



Shaw® Shaw Environmental & Infrastructure, Inc.

April 28, 2004

Mr. Subhash Pal
Project Manager
Superfund Cleanup Section
Texas Commission on Environmental Quality
12100 Park 35 Circle, Bldg. D
Austin, Texas 78753

Re: Remedial Investigation - Geoprobe
October 2003
Jones Road Superfund Site
Houston, Texas

Dear Mr. Pal:

Shaw Environmental, Inc. (Shaw) is pleased to present to the Texas Commission on Environmental Quality (TCEQ) this letter report which summarizes the results of the Remedial Investigation (RI)-Geoprobe related field work conducted at the above-referenced site in October 2003. This letter report is not intended to be a final report nor does it preclude or serve in the place of the Remedial Investigation Technical Memorandum; rather, this letter report provides a summary of results and preliminary conclusions based on Shaw's interpretations of the currently available data.

The objectives of this specific phase of the investigation included:

- identification of potential discharge ("hot spot source") areas of contamination into the shallow soil (upper 35 feet) in the immediate vicinity of the Former Bell Dry Cleaner;
- characterization of the nature and extent of shallow contamination in the immediate vicinity of the Former Bell Dry Cleaner; and
- assessment of the efficacy of the Color Tec field screening on soil matrix by comparing screening test results with soil analyses performed by an on-site mobile laboratory.

All soil and groundwater samples were collected using a Geoprobe that utilizes direct push technology (DPT). All soil samples were analyzed by an off-site fixed-based laboratory performing under the Contract Laboratory Program (CLP) of the Environmental Protection Agency (EPA).

Selected soil and groundwater samples were analyzed by an on-site mobile laboratory (ESN) which was mobilized to the site support the field activities for a limited time. (Note: The results from all soil analysis performed by the on-site mobile laboratory were reported on a wet weight basis.)

Summary of Geoprobe Field Activities

Twenty-one DPT borings were performed to a maximum depth of thirty-five feet below ground surface (bgs) during the period from October 22 through October 29, 2003. Figure 1 shows the approximate location of each of these borings. The locations of the borings were selected jointly by Shaw and TCEQ representatives to assess the whereabouts of potential discharge areas of the contaminant of interest, PCE. Potential discharge areas investigated included:

- Area near the surface water storm drainage grate at the back (north side) of the dry cleaning facility, represented by the GP-4 location which discharges into the roadside ditch along 11600 Jones Road; the GP-3 location represents grassy area just off of the paved area where the drainage grate is located.
- Roadside ditch area along 11600 Jones Road which receives surface water discharge in proximity of the Former Bell Dry Cleaner site, represented by locations GP-12 and GP-13.
- Area associated with the septic tank at 11600 Jones Road, represented by GP-14 and GP-15 locations.
- Secondary discharges along a sewer discharge pipe that conveyed wastewater from the dry cleaner to the septic tank system, represented by locations GP-1, GP-2, and GP-16.
- Area associated with the septic field serving 11600 Jones Road, represented by locations GP-18 through GP-20.
- Area surrounding the 11600 Jones Road building foundation, represented by locations GP-5 through GP-11.

Concrete cores were cut by a coring company (Cores ETC) at all DPT locations in paved areas. Initially a tractor mounted DPT rig was used to install the borings (GP6, GP18, and GP19). However, significant resistance to penetration was encountered at the interface with a firm, hard clay containing calcareous nodules observed at approximately 20 to 28 feet bgs depth interval. A CME 45 drill rig with DPT capabilities beyond those of the trailer mounted unit was mobilized to the site and used to complete borings GP1, GP2, GP3, GP4, GP5, GP7, GP8, GP9, GP10, GP11, GP12, GP13, GP14, GP16, GP17, and GP20. The tractor-mounted rig was then remobilized to complete DPT borings GP15 and GP21 because access to these locations was not possible with the CME 45 rig mounted DPT unit.

The soil sampling interval selection strategy was based upon previous knowledge of the subsurface lithology at the site obtained through the previous investigation work based primarily on interpretations from Cone Penetrometer pushes. The first sample interval targeted shallow soil below the surface in the 1 to 3 foot depth bgs zone. A second zone of interest was the interval just above a clay rich zone interbedded with calcareous nodules (16 to 19 foot depth bgs). The third zone of interest was near the capillary zone (top) of first water bearing zone that ranged in depth generally from 19 to 30 feet bgs. A final (fourth) zone of interest was taken at the final total depth of the boring, generally between 30 to 35 feet bgs.

As required by the Field Sampling Plan (FSP), three Encore samples were collected from each targeted sample zone and sent to the EPA CLP laboratory for VOC analyses using method OLCO4.2. A sample aliquot from each interval was also collected in a 4 oz jar and submitted to the fixed-base lab for analyses of the moisture content of the soil. In addition, one sample aliquot was collected from each interval and field screened using the Color Tec method. For the period that the mobile laboratory was on site (October 22, 23, and 24), water samples collected from DPT borings were submitted to the on-site mobile laboratory for analysis using EPA Method 8260. At the completion of each DPT boring, slotted PVC pipe was placed into the borehole and a groundwater sample was collected and field screened using the Color Tec method.

Summary of Analytical Results

Soil

The analytical results from the EPA CLP laboratory for PCE, TCE, cis-DCE, and VC for each of the DPT borings are tabulated in Table 1 and plotted on Figure 2. The analytical results from the EPA CLP laboratory show impacts to the soil in nine (GP3, GP4, GP5, GP6, GP7, GP8, GP13, GP16, and GP20) of the 21 DPT borings (presented in Figure 3).

The following discussion will present the results for PCE and VC. PCE represents the primary composition of the product discharged by the former dry cleaner operations. Results of VC are discussed as this chemical is a third order degradation by-product of the PCE; its presence (or absence) provides an indication of how much mass of PCE may still be present in the shallow subsurface (e.g., a large mass quantity of VC relative to the mass of PCE observed would indicate that degradation of the PCE source has been substantially completed).

Detections of PCE were observed in the shallow soil zone (1 to 2 feet) at DPT locations GP3, GP4, and GP16; trace levels were also observed at GP-1, GP-2, and GP-13 (presented in Figure 4). No detectable levels of VC were observed in samples collected from this zone.

Detectable concentrations of PCE were also observed in the second soil zone of interest (16 to 19 feet). Specifically, PCE was detected in DPT locations GP-1 (trace), GP-3, GP-4, and GP-13 (presented in Figure 5). VC was detected in samples collected at DPT locations GP-3 (trace), GP-6, and GP-13 (Figure 6).

In the third soil zone (19–30 feet), detections of PCE were observed at DPT locations GP-3, GP-5, GP-6, GP-7, GP-13, and GP-20 in samples collected specifically from the 19 to 27 foot bgs depth (presented in Figure 7). VC was detected in samples collected at DPT locations GP-3, GP-5(trace), GP-6, GP-7, and GP-13 (Figure 8).

In samples collected from the 27 to 30 foot bgs depth, PCE was detected again at GP-3 and GP-7, and also at locations GP-4, GP-8, and at trace levels at GP-1, GP-3, and GP-9 (Figure 9). VC was detected in a single sample collected from this same depth interval at DPT location GP-7.

From the zone representing the 30 to 35 feet depth bgs (bottom of each DPT boring, respectively), PCE was detected at DPT borings GP-4, GP-7, and GP-8 (Figure 10). No quantifiable levels of VC were observed in samples collected from this zone.

The comparison of the analytical results derived from select soils submitted to the on-site mobile laboratory for analyses and the Color Tec field screening tests are presented in Table 2. Correlation between positive Color Tec field test indication and the detection of contaminants of interest by the on-site mobile laboratory results (reported on a wet weight basis) as shown in Table 2 was poor with a 44% “false positive” reporting rate. The results of the Color Tec field screening tests and results from soils analyzed by the EPA CLP laboratory are tabulated in Table 1. The correlation between positive Color Tec field test indication and the detection of the contaminants of interest by the EPA CLP laboratory results as shown in Table 1 was relatively good, with a 11% “false positive” reporting rate.

Groundwater

All groundwater samples collected were field screened using the Color Tec method. In addition, groundwater samples collected from DPT locations GP-1, GP-2, GP-3, GP-6, GP-7, GP-8, GP-9, GP-17, GP-18, GP-19, and GP-20 were also run for Method 8260 analyses using the on-site mobile laboratory. These results are depicted on Table 2. Figure 11 shows the Color Tec and the corresponding mobile laboratory results for each water sample collected as applicable.

Preliminary Conclusions

As stated previously, the objectives of this phase of the RI investigation included:

- identification of potential discharge (“hot spot source”) areas of contamination into the shallow soil (upper 35 feet) in the immediate vicinity of the Former Bell Dry Cleaner;
- characterization of the nature and extent of shallow contamination in the immediate vicinity of the Former Bell Dry Cleaner; and
- assessment of the efficacy of the Color Tec field screening method on soil matrix by comparing screening test results with soil analyses performed by an on-site mobile laboratory.

In the following text, preliminary assessment of the data (i.e., data collected during the Geoprobe Field activities and subsequent laboratory results) with respect to each individual investigative objective will be discussed.

Identification of Potential Discharge Areas

Potential discharge areas investigated included:

- Area near the surface water storm drainage grate at the back (north side) of the dry cleaning facility, represented by the GP-4 location which discharges into the roadside ditch along 11600 Jones Road; the GP-3 location represents grassy area just off of the paved area where the drainage grate is located.
- Roadside ditch area along 11600 Jones Road which receives surface water discharge in proximity of the Former Bell Dry Cleaner site, represented by locations GP-12 and GP-13.
- Area associated with the septic tank at 11600 Jones Road, represented by GP-14 and GP-15 locations.
- Secondary discharges along a sewer discharge pipe that conveyed wastewater from the dry cleaner to the septic tank system, represented by locations GP-1, GP-2, and GP-16.
- Area associated with the septic field serving 11600 Jones Road, represented by locations GP-18 through GP-20.
- Area surrounding the 11600 Jones Road building foundation, represented by locations GP-5 through GP-11.

