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ENGINEERING EVALUATION
INTEGRITY TESTING RESULTS
TOW WAY FUEL FARM
NAVAL STATION ROOSEVELT ROADS, PUERTO RICO
(DRAFT REPORT)

Prepared For

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Naval Facilities Engineering Command

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ENGINEERING EVALUATION
TOW WAY FUEL FARM INTEGRITY TESTING RESULTS
NAVAL STATION ROOSEVELT ROADS

1.0 INTRODUCTION

Dames & Moore was retained by U.S. Navy - Atlantic Division (LANTDIV) to evaluate the integrity of the Tow Way Fuel Farm at Naval Station Roosevelt Roads, Puerto Rico, in terms of leaks or releases to the environment. The Tow Way Fuel Farm system evaluation includes six bulk cut-and-cover storage tanks, twenty thousand five hundred twenty (20,520) feet of active JP-5 distribution pipeline and ten thousand one hundred sixty (10,160) feet of abandoned diesel fuel marine (DFM) line. The scope of work included the installation of permanent sampling probes around the storage tanks and active JP-5 line. Permanent probes adjacent to the active JP-5 lines were also utilized to collect soil gas samples associated with the abandoned DFM line whenever the two lines were in close proximity. Temporary soil gas probes were installed along the remaining length of the abandoned DFM line to collect soil gas samples for Total Volatile Hydrocarbons (TVHC). This report provides the results of tests performed to evaluate whether the active tanks and JP-5 distribution lines are leaking and provides an evaluation of historical impacts adjacent to the abandoned DFM line based on TVHC in soil gas.

2.0 FIELD INVESTIGATION

Dames & Moore retained Tracer Research Corporation (Tracer) to perform integrity testing on six bulk cut-and-cover storage tanks and 20,520 feet of JP-5 distribution piping and a soil gas survey on 10,160 feet of abandoned DFM piping located at Naval Station Roosevelt Roads, Puerto Rico. The selected method for the integrity testing was the Tracer Tight^{R} Leak Test which is described in the attached report prepared by Tracer (Attachment A). Dames & Moore personnel provided oversight of Tracer's activities during the tightness testing, evaluated the results provided by Tracer and developed conclusions and recommendations as provided in this report. The following section summarizes the field investigation activities.

As required by the Tracer Tight[R] Leak Test, all tanks to be tested were inoculated by Tracer personnel. The Tracer Tight[R] Leak Test is further described in procedures in the report provided in Attachment A.

All probes installed surrounding the cut-and-cover tanks and the JP-5 line remain in place; therefore, future tightness testing will only require sampling and analysis of the existing probes. All soil gas samples were collected by temporary probes which were removed after sample collection.

3.0 RESULTS

3.1 CUT-AND-COVER TANKS

The specific details of the methodology employed during testing and the locations of the probes installed are provided in Attachment A. A summary of the test results is provided in Table 1.

Based on the results of the leak detection testing performed by Tracer, three of the six cut-and-cover storage tanks failed the test criteria of the Tracer Tight[R] leak testing method (i.e., Tracer compound concentrations equal to or greater than 0.001 milligrams per liter [mg/l]). Tanks 213, 381 and 1086 failed the initial integrity test and therefore were not tested further. Tanks 212, 429 and 1084 passed the initial tests and therefore were then subjected to flow field testing described in Attachment A. Flow field testing is performed to evaluate the portions of the tank not within the sphere of influence (ten feet) of the probes located adjacent to the side of the tank. By putting the probes under a vacuum, any Tracer compound released under the tank would be drawn to the side of the tank and detected in the tracer probes adjacent to the tank. The three tanks subjected to the flow field tests (212, 429 and 1084) all passed and are certified tight by Tracer.

Tracer also collected samples for TVHC analysis. Soil samples from the perimeter of one of the three tanks that failed the tightness test, Tank 213, exhibited high concentrations of TVHC (0 - 670 mg/l) indicating that the soils are impacted by petroleum. Although tanks 381 and 1086 failed the test and are not considered "tight", the concentrations of TVHC in the soils were not

nearly as high as the concentrations of samples collected from the perimeter of Tank 213. No sample collected from the perimeter of either tank exceeded a TVHC concentration of 1.7 mg/l.

Conversely, although tanks 212, 429 and 1084 passed the integrity test and are considered "tight", there were still high concentrations of TVHC exhibited in samples collected adjacent to the tanks indicating that soils have been impacted by petroleum. Concentrations were as high as 22.8 mg/l at Tank 429, 208 mg/l at Tank 1084 and 510 mg/l at Tank 212. Therefore, although these tanks have passed the integrity test, it still appears that the surrounding soils have been impacted by petroleum products, possibly by surface spills, overfilling or adjacent piping releases.

3.2 JP-5 FUEL LINE INTEGRITY TESTING

A total of 1,026 probes were installed at 20-foot centers along the 20,520 feet of JP-5 pipeline tested. Fuel inoculated with Tracer A was circulated through the piping and all of the probes were sampled and analyzed for Tracer A and TVHC. Probe locations and corresponding TVHC concentrations are shown on the attached maps, Leak Detection (LD) 1 through 7. Only two of the 1,026 probes failed the Tracer test and were reported by Tracer to be leaking. Probes P-0231 and P-0232 each yielded samples with a detectable concentration of Tracer A (0.002 mg/l and 0.001 mg/l, respectively). Based on Tracer's methodology and third party certification, Tracer certifies the remainder of the pipeline to be tight or with a leak rate of less than 0.1 gallons per hour.

Tracer also collected samples for TVHC from each of the probes. The results are provided in Table 2. For ease of review, Dames & Moore has outlined on this Table each result showing a concentration greater than 0.001 mg/l, lightly shaded detections greater than 0.01 mg/l, and darkly shaded detections greater than 0.1 mg/l. No concentrations greater than 0.1 mg/l were detected between probes P-0001 and P-0230. This includes the most northeast portion of the Tow Way Fuel Farm JP-5 line (Figure LD-1) from Tank 430, south past Valve Pit (VP)-1, VP-2 and VP-3. Between probes P-0231 and P-0234 (Figure LD-2), in the area where Tracer A was detected and the pipeline failed the integrity testing, TVHC concentrations ranged from 0.002 to 0.41 mg/l. TVHC concentrations were below the detection limit between probes P-0235 and P-0526, or 5,820 feet of piping. This includes all of the JP-5 line from the detected leak (P-

0234) traveling due east, north of Forrestal Drive, (Figure LD-3) past the fire station to VP-4. From VP-4, the JP-5 line continues east past the navy gas station (Figure LD-4) and turns south prior to VP-5 towards tank 381, to VP-9. At VP-9, the JP-5 line branches in two directions, one line runs east, then south to VP-7 and further south to VP-8.

The second branch from VP-9 runs due south, east of Tanks 381 (VP-9), Tank 1084 (VP-10) and Tank 1086 (VP-11). TVHC was not detected in any of these probes even though Tank 1086 failed tightness testing. From the tank farm fencing to the street, south of tank 1086, TVHC was detected in the majority of probes running across the fleet recreation area, at concentrations up to 0.03 mg/l. This line is located due south of Tank 1086, and the TVHC detections may be from 1086.

Both JP-5 lines turn south towards Forrestal Drive (Figure LD-5). The line from fleet recreation runs south to VP-8. From VP-8, TVHC was consistently detected in probes P-0534 through P-0558 at some of the highest concentrations detected (18 mg/l), in probes adjacent to the valve pit (VP-8).

Both lines north and south of Forrestal Drive exhibited TVHC detections from the point of their intersection with Forrestal Drive to their intersection with Pumphouse Building No. 1982 and Booster Pumphouse Building No. 466 (Figure LD-5). Detected concentrations were higher (3.7 mg/l) south of Forrestal Avenue adjacent to the abandoned DFM line. High TVHC concentrations were also detected in probes from south of Booster Pumphouse Building No. 466 to VP-24 and further south down Forrestal Drive. These areas appear to be indicative of historical impacts from petroleum from surface spills, former line leaks that have been repaired or adjacent line leaks not inoculated with the Tracer compound (abandoned DFM).

Low concentrations of TVHC were detected on the northern concrete pier. TVHC was not detected in probes from Forrestal Drive down to the southern concrete pier.

3.3 DFM FUEL LINE SOIL GAS TEST

Temporary soil probes were installed along the length of the former DFM line and soil gas samples were collected for the analysis of TVHC. A total of 508 probes were installed along 10,160 feet of piping. Where the former DFM line was within the sphere of influence of the JP-

5 line probes, the JP-5 line probes were analyzed for TVHC. Probe locations and corresponding TVHC concentrations are shown on the attached maps, Soil Gas (SG) 1 through 4.

TVHC was detected in most of the first 25 probes, SG-01 through SG-05 adjacent to Tank 213 (which failed leak detection), and SG-06 through SG-25 located south of Tank 215. Concentrations ranged from 0.001 mg/l to 0.470 mg/l (Figure SG-1). Only three locations between SG-26 and SG-393 yielded concentrations of TVHC greater than 0.01 mg/l: SG-46 adjacent to VP-3 (0.026 mg/l) and confirmed by SG-425 (0.150 mg/l); SG-278 adjacent to VP-8 (0.084 mg/l); and SG-341 (0.039 mg/l) and SG-342 (0.040 mg/l) adjacent to Booster Pumphouse Building No. 466. Similarly, probes SG-510 through 526, west of Pumphouse Building 1982 and in close proximity to Booster Pumphouse Building No. 466, also consistently yielded TVHC concentrations greater than 0.01 mg/l and as high as 0.03 mg/l.

Other than these significant locations, several probes yielded detections south of VP-6A which are inconsistent and spread far apart. The detections do not appear to be related to each other. Finally, probe SG-427, adjacent to VP-6, yielded a TVHC concentration of 0.020 mg/l.

4.0 CONCLUSIONS AND RECOMMENDATIONS

4.1 CONCLUSIONS

Dames & Moore and Tracer performed integrity testing of the Tow Way Fuel Farm at the Naval Station Roosevelt Roads. The Tow Way Fuel Farm system evaluation included six bulk cut-and-cover storage tanks, twenty thousand five hundred twenty (20,520) feet of active JP-5 distribution pipeline and ten thousand one hundred sixty (10,160) feet of abandoned DFM line. The scope of work included the installation of permanent sampling probes around the storage tanks and active JP-5 line. Permanent probes adjacent to the active JP-5 lines were also utilized to collect soil gas samples associated with the abandoned DFM line whenever the two lines were in close proximity. Temporary soil gas probes were installed along the length of the abandoned DFM line to collect soil gas samples for TVHC. Based on the integrity test results, Dames & Moore presents the following conclusions:

- Three of the six cut-and-cover tanks failed the integrity test. Tracer compound was detected in probes associated with Tanks 213, 381 and 1086, and therefore these tanks failed the integrity test. Tanks 212, 428 and 1084 passed the integrity test, but high concentrations of TVHC were detected in the associated sampling probes indicating the soils may have been impacted by overfills, surface spills or adjacent leaks of petroleum.

- Only two of the 1,026 probes failed the tracer test and were reported by Tracer to be leaking. Probes P-0231 and P-0232 each yielded samples with detectable concentration of Tracer A (0.002 mg/l and 0.001 mg/l, respectively). Based on Tracer's methodology and third party certification, Tracer certifies the remainder of the pipeline to be tight or with a leak rate of less than 0.1 gallons per hour.

- Soil gas samples collected from the probes indicate historical impacts to the soil from petroleum products. Based solely on the location of the probes and the resulting TVHC concentrations, the following areas are considered to have been impacted:

- Soils around VP-3.
- Soils along the DFM pipeline and JP-5 pipeline south of Forrestal Drive and the JP-5 pipeline north of Forrestal Drive from the fleet recreation area to Booster Pumphouse Building 466 and Pumphouse Building 1982.
- Soils along the pipeline south of Booster Pumphouse Building 466 to VP-24 and further south down Forrestal Drive.
- Soils around the abandoned DFM line adjacent to tanks 213 and 215.
- Isolated areas around VP-2, VP-6 and VP-6A, and VP-8.

4.2 RECOMMENDATIONS

Dames & Moore presents the following recommendations:

- The tanks which failed integrity testing, 213, 381 and 1086 should be taken out of service and repaired.
- The JP-5 line near probes P-0231 and P-0232 appears to be leaking and should be repaired.
- Areas with heavy TVHC concentrations detected should be considered during construction activities or remedial activities.

Table 1
Tow Way Fuel Farm Integrity Testing
Cut–and–Cover Tanks
Naval Station Roosevelt Roads

Tank ID	Initial Integrity Test Results	Flow Field [1] Test Results	Results	TVHC Concentrations
212	Pass	Pass	Pass	0 – 510 mg/l
213	Fail	NA	Fail	0 – 670 mg/l
381	Fail	NA	Fail	0 – 1.7 mg/l
429	Pass	Pass	Pass	0 – 22.8 mg/l
1084	Pass	Pass	Pass	0 – 208 mg/l
1086	Fail	NA	Fail	0 – 0.94 mg/l

[1] Only tanks passing initial tests are flow field tested.

TABLE 2
TOW WAY FUEL FARM INTEGRITY TESTING
JP-5 PIPELINE
NAVAL STATION ROOSEVELT ROADS

11/09/94

SAMPLE	A mg/L	TVHC mg/L	Location/Potential Source
AIR SAMPLE	0.0000	0.0000	
P-0001	0.0000	0.0000	
P-0002	0.0000	0.0000	
P-0003	0.0000	0.0000	
P-0004	0.0000	0.0030	
P-0005	0.0000	0.0000	
P-0006	0.0000	0.0000	
P-0007	0.0000	0.0000	
P-0008	0.0000	0.0000	
P-0009	0.0000	0.0000	
P-0010	0.0000	0.0000	
P-0011	0.0000	0.0000	
P-0012	0.0000	0.0000	
P-0013	0.0000	0.0000	
P-0014	0.0000	0.0000	
P-0015	0.0000	0.0000	
P-0016	0.0000	0.0000	
P-0017	0.0000	0.0000	
P-0018	0.0000	0.0000	
P-0019	0.0000	0.0000	
P-0020	0.0000	0.0000	
P-0021	0.0000	0.0000	
P-0022	0.0000	0.0000	
P-0023	0.0000	0.0000	
P-0024	0.0000	0.0000	
P-0025	0.0000	0.0000	
P-0026	0.0000	0.0000	
P-0027	0.0000	0.0000	
P-0028	0.0000	0.0000	
P-0029	0.0000	0.0000	
P-0030	0.0000	0.0000	
P-0031	0.0000	0.0000	
P-0032	0.0000	0.0000	
P-0033	0.0000	0.0000	
P-0034	0.0000	0.0000	
P-0035	0.0000	0.0000	
P-0036	0.0000	0.0000	
P-0037	0.0000	0.0000	
P-0038	0.0000	0.0000	
P-0039	0.0000	0.0000	
AIR SAMPLE	0.0000	0.0000	
P-0040	0.0000	0.0000	
P-0041	0.0000	0.0000	
P-0042	0.0000	0.0000	
P-0043	0.0000	0.0000	
P-0044	0.0000	0.0000	
P-0045	0.0000	0.0000	
P-0046	0.0000	0.0000	

TABLE 2 (Cont'd)

SAMPLE	A mg/L	TVHC mg/L	Location/Potential Source
P-0047	0.0000	0.0000	
P-0048	0.0000	0.0000	
P-0049	0.0000	0.0000	
P-0050	0.0000	0.0000	
P-0051	0.0000	0.0000	
P-0052	0.0000	0.0000	
P-0053	0.0000	0.0000	
P-0054	0.0000	0.0000	
P-0055	0.0000	0.0000	
P-0056	0.0000	0.0000	
P-0057	0.0000	0.0000	
P-0058	0.0000	0.0000	
P-0059	0.0000	0.0000	
P-0060	0.0000	0.0000	
P-0061	0.0000	0.0000	
P-0062	0.0000	0.0000	
P-0063	0.0000	0.0003	
P-0064	0.0000	0.0000	
P-0065	0.0000	0.0000	
P-0066	0.0000	0.0000	
P-0067	0.0000	0.0000	
P-0068	0.0000	0.0000	
P-0069	0.0000	0.0000	
P-0070	0.0000	0.0000	
P-0071	0.0000	0.0000	
P-0072	0.0000	0.0000	
P-0073	0.0000	0.0000	
P-0074	0.0000	0.0000	
P-0075	0.0000	0.0000	
P-0076	0.0000	0.0000	
P-0077	0.0000	0.0000	
P-0078	0.0000	0.0000	
P-0079	0.0000	0.0000	
P-0080	0.0000	0.0000	
P-0081	0.0000	0.0000	
P-0082	0.0000	0.0000	
P-0083	0.0000	0.0000	
P-0084	0.0000	0.0000	
P-0085	0.0000	0.0000	
P-0086	0.0000	0.0000	
P-0087	0.0000	0.0000	
P-0088	0.0000	0.0000	
P-0089	0.0000	0.0000	
P-0090	0.0000	0.0000	
P-0091	0.0000	0.0000	
P-0092	0.0000	0.0000	
P-0093	0.0000	0.0000	
P-0094	0.0000	0.0000	
P-0095	0.0000	0.0000	
P-0096	0.0000	0.0000	
P-0097	0.0000	0.0000	
P-0098	0.0000	0.0020	
P-0099	0.0000	0.0000	
P-0100	0.0000	0.0000	

TABLE 2 (Cont'd)

SAMPLE	A mg/L	TVHC mg/L	Location/Potential Source
P-0101	0.0000	0.0090	
P-0102	0.0000	0.0120	North of VP-2
P-0103	0.0000	0.0000	
P-0104	0.0000	0.0000	
P-0105	0.0000	0.0000	
AIR SAMPLE	0.0000	0.0000	
P-0106	0.0000	0.0000	
P-0107	0.0000	0.0000	
P-0108	0.0000	0.0000	
P-0109	0.0000	0.0000	
P-0110	0.0000	0.0000	
P-0111	0.0000	0.0000	
P-0112	0.0000	0.0000	
P-0113	0.0000	0.0000	
P-0114	0.0000	0.0000	
P-0115	0.0000	0.0000	
P-0116	0.0000	0.0000	
P-0117	0.0000	0.0000	
P-0118	0.0000	0.0000	
P-0119	0.0000	0.0000	
AIR SAMPLE	0.0000	0.0000	
11/10/94			
AIR SAMPLE	0.0000	0.0000	
P-0120	0.0000	0.0000	
P-0121	0.0000	0.0000	
P-0122	0.0000	0.0000	
P-0123	0.0000	0.0030	
P-0124	0.0000	0.0000	
P-0125	0.0000	0.0000	
P-0126	0.0000	0.0000	
P-0127	0.0000	0.0000	
P-0128	0.0000	0.0000	
P-0129	0.0000	0.0000	
P-0130	0.0000	0.0000	
P-0131	0.0000	0.0000	
P-0132	0.0000	0.0000	
P-0133	0.0000	0.0000	
P-0134	0.0000	0.0000	
P-0135	0.0000	0.0000	
P-0136	0.0000	0.0000	
P-0137	0.0000	0.0000	
P-0138	0.0000	0.0000	
P-0139	0.0000	0.0000	
P-0140	0.0000	0.0000	
P-0141	0.0000	0.0000	
P-0142	0.0000	0.0000	
P-0143	0.0000	0.0000	
P-0144	0.0000	0.0000	
P-0145	0.0000	0.0000	
P-0146	0.0000	0.0000	
P-0147	0.0000	0.0000	
P-0148	0.0000	0.0000	

TABLE 2 (Cont'd)

SAMPLE	A mg/L	TVHC mg/L	Location/Potential Source
P-0149	0.0000	0.0000	
P-0150	0.0000	0.0000	
P-0151	0.0000	0.0000	
P-0152	0.0000	0.0000	
P-0153	0.0000	0.0000	
AIR SAMPLE	0.0000	0.0000	
11/11/94			
AIR SAMPLE	0.0000	0.0000	
P-0154	0.0000	0.0000	
P-0155	0.0000	0.0000	
P-0156	0.0000	0.0000	
P-0157	0.0000	0.0030	
P-0158	0.0000	0.0000	
P-0159	0.0000	0.0000	
P-0160	0.0000	0.0000	
P-0161	0.0000	0.0000	
P-0162	0.0000	0.0000	
P-0163	0.0000	0.0000	
P-0164	0.0000	0.0000	
P-0165	0.0000	0.0000	
P-0166	0.0000	0.0000	
P-0167	0.0000	0.0000	
P-0168	0.0000	0.0000	
P-0169	0.0000	0.0000	
P-0170	0.0000	0.0000	
P-0171	0.0000	0.0000	
P-0172	0.0000	0.0000	
P-0173	0.0000	0.0000	
P-0174	0.0000	0.0000	
P-0175	0.0000	0.0000	
P-0176	0.0000	0.0000	
P-0177	0.0000	0.0000	
P-0178	0.0000	0.0000	
P-0179	0.0000	0.0000	
P-0180	0.0000	0.0000	
AIR SAMPLE	0.0000	0.0000	
AIR SAMPLE	0.0000	0.0000	
P-0181	0.0000	0.0000	
P-0182	0.0000	0.0000	
P-0183	0.0000	0.0000	
P-0184	0.0000	0.0000	
P-0185	0.0000	0.0000	
P-0186	0.0000	0.0000	
P-0187	0.0000	0.0000	
P-0188	0.0000	0.0000	
P-0189	0.0000	0.0000	
P-0190	0.0000	0.0000	
P-0191	0.0000	0.0000	
P-0192	0.0000	0.0000	
P-0193	0.0000	0.0000	
P-0194	0.0000	0.0000	
P-0195	0.0000	0.0000	

TABLE 2 (Cont'd)

SAMPLE	A mg/L	TVHC mg/L	Location/Potential Source
P-0196	0.0000	0.0000	
P-0197	0.0000	0.0000	
P-0198	0.0000	0.0000	
P-0199	0.0000	0.0000	
P-0200	0.0000	0.0000	
P-0201	0.0000	0.0000	
P-0202	0.0000	0.0000	
P-0203	0.0000	0.0000	
P-0204	0.0000	0.0000	
P-0205	0.0000	0.0000	
P-0206	0.0000	0.0000	
P-0207	0.0000	0.0000	
P-0208	0.0000	0.0000	
P-0209	0.0000	0.0000	
P-0210	0.0000	0.0000	
P-0211	0.0000	0.0000	
P-0212	0.0000	0.0000	
P-0213	0.0000	0.0000	
P-0214	0.0000	0.0000	
P-0215	0.0000	0.0000	
P-0216	0.0000	0.0000	
P-0217	0.0000	0.0000	
P-0218	0.0000	0.0000	
P-0219	0.0000	0.0000	
P-0220	0.0000	0.0000	
P-0221	0.0000	0.0000	
P-0222	0.0000	0.0000	
P-0223	0.0000	0.0000	
P-0224	0.0000	0.0000	
AIR SAMPLE	0.0000	0.0000	
11/13/94			
AIR SAMPLE	0.0000	0.0000	
P-0225	0.0000	0.0000	
P-0226	0.0000	0.0000	
P-0227	0.0000	0.0000	
P-0228	0.0000	0.0030	
P-0229	0.0000	0.0000	
P-0230	0.0000	0.0000	
P-0231	0.0002	0.4100	Pipeline Leak (Fig. LD-2)
P-0232	0.0001	0.0110	Pipeline Leak (Fig. LD-2)
P-0233	0.0000	0.0020	Pipeline Leak (Fig. LD-2)
P-0234	0.0000	0.0110	Pipeline Leak (Fig. LD-2)
P-0235	0.0000	0.0000	
P-0236	0.0000	0.0000	
P-0237	0.0000	0.0000	
P-0238	0.0000	0.0000	
P-0239	0.0000	0.0000	
P-0240	0.0000	0.0000	
P-0241	0.0000	0.0000	
P-0242	0.0000	0.0000	
P-0243	0.0000	0.0000	
P-0244	0.0000	0.0000	

TABLE 2 (Cont'd)

SAMPLE	A mg/L	TVHC mg/L	Location/Potential Source
P-0245	0.0000	0.0000	
P-0246	0.0000	0.0000	
P-0247	0.0000	0.0000	
P-0248	0.0000	0.0000	
P-0249	0.0000	0.0000	
P-0250	0.0000	0.0000	
P-0251	0.0000	0.0000	
P-0252	0.0000	0.0000	
P-0253	0.0000	0.0000	
P-0254	0.0000	0.0000	
P-0255	0.0000	0.0000	
P-0256	0.0000	0.0000	
P-0257	0.0000	0.0000	
P-0258	0.0000	0.0000	
P-0259	0.0000	0.0000	
P-0260	0.0000	0.0000	
P-0261	0.0000	0.0000	
P-0262	0.0000	0.0000	
P-0263	0.0000	0.0000	
P-0264	0.0000	0.0000	
P-0265	0.0000	0.0000	
P-0266	0.0000	0.0000	
AIR SAMPLE	0.0000	0.0000	
P-0267	0.0000	0.0000	
P-0268	0.0000	0.0000	
P-0269	0.0000	0.0000	
P-0270	0.0000	0.0000	
P-0271	0.0000	0.0000	
P-0272	0.0000	0.0000	
P-0273	0.0000	0.0000	
P-0274	0.0000	0.0000	
P-0275	0.0000	0.0000	
P-0276	0.0000	0.0000	
P-0277	0.0000	0.0000	
P-0278	0.0000	0.0000	
P-0279	0.0000	0.0000	
P-0280	0.0000	0.0000	
P-0281	0.0000	0.0000	
P-0282	0.0000	0.0000	
P-0283	0.0000	0.0000	
P-0284	0.0000	0.0000	
P-0285	0.0000	0.0000	
P-0286	0.0000	0.0000	
P-0287	0.0000	0.0000	
P-0288	0.0000	0.0000	
P-0289	0.0000	0.0003	
P-0290	0.0000	0.0000	
P-0291	0.0000	0.0000	
P-0292	0.0000	0.0000	
P-0293	0.0000	0.0000	
P-0294	0.0000	0.0000	
P-0295	0.0000	0.0000	
P-0296	0.0000	0.0000	
P-0297	0.0000	0.0000	

TABLE 2 (Cont'd)

SAMPLE	A mg/L	TVHC mg/L	Location/Potential Source
P-0298	0.0000	0.0000	
P-0299	0.0000	0.0000	
P-0300	0.0000	0.0000	
P-0301	0.0000	0.0010	
P-0302	0.0000	0.0000	
P-0303	0.0000	0.0000	
P-0304	0.0000	0.0000	
P-0305	0.0000	0.0000	
P-0306	0.0000	0.0000	
P-0307	0.0000	0.0000	
P-0308	0.0000	0.0000	
P-0309	0.0000	0.0000	
P-0310	0.0000	0.0000	
P-0311	0.0000	0.0000	
P-0312	0.0000	0.0000	
P-0313	0.0000	0.0000	
P-0314	0.0000	0.0000	
P-0315	0.0000	0.0000	
P-0316	0.0000	0.0000	
P-0317	0.0000	0.0000	
P-0318	0.0000	0.0000	
P-0319	0.0000	0.0000	
P-0320	0.0000	0.0000	
P-0321	0.0000	0.0000	
P-0322	0.0000	0.0000	
P-0323	0.0000	0.0000	
P-0324	0.0000	0.0000	
P-0325	0.0000	0.0000	
P-0326	0.0000	0.0000	
P-0327	0.0000	0.0000	
P-0328	0.0000	0.0000	
P-0329	0.0000	0.0000	
P-0330	0.0000	0.0000	
11/14/94			
AIR SAMPLE	0.0000	0.0000	
P-0331	0.0000	0.0000	
P-0332	0.0000	0.0000	
P-0333	0.0000	0.0000	
P-0334	0.0000	0.0000	
P-0335	0.0000	0.0000	
P-0336	0.0000	0.0000	
P-0337	0.0000	0.0000	
P-0338	0.0000	0.0000	
P-0339	0.0000	0.0000	
P-0340	0.0000	0.0000	
P-0341	0.0000	0.0000	
P-0342	0.0000	0.0000	
P-0343	0.0000	0.0000	
P-0344	0.0000	0.0000	
P-0345	0.0000	0.0000	
P-0346	0.0000	0.0000	
P-0347	0.0000	0.0000	

TABLE 2 (Cont'd)

SAMPLE	A mg/L	TVHC mg/L	Location/Potential Source
P-0348	0.0000	0.0000	
P-0349	0.0000	0.0000	
P-0350	0.0000	0.0000	
P-0351	0.0000	0.0000	
P-0352	0.0000	0.0000	
P-0353	0.0000	0.0000	
P-0354	0.0000	0.0000	
P-0355	0.0000	0.0000	
P-0356	0.0000	0.0000	
P-0357	0.0000	0.0000	
P-0358	0.0000	0.0000	
P-0359	0.0000	0.0000	
P-0360	0.0000	0.0000	
P-0361	0.0000	0.0000	
P-0362	0.0000	0.0000	
P-0363	0.0000	0.0000	
P-0364	0.0000	0.0000	
P-0365	0.0000	0.0000	
P-0366	0.0000	0.0000	
P-0367	0.0000	0.0000	
P-0368	0.0000	0.0000	
P-0369	0.0000	0.0000	
P-0370	0.0000	0.0000	
P-0371	0.0000	0.0000	
P-0372	0.0000	0.0000	
P-0373	0.0000	0.0000	
P-0374	0.0000	0.0000	
P-0375	0.0000	0.0000	
P-0376	0.0000	0.0000	
P-0377	0.0000	0.0000	
P-0378	0.0000	0.0000	
P-0379	0.0000	0.0000	
P-0380	0.0000	0.0000	
P-0381	0.0000	0.0000	
P-0382	0.0000	0.0000	
P-0383	0.0000	0.0000	
P-0384	0.0000	0.0000	
P-0385	0.0000	0.0000	
P-0386	0.0000	0.0000	
P-0387	0.0000	0.0000	
P-0388	0.0000	0.0000	
P-0389	0.0000	0.0040	
P-0390	0.0000	0.0000	
P-0391	0.0000	0.0000	
P-0392	0.0000	0.0000	
P-0393	0.0000	0.0000	
P-0394	0.0000	0.0000	
P-0395	0.0000	0.0000	
P-0396	0.0000	0.0000	
P-0397	0.0000	0.0000	
P-0398	0.0000	0.0000	
P-0399	0.0000	0.0000	
P-0400	0.0000	0.0000	
P-0401	0.0000	0.0000	

TABLE 2 (Cont'd)

SAMPLE	A mg/L	TVHC mg/L	Location/Potential Source
P-0402	0.0000	0.0000	
P-0403	0.0000	0.0000	
P-0404	0.0000	0.0000	
P-0405	0.0000	0.0000	
AIR SAMPLE	0.0000	0.0000	
P-0406	0.0000	0.0000	
P-0407	0.0000	0.0000	
P-0408	0.0000	0.0000	
P-0409	0.0000	0.0000	
P-0410	0.0000	0.0000	
P-0411	0.0000	0.0000	
P-0412	0.0000	0.0000	
P-0413	0.0000	0.0000	
P-0414	0.0000	0.0000	
P-0415	0.0000	0.0000	
P-0416	0.0000	0.0000	
P-0417	0.0000	0.0000	
P-0418	0.0000	0.0000	
P-0419	0.0000	0.0000	
P-0420	0.0000	0.0000	
P-0421	0.0000	0.0000	
P-0422	0.0000	0.0000	
P-0423	0.0000	0.0000	
P-0424	0.0000	0.0000	
P-0425	0.0000	0.0000	
P-0426	0.0000	0.0000	
P-0427	0.0000	0.0000	
P-0428	0.0000	0.0000	
P-0429	0.0000	0.0000	
P-0430	0.0000	0.0000	
P-0431	0.0000	0.0000	
P-0432	0.0000	0.0000	
P-0433	0.0000	0.0000	
P-0434	0.0000	0.0000	
P-0435	0.0000	0.0000	
P-0436	0.0000	0.0000	
P-0437	0.0000	0.0000	
P-0438	0.0000	0.0000	
P-0439	0.0000	0.0000	
P-0440	0.0000	0.0000	
P-0441	0.0000	0.0000	
P-0442	0.0000	0.0000	
P-0443	0.0000	0.0000	
P-0444	0.0000	0.0000	
P-0445	0.0000	0.0000	
P-0446	0.0000	0.0000	
P-0447	0.0000	0.0000	
P-0448	0.0000	0.0000	
P-0449	0.0000	0.0000	
P-0450	0.0000	0.0000	
P-0451	0.0000	0.0000	
P-0452	0.0000	0.0000	
P-0453	0.0000	0.0000	
P-0454	0.0000	0.0000	

TABLE 2 (Cont'd)

SAMPLE	A mg/L	TVHC mg/L	Location/Potential Source
P-0455	0.0000	0.0000	
P-0456	0.0000	0.0000	
P-0457	0.0000	0.0000	
P-0458	0.0000	0.0000	
P-0459	0.0000	0.0000	
P-0460	0.0000	0.0000	
P-0461	0.0000	0.0000	
P-0462	0.0000	0.0000	
P-0463	0.0000	0.0000	
P-0464	0.0000	0.0000	
P-0465	0.0000	0.0000	
P-0466	0.0000	0.0000	
P-0467	0.0000	0.0000	
P-0468	0.0000	0.0000	
P-0469	0.0000	0.0000	
P-0470	0.0000	0.0000	
P-0471	0.0000	0.0000	
P-0472	0.0000	0.0000	
P-0473	0.0000	0.0000	
P-0474	0.0000	0.0000	
P-0475	0.0000	0.0000	
P-0476	0.0000	0.0000	
P-0477	0.0000	0.0000	
P-0478	0.0000	0.0000	
P-0479	0.0000	0.0000	
P-0480	0.0000	0.0000	
AIR SAMPLE	0.0000	0.0000	
11/15/94			
AIR SAMPLE	0.0000	0.0000	
P-0481	0.0000	0.0000	
P-0482	0.0000	0.0000	
P-0483	0.0000	0.0000	
P-0484	0.0000	0.0000	
P-0485	0.0000	0.0000	
P-0486	0.0000	0.0000	
P-0487	0.0000	0.0000	
P-0488	0.0000	0.0000	
P-0489	0.0000	0.0000	
P-0490	0.0000	0.0000	
P-0491	0.0000	0.0000	
P-0492	0.0000	0.0000	
P-0493	0.0000	0.0000	
P-0494	0.0000	0.0000	
P-0495	0.0000	0.0000	
P-0496	0.0000	0.0000	
P-0497	0.0000	0.0000	
P-0498	0.0000	0.0000	
P-0499	0.0000	0.0000	
P-0500	0.0000	0.0000	
P-0501	0.0000	0.0000	
P-0502	0.0000	0.0000	
P-0503	0.0000	0.0000	

TABLE 2 (Cont'd)

SAMPLE	A mg/L	TVHC mg/L	Location/Potential Source
P-0504	0.0000	0.0000	
P-0505	0.0000	0.0000	
P-0506	0.0000	0.0000	
P-0507	0.0000	0.0000	
P-0508	0.0000	0.0000	
P-0509	0.0000	0.0000	
P-0510	0.0000	0.0000	
P-0511	0.0000	0.0000	
P-0512	0.0000	0.0000	
P-0513	0.0000	0.0000	
P-0514	0.0000	0.0000	
P-0515	0.0000	0.0000	
P-0516	0.0000	0.0000	
P-0517	0.0000	0.0000	
P-0518	0.0000	0.0000	
P-0519	0.0000	0.0000	
P-0520	0.0000	0.0000	
P-0521	0.0000	0.0000	
P-0522	0.0000	0.0000	
P-0523	0.0000	0.0000	
P-0524	0.0000	0.0000	
P-0525	0.0000	0.0000	
P-0526	0.0000	0.0000	
P-0527	0.0000	0.1200	North of VP-2
P-0528	0.0000	0.0050	
P-0529	0.0000	0.0000	
P-0530	0.0000	0.0000	
P-0531	0.0000	0.0240	North of VP-2
P-0532	0.0000	0.0000	
P-0533	0.0000	0.0000	
P-0534	0.0000	8.8000	South of VP-2
P-0535	0.0000	18.0000	South of VP-2
P-0536	0.0000	0.0360	South of VP-2
P-0537	0.0000	0.0460	South of VP-2
P-0538	0.0000	0.0130	South of VP-2
P-0539	0.0000	0.0300	South of VP-2
P-0540	0.0000	0.0300	South of VP-2
P-0541	0.0000	0.0790	South of VP-2
P-0542	0.0000	0.0200	South of VP-2
P-0543	0.0000	0.0150	South of VP-2
P-0544	0.0000	0.0170	South of VP-2
P-0545	0.0000	0.0080	
P-0546	0.0000	0.0050	
AIR SAMPLE	0.0000	0.0000	
P-0547	0.0000	0.0180	South of VP-2
P-0548	0.0000	0.0100	South of VP-2
P-0549	0.0000	0.0140	South of VP-2
P-0550	0.0000	0.0050	
P-0551	0.0000	0.0100	South of VP-2
P-0552	0.0000	0.0060	
P-0553	0.0000	0.0060	
P-0554	0.0000	0.0000	
P-0555	0.0000	0.0040	
P-0556	0.0000	0.0010	

TABLE 2 (Cont'd)

SAMPLE	A mg/L	TVHC mg/L	Location/Potential Source
P-0557	0.0000	0.0000	
P-0558	0.0000	0.0030	
P-0559	0.0000	0.0000	
P-0560	0.0000	0.0000	
P-0561	0.0000	0.0030	
P-0562	0.0000	0.0030	
P-0563	0.0000	0.0000	
P-0564	0.0000	0.0008	
P-0565	0.0000	0.0000	
P-0566	0.0000	0.0030	
P-0567	0.0000	0.0090	
P-0568	0.0000	0.0000	
P-0569	0.0000	0.0000	
P-0570	0.0000	0.0000	
P-0571	0.0000	0.0000	
P-0572	0.0000	0.0000	
P-0573	0.0000	0.0000	
P-0574	0.0000	0.0006	
P-0575	0.0000	0.0160	Adjacent to DFM Line
P-0576	0.0000	0.0000	
P-0577	0.0000	0.0000	
P-0578	0.0000	0.2700	Adjacent to DFM Line
P-0579	0.0000	4.0000	Adjacent to DFM Line
P-0580	0.0000	1.8000	Adjacent to DFM Line
P-0581	0.0000	1.5000	Adjacent to DFM Line; S. of Forrestal Drive
P-0582	0.0000	0.2300	Adjacent to DFM Line; S. of Forrestal Drive
P-0583	0.0000	0.6200	Adjacent to DFM Line; S. of Forrestal Drive
P-0584	0.0000	1.8000	Adjacent to DFM Line; S. of Forrestal Drive
P-0585	0.0000	0.1400	Adjacent to DFM Line; S. of Forrestal Drive
P-0586	0.0000	0.0030	
P-0587	0.0000	3.6000	Adjacent to DFM Line; S. of Forrestal Drive
P-0588	0.0000	13.0000	Adjacent to DFM Line; S. of Forrestal Drive
P-0589	0.0000	1.4000	Adjacent to DFM Line; S. of Forrestal Drive
P-0590	0.0000	3.8000	Adjacent to DFM Line; S. of Forrestal Drive
P-0591	0.0000	0.1200	Adjacent to DFM Line; S. of Forrestal Drive
P-0592	0.0000	3.7000	Adjacent to DFM Line; S. of Forrestal Drive
P-0593	0.0000	2.8000	Adjacent to DFM Line; S. of Forrestal Drive
P-0594	0.0000	2.9000	Adjacent to DFM Line; S. of Forrestal Drive
P-0595	0.0000	6.9000	Adjacent to DFM Line; S. of Forrestal Drive
P-0596	0.0000	0.0510	Adjacent to DFM Line; S. of Forrestal Drive
P-0597	0.0000	0.0270	Adjacent to DFM Line; S. of Forrestal Drive
P-0598	0.0000	0.0220	Adjacent to DFM Line; S. of Forrestal Drive
P-0599	0.0000	1.9000	Adjacent to DFM Line; S. of Forrestal Drive
P-0600	0.0000	0.0270	Adjacent to DFM Line; S. of Forrestal Drive
P-0601	0.0000	0.1020	Adjacent to DFM Line; S. of Forrestal Drive
P-0602	0.0000	0.0220	Adjacent to DFM Line; S. of Forrestal Drive
P-0603	0.0000	0.0450	Adjacent to DFM Line; S. of Forrestal Drive
P-0604	0.0000	2.0000	Adjacent to DFM Line; S. of Forrestal Drive
P-0605	0.0000	1.0000	Booster pumphouse; Building No. 466
P-0606	0.0000	6.9000	Booster pumphouse; Building No. 466
P-0607	0.0000	4.4000	Booster pumphouse; Building No. 466
P-0608	0.0000	0.0290	Booster pumphouse; Building No. 466
P-0609	0.0000	0.0140	Pumphouse Building No. 1982
P-0610	0.0000	0.0000	

TABLE 2 (Cont'd)

