	<27.0	424	<27.0	<27.0	<27.0	---	---
Nickel (total)	11.5	<6.00	14.3	10.2	10.0	13.5	12.2	18.7	---	---
Selenium (total)	<36.0	<36.0	<21.0	<36.0	<36.0	88.9	<36.0	<36.0	---	---
Thallium (total)	187	187	1780	31.2	31.5	60.6	4.57	10.9	---	---
Oil & Grease	---	---	---	---	---	---	---	---	198	127

Notes: µg/L = microgram per liter
mg/kg = milligram per kilogram

TABLE 3.A-11

CONFIRMATION STUDY
SITE 10 - ROUND 1 DATA SUMMARY
NAVAL STATION ROOSEVELT ROADS, PUERTO RICO

PARAMETER	GROUNDWATER (µg/L)							
	106W1	106W2	106W3	106W4	106W5	106W6	106W7	106W8
Chromium (+6)	<20.0	<20.0	<20.0	<20.0	<20.0	42.9	<20.0	<20.0
Methyl ethyl ketone	<5.0	<5.1	<5.2	9.3	<5.4	<5.9	<5.9	<5.8
Butyl benzyl phthalate	3	16	40	4	11	20	16	15
Bis (2-ethylhexyl)phthalate	3	<1	<1	<1	<1	<1	<1	<1
Antimony (total)	<33.0	<33.0	<33.0	129	78.6	87.6	252	<33.0
Arsenic (total)	119	<21.0	<21.0	<21.0	105	<21.0	<21.0	<21.0
Beryllium (total)	17.3	3.20	16.8	26.0	4.25	23.3	27.1	13.0
Cadmium (total)	29.6	<3.00	5.78	5.39	<3.00	12.3	3.05	5.57
Chromium (total)	72.7	5.90	71.8	138	36.2	113	179	112
Copper (total)	600	86.7	613	927	144	155	549	481
Lead (total)	<21.0	<21.0	<21.0	147	<21.0	66.6	<21.0	<21.0
Mercury (total)	0.309	<0.2	0.527	0.309	<0.2	0.309	<0.2	0.222
Nickel (total)	171	9.90	94.8	97.3	27.1	130	99.2	73.8
Selenium (total)	324	93.1	208	512	30.1	324	411	216
Thallium (total)	42.3	<3.12	24.3	<3.12	3.24	5.03	3.24	112
Zinc (total)	733	68.8	584	533	132	857	489	672

Note: µg/L = microgram per liter

TABLE 3.A-12

CONFIRMATION STUDY
SITE 10 - ROUND 2 DATA SUMMARY
NAVAL STATION ROOSEVELT ROADS, PUERTO RICO

PARAMETER	GROUNDWATER (µg/L)							
	106W01	106W02	106W03	106W04	106W05	106W06	106W07	106W08
Bis (2-ethylhexyl)phthalate	<1.0	1.5	1.8	4.2	1.1	<1.0	1.1	<1.0
Arsenic (total)	<10.0	<1.0	<10.0	<10.0	4.4	<1.0	<1.0	<10.0
Cadmium (total)	2.4	4.0	<2.4	16.8	<2.4	<2.4	<2.4	<2.4
Chromium (total)	202	19.6	101	78.9	137	33.7	33.2	177
Copper (total)	464	207	205	624	520	652	78.9	633
Lead (total)	<400	<20.0	<400	45.1	<20.0	<400	<20.0	134
Nickel (total)	88.6	28.6	43.9	44.1	58.1	17.7	<8.6	57.9
Selenium (total)	154	9.0	95.1	16.4	80.5	69.1	82.4	132
Silver (total)	24.3	6.2	26.5	8.0	10.8	33.8	37.3	45.9
Thallium (total)	5.8	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	63.3
Zinc (total)	541	90.3	285	401	489	94.9	45.1	557
Phenols	270	5	470	9	52	42	9	85

Notes: µg/L = microgram per liter

TABLE 3.A-13

CONFIRMATION STUDY
SITE 13 - ROUND 1 DATA SUMMARY
NAVAL STATION ROOSEVELT ROADS, PUERTO RICO

PARAMETER	GROUNDWATER (µg/L)										
	136W1	136W2	136W3	136W4	136W5	136W6	136W7	136W8	138W9	136W10	136W11
Benzene	<0.23	2000	0.21	<0.25	350	<0.23	<0.22	<0.78	16	<0.24	<0.88
Bromodichloromethane	<0.49	<0.49	0.57	<0.51	<0.48	<0.50	<0.29	<0.26	<0.50	<0.52	<0.29
Chlorobenzene	<0.43	<40	<0.39	<0.42	1.5	<0.40	<0.20	<0.18	<0.41	<0.42	<0.20
Chloroform	1.0	<43	5.0	3.7	2.6	1.1	<0.26	<0.23	<0.46	0.42	<0.26
1,2-Dichloroethane	<0.86	90	<0.73	170	<0.79	<0.80	<0.32	<0.29	<0.81	<0.81	<0.32
Ethylbenzene	<0.82	130	<0.81	1.0	74	<0.83	<0.37	<0.33	<0.85	<0.87	<0.37
Toluene	<0.38	34,000	<0.40	<0.40	420	<0.38	<0.28	<0.25	<0.38	<0.38	<0.28
Vinyl Chloride	<0.85	<94	<0.91	<1.0	1.9	<0.86	<0.71	<0.64	<0.88	<0.90	<0.71
1,2-Dibromoethane	<0.02	0.365	0.045	<0.02	<0.02	0.297	<0.02	<0.02	<0.02	<0.02	<0.02
m-Xylene	<0.63	290	<0.65	<0.66	220	<0.64	<0.11	<0.10	<0.65	<0.67	<0.11
Oil & Grease (mg/L)	0.7	5	0.6	3	2	0.5	0.3	0.4	0.2	0.4	0.2
o, p-Xylene	<0.64	360	0.83	0.57	180	<0.65	<0.10	<0.09	4.9	<0.68	<0.10

Notes: µg/L = microgram per liter
mg/L = milligram per liter

TABLE 3.A-13 (Continued)

CONFIRMATION STUDY
SITE 13 - ROUND 1 DATA SUMMARY
NAVAL STATION ROOSEVELT ROADS, PUERTO RICO

PARAMETER	SURFACE WATER (mg/L)						SEDIMENT (mg/kg)					
	13SW1	13SW2	13SW3	13SW4	13SW5	13SW6	13SE1	13SE2	13SE3	13SE4	13SE5	13SE6
Oil & Grease	<0.2	<0.2	<0.2	<0.2	0.6	0.4	52,300	6,710	3,280	1,730	1,830	10,200
Lead							400	42.3	<12.0	7.79	<11.7	<10.2

Notes: mg/L = milligram per liter
mg/kg = milligram per kilogram

TABLE 3.A-14

CONFIRMATION STUDY
SITE 13 - ROUND 2 DATA SUMMARY
NAVAL STATION ROOSEVELT ROADS, PUERTO RICO

PARAMETER	GROUNDWATER (µg/L)										
	136W01	136W02	136W03	136W04	136W05	136W06	136W07	136W08	136W09	136W10	136W11
Benzene	<100	1900	110	14	2100	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichloroethane	<280	<2800	<280	150	<2.8	<2.8	<2.8	<2.8	<2.8	<2.8	<2.8
Toluene	<600	7500	<600	<6.0	38	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0
Trichloroethene	<100	1500	<100	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
m-Xylene	<1200	<12000	>1200	<12	21	<12	<12	<12	<12	<12	<12
o,p-Xylene	<1200	<12000	<1200	<12	260	<12	<12	<12	<12	<12	<12
1,2-Dibromoethane	0.039	0.022	>0.06	0.103	<0.010	0.106	0.068	<0.010	<.010	<0.138	<0.010
Lead	12.2	150	2.9	8.6	4.7	7.6	5.5	<2.2	7.6	3.1	<2.2
Oil & Grease (mg/L)	0.3	57	<0.2	12	4	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2

Notes: µg/L = microgram per liter
mg/L = milligram per liter

TABLE 3.A-14 (Continued)

CONFIRMATION STUDY
SITE 13 - ROUND 2 DATA SUMMARY
NAVAL STATION ROOSEVELT ROADS, PUERTO RICO

PARAMETER	SURFACE WATER (µg/L)						SEDIMENT (mg/kg)					
	13SW01	13SW02	13SW03	13SW04	13SW05	13SW06	13SE01	13SE02	13SE03	13SE04	13SE05	13SE06
Benzene							<0.68	<0.77	<0.67	2.5	2.4	<0.46
Chlorobenzene							<0.93	<1.1	<0.92	2100	2100	<0.63
Methylene Chloride							<3.1	4.4	<3.1	<2.2	<2.9	3.2
Toluene							<0.93	<1.1	<0.92	3.0	<0.88	<0.63
Trichloroethene							<0.29	<0.33	<0.29	2.5	<0.28	<0.20
Lead	18.7	<2.2	7.0	26.1	32.6	37.6	189	13.8	4.67	5.15	9.16	10.9

Notes: µg/L = microgram per liter
mg/kg = milligram per kilogram

TABLE 3.A-15

CONFIRMATION STUDY
SITE 14 - ROUND 1 DATA SUMMARY
NAVAL STATION ROOSEVELT ROADS, PUERTO RICO

PARAMETER	SURFACE WATER (mg/L)										
	14SW1	14SW2	14SW3	14SW4	14SW5	14SW6	14SW7	14SW8	14SW9	14SW10	14SW11
Oil & Grease	<0.2	<0.2	<0.2	0.8	2	0.7	0.5	0.3	0.6	0.5	0.5

Notes: mg/L = milligram per liter

PARAMETER	SEDIMENT (mg/kg)											
	14SE1	14SE2	14SE3	14SE4	14SE5	14SE6	14SE7	14SE8	14SE9	14SE10	14SE11	14SE12
Oil & Grease	112	119	250	219	656	147	806	225	2080	1670	1180	993
Methyl ethyl ketone	0.008	<2.0	<4.3	<4.6	<12	<2.8	<9.4	<2.2	<2.1	<1.1	<3.6	<2.1

Notes: mg/L = milligram per liter
mg/kg = milligram per kilogram

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
PCB-1260	<1.13	404	92.9	55.9	3.39	8.85	22.8	<1.17	2.73
Lead	109	<3.25	15700	834	151	12.7	69.8	215	<2.81
Methyl ethyl ketone	<0.58	<2.4	<0.17	1.0	<11	<7.6	<0.98	<1.5	1.0

Notes: mg/kg = milligram per kilogram

TABLE 3.A-17

CONFIRMATION STUDY
SITE 18 - ROUND 1 DATA SUMMARY
NAVAL STATION ROOSEVELT ROADS, PUERTO RICO

PARAMETER	SURFACE WATER (µg/L)		SEDIMENT (mg/kg)	
	18SW1	18SW2	18SE1	18SE2
Chlordane	0.571	0.616	34.1	66.7
4,4'-DDE	<0.024	<0.024	1.37	2.63
Endosulfan A	<0.024	<0.024	3.32	3.44
Endosulfan B	<0.062	<0.062	4.38	7.65

Notes: µg/L = microgram per liter
mg/kg = milligram per kilogram

TABLE 3.A-17 (Continued)

CONFIRMATION STUDY
SITE 18 - ROUND 1 DATA SUMMARY
NAVAL STATION ROOSEVELT ROADS, PUERTO RICO

PARAMETER	SOILS (mg/kg)														
	18S1A	18S2A	18S3A	18S4A	18S5A	18S6C	18S7C	18S8C	18S9C	18S10C	18S11C	18S12C	18S13C	18S14C	18S15C
Aldrin	<0.402	<0.348	<0.309	<0.371	<0.330	<0.268	<0.264	<0.266	<0.279	<0.285	0.803	<0.291	0.761	2.06	<0.285
Chlordane	<3.21	<2.78	<2.47	<2.97	<2.64	<2.15	<2.11	<2.13	<2.23	<2.28	57.4	38.3	142	181	<2.28
4,4'-DDD	<0.402	<0.348	6.65	17.3	55.3	1.84	<0.264	<0.266	1.68	<0.285	1.90	0.752	<0.297	<2.88	<0.285
4,4'-DDE	<0.402	<0.348	2.23	<14.8	<13.2	2.10	0.549	<0.266	3.16	23.1	11.5	36.4	<0.297	7.93	0.750
4,4'-DDT	<0.402	<0.348	<1.54	<1.86	<13.2	<0.268	<0.264	<0.266	6.92	88.1	130	208	<0.297	7.24	<0.285
Endosulfan Sulfate	<0.402	<0.348	<0.309	<0.371	<0.330	2.54	2.16	<0.266	<0.279	<0.285	<0.288	<0.291	<0.297	<0.288	<0.285
Endrin	<0.402	<0.348	<0.309	<0.371	<0.330	<0.268	<0.264	<0.266	<0.279	<0.285	<0.288	<0.291	<0.297	13.2	<0.285
Heptachlor Epoxide	<0.402	<0.348	<0.309	<0.371	<0.330	<0.268	<0.264	<0.266	<0.279	<0.285	<11.5	<0.291	<0.297	0.993	<0.285

Note: mg/kg = milligram per kilogram

TABLE 3.A-18

CONFIRMATION STUDY
SITE 18 - ROUND 2 DATA SUMMARY
NAVAL STATION ROOSEVELT ROADS, PUERTO RICO

PARAMETER	SURFACE WATER (µg/L)						GROUNDWATER (µg/L)			SEDIMENT (mg/L)					
	18SW01	18SW02	18SW03	18SW04	18SW05	18SW06	186W01	186W02	186W03	18SE01	18SE02	18SE03	18SE04	18SE05	18SE06
Chlordane	<0.006	0.170	0.145	<0.006	0.098	<0.006	<0.006	<0.006	<0.006	0.0778	<0.023	0.0784	<0.034	<0.030	<0.031
4,4'-DDD	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.012	0.017	<0.012	<0.046	0.0756	<0.050	<0.067	<0.060	<0.061
4,4'-DDE	<0.005	<0.005	0.007	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.31	0.082	0.0798	<0.027	<0.024	<0.025

Notes: µg/L = microgram per liter
mg/L = milligram per liter

APPENDIX 3.E

CHRONOLOGIC LOG OF FIELD ACTIVITIES

APPENDIX 3.B

CHRONOLOGIC LOG OF FIELD ACTIVITIES
SUPPLEMENTAL INVESTIGATION
29 OCTOBER 1992 - 7 DECEMBER 1992
INSTALLATION RESTORATION PROGRAM
NAVAL STATION, ROOSEVELT ROADS
CEIBA, PUERTO RICO

Date	Activity	Site
29 October 1992	Travel - Baker Field Team	
	Baranek	
	Barone	
	Cummings	
	Dabal	
	Johnston	
	Sevcik	
30 October 1992	Administration and logistics	
2 November 1992	Administration and logistics	
	Initial operations	
	Travel - Baker Field Team [Davidson]	
3 November 1992	Station coordination	
	Initial operations	
	Planning	Site 16
	Sampling preparation	Site 1
4 November 1992	Status briefing - Station Public Works Officer	
	General safety briefing	
	Initial operations	
	Sampling preparation	Site 1
5 November 1992	Initial operations	
	Lane-clearing	Site 1
6 November 1992	Transit permit application	
	Lane-clearing	Site 1
	Land-clearing	Site 5
7 November 1992	General operations [reduced crew]	
8 November 1992	Land-navigation mapping [reduced crew]	
9 November 1992	Lane-clearing	Site 1
	Land-clearing	Site 5
	General operations	
	Land-navigation mapping	
	Ground mapping	Site 1
	Travel - Baker Field Team [Skiles]	

Date	Activity	Site
10 November 1992	Initial development of wells	Sites 5, 6, 7 & 18
	Geophysical survey	Site 5
11 November 1992	Soil sampling	Site 18
	Surface water and sediment sampling	Site 18
	Groundwater sampling	Site 18
	Initial development of wells	Sites 5, 6 & 18
	Land-navigation mapping	
	Geophysical survey	
12 November 1992	Soil sampling	Site 1
	Sediment sampling	Site 5
	Geophysical survey	
13 November 1992	Soil/tar sampling	Site 2
	Sediment sampling	Site 2
	Soil sampling	Site 10
	Land-clearing	Sites 5 & 6
	Geophysical survey	Site 5
14 November 1992	Geophysical survey	Site 5
15 November 1992	Soil sampling	Site 5
	Land-navigation mapping	
16 November 1992	Initial well development	Site 7
	Soil sampling	Site 5
17 November 1992	Land-clearing	Site 5
	Soil sampling	Site 5
	Soil sampling	Site 6
18 November 1992	Groundwater sampling	Site 7
	Groundwater sampling	Site 18
19 November 1992	Well-head tests	Site 7
	Sediment sampling	Site 14
	Land-navigation mapping	
20 November 1992	Well-head tests	Site 5, 6, 7 & 18
	Surface water and sediment sampling	Site 16
21 November 1992	Well-head tests	Site 5, 6, 7 & 18
	Soil and structure sampling	Site 21

Date	Activity	Site
22 November 1992	Data reduction - well-head tests Land-navigation mapping	
23 November 1992	Administration and logistics Land-navigation mapping	
24 November 1992	Groundwater sampling (replacement of shipping casualties)	Site 7
	Groundwater sampling (replacement of shipping casualties)	Site 18
25 November 1992	Travel - Baker Field Team Baranek Dabal Davidson Cummings Sevcik Skiles Administration and Logistics	
26 November 1992	Well-head tests	Site 7
	Display briefing - Station Public Works Officer	Site 5
27 November 1992	Administration and logistics	
28 November 1992	Data reduction - well-head tests Land-navigation mapping	
29 November 1992	Data reduction - well-head tests Land-navigation mapping	
30 November 1992	Surface water sampling (replacement of shipping casualties)	Site 18
	Administration and logistics	
1 December 1992	Groundwater sampling (replacement of shipping casualties)	Site 5
	Administration and logistics	
2 December 1992	Travel - Baker Field Team (Johnston) Administration and logistics	
4 December 1992	Administration and logistics	
7 December 1992	Administration and logistics Travel - Baker Field Team (Barone)	

APPENDIX 3.F

MAPPING BY GLOBAL POSITIONING SYSTEM

Israel Meléndez Otero y Asociados
Agrimensor-Consultor

December 18, 1992

MR. Ralph Abbondanza
Director of Operations
Ensat
Enviromental Service
and Technology Corp.
Río Piedras, PR 00927

Dear Mr. Abbondanza:

We are submitting for your consideration the report for the leveling of the monitoring wells at Roosevelt Roads U.S. Naval Station. Also the U.T.M. Coordinates, latitude, longitude and the elevation for the antenna.

Cordially yours,

Israel Meléndez Otero
Surveyor

mm

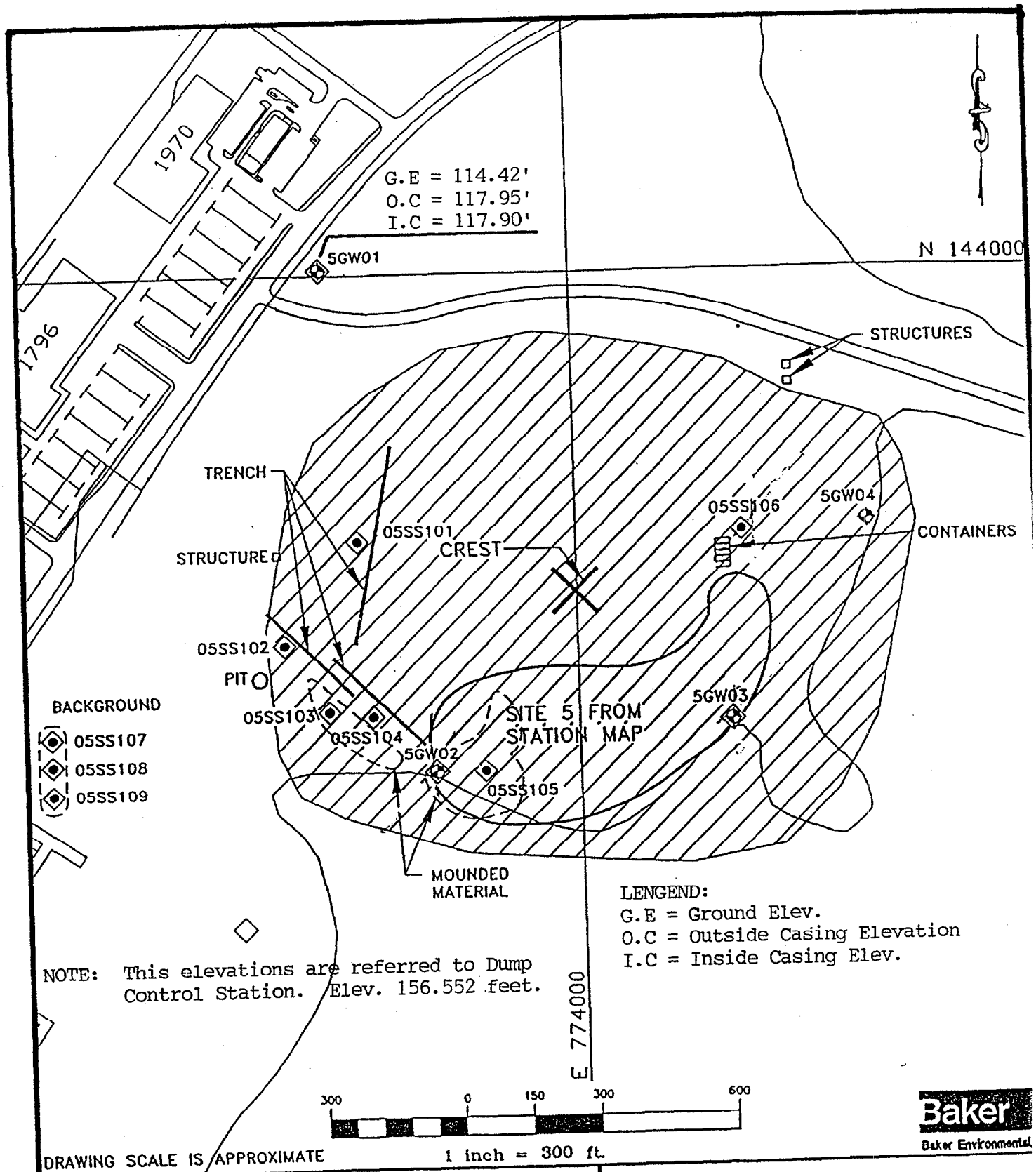
P. O. Box 8575, Bayamón Branch, Bayamón, Puerto Rico 00621 • Tel. (809) 780-8719

NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

MONITORING WELLS ELEVATIONS

Number	Ground Elevation Feet	Outside Casing Elevation Feet	Inside Casing Elevation Feet	Observations
Site 5, Army Cremator Disposal Site				
5Gw01	114.42'	117.95'	117.90'	Referred to Dump Control Station
Site 6, Langley Drive Disposal Site				
06GW01	114.00'	114.36'	114.36'	Referred to Dump Control Station
Site 7, Station Landfill				
R7GW01	109.33'	112.42'	112.32'	Referred to Goat Control Station
R7GW02	98.45'	100.76'	100.72'	"
R7GW03	101.69'	103.61'	103.49'	"
R7GW04	109.99'	112.58'	112.39'	"
R7GW05	111.85'	114.25'	113.52'	"
R7GW06	111.67'	114.28'	114.19'	"
R7GW07	112.17'	115.83'	115.70'	"
R7GW08	108.80'	111.52'	111.34'	"
Site 18, Pest Control Shop and Surrounding Areas				
18GW1	112.81'	113.77'	113.36'	Referred to Dog Control Station
18GW2	109.63'	110.79'	110.62'	"
18GW3	108.64'	109.47'	109.31'	

ISRAEL MELENDEZ OTERO
INGENIERO LICENCIADO
Exp. 12 ago. 1993
LIC. NUM. 7776
C.I.A.P.R.

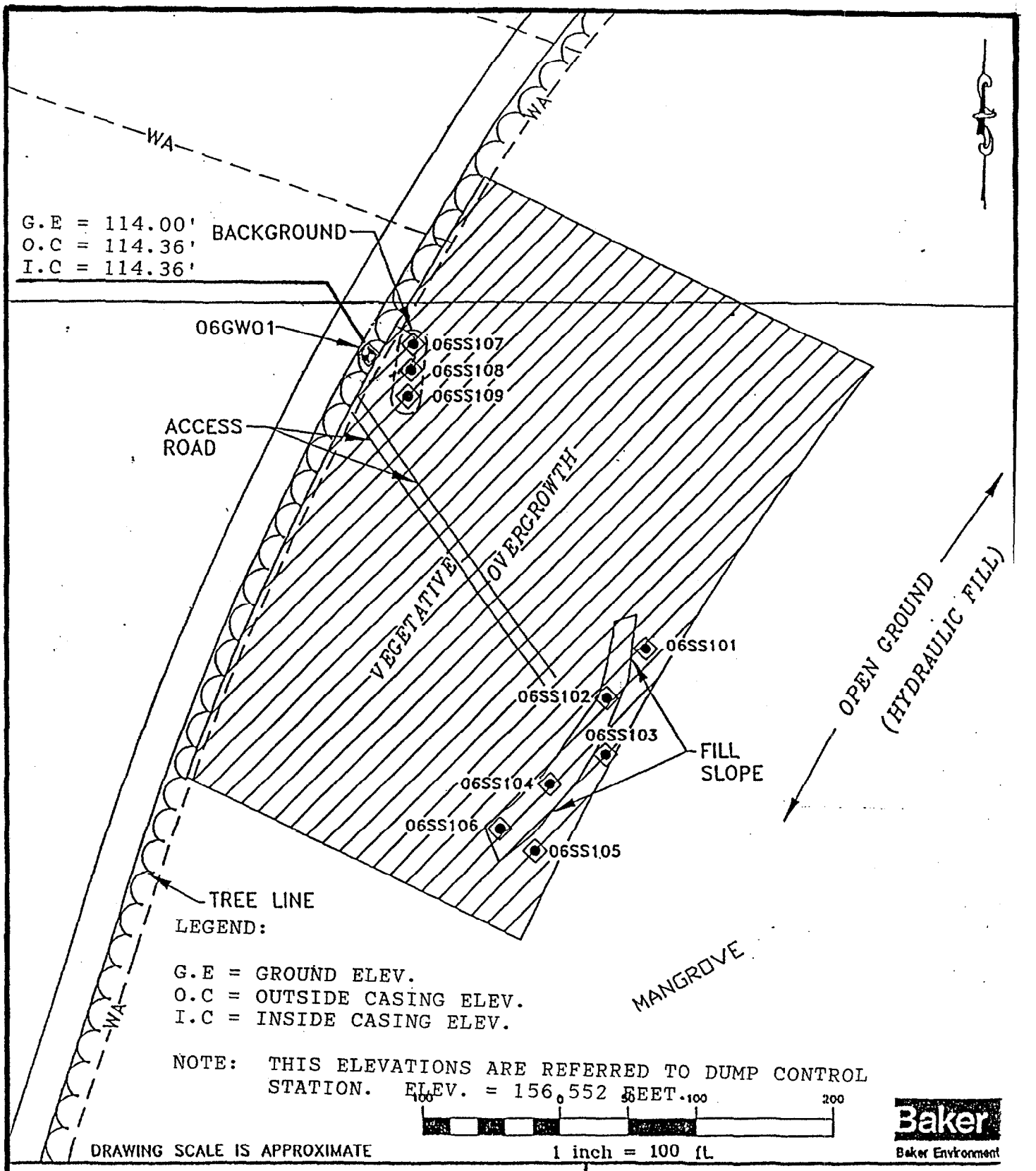


LEGEND

- PLANNED SURFACE SOIL SAMPLE LOCATION
- PLANNED GROUNDWATER SAMPLE LOCATION

FIGURE 2-3
SAMPLE LOCATION MAP
SITE 5, ARMY CREMATOR DISPOSAL SITE

NAVAL STATION ROOSEVELT ROADS
PUERTO RICO



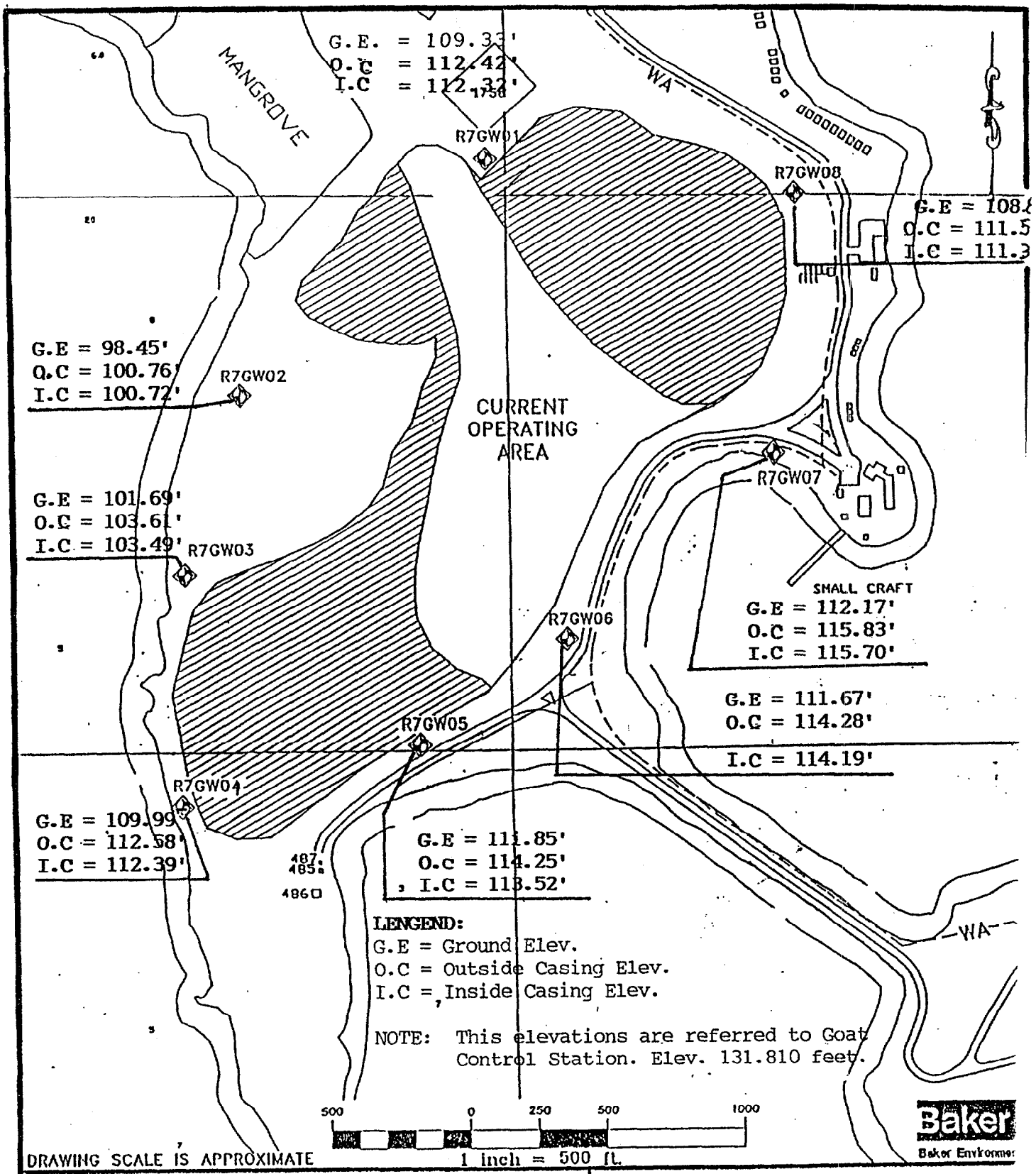
LEGEND

◇ PLANNED SURFACE SOIL SAMPLE LOCATION

◇ PLANNED GROUNDWATER SAMPLING LOCATION

FIGURE 2-4
SAMPLE LOCATION MAP
SITE 6, LANGLEY DRIVE
DISPOSAL SITE

NAVAL STATION ROOSEVELT ROADS
PUERTO RICO



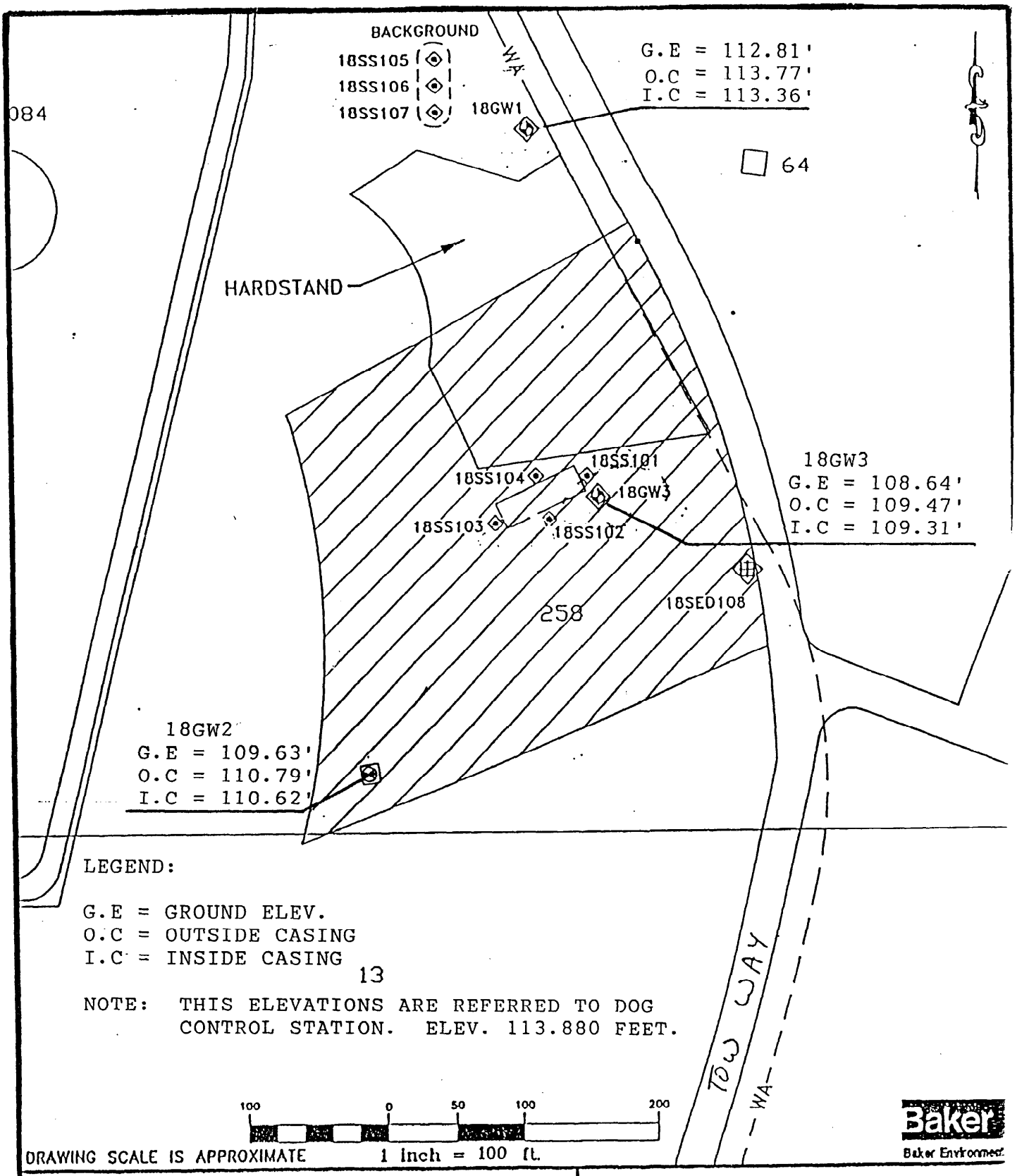
LEGEND

R7GW03 PROPOSED GROUNDWATER SAMPLE LOCATION

FIGURE 2-5
SAMPLE LOCATION MAP
SITE 7, STATION LANDFILL

NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SOURCE: LANTDIV., FEBRUARY 1992



LEGEND

18GW1 — PLANNED GROUNDWATER SAMPLE LOCATION WELL

PLANNED SURFACE SEDIMENT SAMPLE LOCATION

PLANNED SURFACE SOIL SAMPLE LOCATION

SOURCE: LANTDIV., FEBRUARY 1992

FIGURE 2-8
SAMPLE LOCATION MAP
SITE 18, PEST CONTROL SHOP
AND SURROUNDING AREAS

NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

Israel Meléndez Otero y Asociados
Agrimensor-Consultor

From the set up station tank, a backsight reading of 0°-00"-00" was taken to Goat Vertex, then a right angle circle was taken to the Antenna. The distance was measured twelve (12) times and the mean average of them was used as the correct distance for the purpose of the computations of the position.

The same procedure was done setting up the backsight reading of 0°-00'-00" to Rolon and Dump Vertexes. Then a mean average of the three results was calculated obtaining the best value of the coordinates as shown below for the Antenna:

North (Y) = 144,683.965
East (X) = 771,450.426

Said value of the posisiton is tied to the Lambert Grid Coordinate System of Puerto Rico.

Transformation from grid to geographic position was performed using CORSPCOM 2.1 computarized program. The geographic value of the position is as shown below:

18°-13'-48.71273" North ~~61°~~ 65°-39'-03.83901" West

Previous value of the geographic position was transformed to the Universal Transverge Mercator (UTM) System, using UTMS 1.10 computarized program. The UTM value of the position of the antenna shown below is:

North (Y)	East (X)	Zone	Covergence	Scale
2,017,562.859	219,632.481	20	-0°-49'-47.61"	1.00057196

Calculation of coordinate transformation are included.

The equipment used for taking field measurements is a Nikon Total Station Model DTMA5 S/N 250055.

ISRAEL MELENDEZ OTERO
AGRIMENSOR LICENCIADO
Exp. 12 ago. 1993
LIC. NUM. 7776
C.I.A.P.

Israel Meléndez Otero
Surveyor

P. O. Box 8575 Bayamón Branch, Bayamón, Puerto Rico 00621 • Tel. (809) 780-8719

```
DD MM SS.SSSSS
18-13-48.71273

IRECTION OF LATITUDE  - N OR S
YPE N OR S NOW  N

ENTER LONGITUDE:
NOTE IF THE DEGREES ARE LESS THAN 100
YOU MUST ENTER A ZERO FIRST
94 DEGREES WILL BE 094
DDD MM SS.SSSSS
065-39-03.83901

 DIRECTION OF LONGITUDE - E OR W
 TYPE  E OR W NOW  W

UTMS FOR THE CLARK 1866 ELLIPSOID (NAD27 DATUM)

 NORTH(Y)       EAST(X)    ZONE    CONVERGENCE  SCALE
2017562.859  219632.481   20    -0 49 47.61   1.00057196

ANY MORE COMPUTATIONS (Y/N)?
```

NAVY ROOSEVELT ROAD
ANNTENA

12/16/1992

All input values are NAD 27, state plane zone 5201 (FEET).
All output values are NAD 27, geographic coordinates.

STATION	INPUT	(transformed to) OUTPUT
NEW ANNTENA	144683.965 N	18 13 48.71273 N
	771450.426 E	65 39 3.83901 W
Convergence	0 14 41.14	
Scale Factor	0.99999395	

ANTENNA ELEVATION

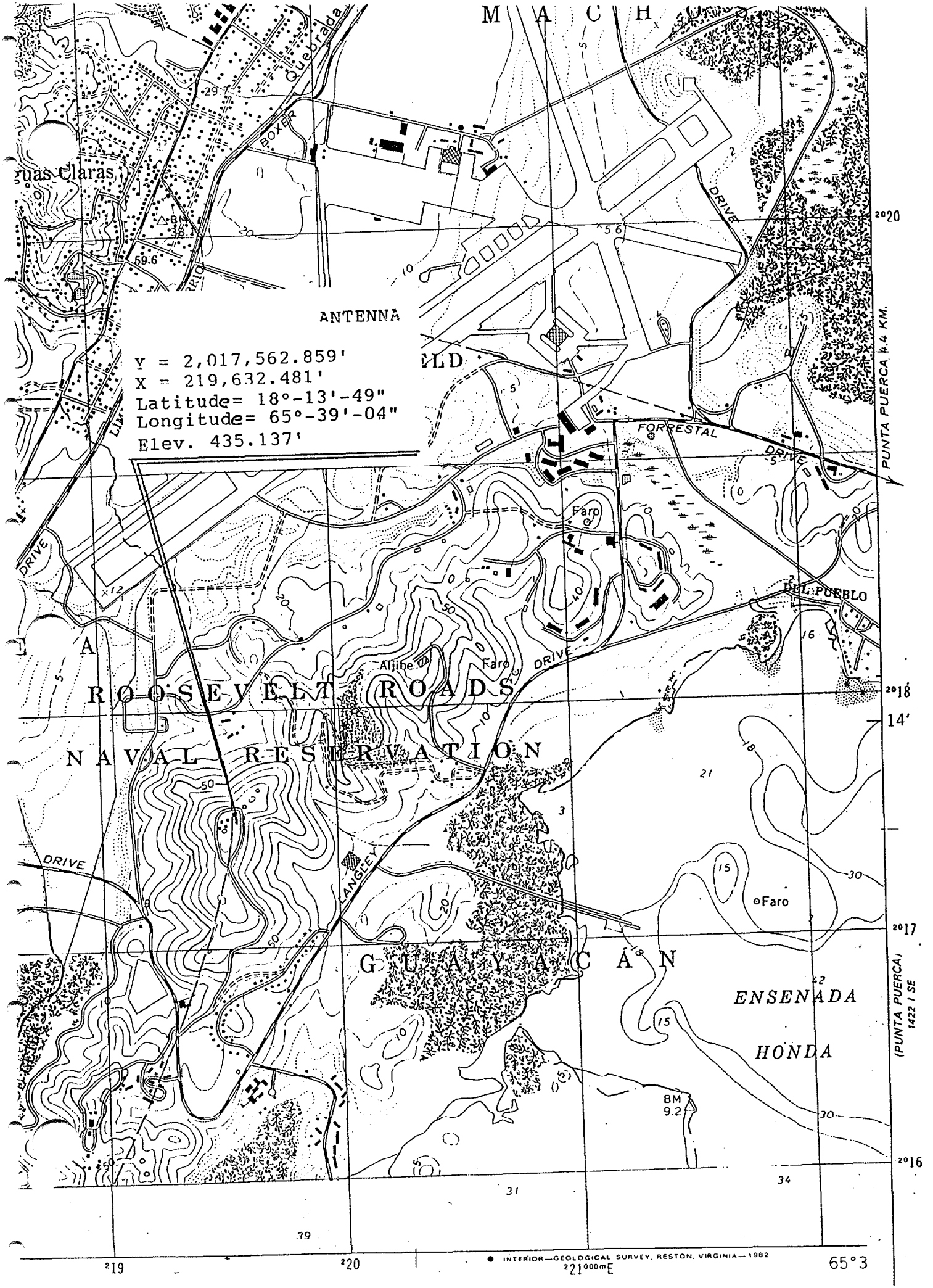
We ran bouble rod reading and bouble T.P. from control station Delvis (elev. 151.421'). To the antenna ground elevation 396.633'. From this elevation to the mark in the antenna the distances is 38.504'.

The antenna elevation = 435.137 feet.

The equipment used for taking field data was LIETZ BZC LEVEL # SERIE 110549.

CONTRO[illegible]TATIONS

STATION	PLAN LOCATION	LAMBERT COORDINATES NORTH (Y)	LAMBERT COORDINATES EAST (X)	GEOGRAPHICAL COORDINATES LATITUDE	GEOGRAPHICAL COORDINATES LONGITUDE	ELEVATION (FEET)
ABLE	H-8	150,334.6002	771,097.0106	18°14' 44.7493"	65°39' 07.2553"	157.220
BAKER	N-5	139,092.5420	764,775.4494	18°12' 53.8249"	65°41' 21.3966"	276.896
CAMP	K-15	145,395.0740	785,272.7090	18°13' 55.1625"	65°36' 40.4086"	168.440
COLINA	M-3	141,580.0946	760,002.2311	18°13' 18.4148"	65°41' 02.7386"	402.010
CRUCES	F-9	154,523.0288	772,281.4538	18°15' 26.2241"	65°38' 54.7802"	177.011
CURVA	N-4	138,124.4444	763,470.2003	18°12' 44.0130"	65°40' 26.9110"	245.310
CASCAJO	O-12	137,261.9100	779,354.4700	18°12' 34.7891"	65°37' 42.1781"	115.187
DAGUAO	M-5	140,833.2125	764,135.2756	18°13' 10.8411"	65°40' 19.8952"	117.510
DELICIAS	L-8	143,687.7670	771,202.3510	18°13' 38.8467"	65°39' 06.4567"	396.253
DOG	I-11	149,988.0050	776,808.0360	18°14' 41.0690"	65°38' 08.0175"	113.880
DELVIS	M-8	141,190.7421	771,447.7201	18°13' 14.0802"	65°39' 04.0219"	151.421
GOAT	N-15	139,184.3600	785,256.7200	18°12' 53.5888"	65°36' 40.8637"	131.810
ISLA	K-18	145,330.0014	790,549.4337	18°13' 54.2803"	65°35' 45.6685"	296.980
MEDIO	E-16	156,524.7293	786,859.5305	18°15' 45.4333"	65°36' 23.4248"	234.240
MOUND	E-11	157,852.0527	776,795.2326	18°15' 59.0352"	65°38' 07.7948"	176.200
ORIENTE	K-6	145,679.5649	766,119.5191	18°13' 58.8069"	65°39' 59.1006"	145.120
ROLON	J-14	146,314.9800	782,872.6900	18°14' 04.3891"	65°37' 05.2650"	267.390
ROLONCITO	J-15	147,066.3865	784,697.4711	18°14' 11.7579"	65°36' 46.2987"	223.740
SOUTH	P-8	135,013.7201	771,501.5577	18°12' 12.8374"	65°39' 03.7371"	191.749
DUMP	L-10	143,658.5230	774,057.2322	18°13' 38.4353"	65°38' 36.8409"	156.552
TANK	J-10	146,703.7200	774,063.3000	18°14' 08.6258"	65°38' 36.6417"	370.617
POPEYE	L-16	142,032.7841	787,509.7151	18°13' 21.7280"	65°36' 17.3587"	112.920
E.M.BEACH	L-16	143,078.8338	786,958.6999	18°13' 32.1235"	65°36' 23.0258"	106.360
SOL-2	N-17	139,071.6248	788,115.0707	18°12' 52.3432"	65°36' 11.2180"	158.580
MUNDO	J-17	146,961.4521	789,015.4398	18°14' 10.5242"	65°36' 01.5058"	217.830



INTERIOR—GEOLOGICAL SURVEY, RESTON, VIRGINIA—1982

```
HDR: 1111        Version: 304  Source: 9854h
     Label. .ean positions of files
     Start Time: Nov 11 17:15:59 1992
     End Time: Nov 11 19:30:09 1992
     Stat Off: 1261  Recs(int): 16  Recs(lng): 16
     GPS Week: 670  GPS TOW: 321359.0 (17:15:59)
     Ref Lat: 2016870.099  Ref Lon: 220473.335  Ref Alt: 12.678

TXT: C:\PFPRO\DATA\PFINDER\111192\1111.COR
_A__U: Nov 11 18:16:14 1992  2017128.360  220460.484  18.057  10h
TXT: C:\PFPRO\DATA\PFINDER\111192\1111A.COR
_A__U: Nov 11 17:15:59 1992  2017139.655  220231.017  15.825  10h
TXT: C:\PFPRO\DATA\PFINDER\111192\1111B.COR
_A__U: Nov 11 17:23:35 1992  2017109.083  220278.530  10.913  10h
TXT: C:\PFPRO\DATA\PFINDER\111192\1111C.COR
_A__U: Nov 11 17:29:44 1992  2017107.913  220325.771  -0.126  10h
TXT: C:\PFPRO\DATA\PFINDER\111192\1111D.COR
_A__U: Nov 11 17:41:02 1992  2017094.221  220338.332  -0.722  10h
TXT: C:\PFPRO\DATA\PFINDER\111192\1111E.COR
_A__U: Nov 11 17:49:19 1992  2017096.525  220369.631  4.636  10h
TXT: C:\PFPRO\DATA\PFINDER\111192\1111F.COR
_A__U: Nov 11 17:56:49 1992  2017117.085  220394.816  9.664  10h
TXT: C:\PFPRO\DATA\PFINDER\111192\1111G.COR
_A__U: Nov 11 18:03:16 1992  2017112.841  220416.775  13.772  10h
TXT: C:\PFPRO\DATA\PFINDER\111192\1111H.COR
_A__U: Nov 11 18:09:16 1992  2017115.877  220422.096  19.907  10h
TXT: C:\PFPRO\DATA\PFINDER\111192\1111J.COR
_A__U: Nov 11 17:35:18 1992  2017119.739  220346.692  5.256  10h
TXT: C:\PFPRO\DATA\PFINDER\111192\1111K.COR
_A__U: Nov 11 18:28:02 1992  2017169.494  220315.241  12.034  10h
TXT: C:\PFPRO\DATA\PFINDER\111192\1111L.COR
_A__U: Nov 11 19:05:12 1992  2017153.960  220369.503  19.709  10h
TXT: C:\PFPRO\DATA\PFINDER\111192\1111M.COR
_A__U: Nov 11 19:11:06 1992  2017164.019  220398.335  14.411  10h
TXT: C:\PFPRO\DATA\PFINDER\111192\1111N.COR
_A__U: Nov 11 18:59:21 1992  2017163.748  220337.847  24.839  10h
TXT: C:\PFPRO\DATA\PFINDER\111192\1111O.COR
_A__U: Nov 11 19:22:18 1992  2017224.502  220377.699  15.630  10h
TXT: C:\PFPRO\DATA\PFINDER\111192\5GW01.COR
_A__U: Nov 11 19:30:09 1992  2017304.047  220241.493  6.122  10h
STS: Type:  7   Number of records:    16
     Max. Lat:        0.318   Min. Lat:        0.318
     Mean Lat:        0.318
STS: Type:  8   Number of records:    16
     Max. Lon:       -1.146   Min. Lon:       -1.146
     Mean Lon:       -1.146
STS: Type:  9   Number of records:    16
     Max. Alt:       24.839   Min. Alt:       -0.722
     Mean Alt:       11.870
```

```
HDL: 1123.ASF  Version: 304  Source: 9854r
     Label: Mean positions of files
     Start Time: Nov 23 15:35:15 1992
     End Time: Nov 23 20:27:56 1992
     Stat Off: 1971  Recs(int): 26  Recs(lng): 26
     GPS Week: 672  GPS TOW: 142515.0 (15:35:15)
     Ref Lat: 2016770.850  Ref Lon: 220379.369  Ref Alt: -95.629

TXT: C:\PFPRO\DATA\PFINDER\112392\05BACK.COR
_A__U: Nov 23 15:43:03 1992  2017153.229  220477.956  36.609  10h
TXT: C:\PFPRO\DATA\PFINDER\112392\10SS101.COR
_A__U: Nov 23 19:03:24 1992  2017758.760  224135.170  0.001  10h
TXT: C:\PFPRO\DATA\PFINDER\112392\10SS102.COR
_A__U: Nov 23 18:17:58 1992  2017763.482  224114.017  15.276  10h
TXT: C:\PFPRO\DATA\PFINDER\112392\10SS104.COR
_A__U: Nov 23 18:11:24 1992  2017775.232  224131.197  6.807  10h
TXT: C:\PFPRO\DATA\PFINDER\112392\10SSBACK.COR
_A__U: Nov 23 18:32:27 1992  2017845.567  223955.272  21.719  10h
TXT: C:\PFPRO\DATA\PFINDER\112392\1SS103.COR
_A__U: Nov 23 18:04:17 1992  2017781.484  224095.743  -0.353  10h
TXT: C:\PFPRO\DATA\PFINDER\112392\21SS101.COR
_A__U: Nov 23 16:24:28 1992  2017677.339  223902.685  11.947  10h
TXT: C:\PFPRO\DATA\PFINDER\112392\21SS102.COR
_A__U: Nov 23 16:07:08 1992  2017679.548  223912.071  14.454  10h
TXT: C:\PFPRO\DATA\PFINDER\112392\21SS103.COR
_A__U: Nov 23 16:11:57 1992  2017676.956  223908.872  11.772  10h
TXT: C:\PFPRO\DATA\PFINDER\112392\21SS104.COR
_A__U: Nov 23 16:01:51 1992  2017673.934  223911.784  16.369  10h
TXT: C:\PFPRO\DATA\PFINDER\112392\21SS105.COR
_A__U: Nov 23 16:18:47 1992  2017680.278  223906.914  15.302  10h
TXT: C:\PFPRO\DATA\PFINDER\112392\21SS106.COR
_A__U: Nov 23 16:34:32 1992  2017729.328  223908.749  9.262  10h
TXT: C:\PFPRO\DATA\PFINDER\112392\DELVIS.COR
_A__U: Nov 23 17:15:30 1992  2016497.580  219612.057  2.030  10h
TXT: C:\PFPRO\DATA\PFINDER\112392\DOG.COR
_A__U: Nov 23 17:04:53 1992  2019151.123  221299.691  -2.772  10h
TXT: C:\PFPRO\DATA\PFINDER\112392\EBEACH.COR
_A__U: Nov 23 16:44:01 1992  2016985.979  224357.511  -2.995  10h
TXT: C:\PFPRO\DATA\PFINDER\112392\LINE1.COR ✓
_A__U: Nov 23 15:35:15 1992  2017117.157  220363.680  19.956  10h
TXT: C:\PFPRO\DATA\PFINDER\112392\LINE10.COR ✓
_A__U: Nov 23 19:51:10 1992  2017102.004  220254.447  7.431  10h
TXT: C:\PFPRO\DATA\PFINDER\112392\LINE1EXT.COR ✓
_A__U: Nov 23 19:55:33 1992  2017051.880  220383.305  2.224  10h
TXT: C:\PFPRO\DATA\PFINDER\112392\LINE20.COR ✓
_A__U: Nov 23 20:23:19 1992  2017248.871  220565.266  -5.157  10h
TXT: C:\PFPRO\DATA\PFINDER\112392\LINE3.COR ✓
_A__U: Nov 23 20:01:21 1992  2017136.814  220354.757  10.026  10h
TXT: C:\PFPRO\DATA\PFINDER\112392\LINE4.COR ✓
_A__U: Nov 23 20:21:24 1992  2017210.978  220352.494  17.233  10h
TXT: C:\PFPRO\DATA\PFINDER\112392\LINE4A.COR ✓
_A__U: Nov 23 20:27:56 1992  2017169.847  220399.265  5.075  10h
TXT: C:\PFPRO\DATA\PFINDER\112392\LINE6.COR ✓
_A__U: Nov 23 20:18:12 1992  2017141.164  220332.085  6.163  10h
TXT: C:\PFPRO\DATA\PFINDER\112392\LINE7.COR ✓
_A__U: Nov 23 19:44:40 1992  2017092.918  220315.377  -6.879  10h
TXT: C:\PFPRO\DATA\PFINDER\112392\LINE8.COR ✓
_A__U: Nov 23 19:46:10 1992  2017076.128  220318.865  -11.889  10h
TXT: C:\PFPRO\DATA\PFINDER\112392\LINE9.COR ✓
_A__U: Nov 23 19:48:30 1992  2017092.890  220293.603  -8.815  10h
STS: Type:  7   Number of records:    26
     Max. Lat:        0.318   Min. Lat:        0.318
     Mean Lat:        0.318
STS: Type:  8   Number of records:    26
     Max. Lon:       -1.145   Min. Lon:       -1.146
```

per attached sheets

printed out twice (both same)

```
HDR: 1114      Version: 304  Source: 9854F
     Label: Mean positions of files
     Start Time: Nov 14 14:36:04 1992
     End Time: Nov 14 19:17:50 1992
     Stat Off: 1414  Recs(int): 18  Recs(lng): 18
     GPS Week: 670  GPS TOW: 570964.0 (14:36:04)
     Ref Lat: 2016876.480  Ref Lon: 220398.245  Ref Alt: 157.601

TXT: C:\PFPRO\DATA\PFINDER\111492\05SS101.COR
_A__U: Nov 14 18:15:27 1992  2017144.616  220355.551  20.001  10h
TXT: C:\PFPRO\DATA\PFINDER\111492\05SS102.COR
_A__U: Nov 14 16:56:12 1992  2017101.475  220257.437  2.376  10h
TXT: C:\PFPRO\DATA\PFINDER\111492\05SS103.COR
_A__U: Nov 14 18:57:28 1992  2017078.328  220317.372  15.567  10h
TXT: C:\PFPRO\DATA\PFINDER\111492\05SS104.COR
_A__U: Nov 14 18:04:01 1992  2017087.207  220350.454  -0.449  10h
TXT: C:\PFPRO\DATA\PFINDER\111492\1114CG1.COR
_A__U: Nov 14 14:36:04 1992  2017260.486  220632.781  1.405  10h
TXT: C:\PFPRO\DATA\PFINDER\111492\1114CG2.COR
_A__U: Nov 14 14:42:43 1992  2017297.638  220216.381  4.995  10h
TXT: C:\PFPRO\DATA\PFINDER\111492\1114NL1.COR
_A__U: Nov 14 14:49:35 1992  2017147.508  220114.337  1.125  10h
TXT: C:\PFPRO\DATA\PFINDER\111492\1114NL2.COR
_A__U: Nov 14 19:17:49 1992  2017147.770  220183.904  20.716  10h
TXT: C:\PFPRO\DATA\PFINDER\111492\1114P.COR
_A__U: Nov 14 16:49:17 1992  2017089.125  220242.701  27.927  10h
TXT: C:\PFPRO\DATA\PFINDER\111492\1114Q.COR
_A__U: Nov 14 17:07:17 1992  2017101.592  220299.693  9.771  10h
TXT: C:\PFPRO\DATA\PFINDER\111492\1114R.COR
_A__U: Nov 14 17:35:49 1992  2017095.138  220307.972  4.380  10h
TXT: C:\PFPRO\DATA\PFINDER\111492\1114S.COR
_A__U: Nov 14 17:42:46 1992  2017080.044  220323.721  -1.670  10h
TXT: C:\PFPRO\DATA\PFINDER\111492\1114T.COR
_A__U: Nov 14 17:48:36 1992  2017073.266  220333.423  4.968  10h
TXT: C:\PFPRO\DATA\PFINDER\111492\1114U.COR
_A__U: Nov 14 17:54:31 1992  2017070.500  220289.118  -0.066  10h
TXT: C:\PFPRO\DATA\PFINDER\111492\1114V.COR
_A__U: Nov 14 17:16:58 1992  2017080.773  220272.756  9.900  10h
TXT: C:\PFPRO\DATA\PFINDER\111492\1114W.COR
_A__U: Nov 14 18:21:07 1992  2017138.722  220357.169  -2.916  10h
TXT: C:\PFPRO\DATA\PFINDER\111492\1114X.COR
_A__U: Nov 14 18:43:26 1992  2017191.501  220387.764  46.243  10h
TXT: C:\PFPRO\DATA\PFINDER\111492\1114Y.COR
_A__U: Nov 14 19:08:08 1992  2017108.900  220319.487  13.238  10h
STS: Type:  7   Number of records:    18
     Max. Lat:        0.318   Min. Lat:        0.318
     Mean Lat:        0.318
STS: Type:  8   Number of records:    18
     Max. Lon:       -1.146   Min. Lon:       -1.146
     Mean Lon:       -1.146
STS: Type:  9   Number of records:    18
     Max. Alt:       46.243   Min. Alt:       -2.916
     Mean Alt:        9.862
```

13 records not corrected

```
HDR: 1119.6    Version: 304  Source: 9854
     Label: Mean positions of files
     Start Time: Nov 19 15:20:22 1992
     End Time: Nov 19 20:57:30 1992
     Stat Off: 1506  Recs(int): 19  Recs(lng): 19
     GPS Week: 671  GPS TOW: 400822.0 (15:20:22)
     Ref Lat: 2016727.071  Ref Lon: 220411.990  Ref Alt: -30.048

TXT: C:\PFPRO\DATA\PFINDER\111992\05SS105.COR
_A__U: Nov 19 17:32:00 1992  2017018.574  220414.439  -4.535  10h
TXT: C:\PFPRO\DATA\PFINDER\111992\05SS106.COR
_A__U: Nov 19 17:46:34 1992  2017121.251  220539.725  -8.071  10h
TXT: C:\PFPRO\DATA\PFINDER\111992\0SS105.COR
_A__U: Nov 19 17:32:00 1992  2017018.574  220414.439  -4.535  10h
TXT: C:\PFPRO\DATA\PFINDER\111992\14SED101.COR
_A__U: Nov 19 20:44:23 1992  2017723.932  221101.165  -7.848  10h
TXT: C:\PFPRO\DATA\PFINDER\111992\14SED102.COR
_A__U: Nov 19 20:57:30 1992  2017590.709  220847.635  -2.552  10h
TXT: C:\PFPRO\DATA\PFINDER\111992\14SED103.COR
_A__U: Nov 19 20:11:17 1992  2016488.842  220530.493  -9.367  10h
TXT: C:\PFPRO\DATA\PFINDER\111992\14SED104.COR
_A__U: Nov 19 19:53:47 1992  2016391.486  221089.459  0.597  10h
TXT: C:\PFPRO\DATA\PFINDER\111992\14SED105.COR
_A__U: Nov 19 19:18:51 1992  2018183.005  221869.974  0.407  10h
TXT: C:\PFPRO\DATA\PFINDER\111992\14SED171.COR
_A__U: Nov 19 19:18:51 1992  2018183.005  221869.974  0.407  10h
TXT: C:\PFPRO\DATA\PFINDER\111992\18GW01.COR
_A__U: Nov 19 15:20:22 1992  2018665.315  222632.954  7.736  10h
TXT: C:\PFPRO\DATA\PFINDER\111992\18GW02.COR
_A__U: Nov 19 15:30:54 1992  2018576.095  222609.163  2.187  10h
TXT: C:\PFPRO\DATA\PFINDER\111992\18GW03.COR
_A__U: Nov 19 15:37:07 1992  2018578.301  222647.817  2.966  10h
TXT: C:\PFPRO\DATA\PFINDER\111992\18SED108.COR
_A__U: Nov 19 16:10:24 1992  2018599.166  222656.769  6.690  10h
TXT: C:\PFPRO\DATA\PFINDER\111992\18SS101.COR
_A__U: Nov 19 15:46:00 1992  2018531.242  222644.560  2.364  10h
TXT: C:\PFPRO\DATA\PFINDER\111992\18SS102.COR
_A__U: Nov 19 16:03:13 1992  2018572.778  222631.666  3.146  10h
TXT: C:\PFPRO\DATA\PFINDER\111992\18SS103.COR
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_A__U: Nov 19 15:51:49 1992  2018594.398  222622.420  0.009  10h
TXT: C:\PFPRO\DATA\PFINDER\111992\18SS106.COR
_A__U: Nov 19 16:17:34 1992  2018682.364  222621.135  -0.707  10h
TXT: C:\PFPRO\DATA\PFINDER\111992\1SS104.COR
_A__U: Nov 19 15:51:49 1992  2018594.398  222622.420  0.009  10h
STS: Type:  7   Number of records:    19
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     Mean Lat:        0.318
STS: Type:  8   Number of records:    19
     Max. Lon:       -1.145   Min. Lon:       -1.146
     Mean Lon:       -1.145
STS: Type:  9   Number of records:    19
     Max. Alt:        7.736   Min. Alt:       -9.367
     Mean Alt:       -0.480
```