Detections of PCE in the shallowest soil zone (1 to 2 feet), represented in Figure 4, were observed at locations GP-3 and GP-4 in this zone. Direct discharges of PCE may have occurred at or near these locations. Detections in this zone observed at GP-16 and to a lesser extent, GP-1, may represent secondary discharges along the sewer discharge pipe, possibly indicating that PCE was present in the sewer system sometime in the past. Trace level detections observed at GP-13 in the shallow soil zone may represent surface water/sediment discharges from the storm drain system located behind the dry cleaner site. Based on the absence of PCE in the shallow soil zone along the building's foundation, there is no evidence to support that any migration of PCE along the foundation has occurred.

Results from soil analyses from the 16 to 19 foot zone (Figure 5) having with the highest reported concentrations (soil matrix) of PCE of 4,600 and 320,000 ug/kg, respectively, provide further support that locations GP-3 and GP-4 represent the primary discharge point of PCE into the underlying soil. Further, the results at GP-13 from this zone provide additional evidence of a secondary discharge area along the roadside ditch along 11600 Jones Road. Based on the absence of PCE in this zone, there is no evidence to support that any discharges of PCE have occurred from the septic tank, the septic field,

or the building foundation. A trace level of PCE detected in GP-1 provides some evidence to support that secondary discharges along the sewer discharge pipe may have occurred.

Characterization of the Nature and Extent of Shallow Contamination

The following preliminary conclusions can be drawn from an interpretation of the results from the Geoprobe field investigation:

Soil

Contaminant mass represented in the soil matrix throughout the shallow subsurface (upper 35 feet) is primarily composed of PCE.

Contaminant mass in the zone near the ground surface is predominantly centered around locations GP-3 and GP-4, representing the potential primary discharge area of the PCE.

Highest mass of the contaminant appears to have "accumulated" at the second (16 to 19 foot) zone; concentrations "migrate" and then dissipate towards the west and south of the source area with increasing depth (in the direction of GP-5 through GP-9).

Lateral extent of contamination for each zone has not been fully defined (focus of the investigation was aimed at assessing potential source areas, not delineation of extent of impacts.)

Secondary discharges of relatively low concentrations of PCE appear to have occurred along the sewer line located along the east side of the 11600 Jones Road building occurred (the water well serving this property is located along this sewer line).

Groundwater

Contaminant mass in groundwater matrix is primarily PCE; however, the presence of degradation daughter products (TCE, cis-DCE, VC) is more evident in the groundwater than the soil matrix.

Lateral extent of the contaminants of interests in the groundwater is relatively greater than the extent observed in the soil matrix.

Presence of VC in GP-17, GP-18, and GP-19 with the lack of PCE in GP-18 and GP-19 as well as nearby GP-1 and GP-20 may be an indication of a southeasterly flow gradient in this shallow zone (assuming lateral diffusion is relatively insignificant).

Assessment of the Efficacy using Color Tec Field Screening on Soil Matrix

The following preliminary conclusions can be made from a review of the results obtained during this Geoprobe field investigation:

- Correlation between positive Color Tec field test results and the detections of contaminants of interest by the on-site mobile laboratory results (soil matrix) was poor with a 44% “false positive” reporting rate.
- Correlation between positive Color Tec field test results and the detections of the contaminants of interest by the EPA CLP laboratory results (soil matrix) was much better with an 11% “false positive” reporting rate.

Preliminary Suggested Recommendations

- Further investigate the extent of the contaminant mass observed in the soil around GP-3 and GP-4 towards the adjacent Meineke Muffler property.
- Assess the feasibility and efficacy of an interim action removing the apparent mass of contaminant observed around GP-3 and GP-4.
- Investigate whether the water well serving the 11600 Jones Road property may provide a vertical migration conduit for the PCE discharged along the sewer line (near this well) to enter deeper water bearing units.
- Collect addition soil data for analyses using Geoprobe in the North -South ditch and near GP-14 to further assess this potential migration pathway.
- Soils collected in the future can be selectively screened using the Color Tec field test method.

This concludes the summary letter report of the Remedial Investigation- Geoprobe Work. If you have any questions, please either contact me at 281-396-4590 or Bill Hardmant at 281-396-4599.

Sincerely,
Shaw Environmental, Inc.



Perry Mann
Program Manager

PM/mfa

TABLE 1
JONES ROAD REMEDIAL INVESTIGATION
EPA CLP LABORATORY ANALYTICAL RESULTS WITH COLOR TEC
GEOPROBE - OCTOBER 2003

Station Location	Depth Interval	CLP Number	PCE in ug/kg	Qualifier	TCE in ug/kg	Qualifier	cis DCE ug/kg	Qualifier	VC in ug/kg	Qualifier	Color Tec Soils (ppm)	Date
GP-04-1	1 - 2	F0PG3	57	B	10	U	10	U	10	U	>3.0	10/27/2003
GP-03-1	1 - 2	F0PD6	37		62		19	JD	10	U	>3.0	10/24/2003
GP-16-1	1 - 2	F0PG7	29	B	10	U	10	U	10	U	2.6	10/27/2003
GP-19-1	1	F0P92	10	U	10	U	10	U	10	U	ND,ND,ND	10/22/2003
GP-05-1	1 - 2	F0PG1	10	JB	10	U	10	U	10	U	ND,ND,ND	10/27/2003
GP-07-1	1 - 2	F0PC1	10	U	10	U	10	U	10	U	ND,ND,ND	10/23/2003
GP-09-1	1 - 2	F0PB2	10	U	10	U	10	U	10	U	ND,ND,ND	10/23/2003
GP-10-1	1 - 2	F0PE6	10	U	10	U	10	U	10	U	ND,ND,ND	10/27/2003
GP-11-1	1 - 2	F0PF4	10	U	10	U	10	U	10	U	ND,ND,ND	10/27/2003
GP-12-1	1 - 2	F0PH5	10	U	10	U	10	U	10	U	ND,ND,ND	10/28/2003
GP-14-1	1 - 2	F0PH6	10	U	10	U	10	U	10	U	ND,ND,ND	10/28/2003
GP-15-1	1 - 2	F0PR3	10	U	10	U	10	U	10	U	ND,ND,ND	10/29/2003
GP-20-1	1 - 2	F0PC5	10	U	10	U	10	U	10	U	ND,0.6	10/23/2003
GP-06-1	2	F0PA3	10	U	10	U	10	U	10	U	ND,ND,ND	10/22/2003
GP-08-1	2	F0PA8	10	U	10	U	10	U	10	U	ND,ND,ND	10/23/2003
GP-18-1	2	F0P97	10	U	10	U	10	U	10	U	ND,ND,ND	10/22/2003
GP-01-1	1 - 2	F0PC9	7	J	10	U	10	U	10	U	ND,ND,0.4	10/24/2003
GP-02-1	1 - 2	F0PE1	3	J	10	U	10	U	10	U	ND,ND,ND	10/24/2003
GP-13-1	1 - 2	F0PH1	2	J	4	J	18		10	U	0.5	10/28/2003
GP-21-4	5 - 6	F0PS2	10	U	10	U	10	U	10	U	ND,ND,ND	10/29/2003
GP-04-2	16 - 17	F0PG4	260000	D	5400		4200		1400	U	>3.0	10/27/2003
GP-03-2	18 - 19	F0PD7	4600	D	170		470	JD	6	J	>3.0	10/24/2003
GP-13-2	16 - 17	F0PH2	37	JD	140		33	JD	54		>3.0	10/28/2003
GP-12-2	16 - 17	F0PR0	10	U	10	U	10	U	10	U	ND,ND,ND	10/28/2003
GP-21-1	16 - 17	F0PR9	10	U	10	U	10	U	10	U	ND,ND,ND	10/29/2003
GP-06-2	18 - 19	F0PA4	10	U	10	U	10	U	5	J	ND,ND,0.7	10/22/2003
GP-14-2	18 - 19	F0PH7	10	U	10	U	10	U	10	U	ND,ND,ND	10/28/2003
GP-15-2	18 - 19	F0PR4	10	U	10	U	10	U	10	U	ND,ND,ND	10/29/2003
GP-01-2	18 - 19	F0PD0	9	J	11	U	11	U	11	U	ND,ND,ND	10/24/2003
GP-03-3	21 - 22	F0PD8	2700	D	380	E	1200	JD	19		>3.0	10/24/2003
GP-06-3	26 - 27	F0PA5	1900	D	390	E	770	JD	110		>3.0	10/22/2003
GP-07-2	24 - 25	F0PC2	1500	D	31		86		18		>3.0	10/23/2003
GP-13-3	22 - 23	F0PH3	39	JD	170		73	D	54		>3.0	10/28/2003
GP-05-2	24 - 25	F0PF8	55	B	15		12		6	J	1.3	10/27/2003
GP-20-2	22 - 23	F0PC6	18		11	U	11	U	11	U	0.3	10/23/2003
GP-09-2	19 - 20	F0PB3	12	U	12	U	12	U	12	U	ND,ND,ND	10/23/2003
GP-08-2	19 - 20	F0PA9	11	U	11	U	11	U	11	U	ND,ND,ND	10/23/2003
GP-19-3	19 - 20	F0P94	11	U	11	U	10	J	11	U	ND,ND,ND	10/22/2003
GP-18-3	26 - 27	F0P99	11	U	11	U	11	U	11	U	ND,ND,ND	10/22/2003
GP-12-3	21 - 22	F0PR1	10	U	10	U	10	U	10	U	ND,ND,ND	10/28/2003
GP-18-2	21 - 22	F0P98	10	U	10	U	10	U	10	U	ND,ND,ND	10/22/2003
GP-21-2	21 - 22	F0PS0	10	U	10	U	10	U	10	U	ND,ND,ND	10/29/2003
GP-10-2	22 - 23	F0PE7	10	U	10	U	10	U	10	U	ND,ND,ND	10/27/2003
GP-11-2	23 - 24	F0PF5	10	U	10	U	10	U	10	U	ND,ND,ND	10/27/2003
GP-15-3	23 - 24	F0PR5	10	U	10	U	10	U	10	U	ND,ND,ND	10/29/2003
GP-16-2	23 - 24	F0PG8	10	JB	10	U	10	U	10	U	0.65	10/27/2003
GP-14-3	25 - 26	F0PH8	10	U	10	U	10	U	10	U	ND,ND,ND	10/28/2003
GP-10-3	26 - 27	F0PE8	10	U	10	U	10	U	10	U	ND,ND,ND	10/27/2003
GP-20-3	26 - 27	F0PC7	2	J	10	U	10	U	10	U	0.3	10/23/2003
GP-07-3	29 - 30	F0PC3	19000	D	720	JD	3000	D	140		>3.0	10/23/2003
GP-08-3	27 - 28	F0PB0	780	E	21		47		12	U	>3.0	10/23/2003
GP-04-3	28.5 - 29.5	F0PG5	19		10	U	10	U	10	U	>3.0	10/27/2003
GP-02-2	27 - 28	F0PE2	11	U	11	U	11	U	11	U	ND,ND,0.2	10/24/2003
GP-17-1	27 - 28	F0PE4	10	U	10	U	10	U	10	U	ND,ND,ND	10/24/2003
GP-05-3	28 - 29	F0PG0	10	JB	10	U	10	U	10	U	ND,ND,ND	10/27/2003
GP-11-3	28 - 29	F0PF6	10	U	10	U	10	U	10	U	ND,ND,ND	10/27/2003