SAMPLE	A mg/L	TVHC mg/L	Location/Potential Source
P-0611	0.0000	0.0160	Pumphouse Building No. 1982
P-0612	0.0000	0.0030	
P-0613	0.0000	0.0030	
P-0614	0.0000	0.0220	Adjacent to DFM; N. of Forrestal Drive
P-0615	0.0000	0.0050	
P-0616	0.0000	0.0140	Adjacent to DFM; N. of Forrestal Drive
P-0617	0.0000	0.0090	
P-0618	0.0000	0.0090	
P-0619	0.0000	0.0060	
P-0620	0.0000	0.0070	
P-0621	0.0000	0.0320	Adjacent to DFM; N. of Forrestal Drive
P-0622	0.0000	0.0120	Adjacent to DFM; N. of Forrestal Drive
P-0623	0.0000	0.0040	
P-0624	0.0000	0.0050	
P-0625	0.0000	0.0100	Adjacent to DFM; N. of Forrestal Drive
P-0626	0.0000	0.0170	Adjacent to DFM; N. of Forrestal Drive
P-0627	0.0000	0.0100	Adjacent to DFM; N. of Forrestal Drive
P-0628	0.0000	0.0020	
P-0629	0.0000	0.0060	
P-0630	0.0000	0.0020	
P-0631	0.0000	0.0000	
P-0632	0.0000	0.0020	
AIR SAMPLE	0.0000	0.0000	
11/16/94			
AIR SAMPLE	0.0000	0.0000	
P-0633	0.0000	0.0070	
P-0634	0.0000	0.0000	
P-0635	0.0000	0.0000	
P-0636	0.0000	0.0010	
P-0637	0.0000	0.0010	
P-0638	0.0000	0.0000	
P-0639	0.0000	0.0000	
P-0640	0.0000	0.0010	
P-0641	0.0000	0.0000	
P-0642	0.0000	0.0000	
P-0643	0.0000	0.0010	
P-0644	0.0000	0.0000	
P-0645	0.0000	0.0010	
P-0646	0.0000	0.0000	
P-0647	0.0000	0.0020	
P-0648	0.0000	0.0000	
P-0649	0.0000	0.0007	
P-0650	0.0000	0.0000	
P-0651	0.0000	0.0007	
P-0652	0.0000	0.0000	
P-0653	0.0000	0.0000	
P-0654	0.0000	0.0030	
P-0655	0.0000	0.0000	
P-0656	0.0000	0.0000	
P-0657	0.0000	0.0020	
P-0658	0.0000	0.0000	
P-0659	0.0000	0.0020	

TABLE 2 (Cont'd)

SAMPLE	A mg/L	TVHC mg/L	Location/Potential Source
P-0660	0.0000	0.0000	
P-0661	0.0000	0.0000	
P-0662	0.0000	0.0000	
P-0663	0.0000	0.0008	
P-0664	0.0000	0.0010	
P-0665	0.0000	0.0000	
P-0666	0.0000	0.0000	
P-0667	0.0000	0.0003	
P-0668	0.0000	0.0000	
P-0669	0.0000	0.0000	
P-0670	0.0000	0.0000	
P-0671	0.0000	0.0000	
P-0672	0.0000	0.0000	
P-0673	0.0000	0.0000	
P-0674	0.0000	0.0000	
P-0675	0.0000	0.0000	
P-0676	0.0000	0.0000	
P-0677	0.0000	0.0000	
P-0678	0.0000	0.9700	Turn in piping; east of baseball field
P-0679	0.0000	0.0000	
P-0680	0.0000	0.0040	
P-0681	0.0000	0.0010	
P-0682	0.0000	0.0020	
P-0683	0.0000	0.0003	
P-0684	0.0000	0.0020	
P-0685	0.0000	0.0000	
P-0686	0.0000	0.0010	
P-0687	0.0000	0.0000	
P-0688	0.0000	0.0000	
P-0689	0.0000	0.0000	
P-0690	0.0000	0.0010	
P-0691	0.0000	0.0008	
P-0692	0.0000	0.0000	
P-0693	0.0000	0.0000	
P-0694	0.0000	0.0000	
P-0695	0.0000	0.0000	
P-0696	0.0000	0.0000	
P-0697	0.0000	0.0000	
P-0698	0.0000	0.0130	Fleet Recreation Area
P-0699	0.0000	0.0240	Fleet Recreation Area
P-0700	0.0000	0.0100	Fleet Recreation Area
AIR SAMPLE	0.0000	0.0000	
P-0701	0.0000	0.0960	Fleet Recreation Area
P-0702	0.0000	0.0300	Fleet Recreation Area
P-0703	0.0000	0.0020	
P-0704	0.0000	0.0020	
P-0705	0.0000	0.0010	
P-0706	0.0000	0.0010	
P-0707	0.0000	0.0010	
P-0708	0.0000	0.0010	
P-0709	0.0000	0.0030	
P-0710	0.0000	0.0010	
P-0711	0.0000	0.0008	
P-0712	0.0000	0.0010	

TABLE 2 (Cont'd)

SAMPLE	A mg/L	TVHC mg/L	Location/Potential Source
P-0713	0.0000	0.0010	
P-0714	0.0000	0.0010	
P-0715	0.0000	0.0010	
P-0716	0.0000	0.0010	
P-0717	0.0000	0.0020	
P-0718	0.0000	0.0020	
P-0719	0.0000	0.0020	
P-0720	0.0000	0.0020	
P-0721	0.0000	0.0020	
P-0722	0.0000	0.0020	
P-0723	0.0000	0.0020	
P-0724	0.0000	0.0060	
P-0725	0.0000	0.0006	
P-0726	0.0000	0.0030	
P-0727	0.0000	0.0020	
P-0728	0.0000	0.0020	
P-0729	0.0000	0.0200	Northeast of VP-24
P-0730	0.0000	0.0000	
P-0731	0.0000	0.0360	Northeast of VP-24
P-0732	0.0000	0.0460	Northeast of VP-24
P-0733	0.0000	0.0050	
P-0734	0.0000	0.0110	Northeast of VP-24
P-0735	0.0000	0.0020	
P-0736	0.0000	0.0010	
P-0737	0.0000	0.0010	
P-0738	0.0000	0.0020	
P-0739	0.0000	0.0020	
P-0740	0.0000	0.0010	
P-0741	0.0000	0.0010	
P-0742	0.0000	0.0050	
P-0743	0.0000	0.0010	
P-0744	0.0000	0.0010	
P-0745	0.0000	0.0010	
P-0746	0.0000	0.0020	
P-0747	0.0000	0.0010	
P-0748	0.0000	0.0060	
P-0749	0.0000	0.0090	
P-0750	0.0000	0.0020	
P-0751	0.0000	0.0090	
AIR SAMPLE	0.0000	0.0000	
11/17/94			
AIR SAMPLE	0.0000	0.0000	
P-0752	0.0000	0.0000	
P-0753	0.0000	0.0000	
P-0754	0.0000	0.0000	
P-0755	0.0000	0.0000	
P-0756	0.0000	0.0000	
P-0757	0.0000	0.0000	
P-0758	0.0000	0.0000	
P-0759	0.0000	0.0000	
P-0760	0.0000	0.0000	
P-0761	0.0000	0.0000	

TABLE 2 (Cont'd)

SAMPLE	A mg/L	TVHC mg/L	Location/Potential Source
P-0762	0.0000	0.0000	
P-0763	0.0000	0.0000	
P-0764	0.0000	0.0000	
P-0765	0.0000	0.0000	
P-0766	0.0000	0.0032	
P-0767	0.0000	0.0000	
P-0768	0.0000	0.0160	Southeast of concrete pier
P-0769	0.0000	0.0270	Southeast of concrete pier
P-0770	0.0000	0.0970	Southeast of concrete pier
P-0771	0.0000	0.0310	Southeast of concrete pier
P-0772	0.0000	0.0170	Southeast of concrete pier
P-0773	0.0000	0.0110	Southeast of concrete pier
P-0774	0.0000	0.0030	
P-0775	0.0000	0.0170	
P-0776	0.0000	0.0040	
P-0777	0.0000	0.0000	
P-0778	0.0000	0.0000	
P-0779	0.0000	0.0160	Southeast of concrete pier
P-0780	0.0000	0.0020	
P-0781	0.0000	0.0000	
P-0782	0.0000	0.0000	
P-0783	0.0000	0.0000	
P-0784	0.0000	0.0000	
P-0785	0.0000	0.0000	
P-0786	0.0000	0.0000	
P-0787	0.0000	0.0000	
P-0788	0.0000	0.0000	
P-0789	0.0000	0.0000	
P-0790	0.0000	0.0030	
P-0791	0.0000	0.2000	East of VP-24
P-0792	0.0000	0.0470	East of VP-24
P-0793	0.0000	0.1500	East of VP-24
P-0794	0.0000	0.4800	East of VP-24
P-0795	0.0000	0.2900	East of VP-24
P-0796	0.0000	0.3200	East of VP-24
P-0797	0.0000	0.0750	East of VP-24
P-0798	0.0000	0.0460	East of VP-24
P-0799	0.0000	0.0110	East of VP-24
P-0800	0.0000	0.0000	
P-0801	0.0000	0.0010	
P-0802	0.0000	0.1700	South of Forrestal Drive
P-0803	0.0000	0.1700	South of Forrestal Drive
P-0804	0.0000	0.0450	South of Forrestal Drive
P-0805	0.0000	0.0120	South of Forrestal Drive
P-0806	0.0000	0.0000	
P-0807	0.0000	0.4000	South of Forrestal Drive
P-0808	0.0000	0.1700	South of Forrestal Drive
P-0809	0.0000	0.1300	South of Forrestal Drive
P-0810	0.0000	0.1000	South of Forrestal Drive
P-0811	0.0000	0.0420	South of Forrestal Drive
P-0812	0.0000	0.6300	South of Forrestal Drive
P-0813	0.0000	0.0650	South of Forrestal Drive
P-0814	0.0000	0.0000	
P-0815	0.0000	0.0000	

TABLE 2 (Cont'd)

SAMPLE	A mg/L	TVHC mg/L	Location/Potential Source
P-0816	0.0000	0.0000	
P-0817	0.0000	0.0000	
P-0818	0.0000	0.0000	
P-0819	0.0000	0.0005	
P-0820	0.0000	0.0020	
P-0821	0.0000	0.0000	
P-0822	0.0000	0.0000	
P-0823	0.0000	0.0000	
P-0824	0.0000	0.0000	
P-0825	0.0000	0.0000	
P-0826	0.0000	0.0000	
P-0827	0.0000	0.0000	
P-0828	0.0000	0.0000	
P-0829	0.0000	0.0000	
P-0830	0.0000	0.0000	
P-0831	0.0000	0.0000	
AIR SAMPLE	0.0000	0.0000	
P-0832	0.0000	0.0080	
P-0833	0.0000	0.0060	
P-0834	0.0000	0.0008	
P-0835	0.0000	0.0000	
P-0836	0.0000	0.0000	
P-0837	0.0000	0.0000	
P-0838	0.0000	0.0000	
P-0839	0.0000	0.0000	
P-0840	0.0000	0.0000	
P-0841	0.0000	0.0000	
P-0842	0.0000	0.0000	
P-0843	0.0000	0.0000	
P-0844	0.0000	0.0000	
P-0845	0.0000	0.0000	
P-0846	0.0000	0.0000	
P-0847	0.0000	0.0000	
P-0848	0.0000	0.0000	
P-0849	0.0000	0.0000	
P-0850	0.0000	0.0000	
P-0851	0.0000	0.0000	
P-0852	0.0000	0.0000	
P-0853	0.0000	0.0000	
P-0854	0.0000	0.0000	
P-0855	0.0000	0.0000	
P-0856	0.0000	0.0000	
P-0857	0.0000	0.0000	
P-0858	0.0000	0.0000	
P-0859	0.0000	0.0000	
P-0860	0.0000	0.0000	
P-0861	0.0000	0.0000	
P-0862	0.0000	0.0000	
P-0863	0.0000	0.0000	
P-0864	0.0000	0.0000	
P-0865	0.0000	0.0000	
P-0866	0.0000	0.0000	
P-0867	0.0000	0.0000	
P-0868	0.0000	0.0000	

TABLE 2 (Cont'd)

SAMPLE	A mg/L	TVHC mg/L	Location/Potential Source
P-0869	0.0000	0.0000	
P-0870	0.0000	0.0000	
P-0871	0.0000	0.0000	
P-0872	0.0000	0.0000	
P-0873	0.0000	0.0000	
P-0874	0.0000	0.0000	
P-0875	0.0000	0.0000	
P-0876	0.0000	0.0000	
P-0877	0.0000	0.0000	
P-0878	0.0000	0.0000	
P-0879	0.0000	0.0000	
P-0880	0.0000	0.0000	
P-0881	0.0000	0.0000	
P-0882	0.0000	0.0000	
P-0883	0.0000	0.0000	
P-0884	0.0000	0.0000	
P-0885	0.0000	0.0000	
P-0886	0.0000	0.0000	
P-0887	0.0000	0.0000	
P-0888	0.0000	0.0000	
P-0889	0.0000	0.0000	
P-0890	0.0000	0.0000	
P-0891	0.0000	0.0010	
P-0892	0.0000	0.0000	
P-0893	0.0000	0.0000	
P-0894	0.0000	0.0000	
P-0895	0.0000	0.0000	
P-0896	0.0000	0.0000	
P-0897	0.0000	0.0000	
P-0898	0.0000	0.0000	
P-0899	0.0000	0.0000	
P-0900	0.0000	0.0000	
P-0901	0.0000	0.0000	
P-0902	0.0000	0.0000	
P-0903	0.0000	0.0000	
P-0904	0.0000	0.0000	
P-0905	0.0000	0.0000	
P-0906	0.0000	0.0000	
P-0907	0.0000	0.0000	
P-0908	0.0000	0.0000	
P-0909	0.0000	0.0000	
P-0910	0.0000	0.0000	
AIR SAMPLE	0.0000	0.0000	
11/18/94			
AIR SAMPLE	0.0000	0.0000	
P-0911	0.0000	0.0000	
P-0912	0.0000	0.0000	
P-0913	0.0000	0.0000	
P-0914	0.0000	0.0000	
P-0915	0.0000	0.0000	
P-0916	0.0000	0.0000	
P-0917	0.0000	0.0000	

TABLE 2 (Cont'd)

SAMPLE	A mg/L	TVHC mg/L	Location/Potential Source
P-0918	0.0000	0.0000	
P-0919	0.0000	0.0000	
P-0920	0.0000	0.0000	
P-0921	0.0000	0.0000	
P-0922	0.0000	0.0000	
P-0923	0.0000	0.0000	
P-0924	0.0000	0.0000	
P-0925	0.0000	0.0000	
P-0926	0.0000	0.0000	
P-0927	0.0000	0.0000	
P-0928	0.0000	0.0000	
P-0929	0.0000	0.0000	
P-0930	0.0000	0.0000	
P-0931	0.0000	0.0000	
P-0932	0.0000	0.0000	
P-0933	0.0000	0.0000	
P-0934	0.0000	0.0000	
P-0935	0.0000	0.0000	
P-0936	0.0000	0.0000	
P-0937	0.0000	0.0000	
P-0938	0.0000	0.0000	
P-0939	0.0000	0.0000	
P-0940	0.0000	0.0000	
P-0941	0.0000	0.0000	
P-0942	0.0000	0.0000	
P-0943	0.0000	0.0000	
P-0944	0.0000	0.0000	
P-0945	0.0000	0.0000	
P-0946	0.0000	0.0000	
P-0947	0.0000	0.0000	
P-0948	0.0000	0.0000	
P-0949	0.0000	0.0000	
P-0950	0.0000	0.0000	
P-0951	0.0000	0.0000	
P-0952	0.0000	0.0000	
P-0953	0.0000	0.0000	
P-0954	0.0000	0.0000	
P-0955	0.0000	0.0000	
P-0956	0.0000	0.0000	
P-0957	0.0000	0.0000	
P-0958	0.0000	0.0000	
AIR SAMPLE	0.0000	0.0000	
P-0959	0.0000	0.0000	
P-0960	0.0000	0.0000	
P-0961	0.0000	0.0000	
P-0962	0.0000	0.0000	
P-0963	0.0000	0.0000	
P-0964	0.0000	0.0000	
P-0965	0.0000	0.0000	
P-0966	0.0000	0.0000	
P-0967	0.0000	0.0000	
P-0968	0.0000	0.0000	
P-0969	0.0000	0.0000	
P-0970	0.0000	0.0000	

TABLE 2 (Cont'd)

SAMPLE	A mg/L	TVHC mg/L	Location/Potential Source
P-0971	0.0000	0.0000	
P-0972	0.0000	0.0000	
P-0973	0.0000	0.0000	
P-0974	0.0000	0.0000	
P-0975	0.0000	0.0000	
P-0976	0.0000	0.0000	
P-0977	0.0000	0.0000	
P-0978	0.0000	0.0000	
P-0979	0.0000	0.0000	
P-0980	0.0000	0.0000	
P-0981	0.0000	0.0000	
P-0982	0.0000	0.0000	
P-0983	0.0000	0.0000	
P-0984	0.0000	0.0000	
P-0985	0.0000	0.0000	
P-0986	0.0000	0.0000	
P-0987	0.0000	0.0000	
P-0988	0.0000	0.0550	Southeast of concrete pier
P-0989	0.0000	0.0300	Southeast of concrete pier
P-0990	0.0000	0.0310	Southeast of concrete pier
P-0991	0.0000	0.0170	Southeast of concrete pier
P-0992	0.0000	0.0320	Southeast of concrete pier
P-0993	0.0000	0.0000	
P-0994	0.0000	0.0000	
P-0995	0.0000	0.0000	
P-0996	0.0000	0.0000	
P-0997	0.0000	0.0000	
P-0998	0.0000	0.0000	
P-0999	0.0000	0.0000	
P-1000	0.0000	0.0000	
P-1001	0.0000	0.0000	
P-1002	0.0000	0.0000	
P-1003	0.0000	0.0000	
P-1004	0.0000	0.0000	
P-1005	0.0000	0.0000	
P-1006	0.0000	0.0000	
P-1007	0.0000	0.0000	
P-1008	0.0000	0.0000	
P-1009	0.0000	0.0000	
P-1010	0.0000	0.0000	
P-1011	0.0000	0.0000	
P-1012	0.0000	0.0490	Southwest of VP-24; Southeast of Booster Pumphouse; Building No. 466
P-1013	0.0000	0.5900	Southwest of VP-24; Southeast of Booster Pumphouse; Building No. 466
P-1014	0.0000	0.0120	Southwest of VP-24; Southeast of Booster Pumphouse; Building No. 466
P-1015	0.0000	0.0020	
P-1016	0.0000	0.0960	Southwest of VP-24; Southeast of Booster Pumphouse; Building No. 466
P-1017	0.0000	0.0900	Southwest of VP-24; Southeast of Booster Pumphouse; Building No. 466
P-1018	0.0000	0.0000	
P-1019	0.0000	0.0120	Southwest of VP-24; Southeast of Booster

TABLE 2 (Cont'd)

SAMPLE	A mg/L	TVHC mg/L	Location/Potential Source
			Pumphouse; Building No. 466
P-1020	0.0000	0.0000	
P-1021	0.0000	0.0000	
P-1022	0.0000	0.0000	
P-1023	0.0000	0.0000	
P-1024	0.0000	0.0000	
P-1025	0.0000	0.0000	
P-1026	0.0000	0.0000	
AIR SAMPLE	0.0000	0.0000	

TABLE 3
TOW WAY FUEL FARM SOIL GAS (VAPOR TRACE) TESTING
ABANDONED DFM LINE
NAVAL STATION ROOSEVELT ROADS

SAMPLE	TVHC mg/L	Location/Potential Source
9/26/94		
AIR SAMPLE	0.0000	
SG-01-3'	0.0060	
SG-02-3'	0.0000	
SG-03-3'	0.0060	
SG-04-3'	0.0010	
SG-05-3'	0.0060	
SG-06-3'	0.4700	Southeast of Tank 215
SG-07-3'	0.0400	Southeast of Tank 215
SG-08-3'	0.0210	Southeast of Tank 215
SG-09-3'	0.0820	Southeast of Tank 215
SG-10-3'	0.0090	
SG-11-3'	0.1700	Southeast of Tank 215
SG-12-3'	0.1500	Southeast of Tank 215
SG-13-3'	0.0060	
SG-14-3'	0.0004	
SG-15-3'	0.0040	
SG-16-3'	0.0070	
SG-17-3'	0.0070	
SG-18-3'	0.0050	
SG-19-3'	0.0070	
SG-20-3'	0.0010	
SG-21-3'	0.0110	Southeast of Tank 215
SG-22-3'	0.0120	Southeast of Tank 215
SG-23-3'	0.0060	
SG-24-3'	0.0100	Southeast of Tank 215
SG-25-3'	0.0120	Southeast of Tank 215
AIR SAMPLE	0.0000	
9/27/94		
AIR SAMPLE	0.0000	
SG-26-3'	0.0000	
SG-27-3'	0.0000	
SG-28-3'	0.0000	
SG-29-3'	0.0000	
SG-30-3'	0.0000	
SG-31-3'	0.0000	
SG-32-3'	0.0000	
SG-33-3'	0.0000	
SG-34-3'	0.0000	
SG-35-3'	0.0000	
SG-36-3'	0.0000	
SG-37-3'	0.0000	
SG-38-3'	0.0000	
SG-39-3'	0.0000	

TABLE 3 (Cont'd)

SAMPLE		TVHC mg/L	Location/Potential Source
SG-40-3'		0.0000	
SG-41-3'		0.0000	
SG-42-3'		0.0000	
SG-43-3'		0.0000	
SG-44-3'		0.0000	
SG-45-3'		0.0000	
SG-46-3'		0.0260	Adjacent to VP-3
SG-47-3'		0.0000	
SG-48-3'		0.0000	
SG-49-3'		0.0000	
SG-50-3'		0.0000	
SG-52-3'		0.0000	
SG-53-3'		0.0000	
SG-54-3'		0.0000	
SG-55-3'		0.0000	
SG-55-3'		0.0000	
AIR SAMPLE		0.0000	
SG-56-3'		0.0000	
SG-57-3'		0.0000	
SG-58-3'		0.0000	
SG-59-3'		0.0000	
SG-60-3'		0.0000	
SG-61-3'		0.0000	
SG-62-3'		0.0000	
SG-63-3'		0.0000	
SG-64-3'		0.0220	
SG-65-3'		0.0000	
SG-66-3'		0.0000	
SG-67-3'		0.0000	
SG-68-3'		0.0000	
SG-69-3'		0.0000	
SG-70-3'		0.0000	
SG-71-3'		0.0000	
SG-72-3'		0.0000	
SG-73-3'		0.0000	
SG-74-3'		0.0000	
SG-75-3'		0.0000	
SG-76-3'		0.0000	
SG-77-3'		0.0000	
SG-78-3'		0.0000	
SG-79-3'		0.0000	
AIR SAMPLE	<0.1	0.0000	
9/28/94			
AIR SAMPLE		0.0000	
SG-80-3'		0.0004	
SG-81-3'		0.0007	
SG-82-3'		0.0006	
SG-83-3'		0.0006	
SG-84-3'		0.0008	
SG-85-3'		0.0008	
SG-86-3'		0.0010	
SG-87-3'		0.0010	

TABLE 3 (Cont'd)

SAMPLE	TVHC mg/L	Location/Potential Source
SG-88-3'	0.0010	
SG-89-3'	0.0010	
SG-90-3'	0.0010	
SG-91-3'	0.0000	
SG-92-3'	0.0000	
SG-93-3'	0.0000	
SG-94-3'	0.0000	
SG-95-3'	0.0000	
SG-96-3'	0.0000	
SG-97-3'	0.0000	
SG-98-3'	0.0000	
SG-99-3'	0.0000	
SG-100-3'	0.0005	
SG-101-3'	0.0006	
SG-102-3'	0.0004	
SG-103-3'	0.0006	
SG-104-3'	0.0006	
SG-105-3'	0.0006	
SG-106-3'	0.0010	
SG-107-3'	0.0000	
SG-108-3'	0.0007	
SG-109-3'	0.0007	
9/29/94		
AIR SAMPLE	0.0000	
SG-110-2'	0.0010	
SG-111-2'	0.0010	
SG-112-2'	0.0005	
SG-113-2'	0.0010	
SG-114-2'	0.0005	
SG-115-2'	0.0005	
SG-116-2'	0.0020	
SG-117-2'	0.0060	
SG-118-2'	0.0010	
SG-119-2'	0.0010	
SG-120-2'	0.0050	
SG-121-2'	0.0005	
SG-122-2'	0.0020	
SG-123-2'	0.0010	
SG-124-2'	0.0010	
SG-125-2'	0.0010	
SG-126-2'	0.0010	
SG-127-2'	0.0010	
SG-128-2'	0.0005	
SG-129-2'	0.0010	
AIR SAMPLE	0.0000	
9/30/94		
AIR SAMPLE	0.0000	
SG-130-2'	0.0008	
SG-131-2'	0.0007	
SG-132-2'	0.0007	

TABLE 3 (Cont'd)

SAMPLE	TVHC mg/L	Location/Potential Source
SG-133-2'	0.0007	
SG-134-2'	0.0004	
SG-135-2'	0.0004	
SG-136-2'	0.0004	
SG-137-2'	0.0004	
SG-138-2'	0.0004	
SG-139-2'	0.0007	
SG-140-2'	0.0020	
SG-141-2'	0.0004	
SG-142-2'	0.0040	
SG-143-2'	0.0010	
SG-144-2'	0.0004	
SG-145-2'	0.0009	
SG-146-2'	0.0004	
SG-147-2'	0.0004	
SG-148-2'	0.0004	
SG-149-2'	0.0004	
SG-150-2'	0.0007	
SG-151-2'	0.0004	
SG-152-2'	0.0007	
SG-153-2'	0.0004	
SG-154-2'	0.0050	
SG-155-2'	0.0090	
SG-156-2'	0.0004	
SG-157-2'	0.0004	
SG-158-2'	0.0004	
SG-159-2'	0.0007	
SG-160-2'	0.0004	
SG-161-2'	0.0004	
SG-162-2'	0.0009	
SG-163-2'	0.0030	
SG-164-3'	0.0008	
SG-165-3'	0.0004	
SG-166-3'	0.0007	
SG-167-3'	0.0004	
SG-168-3'	0.0004	
SG-169-3'	0.0008	
SG-170-3'	0.0004	
SG-171-3'	0.0009	
SG-172-3'	0.0007	
SG-173-3'	0.0040	
SG-174-3'	0.0006	
SG-175-3'	0.0010	
SG-176-3'	0.0040	
SG-177-3'	0.0030	
SG-178-3'	0.0020	
SG-179-3'	0.0004	
SG-180-3'	0.0009	
SG-181-3'	0.0010	
SG-182-3'	0.0005	
SG-183-3'	0.0007	
SG-184-3'	0.0004	
SG-185-3'	0.0004	
SG-186-3'	0.0006	

TABLE 3 (Cont'd)

SAMPLE	TVHC mg/L	Location/Potential Source
SG-187-3'	0.0004	
SG-188-3'	0.0004	
SG-189-3'	0.0004	
SG-190-3'	0.0004	
AIR SAMPLE	0.0000	
10/2/94		
AIR SAMPLE	0.0000	
SG-191-3'	0.0000	
SG-192-3'	0.0000	
SG-193-3'	0.0005	
SG-194-3'	0.0000	
SG-195-3'	0.0000	
SG-196-3'	0.0020	
SG-197-3'	0.0004	
SG-198-3'	0.0000	
SG-199-3'	0.0005	
SG-200-3'	0.0020	
SG-201-3'	0.0004	
SG-202-3'	0.0000	
SG-203-3'	0.0000	
SG-204-3'	0.0005	
SG-205-3'	0.0000	
SG-206-3'	0.0006	
SG-207-3'	0.0007	
SG-208-3'	0.0009	
SG-209-3'	0.0000	
SG-210-3'	0.0000	
SG-211-3'	0.0000	
SG-212'3'	0.0000	
SG-213-3'	0.0000	
SG-214-3'	0.0000	
SG-215-3'	0.0000	
SG-216-3'	0.0000	
SG-217-3'	0.0000	
SG-218-3'	0.0004	
SG-219-3'	0.0000	
SG-220-3	0.0000	
SG-221-3'	0.0006	
SG-222-3'	0.0020	
SG-223-3'	0.0000	
SG-224-3'	0.0080	
SG-225-3'	0.0030	
SG-226-3'	0.0020	
SG-227-3'	0.0040	
SG-228-3'	0.0020	
SG-229-3'	0.0005	
SG-230-3'	0.0020	
SG-231-3'	0.0020	
SG-232-3'	0.0030	
SG-233-3'	0.0000	
SG-234-3'	0.0000	
SG-235-3'	0.0005	

TABLE 3 (Cont'd)

SAMPLE	TVHC mg/L	Location/Potential Source
SG-236-3'	0.0000	
SG-237-3'	0.0020	
SG-238-3'	0.0000	
SG-239-3'	0.0000	
AIR SAMPLE	0.0000	
SG-240-3'	0.0000	
SG-241-3'	0.0000	
SG-242-3'	0.0000	
SG-243-3'	0.0000	
SG-244-3'	0.0000	
SG-245-3'	0.0000	
SG-246-3'	0.0004	
SG-247-3'	0.0000	
SG-248-3'	0.0000	
SG-249-3'	0.0000	
SG-250-3'	0.0000	
SG-251-3'	0.0000	
SG-252-3'	0.0000	
SG-253-3'	0.0000	
10/3/94		
AIR SAMPLE	0.0000	
SG-254-3'	0.0000	
SG-255-3'	0.0000	
SG-256-3'	0.0000	
SG-257-3'	0.0000	
SG-258-3'	0.0000	
SG-259-3'	0.0000	
SG-260-3'	0.0006	
SG-261-3'	0.0000	
SG-262-3'	0.0000	
SG-263-3'	0.0000	
SG-264-3'	0.0000	
SG-265-3'	0.0000	
SG-266-3'	0.0000	
SG-267-3'	0.0000	
SG-268-3'	0.0000	
SG-269-3'	0.0000	
SG-270-3'	0.0000	
SG-271-3'	0.0000	
SG-272-3'	0.0000	
SG-273-3'	0.0000	
SG-274-3'	0.0000	
SG-275-3'	0.0000	
SG-276-3'	0.0000	
SG-277-3'	0.0000	
SG-278-3'	0.0840	Adjacent to VP-8
SG-279-3'	0.0000	
SG-280-3'	0.0000	
SG-281-3'	0.0000	
SG-282-3'	0.0005	
SG-283-3'	0.0000	
SG-284-3'	0.0000	

TABLE 3 (Cont'd)

SAMPLE	TVHC mg/L	Location/Potential Source
AIR SAMPLE	0.0000	
SG-285-3'	0.0000	
SG-286-3'	0.0000	
SG-287-3'	0.0000	
SG-288-3'	0.0000	
SG-289-3'	0.0000	
SG-290-3'	0.0000	
SG-291-3'	0.0000	
SG-292-3'	0.0000	
SG-293-3'	0.0000	
SG-294-3'	0.0000	
SG-295-3'	0.0000	
SG-296-3'	0.0000	
SG-297-3'	0.0000	
SG-298-3'	0.0000	
SG-299-3'	0.0000	
SG-300-3'	0.0000	
SG-301-3'	0.0000	
SG-302-3'	0.0000	
SG-303-3'	0.0000	
SG-304-3'	0.0000	
SG-305-3'	0.0000	
SG-306-3'	0.0000	
SG-307-3'	0.0000	
SG-308-3'	0.0000	
SG-309-3'	0.0000	
SG-310-3'	0.0000	
SG-311-3'	0.0020	
SG-312-3'	0.0000	
SG-313-3'	0.0000	
SG-314-3'	0.0000	
SG-315-3'	0.0000	
SG-316-3'	0.0004	
SG-317-3'	0.0000	
SG-318-3'	0.0000	
SG-319-3'	0.0000	
SG-320-3'	0.0006	
AIR SAMPLE	0.0000	
SG-321-3'	0.0000	
SG-322-3'	0.0020	
SG-323-3'	0.0006	
SG-324-3'	0.0020	
SG-325-3'	0.0004	
SG-326-3'	0.0030	
SG-327-3'	0.0000	
SG-328-3'	0.0010	
SG-329-3'	0.0000	
SG-330-3'	0.0090	
SG-331-3'	0.0030	
SG-332-3'	0.0000	
SG-333-3'	0.0070	
SG-334-3'	0.0020	
SG-335-3'	0.0000	
SG-336-3'	0.0000	

TABLE 3 (Cont'd)

SAMPLE	TVHC mg/L	Location/Potential Source
SG-337-3'	0.0000	
SG-338-3'	0.0000	
SG-339-3'	0.0000	
SG-340-3'	0.0000	
SG-341-3'	0.0390	Booster Pumphouse; Building No. 466
SG-342-3'	0.0400	Booster Pumphouse; Building No. 466
AIR SAMPLE	0.0000	
10/4/94		
AIR SAMPLE	0.0000	
SG-343-3'	0.0000	
SG-344-3'	0.0004	
SG-345-3'	0.0000	
SG-346-3'	0.0020	
SG-347-3'	0.0000	
SG-348-3'	0.0005	
SG-349-3'	0.0004	
SG-350-3'	0.0000	
SG-351-3'	0.0000	
SG-352-3'	0.0000	
SG-353-3'	0.0007	
SG-354-3'	0.0000	
SG-355-3'	0.0000	
SG-356-3'	0.0000	
SG-357-3'	0.0010	
SG-358-3'	0.0005	
AIR SAMPLE	0.0000	
SG-359-3'	0.0030	
SG-360-3'	0.0006	
SG-361-3'	0.0002	
SG-362-3'	0.0000	
SG-363-3'	0.0000	
SG-364-3'	0.0000	
SG-365-3'	0.0000	
SG-366-3'	0.0000	
SG-367-3'	0.0000	
SG-368-3'	0.0000	
SG-369-3'	0.0000	
SG-370-3'	0.0000	
SG-371-3'	0.0000	
SG-372-3'	0.0000	
SG-373-3'	0.0020	
SG-374-3'	0.0000	
SG-375-3'	0.0004	
SG-376-3'	0.0000	
SG-377-3'	0.0020	
SG-378-3'	0.0000	
SG-379-3'	0.0000	
SG-380-3'	0.0000	
SG-381-3'	0.0000	
SG-382-3'	0.0000	
SG-383-3'	0.0000	
SG-384-3'	0.0000	

TABLE 3 (Cont'd)

SAMPLE	TVHC mg/L	Location/Potential Source
SG-385-3'	0.0010	
SG-386-3'	0.0000	
SG-387-3'	0.0000	
SG-388-3'	0.0000	
SG-389-3'	0.0000	
SG-390-3'	0.0000	
SG-391-3'	0.0020	
SG-392-3'	0.0020	
AIR SAMPLE	0.0000	
10/5/94		
AIR SAMPLE	0.0000	
SG-393-3'	0.0004	
SG-394-3'	0.0160	Anomaly in road
SG-395-3'	0.0004	
SG-396-3'	0.0004	
SG-397-3'	0.0004	
SG-398-3'	0.0004	
SG-399-3'	0.0004	
SG-400-3'	0.0004	
SG-401-3'	0.0004	
SG-402-3'	0.1100	Anomaly in road
SG-403-3'	0.0050	
SG-404-3'	0.0004	
SG-405-3'	0.0002	
SG-406-3'	0.0004	
SG-407-3'	0.0004	
SG-408-3'	0.0004	
SG-409-3'	0.0004	
SG-410-3'	0.0004	
SG-411-3'	0.0004	
SG-412-3'	0.0004	
SG-413-3'	0.0002	
SG-414-3'	0.0002	
SG-415-3'	0.0002	
SG-416-3'	0.0020	
SG-417-3'	0.0620	South of VP-6A
AIR SAMPLE	0.0000	
SG-418-3'	0.0002	
SG-419-3'	0.0002	
SG-420-3'	0.0002	
SG-421-3'	0.0000	
SG-422-3'	0.0002	
SG-423-3'	0.0000	
SG-424-3'	0.0520	Adjacent to VP-3
SG-425-3'	0.1500	Adjacent to VP-3
SG-426-3'	0.0002	
AIR SAMPLE	0.0000	
10/20/94		
AIR SAMPLE	0.0000	
SG-427-3'	0.0200	Adjacent to VP-6

TABLE 3 (Cont'd)

SAMPLE	TVHC mg/L	Location/Potential Source
SG-428-3'	0.0009	
SG-429-3'	0.0006	
SG-430-3'	0.0000	
SG-431-3'	0.0000	
SG-432-3'	0.0000	
SG-433-3'	0.0000	
SG-434-3'	0.0000	
SG-435-3'	0.0000	
SG-436-3'	0.0000	
SG-437-3'	0.0000	
SG-438-3'	0.0000	
SG-439-3'	0.0000	
SG-440-3'	0.0000	
SG-441-3'	0.0000	
SG-442-3'	0.0000	
SG-443-3'	0.0000	
SG-444-3'	0.0000	
SG-445-3'	0.0000	
SG-446-3'	0.0000	
SG-447-3'	0.0000	
SG-448-3'	0.0000	
SG-449-3'	0.0000	
SG-450-3'	0.0000	
SG-451-3'	0.0000	
SG-452-3'	0.0000	
SG-453-3'	0.0000	
SG-454-3'	0.0000	
SG-455-3'	0.0020	
SG-456-3'	0.0006	
SG-457-3'	0.0000	
SG-458-3'	0.0010	
SG-459-3'	0.0006	
SG-460-3'	0.0010	
SG-461-3'	0.0000	
SG-462-3'	0.0003	
SG-463-3'	0.0003	
SG-464-3'	0.0009	
SG-465-3'	0.0000	
SG-466-3'	0.0000	
AIR SAMPLE	0.0000	
SG-467-3'	0.0002	
SG-468-3'	0.0000	
SG-469-3'	0.0003	
SG-470-3'	0.0010	
SG-471-3'	0.0000	
SG-472-3'	0.0030	
SG-473-3'	0.0002	
SG-474-3'	0.0007	
SG-475-3'	0.0000	
SG-476-3'	0.0010	
SG-477-3'	0.0005	
SG-478-3'	0.0000	
SG-479-3'	0.0000	
SG-480-3'	0.0004	

TABLE 3 (Cont'd)

SAMPLE	TVHC mg/L	Location/Potential Source
SG-481-3'	0.0020	
SG-482-3'	0.0003	
SG-483-3'	0.0006	
SG-484-3'	0.0020	
AIR SAMPLE	0.0000	
10/21/94		
AIR SAMPLE	0.0000	
SG-485-3'	0.0000	
SG-486-3'	0.0000	
SG-487-3'	0.0000	
SG-488-3'	0.0000	
SG-489-3'	0.0000	
SG-490-3'	0.0000	
SG-491-3'	0.0000	
SG-492-3'	0.0000	
SG-493-3'	0.0000	
SG-494-3'	0.0000	
SG-495-3'	0.0000	
SG-496-3'	0.0000	
SG-497-3'	0.0000	
SG-498-3'	0.0000	
SG-499-3'	0.0000	
SG-500-3'	0.0000	
SG-501-3'	0.0000	
SG-502-3'	0.0000	
SG-503-3'	0.0000	
SG-504-3'	0.0000	
SG-505-3'	0.0000	
SG-506-3'	0.0000	
SG-507-3'	0.0080	
SG-508-3'	0.2200	Adjacent to Tank 216
AIR SAMPLE	0.0000	
10/22/94		
AIR SAMPLE	0.0000	
SG-509-3'	0.0000	
SG-510-3'	0.0160	West of PH Bldg. No. 1982; South of Tank 470
SG-511-3'	0.0030	
SG-512-3'	0.0030	
SG-513-3'	0.0220	West of PH Bldg. No. 1982; South of Tank 470
SG-514-3'	0.0050	
SG-515-3'	0.0140	West of PH Bldg. No. 1982; South of Tank 470
SG-516-3'	0.0090	
SG-517-3'	0.0090	
SG-518-3'	0.0060	
SG-519-3'	0.0070	
SG-520-3'	0.0320	West of PH Bldg. No. 1982; South of Tank 470
SG-521-3'	0.0120	West of PH Bldg. No. 1982; South of Tank 470
SG-522-3'	0.0040	
SG-523-3'	0.0050	
SG-524-3'	0.0100	

TABLE 3 (Cont'd)

SAMPLE	TVHC mg/L	Location/Potential Source
SG-525-3'	0.0170	West of PH Bldg. No. 1982; South of Tank 470
SG-526-3'	0.0100	West of PH Bldg. No. 1982; South of Tank 470
SG-527-3'	0.0020	
SG-528-3'	0.0060	
SG-529-3'	0.0020	
SG-530-3'	0.0000	
SG-531-3'	0.0020	
SG-532-3'	0.0070	
SG-533-3'	0.0000	
SG-534-3'	0.0000	
SG-535-3'	0.0010	
SG-536-3'	0.0010	
SG-537-3'	0.0000	
SG-538-3'	0.0000	
SG-539-3'	0.0010	
SG-540-3'	0.0000	
SG-541-3'	0.0000	
SG-542-3'	0.0010	
SG-543-3'	0.0000	
SG-544-3'	0.0010	
SG-545-3'	0.0000	
SG-546-3'	0.0020	
SG-547-3'	0.0000	
SG-548-3'	0.0007	
SG-549-3'	0.0000	
SG-550-3'	0.0007	
SG-551-3'	0.0000	
SG-552-3'	0.0000	
SG-553-3'	0.0030	
SG-554-3'	0.0000	
SG-555-3'	0.0000	
SG-556-3'	0.0020	
AIR SAMPLE	0.0000	

ATTACHMENT A

TRACER RESEARCH REPORT

Tracer Research Corporation

Tracer Tight® Integrity Testing of Six Cut and Cover Storage Tanks, One JP-5 Fuel Distribution System, One DFM Fuel Distribution System, and a *Vapor Trace®* Soil Gas Investigation at Naval Station Roosevelt Roads Cieba, Puerto Rico

Tracer Research Corporation

Tracer Tight ® Integrity Testing and
Vapor Trace® Soil Gas Investigation

Naval Station Roosevelt Roads
Cieba, Puerto Rico

August 25, 1994 - January 11, 1995

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1.0 INTRODUCTION

Dames and Moore and Tracer Research Corporation (Tracer Research) performed a *Tracer Tight®* integrity test on six cut and cover storage tanks and a JP-5 and DFM pipeline distribution system. The aggregate JP-5 and DFM fuel distribution system consisted of twenty thousand five hundred twenty (20,520) linear feet of pipeline. In addition, a *Vapor Trace®* shallow soil gas investigation was conducted along approximately ten thousand one hundred sixty (10,160) linear feet of abandoned pipeline. All testing was conducted August 25, 1994 through January 11, 1995 at Naval Station Roosevelt Roads in Cieba, Puerto Rico.