39 records not corrected

42 records not corrected

```
HDR: 1127      Version: 304  Source: 9854b
     Lab      ean positions of files
     Start Time: Nov 21 13:45:48 1992
     End Time: Nov 21 19:35:54 1992
     Stat Off: 1706  Recs(int): 22  Recs(lng): 22
     GPS Week: 671  GPS TOW: 567948.0 (13:45:48)
     Ref Lat: 2004810.650  Ref Lon: 231486.501  Ref Alt: -0.719

TXT: C:\PFPRO\DATA\PFINDER\112192\01SED108.COR
_A__U: Nov 21 19:35:54 1992  2005186.487  231525.873  12.684  10h
TXT: C:\PFPRO\DATA\PFINDER\112192\01SS01.COR
_A__U: Nov 21 18:49:13 1992  2005189.231  231539.588  20.622  10h
TXT: C:\PFPRO\DATA\PFINDER\112192\01SS101.COR
_A__U: Nov 21 14:14:44 1992  2005174.126  228908.487  6.478  10h
TXT: C:\PFPRO\DATA\PFINDER\112192\01SS102.COR
_A__U: Nov 21 19:07:48 1992  2005191.737  231538.615  15.371  10h
TXT: C:\PFPRO\DATA\PFINDER\112192\01SS103.COR
_A__U: Nov 21 18:02:55 1992  2005145.607  231559.559  16.509  10h
TXT: C:\PFPRO\DATA\PFINDER\112192\01SS104.COR
_A__U: Nov 21 18:22:10 1992  2005134.855  231549.810  17.809  10h
TXT: C:\PFPRO\DATA\PFINDER\112192\01SS106.COR
_A__U: Nov 21 18:33:53 1992  2005154.141  231605.927  31.005  10h
TXT: C:\PFPRO\DATA\PFINDER\112192\02SED107.COR
_A__U: Nov 21 15:08:18 1992  2005212.970  228893.941  3.838  10h
TXT: C:\PFPRO\DATA\PFINDER\112192\02SED108.COR
_A__U: Nov 21 15:15:13 1992  2005159.978  228880.435  3.342  10h
TXT: C:\PFPRO\DATA\PFINDER\112192\02SED109.COR
_A__U: Nov 21 15:21:39 1992  2005118.083  228912.927  1.069  10h
TXT: C:\PFPRO\DATA\PFINDER\112192\02SS102.COR
_A__U: Nov 21 13:53:46 1992  2005176.011  228890.867  3.602  10h
TXT: C:\PFPRO\DATA\PFINDER\112192\02SS103.COR
_A__U: Nov 21 13:45:48 1992  2005141.930  228904.935  4.929  10h
TXT: C:\PFPRO\DATA\PFINDER\112192\02SS105.COR
_A__U: Nov 21 14:20:58 1992  2005200.516  228997.249  2.903  10h
TXT: C:\PFPRO\DATA\PFINDER\112192\02TAR101.COR
_A__U: Nov 21 14:09:23 1992  2005184.907  228901.076  -1.707  10h
TXT: C:\PFPRO\DATA\PFINDER\112192\1GW01.COR
_A__U: Nov 21 17:43:00 1992  2005321.290  231385.947  15.155  10h
TXT: C:\PFPRO\DATA\PFINDER\112192\1GW02.COR
_A__U: Nov 21 17:09:13 1992  2005361.039  231470.171  15.466  10h
TXT: C:\PFPRO\DATA\PFINDER\112192\1GW03.COR
_A__U: Nov 21 17:26:02 1992  2005350.522  231373.948  0.442  10h
TXT: C:\PFPRO\DATA\PFINDER\112192\ACCESS.COR
_A__U: Nov 21 15:52:01 1992  2005423.826  231449.619  -0.862  10h
TXT: C:\PFPRO\DATA\PFINDER\112192\ACCESS2.COR
_A__U: Nov 21 16:31:57 1992  2005291.884  231507.659  22.071  10h
TXT: C:\PFPRO\DATA\PFINDER\112192\CULV.COR
_A__U: Nov 21 15:43:28 1992  2005439.312  231374.847  10.995  10h
TXT: C:\PFPRO\DATA\PFINDER\112192\CULVERT.COR
_A__U: Nov 21 15:36:20 1992  2005508.631  231694.996  6.741  10h
TXT: C:\PFPRO\DATA\PFINDER\112192\TRAIL.COR
_A__U: Nov 21 15:48:53 1992  2005452.087  231454.226  5.592  10h
STS: Type:  7   Number of records:    22
     Max. Lat:        0.316   Min. Lat:        0.316
     Mean Lat:        0.316
STS: Type:  8   Number of records:    22
     Max. Lon:       -1.144   Min. Lon:       -1.144
     Mean Lon:       -1.144
STS: Type:  9   Number of records:    22
     Max. Alt:       31.005   Min. Alt:       -1.707
     Mean Alt:        9.730
```

116 records not corrected

37 records not corrected

per attached sheets

63 records not corrected

19007-55-SRN → 5/1/93 ←

Correct pt. position files
(see attached for line correction (bridge, culvert etc.))

```
R: 1120.ASF        on: 304  Source: 9854h
   Label: Mea.  sitions of files
   Start Time: Nov 20 17:20:08 1992
   End Time: Nov 20 22:02:20 1992
   Stat Off: 1634  Recs(int): 21  Recs(lng): 21
   GPS Week: 671  GPS TOW: 494408.0 (17:20:08)
   Ref Lat: 2017586.995  Ref Lon: 220789.469  Ref Alt: -90.176

T: C:\PFPRO\DATA\PFINDER\112092\06GW01.COR
__U: Nov 20 19:16:09 1992  2017911.420  220769.169  6.686  10h
T: C:\PFPRO\DATA\PFINDER\112092\06SS01.COR
__U: Nov 20 21:37:27 1992  2017826.163  220837.407  -5.424  10h
T: C:\PFPRO\DATA\PFINDER\112092\06SS02.COR
__U: Nov 20 21:17:25 1992  2017831.841  220815.776  2.217  10h
T: C:\PFPRO\DATA\PFINDER\112092\06SS03.COR
__U: Nov 20 21:44:51 1992  2017803.899  220828.332  -13.445  10h
T: C:\PFPRO\DATA\PFINDER\112092\06SS04.COR
__U: Nov 20 21:23:17 1992  2017811.337  220812.109  5.041  10h
T: C:\PFPRO\DATA\PFINDER\112092\06SS05.COR
__U: Nov 20 21:51:59 1992  2017775.904  220815.079  -0.037  10h
T: C:\PFPRO\DATA\PFINDER\112092\06SS06.COR
__U: Nov 20 21:28:45 1992  2017799.527  220801.098  -2.776  10h
T: C:\PFPRO\DATA\PFINDER\112092\06SS08.COR
__U: Nov 20 22:02:19 1992  2017915.916  220774.352  7.119  10h
T: C:\PFPRO\DATA\PFINDER\112092\07GW01.COR
__U: Nov 20 20:10:25 1992  2016712.103  223961.247  -5.684  10h
T: C:\PFPRO\DATA\PFINDER\112092\07GW02.COR
__U: Nov 20 20:48:45 1992  2016530.818  223775.591  1.936  10h
T: C:\PFPRO\DATA\PFINDER\112092\07GW03.COR
__U: Nov 20 20:38:54 1992  2016386.948  223730.892  -4.193  10h
T: C:\PFPRO\DATA\PFINDER\112092\07GW04.COR
__U: Nov 20 20:22:25 1992  2015929.815  223708.503  -8.915  10h
T: C:\PFPRO\DATA\PFINDER\112092\07GW05.COR
__U: Nov 20 19:53:27 1992  2016060.057  223973.007  -0.773  10h
T: C:\PFPRO\DATA\PFINDER\112092\07GW06.COR
__U: Nov 20 19:48:00 1992  2016055.519  224154.512  -59.636  10h
T: C:\PFPRO\DATA\PFINDER\112092\07GW08.COR
__U: Nov 20 19:31:29 1992  2016684.657  224319.099  -23.993  10h
T: C:\PFPRO\DATA\PFINDER\112092\07GW107.COR
__U: Nov 20 19:41:56 1992  2016399.143  224394.360  -2.607  10h
T: C:\PFPRO\DATA\PFINDER\112092\16SED183.COR
__U: Nov 20 17:20:08 1992  2016488.674  223701.729  -0.650  10h
T: C:\PFPRO\DATA\PFINDER\112092\16SED185.COR
__U: Nov 20 18:55:07 1992  2016869.387  224031.551  1.235  10h
T: C:\PFPRO\DATA\PFINDER\112092\16SED186.COR
__U: Nov 20 18:47:52 1992  2016922.388  224019.475  -8.725  10h
T: C:\PFPRO\DATA\PFINDER\112092\16SED188.COR
__U: Nov 20 18:25:29 1992  2016991.333  224191.301  -0.075  10h
T: C:\PFPRO\DATA\PFINDER\112092\16SED190.COR
__U: Nov 20 17:43:25 1992  2017012.441  224246.843  -2.475  10h
S: Type:  7   Number of records:    21
   Max. Lat:        0.318   Min. Lat:        0.318
   Mean Lat:        0.318
S: Type:  8   Number of records:    21
   Max. Lon:       -1.145   Min. Lon:       -1.146
   Mean Lon:       -1.145
S: Type:  9   Number of records:    21
   Max. Alt:        7.119   Min. Alt:      -59.636
   Mean Alt:       -5.484
```

42 records not corrected

114 records not corrected

90 records not corrected

```
HDR: ACCESS.COR  Version: 304  Source: 9054h
     Label:
     Start Time: Nov 21 15:51:53 1992
     End Time: Nov 21 15:52:10 1992
     Stat Off: 2044  Recs(int): 18  Recs(lng): 18
     GPS Week: 671  GPS TOW: 575513.0 (15:51:53)
     Ref Lat: 2005194.145  Ref Lon: 231472.260  Ref Alt: -11.992

ION: Alpha(1):        0.0  Beta(1):  139264.0
     Alpha(2):        0.0  Beta(2): -147456.0
     Alpha(3):       -0.0  Beta(3):   65536.0
     Alpha(4):        0.0  Beta(4): -131072.0

NAV: PRN 03 IODE: 087h HLTH: 00h TCOL: 15:29:06
IOD: PRN 03 IODE: 087h HLTH: 00h TCOL: 15:29:06 URA: 5.7 TEPH: 15:29:06 Fit: 0h
NAV: PRN 13 IODE: 0CBh HLTH: 00h TCOL: 15:13:18
IOD: PRN 13 IODE: 0CBh HLTH: 00h TCOL: 15:13:18 URA: 2.8 TEPH: 15:13:18 Fit: 0h
NAV: PRN 16 IODE: 0A4h HLTH: 00h TCOL: 15:41:18
IOD: PRN 16 IODE: 0A4h HLTH: 00h TCOL: 15:41:18 URA: 32.0 TEPH: 15:41:18 Fit: 0h
NAV: PRN 18 IODE: 0EEh HLTH: 00h TCOL: 13:54:18
IOD: PRN 18 IODE: 0EEh HLTH: 00h TCOL: 13:54:18 URA: 32.0 TEPH: 13:54:18 Fit: 0h
NAV: PRN 20 IODE: 0C8h HLTH: 00h TCOL: 13:39:42
IOD: PRN 20 IODE: 0C8h HLTH: 00h TCOL: 13:39:42 URA: 2.8 TEPH: 13:39:42 Fit: 0h
NAV: PRN 24 IODE: 057h HLTH: 00h TCOL: 15:12:36
IOD: PRN 24 IODE: 057h HLTH: 00h TCOL: 15:12:36 URA: 32.0 TEPH: 15:12:36 Fit: 0h
NAV: PRN 26 IODE: 0DBh HLTH: 00h TCOL: 15:12:42
IOD: PRN 26 IODE: 0DBh HLTH: 00h TCOL: 15:12:42 URA: 32.0 TEPH: 15:12:42 Fit: 0h
PRN: 16   24   26   03
_____C: Nov 21 15:51:53 1992  2005434.079  231447.703  -3.983  2h
_____C: Nov 21 15:51:54 1992  2005433.519  231446.908  -5.340  2h
_____C: Nov 21 15:51:55 1992  2005435.775  231447.599  -2.231  2h
_____C: Nov 21 15:51:56 1992  2005437.674  231446.838  1.031  2h
_____C: Nov 21 15:51:57 1992  2005437.293  231446.771  0.936  2h
_____C: Nov 21 15:51:58 1992  2005438.227  231447.445  2.926  2h
_____C: Nov 21 15:51:59 1992  2005436.713  231447.362  0.613  2h
_____C: Nov 21 15:52:00 1992  2005433.303  231447.280  -1.621  2h
_____C: Nov 21 15:52:01 1992  2005432.684  231449.482  2.192  2h
_____C: Nov 21 15:52:02 1992  2005429.080  231448.749  1.734  2h
_____C: Nov 21 15:52:03 1992  2005426.003  231450.917  3.137  2h
_____C: Nov 21 15:52:04 1992  2005421.632  231450.897  0.892  2h
_____C: Nov 21 15:52:05 1992  2005416.307  231451.587  -2.240  2h
_____C: Nov 21 15:52:06 1992  2005411.926  231452.290  -2.503  2h
_____C: Nov 21 15:52:07 1992  2005409.247  231453.017  0.338  2h
_____C: Nov 21 15:52:08 1992  2005403.175  231452.973  -2.509  2h
_____C: Nov 21 15:52:09 1992  2005399.182  231452.958  -2.312  2h
_____C: Nov 21 15:52:10 1992  2005393.051  231452.359  -6.572  2h
STS: Type:  7   Number of records:    18
     Max. Lat:        0.316   Min. Lat:        0.316
     Mean Lat:        0.316
STS: Type:  8   Number of records:    18
     Max. Lon:       -1.144   Min. Lon:       -1.144
     Mean Lon:       -1.144
STS: Type:  9   Number of records:    18
     Max. Alt:        3.137   Min. Alt:       -6.572
     Mean Alt:       -0.862
```

```
_____C: Nov 21 15:50:50 1992  2005454.289  231453.138  12.803  2h
_____C: Nov 21 15:50:51 1992  2005453.831  231453.564  11.539  2h
_____C: Nov 21 15:50:52 1992  2005453.094  231454.098  10.395  2h
_____C: Nov 21 15:50:53 1992  2005452.367  231453.909  8.092  2h
_____C: Nov 21 15:50:54 1992  2005452.208  231453.728  6.623  2h
STS: Type:  7   Number of records:   240
     Max. Lat:        0.316   Min. Lat:        0.316
     Mean Lat:        0.316
STS: Type:  8   Number of records:   240
     Max. Lon:       -1.144   Min. Lon:       -1.144
     Mean Lon:       -1.144
STS: Type:  9   Number of records:   240
     Max. Alt:       19.768   Min. Alt:      -15.579
     Mean Alt:        5.592
```

C:	Nov	21	15:49:43	1992	2005457.907	231458.690	11.704	2h
C:	Nov	21	15:49:44	1992	2005458.590	231459.449	11.725	2h
C:	Nov	21	15:49:45	1992	2005459.294	231458.761	13.294	2h
C:	Nov	21	15:49:46	1992	2005459.987	231458.796	14.352	2h
C:	Nov	21	15:49:47	1992	2005458.213	231459.520	10.791	2h
C:	Nov	21	15:49:48	1992	2005459.374	231459.474	13.334	2h
C:	Nov	21	15:49:49	1992	2005459.132	231458.772	12.550	2h
C:	Nov	21	15:49:50	1992	2005458.017	231458.637	10.243	2h
C:	Nov	21	15:49:51	1992	2005456.286	231458.375	7.598	2h
C:	Nov	21	15:49:52	1992	2005455.879	231458.132	8.252	2h
C:	Nov	21	15:49:53	1992	2005454.726	231457.155	6.527	2h
C:	Nov	21	15:49:54	1992	2005452.818	231456.167	4.394	2h
C:	Nov	21	15:49:55	1992	2005452.044	231455.194	3.173	2h
C:	Nov	21	15:49:56	1992	2005451.837	231454.229	3.618	2h
C:	Nov	21	15:49:57	1992	2005451.054	231453.978	2.597	2h
C:	Nov	21	15:49:58	1992	2005451.206	231454.464	3.718	2h
C:	Nov	21	15:49:59	1992	2005450.991	231454.221	3.656	2h
C:	Nov	21	15:50:00	1992	2005452.212	231454.883	7.218	2h
C:	Nov	21	15:50:01	1992	2005452.783	231454.939	8.409	2h
C:	Nov	21	15:50:02	1992	2005452.776	231455.710	8.560	2h
C:	Nov	21	15:50:03	1992	2005454.471	231456.504	13.241	2h
C:	Nov	21	15:50:05	1992	2005455.475	231456.270	15.690	2h
C:	Nov	21	15:50:06	1992	2005455.112	231455.590	16.209	2h
C:	Nov	21	15:50:07	1992	2005453.993	231454.898	15.861	2h
C:	Nov	21	15:50:08	1992	2005453.073	231453.486	14.221	2h
C:	Nov	21	15:50:09	1992	2005452.900	231452.808	14.777	2h
C:	Nov	21	15:50:10	1992	2005452.350	231452.124	15.495	2h
C:	Nov	21	15:50:11	1992	2005451.559	231452.869	13.590	2h
C:	Nov	21	15:50:12	1992	2005452.302	231452.189	13.393	2h
C:	Nov	21	15:50:13	1992	2005452.078	231452.942	12.647	2h
C:	Nov	21	15:50:14	1992	2005450.920	231452.959	8.897	2h
C:	Nov	21	15:50:15	1992	2005450.697	231453.712	7.280	2h
C:	Nov	21	15:50:16	1992	2005450.105	231453.736	6.331	2h
C:	Nov	21	15:50:17	1992	2005450.648	231453.777	7.375	2h
C:	Nov	21	15:50:18	1992	2005449.659	231455.242	5.737	2h
C:	Nov	21	15:50:19	1992	2005449.833	231454.554	6.445	2h
C:	Nov	21	15:50:20	1992	2005450.718	231454.550	7.015	2h
C:	Nov	21	15:50:21	1992	2005450.620	231454.165	6.755	2h
C:	Nov	21	15:50:22	1992	2005451.268	231454.514	8.269	2h
C:	Nov	21	15:50:23	1992	2005452.304	231454.144	10.902	2h
C:	Nov	21	15:50:24	1992	2005453.142	231454.496	12.569	2h
C:	Nov	21	15:50:25	1992	2005453.423	231454.116	13.732	2h
C:	Nov	21	15:50:26	1992	2005453.894	231453.740	14.599	2h
C:	Nov	21	15:50:27	1992	2005454.375	231452.640	16.926	2h
C:	Nov	21	15:50:28	1992	2005454.846	231452.263	18.355	2h
C:	Nov	21	15:50:29	1992	2005453.606	231452.587	16.191	2h
C:	Nov	21	15:50:30	1992	2005452.967	231452.971	15.360	2h
C:	Nov	21	15:50:31	1992	2005454.456	231453.024	17.707	2h
C:	Nov	21	15:50:32	1992	2005454.045	231453.774	16.625	2h
C:	Nov	21	15:50:33	1992	2005454.211	231453.809	15.789	2h
C:	Nov	21	15:50:34	1992	2005454.198	231453.118	16.831	2h
C:	Nov	21	15:50:35	1992	2005456.255	231453.179	19.566	2h
C:	Nov	21	15:50:36	1992	2005456.222	231453.935	19.768	2h
C:	Nov	21	15:50:37	1992	2005455.243	231454.677	17.398	2h
C:	Nov	21	15:50:38	1992	2005455.419	231453.988	18.424	2h
C:	Nov	21	15:50:39	1992	2005455.406	231453.297	18.765	2h
C:	Nov	21	15:50:40	1992	2005453.696	231453.996	15.900	2h
C:	Nov	21	15:50:41	1992	2005451.417	231453.732	11.295	2h
C:	Nov	21	15:50:42	1992	2005452.173	231452.787	12.599	2h
C:	Nov	21	15:50:43	1992	2005452.909	231453.288	13.585	2h
C:	Nov	21	15:50:44	1992	2005453.466	231453.064	14.171	2h
C:	Nov	21	15:50:45	1992	2005452.699	231452.821	11.909	2h
C:	Nov	21	15:50:46	1992	2005452.878	231452.592	11.728	2h
C:	Nov	21	15:50:47	1992	2005453.824	231451.650	13.088	2h
C:	Nov	21	15:50:48	1992	2005453.993	231452.144	13.842	2h
C:	Nov	21	15:50:49	1992	2005454.162	231452.638	13.773	2h

C:	Nov	21	15:48:37	1992	2005448.284	231453.621	4.733 2h
C:	Nov	21	15:48:38	1992	2005446.517	231455.812	0.187 2h
C:	Nov	21	15:48:39	1992	2005445.725	231455.846	-2.770 2h
C:	Nov	21	15:48:40	1992	2005446.492	231455.729	-3.581 2h
C:	Nov	21	15:48:41	1992	2005444.558	231454.824	-7.524 2h
C:	Nov	21	15:48:42	1992	2005443.181	231454.650	-10.762 2h
C:	Nov	21	15:48:43	1992	2005441.815	231453.752	-12.999 2h
C:	Nov	21	15:48:44	1992	2005441.783	231452.150	-14.733 2h
C:	Nov	21	15:48:45	1992	2005440.985	231451.260	-15.579 2h
C:	Nov	21	15:48:46	1992	2005441.202	231451.720	-14.688 2h
C:	Nov	21	15:48:47	1992	2005441.917	231450.851	-11.777 2h
C:	Nov	21	15:48:48	1992	2005442.454	231449.255	-9.800 2h
C:	Nov	21	15:48:49	1992	2005442.951	231450.552	-8.167 2h
C:	Nov	21	15:48:50	1992	2005443.224	231451.099	-7.647 2h
C:	Nov	21	15:48:51	1992	2005444.919	231450.891	-4.440 2h
C:	Nov	21	15:48:52	1992	2005444.703	231452.103	-3.253 2h
C:	Nov	21	15:48:53	1992	2005444.140	231451.141	-3.686 2h
C:	Nov	21	15:48:54	1992	2005444.135	231450.909	-2.833 2h
C:	Nov	21	15:48:55	1992	2005444.130	231450.677	-2.910 2h
C:	Nov	21	15:48:56	1992	2005443.747	231450.439	-2.889 2h
C:	Nov	21	15:48:57	1992	2005443.942	231449.486	-1.235 2h
C:	Nov	21	15:48:58	1992	2005443.182	231449.243	-2.625 2h
C:	Nov	21	15:48:59	1992	2005443.368	231449.012	-1.255 2h
C:	Nov	21	15:49:00	1992	2005443.648	231449.094	-0.612 2h
C:	Nov	21	15:49:01	1992	2005444.751	231449.152	-0.220 2h
C:	Nov	21	15:49:02	1992	2005445.266	231450.647	1.192 2h
C:	Nov	21	15:49:03	1992	2005444.866	231449.960	-1.028 2h
C:	Nov	21	15:49:04	1992	2005445.392	231450.732	-0.440 2h
C:	Nov	21	15:49:05	1992	2005446.683	231450.791	1.326 2h
C:	Nov	21	15:49:06	1992	2005446.830	231451.558	0.771 2h
C:	Nov	21	15:49:07	1992	2005446.798	231451.599	0.406 2h
C:	Nov	21	15:49:08	1992	2005448.099	231450.935	4.071 2h
C:	Nov	21	15:49:09	1992	2005449.580	231450.997	5.811 2h
C:	Nov	21	15:49:10	1992	2005450.561	231452.377	7.838 2h
C:	Nov	21	15:49:11	1992	2005450.766	231452.756	7.977 2h
C:	Nov	21	15:49:12	1992	2005452.104	231453.150	10.516 2h
C:	Nov	21	15:49:13	1992	2005452.309	231453.529	10.918 2h
C:	Nov	21	15:49:14	1992	2005451.558	231454.618	10.029 2h
C:	Nov	21	15:49:15	1992	2005451.216	231453.542	7.984 2h
C:	Nov	21	15:49:16	1992	2005453.501	231453.950	12.732 2h
C:	Nov	21	15:49:17	1992	2005453.295	231453.556	10.968 2h
C:	Nov	21	15:49:18	1992	2005453.301	231454.655	11.768 2h
C:	Nov	21	15:49:19	1992	2005453.328	231454.308	11.614 2h
C:	Nov	21	15:49:20	1992	2005453.370	231454.489	11.758 2h
C:	Nov	21	15:49:21	1992	2005453.011	231454.413	11.725 2h
C:	Nov	21	15:49:22	1992	2005452.464	231454.334	11.141 2h
C:	Nov	21	15:49:23	1992	2005452.494	231453.540	11.516 2h
C:	Nov	21	15:49:24	1992	2005451.957	231452.738	9.895 2h
C:	Nov	21	15:49:25	1992	2005451.789	231452.664	8.909 2h
C:	Nov	21	15:49:26	1992	2005451.054	231452.582	7.441 2h
C:	Nov	21	15:49:27	1992	2005451.842	231451.798	8.415 2h
C:	Nov	21	15:49:28	1992	2005452.242	231451.731	9.700 2h
C:	Nov	21	15:49:29	1992	2005450.941	231451.641	7.885 2h
C:	Nov	21	15:49:30	1992	2005450.899	231451.210	7.669 2h
C:	Nov	21	15:49:31	1992	2005451.994	231451.987	8.804 2h
C:	Nov	21	15:49:32	1992	2005452.511	231453.480	8.510 2h
C:	Nov	21	15:49:33	1992	2005452.282	231454.239	7.769 2h
C:	Nov	21	15:49:34	1992	2005453.953	231454.302	10.538 2h
C:	Nov	21	15:49:35	1992	2005454.491	231454.348	10.974 2h
C:	Nov	21	15:49:36	1992	2005454.261	231455.107	10.025 2h
C:	Nov	21	15:49:37	1992	2005455.356	231455.884	11.155 2h
C:	Nov	21	15:49:38	1992	2005456.828	231456.667	12.944 2h
C:	Nov	21	15:49:39	1992	2005457.156	231458.157	12.405 2h
C:	Nov	21	15:49:40	1992	2005455.839	231457.856	8.458 2h
C:	Nov	21	15:49:41	1992	2005456.910	231457.898	11.165 2h
C:	Nov	21	15:49:42	1992	2005458.170	231457.943	12.858 2h

C:	Nov	21	15:47:29	1992	2005457.930	231458.845	4.558	2h
C:	Nov	21	15:47:30	1992	2005456.774	231458.164	0.966	2h
C:	Nov	21	15:47:31	1992	2005456.917	231458.218	1.353	2h
C:	Nov	21	15:47:32	1992	2005456.283	231459.708	-1.836	2h
C:	Nov	21	15:47:33	1992	2005456.973	231461.216	-1.069	2h
C:	Nov	21	15:47:34	1992	2005457.305	231461.272	-1.849	2h
C:	Nov	21	15:47:35	1992	2005455.368	231461.297	-6.496	2h
C:	Nov	21	15:47:37	1992	2005454.741	231462.066	-8.830	2h
C:	Nov	21	15:47:38	1992	2005456.008	231462.858	-8.106	2h
C:	Nov	21	15:47:39	1992	2005456.518	231463.639	-9.363	2h
C:	Nov	21	15:47:40	1992	2005456.282	231463.687	-11.132	2h
C:	Nov	21	15:47:41	1992	2005456.139	231463.498	-9.323	2h
C:	Nov	21	15:47:42	1992	2005457.320	231463.327	-6.652	2h
C:	Nov	21	15:47:43	1992	2005456.044	231463.121	-8.630	2h
C:	Nov	21	15:47:44	1992	2005455.535	231462.203	-8.619	2h
C:	Nov	21	15:47:44	1992	2005455.606	231461.463	-7.077	2h
C:	Nov	21	15:47:45	1992	2005455.088	231461.268	-7.823	2h
C:	Nov	21	15:47:46	1992	2005455.137	231461.080	-7.157	2h
C:	Nov	21	15:47:47	1992	2005454.931	231460.831	-5.514	2h
C:	Nov	21	15:47:48	1992	2005455.002	231459.196	-4.364	2h
C:	Nov	21	15:47:49	1992	2005453.352	231458.984	-6.981	2h
C:	Nov	21	15:47:50	1992	2005452.750	231458.257	-7.864	2h
C:	Nov	21	15:47:51	1992	2005452.188	231457.558	-7.021	2h
C:	Nov	21	15:47:52	1992	2005450.125	231456.115	-10.770	2h
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C:	Nov	21	15:47:59	1992	2005451.049	231453.412	-2.784	2h
C:	Nov	21	15:48:01	1992	2005453.020	231454.891	-0.400	2h
C:	Nov	21	15:48:02	1992	2005454.656	231456.412	0.226	2h
C:	Nov	21	15:48:03	1992	2005455.357	231457.196	-0.256	2h
C:	Nov	21	15:48:04	1992	2005454.758	231456.513	-2.226	2h
C:	Nov	21	15:48:05	1992	2005456.218	231457.305	0.967	2h
C:	Nov	21	15:48:06	1992	2005455.598	231458.068	-1.688	2h
C:	Nov	21	15:48:07	1992	2005455.307	231460.315	-1.979	2h
C:	Nov	21	15:48:08	1992	2005456.946	231461.832	0.020	2h
C:	Nov	21	15:48:09	1992	2005458.037	231461.895	1.235	2h
C:	Nov	21	15:48:10	1992	2005457.544	231461.178	0.385	2h
C:	Nov	21	15:48:11	1992	2005457.428	231460.291	-0.283	2h
C:	Nov	21	15:48:12	1992	2005457.292	231460.851	0.741	2h
C:	Nov	21	15:48:13	1992	2005456.778	231461.404	0.124	2h
C:	Nov	21	15:48:14	1992	2005456.852	231460.519	0.140	2h
C:	Nov	21	15:48:15	1992	2005456.737	231460.520	-0.695	2h
C:	Nov	21	15:48:16	1992	2005454.911	231460.332	-4.220	2h
C:	Nov	21	15:48:17	1992	2005452.876	231461.586	-8.237	2h
C:	Nov	21	15:48:18	1992	2005452.385	231460.692	-9.222	2h
C:	Nov	21	15:48:19	1992	2005451.694	231460.518	-10.343	2h
C:	Nov	21	15:48:20	1992	2005450.962	231458.435	-8.223	2h
C:	Nov	21	15:48:21	1992	2005449.682	231457.516	-8.024	2h
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C:	Nov	21	15:48:24	1992	2005447.769	231452.615	-2.199	2h
C:	Nov	21	15:48:25	1992	2005448.027	231450.271	1.749	2h
C:	Nov	21	15:48:26	1992	2005446.196	231448.621	0.703	2h
C:	Nov	21	15:48:27	1992	2005445.670	231448.436	2.504	2h
C:	Nov	21	15:48:28	1992	2005445.732	231446.813	6.075	2h
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C:	Nov	21	15:48:30	1992	2005445.201	231446.771	9.125	2h
C:	Nov	21	15:48:31	1992	2005445.723	231447.547	8.688	2h
C:	Nov	21	15:48:33	1992	2005446.972	231449.082	9.016	2h
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     End Time: Nov 21 15:50:55 1992
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     GPS Week: 671  GPS TOW: 575212.0 (15:46:52)
     Ref Lat: 2005123.383  Ref Lon: 231365.686  Ref Alt: 14.911

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     Alpha(4):        0.0  Beta(4): -131072.0

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IOD: PRN 13 IODE: 0CBh HLTH: 00h TCOL: 15:13:18 URA: 2.8 TEPH: 15:13:18 Fit: 0h
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IOD: PRN 16 IODE: 0A4h HLTH: 00h TCOL: 15:41:18 URA: 32.0 TEPH: 15:41:18 Fit: 0h
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IOD: PRN 18 IODE: 0EEh HLTH: 00h TCOL: 13:54:18 URA: 32.0 TEPH: 13:54:18 Fit: 0h
NAV: PRN 20 IODE: 0C8h HLTH: 00h TCOL: 13:39:42
IOD: PRN 20 IODE: 0C8h HLTH: 00h TCOL: 13:39:42 URA: 2.8 TEPH: 13:39:42 Fit: 0h
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IOD: PRN 24 IODE: 057h HLTH: 00h TCOL: 15:12:36 URA: 32.0 TEPH: 15:12:36 Fit: 0h
NAV: PRN 26 IODE: 0DBh HLTH: 00h TCOL: 15:12:42
IOD: PRN 26 IODE: 0DBh HLTH: 00h TCOL: 15:12:42 URA: 32.0 TEPH: 15:12:42 Fit: 0h
PRN: 16   24   26   03
     C: Nov 21 15:46:52 1992  2005448.151  231446.413  10.143  2h
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     C: Nov 21 15:47:28 1992  2005458.009  231458.068  6.370  2h
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PRN: 13   24   26   03
PRN: 13   16   24   26
PRN: 13   24   26   03
PRN: 13   16   24   26
PRN: 13   24   26   03
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     Mean Lat:        0.316
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     Mean Alt:        6.741
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     Alpha(3):       -0.0  Beta(3):   65536.0
     Alpha(4):        0.0  Beta(4): -131072.0

NAV: PRN 03 IODE: 087h HLTH: 00h TCOL: 15:29:06
IOD: PRN 03 IODE: 087h HLTH: 00h TCOL: 15:29:06 URA: 5.7 TEPH: 15:29:06 Fit: 0h
NAV: PRN 13 IODE: 0CBh HLTH: 00h TCOL: 15:13:18
IOD: PRN 13 IODE: 0CBh HLTH: 00h TCOL: 15:13:18 URA: 2.8 TEPH: 15:13:18 Fit: 0h
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IOD: PRN 16 IODE: 0A4h HLTH: 00h TCOL: 14:56:18 URA: 32.0 TEPH: 14:56:18 Fit: 0h
NAV: PRN 18 IODE: 0EEh HLTH: 00h TCOL: 13:54:18
IOD: PRN 18 IODE: 0EEh HLTH: 00h TCOL: 13:54:18 URA: 32.0 TEPH: 13:54:18 Fit: 0h
NAV: PRN 20 IODE: 0C8h HLTH: 00h TCOL: 13:39:42
IOD: PRN 20 IODE: 0C8h HLTH: 00h TCOL: 13:39:42 URA: 2.8 TEPH: 13:39:42 Fit: 0h
NAV: PRN 24 IODE: 057h HLTH: 00h TCOL: 15:12:36
IOD: PRN 24 IODE: 057h HLTH: 00h TCOL: 15:12:36 URA: 32.0 TEPH: 15:12:36 Fit: 0h
NAV: PRN 26 IODE: 0DBh HLTH: 00h TCOL: 15:12:42
IOD: PRN 26 IODE: 0DBh HLTH: 00h TCOL: 15:12:42 URA: 32.0 TEPH: 15:12:42 Fit: 0h
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PRN: 13   24   26   03
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PRN: 13   16   24   26
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PRN: 13   24   26   03
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      C: Nov 21 15:36:16 1992  2005475.498  231642.996  5.647  2h
      C: Nov 21 15:36:17 1992  2005476.730  231651.764  5.078  2h
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STS: Type:  8   Number of records:   233
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     Mean Alt:       10.995
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C:	N		15:44:09	1992	2005446.090	231372.650	19.587	2h
C:	Nov	21	15:44:10	1992	2005445.973	231372.100	20.221	2h
C:	Nov	21	15:44:11	1992	2005445.183	231372.142	19.328	2h
C:	Nov	21	15:44:12	1992	2005444.582	231372.187	19.558	2h
C:	Nov	21	15:44:13	1992	2005444.738	231372.241	21.793	2h
C:	Nov	21	15:44:14	1992	2005443.759	231372.280	21.080	2h
C:	Nov	21	15:44:15	1992	2005442.601	231371.594	18.694	2h
C:	Nov	21	15:44:16	1992	2005442.767	231370.925	20.759	2h
C:	Nov	21	15:44:17	1992	2005441.778	231371.687	19.801	2h
C:	Nov	21	15:44:18	1992	2005441.197	231370.285	19.799	2h
C:	Nov	21	15:44:19	1992	2005441.551	231369.619	19.085	2h
C:	Nov	21	15:44:20	1992	2005440.881	231369.778	18.428	2h
C:	Nov	21	15:44:21	1992	2005439.718	231368.538	16.078	2h
C:	Nov	21	15:44:22	1992	2005439.659	231369.482	15.901	2h
C:	Nov	21	15:44:23	1992	2005439.231	231369.698	14.992	2h
C:	Nov	21	15:44:24	1992	2005438.246	231369.183	13.556	2h
C:	Nov	21	15:44:25	1992	2005438.953	231369.414	14.919	2h
C:	Nov	21	15:44:26	1992	2005440.048	231368.927	17.227	2h
C:	Nov	21	15:44:27	1992	2005440.196	231368.428	17.483	2h
C:	Nov	21	15:44:28	1992	2005439.967	231367.923	16.727	2h
C:	Nov	21	15:44:29	1992	2005439.170	231367.410	14.710	2h
C:	Nov	21	15:44:30	1992	2005439.567	231367.520	16.760	2h
C:	Nov	21	15:44:31	1992	2005437.641	231367.544	13.492	2h
C:	Nov	21	15:44:32	1992	2005436.292	231366.854	11.532	2h
C:	Nov	21	15:44:33	1992	2005435.700	231366.174	10.091	2h
C:	Nov	21	15:44:34	1992	2005433.594	231365.473	7.814	2h
C:	Nov	21	15:44:35	1992	2005434.116	231366.254	11.063	2h
C:	Nov	21	15:44:36	1992	2005433.523	231365.574	10.778	2h
C:	Nov	21	15:44:37	1992	2005433.676	231365.627	12.846	2h
C:	Nov	21	15:44:38	1992	2005433.281	231364.936	12.970	2h
C:	Nov	21	15:44:39	1992	2005432.310	231364.250	12.049	2h
C:	Nov	21	15:44:40	1992	2005430.726	231364.673	10.414	2h
C:	Nov	21	15:44:41	1992	2005429.591	231364.885	6.891	2h
C:	Nov	21	15:44:42	1992	2005429.032	231364.381	4.549	2h
C:	Nov	21	15:44:43	1992	2005426.394	231363.849	0.775	2h
C:	Nov	21	15:44:44	1992	2005426.004	231364.795	1.574	2h
C:	Nov	21	15:44:45	1992	2005429.962	231365.801	7.289	2h
C:	Nov	21	15:44:46	1992	2005428.626	231366.734	6.164	2h
C:	Nov	21	15:44:47	1992	2005429.001	231366.968	6.634	2h
C:	Nov	21	15:44:48	1992	2005430.311	231367.938	10.044	2h
C:	Nov	21	15:44:49	1992	2005430.496	231368.170	10.740	2h
C:	Nov	21	15:44:50	1992	2005430.765	231368.261	10.665	2h
C:	Nov	21	15:44:51	1992	2005432.134	231368.915	11.820	2h
C:	Nov	21	15:44:52	1992	2005433.512	231368.847	13.547	2h
C:	Nov	21	15:44:53	1992	2005432.422	231369.468	10.444	2h
C:	Nov	21	15:44:54	1992	2005433.809	231368.677	12.270	2h
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C:	Nov	21	15:44:56	1992	2005433.905	231369.228	10.702	2h
C:	Nov	21	15:44:57	1992	2005434.147	231369.146	9.865	2h
C:	Nov	21	15:44:58	1992	2005435.701	231369.805	11.741	2h
C:	Nov	21	15:44:59	1992	2005434.987	231370.433	10.915	2h
C:	Nov	21	15:45:00	1992	2005435.535	231370.099	12.726	2h
C:	Nov	21	15:45:01	1992	2005435.696	231369.431	15.634	2h
C:	Nov	21	15:45:02	1992	2005434.901	231369.473	15.419	2h
C:	Nov	21	15:45:03	1992	2005434.315	231368.071	14.680	2h
C:	Nov	21	15:45:04	1992	2005434.286	231367.400	14.466	2h
C:	Nov	21	15:45:05	1992	2005433.880	231366.724	15.244	2h
C:	Nov	21	15:45:06	1992	2005434.040	231366.056	16.051	2h
C:	Nov	21	15:45:07	1992	2005434.001	231366.108	17.865	2h
C:	Nov	21	15:45:08	1992	2005432.837	231365.421	14.755	2h
C:	Nov	21	15:45:09	1992	2005432.968	231366.211	16.467	2h
C:	Nov	21	15:45:10	1992	2005432.845	231366.037	17.019	2h
C:	Nov	21	15:45:11	1992	2005433.778	231366.105	19.694	2h
C:	Nov	21	15:45:12	1992	2005434.901	231366.175	20.015	2h
C:	Nov	21	15:45:13	1992	2005435.068	231366.956	19.496	2h
C:	Nov	21	15:45:14	1992	2005435.434	231367.016	19.418	2h

C:	Nov	21	15:43:02	1992	2005439.142	231373.813	4.033 2h
C:	Nov	21	15:43:03	1992	2005438.537	231374.582	3.015 2h
C:	Nov	21	15:43:04	1992	2005438.321	231374.634	3.243 2h
C:	Nov	21	15:43:05	1992	2005439.043	231374.712	4.391 2h
C:	Nov	21	15:43:06	1992	2005438.448	231374.758	3.676 2h
C:	Nov	21	15:43:07	1992	2005439.933	231374.833	6.170 2h
C:	Nov	21	15:43:08	1992	2005440.851	231374.900	8.274 2h
C:	Nov	21	15:43:09	1992	2005440.443	231374.949	8.825 2h
C:	Nov	21	15:43:10	1992	2005441.815	231374.748	11.543 2h
C:	Nov	21	15:43:11	1992	2005442.822	231373.802	13.963 2h
C:	Nov	21	15:43:12	1992	2005442.495	231373.560	12.968 2h
C:	Nov	21	15:43:13	1992	2005443.313	231372.611	14.896 2h
C:	Nov	21	15:43:14	1992	2005443.355	231373.098	14.195 2h
C:	Nov	21	15:43:15	1992	2005442.849	231372.131	14.603 2h
C:	Nov	21	15:43:16	1992	2005443.658	231371.905	15.906 2h
C:	Nov	21	15:43:17	1992	2005442.754	231372.380	12.034 2h
C:	Nov	21	15:43:18	1992	2005443.384	231371.428	14.685 2h
C:	Nov	21	15:43:19	1992	2005443.237	231371.913	13.711 2h
C:	Nov	21	15:43:20	1992	2005443.302	231372.668	13.503 2h
C:	Nov	21	15:43:21	1992	2005443.010	231371.989	13.031 2h
C:	Nov	21	15:43:23	1992	2005444.027	231372.777	16.476 2h
C:	Nov	21	15:43:24	1992	2005443.521	231374.268	14.440 2h
C:	Nov	21	15:43:25	1992	2005443.976	231374.323	15.101 2h
C:	Nov	21	15:43:26	1992	2005443.107	231374.359	12.893 2h
C:	Nov	21	15:43:27	1992	2005443.184	231374.409	13.120 2h
C:	Nov	21	15:43:28	1992	2005443.648	231373.741	13.982 2h
C:	Nov	21	15:43:29	1992	2005442.779	231373.777	12.378 2h
C:	Nov	21	15:43:30	1992	2005442.270	231374.546	12.094 2h
C:	Nov	21	15:43:31	1992	2005441.482	231373.893	11.613 2h
C:	Nov	21	15:43:32	1992	2005441.643	231373.949	11.661 2h
C:	Nov	21	15:43:33	1992	2005440.869	231373.269	10.617 2h
C:	Nov	21	15:43:34	1992	2005440.085	231373.312	8.692 2h
C:	Nov	21	15:43:35	1992	2005439.499	231372.635	7.517 2h
C:	Nov	21	15:43:36	1992	2005439.086	231372.696	6.951 2h
C:	Nov	21	15:43:37	1992	2005437.903	231374.180	5.307 2h
C:	Nov	21	15:43:38	1992	2005438.064	231374.236	4.574 2h
C:	Nov	21	15:43:39	1992	2005438.035	231374.289	6.524 2h
C:	Nov	21	15:43:40	1992	2005437.512	231374.462	5.099 2h
C:	Nov	21	15:43:41	1992	2005439.294	231374.686	9.145 2h
C:	Nov	21	15:43:42	1992	2005438.429	231374.872	6.415 2h
C:	Nov	21	15:43:43	1992	2005437.764	231374.339	5.104 2h
C:	Nov	21	15:43:44	1992	2005439.167	231374.557	6.897 2h
C:	Nov	21	15:43:45	1992	2005438.501	231374.024	6.392 2h
C:	Nov	21	15:43:46	1992	2005437.825	231374.213	4.690 2h
C:	Nov	21	15:43:47	1992	2005439.039	231374.429	6.215 2h
C:	Nov	21	15:43:48	1992	2005438.741	231374.624	5.260 2h
C:	Nov	21	15:43:49	1992	2005438.831	231374.101	6.323 2h
C:	Nov	21	15:43:50	1992	2005439.569	231374.379	8.413 2h
C:	Nov	21	15:43:51	1992	2005438.251	231373.914	5.782 2h
C:	Nov	21	15:43:52	1992	2005438.445	231373.471	6.795 2h
C:	Nov	21	15:43:53	1992	2005438.818	231373.753	7.500 2h
C:	Nov	21	15:43:54	1992	2005440.136	231374.049	10.983 2h
C:	Nov	21	15:43:55	1992	2005441.831	231374.349	15.377 2h
C:	Nov	21	15:43:56	1992	2005442.970	231373.919	17.056 2h
C:	Nov	21	15:43:57	1992	2005442.974	231373.473	16.612 2h
C:	Nov	21	15:43:58	1992	2005443.166	231373.030	17.860 2h
C:	Nov	21	15:43:59	1992	2005443.538	231373.313	17.699 2h
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C:	Nov	21	15:44:01	1992	2005443.548	231372.740	17.089 2h
C:	Nov	21	15:44:02	1992	2005444.377	231373.922	19.534 2h
C:	Nov	21	15:44:03	1992	2005444.470	231373.647	18.975 2h
C:	Nov	21	15:44:04	1992	2005445.497	231374.108	21.170 2h
C:	Nov	21	15:44:05	1992	2005445.957	231374.561	22.228 2h
C:	Nov	21	15:44:06	1992	2005447.571	231373.584	23.736 2h
C:	Nov	21	15:44:07	1992	2005447.979	231373.952	24.263 2h
C:	Nov	21	15:44:08	1992	2005446.557	231373.656	21.631 2h

C:	Nc	15:41:55	1992	2005438.206	231364.812	14.376	2h
C:	Nov 21	15:41:56	1992	2005437.079	231365.325	11.835	2h
C:	Nov 21	15:41:57	1992	2005437.275	231365.857	12.407	2h
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C:	Nov 21	15:41:59	1992	2005437.300	231366.191	10.958	2h
C:	Nov 21	15:42:00	1992	2005437.478	231366.739	10.481	2h
C:	Nov 21	15:42:01	1992	2005438.977	231367.308	12.488	2h
C:	Nov 21	15:42:02	1992	2005439.919	231367.145	13.118	2h
C:	Nov 21	15:42:04	1992	2005440.803	231367.662	15.114	2h
C:	Nov 21	15:42:05	1992	2005442.879	231367.515	17.814	2h
C:	Nov 21	15:42:06	1992	2005442.866	231368.063	16.829	2h
C:	Nov 21	15:42:07	1992	2005441.918	231367.874	15.873	2h
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C:	Nov 21	15:42:10	1992	2005442.110	231368.103	12.733	2h
C:	Nov 21	15:42:11	1992	2005442.827	231368.891	13.198	2h
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C:	Nov 21	15:42:13	1992	2005442.948	231369.725	10.368	2h
C:	Nov 21	15:42:14	1992	2005444.232	231370.521	11.648	2h
C:	Nov 21	15:42:15	1992	2005444.770	231370.583	11.548	2h
C:	Nov 21	15:42:16	1992	2005443.974	231371.350	8.662	2h
C:	Nov 21	15:42:17	1992	2005443.756	231371.401	7.948	2h
C:	Nov 21	15:42:18	1992	2005443.338	231372.173	6.187	2h
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C:	Nov 21	15:42:20	1992	2005442.280	231372.886	4.764	2h
C:	Nov 21	15:42:21	1992	2005441.137	231373.203	2.911	2h
C:	Nov 21	15:42:22	1992	2005440.182	231373.523	1.171	2h
C:	Nov 21	15:42:23	1992	2005439.239	231373.120	0.246	2h
C:	Nov 21	15:42:24	1992	2005437.917	231372.711	-0.663	2h
C:	Nov 21	15:42:25	1992	2005437.352	231372.314	-1.601	2h
C:	Nov 21	15:42:26	1992	2005437.354	231371.924	-1.779	2h
C:	Nov 21	15:42:27	1992	2005436.591	231372.247	-3.407	2h
C:	Nov 21	15:42:28	1992	2005436.962	231372.586	-2.032	2h
C:	Nov 21	15:42:29	1992	2005436.955	231372.919	-2.001	2h
C:	Nov 21	15:42:30	1992	2005436.799	231373.362	-1.380	2h
C:	Nov 21	15:42:31	1992	2005437.895	231374.155	-0.223	2h
C:	Nov 21	15:42:32	1992	2005438.245	231374.214	0.469	2h
C:	Nov 21	15:42:33	1992	2005438.385	231375.716	-1.549	2h
C:	Nov 21	15:42:34	1992	2005438.528	231376.509	-1.807	2h
C:	Nov 21	15:42:35	1992	2005438.490	231377.286	-2.447	2h
C:	Nov 21	15:42:36	1992	2005437.705	231377.329	-5.422	2h
C:	Nov 21	15:42:37	1992	2005438.044	231378.111	-4.332	2h
C:	Nov 21	15:42:38	1992	2005436.702	231377.423	-5.467	2h
C:	Nov 21	15:42:39	1992	2005436.653	231378.923	-5.170	2h
C:	Nov 21	15:42:40	1992	2005436.969	231378.807	-4.320	2h
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C:	Nov 21	15:42:42	1992	2005436.418	231378.262	-5.662	2h
C:	Nov 21	15:42:43	1992	2005437.658	231378.018	-2.782	2h
C:	Nov 21	15:42:44	1992	2005437.953	231377.762	-1.722	2h
C:	Nov 21	15:42:45	1992	2005438.238	231378.228	0.258	2h
C:	Nov 21	15:42:46	1992	2005438.345	231377.970	0.877	2h
C:	Nov 21	15:42:47	1992	2005437.874	231378.426	0.267	2h
C:	Nov 21	15:42:48	1992	2005437.991	231377.445	0.971	2h
C:	Nov 21	15:42:49	1992	2005438.109	231376.464	2.044	2h
C:	Nov 21	15:42:50	1992	2005439.412	231376.259	4.451	2h
C:	Nov 21	15:42:51	1992	2005440.017	231374.621	3.014	2h
C:	Nov 21	15:42:52	1992	2005440.591	231375.153	6.616	2h
C:	Nov 21	15:42:53	1992	2005440.620	231374.218	6.674	2h
C:	Nov 21	15:42:54	1992	2005440.260	231374.014	6.066	2h
C:	Nov 21	15:42:55	1992	2005440.089	231373.812	5.956	2h
C:	Nov 21	15:42:56	1992	2005439.918	231373.611	5.442	2h
C:	Nov 21	15:42:57	1992	2005439.579	231371.961	3.532	2h
C:	Nov 21	15:42:58	1992	2005438.831	231372.475	1.747	2h
C:	Nov 21	15:42:59	1992	2005439.218	231373.005	2.000	2h
C:	Nov 21	15:43:00	1992	2005437.882	231372.963	0.269	2h
C:	Nov 21	15:43:01	1992	2005438.223	231373.745	0.899	2h

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      End Time: Nov 21 15:45:27 1992
      Stat Off: 7438  Recs(int): 233  Recs(lno): 233
      GPS Week: 671  GPS TOW: 574850.0 (15:40:50)
      Ref Lat: 2005159.749  Ref Lon: 231416.094  Ref Alt: -52.428

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     Alpha(3):       -0.0  Beta(3):   65536.0
     Alpha(4):        0.0  Beta(4): -131072.0

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IOD: PRN 03 IODE: 087h HLTH: 00h TCOL: 15:29:06 URA: 5.7 TEPH: 15:29:06 Fit: 0h
NAV: PRN 13 IODE: 0CBh HLTH: 00h TCOL: 15:13:18
IOD: PRN 13 IODE: 0CBh HLTH: 00h TCOL: 15:13:18 URA: 2.8 TEPH: 15:13:18 Fit: 0h
NAV: PRN 16 IODE: 0A4h HLTH: 00h TCOL: 14:56:18
IOD: PRN 16 IODE: 0A4h HLTH: 00h TCOL: 14:56:18 URA: 32.0 TEPH: 14:56:18 Fit: 0h
NAV: PRN 18 IODE: 0EEh HLTH: 00h TCOL: 13:54:18
IOD: PRN 18 IODE: 0EEh HLTH: 00h TCOL: 13:54:18 URA: 32.0 TEPH: 13:54:18 Fit: 0h
NAV: PRN 20 IODE: 0C8h HLTH: 00h TCOL: 13:39:42
IOD: PRN 20 IODE: 0C8h HLTH: 00h TCOL: 13:39:42 URA: 2.8 TEPH: 13:39:42 Fit: 0h
NAV: PRN 24 IODE: 057h HLTH: 00h TCOL: 15:12:36
IOD: PRN 24 IODE: 057h HLTH: 00h TCOL: 15:12:36 URA: 32.0 TEPH: 15:12:36 Fit: 0h
NAV: PRN 26 IODE: 0DBh HLTH: 00h TCOL: 15:12:42
IOD: PRN 26 IODE: 0DBh HLTH: 00h TCOL: 15:12:42 URA: 32.0 TEPH: 15:12:42 Fit: 0h
PRN: 13   16   24   26
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.......C: Nov 21 15:40:51 1992  2005452.406  231505.362  8.871  2h
.......C: Nov 21 15:40:52 1992  2005451.753  231496.563  8.228  2h
PRN: 13   24   26   03
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.......C: Nov 21 15:40:54 1992  2005450.856  231480.395  7.407  2h
.......C: Nov 21 15:40:55 1992  2005449.657  231469.868  9.237  2h
.......C: Nov 21 15:40:56 1992  2005447.750  231458.645  8.766  2h
.......C: Nov 21 15:40:58 1992  2005446.002  231448.129  8.863  2h
ION: Alpha(1):        0.0  Beta(1):  139264.0
     Alpha(2):        0.0  Beta(2): -147456.0
     Alpha(3):       -0.0  Beta(3):   65536.0
     Alpha(4):        0.0  Beta(4): -131072.0

IOD: PRN 03 IODE: 087h HLTH: 00h TCOL: 15:29:06 URA: 5.7 TEPH: 15:29:06 Fit: 0h
IOD: PRN 13 IODE: 0CBh HLTH: 00h TCOL: 15:13:18 URA: 2.8 TEPH: 15:13:18 Fit: 0h
IOD: PRN 16 IODE: 0A4h HLTH: 00h TCOL: 15:41:18 URA: 32.0 TEPH: 15:41:18 Fit: 0h
IOD: PRN 18 IODE: 0EEh HLTH: 00h TCOL: 13:54:18 URA: 32.0 TEPH: 13:54:18 Fit: 0h
IOD: PRN 20 IODE: 0C8h HLTH: 00h TCOL: 13:39:42 URA: 2.8 TEPH: 13:39:42 Fit: 0h
IOD: PRN 24 IODE: 057h HLTH: 00h TCOL: 15:12:36 URA: 32.0 TEPH: 15:12:36 Fit: 0h
IOD: PRN 26 IODE: 0DBh HLTH: 00h TCOL: 15:12:42 URA: 32.0 TEPH: 15:12:42 Fit: 0h
PRN: 16   24   26   03
.......C: Nov 21 15:41:40 1992  2005438.378  231368.261  13.637  2h
.......C: Nov 21 15:41:41 1992  2005437.916  231367.866  12.868  2h
.......C: Nov 21 15:41:42 1992  2005437.088  231366.743  12.185  2h
.......C: Nov 21 15:41:43 1992  2005437.006  231366.354  12.180  2h
.......C: Nov 21 15:41:44 1992  2005437.302  231365.970  13.017  2h
.......C: Nov 21 15:41:45 1992  2005437.988  231364.869  15.536  2h
.......C: Nov 21 15:41:46 1992  2005439.042  231364.497  18.162  2h
.......C: Nov 21 15:41:47 1992  2005439.708  231364.843  19.746  2h
.......C: Nov 21 15:41:48 1992  2005440.437  231364.974  20.356  2h
.......C: Nov 21 15:41:49 1992  2005441.493  231364.603  22.652  2h
.......C: Nov 21 15:41:50 1992  2005441.734  231364.388  21.681  2h
.......C: Nov 21 15:41:51 1992  2005441.362  231364.911  21.439  2h
.......C: Nov 21 15:41:52 1992  2005440.245  231364.701  18.771  2h
.......C: Nov 21 15:41:53 1992  2005438.749  231364.486  16.045  2h
.......C: Nov 21 15:41:54 1992  2005438.378  231365.009  15.641  2h
```

```
_____C: Nov 21 16:31:53 1992  2005322.454  231482.056  25.128  2h
_____C: Nov 21 16:31:54 1992  2005316.928  231482.027  24.961  2h
_____C: Nov 21 16:31:55 1992  2005311.033  231481.270  25.065  2h
_____C: Nov 21 16:31:56 1992  2005306.799  231483.429  24.414  2h
_____C: Nov 21 16:31:57 1992  2005302.576  231484.865  24.759  2h
_____C: Nov 21 16:31:58 1992  2005297.397  231487.010  24.586  2h
_____C: Nov 21 16:31:59 1992  2005290.924  231486.968  23.149  2h
_____C: Nov 21 16:32:00 1992  2005284.451  231486.877  23.590  2h
_____C: Nov 21 16:32:01 1992  2005278.703  231488.904  23.030  2h
_____C: Nov 21 16:32:02 1992  2005275.193  231493.132  24.906  2h
_____C: Nov 21 16:32:03 1992  2005270.948  231495.903  24.019  2h
_____C: Nov 21 16:32:04 1992  2005264.632  231497.922  24.073  2h
_____C: Nov 21 16:32:05 1992  2005259.431  231501.403  24.982  2h
_____C: Nov 21 16:32:06 1992  2005254.977  231505.618  25.052  2h
_____C: Nov 21 16:32:07 1992  2005250.890  231510.561  23.728  2h
_____C: Nov 21 16:32:08 1992  2005247.003  231514.783  24.657  2h
_____C: Nov 21 16:32:09 1992  2005240.994  231521.130  25.660  2h
_____C: Nov 21 16:32:10 1992  2005234.552  231523.200  22.902  2h
_____C: Nov 21 16:32:11 1992  2005228.127  231526.743  20.869  2h
_____C: Nov 21 16:32:12 1992  2005225.065  231533.226  21.521  2h
_____C: Nov 21 16:32:13 1992  2005221.068  231538.972  21.911  2h
_____C: Nov 21 16:32:14 1992  2005216.156  231542.536  23.603  2h
_____C: Nov 21 16:32:15 1992  2005209.920  231546.081  23.866  2h
_____C: Nov 21 16:32:16 1992  2005202.938  231548.893  22.379  2h
_____C: Nov 21 16:32:17 1992  2005198.582  231553.187  21.019  2h
_____C: Nov 21 16:32:18 1992  2005193.093  231557.465  21.007  2h
_____C: Nov 21 16:32:19 1992  2005187.802  231561.023  22.169  2h
_____C: Nov 21 16:32:20 1992  2005180.766  231564.711  20.446  2h
_____C: Nov 21 16:32:21 1992  2005174.599  231568.530  19.753  2h
_____C: Nov 21 16:32:22 1992  2005170.680  231573.828  20.831  2h
_____C: Nov 21 16:32:23 1992  2005164.901  231576.929  20.028  2h
_____C: Nov 21 16:32:24 1992  2005159.678  231580.762  20.058  2h
_____C: Nov 21 16:32:25 1992  2005155.590  231584.610  20.199  2h
_____C: Nov 21 16:32:26 1992  2005150.188  231587.716  20.683  2h
_____C: Nov 21 16:32:27 1992  2005146.667  231591.572  21.218  2h
_____C: Nov 21 16:32:28 1992  2005142.966  231594.702  20.641  2h
_____C: Nov 21 16:32:29 1992  2005139.465  231597.111  21.149  2h
_____C: Nov 21 16:32:30 1992  2005134.459  231597.854  21.667  2h
_____C: Nov 21 16:32:31 1992  2005127.417  231597.691  18.985  2h
_____C: Nov 21 16:32:32 1992  2005123.170  231600.460  19.515  2h
_____C: Nov 21 16:32:33 1992  2005118.755  231601.780  19.055  2h
_____C: Nov 21 16:32:34 1992  2005113.603  231601.643  16.607  2h
_____C: Nov 21 16:32:35 1992  2005110.352  231600.809  15.667  2h
_____C: Nov 21 16:32:36 1992  2005112.908  231602.927  16.911  2h
_____C: Nov 21 16:32:37 1992  2005111.188  231601.403  16.121  2h
_____C: Nov 21 16:32:38 1992  2005109.460  231599.867  14.884  2h
STS: Type:  7   Number of records:    83
     Max. Lat:        0.316   Min. Lat:        0.316
     Mean Lat:        0.316
STS: Type:  8   Number of records:    83
     Max. Lon:       -1.144   Min. Lon:       -1.144
     Mean Lon:       -1.144
STS: Type:  9   Number of records:    83
     Max. Alt:       30.469   Min. Alt:        8.502
     Mean Alt:       22.071
```

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[illegible] Version: [illegible] [illegible]
Label:
Start Time: Nov 21 16:31:16 1992
End Time: Nov 21 16:32:39 1992
Stat Off: 3604  Recs(int): 83  Recs(lng): 83
GPS Week: 671  GPS TOW: 577876.0 (16:31:16)
Ref Lat: 2005149.360  Ref Lon: 231428.970  Ref Alt: 42.133

ION: Alpha(1):        0.0  Beta(1):  139264.0
     Alpha(2):        0.0  Beta(2): -147456.0
     Alpha(3):       -0.0  Beta(3):   65536.0
     Alpha(4):        0.0  Beta(4): -131072.0

NAV: PRN 03 IODE: 093h HLTH: 00h TCOL: 16:23:06
IOD: PRN 03 IODE: 093h HLTH: 00h TCOL: 16:23:06 URA: 2.8 TEPH: 16:23:06 Fit: 0h
NAV: PRN 13 IODE: 0CBh HLTH: 00h TCOL: 15:13:18
IOD: PRN 13 IODE: 0CBh HLTH: 00h TCOL: 15:13:18 URA: 2.8 TEPH: 15:13:18 Fit: 0h
NAV: PRN 16 IODE: 09Fh HLTH: 00h TCOL: 16:23:06
IOD: PRN 16 IODE: 09Fh HLTH: 00h TCOL: 16:23:06 URA: 32.0 TEPH: 16:23:06 Fit: 0h
NAV: PRN 18 IODE: 0EEh HLTH: 00h TCOL: 13:54:18
IOD: PRN 18 IODE: 0EEh HLTH: 00h TCOL: 13:54:18 URA: 32.0 TEPH: 13:54:18 Fit: 0h
NAV: PRN 20 IODE: 0C8h HLTH: 00h TCOL: 13:39:42
IOD: PRN 20 IODE: 0C8h HLTH: 00h TCOL: 13:39:42 URA: 2.8 TEPH: 13:39:42 Fit: 0h
NAV: PRN 24 IODE: 057h HLTH: 00h TCOL: 15:56:18
IOD: PRN 24 IODE: 057h HLTH: 00h TCOL: 15:56:18 URA: 32.0 TEPH: 15:56:18 Fit: 0h
NAV: PRN 26 IODE: 0DCh HLTH: 00h TCOL: 16:22:36
IOD: PRN 26 IODE: 0DCh HLTH: 00h TCOL: 16:22:36 URA: 32.0 TEPH: 16:22:36 Fit: 0h
PRN: 03   16   24   26
.......C: Nov 21 16:31:16 1992  2005447.811  231445.823  10.087  2h
.......C: Nov 21 16:31:17 1992  2005447.426  231446.045  9.382  2h
.......C: Nov 21 16:31:18 1992  2005447.986  231446.279  8.502  2h
.......C: Nov 21 16:31:19 1992  2005449.282  231447.970  10.566  2h
.......C: Nov 21 16:31:20 1992  2005447.515  231448.834  11.718  2h
.......C: Nov 21 16:31:21 1992  2005445.748  231450.199  13.897  2h
.......C: Nov 21 16:31:22 1992  2005445.494  231451.585  14.883  2h
.......C: Nov 21 16:31:23 1992  2005442.782  231452.937  13.495  2h
.......C: Nov 21 16:31:24 1992  2005441.593  231453.586  16.676  2h
.......C: Nov 21 16:31:25 1992  2005437.955  231453.479  18.406  2h
.......C: Nov 21 16:31:26 1992  2005435.074  231453.381  18.951  2h
.......C: Nov 21 16:31:27 1992  2005433.119  231454.743  20.330  2h
.......C: Nov 21 16:31:28 1992  2005429.839  231456.087  20.770  2h
.......C: Nov 21 16:31:29 1992  2005424.680  231456.682  22.611  2h
.......C: Nov 21 16:31:30 1992  2005418.038  231455.086  23.582  2h
.......C: Nov 21 16:31:31 1992  2005411.753  231454.941  21.979  2h
.......C: Nov 21 16:31:32 1992  2005408.275  231457.005  23.244  2h
.......C: Nov 21 16:31:33 1992  2005404.996  231458.349  25.234  2h
.......C: Nov 21 16:31:34 1992  2005398.722  231457.481  24.003  2h
.......C: Nov 21 16:31:35 1992  2005393.195  231457.347  25.136  2h
.......C: Nov 21 16:31:36 1992  2005389.149  231459.403  26.327  2h
.......C: Nov 21 16:31:37 1992  2005385.482  231461.464  27.020  2h
.......C: Nov 21 16:31:38 1992  2005381.447  231462.797  28.834  2h
.......C: Nov 21 16:31:39 1992  2005376.099  231463.388  30.200  2h
.......C: Nov 21 16:31:40 1992  2005371.034  231464.899  30.397  2h
.......C: Nov 21 16:31:41 1992  2005367.333  231466.851  30.469  2h
.......C: Nov 21 16:31:42 1992  2005363.989  231470.254  29.113  2h
.......C: Nov 21 16:31:43 1992  2005359.910  231472.200  28.671  2h
.......C: Nov 21 16:31:44 1992  2005355.083  231473.411  27.595  2h
.......C: Nov 21 16:31:45 1992  2005352.346  231473.927  28.239  2h
.......C: Nov 21 16:31:46 1992  2005349.599  231475.166  28.514  2h
.......C: Nov 21 16:31:47 1992  2005347.976  231477.143  28.336  2h
.......C: Nov 21 16:31:48 1992  2005344.083  231479.087  27.182  2h
.......C: Nov 21 16:31:49 1992  2005339.842  231478.857  27.793  2h
.......C: Nov 21 16:31:50 1992  2005333.602  231478.448  25.927  2h
.......C: Nov 21 16:31:51 1992  2005330.523  231479.177  25.463  2h
.......C: Nov 21 16:31:52 1992  2005328.180  231481.363  26.938  2h
```