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EPA CLP LABORATORY ANALYTICAL RESULTS WITH COLOR TEC
GEOPROBE - OCTOBER 2003

Station Location	Depth Interval	CLP Number	PCE in ug/kg	Qualifier	TCE in ug/kg	Qualifier	cis DCE ug/kg	Qualifier	VC in ug/kg	Qualifier	Color Tec Soils (ppm)	Date
GP-12-4	29 - 30	F0PR2	10	U	10	U	10	U	10	U	ND,ND,ND	10/28/2003
GP-15-4	29 - 30	F0PR6	10	U	10	U	10	U	10	U	ND,ND,ND	10/29/2003
GP-16-3	29 - 30	F0PG9	10	JB	10	U	10	U	10	U	ND,0.2	10/27/2003
GP-17-2	29 - 30	F0PE5	10	U	10	U	10	U	10	U	ND,ND,ND	10/24/2003
GP-21-3	29 - 30	F0PS1	10	U	10	U	10	U	10	U	ND,ND,ND	10/29/2003
GP-03-4	29 - 30	F0PD9	5	J	14	U	14	U	14	U	0.7	10/24/2003
GP-09-3	28 - 29	F0PB4	3	J	10	U	10	U	10	U	ND,ND,ND	10/23/2003
GP-01-3	29 - 30	F0PD1	3	J	10	U	10	U	10	U	ND,ND,ND	10/24/2003
GP-04-4	34 - 35	F0PG6	700	J	1400	U	1400	U	1400	U	>3.0	10/27/2003
GP-08-4	31 - 32	F0PB1	230	D	13		37		11	U	>3.0	10/23/2003
GP-07-4	31 - 32	F0PC4	25		10	U	10	U	10	U	1.3	10/23/2003
GP-20-4	31 - 32	F0PC8	13	U	13	U	3	J	13	U	ND,0.2	10/23/2003
GP-06-4	31 - 32	F0PA6	12	U	12	U	12	U	12	U	ND,ND,0.9	10/22/2003
GP-19-2	32	F0P93	11	U	11	U	11	U	11	U	ND,ND,0.2	10/22/2003
GP-01-4	31 - 32	F0PD2	10	U	10	U	10	U	10	U	ND,ND,ND	10/24/2003
GP-02-3	31 - 32	F0PE3	10	U	10	U	10	U	10	U	ND,ND,0.2	10/24/2003
GP-09-4	31 - 32	F0PB5	10	U	10	U	10	U	10	U	ND,ND,ND	10/23/2003
GP-10-4	31 - 32	F0PE9	10	U	10	U	10	U	10	U	ND,ND,ND	10/27/2003
GP-11-4	31 - 32	F0PF7	10	U	10	U	10	U	10	U	ND,ND,ND	10/27/2003
GP-18-4	31 - 32	F0PA0	10	U	10	U	10	U	10	U	ND,ND,ND	10/22/2003
GP-05-4	34 - 35	F0PF9	10	JB	10	U	10	U	10	U	ND,ND,0.2	10/27/2003
GP-13-4	34 - 35	F0PH4	10	U	10	U	10	U	10	U	ND,0.6	10/28/2003
GP-14-4	34 - 35	F0PJ0	10		10	U	10	U	10	U	ND,ND,0.3	10/28/2003
GP-16-4	34 - 35	F0PH0	10	JB	10	U	10	U	10	U	ND,ND,0.2	10/27/2003

Notes:

- U Not detected at reported quantitation limit
- J Estimated value
- E Estimated value above the detection limit
- D Value from dilution
- B This result may be high biased because of laboratory/field contamination
- JB Estimated below the detection limit. This result may be high biased because of laboratory/field contamination
- JD Estimated value from dilution

TABLE 2
JONES ROAD REMEDIAL INVESTIGATION
ONSITE MOBILE LABORATORY ANALYTICAL RESULTS WITH COLOR TEC
GEOPROBE - OCTOBER 2003

Location	Interval	Mobile Laboratory Results Soil in mg/Kg, Water in ug/L				Color-Tec Results (ppm)			Date
		PCE	TCE	<i>cis</i> DCE	VC	1st Pull	2nd Pull	3rd Pull	
GP-1	Water	12.6	0.13	<0.25	<0.18	0.4			10/23/2003
GP-2	Water	0.65	<0.11	0.34	<0.18	ND	ND	ND	10/23/2003
GP-3	Water	7860	821	2290	34.2	>3.0			10/23/2003
GP-4	Water	NS	NS	NS	NS	>3.0			10/27/2003
GP-5	Water	NS	NS	NS	NS	>3.0			10/27/2003
GP-6	Water	366	132	1780	176	>3.0			10/22/2003
GP-7	Water	7030	787	5450	511	>3.0			10/23/2003
GP-8	Water	264	28.8	107	1.11	>3.0			10/23/2003
GP-9	Water	8.29	2.73	6.07	0.19	0.4			10/23/2003
GP-10	Water	NS	NS	NS	NS	ND	ND	ND	10/27/2003
GP-11	Water	NS	NS	NS	NS	ND	ND	ND	10/27/2003
GP-12	Water	NS	NS	NS	NS	0.5			10/28/2003
GP-13	Water	NS	NS	NS	NS	>3.0			10/28/2003
GP-14	Water	NS	NS	NS	NS	>3.0			10/28/2003
GP-15	Water	NS	NS	NS	NS	ND	ND	ND	10/29/2003
GP-16	Water	NS	NS	NS	NS	ND	ND	ND	10/27/2003
GP-17	Water	1.82	<0.11	2	0.46	ND	ND	0.3	10/23/2003
GP-18	Water	<0.21	<0.11	0.72	0.77	ND	ND	ND	10/22/2003
GP-19	Water	<0.21	<0.11	3.93	0.36	ND	ND	ND	10/22/2003
GP-20	Water	1.93	<0.11	1.42	<0.18	ND	0.4		10/23/2003
GP-21	Water	NS	NS	NS	NS	ND	ND	0.2	10/29/2003

GP-3	1-2	0.12	0.13	0.29	0.03	>3.0			10/23/2003
GP-1	1-2	<0.01	<0.02	<0.02	<0.03	ND	0.4		10/23/2003
GP-9	1-2	<0.01	<0.02	<0.02	<0.03	ND	ND	ND	10/23/2003
GP-8	0.5-2	<0.01	<0.02	<0.02	<0.03	ND	ND	ND	10/23/2003
GP-7	1-2	<0.01	<0.02	<0.02	<0.03	ND	ND	ND	10/23/2003
GP-20	1-2	<0.01	<0.02	<0.02	<0.03	ND	0.6		10/23/2003
GP-2	1-2	<0.01	<0.02	<0.02	<0.03	ND	ND	ND	10/23/2003
GP-19	0.5-2	<0.01	<0.02	<0.02	<0.03	ND	ND	ND	10/22/2003
GP-18	0.5-2	<0.01	<0.02	<0.02	<0.03	ND	ND	ND	10/22/2003
GP-6	2-3	<0.01	<0.02	<0.02	<0.03	ND	ND	0.4	10/22/2003
GP-3	8-9	2.11	0.41	0.89	<0.03	>3.0			10/24/2003
GP-3	18-19	1.43	0.03	0.17	<0.03	>3.0			10/23/2003
GP-9	19-20	<0.01	<0.02	<0.02	<0.03	ND	ND	ND	10/23/2003
GP-8	19-20	<0.01	<0.02	<0.02	<0.03	ND	ND	ND	10/23/2003
GP-19	19-20	<0.01	<0.02	<0.02	<0.03	ND	ND	ND	10/22/2003
GP-1	18-19	<0.01	<0.02	<0.02	<0.03	ND	ND	ND	10/23/2003
GP-6	18-19	NS	NS	NS	NS	ND	ND	0.7	10/22/2003
GP-3	21-22	1.62	0.07	0.46	<0.03	>3.0			10/23/2003
GP-7	24-25	1.47	0.04	0.13	0.03	>3.0			10/23/2003
GP-6	26-27	0.81	0.08	0.23	0.4	>3.0			10/22/2003
GP-8	27-28	0.63	<0.02	0.04	<0.03	>3.0			10/23/2003
GP-20	22-23	<0.01	<0.02	<0.02	<0.03	0.3			10/23/2003
GP-20	26-27	<0.01	<0.02	<0.02	<0.03	0.3			10/23/2003
GP-17	27-28	<0.01	<0.02	<0.02	<0.03	ND	ND	ND	10/23/2003
GP-18	21-22	<0.01	<0.02	<0.02	<0.03	ND	ND	ND	10/22/2003
GP-18	26-27	<0.01	<0.02	<0.02	<0.03	ND	ND	ND	10/22/2003
GP-2	27-28	<0.01	<0.02	<0.02	<0.03	ND	ND	0.2	10/23/2003
GP-9	28-29	<0.01	<0.02	<0.02	<0.03	ND	ND	ND	10/23/2003

TABLE 2
JONES ROAD REMEDIAL INVESTIGATION
ONSITE MOBILE LABORATORY ANALYTICAL RESULTS WITH COLOR TEC
GEOPROBE - OCTOBER 2003