1.1 Cut and Cover Tanks

Three of the six cut and cover tanks are 100 feet in diameter, 20 feet tall and have a volume of 1,200,000 gallons. Two of the tanks are 33 feet in diameter, 11 feet tall and have a volume of 50,000 gallons. The final tank has a diameter of 54 feet and is 13.5 feet tall, with a volume of 350,000 gallons.

The installation of probes on the cut and cover tanks was performed August 26 through September 5, and December 6, 1994 by Tracer Research field professionals. The inoculation of the cut and cover tanks was conducted by Tracer Research field professionals August 25 through December 15, 1994. Sampling dates and final results are outlined in Sections 7.0 and 8.0, respectively.

1.2 Pipeline Systems

The Leak Detection Monitoring Systems (LDMS) were installed on the JP-5 and DFM pipeline distribution systems between September 7 and November 3, 1994 by Tracer Research field professionals. The inoculation of tracer into the fuel systems was performed by Tracer Research field professionals at a concentration not exceeding ten (10) parts per million October 25 through October 30, 1994. This was accomplished by the addition of Tracer A into several bulk storage tanks. The tracer laden fuel was then dispensed throughout the entire pipeline distribution systems. Fuel samples were taken from various locations on the opposite ends of the pipeline distribution systems and analyzed for the presence of Tracer A to ensure that tracer had traveled through the piping. This task was accomplished on November 7, 1994.

Soil vapor samples were collected from the LDMS by Tracer Research field professionals November 8 through November 15, 1994. The collected samples were analyzed in an on-site trailer equipped with Tracer Research analytical instrumentation. The collected samples were analyzed for Tracer A and Total Volatile Hydrocarbons (TVHC) between November 9 and November 19, 1994.

1.3 *Vapor Trace®* Soil gas Investigation

A *Vapor Trace®* shallow soil gas investigation was performed along several abandoned fuel pipelines. Five hundred fifty six (556) samples were collected along the pipelines and analyzed for TVHC. The soil gas investigation was conducted September 26 through October 21, 1994.

The purpose of the investigation was to determine the extent of possible soil and/or ground water contamination by screening the shallow soil gas for the presence of TVHC.

2.0 CONCEPT OF OPERATION

The *Tracer Tight®* leak detection method relies upon the addition of a highly volatile liquid or gaseous chemical, a tracer, into the system to be tested. If a leak should occur in the backfill surrounding the system, the tracer escapes from the fuel by vaporization and disperses throughout the backfill by molecular diffusion. Testing was performed by sampling permanent probes installed in the backfill of the associated tanks and piping. Each sampling probe has an effective detection radius of approximately ten to twelve feet. This means that a given probe can detect an unauthorized release anywhere within the prescribed ten to twelve foot radius surrounding the probe. For this method to be effective, the tracer must be introduced into the fuel system at least two weeks prior to sampling to allow for adequate diffusion into the soil gas surrounding the system. This process of leak detection by adding a liquid or gas tracer into a liquid product followed by detection of any released tracer underground into the vapor phase is protected under Tracer Research Corporation patents.

The *Vapor Trace®* soil gas investigation is based on the collection of vapor samples in identified areas of concern. The analyses of these samples correlates to the extent of contamination in the soil or ground water of the compound being analyzed.

3.0 PROCEDURES

The *Tracer Tight*® test was performed in three phases; installation, inoculation, and testing (sample collection and analysis). Typical procedures for each phase are outlined below.

3.1 Installation

3.1.1 *Tracer Tight*® Pipeline Probe Installation

The *Tracer Tight*® pipeline test utilizes a three quarter inch, schedule 40, slotted PVC pipe that is driven below the ground surface into the backfill of the system to be tested. Each probe installed has a sphere of influence of ten to twelve feet. At Naval Station Roosevelt Roads, one thousand twenty-six (1,026) probes were installed in the backfill along approximately twenty thousand five hundred twenty (20,520) linear feet of JP-5/DFM pipeline. The probes were installed at twenty (20) foot intervals along the piping at a depths of two to three feet. The pipelines were buried approximately five to six feet below the ground surface. The distance between the bottom of the probe and the pipelines was between two and four feet. Typical installation procedures are as follows:

I. The pipeline area is inspected and all utilities of the pipeline design are identified and marked. The system design is reviewed.

II. Probe intervals are marked.

III. Probes are constructed to design specification for length and screening.

IV. Installation equipment is assembled and inspected for safety.

V. Holes are drilled and probes are installed to the desired depth.

VI. Each probe's integrity is tested for any obstruction that may interfere with the air flow required for testing. Vacuum measurements are taken to determine soil porosity and used to determine if modification to the system design is required.

VII. A *Tracer Tight®* probe cap is installed on each probe. The cap is of a design to permit sampling and resealing of the probe.

VIII. Probes in dirt or grass are affixed with a concrete monument and finished so that the probe is flush with the surrounding grade. Probes in asphalt/concrete are sealed with caulking and finished flush with the surrounding grade.

3.1.2 Cut and Cover Tank Probe Installation

The *Tracer Tight®* test utilizes a probe array system designed specifically for each tank, based upon the tank dimensions. The design determines optimal placement of each probe so that each area of the tank is effectively tested by at least one probe.

Probes are placed vertically around the perimeter of the tank at designated intervals. This probe array will effectively allow the testing of the tank's perimeter. The floor area under the tank that is not directly accessible by the probe system was tested by utilizing a flow field procedure (see section 3.3.1).Typical installation procedures are as follows:

I. The tank area is inspected and all utilities of the tank design are identified and marked. The system design is reviewed.

II. The probe system is laid out around the tank for optimal installation.

III. Probes are constructed to design specification for length and screening.

IV. Installation equipment is assembled and inspected for safety.

V. Probes are installed to the desired depth.

VI. Each probe's integrity is tested for any obstruction that may interfere with the air flow required for testing. Vacuum measurements are taken to determine soil porosity and used to determine if modification to the system design is required.

VII. A *Tracer Tight®* probe cap is installed on each probe. This cap is of a design to permit sampling and resealing of the probe.

VIII. All probes are fixed with a concrete monument and finished so that the final product is flush with the surrounding grade. All excavations are backfield and the area is returned to pre-installation condition.

3.1.3 *Vapor Trace®* Soil Gas Probe Installation

The *Vapor Trace®* soil gas investigation utilized three quarter inch diameter, schedule 40, galvanized steel pipe at 508 sampling locations. In addition, 48 sampling locations were taken from a portion of the LDMS. These sampling locations were taken at 20 foot intervals in the backfill of the abandoned pipeline. The typical installation procedures for the 48 samples taken from the LDMS is depicted in paragraph 3.1.1. The 508 sampling locations where temporary probes were installed is depicted below.

I. The pipeline area is inspected and all utilities of the pipeline design are identified and marked. The system design is reviewed.

II. Probe intervals are marked.

III. Installation equipment is assembled and inspected for safety.

IV. Probes are installed to the desired depth with hydraulic equipment.

V. Each probe's integrity is tested for any obstruction that may interfere with the air flow required for testing. Vacuum measurements are taken to determine soil porosity and used to determine if modification to the system design is required.

VI. A *Tracer Tight®* reducer manifold is affixed to the probe and a sample is withdrawn.

VII. The temporary probe is removed.

3.2 Inoculation

Inoculation is the introduction of a highly volatile liquid or gaseous compound, a tracer, into the product of the tank and/or piping to be tested. An amount of tracer is added to the product to achieve a concentration not to exceed ten parts per million. Tracer is inoculated into the tank's product utilizing the following procedure:

I. Each fuel system is inspected for leaks at valves and piping connections. Any problem areas are repaired or isolated before inoculation can proceed.

II. Product levels are obtained from the tank owner or from tank gauges prior to inoculation. Calculations are made to determine the amount of tracer needed to reach the desired concentration. For pipeline inoculation, fuel is moved throughout the system from inoculated bulk tanks or by product transfer.

III. The tracer compound is shipped to the site in a pre-pressurized canister. The pressure assures that all the tracer will be dispensed into the tank.

IV. The tracer is introduced through a drop tube to the bottom of the tank. This drop tube is inserted through the gauging hatch in the top of the tank. The tracer canister is attached to the drop tube and dispensed into the bottom portion of the tank. Once the tracer has been introduced into the product and the tracer laden product has been transferred throughout the system, samples are collected and qualitative analysis is performed to assure proper distribution of tracer throughout the system.

3.3 Sampling

3.3.1 Cut and Cover Tank Sampling

The sampling of cut and cover tanks involves two separate test procedures, passive and flow field. The passive test can be performed after a minimum of two weeks from inoculation. The two week period allows time for the tracer to escape from a potential release point and migrate throughout the soil.

The *Tracer Tight®* test involves collecting soil gas samples around the tank from the LDMS and analyzing the samples for the tracer compound. Tanks 212 and 213 had six probes installed at a depth of 10.5 feet. Tanks 381, 1084 and 1086 had thirty-six (36) probes installed around the perimeter of each tank. Eighteen probes were installed at a depth of 12 feet and eighteen probes were installed at a depth of 24 feet. Tank 429 had a total of eighteen probes installed on its perimeter, nine at a depth of 7 feet and nine at depth of 14 feet. Appendix D1 show the LDMS locations, depths, and any concentrations of tracer or TVHC detected.

Sampling is performed by evacuating each probe for a designated time determined by the observed vacuum reading at each probe. Evacuation of the probe is designed to remove any ambient air and to draw a representative sample from the probe. After evacuation is complete, a 120 milliliter (ml) volume sample is collected in a pre-evacuated container.

The passive test effectively samples the perimeter wall of the tank. Samples are collected and analyzed for tracer and TVHC. If tracer is detected during this passive test round, the tank fails and no further testing is required.

The second test or flow field test is performed only if the tank passes the passive test. The flow field test is used to test the area under the tank that is not directly accessible to the probe system. A flow field test is designed to sweep under the bottom of the tank and force the inoculated tracer from any possible leak to the outside perimeter. Once the tracer has reached the outside perimeter it then falls under the influence of the probe system and can be detected. The flow field is established by attaching a high volume vacuum system on three consecutive probes at one side of the tank. Samples are collected from these locations at designated time intervals during the evacuation. The process is monitored by introducing a different tracer through a probe on the opposite side of the tank. Once this monitoring tracer is detected at the evacuation probes the test is complete. The interval sampling during this test process effectively tests the soil gas under the tank as it is being displaced. Samples are analyzed for the first tracer to determine if a leak is present. The second tracer is analyzed to determine test completion.

3.3.2 Pipeline Sampling

Tracer Tight® testing of pipelines involves collecting soil gas samples from installed probes in the backfill of the system. A total of one thousand twenty-six (1,026) soil vapor samples were collected from permanently installed probes. Sampling is performed by evacuating each probe for a designated amount of time determined by the observed vacuum reading at each probe. Evacuation of the probe is designed to remove any ambient air and to draw a representative sample from the probe. After evacuation is complete, a 120 milliliter (ml) volume sample is collected in a pre-evacuated container.

3.3.3 Soil Gas Sampling

The *Vapor Trace®* soil gas investigation conducted at Naval Station Roosevelt Roads consisted of 556 sampling probes along approximately eleven thousand one hundred twenty (11,120) linear feet of abandoned pipeline. Five hundred eight (508) samples were drawn from temporarily installed probes consisting of three quarter inch galvanized steel pipe and are depicted as SG (soil gas) samples at appendix A. Forty eight (48) *Vapor Trace®* soil gas samples were drawn from 48 permanently installed LDMS probes as the abandoned pipeline and the active pipeline ran parallel beneath probes P610 through P657 (refer to soil gas SG-509 through SG-556 on the soil gas figures and data). The temporary probes were fitted with detachable drive points and pneumatically pounded to depths of 1.5 to 3 feet below ground surface. Some locations were hand pounded when the pneumatic equipment was rendered unusable. An air compressor and rock drill were used to drill through asphalt.

The aboveground end of each probe was fitted with an aluminum reducer manifold and a length of polyethylene tube leading to a vacuum pump. Soil gas was extracted by vacuum into the probe. Samples were collected into a glass syringe by inserting a syringe needle through a silicone rubber segment in the evacuation line and down into the steel probe. The vacuum was monitored on the vacuum gauge to maintain an adequate air flow from the vadose zone. Once the sample was collected in the glass syringe the needle on the syringe was exchanged with a sample can adapter. The sample was then transferred from the syringe into a sample canister.

The volume of ambient air within the probe was purged by evacuating 2 to 5 liters of probe volume. The evacuation time in minutes versus the vacuum in inches of mercury (Hg) was used to calculate the necessary evacuation time. The vacuum in inches Hg was recorded at each sampling location.

Sample probe vacuums ranged from less than 2 inches to 15 inches Hg. The vacuum capacity of the pump was approximately 26 inches Hg.

4.0 Analytical Parameters

During this investigation, up to 120 ml of soil gas was collected for each sample and immediately analyzed in an on-site trailer equipped with Tracer Research analytical instrumentation. Sub samples (replicates) from these samples were injected into the gas chromatograph (GC) in volumes of 1 to 1,000 microliters (µL) depending on the volatile organic compound (VOC) concentrations in the sample.

Analytical instruments were calibrated daily using fresh working standards made from National Institute of Sciences and Technology (NIST) traceable standards and reagent blanked solvents.

4.1 Chromatographic System

A Hewlett Packard 5890 series II gas chromatograph, equipped with a flame ionization detector (FID) and a computing integrator was used for the analyses. The total volatile hydrocarbons (TVHC), detected with the FID, were separated in the GC. The column was in a temperature controlled oven and nitrogen was used as the carrier gas.

The instrument calibrations were checked periodically throughout the day to monitor the response factors and the retention times. The following paragraphs explain the GC and FID processes.

4.1.1 GC Process

The soil gas is injected into the GC where it is swept through the analytical column by the carrier gas. The components of the sample pass through the column at different rates, according to their individual properties, and are detected by the detector. The detector senses the presence of a component different from the carrier gas and converts that information into an electrical signal. Compounds are identified by the time it takes them to pass through the column (retention time).

4.1.2 FID Process

The FID utilizes a flame produced by the combustion of hydrogen and air. When a component, which has been separated on the GC analytical column, is introduced into the flame, a large increase in ions occurs. A polarizing voltage is applied to an ion collector near the flame. The ions are attracted to the collector, producing a current which is proportional to the amount of sample analyte in the flame. The electrical current causes the computing integrator to record a peak on the chromatogram. By measuring the area of the peak and comparing that area to the integrator response of a known standard, the concentration of the analyte in the sample is determined.

4.1.3 ECD Process

The ECD principle arises from the phenomenon that electronegative species can react with thermal electrons present to form negatively charged ions. The loss of these electrons is directly related to the quantity of the analyte in the injected sample. In order to produce capturable (low level) thermal electrons, the carrier gas is ionized by beta particles from a radioactive source placed in the detector cell. This electron flow produces a small current, which is collected and measured. When the sample molecule is introduced into the cell, electrons which would otherwise be collected at the detector electrode are captured by the sample, resulting in decreased current. This change is the quantitative basis for the ECD.

4.2 Analyses

The detection limits for a target compound depends on the sensitivity of the detector to the individual compound as well as the volume of the sample injection. The detection limits of the target compounds were calculated from the response factor, the sample injection size, and the calculated minimum peak size (area) observed under the conditions of the analyses. If any compound was not detected in an analysis, the detection limit is presented as 0.0000 mg/L. The detection limit for the target compounds (TVHC and Tracer A) was 0.0001 mg/L.

5.0 QUALITY ASSURANCE AND QUALITY CONTROL

5.1 Test Quality and Validity

In order to assure test quality and validity, Tracer Research Corporation has incorporated quality control measures into each phase of the *Tracer Tight*® test. These control measures are designed to verify system efficiency and eliminate false detection's. These control measures include:

Analytical Equipment Calibration - The Gas Chromatograph is tested for sensitivity and accuracy utilizing a known concentration standard. Calibration is performed at least twice a day and upon any detection of tracer.

Pre-inoculation Background Samples - Samples are collected before the tracer compounds are introduced into the area. This assures that the tracer compound is not already present and allows for choice of alternate tracers if a tracer compound is evident.

Ambient Background Samples - Ambient background samples are taken periodically during the sampling process at locations adjacent to the top of sampling probes. These ambient background samples monitor for any tracer contamination caused by tank venting and normal tank operation. These data collected from the samples are compared to test sample concentrations. Adjustments are then made taking any background contamination into consideration.

Quality Assurance and Quality Control Review - All analytical data and job logs are reviewed by Tracer Research Corporation's report staff. Chromatography, concentration calculations and job procedures are verified to assure test results.

5.2 Sampling Manifolds for *Vapor Trace®* Soil Gas Investigation

Tracer Research Corporation's custom designed sampling manifold connects the sample probe to the vacuum line and pump. The manifold is designed to eliminate sample exposure to the polymeric (plastic) materials that connect the probe to the vacuum pump.

The sampling manifold is attached to the end of the probe, forming an air tight union between the probe and the silicone tubing septum. The septum connects the manifold to the pump vacuum line and permits sampling with the syringe.

This sampling system allows the sample to be taken upstream of the sampling pump, manifold, and septum. Since cross contamination of sampling can be a major problem, Tracer Research replaces the materials (probe and syringe) between sampling points.

5.3 Sampling Probes

5.3.1 Cut and Cover Tank Probes

Permanent probes are capped immediately following installation to seal the probe from contaminants. Each probe is re-capped after sampling to protect the probe for further use.

5.3.2 Pipeline Probes

Permanent probes are capped immediately following installation to seal the probe from foreign contaminants. Each probe is re-capped after sampling to protect the probe for further use.

5.3.3 *Vapor Trace®* Soil Gas Probes

Steel probes are used only once each day. To eliminate the possibility of cross contamination, they are washed with high pressure soap and hot water spray, or steam-cleaned. Enough sampling probes are provided to avoid the need to re-use any probe during the day.

5.4 Syringes

5.4.1 Cut and Cover Tanks

Disposable syringes are used for up to twenty (20) samples each day. Samples indicating elevated levels of tracer or TVHC are re-sampled in batches of twenty by individual glass syringes.

5.4.2 Pipeline Systems

Disposable syringes are used for up to twenty (20) samples each day. Samples indicating elevated levels of tracer or TVHC are re-sampled in batches of twenty by individual glass syringes.

5.4.3 *Vapor Trace®* Soil Gas Investigation

Glass syringes are used for only one sample each day and are washed and oven baked each night. If they must be used twice, they are purged with carrier gas (nitrogen) and oven baked between probe samplings.

5.5 Sampling efficiency

Soil gas pumping is monitored by a vacuum gauge to ensure that an adequate flow of gas from the soil is maintained. A reliable soil gas sample can be obtained if the sample vacuum gauge reading is at least 2 inches Hg less than the maximum measured vacuum of the vacuum pump.

5.6 Analytical Quality Assurance Samples

Quality assurance samples are performed at the minimum frequencies listed in Table A. The actual frequency depends on the number of samples analyzed each day and the length of time of the survey.

Table A Quality Assurance Samples

Sample type	Frequency
Ambient Air Samples	3 per day or 1 per site
Analytical Method Blanks	1 per day
Field System Blank	1 per day
Reagent Blank	1 per set of working standards
Replicate Samples	10% of all samples

The ambient air samples are obtained on site by sampling the air immediately outside the on-site trailer and directly injecting it into the GC. Analytical method blanks are taken to demonstrate that the analytical instrumentation is not contaminated. These are performed by injecting carrier gas (nitrogen) into the GC with the sampling syringe. Sub sampling syringes are also checked in this fashion.

Continuing calibration checks are analyzed to verify the detector response for the target VOCs. If the response changes by more than twenty-five percent, the gas chromatograph is recalibrated and new response factors are calculated.

For soil gas samples field, system blanks are analyzed to check for contamination of the sampling apparatus (e.g. probe and sampling syringe). A sample is collected using standard soil gas sampling procedures, but without putting the probe into the ground. The results are compared to those obtained from a concurrently analyzed ambient air sample.

If the field system blanks detect compounds of interest at concentrations that indicate equipment contamination exceeding normal background levels (ambient air analysis), corrective actions are performed. If the problem cannot be corrected, an out-of-control event is documented and reported. Field system blanks are performed after any probe decontamination process.

A reagent blank is performed to ensure the solvent used to dilute the stock standards is clean. Analytical instruments are calibrated daily using fresh working standards made from National Institute of Sciences and Technology traceable standards and reagent blanked solvents.

Quantitative precision is assured by replicating analyses of 10 percent of the samples. Replicate analyses are performed by sub sampling vapors from the same sampling syringe.

The injector port septa through which samples are injected into the GC are replaced daily to prevent possible gas leaks from the chromatographic column. All

sampling and sub sampling syringes are decontaminated after use and are not used again until they have been decontaminated by washing in anionic detergent and baking at 90°C.

6.0 CRITERIA FOR DETERMINATION OF LEAKAGE

Determination of leakage is based on the criteria established in the *Tracer Tight®* third party evaluation, which meets the criteria set forth in NFPA 329 for a precision leak test. According to EPA standard test procedures for evaluating leak detection methods, this method is capable of detecting leaks of 0.05 gallons per hour with a Probability of Detection (PD) of 0.97 and Probability of False Alarm (PFA) of 0.029.

PASS: No Tracer Detected

FAIL: Tracer Detected

7.0 SUMMARY OF FINDINGS

7.1 Cut and Cover Tanks

Six cut and cover storage tanks (Tanks 212, 213, 381, 429, 1084, 1086) were *Tracer Tight®* tested at the Naval Station Roosevelt Roads. The test was performed by Tracer Research field professionals.

It was determined during the initial site investigation, that the ground water in the area of all six tanks was lower than the bottom of the tanks. Ground water levels lower than the bottom of the tanks permits use of the standard flow field test method.

In order to meet these test requirements a test schedule was arranged. This schedule allowed Tanks 212, 213, 381 and 1084 to have probes installed and inoculated while in standard working order. Probes for Tanks 212, 213, 381, 1084, and 1086 were installed August 26 through September 5, 1994. Background samples were collected and Tracer A was introduced to Tanks 212, 213, 381 and 1084 on September 23, 1994. Tank 1086, was completely void of product, therefore the inoculation of this tank required a variation of procedure. Tank 1086 required sealing prior to inoculation. On October 19, 1994 all existing vent lines, manholes, and gauges hatches were sealed, background samples collected and the Tank 1086 was inoculated with Tracer A.

Probes around tank 429 were installed on December 6, 1994. Installation of probes was performed while the tank was empty.Tracer laden fuel was transferred from a previously inoculated tank into Tank 429 by Tracer Research field professionals on November 20, 1994. Background samples were collected and Tracer A was introduced into the tank on December 15, 1994 by fuels operations personnel, under the supervision of Mr. Charlie Brown. A future test date was set for the collection of the samples.

On October 11, 1994 samples were collected and analyzed from Tanks 212 and 213. Tank 381 was tested on October 12 and Tank 1084 was tested on October 13, 1994. Tank 1086 was tested on November 3, 1994. After the initial tests it was confirmed that Tanks 212 and 1084 passed, and the results from tanks 381 and 213 required further investigation. Tank 1086 received a failing status from the initial test. Tanks 381 and 213 were re-inoculated with a different tracer (Tracer B) and re-tested on October 31 and November 7, 1994, respectively. Both tanks contained failing concentrations of Tracer B and failed their *Tracer Tight®* tightness test. Tank 429 was tested on January 7, 1995 and no tracer was detected. Since Tanks 212, 429, and 1084 passed the passive *Tracer Tight®* test, a flow field test was performed on them on October 18, 1994 on Tank 212, October 17, 1994 on Tank 1084, and January 7, 1995 on Tank 429. Tracer Research field professionals determined that an adequate flow field was present under the tanks. A flow field test was not performed on tanks which did not pass the initial (passive) phase test (381/1086/213). Table B lists the dates of installation, inoculation and testing for each tank.

Table B: Cut and Cover Storage Tanks/Progression of Testing

Tank #	Diameter	Installation	Inoculation	First Test	Second Test
212	33ft.	8/25/94	9/23/94	10/11/94	N/A
213	33ft.	8/25/94	9/23/94,11/3/94	10/11/94	11/7/94
381	100ft	8/26,28/94	9/23/94,10/19/94	10/12/94	10/31/94
1084	100ft	8/29,30/94	9/23/94	10/13/94	N/A
1086	100ft	8/31/94,9/1/94	10/19/94	11/3/94	N/A
429	54ft	9/2,3/94	12/15/94	01/7/95	N/A

Tank #	Diameter	# of Probes installed	Depth of Probes(ft)
212	33ft.	6	6 at 10.5ft
213	33ft.	6	6 at 10.5ft
381	100ft.	36	18 at 12,18 at 24
1084	100ft.	36	18 at 12,18 at 24
1086	100ft.	36	18 at 12,18 at 24
429	54ft.	18	9 at 7, 9 at 17ft

7.2 JP-5/DFM Pipeline Systems

The integrity of the pipeline was tested using the non volumetric *Tracer Tight* ® method. The results from the test indicated two probe locations with failing concentrations of Tracer A. These locations are P-0231 and P-0232. P-0231 yielded a concentration of Tracer A at 0.0002 mg/L. Location P-0232 yielded a concentration of 0.0001 mg/L. The corresponding hydrocarbon data for each probe was 0.4100 and 0.0110 mg/L, respectively. No other tracer concentrations were detected at any other sampling location.

The hydrocarbon data was quantified as additional information, with the highest hydrocarbon concentration detected at location P-0535 of 18.0000 mg/L. The hydrocarbon data does not produce an obvious trend. Appendix C contains the data from the *Tracer Tight*® pipeline test and depicts the probe location, tracer and TVHC concentrations for each sample.

7.3 *Vapor Trace*® Soil Gas Investigation

The analytical results from the *Vapor Trace*® soil gas investigation are condensed at Appendix A. The data are presented by probe location and by analyte concentration. When the compound was not detected, the detection limit is presented as 0.0000 mg/L.

Soil gas samples are identified by sample location and sampling depth. For example, SG-1-3' represents a soil gas sample collected at location 1 at a depth of 3 feet below ground surface. Appendix C contains the data from the *Vapor Trace*® soil gas investigation and depicts the probe location and TVHC concentrations for each sample.

8.0 RESULTS

8.1 Cut and Cover Tanks

The results of the *Tracer Tight®* tests indicate that Tanks 212, 1084, and 429 passed the tightness test and tanks 213, 381, and 1086 failed the tightness test. The results from the tests indicate: one probe location (probe T-213-5-10.5') at Tank 213; four probe locations (probes T-381-12-12', T-381-13-24', T-381-14-12', and T-381-16-12') at Tank 381; and two probe locations (probes T-1086-12-12' and T-1086-16-12') at Tank 1086, all with failing concentrations of Tracer A. Probe T-213-5-10.5' yielded a concentration of Tracer A at 0.0003 mg/L. Probes T-381-12-12', T-381-13-24', T-381-14-12', and T-381-16-12' yielded concentrations of Tracer A at 0.0007 mg/L, 0.003 mg/L, 0.013 mg/L and 0.0009 mg/L, respectively. Probes T-1086-12-12' and T-1086-16-12' yielded concentrations of Tracer A at 0.004 mg/L and 0.003 mg/L, respectively. The hydrocarbon data was quantified as additional information. A confirmation test was performed on Tanks 213 and 381 using a different tarcer (Tracer B). The results from these tests indicate: Four probe locations (probes T-213-3-10.5', T-213-4-10.5', T-213-5-10.5', T-213-6-10.5') at Tank 213; and two probe locations (probes T-381-12-12' and T-381-13-24') at Tank 381 with failing concentrations of Tracer A. Probes T-213-3-10.5', T-213-4-10.5', T-213-5-10.5', T-213-6-10.5' yielded concentrations of Tracer B at 0.0081 mg/L, 0.0016 mg/L, 0.0150 mg/L, and 0.0006 mg/L, respectively. Probes T-381-12-12' and T-381-13-24' yielded concentartions of Tracer B at 0.0003 mg/L and 0.0013 mg/L, respectively.

8.2 JP-5/DFM Pipeline Systems

The integrity of the pipelines were tested using the non volumetric *Tracer Tight ®* method. The results from the tests indicate two probe locations with failing concentrations of Tracer A. These locations are P-0231 and P-0232. P-0231 yielded a concentration of Tracer A at 0.0002 mg/L. Location P-0232 yielded a concentration of 0.0001 mg/L The corresponding hydrocarbon data for each probe was 0.41 and 0.011 mg/L, respectively. No other tracer concentrations were detected at any other sampling location.

The hydrocarbon data was quantified as additional information, with the highest hydrocarbon concentration detected at location P-0535 of 18. mg/L. The hydrocarbon and tracer data does not indicate an obvious trend.

8.3 *Vapor Trace®* Soil Gas Investigation

The analytical results from the *Vapor Trace®* investigation are condensed at Appendix A. The data are presented by location and by analyte concentration. When the compound was not detected, the detection limit is presented as 0.0000 mg/L.

APPENDIX A: Results of U.S. EPA Standard Evaluation

Results of U.S. EPA Standard Evaluation

Nonvolumetric Tank Tightness Testing Method

This form tells whether the tank tightness testing method described below complies with the performance requirements of the federal underground storage tank regulation. The evaluation was conducted by the equipment manufacturer or a consultant to the manufacturer according to the U.S. EPA "Standard Test Procedure for Evaluating Leak Detection Methods: Nonvolumetric Tank Tightness Testing Methods." The full evaluation report also includes a form describing the method and a form summarizing the test data.

Tank owners using this leak detection system should keep this form on file to prove compliance with the federal regulations. Tank owners should check with State and local agencies to make sure this form satisfies their requirements.

Method Description

Name Tracer Tight®

Version

Vendor Tracer Research Corporation

(address) 3855 North Business Center Drive

(city) Tucson (state) Arizona (zip) 85705 (phone) 602/888-9400

Evaluation Results

This method, which declares a tank to be leaking when tracer is detected outside the tank at concentrations greater than 3×10^{-5} times the tracer concentration in the tank has an estimated probability of false alarms [P(FA)] of a 0.0 % based on the test results of 0 false alarms out of 22 tests. A 95% confidence interval for P(FA) is from 0 % to 13 %

The corresponding probability of detection [P(D)] of a 0.05 gallon per hour leak is 100 % based on the test results of 45 detections out of 45 simulated leak tests. A 95% confidence interval for P(D) is from 92.4 % to 100 %

The corresponding probability of detection [P(D)] of a 0.1 gallon per hour leak is 100 % based on the test results of 93 detections out of 93 simulated leak tests. A 95% confidence interval for P(D) is from 96.2 % to 100 %

Does this method use additional modes of leak detection? ☒ Yes ☐ No If Yes, complete additional evaluation results on page 3 of this form.

Based on the results above, and on page 3 if applicable, this method ☒ does ☐ does not meet the federal performance standards established by the U.S. Environmental Protection Agency (0.10 gallon per hour at P(D) of 95% and P(FA) of 5%).

Test Conditions During Evaluation

The evaluation testing was conducted outside a 55 -gallon ☒ steel ☐ fiberglass tank that was 22 inches in diameter and 34 inches long, installed in silty clay native soil backfill.

The ground-water level was 0 inches above the bottom of the tank.

Nonvolumetric TTT Method Tracer Tight®
Version

Test Conditions During Evaluation (continued)

The tests were conducted with the tank 38/0.0 percent full.

The temperature difference between product added to fill the tank and product already in the tank ranged from NA °F to NA °F,
with a standard deviation of NA °F.

The product used in the evaluation was regular leaded gasoline

This method may be affected by other sources of interference. List these interferences below and give the ranges of conditions under which the evaluation was done. (Check None if not applicable.)

☒ None

Interferences	Range of Test Conditions

Limitations on the Results

The performance estimates above are only valid when:

- The method has not been substantially changed.
- The vendors instructions for using the method are followed.
- The tank contains a product identified on the method description form.
- The tank capacity is NA gallons or smaller. *NO SIZE LIMITATION*
- The difference between added and in-tank product temperatures is no greater than + or - NA degrees Fahrenheit.

☒ Check if applicable:

Temperature is not a factor because Tracer Tight is an external leak detection method

- The waiting time between the end of filling the test tank and the start of the test data colleciton is at least NA hours.
- The waiting time between the end of "topping off" to final testing level and the start of the test data collection is at least NA hours.
- The total data collection time for the test is at least NA hours.
- The product volume in the tank during testing is NA % full.
- This method ☒ can ☐ cannot be used if the ground-water level is above the bottom of the tank.

Other limitations specified by the vendor or determined during testing:

Soil must be permeable enough to yield at least 0.15 cfm of air through a 3/4" nominal diameter probe under a vacuum of 15" of Hg.

Nonvolumetric TTT Method Tracer Tight®
Version

>Safety disclaimer: This test procedure only addresses the issue of the methods ability to detect leaks. It does not test the equipment for safety hazards.

Additional Evaluation Results (if applicable)

This method, which declares a tank to be leaking when water ingress is detected has an estimated probability of false alarms [P(FA)] of N/A % based on the test results of false alarms out of N/A tests. Note: A perfect score during testing does not mean that the method is perfect. Based on the observed results, a 95% confidence interval for P(FA) is from 0 % to N/A %.

The corresponding probability of detetecton [P(D)] of a N/A gallon per hour leak is N/A % based on the test results of N/A detections out of N/A simulated leak tests. Note: A perfect score during testing does not mean that the method is perfect. Based on the observed results, a 95% confidence interval for P(D) is from N/A % to 100 %.

>Water detection mode (if applicable)

Using a false alarm rate of 0% the minimum water level that the water sensor can detect with a 100% probability of detection is 0.008 inches.

Using a false alarm rate of 5% the minimum change in water level that the water sensor can detect with a 95% probability of detection is 0.19 inches.

Based on the minimum water level and change in water level that the water sensor can detect with a false alarm rate of 5% and a 95% probability of detection, the minimum time for the system to detect an increase in water level at an incursion rate of 0.10 gallon per hour is 1836 minutes in a 75,000 - gallon tank.

Certification of Results

I certify that the nonvolumetric tank tightness testing method was installed and operated according the the vendors instructions. I also certify that the evaluation was performed according to the standard EPA test procedure for nonvolumetric tank tightness testing methods and that the results presented above are those obtained during the evaluation.