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HDR: LINE1.COR  Version: 304  Source: 9054h
     Label:
     Start Time: Nov 23 15:34:18 1992
     End Time: Nov 23 15:36:10 1992
     Stat Off: 3920  Recs(int): 108  Recs(lng): 108
     GPS Week: 672  GPS TOW: 142458.0 (15:34:18)
     Ref Lat: 2016863.404  Ref Lon: 220243.354  Ref Alt: 16.799

ION: Alpha(1):       0.0  Beta(1):  141312.0
     Alpha(2):       0.0  Beta(2): -180224.0
     Alpha(3):      -0.0  Beta(3):       0.0
     Alpha(4):       0.0  Beta(4):   65536.0

NAV: PRN 03 IODE: 0AEh HLTH: 00h TCOL: 15:31:48
IOD: PRN 03 IODE: 0AEh HLTH: 00h TCOL: 15:31:48 URA: 2.8 TEPH: 15:31:48 Fit: 0h
NAV: PRN 13 IODE: 0E7h HLTH: 00h TCOL: 15:21:18
IOD: PRN 13 IODE: 0E7h HLTH: 00h TCOL: 15:21:18 URA: 2.8 TEPH: 15:21:18 Fit: 0h
NAV: PRN 16 IODE: 0D8h HLTH: 00h TCOL: 15:21:18
IOD: PRN 16 IODE: 0D8h HLTH: 00h TCOL: 15:21:18 URA: 32.0 TEPH: 15:21:18 Fit: 0h
NAV: PRN 24 IODE: 089h HLTH: 00h TCOL: 15:21:18
IOD: PRN 24 IODE: 089h HLTH: 00h TCOL: 15:21:18 URA: 32.0 TEPH: 15:21:18 Fit: 0h
NAV: PRN 26 IODE: 01Ch HLTH: 00h TCOL: 15:21:12
IOD: PRN 26 IODE: 01Ch HLTH: 00h TCOL: 15:21:12 URA: 32.0 TEPH: 15:21:12 Fit: 0h
PRN: 03   13   24   26
     C: Nov 23 15:34:18 1992  2017139.805  220239.010  28.571  2h
     C: Nov 23 15:34:19 1992  2017140.032  220236.480  28.817  2h
     C: Nov 23 15:34:21 1992  2017139.183  220237.517  28.792  2h
     C: Nov 23 15:34:22 1992  2017139.008  220238.104  27.488  2h
     C: Nov 23 15:34:23 1992  2017137.499  220239.395  27.140  2h
     C: Nov 23 15:34:24 1992  2017135.189  220242.101  25.031  2h
     C: Nov 23 15:34:25 1992  2017133.455  220244.091  24.342  2h
     C: Nov 23 15:34:26 1992  2017131.757  220245.379  24.705  2h
     C: Nov 23 15:34:28 1992  2017129.839  220246.638  24.186  2h
     C: Nov 23 15:34:29 1992  2017127.920  220248.629  24.030  2h
     C: Nov 23 15:34:30 1992  2017125.120  220250.668  23.496  2h
     C: Nov 23 15:34:31 1992  2017123.231  220252.877  22.786  2h
     C: Nov 23 15:34:32 1992  2017121.332  220255.808  23.313  2h
     C: Nov 23 15:34:33 1992  2017119.999  220258.747  22.980  2h
     C: Nov 23 15:34:34 1992  2017118.289  220261.680  22.067  2h
     C: Nov 23 15:34:35 1992  2017117.334  220264.625  21.596  2h
     C: Nov 23 15:34:36 1992  2017116.202  220266.845  21.557  2h
     C: Nov 23 15:34:37 1992  2017116.214  220268.358  21.511  2h
     C: Nov 23 15:34:38 1992  2017115.092  220269.856  20.727  2h
     C: Nov 23 15:34:39 1992  2017114.148  220272.078  20.606  2h
     C: Nov 23 15:34:40 1992  2017112.872  220275.815  21.514  2h
     C: Nov 23 15:34:41 1992  2017111.460  220278.861  20.469  2h
     C: Nov 23 15:34:42 1992  2017110.243  220281.181  19.533  2h
     C: Nov 23 15:34:43 1992  2017109.394  220284.230  19.793  2h
     C: Nov 23 15:34:44 1992  2017108.723  220288.004  19.484  2h
PRN: 13   16   24   26
     C: Nov 23 15:34:45 1992  2017107.872  220290.710  18.786  2h
     C: Nov 23 15:34:46 1992  2017107.239  220293.770  18.739  2h
     C: Nov 23 15:34:47 1992  2017106.417  220296.827  19.220  2h
     C: Nov 23 15:34:48 1992  2017106.362  220299.172  18.074  2h
     C: Nov 23 15:34:49 1992  2017106.117  220301.515  16.758  2h
     C: Nov 23 15:34:50 1992  2017105.878  220305.245  18.355  2h
     C: Nov 23 15:34:51 1992  2017106.145  220306.768  17.403  2h
     C: Nov 23 15:34:52 1992  2017106.180  220309.727  18.159  2h
     C: Nov 23 15:34:53 1992  2017106.604  220311.969  17.548  2h
     C: Nov 23 15:34:54 1992  2017106.450  220314.926  17.900  2h
     C: Nov 23 15:34:55 1992  2017105.530  220318.596  18.595  2h
     C: Nov 23 15:34:56 1992  2017105.954  220320.838  19.327  2h
     C: Nov 23 15:34:57 1992  2017105.422  220323.791  19.768  2h
     C: Nov 23 15:34:58 1992  2017104.701  220326.740  19.987  2h
     C: Nov 23 15:34:59 1992  2017104.390  220327.527  18.601  2h
```

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     C: Nov 23 15:35:00 1992  2017103.121  220330.499  19.552  2h
     C: Nov 23 15:35:01 1992  2017101.397  220333.477  19.591  2h
PRN: 03   13   24   26
     C: Nov 23 15:35:02 1992  2017101.179  220333.700  16.190  2h
     C: Nov 23 15:35:03 1992  2017099.481  220335.912  15.801  2h
     C: Nov 23 15:35:04 1992  2017097.783  220338.124  15.304  2h
     C: Nov 23 15:35:05 1992  2017096.852  220339.625  15.680  2h
     C: Nov 23 15:35:06 1992  2017096.279  220342.576  15.145  2h
     C: Nov 23 15:35:07 1992  2017095.149  220344.796  13.576  2h
     C: Nov 23 15:35:08 1992  2017094.008  220347.739  13.968  2h
     C: Nov 23 15:35:09 1992  2017092.857  220351.405  14.241  2h
     C: Nov 23 15:35:10 1992  2017092.513  220355.103  13.954  2h
PRN: 13   16   24   26
     C: Nov 23 15:35:11 1992  2017091.621  220357.763  14.530  2h
     C: Nov 23 15:35:12 1992  2017091.032  220360.836  16.295  2h
     C: Nov 23 15:35:13 1992  2017091.031  220362.473  17.004  2h
PRN: 03   13   24   26
     C: Nov 23 15:35:15 1992  2017092.250  220364.177  14.353  2h
     C: Nov 23 15:35:16 1992  2017093.075  220366.452  14.042  2h
     C: Nov 23 15:35:17 1992  2017093.689  220370.170  14.041  2h
     C: Nov 23 15:35:18 1992  2017095.249  220373.902  15.474  2h
     C: Nov 23 15:35:19 1992  2017096.809  220377.634  16.783  2h
     C: Nov 23 15:35:20 1992  2017098.203  220380.663  18.762  2h
     C: Nov 23 15:35:21 1992  2017101.610  220383.945  18.257  2h
     C: Nov 23 15:35:22 1992  2017103.903  220385.764  17.445  2h
     C: Nov 23 15:35:23 1992  2017106.186  220388.307  18.067  2h
     C: Nov 23 15:35:24 1992  2017108.647  220391.576  18.476  2h
PRN: 03   16   24   26
     C: Nov 23 15:35:25 1992  2017105.101  220392.341  9.889  2h
     C: Nov 23 15:35:26 1992  2017106.618  220395.525  9.983  2h
     C: Nov 23 15:35:27 1992  2017106.465  220397.235  7.974  2h
     C: Nov 23 15:35:28 1992  2017107.436  220399.684  9.753  2h
     C: Nov 23 15:35:29 1992  2017106.137  220402.098  6.659  2h
     C: Nov 23 15:35:30 1992  2017105.483  220404.508  6.839  2h
     C: Nov 23 15:35:31 1992  2017105.828  220407.537  7.011  2h
     C: Nov 23 15:35:32 1992  2017102.968  220409.797  2.539  2h
     C: Nov 23 15:35:33 1992  2017102.945  220412.098  1.299  2h
     C: Nov 23 15:35:34 1992  2017103.678  220414.410  2.263  2h
     C: Nov 23 15:35:36 1992  2017111.178  220420.647  13.749  2h
     C: Nov 23 15:35:37 1992  2017112.867  220422.249  12.376  2h
     C: Nov 23 15:35:38 1992  2017115.879  220423.871  15.492  2h
     C: Nov 23 15:35:39 1992  2017119.447  220426.223  19.909  2h
     C: Nov 23 15:35:40 1992  2017119.839  220429.360  19.015  2h
     C: Nov 23 15:35:41 1992  2017118.997  220433.243  18.098  2h
     C: Nov 23 15:35:42 1992  2017119.667  220436.480  20.227  2h
     C: Nov 23 15:35:43 1992  2017119.013  220440.364  20.783  2h
     C: Nov 23 15:35:44 1992  2017118.370  220443.524  19.158  2h
     C: Nov 23 15:35:45 1992  2017118.293  220446.692  19.915  2h
     C: Nov 23 15:35:46 1992  2017117.449  220450.571  18.976  2h
     C: Nov 23 15:35:47 1992  2017119.262  220453.764  22.935  2h
     C: Nov 23 15:35:48 1992  2017119.563  220456.935  23.346  2h
     C: Nov 23 15:35:49 1992  2017119.495  220459.377  21.506  2h
PRN: 03   13   24   26
     C: Nov 23 15:35:51 1992  2017128.452  220462.391  32.850  2h
     C: Nov 23 15:35:52 1992  2017130.905  220464.813  32.555  2h
     C: Nov 23 15:35:53 1992  2017133.557  220466.515  33.328  2h
     C: Nov 23 15:35:54 1992  2017136.009  220468.937  33.710  2h
     C: Nov 23 15:35:55 1992  2017139.418  220470.650  32.578  2h
     C: Nov 23 15:35:56 1992  2017142.081  220471.629  31.898  2h
     C: Nov 23 15:35:57 1992  2017144.386  220471.158  30.887  2h
     C: Nov 23 15:35:58 1992  2017146.681  220471.409  29.590  2h
PRN: 03   16   24   26
     C: Nov 23 15:35:59 1992  2017145.884  220470.360  24.364  2h
PRN: 03   13   24   26
     C: Nov 23 15:36:00 1992  2017151.083  220471.189  30.729  2h
     C: Nov 23 15:36:01 1992  2017151.885  220470.549  29.218  2h
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```
C: Nov  3 15:36:02 1992  2017151.541  220470.615  27.942  2h
C: Nov 23 15:36:03 1992  2017153.110  220469.262  26.149  2h
C: Nov 23 15:36:04 1992  2017153.324  220470.059  25.423  2h
C: Nov 23 15:36:05 1992  2017153.916  220470.862  26.744  2h
C: Nov 23 15:36:06 1992  2017153.961  220470.210  27.327  2h
C: Nov 23 15:36:07 1992  2017154.574  220469.567  26.729  2h
C: Nov 23 15:36:08 1992  2017153.286  220469.620  26.928  2h
C: Nov 23 15:36:09 1992  2017153.709  220468.974  25.303  2h
C: Nov 23 15:36:10 1992  2017154.730  220468.457  23.061  2h
STS: Type:  7   Number of records:   108
     Max. Lat:        0.318   Min. Lat:        0.318
     Mean Lat:        0.318
STS: Type:  8   Number of records:   108
     Max. Lon:       -1.146   Min. Lon:       -1.146
     Mean Lon:       -1.146
STS: Type:  9   Number of records:   108
     Max. Alt:       33.710   Min. Alt:        1.299
     Mean Alt:       19.956
```

```
HDR: LINE10.COR  Version: 304  Source: 9054h
     Label:
     Start Time: Nov 23 19:50:55 1992
     End Time: Nov 23 19:51:25 1992
     Stat Off: 2760  Recs(int): 29  Recs(lng): 29
     GPS Week: 672  GPS TOW: 157855.0 (19:50:55)
     Ref Lat: 2016816.294  Ref Lon: 220257.854  Ref Alt: -13.699

ION: Alpha(1):       0.0  Beta(1):  141312.0
     Alpha(2):       0.0  Beta(2): -180224.0
     Alpha(3):      -0.0  Beta(3):       0.0
     Alpha(4):       0.0  Beta(4):   65536.0

NAV: PRN 03 IODE: 0B2h HLTH: 00h TCOL: 19:35:36
IOD: PRN 03 IODE: 0B2h HLTH: 00h TCOL: 19:35:36 URA: 2.8 TEPH: 19:35:36 Fit: 0h
NAV: PRN 12 IODE: 03Ch HLTH: 00h TCOL: 19:35:06
IOD: PRN 12 IODE: 03Ch HLTH: 00h TCOL: 19:35:06 URA: 4.0 TEPH: 19:35:06 Fit: 0h
NAV: PRN 16 IODE: 0D3h HLTH: 00h TCOL: 17:58:12
IOD: PRN 16 IODE: 0D3h HLTH: 00h TCOL: 17:58:12 URA: 32.0 TEPH: 17:58:12 Fit: 0h
NAV: PRN 17 IODE: 0E8h HLTH: 00h TCOL: 19:35:36
IOD: PRN 17 IODE: 0E8h HLTH: 00h TCOL: 19:35:36 URA: 32.0 TEPH: 19:35:36 Fit: 0h
NAV: PRN 20 IODE: 00Dh HLTH: 00h TCOL: 19:35:36
IOD: PRN 20 IODE: 00Dh HLTH: 00h TCOL: 19:35:36 URA: 4.0 TEPH: 19:35:36 Fit: 0h
NAV: PRN 21 IODE: 05Ah HLTH: 00h TCOL: 19:08:48
IOD: PRN 21 IODE: 05Ah HLTH: 00h TCOL: 19:08:48 URA: 32.0 TEPH: 19:08:48 Fit: 0h
NAV: PRN 23 IODE: 08Bh HLTH: 00h TCOL: 19:35:48
IOD: PRN 23 IODE: 08Bh HLTH: 00h TCOL: 19:35:48 URA: 32.0 TEPH: 19:35:48 Fit: 0h
NAV: PRN 24 IODE: 08Ah HLTH: 00h TCOL: 17:16:48
IOD: PRN 24 IODE: 08Ah HLTH: 00h TCOL: 17:16:48 URA: 32.0 TEPH: 17:16:48 Fit: 0h
NAV: PRN 26 IODE: 018h HLTH: 00h TCOL: 18:56:18
IOD: PRN 26 IODE: 018h HLTH: 00h TCOL: 18:56:18 URA: 32.0 TEPH: 18:56:18 Fit: 0h
PRN: 12   17   20   21
     C: Nov 23 19:50:55 1992  2017119.702  220269.741  5.200  2h
     C: Nov 23 19:50:56 1992  2017119.340  220269.801  4.979  2h
     C: Nov 23 19:50:57 1992  2017119.913  220269.897  5.632  2h
     C: Nov 23 19:50:58 1992  2017119.372  220269.232  4.604  2h
     C: Nov 23 19:50:59 1992  2017117.903  220266.418  6.276  2h
     C: Nov 23 19:51:00 1992  2017116.610  220266.586  5.964  2h
     C: Nov 23 19:51:01 1992  2017113.949  220264.255  5.214  2h
     C: Nov 23 19:51:03 1992  2017111.666  220261.929  4.691  2h
     C: Nov 23 19:51:04 1992  2017110.686  220261.069  4.888  2h
     C: Nov 23 19:51:05 1992  2017108.199  220258.699  4.597  2h
     C: Nov 23 19:51:06 1992  2017107.970  220258.586  4.181  2h
     C: Nov 23 19:51:07 1992  2017107.017  220256.295  3.587  2h
     C: Nov 23 19:51:08 1992  2017105.884  220253.278  3.728  2h
     C: Nov 23 19:51:09 1992  2017104.909  220252.432  2.421  2h
     C: Nov 23 19:51:10 1992  2017103.697  220251.150  1.709  2h
PRN: 12   17   20   23
     C: Nov 23 19:51:11 1992  2017096.352  220255.345  13.898  2h
     C: Nov 23 19:51:12 1992  2017095.201  220255.922  15.429  2h
     C: Nov 23 19:51:13 1992  2017093.871  220255.773  17.001  2h
     C: Nov 23 19:51:14 1992  2017092.783  220252.013  15.496  2h
     C: Nov 23 19:51:15 1992  2017092.608  220250.435  16.935  2h
PRN: 12   17   20   21
     C: Nov 23 19:51:16 1992  2017097.808  220243.570  5.140  2h
     C: Nov 23 19:51:17 1992  2017095.926  220241.689  5.792  2h
     C: Nov 23 19:51:18 1992  2017094.968  220241.268  6.852  2h
     C: Nov 23 19:51:19 1992  2017094.010  220240.846  6.892  2h
PRN: 12   17   21   23
     C: Nov 23 19:51:20 1992  2017082.381  220250.806  -25.519  2h
PRN: 12   17   20   23
     C: Nov 23 19:51:21 1992  2017085.536  220242.423  16.873  2h
     C: Nov 23 19:51:22 1992  2017084.333  220241.971  15.829  2h
     C: Nov 23 19:51:23 1992  2017083.152  220240.073  18.591  2h
     C: Nov 23 19:51:24 1992  2017082.359  220237.457  18.624  2h
```

```
STS: Type:  7   Number of records:    29
     Max. Lat:        0.318   Min. Lat:        0.318
     Mean Lat:        0.318
STS: Type:  8   Number of records:    29
     Max. Lon:       -1.146   Min. Lon:       -1.146
     Mean Lon:       -1.146
STS: Type:  9   Number of records:    29
     Max. Alt:       18.624   Min. Alt:      -25.519
     Mean Alt:        7.431
```

```
HDR: LINE1EXT.COR  Version: 304  Source: 9054h
     Label:
     Start Time: Nov 23 19:55:04 1992
     End Time: Nov 23 19:56:02 1992
     Stat Off: 3408  Recs(int): 54  Recs(lng): 54
     GPS Week: 672  GPS TOW: 158104.0 (19:55:04)
     Ref Lat: 2016818.780  Ref Lon: 220373.555  Ref Alt: -94.922

ION: Alpha(1):       0.0  Beta(1):  141312.0
     Alpha(2):       0.0  Beta(2): -180224.0
     Alpha(3):      -0.0  Beta(3):       0.0
     Alpha(4):       0.0  Beta(4):   65536.0

ION: Alpha(1):       0.0  Beta(1):  141312.0
     Alpha(2):       0.0  Beta(2): -180224.0
     Alpha(3):      -0.0  Beta(3):       0.0
     Alpha(4):       0.0  Beta(4):   65536.0

ION: Alpha(1):       0.0  Beta(1):  141312.0
     Alpha(2):       0.0  Beta(2): -180224.0
     Alpha(3):      -0.0  Beta(3):       0.0
     Alpha(4):       0.0  Beta(4):   65536.0

NAV: PRN 03 IODE: 0B2h HLTH: 00h TCOL: 19:35:36
IOD: PRN 03 IODE: 0B2h HLTH: 00h TCOL: 19:35:36 URA: 2.8 TEPH: 19:35:36 Fit: 0h
NAV: PRN 12 IODE: 03Ch HLTH: 00h TCOL: 19:35:06
IOD: PRN 12 IODE: 03Ch HLTH: 00h TCOL: 19:35:06 URA: 4.0 TEPH: 19:35:06 Fit: 0h
NAV: PRN 16 IODE: 0D3h HLTH: 00h TCOL: 17:58:12
IOD: PRN 16 IODE: 0D3h HLTH: 00h TCOL: 17:58:12 URA: 32.0 TEPH: 17:58:12 Fit: 0h
NAV: PRN 17 IODE: 0E8h HLTH: 00h TCOL: 19:35:36
IOD: PRN 17 IODE: 0E8h HLTH: 00h TCOL: 19:35:36 URA: 32.0 TEPH: 19:35:36 Fit: 0h
NAV: PRN 20 IODE: 00Dh HLTH: 00h TCOL: 19:35:36
IOD: PRN 20 IODE: 00Dh HLTH: 00h TCOL: 19:35:36 URA: 4.0 TEPH: 19:35:36 Fit: 0h
NAV: PRN 21 IODE: 05Ah HLTH: 00h TCOL: 19:52:42
IOD: PRN 21 IODE: 05Ah HLTH: 00h TCOL: 19:52:42 URA: 32.0 TEPH: 19:52:42 Fit: 0h
NAV: PRN 23 IODE: 08Bh HLTH: 00h TCOL: 19:35:48
IOD: PRN 23 IODE: 08Bh HLTH: 00h TCOL: 19:35:48 URA: 32.0 TEPH: 19:35:48 Fit: 0h
NAV: PRN 24 IODE: 08Ah HLTH: 00h TCOL: 17:16:48
IOD: PRN 24 IODE: 08Ah HLTH: 00h TCOL: 17:16:48 URA: 32.0 TEPH: 17:16:48 Fit: 0h
NAV: PRN 26 IODE: 018h HLTH: 00h TCOL: 18:56:18
IOD: PRN 26 IODE: 018h HLTH: 00h TCOL: 18:56:18 URA: 32.0 TEPH: 18:56:18 Fit: 0h
PRN: 12   17   20   21
.....C: Nov 23 19:55:04 1992  2017085.822  220372.333  0.274  2h
.....C: Nov 23 19:55:05 1992  2017085.777  220372.959  0.541  2h
.....C: Nov 23 19:55:06 1992  2017085.742  220372.860  0.943  2h
.....C: Nov 23 19:55:07 1992  2017084.572  220372.745  2.114  2h
.....C: Nov 23 19:55:08 1992  2017085.492  220371.932  3.472  2h
.....C: Nov 23 19:55:09 1992  2017085.466  220371.108  4.011  2h
.....C: Nov 23 19:55:10 1992  2017084.433  220369.772  3.919  2h
.....C: Nov 23 19:55:11 1992  2017083.608  220370.705  3.561  2h
.....C: Nov 23 19:55:13 1992  2017082.210  220372.362  2.597  2h
.....C: Nov 23 19:55:13 1992  2017081.172  220373.251  1.843  2h
.....C: Nov 23 19:55:14 1992  2017080.724  220373.448  1.859  2h
.....C: Nov 23 19:55:15 1992  2017080.655  220373.650  1.894  2h
.....C: Nov 23 19:55:16 1992  2017080.408  220373.129  2.458  2h
.....C: Nov 23 19:55:17 1992  2017078.672  220371.145  1.323  2h
.....C: Nov 23 19:55:19 1992  2017078.969  220372.814  2.070  2h
.....C: Nov 23 19:55:20 1992  2017078.905  220373.771  2.009  2h
.....C: Nov 23 19:55:21 1992  2017078.094  220374.030  1.500  2h
.....C: Nov 23 19:55:22 1992  2017077.863  220373.579  0.762  2h
.....C: Nov 23 19:55:23 1992  2017077.241  220373.841  2.146  2h
.....C: Nov 23 19:55:24 1992  2017076.443  220373.381  1.599  2h
.....C: Nov 23 19:55:25 1992  2017073.747  220373.625  1.741  2h
.....C: Nov 23 19:55:26 1992  2017072.171  220374.599  2.748  2h
.....C: Nov 23 19:55:27 1992  2017067.772  220374.814  2.481  2h
```

```
     C: Nov 23 19:55:28 1992  2017063.163  220375.026  1.863  2h
     C: Nov 23 19:55:29 1992  2017059.909  220375.238  2.595  2h
     C: Nov 23 19:55:31 1992  2017055.320  220375.025  2.493  2h
     C: Nov 23 19:55:32 1992  2017053.581  220374.894  3.082  2h
     C: Nov 23 19:55:33 1992  2017051.820  220376.208  3.443  2h
     C: Nov 23 19:55:34 1992  2017049.325  220376.067  3.667  2h
     C: Nov 23 19:55:36 1992  2017046.240  220377.359  4.532  2h
     C: Nov 23 19:55:37 1992  2017044.270  220380.118  4.377  2h
     C: Nov 23 19:55:38 1992  2017041.764  220380.700  4.332  2h
     C: Nov 23 19:55:39 1992  2017039.438  220382.009  4.446  2h
     C: Nov 23 19:55:40 1992  2017038.093  220385.664  4.686  2h
     C: Nov 23 19:55:41 1992  2017035.915  220388.081  4.259  2h
     C: Nov 23 19:55:42 1992  2017033.399  220387.598  3.582  2h
     C: Nov 23 19:55:43 1992  2017031.783  220390.010  4.215  2h
     C: Nov 23 19:55:44 1992  2017030.009  220392.491  3.390  2h
     C: Nov 23 19:55:45 1992  2017028.055  220392.003  3.022  2h
     C: Nov 23 19:55:46 1992  2017026.471  220392.247  3.139  2h
     C: Nov 23 19:55:47 1992  2017025.621  220393.948  4.015  2h
     C: Nov 23 19:55:48 1992  2017023.470  220394.184  2.453  2h
     C: Nov 23 19:55:49 1992  2017021.526  220392.973  2.435  2h
PRN: 12   17   20   23
     C: Nov 23 19:55:51 1992  2017021.294  220395.144  0.883  2h
PRN: 12   17   20   21
     C: Nov 23 19:55:52 1992  2017018.613  220396.648  1.577  2h
     C: Nov 23 19:55:53 1992  2017016.513  220396.977  1.314  2h
     C: Nov 23 19:55:54 1992  2017015.883  220400.235  0.629  2h
     C: Nov 23 19:55:55 1992  2017014.329  220402.018  -0.262  2h
     C: Nov 23 19:55:56 1992  2017012.775  220403.800  0.352  2h
     C: Nov 23 19:55:57 1992  2017011.947  220407.747  0.520  2h
     C: Nov 23 19:55:58 1992  2017011.529  220409.520  -1.471  2h
     C: Nov 23 19:55:59 1992  2017011.152  220408.429  0.083  2h
     C: Nov 23 19:56:00 1992  2017011.295  220409.104  -0.181  2h
     C: Nov 23 19:56:02 1992  2017011.036  220411.159  -1.243  2h
STS: Type:  7   Number of records:    54
     Max. Lat:        0.318   Min. Lat:        0.318
     Mean Lat:        0.318
STS: Type:  8   Number of records:    54
     Max. Lon:       -1.146   Min. Lon:       -1.146
     Mean Lon:       -1.146
STS: Type:  9   Number of records:    54
     Max. Alt:        4.686   Min. Alt:       -1.471
     Mean Alt:        2.224
```

```
HDR: LINE20.COR  Version: 304  Source: 9054h
     Label:
     Start Time: Nov 23 20:23:03 1992
     End Time: Nov 23 20:23:35 1992
     Stat Off: 2844  Recs(int): 26  Recs(lng): 26
     GPS Week: 672  GPS TOW: 159783.0 (20:23:03)
     Ref Lat: 2016970.469  Ref Lon: 220515.990  Ref Alt: -15.587

ION: Alpha(1):        0.0  Beta(1):  141312.0
     Alpha(2):        0.0  Beta(2): -180224.0
     Alpha(3):       -0.0  Beta(3):       0.0
     Alpha(4):        0.0  Beta(4):   65536.0

NAV: PRN 03 IODE: 0B2h HLTH: 00h TCOL: 19:35:36
IOD: PRN 03 IODE: 0B2h HLTH: 00h TCOL: 19:35:36 URA: 2.8 TEPH: 19:35:36 Fit: 0h
NAV: PRN 12 IODE: 03Dh HLTH: 00h TCOL: 20:12:48
IOD: PRN 12 IODE: 03Dh HLTH: 00h TCOL: 20:12:48 URA: 4.0 TEPH: 20:12:48 Fit: 0h
NAV: PRN 16 IODE: 0D3h HLTH: 00h TCOL: 17:58:12
IOD: PRN 16 IODE: 0D3h HLTH: 00h TCOL: 17:58:12 URA: 32.0 TEPH: 17:58:12 Fit: 0h
NAV: PRN 17 IODE: 0E9h HLTH: 00h TCOL: 20:13:06
IOD: PRN 17 IODE: 0E9h HLTH: 00h TCOL: 20:13:06 URA: 32.0 TEPH: 20:13:06 Fit: 0h
NAV: PRN 20 IODE: 00Eh HLTH: 00h TCOL: 20:13:18
IOD: PRN 20 IODE: 00Eh HLTH: 00h TCOL: 20:13:18 URA: 4.0 TEPH: 20:13:18 Fit: 0h
NAV: PRN 21 IODE: 05Ah HLTH: 00h TCOL: 19:52:42
IOD: PRN 21 IODE: 05Ah HLTH: 00h TCOL: 19:52:42 URA: 32.0 TEPH: 19:52:42 Fit: 0h
NAV: PRN 23 IODE: 08Ch HLTH: 00h TCOL: 20:13:06
IOD: PRN 23 IODE: 08Ch HLTH: 00h TCOL: 20:13:06 URA: 32.0 TEPH: 20:13:06 Fit: 0h
NAV: PRN 24 IODE: 08Ah HLTH: 00h TCOL: 17:16:48
IOD: PRN 24 IODE: 08Ah HLTH: 00h TCOL: 17:16:48 URA: 32.0 TEPH: 17:16:48 Fit: 0h
NAV: PRN 25 IODE: 03Ch HLTH: 00h TCOL: 20:11:12
IOD: PRN 25 IODE: 03Ch HLTH: 00h TCOL: 20:11:12 URA: 32.0 TEPH: 20:11:12 Fit: 0h
NAV: PRN 26 IODE: 018h HLTH: 00h TCOL: 18:56:18
IOD: PRN 26 IODE: 018h HLTH: 00h TCOL: 18:56:18 URA: 32.0 TEPH: 18:56:18 Fit: 0h
PRN: 17   20   21   25
     C: Nov 23 20:23:03 1992  2017284.497  220563.985  -7.118  2h
     C: Nov 23 20:23:04 1992  2017283.749  220564.401  -6.340  2h
     C: Nov 23 20:23:06 1992  2017283.011  220564.094  -5.516  2h
     C: Nov 23 20:23:07 1992  2017281.694  220564.501  -4.735  2h
     C: Nov 23 20:23:08 1992  2017278.885  220563.439  -4.907  2h
     C: Nov 23 20:23:10 1992  2017276.255  220563.853  -2.549  2h
     C: Nov 23 20:23:11 1992  2017273.715  220563.739  -2.772  2h
     C: Nov 23 20:23:12 1992  2017271.185  220563.634  -3.666  2h
     C: Nov 23 20:23:14 1992  2017268.457  220563.517  -4.026  2h
     C: Nov 23 20:23:15 1992  2017265.171  220563.401  -2.517  2h
     C: Nov 23 20:23:16 1992  2017261.875  220564.008  -0.629  2h
     C: Nov 23 20:23:17 1992  2017258.011  220564.606  -0.498  2h
     C: Nov 23 20:23:18 1992  2017253.917  220567.360  2.916  2h
     C: Nov 23 20:23:20 1992  2017250.038  220568.668  1.997  2h
     C: Nov 23 20:23:21 1992  2017246.812  220568.553  0.591  2h
     C: Nov 23 20:23:22 1992  2017242.618  220569.858  -3.836  2h
     C: Nov 23 20:23:24 1992  2017238.455  220568.995  -6.643  2h
     C: Nov 23 20:23:25 1992  2017234.103  220568.130  -10.067  2h
     C: Nov 23 20:23:26 1992  2017229.929  220567.992  -13.237  2h
     C: Nov 23 20:23:27 1992  2017225.400  220566.412  -11.091  2h
     C: Nov 23 20:23:28 1992  2017221.050  220565.557  -9.648  2h
     C: Nov 23 20:23:30 1992  2017217.074  220563.995  -10.315  2h
PRN: 17   20   21   23
     C: Nov 23 20:23:31 1992  2017212.366  220564.105  -8.694  2h
     C: Nov 23 20:23:32 1992  2017208.095  220563.252  -8.567  2h
     C: Nov 23 20:23:33 1992  2017203.819  220563.124  -6.326  2h
     C: Nov 23 20:23:35 1992  2017200.472  220563.729  -5.890  2h
STS: Type:  7   Number of records:    26
     Max. Lat:        0.318   Min. Lat:        0.318
     Mean Lat:        0.318
STS: Type:  8   Number of records:    26
```

```
      Max. Lon:        -1.146    Min. Lon:        -1.146
      Mean Lon:        -1.146
STS:  Type:   9   Number of records:     26
      Max. Alt:         2.916    Min. Alt:       -13.237
      Mean Alt:        -5.157
```

```
HDR: LINE3.COR  Version: 304  Source: 9054h
     Label:
     Start Time: Nov 23 20:00:51 1992
     End Time: Nov 23 20:01:50 1992
     Stat Off: 3366  Recs(int): 56  Recs(lng): 56
     GPS Week: 672  GPS TOW: 158451.0 (20:00:51)
     Ref Lat: 2016824.152  Ref Lon: 220276.763  Ref Alt: -55.942

ION: Alpha(1):       0.0  Beta(1):  141312.0
     Alpha(2):       0.0  Beta(2): -180224.0
     Alpha(3):      -0.0  Beta(3):       0.0
     Alpha(4):       0.0  Beta(4):   65536.0

NAV: PRN 03 IODE: 0B2h HLTH: 00h TCOL: 19:35:36
IOD: PRN 03 IODE: 0B2h HLTH: 00h TCOL: 19:35:36 URA: 2.8 TEPH: 19:35:36 Fit: 0h
NAV: PRN 12 IODE: 03Ch HLTH: 00h TCOL: 19:35:06
IOD: PRN 12 IODE: 03Ch HLTH: 00h TCOL: 19:35:06 URA: 4.0 TEPH: 19:35:06 Fit: 0h
NAV: PRN 16 IODE: 0D3h HLTH: 00h TCOL: 17:58:12
IOD: PRN 16 IODE: 0D3h HLTH: 00h TCOL: 17:58:12 URA: 32.0 TEPH: 17:58:12 Fit: 0h
NAV: PRN 17 IODE: 0E8h HLTH: 00h TCOL: 19:35:36
IOD: PRN 17 IODE: 0E8h HLTH: 00h TCOL: 19:35:36 URA: 32.0 TEPH: 19:35:36 Fit: 0h
NAV: PRN 20 IODE: 00Dh HLTH: 00h TCOL: 19:35:36
IOD: PRN 20 IODE: 00Dh HLTH: 00h TCOL: 19:35:36 URA: 4.0 TEPH: 19:35:36 Fit: 0h
NAV: PRN 21 IODE: 05Ah HLTH: 00h TCOL: 19:52:42
IOD: PRN 21 IODE: 05Ah HLTH: 00h TCOL: 19:52:42 URA: 32.0 TEPH: 19:52:42 Fit: 0h
NAV: PRN 23 IODE: 08Bh HLTH: 00h TCOL: 19:35:48
IOD: PRN 23 IODE: 08Bh HLTH: 00h TCOL: 19:35:48 URA: 32.0 TEPH: 19:35:48 Fit: 0h
NAV: PRN 24 IODE: 08Ah HLTH: 00h TCOL: 17:16:48
IOD: PRN 24 IODE: 08Ah HLTH: 00h TCOL: 17:16:48 URA: 32.0 TEPH: 17:16:48 Fit: 0h
NAV: PRN 26 IODE: 018h HLTH: 00h TCOL: 18:56:18
IOD: PRN 26 IODE: 018h HLTH: 00h TCOL: 18:56:18 URA: 32.0 TEPH: 18:56:18 Fit: 0h
PRN: 12   17   20   21
     C: Nov 23 20:00:51 1992  2017102.974  220324.060  5.200  2h
     C: Nov 23 20:00:52 1992  2017103.795  220325.494  2.952  2h
     C: Nov 23 20:00:53 1992  2017105.004  220326.944  0.577  2h
     C: Nov 23 20:00:54 1992  2017107.369  220328.639  1.497  2h
     C: Nov 23 20:00:56 1992  2017109.303  220332.267  0.932  2h
     C: Nov 23 20:00:57 1992  2017111.354  220335.819  -0.780  2h
     C: Nov 23 20:00:58 1992  2017112.842  220337.899  -1.833  2h
     C: Nov 23 20:00:59 1992  2017114.141  220339.975  -2.025  2h
     C: Nov 23 20:01:00 1992  2017117.247  220341.977  -5.192  2h
     C: Nov 23 20:01:01 1992  2017119.627  220344.793  -3.981  2h
     C: Nov 23 20:01:02 1992  2017121.271  220346.152  -1.905  2h
     C: Nov 23 20:01:03 1992  2017122.524  220348.222  0.676  2h
     C: Nov 23 20:01:04 1992  2017124.525  220351.031  1.197  2h
     C: Nov 23 20:01:06 1992  2017126.534  220353.110  2.077  2h
     C: Nov 23 20:01:07 1992  2017128.367  220354.473  5.036  2h
     C: Nov 23 20:01:08 1992  2017129.638  220355.842  6.685  2h
     C: Nov 23 20:01:09 1992  2017131.287  220357.216  7.092  2h
     C: Nov 23 20:01:10 1992  2017132.241  220357.900  8.138  2h
     C: Nov 23 20:01:11 1992  2017134.288  220357.256  10.408  2h
     C: Nov 23 20:01:12 1992  2017136.290  220359.502  9.198  2h
     C: Nov 23 20:01:13 1992  2017138.870  220361.034  9.263  2h
     C: Nov 23 20:01:14 1992  2017140.711  220361.108  10.690  2h
     C: Nov 23 20:01:15 1992  2017141.406  220361.888  13.889  2h
     C: Nov 23 20:01:16 1992  2017143.425  220362.687  14.254  2h
     C: Nov 23 20:01:17 1992  2017145.444  220363.486  13.847  2h
     C: Nov 23 20:01:18 1992  2017146.740  220362.106  14.489  2h
     C: Nov 23 20:01:19 1992  2017145.883  220365.029  7.006  2h
     C: Nov 23 20:01:20 1992  2017146.795  220365.103  8.257  2h
     C: Nov 23 20:01:21 1992  2017147.512  220365.909  9.565  2h
     C: Nov 23 20:01:22 1992  2017148.636  220364.551  10.114  2h
     C: Nov 23 20:01:23 1992  2017148.639  220362.455  12.251  2h
     C: Nov 23 20:01:24 1992  2017149.831  220360.400  20.895  2h
     C: Nov 23 20:01:25 1992  2017148.079  220362.621  12.402  2h
```

```
      C: Nov 23 20:01:27 1992  2017147.336  220361.974  12.449  2h
      C: Nov 23 20:01:28 1992  2017146.768  220361.323  12.708  2h
      C: Nov 23 20:01:29 1992  2017147.492  220362.132  10.671  2h
      C: Nov 23 20:01:30 1992  2017146.648  220362.141  11.718  2h
      C: Nov 23 20:01:31 1992  2017145.125  220360.578  13.302  2h
      C: Nov 23 20:01:32 1992  2017143.781  220359.740  16.381  2h
      C: Nov 23 20:01:33 1992  2017142.981  220360.353  15.750  2h
      C: Nov 23 20:01:34 1992  2017142.204  220359.523  15.571  2h
      C: Nov 23 20:01:35 1992  2017142.379  220357.974  16.435  2h
      C: Nov 23 20:01:36 1992  2017141.974  220357.134  18.357  2h
      C: Nov 23 20:01:37 1992  2017143.073  220357.042  18.834  2h
      C: Nov 23 20:01:38 1992  2017144.330  220359.123  18.464  2h
      C: Nov 23 20:01:39 1992  2017145.261  220357.585  20.410  2h
      C: Nov 23 20:01:41 1992  2017146.033  220358.414  21.140  2h
      C: Nov 23 20:01:42 1992  2017148.504  220360.743  19.489  2h
      C: Nov 23 20:01:43 1992  2017149.100  220360.115  19.044  2h
      C: Nov 23 20:01:44 1992  2017149.139  220358.755  17.138  2h
      C: Nov 23 20:01:45 1992  2017149.725  220358.850  16.069  2h
PRN: 12   17   20   23
      C: Nov 23 20:01:46 1992  2017151.072  220359.851  12.307  2h
      C: Nov 23 20:01:47 1992  2017151.696  220359.418  12.003  2h
      C: Nov 23 20:01:48 1992  2017151.143  220358.953  13.947  2h
      C: Nov 23 20:01:49 1992  2017150.955  220358.487  14.787  2h
      C: Nov 23 20:01:50 1992  2017152.246  220359.261  11.616  2h
STS: Type:  7   Number of records:    56
     Max. Lat:        0.318   Min. Lat:        0.318
     Mean Lat:        0.318
STS: Type:  8   Number of records:    56
     Max. Lon:       -1.146   Min. Lon:       -1.146
     Mean Lon:       -1.146
STS: Type:  9   Number of records:    56
     Max. Alt:       21.140   Min. Alt:       -5.192
     Mean Alt:       10.026
```

```
HDR: LINE4.COR  Version: 304  Source: 9054h
     Label:
     Start Time: Nov 23 20:20:43 1992
     End Time: Nov 23 20:22:08 1992
     Stat Off: 3770  Recs(int): 64  Recs(lng): 64
     GPS Week: 672  GPS TOW: 159643.0 (20:20:43)
     Ref Lat: 2016804.209  Ref Lon: 220165.147  Ref Alt: 167.410

ION: Alpha(1):        0.0  Beta(1):  141312.0
     Alpha(2):        0.0  Beta(2): -180224.0
     Alpha(3):       -0.0  Beta(3):       0.0
     Alpha(4):        0.0  Beta(4):   65536.0

NAV: PRN 03 IODE: 0B2h HLTH: 00h TCOL: 19:35:36
IOD: PRN 03 IODE: 0B2h HLTH: 00h TCOL: 19:35:36 URA: 2.8 TEPH: 19:35:36 Fit: 0h
NAV: PRN 12 IODE: 03Dh HLTH: 00h TCOL: 20:12:48
IOD: PRN 12 IODE: 03Dh HLTH: 00h TCOL: 20:12:48 URA: 4.0 TEPH: 20:12:48 Fit: 0h
NAV: PRN 16 IODE: 0D3h HLTH: 00h TCOL: 17:58:12
IOD: PRN 16 IODE: 0D3h HLTH: 00h TCOL: 17:58:12 URA: 32.0 TEPH: 17:58:12 Fit: 0h
NAV: PRN 17 IODE: 0E9h HLTH: 00h TCOL: 20:13:06
IOD: PRN 17 IODE: 0E9h HLTH: 00h TCOL: 20:13:06 URA: 32.0 TEPH: 20:13:06 Fit: 0h
NAV: PRN 20 IODE: 00Eh HLTH: 00h TCOL: 20:13:18
IOD: PRN 20 IODE: 00Eh HLTH: 00h TCOL: 20:13:18 URA: 4.0 TEPH: 20:13:18 Fit: 0h
NAV: PRN 21 IODE: 05Ah HLTH: 00h TCOL: 19:52:42
IOD: PRN 21 IODE: 05Ah HLTH: 00h TCOL: 19:52:42 URA: 32.0 TEPH: 19:52:42 Fit: 0h
NAV: PRN 23 IODE: 08Ch HLTH: 00h TCOL: 20:13:06
IOD: PRN 23 IODE: 08Ch HLTH: 00h TCOL: 20:13:06 URA: 32.0 TEPH: 20:13:06 Fit: 0h
NAV: PRN 24 IODE: 08Ah HLTH: 00h TCOL: 17:16:48
IOD: PRN 24 IODE: 08Ah HLTH: 00h TCOL: 17:16:48 URA: 32.0 TEPH: 17:16:48 Fit: 0h
NAV: PRN 25 IODE: 03Ch HLTH: 00h TCOL: 20:11:12
IOD: PRN 25 IODE: 03Ch HLTH: 00h TCOL: 20:11:12 URA: 32.0 TEPH: 20:11:12 Fit: 0h
NAV: PRN 26 IODE: 018h HLTH: 00h TCOL: 18:56:18
IOD: PRN 26 IODE: 018h HLTH: 00h TCOL: 18:56:18 URA: 32.0 TEPH: 18:56:18 Fit: 0h
PRN: 17   20   21   25
    C: Nov 23 20:20:43 1992  2017138.437  220248.496  19.519  2h
    C: Nov 23 20:20:44 1992  2017138.021  220248.284  21.697  2h
    C: Nov 23 20:20:45 1992  2017137.409  220248.064  20.571  2h
    C: Nov 23 20:20:46 1992  2017137.594  220247.892  21.327  2h
    C: Nov 23 20:20:47 1992  2017140.379  220249.741  21.008  2h
    C: Nov 23 20:20:49 1992  2017142.985  220253.794  18.622  2h
    C: Nov 23 20:20:50 1992  2017146.883  220257.155  18.466  2h
    C: Nov 23 20:20:52 1992  2017150.323  220262.691  21.658  2h
    C: Nov 23 20:20:53 1992  2017153.221  220266.777  24.861  2h
    C: Nov 23 20:20:55 1992  2017155.725  220271.577  27.593  2h
    C: Nov 23 20:20:56 1992  2017156.900  220277.083  27.839  2h
    C: Nov 23 20:20:58 1992  2017157.892  220281.132  27.855  2h
    C: Nov 23 20:20:59 1992  2017159.255  220286.641  25.460  2h
    C: Nov 23 20:21:01 1992  2017160.417  220291.612  25.433  2h
    C: Nov 23 20:21:02 1992  2017162.046  220297.363  24.764  2h
    C: Nov 23 20:21:03 1992  2017164.263  220301.683  24.980  2h
    C: Nov 23 20:21:05 1992  2017167.396  220308.170  24.735  2h
    C: Nov 23 20:21:06 1992  2017168.306  220311.045  25.023  2h
    C: Nov 23 20:21:07 1992  2017169.405  220313.922  24.354  2h
    C: Nov 23 20:21:09 1992  2017170.282  220319.642  23.851  2h
    C: Nov 23 20:21:10 1992  2017170.930  220325.947  22.666  2h
    C: Nov 23 20:21:11 1992  2017171.152  220329.301  23.596  2h
    C: Nov 23 20:21:12 1992  2017171.748  220332.656  22.844  2h
    C: Nov 23 20:21:14 1992  2017172.436  220337.391  21.739  2h
    C: Nov 23 20:21:15 1992  2017173.300  220342.116  19.911  2h
    C: Nov 23 20:21:16 1992  2017176.983  220345.572  19.284  2h
    C: Nov 23 20:21:17 1992  2017179.141  220348.262  18.863  2h
    C: Nov 23 20:21:18 1992  2017181.666  220350.216  19.959  2h
    C: Nov 23 20:21:19 1992  2017186.653  220354.968  19.398  2h
    C: Nov 23 20:21:21 1992  2017192.309  220358.139  18.243  2h
    C: Nov 23 20:21:22 1992  2017195.512  220360.057  17.976  2h
```

```
_____C: Nov 23 20:21:23 1992  2017202.832  220365.334  16.674  2h
_____C: Nov 23 20:21:24 1992  2017207.687  220367.930  17.256  2h
_____C: Nov 23 20:21:25 1992  2017211.589  220371.240  18.476  2h
_____C: Nov 23 20:21:26 1992  2017215.872  220373.821  19.575  2h
_____C: Nov 23 20:21:28 1992  2017221.323  220379.111  19.959  2h
_____C: Nov 23 20:21:29 1992  2017224.917  220382.950  21.139  2h
_____C: Nov 23 20:21:31 1992  2017227.827  220387.919  17.737  2h
_____C: Nov 23 20:21:32 1992  2017231.345  220393.696  15.857  2h
_____C: Nov 23 20:21:34 1992  2017235.987  220400.212  12.648  2h
_____C: Nov 23 20:21:35 1992  2017241.028  220405.288  12.034  2h
_____C: Nov 23 20:21:37 1992  2017246.646  220409.648  10.525  2h
_____C: Nov 23 20:21:38 1992  2017251.550  220411.107  9.663  2h
_____C: Nov 23 20:21:39 1992  2017256.274  220411.847  8.323  2h
_____C: Nov 23 20:21:41 1992  2017260.590  220413.267  8.401  2h
_____C: Nov 23 20:21:42 1992  2017263.024  220413.187  5.176  2h
_____C: Nov 23 20:21:44 1992  2017265.271  220413.113  0.815  2h
_____C: Nov 23 20:21:45 1992  2017266.406  220413.814  3.423  2h
_____C: Nov 23 20:21:47 1992  2017267.197  220412.350  7.633  2h
_____C: Nov 23 20:21:48 1992  2017268.197  220410.932  11.101  2h
_____C: Nov 23 20:21:49 1992  2017269.365  220409.472  14.673  2h
PRN: 17   20   21   23
_____C: Nov 23 20:21:50 1992  2017267.388  220401.392  -7.018  2h
PRN: 17   20   21   25
_____C: Nov 23 20:21:51 1992  2017271.671  220409.139  15.169  2h
_____C: Nov 23 20:21:52 1992  2017273.328  220407.931  15.976  2h
_____C: Nov 23 20:21:54 1992  2017275.207  220407.143  16.637  2h
_____C: Nov 23 20:21:55 1992  2017276.689  220407.802  14.154  2h
_____C: Nov 23 20:21:57 1992  2017278.376  220407.008  12.131  2h
_____C: Nov 23 20:21:58 1992  2017280.245  220406.948  12.786  2h
_____C: Nov 23 20:22:00 1992  2017280.281  220405.485  17.380  2h
_____C: Nov 23 20:22:01 1992  2017281.408  220406.157  16.198  2h
_____C: Nov 23 20:22:03 1992  2017282.366  220405.381  16.100  2h
_____C: Nov 23 20:22:04 1992  2017281.969  220406.755  12.771  2h
_____C: Nov 23 20:22:06 1992  2017283.484  220406.711  10.153  2h
_____C: Nov 23 20:22:07 1992  2017286.302  220408.132  5.292  2h
STS: Type:  7   Number of records:    64
     Max. Lat:        0.318   Min. Lat:        0.318
     Mean Lat:        0.318
STS: Type:  8   Number of records:    64
     Max. Lon:       -1.146   Min. Lon:       -1.146
     Mean Lon:       -1.146
STS: Type:  9   Number of records:    64
     Max. Alt:       27.855   Min. Alt:       -7.018
     Mean Alt:       17.233
```

```
HDR: LINE4A.COR  Version: 304  Source: 9054h
     Label:
     Start Time: Nov 23 20:27:04 1992
     End Time: Nov 23 20:28:48 1992
     Stat Off: 4230  Recs(int): 72  Recs(lng): 72
     GPS Week: 672  GPS TOW: 160024.0 (20:27:04)
     Ref Lat: 2016890.037  Ref Lon: 220336.994  Ref Alt: -68.471

ION: Alpha(1):        0.0  Beta(1):  141312.0
     Alpha(2):        0.0  Beta(2): -180224.0
     Alpha(3):       -0.0  Beta(3):       0.0
     Alpha(4):        0.0  Beta(4):   65536.0

NAV: PRN 03 IODE: 0B2h HLTH: 00h TCOL: 19:35:36
IOD: PRN 03 IODE: 0B2h HLTH: 00h TCOL: 19:35:36 URA: 2.8 TEPH: 19:35:36 Fit: 0h
NAV: PRN 12 IODE: 03Dh HLTH: 00h TCOL: 20:12:48
IOD: PRN 12 IODE: 03Dh HLTH: 00h TCOL: 20:12:48 URA: 4.0 TEPH: 20:12:48 Fit: 0h
NAV: PRN 16 IODE: 0D3h HLTH: 00h TCOL: 17:58:12
IOD: PRN 16 IODE: 0D3h HLTH: 00h TCOL: 17:58:12 URA: 32.0 TEPH: 17:58:12 Fit: 0h
NAV: PRN 17 IODE: 0E9h HLTH: 00h TCOL: 20:13:06
IOD: PRN 17 IODE: 0E9h HLTH: 00h TCOL: 20:13:06 URA: 32.0 TEPH: 20:13:06 Fit: 0h
NAV: PRN 20 IODE: 00Eh HLTH: 00h TCOL: 20:13:18
IOD: PRN 20 IODE: 00Eh HLTH: 00h TCOL: 20:13:18 URA: 4.0 TEPH: 20:13:18 Fit: 0h
NAV: PRN 21 IODE: 05Ah HLTH: 00h TCOL: 19:52:42
IOD: PRN 21 IODE: 05Ah HLTH: 00h TCOL: 19:52:42 URA: 32.0 TEPH: 19:52:42 Fit: 0h
NAV: PRN 23 IODE: 08Ch HLTH: 00h TCOL: 20:13:06
IOD: PRN 23 IODE: 08Ch HLTH: 00h TCOL: 20:13:06 URA: 32.0 TEPH: 20:13:06 Fit: 0h
NAV: PRN 24 IODE: 08Ah HLTH: 00h TCOL: 17:16:48
IOD: PRN 24 IODE: 08Ah HLTH: 00h TCOL: 17:16:48 URA: 32.0 TEPH: 17:16:48 Fit: 0h
NAV: PRN 25 IODE: 03Ch HLTH: 00h TCOL: 20:11:12
IOD: PRN 25 IODE: 03Ch HLTH: 00h TCOL: 20:11:12 URA: 32.0 TEPH: 20:11:12 Fit: 0h
NAV: PRN 26 IODE: 018h HLTH: 00h TCOL: 18:56:18
IOD: PRN 26 IODE: 018h HLTH: 00h TCOL: 18:56:18 URA: 32.0 TEPH: 18:56:18 Fit: 0h
PRN: 17   20   21   23
      C: Nov 23 20:27:04 1992  2017169.076  220343.615  -1.069  2h
      C: Nov 23 20:27:05 1992  2017170.956  220342.828  -7.532  2h
      C: Nov 23 20:27:06 1992  2017169.966  220344.164  -5.706  2h
      C: Nov 23 20:27:08 1992  2017168.785  220345.487  -5.937  2h
      C: Nov 23 20:27:09 1992  2017166.852  220346.814  -4.951  2h
      C: Nov 23 20:27:10 1992  2017165.955  220349.668  -1.917  2h
      C: Nov 23 20:27:12 1992  2017165.138  220352.577  -0.756  2h
PRN: 17   20   21   25
      C: Nov 23 20:27:13 1992  2017164.741  220354.092  1.029  2h
      C: Nov 23 20:27:14 1992  2017165.013  220355.926  0.176  2h
      C: Nov 23 20:27:16 1992  2017164.524  220356.321  0.644  2h
      C: Nov 23 20:27:17 1992  2017163.275  220357.426  -1.659  2h
      C: Nov 23 20:27:19 1992  2017161.837  220359.244  -4.065  2h
      C: Nov 23 20:27:20 1992  2017162.595  220362.672  -0.070  2h
      C: Nov 23 20:27:21 1992  2017162.017  220363.337  -1.229  2h
      C: Nov 23 20:27:23 1992  2017161.797  220365.447  -1.170  2h
      C: Nov 23 20:27:24 1992  2017160.642  220366.820  -0.292  2h
      C: Nov 23 20:27:26 1992  2017159.099  220368.900  1.366  2h
PRN: 17   20   21   23
      C: Nov 23 20:27:27 1992  2017158.694  220370.185  0.246  2h
      C: Nov 23 20:27:28 1992  2017158.813  220372.962  -2.740  2h
      C: Nov 23 20:27:29 1992  2017158.789  220372.865  -1.190  2h
PRN: 17   20   21   25
      C: Nov 23 20:27:31 1992  2017160.847  220378.601  6.203  2h
      C: Nov 23 20:27:33 1992  2017162.219  220383.363  5.809  2h
      C: Nov 23 20:27:34 1992  2017163.223  220388.126  5.845  2h
      C: Nov 23 20:27:37 1992  2017165.927  220393.905  6.135  2h
      C: Nov 23 20:27:38 1992  2017167.302  220398.671  7.382  2h
      C: Nov 23 20:27:40 1992  2017168.069  220401.240  5.229  2h
      C: Nov 23 20:27:41 1992  2017169.032  220403.850  5.689  2h
      C: Nov 23 20:27:42 1992  2017169.042  220406.441  6.610  2h
```

```
PRN: 12    17    21    25
      C: Nov 23 20:27:43 1992  2017168.882  220391.465  33.963  2h
PRN: 17    20    21    25
      C: Nov 23 20:27:44 1992  2017169.657  220408.861  13.842  2h
      C: Nov 23 20:27:46 1992  2017170.804  220412.331  11.814  2h
      C: Nov 23 20:27:47 1992  2017171.720  220415.039  12.891  2h
NAV: PRN 21 IODE: 05Bh HLTH: 00h TCOL: 20:27:48
IOD: PRN 21 IODE: 05Bh HLTH: 00h TCOL: 20:27:48 URA: 32.0 TEPH: 20:27:48 Fit: 0h
PRN: 17    20    21    23
      C: Nov 23 20:27:53 1992  2017172.438  220414.167  -0.158  2h
      C: Nov 23 20:27:55 1992  2017172.939  220415.498  -2.553  2h
      C: Nov 23 20:27:57 1992  2017172.866  220415.860  -1.072  2h
      C: Nov 23 20:27:58 1992  2017173.500  220416.170  -3.387  2h
      C: Nov 23 20:27:59 1992  2017173.826  220416.563  -4.824  2h
      C: Nov 23 20:28:01 1992  2017173.916  220418.824  -4.743  2h
      C: Nov 23 20:28:02 1992  2017173.348  220417.275  -4.494  2h
      C: Nov 23 20:28:03 1992  2017172.958  220416.450  -3.075  2h
      C: Nov 23 20:28:04 1992  2017172.179  220416.343  -1.839  2h
      C: Nov 23 20:28:05 1992  2017171.798  220415.556  -1.646  2h
      C: Nov 23 20:28:07 1992  2017170.448  220415.422  0.178  2h
      C: Nov 23 20:28:08 1992  2017169.108  220414.564  1.937  2h
      C: Nov 23 20:28:10 1992  2017168.081  220413.134  3.877  2h
      C: Nov 23 20:28:11 1992  2017168.425  220412.768  5.910  2h
      C: Nov 23 20:28:13 1992  2017168.390  220412.396  5.457  2h
      C: Nov 23 20:28:14 1992  2017169.101  220412.757  5.060  2h
      C: Nov 23 20:28:16 1992  2017170.558  220413.851  -0.460  2h
      C: Nov 23 20:28:17 1992  2017171.177  220414.099  0.213  2h
      C: Nov 23 20:28:18 1992  2017171.901  220414.982  -0.726  2h
      C: Nov 23 20:28:20 1992  2017172.588  220415.080  -1.490  2h
      C: Nov 23 20:28:21 1992  2017172.198  220414.253  -1.372  2h
      C: Nov 23 20:28:22 1992  2017171.617  220413.420  -1.017  2h
      C: Nov 23 20:28:23 1992  2017170.851  220412.602  -0.307  2h
      C: Nov 23 20:28:24 1992  2017170.639  220412.500  -0.457  2h
      C: Nov 23 20:28:26 1992  2017170.236  220412.392  0.026  2h
      C: Nov 23 20:28:27 1992  2017170.368  220414.454  -0.053  2h
PRN: 17    20    21    25
      C: Nov 23 20:28:29 1992  2017171.483  220419.317  22.816  2h
      C: Nov 23 20:28:30 1992  2017171.933  220422.052  21.001  2h
      C: Nov 23 20:28:32 1992  2017173.443  220423.731  22.892  2h
      C: Nov 23 20:28:33 1992  2017174.744  220426.854  22.601  2h
      C: Nov 23 20:28:35 1992  2017175.859  220429.241  22.488  2h
      C: Nov 23 20:28:36 1992  2017177.342  220432.357  22.074  2h
      C: Nov 23 20:28:38 1992  2017178.091  220434.016  20.308  2h
      C: Nov 23 20:28:39 1992  2017179.036  220435.688  20.915  2h
      C: Nov 23 20:28:40 1992  2017179.476  220435.570  22.460  2h
      C: Nov 23 20:28:42 1992  2017180.313  220435.294  20.876  2h
      C: Nov 23 20:28:43 1992  2017180.585  220434.274  20.119  2h
      C: Nov 23 20:28:45 1992  2017181.592  220434.711  18.976  2h
      C: Nov 23 20:28:46 1992  2017182.043  220434.416  18.453  2h
      C: Nov 23 20:28:48 1992  2017182.337  220434.903  15.846  2h
STS: Type:  7   Number of records:    72
     Max. Lat:        0.318   Min. Lat:        0.318
     Mean Lat:        0.318
STS: Type:  8   Number of records:    72
     Max. Lon:       -1.146   Min. Lon:       -1.146
     Mean Lon:       -1.146
STS: Type:  9   Number of records:    72
     Max. Alt:       33.963   Min. Alt:       -7.532
     Mean Alt:        5.075
```

```
HDR: LINE6.COR  Version: 304  Source: 9054h
     Label:
     Start Time: Nov 23 20:17:49 1992
     End Time: Nov 23 20:18:36 1992
     Stat Off: 3126  Recs(int): 36  Recs(lnq): 36
     GPS Week: 672  GPS TOW: 159469.0 (20:17:49)
     Ref Lat: 2016775.327  Ref Lon: 220239.912  Ref Alt: -5.051

ION: Alpha(1):       0.0  Beta(1):  141312.0
     Alpha(2):       0.0  Beta(2): -180224.0
     Alpha(3):      -0.0  Beta(3):       0.0
     Alpha(4):       0.0  Beta(4):   65536.0

NAV: PRN 03 IODE: 0B2h HLTH: 00h TCOL: 19:35:36
IOD: PRN 03 IODE: 0B2h HLTH: 00h TCOL: 19:35:36 URA: 2.8 TEPH: 19:35:36 Fit: 0h
NAV: PRN 12 IODE: 03Dh HLTH: 00h TCOL: 20:12:48
IOD: PRN 12 IODE: 03Dh HLTH: 00h TCOL: 20:12:48 URA: 4.0 TEPH: 20:12:48 Fit: 0h
NAV: PRN 16 IODE: 0D3h HLTH: 00h TCOL: 17:58:12
IOD: PRN 16 IODE: 0D3h HLTH: 00h TCOL: 17:58:12 URA: 32.0 TEPH: 17:58:12 Fit: 0h
NAV: PRN 17 IODE: 0E9h HLTH: 00h TCOL: 20:13:06
IOD: PRN 17 IODE: 0E9h HLTH: 00h TCOL: 20:13:06 URA: 32.0 TEPH: 20:13:06 Fit: 0h
NAV: PRN 20 IODE: 00Eh HLTH: 00h TCOL: 20:13:18
IOD: PRN 20 IODE: 00Eh HLTH: 00h TCOL: 20:13:18 URA: 4.0 TEPH: 20:13:18 Fit: 0h
NAV: PRN 21 IODE: 05Ah HLTH: 00h TCOL: 19:52:42
IOD: PRN 21 IODE: 05Ah HLTH: 00h TCOL: 19:52:42 URA: 32.0 TEPH: 19:52:42 Fit: 0h
NAV: PRN 23 IODE: 08Ch HLTH: 00h TCOL: 20:13:06
IOD: PRN 23 IODE: 08Ch HLTH: 00h TCOL: 20:13:06 URA: 32.0 TEPH: 20:13:06 Fit: 0h
NAV: PRN 24 IODE: 08Ah HLTH: 00h TCOL: 17:16:48
IOD: PRN 24 IODE: 08Ah HLTH: 00h TCOL: 17:16:48 URA: 32.0 TEPH: 17:16:48 Fit: 0h
NAV: PRN 25 IODE: 03Ch HLTH: 00h TCOL: 20:11:12
IOD: PRN 25 IODE: 03Ch HLTH: 00h TCOL: 20:11:12 URA: 32.0 TEPH: 20:11:12 Fit: 0h
NAV: PRN 26 IODE: 018h HLTH: 00h TCOL: 18:56:18
IOD: PRN 26 IODE: 018h HLTH: 00h TCOL: 18:56:18 URA: 32.0 TEPH: 18:56:18 Fit: 0h
PRN: 17   20   21   25
     C: Nov 23 20:17:49 1992  2017109.691  220319.736  1.826  2h
     C: Nov 23 20:17:50 1992  2017109.587  220319.261  1.027  2h
     C: Nov 23 20:17:52 1992  2017110.063  220320.556  -1.700  2h
     C: Nov 23 20:17:54 1992  2017111.173  220321.760  -2.435  2h
     C: Nov 23 20:17:56 1992  2017114.125  220324.413  -1.994  2h
     C: Nov 23 20:17:57 1992  2017115.873  220323.904  0.314  2h
     C: Nov 23 20:17:58 1992  2017117.974  220324.843  -0.420  2h
     C: Nov 23 20:17:59 1992  2017120.269  220325.789  -0.708  2h
     C: Nov 23 20:18:00 1992  2017122.564  220326.734  0.292  2h
     C: Nov 23 20:18:01 1992  2017125.749  220328.148  0.839  2h
     C: Nov 23 20:18:02 1992  2017127.047  220329.568  1.070  2h
     C: Nov 23 20:18:03 1992  2017129.107  220330.242  2.139  2h
     C: Nov 23 20:18:05 1992  2017129.519  220327.277  9.732  2h
     C: Nov 23 20:18:06 1992  2017130.090  220326.500  12.287  2h
     C: Nov 23 20:18:07 1992  2017132.183  220325.017  12.841  2h
PRN: 12   17   20   21
     C: Nov 23 20:18:09 1992  2017133.708  220323.045  2.700  2h
PRN: 17   20   21   25
     C: Nov 23 20:18:10 1992  2017138.373  220330.806  15.594  2h
     C: Nov 23 20:18:11 1992  2017140.406  220332.428  14.659  2h
     C: Nov 23 20:18:12 1992  2017141.559  220334.828  13.321  2h
     C: Nov 23 20:18:13 1992  2017143.660  220336.512  12.972  2h
     C: Nov 23 20:18:15 1992  2017145.786  220337.487  15.386  2h
     C: Nov 23 20:18:16 1992  2017149.470  220337.793  15.501  2h
     C: Nov 23 20:18:18 1992  2017153.503  220339.543  14.831  2h
     C: Nov 23 20:18:19 1992  2017156.227  220340.554  12.601  2h
     C: Nov 23 20:18:21 1992  2017158.501  220341.371  10.884  2h
     C: Nov 23 20:18:22 1992  2017160.570  220342.139  8.668  2h
     C: Nov 23 20:18:24 1992  2017160.214  220340.704  10.381  2h
     C: Nov 23 20:18:25 1992  2017161.916  220340.746  10.024  2h
     C: Nov 23 20:18:27 1992  2017163.412  220340.788  12.871  2h
```

