INITIAL REMEDIAL ACTION REPORT
FOR THE
PERMA-FIX ENVIRONMENTAL SERVICES FACILITY
3670 S.W. 47TH AVENUE
DAVIE, FLORIDA
EAR LICENSE NO. 00429

PREPARED FOR:

BROWARD COUNTY DEPARTMENT OF
NATURAL RESOURCE PROTECTION
218 S.W. 1ST AVENUE
FORT LAUDERDALE, FLORIDA 33301

SUBMITTED BY:

AQUA TERRA, INC.
3250 CORPORATE WAY
MIRAMAR, FLORIDA 33025

PROJECT NO. AT-1239

DECEMBER 1996

Richard K. Meyers
Senior Project Scientist

12-14-96
Isidro A. Duque
Registered Geologist No. 1660
State of Florida

AQUA TERRA, INC.
ENVIRONMENTAL CONSULTANTS

December 16, 1996

Mr. Lorenzo Fernandez, P.E.
Environmental Assessment and Remediation Section
Broward County Department of
Natural Resource Protection
218 S.W. 1st Avenue
Fort Lauderdale, Florida 33301

RE: INITIAL REMEDIAL ACTION REPORT FOR THE PERMA-FIX ENVIRONMENTAL SERVICES FACILITY LOCATED AT 3670 S.W. 47TH AVENUE, DAVIE, FLORIDA.
AT-1239
EAR LICENSE NO. 00429

Dear Mr. Fernandez:

Aqua Terra, Inc. (Aqua Terra) is pleased to provide you with the attached Initial Remedial Action Report regarding the above-referenced facility.

Should you have any questions or require additional information, please do not hesitate to contact Isidro Duque or myself at (954) 433-8804.

Sincerely,

AQUA TERRA, INC.

Richard K. Meyers
Senior Project Scientist

cc: Chris Blanton, Perma-Fix Environmental Services
Vincent Peluzo, FDEP
Ann Roat, PRC Environmental Management, Inc.

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1.0 INTRODUCTION

This Initial Remedial Action (IRA) Report summarizes the field activities which took place in an effort to mitigate a discharge of used oil (free product) and petroleum contaminated water that occurred from five above ground storage tanks at the Perma-Fix Environmental Services (Perma-Fix) facility located at 3670 S.W. 47th Avenue, Davie, Florida. The IRA included the elimination of the source of discharge (repairs to the damaged tanks), the removal of all free product, the excavation and disposal of impacted soil, the backfilling of excavated areas, and a limited evaluation of the groundwater quality.

2.0 BACKGROUND

Perma-Fix conducts business involving the re-processing of used oil. Perma-fix personnel pick up used oil from their clients using tanker or vacuum trucks which are ultimately downloaded to an on-site above ground tank system at their facility (subject site). Their facility is located at 3670 S.W. 47th Avenue, Davie, Florida. The used oil is stored in these tanks, eventually re-processed and then sold to end-users. Between October 12, 1996 and October 14, 1996, five (5) above ground storage tanks containing used oil, each having a 20,000 gallon capacity and one (1) containing water, were sabotaged by an unknown party. The valves on each of the oil tanks were destroyed, allowing the used oil to discharge from each tank until the used oil reached the level of the broken valves. The valve on the water tank was opened, allowing the stored water to discharge. The estimated quantity of used oil discharged is 53,000 gallons. The majority of the used oil discharged was retained by the secondary and tertiary containment walls surrounding the tank system. It has been estimated that approximately 5,900 gallons of used oil spilled outside of the containment walls. Upon discovery of the used oil discharge, Aqua Terra, Inc. (Aqua Terra) was retained by Perma-Fix to coordinate and supervise IRA activities in an effort to mitigate the effects of the oil spill. The IRA activities commenced on October 14, 1996 and ended on November 15, 1996.

3.0 INITIAL REMEDIAL ACTION ACTIVITIES

The oil spill affected only the eastern portion of the subject site spanning from the south to north property boundaries. The oil which discharged outside of the containment walls migrated from the south to the north end of the subject site. Subsurface drainage at the subject site was limited to a French-Drain system located at the northeast corner of the southern above ground tank system and a storm sewer system located immediately north of the northern property boundary. A site map is included as Figure 1.

An inspection of the spill on October 14, 1996 indicated that the spill did not impact the area beyond the eastern property boundary. The neighboring property to the south, Petroleum Management, Inc. (PMI), complained of marginal amounts of floating oil at their facility. Aqua Terra supervised the skimming of standing water at the northeast portion of the PMI property using a vacuum truck. Aqua Terra completed the off-site recovery of oil to the satisfaction of Petroleum Management. Immediately south of PMI, booms, oil-dry and absorbent pads were used to recover oil that migrated to this location via the wind and rainwater. All materials used to recover the oil in this area were stored in drums and relocated to the Perma-Fix facility for proper disposal.

The majority of the spill at the subject site either pooled on the ground surface or entered the on-site French-Drain system. Minimal amounts of oil entered the storm sewer system at the northern property boundary which ultimately discharges to nearby canals. In an effort to contain the spill from migrating to nearby canals, the oil was continuously recovered from the storm sewer catch basins, the French-Drain catch basins and any pools of oil that accumulated on the ground surface using vacuum trucks. Periodic inspections indicated that the spill did not affect the nearby canals. All oil recovered by the vacuum trucks was temporarily downloaded to a portable holding tank until the above ground tank valves were replaced. The tank valves were replaced within a couple of days from the date of the spill.