Curtis W. Bryant
(printed name)

Curtis W. Bryant
(signature)

May 20, 1992
(date)

Control Strategies Engineering
(organization performing evaluation)

12550 West Manville Road
Tucson, Arizona 85743
(city, state, zip)

(602) 682-8726
(phone number)

APPENDIX B Analytical Data

APPENDIX B1 Cut and Cover Tank Data

TRACER RESEARCH CORPORATION 2240073B
DAMES AND MOORE/NAVAL STATION ROOSEVELT ROADS, CIEBA, PUERTO RICO
CUT AND COVER TANKS ANALYTICAL RESULTS
10/11/94

SAMPLE	TRACER A mg/L	TVHC mg/L
AIR SAMPLE	0.0000	0.0000
T-212-1-10.5'	0.0000	21.0000
T-212-2-10.5'	0.0000	0.7600
T-212-3-10.5'	0.0000	13.0000
T-212-4-10.5'	0.0000	270.0000
T-212-5-10.5'	0.0000	420.0000
T-212-6-10.5'	0.0000	510.0000
AIR SAMPLE	0.0000	0.0000
T-213-1-10.5'	0.0000	140.0000
T-213-2-10.5'	0.0000	450.0000
T-213-3-10.5'	0.0000	340.0000
T-213-4-10.5'	0.0000	490.0000
T-213-5-10.5'	0.0003	670.0000
T-213-6-10.5'	0.0000	11.0000
AIR SAMPLE	0.0000	0.0000

TRACER RESEARCH CORPORATION 2240073B
DAMES AND MOORE/NAVAL STATION ROOSEVELT ROADS, CIEBA, PUERTO RICO
CUT AND COVER TANKS ANALYTICAL RESULTS
10/12/94

SAMPLE	TRACER A mg/L	TVHC mg/L
AIR SAMPLE	0.0000	0.0000
T-381-1-24'	0.0000	0.7500
T-381-2-12'	0.0000	0.3600
T-381-3-24'	0.0000	0.9900
T-381-4-12'	0.0000	0.1100
T-381-5-24'	0.0000	0.4800
T-381-6-12'	0.0000	0.0000
T-381-7-24'	0.0000	1.7000
T-381-8-12'	0.0000	0.0000
T-381-9-24'	0.0000	0.2300
T-381-10-12'	0.0000	0.0460
T-381-11-24'	0.0000	0.2400
T-381-12-12'	0.0007	0.0230
T-381-13-24'	0.0030	0.3200
T-381-14-12'	0.0130	0.0000
T-381-15-24'	0.0000	1.2000
T-381-16-12'	0.0009	0.1100
T-381-17-24'	0.0000	1.4000
T-381-18-12'	0.0000	0.6800
T-381-19-24'	0.0000	1.1000
T-381-20-12'	0.0000	1.1000
T-381-21-24'	0.0000	0.4800
T-381-22-12'	0.0000	0.7500
T-381-23-24'	0.0000	1.3000
T-381-24-12'	0.0000	0.9200
T-381-25-24'	0.0000	1.3000
T-381-26-12'	0.0000	0.4300
T-381-27-24'	0.0000	0.1900
T-381-28-12'	0.0000	0.0000
T-381-29-24'	0.0000	0.6800
T-381-30-12'	0.0000	1.4000
T-381-31-24'	0.0000	0.0360
T-381-32-12'	0.0000	0.0000
T-381-33-24'	0.0000	0.9400

TRACER RESEARCH CORPORATION 2240073B
DAMES AND MOORE/NAVAL STATION ROOSEVELT ROADS, CIEBA, PUERTO RICO
CUT AND COVER TANKS ANALYTICAL RESULTS
10/12/94

SAMPLE	TRACER A mg/L	TVHC mg/L
T-381-34-12'	0.0000	0.4500
T-381-35-24'	0.0000	0.1300
T-381-36-12'	0.0000	0.5100
AIR SAMPLE	0.0000	0.0000

TRACER RESEARCH CORPORATION 2240073B
DAMES AND MOORE/NAVAL STATION ROOSEVELT ROADS, CIEBA, PUERTO RICO
CUT AND COVER TANKS ANALYTICAL RESULTS
10/13/94

SAMPLE	TRACER A mg/L	TVHC mg/L
AIR SAMPLE	0.0000	0.0000
T-1084-1-24'	0.0000	0.0000
T-1084-2-12'	0.0000	0.0000
T-1084-3-24'	0.0000	0.0000
T-1084-4-12'	0.0000	0.0000
T-1084-5-24'	0.0000	4.1000
T-1084-6-12'	0.0000	0.0000
T-1084-7-24'	0.0000	0.0110
T-1084-8-12'	0.0000	0.0000
T-1084-9-24'	0.0000	1.3000
T-1084-10-12'	0.0000	0.0830
T-1084-11-24'	0.0000	0.7000
T-1084-12-12'	0.0000	2.4000
T-1084-13-24'	0.0000	2.5000
T-1084-14-12'	0.0000	0.0000
T-1084-15-24'	0.0000	1.9000
T-1084-16-12'	0.0000	1.6000
T-1084-17-24'	0.0000	0.0000
T-1084-18-12'	0.0000	0.4000
T-1084-19-24'	0.0000	1.1000
T-1084-20-12'	0.0000	2.6000
T-1084-21-24'	0.0000	2.9000
T-1084-22-12'	0.0000	208.0000
T-1084-23-24'	0.0000	0.0000
T-1084-24-12'	0.0000	0.5700
T-1084-25-24'	0.0000	0.3900
T-1084-26-12'	0.0000	0.0410
T-1084-27-24'	0.0000	0.0380
T-1084-28-12'	0.0000	4.1000
T-1084-29-24'	0.0000	2.8000
T-1084-30-12'	0.0000	1.5000
T-1084-31-24'	0.0000	4.2000
T-1084-32-12'	0.0000	0.2800
T-1084-33-24'	0.0000	2.5000

TRACER RESEARCH CORPORATION 2240073B
DAMES AND MOORE/NAVAL STATION ROOSEVELT ROADS, CIEBA, PUERTO RICO
CUT AND COVER TANKS ANALYTICAL RESULTS
10/13/94

SAMPLE	TRACER A mg/L	TVHC mg/L
T-1084-34-12'	0.0000	0.2800
T-1084-35-24'	0.0000	0.2200
T-1084-36-12'	0.0000	0.0000
AIR SAMPLE	0.0000	0.0000

TRACER RESEARCH CORPORATION 2240073B
DAMES AND MOORE/NAVAL STATION ROOSEVELT ROADS, CIEBA, PUERTO RICO
CUT AND COVER TANKS ANALYTICAL RESULTS
11/3/94

SAMPLE	TRACER A mg/L	TVHC mg/L
AIR SAMPLE	0.0000	0.0000
T-1086-1-24'	0.0000	0.0000
T-1086-2-12'	0.0000	0.0000
T-1086-3-24'	0.0000	0.0000
T-1086-4-12'	0.0000	0.0000
T-1086-5-24'	0.0000	0.0000
T-1086-6-12'	0.0000	0.0000
T-1086-7-24'	0.0000	0.0000
T-1086-8-12'	0.0000	0.0000
T-1086-9-24'	0.0000	0.0000
T-1086-10-12'	0.0000	0.0000
T-1086-11-24'	0.0000	0.0000
T-1086-12-12'	0.0000	0.3500
T-1086-13-24'	0.0000	0.0000
T-1086-14-12'	0.0040	0.0000
T-1086-15-24'	0.0000	0.9400
T-1086-16-12'	0.0030	0.4000
T-1086-17-24'	0.0000	0.0000
T-1086-18-12'	0.0000	0.0350
T-1086-19-24'	0.0000	0.0000
T-1086-20-12'	0.0000	0.0000
T-1086-21-24'	0.0000	0.0000
T-1086-22-12'	0.0000	0.1100
T-1086-23-24'	0.0000	0.0000
T-1086-24-12'	0.0000	0.0000
T-1086-25-24'	0.0000	0.0000
T-1086-26-12'	0.0000	0.0010
T-1086-27-24'	0.0000	0.0000
T-1086-28-12'	0.0000	0.0000
T-1086-29-24'	0.0000	0.0000
T-1086-30-12'	0.0000	0.0000
T-1086-31-24'	0.0000	0.0000
T-1086-32-12'	0.0000	0.0000
T-1086-33-24'	0.0000	0.0000

TRACER RESEARCH CORPORATION 2240073B
DAMES AND MOORE/NAVAL STATION ROOSEVELT ROADS, CIEBA, PUERTO RICO
CUT AND COVER TANKS ANALYTICAL RESULTS
11/3/94

SAMPLE	TRACER A mg/L	TVHC mg/L
T-1086-34-12'	0.0000	0.0000
T-1086-35-24'	0.0000	0.0000
T-1086-36-12'	0.0000	0.0000
AIR SAMPLE	0.0000	0.0000

TRACER RESEARCH CORPORATION 2240073B
DAMES AND MOORE/NAVAL STATION ROOSEVELT ROADS, CIEBA, PUERTO RICO
CUT AND COVER TANKS ANALYTICAL RESULTS
1/11/95

SAMPLE	TRACER A mg/L	TVHC mg/L
AIR SAMPLE	0.0000	0.0000
T-429-1-7'	0.0000	0.0000
T-429-2-17'	0.0000	0.2200
T-429-3-7'	0.0000	0.0000
T-429-4-17'	0.0000	0.4500
T-429-5-7'	0.0000	0.0000
T-429-6-17'	0.0000	0.5300
T-429-7-7'	0.0000	0.0000
T-429-8-17'	0.0000	0.0000
T-429-9-7'	0.0000	2.9000
T-429-10-17'	0.0000	42.2000
T-429-11-7'	0.0000	3.1900
T-429-12-17'	0.0000	0.1800
T-429-13-7'	0.0000	1.2400
T-429-14-17'	0.0000	22.8100
T-429-15-7'	0.0000	0.1900
T-429-16-17'	0.0000	0.0000
T-429-17-7'	0.0000	12.5800
T-429-18-17'	0.0000	0.0000
AIR SAMPLE	0.0000	0.0000

TRACER RESEARCH CORPORATION 2240073B
DAMES AND MOORE/NAVAL STATION ROOSEVELT ROADS, CIEBA, PUERTO RICO
CUT AND COVER TANKS ANALYTICAL RESULTS / SECOND TEST FOR TANK 381
10/31/94

SAMPLE	TRACER B mg/L
AIR SAMPLE	0.0000
T-381-1-24'	0.0000
T-381-2-12'	0.0000
T-381-3-24'	0.0000
T-381-4-12'	0.0000
T-381-5-24'	0.0000
T-381-6-12'	0.0000
T-381-7-24'	0.0000
T-381-8-12'	0.0000
T-381-9-24'	0.0000
T-381-10-12'	0.0000
T-381-11-24'	0.0000
T-381-12-12'	0.0003
T-381-13-24'	0.0013
T-381-14-12'	0.0000
T-381-15-24'	0.0000
T-381-16-12'	0.0000
T-381-17-24'	0.0000
T-381-18-12'	0.0000
T-381-19-24'	0.0000
T-381-20-12'	0.0000
T-381-21-24'	0.0000
T-381-22-12'	0.0000
T-381-23-24'	0.0000
T-381-24-12'	0.0000
T-381-25-24'	0.0000
T-381-26-12'	0.0000
T-381-27-24'	0.0000
T-381-28-12'	0.0000
T-381-29-24'	0.0000
T-381-30-12'	0.0000
T-381-31-24'	0.0000
T-381-32-12'	0.0000
T-381-33-24'	0.0000
T-38134-12'	0.0000
T-38135-24'	0.0000
T-381-36-12'	0.0000

TRACER RESEARCH CORPORATION 2240073B
DAMES AND MOORE/NAVAL STATION ROOSEVELT ROADS, CIEBA, PUERTO RICO
CUT AND COVER TANKS ANALYTICAL RESULTS / SECOND TEST FOR TANK 213
11/7/94

SAMPLE	TRACER B mg/L
AIR SAMPLE	0.0000
T-213-1-10.5'	0.0000
T-213-2-10.5'	0.0000
T-213-3-10.5'	0.0081
T-213-4-10.5'	0.0016
T-213-5-10.5'	0.0150
T-213-6-10.5'	0.0006

APPENDIX B2: JP-5/DFM Pipeline Data

TRACER RESEARCH CORPORATION 2240073B
DAMES AND MOORE/NAVAL STATION ROOSEVELT ROADS, CIEBA, PUERTO RICO
HYDRANT PIPE ANALYTICAL RESULTS
11/9/94

SAMPLE	TRACER A mg/L	TVHC mg/L
AIR SAMPLE	0.0000	0.0000
P-0001	0.0000	0.0000
P-0002	0.0000	0.0000
P-0003	0.0000	0.0000
P-0004	0.0000	0.0030
P-0005	0.0000	0.0000
P-0006	0.0000	0.0000
P-0007	0.0000	0.0000
P-0008	0.0000	0.0000
P-0009	0.0000	0.0000
P-0010	0.0000	0.0000
P-0011	0.0000	0.0000
P-0012	0.0000	0.0000
P-0013	0.0000	0.0000
P-0014	0.0000	0.0000
P-0015	0.0000	0.0000
P-0016	0.0000	0.0000
P-0017	0.0000	0.0000
P-0018	0.0000	0.0000
P-0019	0.0000	0.0000
P-0020	0.0000	0.0000
P-0021	0.0000	0.0000
P-0022	0.0000	0.0000
P-0023	0.0000	0.0000
P-0024	0.0000	0.0000
P-0025	0.0000	0.0000
P-0026	0.0000	0.0000
P-0027	0.0000	0.0000
P-0028	0.0000	0.0000
P-0029	0.0000	0.0000
P-0030	0.0000	0.0000
P-0031	0.0000	0.0000
P-0032	0.0000	0.0000
P-0033	0.0000	0.0000

TRACER RESEARCH CORPORATION 2240073B
DAMES AND MOORE/NAVAL STATION ROOSEVELT ROADS, CIEBA, PUERTO RICO
HYDRANT PIPING ANALYTICAL RESULTS
10/9/94

SAMPLE	TRACER A mg/L	TVHC mg/L
P-0034	0.0000	0.0000
P-0035	0.0000	0.0000
P-0036	0.0000	0.0000
P-0037	0.0000	0.0000
P-0038	0.0000	0.0000
P-0039	0.0000	0.0000
AIR SAMPLE	0.0000	0.0000
P-0040	0.0000	0.0000
P-0041	0.0000	0.0000
P-0042	0.0000	0.0000
P-0043	0.0000	0.0000
P-0044	0.0000	0.0000
P-0045	0.0000	0.0000
P-0046	0.0000	0.0000
P-0047	0.0000	0.0000
P-0048	0.0000	0.0000
P-0049	0.0000	0.0000
P-0050	0.0000	0.0000
P-0051	0.0000	0.0000
P-0052	0.0000	0.0000
P-0053	0.0000	0.0000
P-0054	0.0000	0.0000
P-0055	0.0000	0.0000
P-0056	0.0000	0.0000
P-0057	0.0000	0.0000
P-0058	0.0000	0.0000
P-0059	0.0000	0.0000
P-0060	0.0000	0.0000
P-0061	0.0000	0.0000
P-0062	0.0000	0.0000
P-0063	0.0000	0.0003
P-0064	0.0000	0.0000
P-0065	0.0000	0.0000

TRACER RESEARCH CORPORATION 2240073B
DAMES AND MOORE/NAVAL STATION ROOSEVELT ROADS, CIEBA, PUERTO RICO
HYDRANT PIPE ANALYTICAL RESULTS
11/9/94

SAMPLE	TRACER A mg/L	TVHC mg/L
P-0066	0.0000	0.0000
P-0067	0.0000	0.0000
P-0068	0.0000	0.0000
P-0069	0.0000	0.0000
P-0070	0.0000	0.0000
P-0071	0.0000	0.0000
P-0072	0.0000	0.0000
P-0073	0.0000	0.0000
P-0074	0.0000	0.0000
P-0075	0.0000	0.0000
P-0076	0.0000	0.0000
P-0077	0.0000	0.0000
P-0078	0.0000	0.0000
P-0079	0.0000	0.0000
P-0080	0.0000	0.0000
P-0081	0.0000	0.0000
P-0082	0.0000	0.0000
P-0083	0.0000	0.0000
P-0084	0.0000	0.0000
P-0085	0.0000	0.0000
P-0086	0.0000	0.0000
P-0087	0.0000	0.0000
P-0088	0.0000	0.0000
P-0089	0.0000	0.0000
P-0090	0.0000	0.0000
P-0091	0.0000	0.0000
P-0092	0.0000	0.0000
P-0093	0.0000	0.0000
P-0094	0.0000	0.0000
P-0095	0.0000	0.0000
P-0096	0.0000	0.0000

TRACER RESEARCH CORPORATION 2240073B
DAMES AND MOORE/NAVAL STATION ROOSEVELT ROADS, CIEBA, PUERTO RICO
HYDRANT PIPE ANALYTICAL RESULTS
11/9/94

SAMPLE	TRACER A mg/L	TVHC mg/L
P-0097	0.0000	0.0000
P-0098	0.0000	0.0020
P-0099	0.0000	0.0000
P-0100	0.0000	0.0000
P-0101	0.0000	0.0090
P-0102	0.0000	0.0120
P-0103	0.0000	0.0000
P-0104	0.0000	0.0000
P-0105	0.0000	0.0000
AIR SAMPLE	0.0000	0.0000
P-0106	0.0000	0.0000
P-0107	0.0000	0.0000
P-0108	0.0000	0.0000
P-0109	0.0000	0.0000
P-0110	0.0000	0.0000
P-0111	0.0000	0.0000
P-0112	0.0000	0.0000
P-0113	0.0000	0.0000
P-0114	0.0000	0.0000
P-0115	0.0000	0.0000
P-0116	0.0000	0.0000
P-0117	0.0000	0.0000
P-0118	0.0000	0.0000
P-0119	0.0000	0.0000
AIR SAMPLE	0.0000	0.0000

TRACER RESEARCH CORPORATION 2240073B
DAMES AND MOORE/NAVAL STATION ROOSEVELT ROADS, CIEBA, PUERTO RICO
HYDRANT PIPE ANALYTICAL RESULTS
11/10/94

SAMPLE	TRACER A mg/L	TVHC mg/L
AIR SAMPLE	0.0000	0.0000
P-0120	0.0000	0.0000
P-0121	0.0000	0.0000
P-0122	0.0000	0.0000
P-0123	0.0000	0.0030
P-0124	0.0000	0.0000
P-0125	0.0000	0.0000
P-0126	0.0000	0.0000
P-0127	0.0000	0.0000
P-0128	0.0000	0.0000
P-0129	0.0000	0.0000
P-0130	0.0000	0.0000
P-0131	0.0000	0.0000
P-0132	0.0000	0.0000
P-0133	0.0000	0.0000
P-0134	0.0000	0.0000
P-0135	0.0000	0.0000
P-0136	0.0000	0.0000
P-0137	0.0000	0.0000
P-0138	0.0000	0.0000
P-0139	0.0000	0.0000
P-0140	0.0000	0.0000
P-0141	0.0000	0.0000
P-0142	0.0000	0.0000
P-0143	0.0000	0.0000
P-0144	0.0000	0.0000
P-0145	0.0000	0.0000
P-0146	0.0000	0.0000
P-0147	0.0000	0.0000
P-0148	0.0000	0.0000
P-0149	0.0000	0.0000
P-0150	0.0000	0.0000
P-0151	0.0000	0.0000
P-0152	0.0000	0.0000
P-0153	0.0000	0.0000
AIR SAMPLE	0.0000	0.0000

TRACER RESEARCH CORPORATION 2240073B
DAMES AND MOORE/NAVAL STATION ROOSEVELT ROADS, CIEBA, PUERTO RICO
HYDRANT PIPE ANALYTICAL RESULTS
11/11/94

SAMPLE	TRACER A mg/L	TVHC mg/L
AIR SAMPLE	0.0000	0.0000
P-0154	0.0000	0.0000
P-0155	0.0000	0.0000
P-0156	0.0000	0.0000
P-0157	0.0000	0.0030
P-0158	0.0000	0.0000
P-0159	0.0000	0.0000
P-0160	0.0000	0.0000
P-0161	0.0000	0.0000
P-0162	0.0000	0.0000
P-0163	0.0000	0.0000
P-0164	0.0000	0.0000
P-0165	0.0000	0.0000
P-0166	0.0000	0.0000
P-0167	0.0000	0.0000
P-0168	0.0000	0.0000
P-0169	0.0000	0.0000
P-0170	0.0000	0.0000
P-0171	0.0000	0.0000
P-0172	0.0000	0.0000
P-0173	0.0000	0.0000
P-0174	0.0000	0.0000
P-0175	0.0000	0.0000
P-0176	0.0000	0.0000
P-0177	0.0000	0.0000
P-0178	0.0000	0.0000
P-0179	0.0000	0.0000
P-0180	0.0000	0.0000
AIR SAMPLE	0.0000	0.0000

TRACER RESEARCH CORPORATION 2240073B
DAMES AND MOORE/NAVAL STATION ROOSEVELT ROADS, CIEBA, PUERTO RICO
HYDRANT PIPE ANALYTICAL RESULTS
11/12/94

SAMPLE	TRACER A mg/L	TVHC mg/L
AIR SAMPLE	0.0000	0.0000
P-0181	0.0000	0.0000
P-0182	0.0000	0.0000
P-0183	0.0000	0.0000
P-0184	0.0000	0.0000
P-0185	0.0000	0.0000
P-0186	0.0000	0.0000
P-0187	0.0000	0.0000
P-0188	0.0000	0.0000
P-0189	0.0000	0.0000
P-0190	0.0000	0.0000
P-0191	0.0000	0.0000
P-0192	0.0000	0.0000
P-0193	0.0000	0.0000
P-0194	0.0000	0.0000
P-0195	0.0000	0.0000
P-0196	0.0000	0.0000
P-0197	0.0000	0.0000
P-0198	0.0000	0.0000
P-0199	0.0000	0.0000
P-0200	0.0000	0.0000
P-0201	0.0000	0.0000
P-0202	0.0000	0.0000
P-0203	0.0000	0.0000
P-0204	0.0000	0.0000
P-0205	0.0000	0.0000
P-0206	0.0000	0.0000
P-0207	0.0000	0.0000
P-0208	0.0000	0.0000
P-0209	0.0000	0.0000
P-0210	0.0000	0.0000
P-0211	0.0000	0.0000
P-0212	0.0000	0.0000
P-0213	0.0000	0.0000

TRACER RESEARCH CORPORATION 2240073B
DAMES AND MOORE/NAVAL STATION ROOSEVELT ROADS , CIEBA, PUERTO RICO
HYDRANT PIPE ANALYTICAL RESULTS
11/12/94

SAMPLE	TRACER A mg/L	TVHC mg/L
P-0214	0.0000	0.0000
P-0215	0.0000	0.0000
P-0216	0.0000	0.0000
P-0217	0.0000	0.0000
P-0218	0.0000	0.0000
P-0219	0.0000	0.0000
P-0220	0.0000	0.0000
P-0221	0.0000	0.0000
P-0222	0.0000	0.0000
P-0223	0.0000	0.0000
P-0224	0.0000	0.0000
AIR SAMPLE	0.0000	0.0000

TRACER RESEARCH CORPORATION 2240073B
DAMES AND MOORE/NAVAL STATION ROOSEVELT ROADS, CIEBA, PUERTO RICO
HYDRANT PIPE ANALYTICAL RESULTS
11/13/94

SAMPLE	TRACER A mg/L	TVHC mg/L
AIR SAMPLE	0.0000	0.0000
P-0225	0.0000	0.0000
P-0226	0.0000	0.0000
P-0227	0.0000	0.0000
P-0228	0.0000	0.0030
P-0229	0.0000	0.0000
P-0230	0.0000	0.0000
P-0231	0.0002	0.4100
P-0232	0.0001	0.0110
P-0233	0.0000	0.0020
P-0234	0.0000	0.0110
P-0235	0.0000	0.0000
P-0236	0.0000	0.0000
P-0237	0.0000	0.0000
P-0238	0.0000	0.0000
P-0239	0.0000	0.0000
P-0240	0.0000	0.0000
P-0241	0.0000	0.0000
P-0242	0.0000	0.0000
P-0243	0.0000	0.0000
P-0244	0.0000	0.0000
P-0245	0.0000	0.0000
P-0246	0.0000	0.0000
P-0247	0.0000	0.0000
P-0248	0.0000	0.0000
P-0249	0.0000	0.0000
P-0250	0.0000	0.0000
P-0251	0.0000	0.0000
P-0252	0.0000	0.0000
P-0253	0.0000	0.0000
P-0254	0.0000	0.0000
P-0255	0.0000	0.0000
P-0256	0.0000	0.0000
P-0257	0.0000	0.0000
P-0258		

TRACER RESEARCH CORPORATION 2240073B
DAMES AND MOORE/NAVAL STATION ROOSEVELT ROADS, CIEBA, PUERTO RICO
HYDRANT PIPING ANALYTICAL RESULTS
10/13/94

SAMPLE	TRACER A mg/L	TVHC mg/L
P-0259	0.0000	0.0000
P-0260	0.0000	0.0000
P-0261	0.0000	0.0000
P-0262	0.0000	0.0000
P-0263	0.0000	0.0000
P-0264	0.0000	0.0000
P-0265	0.0000	0.0000
P-0266	0.0000	0.0000
AIR SAMPLE	0.0000	0.0000
P-0267	0.0000	0.0000
P-0268	0.0000	0.0000
P-0269	0.0000	0.0000
P-0270	0.0000	0.0000
P-0271	0.0000	0.0000
P-0272	0.0000	0.0000
P-0273	0.0000	0.0000
P-0274	0.0000	0.0000
P-0275	0.0000	0.0000
P-0276	0.0000	0.0000
P-0277	0.0000	0.0000
P-0278	0.0000	0.0000
P-0279	0.0000	0.0000
P-0280	0.0000	0.0000
P-0281	0.0000	0.0000
P-0282	0.0000	0.0000
P-0283	0.0000	0.0000
P-0284	0.0000	0.0000
P-0285	0.0000	0.0000
P-0286	0.0000	0.0000
P-0287	0.0000	0.0000
P-0288	0.0000	0.0000
P-0289	0.0000	0.0003
P-0290	0.0000	0.0000
P-0291	0.0000	0.0000

TRACER RESEARCH CORPORATION 2240073B
DAMES AND MOORE/NAVAL STATION ROOSEVELT ROADS, CIEBA, PUERTO RICO
HYDRANT PIPING ANALYTICAL RESULTS
10/13/94

SAMPLE	TRACER A mg/L	TVHC mg/L
P-0292	0.0000	0.0000
P-0293	0.0000	0.0000
P-0294	0.0000	0.0000
P-0295	0.0000	0.0000
P-0296	0.0000	0.0000
P-0297	0.0000	0.0000
P-0298	0.0000	0.0000
P-0299	0.0000	0.0000
P-0300	0.0000	0.0000
P-0301	0.0000	0.0010
P-0302	0.0000	0.0000
P-0303	0.0000	0.0000
P-0304	0.0000	0.0000
P-0305	0.0000	0.0000
P-0306	0.0000	0.0000
P-0307	0.0000	0.0000
P-0308	0.0000	0.0000
P-0309	0.0000	0.0000
P-0310	0.0000	0.0000
P-0311	0.0000	0.0000
P-0312	0.0000	0.0000
P-0313	0.0000	0.0000
P-0314	0.0000	0.0000
P-0315	0.0000	0.0000
P-0316	0.0000	0.0000
P-0317	0.0000	0.0000
P-0318	0.0000	0.0000
P-0319	0.0000	0.0000
P-0320	0.0000	0.0000
P-0321	0.0000	0.0000
P-0322	0.0000	0.0000
P-0323	0.0000	0.0000
P-0324	0.0000	0.0000
P-0325	0.0000	0.0000

TRACER RESEARCH CORPORATION 2240073B
DAMES AND MOORE/NAVAL STATION ROOSEVELT ROADS, CIEBA, PUERTO RICO
HYDRANT PIPING ANALYTICAL RESULTS
10/13/94

SAMPLE	TRACER A mg/L	TVHC mg/L
P-0326	0.0000	0.0000
P-0327	0.0000	0.0000
P-0328	0.0000	0.0000
P-0329	0.0000	0.0000
P-0330	0.0000	0.0000

TRACER RESEARCH CORPORATION 2240073B
DAMES AND MOORE/NAVAL STATION ROOSEVELT ROADS, CIEBA, PUERTO RICO
HYDRANT PIPE ANALYTICAL RESULTS
11/14/94

SAMPLE	TRACER A mg/L	TVHC mg/L
AIR SAMPLE	0.0000	0.0000
P-0331	0.0000	0.0000
P-0332	0.0000	0.0000
P-0333	0.0000	0.0000
P-0334	0.0000	0.0000
P-0335	0.0000	0.0000
P-0336	0.0000	0.0000
P-0337	0.0000	0.0000
P-0338	0.0000	0.0000
P-0339	0.0000	0.0000
P-0340	0.0000	0.0000
P-0341	0.0000	0.0000
P-0342	0.0000	0.0000
P-0343	0.0000	0.0000
P-0344	0.0000	0.0000
P-0345	0.0000	0.0000
P-0346	0.0000	0.0000
P-0347	0.0000	0.0000
P-0348	0.0000	0.0000
P-0349	0.0000	0.0000
P-0350	0.0000	0.0000
P-0351	0.0000	0.0000
P-0352	0.0000	0.0000
P-0353	0.0000	0.0000
P-0354	0.0000	0.0000
P-0355	0.0000	0.0000
P-0356	0.0000	0.0000
P-0357	0.0000	0.0000
P-0358	0.0000	0.0000
P-0359	0.0000	0.0000
P-0360	0.0000	0.0000
P-0361	0.0000	0.0000
P-0362	0.0000	0.0000

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DAMES AND MOORE/NAVAL STATION ROOSEVELT ROADS, CIEBA, PUERTO RICO
HYDRANT PIPE ANALYTICAL RESULTS
11/14/94

SAMPLE	TRACER A mg/L	TVHC mg/L
P-0363	0.0000	0.0000
P-0364	0.0000	0.0000
P-0365	0.0000	0.0000
P-0366	0.0000	0.0000
P-0367	0.0000	0.0000
P-0368	0.0000	0.0000
P-0369	0.0000	0.0000
P-0370	0.0000	0.0000
P-0371	0.0000	0.0000
P-0372	0.0000	0.0000
P-0373	0.0000	0.0000
P-0374	0.0000	0.0000
P-0375	0.0000	0.0000
P-0376	0.0000	0.0000
P-0377	0.0000	0.0000
P-0378	0.0000	0.0000
P-0379	0.0000	0.0000
P-0380	0.0000	0.0000
P-0381	0.0000	0.0000
P-0382	0.0000	0.0000
P-0383	0.0000	0.0000
P-0384	0.0000	0.0000
P-0385	0.0000	0.0000
P-0386	0.0000	0.0000
P-0387	0.0000	0.0000
P-0388	0.0000	0.0000
P-0389	0.0000	0.0040
P-0390	0.0000	0.0000
P-0391	0.0000	0.0000
P-0392	0.0000	0.0000
P-0393	0.0000	0.0000
P-0394	0.0000	0.0000
P-0395	0.0000	0.0000
P-0396	0.0000	0.0000

TRACER RESEARCH CORPORATION 2240073B
DAMES AND MOORE/NAVAL STATION ROOSEVELT ROADS, CIEBA, PUERTO RICO
HYDRANT PIPE ANALYTICAL RESULTS
11/14/94

SAMPLE	TRACER A mg/L	TVHC mg/L
P-0397	0.0000	0.0000
P-0398	0.0000	0.0000
P-0399	0.0000	0.0000
P-0400	0.0000	0.0000
P-0401	0.0000	0.0000
P-0402	0.0000	0.0000
P-0403	0.0000	0.0000
P-0404	0.0000	0.0000
P-0405	0.0000	0.0000
AIR SAMPLE	0.0000	0.0000
P-0406	0.0000	0.0000
P-0407	0.0000	0.0000
P-0408	0.0000	0.0000
P-0409	0.0000	0.0000
P-0410	0.0000	0.0000
P-0411	0.0000	0.0000
P-0412	0.0000	0.0000
P-0413	0.0000	0.0000
P-0414	0.0000	0.0000
P-0415	0.0000	0.0000
P-0416	0.0000	0.0000
P-0417	0.0000	0.0000
P-0418	0.0000	0.0000
P-0419	0.0000	0.0000
P-0420	0.0000	0.0000
P-0421	0.0000	0.0000
P-0422	0.0000	0.0000
P-0423	0.0000	0.0000
P-0424	0.0000	0.0000
P-0425	0.0000	0.0000
P-0426	0.0000	0.0000
P-0427	0.0000	0.0000
P-0428	0.0000	0.0000

TRACER RESEARCH CORPORATION 2240073B
DAMES AND MOORE/NAVAL STATION ROOSEVELT ROADS, CIEBA, PUERTO RICO
HYDRANT PIPE ANALYTICAL RESULTS
11/14/94

SAMPLE	TRACER A mg/L	TVHC mg/L
P-0429	0.0000	0.0000
P-0430	0.0000	0.0000
P-0431	0.0000	0.0000
P-0432	0.0000	0.0000
P-0433	0.0000	0.0000
P-0434	0.0000	0.0000
P-0435	0.0000	0.0000
P-0436	0.0000	0.0000
P-0437	0.0000	0.0000
P-0438	0.0000	0.0000
P-0439	0.0000	0.0000
P-0440	0.0000	0.0000
P-0441	0.0000	0.0000
P-0442	0.0000	0.0000
P-0443	0.0000	0.0000
P-0444	0.0000	0.0000
P-0445	0.0000	0.0000
P-0446	0.0000	0.0000
P-0447	0.0000	0.0000
P-0448	0.0000	0.0000
P-0449	0.0000	0.0000
P-0450	0.0000	0.0000
P-0451	0.0000	0.0000
P-0452	0.0000	0.0000
P-0453	0.0000	0.0000
P-0454	0.0000	0.0000
P-0455	0.0000	0.0000
P-0456	0.0000	0.0000
P-0457	0.0000	0.0000
P-0458	0.0000	0.0000
P-0459	0.0000	0.0000
P-0460	0.0000	0.0000
P-0461	0.0000	0.0000
P-0462	0.0000	0.0000

TRACER RESEARCH CORPORATION 2240073B
DAMES AND MOORE/NAVAL STATION ROOSEVELT ROADS, CIEBA, PUERTO RICO
HYDRANT PIPE ANALYTICAL RESULTS
11/14/94

SAMPLE	TRACER A mg/L	TVHC mg/L
P-0463	0.0000	0.0000
P-0464	0.0000	0.0000
P-0465	0.0000	0.0000
P-0466	0.0000	0.0000
P-0467	0.0000	0.0000
P-0468	0.0000	0.0000
P-0469	0.0000	0.0000
P-0470	0.0000	0.0000
P-0471	0.0000	0.0000
P-0472	0.0000	0.0000
P-0473	0.0000	0.0000
P-0474	0.0000	0.0000
P-0475	0.0000	0.0000
P-0476	0.0000	0.0000
P-0477	0.0000	0.0000
P-0478	0.0000	0.0000
P-0479	0.0000	0.0000
P-0480	0.0000	0.0000
AIR SAMPLE	0.0000	0.0000

TRACER RESEARCH CORPORATION 2240073B
DAMES AND MOORE/NAVAL STATION ROOSEVELT ROADS , CIEBA, PUERTO RICO
HYDRANT PIPE ANALYTICAL RESULTS
11/15/94

SAMPLE	TRACER A mg/L	TVHC mg/L
AIR SAMPLE	0.0000	0.0000
P-0481	0.0000	0.0000
P-0482	0.0000	0.0000
P-0483	0.0000	0.0000
P-0484	0.0000	0.0000
P-0485	0.0000	0.0000
P-0486	0.0000	0.0000
P-0487	0.0000	0.0000
P-0488	0.0000	0.0000
P-0489	0.0000	0.0000
P-0490	0.0000	0.0000
P-0491	0.0000	0.0000
P-0492	0.0000	0.0000
P-0493	0.0000	0.0000
P-0494	0.0000	0.0000
P-0495	0.0000	0.0000
P-0496	0.0000	0.0000
P-0497	0.0000	0.0000
P-0498	0.0000	0.0000
P-0499	0.0000	0.0000
P-0500	0.0000	0.0000
P-0501	0.0000	0.0000
P-0502	0.0000	0.0000
P-0503	0.0000	0.0000
P-0504	0.0000	0.0000
P-0505	0.0000	0.0000
P-0506	0.0000	0.0000
P-0507	0.0000	0.0000
P-0508	0.0000	0.0000
P-0509	0.0000	0.0000
P-0510	0.0000	0.0000
P-0511	0.0000	0.0000
P-0512	0.0000	0.0000
P-0513	0.0000	0.0000

TRACER RESEARCH CORPORATION 2240073B
DAMES AND MOORE/NAVAL STATION ROOSEVELT ROADS , CIEBA, PUERTO RICO
HYDRANT PIPE ANALYTICAL RESULTS
11/15/94

SAMPLE	TRACER A mg/L	TVHC mg/L
P-0514	0.0000	0.0000
P-0515	0.0000	0.0000
P-0516	0.0000	0.0000
P-0517	0.0000	0.0000
P-0518	0.0000	0.0000
P-0519	0.0000	0.0000
P-0520	0.0000	0.0000
P-0521	0.0000	0.0000
P-0522	0.0000	0.0000
P-0523	0.0000	0.0000
P-0524	0.0000	0.0000
P-0525	0.0000	0.0000
P-0526	0.0000	0.0000
P-0527	0.0000	0.1200
P-0528	0.0000	0.0050
P-0529	0.0000	0.0000
P-0530	0.0000	0.0000
P-0531	0.0000	0.0240
P-0532	0.0000	0.0000
P-0533	0.0000	0.0000
P-0534	0.0000	8.8000
P-0535	0.0000	18.0000
P-0536	0.0000	0.0360
P-0537	0.0000	0.0460
P-0538	0.0000	0.0130
P-0539	0.0000	0.0300
P-0540	0.0000	0.0300
P-0541	0.0000	0.0790
P-0542	0.0000	0.0200
P-0543	0.0000	0.0150
P-0544	0.0000	0.0170
P-0545	0.0000	0.0080
P-0546	0.0000	0.0050
AIR SAMPLE	0.0000	0.0000

TRACER RESEARCH CORPORATION 2240073B
DAMES AND MOORE/NAVAL STATION ROOSEVELT ROADS , CIEBA, PUERTO RICO
HYDRANT PIPE ANALYTICAL RESULTS
11/15/94

SAMPLE	TRACER A mg/L	TVHC mg/L
P-0547	0.0000	0.0180
P-0548	0.0000	0.0100
P-0549	0.0000	0.0140
P-0550	0.0000	0.0050
P-0551	0.0000	0.0100
P-0552	0.0000	0.0060
P-0553	0.0000	0.0060
P-0554	0.0000	0.0000
P-0555	0.0000	0.0040
P-O556	0.0000	0.0010
P-0557	0.0000	0.0000
P-0558	0.0000	0.0030
P-0559	0.0000	0.0000
P-0560	0.0000	0.0000
P-0561	0.0000	0.0030
P-0562	0.0000	0.0030
P-0563	0.0000	0.0000
P-0564	0.0000	0.0008
P-0565	0.0000	0.0000
P-0566	0.0000	0.0030
P-0567	0.0000	0.0090
P-0568	0.0000	0.0000
P-0569	0.0000	0.0000
P-0570	0.0000	0.0000
P-0571	0.0000	0.0000
P-0572	0.0000	0.0000
P-0573	0.0000	0.0000
P-0574	0.0000	0.0006
P-0575	0.0000	0.0160
P-0576	0.0000	0.0000
P-0577	0.0000	0.0000
P-0578	0.0000	0.2700
P-0579	0.0000	4.0000
P-0580	0.0000	1.8000

TRACER RESEARCH CORPORATION 2240073B
DAMES AND MOORE/NAVAL STATION ROOSEVELT ROADS , CIEBA, PUERTO RICO
HYDRANT PIPE ANALYTICAL RESULTS
11/15/94

SAMPLE	TRACER A mg/L	TVHC mg/L
P-0581	0.0000	1.5000
P-0582	0.0000	0.2300
P-0583	0.0000	0.6200
P-0584	0.0000	1.8000
P-0585	0.0000	0.1400
P-0586	0.0000	0.0030
P-0587	0.0000	3.6000
P-0588	0.0000	13.0000
P-0589	0.0000	1.4000
P-0590	0.0000	3.8000
P-0591	0.0000	0.1200
P-0592	0.0000	3.7000
P-0593	0.0000	2.8000
P-0594	0.0000	2.9000
P-0595	0.0000	6.9000
P-0596	0.0000	0.0510
P-0597	0.0000	0.0270
P-0598	0.0000	0.0220
P-0599	0.0000	1.9000
P-0600	0.0000	0.0270
P-0601	0.0000	0.1020
P-0602	0.0000	0.0220
P-0603	0.0000	0.0450
P-0604	0.0000	2.0000
P-0605	0.0000	1.0000
P-0606	0.0000	6.9000
P-0607	0.0000	4.4000
P-0608	0.0000	0.0290
P-0609	0.0000	0.0140
P-0610	0.0000	0.0000
P-0611	0.0000	0.0160
P-0612	0.0000	0.0030
P-0613	0.0000	0.0030
P-0614	0.0000	0.0220

TRACER RESEARCH CORPORATION 2240073B
DAMES AND MOORE/NAVAL STATION ROOSEVELT ROADS , CIEBA, PUERTO RICO
HYDRANT PIPE ANALYTICAL RESULTS
11/15/94

SAMPLE	TRACER A mg/L	TVHC mg/L
P-0615	0.0000	0.0050
P-0616	0.0000	0.0140
P-0617	0.0000	0.0090
P-0618	0.0000	0.0090
P-0619	0.0000	0.0060
P-0620	0.0000	0.0070
P-0621	0.0000	0.0320
P-0622	0.0000	0.0120
P-0623	0.0000	0.0040
P-0624	0.0000	0.0050
P-0625	0.0000	0.0100
P-0626	0.0000	0.0170
P-0627	0.0000	0.0100
P-0628	0.0000	0.0020
P-0629	0.0000	0.0060
P-0630	0.0000	0.0020
P-0631	0.0000	0.0000
P-0632	0.0000	0.0020
AIR SAMPLE	0.0000	0.0000

TRACER RESEARCH CORPORATION 2240073B
DAMES AND MOORE/NAVAL STATION ROOSEVELT ROADS, CIEBA, PUERTO RICO
HYDRANT PIPE ANALYTICAL RESULTS
11/16/94

SAMPLE	TRACER A mg/L	TVHC mg/L
AIR SAMPLE	0.0000	0.0000
P-0633	0.0000	0.0070
P-0634	0.0000	0.0000
P-0635	0.0000	0.0000
P-0636	0.0000	0.0010
P-0637	0.0000	0.0010
P-0638	0.0000	0.0000
P-0639	0.0000	0.0000
P-0640	0.0000	0.0010
P-0641	0.0000	0.0000
P-0642	0.0000	0.0000
P-0643	0.0000	0.0010
P-0644	0.0000	0.0000
P-0645	0.0000	0.0010
P-0646	0.0000	0.0000
P-0647	0.0000	0.0020
P-0648	0.0000	0.0000
P-0649	0.0000	0.0007
P-0650	0.0000	0.0000
P-0651	0.0000	0.0007
P-0652	0.0000	0.0000
P-0653	0.0000	0.0000
P-0654	0.0000	0.0030
P-0655	0.0000	0.0000
P-0656	0.0000	0.0000
P-0657	0.0000	0.0020
P-0658	0.0000	0.0000
P-0659	0.0000	0.0020
P-0660	0.0000	0.0000
P-0661	0.0000	0.0000
P-0662	0.0000	0.0000
P-0663	0.0000	0.0008
P-0664	0.0000	0.0010
P-0665	0.0000	0.0000

TRACER RESEARCH CORPORATION 2240073B
DAMES AND MOORE/NAVAL STATION ROOSEVELT ROADS, CIEBA, PUERTO RICO
HYDRANT PIPE ANALYTICAL RESULTS
11/16/94

SAMPLE	TRACER A mg/L	TVHC mg/L
P-0666	0.0000	0.0000
P-0667	0.0000	0.0003
P-0668	0.0000	0.0000
P-0669	0.0000	0.0000
P-0670	0.0000	0.0000
P-0671	0.0000	0.0000
P-0672	0.0000	0.0000
P-0673	0.0000	0.0000
P-0674	0.0000	0.0000
P-0675	0.0000	0.0000
P-0676	0.0000	0.0000
P-0677	0.0000	0.0000
P-0678	0.0000	0.9700
P-0679	0.0000	0.0000
P-0680	0.0000	0.0040
P-0681	0.0000	0.0010
P-0682	0.0000	0.0020
P-0683	0.0000	0.0003
P-0684	0.0000	0.0020
P-0685	0.0000	0.0000
P-0686	0.0000	0.0010
P-0687	0.0000	0.0000
P-0688	0.0000	0.0000
P-0689	0.0000	0.0000
P-0690	0.0000	0.0010
P-0691	0.0000	0.0008
P-0692	0.0000	0.0000
P-0693	0.0000	0.0000
P-0694	0.0000	0.0000
P-0695	0.0000	0.0000
P-0696	0.0000	0.0000
P-0697	0.0000	0.0000
P-0698	0.0000	0.0130
P-0699	0.0000	0.0240

TRACER RESEARCH CORPORATION 2240073B
DAMES AND MOORE/NAVAL STATION ROOSEVELT ROADS, CIEBA, PUERTO RICO
HYDRANT PIPE ANALYTICAL RESULTS
11/16/94