Double printout

```
_____C: Nov 23 20:18:28 1992  2017164.719  220340.820  11.795  2h
_____C: Nov 23 20:18:29 1992  2017166.776  220341.591  7.540  2h
_____C: Nov 23 20:18:31 1992  2017169.448  220341.576  5.604  2h
PRN: 12   17   20   21
_____C: Nov 23 20:18:31 1992  2017167.350  220335.642  -5.756  2h
PRN: 17   20   21   23
_____C: Nov 23 20:18:33 1992  2017167.561  220336.056  -3.952  2h
_____C: Nov 23 20:18:34 1992  2017167.211  220334.562  -1.336  2h
_____C: Nov 23 20:18:35 1992  2017166.306  220332.337  2.463  2h
STS: Type:  7   Number of records:    36
     Max. Lat:        0.318   Min. Lat:        0.318
     Mean Lat:        0.318
STS: Type:  8   Number of records:    36
     Max. Lon:       -1.146   Min. Lon:       -1.146
     Mean Lon:       -1.146
STS: Type:  9   Number of records:    36
     Max. Alt:       15.594   Min. Alt:       -5.756
     Mean Alt:        6.163
```

Double printout

```
HDR: LINE6.COR  Version: 304  Source: 9054h
     Label:
     Start Time: Nov 23 20:17:49 1992
     End Time: Nov 23 20:18:36 1992
     Stat Off: 3126  Recs(int): 36  Recs(lng): 36
     GPS Week: 672  GPS TOW: 159469.0 (20:17:49)
     Ref Lat: 2016775.327  Ref Lon: 220239.912  Ref Alt: -5.051

ION: Alpha(1):        0.0  Beta(1):  141312.0
     Alpha(2):        0.0  Beta(2): -180224.0
     Alpha(3):       -0.0  Beta(3):       0.0
     Alpha(4):        0.0  Beta(4):   65536.0

NAV: PRN 03 IODE: 0B2h HLTH: 00h TCOL: 19:35:36
IOD: PRN 03 IODE: 0B2h HLTH: 00h TCOL: 19:35:36 URA: 2.8 TEPH: 19:35:36 Fit: 0h
NAV: PRN 12 IODE: 03Dh HLTH: 00h TCOL: 20:12:48
IOD: PRN 12 IODE: 03Dh HLTH: 00h TCOL: 20:12:48 URA: 4.0 TEPH: 20:12:48 Fit: 0h
NAV: PRN 16 IODE: 0D3h HLTH: 00h TCOL: 17:58:12
IOD: PRN 16 IODE: 0D3h HLTH: 00h TCOL: 17:58:12 URA: 32.0 TEPH: 17:58:12 Fit: 0h
NAV: PRN 17 IODE: 0E9h HLTH: 00h TCOL: 20:13:06
IOD: PRN 17 IODE: 0E9h HLTH: 00h TCOL: 20:13:06 URA: 32.0 TEPH: 20:13:06 Fit: 0h
NAV: PRN 20 IODE: 00Eh HLTH: 00h TCOL: 20:13:18
IOD: PRN 20 IODE: 00Eh HLTH: 00h TCOL: 20:13:18 URA: 4.0 TEPH: 20:13:18 Fit: 0h
NAV: PRN 21 IODE: 05Ah HLTH: 00h TCOL: 19:52:42
IOD: PRN 21 IODE: 05Ah HLTH: 00h TCOL: 19:52:42 URA: 32.0 TEPH: 19:52:42 Fit: 0h
NAV: PRN 23 IODE: 08Ch HLTH: 00h TCOL: 20:13:06
IOD: PRN 23 IODE: 08Ch HLTH: 00h TCOL: 20:13:06 URA: 32.0 TEPH: 20:13:06 Fit: 0h
NAV: PRN 24 IODE: 08Ah HLTH: 00h TCOL: 17:16:48
IOD: PRN 24 IODE: 08Ah HLTH: 00h TCOL: 17:16:48 URA: 32.0 TEPH: 17:16:48 Fit: 0h
NAV: PRN 25 IODE: 03Ch HLTH: 00h TCOL: 20:11:12
IOD: PRN 25 IODE: 03Ch HLTH: 00h TCOL: 20:11:12 URA: 32.0 TEPH: 20:11:12 Fit: 0h
NAV: PRN 26 IODE: 018h HLTH: 00h TCOL: 18:56:18
IOD: PRN 26 IODE: 018h HLTH: 00h TCOL: 18:56:18 URA: 32.0 TEPH: 18:56:18 Fit: 0h
PRN: 17   20   21   25
     C: Nov 23 20:17:49 1992  2017109.691  220319.736  1.826  2h
     C: Nov 23 20:17:50 1992  2017109.587  220319.261  1.027  2h
     C: Nov 23 20:17:52 1992  2017110.063  220320.556  -1.700  2h
     C: Nov 23 20:17:54 1992  2017111.173  220321.760  -2.435  2h
     C: Nov 23 20:17:56 1992  2017114.125  220324.413  -1.994  2h
     C: Nov 23 20:17:57 1992  2017115.873  220323.904  0.314  2h
     C: Nov 23 20:17:58 1992  2017117.974  220324.843  -0.420  2h
     C: Nov 23 20:17:59 1992  2017120.269  220325.789  -0.708  2h
     C: Nov 23 20:18:00 1992  2017122.564  220326.734  0.292  2h
     C: Nov 23 20:18:01 1992  2017125.749  220328.148  0.839  2h
     C: Nov 23 20:18:02 1992  2017127.047  220329.568  1.070  2h
     C: Nov 23 20:18:03 1992  2017129.107  220330.242  2.139  2h
     C: Nov 23 20:18:05 1992  2017129.519  220327.277  9.732  2h
     C: Nov 23 20:18:06 1992  2017130.090  220326.500  12.287  2h
     C: Nov 23 20:18:07 1992  2017132.183  220325.017  12.841  2h
PRN: 12   17   20   21
     C: Nov 23 20:18:09 1992  2017133.708  220323.045  2.700  2h
PRN: 17   20   21   25
     C: Nov 23 20:18:10 1992  2017138.373  220330.806  15.594  2h
     C: Nov 23 20:18:11 1992  2017140.406  220332.428  14.659  2h
     C: Nov 23 20:18:12 1992  2017141.559  220334.828  13.321  2h
     C: Nov 23 20:18:13 1992  2017143.660  220336.512  12.972  2h
     C: Nov 23 20:18:15 1992  2017145.786  220337.487  15.386  2h
     C: Nov 23 20:18:16 1992  2017149.470  220337.793  15.501  2h
     C: Nov 23 20:18:18 1992  2017153.503  220339.543  14.831  2h
     C: Nov 23 20:18:19 1992  2017156.227  220340.554  12.601  2h
     C: Nov 23 20:18:21 1992  2017158.501  220341.371  10.884  2h
     C: Nov 23 20:18:22 1992  2017160.570  220342.139  8.668  2h
     C: Nov 23 20:18:24 1992  2017160.214  220340.704  10.381  2h
     C: Nov 23 20:18:25 1992  2017161.916  220340.746  10.024  2h
     C: Nov 23 20:18:27 1992  2017163.612  220340.788  12.871  2h
```

```
_____C: Nc     20:18:28 1992  2017164.719  220340.820  11.795  2h
_____C: Nov 23 20:18:29 1992  2017166.776  220341.591  7.540  2h
_____C: Nov 23 20:18:31 1992  2017169.448  220341.576  5.604  2h
PRN: 12   17   20   21
_____C: Nov 23 20:18:31 1992  2017167.350  220335.642  -5.756  2h
PRN: 17   20   21   23
_____C: Nov 23 20:18:33 1992  2017167.561  220336.056  -3.952  2h
_____C: Nov 23 20:18:34 1992  2017167.211  220334.562  -1.336  2h
_____C: Nov 23 20:18:35 1992  2017166.306  220332.337  2.463  2h
STS: Type:  7   Number of records:    36
     Max. Lat:        0.318   Min. Lat:        0.318
     Mean Lat:        0.318
STS: Type:  8   Number of records:    36
     Max. Lon:       -1.146   Min. Lon:       -1.146
     Mean Lon:       -1.146
STS: Type:  9   Number of records:    36
     Max. Alt:       15.594   Min. Alt:       -5.756
     Mean Alt:        6.163
```

```
HDR: LINE7.COR  Version: 304  Source: 9054h
     Label:
     Start Time: Nov 23 19:44:29 1992
     End Time: Nov 23 19:44:53 1992
     Stat Off: 2416  Recs(int): 17  Recs(lng): 17
     GPS Week: 672  GPS TOW: 157469.0 (19:44:29)
     Ref Lat: 2016809.202  Ref Lon: 220238.233  Ref Alt: -13.776

ION: Alpha(1):       0.0  Beta(1):  141312.0
     Alpha(2):       0.0  Beta(2): -180224.0
     Alpha(3):      -0.0  Beta(3):       0.0
     Alpha(4):       0.0  Beta(4):   65536.0

NAV: PRN 03 IODE: 0B2h HLTH: 00h TCOL: 19:35:36
IOD: PRN 03 IODE: 0B2h HLTH: 00h TCOL: 19:35:36 URA: 2.8 TEPH: 19:35:36 Fit: 0h
NAV: PRN 12 IODE: 03Ch HLTH: 00h TCOL: 19:35:06
IOD: PRN 12 IODE: 03Ch HLTH: 00h TCOL: 19:35:06 URA: 4.0 TEPH: 19:35:06 Fit: 0h
NAV: PRN 16 IODE: 0D3h HLTH: 00h TCOL: 17:58:12
IOD: PRN 16 IODE: 0D3h HLTH: 00h TCOL: 17:58:12 URA: 32.0 TEPH: 17:58:12 Fit: 0h
NAV: PRN 17 IODE: 0E8h HLTH: 00h TCOL: 19:35:36
IOD: PRN 17 IODE: 0E8h HLTH: 00h TCOL: 19:35:36 URA: 32.0 TEPH: 19:35:36 Fit: 0h
NAV: PRN 20 IODE: 00Dh HLTH: 00h TCOL: 19:35:36
IOD: PRN 20 IODE: 00Dh HLTH: 00h TCOL: 19:35:36 URA: 4.0 TEPH: 19:35:36 Fit: 0h
NAV: PRN 21 IODE: 05Ah HLTH: 00h TCOL: 19:08:48
IOD: PRN 21 IODE: 05Ah HLTH: 00h TCOL: 19:08:48 URA: 32.0 TEPH: 19:08:48 Fit: 0h
NAV: PRN 23 IODE: 08Bh HLTH: 00h TCOL: 19:35:48
IOD: PRN 23 IODE: 08Bh HLTH: 00h TCOL: 19:35:48 URA: 32.0 TEPH: 19:35:48 Fit: 0h
NAV: PRN 24 IODE: 08Ah HLTH: 00h TCOL: 17:16:48
IOD: PRN 24 IODE: 08Ah HLTH: 00h TCOL: 17:16:48 URA: 32.0 TEPH: 17:16:48 Fit: 0h
NAV: PRN 26 IODE: 018h HLTH: 00h TCOL: 18:56:18
IOD: PRN 26 IODE: 018h HLTH: 00h TCOL: 18:56:18 URA: 32.0 TEPH: 18:56:18 Fit: 0h
PRN: 12   17   20   21
_____C: Nov 23 19:44:29 1992  2017112.244  220291.366  -8.271  2h
_____C: Nov 23 19:44:30 1992  2017111.947  220291.703  -8.612  2h
_____C: Nov 23 19:44:31 1992  2017110.899  220294.427  -7.791  2h
_____C: Nov 23 19:44:32 1992  2017108.893  220297.857  -6.817  2h
_____C: Nov 23 19:44:34 1992  2017106.698  220301.282  -7.442  2h
_____C: Nov 23 19:44:35 1992  2017104.146  220303.257  -7.105  2h
_____C: Nov 23 19:44:37 1992  2017101.749  220307.397  -7.335  2h
_____C: Nov 23 19:44:38 1992  2017098.997  220310.089  -7.445  2h
_____C: Nov 23 19:44:39 1992  2017096.223  220314.227  -7.854  2h
_____C: Nov 23 19:44:42 1992  2017090.587  220319.930  -7.120  2h
_____C: Nov 23 19:44:44 1992  2017086.252  220326.337  -7.476  2h
_____C: Nov 23 19:44:46 1992  2017081.688  220328.656  -6.282  2h
_____C: Nov 23 19:44:47 1992  2017078.434  220331.708  -6.278  2h
_____C: Nov 23 19:44:49 1992  2017074.853  220333.398  -6.313  2h
_____C: Nov 23 19:44:50 1992  2017071.823  220336.598  -4.994  2h
_____C: Nov 23 19:44:51 1992  2017071.559  220336.327  -5.768  2h
_____C: Nov 23 19:44:52 1992  2017072.621  220336.847  -4.041  2h
STS: Type:  7   Number of records:    17
     Max. Lat:        0.318   Min. Lat:        0.318
     Mean Lat:        0.318
STS: Type:  8   Number of records:    17
     Max. Lon:       -1.146   Min. Lon:       -1.146
     Mean Lon:       -1.146
STS: Type:  9   Number of records:    17
     Max. Alt:       -4.041   Min. Alt:       -8.612
     Mean Alt:       -6.879
```

```
HDR: LINE8.COR  Version: 304  Source: 9054h
     Label:
     Start Time: Nov 23 19:46:00 1992
     End Time: Nov 23 19:46:24 1992
     Stat Off: 2492  Recs(int): 19  Recs(lng): 19
     GPS Week: 672  GPS TOW: 157560.0 (19:46:00)
     Ref Lat: 2016785.602  Ref Lon: 220287.772  Ref Alt: -26.161

ION: Alpha(1):       0.0  Beta(1):  141312.0
     Alpha(2):       0.0  Beta(2): -180224.0
     Alpha(3):      -0.0  Beta(3):       0.0
     Alpha(4):       0.0  Beta(4):   65536.0

NAV: PRN 03 IODE: 0B2h HLTH: 00h TCOL: 19:35:36
IOD: PRN 03 IODE: 0B2h HLTH: 00h TCOL: 19:35:36 URA: 2.8 TEPH: 19:35:36 Fit: 0h
NAV: PRN 12 IODE: 03Ch HLTH: 00h TCOL: 19:35:06
IOD: PRN 12 IODE: 03Ch HLTH: 00h TCOL: 19:35:06 URA: 4.0 TEPH: 19:35:06 Fit: 0h
NAV: PRN 16 IODE: 0D3h HLTH: 00h TCOL: 17:58:12
IOD: PRN 16 IODE: 0D3h HLTH: 00h TCOL: 17:58:12 URA: 32.0 TEPH: 17:58:12 Fit: 0h
NAV: PRN 17 IODE: 0E8h HLTH: 00h TCOL: 19:35:36
IOD: PRN 17 IODE: 0E8h HLTH: 00h TCOL: 19:35:36 URA: 32.0 TEPH: 19:35:36 Fit: 0h
NAV: PRN 20 IODE: 00Dh HLTH: 00h TCOL: 19:35:36
IOD: PRN 20 IODE: 00Dh HLTH: 00h TCOL: 19:35:36 URA: 4.0 TEPH: 19:35:36 Fit: 0h
NAV: PRN 21 IODE: 05Ah HLTH: 00h TCOL: 19:08:48
IOD: PRN 21 IODE: 05Ah HLTH: 00h TCOL: 19:08:48 URA: 32.0 TEPH: 19:08:48 Fit: 0h
NAV: PRN 23 IODE: 08Bh HLTH: 00h TCOL: 19:35:48
IOD: PRN 23 IODE: 08Bh HLTH: 00h TCOL: 19:35:48 URA: 32.0 TEPH: 19:35:48 Fit: 0h
NAV: PRN 24 IODE: 08Ah HLTH: 00h TCOL: 17:16:48
IOD: PRN 24 IODE: 08Ah HLTH: 00h TCOL: 17:16:48 URA: 32.0 TEPH: 17:16:48 Fit: 0h
NAV: PRN 26 IODE: 018h HLTH: 00h TCOL: 18:56:18
IOD: PRN 26 IODE: 018h HLTH: 00h TCOL: 18:56:18 URA: 32.0 TEPH: 18:56:18 Fit: 0h
PRN: 12   17   20   21
_____C: Nov 23 19:46:00 1992  2017083.488  220326.822  -6.063  2h
_____C: Nov 23 19:46:01 1992  2017083.440  220326.696  -6.657  2h
_____C: Nov 23 19:46:02 1992  2017083.204  220326.569  -6.936  2h
_____C: Nov 23 19:46:03 1992  2017082.769  220327.164  -7.069  2h
_____C: Nov 23 19:46:04 1992  2017081.417  220325.570  -7.075  2h
_____C: Nov 23 19:46:05 1992  2017081.191  220324.722  -7.182  2h
_____C: Nov 23 19:46:06 1992  2017080.041  220322.413  -6.744  2h
_____C: Nov 23 19:46:07 1992  2017079.629  220321.570  -6.709  2h
_____C: Nov 23 19:46:08 1992  2017079.387  220322.178  -8.113  2h
_____C: Nov 23 19:46:09 1992  2017078.620  220319.887  -7.790  2h
_____C: Nov 23 19:46:10 1992  2017077.900  220318.383  -8.585  2h
_____C: Nov 23 19:46:11 1992  2017077.757  220316.898  -7.795  2h
_____C: Nov 23 19:46:12 1992  2017076.869  220314.678  -7.794  2h
PRN: 12   17   20   23
_____C: Nov 23 19:46:13 1992  2017073.925  220316.174  -2.683  2h
_____C: Nov 23 19:46:14 1992  2017073.503  220315.887  -3.097  2h
_____C: Nov 23 19:46:15 1992  2017072.744  220312.705  -3.092  2h
PRN: 12   17   21   23
_____C: Nov 23 19:46:22 1992  2017060.048  220310.319  -48.186  2h
_____C: Nov 23 19:46:23 1992  2017060.620  220305.996  -37.565  2h
_____C: Nov 23 19:46:24 1992  2017059.872  220303.793  -36.752  2h
STS: Type:  7   Number of records:    19
     Max. Lat:        0.318   Min. Lat:        0.318
     Mean Lat:        0.318
STS: Type:  8   Number of records:    19
     Max. Lon:       -1.146   Min. Lon:       -1.146
     Mean Lon:       -1.146
STS: Type:  9   Number of records:    19
     Max. Alt:       -2.683   Min. Alt:      -48.186
     Mean Alt:      -11.889
```

```
HDR: LINE9.COR  Version: 304  Source: 9054h
     Label:
     Start Time: Nov 23 19:48:18 1992
     End Time: Nov 23 19:48:44 1992
     Stat Off: 2468  Recs(int): 18  Recs(lng): 18
     GPS Week: 672  GPS TOW: 157698.0 (19:48:18)
     Ref Lat: 2016805.330  Ref Lon: 220296.732  Ref Alt: -29.170

ION: Alpha(1):       0.0  Beta(1):  141312.0
     Alpha(2):       0.0  Beta(2): -180224.0
     Alpha(3):      -0.0  Beta(3):       0.0
     Alpha(4):       0.0  Beta(4):   65536.0

NAV: PRN 03 IODE: 0B2h HLTH: 00h TCOL: 19:35:36
IOD: PRN 03 IODE: 0B2h HLTH: 00h TCOL: 19:35:36 URA: 2.8 TEPH: 19:35:36 Fit: 0h
NAV: PRN 12 IODE: 03Ch HLTH: 00h TCOL: 19:35:06
IOD: PRN 12 IODE: 03Ch HLTH: 00h TCOL: 19:35:06 URA: 4.0 TEPH: 19:35:06 Fit: 0h
NAV: PRN 16 IODE: 0D3h HLTH: 00h TCOL: 17:58:12
IOD: PRN 16 IODE: 0D3h HLTH: 00h TCOL: 17:58:12 URA: 32.0 TEPH: 17:58:12 Fit: 0h
NAV: PRN 17 IODE: 0E8h HLTH: 00h TCOL: 19:35:36
IOD: PRN 17 IODE: 0E8h HLTH: 00h TCOL: 19:35:36 URA: 32.0 TEPH: 19:35:36 Fit: 0h
NAV: PRN 20 IODE: 00Dh HLTH: 00h TCOL: 19:35:36
IOD: PRN 20 IODE: 00Dh HLTH: 00h TCOL: 19:35:36 URA: 4.0 TEPH: 19:35:36 Fit: 0h
NAV: PRN 21 IODE: 05Ah HLTH: 00h TCOL: 19:08:48
IOD: PRN 21 IODE: 05Ah HLTH: 00h TCOL: 19:08:48 URA: 32.0 TEPH: 19:08:48 Fit: 0h
NAV: PRN 23 IODE: 08Bh HLTH: 00h TCOL: 19:35:48
IOD: PRN 23 IODE: 08Bh HLTH: 00h TCOL: 19:35:48 URA: 32.0 TEPH: 19:35:48 Fit: 0h
NAV: PRN 24 IODE: 08Ah HLTH: 00h TCOL: 17:16:48
IOD: PRN 24 IODE: 08Ah HLTH: 00h TCOL: 17:16:48 URA: 32.0 TEPH: 17:16:48 Fit: 0h
NAV: PRN 26 IODE: 018h HLTH: 00h TCOL: 18:56:18
IOD: PRN 26 IODE: 018h HLTH: 00h TCOL: 18:56:18 URA: 32.0 TEPH: 18:56:18 Fit: 0h
PRN: 12   17   20   21
_____C: Nov 23 19:48:18 1992  2017104.601  220303.911  -8.054  2h
_____C: Nov 23 19:48:19 1992  2017104.422  220303.272  -6.355  2h
_____C: Nov 23 19:48:20 1992  2017105.320  220304.160  -9.166  2h
_____C: Nov 23 19:48:21 1992  2017103.534  220300.838  -6.984  2h
_____C: Nov 23 19:48:22 1992  2017103.026  220299.017  -5.810  2h
_____C: Nov 23 19:48:23 1992  2017102.337  220296.476  -5.174  2h
_____C: Nov 23 19:48:25 1992  2017101.104  220293.889  -3.495  2h
_____C: Nov 23 19:48:26 1992  2017100.765  220292.809  -3.484  2h
PRN: 12   17   21   23
_____C: Nov 23 19:48:27 1992  2017090.543  220299.845  -31.580  2h
_____C: Nov 23 19:48:28 1992  2017089.824  220298.105  -31.570  2h
_____C: Nov 23 19:48:29 1992  2017089.077  220298.528  -34.474  2h
_____C: Nov 23 19:48:30 1992  2017088.407  220294.534  -32.627  2h
PRN: 12   17   20   23
_____C: Nov 23 19:48:38 1992  2017081.692  220282.658  4.658  2h
_____C: Nov 23 19:48:39 1992  2017081.142  220281.772  4.011  2h
_____C: Nov 23 19:48:40 1992  2017081.217  220283.795  4.160  2h
_____C: Nov 23 19:48:41 1992  2017081.740  220282.934  2.444  2h
_____C: Nov 23 19:48:42 1992  2017081.664  220284.232  2.409  2h
_____C: Nov 23 19:48:43 1992  2017081.610  220284.085  2.414  2h
STS: Type:  7   Number of records:    18
     Max. Lat:        0.318   Min. Lat:        0.318
     Mean Lat:        0.318
STS: Type:  8   Number of records:    18
     Max. Lon:       -1.146   Min. Lon:       -1.146
     Mean Lon:       -1.146
STS: Type:  9   Number of records:    18
     Max. Alt:        4.658   Min. Alt:      -34.474
     Mean Alt:       -8.815
```

APPENDIX 4.A

INDEX OF DATA STATIONS AND SAMPLE NUMBERS

E 1

STATION	TYPE	SAMPLE TAKEN	COMMENTS
01GW01	ORIGINAL	NO	WELL DRY
01GW02	ORIGINAL	NO	WELL DRY
01GW02	DUPLICATE	NO	WELL DRY
01GW03	ORIGINAL	NO	WELL DRY
01SS101	ORIGINAL	01SS101	UPPER SAMPLE
01SS101	ORIGINAL	01SS102	LOWER SAMPLE
01SS102	ORIGINAL	01SS103	UPPER SAMPLE
01SS102	ORIGINAL	01SS104	LOWER SAMPLE
01SS102	DUPLICATE	01SS105	01SS104
01SS103	ORIGINAL	01SS106	UPPER SAMPLE
01SS103	ORIGINAL	01SS107	LOWER SAMPLE
01SS104	ORIGINAL	01SS108	UPPER SAMPLE
01SS104	ORIGINAL	01SS109	LOWER SAMPLE
01SS105	BACKGROUND	01SS110C	LOWER SAMPLE
01SS106	BACKGROUND	01SS110D	LOWER SAMPLE
01SS107	BACKGROUND	01SS110E	LOWER SAMPLE
01SED108	ORIGINAL	01SED111	
LANK	TRIP	01W101	
ANK	RINSATE	01W112	SS
LANK	FIELD	01W114	

TE 2

STATION	TYPE	SAMPLE TAKEN	COMMENTS
02SS101	ORIGINAL	02SS112	UPPER SAMPLE
02SS101	ORIGINAL	02SS113	LOWER SAMPLE
02TAR101	ORIGINAL	02TAR120	ASPHALTIC OIL
02TAR101	DUPLICATE	02TAR121	02TAR120
02SS102	ORIGINAL	02SS114	UPPER SAMPLE
02SS102	ORIGINAL	02SS115	LOWER SAMPLE
02SS103	ORIGINAL	02SS116	UPPER SAMPLE
02SS103	ORIGINAL	02SS117	LOWER SAMPLE
02SS103	DUPLICATE	02SS118	02SS113
02SS104	BACKGROUND	02SS119C	LOWER SAMPLE
02SS105	BACKGROUND	02SS119D	LOWER SAMPLE
02SS106	BACKGROUND	02SS119E	LOWER SAMPLE
02SED107	ORIGINAL	02SED122	
02SED108	ORIGINAL	02SED123	
02SED109	BACKGROUND	02SED124	
BLANK	TRIP	02W115	
BLANK	RINSATE	02W125	SS
BLANK	RINSATE	02W182	TAR
BLANK	RINSATE	02W183	SED

E 5

STATION	TYPE	SAMPLE TAKEN	COMMENTS
05GW01	BACKGROUND	05GW101A/B	A:TOTAL/B:DISSOLVED slug-test
05GW02	ORIGINAL	NO	NOT FOUND
05GW03	ORIGINAL	NO	NOT FOUND
05SS101	ORIGINAL	05SS126	UPPER SAMPLE
05SS101	ORIGINAL	05SS127	LOWER SAMPLE
05SS102	ORIGINAL	05SS128	UPPER SAMPLE
05SS102	ORIGINAL	05SS129	LOWER SAMPLE
05SS103	ORIGINAL	05SS130	UPPER SAMPLE
05SS103	ORIGINAL	05SS131	LOWER SAMPLE
05SS104	ORIGINAL	05SS132	UPPER SAMPLE
05SS104	ORIGINAL	05SS133	LOWER SAMPLE
05SS104	DUPLICATE	05SS134	05SS133
05SS105	ORIGINAL	05SS135	UPPER SAMPLE
05SS105	ORIGINAL	05SS136	LOWER SAMPLE
05SS105	DUPLICATE	05SS137	05SS136
05SS106	ORIGINAL	05SS138	UPPER SAMPLE
05SS106	ORIGINAL	05SS139	LOWER SAMPLE
05SS107	BACKGROUND	05SS140C	LOWER SAMPLE
05SS108	BACKGROUND	05SS140D	LOWER SAMPLE
05SS109	BACKGROUND	05SS140E	LOWER SAMPLE
BLANK	TRIP	05W127	
BLANK	RINSATE	05W138	SS
BLANK	RINSATE	05W184	SS

E 6

STATION	TYPE	SAMPLE TAKEN	COMMENTS
06GW01	BACKGROUND	06GW101A/B	A:TOTAL/B:DISSOLVED slug-test
06SS101	ORIGINAL	06SS141	UPPER SAMPLE
06SS101	ORIGINAL	06SS142	LOWER SAMPLE
06SS102	ORIGINAL	06SS143	UPPER SAMPLE
06SS102	ORIGINAL	NO	AUGER REFUSAL
06SS103	ORIGINAL	06SS145	UPPER SAMPLE
06SS103	ORIGINAL	06SS146	LOWER SAMPLE
06SS104	ORIGINAL	06SS147	UPPER SAMPLE
06SS104	ORIGINAL	06SS148	LOWER SAMPLE
06SS104	DUPLICATE	06SS149	06SS148
06SS105	ORIGINAL	06SS150	UPPER SAMPLE
06SS105	ORIGINAL	06SS151	LOWER SAMPLE
06SS105	DUPLICATE	06SS152	06SS151
06SS106	ORIGINAL	06SS153	UPPER SAMPLE
06SS106	ORIGINAL	06SS154	LOWER SAMPLE
06SS107	BACKGROUND	06SS155C	LOWER SAMPLE
06SS108	BACKGROUND	06SS155D	LOWER SAMPLE
06SS109	BACKGROUND	06SS155E	LOWER SAMPLE
BLANK	TRIP	06W139	
ANK	RINSATE	06W149	SS

E 7

STATION	TYPE	SAMPLE TAKEN	COMMENTS	
R7GW01	BACKGROUND	07GW101A/B	A:TOTAL/B:DISSOLVED	slug-test
R7GW02	ORIGINAL	07GW102A/B	ID - SD	slug-test
R7GW03	ORIGINAL	R07GW103AB	ID - SD	slug-test
R7GW04	ORIGINAL	07GW104A/B	ID - SD	slug-test
R7GW05	ORIGINAL	07GW105A/B	ID - SD	slug-test
R7GW05	DUPLICATE	07GW110A/B	R07GW103AB	
R7GW06	ORIGINAL	R07GW106AB	ID - SD	slug-test
R7GW07	ORIGINAL	07GW107A/B	ID - SD	slug-test
R7GW07	DUPLICATE	R07GW109AB	R07GW106AB	
R7GW08	ORIGINAL	07GW108A/B	ID - SD	slug-test

10

STATION	TYPE	SAMPLE TAKEN	COMMENTS
10SS101	ORIGINAL	10SS156	UPPER SAMPLE
10SS101	ORIGINAL	NO	AUGER REFUSAL
10SS101	DUPLICATE	10SS158	10SS157
10SS102	ORIGINAL	10SS159	UPPER SAMPLE
10SS102	ORIGINAL	NO	AUGER REFUSAL
10SS103	ORIGINAL	10SS161	UPPER SAMPLE
10SS103	ORIGINAL	NO	AUGER REFUSAL
10SS104	ORIGINAL	10SS163	UPPER SAMPLE
10SS104	ORIGINAL	NO	AUGER REFUSAL
10SS105	BACKGROUND	10SS165C	UPPER SAMPLE
10SS106	BACKGROUND	10SS165D	UPPER SAMPLE
10SS107	BACKGROUND	10SS165E	UPPER SAMPLE

14

STATION	TYPE	SAMPLE TAKEN	COMMENTS
14SED101	ORIGINAL	14SED166	
14SED102	ORIGINAL	14SED167	
14SED103	ORIGINAL	14SED168	
14SED104	ORIGINAL	14SED169	
14SED104	DUPLICATE	14SED170	14SED169
14SED105	BACKGROUND	14SED171	
BLANK	TRIP	14W164	
BLANK	RINSATE	14W167	SED

SITE 18

STATION	TYPE	SAMPLE TAKEN	COMMENTS
18GW01	BACKGROUND	R18GW101AB	A:TOTAL/B:DISSOLVED slug-test
18GW02	ORIGINAL	18GW102A/B	A:TOTAL/B:DISSOLVED slug-test
18GW03	ORIGINAL	R18GW103AB	A:TOTAL/B:DISSOLVED slug-test
18SS101	ORIGINAL	18SS172	UPPER SAMPLE
18SS101	ORIGINAL	18SS173	LOWER SAMPLE
18SS102	ORIGINAL	18SS174	UPPER SAMPLE
18SS102	ORIGINAL	18SS175	LOWER SAMPLE
18SS103	ORIGINAL	18SS176	UPPER SAMPLE
18SS103	ORIGINAL	18SS177	LOWER SAMPLE
18SS103	DUPLICATE	18SS178	18SS177
18SS104	ORIGINAL	18SS179	UPPER SAMPLE
18SS104	ORIGINAL	NO	AUGER REFUSAL
18SS105	BACKGROUND	18SS181C	LOWER SAMPLE
18SS106	BACKGROUND	18SS181D	LOWER SAMPLE
18SS107	BACKGROUND	18SS181E	LOWER SAMPLE
18SED108	ORIGINAL	18SED182	
18SED108	ORIGINAL	18SW108	
BLANK	TRIP	18W168	
BLANK	RINSATE	18W178	SS
BLANK	RINSATE	18W179	GW

SITE 21 ION	TYPE	SAMPLE TAKEN	COMMENTS
21SS101	ORIGINAL	21SS184	UPPER SAMPLE
21SS101	ORIGINAL	NO	AUGER REFUSAL
21SS102	ORIGINAL	21SS186	UPPER SAMPLE
21SS102	ORIGINAL	NO	AUGER REFUSAL
21SS103	ORIGINAL	21SS188	UPPER SAMPLE
21SS103	ORIGINAL	NO	AUGER REFUSAL
21SS104	ORIGINAL	21SS190	UPPER SAMPLE
21SS104	ORIGINAL	NO	AUGER REFUSAL
21SS105	ORIGINAL	21SS192	UPPER SAMPLE
21SS105	ORIGINAL	NO	AUGER REFUSAL
21SS105	DUPLICATE	21SS194	21SS193
21SS106C	BACKGROUND	21SS106C	UPPER SAMPLE
21SS106D	BACKGROUND	21SS106D	UPPER SAMPLE
21SS106E	BACKGROUND	21SS106E	UPPER SAMPLE
21CC107	ORIGINAL	21CC107	
21CC108	ORIGINAL	21CC108	
21CC109	ORIGINAL	21CC109	
21CC109	DUPLICATE	21CC110	21CC109
BLANK	RINSATE	21W187	SS
BLANK	RINSATE	21W188	CC
BLANK	FIELD	21W189	
ANK	TRIP	21W190	
SITE 16			
16S4	ORIGINAL	16SW183	
16S2	ORIGINAL	16SW184	
16S2	ORIGINAL	NO	SINGLE CHAMBER
16S1	ORIGINAL	16SW186	
16S1	ORIGINAL	16SW187	
16S3	ORIGINAL	16SW188	
16S3	ORIGINAL	R16SW189	
16S4	DUPLICATE	16SW191	16SW183
16S4	ORIGINAL	16SED183	
16S2	ORIGINAL	16SED184	
16S2	ORIGINAL	NO	SINGLE CHAMBER
16S1	ORIGINAL	16SED186	
16S1	ORIGINAL	16SED187	
16S3		NO	SEDIMENT ABSENT
16S3		NO	SEDIMENT ABSENT
16S5	ORIGINAL	16SED190	
16S5	DUPLICATE	16SED191	16SED190
BLANK	RINSATE	16SW192	

APPENDIX 4.B

REPORTS OF CHEMICAL ANALYSES SUPPLEMENTAL INVESTIGATION

APPENDIX 4.B

REPORTS OF CHEMICAL ANALYSES SUPPLEMENTAL INVESTIGATION

VOLATILE ORGANIC COMPOUNDS DETECTED IN THE SOIL AND SEDIMENT
SITE 1 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	01 SS 101	01 SS 102	01 SS 103	01 SS 104	01 SS 105DUP	01 SS 106	01 SS 107
UNITS	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Acetone	12 U	29 J	60 J	98	12 U	12 U	100
Benzene	6 U	6 U	6 U	29 U	6 U	6 U	6 U
Bromodichloromethane	6 U	6 U	6 U	29 U	6 U	6 U	6 U
Bromoform	6 U	6 U	6 U	29 U	6 U	6 U	6 U
Bromomethane	12 U	12 U	12 U	58 U	12 U	12 U	12 U
Butanone,2-	12 U	R	R	58 UJ	12 UJ	12 U	12 U
Carbon disulfide	5 U	6 U	22	59	25	13	13
Carbon tetrachloride	6 U	6 U	6 U	29 U	6 U	6 U	6 U
Chlorobenzene	6 U	6 U	6 UJ	29 U	6 U	6 U	6 U
Chloroethane	12 U	12 U	12 U	58 U	12 U	12 U	12 U
Chloroform	6 U	6 U	6 U	29 U	6 U	6 U	6 U
Chloromethane	12 U	12 U	12 U	58 U	12 U	12 U	12 U
Dibromochloromethane	6 U	6 U	6 U	29 U	6 U	6 U	6 U
Dichloroethane,1,1-	6 U	6 U	6 U	29 U	6 U	6 U	6 U
Dichloroethane,1,2-	6 U	6 U	6 U	29 U	6 U	6 U	6 U
Dichloroethene,1,1-	6 U	6 U	6 U	29 U	6 U	6 U	6 U
Dichloroethene,1,2-(cis)	6 U	6 U	6 U	29 U	6 U	6 U	6 U
Dichloroethene,1,2-(trans)	6 U	6 U	6 U	29 U	6 U	6 U	6 U
Dichloropropane,1,2-	6 U	6 U	6 U	29 U	6 U	6 U	6 U
Dichloropropene,cis,1,3-	6 U	6 U	6 U	29 U	6 U	6 U	6 U
Dichloropropene,trans-1,3-	6 U	6 U	6 U	29 U	6 U	6 U	6 U
Ethylbenzene	6 U	6 U	6 UJ	29 U	6 U	6 U	6 U
Hexanone,2-	12 U	12 U	12 UJ	58 U	12 U	12 U	12 U
Methyl-2-pentanone,4-	12 U	12 U	12 UJ	58 U	12 U	12 U	12 U
Methylene chloride	8 U	12 U	26 U	100 U	49 U	29 U	34 U
Styrene	6 U	6 U	6 UJ	29 U	6 U	6 U	6 U
Tetrachloroethane,1,1,2,2-	6 U	6 U	6 UJ	29 U	6 U	6 U	6 U
Tetrachloroethene	6 U	6 U	6 UJ	29 U	6 U	6 U	6 U
Toluene	19	7 U	11 UJ	52	8 U	16 U	48
Trichloroethane,1,1,1-	6 U	6 U	6 U	29 U	6 U	6 U	6 U
Trichloroethane,1,1,2-	6 U	6 U	6 U	29 U	6 U	6 U	6 U
Trichloroethene	6 U	6 U	6 U	29 U	6 U	6 U	6 U
Vinyl acetate	12 U	12 U	12 U	58 U	12 U	12 U	12 U
Vinyl chloride	12 U	12 U	12 U	58 U	12 U	12 U	12 U
Xylene, o-	6 U	6 U	6 UJ	29 U	6 U	6 U	6 U
Xylenes, m-, p-	6 U	6 U	6 UJ	29 U	6 U	6 U	6 U

J - estimated value
NA - not analyzed
R - result is rejected and unusable
U - not detected
UJ - reported quantitation limit is estimated

PESTICIDES/PCBs COMPOUNDS DETECTED IN THE SOIL AND SEDIMENT
SITE 1 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	01SS101	01SS102	01SS103	01SS104	01SS105DUP	01SS106	01SS108
UNITS	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Aldrin	R	R	R	8 UJ	0.25 UJ	0.26 UJ	0.25 UJ
Aroclor-1016	R	R	R	160 UJ	4.9 UJ	5.1 UJ	4.8 UJ
Aroclor-1221	R	R	R	320 UJ	9.9 UJ	10 UJ	9.7 UJ
Aroclor-1232	R	R	R	160 UJ	4.9 UJ	5.1 UJ	4.8 UJ
Aroclor-1242	R	R	R	160 UJ	4.9 UJ	5.1 UJ	4.8 UJ
Aroclor-1248	R	R	R	160 UJ	4.9 UJ	5.1 UJ	4.8 UJ
Aroclor-1254	R	R	R	160 UJ	4.9 UJ	5.1 UJ	4.8 UJ
Aroclor-1260	R	R	R	160 UJ	4.9 UJ	25 J	4.8 UJ
BHC,alpha-	R	R	R	8 UJ	0.25 UJ	0.26 UJ	0.25 UJ
BHC,beta-	R	R	R	8 UJ	0.25 UJ	0.26 UJ	0.25 UJ
BHC,delta-	R	R	R	8 UJ	0.25 UJ	0.26 UJ	0.25 UJ
BHC,gamma-	R	R	R	8 UJ	0.25 UJ	0.26 UJ	0.25 UJ
Chlordane,alpha-	R	R	R	8 UJ	0.25 UJ	0.26 UJ	0.25 UJ
Chlordane,gamma-	R	R	R	8 UJ	0.25 UJ	0.26 UJ	0.25 UJ
DDD,4,4-	R	R	R	16 UJ	0.49 UJ	0.51 UJ	0.48 UJ
DDE,4,4-	R	R	R	16 UJ	0.49 UJ	0.51 UJ	0.48 UJ
DDT,4,4-	R	R	R	16 UJ	0.49 UJ	0.51 UJ	0.48 UJ
Dieldrin	R	R	R	16 UJ	0.49 UJ	0.51 UJ	0.48 UJ
Endosulfan I	R	R	R	8 UJ	0.25 UJ	0.26 UJ	0.25 UJ
Endosulfan II	R	R	R	16 UJ	0.49 UJ	0.51 UJ	0.48 UJ
Endosulfan sulfate	R	R	R	16 UJ	0.49 UJ	0.51 UJ	0.48 UJ
Endrin	R	R	R	16 UJ	0.49 UJ	0.51 UJ	0.48 UJ
Endrin aldehyde	R	R	R	16 UJ	0.49 UJ	0.51 UJ	0.48 UJ
Endrin ketone	R	R	R	16 UJ	0.49 UJ	0.51 UJ	0.48 UJ
Heptachlor	R	R	R	8 UJ	0.25 UJ	0.26 UJ	0.25 UJ
Heptachlor epoxide	R	R	R	8 UJ	0.25 UJ	0.26 UJ	0.25 UJ
Methoxychlor	R	R	R	80 UJ	2.5 UJ	2.6 UJ	2.5 UJ
Toxaphene	R	R	R	800 UJ	25 UJ	26 UJ	25 UJ

Qualifiers:
J - estimated value
NA - not analyzed
R - result is rejected and unusable
U - not detected
UJ - reported quantitation limit is estimated

SEMIVOLATILE COMPOUNDS DETECTED IN THE SOIL AND SEDIMENT
SITE 1 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	01 SS 101	01 SS 102	01 SS 103	01 SS 104	01 SS 105DUP	01 SS 106	01 SS 107
UNITS	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Acenaphthene	1500 U	1600 U	1600 U	1500 U	1500 U	1500 U	1600 U
Acenaphthylene	1500 U	1600 U	1600 U	1500 U	1500 U	1500 U	1600 U
Anthracene	1500 U	1600 U	1600 U	1500 U	1500 U	1500 U	1600 U
Benzo(a)anthracene	1500 U	1600 U	1600 U	1500 U	1500 U	1500 U	1600 U
Benzo(a)pyrene	1500 U	1600 U	1600 U	1500 U	1500 U	1500 U	1600 U
Benzo(b)fluoranthene	1500 U	1600 U	1600 U	1500 U	1500 U	1500 U	1600 U
Benzo(g,h,i)perylene	1500 U	1600 U	1600 U	1500 U	1500 U	1500 U	1600 U
Benzo(k)fluoranthene	1500 U	1600 U	1600 U	1500 U	1500 U	1500 U	1600 U
Bis(2-chloroethoxy)methane	1500 U	1600 U	1600 U	1500 U	1500 U	1500 U	1600 U
Bis(2-chloroethyl)ether	1500 U	1600 U	1600 U	1500 U	1500 U	1500 U	1600 U
Bis(2-chloroisopropyl)ether	1500 U	1600 U	1600 U	1500 U	1500 U	1500 U	1600 U
Bis(2-ethylhexyl)phthalate	1500 U	400 J	1600 U	1500 U	430 J	440 J	500 J
Bromophenyl-phenylether,4-	1500 U	1600 U	1600 U	1500 U	1500 U	1500 U	1600 U
Butylbenzylphthaalte	1500 U	1600 U	360 J	100 J	1500 U	1500 U	1600 U
Carbazole	1500 U	1600 U	1600 U	1500 U	1500 U	1500 U	1600 U
Chloro-3-methylphenol,4-	1500 U	1600 U	1600 U	1500 U	1500 U	1500 U	1600 U
Chloroaniline,4-	1500 U	1600 U	1600 U	1500 U	1500 U	1500 U	1600 U
Chloronaphthalene,2-	1500 U	1600 U	1600 U	1500 U	1500 U	1500 U	1600 U
Chloropehnyl-phenylether,4-	1500 U	1600 U	1600 U	1500 U	1500 U	1500 U	1600 U
Chlorophenol,2-	1500 U	1600 U	1600 U	1500 U	1500 U	1500 U	1600 U

Qualifiers:
J - estimated value
NA - not analyzed
R - result is rejected and unusable
U - not detected
UJ - reported quantitation limit is estimated

SEMIVOLATILE COMPOUNDS DETECTED IN THE SOIL AND SEDIMENT
SITE 1 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	01 SS 101	01 SS 102	01 SS 103	01 SS 104	01 SS 105DUP	01 SS 106	01 SS 107
UNITS	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Chrysene	1500 U	1600 U	1600 U	1500 U	1500 U	1500 U	1600 U
Di-n-butylphthalate	200 J	270 J	270 J	320 J	1500 U	1500 U	340 J
Di-n-octylphthalate	1500 U	1600 U	1600 U	1500 U	1500 U	1500 U	1600 U
Dibenzo(a,h)anthracene	1500 U	1600 U	1600 U	1500 U	1500 U	1500 U	1600 U
Dibenzofuran	1500 U	1600 U	1600 U	1500 U	1500 U	1500 U	1600 U
Dichlorobenzene,1,2-	1500 U	1600 U	1600 U	1500 U	1500 U	1500 U	1600 U
Dichlorobenzene,1,3-	1500 U	1600 U	1600 U	1500 U	1500 U	1500 U	1600 U
Dichlorobenzene,1,4-	1500 U	1600 U	1600 U	1500 U	1500 U	1500 U	1600 U
Dichlorobenzidine,3,3-	1500 U	1600 U	1600 U	1500 U	1500 U	1500 U	1600 U
Dichlorophenol,2,4-	1500 U	1600 U	1600 U	1500 U	1500 U	1500 U	1600 U
Diethylphthalate	1500 U	1600 U	1600 U	1500 U	1500 U	1500 U	1600 U
Dimethylphenol,2,4-	1500 U	1600 U	1600 U	1500 U	1500 U	1500 U	1600 U
Dimethylphthalate	1500 U	1600 U	1600 U	1500 U	1500 U	1500 U	1600 U
Dinitro-2-methylphenol,4,6-	1500 U	1600 U	1600 U	1500 U	1500 U	1500 U	1600 U
Dinitrophenol,2,4-	1500 U	1600 U	1600 U	1500 U	1500 U	1500 U	1600 U
Dinitrotoluene,2,4-	1500 U	1600 U	1600 U	1500 U	1500 U	1500 U	1600 U
Dinitrotoluene,2,6-	1500 U	1600 U	1600 U	1500 U	1500 U	1500 U	1600 U
Fluoranthene	1500 U	1600 U	1600 U	1500 U	1500 U	1500 U	1600 U
Fluorene	1500 U	1600 U	1600 U	1500 U	1500 U	1500 U	1600 U
Hexachlorobenzene	1500 U	1600 U	1600 U	1500 U	1500 U	1500 U	1600 U
Hexachlorobutadiene	1500 U	1600 U	1600 U	1500 U	1500 U	1500 U	1600 U

Qualifiers:
J - estimated value
NA - not analyzed
R - result is rejected and unusable
U - not detected
UJ - reported quantitation limit is estimated

SEMIVOLATILE COMPOUNDS DETECTED IN THE SOIL AND SEDIMENT
SITE 1 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	01 SS 101	01 SS 102	01 SS 103	01 SS 104	01 SS 105DUP	01 SS 106	01 SS 107
UNITS	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Hexachlorocyclopentadiene	1500 U	1600 U	1600 U	1500 U	1500 U	1500 U	1600 U
Hexachloroethane	1500 U	1600 U	1600 U	1500 U	1500 U	1500 U	1600 U
Indeno(1,2,3-cd)pyrene	1500 U	1600 U	1600 U	1500 U	1500 U	1500 U	1600 U
Isophorone	1500 U	1600 U	1600 U	1500 U	1500 U	1500 U	1600 U
Methylnaphthalene,2-	1500 U	1600 U	1600 U	1500 U	1500 U	1500 U	1600 U
Methylphenol,2-	1500 U	1600 U	1600 U	1500 U	1500 U	1500 U	1600 U
Methylphenol,4-	1500 U	1600 U	1600 U	1500 U	1500 U	1500 U	1600 U
N-nitrosodi-n-propylamine	1500 U	1600 U	1600 U	1500 U	1500 U	1500 U	1600 U
N-nitrosodiphenylamine	1500 U	1600 U	1600 U	1500 U	1500 U	1500 U	1600 U
Naphthalene	1500 U	1600 U	1600 U	1500 U	1500 U	1500 U	1600 U
Nitroaniline,2-	1500 U	1600 U	1600 U	1500 U	1500 U	1500 U	1600 U
Nitroaniline,3-	1500 U	1600 U	1600 U	1500 U	1500 U	1500 U	1600 U
Nitroaniline,4-	1500 U	1600 U	1600 U	1500 U	1500 U	1500 U	1600 U
Nitrobenzene	1500 U	1600 U	1600 U	1500 U	1500 U	1500 U	1600 U
Nitrophenol,2-	1500 U	1600 U	1600 U	1500 U	1500 U	1500 U	1600 U
Nitrophenol,4-	1500 U	1600 U	1600 U	1500 U	1500 U	1500 U	1600 U
Pentachlorophenol	1500 U	1600 U	1600 U	1500 U	1500 U	1500 U	1600 U
Phenanthrene	1500 U	1600 U	1600 U	1500 U	1500 U	1500 U	1600 U
Phenol	1500 U	1600 U	1600 U	1500 U	1500 U	1500 U	1600 U
Pyrene	1500 U	1600 U	1600 U	1500 U	1500 U	1500 U	1600 U
Trichlorobenzene,1,2,4-	1500 U	1600 U	1600 U	1500 U	1500 U	1500 U	1600 U
Trichlorophenol,2,4,5-	1500 U	1600 U	1600 U	1500 U	1500 U	1500 U	1600 U
Trichlorophenol,2,4,6-	1500 U	1600 U	1600 U	1500 U	1500 U	1500 U	1600 U

Qualifiers:
J - estimated value
NA - not analyzed
R - result is rejected and unusable
U - not detected
UJ - reported quantitation limit is estimated

INORGANIC CHEMICALS DETECTED IN THE SOIL AND SEDIMENT
SITE 1 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	01 SS 101		01 SS 102		01 SS 103		01 SS 104		01 SS 105DUP		01 SS 106		01 SS 107	
UNITS	mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg	
Aluminum	13300		11400		11800		7810		10000		12600		13400	
Antimony		R		R		R		R		R		R		R
Arsenic	0.71	U	0.73	U	0.73	U	0.7	U	0.97	B	0.74	U	0.74	U
Barium	131		91.7		99.3		70.3		70.2		101		107	
Beryllium	0.19	B	0.36	B	0.55	B	0.17	B	0.3	B	0.71	B	0.74	B
Cadmium	0.66	U	0.74	B	0.97	B	0.66	B	0.98	B	1.5		1.6	
Calcium	5630		5440		8700		5720		7070		5720		5770	
Chromium	42.1		62.1		45.7		25.2		37		53.5		51.1	
Cobalt	13.9		18.4		19.3		14.6		13.1		24.1		23.7	
Copper	24.5	J	44.4	J	39.8	J	26	J	36.4	J	58.4	J	49	J
Iron	13200		19100		24100		15000		21200		27200		27400	
Lead	0.42	UJ	0.44	UJ	8.2		7.1		33.6		8.7		23.1	
Magnesium	7140		9920		7050		6320		6130		6700		6570	
Manganese	509		690		1040		622		608		769		914	
Mercury	0.09	U	0.12	U	0.1	U	0.1	U	0.11	U	0.12	U	0.12	U
Nickel	35.5		40.1		26.3		17.1		20.6		28.6		27.8	
Potassium	302		181		619		934		1110		562		624	
Selenium	0.57	UJ	0.58	UJ	0.59	UJ	0.56	UJ	0.92	J	0.59	UJ	0.59	UJ
Silver	1.7	J	1.5	UJ	1.5	UJ	1.7	J	1.7	J	2.3	J	1.6	J
Sodium	562	B	508	B	691	B	376	B	532	B	870	B	843	B
Thallium	0.35	UJ	0.36	UJ	0.37	UJ	0.35	UJ	0.36	UJ	0.37	UJ	0.37	UJ
Vanadium	34.4	J	63.7	J	91.4	J	54.8	J	70.9	J	118	J	120	J
Zinc	23.7	J	35.3	J	56.6	J	50.8	J	58.2	J	62.8	J	137	J
Cyanide	0.12	U	0.12	U	0.12	U	0.12	U	0.12	U	0.12	U	0.12	U

Qualifiers:
B - value is greater than the Instrument Detection Limit but less than the Contract Required Detection Limit
J - estimated value
NA - not analyzed
R - result is rejected and unusable
U - not detected
UJ - reported quantitation limit is estimated

VOLATILE ORGANIC COMPOUNDS DETECTED IN THE SOIL AND SEDIMENT
SITE 1 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	01 SS 108	01 SS 109	01SED 111
UNITS	ug/Kg	ug/Kg	ug/Kg
Acetone	10 U	72	54
Benzene	6 U	6 U	6 U
Bromodichloromethane	6 U	6 U	6 U
Bromoform	6 U	6 U	6 U
Bromomethane	12 U	11 U	11 U
Butanone,2-	12 U	11 U	11 U
Carbon disulfide	2 J	29	5 U
Carbon tetrachloride	6 U	6 U	6 U
Chlorobenzene	6 U	6 UJ	6 U
Chloroethane	12 U	11 U	11 U
Chloroform	6 U	6 U	6 U
Chloromethane	12 U	11 U	11 U
Dibromochloromethane	6 U	6 U	6 U
Dichloroethane,1,1-	6 U	6 U	6 U
Dichloroethane,1,2-	6 U	6 U	6 U
Dichloroethene,1,1-	6 U	6 U	6 U
Dichloroethene,1,2-(cis)	6 U	6 U	6 U
Dichloroethene,1,2-(trans)	6 U	6 U	6 U
Dichloropropane,1,2-	6 U	6 U	6 U
Dichloropropene,cis,1,3-	6 U	6 U	6 U
Dichloropropene,trans-1,3-	6 U	6 U	6 U
Ethylbenzene	6 U	6 UJ	6 U
Hexanone,2-	12 U	11 UJ	11 U
Methyl-2-pentanone,4-	12 U	11 UJ	11 U
Methylene chloride	24 U	45 U	14 U
Styrene	6 U	6 UJ	6 U
Tetrachloroethane,1,1,2,2-	6 U	6 UJ	6 U
Tetrachloroethene	6 U	6 UJ	6 U
Toluene	10 U	32 J	6 U
Trichloroethane,1,1,1-	6 U	6 U	6 U
Trichloroethane,1,1,2-	6 U	6 U	6 U
Trichloroethene	6 U	6 U	6 U
Vinyl acetate	12 U	11 U	11 U
Vinyl chloride	12 U	11 U	11 U
Xylene, o-	6 U	6 UJ	6 U
Xylenes, m-, p-	6 U	6 UJ	6 U

J - estimated value
NA - not analyzed
R - result is rejected and unusable
U - not detected
UJ - reported quantitation limit is estimated