Location	Interval	Mobile Laboratory Results Soil in mg/Kg, Water in ug/L				Color-Tec Results (ppm)			Date
		PCE	TCE	<i>cis</i> DCE	VC	1st Pull	2nd Pull	3rd Pull	
GP-7	29-30	7.75	0.37	1.57	0.07	>3.0			10/23/2003
GP-8	31-32	0.37	<0.02	0.04	<0.03	>3.0			10/23/2003
GP-7	31-32	0.07	<0.02	0.03	<0.03	1.3			10/23/2003
GP-2	31-32	<0.01	<0.02	<0.02	<0.03	ND	ND	ND	10/23/2003
GP-19	31.5-32	<0.01	<0.02	<0.02	<0.03	ND	ND	0.2	10/22/2003
GP-18	31-32	<0.01	<0.02	<0.02	<0.03	ND	ND	ND	10/22/2003
GP-17	29-30	<0.01	<0.02	<0.02	<0.03	ND	ND	ND	10/23/2003
GP-1	29-30	<0.01	<0.02	<0.02	<0.03	ND	ND	ND	10/23/2003
GP-1	31-32	<0.01	<0.02	<0.02	<0.03	ND	ND	ND	10/23/2003

NS Not sampled
ND Not Detected

100249-B1
DRAWING NUMBER

APPROVED BY

CHECKED BY

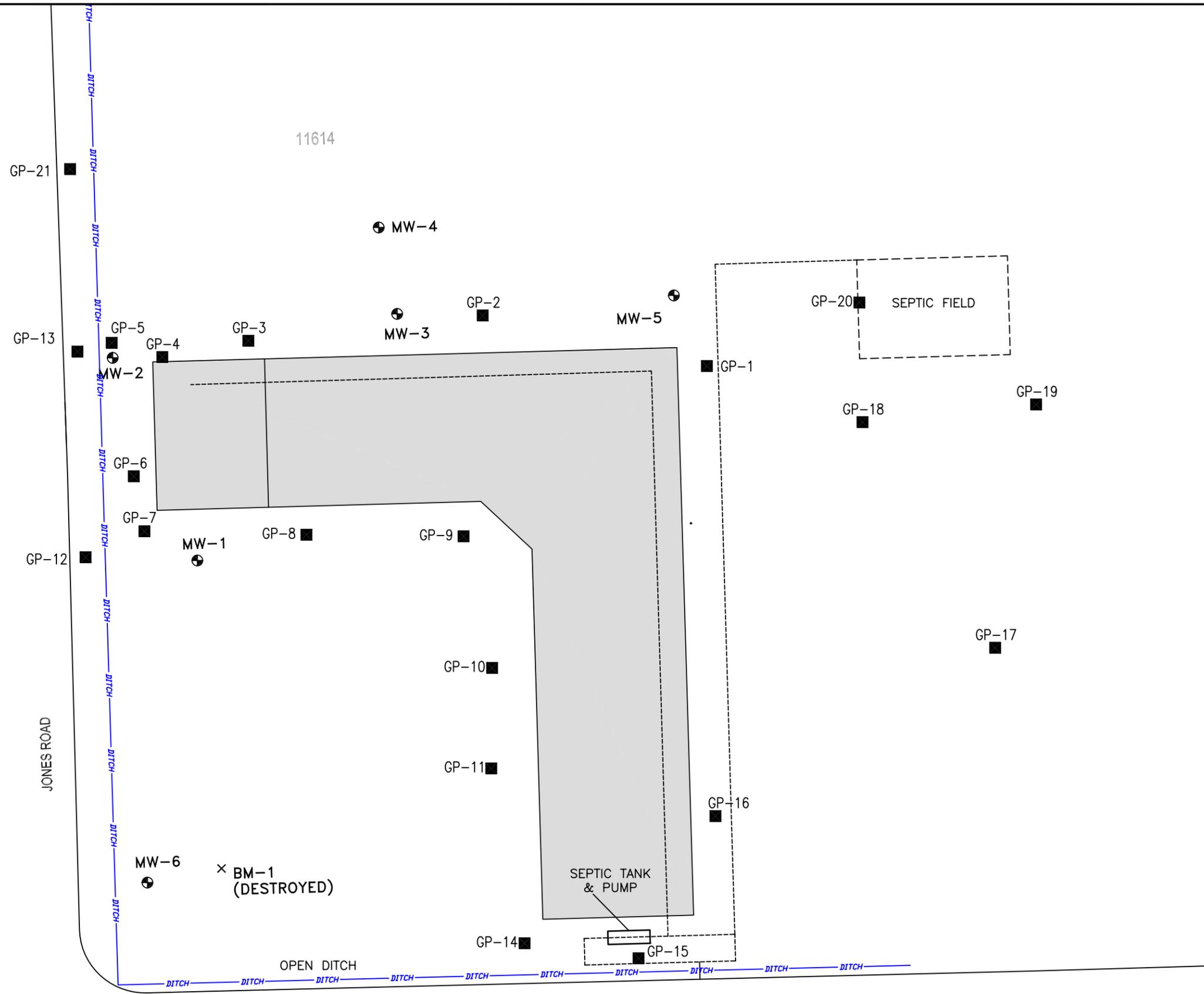
DRAWN BY
J. RDZ
12/29/03

OFFICE
Houston, Texas

X-REF

IMAGE

PLOT DATE: 4/14/04
FORMAT REVISION 3/25/99



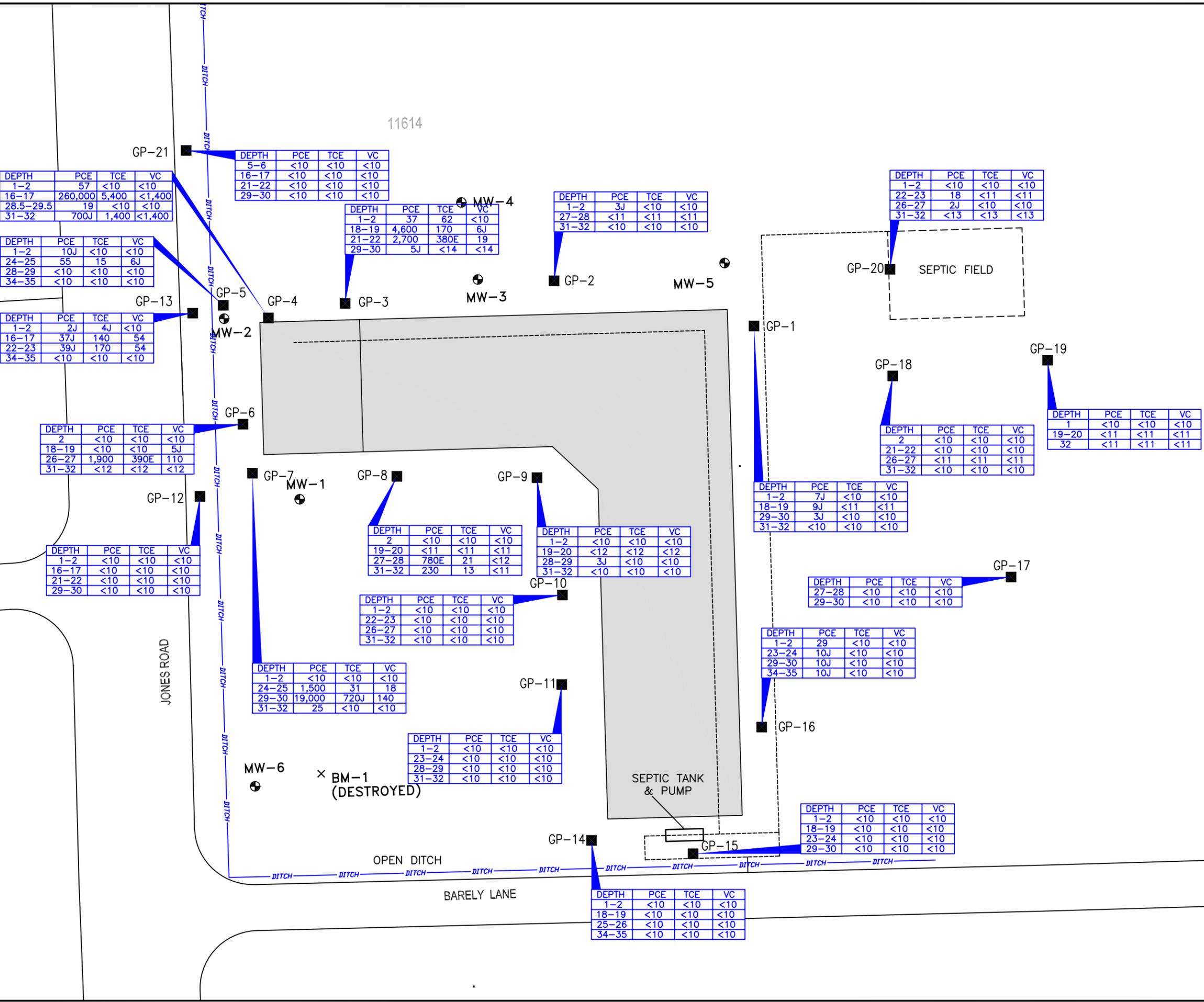
- LEGEND:
- × BENCHMARK
 - ⊕ MONITORING WELL LOCATION
 - GEOPROBE LOCATION



TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

FIGURE 1
GEOPROBE INVESTIGATION
11600 JONES ROAD
#TXN000605460
HARRIS COUNTY, TEXAS

DRAWING NUMBER 100249-B3
 APPROVED BY
 CHECKED BY
 DRAWN BY J. RDZ 4/15/04
 OFFICE Houston, Texas
 X-REF
 IMAGE
 PLOT DATE: 4/15/04
 FORMAT REVISION 3/25/99



LEGEND:

- × BENCHMARK
- ⊕ MONITORING WELL LOCATION
- GEOPROBE LOCATION
- ND NOT DETECTED

PCE, TCE, VC, CONCENTRATIONS IN PARTS PER BILLION (ppb)