SAMPLE	TRACER A mg/L	TVHC mg/L
P-0700	0.0000	0.0100
AIR SAMPLE	0.0000	0.0000
P-0701	0.0000	0.0960
P-0702	0.0000	0.0300
P-0703	0.0000	0.0020
P-0704	0.0000	0.0020
P-0705	0.0000	0.0010
P-0706	0.0000	0.0010
P-0707	0.0000	0.0010
P-0708	0.0000	0.0010
P-0709	0.0000	0.0030
P-0710	0.0000	0.0010
P-0711	0.0000	0.0008
P-0712	0.0000	0.0010
P-0713	0.0000	0.0010
P-0714	0.0000	0.0010
P-0715	0.0000	0.0010
P-0716	0.0000	0.0010
P-0717	0.0000	0.0020
P-0718	0.0000	0.0020
P-0719	0.0000	0.0020
P-0720	0.0000	0.0020
P-0721	0.0000	0.0020
P-0722	0.0000	0.0020
P-0723	0.0000	0.0020
P-0724	0.0000	0.0060
P-0725	0.0000	0.0006
P-0726	0.0000	0.0030
P-0727	0.0000	0.0020
P-0728	0.0000	0.0020
P-0729	0.0000	0.0200
P-0730	0.0000	0.0000
P-0731	0.0000	0.0360
P-0732	0.0000	0.0460

TRACER RESEARCH CORPORATION 2240073B
DAMES AND MOORE/NAVAL STATION ROOSEVELT ROADS, CIEBA, PUERTO RICO
HYDRANT PIPE ANALYTICAL RESULTS
11/16/94

SAMPLE	TRACER A mg/L	TVHC mg/L
P-0733	0.0000	0.0050
P-0734	0.0000	0.0110
P-0735	0.0000	0.0020
P-0736	0.0000	0.0010
P-0737	0.0000	0.0010
P-0738	0.0000	0.0020
P-0739	0.0000	0.0020
P-0740	0.0000	0.0010
P-0741	0.0000	0.0010
P-0742	0.0000	0.0050
P-0743	0.0000	0.0010
P-0744	0.0000	0.0010
P-0745	0.0000	0.0010
P-0746	0.0000	0.0020
P-0747	0.0000	0.0010
P-0748	0.0000	0.0060
P-0749	0.0000	0.0090
P-0750	0.0000	0.0020
P-0751	0.0000	0.0090
AIR SAMPLE	0.0000	0.0000

TRACER RESEARCH CORPORATION 2240073B
DAMES AND MOORE/NAVAL STATION ROOSEVELT ROADS , CIEBA, PUERTO RICO
HYDRANT PIPE ANALYTICAL RESULTS
11/17/94

SAMPLE	TRACER A mg/L	TVHC mg/L
AIR SAMPLE	0.0000	0.0000
P-0752	0.0000	0.0000
P-0753	0.0000	0.0000
P-0754	0.0000	0.0000
P-0755	0.0000	0.0000
P-0756	0.0000	0.0000
P-0757	0.0000	0.0000
P-0758	0.0000	0.0000
P-0759	0.0000	0.0000
P-0760	0.0000	0.0000
P-0761	0.0000	0.0000
P-0762	0.0000	0.0000
P-0763	0.0000	0.0000
P-0764	0.0000	0.0000
P-0765	0.0000	0.0000
P-0766	0.0000	0.0032
P-0767	0.0000	0.0000
P-0768	0.0000	0.0160
P-0769	0.0000	0.0270
P-0770	0.0000	0.0970
P-0771	0.0000	0.0310
P-0772	0.0000	0.0170
P-0773	0.0000	0.0110
P-0774	0.0000	0.0030
P-0775	0.0000	0.0170
P-0776	0.0000	0.0040
P-0777	0.0000	0.0000
P-0778	0.0000	0.0000
P-0779	0.0000	0.0160
P-0780	0.0000	0.0020
P-0781	0.0000	0.0000
P-0782	0.0000	0.0000
P-0783	0.0000	0.0000
P-0784	0.0000	0.0000

TRACER RESEARCH CORPORATION 2240073B
DAMES AND MOORE/NAVAL STATION ROOSEVELT ROADS , CIEBA, PUERTO RICO
HYDRANT PIPE ANALYTICAL RESULTS
11/17/94

SAMPLE	TRACER A mg/L	TVHC mg/L
P-0785	0.0000	0.0000
P-0786	0.0000	0.0000
P-0787	0.0000	0.0000
P-0788	0.0000	0.0000
P-0789	0.0000	0.0000
P-0790	0.0000	0.0030
P-0791	0.0000	0.2000
P-0792	0.0000	0.0470
P-0793	0.0000	0.1500
P-0794	0.0000	0.4800
P-0795	0.0000	0.2900
P-0796	0.0000	0.3200
P-0797	0.0000	0.0750
P-0798	0.0000	0.0460
P-0799	0.0000	0.0110
P-0800	0.0000	0.0000
P-0801	0.0000	0.0010
P-0802	0.0000	0.1700
P-0803	0.0000	0.1700
P-0804	0.0000	0.0450
P-0805	0.0000	0.0120
P-0806	0.0000	0.0000
P-0807	0.0000	0.4000
P-0808	0.0000	0.1700
P-0809	0.0000	0.1300
P-0810	0.0000	0.1000
P-0811	0.0000	0.0420
P-0812	0.0000	0.6300
P-0813	0.0000	0.0650
P-0814	0.0000	0.0000
P-0815	0.0000	0.0000
P-0816	0.0000	0.0000
P-0817	0.0000	0.0000
P-0818	0.0000	0.0000

TRACER RESEARCH CORPORATION 2240073B
DAMES AND MOORE/NAVAL STATION ROOSEVELT ROADS . CIEBA, PUERTO RICO
HYDRANT PIPE ANALYTICAL RESULTS
11/17/94

SAMPLE	TRACER A mg/L	TVHC mg/L
P-0819	0.0000	0.0005
P-0820	0.0000	0.0020
P-0821	0.0000	0.0000
P-0822	0.0000	0.0000
P-0823	0.0000	0.0000
P-0824	0.0000	0.0000
P-0825	0.0000	0.0000
P-0826	0.0000	0.0000
P-0827	0.0000	0.0000
P-0828	0.0000	0.0000
P-0829	0.0000	0.0000
P-0830	0.0000	0.0000
P-0831	0.0000	0.0000
AIR SAMPLE	0.0000	0.0000
P-0832	0.0000	0.0080
P-0833	0.0000	0.0060
P-0834	0.0000	0.0008
P-0835	0.0000	0.0000
P-0836	0.0000	0.0000
P-0837	0.0000	0.0000
P-0838	0.0000	0.0000
P-0839	0.0000	0.0000
P-0840	0.0000	0.0000
P-0841	0.0000	0.0000
P-0842	0.0000	0.0000
P-0843	0.0000	0.0000
P-0844	0.0000	0.0000
P-0845	0.0000	0.0000
P-0846	0.0000	0.0000
P-0847	0.0000	0.0000
P-0848	0.0000	0.0000
P-0849	0.0000	0.0000
P-0850	0.0000	0.0000
P-0851	0.0000	0.0000

TRACER RESEARCH CORPORATION 2240073B
DAMES AND MOORE/NAVAL STATION ROOSEVELT ROADS , CIEBA, PUERTO RICO
HYDRANT PIPE ANALYTICAL RESULTS
11/17/94

SAMPLE	TRACER A mg/L	TVHC mg/L
P-0852	0.0000	0.0000
P-0853	0.0000	0.0000
P-0854	0.0000	0.0000
P-0855	0.0000	0.0000
P-0856	0.0000	0.0000
P-0857	0.0000	0.0000
P-0858	0.0000	0.0000
P-0859	0.0000	0.0000
P-0860	0.0000	0.0000
P-0861	0.0000	0.0000
P-0862	0.0000	0.0000
P-0863	0.0000	0.0000
P-0864	0.0000	0.0000
P-0865	0.0000	0.0000
P-0866	0.0000	0.0000
P-0867	0.0000	0.0000
P-0868	0.0000	0.0000
P-0869	0.0000	0.0000
P-0870	0.0000	0.0000
P-0871	0.0000	0.0000
P-0872	0.0000	0.0000
P-0873	0.0000	0.0000
P-0874	0.0000	0.0000
P-0875	0.0000	0.0000
P-0876	0.0000	0.0000
P-0877	0.0000	0.0000
P-0878	0.0000	0.0000
P-0879	0.0000	0.0000
P-0880	0.0000	0.0000
P-0881	0.0000	0.0000
P-0882	0.0000	0.0000
P-0883	0.0000	0.0000
P-0884	0.0000	0.0000
P-0885	0.0000	0.0000

TRACER RESEARCH CORPORATION 2240073B
DAMES AND MOORE/NAVAL STATION ROOSEVELT ROADS , CIEBA, PUERTO RICO
HYDRANT PIPE ANALYTICAL RESULTS
11/17/94

SAMPLE	TRACER A mg/L	TVHC mg/L
P-0886	0.0000	0.0000
P-0887	0.0000	0.0000
P-0888	0.0000	0.0000
P-0889	0.0000	0.0000
P-0890	0.0000	0.0000
P-0891	0.0000	0.0010
P-0892	0.0000	0.0000
P-0893	0.0000	0.0000
P-0894	0.0000	0.0000
P-0895	0.0000	0.0000
P-0896	0.0000	0.0000
P-0897	0.0000	0.0000
P-0898	0.0000	0.0000
P-0899	0.0000	0.0000
P-0900	0.0000	0.0000
P-0901	0.0000	0.0000
P-0902	0.0000	0.0000
P-0903	0.0000	0.0000
P-0904	0.0000	0.0000
P-0905	0.0000	0.0000
P-0906	0.0000	0.0000
P-0907	0.0000	0.0000
P-0908	0.0000	0.0000
P-0909	0.0000	0.0000
P-0910	0.0000	0.0000
AIR SAMPLE	0.0000	0.0000

TRACER RESEARCH CORPORATION 2240073B
DAMES AND MOORE/NAVAL STATION ROOSEVELT ROADS , CIEBA, PUERTO RICO
HYDRANT PIPE ANALYTICAL RESULTS
11/18/94

SAMPLE	TRACER A mg/L	TVHC mg/L
AIR SAMPLE	0.0000	0.0000
P-0911	0.0000	0.0000
P-0912	0.0000	0.0000
P-0913	0.0000	0.0000
P-0914	0.0000	0.0000
P-0915	0.0000	0.0000
P-0916	0.0000	0.0000
P-0917	0.0000	0.0000
P-0918	0.0000	0.0000
P-0919	0.0000	0.0000
P-0920	0.0000	0.0000
P-0921	0.0000	0.0000
P-0922	0.0000	0.0000
P-0923	0.0000	0.0000
P-0924	0.0000	0.0000
P-0925	0.0000	0.0000
P-0926	0.0000	0.0000
P-0927	0.0000	0.0000
P-0928	0.0000	0.0000
P-0929	0.0000	0.0000
P-0930	0.0000	0.0000
P-0931	0.0000	0.0000
P-0932	0.0000	0.0000
P-0933	0.0000	0.0000
P-0934	0.0000	0.0000
P-0935	0.0000	0.0000
P-0936	0.0000	0.0000
P-0937	0.0000	0.0000
P-0938	0.0000	0.0000
P-0939	0.0000	0.0000
P-0940	0.0000	0.0000
P-0941	0.0000	0.0000
P-0942	0.0000	0.0000
P-0943	0.0000	0.0000

TRACER RESEARCH CORPORATION 2240073B
DAMES AND MOORE/NAVAL STATION ROOSEVELT ROADS , CIEBA, PUERTO RICO
HYDRANT PIPE ANALYTICAL RESULTS
11/17/94

SAMPLE	TRACER A mg/L	TVHC mg/L
P-0944	0.0000	0.0000
P-0945	0.0000	0.0000
P-0946	0.0000	0.0000
P-0947	0.0000	0.0000
P-0948	0.0000	0.0000
P-0949	0.0000	0.0000
P-0950	0.0000	0.0000
P-0951	0.0000	0.0000
P-0952	0.0000	0.0000
P-0953	0.0000	0.0000
P-0954	0.0000	0.0000
P-0955	0.0000	0.0000
P-0956	0.0000	0.0000
P-0957	0.0000	0.0000
P-0958	0.0000	0.0000
AIR SAMPLE	0.0000	0.0000
P-0959	0.0000	0.0000
P-0960	0.0000	0.0000
P-0961	0.0000	0.0000
P-0962	0.0000	0.0000
P-0963	0.0000	0.0000
P-0964	0.0000	0.0000
P-0965	0.0000	0.0000
P-0966	0.0000	0.0000
P-0967	0.0000	0.0000
P-0968	0.0000	0.0000
P-0969	0.0000	0.0000
P-0970	0.0000	0.0000
P-0971	0.0000	0.0000
P-0972	0.0000	0.0000
P-0973	0.0000	0.0000
P-0974	0.0000	0.0000
P-0975	0.0000	0.0000
P-0976	0.0000	0.0000
P-0977	0.0000	0.0000

TRACER RESEARCH CORPORATION 2240073B
DAMES AND MOORE/NAVAL STATION ROOSEVELT ROADS , CIEBA, PUERTO RICO
HYDRANT PIPE ANALYTICAL RESULTS
11/18/94

SAMPLE	TRACER A mg/L	TVHC mg/L
P-0978	0.0000	0.0000
P-0979	0.0000	0.0000
P-0980	0.0000	0.0000
P-0981	0.0000	0.0000
P-0982	0.0000	0.0000
P-0983	0.0000	0.0000
P-0984	0.0000	0.0000
P-0985	0.0000	0.0000
P-0986	0.0000	0.0000
P-0987	0.0000	0.0000
P-0988	0.0000	0.0550
P-0989	0.0000	0.0300
P-0990	0.0000	0.0310
P-0991	0.0000	0.0170
P-0992	0.0000	0.0320
P-0993	0.0000	0.0000
P-0994	0.0000	0.0000
P-0995	0.0000	0.0000
P-0996	0.0000	0.0000
P-0997	0.0000	0.0000
P-0998	0.0000	0.0000
P-0999	0.0000	0.0000
P-1000	0.0000	0.0000
P-1001	0.0000	0.0000
P-1002	0.0000	0.0000
P-1003	0.0000	0.0000
P-1004	0.0000	0.0000
P-1005	0.0000	0.0000
P-1006	0.0000	0.0000
P-1007	0.0000	0.0000
P-1008	0.0000	0.0000
P-1009	0.0000	0.0000
P-1010	0.0000	0.0000

TRACER RESEARCH CORPORATION 2240073B
DAMES AND MOORE/NAVAL STATION ROOSEVELT ROADS , CIEBA, PUERTO RICO
HYDRANT PIPE ANALYTICAL RESULTS
11/18/94

SAMPLE	TRACER A mg/L	TVHC mg/L
P-1011	0.0000	0.0000
P-1012	0.0000	0.0490
P-1013	0.0000	0.5900
P-1014	0.0000	0.0120
P-1015	0.0000	0.0020
P-1016	0.0000	0.0960
P-1017	0.0000	0.0900
P-1018	0.0000	0.0000
P-1019	0.0000	0.0120
P-1020	0.0000	0.0000
P-1021	0.0000	0.0000
P-1022	0.0000	0.0000
P-1023	0.0000	0.0000
P-1024	0.0000	0.0000
P-1025	0.0000	0.0000
P-1026	0.0000	0.0000
AIR SAMPLE	0.0000	0.0000

APPENDIX B3 Soil Gas Data

TRACER RESEARCH CORPORATION 2240073B
DAMES & MOORE/NAVAL STATION ROOSEVELT ROADS, CIEBA PUERTO RICO
SOIL GAS ANALYTICAL RESULTS
9/26/94

SAMPLE	TVHC mg/L
AIR SAMPLE	0.0000
SG-01-3'	0.0060
SG-02-3'	0.0000
SG-03-3'	0.0060
SG-04-3'	0.0010
SG-05-3'	0.0060
SG-06-3'	0.4700
SG-07-3'	0.0400
SG-08-3'	0.0210
SG-09-3'	0.0820
SG-10-3'	0.0090
SG-11-3'	0.1700
SG-12-3'	0.1500
SG-13-3'	0.0060
SG-14-3'	0.0004
SG-15-3'	0.0040
SG-16-3'	0.0070
SG-17-3'	0.0070
SG-18-3'	0.0050
SG-19-3'	0.0070
SG-20-3'	0.0010
SG-21-3'	0.0110
SG-22-3'	0.0120
SG-23-3'	0.0060
SG-24-3'	0.0100
SG-25-3'	0.0120
AIR SAMPLE	0.0000

TRACER RESEARCH CORPORATION 2240073B
DAMES AND MOORE/NAVAL STATION ROOSEVELT ROADS, CIEBA, PUERTO RICO
SOIL GAS ANALYTICAL RESULTS
9/27/94

SAMPLE	TVHC mg/L
AIR SAMPLE	0.0000
SG-26-3'	0.0000
SG-27-3'	0.0000
SG-28-3'	0.0000
SG-29-3'	0.0000
SG-30-3'	0.0000
SG-31-3'	0.0000
SG-32-3'	0.0000
SG-33-3'	0.0000
SG-34-3'	0.0000
SG-35-3'	0.0000
SG-36-3'	0.0000
SG-37-3'	0.0000
SG-38-3'	0.0000
SG-39-3'	0.0000
SG-40-3'	0.0000
SG-41-3'	0.0000
SG-42-3'	0.0000
SG-43-3'	0.0000
SG-44-3'	0.0000
SG-45-3'	0.0000
SG-46-3'	0.0260
SG-47-3'	0.0000
SG-48-3'	0.0000
SG-49-3'	0.0000
SG-50-3'	0.0000
SG-52-3'	0.0000
SG-53-3'	0.0000
SG-54-3'	0.0000
SG-55-3'	0.0000
SG-55-3'	0.0000
AIR SAMPLE	0.0000
SG-56-3'	0.0000
SG-57-3'	0.0000
SG-58-3'	0.0000
SG-59-3'	0.0000

TRACER RESEARCH CORPORATION 2240073B
DAMES AND MOORE/NAVAL STATION ROOSEVELT ROADS, CIEBA, PUERTO RICO
SOIL GAS ANALYTICAL RESULTS
0/27/94

SAMPLE	TVHC mg/L
SG-60-3'	0.0000
SG-61-3'	0.0000
SG-62-3'	0.0000
SG-63-3'	0.0000
SG-64-3'	0.0220
SG-65-3'	0.0000
SG-66-3'	0.0000
SG-67-3'	0.0000
SG-68-3'	0.0000
SG-69-3'	0.0000
SG-70-3'	0.0000
SG-71-3'	0.0000
SG-72-3'	0.0000
SG-73-3'	0.0000
SG-74-3'	0.0000
SG-75-3'	0.0000
SG-76-3'	0.0000
SG-77-3'	0.0000
SG-78-3'	0.0000
SG-79-3'	0.0000
AIR SAMPLE	0.0000

TRACER RESEARCH CORPORATION 2240073B
DAMES & MOORE/NAVAL STSTION ROOSEVELT ROADS, CIEBA, PUERTO RICO
SOIL GAS ANALYTICAL RESULTS
9/28/94

SAMPLE	TVHC mg/L
AIR SAMPLE	0.0000
SG-80-3'	0.0004
SG-81-3'	0.0007
SG-82-3'	0.0006
SG-83-3'	0.0006
SG-84-3'	0.0008
SG-85-3'	0.0008
SG-86-3'	0.0010
SG-87-3'	0.0010
SG-88-3'	0.0010
SG-89-3'	0.0010
SG-90-3'	0.0010
SG-91-3'	0.0000
SG-92-3'	0.0000
SG-93-3'	0.0000
SG-94-3'	0.0000
SG-95-3'	0.0000
SG-96-3'	0.0000
SG-97-3'	0.0000
SG-98-3'	0.0000
SG-99-3'	0.0000
SG-100-3'	0.0005
SG-101-3'	0.0006
SG-102-3'	0.0004
SG-103-3'	0.0006
SG-104-3'	0.0006
SG-105-3'	0.0006
SG-106-3'	0.0010
SG-107-3'	0.0000
SG-108-3'	0.0007
SG-109-3'	0.0007

TRACER RESEARCH CORPORATION 2240073B
DAMES & MOORE/NAVAL STATION ROOSEVELT ROADS, CIEBA, PUERTO RICO
SOIL GAS ANALYTICAL RESULTS
9/29/94

SAMPLE	TVHC mg/L
AIR SAMPLE	0.0000
SG-110-2'	0.0010
SG-111-2'	0.0010
SG-112-2'	0.0005
SG-113-2'	0.0010
SG-114-2'	0.0005
SG-115-2'	0.0005
SG-116-2'	0.0020
SG-117-2'	0.0060
SG-118-2'	0.0010
SG-119-2'	0.0010
SG-120-2'	0.0050
SG-121-2'	0.0005
SG-122-2'	0.0020
SG-123-2'	0.0010
SG-124-2'	0.0010
SG-125-2'	0.0010
SG-126-2'	0.0010
SG-127-2'	0.0010
SG-128-2'	0.0005
SG-129-2'	0.0010
AIR SAMPLE	0.0000

TRACER RESEARCH CORPORATION 2240073B
DAMES & MOORE/NAVAL STATION ROOSEVELT ROADS, CIEBA, PUERTO RICO
SOIL GAS ANALYTICAL RESULTS
9/30/94

SAMPLE	TVHC mg/L
AIR SAMPLE	0.0000
SG-130-2'	0.0008
SG-131-2'	0.0007
SG-132-2'	0.0007
SG-133-2'	0.0007
SG-134-2'	0.0004
SG-135-2'	0.0004
SG-136-2'	0.0004
SG-137-2'	0.0004
SG-138-2'	0.0004
SG-139-2'	0.0007
SG-140-2'	0.0020
SG-141-2'	0.0004
SG-142-2'	0.0040
SG-143-2'	0.0010
SG-144-2'	0.0004
SG-145-2'	0.0009
SG-146-2'	0.0004
SG-147-2'	0.0004
SG-148-2'	0.0004
SG-149-2'	0.0004
SG-150-2'	0.0007
SG-151-2'	0.0004
SG-152-2'	0.0007
SG-153-2'	0.0004
SG-154-2'	0.0050
SG-155-2'	0.0090
SG-156-2'	0.0004
SG-157-2'	0.0004
SG-158-2'	0.0004
SG-159-2'	0.0007
SG-160-2'	0.0004
SG-161-2'	0.0004
SG-162-2'	0.0009
SG-163-2'	0.0030

TRACER RESEARCH CORPORATION 2240073B
DAMES & MOORE/NAVAL STATION ROOSEVELT ROADS, CIEBA, PUERTO RICO
SOIL GAS ANALYTICAL RESULTS
9/30/94

SAMPLE	TVHC mg/L
SG-164-3'	0.0008
SG-165-3'	0.0004
SG-166-3'	0.0007
SG-167-3'	0.0004
SG-168-3'	0.0004
SG-169-3'	0.0008
SG-170-3'	0.0004
SG-171-3'	0.0009
SG-172-3'	0.0007
SG-173-3'	0.0040
SG-174-3'	0.0006
SG-175-3'	0.0010
SG-176-3'	0.0040
SG-177-3'	0.0030
SG-178-3'	0.0020
SG-179-3'	0.0004
SG-180-3'	0.0009
SG-181-3'	0.001
SG-182-3'	0.0005
SG-183-3'	0.0007
SG-184-3'	0.0004
SG-185-3'	0.0004
SG-186-3'	0.0006
SG-187-3'	0.0004
SG-188-3'	0.0004
SG-189-3'	0.0004
SG-190-3'	0.0004
AIR SAMPLE	0.0000

TRACER RESEARCH CORPORATION 2240073B
DAMES & MOORE/NAVAL STATION ROOSEVELT ROADS, CIEBA, PUERTO RICO
SOIL GAS ANALYTICAL RESULTS
10/2/94

SAMPLE	TVHC mg/L
AIR SAMPLE	0.0000
SG-191-3'	0.0000
SG-192-3'	0.0000
SG-193-3'	0.0005
SG-194-3'	0.0000
SG-195-3'	0.0000
SG-196-3'	0.0020
SG-197-3'	0.0004
SG-198-3'	0.0000
SG-199-3'	0.0005
SG-200-3'	0.0020
SG-201-3'	0.0004
SG-202-3'	0.0000
SG-203-3'	0.0000
SG-204-3'	0.0005
SG-205-3'	0.0000
SG-206-3'	0.0006
SG-207-3'	0.0007
SG-208-3'	0.0009
SG-209-3'	0.0000
SG-210-3'	0.0000
SG-211-3'	0.0000
SG-212'3'	0.0000
SG-213-3'	0.0000
SG-214-3'	0.0000
SG-215-3'	0.0000
SG-216-3'	0.0000
SG-217-3'	0.0000
SG-218-3'	0.0004
SG-219-3'	0.0000
SG-220-3	0.0000
SG-221-3'	0.0006
SG-222-3'	0.0020
SG-223-3'	0.0000

TRACER RESEARCH CORPORATION 2240073B
DAMES & MOORE/NAVAL STATION ROOSEVELT ROADS, CIEBA, PUERTO RICO
SOIL GAS ANALYTICAL RESULTS
10/2/94

SAMPLE	TVHC mg/L
SG-224-3'	0.0080
SG-225-3'	0.0030
SG-226-3'	0.0020
SG-227-3'	0.0040
SG-228-3'	0.0020
SG-229-3'	0.0005
SG-230-3'	0.0020
SG-231-3'	0.0020
SG-232-3'	0.0030
SG-233-3'	0.0000
SG-234-3'	0.0000
SG-235-3'	0.0005
SG-236-3'	0.0000
SG-237-3'	0.0020
SG-238-3'	0.0000
SG-239-3'	0.0000
AIR SAMPLE	0.0000
SG-240-3'	0.0000
SG-241-3'	0.0000
SG-242-3'	0.0000
SG-243-3'	0.0000
SG-244-3'	0.0000
SG-245-3'	0.0000
SG-246-3'	0.0004
SG-247-3'	0.0000
SG-248-3'	0.0000
SG-249-3'	0.0000
SG-250-3'	0.0000
SG-251-3'	0.0000
SG-252-3'	0.0000
SG-253-3'	0.0000

TRACER RESEARCH CORPORATION 2240073B
DAMES & MOORE/NAVAL STATION ROOSEVELT ROADS, CIEBA, PUERTO RICO
SOIL GAS ANALYTICAL RESULTS
10/3/94

SAMPLE	TVHC mg/L
AIR SAMPLE	0.0000
SG-254-3'	0.0000
SG-255-3'	0.0000
SG-256-3'	0.0000
SG-257-3'	0.0000
SG-258-3'	0.0000
SG-259-3'	0.0000
SG-260-3'	0.0006
SG-261-3'	0.0000
SG-262-3'	0.0000
SG-263-3'	0.0000
SG-264-3'	0.0000
SG-265-3'	0.0000
SG-266-3'	0.0000
SG-267-3'	0.0000
SG-268-3'	0.0000
SG-269-3'	0.0000
SG-270-3'	0.0000
SG-271-3'	0.0000
SG-272-3'	0.0000
SG-273-3'	0.0000
SG-274-3'	0.0000
SG-275-3'	0.0000
SG-276-3'	0.0000
SG-277-3'	0.0000
SG-278-3'	0.0840
SG-279-3'	0.0000

TRACER RESEARCH CORPORATION 2240073B
DAMES & MOORE/NAVAL STATION ROOSEVELT ROADS, CIEBA, PUERTO RICO
SOIL GAS ANALYTICAL RESULTS
10/3/94

SAMPLE	TVHC mg/L
SG-280-3'	0.0000
SG-281-3'	0.0000
SG-282-3'	0.0005
SG-283-3'	0.0000
SG-284-3'	0.0000
AIR SAMPLE	0.0000
SG-285-3'	0.0000
SG-286-3'	0.0000
SG-287-3'	0.0000
SG-288-3'	0.0000
SG-289-3'	0.0000
SG-290-3'	0.0000
SG-291-3'	0.0000
SG-292-3'	0.0000
SG-293-3'	0.0000
SG-294-3'	0.0000
SG-295-3'	0.0000
SG-296-3'	0.0000
SG-297-3'	0.0000
SG-298-3'	0.0000
SG-299-3'	0.0000
SG-300-3'	0.0000
SG-301-3'	0.0000
SG-302-3'	0.0000
SG-303-3'	0.0000
SG-304-3'	0.0000
SG-305-3'	0.0000
SG-306-3'	0.0000
SG-307-3'	0.0000
SG-308-3'	0.0000
SG-309-3'	0.0000
SG-310-3'	0.0000
SG-311-3'	0.0020

TRACER RESEARCH CORPORATION 2240073B
DAMES & MOORE/NAVAL STATION ROOSEVELT ROADS, CIEBA, PUERTO RICO
SOIL GAS ANALYTICAL RESULTS
10/3/94

SAMPLE	TVHC mg/L
SG-312-3'	0.0000
SG-313-3'	0.0000
SG-314-3'	0.0000
SG-315-3'	0.0000
SG-316-3'	0.0004
SG-317-3'	0.0000
SG-318-3'	0.0000
SG-319-3'	0.0000
SG-320-3'	0.0006
AIR SAMPLE	0.0000
SG-321-3'	0.0000
SG-322-3'	0.0020
SG-323-3'	0.0006
SG-324-3'	0.0020
SG-325-3'	0.0004
SG-326-3'	0.0030
SG-327-3'	0.0000
SG-328-3'	0.0010
SG-329-3'	0.0000
SG-330-3'	0.0090
SG-331-3'	0.0030
SG-332-3'	0.0000
SG-333-3'	0.0070
SG-334-3'	0.0020
SG-335-3'	0.0000
SG-336-3'	0.0000
SG-337-3'	0.0000
SG-338-3'	0.0000
SG-339-3'	0.0000
SG-340-3'	0.0000
SG-341-3'	0.0390
SG-342-3'	0.0400
AIR SAMPLE	0.0000

TRACER RESEARCH CORPORATION 2240073B
DAMES AND MOORE/NAVAL STATION ROOSEVELT ROADS, CIEBA, PUERTO RICO
SOIL GAS ANALYTICAL RESULTS
10/4/94

SAMPLE	TVHC mg/L
AIR SAMPLE	0.0000
SG-343-3'	0.0000
SG-344-3'	0.0004
SG-345-3'	0.0000
SG-346-3'	0.0020
SG-347-3'	0.0000
SG-348-3'	0.0005
SG-349-3'	0.0004
SG-350-3'	0.0000
SG-351-3'	0.0000
SG-352-3'	0.0000
SG-353-3'	0.0007
SG-354-3'	0.0000
SG-355-3'	0.0000
SG-356-3'	0.0000
SG-357-3'	0.0010
SG-358-3'	0.0005
AIR SAMPLE	0.0000
SG-359-3'	0.0030
SG-360-3'	0.0006
SG-361-3'	0.0002
SG-362-3'	0.0000
SG-363-3'	0.0000
SG-364-3'	0.0000
SG-365-3'	0.0000
SG-366-3'	0.0000
SG-367-3'	0.0000
SG-368-3'	0.0000
SG-369-3'	0.0000

TRACER RESEARCH CORPORATION 2240073B
DAMES AND MOORE/NAVAL STATION ROOSEVELT ROADS, CIEBA, PUERTO RICO
SOIL GAS ANALYTICAL RESULTS
10/4/94

SAMPLE	TVHC mg/L
SG-370-3'	0.0000
SG-371-3'	0.0000
SG-372-3'	0.0000
SG-373-3'	0.0020
SG-374-3'	0.0000
SG-375-3'	0.0004
SG-376-3'	0.0000
SG-377-3'	0.0020
SG-378-3'	0.0000
SG-379-3'	0.0000
SG-380-3'	0.0000
SG-381-3'	0.0000
SG-382-3'	0.0000
SG-383-3'	0.0000
SG-384-3'	0.0000
SG-385-3'	0.0010
SG-386-3'	0.0000
SG-387-3'	0.0000
SG-388-3'	0.0000
SG-389-3'	0.0000
SG-390-3'	0.0000
SG-391-3'	0.0020
SG-392-3'	0.0020
AIR SAMPLE	0.0000

TRACER RESEARCH CORPORATION 2240073B
DAMES AND MOORE/NAVAL STATION ROOSEVELT ROADS, CIEBA, PUERTO RICO
SOIL GAS ANALYTICAL RESULTS
10/5/94

SAMPLE	TVHC mg/L
AIR SAMPLE	0.0000
SG-393-3'	0.0004
SG-394-3'	0.0160
SG-395-3'	0.0004
SG-396-3'	0.0004
SG-397-3'	0.0004
SG-398-3'	0.0004
SG-399-3'	0.0004
SG-400-3'	0.0004
SG-401-3'	0.0004
SG-402-3'	0.1100
SG-403-3'	0.0050
SG-404-3'	0.0004
SG-405-3'	0.0002
SG-406-3'	0.0004
SG-407-3'	0.0004
SG-408-3'	0.0004
SG-409-3'	0.0004
SG-410-3'	0.0004
SG-411-3'	0.0004
SG-412-3'	0.0004
SG-413-3'	0.0002
SG-414-3'	0.0002
SG-415-3'	0.0002
SG-416-3'	0.0020
SG-417-3'	0.0000
AIR SAMPLE	0.0000
SG-418-3'	0.0002
SG-419-3'	0.0002
SG-420-3'	0.0002
SG-421-3'	0.0000
SG-422-3'	0.0002
SG-423-3'	0.0000
SG-424-3'	0.0520
SG-425-3'	0.1500
SG-426-3'	0.0002
AIR SAMPLE	0.0000

TRACER RESEARCH CORPORATION 2240073B
DAMES AND MOORE/NAVAL STATION ROOSEVELT ROADS, CIEBA, PUERTO RICO
SOIL GAS ANALYTICAL RESULTS
10/20/94

SAMPLE	TVHC mg/L
AIR SAMPLE	0.0000
SG-427-3'	0.0200
SG-428-3'	0.0009
SG-429-3'	0.0006
SG-430-3'	0.0000
SG-431-3'	0.0000
SG-432-3'	0.0000
SG-433-3'	0.0000
SG-434-3'	0.0000
SG-435-3'	0.0000
SG-436-3'	0.0000
SG-437-3'	0.0000
SG-438-3'	0.0000
SG-439-3'	0.0000
SG-440-3'	0.0000
SG-441-3'	0.0000
SG-442-3'	0.0000
SG-443-3'	0.0000
SG-444-3'	0.0000
SG-445-3'	0.0000
SG-446-3'	0.0000
SG-447-3'	0.0000
SG-448-3'	0.0000
SG-449-3'	0.0000
SG-450-3'	0.0000
SG-451-3'	0.0000
SG-452-3'	0.0000
SG-453-3'	0.0000
SG-454-3'	0.0000
SG-455-3'	0.0020
SG-456-3'	0.0006

TRACER RESEARCH CORPORATION 2240073B
DAMES AND MOORE/NAVAL STATION ROOSEVELT ROADS, CIEBA, PUERTO RICO
SOIL GAS ANALYTICAL RESULTS
10/20/94

SAMPLE	TVHC mg/L
SG-457-3'	0.0000
SG-458-3'	0.0010
SG-459-3'	0.0006
SG-460-3'	0.0010
SG-461-3'	0.0000
SG-462-3'	0.0003
SG-463-3'	0.0003
SG-464-3'	0.0009
SG-465-3'	0.0000
SG-466-3'	0.0000
AIR SAMPLE	0.0000
SG-467-3'	0.0002
SG-468-3'	0.0000
SG-469-3'	0.0003
SG-470-3'	0.0010
SG-471-3'	0.0000
SG-472-3'	0.0030
SG-473-3'	0.0002
SG-474-3'	0.0007
SG-475-3'	0.0000
SG-476-3'	0.0010
SG-477-3'	0.0005
SG-478-3'	0.0000
SG-479-3'	0.0000
SG-480-3'	0.0004
SG-481-3'	0.0020
SG-482-3'	0.0003
SG-483-3'	0.0006
SG-484-3'	0.0020
AIR SAMPLE	0.0000

TRACER RESEARCH CORPORATION 2240073B
DAMES AND MOORE/NAVAL STATION ROOSEVELT ROADS, CIEBA, PUERTO RICO
SOIL GAS ANALYTICAL RESULTS
10/21/94

SAMPLE	TVHC mg/L
AIR SAMPLE	0.0000
SG-485-3'	0.0000
SG-486-3'	0.0000
SG-487-3'	0.0000
SG-488-3'	0.0000
SG-489-3'	0.0000
SG-490-3'	0.0000
SG-491-3'	0.0000
SG-492-3'	0.0000
SG-493-3'	0.0000
SG-494-3'	0.0000
SG-495-3'	0.0000
SG-496-3'	0.0000
SG-497-3'	0.0000
SG-498-3'	0.0000
SG-499-3'	0.0000
SG-500-3'	0.0000
SG-501-3'	0.0000
SG-502-3'	0.0000
SG-503-3'	0.0000
SG-504-3'	0.0000
SG-505-3'	0.0000
SG-506-3'	0.0000
SG-507-3'	0.0080
SG-508-3'	0.2200
AIR SAMPLE	0.0000

TRACER RESEARCH CORPORATION 2240073B
DAMES AND MOORE/NAVAL STATION ROOSEVELT ROADS, CIEBA, PUERTO RICO
SOIL GAS ANALYTICAL RESULTS
10/22/94

SAMPLE	TVHC mg/L
AIR SAMPLE	0.0000
SG-509-3'	0.0000
SG-510-3'	0.0000
SG-511-3'	0.0000
SG-512-3'	0.0000
SG-513-3'	0.0000
SG-514-3'	0.0000
SG-515-3'	0.0000
SG-516-3'	0.0000
SG-517-3'	0.0000
SG-518-3'	0.0000
SG-519-3'	0.0000
SG-520-3'	0.0000
SG-521-3'	0.0000
SG-522-3'	0.0000
SG-523-3'	0.0000
SG-524-3'	0.0000
SG-525-3'	0.0000
SG-526-3'	0.0000
SG-527-3'	0.0000
SG-528-3'	0.0000
SG-529-3'	0.0000
SG-530-3'	0.0000
SG-531-3'	0.0000
SG-532-3'	0.0000
SG-533-3'	0.0000
SG-534-3'	0.0000
SG-535-3'	0.0000
SG-536-3'	0.0000
SG-537-3'	0.0000
SG-538-3'	0.0000
SG-539-3'	0.0000
SG-540-3'	0.0000
SG-541-3'	0.0000

TRACER RESEARCH CORPORATION 2240073B
DAMES AND MOORE/NAVAL STATION ROOSEVELT ROADS, CIEBA, PUERTO RICO
SOIL GAS ANALYTICAL RESULTS
10/22/94

SAMPLE	TVHC mg/L
SG-542-3'	0.0000
SG-543-3'	0.0000
SG-544-3'	0.0000
SG-545-3'	0.0000
SG-546-3'	0.0000
SG-547-3'	0.0000
SG-548-3'	0.0000
SG-549-3'	0.0000
SG-550-3'	0.0000
SG-551-3'	0.0000
SG-552-3'	0.0000
SG-553-3'	0.0000
SG-554-3'	0.0000
SG-555-3'	0.0000
SG-556-3'	0.0000
AIR SAMPLE	0.0000

APPENDIX C: Certification

APPENDIX C1: Cut and Cover Tank Certification

Tracer Research Corporation

TRACER TIGHT® LEAK DETECTION CERTIFICATION

Cut and Cover Tanks
Naval Station Roosevelt Roads
Cieba, Puerto Rico

Date: February 1994

2240073B

TANK #	VOLUME (gal)	PRODUCT	TRACER	LEAK STATUS
212	50,000	Unleaded	A	Pass
213	**50,000**	**Diesel**	**A**	**Fail**
381	**1,200,000**	**JP-5**	**A**	**Fail**
1084	1,200,000	JP-5	A	Pass
1086	**1,200,000**	**Empty**	**A**	**Fail**
429	350,000	JP-5	A	Pass

Tracer Research Corporation certifies that the tanks listed in the above table has been tested by means of *Tracer Tight®*, which meets the criteria set forth in NFPA 329 for a precision leak test. According to EPA standard test procedures for evaluating leak detection methods, this method is capable of detecting leaks of 0.05 gallons per hour with a Probability of Detection (PD) of 0.97 and Probability of False Alarm (PFA) of 0.029.

Submitted by: Tracer Research Corporation

The following criteria is used for the classification of leakage when Tracer is detected.