PESTICIDES/PCBs COMPOUNDS DETECTED IN THE SOIL AND SEDIMENT
SITE 1 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	01SS109	01SS110C	01SS110D	01SS110E	01SED111
UNITS	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Aldrin	0.2 UJ	0.22 UJ	0.2 UJ	0.26 UJ	0.23 UJ
Aroclor-1016	3.9 UJ	4.2 UJ	3.9 UJ	5 UJ	4.5 UJ
Aroclor-1221	8 UJ	8.6 UJ	7.9 UJ	10 UJ	9 UJ
Aroclor-1232	3.9 UJ	4.2 UJ	3.9 UJ	5 UJ	4.5 UJ
Aroclor-1242	3.9 UJ	4.2 UJ	3.9 UJ	5 UJ	4.5 UJ
Aroclor-1248	3.9 UJ	4.2 UJ	3.9 UJ	5 UJ	4.5 UJ
Aroclor-1254	3.9 UJ	4.2 UJ	3.9 UJ	5 UJ	4.5 UJ
Aroclor-1260	3.9 UJ	4.2 UJ	3.9 UJ	5 UJ	4.5 UJ
BHC,alpha-	0.2 UJ	0.22 UJ	0.2 UJ	0.26 UJ	0.23 UJ
BHC,beta-	0.2 UJ	0.22 UJ	0.2 UJ	0.26 UJ	0.23 UJ
BHC,delta-	0.2 UJ	0.22 UJ	0.2 UJ	0.26 UJ	0.23 UJ
BHC,gamma-	0.2 UJ	0.22 UJ	0.2 UJ	0.26 UJ	0.23 UJ
Chlordane,alpha-	0.2 UJ	0.22 UJ	0.2 UJ	0.43 J	0.23 UJ
Chlordane,gamma-	0.2 UJ	0.22 UJ	0.2 UJ	0.26 UJ	0.23 UJ
DDD,4,4-	0.39 UJ	0.42 UJ	0.39 UJ	17 J	0.45 UJ
DDE,4,4-	0.39 UJ	0.42 UJ	0.39 UJ	1.7 J	0.45 UJ
DDT,4,4-	0.69 UJ	0.42 UJ	0.39 UJ	1 UJ	0.57 UJ
Dieldrin	0.39 UJ	0.42 UJ	0.39 UJ	0.5 UJ	0.45 UJ
Endosulfan I	0.2 UJ	0.22 UJ	0.2 UJ	0.26 UJ	0.23 UJ
Endosulfan II	0.39 UJ	0.42 UJ	0.39 UJ	0.5 UJ	0.45 UJ
Endosulfan sulfate	0.39 UJ	0.42 UJ	0.39 UJ	0.5 UJ	0.45 UJ
Endrin	0.39 UJ	0.42 UJ	0.39 UJ	0.5 UJ	0.45 UJ
Endrin aldehyde	0.39 UJ	0.42 UJ	0.39 UJ	0.5 UJ	0.45 UJ
Endrin ketone	0.39 UJ	0.42 UJ	0.39 UJ	0.5 UJ	0.45 UJ
Heptachlor	0.2 UJ	0.22 UJ	0.2 UJ	0.26 UJ	0.23 UJ
Heptachlor epoxide	0.2 UJ	0.22 UJ	0.2 UJ	0.26 UJ	0.23 UJ
Methoxychlor	10 UJ	2.2 UJ	2 UJ	2.6 UJ	2.3 UJ
Toxaphene	20 UJ	22 UJ	20 UJ	26 UJ	23 UJ

Qualifiers:
J - estimated value
NA - not analyzed
R - result is rejected and unusable
U - not detected
UJ - reported quantitation limit is estimated

SEMIVOLATILE COMPOUNDS DETECTED IN THE SOIL AND SEDIMENT
SITE 1 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	01 SS 108		01 SS 109		01 SED 111	
UNITS	ug/Kg		ug/Kg		ug/Kg	
Acenaphthene	1500	U	1400	U	1400	U
Acenaphthylene	1500	U	1400	U	1400	U
Anthracene	1500	U	1400	U	1400	U
Benzo(a)anthracene	1500	U	1400	U	1400	U
Benzo(a)pyrene	1500	U	1400	U	1400	U
Benzo(b)fluoranthene	1500	U	1400	U	1400	U
Benzo(g,h,i)perylene	1500	U	1400	U	1400	U
Benzo(k)fluoranthene	1500	U	1400	U	1400	U
Bis(2-chloroethoxy)methane	1500	U	1400	U	1400	U
Bis(2-chloroethyl)ether	1500	U	1400	U	1400	U
Bis(2-chloroisopropyl)ether	1500	U	1400	U	1400	U
Bis(2-ethylhexyl)phthalate	430	J	490	J	800	J
Bromophenyl-phenylether,4-	1500	U	1400	U	1400	U
Butylbenzylphthaalte	1500	U	1400	U	100	J
Carbazole	1500	U	1400	U	1400	U
Chloro-3-methylphenol,4-	1500	U	1400	U	1400	U
Chloroaniline,4-	1500	U	1400	U	1400	U
Chloronaphthalene,2-	1500	U	1400	U	1400	U
Chloropehnyl-phenylether,4-	1500	U	1400	U	1400	U
Chlorophenol,2-	1500	U	1400	U	1400	U

Qualifiers:
J - estimated value
NA - not analyzed
R - result is rejected and unusable
U - not detected
UJ - reported quantitation limit is estimated

SEMIVOLATILE COMPOUNDS DETECTED IN THE SOIL AND SEDIMENT
SITE 1 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	01 SS 108	01 SS 109	01 SED 111
UNITS	ug/Kg	ug/Kg	ug/Kg
Chrysene	1500 U	1400 U	1400 U
Di-n-butylphthalate	260 J	290 J	280 J
Di-n-octylphthalate	1500 U	1400 U	1400 U
Dibenzo(a,h)anthracene	1500 U	1400 U	1400 U
Dibenzofuran	1500 U	1400 U	1400 U
Dichlorobenzene,1,2-	1500 U	1400 U	1400 U
Dichlorobenzene,1,3-	1500 U	1400 U	1400 U
Dichlorobenzene,1,4-	1500 U	1400 U	1400 U
Dichlorobenzidine,3,3-	1500 U	1400 U	1400 U
Dichlorophenol,2,4-	1500 U	1400 U	1400 U
Diethylphthalate	1500 U	1400 U	1400 U
Dimethylphenol,2,4-	1500 U	1400 U	1400 U
Dimethylphthalate	1500 U	1400 U	1400 U
Dinitro-2-methylphenol,4,6-	1500 U	1400 U	1400 U
Dinitrophenol,2,4-	1500 U	1400 U	1400 U
Dinitrotoluene,2,4-	1500 U	1400 U	1400 U
Dinitrotoluene,2,6-	1500 U	1400 U	1400 U
Fluoranthene	1500 U	1400 U	1400 U
Fluorene	1500 U	1400 U	1400 U
Hexachlorobenzene	1500 U	1400 U	1400 U
Hexachlorobutadiene	1500 U	1400 U	1400 U

Qualifiers:
J - estimated value
NA - not analyzed
R - result is rejected and unusable
U - not detected
UJ - reported quantitation limit is estimated

SEMIVOLATILE COMPOUNDS DETECTED IN THE SOIL AND SEDIMENT
SITE 1 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	01 SS 108	01 SS 109	01 SED 111
UNITS	ug/Kg	ug/Kg	ug/Kg
Hexachlorocyclopentadiene	1500 U	1400 U	1400 U
Hexachloroethane	1500 U	1400 U	1400 U
Indeno(1,2,3-cd)pyrene	1500 U	1400 U	1400 U
Isophorone	1500 U	1400 U	1400 U
Methylnaphthalene,2-	1500 U	1400 U	1400 U
Methylphenol,2-	1500 U	1400 U	1400 U
Methylphenol,4-	1500 U	1400 U	1400 U
N-nitrosodi-n-propylamine	1500 U	1400 U	1400 U
N-nitrosodiphenylamine	1500 U	1400 U	1400 U
Naphthalene	1500 U	1400 U	1400 U
Nitroaniline,2-	1500 U	1400 U	1400 U
Nitroaniline,3-	1500 U	1400 U	1400 U
Nitroaniline,4-	1500 U	1400 U	1400 U
Nitrobenzene	1500 U	1400 U	1400 U
Nitrophenol,2-	1500 U	1400 U	1400 U
Nitrophenol,4-	1500 U	1400 U	1400 U
Pentachlorophenol	1500 U	1400 U	1400 U
Phenanthrene	1500 U	1400 U	1400 U
Phenol	1500 U	1400 U	1400 U
Pyrene	1500 U	1400 U	1400 U
Trichlorobenzene,1,2,4-	1500 U	1400 U	1400 U
Trichlorophenol,2,4,5-	1500 U	1400 U	1400 U
Trichlorophenol,2,4,6-	1500 U	1400 U	1400 U

Qualifiers:
J - estimated value
NA - not analyzed
R - result is rejected and unusable
U - not detected
UJ - reported quantitation limit is estimated

INORGANIC CHEMICALS DETECTED IN THE SOIL AND SEDIMENT
SITE 1 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	01 SS 108		01 SS 109		01 SS 110 C		01 SS 110 D		01 SS 110 E		01-SED-111	
UNITS	mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg	
Aluminum	11400		17200		19500		16400		18200		6390	
Antimony	29.7	J		R		R		R		R		R
Arsenic	0.69	UJ	0.67	U	0.64	U	0.64	U	0.78	U	0.67	U
Barium	49.5		66.8		139		45.4		89.9		48.7	
Beryllium	0.4	B	0.49	B	0.79	B	0.21	B	0.89	B	0.31	B
Cadmium	1.1	B	1.6		1.7		0.79	B	2		0.66	B
Calcium	3940		6420		7190		6130		6500		2310	
Chromium	43.4		58.9		6.1		63.4		20.8		24.9	
Cobalt	15		20.6		17.5		19.3		15.7		17.1	
Copper	30.4	J	49.3	J	75.1	J	114	J	66.6	J	25.4	J
Iron	24800		50800		47100		20400		47700		19900	
Lead	2.1		1.5		0.55	J	0.38	U	0.47	U	2.4	
Magnesium	6670		8860		12200		15200		10500		5570	
Manganese	658		554		839		298		675		795	
Mercury	0.11	U	0.1	U	0.1	U	0.08	U	0.12	U	0.1	U
Nickel	16.1		24.7		11.1		62.4		11.1		12.3	
Potassium	778		686		1990		692		382		799	
Selenium	0.56	UJ	0.53	UJ	0.51	UJ	0.51	UJ	0.63	UJ	0.54	UJ
Silver	1.9	J	2.3	J	1.3	UJ	2.7	J	1.6	UJ	1.4	UJ
Sodium	639	B	1110		1180		631	B	1120	B	395	B
Thallium	0.35	UJ	0.33	UJ	0.32	UJ	0.32	UJ	0.39	UJ	0.33	UJ
Vanadium	83.3	J	138	J	131	J	38.4	J	146	J	63.5	J
Zinc	72.9	J	41.6	J	71.7	J	20.2	J	55.9	J	29.2	J
Cyanide	0.12	U	0.11	U	0.11	U	0.11	U	0.13	U	0.11	U

Qualifiers:
B - value is greater than the Instrument Detection Limit but less than the Contract Required Detection Limit
J - estimated value
NA - not analyzed
R - result is rejected and unusable
U - not detected
UJ - reported quantitation limit is estimated

VOLATILE ORGANIC COMPOUNDS DETECTED IN THE SOIL, SEDIMENT AND TAR
SITE 2 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	02 SS 112	02 SS 113	02 SS 114	02 SS 115	02 SS 116	02 SS 117
UNITS	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Acetone	110 U	280 U	220 U	160 U	39 U	47 U
Benzene	6 U	7 U	6 U	7 U	7 U	7 U
Bromodichloromethane	6 U	7 U	6 U	7 U	7 U	7 U
Bromoform	6 U	7 U	6 U	7 U	7 U	7 U
Bromomethane	13 U	14 U	13 U	15 U	13 U	14 U
Butanone,2-	13 U	14 U	13 U	15 U	13 UJ	14 UJ
Carbon disulfide	6 U	7 U	6 U	6 J	7 U	7 U
Carbon tetrachloride	6 U	7 U	6 U	7 U	7 U	7 U
Chlorobenzene	6 U	7 U	6 U	7 U	7 U	7 U
Chloroethane	13 U	14 U	13 U	15 U	13 U	14 U
Chloroform	6 U	7 U	6 U	7 U	7 U	7 U
Chloromethane	13 U	14 U	13 U	15 U	13 U	14 U
Dibromochloromethane	6 U	7 U	6 U	7 U	7 U	7 U
Dichloroethane,1,1-	6 U	7 U	6 U	7 U	7 U	7 U
Dichloroethane,1,2-	6 U	7 U	6 U	7 U	7 U	7 U
Dichloroethene,1,1-	6 U	7 U	6 U	7 U	7 U	7 U
Dichloroethene,1,2-cis	6 U	7 U	6 U	7 U	7 U	7 U
Dichloroethene,1,2-trans	6 U	7 U	6 U	7 U	7 U	7 U
Dichloropropane,1,2-	6 U	7 U	6 U	7 U	7 U	7 U
Dichloropropene,cis,1,3-	6 U	7 U	6 U	7 U	7 U	7 U
Dichloropropene,trans-1,3-	6 U	7 U	6 U	7 U	7 U	7 U
Ethylbenzene	6 U	7 U	6 U	7 U	7 U	7 U
Hexanone,2-	13 U	14 U	13 U	15 U	13 U	14 U
Methyl-2-pentanone,4-	13 U	14 U	13 U	15 U	13 U	14 U
Methylene chloride	8 U	21 U	27 U	18 U	36 U	43 U
Styrene	6 U	7 U	6 U	7 U	7 U	7 U
Tetrachloroethane,1,1,2,2-	6 U	7 U	6 U	7 U	7 U	7 U
Tetrachloroethene	6 U	7 U	6 U	7 U	7 U	7 U
Toluene	6 U	7 U	6 U	7 U	7 U	7 U
Trichloroethane,1,1,1-	6 U	7 U	6 U	7 U	7 U	7 U
Trichloroethane,1,1,2-	6 U	7 U	6 U	7 U	7 U	7 U
Trichloroethene	6 U	7 U	6 U	7 U	7 U	7 U
Vinyl acetate	13 U	14 U	13 U	15 U	13 U	14 U
Vinyl chloride	13 U	14 U	13 U	15 U	13 U	14 U
Xylenes, m-, p-	6 U	7 U	6 U	7 U	7 U	7 U
Xylenes, o-	6 U	7 U	6 U	7 U	7 U	7 U

D - parameter identified in an analysis at a secondary dilution factor
E - concentration exceeds calibration range of GC/MS instrument
J - estimated value
U - not detected
UJ - reported quantitation limit is estimated

VOLATILE ORGANIC COMPOUNDS DETECTED IN THE SOIL, SEDIMENT AND TAR
SITE 2 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	02 SS 112	02 SS 113	02 SS 114	02 SS 115	02 SS 116	02 SS 117
UNITS	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Acetone	110 U	280 U	220 U	160 U	39 U	47 U
Benzene	6 U	7 U	6 U	7 U	7 U	7 U
Bromodichloromethane	6 U	7 U	6 U	7 U	7 U	7 U
Bromoform	6 U	7 U	6 U	7 U	7 U	7 U
Bromomethane	13 U	14 U	13 U	15 U	13 U	14 U
Butanone,2-	13 U	14 U	13 U	15 U	13 UJ	14 UJ
Carbon disulfide	6 U	7 U	6 U	6 J	7 U	7 U
Carbon tetrachloride	6 U	7 U	6 U	7 U	7 U	7 U
Chlorobenzene	6 U	7 U	6 U	7 U	7 U	7 U
Chloroethane	13 U	14 U	13 U	15 U	13 U	14 U
Chloroform	6 U	7 U	6 U	7 U	7 U	7 U
Chloromethane	13 U	14 U	13 U	15 U	13 U	14 U
Dibromochloromethane	6 U	7 U	6 U	7 U	7 U	7 U
Dichloroethane,1,1-	6 U	7 U	6 U	7 U	7 U	7 U
Dichloroethane,1,2-	6 U	7 U	6 U	7 U	7 U	7 U
Dichloroethene,1,1-	6 U	7 U	6 U	7 U	7 U	7 U
Dichloroethene,1,2-cis	6 U	7 U	6 U	7 U	7 U	7 U
Dichloroethene,1,2-trans	6 U	7 U	6 U	7 U	7 U	7 U
Dichloropropane,1,2-	6 U	7 U	6 U	7 U	7 U	7 U
Dichloropropene,cis,1,3-	6 U	7 U	6 U	7 U	7 U	7 U
Dichloropropene,trans-1,3-	6 U	7 U	6 U	7 U	7 U	7 U
Ethylbenzene	6 U	7 U	6 U	7 U	7 U	7 U
Hexanone,2-	13 U	14 U	13 U	15 U	13 U	14 U
Methyl-2-pentanone,4-	13 U	14 U	13 U	15 U	13 U	14 U
Methylene chloride	8 U	21 U	27 U	18 U	36 U	43 U
Styrene	6 U	7 U	6 U	7 U	7 U	7 U
Tetrachloroethane,1,1,2,2-	6 U	7 U	6 U	7 U	7 U	7 U
Tetrachloroethene	6 U	7 U	6 U	7 U	7 U	7 U
Toluene	6 U	7 U	6 U	7 U	7 U	7 U
Trichloroethane,1,1,1-	6 U	7 U	6 U	7 U	7 U	7 U
Trichloroethane,1,1,2-	6 U	7 U	6 U	7 U	7 U	7 U
Trichloroethene	6 U	7 U	6 U	7 U	7 U	7 U
Vinyl acetate	13 U	14 U	13 U	15 U	13 U	14 U
Vinyl chloride	13 U	14 U	13 U	15 U	13 U	14 U
Xylenes, m-, p-	6 U	7 U	6 U	7 U	7 U	7 U
Xylenes, o-	6 U	7 U	6 U	7 U	7 U	7 U

D - parameter identified in an analysis at a secondary dilution factor
E - concentration exceeds calibration range of GC/MS instrument
J - estimated value
U - not detected
UJ - reported quantitation limit is estimated

SEMIVOLATILE COMPOUNDS DETECTED IN THE SOIL, SEDIMENT, AND TAR
SITE 2 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	02 SS 112		02 SS 113		02 SS 114		02 SS 115		02 SS 116		02 SS 117	
UNITS	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Acenaphthene	1600	U	1900	U	1700	U	1900	U	1700	U	1800	U
Acenaphthylene	1600	U	1900	U	1700	U	1900	U	1700	U	1800	U
Anthracene	1600	U	1900	U	1700	U	1900	U	1700	U	1800	U
Benzo(a)anthracene	1600	U	1900	U	1700	U	1900	U	1700	U	1800	U
Benzo(a)pyrene	1600	U	1900	U	1700	U	1900	U	1700	U	1800	U
Benzo(b)fluoranthene	1600	U	1900	U	1700	U	1900	U	1700	U	1800	U
Benzo(g,h,i)perylene	1600	U	1900	U	1700	U	1900	U	1700	U	1800	U
Benzo(k)fluoranthene	1600	U	1900	U	1700	U	1900	U	1700	U	1800	U
Bis(2-chloroethoxy)methane	1600	U	1900	U	1700	U	1900	U	1700	U	1800	U
Bis(2-chloroethyl)ether		R	1900	U	1700	U	1900	U	1700	U	1800	U
Bis(2-chloroisopropyl)ether		R	1900	U	1700	U	1900	U	1700	U	1800	U
Bis(2-ethylhexyl)phthalate	1600	U	230	J	310	J	260	J	220	J	380	J
Bromophenyl-phenylether,4-		R	1900	U	1700	U	1900	U	1700	U	1800	U
Butylbenzylphthaalte	1600	U	1900	U	1700	U	1900	U	1700	U	1800	U
Carbazole	1600	U	1900	U	1700	U	1900	U	1700	U	1800	U
Chloro-3-methylphenol,4-		R	1900	U	1700	U	1900	U	1700	U	1800	U
Chloroaniline,4-	1600	U	1900	U	1700	U	1900	U	1700	U	1800	U
Chloronaphthalene,2-	1600	U	1900	U	1700	U	1900	U	1700	U	1800	U
Chloropehnyl-phenylether,4-		R	1900	U	1700	U	1900	U	1700	U	1800	U
Chlorophenol,2-		R	1900	U	1700	U	1900	U	1700	U	1800	U
Chrysene	1600	U	1900	U	1700	U	1900	U	1700	U	1800	U

QUALIFIERS:

J - estimated value

R - result is rejected and unusable

U - not detected

SEMIVOLATILE COMPOUNDS DETECTED IN THE SOIL, SEDIMENT, AND TAR
SITE 2 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	02 SS 112	02 SS 113	02 SS 114	02 SS 115	02 SS 116	02 SS 117
UNITS	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Di-n-butylphthalate	1600 U	1900 U	1700 U	1900 U	1700 U	1800 U
Di-n-octylphthalate	1600 U	1900 U	1700 U	1900 U	1700 U	1800 U
Dibenzo(a,h)anthracene	1600 U	1900 U	1700 U	1900 U	1700 U	1800 U
Dibenzofuran	1600 U	1900 U	1700 U	1900 U	1700 U	1800 U
Dichlorobenzene,1,2-	1600 U	1900 U	1700 U	1900 U	1700 U	1800 U
Dichlorobenzene,1,3-	1600 U	1900 U	1700 U	1900 U	1700 U	1800 U
Dichlorobenzene,1,4-	1600 U	1900 U	1700 U	1900 U	1700 U	1800 U
Dichlorobenzidine,3,3-	1600 U	1900 U	1700 U	1900 U	1700 U	1800 U
Dichlorophenol,2,4-	R	1900 U	1700 U	1900 U	1700 U	1800 U
Diethylphthalate	1600 U	1900 U	1700 U	1900 U	1700 U	1800 U
Dimethylphenol,2,4-	R	1900 U	1700 U	1900 U	1700 U	1800 U
Dimethylphthalate	1600 U	1900 U	1700 U	1900 U	1700 U	1800 U
Dinitro-2-methylphenol,4,6-	R	4800 U	4300 U	4800 U	4300 U	4500 U
Dinitrophenol,2,4-	R	4800 U	4300 U	4800 U	4300 U	4500 U
Dinitrotoluene,2,4-	1600 U	1900 U	1700 U	1900 U	1700 U	1800 U
Dinitrotoluene,2,4-	1600 U	1900 U	1700 U	1900 U	1700 U	1800 U
Fluoranthene	1600 U	1900 U	1700 U	1900 U	1700 U	1800 U
Fluorene	1600 U	1900 U	1700 U	1900 U	1700 U	1800 U
Hexachlorobenzene	1600 U	1900 U	1700 U	1900 U	1700 U	1800 U

QUALIFIERS:
J - estimated value
R - result is rejected and unusable
U - not detected

SEMIVOLATILE COMPOUNDS DETECTED IN THE SOIL, SEDIMENT, AND TAR
SITE 2 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	02 SS 112	02 SS 113	02 SS 114	02 SS 115	02 SS 116	02 SS 117
UNITS	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Hexachlorobutadiene	1600 U	1900 U	1700 U	1900 U	1700 U	1800 U
Hexachlorocyclopentadiene	1600 U	1900 U	1700 U	1900 U	1700 U	1800 U
Hexachloroethane	1600 U	1900 U	1700 U	1900 U	1700 U	1800 U
Indeno(1,2,3-cd)pyrene	1600 U	1900 U	1700 U	1900 U	1700 U	1800 U
Isophorone	1600 U	1900 U	1700 U	1900 U	1700 U	1800 U
Methylnaphthalene,2-	1600 U	1900 U	1700 U	1900 U	1700 U	1800 U
Methylphenol,2-	R	1900 U	1700 U	1900 U	1700 U	1800 U
Methylphenol,4-	R	1900 U	1700 U	1900 U	1700 U	1800 U
N-nitrosodi-n-propylamine	R	1900 U	1700 U	1900 U	1700 U	1800 U
N-nitrosodiphenylamine	R	1900 U	1700 U	1900 U	1700 U	1800 U
Naphthalene	1600 U	1900 U	1700 U	1900 U	1700 U	1800 U
Nitroaniline,2-	4000 U	4800 U	4300 U	4800 U	4300 U	4500 U
Nitroaniline,3-	4000 U	4800 U	4300 U	4800 U	4300 U	4500 U
Nitroaniline,4-	4000 U	4800 U	4300 U	4800 U	4300 U	4500 U
Nitrobenzene	1600 U	1900 U	1700 U	1900 U	1700 U	1800 U
Nitrophenol,2-	R	1900 U	1700 U	1900 U	1700 U	1800 U
Nitrophenol,4-	R	4800 U	4300 U	4800 U	4300 U	4500 U
Pentachlorophenol	R	4800 U	4300 U	4800 U	4300 U	4500 U
Phenanthrene	1600 U	1900 U	1700 U	1900 U	1700 U	1800 U
Phenol	R	1900 U	1700 U	1900 U	1700 U	1800 U
Pyrene	1600 U	1900 U	1700 U	1900 U	1700 U	1800 U
Trichlorobenzene,1,2,4-	1600 U	1900 U	1700 U	1900 U	1700 U	1800 U
Trichlorophenol,2,4,5-	R	4800 U	4300 U	4800 U	4300 U	4500 U
Trichlorophenol,2,4,6-	R	1900 U	1700 U	1900 U	1700 U	1800 U

QUALIFIERS:
J - estimated value
R - result is rejected and unusable
U - not detected

INORGANIC CHEMICALS DETECTED IN THE SOIL, SEDIMENT AND TAR
SITE 2 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	02 SS 112		02 SS 113		02 SS 114		02 SS 115		02 SS 116		02 SS 117	
UNITS	mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg	
Aluminum	1490		941		1380		929		2800		4040	
Antimony		R		R		R		R		R	13.1	UJ
Arsenic	0.75	U	1.7	B	2	J	1.5	J	1.1	J	1.3	J
Barium	8.8	U	10.2	U	8.9	U	10.3	U	14.1		14.4	B
Beryllium	0.15	U	0.17	U	0.15	U	0.18	U	0.16	U	0.24	B
Cadmium	0.7	U	0.81	U	0.71	U	0.82	U	0.74	U	1.5	UJ
Calcium	168000		204000		115000		142000		103000		96500	
Chromium	4.4		4.2		5.2		4		9.9		19.4	
Cobalt	2.4	U	2.8	U	2.4	U	2.8	U	2.5	U	3.3	B
Copper	3.9	J	1.5	J	6.8	J	1.5	UJ	6.5	J	4.7	B
Cyanide	0.13	U	0.15	U	0.13	U	0.15	U	0.13	U	0.14	U
Iron	2830		3060		6080		2960		5550		5890	J
Lead	4.8		0.52	U	9.8		0.53	UJ	1.7	J	2.4	J
Magnesium	3110		3160		2440		2030		3350		3900	
Manganese	88.2		49.4		121		69.6		277		218	
Mercury	0.11	U	0.14	U	0.13	U	0.13	U	0.13	U	0.12	U
Nickel	4.7	U	5.4	U	4.7	U	5.5	U	7.8	B	7.3	
Potassium	652		533		731		749		426		822	J
Selenium	0.6	UJ	0.7	UJ	0.61	UJ	0.7	UJ	0.63	UJ	0.67	U
Silver	1.6	UJ	1.8	UJ	1.6	UJ	1.8	UJ	1.7	UJ	1.8	U
Sodium	6140		8980		9460		10600		2560		3380	J
Thallium	0.38	UJ	0.44	UJ	0.38	UJ	0.44	UJ	0.39	UJ	0.42	U
Vanadium	8.9	J	9.9	J	10.3	J	12.5	J	14	J	21.5	
Zinc	10.9	J	3.9	J	18.2	J	3.5	UJ	13.7	J	15.4	

QUALIFIERS:

B - value is greater than the Instrument Detection Limit but less than the Contract Required Detection Limit

J - estimated value

R - result is rejected and unusable

U - not detected

UJ - reported quantitation limit is estimated

VOLATILE ORGANIC COMPOUNDS DETECTED IN THE SOIL, SEDIMENT AND TAR
SITE 2 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	02 SS 118DUP	02 SED 122	02 SED 123	02 SED 124	02 TAR 120	02 TAR 121DUP
UNITS	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Acetone	58 UJ	2000 J	510 J	820 E	390 J	1400 J
Benzene	7 U	13 U	6 U	8 U	13 U	13 U
Bromodichloromethane	7 U	13 U	6 U	8 U	13 U	13 U
Bromoform	7 U	13 U	6 U	8 U	13 U	13 U
Bromomethane	14 U	25 U	13 U	15 U	26 U	26 U
Butanone,2-	14 UJ	25 U	13 U	15 U	26 U	110
Carbon disulfide	5 J	70	6 U	8 U	20 UJ	13 UJ
Carbon tetrachloride	7 U	13 U	6 U	8 U	13 U	13 U
Chlorobenzene	7 U	13 UJ	6 UJ	8 U	13 U	13 UJ
Chloroethane	14 U	25 U	13 U	15 U	26 U	26 U
Chloroform	7 U	13 U	6 U	8 U	13 U	13 U
Chloromethane	14 U	25 U	13 U	15 U	26 U	26 U
Dibromochloromethane	7 U	13 U	6 U	8 U	13 U	13 U
Dichloroethane,1,1-	7 U	13 U	6 U	8 U	13 U	13 U
Dichloroethane,1,2-	7 U	13 U	6 U	8 U	13 U	13 U
Dichloroethene,1,1-	7 U	13 U	6 U	8 U	13 U	13 U
Dichloroethene,1,2-cis	7 U	13 U	6 U	8 U	13 U	13 U
Dichloroethene,1,2-trans	7 U	13 U	6 U	8 U	13 U	13 U
Dichloropropane,1,2-	7 U	13 U	6 U	8 U	13 U	13 U
Dichloropropene,cis,1,3-	7 U	13 U	6 U	8 U	13 U	13 U
Dichloropropene,trans-1,3-	7 U	13 U	6 U	8 U	13 U	13 U
Ethylbenzene	7 U	13 UJ	6 UJ	8 U	13 U	13 UJ
Hexanone,2-	14 U	25 UJ	13 UJ	15 U	26 UJ	26 UJ
Methyl-2-pentanone,4-	14 U	25 UJ	13 UJ	15 U	26 UJ	26 UJ
Methylene chloride	27 U	1000 J	63 U	100 U	21000 D	4800 J
Styrene	7 U	13 UJ	6 UJ	8 U	13 U	13 UJ
Tetrachloroethane,1,1,2,2-	7 U	13 UJ	6 UJ	8 U	13 U	13 UJ
Tetrachloroethene	7 U	13 UJ	6 UJ	8 U	13 U	13 UJ
Toluene	7 U	13 UJ	6 UJ	8 U	13 U	13 UJ
Trichloroethane,1,1,1-	7 U	13 U	6 U	8 U	13 U	13 U
Trichloroethane,1,1,2-	7 U	13 U	6 U	8 U	13 U	13 U
Trichloroethene	7 U	13 U	6 U	8 U	13 U	13 U
Vinyl acetate	14 U	25 U	13 U	15 U	26 U	26 U
Vinyl chloride	14 U	25 U	13 U	15 U	26 U	26 U
Xylenes, m-, p-	7 U	13 UJ	6 UJ	8 U	13 U	13 UJ
Xylenes, o-	7 U	13 UJ	6 UJ	8 U	13 U	13 UJ

D - parameter identified in an analysis at a secondary dilution factor
E - concentration exceeds calibration range of GC/MS instrument
J - estimated value
U - not detected
UJ - reported quantitation limit is estimated

PESTICIDES/PCBs COMPOUNDS DETECTED IN THE SOIL, SEDIMENT AND TAR
SITE 2 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	02 SS 118DUP	02 SED 122	02 SED 123	02 SED 124	02 TAR 120	02 TAR 121DUP	02 SS 119C
UNITS	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Aldrin	0.28 UJ	0.53 UJ	0.27 UJ	0.32 UJ	0.54 UJ	0.54 UJ	0.27 UJ
Aroclor-1016	5.5 UJ	10 UJ	5.2 UJ	6.3 UJ	11 UJ	10 UJ	5.3 UJ
Aroclor-1221	11 UJ	21 UJ	10 UJ	13 UJ	21 UJ	21 UJ	11 UJ
Aroclor-1232	5.5 UJ	10 UJ	5.2 UJ	6.3 UJ	11 UJ	10 UJ	5.3 UJ
Aroclor-1242	5.5 UJ	10 UJ	5.2 UJ	6.3 UJ	11 UJ	10 UJ	5.3 UJ
Aroclor-1248	5.5 UJ	10 UJ	5.2 UJ	6.3 UJ	11 UJ	10 UJ	5.3 UJ
Aroclor-1254	5.5 UJ	10 UJ	5.2 UJ	6.3 UJ	11 UJ	10 UJ	5.3 UJ
Aroclor-1260	5.5 UJ	10 UJ	5.2 UJ	6.3 UJ	11 UJ	10 UJ	5.3 UJ
BHC,alpha-	0.28 UJ	0.53 UJ	0.27 UJ	0.32 UJ	0.54 UJ	0.54 UJ	0.27 UJ
BHC,beta-	0.28 UJ	0.53 UJ	0.27 UJ	0.32 UJ	0.54 UJ	0.54 UJ	0.27 UJ
BHC,delta-	0.28 UJ	0.53 UJ	0.27 UJ	0.32 UJ	0.54 UJ	0.54 UJ	0.27 UJ
BHC,gamma-	0.28 UJ	0.53 UJ	0.27 UJ	0.32 UJ	0.54 UJ	0.54 UJ	0.27 UJ
Chlordane,alpha-	0.28 UJ	0.53 UJ	0.27 UJ	0.32 UJ	0.54 UJ	0.54 UJ	0.27 UJ
Chlordane,gamma-	0.28 UJ	0.53 UJ	0.27 UJ	0.32 UJ	0.54 UJ	0.99 J	0.27 UJ
DDD,4,4-	0.55 UJ	12 J	3.3 NJ	0.63 UJ	1.1 UJ	2 NJ	0.53 UJ
DDE,4,4-	0.55 UJ	22 J	7.3 J	1.5 NJ	1.6 J	5.8 J	0.53 UJ
DDT,4,4-	0.55 UJ	4 NJ	3.4 NJ	0.63 UJ	1.1 UJ	11 NJ	0.53 UJ
Dieldrin	0.55 UJ	1 UJ	0.52 UJ	0.63 UJ	1.1 UJ	1 UJ	0.53 UJ
Endosulfan I	0.28 UJ	0.53 UJ	0.27 UJ	0.32 UJ	0.54 UJ	0.54 UJ	0.27 UJ
Endosulfan II	0.55 UJ	1 UJ	0.52 UJ	0.63 UJ	1.1 UJ	1 UJ	0.53 UJ
Endosulfan sulfate	0.55 UJ	1 UJ	0.52 UJ	0.63 UJ	1.1 UJ	1 UJ	0.53 UJ
Endrin	0.55 UJ	1 UJ	0.52 UJ	0.63 UJ	1.1 UJ	1 UJ	R
Endrin aldehyde	0.55 UJ	1 UJ	0.52 UJ	7.7 J	1.1 UJ	1 UJ	0.53 UJ
Endrin ketone	0.55 UJ	1 UJ	0.52 UJ	0.63 UJ	1.1 UJ	1 UJ	0.53 UJ
Heptachlor	0.28 UJ	4.8 J	0.27 UJ	0.32 UJ	0.54 UJ	0.54 UJ	0.27 UJ
Heptachlor epoxide	0.28 UJ	0.53 UJ	0.27 UJ	0.32 UJ	0.54 UJ	0.54 UJ	0.27 UJ
Methoxychlor	2.8 UJ	5.3 UJ	2.7 UJ	3.2 UJ	5.4 UJ	5.4 UJ	2.7 UJ
Toxaphene	28 UJ	53 UJ	27 UJ	32 UJ	54 UJ	54 UJ	27 UJ

QUALIFIERS:

J - estimated value

NJ - presumptive evidence for the presence of the parameter at an estimated value

R - result is rejected and unusable

UJ - reported quantitation limit is estimated

SEMIVOLATILE COMPOUNDS DETECTED IN THE SOIL, SEDIMENT, AND TAR
SITE 2 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	02 SS 118DUP	02 SED 122	02 SED 123	02 SED 124	02 TAR 120	02 TAR 121DUP
UNITS	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Acenaphthene	1800 U	3400 U	1500 U	1900 U	3300 U	3200 U
Acenaphthylene	1800 U	3400 U	1500 U	1900 U	3300 U	3200 U
Anthracene	1800 U	3400 U	1500 U	1900 U	3300 U	3200 U
Benzo(a)anthracene	1800 U	3400 U	1500 U	1900 U	260 J	3200 U
Benzo(a)pyrene	1800 U	3400 U	1500 U	1900 U	3300 U	3200 U
Benzo(b)fluoranthene	1800 U	3400 U	1500 U	1900 U	460 J	3200 U
Benzo(g,h,i)perylene	1800 U	3400 U	1500 U	1900 U	3300 U	3200 U
Benzo(k)fluoranthene	1800 U	3400 U	1500 U	1900 U	3300 U	3200 U
Bis(2-chloroethoxy)methane	1800 U	3400 U	1500 U	1900 U	3300 U	3200 U
Bis(2-chloroethyl)ether	1800 U	3400 U	1500 U	1900 U	3300 U	3200 U
Bis(2-chloroisopropyl)ether	1800 U	3400 U	1500 U	1900 U	3300 U	3200 U
Bis(2-ethylhexyl)phthalate	460 J	3400 U	1500 U	1900 U	3300 U	3200 U
Bromophenyl-phenylether,4-	1800 U	3400 U	1500 U	1900 U	3300 U	3200 U
Butylbenzylphthaalte	1800 U	3400 U	1500 U	1900 U	3300 U	3200 U
Carbazole	1800 U	3400 U	1500 U	1900 U	3300 U	3200 U
Chloro-3-methylphenol,4-	1800 U	3400 U	1500 U	1900 U	3300 U	3200 U
Chloroaniline,4-	1800 U	3400 U	1500 U	1900 U	3300 U	3200 U
Chloronaphthalene,2-	1800 U	3400 U	1500 U	1900 U	3300 U	3200 U
Chloropehnyl-phenylether,4-	1800 U	3400 U	1500 U	1900 U	3300 U	3200 U
Chlorophenol,2-	1800 U	3400 U	1500 U	1900 U	3300 U	3200 U
Chrysene	1800 U	3400 U	1500 U	1900 U	280 J	3200 U

QUALIFIERS:
J - estimated value
R - result is rejected and unusable
U - not detected

SEMIVOLATILE COMPOUNDS DETECTED IN THE SOIL, SEDIMENT, AND TAR
SITE 2 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	02 SS 118DUP	02 SED 122	02 SED 123	02 SED 124	02 TAR 120	02 TAR 121DUP
UNITS	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Di-n-butylphthalate	1800 U	3400 U	1500 U	1900 U	3300 U	3200 U
Di-n-octylphthalate	1800 U	4200	1500 U	1900 U	3300 U	3200 U
Dibenzo(a,h)anthracene	1800 U	3400 U	1500 U	1900 U	3300 U	3200 U
Dibenzofuran	1800 U	3400 U	1500 U	1900 U	3300 U	3200 U
Dichlorobenzene,1,2-	1800 U	3400 U	1500 U	1900 U	3300 U	3200 U
Dichlorobenzene,1,3-	1800 U	3400 U	1500 U	1900 U	3300 U	3200 U
Dichlorobenzene,1,4-	1800 U	3400 U	1500 U	1900 U	3300 U	3200 U
Dichlorobenzidine,3,3-	1800 U	3400 U	1500 U	1900 U	3300 U	3200 U
Dichlorophenol,2,4-	1800 U	3400 U	1500 U	1900 U	3300 U	3200 U
Diethylphthalate	1800 U	3400 U	1500 U	1900 U	3300 U	3200 U
Dimethylphenol,2,4-	1800 U	3400 U	1500 U	1900 U	3300 U	3200 U
Dimethylphthalate	1800 U	3400 U	1500 U	1900 U	3300 U	3200 U
Dinitro-2-methylphenol,4,6-	4500 U	8500 U	3800 U	4800 U	8300 U	8000 U
Dinitrophenol,2,4-	4500 U	8500 U	3800 U	4800 U	8300 U	8000 U
Dinitrotoluene,2,4-	1800 U	3400 U	1500 U	1900 U	3300 U	3200 U
Dinitrotoluene,2,4-	1800 U	3400 U	1500 U	1900 U	3300 U	3200 U
Fluoranthene	1800 U	3400 U	1500 U	1900 U	420 J	3200 U
Fluorene	1800 U	3400 U	1500 U	1900 U	3300 U	3200 U
Hexachlorobenzene	1800 U	3400 U	1500 U	1900 U	3300 U	3200 U

QUALIFIERS:
J - estimated value
R - result is rejected and unusable
U - not detected

SEMIVOLATILE COMPOUNDS DETECTED IN THE SOIL, SEDIMENT, AND TAR
SITE 2 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	02 SS 118DUP	02 SED 122	02 SED 123	02 SED 124	02 TAR 120	02 TAR 121DUP
UNITS	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Hexachlorobutadiene	1800 U	3400 U	1500 U	1900 U	3300 U	3200 U
Hexachlorocyclopentadiene	1800 U	3400 U	1500 U	1900 U	3300 U	3200 U
Hexachloroethane	1800 U	3400 U	1500 U	1900 U	3300 U	3200 U
Indeno(1,2,3-cd)pyrene	1800 U	3400 U	1500 U	1900 U	3300 U	3200 U
Isophorone	1800 U	3400 U	1500 U	1900 U	3300 U	3200 U
Methylnaphthalene,2-	1800 U	3400 U	1500 U	1900 U	3300 U	3200 U
Methylphenol,2-	1800 U	3400 U	1500 U	1900 U	3300 U	3200 U
Methylphenol,4-	1800 U	3400 U	1500 U	1900 U	3300 U	3200 U
N-nitrosodi-n-propylamine	1800 U	3400 U	1500 U	1900 U	3300 U	3200 U
N-nitrosodiphenylamine	1800 U	3400 U	1500 U	1900 U	3300 U	3200 U
Naphthalene	1800 U	3400 U	1500 U	1900 U	3300 U	3200 U
Nitroaniline,2-	4500 U	8500 U	3800 U	4800 U	8300 U	8000 U
Nitroaniline,3-	4500 U	8500 U	3800 U	4800 U	8300 U	8000 U
Nitroaniline,4-	4500 U	8500 U	3800 U	4800 U	8300 U	8000 U
Nitrobenzene	1800 U	3400 U	1500 U	1900 U	3300 U	3200 U
Nitrophenol,2-	1800 U	3400 U	1500 U	1900 U	3300 U	3200 U
Nitrophenol,4-	4500 U	8500 U	3800 U	4800 U	8300 U	8000 U
Pentachlorophenol	4500 U	8500 U	3800 U	4800 U	8300 U	8000 U
Phenanthrene	1800 U	3400 U	1500 U	1900 U	3300 U	3200 U
Phenol	1800 U	3400 U	1500 U	1900 U	3300 U	3200 U
Pyrene	1800 U	3400 U	1500 U	1900 U	340 J	3200 U
Trichlorobenzene,1,2,4-	1800 U	3400 U	1500 U	1900 U	3300 U	3200 U
Trichlorophenol,2,4,5-	4500 U	8500 U	3800 U	4800 U	8300 U	8000 U
Trichlorophenol,2,4,6-	1800 U	3400 U	1500 U	1900 U	3300 U	3200 U

QUALIFIERS:
J - estimated value
R - result is rejected and unusable
U - not detected

INORGANIC CHEMICALS DETECTED IN THE SOIL, SEDIMENT AND TAR
SITE 2 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	02 SS 118DUP	02 SED 122	02 SED 123	02 SED 124	02 TAR 120	02 TAR 121DUP	02 SS 119 C
UNITS	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Aluminum	2510	6910	5200	3340	9760	13500	1730
Antimony	18.7 UJ	23.8 UJ	12.2 UJ	14.6 UJ	24.1 UJ	24.4 UJ	12.3 UJ
Arsenic	2.2 B	7.9 J	2.2 B	1.1 J	25.4	12.8	1.3 B
Barium	13.9 U	17.8 U	9.1 U	10.9 U	21.7 B	28.8 B	9.5 B
Beryllium	0.24 U	0.3 U	0.16 U	0.19 U	0.31 U	0.31 U	0.16 U
Cadmium	2.2 UJ	2.8 UJ	1.4 UJ	1.7 UJ	15.3	15.7	1.4 UJ
Calcium	257000	43600	29500	1740	50900	37000	83200
Chromium	5	12.4	16.3	4.8	53.9	59.1	3.4
Cobalt	3.8 U	5.8 B	5.1 B	4.5 B	4.9 U	12.6 B	2.5 U
Copper	5 U	23.7	19	9.8	215	243	3.3 U
Cyanide	0.2 U	0.25 U	0.13 U	0.15 U	0.26 U	0.26 U	0.13 U
Iron	3460 J	22500 J	9710 J	5390 J	127000 J	82100 J	4490 J
Lead	1.6 J	50.1	7	4.5	825 J	649	3.8
Magnesium	4470	8510	6530	3250	13600	13600	3270
Manganese	86	339	164	62.4	434	336	140
Mercury	0.19 U	0.22 U	0.12 U	0.11 U	0.26 U	0.25 U	0.11 U
Nickel	7.4 U	9.4 U	7.9 B	5.8 U	22.4	23.6	4.9 U
Potassium	1140 J	3500 J	982 J	1750 J	2840 J	3490 J	837 J
Selenium	1.9 UJ	1.2 UJ	0.62 UJ	0.74 UJ	1.2 U	1.2 U	1.2 UJ
Silver	2.5 U	3.2 U	1.8 B	2 B	5.2	3.5 B	2 B
Sodium	9500 J	19500 J	6070 J	8250 J	23000 J	25000 J	5510 J
Thallium	0.59 UJ	0.76 UJ	1 J	0.46 UJ	0.77 UJ	0.78 UJ	0.39 UJ
Vanadium	19.4	35.9	20.1	20.6	42.4	53.9	16.3
Zinc	5.4 B	108	30.5	110	1930	1860	6.3

QUALIFIERS:

B - value is greater than the Instrument Detection Limit but less than the Contract Required Detection Limit

J - estimated value

R - result is rejected and unusable

U - not detected

UJ - reported quantitation limit is estimated

PESTICIDES/PCBs COMPOUNDS DETECTED IN THE SOIL, SEDIMENT AND TAR
SITE 2 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	02 SS 119D		02 SS 119E	
UNITS	ug/Kg		ug/Kg	
Aldrin	0.26	UJ	0.28	UJ
Aroclor-1016	5	UJ	5.5	UJ
Aroclor-1221	10	UJ	11	UJ
Aroclor-1232	5	UJ	5.5	UJ
Aroclor-1242	5	UJ	5.5	UJ
Aroclor-1248	5	UJ	5.5	UJ
Aroclor-1254	5	UJ	5.5	UJ
Aroclor-1260	5	UJ	5.5	UJ
BHC,alpha-	0.26	UJ	0.28	UJ
BHC,beta-	0.26	UJ	0.28	UJ
BHC,delta-	0.26	UJ	0.28	UJ
BHC,gamma-	0.26	UJ	0.28	UJ
Chlordane,alpha-	0.26	UJ	0.28	UJ
Chlordane,gamma-	0.26	UJ	0.28	UJ
DDD,4,4-	0.5	UJ	0.55	UJ
DDE,4,4-	0.5	UJ	0.55	UJ
DDT,4,4-	0.5	UJ	0.55	UJ
Dieldrin	0.5	UJ	0.55	UJ
Endosulfan I	0.26	UJ	0.28	UJ
Endosulfan II	0.5	UJ	0.55	UJ
Endosulfan sulfate	0.5	UJ	0.55	UJ
Endrin		R		R
Endrin aldehyde	0.5	UJ	0.55	UJ
Endrin ketone	0.5	UJ	0.55	UJ
Heptachlor	0.26	UJ	0.28	UJ
Heptachlor epoxide	0.26	UJ	0.28	UJ
Methoxychlor	2.6	UJ	2.8	UJ
Toxaphene	26	UJ	28	UJ

QUALIFIERS:

J - estimated value

NJ - presumptive evidence for the presence of the parameter at an estimated value

R - result is rejected and unusable

UJ - reported quantitation limit is estimated

INORGANIC CHEMICALS DETECTED IN THE SOIL, SEDIMENT AND TAR
SITE 2 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	02 SS 119 D		02 SS 119 E	
UNITS	mg/Kg		mg/Kg	
Aluminum	1610		1730	
Antimony	11.8	UJ	12.9	UJ
Arsenic	2	B	1.3	J
Barium	8.8	U	9.6	U
Beryllium	0.15	U	0.16	U
Cadmium	1.4	UJ	1.5	UJ
Calcium	111000		128000	
Chromium	5.7		4	
Cobalt	2.4	U	2.6	U
Copper	3.2	U	3.5	U
Cyanide	0.12	U	0.14	U
Iron	2710	J	2430	J
Lead	0.45	J	0.68	J
Magnesium	3830		4440	
Manganese	75.8		92.7	
Mercury	0.12	U	0.13	U
Nickel	4.7	U	5.1	U
Potassium	774	J	991	J
Selenium	0.6	UJ	1.3	U
Silver	1.6	U	2.2	B
Sodium	6820	J	8460	J
Thallium	0.38	UJ	0.41	UJ
Vanadium	15.2		8.3	U
Zinc	2.4	U	3.9	B

QUALIFIERS:

B - value is greater than the Instrument Detection Limit but less than the Contract Required Detection Limit

J - estimated value

R - result is rejected and unusable

U - not detected

UJ - reported quantitation limit is estimated

VOLATILE ORGANIC COMPOUNDS DETECTED IN THE GROUNDWATER AND SOIL
SITE 5 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	05 GW 101A	05 SS 126	05 SS 127	05 SS 128	05 SS 129	05 SS 130	05 SS 131	05 SS 132
UNITS		ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Acetone		73 J	160 J	170 UJ	12 U	38 J	12 U	48 J
Benzene		6 U	6 U	6 U	6 U	6 U	6 U	6 U
Bromodichloromethane		6 U	6 U	6 U	6 U	6 U	6 U	6 U
Bromoform		6 U	6 U	6 U	6 U	6 U	6 U	6 U
Bromomethane		12 U	11 U	12 U	12 U	12 U	12 U	13 U
Butanone,2-		12 UJ	11 U	12 UJ	12 UJ	12 U	12 UJ	13 UJ
Carbon disulfide		14	21	10	10	18	10	10
Carbon tetrachloride		6 U	6 U	6 U	6 U	6 U	6 U	6 U
Chlorobenzene		6 U	6 U	6 U	6 U	6 U	6 U	6 U
Chloroethane		12 U	11 U	12 U	12 U	12 U	12 U	13 U
Chloroform		6 U	6 U	6 U	6 U	6 U	6 U	6 U
Chloromethane		12 U	11 UJ	12 U	12 U	12 UJ	12 U	13 U
Dibromochloromethane		6 U	6 U	6 U	6 U	6 U	6 U	6 U
Dichlorethene,trans-1,2-		6 U	6 U	6 U	6 U	6 U	6 U	6 U
Dichloroethane,1,1-		6 U	6 U	6 U	6 U	6 U	6 U	6 U
Dichloroethane,1,2-		6 U	6 U	6 U	6 U	6 U	6 U	6 U
Dichloroethene,1,1-		6 U	6 U	6 U	6 U	6 U	6 U	6 U
Dichloroethene,1,2-(total)								
Dichloroethene,cis-1,2-		6 U	6 U	6 U	6 U	6 U	6 U	6 U
Dichloropropane,1,2-		6 U	6 U	6 U	6 U	6 U	6 U	6 U
Dichloropropene,cis,1,3-		6 U	6 U	6 U	6 U	6 U	6 U	6 U

QUALIFIERS:
J - estimated value
NA - not analyzed
U - not detected
UJ - reported quantitation limit is estimated

VOLATILE ORGANIC COMPOUNDS DETECTED IN THE GROUNDWATER AND SOIL
SITE 5 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	05 GW 101A	05 SS 126	05 SS 127	05 SS 128	05 SS 129	05 SS 130	05 SS 131	05 SS 132
UNITS		ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Dichloropropene,trans-1,3-		6 U	6 U	6 U	6 U	6 U	6 U	6 U
Ethylbenzene		6 U	6 U	6 U	6 U	6 U	6 U	6 U
Hexanone,2-		12 U	11 U	12 U	12 U	12 U	12 U	13 U
Methyl-2-pentanone,4-		12 U	11 U	12 U	12 U	12 U	12 U	13 U
Methylene chloride		31 U	19 U	35 U	51 NA	28 U	19 U	29 U
Styrene		6 U	6 U	6 U	6 U	6 U	6 U	6 U
Tetrachloroethane,1,1,2,2-		6 U	6 U	6 U	6 U	6 U	6 U	6 U
Tetrachloroethene		6 U	6 U	6 U	6 U	6 U	6 U	6 U
Toluene		6 U	6 U	6 U	6 U	6 U	6 U	6 U
Trichloroethane,1,1,1-		6 U	6 U	6 U	6 U	6 U	6 U	6 U
Trichloroethane,1,1,2-		6 U	6 U	6 U	6 U	6 U	6 U	6 U
Trichloroethene		6 U	6 U	6 U	6 U	6 U	6 U	6 U
Vinyl acetate		12 U	11 U	12 U	12 U	12 U	12 U	13 U
Vinyl chloride		12 U	11 U	12 U	12 U	12 U	12 U	13 U
Xylenes(total)								
Xylenes,m-,p-		6 U	6 U	6 U	6 U	6 U	6 U	6 U
Xylenes,o-		6 U	6 U	6 U	6 U	6 U	6 U	6 U

QUALIFIERS:
J - estimated value
NA - not analyzed
U - not detected
UJ - reported quantitation limit is estimated

PESTICIDES/PCBs COMPOUNDS DETECTED IN THE GROUNDWATER AND SOIL
SITE 5 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	05 GW 101A	05 SS 126	05 SS 127	05 SS 128	05 SS 129	05 SS 130	05 SS 131	05 SS 132
UNITS	ug/L	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Aldrin	0.05 U	2 U	1.9 U	2 U	2.1 U	21 U	20 U	2.1 UJ
Aroclor-1016	1 U	38 U	37 U	39 U	41 U	400 U	380 U	41 UJ
Aroclor-1221	2 U	77 U	75 U	80 U	82 U	810 U	780 U	82 UJ
Aroclor-1232	1 U	38 U	37 U	39 U	41 U	400 U	380 U	41 UJ
Aroclor-1242	1 U	38 U	37 U	39 U	41 U	400 U	380 U	41 UJ
Aroclor-1248	1 U	38 U	37 U	39 U	41 U	400 U	380 U	41 UJ
Aroclor-1254	1 U	38 U	37 U	39 U	41 U	400 U	380 U	41 UJ
Aroclor-1260	1 U	38 U	37 U	39 U	41 U	400 U	380 U	41 UJ
BHC,alpha-	0.05 U	2 U	1.9 U	2 U	2.1 U	21 U	20 U	2.1 UJ
BHC,beta-	0.05 U	2 U	1.9 U	2 U	2.1 U	21 U	20 U	2.1 UJ
BHC,delta-	0.05 U	0.097 U	1.9 U	2 UJ	0.19 J	21 UJ	20 U	2.1 UJ
BHC,gamma-	0.05 U	2 U	1.9 U	2 U	2.1 U	21 U	20 U	2.1 UJ
Chlordane,alpha-	0.05 U	2 U	1.9 UJ	2 UJ	2.1 UJ	21 UJ	20 UJ	2.1 UJ
Chlordane,gamma-	0.05 U	2 U	1.9 U	2 UJ	2.1 UJ	21 U	20 U	2.1 UJ
DDD,4,4-	0.1 U	1.8 J	3.7 U	0.26 J	4.1 U	180 NJ	44 NJ	4.1 UJ
DDE,4,4-	0.1 U	5.5	0.49 J	2.2 J	1.2 J	480 J	210	0.63 J
DDT,4,4-	0.1 U	2.1 J	0.31 NJ	2.9 J	2.6 J	3500 CD	1500 CD	0.49 J
Dieldrin	0.1 UJ	3.8 UJ	3.7 U	3.9 U	4.1 U	40 U	38 U	4.1 UJ
Endosulfan I	0.05 U	2 U	1.9 U	2 U	2.1 U	21 U	20 U	2.1 UJ
Endosulfan II	0.1 U	3.8 U	3.7 U	3.9 U	4.1 U	40 U	38 U	4.1 UJ
Endosulfan sulfate	0.1 U	3.8 U	3.7 U	3.9 U	4.1 UJ	40 U	38 U	4.1 UJ
Endrin	0.1 U	0.12 NJ	3.7 U	3.9 U	0.39 J	40 U	38 U	4.1 UJ
Endrin aldehyde	0.1 U	3.8 U	3.7 U	3.9 U	4.1 U	40 U	38 U	4.1 UJ
Endrin ketone	0.1 U	3.8 U	3.7 U	3.9 U	4.1 U	40 U	38 U	4.1 UJ
Heptachlor	0.0032 J	2 UJ	1.9 UJ	2 UJ	2.1 UJ	21 U	20 U	2.1 NJ
Heptachlor epoxide	0.05 U	2 U	1.9 U	2 U	2.1 U	21 U	20 U	2.1 UJ
Methoxychlor	0.5 UJ	0.44 NJ	19 U	21 UJ	21 U	210 U	200 U	21 UJ
Toxaphene	5 U	200 U	190 U	200 U	210 U	2100 U	2000 U	210 UJ

QUALIFIERS:

C - results were confirmed by GC/MS

D - parameter identified in an analysis at a secondary dilution factor

J - estimated value

NJ - presumptive evidence for the presence of the parameter at an estimated value

U - not detected

UJ - reported quantitation limit is estimated

SEMIVOLATILE COMPOUNDS DETECTED IN THE GROUNDWATER AND SOIL
SITE 5 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	05 GW 101	05 SS 126	05 SS 127	05 SS 128	05 SS 129	05 SS 130	05 SS 131	05 SS 132
UNITS	ug/L	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Acenaphthene	21 U	1500 U	1500 U	1500 U	1500 U	1560 U	1500 U	1500 U
Acenaphthylene	21 U	1500 U	1500 U	1500 U	1500 U	1560 U	1500 U	1500 U
Anthracene	21 U	1500 U	1500 U	1500 U	1500 U	1560 U	1500 U	1500 U
Benzo(a)anthracene	21 U	1500 U	1500 U	1500 U	1500 U	1560 U	1500 U	1500 U
Benzo(a)pyrene	21 U	1500 U	1500 U	1500 U	1500 U	1560 UJ	1500 U	1500 U
Benzo(b)fluoranthene	21 U	1500 U	1500 U	1500 U	1500 U	1560 UJ	1500 U	1500 U
Benzo(g,h,i)perylene	21 U	1500 U	1500 U	1500 U	1500 U	1560 UJ	1500 U	1500 U
Benzo(k)fluoranthene	21 U	1500 U	1500 U	1500 U	1500 U	1560 UJ	1500 U	1500 U
Bis(2-chloroethoxy)methane	21 U	1500 U	1500 U	1500 U	1500 U	1560 U	1500 U	1500 U
Bis(2-chloroethyl)ether	21 U	1500 U	1500 U	1500 U	1500 U	1560 U	1500 U	1500 U
Bis(2-chloroisopropyl)ether	21 U	1500 U	1500 U	1500 U	1500 U	1560 U	1500 U	1500 U
Bis(2-ethylhexyl)phthalate	3 J	1500 U	1500 U	1500 U	1500 U	430 J	1500 U	1500 U
Bromophenyl-phenylether,4-	21 U	1500 U	1500 U	1500 U	1500 U	1560 U	1500 U	1500 U
Butylbenzylphthaalte	21 U	1500 U	1500 U	1500 U	1500 U	1560 U	1500 U	1500 U
Carbazole	21 U	1500 U	1500 U	1500 U	1500 U	1560 U	1500 U	1500 U
Chloro-3-methylphenol,4-	21 U	1500 U	1500 U	1500 U	1500 U	1560 U	1500 U	1500 U
Chloroaniline,4-	21 U	1500 U	1500 U	1500 U	1500 U	1560 U	1500 U	1500 U
Chloronaphthalene,2-	21 U	1500 U	1500 U	1500 U	1500 U	1560 U	1500 U	1500 U
Chloropehnyl-phenylether,4-	21 U	1500 U	1500 U	1500 U	1500 U	1560 U	1500 U	1500 U
Chlorophenol,2-	21 U	1500 U	1500 U	1500 U	1500 U	1560 U	1500 U	1500 U

QUALIFIERS:
J - estimated value
U - not detected
UJ - reported quantitation limit is estimated

SEMIVOLATILE COMPOUNDS DETECTED IN THE GROUNDWATER AND SOIL
SITE 5 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	05 GW 101	05 SS 126	05 SS 127	05 SS 128	05 SS 129	05 SS 130	05 SS 131	05 SS 132
UNITS	ug/L	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Chrysene	21 U	1500 U	1500 U	1500 U	1500 U	1560 U	1500 U	1500 U
Di-n-butylphthalate	21 U	1500 U	1500 U	1500 U	1500 U	1560 U	1500 U	1500 U
Di-n-octylphthalate	21 U	1500 U	1500 U	1500 U	1500 U	1560 UJ	1500 U	1500 U
Dibenzo(a,h)anthracene	21 U	1500 U	1500 U	1500 U	1500 U	1560 UJ	1500 U	1500 U
Dibenzofuran	21 U	1500 U	1500 U	1500 U	1500 U	1560 U	1500 U	1500 U
Dichlorobenzene,1,2-	21 U	1500 U	1500 U	1500 U	1500 U	1560 U	1500 U	1500 U
Dichlorobenzene,1,3-	21 U	1500 U	1500 U	1500 U	1500 U	1560 U	1500 U	1500 U
Dichlorobenzene,1,4-	21 U	1500 U	1500 U	1500 U	1500 U	1560 U	1500 U	1500 U
Dichlorobenzidine,3,3-	21 U	1500 U	1500 U	1500 U	1500 U	1600 U	1500 U	1500 U
Dichlorophenol,2,4-	21 U	1500 U	1500 U	1500 U	1500 U	1560 U	1500 U	1500 U
Diethylphthalate	21 U	1500 U	1500 U	1500 U	1500 U	1560 U	1500 U	1500 U
Dimethylphenol,2,4-	21 U	1500 U	1500 U	1500 U	1500 U	1560 U	1500 U	1500 U
Dimethylphthalate	21 U	1500 U	1500 U	1500 U	1500 U	1560 U	1500 U	1500 U
Dinitro-2-methylphenol,4,6-	52 U	3800 U	3800 U	3800 U	3800 U	3900 U	3800 U	3800 U
Dinitrophenol,2,4-	52 U	3800 U	3800 U	3800 U	3800 U	3900 U	3800 U	3800 U
Dinitrotoluene,2,4-	21 U	1500 U	1500 U	1500 U	1500 U	1560 U	1500 U	1500 U
Dinitrotoluene,2,4-	21 U	1500 U	1500 U	1500 U	1500 U	1560 U	1500 U	1500 U
Fluoranthene	21 U	1500 U	1500 U	1500 U	1500 U	1560 U	1500 U	1500 U
Fluorene	21 U	1500 U	1500 U	1500 U	1500 U	1560 U	1500 U	1500 U
Hexachlorobenzene	21 U	1500 U	1500 U	1500 U	1500 U	1560 U	1500 U	1500 U

QUALIFIERS:
J - estimated value
U - not detected
UJ - reported quantitation limit is estimated