SAMPLING PERIOD
OCTOBER 22-29, 2003

SCALE

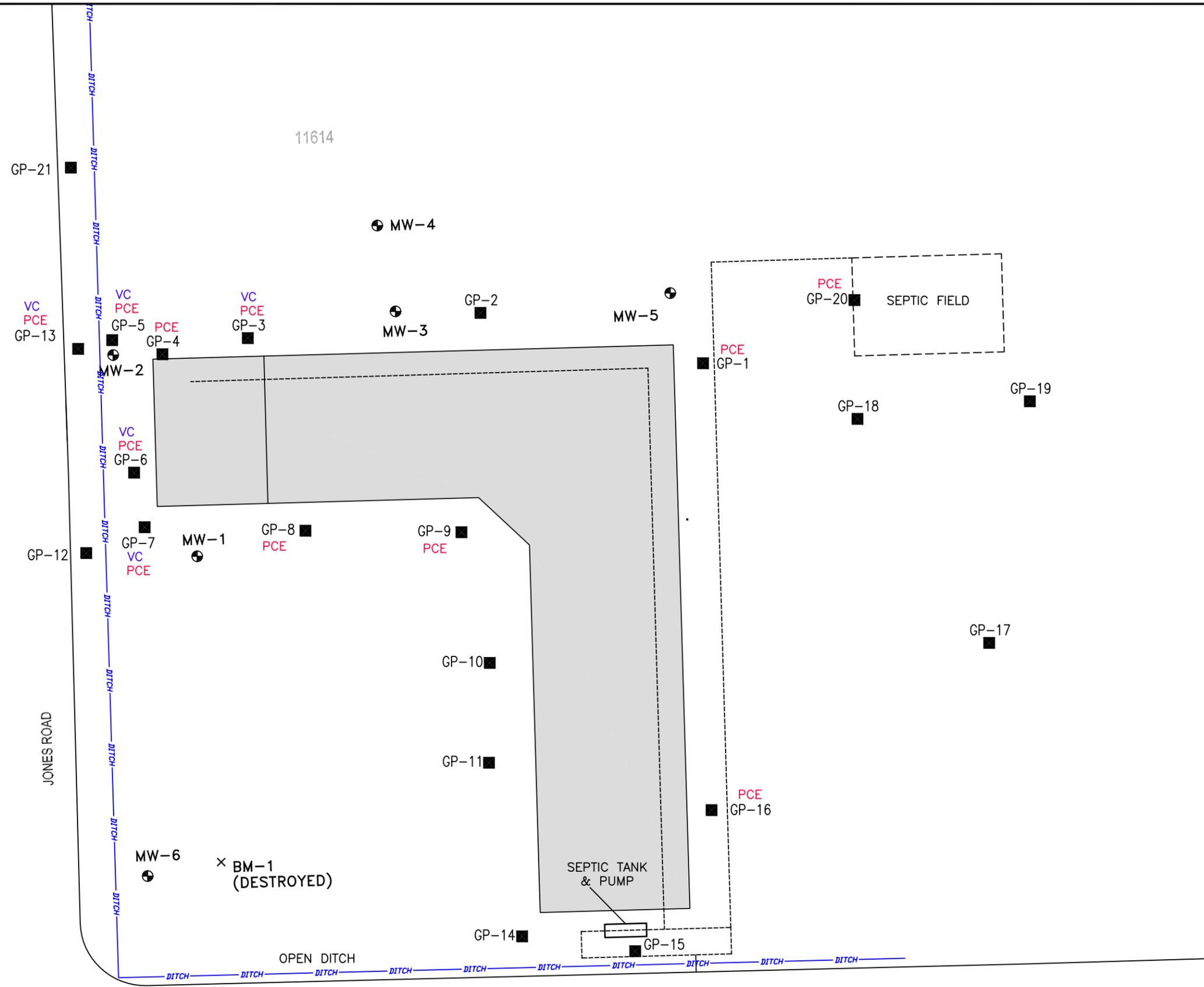
0 50 100 FEET

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

FIGURE 2
 PCE, TCE, VC CONCENTRATIONS IN SOIL
 11600 JONES ROAD
 #TXN000605460
 HARRIS COUNTY, TEXAS

IMAGE X-REF OFFICE DRAWN BY CHECKED BY APPROVED BY DRAWING NUMBER
 --- J. RDZ 4/15/04 100249-B4

PLOT DATE: 4/16/04
 FORMAT REVISION 3/25/99



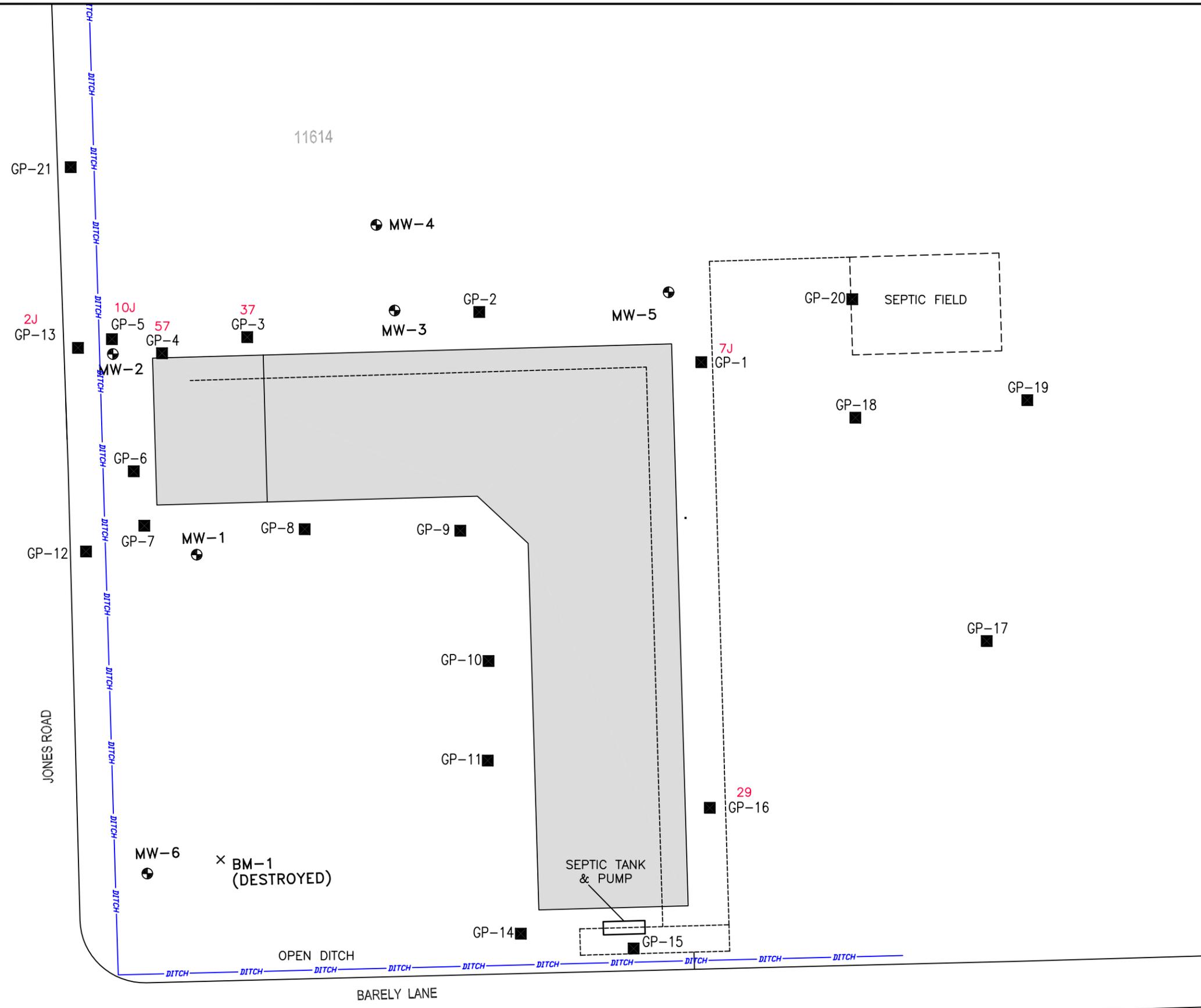
LEGEND:
 X BENCHMARK
 ⊕ MONITORING WELL LOCATION
 ■ GEOPROBE LOCATION
 PCE: PCE DETECTIONS
 VC: VC DETECTIONS



FIGURE 3
 SOIL COMPOSITE-PCE, VC
 11600 JONES ROAD
 #TXN000605460
 HARRIS COUNTY, TEXAS

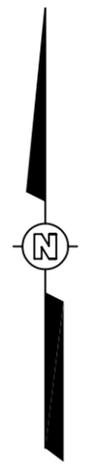
DRAWING NUMBER 100249-B5
 APPROVED BY
 CHECKED BY
 DRAWN BY J. RDZ 4/19/04
 OFFICE Houston, Texas
 X-REF
 IMAGE

PLOT DATE: 4/19/04
 FORMAT REVISION 3/25/99



LEGEND:
 X BENCHMARK
 ⊕ MONITORING WELL LOCATION
 ■ GEOPROBE LOCATION
 PCE: CONCENTRATION IN SOIL
 1-2 FEET (µg/kg)