PASS CRITERIA:

TRACER not detected

FAIL CRITERIA:

TRACER detected

APPENDIX C2: JP-5/DFM Pipeline Certification

TRACER TIGHT® LEAK DETECTION CERTIFICATION

JP-5/DFM Fuel Distribution System
Naval Station Roosevelt Roads
Cieba, Puerto Rico

Date: February 1994

2240073B

PIPELINE	LENGTH (ft)	PRODUCT	TRACER	LEAK STATUS
JP-5/DFM	**20,520**	**JP-5/Diesel**	**A**	**Fail**

Tracer Research Corporation certifies that the piping listed in the above table has been tested by means of *Tracer Tight®*, which meets the criteria set forth in NFPA 329 for a precision leak test. According to EPA standard test procedures for evaluating leak detection methods, this method is capable of detecting leaks of 0.05 gallons per hour with a Probability of Detection (PD) of 0.97 and Probability of False Alarm (PFA) of 0.029.

Submitted by: Tracer Research Corporation

The following criteria is used for the classification of leakage when Tracer is detected.

PASS CRITERIA:

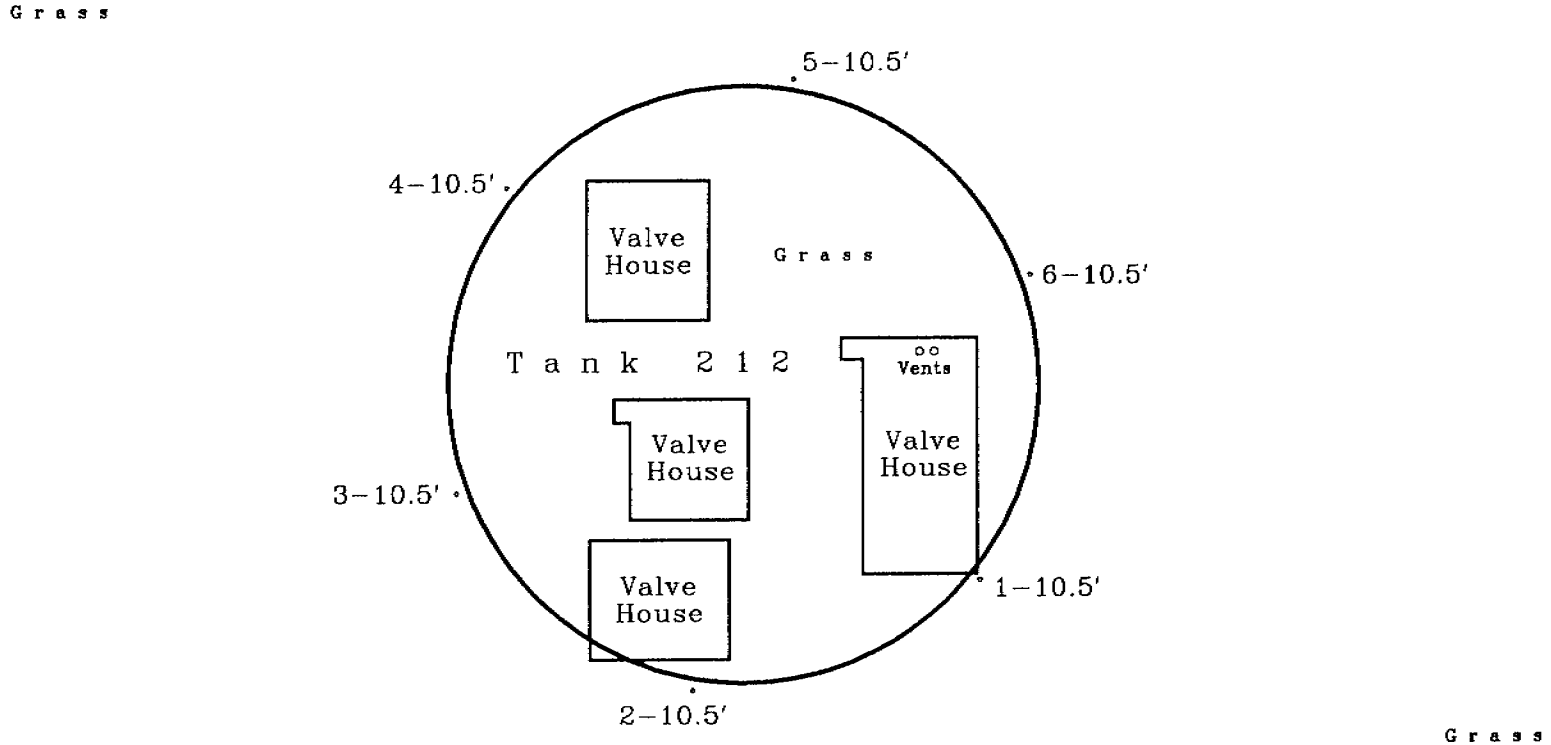
TRACER not detected

FAIL CRITERIA:

TRACER detected

APPENDIX D: Maps

APPENDIX D1: Cut and Cover Tank Maps



2240073B

NAVAL STATION ROOSEVELT ROADS
CUT & COVER TANKS
Tank No. 212
CIEBA, PUERTO RICO
SAMPLING LOCATIONS

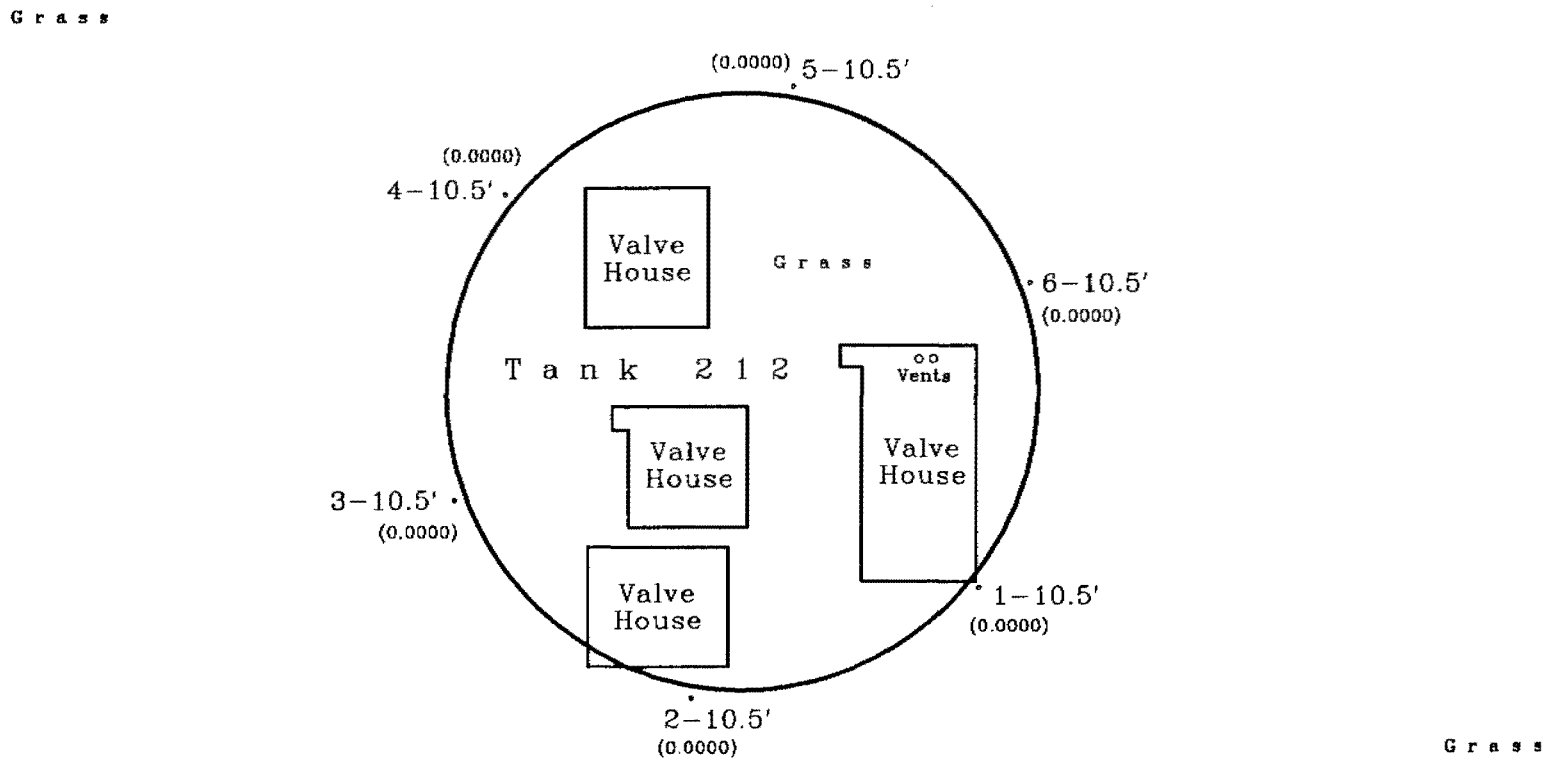
N

0 5 10
feet

EXPLANATION

•1 Sampling Probe Location

Figure 1



2240073B

EXPLANATION

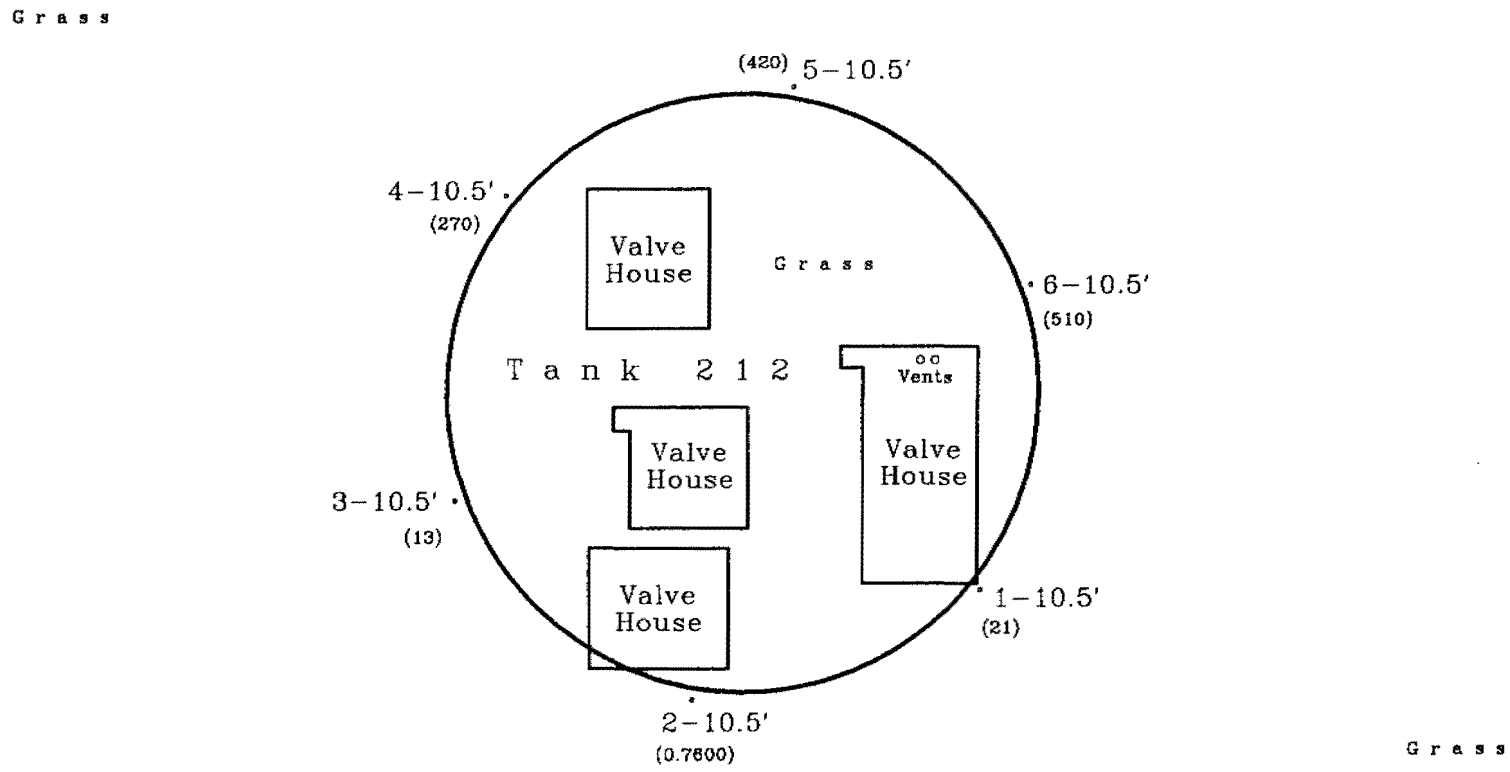
•1	Sampling Probe Location
(0.0001)	Soil Gas Sample Value (mg/L)
0.001	Isoconcentration Line (mg/L)

N

0 5 10
feet

NAVAL STATION ROOSEVELT ROADS
CUT & COVER TANKS
Tank No. 212
CIEBA, PUERTO RICO
Tracer [A] Distribution

Figure 1a



2240073B

EXPLANATION

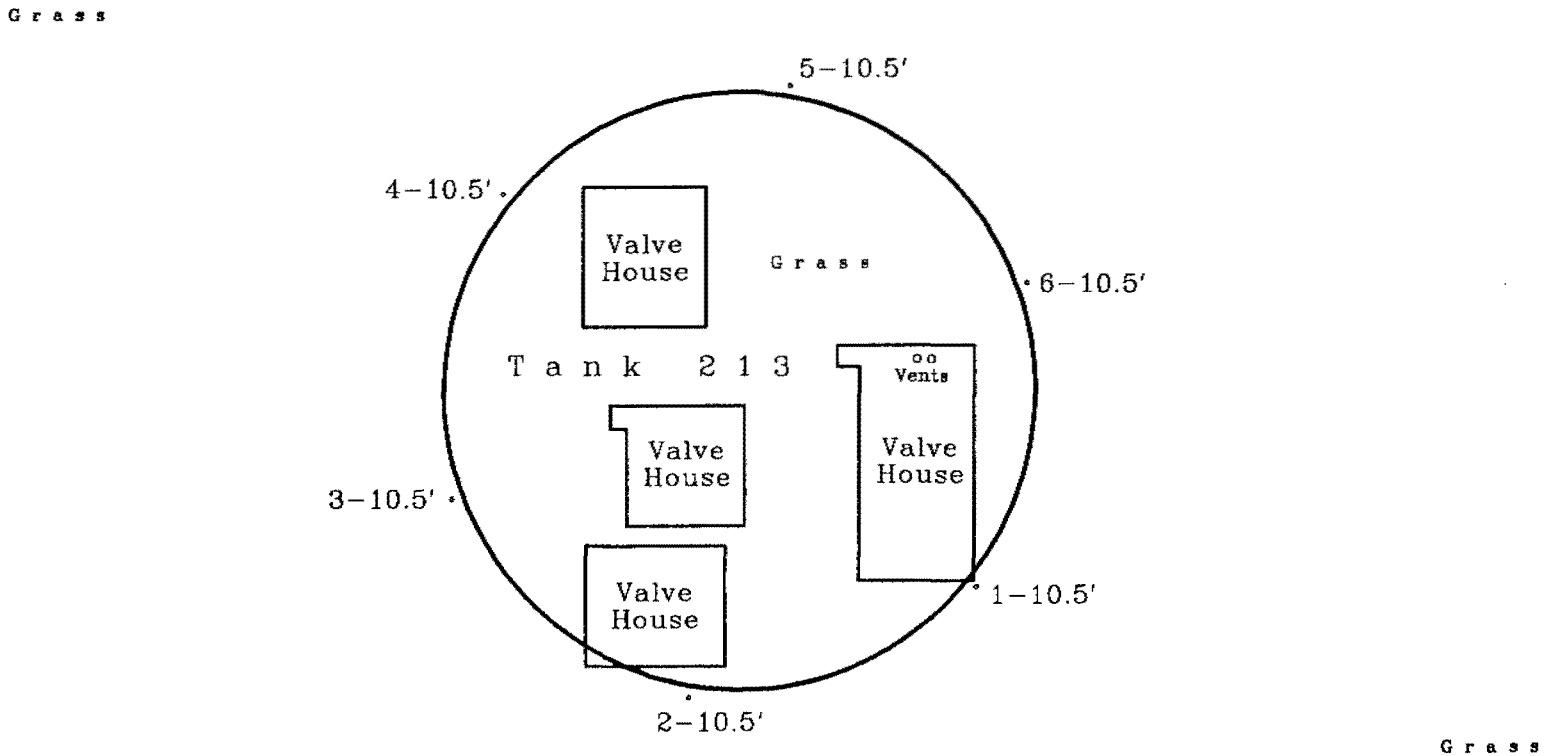
•1	Sampling Probe Location
(100)	Soil Gas Sample Value (mg/L)
100	Isoconcentration Line (mg/L)

N

0 5 10
feet

NAVAL STATION ROOSEVELT ROADS
CUT & COVER TANKS
Tank No. 212
CIEBA, PUERTO RICO
TVHC

Figure 1b



2240073B

EXPLANATION

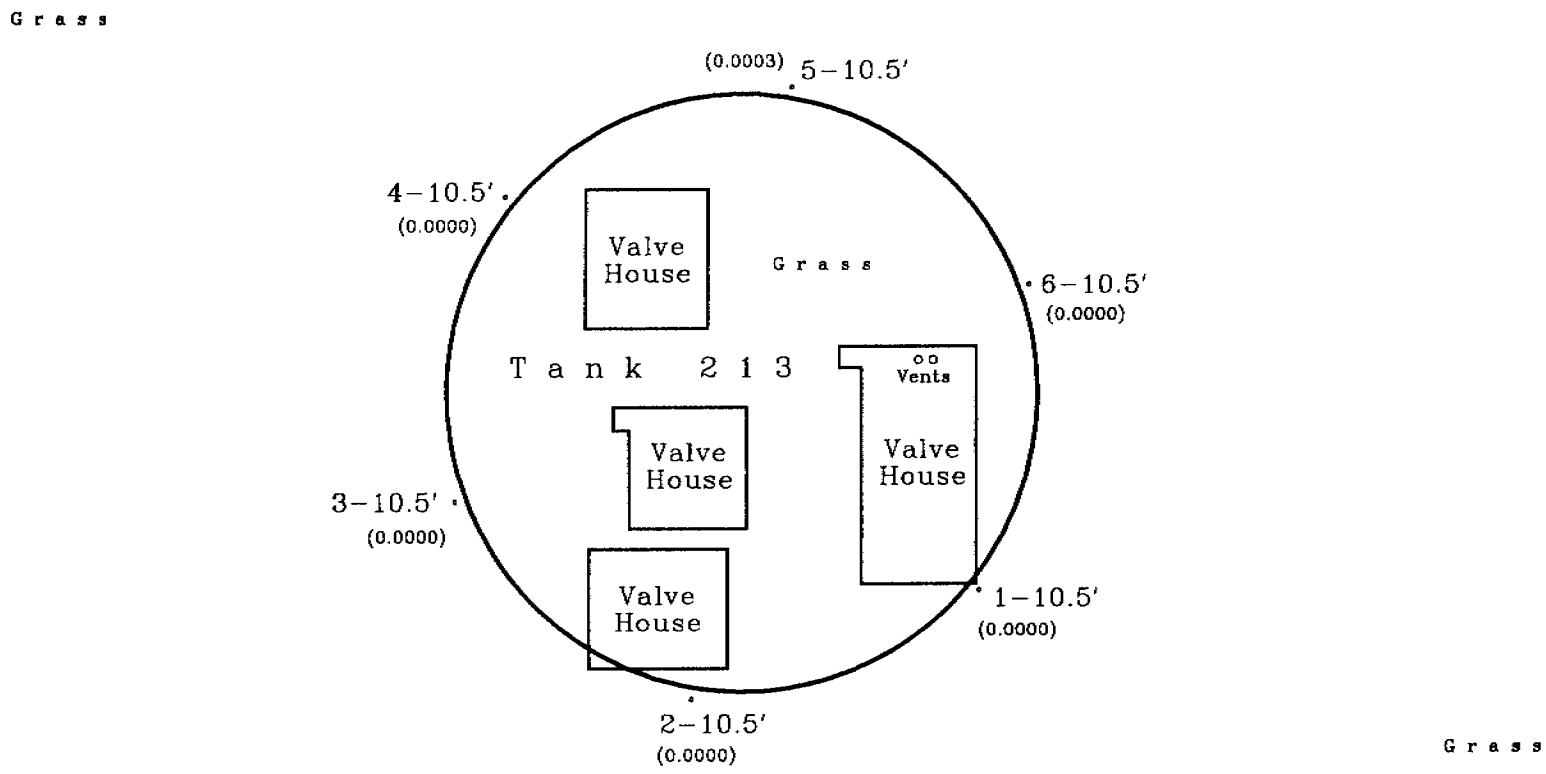
•1 Sampling Probe Location

N

0 5 10
feet

NAVAL STATION ROOSEVELT ROADS
CUT & COVER TANKS
Tank No. 213
CIEBA, PUERTO RICO
SAMPLING LOCATIONS

Figure 2



2240073B

EXPLANATION

•1	Sampling Probe Location
(0.0001)	Soil Gas Sample Value (mg/L)
0.001	Isoconcentration Line (mg/L)

N

0 5 10

feet

NAVAL STATION ROOSEVELT ROADS

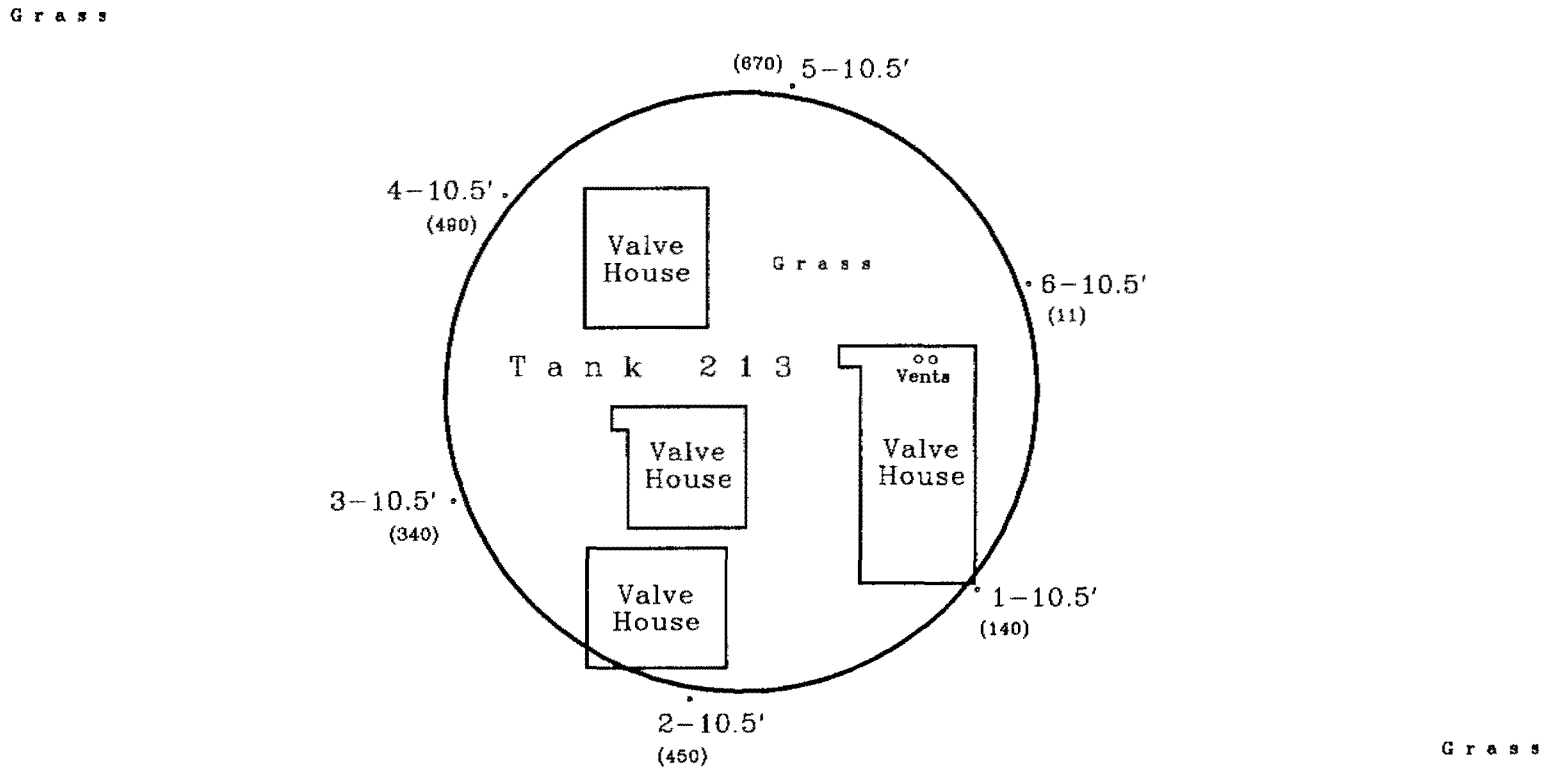
CUT & COVER TANKS

Tank No. 213

CIEBA, PUERTO RICO

Tracer [A] Distribution

Figure 2a



2240073B

EXPLANATION

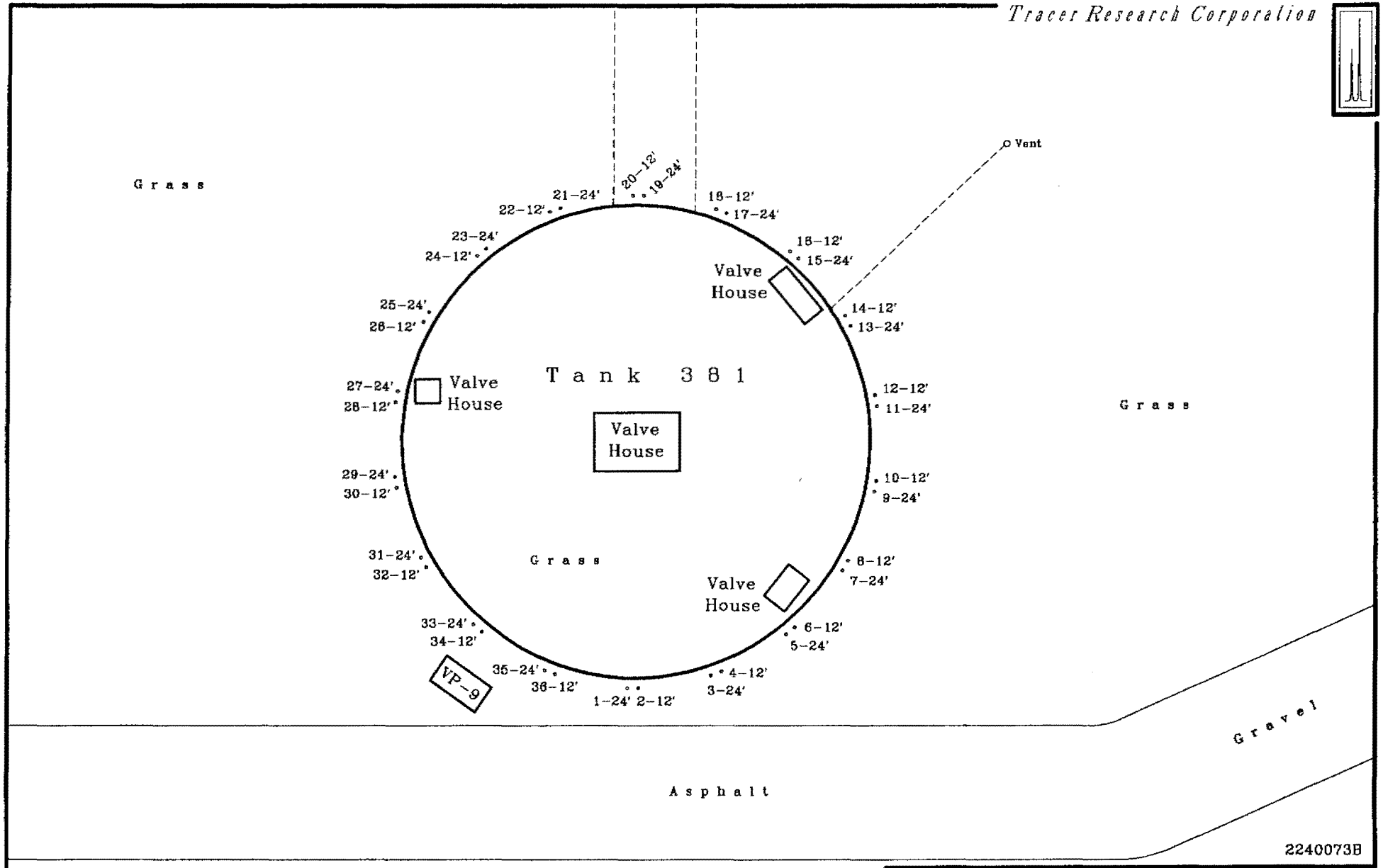
•1	Sampling Probe Location
(100)	Soil Gas Sample Value (mg/L)
100	Isoconcentration Line (mg/L)

N

0 5 10
feet

NAVAL STATION ROOSEVELT ROADS
CUT & COVER TANKS
Tank No. 213
CIEBA, PUERTO RICO
TVHC

Figure 2b



EXPLANATION

•1 Sampling Probe Location

------- Approximate Pipeline Location

N

0 15 30

feet

NAVAL STATION ROOSEVELT ROADS

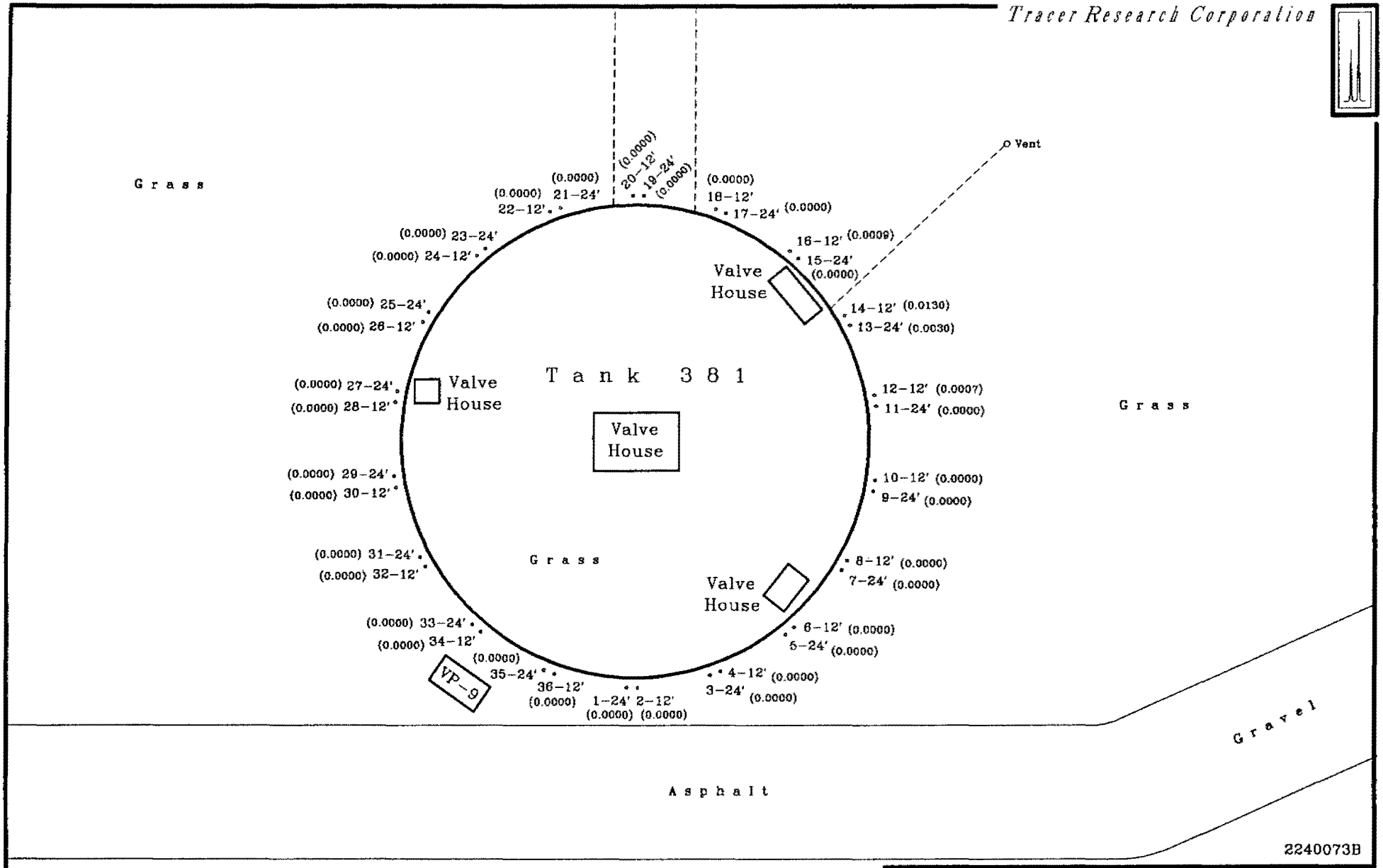
CUT & COVER TANKS

Tank No. 381

CIEBA, PUERTO RICO

SAMPLING LOCATIONS

Figure 3



EXPLANATION

•1	Sampling Probe Location
-------	Approximate Pipeline Location
(0.0001)	Soil Gas Sample Value (mg/L)
0.001	Isoconcentration Line (mg/L)

N

0 15 30

feet

NAVAL STATION ROOSEVELT ROADS

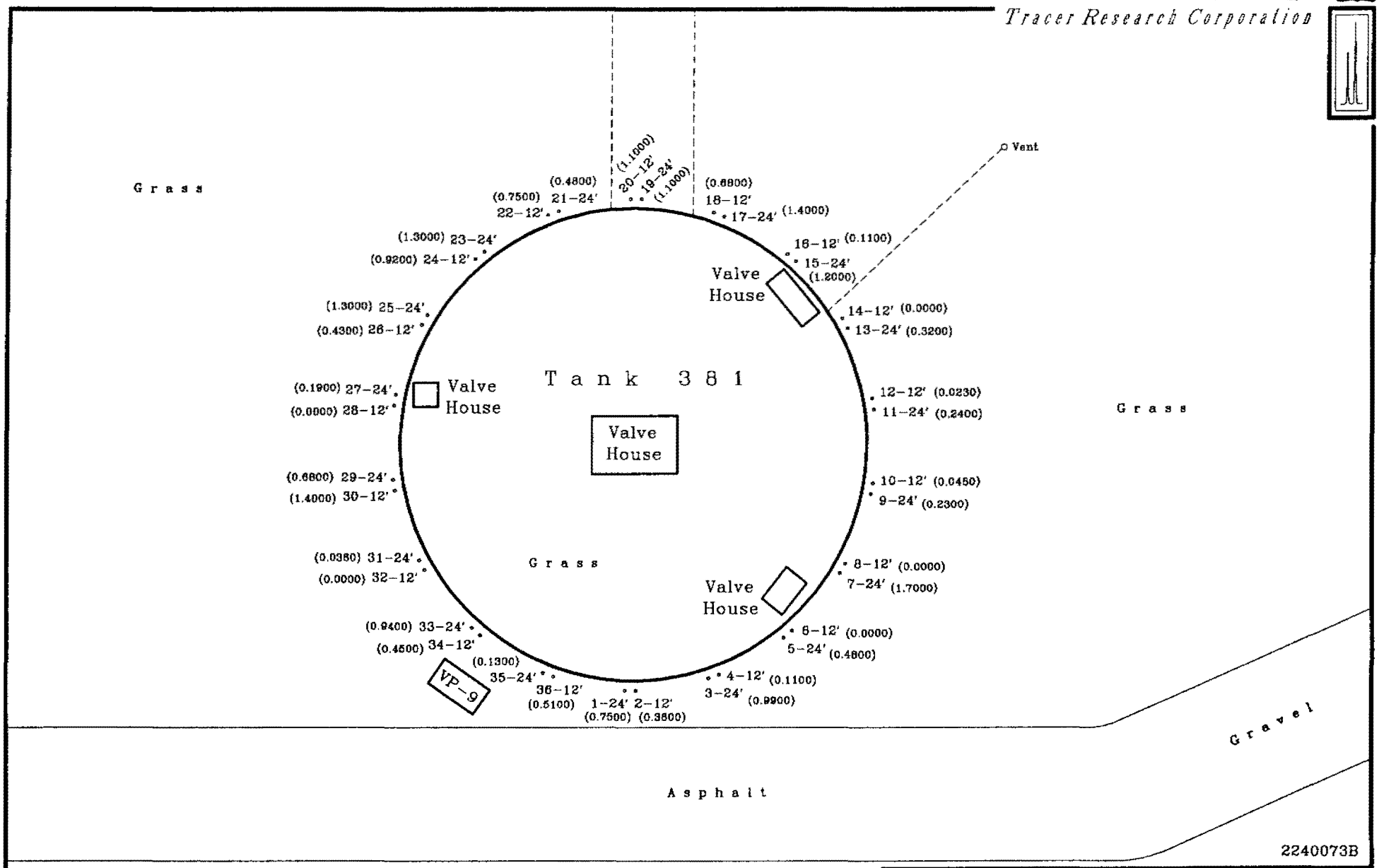
CUT & COVER TANKS

Tank No. 381

CIEBA, PUERTO RICO

Tracer [A] Distribution

Figure 3a



EXPLANATION

•1	Sampling Probe Location
-------	Approximate Pipeline Location
(100)	Soil Gas Sample Value (mg/L)
100	Isoconcentration Line (mg/L)