SEMIVOLATILE COMPOUNDS DETECTED IN THE GROUNDWATER AND SOIL
SITE 5 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	05 GW 101	05 SS 126	05 SS 127	05 SS 128	05 SS 129	05 SS 130	05 SS 131	05 SS 132
UNITS	ug/L	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Hexachlorobutadiene	21 U	1500 U	1500 U	1500 U	1500 U	1560 U	1500 U	1500 U
Hexachlorocyclopentadiene	21 U	1500 U	1500 U	1500 U	1500 U	1560 U	1500 U	1500 U
Hexachloroethane	21 U	1500 U	1500 U	1500 U	1500 U	1560 U	1500 U	1500 U
Indeno(1,2,3-cd)pyrene	21 U	1500 U	1500 U	1500 U	1500 U	1560 UJ	1500 U	1500 U
Isophorone	21 U	1500 U	1500 U	1500 U	1500 U	1560 U	1500 U	1500 U
Methylnaphthalene,2-	21 U	1500 U	1500 U	1500 U	1500 U	1560 U	1500 U	1500 U
Methylphenol,2-	21 U	1500 U	1500 U	1500 U	1500 U	1560 U	1500 U	1500 U
Methylphenol,4-	21 U	1500 U	1500 U	1500 U	1500 U	1560 U	1500 U	1500 U
N-nitrosodi-n-propylamine	21 U	1500 U	1500 U	1500 U	1500 U	1560 U	1500 U	1500 U
N-nitrosodiphenylamine	21 U	1500 U	1500 U	1500 U	1500 U	1560 U	1500 U	1500 U
Naphthalene	21 U	1500 U	1500 U	1500 U	1500 U	1560 U	1500 U	1500 U
Nitroaniline,2-	52 U	3800 U	3800 U	3800 U	3800 U	3900 U	3800 U	3800 U
Nitroaniline,3-	52 U	3800 U	3800 U	3800 U	3800 U	3900 U	3800 U	3800 U
Nitroaniline,4-	52 U	3800 U	3800 U	3800 U	3800 U	3900 U	3800 U	3800 U
Nitrobenzene	21 U	1500 U	1500 U	1500 U	1500 U	1560 U	1500 U	1500 U
Nitrophenol,2-	21 U	1500 U	1500 U	1500 U	1500 U	1560 U	1500 U	1500 U
Nitrophenol,4-	52 U	3800 U	3800 U	3800 U	3800 U	3900 U	3800 U	3800 U
Pentachlorophenol	52 U	3800 U	3800 U	3800 U	3800 U	3900 U	3800 U	3800 U
Phenanthrene	21 U	1500 U	1500 U	1500 U	1500 U	1560 U	1500 U	1500 U
Phenol	21 U	1500 U	1500 U	1500 U	1500 U	1560 U	1500 U	1500 U
Pyrene	21 U	1500 U	1500 U	1500 U	1500 U	1560 U	1500 U	1500 U
Trichlorobenzene,1,2,4-	21 U	1500 U	1500 U	1500 U	1500 U	1560 U	1500 U	1500 U
Trichlorophenol,2,4,5-	52 U	3800 U	3800 U	3800 U	3800 U	3900 U	3800 U	3800 U
Trichlorophenol,2,4,6-	21 U	1500 U	1500 U	1500 U	1500 U	1560 U	1500 U	1500 U

QUALIFIERS:
J - estimated value
U - not detected
UJ - reported quantitation limit is estimated

INORGANIC CHEMICALS DETECTED IN THE GROUNDWATER AND SOIL
SITE 5 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	05 GW 101A	05 GW 101B	05 SS 126	05 SS 127	05 SS 128	05 SS 129	05 SS 130	05 SS 131
UNITS	ug/L	ug/L	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Aluminum	598 J	79.9 U	17100	6240	18200	40700	22600	6920
Antimony	47.2 U	47.2 U	11.1 U	10.6 U	11.5 U	11 U	11.2 U	11.4 U
Arsenic	3 U	3 U	0.71 U	0.67 UJ	0.73 U	0.7 UJ	0.71 U	0.72 U
Barium	164 B	155 B	180	144	143	166	174	123
Beryllium	0.6 U	0.6 U	0.73 B	0.2 B	1.2	0.86 B	1.2	0.84 B
Cadmium	2.8 U	2.8 U	1.3	0.63 U	1.4	1.7	1.7	0.72 B
Calcium	158000	145000	9110	5430	6030	12500	8360	6320
Chromium	10.3 UJ	10.3 UJ	13.9 J	2.8 J	16.4 J	35.7 J	24.2 J	14.9 J
Cobalt	9.6 U	9.6 U	16	18.8	24.8	23.8	24.1	22.5
Copper	5.9 B	6.8 B	131 J	53.3 J	57.4 J	106 J	68.5 J	25.8 J
Cyanide	10 UJ	NA	0.12 U	0.11 U	0.12 U	0.12 U	0.12 U	0.12 U
Iron	857 J	51.8 B	31700	8630	41500	48800	47900	19400
Lead	1.8 U	1.8 U	39.6 *	5.9 *	9.1 *	4.6 *	18.1 *	4.7 *
Magnesium	150000	143000	4550	5510	3710	5730	3550	3360
Manganese	162 J	97.7	381 J	620 J	1140 J	848 J	994 J	876 J
Mercury	0.2 UJ	0.2 UJ	0.1 UJ	0.11 UJ	0.12 UJ	0.1 UJ	0.11 UJ	0.12 UJ
Nickel	18.7 U	18.7 U	9.3 B	4.2 U	4.6 U	13.3	10	4.9 B
Potassium	1220 U	1180 U	315 U	245 U	299 U	371 U	430 U	316 U
Selenium	2.4 UJ	4.8 U	0.56 UJ	0.54 UJ	0.59 UJ	0.56 UJ	0.57 UJ	0.58 UJ
Silver	6.3 U	6.3 U	1.7 B	1.7 B	1.5 U	1.5 U	1.5 U	1.6 B
Sodium	1040000 J	1030000 J	1220	750 B	1400	2810	1640	730 B
Thallium	1.5 UJ	16.5 J	0.35 UJ	0.34 U	0.37 U	0.35 U	0.36 U	0.36 U
Vanadium	41.7 B	20.3 B	112 J	39.1 J	210 J	223 J	239 J	131 J
Zinc	25.8	12.1 U	84.9	28.6	31.9	42.2	63.8	20.2

QUALIFIERS:

B - value is greater than the Instrument Detection Limit but less than the Contract Required Detection Limit

J - estimated value

NA - not analyzed

U - not detected

UJ - reported quantitation limit is estimated

* - duplicate analysis is greater than control limit

VOLATILE ORGANIC COMPOUNDS DETECTED IN THE GROUNDWATER AND SOIL
SITE 5 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	05 SS 133	05 SS 134DUP	05 SS 135	05 SS 136	05 SS 137DUP	05 SS 138	05 SS 139
UNITS	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Acetone	260 J	120 J	13 U	54 J	47 J	83 J	12 UJ
Benzene	6 U	6 U	6 U	6 U	6 U	6 U	6 U
Bromodichloromethane	6 U	6 U	6 U	6 U	6 U	6 U	6 U
Bromoform	6 U	6 U	6 U	6 U	6 U	6 U	6 U
Bromomethane	13 U	13 U	13 U	12 U	12 U	11 U	12 U
Butanone,2-	13 UJ	13 UJ	13 UJ	12 UJ	12 UJ	11 UJ	12 UJ
Carbon disulfide	2 J	3 J	6 U	3 J	6	6 U	6 U
Carbon tetrachloride	6 U	6 U	6 U	6 U	6 U	6 U	6 U
Chlorobenzene	6 U	6 U	6 U	6 U	6 U	6 U	6 U
Chloroethane	13 U	13 U	13 U	12 U	12 U	11 U	12 U
Chloroform	6 U	6 U	6 U	6 U	6 U	6 U	6 U
Chloromethane	13 U	13 U	13 U	12 U	12 U	11 U	12 U
Dibromochloromethane	6 U	6 U	6 U	6 U	6 U	6 U	6 U
Dichlorethene,trans-1,2-	6 U	6 U	6 U	6 U	6 U	6 U	6 U
Dichloroethane,1,1-	6 U	6 U	6 U	6 U	6 U	6 U	6 U
Dichloroethane,1,2-	6 U	6 U	6 U	6 U	6 U	6 U	6 U
Dichloroethene,1,1-	6 U	6 U	6 U	6 U	6 U	6 U	6 U
Dichloroethene,1,2-(total)							
Dichloroethene,cis-1,2-	6 U	6 U	6 U	6 U	6 U	6 U	6 U
Dichloropropane,1,2-	6 U	6 U	6 U	6 U	6 U	6 U	6 U
Dichloropropene,cis,1,3-	6 U	6 U	6 U	6 U	6 U	6 U	6 U

QUALIFIERS:
J - estimated value
NA - not analyzed
U - not detected
UJ - reported quantitation limit is estimated

VOLATILE ORGANIC COMPOUNDS DETECTED IN THE GROUNDWATER AND SOIL
SITE 5 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	05 SS 133	05 SS 134DUP	05 SS 135	05 SS 136	05 SS 137DUP	05 SS 138	05 SS 139
UNITS	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Dichloropropene,trans-1,3-	6 U	6 U	6 U	6 U	6 U	6 U	6 U
Ethylbenzene	6 U	6 U	6 U	6 U	6 U	6 U	6 U
Hexanone,2-	13 U	13 U	13 U	12 U	12 U	11 U	12 U
Methyl-2-pentanone,4-	13 U	13 U	13 U	12 U	12 U	11 U	12 U
Methylene chloride	27 U	31 U	8	28 U	17 U	6 U	6 U
Styrene	6 U	6 U	6 U	6 U	6 U	6 U	6 U
Tetrachloroethane,1,1,2,2-	6 U	6 U	6 U	6 U	6 U	6 U	6 U
Tetrachloroethene	6 U	6 U	6 U	6 U	6 U	6 U	6 U
Toluene	6 U	6 U	6 U	6 U	6 U	6 U	6 U
Trichloroethane,1,1,1-	6 U	6 U	6 U	6 U	6 U	6 U	6 U
Trichloroethane,1,1,2-	6 U	6 U	6 U	6 U	6 U	6 U	6 U
Trichloroethene	6 U	6 U	6 U	6 U	6 U	6 U	6 U
Vinyl acetate	13 U	13 U	13 U	12 U	12 U	11 U	12 U
Vinyl chloride	13 U	13 U	13 U	12 U	12 U	11 U	12 U
Xylenes(total)							
Xylenes,m-,p-	6 U	6 U	6 U	6 U	6 U	6 U	6 U
Xylenes,o-	6 U	6 U	6 U	6 U	6 U	6 U	6 U

QUALIFIERS:
J - estimated value
NA - not analyzed
U - not detected
UJ - reported quantitation limit is estimated

PESTICIDES/PCBs COMPOUNDS DETECTED IN THE GROUNDWATER AND SOIL
SITE 5 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	05 SS 133	05 SS 134DUP	05 SS 135	05 SS 136	05 SS 137DUP	05 SS 138	05 SS 139	05 SS 142
UNITS	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Aldrin	2.1 U	2.1 U	2.1 U	2 U	2 U	1.9 U	2 U	4.2 U
Aroclor-1016	42 U	42 U	40 U	38 U	38 U	37 U	38 U	82 U
Aroclor-1221	85 U	85 U	81 U	77 U	78 U	76 U	77 U	170 U
Aroclor-1232	42 U	42 U	40 U	38 U	38 U	37 U	38 U	82 U
Aroclor-1242	42 U	42 U	40 U	38 U	38 U	37 U	38 U	82 U
Aroclor-1248	42 U	42 U	40 U	38 U	38 U	37 U	38 U	82 U
Aroclor-1254	42 U	42 U	40 U	38 U	38 U	37 U	38 U	82 U
Aroclor-1260	42 U	42 U	40 U	38 U	38 U	37 U	38 U	82 U
BHC,alpha-	2.1 U	2.1 U	2.1 U	2 U	2 U	1.9 U	2 U	4.2 U
BHC,beta-	2.1 U	2.1 U	2.1 U	2 U	2 U	1.9 UJ	2 U	1.1 J
BHC,delta-	2.1 U	2.1 U	2.1 U	2 U	2 U	1.9 U	2 UJ	0.86 J
BHC,gamma-	2.1 U	2.1 U	2.1 U	2 U	2 U	1.9 UJ	2 U	0.13 NJ
Chlordane,alpha-	2.1 U	2.1 UJ	2.1 U	2 UJ	2 UJ	1.9 U	2 U	4.2 UJ
Chlordane,gamma-	2.1 U	0.086 J	2.1 UJ	2 U	2 U	1.9 U	2 U	4.2 J
DDD,4,4-	0.23 J	1 NJ	4 U	3.8 U	3.8 U	3.7 U	3.8 U	8.2 U
DDE,4,4-	1.2 J	5.8	4 U	3.8 U	3.8 U	3.7 U	3.8 UJ	8.2 U
DDT,4,4-	1.2 J	5.4	4 U	3.8 U	3.8 U	0.11 NJ	3.8 U	8.2 U
Dieldrin	4.2 U	4.2 U	4 U	3.8 U	3.8 U	3.7 UJ	3.8 UJ	4.2 UJ
Endosulfan I	2.1 U	2.1 U	2.1 U	2 U	2 U	1.9 UJ	2 UJ	1.5 NJ
Endosulfan II	4.2 U	4.2 U	4 U	3.8 U	3.8 UJ	3.7 U	3.8 U	8.2 UJ
Endosulfan sulfate	4.2 U	4.2 UJ	4 U	3.8 U	3.8 U	3.7 U	3.8 U	8.2 UJ
Endrin	4.2 U	4.2 U	4 U	3.8 U	3.8 U	3.7 U	3.8 U	8.2 UJ
Endrin aldehyde	4.2 U	4.2 U	4 U	3.8 U	3.8 U	3.7 U	3.8 U	8.2 U
Endrin ketone	4.2 U	4.2 U	4 U	3.8 U	3.8 U	3.7 U	3.8 U	8.2 U
Heptachlor	2.1 UJ	2.1 UJ	0.12 J	2 UJ	2 UJ	1.9 UJ	2 U	0.42 J
Heptachlor epoxide	2.1 U	2.1 U	2.1 U	2 U	2 UJ	1.9 U	2 U	4.2 UJ
Methoxychlor	22 UJ	22 UJ	21 U	20 U	20 U	19 UJ	20 UJ	1.5 J
Toxaphene	210 U	210 U	210 U	200 U	200 U	190 U	200 U	420 U

QUALIFIERS:

C - results were confirmed by GC/MS

D - parameter identified in an analysis at a secondary dilution factor

J - estimated value

NJ - presumptive evidence for the presence of the parameter at an estimated value

U - not detected

UJ - reported quantitation limit is estimated

SEMIVOLATILE COMPOUNDS DETECTED IN THE GROUNDWATER AND SOIL
SITE 5 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	05 SS 133	05 SS 134DUP	05 SS 135	05 SS 136	05 SS 137DUP	05 SS 138	05 SS 139
UNITS	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Acenaphthene	1700 U	1700 U	1600 UJ	1600 UJ	1500 UJ	1500 U	1500 UJ
Acenaphthylene	1700 U	1700 U	1600 UJ	1600 UJ	1500 UJ	1500 U	1500 UJ
Anthracene	1700 U	1700 U	1600 UJ	1600 UJ	1500 UJ	1500 U	1500 UJ
Benzo(a)anthracene	1700 U	1700 U	1600 UJ	1600 UJ	1500 UJ	1500 U	1500 UJ
Benzo(a)pyrene	1700 U	1700 U	1600 UJ	1600 UJ	1500 UJ	1500 U	1500 UJ
Benzo(b)fluoranthene	1700 U	1700 U	1600 UJ	1600 UJ	1500 UJ	1500 U	1500 UJ
Benzo(g,h,i)perylene	1700 U	1700 U	1600 UJ	1600 UJ	1500 UJ	1500 U	1500 UJ
Benzo(k)fluoranthene	1700 U	1700 U	1600 UJ	1600 UJ	1500 UJ	1500 U	1500 UJ
Bis(2-chloroethoxy)methane	1700 U	1700 U	1600 UJ	1600 UJ	1500 UJ	1500 U	1500 UJ
Bis(2-chloroethyl)ether	1700 U	1700 U	1600 UJ	1600 UJ	1500 UJ	1500 U	1500 UJ
Bis(2-chloroisopropyl)ether	1700 U	1700 U	1600 UJ	1600 UJ	1500 UJ	1500 U	1500 UJ
Bis(2-ethylhexyl)phthalate	1700 U	1900	1600 UJ	400 J	440 J	1500 U	420 J
Bromophenyl-phenylether,4-	1700 U	1700 U	1600 UJ	1600 UJ	1500 UJ	1500 U	1500 UJ
Butylbenzylphthaalte	1700 U	1700 U	1600 UJ	1600 UJ	1500 UJ	1500 U	1500 UJ
Carbazole	1700 U	1700 U	1600 UJ	1600 UJ	1500 UJ	1500 U	1500 UJ
Chloro-3-methylphenol,4-	1700 U	1700 U	1600 UJ	1600 UJ	1500 UJ	1500 U	1500 UJ
Chloroaniline,4-	1700 U	1700 U	1600 UJ	1600 UJ	1500 UJ	1500 U	1500 UJ
Chloronaphthalene,2-	1700 U	1700 U	1600 UJ	1600 UJ	1500 UJ	1500 U	1500 UJ
Chloropehnyl-phenylether,4-	1700 U	1700 U	1600 UJ	1600 UJ	1500 UJ	1500 U	1500 UJ
Chlorophenol,2-	1700 U	1700 U	1600 UJ	1600 UJ	1500 UJ	1500 U	1500 UJ

QUALIFIERS:
J - estimated value
U - not detected
UJ - reported quantitation limit is estimated

SEMIVOLATILE COMPOUNDS DETECTED IN THE GROUNDWATER AND SOIL
SITE 5 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	05 SS 133	05 SS 134DUP	05 SS 135	05 SS 136	05 SS 137DUP	05 SS 138	05 SS 139
UNITS	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Chrysene	1700 U	1700 U	1600 UJ	1600 UJ	1500 UJ	1500 U	1500 UJ
Di-n-butylphthalate	1700 U	1700 U	1600 UJ	1600 UJ	1500 UJ	1500 U	1500 UJ
Di-n-octylphthalate	1700 U	1700 U	1600 UJ	1600 UJ	1500 UJ	1500 U	1500 UJ
Dibenzo(a,h)anthracene	1700 U	1700 U	1600 UJ	1600 UJ	1500 UJ	1500 U	1500 UJ
Dibenzofuran	1700 U	1700 U	1600 UJ	1600 UJ	1500 UJ	1500 U	1500 UJ
Dichlorobenzene,1,2-	1700 U	1700 U	1600 UJ	1600 UJ	1500 UJ	1500 U	1500 UJ
Dichlorobenzene,1,3-	1700 U	1700 U	1600 UJ	1600 UJ	1500 UJ	1500 U	1500 UJ
Dichlorobenzene,1,4-	1700 U	1700 U	1600 UJ	1600 UJ	1500 UJ	1500 U	1500 UJ
Dichlorobenzidine,3,3-	1700 U	1700 U	1600 UJ	1600 UJ	1500 UJ	1500 U	1500 UJ
Dichlorophenol,2,4-	1700 U	1700 U	1600 UJ	1600 UJ	1500 UJ	1500 U	1500 UJ
Diethylphthalate	1700 U	1700 U	1600 UJ	1600 UJ	1500 UJ	1500 U	1500 UJ
Dimethylphenol,2,4-	1700 U	1700 U	1600 UJ	1600 UJ	1500 UJ	1500 U	1500 UJ
Dimethylphthalate	1700 U	1700 U	1600 UJ	1600 UJ	1500 UJ	1500 U	1500 UJ
Dinitro-2-methylphenol,4,6-	4300 U	4300 U	4000 UJ	4000 UJ	3900 UJ	3800 U	3800 UJ
Dinitrophenol,2,4-	4300 U	4300 U	4000 UJ	4000 UJ	3900 UJ	3800 U	3800 UJ
Dinitrotoluene,2,4-	1700 U	1700 U	1600 UJ	1600 UJ	1500 UJ	1500 U	1500 UJ
Dinitrotoluene,2,4-	1700 U	1700 U	1600 UJ	1600 UJ	1500 UJ	1500 U	1500 UJ
Fluoranthene	1700 U	1700 U	1600 UJ	1600 UJ	1500 UJ	1500 U	1500 UJ
Fluorene	1700 U	1700 U	1600 UJ	1600 UJ	1500 UJ	1500 U	1500 UJ
Hexachlorobenzene	1700 U	1700 U	1600 UJ	1600 UJ	1500 UJ	1500 U	1500 UJ

QUALIFIERS:
J - estimated value
U - not detected
UJ - reported quantitation limit is estimated

SEMIVOLATILE COMPOUNDS DETECTED IN THE GROUNDWATER AND SOIL
SITE 5 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	05 SS 133	05 SS 134DUP	05 SS 135	05 SS 136	05 SS 137DUP	05 SS 138	05 SS 139
UNITS	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Hexachlorobutadiene	1700 U	1700 U	1600 UJ	1600 UJ	1500 UJ	1500 U	1500 UJ
Hexachlorocyclopentadiene	1700 U	1700 U	1600 UJ	1600 UJ	1500 UJ	1500 U	1500 UJ
Hexachloroethane	1700 U	1700 U	1600 UJ	1600 UJ	1500 UJ	1500 U	1500 UJ
Indeno(1,2,3-cd)pyrene	1700 U	1700 U	1600 UJ	1600 UJ	1500 UJ	1500 U	1500 UJ
Isophorone	1700 U	1700 U	1600 UJ	1600 UJ	1500 UJ	1500 U	1500 UJ
Methylnaphthalene,2-	1700 U	1700 U	1600 UJ	1600 UJ	1500 UJ	1500 U	1500 UJ
Methylphenol,2-	1700 U	1700 U	1600 UJ	1600 UJ	1500 UJ	1500 U	1500 UJ
Methylphenol,4-	1700 U	1700 U	1600 UJ	1600 UJ	1500 UJ	1500 U	1500 UJ
N-nitrosodi-n-propylamine	1700 U	1700 U	1600 UJ	1600 UJ	1500 UJ	1500 U	1500 UJ
N-nitrosodiphenylamine	1700 U	1700 U	1600 UJ	1600 UJ	1500 UJ	1500 U	1500 UJ
Naphthalene	1700 U	1700 U	1600 UJ	1600 UJ	1500 UJ	1500 U	1500 UJ
Nitroaniline,2-	4300 U	4300 U	4000 UJ	4000 UJ	3900 UJ	3800 U	3800 UJ
Nitroaniline,3-	4300 U	4300 U	4000 UJ	4000 UJ	3900 UJ	3800 U	3800 UJ
Nitroaniline,4-	4300 U	4300 U	4000 UJ	4000 UJ	3900 UJ	3800 U	3800 UJ
Nitrobenzene	1700 U	1700 U	1600 UJ	1600 UJ	1500 UJ	1500 U	1500 UJ
Nitrophenol,2-	1700 U	1700 U	1600 UJ	1600 UJ	1500 UJ	1500 U	1500 UJ
Nitrophenol,4-	4300 U	4300 U	4000 UJ	4000 UJ	3900 UJ	3800 U	3800 UJ
Pentachlorophenol	4300 U	4300 U	4000 UJ	4000 UJ	3900 UJ	3800 U	3800 UJ
Phenanthrene	1700 U	1700 U	1600 UJ	1600 UJ	1500 UJ	1500 U	1500 UJ
Phenol	1700 U	1700 U	1600 UJ	1600 UJ	1500 UJ	1500 U	1500 UJ
Pyrene	1700 U	1700 U	1600 UJ	1600 UJ	1500 UJ	1500 U	1500 UJ
Trichlorobenzene,1,2,4-	1700 U	1700 U	1600 UJ	1600 UJ	1500 UJ	1500 U	1500 UJ
Trichlorophenol,2,4,5-	4300 U	4300 U	4000 UJ	4000 UJ	3900 UJ	3800 U	3800 UJ
Trichlorophenol,2,4,6-	1700 U	1700 U	1600 UJ	1600 UJ	1500 UJ	1500 U	1500 UJ

QUALIFIERS:
J - estimated value
U - not detected
UJ - reported quantitation limit is estimated

INORGANIC CHEMICALS DETECTED IN THE GROUNDWATER AND SOIL
SITE 5 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	05 SS 132	05 SS 133	05 SS 134DUP	05 SS 135	05 SS 136	05 SS 137DUP	05 SS 138	05 SS 139
UNITS	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Aluminum	8220	12800	9430	38500	14000	32800	9180	17700
Antimony	11.9 U	12.1 U	12.1 U	5.9 J	3 J	3.2 J	2.3 U	2.3 U
Arsenic	0.76 U	0.77 U	0.77 U	0.75 U	0.71 U	0.71 U	0.69 U	0.69 U
Barium	143	114	195	131	385	366	46.5	132
Beryllium	0.69 B	0.96 B	0.72 B	1.3	0.9 B	1 B	0.69 B	0.63 B
Cadmium	0.71 U	0.9 B	0.72 U	4.6	2.4	4.2	1.3 UJ	1.3 UJ
Calcium	10800	5660	11200	3420	2210	2750	2920	6000
Chromium	20.5 J	33.3 J	21.3 J	19.5	9.6	15.3	13.5	51.7
Cobalt	34.6	35.5	33.8	24.5	16.5	17.5	16.6	16
Copper	91.6 J	141 J	93.6 J	35.3	31.6	45.4	19.9	33.4
Cyanide	0.13 U	0.13 U	0.13 U	0.12 U	0.12 U	0.12 U	0.11 U	0.11 U
Iron	13300	25900	17900	69900	38600	62200	19700	27200
Lead	2 *	3.1 *	25.4 *	2.1 J	2 J	1.9 J	1.9 J	1.6 J
Magnesium	5600	6910	5340	5250	5350	6310	4720	10200
Manganese	776 J	971 J	1450 J	1170	508	407	735	656
Mercury	0.12 UJ	0.12 UJ	0.12 UJ	0.11 U	0.1 U	0.11 U	0.11 U	0.11 U
Nickel	18.8	20.8	17.5	4.7 U	4.5 U	4.4 U	4.3 U	10.8
Potassium	462 U	606 U	569 U	742 B	580 B	633 B	320 B	205 U
Selenium	0.61 UJ	0.62 UJ	0.62 UJ	0.6 U	0.57 U	0.56 UJ	0.55 UJ	0.55 UJ
Silver	2.3 B	1.6 U	1.6 U	1.1 UJ	1.1 UJ	1.1 UJ	1 UJ	1 UJ
Sodium	3700	3010	2230	2440 J	4370 J	4830 J	4840 J	6520 J
Thallium	0.38 U	0.38 U	0.38 U	0.38 UJ	0.36 UJ	0.35 UJ	0.34 UJ	0.34 UJ
Vanadium	108 J	160 J	116 J	195	134	176	84.5	80.7
Zinc	31.6	44.7	68.8	44.2	28.5	37.3	18.8	49.4

QUALIFIERS:

B - value is greater than the Instrument Detection Limit but less than the Contract Required Detection Limit

J - estimated value

NA - not analyzed

U - not detected

UJ - reported quantitation limit is estimated

* - duplicate analysis is greater than control limit

SAMPLE ID
UNITS

Acetone
Benzene
Bromodichloromethane
Bromoform
Bromomethane
Butanone,2-
Carbon disulfide
Carbon tetrachloride
Chlorobenzene
Chloroethane
Chloroform
Chloromethane
Dibromochloromethane
Dichlorethene,trans-1,2-
Dichloroethane,1,1-
Dichloroethane,1,2-
Dichloroethene,1,1-
Dichloroethene,1,2-(total)
Dichloroethene,cis-1,2-
Dichloropropane,1,2-
Dichloropropene,cis,1,3-

SAMPLE ID
UNITS

Dichloropropene,trans-1,3-
Ethylbenzene
Hexanone,2-
Methyl-2-pentanone,4-
Methylene chloride
Styrene
Tetrachloroethane,1,1,2,2-
Tetrachloroethene
Toluene
Trichloroethane,1,1,1-
Trichloroethane,1,1,2-
Trichloroethene
Vinyl acetate
Vinyl chloride
Xylenes(total)
Xylenes,m-,p-
Xylenes,o-

PESTICIDES/PCBs COMPOUNDS DETECTED IN THE GROUNDWATER AND SOIL
SITE 5 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	05 SS 143	05 SS 140C	05 SS 140D	05 SS140E
UNITS	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Aldrin	2.2 U	1.9 U	1.8 U	1.8 U
Aroclor-1016	43 U	36 U	35 U	36 U
Aroclor-1221	86 U	74 U	72 U	73 U
Aroclor-1232	43 U	36 U	35 U	36 U
Aroclor-1242	43 U	36 U	35 U	36 U
Aroclor-1248	43 U	36 U	35 U	36 U
Aroclor-1254	43 U	36 U	35 U	36 U
Aroclor-1260	43 U	36 U	35 U	36 U
BHC,alpha-	2.2 U	1.9 U	1.8 U	1.8 U
BHC,beta-	2.2 U	1.9 U	1.8 U	1.8 U
BHC,delta-	2.2 U	1.9 U	1.8 U	1.8 U
BHC,gamma-	2.2 U	1.9 UJ	1.8 UJ	1.8 UJ
Chlordane,alpha-	2.2 U	1.9 U	1.8 U	1.8 U
Chlordane,gamma-	2.2 U	1.9 UJ	1.8 U	0.24 J
DDD,4,4-	0.75 NJ	3.6 U	3.5 U	3.6 U
DDE,4,4-	4.3 U	3.6 UJ	3.5 UJ	3.6 U
DDT,4,4-	4.3 U	0.2 J	0.16 J	3.6 U
Dieldrin	2 J	3.6 U	3.5 U	3.6 U
Endosulfan I	2.8 NJ	1.9 UJ	1.8 UJ	1.8 UJ
Endosulfan II	4.3 U	3.6 U	3.5 UJ	3.6 UJ
Endosulfan sulfate	4.3 U	3.6 U	3.5 U	3.6 U
Endrin	4.3 U	0.12 J	3.5 U	3.6 U
Endrin aldehyde	4.3 U	3.6 U	0.14 J	3.6 U
Endrin ketone	4.3 U	3.6 U	3.5 UJ	3.6 U
Heptachlor	2.2 U	1.9 U	1.8 U	1.8 UJ
Heptachlor epoxide	0.46 NJ	1.9 UJ	1.8 U	1.8 U
Methoxychlor	22 UJ	19 U	1.9 UJ	0.23 NJ
Toxaphene	220 U	190 U	180 U	180 U

QUALIFIERS:

C - results were confirmed by GC/MS

D - parameter identified in an analysis at a secondary dilution factor

J - estimated value

NJ - presumptive evidence for the presence of the parameter at an estimated value

U - not detected

UJ - reported quantitation limit is estimated

SAMPLE ID
UNITS

Acenaphthene
Acenaphthylene
Anthracene
Benzo(a)anthracene
Benzo(a)pyrene
Benzo(b)fluoranthene
Benzo(g,h,i)perylene
Benzo(k)fluoranthene
Bis(2-chloroethoxy)methane
Bis(2-chloroethyl)ether
Bis(2-chloroisopropyl)ether
Bis(2-ethylhexyl)phthalate
Bromophenyl-phenylether,4-
Butylbenzylphthaalte
Carbazole
Chloro-3-methylphenol,4-
Chloroaniline,4-
Chloronaphthalene,2-
Chloropehnyl-phenylether,4-
Chlorophenol,2-

SAMPLE ID
UNITS

Chrysene
Di-n-butylphthalate
Di-n-octylphthalate
Dibenzo(a,h)anthracene
Dibenzofuran
Dichlorobenzene,1,2-
Dichlorobenzene,1,3-
Dichlorobenzene,1,4-
Dichlorobenzidine,3,3-
Dichlorophenol,2,4-
Diethylphthalate
Dimethylphenol,2,4-
Dimethylphthalate
Dinitro-2-methylphenol,4,6-
Dinitrophenol,2,4-
Dinitrotoluene,2,4-
Dinitrotoluene,2,4-
Fluoranthene
Fluorene
Hexachlorobenzene

SAMPLE ID
UNITS

Hexachlorobutadiene
Hexachlorocyclopentadiene
Hexachloroethane
Indeno(1,2,3-cd)pyrene
Isophorone
Methylnaphthalene,2-
Methylphenol,2-
Methylphenol,4-
N-nitrosodi-n-propylamine
N-nitrosodiphenylamine
Naphthalene
Nitroaniline,2-
Nitroaniline,3-
Nitroaniline,4-
Nitrobenzene
Nitrophenol,2-
Nitrophenol,4-
Pentachlorophenol
Phenanthrene
Phenol
Pyrene
Trichlorobenzene,1,2,4-
Trichlorophenol,2,4,5-
Trichlorophenol,2,4,6-

INORGANIC CHEMICALS DETECTED IN THE GROUNDWATER AND SOIL
SITE 5 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	05 SS 140C		05 SS 140D		05 SS140E	
UNITS	mg/Kg		mg/Kg		mg/Kg	
Aluminum	6880		8720		5770	
Antimony	10.6	U	10.6	U	10.6	U
Arsenic	0.67	U	0.67	U	0.67	U
Barium	92.5		141		101	
Beryllium	0.39	B	0.46	B	0.42	B
Cadmium	0.63	U	0.63	U	0.63	U
Calcium	4520		4730		3390	
Chromium	9	J	8	J	5.8	J
Cobalt	15.6		19.3		15.8	
Copper	19.6	J	28.8	J	16.1	J
Cyanide	0.11	U	0.11	U	0.11	U
Iron	10300		12700		9250	
Lead	4.1	*	4.7	*	3.1	*
Magnesium	2930		2860		2470	
Manganese	696	J	976	J	764	J
Mercury	0.11	UJ	0.11	UJ	0.1	UJ
Nickel	4.2	U	4.2	U	5.2	B
Potassium	1020	B	923	B	1310	
Selenium	0.54	UJ	0.6	J	0.54	UJ
Silver	1.9	B	1.4	U	2.4	
Sodium	500	U	575	U	507	U
Thallium	0.34	U	0.34	U	0.34	UJ
Vanadium	43.4	J	49.4	J	44.4	J
Zinc	24.6		38.6		22.4	

QUALIFIERS:

B - value is greater than the Instrument Detection Limit but less than the Contract Required Detection Limit

J - estimated value

NA - not analyzed

U - not detected

UJ - reported quantitation limit is estimated

* - duplicate analysis is greater than control limit

VOLATILE ORGANIC COMPOUNDS DETECTED IN THE GROUNDWATER AND SOIL
SITE 6 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	06 GW 101	06 SS 141	06 SS 142	06 SS 143	06 SS 145	06 SS 146	06 SS 147	06 SS 148
UNITS	ug/L	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Acetone	10 U	16 UJ	R	180 J	370 J	39 J	370 J	99 J
Benzene	5 U	8 U	18 U	10 U	7 U	7 U	6 U	6 U
Bromodichloromethane	5 U	8 U	18 U	10 U	7 U	7 U	6 U	6 U
Bromoform	5 U	8 U	18 U	10 U	7 U	7 U	6 U	6 U
Bromomethane	10 U	16 U	36 U	19 U	14 U	15 U	12 U	12 U
Butanone,2-	10 U	16 UJ	410 J	19 UJ	14 UJ	15 UJ	12 UJ	12 UJ
Carbon disulfide	5 U	17 U	110 U	10 U	7 U	7 U	3 J	6 U
Carbon tetrachloride	5 U	8 U	18 U	10 U	7 U	7 U	6 U	6 U
Chlorobenzene	5 U	8 U	18 UJ	10 U	7 U	7 U	6 U	6 U
Chloroethane	10 U	16 U	36 U	19 U	14 U	15 U	12 U	12 U
Chloroform	5 U	8 U	18 U	10 U	7 U	7 U	6 U	6 U
Chloromethane	10 U	16 U	36 U	19 U	14 U	15 U	12 U	12 U
Dibromochloromethane	5 U	8 U	18 U	10 U	7 U	7 U	6 U	6 U
Dichloroethane,1,1-	5 U	8 U	18 U	10 U	7 U	7 U	6 U	6 U
Dichloroethane,1,2-	5 U	8 U	18 U	10 U	7 U	7 U	6 U	6 U
Dichloroethene,1,1-	5 U	8 U	18 U	10 U	7 U	7 U	6 U	6 U
Dichloroethene,1,2- (total)	5 U	NA	NA	NA	NA	NA	NA	NA
Dichloroethene,cis-1,2-	NA	8 U	18 U	10 U	7 U	7 U	6 U	6 U
Dichloroethene,trans-1,2-	NA	8 U	18 U	10 U	7 U	7 U	6 U	6 U

QUALIFIERS:

E - concentration exceeds calibration range of GC/MS instrument

J - estimated value

NA - not analyzed

R - result is rejected and unusable

U - not detected

UJ - reported quantitation limit is estimated

VOLATILE ORGANIC COMPOUNDS DETECTED IN THE GROUNDWATER AND SOIL
SITE 6 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	06 GW 101	06 SS 141	06 SS 142	06 SS 143	06 SS 145	06 SS 146	06 SS 147	06 SS 148
UNITS	ug/L	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Dichloropropane,1,2-	5 U	8 U	18 U	10 U	7 U	7 U	6 U	6 U
Dichloropropene,cis,1,3-	5 U	8 U	18 U	10 U	7 U	7 U	6 U	6 U
Dichloropropene,trans-1,3-	5 U	8 U	18 U	10 U	7 U	7 U	6 U	6 U
Ethylbenzene	5 U	8 U	18 UJ	10 U	7 U	7 U	6 U	6 U
Hexanone,2-	10 U	16 U	36 UJ	19 U	14 U	15 U	12 U	12 U
Methyl-2-pentanone,4-	10 U	16 U	36 UJ	19 U	14 U	15 U	12 U	12 U
Methylene chloride	5 U	24	590	9 J	65	11	39 U	23
Styrene	5 U	8 U	18 UJ	10 U	7 U	7 U	6 U	6 U
Tetrachloroethane,1,1,2,2-	5 U	8 U	18 UJ	10 U	7 U	7 U	6 U	6 U
Tetrachloroethene	5 U	8 U	31 UJ	10 U	7 U	7 U	6 U	6 U
Toluene	5 U	8 U	14 J	10 U	7	7 U	6 U	6 U
Trichloroethane,1,1,1-	5 U	8 U	18 U	10 U	7 U	7 U	6 U	6 U
Trichloroethane,1,1,2-	5 U	8 U	18 U	10 U	7 U	7 U	6 U	6 U
Trichloroethene	5 U	8 U	18 U	10 U	7 U	7 U	6 U	6 U
Vinyl acetate	10 U	16 U	36 U	19 U	14 U	15 U	12 U	12 U
Vinyl chloride	10 U	16 U	36 U	19 U	14 U	15 U	12 U	12 U
Xylene, o-	NA	8 U	18 UJ	10 U	7 U	7 U	6 U	6 U
Xylenes(total)	5 U	NA	NA	NA	NA	NA	NA	NA
Xylenes, m-, p-	NA	8 U	18 UJ	10 U	7 U	7 U	6 U	6 U

QUALIFIERS:

E - concentration exceeds calibration range of GC/MS instrument

J - estimated value

NA - not analyzed

R - result is rejected and unusable

U - not detected

UJ - reported quantitation limit is estimated

PESTICIDES/PCBs COMPOUNDS DETECTED IN THE GROUNDWATER AND SOIL
SITE 6 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	06 GW 101	06 SS 141	06 SS 142	06 SS 143	06 SS 145	06 SS 146	06 SS 147	06 SS 148
UNITS	ug/L	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Aldrin	0.05 U	2.5 U	4.2 U	2.2 U	2.3 U	0.35 J	2.2 U	2.2 U
Aroclor-1016	1 U	49 U	82 U	43 U	45 U	52 U	42 U	43 U
Aroclor-1221	2 U	100 U	170 U	86 U	92 U	110 U	90 U	86 U
Aroclor-1232	1 U	49 U	82 U	43 U	45 U	52 U	42 U	43 U
Aroclor-1242	1 U	49 U	82 U	43 U	45 U	52 U	42 U	43 U
Aroclor-1248	1 U	49 U	82 U	43 U	45 U	52 U	42 U	43 U
Aroclor-1254	1 U	49 U	82 U	43 U	45 U	52 U	42 U	43 U
Aroclor-1260	1 U	49 U	82 U	43 U	45 U	52 U	42 U	43 U
BHC,alpha-	0.05 U	0.085 NJ	4.2 U	2.2 U	2.3 UJ	2.7 U	2.2 U	2.2 U
BHC,beta-	0.05 U	0.8 NJ	1.1 J	2.2 U	2.3 U	2.7 U	2.2 U	2.2 U
BHC,delta-	0.05 U	0.39 NJ	0.86 J	2.2 U	2.3 U	2.7 U	2.2 U	2.2 U
BHC,gamma-	0.05 U	2.5 U	0.13 NJ	2.2 U	1.2 NJ	2.7 U	2.2 U	2.2 U
Chlordane,alpha-	0.05 U	2.5 UJ	4.2 UJ	2.2 U	2.3 U	2.7 U	2.2 UJ	2.2 U
Chlordane,gamma-	0.05 UJ	2.5 UJ	4.2 U	2.2 U	2.3 U	2.7 U	2.2 U	2.2 U
DDD,4,4-	0.1 U	5.1	8.2 U	0.75 NJ	4.5 UJ	5.2 U	4.2 U	4.3 U
DDE,4,4-	0.1 U	3 NJ	8.2 U	4.3 U	5.3 J	5.2 U	4.2 U	4.3 U
DDT,4,4-	0.1 U	1 NJ	8.2 U	4.3 U	1.1 J	5.2 U	4.2 UJ	4.3 U
Dieldrin	0.1 UJ	4.9 U	4.2 UJ	2 J	4.5 UJ	5.2 U	4.2 U	4.3 U
Endosulfan I	0.05 U	2.5 U	1.5 NJ	2.8 NJ	2.3 UJ	2.7 U	2.2 U	2.2 U
Endosulfan II	0.1 U	4.9 U	8.2 UJ	4.3 U	0.15 NJ	5.2 U	4.2 U	4.3 U
Endosulfan sulfate	0.1 U	1 NJ	8.2 UJ	4.3 U	4.5 U	5.2 U	4.2 U	4.3 U
Endrin	0.1 U	4.9 UJ	8.2 UJ	4.3 U	0.15 NJ	5.2 U	4.2 U	4.3 U
Endrin aldehyde	0.1 U	4.9 U	8.2 U	4.3 U	0.71 J	5.2 U	4.2 U	4.3 U
Endrin ketone	0.1 U	4.9 UJ	8.2 U	4.3 U	0.25 NJ	5.2 U	4.2 U	4.3 U
Heptachlor	0.0017 NJ	0.36 J	0.42 J	2.2 U	0.17 J	2.7 U	0.11 J	2.2 UJ
Heptachlor epoxide	0.05 U	2.5 UJ	4.2 UJ	0.46 NJ	2.3 UJ	2.7 U	2.2 U	2.2 U
Methoxychlor	0.05 UJ	25 U	1.5 J	22 UJ	24 UJ	27 U	22 U	22 U
Toxaphene	5 U	250 U	420 U	220 U	230 U	270 U	220 U	220 U

QUALIFIERS:

J - estimated value

NJ - presumptive evidence for the presence of the parameter at an estimated value

U - not detected

UJ - reported quantitation limit is estimated

SEMIVOLATILE COMPOUNDS DETECTED IN THE GROUNDWATER AND SOIL
SITE 6 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	06 GW 101	06 SS 141	06 SS 142	06 SS 143	06 SS 145	06 SS 146	06 SS 147	06 SS 148
UNITS	ug/L	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Acenaphthene	21 U	2000 U	4400 U	2500 U	1900 U	1700 U	1500 U	1600 U
Acenaphthylene	21 U	2000 U	4400 U	2500 U	1900 U	1700 U	1500 U	1600 U
Anthracene	21 U	2000 U	4400 U	2500 U	1900 U	110 J	1500 U	1600 U
Benzo(a)anthracene	21 U	2000 U	4400 U	2500 U	1900 U	1000 J	1500 U	1600 U
Benzo(a)pyrene	21 U	2000 U	4400 U	2500 U	180 J	270 J	1500 U	1600 U
Benzo(b)fluoranthene	21 U	2000 U	4400 U	2500 U	180 J	1300 J	1500 U	1600 U
Benzo(g,h,i)perylene	21 U	2000 U	4400 U	2500 U	1900 U	350 J	1500 U	1600 U
Benzo(k)fluoranthene	21 U	2000 U	4400 U	2500 U	260 J	2000	1500 U	1600 U
Bis(2-chloroethoxy)methane	21 U	2000 U	4400 U	2500 U	1900 U	1700 U	1500 U	1600 U
Bis(2-chloroethyl)ether	21 U	R	4400 U	2500 U	R	R	1500 U	1600 U
Bis(2-chloroisopropyl)ether	21 U	R	4400 U	2500 U	R	R	1500 U	1600 U
Bis(2-ethylhexyl)phthalate	2 J	2000 U	15000	2500 U	1900 U	1700 U	1500 U	1600 U
Bromophenyl-phenylether,4-	21 U	R	4400 U	2500 U	R	R	1500 U	1600 U
Butylbenzylphthaalte	21 U	2000 U	4400 U	2500 U	1900 U	1700 U	1500 U	1600 U
Carbazole	21 U	2000 U	4400 U	2500 U	1900 U	92 J	1500 U	1600 U
Chloro-3-methylphenol,4-	21 U	R	4400 U	2500 U	R	R	1500 U	1600 U
Chloroaniline,4-	21 U	2000 U	4400 U	2500 U	1900 U	1700 U	1500 U	1600 U
Chloronaphthalene,2-	21 U	2000 U	4400 U	2500 U	1900 U	1700 U	1500 U	1600 U
Chloropehnyl-phenylether,4-	21 U	R	4400 U	2500 U	R	R	1500 U	1600 U
Chlorophenol,2-	21 U	R	4400 U	2500 U	R	R	1500 U	1600 U
Chrysene	21 U	2000 U	4400 U	2500 U	150 J	1400 J	1500 U	1600 U
Di-n-butylphthalate	21 U	2000 U	4400 U	2500 U	1900 U	94 J	1500 U	1600 U

QUALIFIERS:
J - estimated value
R - result is rejected and unusable
U - not detected

SEMIVOLATILE COMPOUNDS DETECTED IN THE GROUNDWATER AND SOIL
SITE 6 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	06 GW 101	06 SS 141	06 SS 142	06 SS 143	06 SS 145	06 SS 146	06 SS 147	06 SS 148
UNITS	ug/L	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Di-n-octylphthalate	21 U	2000 U	4400 U	2500 U	1900 U	1700 U	1500 U	1600 U
Dibenzo(a,h)anthracene	21 U	2000 U	4400 U	2500 U	1900 U	450 J	1500 U	1600 U
Dibenzofuran	21 U	2000 U	4400 U	2500 U	1900 U	1700 U	1500 U	1600 U
Dichlorobenzene,1,2-	21 U	2000 U	4400 U	2500 U	1900 U	1700 U	1500 U	1600 U
Dichlorobenzene,1,3-	21 U	2000 U	4400 U	2500 U	1900 U	1700 U	1500 U	1600 U
Dichlorobenzene,1,4-	21 U	2000 U	4400 U	2500 U	1900 U	1700 U	1500 U	1600 U
Dichlorobenzidine,3,3-	21 U	2000 U	4400 U	2500 U	1900 U	1700 U	1500 U	1600 U
Dichlorophenol,2,4-	21 U	R	4400 U	2500 U	R	R	1500 U	1600 U
Diethylphthalate	21 U	2000 U	4400 U	2500 U	1900 U	1700 U	1500 U	1600 U
Dimethylphenol,2,4-	21 U	R	4400 U	2500 U	R	R	1500 U	1600 U
Dimethylphthalate	21 U	2000 U	4400 U	2500 U	1900 U	1700 U	1500 U	1600 U
Dinitro-2-methylphenol,4,6-	53 U	R	11000 U	6300 U	R	R	3800 U	4000 U
Dinitrophenol,2,4-	53 U	R	11000 U	6300 U	R	R	3800 U	4000 U
Dinitrotoluene,2,4-	21 U	2000 U	4400 U	2500 U	1900 U	1700 U	1500 U	1600 U
Dinitrotoluene,2,4-	21 U	2000 U	4400 U	2500 U	1900 U	1700 U	1500 U	1600 U
Fluoranthene	21 U	2000 U	4400 U	2500 U	1900 U	3200	1500 U	1600 U
Fluorene	21 U	2000 U	4400 U	2500 U	1900 U	1700 U	1500 U	1600 U
Hexachlorobenzene	21 U	2000 U	4400 U	2500 U	1900 U	1700 U	1500 U	1600 U
Hexachlorobutadiene	21 U	2000 U	4400 U	2500 U	1900 U	1700 U	1500 U	1600 U
Hexachlorocyclopentadiene	21 U	2000 U	4400 U	2500 U	1900 U	1700 U	1500 U	1600 U
Hexachloroethane	21 U	2000 U	4400 U	2500 U	1900 U	1700 U	1500 U	1600 U

QUALIFIERS:
J - estimated value
R - result is rejected and unusable
U - not detected

SEMIVOLATILE COMPOUNDS DETECTED IN THE GROUNDWATER AND SOIL
SITE 6 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	06 GW 101	06 SS 141	06 SS 142	06 SS 143	06 SS 145	06 SS 146	06 SS 147	06 SS 148
UNITS	ug/L	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Indeno(1,2,3-cd)pyrene	21 U	2000 U	4400 U	2500 U	1900 U	700 J	1500 U	1600 U
Isophorone	21 U	2000 U	4400 U	2500 U	1900 U	1700 U	1500 U	1600 U
Methylnaphthalene,2-	21 U	2000 U	4400 U	2500 U	1900 U	1700 U	1500 U	1600 U
Methylphenol,2-	21 U	R	4400 U	2500 U	R	R	1500 U	1600 U
Methylphenol,4-	21 U	R	4400 U	2500 U	R	R	1500 U	1600 U
N-nitrosodi-n-propylamine	21 U	R	4400 U	2500 U	R	R	1500 U	1600 U
N-nitrosodiphenylamine	21 U	R	4400 U	2500 U	R	R	1500 U	1600 U
Naphthalene	21 U	2000 U	4400 U	2500 U	1900 U	1700 U	1500 U	1600 U
Nitroaniline,2-	53 U	5000 U	11000 U	6300 U	4800 U	4300 U	3800 U	4000 U
Nitroaniline,3-	53 U	5000 U	11000 U	6300 U	4800 U	4300 U	3800 U	4000 U
Nitroaniline,4-	53 U	5000 U	11000 U	6300 U	4800 U	4300 U	3800 U	4000 U
Nitrobenzene	21 U	2000 U	4400 U	2500 U	1900 U	1700 U	1500 U	1600 U
Nitrophenol,2-	21 U	R	4400 U	2500 U	R	R	1500 U	1600 U
Nitrophenol,4-	53 U	R	11000 U	6300 U	R	R	3800 U	4000 U
Pentachlorophenol	53 U	R	11000 U	6300 U	R	R	3800 U	4000 U
Phenanthrene	21 U	2000 U	4400 U	2500 U	1900 U	1900	1500 U	1600 U
Phenol	21 U	R	4400 U	2500 U	R	R	1500 U	1600 U
Pyrene	21 U	2000 U	4400 U	2500 U	1900 U	2100	1500 U	1600 U
Trichlorobenzene,1,2,4-	21 U	2000 U	4400 U	2500 U	1900 U	1700 U	1500 U	1600 U
Trichlorophenol,2,4,5-	53 U	R	11000 U	6300 U	R	R	3800 U	4000 U
Trichlorophenol,2,4,6-	21 U	R	4400 U	2500 U	R	R	1500 U	1600 U

QUALIFIERS:
J - estimated value
R - result is rejected and unusable
U - not detected

INORGANIC CHEMICALS DETECTED IN THE GROUNDWATER AND SOIL
SITE 6 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	06 GW 101A	06 GW 101B	06 SS 141	06 SS 142	06 SS 143	06 SS 145	06 SS 146	06 SS 147
UNITS	ug/L	ug/L	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Aluminum	1200	48.9 J	21600	12400	20000	15100	18600	1660 J
Antimony	47.2 U	47.2 U	17.9 J	21.4 J	6.3 J	20.1 J	19.8 J	2.4 UJ
Arsenic	3 U	3 U	17.5	21.4	1.2 U	19.6	18.7	3.3
Barium	22.5 U	35.2 U	156	25.1 U	100	410	509	24 B
Beryllium	1.5 B	0.6 U	0.47 B	0.82 B	0.51 B	0.77 B	0.57 B	0.15 U
Cadmium	2.8 U	2.8 U	8.7	9.3	2.1 UJ	3.9	5	1.3 UJ
Calcium	62500	58700	51900	15900	9920	48200	61000	487000
Chromium	10.4 UJ	10.4 UJ	59.8	110	19	40.6	39.4	6.1
Cobalt	15.5 UJ	15.5 UJ	10.7 B	6.9 U	23.7	16.8	15.7	2.3 U
Copper	5.1 UJ	8.5 J	5850	1490	227	739	774	4.3 B
Cyanide	10 U	NA	0.16 U	0.36 U	0.19 U	0.14 U	0.15 U	0.12 U
Iron	1730	14.5 UJ	168000	238000	43400	38000	44900	4040 J
Lead	1.5 UJ	1.8 U	1210 J	546 J	130 J	4760 J	5850 J	3.1
Magnesium	80700	77500	9980	14600	12200	10900	12700	3290
Manganese	R	R	972	766	808	596	601	75.5
Mercury	0.2 UJ	0.2 UJ	0.15 U	0.3 U	0.15 U	0.45	0.68	0.12 U
Nickel	7.8 UJ	7.8 UJ	49.9	108	10.2 B	19.4	17.4	4.6 UJ
Potassium	2180 U	2250 BU	1540 B	3690	2760	2350	2200	347 BU
Selenium	4.8 J	9.2 J	0.75 U	2.1 J	0.92 U	0.7 U	0.72 J	0.59 UJ
Silver	6.3 U	6.3 U	2.8 UJ	3.2 UJ	1.7 UJ	1.3 UJ	1.3 UJ	1.1 UJ
Sodium	801000 J	786000 J	13100 J	50100 J	13100 J	4940 J	7540 J	2800 J
Thallium	R	1.5 UJ	0.47 UJ	1.1 UJ	0.58 UJ	0.43 UJ	0.44 UJ	0.37 UJ
Vanadium	30 J	17.9 J	90.6	145	118	122	116	9.3 B
Zinc	20.2 J	16.5 B	3350	592	200	1440	2010	8.3

QUALIFIERS:

B - value is greater than the Instrument Detection Limit but less than the Contract Required Detection Limit

J - estimated value

NA - not analyzed

R - result is rejected and unusable

U - not detected

UJ - reported quantitation limit is estimated

VOLATILE ORGANIC COMPOUNDS DETECTED IN THE GROUNDWATER AND SOIL
SITE 6 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	06 SS 149DUP	06 SS 150	06 SS 151	06 SS 153	06 SS 154
UNITS	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Acetone	62 J	560 J	450 J	220 J	350 EJ
Benzene	6 U	10 U	7 U	7 U	1 J
Bromodichloromethane	6 U	10 U	7 U	7 U	R
Bromoform	6 U	10 U	7 U	7 U	R
Bromomethane	12 U	20 U	14 U	13 U	R
Butanone,2-	12 UJ	20 UJ	14 UJ	13 UJ	13 J
Carbon disulfide	6 U	10 U	7 U	7 U	R
Carbon tetrachloride	6 U	10 U	7 U	7 U	R
Chlorobenzene	6 U	10 U	7 U	7 U	R
Chloroethane	12 U	20 U	14 U	13 U	R
Chloroform	6 U	10 U	7 U	7 U	R
Chloromethane	12 U	20 U	14 U	13 U	R
Dibromochloromethane	6 U	10 U	7 U	7 U	R
Dichloroethane,1,1-	6 U	10 U	7 U	7 U	R
Dichloroethane,1,2-	6 U	10 U	7 U	7 U	R
Dichloroethene,1,1-	6 U	10 U	7 U	7 U	R
Dichloroethene,1,2- (total)	NA	NA	NA	NA	NA
Dichloroethene,cis-1,2-	6 U	10 U	7 U	7 U	R
Dichloroethene,trans-1,2-	6 U	10 U	7 U	7 U	R

QUALIFIERS:

E - concentration exceeds calibration range of GC/MS instrument
J - estimated value
NA - not analyzed
R - result is rejected and unusable
U - not detected
UJ - reported quantitation limit is estimated

VOLATILE ORGANIC COMPOUNDS DETECTED IN THE GROUNDWATER AND SOIL
SITE 6 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	06 SS 149DUP	06 SS 150	06 SS 151	06 SS 153	06 SS 154
UNITS	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Dichloropropane,1,2-	6 U	10 U	7 U	7 U	R
Dichloropropene,cis,1,3-	6 U	10 U	7 U	7 U	R
Dichloropropene,trans-1,3-	6 U	10 U	7 U	7 U	R
Ethylbenzene	6 U	10 U	7 U	7 U	2 J
Hexanone,2-	12 U	20 U	14 U	13 U	R
Methyl-2-pentanone,4-	12 U	20 U	14 U	13 U	11 J
Methylene chloride	15	40	27	32	300 EJ
Styrene	6 U	10 U	7 U	7 U	R
Tetrachloroethane,1,1,2,2-	6 U	10 U	7 U	7 U	R
Tetrachloroethene	6 U	10 U	7 U	7 U	R
Toluene	6 U	10 U	7 U	7 U	18 J
Trichloroethane,1,1,1-	6 U	10 U	7 U	7 U	R
Trichloroethane,1,1,2-	6 U	10 U	7 U	7 U	R
Trichloroethene	6 U	10 U	7 U	7 U	R
Vinyl acetate	12 U	20 U	14 U	13 U	R
Vinyl chloride	12 U	20 U	14 U	13 U	R
Xylene, o-	6 U	10 U	7 U	7 U	3 J
Xylenes(total)	NA	NA	NA	NA	NA
Xylenes, m-, p-	6 U	10 U	7 U	7 U	5 J

QUALIFIERS:

E - concentration exceeds calibration range of GC/MS instrument
J - estimated value
NA - not analyzed
R - result is rejected and unusable
U - not detected
UJ - reported quantitation limit is estimated

PESTICIDES/PCBs COMPOUNDS DETECTED IN THE GROUNDWATER AND SOIL
SITE 6 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	06 SS 149DUP	06 SS 150	06 SS 151	06 SS 152 DUP	06 SS 153	06 SS 154	06 SS 155C	06 SS 155D
UNITS	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Aldrin	2.1 U	2.4 U	2.4 U	2.5 U	0.27 J	2.1 U	2.2 U	2.2 U
Aroclor-1016	40 U	47 U	47 U	48 U	40 U	41 U	43 U	42 U
Aroclor-1221	81 U	94 U	94 U	97 U	81 U	82 U	87 U	85 U
Aroclor-1232	40 U	47 U	47 U	48 U	40 U	41 U	43 U	42 U
Aroclor-1242	40 U	47 U	47 U	48 U	40 U	41 U	43 U	42 U
Aroclor-1248	40 U	47 U	47 U	48 U	40 U	41 U	43 U	42 U
Aroclor-1254	40 U	47 U	47 U	48 U	40 U	41 U	43 U	42 U
Aroclor-1260	40 U	47 U	47 U	48 U	40 U	41 U	43 U	42 U
BHC,alpha-	2.1 U	2.4 U	2.4 U	2.5 U	2.1 U	2.1 U	2.2 U	2.2 U
BHC,beta-	0.48 J	2.4 U	2.4 UJ	0.43 NJ	2.1 U	2.1 U	2.2 U	2.2 U
BHC,delta-	2.1 U	2.4 U	2.4 U	2.5 U	2.1 U	2.1 U	2.2 U	2.2 U
BHC,gamma-	2.1 U	2.4 U	2.4 UJ	2.5 U	2.1 U	2.1 U	2.2 U	2.2 U
Chlordane,alpha-	2.1 U	2.4 UJ	2.4 U	2.5 U	2.1 U	1.5 NJ	2.2 UJ	2.2 U
Chlordane,gamma-	2.1 U	2.4 UJ	2.4 U	2.5 U	2.1 U	2.1 U	2.2 U	2.2 U
DDD,4,4-	4 U	4.7 UJ	4.7 U	4.8 U	4 U	4.1 U	4.3 U	4.2 U
DDE,4,4-	4 U	4.7 U	0.68 J	4.8 U	4 U	4.1 U	4.3 U	4.2 U
DDT,4,4-	4 U	0.74 J	1.7 J	0.22 NJ	4 U	4.1 UJ	0.92 U	4.2 U
Dieldrin	4 U	4.7 U	0.064 NJ	0.44 J	4 U	4.1 U	4.3 U	4.2 U
Endosulfan I	2.1 U	2.4 U	2.4 UJ	2.5 U	2.1 U	2.1 U	2.2 UJ	2.2 U
Endosulfan II	4 U	4.7 U	0.33 J	4.8 U	4 U	4.1 U	4.3 UJ	4.2 U
Endosulfan sulfate	4 U	4.7 U	4.7 U	4.8 U	4 U	4.1 U	4.3 U	4.2 U
Endrin	4 U	4.7 U	4.7 U	0.31 J	4 U	1.6 J	0.11 J	4.2 U
Endrin aldehyde	4 U	4.7 U	4.7 U	4.8 U	4 U	4.1 U	4.3 U	4.2 U
Endrin ketone	4 U	4.7 U	4.7 U	4.8 U	4 U	4.1 U	4.3 U	4.2 U
Heptachlor	2.1 U	2.4 UJ	2.4 UJ	2.5 U	2.1 UJ	2.1 UJ	2.2 UJ	2.2 UJ
Heptachlor epoxide	2.1 U	2.4 U	2.4 U	2.5 U	2.1 U	0.35 J	0.13 NJ	2.2 U
Methoxychlor	21 U	24 U	25 UJ	25 U	21 U	21 U	22 U	22 U
Toxaphene	210 U	240 U	240 U	250 U	210 U	210 U	220 U	220 U

QUALIFIERS:
J - estimated value
NJ - presumptive evidence for the presence of the parameter at an estimated value
U - not detected
UJ - reported quantitation limit is estimated

SEMIVOLATILE COMPOUNDS DETECTED IN THE GROUNDWATER AND SOIL
SITE 6 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	06 SS 149DUP	06 SS 150	06 SS 151	06 SS 153	06 SS 154
UNITS	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Acenaphthene	1600 U	2700 U	1800 U	1700 U	1400 U
Acenaphthylene	1600 U	2700 U	1800 U	1700 U	1400 U
Anthracene	1600 U	2700 U	1800 U	1700 U	1400 U
Benzo(a)anthracene	1600 U	2700 U	1800 U	1700 U	1400 U
Benzo(a)pyrene	1600 U	2700 U	1800 U	1700 U	1400 U
Benzo(b)fluoranthene	1600 U	2700 U	1800 U	1700 U	1400 U
Benzo(g,h,i)perylene	1600 U	2700 U	1800 U	1700 U	1400 U
Benzo(k)fluoranthene	1600 U	2700 U	1800 U	1700 U	1400 U
Bis(2-chloroethoxy)methane	1600 U	2700 U	1800 U	1700 U	1400 U
Bis(2-chloroethyl)ether	1600 U	2700 U	1800 U	1700 U	1400 U
Bis(2-chloroisopropyl)ether	1600 U	2700 U	1800 U	1700 U	1400 U
Bis(2-ethylhexyl)phthalate	1600 U	2700 U	3300	1700 U	630 J
Bromophenyl-phenylether,4-	1600 U	2700 U	1800 U	1700 U	1400 U
Butylbenzylphthaalte	1600 U	2700 U	1800 U	1700 U	1400 U
Carbazole	1600 U	2700 U	1800 U	1700 U	1400 U
Chloro-3-methylphenol,4-	1600 U	2700 U	1800 U	1700 U	1400 U
Chloroaniline,4-	1600 U	2700 U	1800 U	1700 U	1400 U
Chloronaphthalene,2-	1600 U	2700 U	1800 U	1700 U	1400 U
Chloropehnyl-phenylether,4-	1600 U	2700 U	1800 U	1700 U	1400 U
Chlorophenol,2-	1600 U	2700 U	1800 U	1700 U	1400 U
Chrysene	1600 U	2700 U	1800 U	1700 U	1400 U
Di-n-butylphthalate	1600 U	2700 U	1800 U	1700 U	1400 U