SCALE
 0 50 100 FEET

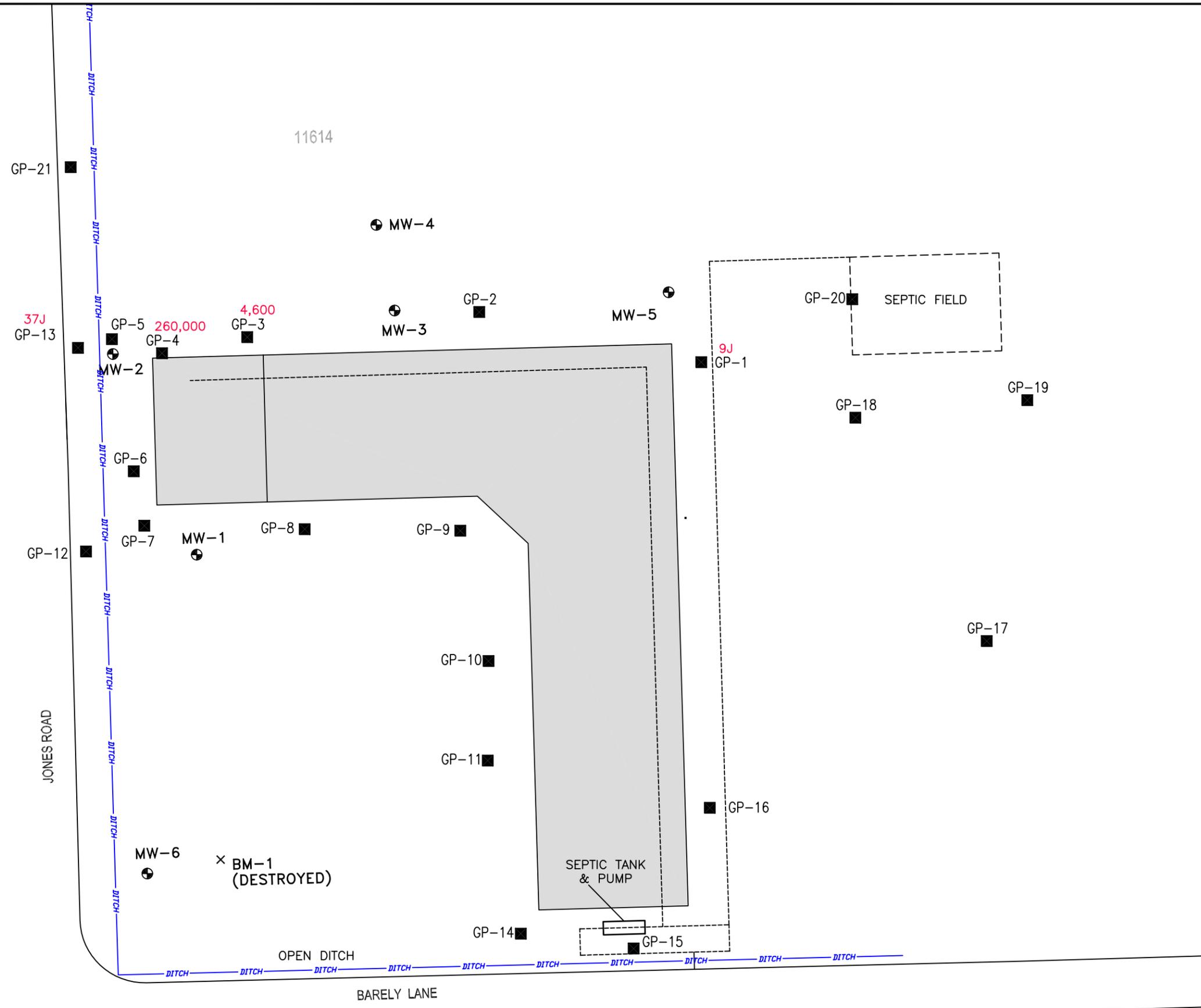



 TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

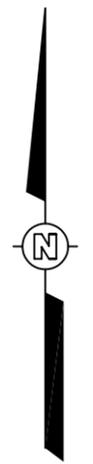
FIGURE 4
 PCE CONCENTRATION IN SOIL, 1-2 FEET
 11600 JONES ROAD
 #TXN000605460
 HARRIS COUNTY, TEXAS

IMAGE X-REF OFFICE DRAWN BY CHECKED BY APPROVED BY DRAWING NUMBER
 --- J. RDZ Houston, Texas 4/19/04 100249-B6

PLOT DATE: 4/19/04
 FORMAT REVISION 3/25/99



LEGEND:
 × BENCHMARK
 ⊕ MONITORING WELL LOCATION
 ■ GEOPROBE LOCATION
 PCE: CONCENTRATION IN SOIL
 16-19 FEET (µg/kg)

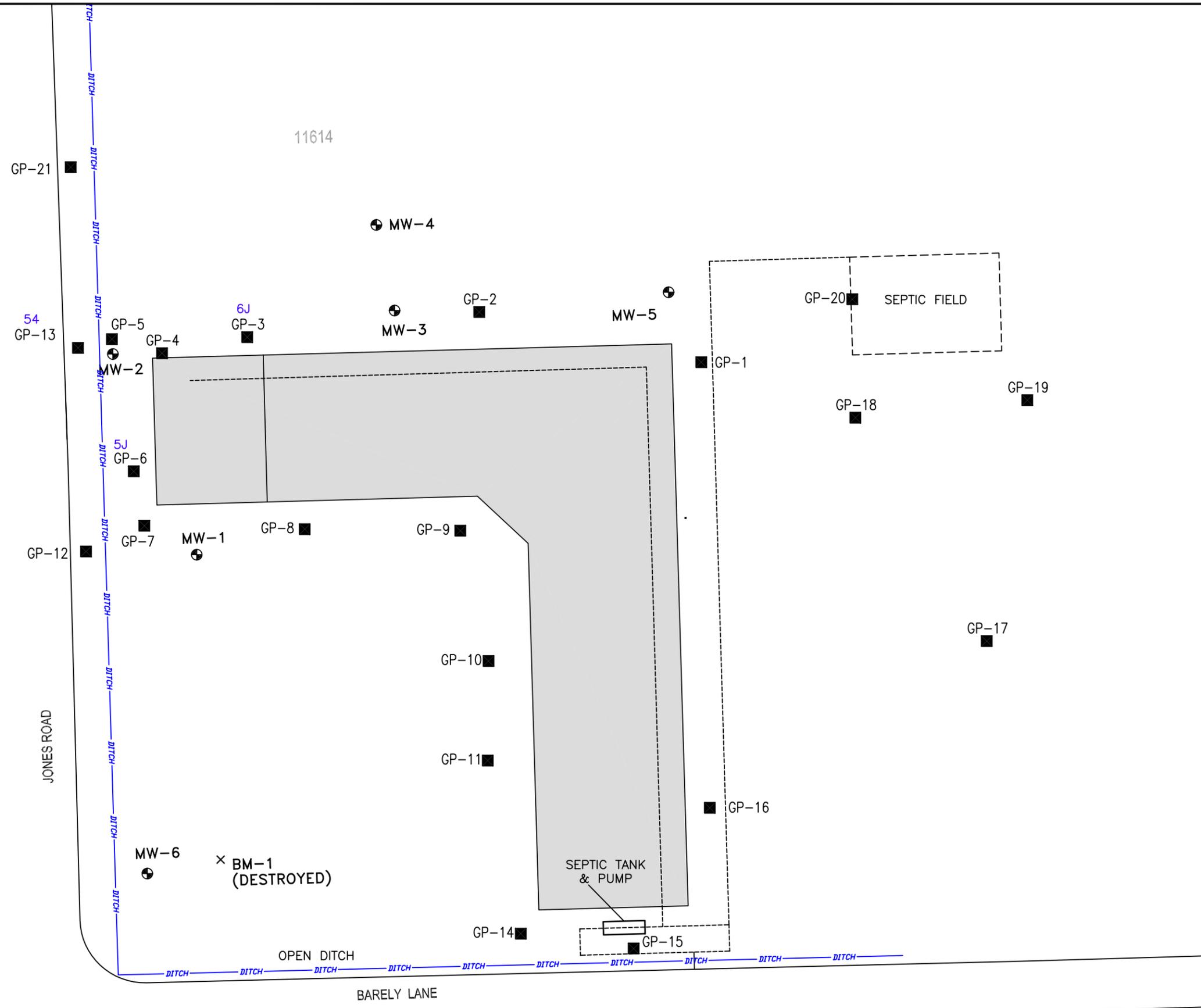


TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

FIGURE 5
 PCE CONCENTRATION IN SOIL, 16-19 FEET
 11600 JONES ROAD
 #TXN000605460
 HARRIS COUNTY, TEXAS

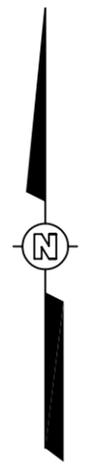
IMAGE X-REF OFFICE DRAWN BY CHECKED BY APPROVED BY DRAWING NUMBER
 --- J. RDZ 4/19/04 100249-B7

PLOT DATE: 4/19/04
 FORMAT REVISION 3/25/99



LEGEND:

- × BENCHMARK
- ⊕ MONITORING WELL LOCATION
- GEOPROBE LOCATION
- VC VINYL CHLORDE CONCENTRATIONS IN SOIL 16-19 FEET (µg/kg)

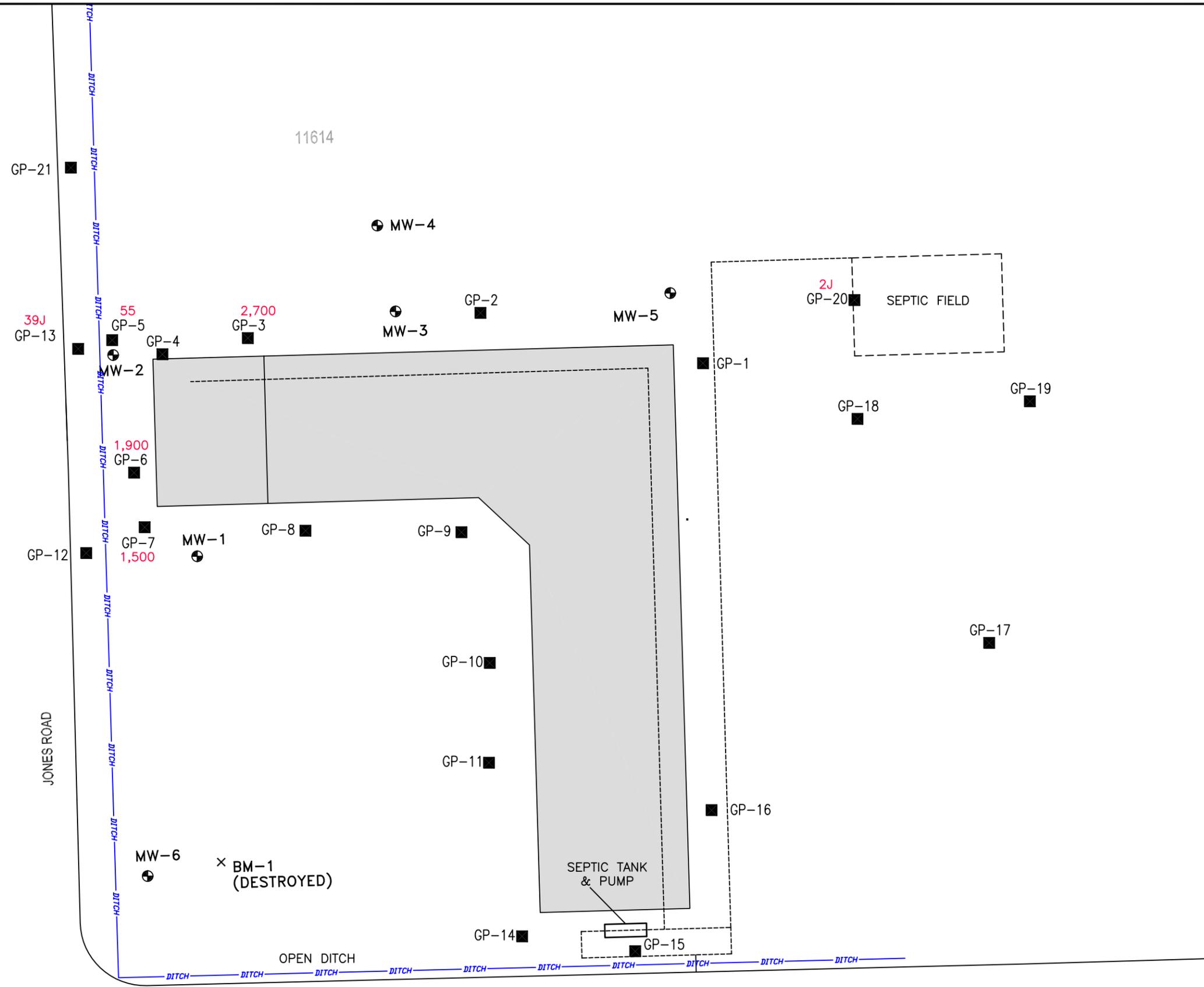


TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

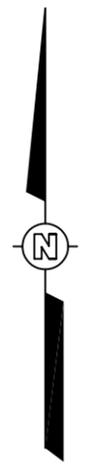
FIGURE 6
 VC CONCENTRATION IN SOIL, 16-19 FEET
 11600 JONES ROAD
 #TXN000605460
 HARRIS COUNTY, TEXAS