N

0 15 30

feet

NAVAL STATION ROOSEVELT ROADS

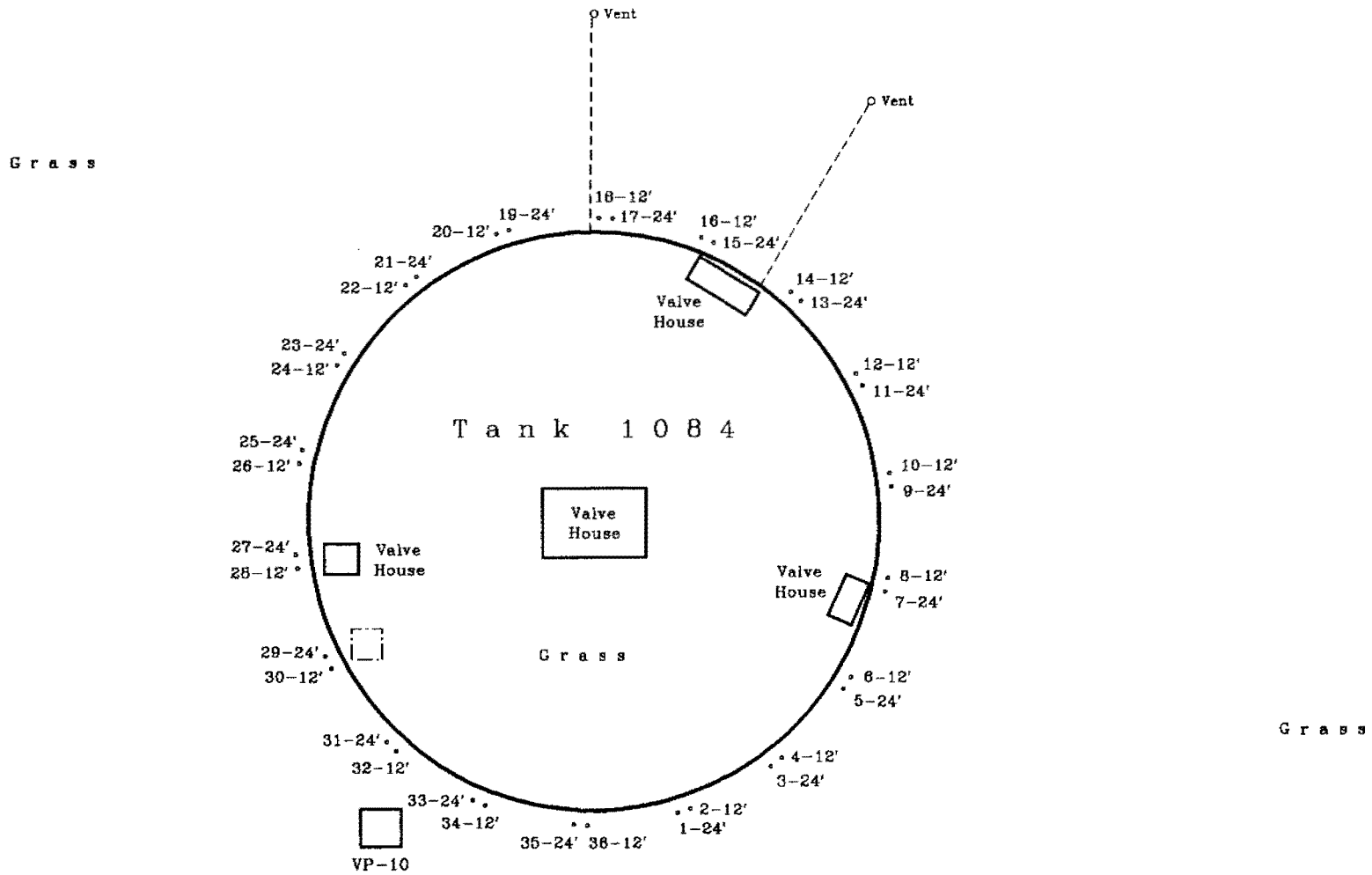
CUT & COVER TANKS

Tank No. 381

CIEBA, PUERTO RICO

TVHC

Figure 3b



2240073B

EXPLANATION

•1 Sampling Probe Location

------- Approximate Pipeline Location

N

0 5 10

feet

NAVAL STATION ROOSEVELT ROADS

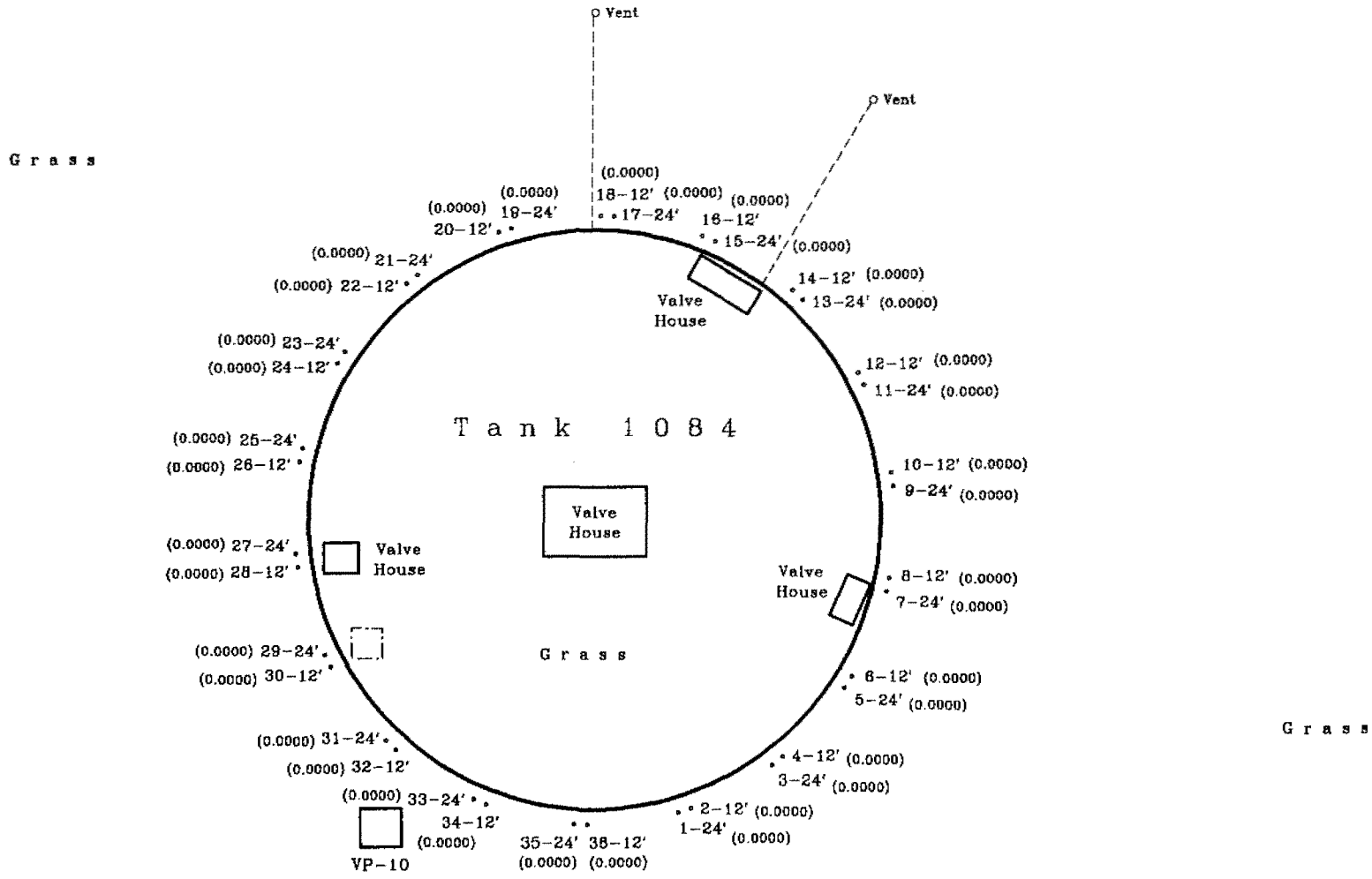
CUT & COVER TANKS

Tank No. 1084

CIEBA, PUERTO RICO

SAMPLING LOCATIONS

Figure 5



2240073B

EXPLANATION

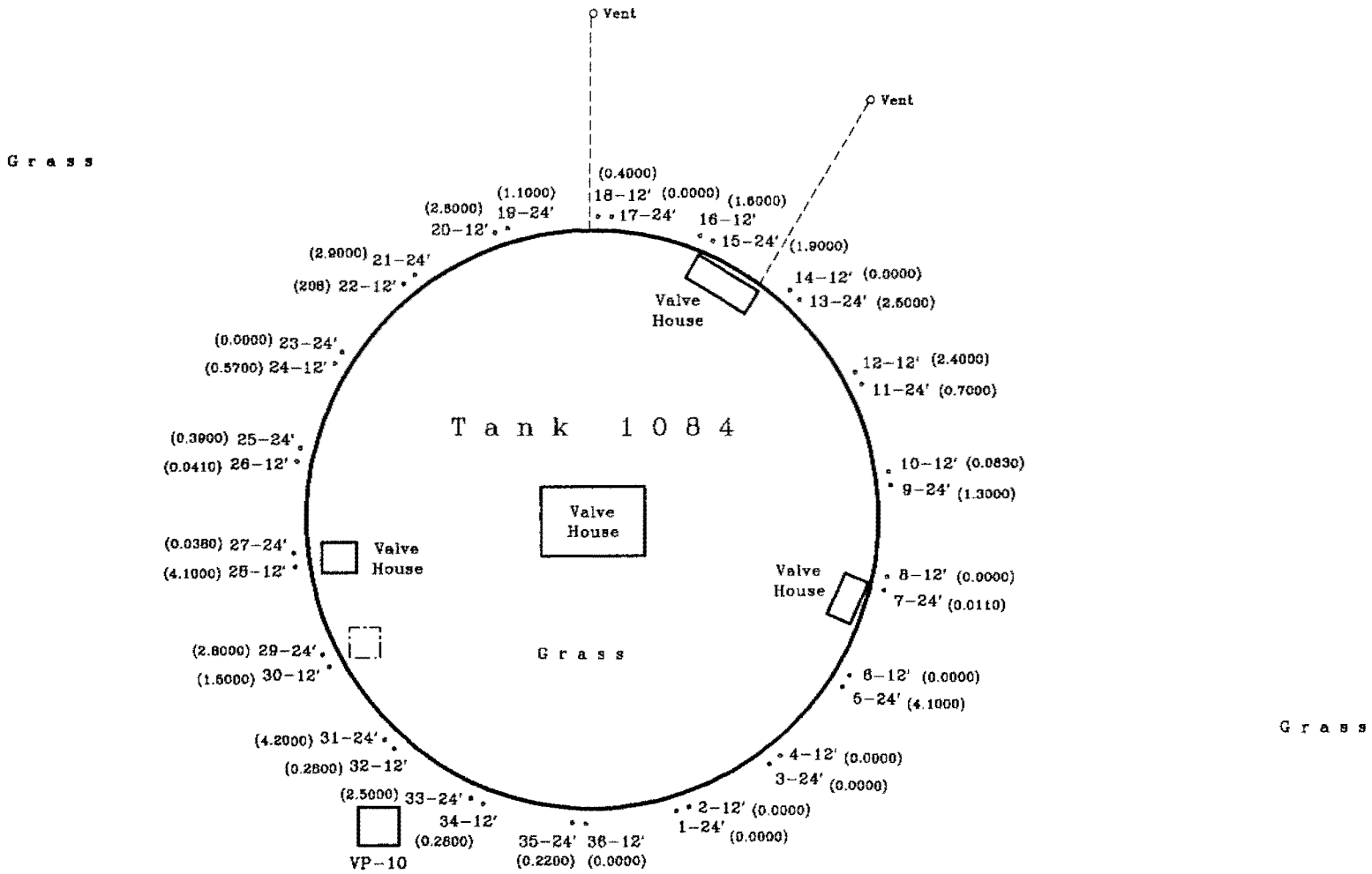
•1	Sampling Probe Location
-------	Approximate Pipeline Location
(0.0001)	Soil Gas Sample Value (mg/L)
0.001	Isoconcentration Line (mg/L)

N

0 5 10
feet

NAVAL STATION ROOSEVELT ROADS
CUT & COVER TANKS
Tank No. 1084
CIEBA, PUERTO RICO
Tracer [A] Distribution

Figure 5a



2240073B

EXPLANATION

•1	Sampling Probe Location
--------	Approximate Pipeline Location
(100)	Soil Gas Sample Value (mg/L)
100	Isoconcentration Line (mg/L)

N

0 5 10

feet

NAVAL STATION ROOSEVELT ROADS

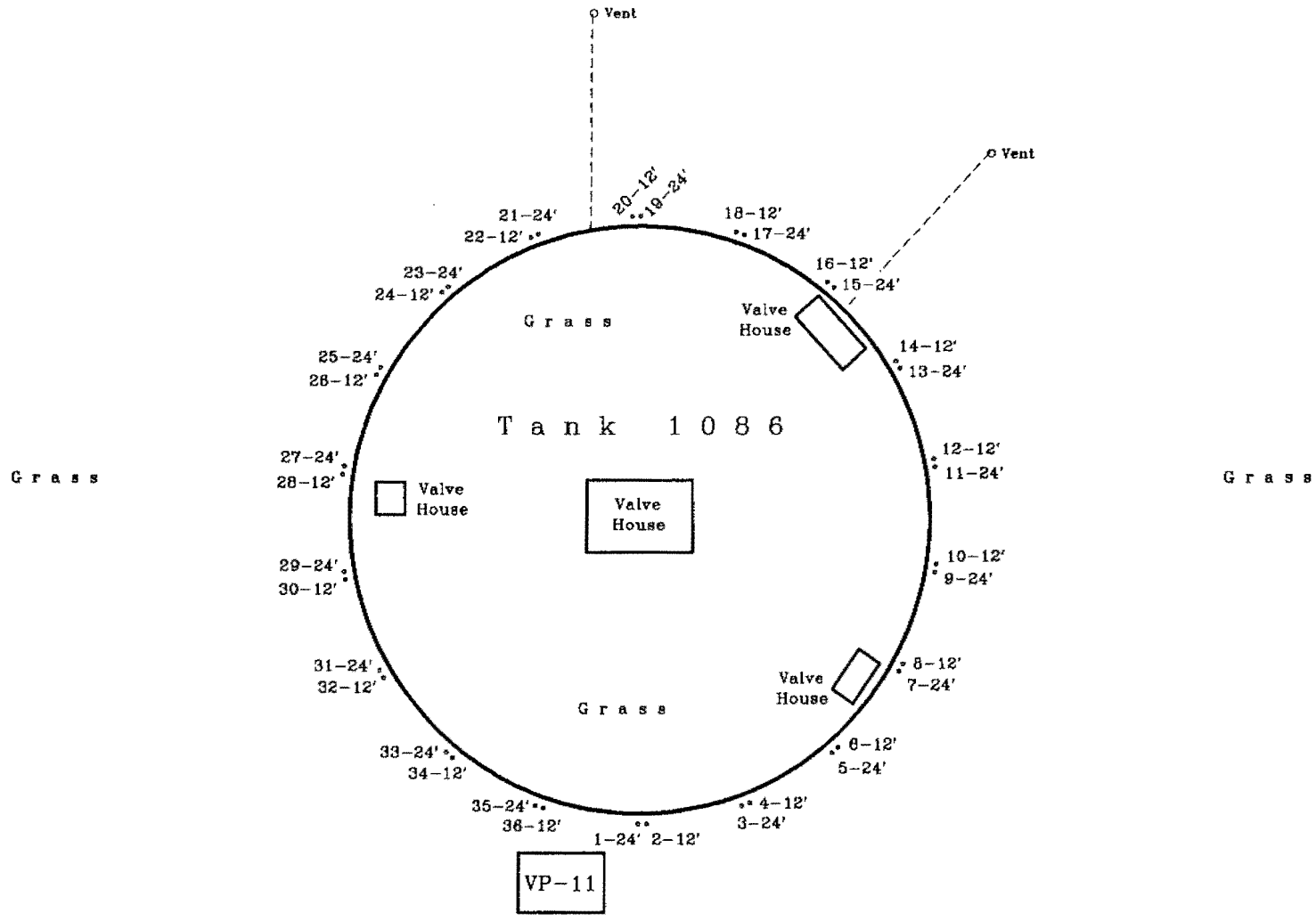
CUT & COVER TANKS

Tank No. 1084

CIEBA, PUERTO RICO

TVHC

Figure 5b



2240073B

N

0 5 10
feet

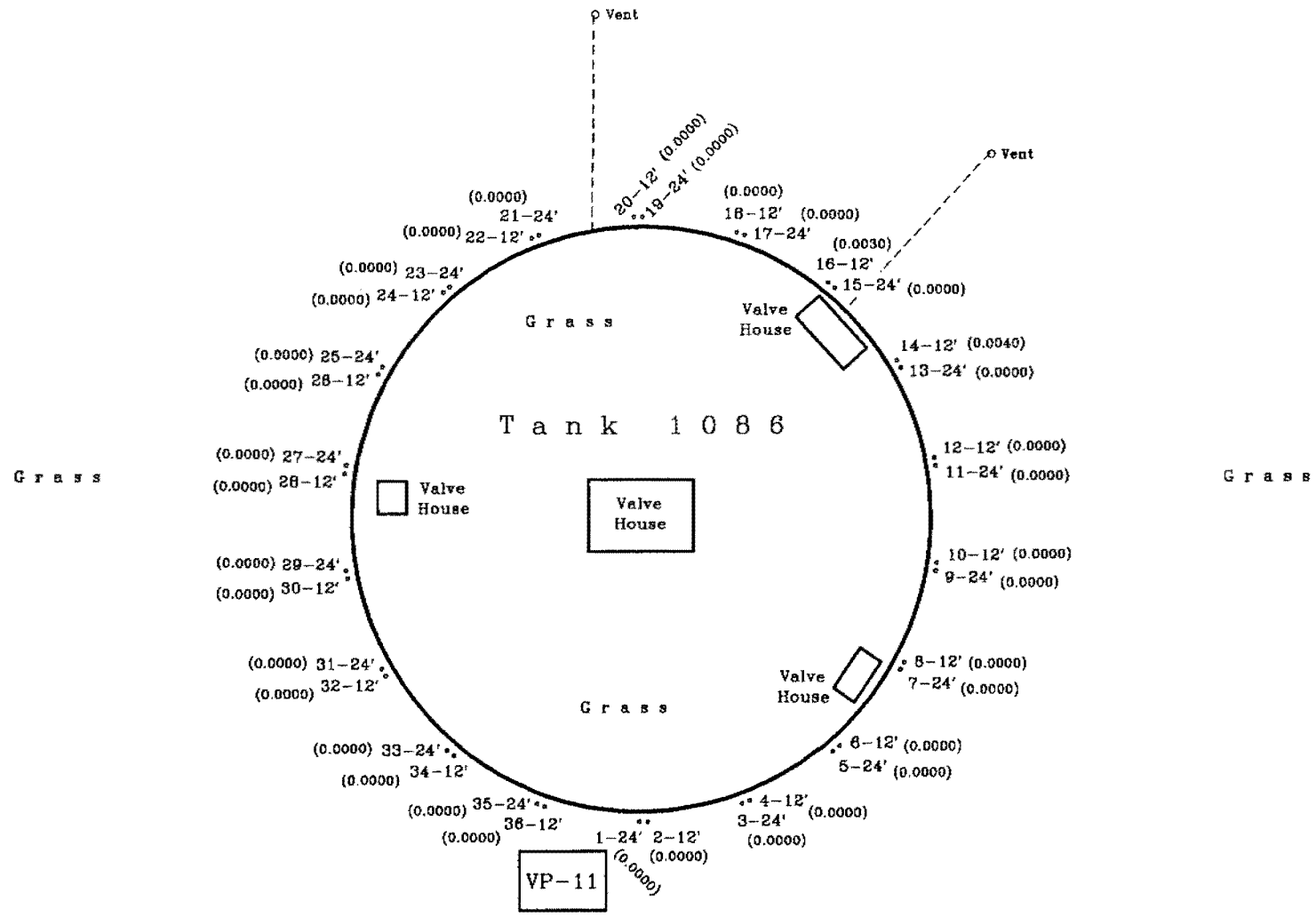
EXPLANATION

•1 Sampling Probe Location

------- Approximate Pipeline Location

NAVAL STATION ROOSEVELT ROADS
CUT & COVER TANKS
Tank No. 1086
CIEBA, PUERTO RICO
SAMPLING LOCATIONS

Figure 6



2240073B

EXPLANATION

•1	Sampling Probe Location
-------	Approximate Pipeline Location
(0.0001)	Soil Gas Sample Value (mg/L)
0.001	Isoconcentration Line (mg/L)

N

0 5 10

feet

NAVAL STATION ROOSEVELT ROADS

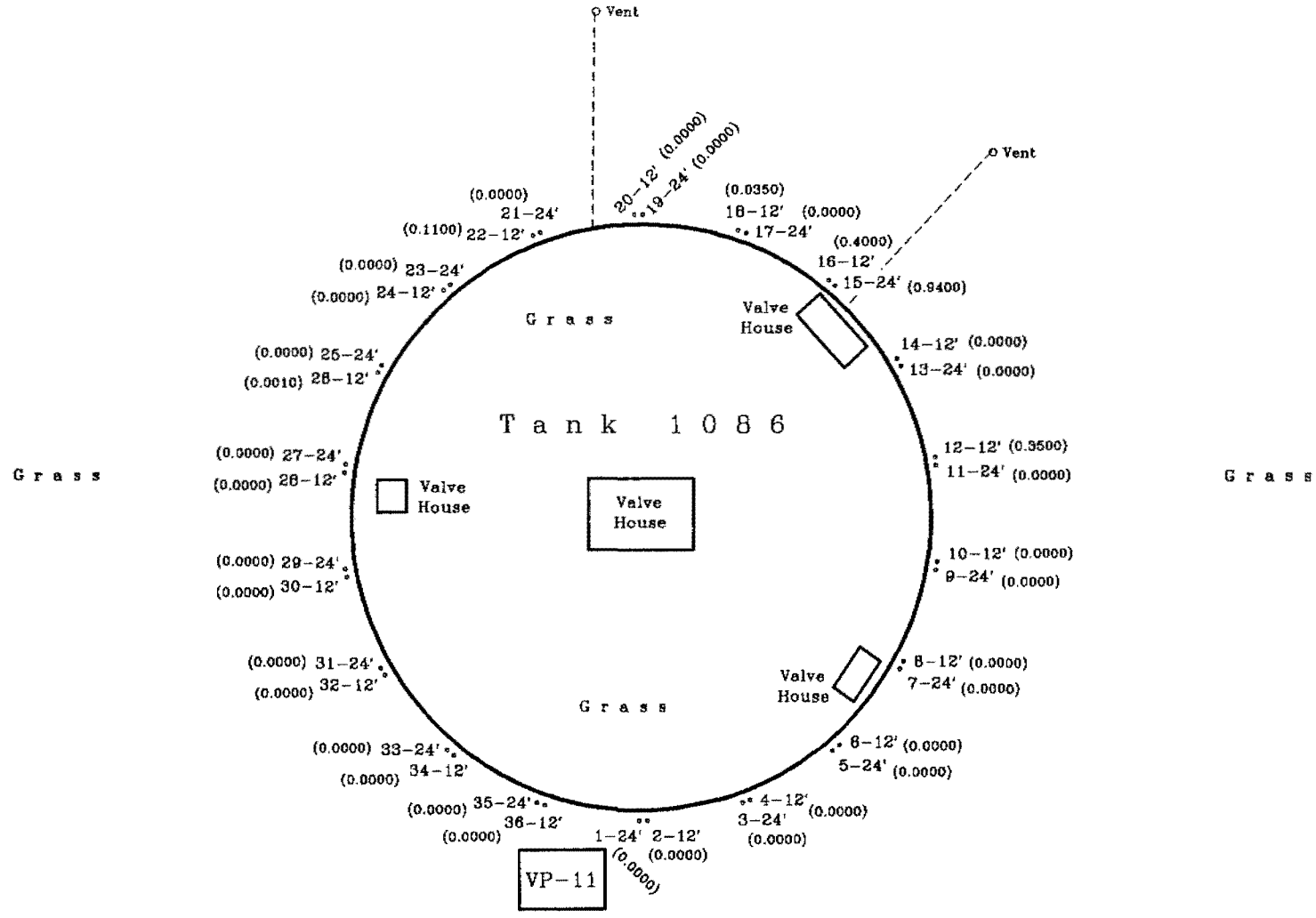
CUT & COVER TANKS

Tank No. 1086

CIEBA, PUERTO RICO

Tracer [A] Distribution

Figure 6a



2240073B

EXPLANATION

•1	Sampling Probe Location
-------	Approximate Pipeline Location
(100)	Soil Gas Sample Value (mg/L)
100	Isoconcentration Line (mg/L)

N

0 5 10

feet

NAVAL STATION ROOSEVELT ROADS

CUT & COVER TANKS

Tank No. 1086

CIEBA, PUERTO RICO

TVHC

Figure 6b

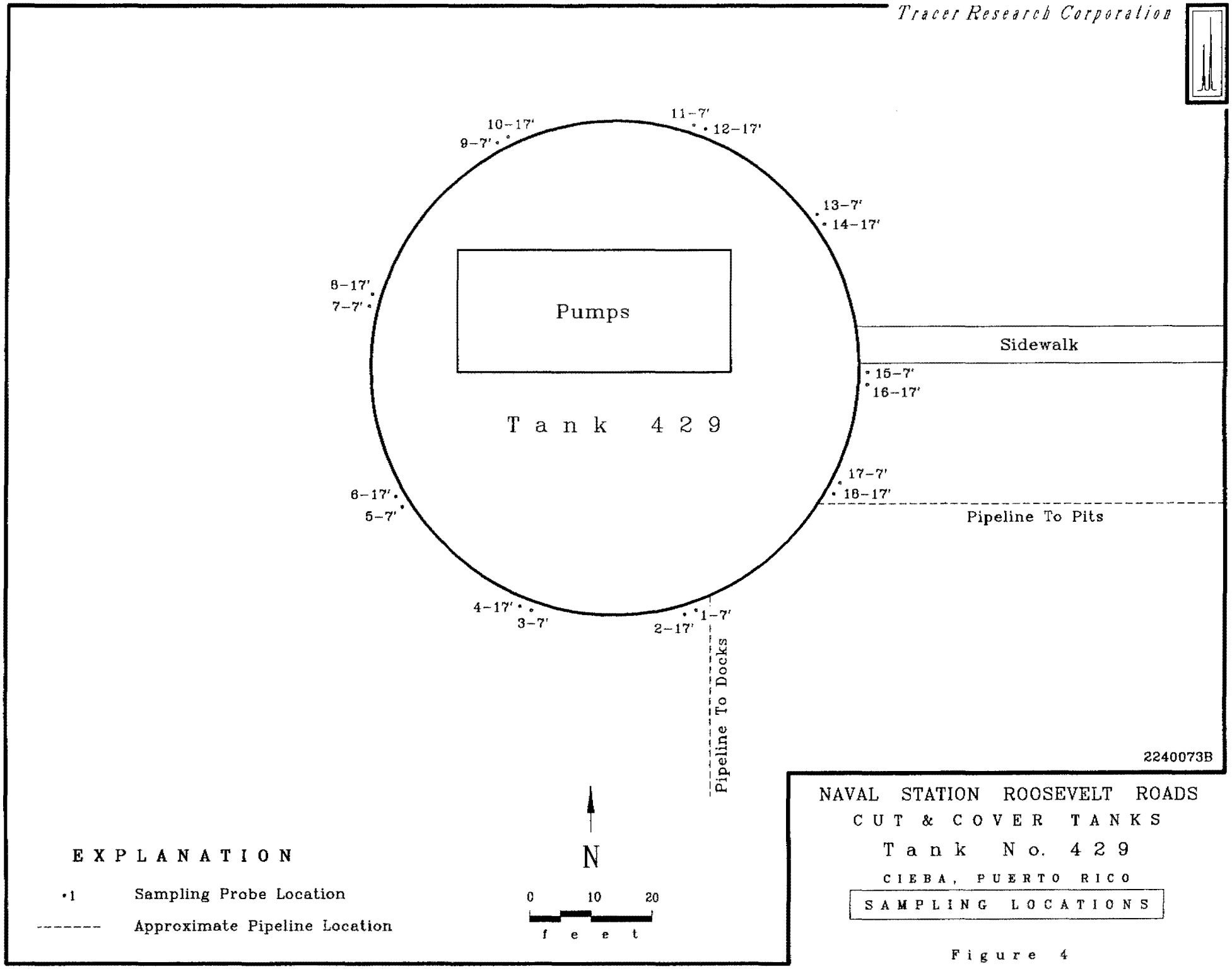
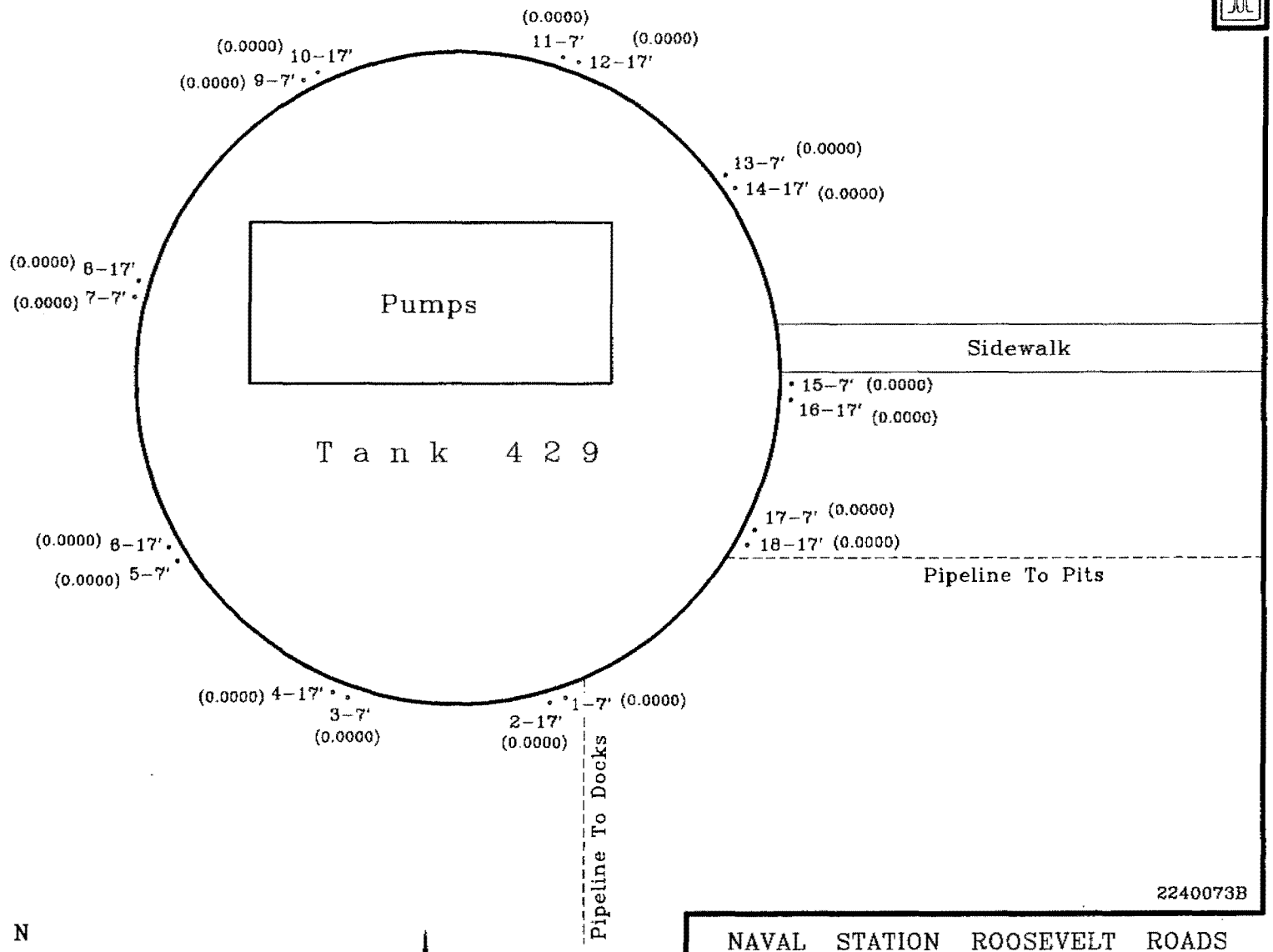

10-17'
9-7'
11-7'
12-17'
13-7'
14-17'
8-17'
7-7'
Pumps
Sidewalk
15-7'
16-17'
Tank 429
17-7'
18-17'
6-17'
5-7'
Pipeline To Pits
4-17'
3-7'
2-17'
1-7'
Pipeline To Docks
2240073B
N
0 10 20
feet
EXPLANATION
•1 Sampling Probe Location
------- Approximate Pipeline Location
NAVAL STATION ROOSEVELT ROADS
CUT & COVER TANKS
Tank No. 429
CIEBA, PUERTO RICO
SAMPLING LOCATIONS

Figure 4



EXPLANATION

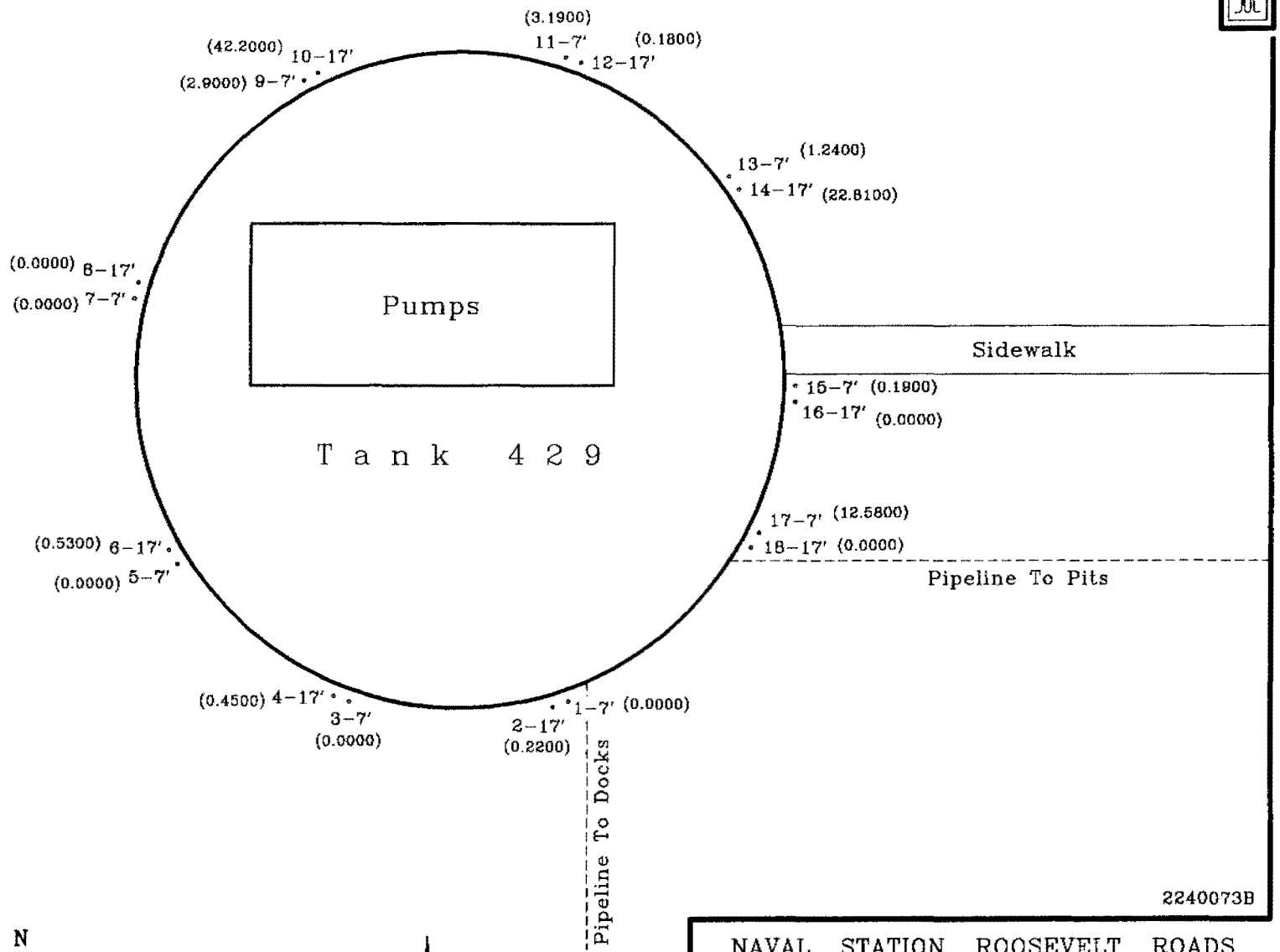
•1	Sampling Probe Location
-------	Approximate Pipeline Location
(0.0001)	Soil Gas Sample Value (mg/L)
0.001	Isoconcentration Line (mg/L)

N

0 10 20
feet

NAVAL STATION ROOSEVELT ROADS
CUT & COVER TANKS
Tank No. 429
CIEBA, PUERTO RICO
Tracer [A] Distribution

Figure 4a



EXPLANATION

•1	Sampling Probe Location
-------	Approximate Pipeline Location
(100)	Soil Gas Sample Value (mg/L)
100	Isoconcentration Line (mg/L)

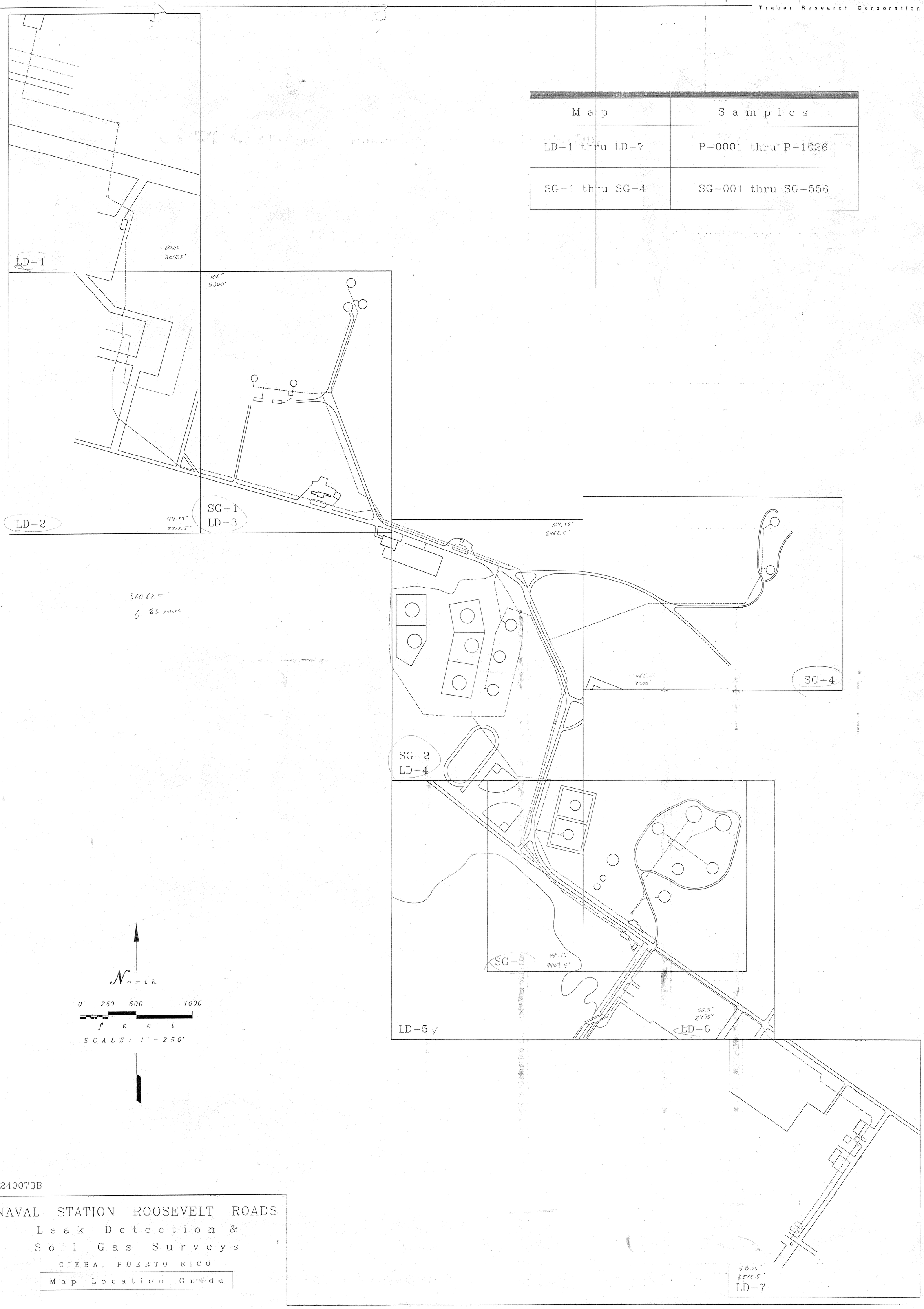
N

0 10 20
feet

NAVAL STATION ROOSEVELT ROADS
CUT & COVER TANKS
Tank No. 429
CIEBA, PUERTO RICO
TVHC

Figure 4b

Map	Samples
LD-1 thru LD-7	P-0001 thru P-1026
SG-1 thru SG-4	SG-001 thru SG-556



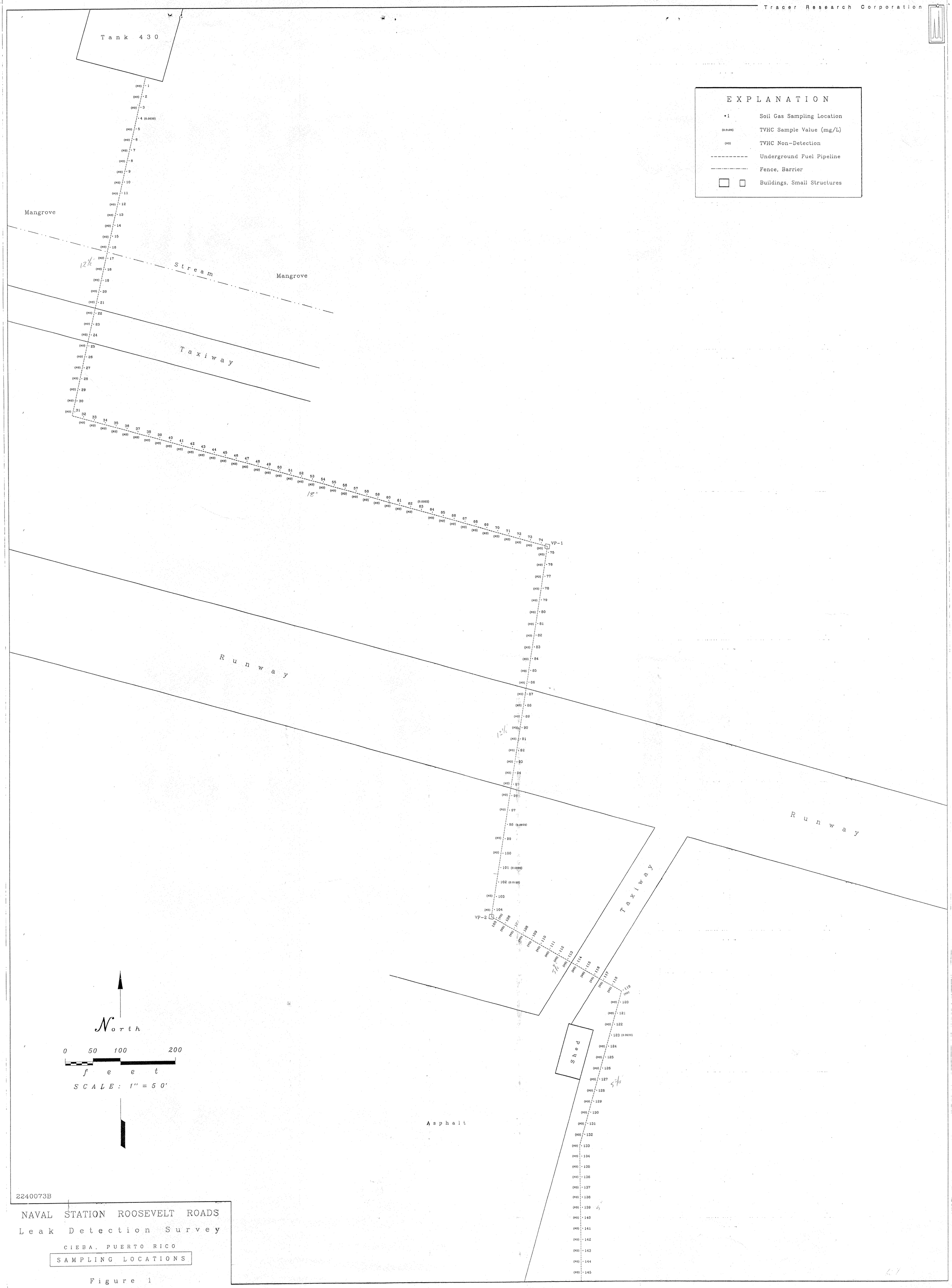
2240073B

NAVAL STATION ROOSEVELT ROADS

Leak Detection &
Soil Gas Surveys

CIEBA, PUERTO RICO

Map Location Guide



2240073B

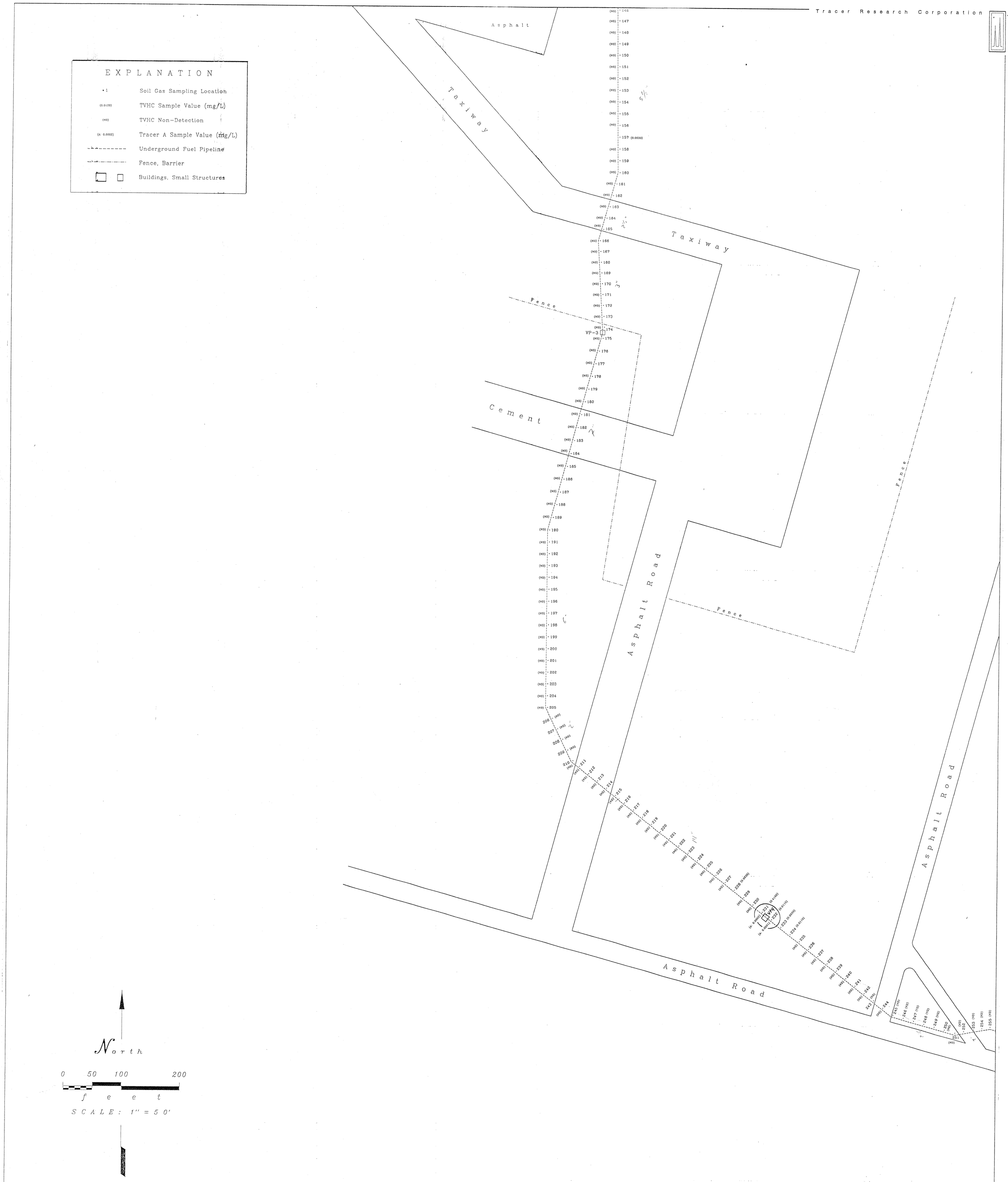
NAVAL STATION ROOSEVELT ROADS

Leak Detection Survey

CIEBA, PUERTO RICO

SAMPLING LOCATIONS

Figure 1



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NAVAL STATION ROOSEVELT ROADS