QUALIFIERS:
J - estimated value
R - result is rejected and unusable
U - not detected

PESTICIDES/PCBs COMPOUNDS DETECTED IN THE GROUNDWATER AND SOIL
SITE 6 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	06 SS 155E	
UNITS	ug/Kg	
Aldrin	1.9	U
Aroclor-1016	37	U
Aroclor-1221	75	U
Aroclor-1232	37	U
Aroclor-1242	37	U
Aroclor-1248	37	U
Aroclor-1254	37	U
Aroclor-1260	37	U
BHC,alpha-	1.9	U
BHC,beta-	1.9	U
BHC,delta-	1.9	U
BHC,gamma-	1.9	U
Chlordane,alpha-	1.9	UJ
Chlordane,gamma-	1.9	U
DDD,4,4-	3.7	U
DDE,4,4-	0.8	J
DDT,4,4-	0.82	J
Dieldrin	3.7	U
Endosulfan I	1.9	U
Endosulfan II	3.7	U
Endosulfan sulfate	3.7	U
Endrin	3.7	U
Endrin aldehyde	3.7	U
Endrin ketone	3.7	U
Heptachlor	1.9	UJ
Heptachlor epoxide	1.9	U
Methoxychlor	19	U
Toxaphene	190	U

QUALIFIERS:
J - estimated value
NJ - presumptive evidence for the presence of the parameter at an estimated value
U - not detected
UJ - reported quantitation limit is estimated

INORGANIC CHEMICALS DETECTED IN THE GROUNDWATER AND SOIL
SITE 6 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	06 SS 155E	
UNITS	mg/Kg	
Aluminum	24100	J
Antimony	2.8	J
Arsenic	0.78	U
Barium	129	
Beryllium	1.7	
Cadmium	2.7	
Calcium	16000	
Chromium	37.4	
Cobalt	82.3	
Copper	47.5	
Cyanide	0.13	U
Iron	63600	J
Lead	8.6	
Magnesium	3960	
Manganese	3130	
Mercury	0.12	U
Nickel	14.3	J
Potassium	363	BU
Selenium	0.62	UJ
Silver	1.2	UJ
Sodium	2810	J
Thallium	0.39	UJ
Vanadium	256	
Zinc	39.1	

QUALIFIERS:
B - value is greater than the Instrument Detection Limit but less than the Contract Required Detection Limit
J - estimated value
NA - not analyzed
R - result is rejected and unusable
U - not detected
UJ - reported quantitation limit is estimated

VOLATILE ORGANIC COMPOUNDS DETECTED IN THE GROUNDWATER
SITE 7 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	07 GW 101	07 GW 102	07 GW 103	07 GW 104	07 GW 105	07 GW 106	07 GW 106	07 GW 107
UNITS	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Acetone	10 U	15 J	16 J	22 J	13 J	22 J	11 J	19 J
Benzene	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Bromodichloromethane	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Bromoform	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Bromomethane	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Butanone,2-	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Carbon disulfide	5 U	5 U	3 J	5 J	5 U	5 U	5 U	5 U
Carbon tetrachloride	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Chlorobenzene	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Chloroethane	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chloroform	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Chloromethane	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dibromochloromethane	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Dichloroethane,1,1-	5 U	5 U	5 U	5 U	3 J	5 U	5 U	5 U
Dichloroethane,1,2-	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Dichloroethene,1,1-	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Dichloroethene,1,2- (total)	5 U	5 U	5 U	5 U	7	5 U	5 U	5 U
Dichloropropane,1,2-	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Dichloropropene,cis-1,3-	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Dichloropropene,trans-1,3-	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Ethylbenzene	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Hexanone,2-	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Methyl-2-pentanone,4-	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Methylene chloride	5 U	5 U	5 U	3 J	5 U	3 J	5 U	3 J
Styrene	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Tetrachloroethane,1,1,2,2-	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Tetrachloroethene	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Toluene	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Trichloroethane,1,1,1-	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Trichloroethane,1,1,2-	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Trichloroethene	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Vinyl acetate	10 U	10 U	10 U	10 U	10 U	10 U	5 U	10 U
Vinyl chloride	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Xylenes(total)	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U

Qualifiers:
J - estimated value
U - not detected

PESTICIDES/PCBs COMPOUNDS DETECTED IN THE GROUNDWATER
SITE 7 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	07 GW 101	07 GW 102	07 GW 103	07 GW 104	07 GW 105	07 GW 106	07 GW 107	07 GW 108
UNITS	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Aldrin	0.13 U	0.0064 U	0.32 U	0.0062 U	0.0064 U	0.0064 U	0.0065 U	0.0069 U
Aroclor-1016	2.6 U	0.13 U	6.4 U	0.12 U	0.13 U	0.13 U	0.13 U	0.14 U
Aroclor-1221	5.2 U	0.26 U	13 U	0.25 U	0.26 U	0.26 U	0.26 U	0.28 U
Aroclor-1232	2.6 U	0.13 U	6.4 U	0.12 U	0.13 U	0.13 U	0.13 U	0.14 U
Aroclor-1242	2.6 U	0.13 U	6.4 U	0.12 U	0.13 U	0.13 U	0.13 U	0.14 U
Aroclor-1248	2.6 U	0.13 U	6.4 U	0.12 U	0.13 U	0.13 U	0.13 U	0.14 U
Aroclor-1254	2.6 U	0.13 U	6.4 U	0.12 U	0.13 U	0.13 U	0.13 U	0.14 U
Aroclor-1260	2.6 U	0.13 U	6.4 U	0.12 U	0.13 U	0.13 U	0.13 U	0.14 U
BHC,alpha-	0.13 U	0.0064 U	0.32 U	0.0062 U	0.0064 U	0.0064 U	0.0065 U	0.0069 U
BHC,beta-	0.13 U	0.0064 U	0.32 U	0.0062 U	0.0064 U	0.0064 U	0.0065 U	0.0069 U
BHC,delta-	0.13 U	0.0064 U	0.32 U	0.0062 U	0.0064 U	0.0064 U	0.0065 U	0.0069 U
BHC,gamma-	0.13 U	0.0064 U	0.32 U	0.0062 U	0.0064 U	0.0064 U	0.0065 U	0.0069 U
Chlordane,alpha-	0.13 U	0.0064 U	0.32 U	0.0062 U	0.0064 U	0.0064 U	0.0065 U	0.0069 U
Chlordane,gamma-	0.13 U	0.0064 U	0.32 U	0.0062 U	0.0064 U	0.0064 U	0.0065 U	0.0069 U
DDD,4,4-	0.26 U	0.013 U	0.64 U	0.012 U	0.013 U	0.013 U	0.013 U	0.014 U
DDE,4,4-	0.26 U	0.013 U	0.64 U	0.012 U	0.013 U	0.013 U	0.013 U	0.014 U
DDT,4,4-	0.26 U	0.013 U	0.64 U	0.012 U	0.013 U	0.013 U	0.013 U	0.014 U
Dieldrin	0.26 U	0.013 U	0.64 U	0.012 U	0.013 U	0.013 U	0.013 U	0.014 U
Endosulfan I	0.13 U	0.0064 U	0.32 U	0.0062 U	0.0064 U	0.0064 U	0.0065 U	0.0069 U
Endosulfan II	0.26 U	0.013 U	0.64 U	0.012 U	0.013 U	0.013 U	0.013 U	0.014 U
Endosulfan sulfate	0.26 U	0.013 U	0.64 U	0.012 U	0.013 U	0.013 U	0.013 U	0.014 U
Endrin	0.26 U	0.013 U	0.64 U	0.012 U	0.013 U	0.013 U	0.013 U	0.014 U
Endrin aldehyde	0.26 U	0.013 U	0.64 U	0.012 U	0.013 U	0.013 U	0.013 U	0.014 U
Endrin ketone	0.26 U	0.013 U	0.64 U	0.012 U	0.013 U	0.013 U	0.013 U	0.014 U
Heptachlor	0.13 U	0.0064 U	0.32 U	0.0062 U	0.0064 U	0.0064 U	0.0065 U	0.0069 U
Heptachlor epoxide	0.13 U	0.0064 U	0.32 U	0.0062 U	0.0064 U	0.0064 U	0.0065 U	0.0069 U
Methoxychlor	1.3 U	0.064 U	3.2 U	0.012 U	0.064 U	0.064 U	0.065 U	0.069 U
Toxaphene	13 U	0.64 U	32 U	0.62 U	0.64 U	0.64 U	0.65 U	0.69 U

Qualifiers:
U - not detected

SEMIVOLATILE COMPOUNDS DETECTED IN THE GROUNDWATER
SITE 7 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	07 GW 101	07 GW 102	07 GW 103	07 GW 104	07 GW 105	07 GW 106	07 GW 107	07 GW 108
UNITS	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Acenaphthene	20 U	20 U	20 U	20 U	20 U	R	21 U	21 U
Acenaphthylene	20 U	20 U	20 U	20 U	20 U	R	21 U	21 U
Anthracene	20 U	20 U	20 U	20 U	20 U	R	21 U	21 U
Benzo(a)anthracene	20 U	20 U	20 U	20 U	20 U	R	21 U	21 U
Benzo(a)pyrene	20 U	20 U	20 U	20 U	20 U	R	21 U	21 U
Benzo(b)fluoranthene	20 U	20 U	20 U	20 U	20 U	R	21 U	21 U
Benzo(g,h,i)perylene	20 U	20 U	20 U	20 U	20 U	R	21 U	21 U
Benzo(k)fluoranthene	20 U	20 U	20 U	20 U	20 U	R	21 U	21 U
Bis(2-chloroethoxy)methane	20 U	20 U	20 U	20 U	20 U	R	21 U	21 U
Bis(2-chloroethyl)ether	20 U	20 U	20 U	20 U	20 U	R	21 U	21 U
Bis(2-chloroisopropyl)ether	20 U	20 U	20 U	20 U	20 U	R	21 U	21 U
Bis(2-ethylhexyl)phthalate	1 J	20 U	20 U	5 J	6 J	R	2 J	5 J
Bromophenyl-phenylether,4-	20 U	20 U	20 U	20 U	20 U	R	21 U	21 U
Butylbenzylphthaalte	20 U	20 U	20 U	20 U	20 U	R	21 U	21 U
Carbazole	20 U	20 U	20 U	20 U	20 U	R	21 U	21 U
Chloro-3-methylphenol,4-	20 U	20 U	20 U	20 U	20 U	R	21 U	21 U
Chloroaniline,4-	20 U	20 U	20 U	20 U	20 U	R	21 U	21 U
Chloronaphthalene,2-	20 U	20 U	20 U	20 U	20 U	R	21 U	21 U
Chloropehnyl-phenylether,4-	20 U	20 U	20 U	20 U	20 U	R	21 U	21 U
Chlorophenol,2-	20 U	20 U	20 U	20 U	20 U	R	21 U	21 U
Chrysene	20 U	20 U	20 U	20 U	20 U	R	21 U	21 U

Qualifiers:
J - estimated value
R - rejected value
U - not detected

SEMIVOLATILE COMPOUNDS DETECTED IN THE GROUNDWATER
SITE 7 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	07 GW 101	07 GW 102	07 GW 103	07 GW 104	07 GW 105	07 GW 106	07 GW 107	07 GW 108
UNITS	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Di-n-butylphthalate	20 U	20 U	20 U	20 U	6 J	R	21 U	21 U
Di-n-octylphthalate	20 U	20 U	20 U	20 U	20 U	R	21 U	21 U
Dibenzo(a,h)anthracene	20 U	20 U	20 U	20 U	20 U	R	21 U	21 U
Dibenzofuran	20 U	20 U	20 U	20 U	20 U	R	21 U	21 U
Dichlorobenzene,1,2-	20 U	20 U	20 U	20 U	20 U	R	21 U	21 U
Dichlorobenzene,1,3-	20 U	20 U	20 U	20 U	20 U	R	21 U	21 U
Dichlorobenzene,1,4-	20 U	20 U	20 U	20 U	20 U	R	21 U	21 U
Dichlorobenzidine,3,3-	20 U	20 U	20 U	20 U	20 U	R	21 U	21 U
Dichlorophenol,2,4-	20 U	20 U	20 U	20 U	20 U	R	21 U	21 U
Diethylphthalate	20 U	20 U	20 U	20 U	20 U	R	21 U	21 U
Dimethylphenol,2,4-	20 U	20 U	20 U	20 U	20 U	R	21 U	21 U
Dimethylphthalate	20 U	20 U	20 U	20 U	20 U	R	21 U	21 U
Dinitro-2-methylphenol,4,6-	51 U	51 U	51 U	51 U	51 U	R	51 U	53 U
Dinitrophenol,2,4-	51 U	51 U	51 U	51 U	51 U	R	51 U	53 U
Dinitrotoluene,2,4-	20 U	20 U	20 U	20 U	20 U	R	21 U	21 U
Dinitrotoluene,2,4-	20 U	20 U	20 U	20 U	20 U	R	21 U	21 U
Fluoranthene	20 U	20 U	20 U	20 U	20 U	R	21 U	21 U
Fluorene	20 U	20 U	20 U	20 U	20 U	R	21 U	21 U
Hexachlorobenzene	20 U	20 U	20 U	20 U	20 U	R	21 U	21 U
Hexachlorobutadiene	20 U	20 U	20 U	20 U	20 U	R	21 U	21 U
Hexachlorocyclopentadiene	20 U	20 U	20 U	20 U	20 U	R	21 U	21 U
Hexachloroethane	20 U	20 U	20 U	20 U	20 U	R	21 U	21 U

Qualifiers:
J - estimated value
R - rejected value
U - not detected

SEMIVOLATILE COMPOUNDS DETECTED IN THE GROUNDWATER
SITE 7 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	07 GW 101	07 GW 102	07 GW 103	07 GW 104	07 GW 105	07 GW 106	07 GW 107	07 GW 108
UNITS	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Indeno(1,2,3-cd)pyrene	20 U	20 U	20 U	20 U	20 U	R	21 U	21 U
Isophorone	20 U	20 U	20 U	20 U	20 U	R	21 U	21 U
Methylnaphthalene,2-	20 U	20 U	20 U	20 U	20 U	R	21 U	21 U
Methylphenol,2-	20 U	20 U	20 U	20 U	20 U	R	21 U	21 U
Methylphenol,4-	20 U	20 U	20 U	20 U	20 U	R	21 U	21 U
N-nitrosodi-n-propylamine	20 U	20 U	20 U	20 U	20 U	R	21 U	21 U
N-nitrosodiphenylamine	20 U	20 U	20 U	20 U	20 U	R	21 U	21 U
Naphthalene	20 U	20 U	20 U	20 U	20 U	R	21 U	21 U
Nitroaniline,2-	51 U	51 U	51 U	51 U	51 U	R	51 U	53 U
Nitroaniline,3-	51 U	51 U	51 U	51 U	51 U	R	51 U	53 U
Nitroaniline,4-	51 U	51 U	51 U	51 U	51 U	R	51 U	53 U
Nitrobenzene	20 U	20 U	20 U	20 U	20 U	R	21 U	21 U
Nitrophenol,2-	20 U	20 U	20 U	20 U	20 U	R	21 U	21 U
Nitrophenol,4-	51 U	51 U	51 U	51 U	51 U	R	51 U	53 U
Pentachlorophenol	51 U	51 U	51 U	51 U	51 U	R	51 U	53 U
Phenanthrene	20 U	20 U	20 U	20 U	20 U	R	21 U	21 U
Phenol	20 U	20 U	20 U	20 U	20 U	R	21 U	21 U
Pyrene	20 U	20 U	20 U	20 U	20 U	R	21 U	21 U
Trichlorobenzene,1,2,4-	20 U	20 U	20 U	20 U	20 U	R	21 U	21 U
Trichlorophenol,2,4,5-	51 U	51 U	51 U	51 U	51 U	R	51 U	53 U
Trichlorophenol,2,4,6-	20 U	20 U	20 U	20 U	20 U	R	21 U	21 U

Qualifiers:
J - estimated value
R - rejected value
U - not detected

INORGANIC CHEMICALS DETECTED IN THE GROUNDWATER
SITE 7 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	07 GW 101A	07 GW 101B	07 GW 102A	07 GW 102B	07 GW 103A	07 GW 103B	07 GW 104A	07 GW 104B
UNIT	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Aluminum	4700 J	104 U	101 UJ	82.5 U	49100 J	39.2 UJ	3390 J	98.2 U
Antimony	47.2 U	47.2 U	47.2 U	256	47.2 UJ	47.2 UJ	47.2 U	47.2 U
Arsenic	7.8 B	3 U	3 U	3 U	34.8 J	7 J	15 U	3 UJ
Barium	294	119 B	40.6 B	39 B	178 J	77 J	98.4 B	80.6 B
Beryllium	0.6 U	0.6 U	0.6 U	0.6 U	2.2 J	0.8 UJ	0.6 U	0.6 U
Cadmium	3.9 B	2.8 U	2.8 U	2.8 U	6.2 J	2.8 UJ	2.8 U	2.8 U
Calcium	136000 J	105000	111000	137000	1530000 J	253000 J	358000	347000
Chromium	10.3 UJ	10.3 UJ	10.3 UJ	10.3 UJ	91.8 J	5.9 UJ	10.3 UJ	10.3 UJ
Cobalt	177	9.6 U	9.6 U	9.6 U	33.6 J	15.5 UJ	9.6 U	9.6 U
Copper	37.4	8 B	5.1 U	5.1 U	296 J	10.9 J	30.6	9.4 B
Iron	32000 J	119	691 J	85 B	59300 J	16 J	9620 J	305
Lead	9 UJ	9 UJ	9 U	9 UJ	1.8 UJ	18 UJ	9 UJ	9 U
Magnesium	266000	270000	186000	338000	1440000 J	1280000 J	1300000	1300000
Manganese	775	215	395 J	246	1140 J	155 J	2160 J	1950
Mercury	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ
Nickel	42.4	18.7 U	18.7 U	18.7 U	36.8 J	7.8 UJ	18.7 U	18.7 U
Potassium	94200 J	88700 J	106000 J	156000 J	326000 J	374000 J	408000 J	405000 J
Selenium	12 UJ	24 U	12 UJ	24 UJ	12 UJ	12 UJ	12 UJ	24 UJ
Silver	6.3 U	6.3 U	6.3 U	6.3 U	6.3 J	6.3 UJ	6.3 U	6.3 U
Sodium	2810000 J	2630000 J	195000 J	3340000 J	10100000 J	10300000 J	14800000 J	15900000 J
Thallium	7.5 UJ	7.5 UJ	1.5 UJ	7.5 UJ	7.5 UJ	7.5 UJ	7.5 UJ	15 UJ
Vanadium	65.9	52.1	14.3 U	14.3 U	172 J	8.5 UJ	14.3 U	14.3 U
Zinc	40.1	12.1 U	12.1 U	12.1 U	285 J	22.5 J	125	12.1 U
Cyanide	10 UJ	NA	10 UJ	NA	10 UJ	NA	10 U	NA

Qualifiers:

B - value is greater than the Instrument Detection Limit but less than the Contract Required Detection Limit

J - estimated value

R - result is rejected and unusable

U - not detected

UJ - reported quantitation limit is estimated

VOLATILE ORGANIC COMPOUNDS DETECTED IN THE GROUNDWATER
SITE 7 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	07 GW 108	07 GW 109	07 GW 110
UNITS	ug/L	ug/L	ug/L
Acetone	22 J	12 J	20 J
Benzene	5 U	5 U	5 U
Bromodichloromethane	5 U	5 U	5 U
Bromoform	5 U	5 U	5 U
Bromomethane	10 U	10 U	10 U
Butanone,2-	10 U	10 U	10 U
Carbon disulfide	5 U	5 U	6
Carbon tetrachloride	5 U	5 U	5 U
Chlorobenzene	5 U	5 U	5 U
Chloroethane	10 U	10 U	10 U
Chloroform	5 U	5 U	5 U
Chloromethane	10 U	10 U	10 U
Dibromochloromethane	5 U	5 U	5 U
Dichloroethane,1,1-	5 U	5 U	5 U
Dichloroethane,1,2-	5 U	5 U	5 U
Dichloroethene,1,1-	5 U	5 U	5 U
Dichloroethene,1,2- (total)	5 U	5 U	5 U
Dichloropropane,1,2-	5 U	5 U	5 U
Dichloropropene,cis-1,3-	5 U	5 U	5 U
Dichloropropene,trans-1,3-	5 U	5 U	5 U
Ethylbenzene	5 U	5 U	5 U
Hexanone,2-	10 U	10 U	10 U
Methyl-2-pentanone,4-	10 U	10 U	10 U
Methylene chloride	3 J	5 U	5 U
Styrene	5 U	5 U	5 U
Tetrachloroethane,1,1,2,2-	5 U	5 U	5 U
Tetrachloroethene	5 U	5 U	5 U
Toluene	5 U	5 U	5 U
Trichloroethane,1,1,1-	5 U	5 U	5 U
Trichloroethane,1,1,2-	5 U	5 U	5 U
Trichloroethene	5 U	5 U	5 U
Vinyl acetate	10 U	5 U	5 U
Vinyl chloride	10 U	10 U	10 U
Xylenes(total)	5 U	5 U	5 U

Qualifiers:
J - estimated value
U - not detected

PESTICIDES/PCBs COMPOUNDS DETECTED IN THE GROUNDWATER
SITE 7 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	07 GW 109DUP		07 GW 110DUP	
UNITS	ug/L		ug/L	
Aldrin	0.0064	U	0.32	U
Aroclor-1016	0.13	U	6.4	U
Aroclor-1221	0.26	U	13	U
Aroclor-1232	0.13	U	6.4	U
Aroclor-1242	0.13	U	6.4	U
Aroclor-1248	0.13	U	6.4	U
Aroclor-1254	0.13	U	6.4	U
Aroclor-1260	0.13	U	6.4	U
BHC,alpha-	0.0064	U	0.32	U
BHC,beta-	0.0064	U	0.32	U
BHC,delta-	0.0064	U	0.32	U
BHC,gamma-	0.0064	U	0.32	U
Chlordane,alpha-	0.0064	U	0.32	U
Chlordane,gamma-	0.0064	U	0.32	U
DDD,4,4-	0.013	U	0.64	U
DDE,4,4-	0.013	U	0.64	U
DDT,4,4-	0.013	U	0.64	U
Dieldrin	0.013	U	0.64	U
Endosulfan I	0.0064	U	0.32	U
Endosulfan II	0.013	U	0.64	U
Endosulfan sulfate	0.013	U	0.64	U
Endrin	0.013	U	0.64	U
Endrin aldehyde	0.013	U	0.64	U
Endrin ketone	0.013	U	0.64	U
Heptachlor	0.0064	U	0.32	U
Heptachlor epoxide	0.0064	U	0.32	U
Methoxychlor	0.064	U	3.2	U
Toxaphene	0.64	U	32	U

Qualifiers:
U - not detected

SEMIVOLATILE COMPOUNDS DETECTED IN THE GROUNDWATER
SITE 7 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	07 GW 109DUP		07 GW 110DUP	
UNITS	ug/L		ug/L	
Acenaphthene	20	U	20	U
Acenaphthylene	20	U	20	U
Anthracene	20	U	20	U
Benzo(a)anthracene	20	U	20	U
Benzo(a)pyrene	20	U	20	U
Benzo(b)fluoranthene	20	U	20	U
Benzo(g,h,i)perylene	20	U	20	U
Benzo(k)fluoranthene	20	U	20	U
Bis(2-chloroethoxy)methane	20	U	20	U
Bis(2-chloroethyl)ether	20	U	20	U
Bis(2-chloroisopropyl)ether	20	U	20	U
Bis(2-ethylhexyl)phthalate	20	U	26	U
Bromophenyl-phenylether,4-	20	U	20	U
Butylbenzylphthaalte	20	U	20	U
Carbazole	20	U	20	U
Chloro-3-methylphenol,4-	20	U	20	U
Chloroaniline,4-	20	U	20	U
Chloronaphthalene,2-	20	U	20	U
Chloropehnyl-phenylether,4-	20	U	20	U
Chlorophenol,2-	20	U	20	U
Chrysene	20	U	20	U

Qualifiers:
J - estimated value
R - rejected value
U - not detected

SEMIVOLATILE COMPOUNDS DETECTED IN THE GROUNDWATER
SITE 7 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	07 GW 109DUP		07 GW 110DUP	
UNITS	ug/L		ug/L	
Di-n-butylphthalate	20	U	20	U
Di-n-octylphthalate	20	U	20	U
Dibenzo(a,h)anthracene	20	U	20	U
Dibenzofuran	20	U	20	U
Dichlorobenzene,1,2-	20	U	20	U
Dichlorobenzene,1,3-	20	U	20	U
Dichlorobenzene,1,4-	20	U	20	U
Dichlorobenzidine,3,3-	20	U	20	U
Dichlorophenol,2,4-	20	U	20	U
Diethylphthalate	20	U	20	U
Dimethylphenol,2,4-	20	U	20	U
Dimethylphthalate	20	U	20	U
Dinitro-2-methylphenol,4,6-	51	U	51	U
Dinitrophenol,2,4-	51	U	51	U
Dinitrotoluene,2,4-	20	U	20	U
Dinitrotoluene,2,4-	20	U	20	U
Fluoranthene	20	U	20	U
Fluorene	20	U	20	U
Hexachlorobenzene	20	U	20	U
Hexachlorobutadiene	20	U	20	U
Hexachlorocyclopentadiene	20	U	20	U
Hexachloroethane	20	U	20	U

Qualifiers:
J - estimated value
R - rejected value
U - not detected

SEMIVOLATILE COMPOUNDS DETECTED IN THE GROUNDWATER
SITE 7 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	07 GW 109DUP		07 GW 110DUP	
UNITS	ug/L		ug/L	
Indeno(1,2,3-cd)pyrene	20	U	20	U
Isophorone	20	U	20	U
Methylnaphthalene,2-	20	U	20	U
Methylphenol,2-	20	U	20	U
Methylphenol,4-	20	U	20	U
N-nitrosodi-n-propylamine	20	U	20	U
N-nitrosodiphenylamine	20	U	20	U
Naphthalene	20	U	20	U
Nitroaniline,2-	51	U	51	U
Nitroaniline,3-	51	U	51	U
Nitroaniline,4-	51	U	51	U
Nitrobenzene	20	U	20	U
Nitrophenol,2-	20	U	20	U
Nitrophenol,4-	51	U	51	U
Pentachlorophenol	51	U	51	U
Phenanthrene	20	U	20	U
Phenol	20	U	20	U
Pyrene	20	U	20	U
Trichlorobenzene,1,2,4-	20	U	20	U
Trichlorophenol,2,4,5-	51	U	51	U
Trichlorophenol,2,4,6-	20	U	20	U

Qualifiers:
J - estimated value
R - rejected value
U - not detected

INORGANIC CHEMICALS DETECTED IN THE GROUNDWATER
SITE 7 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	07 GW 105A	07 GW 105B	07 GW 106A	07 GW 106B	07 GW 107A	07 GW 107B	07 GW 108A	07 GW 108B
UNIT	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Aluminum	416 J	93.2 U	498 J	39.2 UJ	2690 J	108 U	2210 J	60.2 U
Antimony	47.2 U	47.2 U	47.2 UJ	47.2 UJ	47.2 U	47.2 U	47.2 U	47.2 U
Arsenic	3 U	3 U	3 UJ	3 UJ	3 U	3 U	30.6	3 UJ
Barium	35.2 U	35.2 U	60.7 J	57.7 J	35.2 U	35.2 U	60.2 B	62.4 B
Beryllium	0.6 U	0.6 U	0.8 UJ	0.8 UJ	0.6 U	0.6 U	0.6 U	0.6 U
Cadmium	2.8 U	2.8 U	2.8 UJ	2.8 UJ	2.8 U	2.8 U	2.8 U	2.8 U
Calcium	312000	270000	198000 J	183000 J	139000	89800	472000	345000
Chromium	10.3 UJ	10.3 UJ	5.9 UJ	5.9 UJ	10.3 UJ	10.3 UJ	10.3 UJ	10.3 UJ
Cobalt	9.6 U	9.6 U	15.5 UJ	15.5 UJ	9.6 U	9.6 U	9.6 U	9.6 U
Copper	5.2 B	8.7 B	9.9 J	5.1 UJ	13 B	5.1 U	17.1 B	5.1 U
Iron	4810 J	740	1410 J	38 J	7150 J	51.9 B	6650 J	39.2 B
Lead	9 UJ	1.8 UJ	4.8 J	1.8 UJ	2.7 J	1.8 U	9 UJ	1.8 U
Magnesium	454000	442000	249000 J	228000 J	67400	61600	1360000	1410000
Manganese	78 J	60.5	518 J	443 J	102 J	41.4	80.9 J	28.8
Mercury	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ
Nickel	18.7 U	18.7 U	7.8 UJ	7.8 UJ	18.7 U	18.7 U	18.7 U	18.7 U
Potassium	1420000 J	159000 J	93600 J	71900 J	10400 J	9320 J	405000 J	369000 J
Selenium	12 UJ	24 UJ	12 UJ	12 UJ	2.5 J	2.4 U	12 UJ	24 UJ
Silver	6.3 U	6.3 U	6.3 UJ	6.3 UJ	6.3 U	6.3 U	6.3 U	6.3 U
Sodium	20100000 J	31300000 J	2190000 J	1560000 J	222000 J	194000 J	12500000 J	9900000 J
Thallium	7.5 UJ	7.5 UJ	1.5 UJ	1.5 UJ	1.5 UJ	1.5 UJ	7.5 UJ	15 UJ
Vanadium	14.3 U	14.3 U	8.5 UJ	8.5 UJ	18 B	14.3 U	14.3 U	14.3 U
Zinc	12.1 U	12.1 U	21.1 J	12.1 UJ	16.7 B	12.1 U	12.1 U	12.1 U
Cyanide	10 UJ	NA	10 UJ	NA	10 UJ	NA	10 UJ	NA

Qualifiers:

B - value is greater than the Instrument Detection Limit but less than the Contract Required Detection Limit

J - estimated value

R - result is rejected and unusable

U - not detected

UJ - reported quantitation limit is estimated

INORGANIC CHEMICALS DETECTED IN THE GROUNDWATER
SITE 7 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	07 GW 109A		07 GW 109B		07 GW 110A		07 GW 110B	
UNIT	ug/L		ug/L		ug/L		ug/L	
Aluminum	4820	J	39.2	UJ	35900	J	62.9	J
Antimony	47.2	UJ	47.2	UJ	47.2	UJ	47.2	UJ
Arsenic	3	UJ	3	UJ	22.2	J	4.3	J
Barium	70.1	J	67.4	J	163	J	74.1	J
Beryllium	0.8	UJ	0.8	UJ	2	J	0.8	UJ
Cadmium	2.8	UJ	2.8	UJ	3.6	J	2.8	UJ
Calcium	195000	J	202000	J	1550000	J	300000	J
Chromium	5.9	UJ	5.9	UJ	67.8	J	5.9	UJ
Cobalt	15.5	UJ	15.5	UJ	15.5	UJ	15.5	UJ
Copper	28.2	UJ	5.1	UJ	160	J	5.1	UJ
Iron	6730	J	94.3	J	34500	J	92.8	J
Lead	3.1	J	1.8	UJ	100	J	18	UJ
Magnesium	229000	J	268000	J	1390000	J	1320000	J
Manganese	532	J	463	J	922	J	172	J
Mercury	0.2	UJ	0.2	UJ	0.2	UJ	0.2	UJ
Nickel	7.8	UJ	7.8	UJ	9.6	J	7.8	UJ
Potassium	76500	J	91700	J	298000	J	440000	J
Selenium	12	UJ	12	UJ	12	UJ	12	UJ
Silver	6.3	UJ	6.3	UJ	8.4	J	6.3	UJ
Sodium	1600000	J	1880000	J	10600000	J	10700000	J
Thallium	1.5	UJ	7.5	UJ	7.5	UJ	7.5	UJ
Vanadium	8.5	UJ	8.5	UJ	137	J	8.5	UJ
Zinc	23.2	J	12.1	UJ	237	J	18.2	J
Cyanide	10	UJ	NA		10	UJ	NA	

Qualifiers:

B - value is greater than the Instrument Detection Limit but less than the Contract Required Detection Limit

J - estimated value

R - result is rejected and unusable

U - not detected

UJ - reported quantitation limit is estimated

VOLATILE ORGANIC COMPOUNDS DETECTED IN THE SOIL
SITE 10 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	10 SS 156	10 SS 158DUP	10 SS 159	10 SS 161	10 SS 163
UNITS	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Acetone	130 U	10 UJ	40 U	11 U	11 U
Benzene	6 U	6 U	5 U	6 U	5 U
Bromodichloromethane	6 U	6 U	5 U	6 U	5 U
Bromoform	6 U	6 U	5 U	6 U	5 U
Bromomethane	11 U	11 U	11 U	11 U	11 U
Butanone,2-	11 UJ	11 UJ	11 U	11 U	11 UJ
Carbon disulfide	21 U	15 U	7 U	7 J	39 J
Carbon tetrachloride	6 U	6 U	5 U	6 U	5 U
Chlorobenzene	6 U	6 U	5 U	6 UJ	5 UJ
Chloroethane	11 U	11 U	11 U	11 U	11 U
Chloroform	6 U	6 U	5 U	6 U	5 U
Chloromethane	11 U	11 U	11 U	11 U	11 U
Dibromochloromethane	6 U	6 U	5 U	6 U	5 U
Dichloroethane,1,1-	6 U	6 U	5 U	6 U	5 U
Dichloroethane,1,2-	6 U	6 U	5 U	6 U	5 U
Dichloroethene -1, 2 (cis)	6 U	6 U	5 U	6 UJ	5 UJ
Dichloroethene,1,1-	6 U	6 U	5 U	6 U	5 U
Dichloroethene,1,2- (total)	6 U	6 U	5 U	6 U	5 U
Dichloropropane,1,2-	6 U	6 U	5 U	6 U	5 U
Dichloropropene,cis,1,3-	6 U	6 U	5 U	6 U	5 U
Dichloropropene,trans-1,3-	6 U	6 U	5 U	6 U	5 U
Ethylbenzene	6 U	6 U	5 U	6 UJ	5 UJ
Hexanone,2-	11 U	11 U	11 U	11 UJ	11 UJ
Methyl-2-pentanone,4-	11 U	11 U	11 U	11 UJ	11 UJ
Methylene chloride	27 U	32 U	29 U	20 U	98 J
Styrene	6 U	6 U	5 U	6 UJ	5 UJ
Tetrachloroethane,1,1,2,2-	6 U	6 U	5 U	6 UJ	5 UJ
Tetrachloroethene	6 U	6 U	5 U	6 UJ	5 UJ
Toluene	6 U	6 U	5 U	6 UJ	3 J
Trichloroethane,1,1,1-	6 U	6 U	5 U	6 U	5 U
Trichloroethane,1,1,2-	6 U	6 U	5 U	6 U	5 U
Trichloroethene	6 U	6 U	5 U	6 U	5 U
Vinyl acetate	11 U	11 U	11 U	11 U	11 U
Vinyl chloride	11 U	11 U	11 U	11 U	11 U
Xylene, m-, p-	6 U	6 U	5 U	6 UJ	2 J
Xylene, o-	6 U	6 U	5 U	6 UJ	5 UJ

Qualifiers:
J - estimated value
U - not detected
UJ - reported quantitation limit is estimated

PESTICIDES/PCBs COMPOUNDS DETECTED IN THE SOIL
SITE 10 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	10 SS 156	10 SS 158DUP	10 SS 159	10 SS 161	10 SS 163	10 SS 165C
UNITS	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Aldrin	0.24 UJ	0.24 UJ	0.23 UJ	0.24 UJ	0.22 UJ	0.29 UJ
Aroclor-1016	4.6 UJ	4.7 UJ	4.5 UJ	4.6 UJ	8.8 UJ	5.6 UJ
Aroclor-1221	9.3 UJ	9.5 UJ	9.1 UJ	9.3 UJ	4.3 UJ	11 UJ
Aroclor-1232	4.6 UJ	4.7 UJ	4.5 UJ	4.6 UJ	4.3 UJ	5.6 UJ
Aroclor-1242	4.6 UJ	4.7 UJ	4.5 UJ	4.6 UJ	4.3 UJ	5.6 UJ
Aroclor-1248	4.6 UJ	4.7 UJ	4.5 UJ	4.6 UJ	4.3 UJ	5.6 UJ
Aroclor-1254	4.6 UJ	4.7 UJ	4.5 UJ	4.6 UJ	4.3 UJ	5.6 UJ
Aroclor-1260	4.6 UJ	4.7 UJ	4.5 UJ	4.6 UJ	4.3 UJ	5.6 UJ
BHC,alpha-	0.24 UJ	0.24 UJ	0.23 UJ	0.24 UJ	0.22 UJ	0.29 UJ
BHC,beta-	0.24 UJ	0.24 UJ	0.23 UJ	0.24 UJ	0.22 UJ	0.29 UJ
BHC,delta-	0.24 UJ	0.24 UJ	0.23 UJ	0.24 UJ	0.22 UJ	0.29 UJ
BHC,gamma-	0.24 UJ	0.24 UJ	0.23 UJ	0.24 UJ	0.22 UJ	0.29 UJ
Chlordane,alpha-	0.24 UJ	0.24 UJ	0.23 UJ	0.24 UJ	0.22 UJ	0.29 UJ
Chlordane,gamma-	0.24 UJ	0.24 UJ	0.23 UJ	0.24 UJ	0.22 UJ	0.29 UJ
DDD,4,4-	0.46 UJ	0.47 UJ	0.45 UJ	0.46 UJ	0.43 UJ	0.56 UJ
DDE,4,4-	0.46 UJ	0.47 UJ	0.45 UJ	3.7 J	0.43 UJ	0.56 UJ
DDT,4,4-	0.46 UJ	0.47 UJ	0.45 UJ	2.4 J	0.43 UJ	0.56 UJ
Dieldrin	0.46 UJ	0.47 UJ	0.45 UJ	0.46 UJ	0.43 UJ	0.56 UJ
Endosulfan I	0.24 UJ	0.24 UJ	0.23 UJ	0.24 UJ	0.22 UJ	0.29 UJ
Endosulfan II	0.46 UJ	0.47 UJ	0.45 UJ	0.46 UJ	0.43 UJ	0.56 UJ
Endosulfan sulfate	0.46 UJ	0.47 UJ	0.54 J	0.46 UJ	0.43 UJ	0.56 UJ
Endrin	0.46 UJ	0.47 UJ	0.45 UJ	0.46 UJ	0.43 UJ	R
Endrin aldehyde	0.46 UJ	0.47 UJ	0.45 UJ	0.46 UJ	0.43 UJ	0.56 UJ
Endrin ketone	0.46 UJ	0.47 UJ	0.33 NJ	0.46 UJ	0.43 UJ	0.56 UJ
Heptachlor	0.24 UJ	0.24 UJ	0.23 UJ	0.24 UJ	0.22 UJ	0.29 UJ
Heptachlor epoxide	0.24 UJ	0.24 UJ	0.23 UJ	0.24 UJ	0.22 UJ	0.29 UJ
Methoxychlor	2.4 UJ	2.4 UJ	2.3 UJ	1.5 UJ	2.2 UJ	2.9 UJ
Toxaphene	24 UJ	24 UJ	23 UJ	24 UJ	4.3 UJ	29 UJ

Qualifers:
J - estimated value
R - rejected value
UJ - reported quantitation limit is estimated

SEMIVOLATILE COMPOUNDS DETECTED IN THE SOIL
SITE 10 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	10 SS 156	10 SS 158DUP	10 SS 159	10 SS 161	10 SS 163
UNITS	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Acenaphthene	1500 U	1500 U	84 J	1500 U	1300 U
Acenaphthylene	1500 U	1500 U	1400 U	1500 U	1300 U
Anthracene	1500 U	1500 U	110 J	1500 U	1300 U
Benzo(a)anthracene	1500 U	1500 U	510 J	460 J	360 J
Benzo(a)pyrene	1500 U	1500 U	310 J	260 J	350 J
Benzo(b)fluoranthene	1500 U	1500 U	620 J	790 J	830 J
Benzo(g,h,i)perylene	1500 U	1500 U	150 J	200 J	1300 UJ
Benzo(k)fluoranthene	1500 U	1500 U	1400 U	1500 U	1300 UJ
Bis(2-chloroethoxy)methane	1500 U	1500 U	1400 U	1500 U	1300 U
Bis(2-chloroethyl)ether	1500 U	1500 U	1400 U	1500 U	1300 U
Bis(2-chloroisopropyl)ether	1500 U	1500 U	450 J	1500 U	550 J
Bis(2-ethylhexyl)phthalate	310 J	1500 U	250 J	160 J	130 J
Bromophenyl-phenylether,4-	1500 U	1500 U	1400 U	1500 U	1300 U
Butylbenzylphthaalte	1500 U	1500 U	1400 U	1500 U	1300 U
Carbazole	1500 U	1500 U	1400 U	1500 U	1300 U
Chloro-3-methylphenol,4-	1500 U	1500 U	1400 U	1500 U	1300 U
Chloroaniline,4-	1500 U	1500 U	1400 U	1500 U	1300 U
Chloronaphthalene,2-	1500 U	1500 U	1400 U	1500 U	1300 U
Chloropehnyl-phenylether,4-	1500 U	1500 U	1400 U	1500 U	1300 U
Chlorophenol,2-	1500 U	1500 U	1400 U	1500 U	1300 U
Chrysene	1500 U	1500 U	800 J	500 J	370 J

Qualifiers:
J - estimated value
U - not detected

SEMIVOLATILE COMPOUNDS DETECTED IN THE SOIL
SITE 10 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	10 SS 156	10 SS 158DUP	10 SS 159	10 SS 161	10 SS 163
UNITS	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Di-n-butylphthalate	1500 U	1500 U	1400 U	1500 U	1300 U
Di-n-octylphthalate	1500 U	1500 U	1400 U	1500 U	1300 U
Dibenzo(a,h)anthracene	1500 U	1500 U	1400 U	160 J	1300 UJ
Dibenzofuran	1500 U	1500 U	1400 U	1500 U	1300 U
Dichlorobenzene,1,2-	1500 U	1500 U	1400 U	1500 U	1300 U
Dichlorobenzene,1,3-	1500 U	1500 U	1400 U	1500 U	1300 U
Dichlorobenzene,1,4-	1500 U	1500 U	1400 U	1500 U	1300 U
Dichlorobenzidine,3,3-	1500 U	1500 U	1400 U	1500 U	1300 U
Dichlorophenol,2,4-	1500 U	1500 U	1400 U	1500 U	1300 U
Diethylphthalate	1500 U	1500 U	1400 U	1500 U	1300 U
Dimethylphenol,2,4-	1500 U	1500 U	1400 U	1500 U	1300 U
Dimethylphthalate	1500 U	1500 U	1400 U	1500 U	1300 U
Dinitro-2-methylphenol,4,6-	3800 U	3800 U	3500 U	3800 U	3300 U
Dinitrophenol,2,4-	3800 U	3800 U	3500 U	3800 U	3300 U
Dinitrotoluene,2,4-	1500 U	1500 U	1400 U	1500 U	1300 U
Dinitrotoluene,2,4-	1500 U	1500 U	1400 U	1500 U	1300 U
Fluoranthene	1500 U	1500 U	970 J	1100 J	530 J
Fluorene	1500 U	1500 U	1400 U	1500 U	1300 U
Hexachlorobenzene	1500 U	1500 U	1400 U	1500 U	1300 U
Hexachlorobutadiene	1500 U	1500 U	1400 U	1500 U	1300 U
Hexachlorocyclopentadiene	1500 U	1500 U	1400 U	1500 U	1300 U

Qualifiers:
J - estimated value
U - not detected

SEMIVOLATILE COMPOUNDS DETECTED IN THE GROUNDWATER AND SOIL
SITE 6 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	06 SS 149DUP	06 SS 150	06 SS 151	06 SS 153	06 SS 154
UNITS	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Di-n-octylphthalate	1600 U	2700 U	1800 U	1700 U	1400 U
Dibenzo(a,h)anthracene	1600 U	2700 U	1800 U	1700 U	1400 U
Dibenzofuran	1600 U	2700 U	1800 U	1700 U	1400 U
Dichlorobenzene,1,2-	1600 U	2700 U	1800 U	1700 U	1400 U
Dichlorobenzene,1,3-	1600 U	2700 U	1800 U	1700 U	1400 U
Dichlorobenzene,1,4-	1600 U	2700 U	1800 U	1700 U	1400 U
Dichlorobenzidine,3,3-	1600 U	2700 U	1800 U	1700 U	1400 U
Dichlorophenol,2,4-	1600 U	2700 U	1800 U	1700 U	1400 U
Diethylphthalate	1600 U	2700 U	1800 U	1700 U	1400 U
Dimethylphenol,2,4-	1600 U	2700 U	1800 U	1700 U	1400 U
Dimethylphthalate	1600 U	2700 U	1800 U	1700 U	1400 U
Dinitro-2-methylphenol,4,6-	4000 U	6800 U	4500 U	4300 U	3500 U
Dinitrophenol,2,4-	4000 U	6800 U	4500 U	4300 U	3500 U
Dinitrotoluene,2,4-	1600 U	2700 U	1800 U	1700 U	1400 U
Dinitrotoluene,2,4-	1600 U	2700 U	1800 U	1700 U	1400 U
Fluoranthene	1600 U	2700 U	1800 U	1700 U	1400 U
Fluorene	1600 U	2700 U	1800 U	1700 U	1400 U
Hexachlorobenzene	1600 U	2700 U	1800 U	1700 U	1400 U
Hexachlorobutadiene	1600 U	2700 U	1800 U	1700 U	1400 U
Hexachlorocyclopentadiene	1600 U	2700 U	1800 U	1700 U	1400 U
Hexachloroethane	1600 U	2700 U	1800 U	1700 U	1400 U

QUALIFIERS:
J - estimated value
R - result is rejected and unusable
U - not detected

SEMIVOLATILE COMPOUNDS DETECTED IN THE GROUNDWATER AND SOIL
SITE 6 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	06 SS 149DUP	06 SS 150	06 SS 151	06 SS 153	06 SS 154
UNITS	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Indeno(1,2,3-cd)pyrene	1600 U	2700 U	1800 U	1700 U	1400 U
Isophorone	1600 U	2700 U	1800 U	1700 U	1400 U
Methylnaphthalene,2-	1600 U	2700 U	1800 U	1700 U	1400 U
Methylphenol,2-	1600 U	2700 U	1800 U	1700 U	1400 U
Methylphenol,4-	1600 U	2700 U	1800 U	1700 U	1400 U
N-nitrosodi-n-propylamine	1600 U	2700 U	1800 U	1700 U	1400 U
N-nitrosodiphenylamine	1600 U	2700 U	1800 U	1700 U	1400 U
Naphthalene	1600 U	2700 U	1800 U	1700 U	1400 U
Nitroaniline,2-	4000 U	6800 U	4500 U	4300 U	3500 U
Nitroaniline,3-	4000 U	6800 U	4500 U	4300 U	3500 U
Nitroaniline,4-	4000 U	6800 U	4500 U	4300 U	3500 U
Nitrobenzene	1600 U	2700 U	1800 U	1700 U	1400 U
Nitrophenol,2-	1600 U	2700 U	1800 U	1700 U	1400 U
Nitrophenol,4-	4000 U	6800 U	4500 U	4300 U	3500 U
Pentachlorophenol	4000 U	6800 U	4500 U	4300 U	3500 U
Phenanthrene	1600 U	2700 U	1800 U	1700 U	1400 U
Phenol	1600 U	2700 U	1800 U	1700 U	1400 U
Pyrene	1600 U	2700 U	1800 U	1700 U	1400 U
Trichlorobenzene,1,2,4-	1600 U	2700 U	1800 U	1700 U	1400 U
Trichlorophenol,2,4,5-	4000 U	6800 U	4500 U	4300 U	3500 U
Trichlorophenol,2,4,6-	1600 U	2700 U	1800 U	1700 U	1400 U

QUALIFIERS:
J - estimated value
R - result is rejected and unusable
U - not detected

INORGANIC CHEMICALS DETECTED IN THE GROUNDWATER AND SOIL
SITE 6 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	06 SS 148	06 SS 149DUP	06 SS 150	06 SS 151	06 SS 153	06 SS 154	06 SS 155C	06 SS 155D
UNITS	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Aluminum	7220 J	13700 J	36600 J	38600 J	23900 J	22800 J	20600 J	27200 J
Antimony	2.4 UJ	2.4 UJ	4 UJ	2.8 UJ	2.6 UJ	2.9 J	3.8 J	3 J
Arsenic	0.95 B	1.7 B	1.2 U	1.5 J	6.9	10.5	0.83 U	0.82 U
Barium	32.4 B	41.9 B	189	213	263	173	78.2	83.1
Beryllium	0.16 B	0.22 B	1.5 B	1.3 B	0.41 B	0.42 B	1.4	1.4
Cadmium	1.3 UJ	1.3 UJ	6.3	5.1	1.5 UJ	1.5 UJ	3.3	3.9
Calcium	20100 B	337000	6460	10700	166000	154000	2760	1880
Chromium	15.4	21.7	13.5	2.8	42.7	26.4	33	40.7
Cobalt	3.5 B	4.9 B	45.5	14.1	11.5 B	14.2	40.1	41.1
Copper	13.2	17.6	136	86.3	77.8	60.7	48.8	54.5
Cyanide	0.12 U	0.12 U	0.2 U	0.14 U	0.13 U	0.14 U	0.14 U	0.14 U
Iron	9050 J	16000 J	107000 J	84100 J	20800 J	24400 J	53200 J	62700 J
Lead	7.4	3.4	7.5	5	77.4	89.5	3.8	5.6
Magnesium	5890	8250	5450	10900	8600	9220	4690	4740
Manganese	212	458	1090	245	842	615	1010	598
Mercury	0.1 U	0.09 U	0.16 U	0.13 U	0.12 U	0.13 U	0.12 U	0.13 U
Nickel	4.5 UJ	4.6 UJ	7.6 UJ	5.3 UJ	12 J	5.1 UJ	5.2 UJ	5.1 UJ
Potassium	549 BU	788 B	676 BU	1200 B	2000	1880	331 BU	375 BU
Selenium	0.58 UJ	0.59 UJ	0.98 UJ	0.68 UJ	0.64 UJ	0.65 UJ	0.67 UJ	0.66 UJ
Silver	1.1 UJ	1.1 UJ	1.8 UJ	1.3 UJ	1.2 UJ	1.2 UJ	1.2 UJ	1.2 UJ
Sodium	3830 J	5630 J	7830 J	11300 J	6900 J	7470 J	4150 J	5630 J
Thallium	0.36 UJ	0.37 UJ	0.61 UJ	0.42 UJ	0.4 UJ	0.41 UJ	0.42 UJ	0.41 UJ
Vanadium	22.8	33.7	386	257	65.8	70.5	230	210
Zinc	24.3	33.8	89.2	80.7	206	102	35.5	40.7

QUALIFIERS:

B - value is greater than the Instrument Detection Limit but less than the Contract Required Detection Limit

J - estimated value

NA - not analyzed

R - result is rejected and unusable

U - not detected

UJ - reported quantitation limit is estimated

SEMIVOLATILE COMPOUNDS DETECTED IN THE SOIL
SITE 10 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	10 SS 156	10 SS 158DUP	10 SS 159	10 SS 161	10 SS 163
UNITS	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Hexachloroethane	1500 U	1500 U	1400 U	1500 U	1300 U
Indeno(1,2,3-cd)pyrene	1500 U	1500 U	270 J	340 J	1300 UJ
Isophorone	1500 U	1500 U	1400 U	1500 U	1300 U
Methylnaphthalene,2-	1500 U	1500 U	1400 U	1500 U	1300 U
Methylphenol,2-	1500 U	1500 U	1400 U	1500 U	1300 U
Methylphenol,4-	1500 U	1500 U	1400 U	1500 U	1300 U
N-nitrosodi-n-propylamine	1500 U	1500 U	1400 U	1500 U	1300 U
N-nitrosodiphenylamine	1500 U	1500 U	1400 U	1500 U	1300 U
Naphthalene	1500 U	1500 U	1400 U	1500 U	1300 U
Nitroaniline,2-	3800 U	3800 U	3500 U	3800 U	3300 U
Nitroaniline,3-	3800 U	3800 U	3500 U	3800 U	3300 U
Nitroaniline,4-	3800 U	3800 U	3500 U	3800 U	3300 U
Nitrobenzene	1500 U	1500 U	1400 U	1500 U	1300 U
Nitrophenol,2-	1500 U	1500 U	1400 U	1500 U	1300 U
Nitrophenol,4-	3800 U	3800 U	3500 U	3800 U	3300 U
Pentachlorophenol	3800 U	3800 U	3500 U	3800 U	3300 U
Phenanthrene	1500 U	1500 U	490 J	470 J	310 J
Phenol	1500 U	1500 U	1400 U	1500 U	1300 U
Pyrene	1500 U	1500 U	730 J	750 J	810 J
Trichlorobenzene,1,2,4-	1500 U	1500 U	1400 U	1500 U	1300 U
Trichlorophenol,2,4,5-	3800 U	3800 U	3500 U	3800 U	3300 U
Trichlorophenol,2,4,6-	1500 U	1500 U	1400 U	1500 U	1300 U

Qualifiers:
J - estimated value
U - not detected

INORGANIC CHEMICALS DETECTED IN THE SOIL
SITE 10 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	10 SS 156		10 SS 158DUP		10 SS 159		10 SS 161		10 SS 163		10 SS 165C	
UNITS	mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg	
Aluminum	17500		20600		21100		18900		7560		11400	
Antimony	10.6	UJ	10.7	UJ	10.2	UJ	10.5	UJ	10.1	UJ	12.9	UJ
Arsenic	0.67		0.68	U	1.1	B	0.67	U	4.8	J	1.1	B
Barium	67.1		74.4		122		82.4		28.2	B	148	
Beryllium	0.37	B	0.44	B	0.4	OB	0.29	B	0.37	B	1.4	
Cadmium	1.2	UJ	1.2	UJ	2.5		2.6		1.2	UJ	1.5	UJ
Calcium	10100		9460		40900		53100		191000		6450	
Chromium	18.4		22.8		15.4		15		29.9		5.6	
Cobalt	21.7		21.6		24.8		14.1		7.3	B	133	
Copper	162		169		98.5		62.9		19.2		90.1	
Iron	20700		21300	J	31500	J	29300	J	8860		37900	J
Lead	2.5		3.8		61.1		39.2		26.7		7.1	
Magnesium	8020		8040		10200		8880		4620		2880	
Manganese	694		654		954		545		200		5030	
Mercury	0.09	U	0.09	U	0.18		0.11	U	0.1	U	0.12	U
Nickel	16.4		17.1		12.8		9.4		6.8	B	7.6	B
Potassium	596		716	J	1930	J	2620	J	606	J	489	J
Selenium	0.54	U	0.54	U	0.52	U	0.53	U	0.52	UJ	1.3	B
Silver	1.4	U	1.9	B	2	B	1.4	U	1.8	B	1.7	U
Sodium	4300		4850	J	2390	J	1820	J	1700	J	2060	J
Thallium	0.34	U	0.34	UJ	0.33	UJ	0.33	UJ	0.32	UJ	0.41	UJ
Vanadium	76.5		84.6		116		101		59.7		210	
Zinc	112		118		202		136		49.2		48.9	
Cyanide	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.14	U

Qualifiers:

B - value is greater than the Instrument Detection Limit but less than the Contract Required Detection Limit

J - estimated value

U - not detected

UJ - reported quantitation limit is estimated

PESTICIDES/PCBs COMPOUNDS DETECTED IN THE SOIL
SITE 10 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	10 SS 165D		10 SS 165E	
UNITS	ug/Kg		ug/Kg	
Aldrin	0.27	UJ	0.30	UJ
Aroclor-1016	5.2	UJ	5.70	UJ
Aroclor-1221	10	UJ	12.00	UJ
Aroclor-1232	5.2	UJ	5.7	UJ
Aroclor-1242	5.2	UJ	5.7	UJ
Aroclor-1248	5.2	UJ	5.7	UJ
Aroclor-1254	5.2	UJ	5.7	UJ
Aroclor-1260	5.2	UJ	5.7	UJ
BHC,alpha-	0.27	UJ	0.30	UJ
BHC,beta-	0.7	J	0.30	UJ
BHC,delta-	0.27	UJ	0.30	UJ
BHC,gamma-	0.27	UJ	0.30	UJ
Chlordane,alpha-	0.27	UJ	0.30	UJ
Chlordane,gamma-	0.27	UJ	0.30	UJ
DDD,4,4-	0.52	UJ	0.57	UJ
DDE,4,4-	2.9	J	0.93	J
DDT,4,4-	1.8	J	0.57	UJ
Dieldrin	0.52	UJ	0.57	UJ
Endosulfan I	0.27	UJ	0.30	UJ
Endosulfan II	0.52	UJ	0.57	UJ
Endosulfan sulfate	0.52	UJ	0.57	UJ
Endrin		R	0.57	UJ
Endrin aldehyde	0.52	UJ	0.57	UJ
Endrin ketone	0.52	UJ	0.57	UJ
Heptachlor	0.27	UJ	0.30	UJ
Heptachlor epoxide	0.27	UJ	0.30	UJ
Methoxychlor	3.8	J	0.59	UJ
Toxaphene	27	UJ	30.0	UJ

Qualifers:
J - estimated value
R - rejected value
UJ - reported quantitation limit is estimated

SAMPLE ID
UNITS

Acenaphthene
Acenaphthylene
Anthracene
Benzo(a)anthracene
Benzo(a)pyrene
Benzo(b)fluoranthene
Benzo(g,h,i)perylene
Benzo(k)fluoranthene
Bis(2-chloroethoxy)methane
Bis(2-chloroethyl)ether
Bis(2-chloroisopropyl)ether
Bis(2-ethylhexyl)phthalate
Bromophenyl-phenylether,4-
Butylbenzylphthaalte
Carbazole
Chloro-3-methylphenol,4-
Chloroaniline,4-
Chloronaphthalene,2-
Chloropehnyl-phenylether,4-
Chlorophenol,2-
Chrysene

INORGANIC CHEMICALS DETECTED IN THE SOIL
SITE 10 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	10 SS 165D		10 SS 165 E	
UNITS	mg/Kg		mg/Kg	
Aluminum	10100		9910	
Antimony	1109	UJ	13.1	UJ
Arsenic	1.5	J	0.85	B
Barium	48	B	84.8	
Beryllium	0.33	B	0.92	B
Cadmium	1.4	UJ	2	
Calcium	89500		13800	
Chromium	3		7	
Cobalt	15.7		38.8	
Copper	27.1	U	65.7	
Iron	10600	J	24800	J
Lead	5.1		6.4	
Magnesium	3870		2730	
Manganese	518		1970	
Mercury	0.11	U	0.13	U
Nickel	5.8	B	5.2	U
Potassium	504	J	504	J
Selenium	0.61	UJ	0.71	J
Silver	1.6	U	2	B
Sodium	2080	J	1890	J
Thallium	0.38	UJ	0.42	UJ
Vanadium	62.1		148	
Zinc	22.1		39.9	
Cyanide	0.13	U	0.14	U

Qualifiers:
B - value is greater than the Instrument Detection Limit but less than the Contract Required Detection Limit
J - estimated value
U - not detected
UJ - reported quantitation limit is estimated

VOLATILE COMPOUNDS DETECTED IN THE SOIL
SITE 14 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	14 GW 101	14 SED 166	14 SED 167	14 SED 168	14 SED 169	14 SED 170DUP	14 SED 171
UNITS	ug/L	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Chloromethane	10 U	18 U	91 U	23 U	28 U	25 U	37 U
Bromomethane	10 U	18 U	91 U	23 U	28 U	25 U	37 U
Vinyl chloride	10 U	18 U	91 U	23 U	28 U	25 U	37 U
Chloroethane	10 U	18 U	91 U	23 U	28 U	25 U	37 U
Methylene chloride	5 U	15	190	29	28	75	15 J
Acetone	10 U	39 J	91 U	23 U	500 J	64 J	37 UJ
Carbon disulfide	5 U	17 U	66 U	35 U	5 J	13 U	37
Dichloroethene,1,1-	5 U	9 U	45 U	11 U	14 U	13 U	19 U
Dichloroethane,1,1-	5 U	9 U	45 U	11 U	14 U	13 U	19 U
Dichloroethene,1,2- (total)	5 U	NA	NA	NA	NA	NA	NA
Dichloroethene,trans-1,2-	NA	9 U	45 U	11 U	14 U	13 U	19 U
Dichloroethene,cis-1,2-	NA	9 U	45 U	11 U	14 U	13 U	19 U
Chloroform	5 U	9 U	45 U	11 U	14 U	13 U	19 U
Dichloroethane,1,2-	5 U	9 U	45 U	11 U	14 U	13 U	19 U
Butanone,2-	10 U	18 UJ	91 UJ	23 UJ	28 UJ	25 UJ	37 UJ
Trichloroethane,1,1,1-	5 U	9 U	45 U	11 U	14 U	13 U	19 U
Carbon tetrachloride	5 U	9 U	45 U	11 U	14 U	13 U	19 U
Vinyl acetate	10 U	18 U	91 U	23 U	28 U	25 U	37 U
Bromodichloromethane	5 U	9 U	45 U	11 U	14 U	13 U	19 U

Qualifiers:
J - estimated value
NA - not analyzed
U - not detected
UJ - reported quantitation limit is estimated