IMAGE X-REF OFFICE DRAWN BY CHECKED BY APPROVED BY DRAWING NUMBER
 --- J. RDZ 4/19/04 100249-B8

PLOT DATE: 4/19/04
 FORMAT REVISION 3/25/99



LEGEND:
 × BENCHMARK
 ⊕ MONITORING WELL LOCATION
 ■ GEOPROBE LOCATION
 PCE: CONCENTRATION IN SOIL
 19-27 FEET (µg/kg)

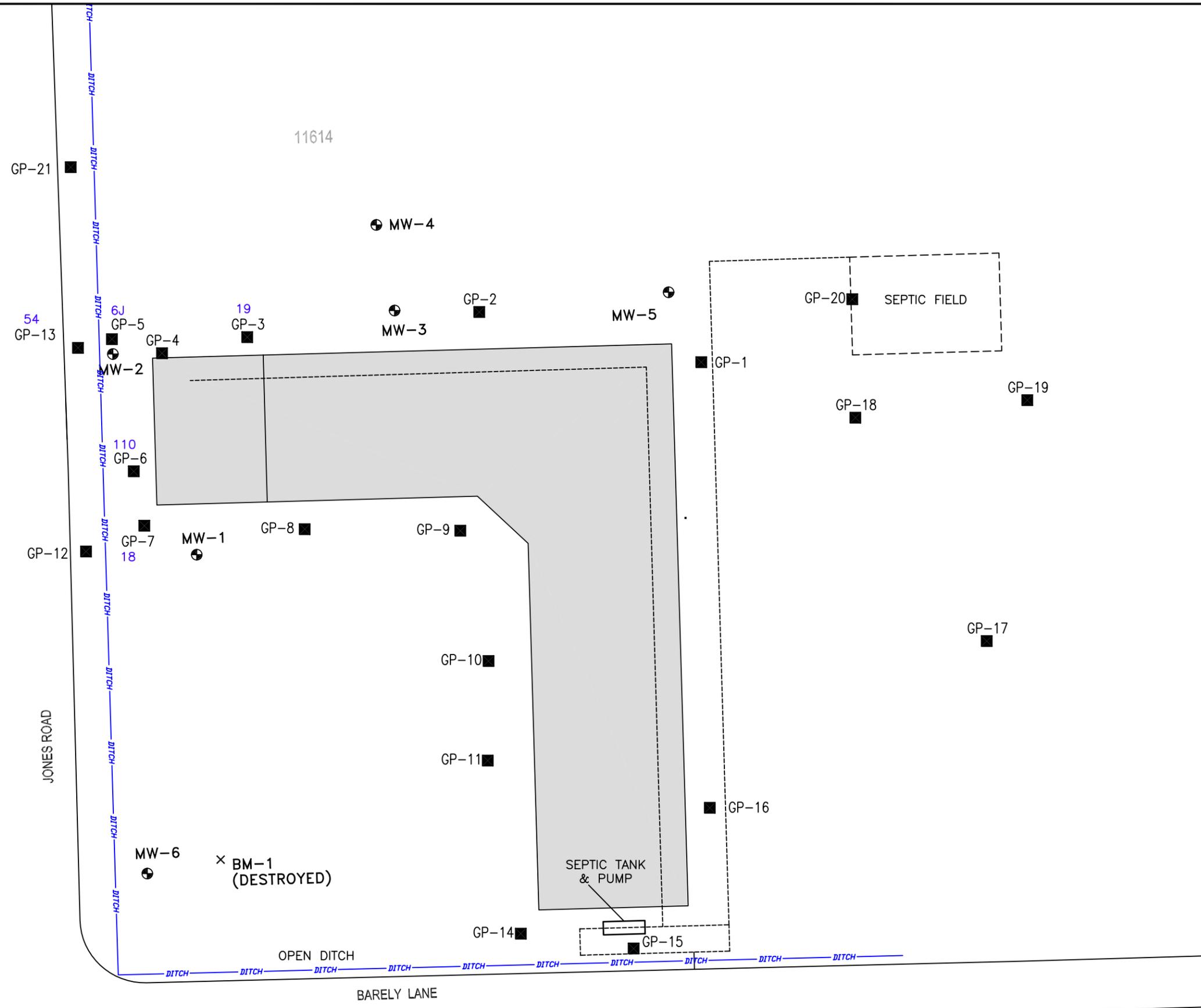



TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

FIGURE 7
 PCE CONCENTRATION IN SOIL, 19-27 FEET
 11600 JONES ROAD
 #TXN000605460
 HARRIS COUNTY, TEXAS

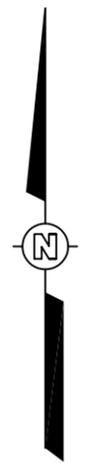
IMAGE X-REF OFFICE DRAWN BY CHECKED BY APPROVED BY DRAWING NUMBER
 --- J. RDZ 4/19/04 100249-B9

PLOT DATE: 4/19/04
 FORMAT REVISION 3/25/99



LEGEND:

- × BENCHMARK
- ⊕ MONITORING WELL LOCATION
- GEOPROBE LOCATION
- VC VINYL CHLORDE CONCENTRATIONS IN SOIL 19-27 FEET (µg/kg)

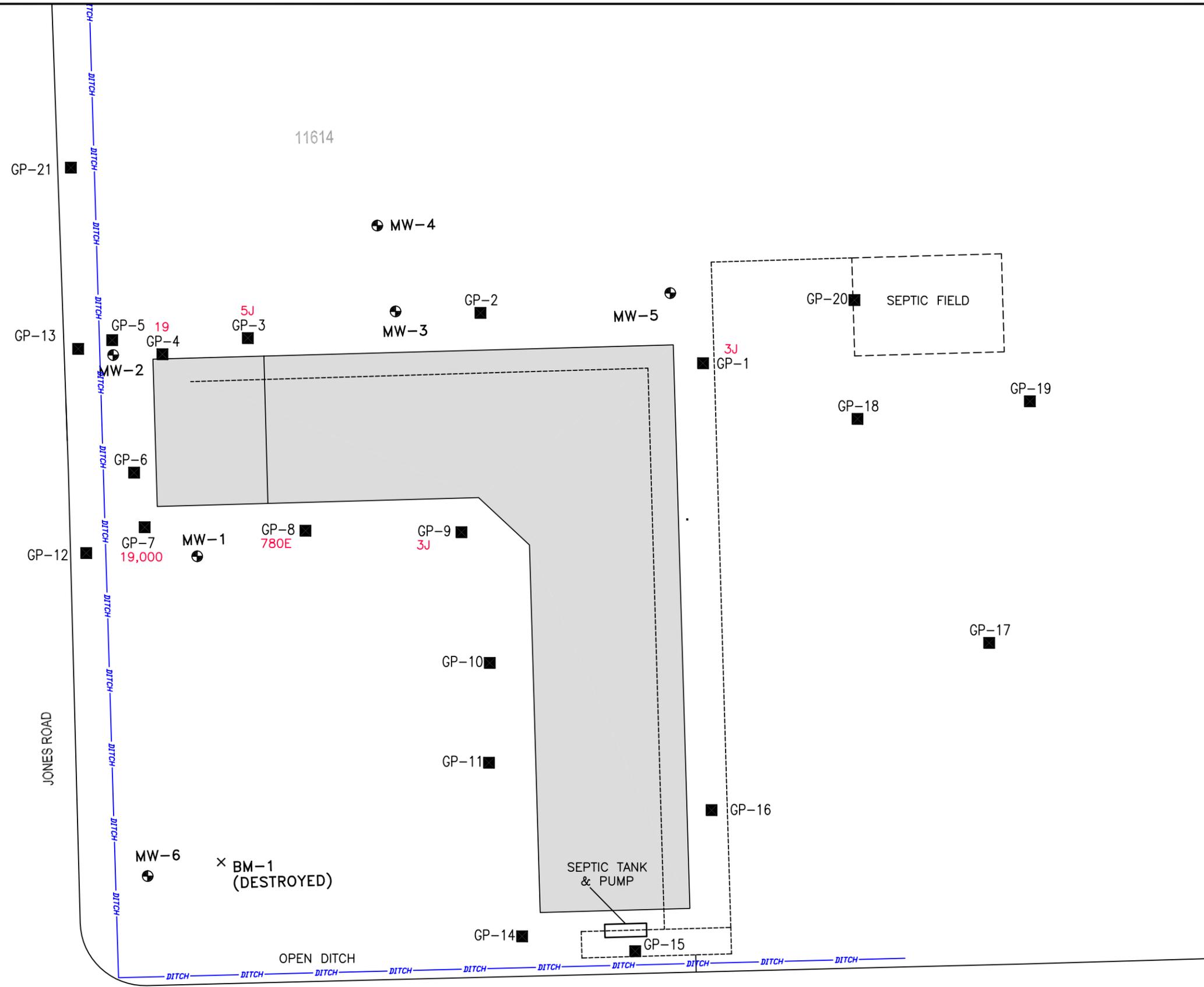


TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

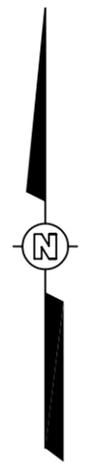
FIGURE 8
 VC CONCENTRATION IN SOIL, 19-27 FEET
 11600 JONES ROAD
 #TXN000605460
 HARRIS COUNTY, TEXAS