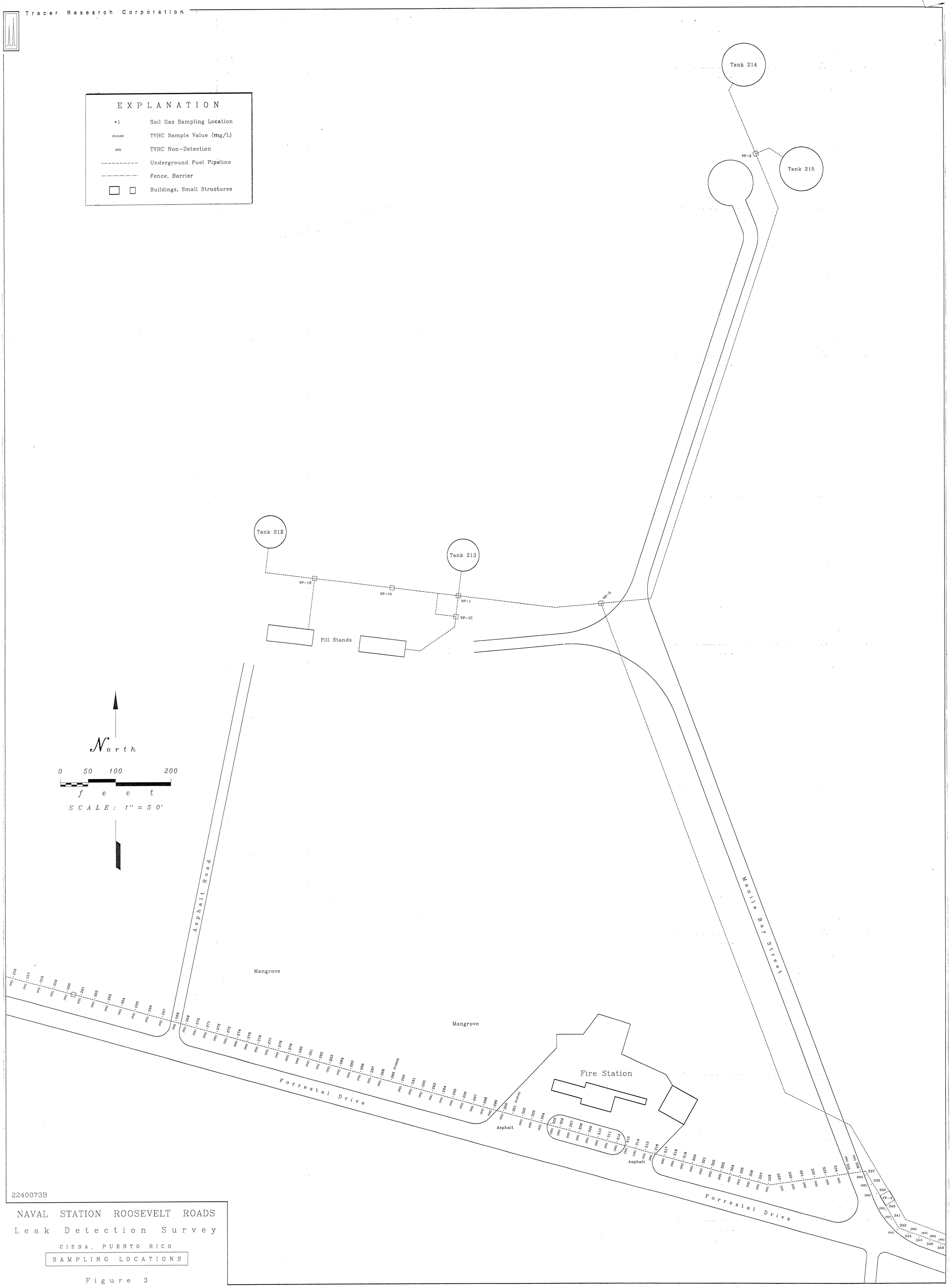
Leak Detection Survey

CIEBA, PUERTO RICO

SAMPLING LOCATIONS

Figure 2

Tracer Research Corporation



NAVAL STATION ROOSEVELT ROADS

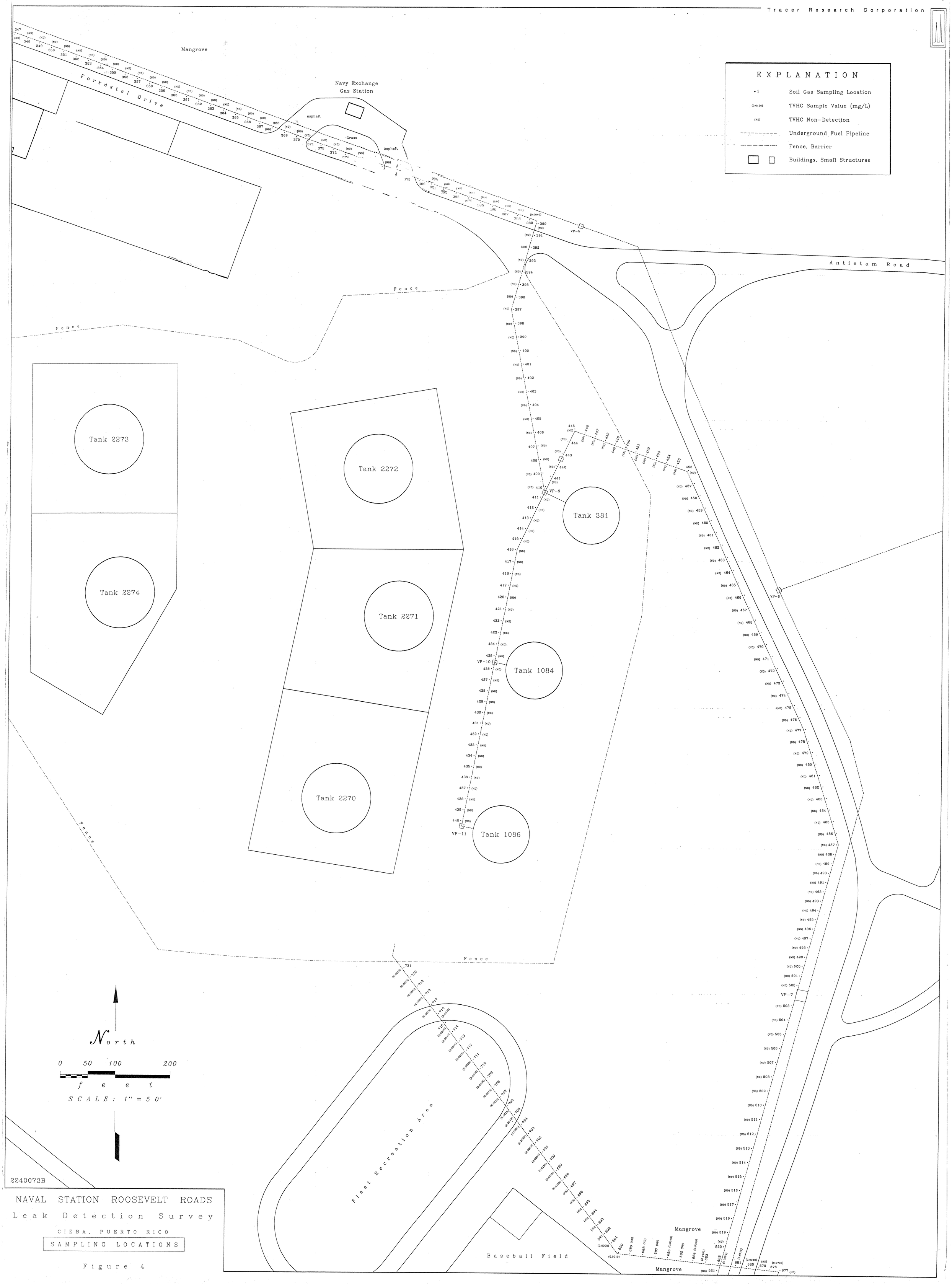
Leak Detection Survey

CIEBA, PUERTO RICO

SAMPLING LOCATIONS

Figure 3

Tracer Research Corporation



NAVAL STATION ROOSEVELT ROADS

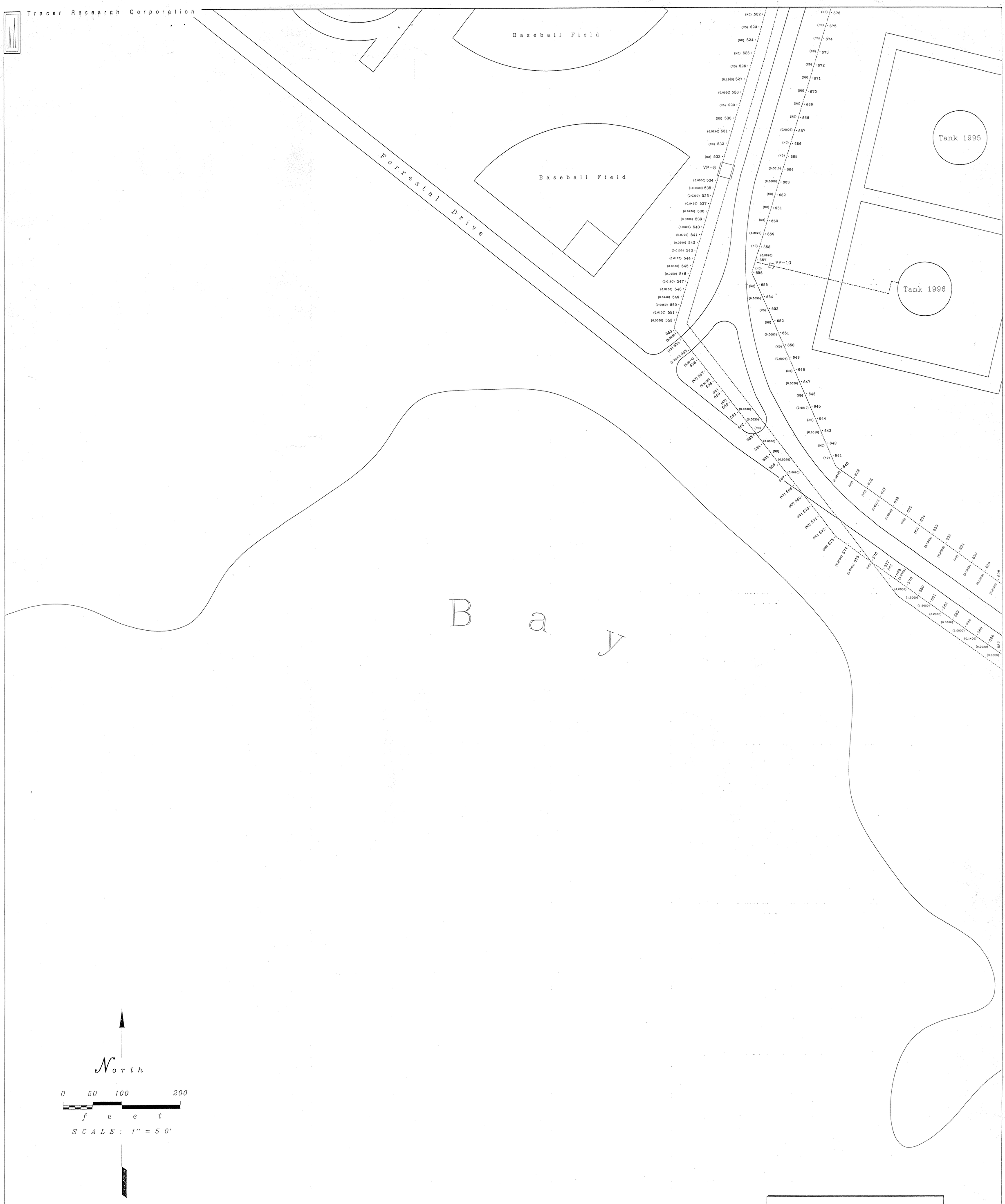
Leak Detection Survey

CIEBA, PUERTO RICO

SAMPLING LOCATIONS

Figure 4

Tracer Research Corporation



EXPLANATION

•1	Soil Gas Sampling Location
(0.0120)	TVHC Sample Value (mg/L)
(ND)	TVHC Non-Detection
----------	Underground Fuel Pipeline
-·-·-·-·-	Fence, Barrier
□ □	Buildings, Small Structures

2240073B

NAVAL STATION ROOSEVELT ROADS

Leak Detection Survey

CIEBA, PUERTO RICO

SAMPLING LOCATIONS

Figure 5

Tracer Research Corporation

Figure 6

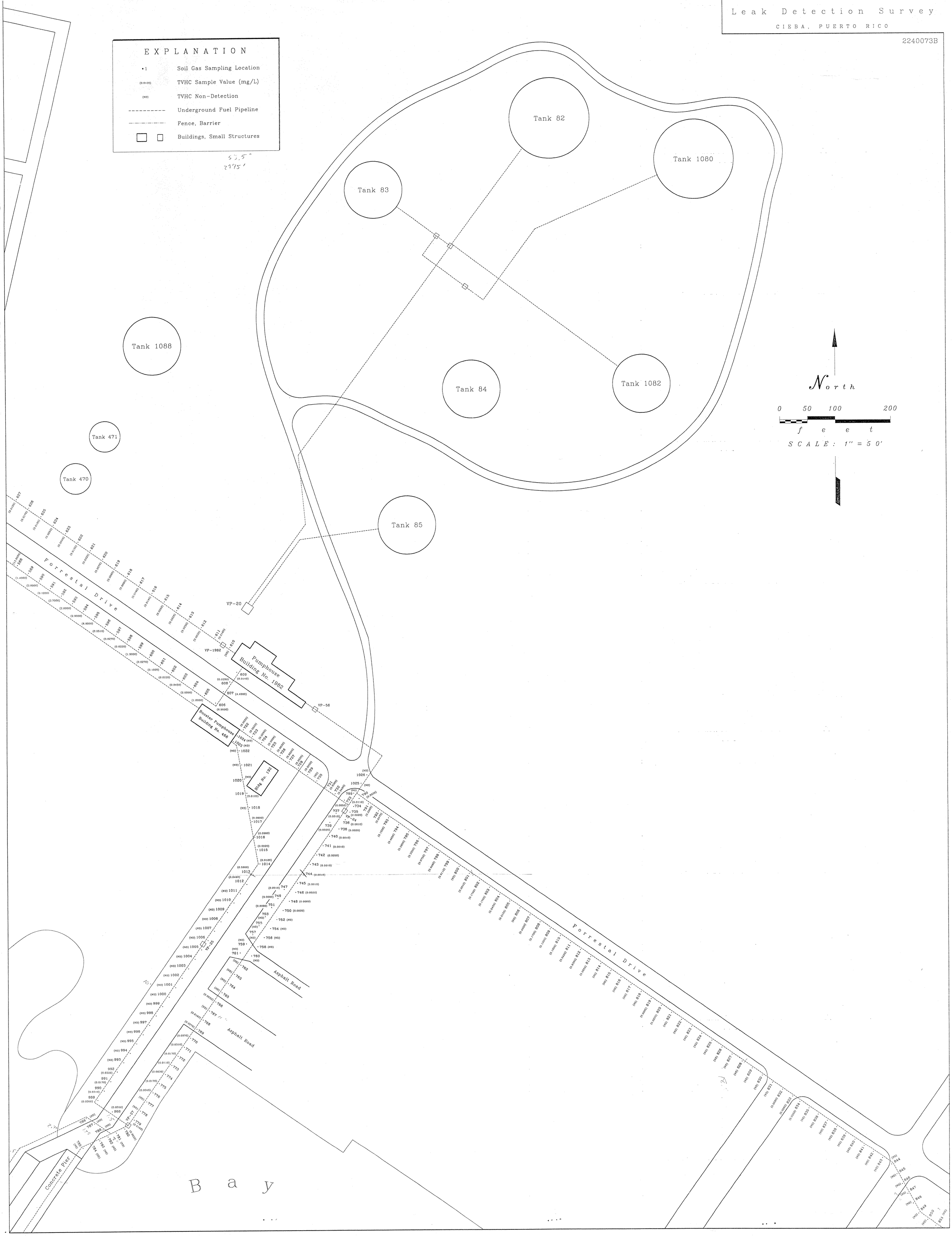
SAMPLING LOCATIONS

NAVAL STATION ROOSEVELT ROADS

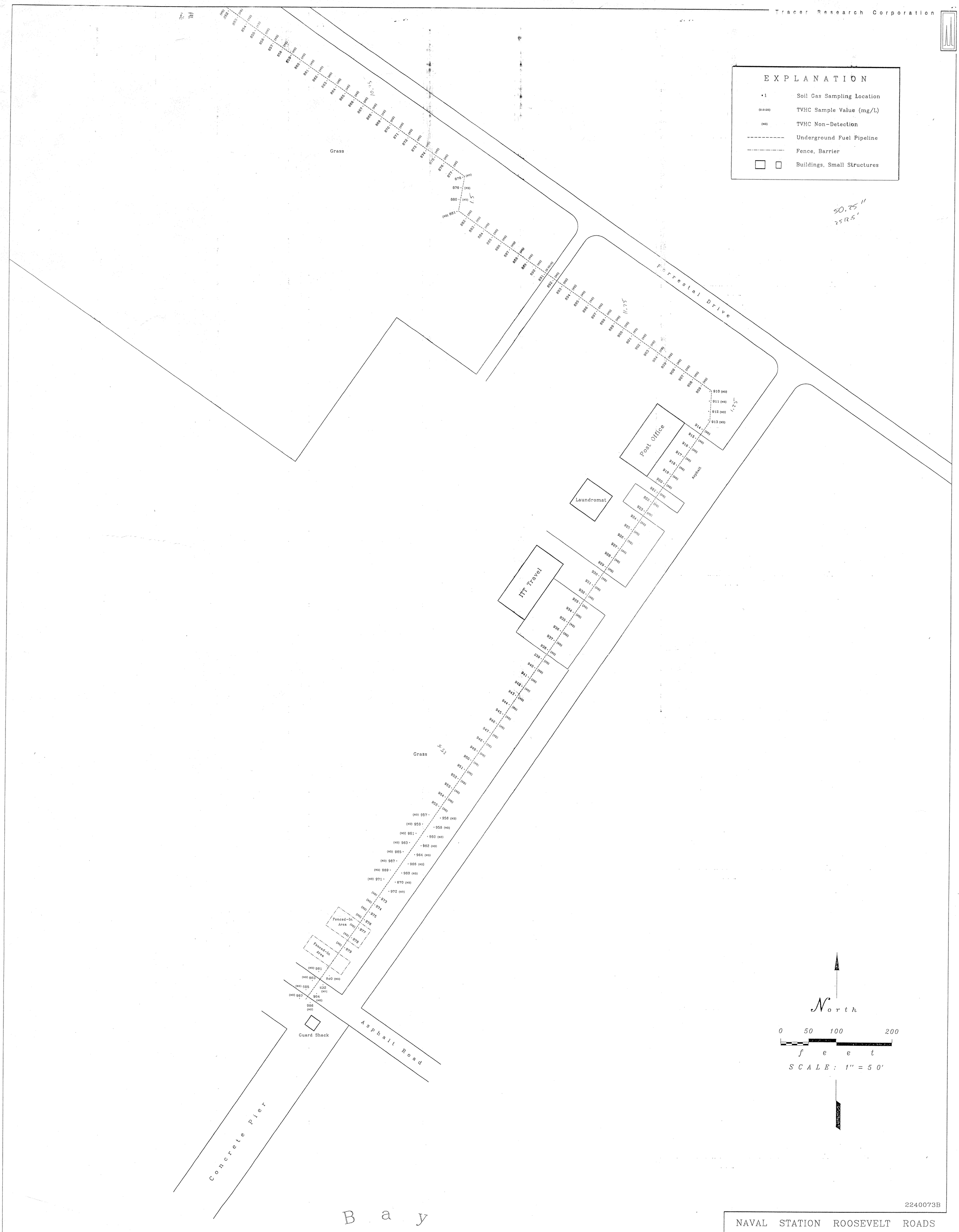
Leak Detection Survey

CIEBA, PUERTO RICO

2240073B



Tracer Research Corporation



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NAVAL STATION ROOSEVELT ROADS

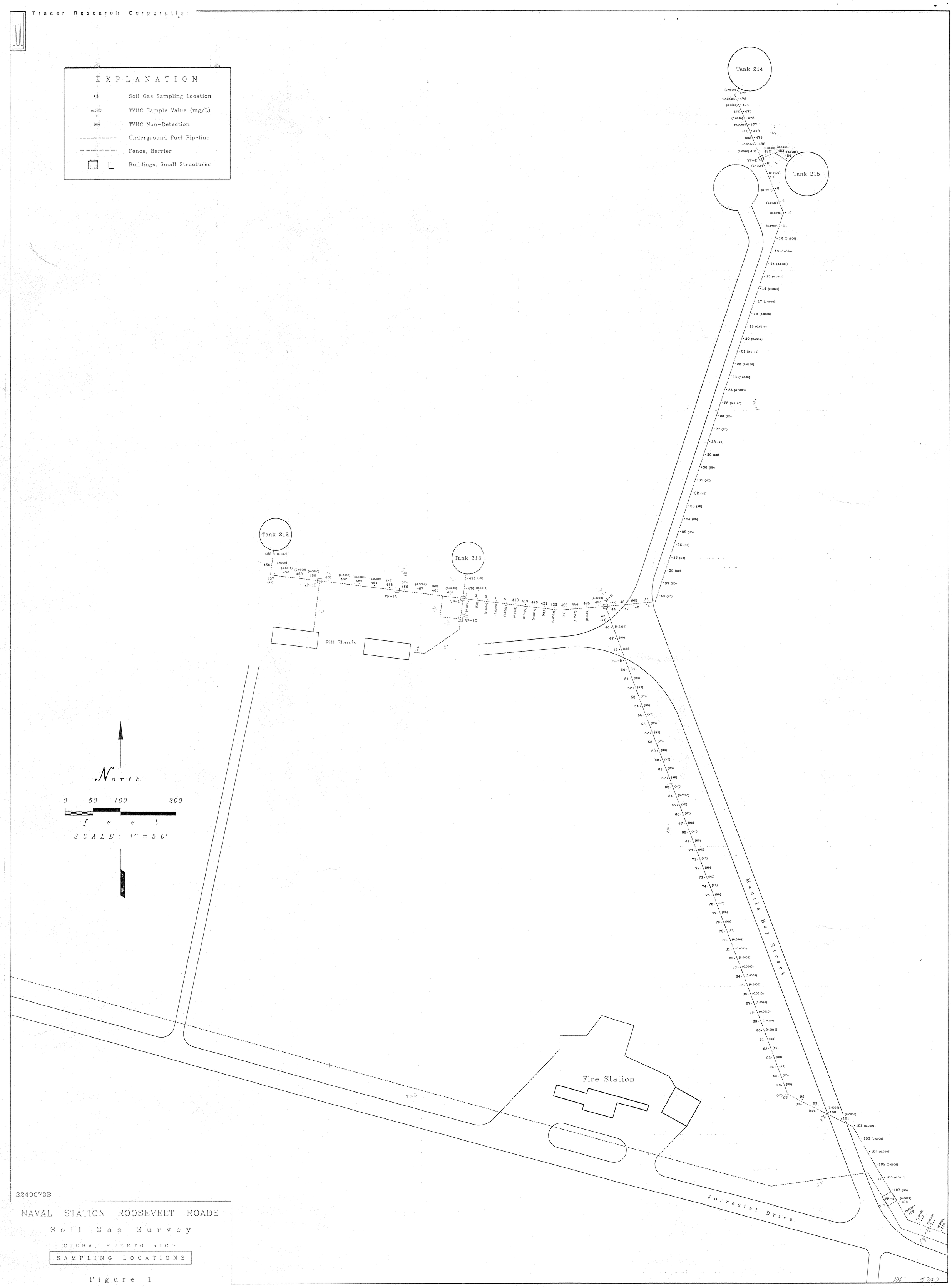
Leak Detection Survey

CIEBA, PUERTO RICO

SAMPLING LOCATIONS

Figure 7

Tracer Research Corporation



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NAVAL STATION ROOSEVELT ROADS

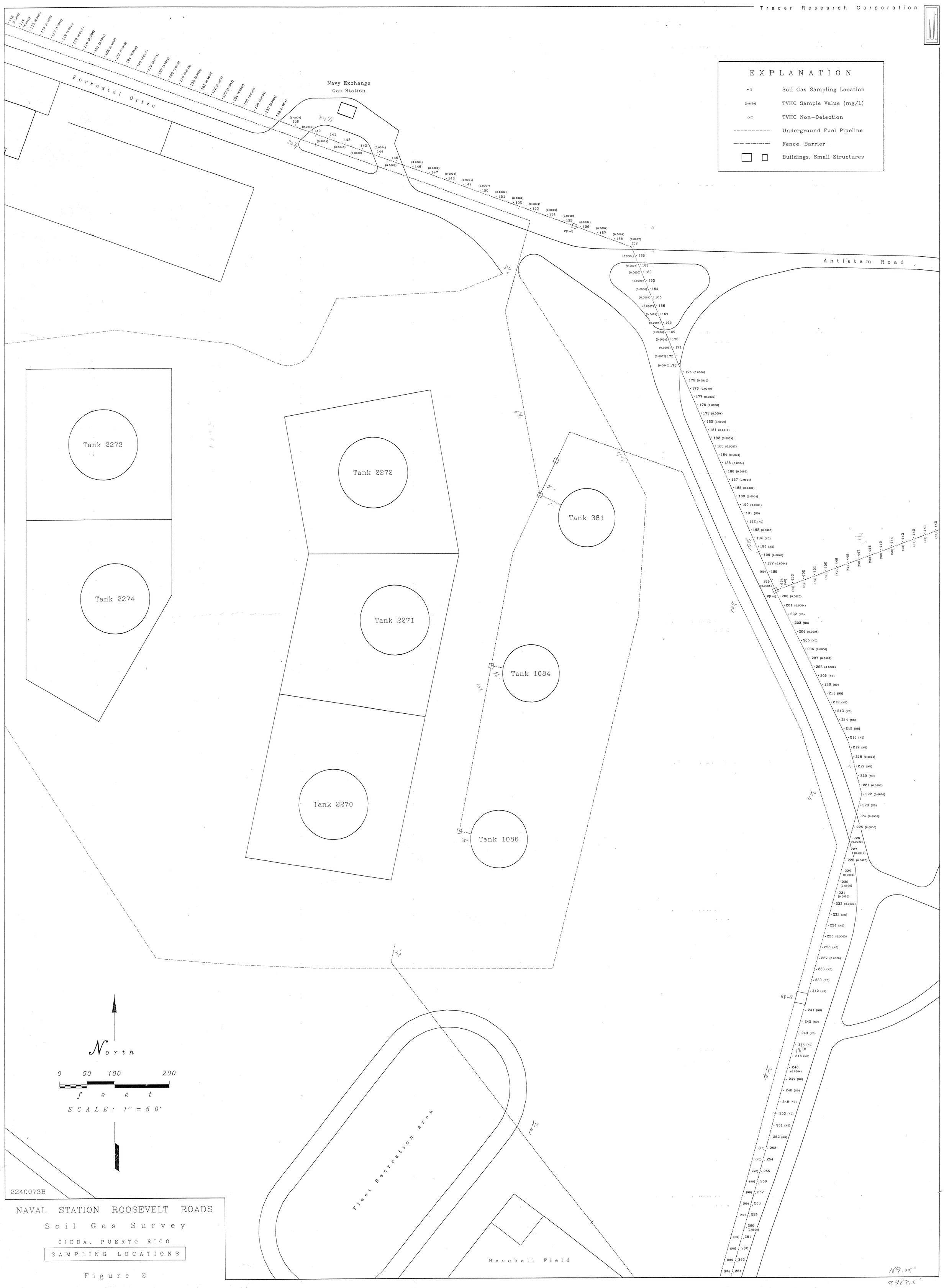
Soil Gas Survey

CIEBA, PUERTO RICO

SAMPLING LOCATIONS

Figure 1

Tracer Research Corporation



NAVAL STATION ROOSEVELT ROADS

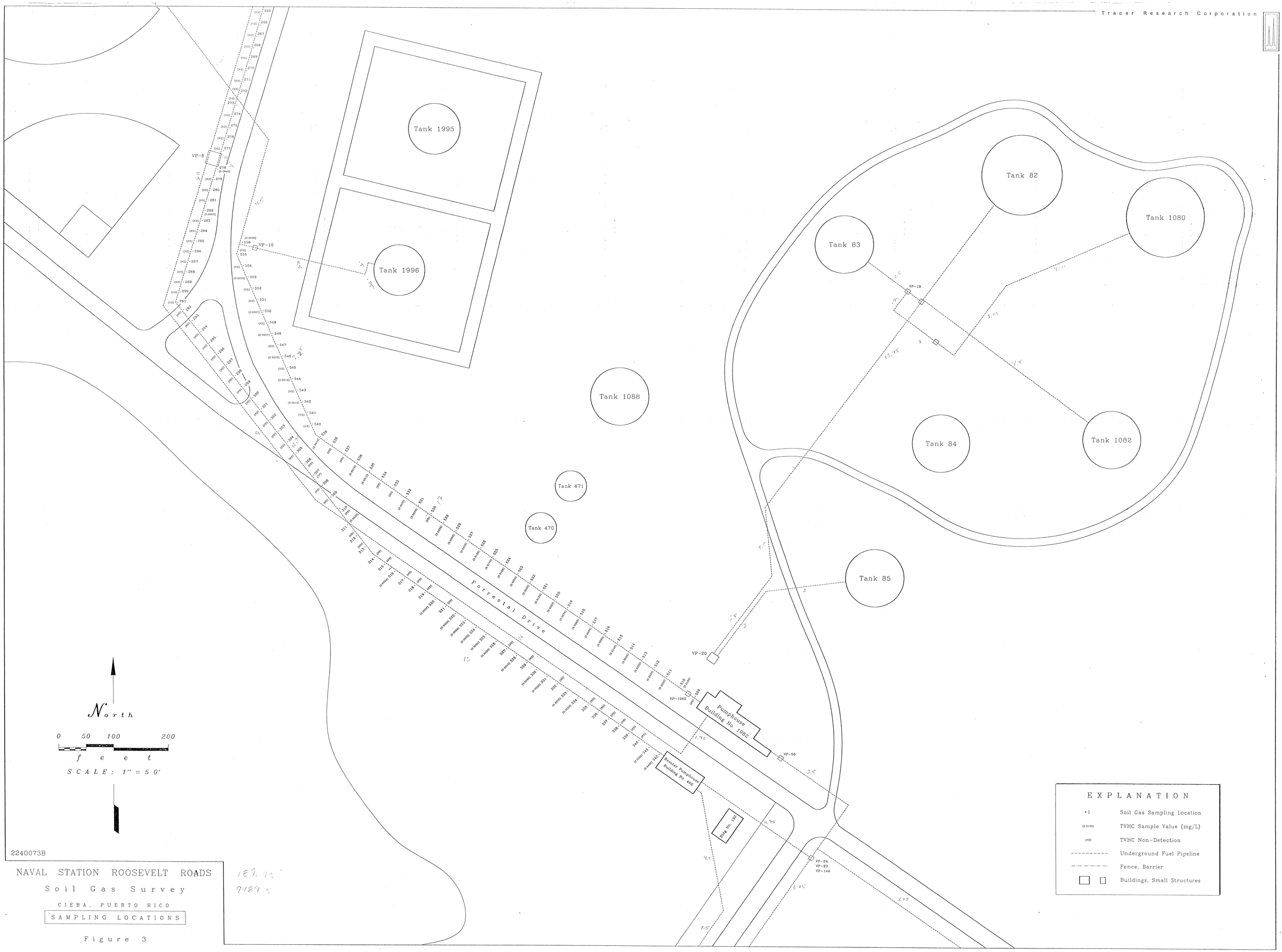
Soil Gas Survey

CIEBA, PUERTO RICO

SAMPLING LOCATIONS

Figure 2

Tracer Research Corporation



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NAVAL STATION ROOSEVELT ROADS

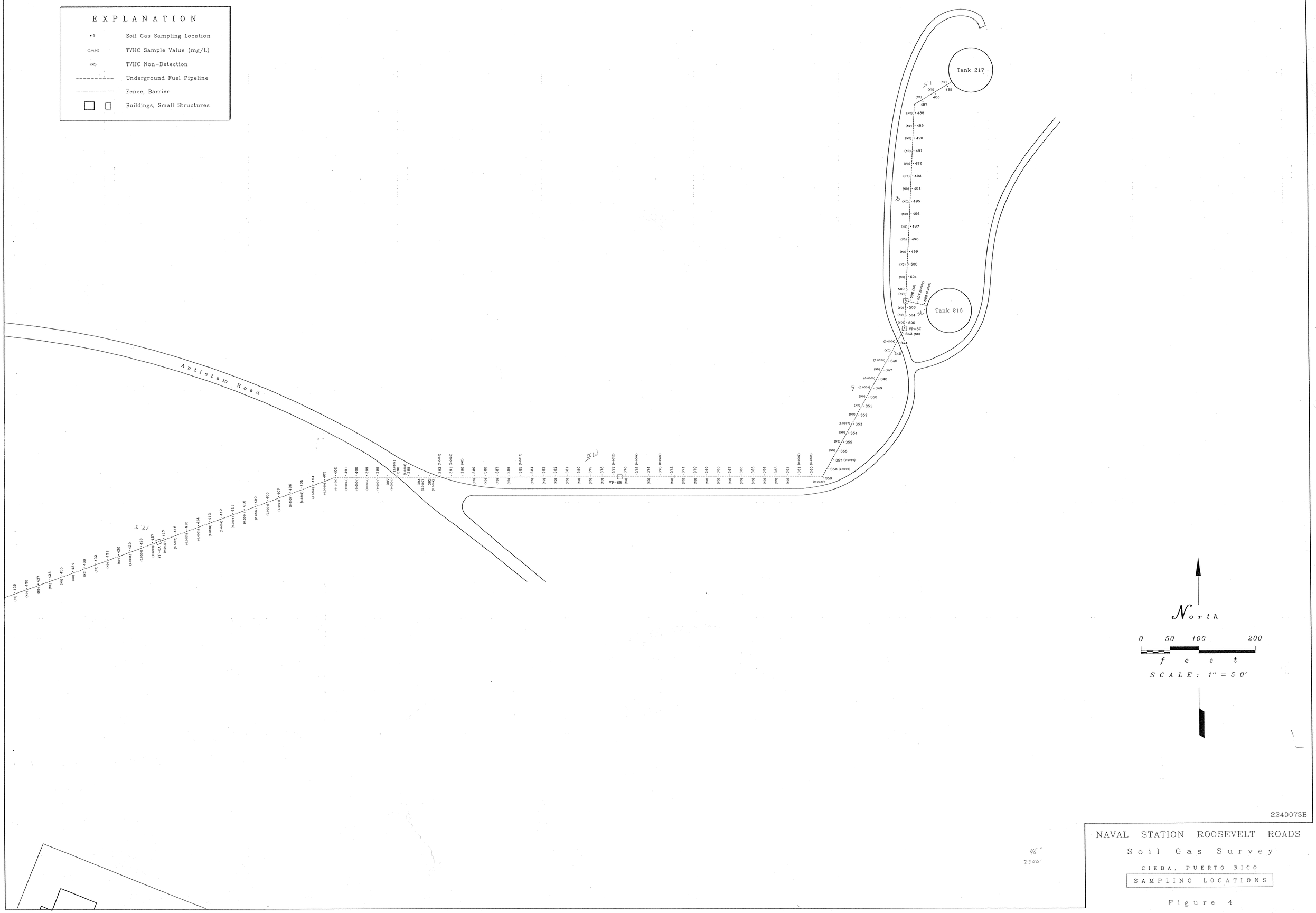
Soil Gas Survey

CIEBA, PUERTO RICO

SAMPLING LOCATIONS

Figure 3

Tracer Research Corporation



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NAVAL STATION ROOSEVELT ROADS

Soil Gas Survey

CIEBA, PUERTO RICO

SAMPLING LOCATIONS

Figure 4

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