VOLATILE COMPOUNDS DETECTED IN THE SOIL
SITE 14 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	14 GW 101	14 SED 166	14 SED 167	14 SED 168	14 SED 169	14 SED 170DUP	14 SED 171
UNITS	ug/L	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Dichloropropane,1,2-	5 U	9 U	45 U	11 U	14 U	13 U	19 U
Dichloropropene,trans-1,3-	5 U	9 U	45 U	11 U	14 U	13 U	19 U
Trichloroethene	5 U	9 U	45 U	11 U	14 U	13 U	19 U
Dibromochloromethane	5 U	9 U	45 U	11 U	14 U	13 U	19 U
Trichloroethane,1,1,2-	5 U	9 U	45 U	11 U	14 U	13 U	19 U
Benzene	5 U	9 U	45 U	11 U	14 U	13 U	19 U
Dichloropropene,cis,1,3-	5 U	9 U	45 U	11 U	14 U	13 U	19 U
Bromoform	5 U	9 U	45 U	11 U	14 U	13 U	19 U
Methyl-2-pentanone,4-	10 U	18 U	91 UJ	23 U	28 UJ	25 UJ	37 U
Hexanone,2-	10 U	18 U	91 UJ	23 U	28 UJ	25 UJ	37 U
Tetrachloroethene	5 U	9 U	45 UJ	11 U	14 UJ	13 UJ	19 U
Tetrachloroethane,1,1,2,2-	5 U	9 U	45 UJ	11 U	14 UJ	13 UJ	19 U
Toluene	5 U	9 U	45 UJ	11 U	14 UJ	13 UJ	120
Chlorobenzene	5 U	9 U	45 UJ	11 U	14 UJ	13 UJ	19 U
Ethylbenzene	5 U	9 U	45 UJ	11 U	14 UJ	13 UJ	19 U
Styrene	5 U	9 U	45 UJ	11 U	14 UJ	13 UJ	19 U
Xylenes(total)	5 U	NA	NA	NA	NA	NA	NA
Xylenes, m-, p-	NA	9 U	45 UJ	11 U	14 UJ	13 UJ	19 U
Xylene, o-	NA	9 U	45 UJ	11 U	14 UJ	13 UJ	19 U

Qualifiers:
J - estimated value
NA - not analyzed
U - not detected
UJ - reported quantitation limit is estimated

PESTICIDES/PCBs COMPOUNDS DETECTED IN THE SOIL
SITE 14 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	14 SED 166	14 SED 167	14 SED 168	14 SED 169	14 SED 170DUP	14 SED 171
UNITS	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
BHC,alpha-	3.2 U	9.9 U	0.39 J	4.3 U	0.071 J	8.4 U
BHC,beta-	3.2 U	9.9 U	3.2 U	4.3 U	4.1 U	8.4 U
BHC,delta-	3.2 U	9.9 U	3.2 U	4.3 U	4.1 U	8.4 U
BHC,gamma-	3.2 UJ	9.9 U	3.2 UJ	4.3 U	4.1 UJ	8.4 UJ
Heptachlor	3.2 UJ	9.9 U	3.2 U	4.3 UJ	0.27 NJ	8.4 UJ
Aldrin	3.2 U	0.91 J	3.2 U	0.61 J	0.22 NJ	8.4 U
Heptachlor epoxide	3.2 U	9.9 U	3.2 U	4.3 U	0.62 NJ	1.1 J
Endosulfan I	3.2 U	9.9 U	3.2 U	4.3 U	4.1 U	8.4 U
Dieldrin	6.2 U	19 U	6.3 UJ	8.4 U	7.9 U	16 U
DDE,4,4-	6.2 U	19 U	6.3 U	8.4 U	0.26 J	25
Endrin	6.2 U	19 U	6.3 U	8.4 U	7.9 UJ	16 U
Endosulfan II	6.2 U	19 U	6.3 U	8.4 U	0.21 NJ	16 U
DDD,4,4-	6.2 U	19 U	6.3 UJ	8.4 U	7.9 U	4.1 J
Endosulfan sulfate	6.2 U	19 U	6.3 U	8.4 U	7.9 U	16 U
DDT,4,4-	6.2 U	19 U	0.22 NJ	8.4 U	0.58 NJ	16 U
Methoxychlor	32 U	99 U	32 U	43 U	41 U	3.1 NJ
Endrin ketone	6.2 U	19 U	6.3 UJ	8.4 U	7.9 U	16 U
Endrin aldehyde	6.2 U	19 U	6.3 U	8.4 U	0.94 J	2.1 NJ
Chlordane,alpha-	3.2 UJ	0.36 J	3.2 UJ	4.3 U	4.1 U	5.5 J
Chlordane,gamma-	3.2 U	9.9 U	3.2 U	4.3 U	4.1 U	8.4 U
Toxaphene	320 U	990 U	320 U	430 U	410 U	840 U
Aroclor-1016	62 U	190 U	60 U	84 U	79 U	160 U
Aroclor-1221	130 U	390 U	130 U	170 U	160 U	330 U
Aroclor-1232	62 U	190 U	60 U	84 U	79 U	160 U
Aroclor-1242	62 U	190 U	60 U	84 U	79 U	160 U
Aroclor-1248	62 U	190 U	60 U	84 U	79 U	160 U
Aroclor-1254	62 U	190 U	60 U	84 U	79 U	160 U
Aroclor-1260	62 U	190 U	60 U	84 U	79 U	160 U

Qualifiers:
J - estimated value
U - not detected
UJ - reported quantitation limit is estimated
NJ - presumptive evidence for the presence of the material at an estimated value

SEMIVOLATILE COMPOUNDS DETECTED IN THE SOIL
SITE 14 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	14 SED 166	14 SED 167	14 SED 168	14 SED 169	14 SED 170DUP	14 SED 171
UNITS	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Phenol	2300 U	12000 UJ	2800 U	R	3300 U	4800 U
Bis(2-chloroethyl)ether	2300 U	12000 UJ	2800 U	R	3300 U	4800 U
Chlorophenol,2-	2300 U	12000 UJ	2800 U	R	3300 U	4800 U
Dichlorobenzene,1,3-	2300 U	12000 UJ	2800 U	R	3300 U	4800 U
Dichlorobenzene,1,4-	2300 U	12000 UJ	2800 U	R	3300 U	4800 U
Dichlorobenzene,1,2-	2300 U	12000 UJ	2800 U	R	3300 U	4800 U
Methylphenol,2-	2300 U	12000 UJ	2800 U	R	3300 U	4800 U
Bis(2-chloroisopropyl)ether	2300 U	12000 UJ	2800 U	R	3300 U	4800 U
Methylphenol,4-	2300 U	12000 UJ	2800 U	R	3300 U	4800 U
N-nitrosodi-n-propylamine	2300 U	12000 UJ	2800 U	R	3300 U	4800 U
Hexachloroethane	2300 U	12000 UJ	2800 U	R	3300 U	4800 U
Nitrobenzene	2300 U	12000 UJ	2800 U	R	3300 U	4800 U
Isophorone	2300 U	12000 UJ	2800 U	R	3300 U	4800 U
Nitrophenol,2-	2300 U	12000 UJ	2800 U	R	3300 U	4800 U
Dimethylphenol,2,4-	2300 U	12000 UJ	2800 U	R	3300 U	4800 U
Bis(2-chloroethoxy)methane	2300 U	12000 U	2800 U	R	3300 U	4800 U
Dichlorophenol,2,4-	2300 U	12000 UJ	2800 U	R	3300 U	4800 U
Trichlorobenzene,1,2,4-	2300 U	12000 UJ	2800 U	R	3300 U	4800 U
Naphthalene	2300 U	12000 UJ	2800 U	R	3300 U	4800 U
Chloroaniline,4-	2300 U	12000 UJ	2800 U	R	3300 U	4800 U

Qualifiers:
J - estimated value
R - result is rejected and unusable
U - not detected
UJ - reported quantitation limit is estimated

SEMIVOLATILE COMPOUNDS DETECTED IN THE SOIL
SITE 14 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	14 SED 166	14 SED 167	14 SED 168	14 SED 169	14 SED 170DUP	14 SED 171
UNITS	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Hexachlorobutadiene	2300 U	12000 UJ	2800 U	R	3300 U	4800 U
Chloro-3-methylphenol,4-	2300 U	12000 UJ	2800 U	R	3300 U	4800 U
Methylnaphthalene,2-	2300 U	12000 UJ	2800 U	R	3300 U	4800 U
Hexachlorocyclopentadiene	2300 U	12000 UJ	2800 U	R	3300 U	4800 U
Trichlorophenol,2,4,6-	2300 U	12000 UJ	2800 U	R	3300 U	4800 U
Trichlorophenol,2,4,5-	5700 U	30000 UJ	7000 U	R	8200 U	12000 U
Chloronaphthalene,2-	2300 U	12000 UJ	2800 U	R	3300 U	4800 U
Nitroaniline,2-	5700 U	30000 UJ	7000 U	R	8200 U	12000 U
Dimethylphthalate	2300 U	12000 UJ	2800 U	R	3300 U	4800 U
Acenaphthylene	2300 U	12000 UJ	2800 U	R	3300 U	4800 U
Dinitrotoluene,2,4-	2300 U	12000 UJ	2800 U	R	3300 U	4800 U
Nitroaniline,3-	5700 U	30000 UJ	7000 U	R	8200 U	12000 U
Acenaphthene	2300 U	12000 UJ	2800 U	R	3300 U	4800 U
Dinitrophenol,2,4-	5700 U	30000 UJ	7000 U	R	8200 U	12000 U
Nitrophenol,4-	5700 U	30000 UJ	7000 U	R	8200 U	12000 U
Dibenzofuran	2300 U	12000 UJ	2800 U	R	3300 U	4800 U
Dinitrotoluene,2,4-	2300 U	12000 UJ	2800 U	R	3300 U	4800 U
Diethylphthalate	2300 U	12000 UJ	2800 U	R	3300 U	4800 U
Chloropehnyl-phenylether,4-	2300 U	12000 UJ	2800 U	R	3300 U	4800 U
Fluorene	2300 U	12000 UJ	2800 U	R	3300 U	4800 U
Nitroaniline,4-	5700 U	30000 UJ	7000 U	R	8200 U	12000 U

Qualifiers:
J - estimated value
R - result is rejected and unusable
U - not detected
UJ - reported quantitation limit is estimated

SEMIVOLATILE COMPOUNDS DETECTED IN THE SOIL
SITE 14 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	14 SED 166	14 SED 167	14 SED 168	14 SED 169	14 SED 170DUP	14 SED 171
UNITS	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Dinitro-2-methylphenol,4,6-	5700 U	30000 UJ	7000 U	R	8200 U	12000 U
N-nitrosodiphenylamine	2300 U	12000 UJ	2800 U	R	3300 U	4800 U
Bromophenyl-phenylether,4-	2300 U	12000 UJ	2800 U	R	3300 U	4800 U
Hexachlorobenzene	2300 U	12000 UJ	2800 U	R	3300 U	4800 U
Pentachlorophenol	5700 U	30000 UJ	7000 U	R	8200 U	12000 U
Phenanthrene	2300 U	12000 UJ	2800 U	R	3300 U	4800 U
Anthracene	2300 U	12000 UJ	2800 U	R	3300 U	4800 U
Carbazole	2300 U	12000 UJ	2800 U	R	3300 U	4800 U
Di-n-butylphthalate	2300 U	12000 UJ	220 J	R	3300 U	4800 U
Fluoranthene	2300 U	12000 UJ	2800 U	R	3300 U	4800 U
Pyrene	2300 U	12000 UJ	2800 U	R	3300 U	4800 U
Butylbenzylphthaalte	2300 U	12000 UJ	2800 U	R	3300 U	4800 U
Dichlorobenzidine,3,3-	2300 U	12000 UJ	2800 U	R	3300 U	4800 U
Benzo(a)anthracene	2300 U	12000 UJ	2800 U	R	3300 U	4800 U
Chrysene	2300 U	12000 UJ	2800 U	R	3300 U	4800 U
Bis(2-ethylhexyl)phthalate	2300 U	12000 UJ	2800 U	R	3300 U	4800 U
Di-n-octylphthalate	2300 U	12000 UJ	2800 U	R	3300 U	4800 U
Benzo(b)fluoranthene	2300 U	12000 UJ	2800 U	R	3300 U	4800 U
Benzo(k)fluoranthene	2300 U	12000 UJ	2800 U	R	3300 U	4800 U
Benzo(a)pyrene	2300 U	12000 UJ	2800 U	R	3300 U	4800 U
Indeno(1,2,3-cd)pyrene	2300 U	12000 UJ	2800 U	R	3300 U	4800 U
Dibenzo(a,h)anthracene	2300 U	12000 UJ	2800 U	R	3300 U	4800 U
Benzo(g,h,i)perylene	2300 U	12000 UJ	2800 U	R	3300 U	4800 U

Qualifiers:
J - estimated value
R - result is rejected and unusable
U - not detected
UJ - reported quantitation limit is estimated

INORGANIC CHEMICALS DETECTED IN THE SOIL AND SEDIMENT
SITE 14 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	14 SED 166		14 SED 167		14 SED 168		14 SED 169		14 SED 170DUP		14 SED 171	
UNIT	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Aluminum	5810		31300		10000		8350		1020		3540	
Antimony	3.6	U	18	U	4.5	U	5.5	U	5	U	7.3	U
Arsenic	5.8		10.8	B	6.6		5.8		4.4	B	2.2	U
Barium	16.2	B	64	U	16	U	19.6	U	17.6	U	26.1	U
Beryllium	0.22	U	1.2	B	0.27	U	0.33	U	0.3	U	0.44	U
Cadmium	2	UJ	10	UJ	2.5	UJ	3.1	UJ	2.8	UJ	4.1	UJ
Calcium	375000		31900		424000		686000		594000		153000	
Chromium	15		32.8		21		3.5	B	5.5		14.6	
Cobalt	3.5	U	17.5	U	4.4	U	5.3	U	4.8	U	7.1	U
Copper	12.8		66.7		9.2	B	7.1	U	6.4	U	9.4	U
Iron	9360		33700		9400		23800		27600		5450	
Lead	3.8	J	8.3	J	1.7	J	2.4	J	2.5	J	2.7	J
Magnesium	12100		28400		150000		69500		6750		8230	
Manganese	114		228		122		18.1		25.4		49.9	
Mercury	0.17	U	0.76	U	0.21	U	0.29	U	0.24	U	0.37	U
Nickel	6.8	U	36.9	B	8.5	U	10.4	U	9.4	U	13.9	U
Potassium	1350	B	8680	B	1620	B	1120	B	1020	B	2430	B
Selenium	0.87	UJ	4.4	U	2.6	J	1.3	UJ	1.2	UJ	1.8	UJ
Silver	1.6	UJ	8.2	UJ	2	UJ	2.5	UJ	2.2	UJ	3.3	UJ
Sodium	13800	J	121000	J	21200	J	20600	J	19000	J	48300	J
Thallium	0.55	UJ	2.7	UJ	0.68	UJ	0.83	UJ	0.75	UJ	1.1	UJ
Vanadium	24.2		136		23.5		7.9	U	7.2	U	26.6	B
Zinc	14.8		112		17.1		5.4	B	10.1		10.2	B
Cyanide	0.18	U	0.91	U	0.23	U	0.28	U	0.25	U	0.37	U

Qualifiers:
J - estimated value
R - result is rejected and unusable
U - not detected
UJ - reported quantitation limit is estimated
B - value is greater than the Instrument Detection Limit but less than the Contract Required Detection Limit

VOLATILE ORGANIC COMPOUNDS DETECTED IN GROUNDWATER, SOIL, SURFACE WATER AND SEDIMENT
SITE 18 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	18 GW 101	18 GW 102	18 GW 103	18 GW 169	18 SS 172	18 SS 173
UNITS	ug/L	ug/L	ug/L	ug/L	ug/Kg	ug/Kg
Acetone	15 J	19 J	13 J	10 U	17 U	17 U
Benzene	5 U	5 U	5 U	5 U	6 U	9 U
Bromodichloromethane	5 U	5 U	5 U	5 U	6 U	9 U
Bromoform	5 U	5 U	5 U	5 U	6 U	9 U
Bromomethane	10 U	10 U	10 U	10 U	11 U	17 U
Butanone,2-	10 U	10 U	10 U	10 U	R	R
Carbon disulfide	3 J	2 J	5 U	5 U	3 J	9 U
Carbon tetrachloride	5 U	5 U	5 U	5 U	6 U	9 U
Chlorobenzene	5 U	5 U	5 U	5 U	6 U	9 U
Chloroethane	10 U	10 U	10 U	10 U	11 U	17 U
Chloroform	5 U	5 U	5 U	5 U	6 U	9 U
Chloromethane	10 U	10 U	10 U	10 U	11 U	17 U
Dibromochloromethane	5 U	5 U	5 U	5 U	6 U	9 U
Dichloroethane,1,1-	5 U	5 U	5 U	5 U	6 U	9 U
Dichloroethane,1,2-	5 U	5 U	5 U	5 U	6 U	9 U
Dichloroene,1,1-	5 U	5 U	5 U	5 U	6 U	9 U
Dichloroene,1,2- (total)	5 U	5 U	5 U	5 U	NA	NA
Dichloroene,cis-1,2-	NA	NA	NA	NA	6 U	9 U
Dichloroene,trans-1,2-	NA	NA	NA	NA	6 U	9 U

Qualifiers:
J - estimated value
NA - not analyzed
R - result is rejected and unusable
U - not detected
UJ - reported quantitation limit is estimated

VOLATILE ORGANIC COMPOUNDS DETECTED IN GROUNDWATER, SOIL, SURFACE WATER AND SEDIMENT
SITE 18 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	18 GW 101	18 GW 102	18 GW 103	18 GW 169	18 SS 172	18 SS 173
UNITS	ug/L	ug/L	ug/L	ug/L	ug/Kg	ug/Kg
Dichloropropane,1,2-	5 U	5 U	5 U	5 U	6 U	9 U
Dichloropropene,cis-1,3-	5 U	5 U	5 U	5 U	6 U	9 U
Dichloropropene,trans-1,3-	5 U	5 U	5 U	5 U	6 U	9 U
Ethylbenzene	5 U	5 U	5 U	5 U	6 U	9 U
Hexanone,2-	10 U	10 U	10 U	10 U	11 U	17 U
Methyl-2-pentanone,4-	10 U	10 U	10 U	10 U	11 U	17 U
Methylene chloride	5 U	13 U	5 U	5 U	13 U	9 U
Styrene	5 U	5 U	5 U	5 U	6 U	9 U
Tetrachloroethane,1,1,2,2-	5 U	5 U	5 U	5 U	6 U	9 U
Tetrachloroene	5 U	5 U	5 U	5 J	6 U	9 U
Toluene	5 U	5 U	5 U	5 U	6 U	9 U
Trichloroethane,1,1,1-	5 U	5 U	5 U	5 U	6 U	9 U
Trichloroethane,1,1,2-	5 U	5 U	5 U	5 U	6 U	9 U
Trichloroene	5 U	5 U	5 U	5 U	6 U	9 U
Vinyl acetate	10 U	10 U	10 U	10 U	11 U	17 U
Vinyl chloride	10 U	10 U	10 U	10 U	11 U	17 U
Xylenes(total)	5 U	5 U	5 U	5 U	NA	NA
Xylenes,m-,p-,	NA	NA	NA	NA	6 U	9 U
Xylenes,o-	NA	NA	NA	NA	6 U	9 U

Qualifiers:
J - estimated value
NA - not analyzed
R - result is rejected and unusable
U - not detected
UJ - reported quantitation limit is estimated

PESTICIDES/PCBs COMPOUNDS DETECTED IN GROUNDWATER, SOIL, SURFACE WATER, AND SEDIMENT
SITE 18 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	18 GW 101	18 GW 102	18 GW 103	18SS172	18SS173	18SS174
UNITS	ug/L	ug/L	ug/L	ug/Kg	ug/Kg	ug/Kg
Aldrin	0.0064 U	0.0064 U	0.0064 U	4.6 UJ	3.6 UJ	14 UJ
Aroclor-1016	0.13 U	0.13 U	0.13 U	89 UJ	71 UJ	280 UJ
Aroclor-1221	0.26 U	0.26 U	0.26 U	180 UJ	140 UJ	560 UJ
Aroclor-1232	0.13 U	0.13 U	0.13 U	89 UJ	71 UJ	280 UJ
Aroclor-1242	0.13 U	0.13 U	0.13 U	89 UJ	71 UJ	280 UJ
Aroclor-1248	0.13 U	0.13 U	0.13 U	89 UJ	71 UJ	280 UJ
Aroclor-1254	0.13 U	0.13 U	0.13 U	89 UJ	71 UJ	280 UJ
Aroclor-1260	0.13 U	0.13 U	0.13 U	89 UJ	71 UJ	280 UJ
BHC,alpha-	0.0064 U	0.0064 U	0.0064 U	4.6 UJ	3.6 UJ	14 UJ
BHC,beta-	0.0064 U	0.0064 U	0.0064 U	4.6 UJ	3.6 UJ	14 UJ
BHC,delta-	0.0064 U	0.0064 U	0.0064 U	4.6 UJ	3.6 UJ	14 UJ
BHC,gamma-	0.0064 U	0.0064 U	0.0064 U	4.6 UJ	3.6 UJ	14 UJ
Chlordane,alpha-	0.0064 U	0.0064 U	0.0064 U	24 J	4.1 J	13 J
Chlordane,gamma-	0.0064 U	0.0064 U	0.0064 U	23 J	3.7 J	14 UJ
DDD,4,4-	0.013 U	0.013 U	0.013 U	140 J	38 J	160 J
DDE,4,4-	0.013 U	0.013 U	0.013 U	380 J	53 J	150 J
DDT,4,4-	0.013 U	0.013 U	0.013 U	1300 EJ	320 J	4500 EJ
Dieldrin	0.013 U	0.013 U	0.013 U	8.9 UJ	7.1 UJ	28 UJ
Endosulfan I	0.0064 U	0.0064 U	0.0064 U	4.6 UJ	3.6 UJ	14 UJ
Endosulfan II	0.013 U	0.013 U	0.013 U	8.9 UJ	7.1 UJ	28 UJ
Endosulfan sulfate	0.013 U	0.013 U	0.013 U	8.9 UJ	7.1 UJ	28 UJ
Endrin	0.013 U	0.013 U	0.013 U	8.9 UJ	7.1 UJ	28 UJ
Endrin aldehyde	0.013 U	0.013 U	0.013 U	8.9 UJ	7.1 UJ	28 UJ
Endrin ketone	0.013 U	0.013 U	0.013 U	8.9 UJ	7.1 UJ	28 UJ
Heptachlor	0.0064 U	0.0064 U	0.0064 U	4.6 UJ	3.6 UJ	14 UJ
Heptachlor epoxide	0.0064 U	0.0064 U	0.0064 U	4.6 UJ	3.6 UJ	14 UJ
Methoxychlor	0.064 U	0.064 U	0.064 U	46 UJ	36 UJ	140 UJ
Toxaphene	0.64 U	0.64 U	0.64 U	460 UJ	360 UJ	1400 UJ

Qualifiers:

E - concentration exceeds calibration range of GC/MS instrument

J - estimated value

R - result is rejected and unusable

U - not detected

UJ - reported quantitation limit is estimated

SEMIVOLATILE COMPOUNDS DETECTED IN GROUNDWATER, SOIL, SURFACE WATER, AND SEDIMENT
SITE 18 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	18 GW 101	18 GW 102	18 GW 103	18 SS 172	18 SS 173	18 SS 174
UNITS	ug/L	ug/L	ug/L	ug/Kg	ug/Kg	ug/Kg
Acenaphne	20 UJ	21 U	20 U	1500 U	3400 U	1600 U
Acenaphthylene	20 UJ	21 U	20 U	1500 U	3400 U	1600 U
Anthracene	20 UJ	21 U	20 U	1500 U	3400 U	1600 U
Benzo(a)anthracene	20 UJ	21 U	20 U	1500 U	3400 U	1600 U
Benzo(a)pyrene	20 UJ	21 U	20 U	1500 U	3400 U	1600 U
Benzo(b)fluoranne	20 UJ	21 U	20 U	1500 U	3400 U	1600 U
Benzo(g,h,i)perylene	20 UJ	21 U	20 U	1500 U	3400 U	1600 U
Benzo(k)fluoranne	20 UJ	21 U	20 U	1500 U	3400 U	1600 U
Bis(2-chloroethoxy)methane	20 U	21 U	20 U	1500 U	3400 U	1600 U
Bis(2-chloroethyl)er	R	21 U	20 U	1500 U	3400 U	1600 U
Bis(2-chloroisopropyl)er	R	21 U	20 U	1500 U	3400 U	1600 U
Bis(2-ethylhexyl)phthalate	23 UJ	2 J	20 U	460 J	1700 J	1600 U
Bromophenyl-phenyler,4-	R	21 U	20 U	1500 U	3400 U	1600 U
Butylbenzylphthaalte	20 UJ	21 U	20 U	1500 U	3400 U	1600 U
Carbazole	20 UJ	21 U	20 U	1500 U	3400 U	1600 U
Chloro-3-methylphenol,4-	R	21 U	20 U	1500 U	3400 U	1600 U
Chloroaniline,4-	20 U	21 U	20 U	1500 U	3400 U	1600 U
Chloronaphthalene,2-	20 UJ	21 U	20 U	1500 U	3400 U	1600 U
Chloropehnyl-phenyler,4-	R	21 U	20 U	1500 U	3400 U	1600 U
Chlorophenol,2-	R	21 U	20 U	1500 U	3400 U	1600 U
Chrysene	20 UJ	21 U	20 U	1500 U	3400 U	1600 U

Qualifiers:

E - concentration exceeds calibration range of GC/MS instrument

J - estimated value

R - result is rejected and unusable

U - not detected

UJ - reported quantitation limit is estimated

SEMIVOLATILE COMPOUNDS DETECTED IN GROUNDWATER, SOIL, SURFACE WATER, AND SEDIMENT
SITE 18 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	18 GW 101	18 GW 102	18 GW 103	18 SS 172	18 SS 173	18 SS 174
UNITS	ug/L	ug/L	ug/L	ug/Kg	ug/Kg	ug/Kg
Di-n-butylphthalate	20 UJ	21 U	20 U	1500 U	3400 U	1600 U
Di-n-octylphthalate	20 UJ	21 U	20 U	1500 U	3400 U	1600 U
Dibenzo(a,h)anthracene	20 UJ	21 U	20 U	1500 U	3400 U	1600 U
Dibenzofuran	20 UJ	21 U	20 U	1500 U	3400 U	1600 U
Dichlorobenzene,1,2-	20 U	21 U	20 U	1500 U	3400 U	1600 U
Dichlorobenzene,1,3-	20 U	21 U	20 U	1500 U	3400 U	1600 U
Dichlorobenzene,1,4-	20 U	21 U	20 U	1500 U	3400 U	1600 U
Dichlorobenzidine,3,3-	20 UJ	21 U	20 U	1500 U	3400 U	1600 U
Dichlorophenol,2,4-	R	21 U	20 U	1500 U	3400 U	1600 U
Diethylphthalate	20 UJ	21 U	20 U	1500 U	3400 U	1600 U
Dimethylphenol,2,4-	R	21 U	20 U	1500 U	3400 U	1600 U
Dimethylphthalate	20 UJ	21 U	20 U	1500 U	3400 U	1600 U
Dinitro-2-methylphenol,4,6-	R	52 U	51 U	1500 U	3400 U	1600 U
Dinitrophenol,2,4-	R	52 U	51 U	1500 U	3400 U	1600 U
Dinitrotoluene,2,4-	20 UJ	21 U	20 U	1500 U	3400 U	1600 U
Dinitrotoluene,2,4-	20 UJ	21 U	20 U	1500 U	3400 U	1600 U
Fluoranne	20 UJ	21 U	20 U	1500 U	3400 U	1600 U
Fluorene	20 UJ	21 U	20 U	1500 U	3400 U	1600 U
Hexachlorobenzene	20 UJ	21 U	20 U	1500 U	3400 U	1600 U
Hexachlorobutadiene	20 U	21 U	20 U	1500 U	3400 U	1600 U
Hexachlorocyclopentadiene	20 UJ	21 U	20 U	1500 U	3400 U	1600 U
Hexachloroethane	20 U	21 U	20 U	1500 U	3400 U	1600 U

Qualifiers:
E - concentration exceeds calibration range of GC/MS instrument
J - estimated value
R - result is rejected and unusable
U - not detected
UJ - reported quantitation limit is estimated

SEMIVOLATILE COMPOUNDS DETECTED IN GROUNDWATER, SOIL, SURFACE WATER, AND SEDIMENT
SITE 18 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	18 GW 101	18 GW 102	18 GW 103	18 SS 172	18 SS 173	18 SS 174
UNITS	ug/L	ug/L	ug/L	ug/Kg	ug/Kg	ug/Kg
Indeno(1,2,3-cd)pyrene	20 UJ	21 U	20 U	1500 U	3400 U	1600 U
Isophorone	20 U	21 U	20 U	1500 U	3400 U	1600 U
Methylnaphthalene,2-	20 U	21 U	20 U	1500 U	3400 U	1600 U
Methylphenol,2-	R	21 U	20 U	1500 U	3400 U	1600 U
Methylphenol,4-	R	21 U	20 U	1500 U	3400 U	1600 U
N-nitrosodi-n-propylamine	R	21 U	20 U	1500 U	3400 U	1600 U
N-nitrosodiphenylamine	R	21 U	20 U	1500 U	3400 U	1600 U
Naphthalene	20 U	21 U	20 U	1500 U	3400 U	1600 U
Nitroaniline,2-	51 UJ	52 U	51 U	1500 U	3400 U	1600 U
Nitroaniline,3-	51 UJ	52 U	51 U	1500 U	3400 U	1600 U
Nitroaniline,4-	51 UJ	52 U	51 U	1500 U	3400 U	1600 U
Nitrobenzene	20 U	21 U	20 U	1500 U	3400 U	1600 U
Nitrophenol,2-	R	21 U	20 U	1500 U	3400 U	1600 U
Nitrophenol,4-	R	52 U	51 U	1500 U	3400 U	1600 U
Pentachlorophenol	R	52 U	51 U	1500 U	3400 U	1600 U
Phenanthrene	20 UJ	21 U	20 U	1500 U	3400 U	1600 U
Phenol	R	21 U	20 U	1500 U	3400 U	1600 U
Pyrene	20 UJ	21 U	20 U	1500 U	3400 U	1600 U
Trichlorobenzene,1,2,4-	20 U	21 U	20 U	1500 U	3400 U	1600 U
Trichlorophenol,2,4,5-	R	52 U	51 U	1500 U	3400 U	1600 U
Trichlorophenol,2,4,6-	R	21 U	20 U	1500 U	3400 U	1600 U

Qualifiers:
E - concentration exceeds calibration range of GC/MS instrument
J - estimated value
R - result is rejected and unusable
U - not detected
UJ - reported quantitation limit is estimated

INORGANIC CHEMICALS DETECTED IN SOIL
SITE 18 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	18 GW 101A	18 GW 101B	18 GW 102A	18 GW 102B	18 GW 103A	18 GW 103B
UNITS	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Aluminum	518 J	39.2 UJ	3850	53 J	5550 J	39.2 UJ
Antimony	47.2 UJ	47.2 UJ	47.2 U	47.2 U	47.2 UJ	47.2 UJ
Arsenic	3 UJ	3 UJ	3.1 J	3 UJ	3 UJ	3 UJ
Barium	22.5 UJ	22.5 UJ	1120	1120	22.5 UJ	22.5 UJ
Beryllium	1.1 J	0.81 J	1.1 B	0.6 U	1.2 J	0.8 UJ
Cadmium	2.8 UJ	2.8 UJ	2.8 U	2.8 U	2.8 UJ	2.8 UJ
Calcium	238000 J	245000 J	425000	388000	9030 J	7000 J
Chromium	5.9 UJ	5.9 UJ	10.4 UJ	10.4 UJ	20.4 J	5.9 UJ
Cobalt	15.5 UJ	15.5 UJ	15.5 UJ	15.5 UJ	15.5 UJ	15.5 UJ
Copper	5.1 UJ	7 J	20.9 J	5.1 UJ	30.6 J	5.1 UJ
Iron	1020 J	14.5 UJ	20200	144000	6810 J	86.7 J
Lead	1.8 UJ	1.8 UJ	106 J	9 U	1.8 UJ	1.8 UJ
Magnesium	211000 J	217000 J	298000	541000	9020 J	5620 J
Manganese	482 J	369 J	10000	9610	345 J	230 J
Mercury	2.8 J	1.4 J	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ
Nickel	7.8 UJ	7.8 UJ	7.8 UJ	7.8 UJ	7.8 UJ	7.8 UJ
Potassium	7440 J	7870 J	35100	34000	3040 J	2990 U
Selenium	12 UJ	12 UJ	12 UJ	2.4 UJ	2.4 UJ	2.4 UJ
Silver	6.3 UJ	6.3 UJ	6.3 U	6.3 U	6.3 UJ	6.3 UJ
Sodium	2000000 J	1920000 J	4600000 J	4570000 J	205000 J	198000 J
Thallium	1.5 UJ	1.5 UJ	R	7.5 UJ	1.5 UJ	1.5 UJ
Vanadium	8.5 UJ	8.5 UJ	8.5 UJ	14.3 UJ	22.2 J	8.5 UJ
Zinc	22 J	16 J	187 J	12.1 U	26 J	12.1 UJ
Cyanide	10 UJ	NA	10 UJ	NA	10 UJ	NA

Qualifiers:
J - estimated value
NA - not analyzed
R - result is rejected and unusable
U - not detected
UJ - reported quantitation limit is estimated
B - value is greater than Instrument Detection Limit but less than Contract Required Detection Limit

VOLA VOLATILE ORGANIC COMPOUNDS DETECTED IN GROUNDWATER, SOIL, SURFACE WATER AND SEDIMENT

SITE 18 - NAVAL STATION ROOSEVELT ROADS

PUERTO RICO

SAMPLE ID	18 SS 174	18 SS 175	18 SS 176	18 SS 177	18 SS 178DUP	18 SS 179
UNITS	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Acetone	230	55 J	76 U	310 J	32 U	61 U
Benzene	6 U	7 U	6 U	6 U	6 U	6 U
Bromodichloromethane	6 U	7 U	6 U	6 U	6 U	6 U
Bromoform	6 U	7 U	6 U	6 U	6 U	6 U
Bromomethane	12 U	14 U	12 U	12 U	12 U	11 U
Butanone,2-	R	14 U	12 U	R	R	11 U
Carbon disulfide	6 U	8 U	6 U	6 U	3 J	6 U
Carbon tetrachloride	6 U	7 U	6 U	6 U	6 U	6 U
Chlorobenzene	6 U	7 U	6 U	6 U	6 U	6 U
Chloroethane	12 U	14 U	12 U	12 U	12 U	11 U
Chloroform	6 U	7 U	6 U	6 U	6 U	6 U
Chloromethane	12 U	14 U	12 U	12 U	12 U	11 U
Dibromochloromethane	6 U	7 U	6 U	6 U	6 U	6 U
Dichloroethane,1,1-	6 U	7 U	6 U	6 U	6 U	6 U
Dichloroethane,1,2-	6 U	7 U	6 U	6 U	6 U	6 U
Dichloroene,1,1-	6 U	7 U	6 U	6 U	6 U	6 U
Dichloroene,1,2- (total)	NA	NA	NA	NA	NA	NA
Dichloroene,cis-1,2-	6 U	7 U	6 U	6 U	6 U	6 U
Dichloroene,trans-1,2-	6 U	7 U	6 U	6 U	6 U	6 U

Qualifiers:

J - estimated value

NA - not analyzed

R - result is rejected and unusable

U - not detected

UJ - reported quantitation limit is estimated

VOLA VOLATILE ORGANIC COMPOUNDS DETECTED IN GROUNDWATER, SOIL, SURFACE WATER AND SEDIMENT

SITE 18 - NAVAL STATION ROOSEVELT ROADS

PUERTO RICO

SAMPLE ID	18 SS 174	18 SS 175	18 SS 176	18 SS 177	18 SS 178DUP	18 SS 179
UNITS	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Dichloropropane,1,2-	6 U	7 U	6 U	6 U	6 U	6 U
Dichloropropene,cis-1,3-	6 U	7 U	6 U	6 U	6 U	6 U
Dichloropropene,trans-1,3-	6 U	7 U	6 U	6 U	6 U	6 U
Ethylbenzene	6 U	7 U	6 U	6 U	6 U	6 U
Hexanone,2-	12 U	14 UJ	12 U	12 U	12 U	11 U
Methyl-2-pentanone,4-	12 U	14 UJ	12 U	12 U	12 U	11 U
Methylene chloride	28 U	43 U	12 U	13 U	13 U	6 U
Styrene	6 U	7 U	6 U	6 U	6 U	6 U
Tetrachloroethane,1,1,2,2-	6 U	7 U	6 U	6 U	6 U	6 U
Tetrachloroene	6 U	7 U	6 U	6 U	6 U	6 U
Toluene	6 U	7 U	6 U	6 U	6 U	6 U
Trichloroethane,1,1,1-	6 U	7 U	6 U	6 U	6 U	6 U
Trichloroethane,1,1,2-	6 U	7 U	6 U	6 U	6 U	6 U
Trichloroene	6 U	7 U	6 U	6 U	6 U	6 U
Vinyl acetate	12 U	14 U	12 U	12 U	12 U	11 U
Vinyl chloride	12 U	14 U	12 U	12 U	12 U	11 U
Xylenes(total)	NA	NA	NA	NA	NA	NA
Xylenes,m-,p-,	6 U	7 U	6 U	6 U	6 U	6 U
Xylenes,o-	6 U	7 U	6 U	6 U	6 U	6 U

Qualifiers:

J - estimated value

NA - not analyzed

R - result is rejected and unusable

U - not detected

UJ - reported quantitation limit is estimated

PES

PESTICIDES/PCBs COMPOUNDS DETECTED IN GROUNDWATER, SOIL, SURFACE WATER, AND SEDIMENT
SITE 18 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	18SS175	18SS176	18SS177	18SS178	18SS179	18SS181C
UNITS	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Aldrin	2.6 UJ	0.24 UJ	0.24 UJ	0.23 UJ	0.23 UJ	0.22 UJ
Aroclor-1016	50 UJ	4.7 UJ	4.7 UJ	4.5 UJ	4.4 UJ	4.2 UJ
Aroclor-1221	100 UJ	9 UJ	9.6 UJ	9.2 UJ	8.9 UJ	8.6 UJ
Aroclor-1232	50 UJ	4.7 UJ	4.7 UJ	4.5 UJ	4.4 UJ	4.2 UJ
Aroclor-1242	50 UJ	4.7 UJ	4.7 UJ	4.5 UJ	4.4 UJ	4.2 UJ
Aroclor-1248	50 UJ	4.7 UJ	4.7 UJ	4.5 UJ	4.4 UJ	4.2 UJ
Aroclor-1254	50 UJ	4.7 UJ	4.7 UJ	4.5 UJ	4.4 UJ	4.2 UJ
Aroclor-1260	50 UJ	4.7 UJ	4.7 UJ	4.5 UJ	4.4 UJ	4.2 UJ
BHC,alpha-	2.6 UJ	0.24 UJ	0.24 UJ	0.23 UJ	0.23 UJ	0.22 UJ
BHC,beta-	2.6 UJ	0.24 UJ	0.24 UJ	0.23 UJ	0.23 UJ	0.22 UJ
BHC,delta-	2.6 UJ	0.24 UJ	0.24 UJ	0.23 UJ	0.23 UJ	0.22 UJ
BHC,gamma-	2.6 UJ	0.24 UJ	0.24 UJ	0.23 UJ	0.23 UJ	0.22 UJ
Chlordane,alpha-	2.6 UJ	0.24 UJ	0.24 UJ	0.23 UJ	5.2 J	0.22 UJ
Chlordane,gamma-	2.6 UJ	0.24 UJ	0.24 UJ	0.23 UJ	5 J	0.22 UJ
DDD,4,4-	5.1 J	0.47 UJ	0.47 UJ	0.71 J	11 J	0.42 UJ
DDE,4,4-	9.4 J	4.7 J	1.2 J	1.6 J	40 J	6.5 J
DDT,4,4-	120 J	3.4 J	1.1 J	1.2 J	36 J	4.2 J
Dieldrin	5 UJ	0.47 UJ	0.48 UJ	0.45 UJ	0.44 UJ	0.42 UJ
Endosulfan I	2.6 UJ	0.24 UJ	0.24 UJ	0.23 UJ	0.23 UJ	0.22 UJ
Endosulfan II	5 UJ	0.47 UJ	0.47 UJ	0.45 UJ	0.44 UJ	0.42 UJ
Endosulfan sulfate	5 UJ	0.47 UJ	0.47 UJ	0.45 UJ	0.44 UJ	0.42 UJ
Endrin	5 UJ	0.47 UJ	0.47 UJ	0.45 UJ	0.44 UJ	0.42 UJ
Endrin aldehyde	5 UJ	0.47 UJ	0.47 UJ	0.45 UJ	0.44 UJ	0.42 UJ
Endrin ketone	5 UJ	0.47 UJ	0.47 UJ	0.45 UJ	0.44 UJ	0.42 UJ
Heptachlor	2.6 UJ	0.24 UJ	0.24 UJ	0.23 UJ	0.23 UJ	0.22 UJ
Heptachlor epoxide	2.6 UJ	0.24 UJ	0.24 UJ	0.23 UJ	0.23 UJ	0.22 UJ
Methoxychlor	26 UJ	0.86 UJ	2.4 UJ	2.3 UJ	2.3 UJ	2.2 UJ
Toxaphene	260 UJ	24 UJ	24 UJ	23 UJ	23 UJ	22 UJ

Qualifiers:

E - concentration exceeds calibration range of GC/MS instrument

J - estimated value

R - result is rejected and unusable

U - not detected

UJ - reported quantitation limit is estimated

SE

SEMIVOLATILE COMPOUNDS DETECTED IN GROUNDWATER, SOIL, SURFACE WATER, AND SEDIMENT
SITE 18 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	18 SS 175	18 SS 176	18 SS 177	18 SS 178	18 SS 179	18 SW 108
UNITS	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/L
Acenaphne	1800 U	1600 U	1500 U	1600 U	1500 U	23 U
Acenaphthylene	1800 U	1600 U	1500 U	1600 U	1500 U	23 U
Anthracene	1800 U	1600 U	1500 U	1600 U	1500 U	23 U
Benzo(a)anthracene	1800 U	1600 U	1500 U	1600 U	310 J	23 U
Benzo(a)pyrene	1800 U	1600 U	1500 U	1600 U	350 J	23 U
Benzo(b)fluoranne	1800 U	1600 U	1500 U	1600 U	660 J	23 U
Benzo(g,h,i)perylene	1800 U	1600 U	1500 U	1600 U	1500 U	23 U
Benzo(k)fluoranne	1800 U	1600 U	1500 U	1600 U	1500 U	23 U
Bis(2-chloroethoxy)methane	1800 U	1600 U	1500 U	1600 U	1500 U	23 U
Bis(2-chloroethyl)er	1800 U	1600 U	1500 U	1600 U	1500 U	23 U
Bis(2-chloroisopropyl)er	1800 U	1600 U	1500 U	1600 U	1500 U	23 U
Bis(2-ethylhexyl)phthalate	1100 J	600 J	350 J	1600 U	1500 U	2 J
Bromophenyl-phenyler,4-	1800 U	1600 U	1500 U	1600 U	1500 U	23 U
Butylbenzylphthaalte	1800 U	1600 U	1500 U	1600 U	1500 U	23 U
Carbazole	1800 U	1600 U	1500 U	1600 U	1500 U	23 U
Chloro-3-methylphenol,4-	1800 U	1600 U	1500 U	1600 U	1500 U	23 U
Chloroaniline,4-	1800 U	1600 U	1500 U	1600 U	1500 U	23 U
Chloronaphthalene,2-	1800 U	1600 U	1500 U	1600 U	1500 U	23 U
Chloropehnyl-phenyler,4-	1800 U	1600 U	1500 U	1600 U	1500 U	23 U
Chlorophenol,2-	1800 U	1600 U	1500 U	1600 U	1500 U	23 U
Chrysene	1800 U	1600 U	1500 U	1600 U	450 J	23 U

Qualifiers:

E - concentration exceeds calibration range of GC/MS instrument

J - estimated value

R - result is rejected and unusable

U - not detected

UJ - reported quantitation limit is estimated

SE

SEMIVOLATILE COMPOUNDS DETECTED IN GROUNDWATER, SOIL, SURFACE WATER, AND SEDIMENT
SITE 18 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	18 SS 175	18 SS 176	18 SS 177	18 SS 178	18 SS 179	18 SW 108
UNITS	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/L
Di-n-butylphthalate	1800 U	1600 U	1500 U	1600 U	1500 U	4 J
Di-n-octylphthalate	1800 U	1600 U	1500 U	1600 U	1500 U	23 U
Dibenzo(a,h)anthracene	1800 U	1600 U	1500 U	1600 U	1500 U	23 U
Dibenzofuran	1800 U	1600 U	1500 U	1600 U	1500 U	23 U
Dichlorobenzene,1,2-	1800 U	1600 U	1500 U	1600 U	1500 U	23 U
Dichlorobenzene,1,3-	1800 U	1600 U	1500 U	1600 U	1500 U	23 U
Dichlorobenzene,1,4-	1800 U	1600 U	1500 U	1600 U	1500 U	23 U
Dichlorobenzidine,3,3-	1800 U	1600 U	1500 U	1600 U	1500 U	23 U
Dichlorophenol,2,4-	1800 U	1600 U	1500 U	1600 U	1500 U	23 U
Diethylphthalate	1800 U	1600 U	1500 U	1600 U	1500 U	23 U
Dimethylphenol,2,4-	1800 U	1600 U	1500 U	1600 U	1500 U	23 U
Dimethylphthalate	1800 U	1600 U	1500 U	1600 U	1500 U	23 U
Dinitro-2-methylphenol,4,6-	1800 U	1600 U	1500 U	1600 U	1500 U	23 U
Dinitrophenol,2,4-	1800 U	1600 U	1500 U	1600 U	1500 U	23 U
Dinitrotoluene,2,4-	1800 U	1600 U	1500 U	1600 U	1500 U	23 U
Dinitrotoluene,2,4-	1800 U	1600 U	1500 U	1600 U	1500 U	23 U
Fluoranne	1800 U	1600 U	1500 U	1600 U	240 J	23 U
Fluorene	1800 U	1600 U	1500 U	1600 U	1500 U	23 U
Hexachlorobenzene	1800 U	1600 U	1500 U	1600 U	1500 U	23 U
Hexachlorobutadiene	1800 U	1600 U	1500 U	1600 U	1500 U	23 U
Hexachlorocyclopentadiene	1800 U	1600 U	1500 U	1600 U	1500 U	23 U
Hexachloroethane	1800 U	1600 U	1500 U	1600 U	1500 U	23 U

Qualifiers:
E - concentration exceeds calibration range of GC/MS instrument
J - estimated value
R - result is rejected and unusable
U - not detected
UJ - reported quantitation limit is estimated

SE

SEMIVOLATILE COMPOUNDS DETECTED IN GROUNDWATER, SOIL, SURFACE WATER, AND SEDIMENT
SITE 18 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	18 SS 175	18 SS 176	18 SS 177	18 SS 178	18 SS 179	18 SW 108
UNITS	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/L
Indeno(1,2,3-cd)pyrene	1800 U	1600 U	1500 U	1600 U	260 J	23 U
Isophorone	1800 U	1600 U	1500 U	1600 U	1500 U	23 U
Methylnaphthalene,2-	1800 U	1600 U	1500 U	1600 U	1500 U	23 U
Methylphenol,2-	1800 U	1600 U	1500 U	1600 U	1500 U	23 U
Methylphenol,4-	1800 U	1600 U	1500 U	1600 U	1500 U	23 U
N-nitrosodi-n-propylamine	1800 U	1600 U	1500 U	1600 U	1500 U	23 U
N-nitrosodiphenylamine	1800 U	1600 U	1500 U	1600 U	1500 U	23 U
Naphthalene	1800 U	1600 U	1500 U	1600 U	1500 U	23 U
Nitroaniline,2-	1800 U	1600 U	1500 U	1600 U	1500 U	23 U
Nitroaniline,3-	1800 U	1600 U	1500 U	1600 U	1500 U	23 U
Nitroaniline,4-	1800 U	1600 U	1500 U	1600 U	1500 U	23 U
Nitrobenzene	1800 U	1600 U	1500 U	1600 U	1500 U	23 U
Nitrophenol,2-	1800 U	1600 U	1500 U	1600 U	1500 U	23 U
Nitrophenol,4-	1800 U	1600 U	1500 U	1600 U	1500 U	23 U
Pentachlorophenol	1800 U	1600 U	1500 U	1600 U	1500 U	23 U
Phenanthrene	1800 U	1600 U	1500 U	1600 U	1500 U	23 U
Phenol	1800 U	1600 U	1500 U	1600 U	1500 U	23 U
Pyrene	1800 U	1600 U	1500 U	1600 U	300 J	23 U
Trichlorobenzene,1,2,4-	1800 U	1600 U	1500 U	1600 U	1500 U	23 U
Trichlorophenol,2,4,5-	1800 U	1600 U	1500 U	1600 U	1500 U	23 U
Trichlorophenol,2,4,6-	1800 U	1600 U	1500 U	1600 U	1500 U	23 U

Qualifiers:

E - concentration exceeds calibration range of GC/MS instrument

J - estimated value

R - result is rejected and unusable

U - not detected

UJ - reported quantitation limit is estimated

INORGANIC CHEMICALS DETECTED IN SOIL
SITE 18 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	18 SS 172	18 SS 173	18 SS 174	18 SS 175	18 SS 176	18 SS 177
UNITS	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Aluminum	24100 J	19700 J	3760 J	3210 J	8560 J	20800 J
Antimony	10.9 U	16.3 U	11.5 U	13 U	11.2 U	11 U
Arsenic	0.69 UJ	1 UJ	2.3 J	2.9 J	79.1 J	16.4 J
Barium	57.3	109	33.8 B	16.4 B	34.9 B	89.2
Beryllium	0.47 B	0.47 B	0.15 U	0.17 U	0.14 U	0.53 B
Cadmium	1.1	0.97 U	0.68 U	0.77 U	0.67 U	1.1 B
Calcium	14600	10600	466000	475000	317000	60000
Chromium	17.1 J	34 J	6.9 J	7.8 J	10.2 J	15.2 J
Cobalt	23.4	26.1	4.1 B	2.6 U	6.7 B	29.8
Copper	77.4 J	33.5 J	22.7 J	14.3 J	49.8 J	61.2 J
Iron	35000 J	30800 J	7480 J	5670 J	12400 J	28800 J
Lead	7.8	17.1	10.8	1.5	1.6	4.7
Magnesium	18300	19000	6120	4930	5720	13600
Manganese	762 J	857 J	130 J	102 J	378 J	1260 J
Mercury	0.1 U	0.16 U	0.12 U	0.15 U	0.1 U	0.1 U
Nickel	22	26.9	4.6 U	5.2 U	4.4 U	16.3
Potassium	647 U	270 U	397 U	341 U	493 U	457 U
Selenium	0.55 UJ	0.83 UJ	0.58 UJ	0.66 UJ	0.57 UJ	0.56 UJ
Silver	1.4 U	2.2 U	1.5 U	1.7 U	1.5 U	1.5 U
Sodium	1580 J	4940 J	3610 J	3040 J	2570 J	1520 J
Thallium	0.34 U	0.52 UJ	0.37 UJ	0.41 UJ	0.36 UJ	0.35 UJ
Vanadium	89.2	95.3	20.6 J	16.1 J	45.2	98.7
Zinc	87 J	87.8 J	28.5 J	10.3 J	21 J	77.7 J
Cyanide	0.11 U	0.17 U	0.12 U	0.14 U	0.12 U	0.12 U

Qualifiers:
J - estimated value
NA - not analyzed
R - result is rejected and unusable
U - not detected
UJ - reported quantitation limit is estimated
B - value is greater than Instrument Detection Limit but less than Contract Required Detection Limit

VOLA VOLATILE ORGANIC COMPOUNDS DETECTED IN GROUNDWATER, SOIL, SURFACE WATER AND SEDIMENT

SITE 18 - NAVAL STATION ROOSEVELT ROADS

PUERTO RICO

SAMPLE ID	18 SED 182		18 SW 108	
UNITS	ug/Kg		ug/L	
Acetone	730		18	
Benzene	19	U	5	U
Bromodichloromethane	19	U	5	U
Bromoform	19	U	5	U
Bromomethane	38	U	10	U
Butanone,2-	390	J	10	U
Carbon disulfide	19	U	5	U
Carbon tetrachloride	19	U	5	U
Chlorobenzene	19	UJ	5	U
Chloroethane	38	U	10	U
Chloroform	19	U	5	U
Chloromethane	38	U	10	U
Dibromochloromethane	19	U	5	U
Dichloroethane,1,1-	19	U	5	U
Dichloroethane,1,2-	19	U	5	U
Dichloroene,1,1-	19	U	5	U
Dichloroene,1,2- (total)	NA		5	U
Dichloroene,cis-1,2-	19	U	NA	
Dichloroene,trans-1,2-	19	U	NA	

Qualifiers:

J - estimated value

NA - not analyzed

R - result is rejected and unusable

U - not detected

UJ - reported quantitation limit is estimated

VOLA VOLATILE ORGANIC COMPOUNDS DETECTED IN GROUNDWATER, SOIL, SURFACE WATER AND SEDIMENT

SITE 18 - NAVAL STATION ROOSEVELT ROADS

PUERTO RICO

SAMPLE ID	18 SED 182		18 SW 108	
UNITS	ug/Kg		ug/L	
Dichloropropane,1,2-	19	U	5	U
Dichloropropene,cis-1,3-	19	U	5	U
Dichloropropene,trans-1,3-	19	U	5	U
Ethylbenzene	19	UJ	5	U
Hexanone,2-	38	UJ	10	U
Methyl-2-pentanone,4-	38	UJ	10	U
Methylene chloride	56	U	5	U
Styrene	19	UJ	5	U
Tetrachloroethane,1,1,2,2-	19	UJ	5	U
Tetrachloroene	19	UJ	5	U
Toluene	68	J	5	U
Trichloroethane,1,1,1-	19	U	5	U
Trichloroethane,1,1,2-	19	U	5	U
Trichloroene	19	U	5	U
Vinyl acetate	38	U	10	U
Vinyl chloride	38	U	10	U
Xylenes(total)	NA		5	U
Xylenes,m-,p-,	19	UJ	NA	
Xylenes,o-	19	UJ	NA	

Qualifiers:

J - estimated value

NA - not analyzed

R - result is rejected and unusable

U - not detected

UJ - reported quantitation limit is estimated

PES PESTICIDES/PCBs COMPOUNDS DETECTED IN GROUNDWATER, SOIL, SURFACE WATER, AND SEDIMENT

SITE 18 - NAVAL STATION ROOSEVELT ROADS

PUERTO RICO

SAMPLE ID	18SS181D		18SS181E		18 SW 108		18SED182	
UNITS	ug/Kg		ug/Kg		ug/L		ug/Kg	
Aldrin	0.22	UJ	0.23	UJ	0.0066	U	15	UJ
Aroclor-1016	4.2	UJ	4.4	UJ	0.13	U	300	UJ
Aroclor-1221	8.6	UJ	9	UJ	0.26	U	600	UJ
Aroclor-1232	4.2	UJ	4.4	UJ	0.13	U	300	UJ
Aroclor-1242	4.2	UJ	4.4	UJ	0.13	U	300	UJ
Aroclor-1248	4.2	UJ	4.4	UJ	0.13	U	300	UJ
Aroclor-1254	4.2	UJ	4.4	UJ	0.13	U	300	UJ
Aroclor-1260	4.2	UJ	4.4	UJ	0.13	U	300	UJ
BHC,alpha-	0.22	UJ	0.23	UJ	0.0066	U	15	UJ
BHC,beta-	0.22	UJ	0.23	UJ	0.0066	U	15	UJ
BHC,delta-	0.22	UJ	0.23	UJ	0.0066	U	15	UJ
BHC,gamma-	0.22	UJ	0.23	UJ	0.0066	U	15	UJ
Chlordane,alpha-	0.22	UJ	0.23	UJ	0.017		160	J
Chlordane,gamma-	0.22	UJ	0.23	UJ	0.0066	U	180	J
DDD,4,4-	0.42	UJ	0.44	UJ	0.076		4700	EJ
DDE,4,4-	17	J	3.4	J	0.092		550	J
DDT,4,4-	6	J	3.7	J	0.013	U	490	J
Dieldrin	0.42	UJ	0.45	UJ	0.013	U	30	UJ
Endosulfan I	0.22	UJ	0.23	UJ	0.0066	U	230	J
Endosulfan II	0.42	UJ	0.44	UJ	0.013	U	30	UJ
Endosulfan sulfate	0.42	UJ	0.44	UJ	0.013	U	30	U
Endrin	0.42	UJ	0.44	UJ	0.013	U	30	UJ
Endrin aldehyde	0.42	UJ	0.44	UJ	0.013	U	30	UJ
Endrin ketone	0.42	UJ	0.44	UJ	0.013	U	30	UJ
Heptachlor	0.22	UJ	0.23	UJ	0.0066	U	15	UJ
Heptachlor epoxide	0.22	UJ	0.23	UJ	0.0066	U	15	UJ
Methoxychlor	2.2	UJ	2.3	UJ	0.066	U	150	UJ
Toxaphene	22	UJ	23	UJ	0.66	U	1500	UJ

Qualifiers:

E - concentration exceeds calibration range of GC/MS instrument

J - estimated value

R - result is rejected and unusable

U - not detected

UJ - reported quantitation limit is estimated

SE SEMIVOLATILE COMPOUNDS DETECTED IN GROUNDWATER, SOIL, SURFACE WATER, AND SEDIMENT

SITE 18 - NAVAL STATION ROOSEVELT ROADS

PUERTO RICO

SAMPLE ID	18 SED 182	
UNITS	ug/Kg	
Acenaphne	5100	U
Acenaphthylene	5100	U
Anthracene	5100	U
Benzo(a)anthracene	5100	U
Benzo(a)pyrene	5100	U
Benzo(b)fluoranne	5100	U
Benzo(g,h,i)perylene	5100	U
Benzo(k)fluoranne	5100	U
Bis(2-chloroethoxy)methane	5100	U
Bis(2-chloroethyl)er	5100	U
Bis(2-chloroisopropyl)er	5100	U
Bis(2-ethylhexyl)phthalate	1100	J
Bromophenyl-phenyler,4-	5100	U
Butylbenzylphthaalte	5100	U
Carbazole	5100	U
Chloro-3-methylphenol,4-	5100	U
Chloroaniline,4-	5100	U
Chloronaphthalene,2-	5100	U
Chloropehnyl-phenyler,4-	5100	U
Chlorophenol,2-	5100	U
Chrysene	5100	U

Qualifiers:

E - concentration exceeds calibration range of GC/MS instrument

J - estimated value

R - result is rejected and unusable

U - not detected

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SE SEMIVOLATILE COMPOUNDS DETECTED IN GROUNDWATER, SOIL, SURFACE WATER, AND SEDIMENT
SITE 18 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	18 SED 182	
UNITS	ug/Kg	
Di-n-butylphthalate	5100	U
Di-n-octylphthalate	5100	U
Dibenzo(a,h)anthracene	5100	U
Dibenzofuran	5100	U
Dichlorobenzene,1,2-	5100	U
Dichlorobenzene,1,3-	5100	U
Dichlorobenzene,1,4-	5100	U
Dichlorobenzidine,3,3-	5100	U
Dichlorophenol,2,4-	5100	U
Diethylphthalate	5100	U
Dimethylphenol,2,4-	5100	U
Dimethylphthalate	5100	U
Dinitro-2-methylphenol,4,6-	5100	U
Dinitrophenol,2,4-	5100	U
Dinitrotoluene,2,4-	5100	U
Dinitrotoluene,2,4-	5100	U
Fluoranne	5100	U
Fluorene	5100	U
Hexachlorobenzene	5100	U
Hexachlorobutadiene	5100	U
Hexachlorocyclopentadiene	5100	U
Hexachloroethane	5100	U

Qualifiers:
E - concentration exceeds calibration range of GC/MS instrument
J - estimated value
R - result is rejected and unusable
U - not detected
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SE SEMIVOLATILE COMPOUNDS DETECTED IN GROUNDWATER, SOIL, SURFACE WATER, AND SEDIMENT
SITE 18 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	18 SED 182	
UNITS	ug/Kg	
Indeno(1,2,3-cd)pyrene	5100	U
Isophorone	5100	U
Methylnaphthalene,2-	5100	U
Methylphenol,2-	5100	U
Methylphenol,4-	5100	U
N-nitrosodi-n-propylamine	5100	U
N-nitrosodiphenylamine	5100	U
Naphthalene	5100	U
Nitroaniline,2-	5100	U
Nitroaniline,3-	5100	U
Nitroaniline,4-	5100	U
Nitrobenzene	5100	U
Nitrophenol,2-	5100	U
Nitrophenol,4-	5100	U
Pentachlorophenol	5100	U
Phenanthrene	5100	U
Phenol	1300	J
Pyrene	5100	U
Trichlorobenzene,1,2,4-	5100	U
Trichlorophenol,2,4,5-	5100	U
Trichlorophenol,2,4,6-	5100	U

Qualifiers:
E - concentration exceeds calibration range of GC/MS instrument
J - estimated value
R - result is rejected and unusable
U - not detected
UJ - reported quantitation limit is estimated

INORGANIC CHEMICALS DETECTED IN SOIL
SITE 18 - NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SAMPLE ID	18 SS 178	18 SS 179	18 SS 181C	18 SS 181D	18 SS 181E	18 SED 182	18 SW 108
UNITS	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	ug/L
Aluminum	1810 J	10900 J	4030 J	12300 J	16000 J	14100 J	42.9 U
Antimony	11.3 U	10.7 U	10.1 U	10.2 U	10.7 U	36.2 U	47.2 U
Arsenic	30.2 J	2.5 J	0.85 J	1.1 J	0.86 J	2.3 UJ	3 U
Barium	59.6	27.2 B	24.7 B	60.5	79.9	95 B	35.2 U
Beryllium	0.4 B	0.18 B	0.13 U	0.29 B	0.59 B	0.46 U	0.6 U
Cadmium	1 B	0.7 B	0.6 U	0.72 B	1.1	2.3 B	2.8 U
Calcium	9560	306000	341000	165000	94600	62900	42900
Chromium	15.4 J	13.2 J	7.1 J	11.8 J	15.6 J	24.7 J	4.9 U
Cobalt	24.4	5.9 B	2.5 B	16.8	18.6	21.2 B	9.6 U
Copper	56.1 J	33.5 J	18.9 J	39.9 J	35.1 J	133 J	5.1 U
Iron	24000 J	15600 J	6360 J	22300 J	30000 J	25300 J	682
Lead	6.9	15.6	20.9	57.8	16.1	83.8	1.8 U
Magnesium	11900	6510	3750	5680	6750	9120	6780
Manganese	904 J	206 J	145 J	605 J	562 J	479 J	104
Mercury	0.11 U	0.11 U	0.1 U	0.11 U	0.11 U	0.35 U	0.2 U
Nickel	16.3	9.1	4 U	6 B	9.2	16.5 B	18.7 U
Potassium	550 U	741 U	276 U	307 U	473 U	1130 B	2720 B
Selenium	0.57 UJ	0.55 UJ	0.52 UJ	0.52 UJ	0.54 UJ	1.8 UJ	2.4 U
Silver	1.5 U	1.4 U	1.4 U	1.4 U	1.4 U	4.8 U	6.3 U
Sodium	1610 J	2410 J	1590 J	1480 J	1110 J	1330 J	23400
Thallium	0.36 UJ	0.34 UJ	0.32 UJ	0.33 UJ	0.34 UJ	1.1 UJ	1.5 UJ
Vanadium	79.9	45	18.3 J	65.7	97.6	99.8	19.3 U
Zinc	76.7 J	55.7 J	21.2 J	52.5 J	62.9 J	361 J	12.1 U
Cyanide	0.12 U	0.11 U	NA	NA	NA	NA	NA

Qualifiers:
J - estimated value
NA - not analyzed
R - result is rejected and unusable
U - not detected
UJ - reported quantitation limit is estimated
B - value is greater than Instrument Detection Limit but less than Contract Required Detection Limit