IMAGE	X-REF	OFFICE	DRAWN BY	CHECKED BY	APPROVED BY	DRAWING NUMBER
---	---	Houston, Texas	J. RDZ			100249-B10

PLOT DATE: 4/19/04
 FORMAT REVISION 3/25/99



LEGEND:
 × BENCHMARK
 ⊕ MONITORING WELL LOCATION
 ■ GEOPROBE LOCATION
 PCE: CONCENTRATION IN SOIL
 27-30 FEET (µg/kg)

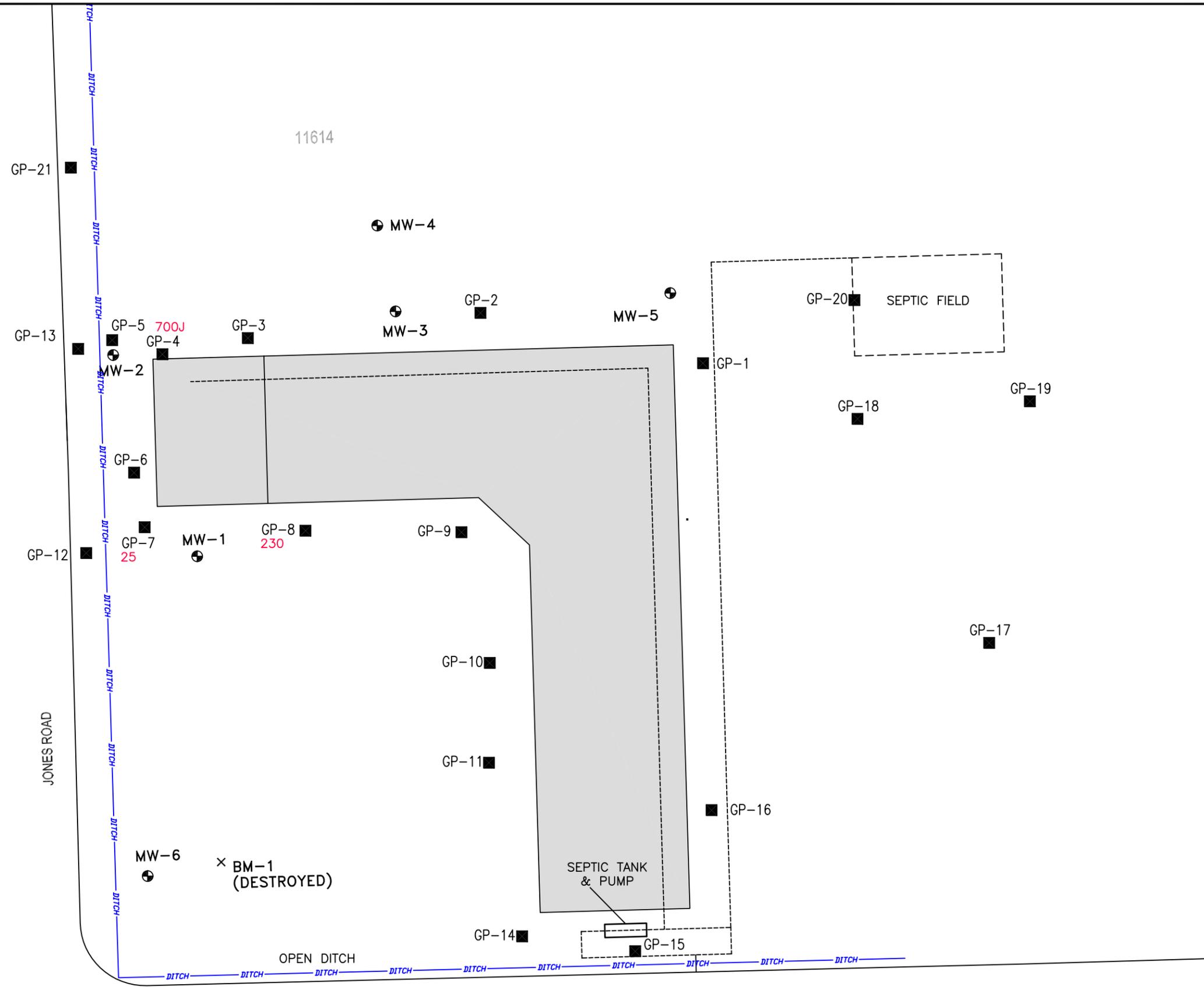


TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

FIGURE 9
 PCE CONCENTRATION IN SOIL, 27-30 FEET
 11600 JONES ROAD
 #TXN000605460
 HARRIS COUNTY, TEXAS

IMAGE X-REF OFFICE DRAWN BY CHECKED BY APPROVED BY DRAWING NUMBER
 --- J. RDZ Houston, Texas 4/19/04 100249-B11

PLOT DATE: 4/19/04
 FORMAT REVISION 3/25/99



LEGEND:

- × BENCHMARK
- ⊕ MONITORING WELL LOCATION
- GEOPROBE LOCATION

PCE: CONCENTRATION IN SOIL
 30-35 FEET (µg/kg)

SCALE

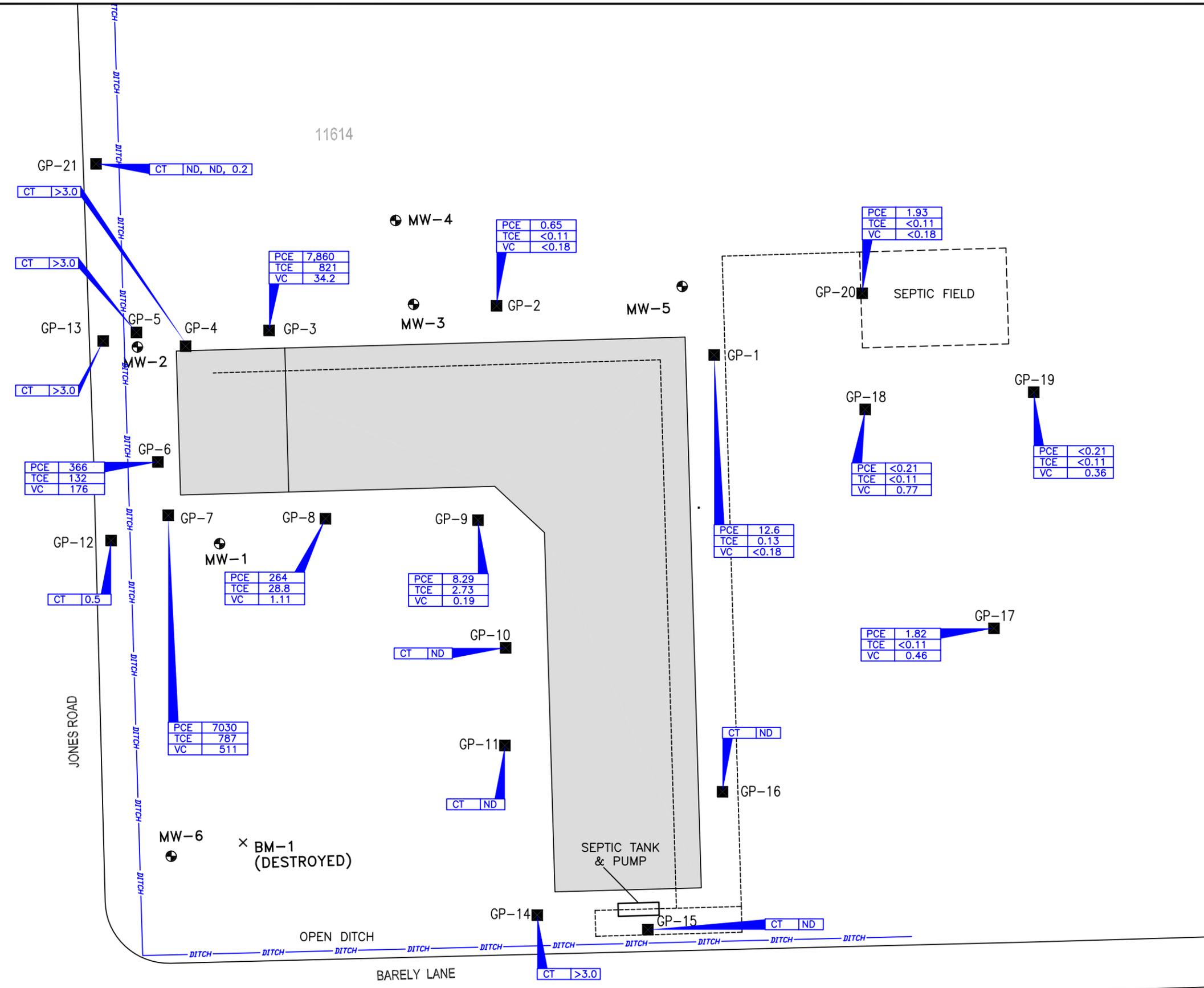
0 50 100 FEET

 TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

FIGURE 10
 PCE CONCENTRATION IN SOIL, 30-35 FEET
 11600 JONES ROAD
 #TXN000605460
 HARRIS COUNTY, TEXAS

DRAWING NUMBER 100249-B12
 APPROVED BY
 CHECKED BY
 DRAWN BY J. RDZ 4/19/04
 OFFICE Houston, Texas
 X-REF
 IMAGE

PLOT DATE: 4/28/04
 FORMAT REVISION 3/25/99



LEGEND:

- × BENCHMARK
- ⊕ MONITORING WELL LOCATION
- GEOPROBE LOCATION

PCE PCE, TCE, VC CONCENTRATIONS IN PARTS PER BILLION (ppb)

NS NOT SAMPLED

ND NOT DETECTED

CT COLOR TEC METHOD RESULTS

NOTE:
ALL LABORATORY ANALYTICAL DATA WERE MEASURED ONSITE USING A MOBILE LAB.



TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

FIGURE 11
 PCE, TCE, VC CONCENTRATIONS IN GROUNDWATER
 11600 JONES ROAD
 #TXN000605460
 HARRIS COUNTY, TEXAS