Following the removal of the pools of oil on the ground surface, approximately six inches of soil was scraped from the impacted area with a backhoe. The scraped soil was placed on visqueen on the northwest end of the subject site. By October 16, 1996, the majority of the oil which had spilled on the ground surface or in the storm sewer system was recovered.

It was determined that the existence of the French-Drain system was preventing the proper recovery of oil that entered the French-Drain catch basins. On October 17,

1996, Aqua Terra supervised the removal of the French-Drain system while continuously removing product discharging from the system using a vacuum truck. All impacted dry soil removed was stockpiled whereas all impacted wet soil was placed in lined roll-offs awaiting transportation to a thermal treatment facility. During the removal of the French-Drain system, an unidentifiable concrete pipe (30-36" diameter) was encountered running along a north-south direction at a depth of approximately three feet below land surface (bls). It was determined that the concrete pipe was discharging oil through a hole at the top of the pipe. After inquiring into the nature of this concrete pipe, no regulatory agency was able to identify the purpose of the pipe. According to a Mr. Danielli, who owned a majority of the property in the area during the 1970's, the extent of the concrete pipe did not go much beyond the Perma-Fix property boundaries. He said that the original intent of the pipe was to facilitate drainage but that the construction of the pipe was never completed.

Since the pipe continued to discharge oil and approval was granted by DNRP to remove the pipe, the decision was made to remove and dispose of this pipe. The entire length of the pipe was excavated, pressure cleaned and removed from the southern to the northern property boundaries. After allowing all the oil to flow out of the remaining sections of pipe at each property boundary, both ends of the pipe at each property boundary were sealed with hydraulic cement to prevent any environmental concerns in the future. All oil entering the trench created by the removal of the pipe was recovered using a vacuum truck. After further investigation, it was determined that only one (1) eight foot section of concrete pipe remained at the northern property boundary (between Perma-Fix and Oakes Road). This pipe section was subsequently removed and disposed, leaving no pipe remaining on the north end of the property. Figure 2 depicts the location of the concrete pipe.

3.1 Soil Excavation Activities

All soil excavation activities were conducted by Chuck's Backhoe personnel under the supervision of Aqua Terra. As mentioned previously, the initial soil excavation involved the scraping of impacted areas in an effort to prevent oil from migrating deeper into the subsurface. Additional soil was removed while removing both the French-Drain system and the unidentifiable concrete pipe. In both of these locations the soil was excavated to approximately one foot below the water table. In all, a total of 1,958.42 tons of soil were excavated, transported and thermally treated at the Rinker Materials Corporation facility in Miami, Florida. A copy of the soil waste disposal manifests are provided in Appendix A.

3.2 Free Product (Oil) Recovery

The amount of free product recovered during the IRA activities is unknown. Whenever accessible, product was recovered using a vacuum truck and ultimately downloaded on-site to the above ground tank system. Several companies assisted Perma-Fix in removing free product. These companies were R.S. Environmental, Cliff Berry, Harry's Waste Oil and Magnum Tank Services.

3.3 Soil Verification Sampling and Results

Following the removal of the French-Drain system and unidentifiable concrete pipe, Aqua Terra supervised the removal of impacted soil along the walls of the excavations. On October 29, 1996, Aqua Terra collected a total of fifty-seven (57) soil samples (SW-1 through SW-19) from the walls of the excavation areas at six inches, 18 inches and 30 inches below land surface at each sampling location. The samples were analyzed for Total Recoverable Petroleum Hydrocarbons (TRPH) by FL-PRO. The soil sampling locations are depicted in Figure 3. The analytical results indicated that 13 samples of the 57 samples collected exceeded the maximum allowable level of 50 parts per million (ppm). The exceedances are from particular intervals from soil samples SW-1, SW-5, SW-6, SW-8, SW-9, SW-12, SW-14 SW-16, SW-17 and SW-19. A summary of the soil analytical data from the walls of the initial excavation is provided as Table 1.

As a result of the exceedances at several locations along the excavation walls, the walls of the excavation areas were expanded in an effort to remove impacted soil. The walls were expanded in the locations of soil samples SW-5, SW-8, SW-9, SW-12, SW-16 and SW-17. From November 4, 1996 through November 6, 1996, Aqua Terra collected verification samples from the walls of the expanded areas from applicable intervals, designated soil samples SW-5A, SW-8A, SW-9A, SW-12A, SW-16A and SW-17A. The soil analytical results revealed that only soil sample SW-17A exceeded the maximum allowable level of 50 ppm. The locations of the soil sampling locations for the expanded excavation are depicted in Figure 4. A summary of the soil analytical data from the walls of the expanded excavation is provided as Table 2. The excavation area was eventually extended to the northern above ground tank system in the locations of SW-16A, SW-17A, SW-18 and SW-19.

Exceedances revealed from soil sample locations SW-1, SW-6 and SW-14 were addressed by scraping approximately one foot of soil from these areas. Verification samples were collected from 14 ground surface areas, designated SS-A through SS-N. The surface soil samples were analyzed for Total Recoverable Petroleum

Hydrocarbons (TRPH) by FL-PRO as well. The soil surface sampling locations are depicted in Figure 5. The analytical results indicated that all samples were below detection limits. Copies of the soil verification analytical results and chain of custody forms are provided in Appendix B.

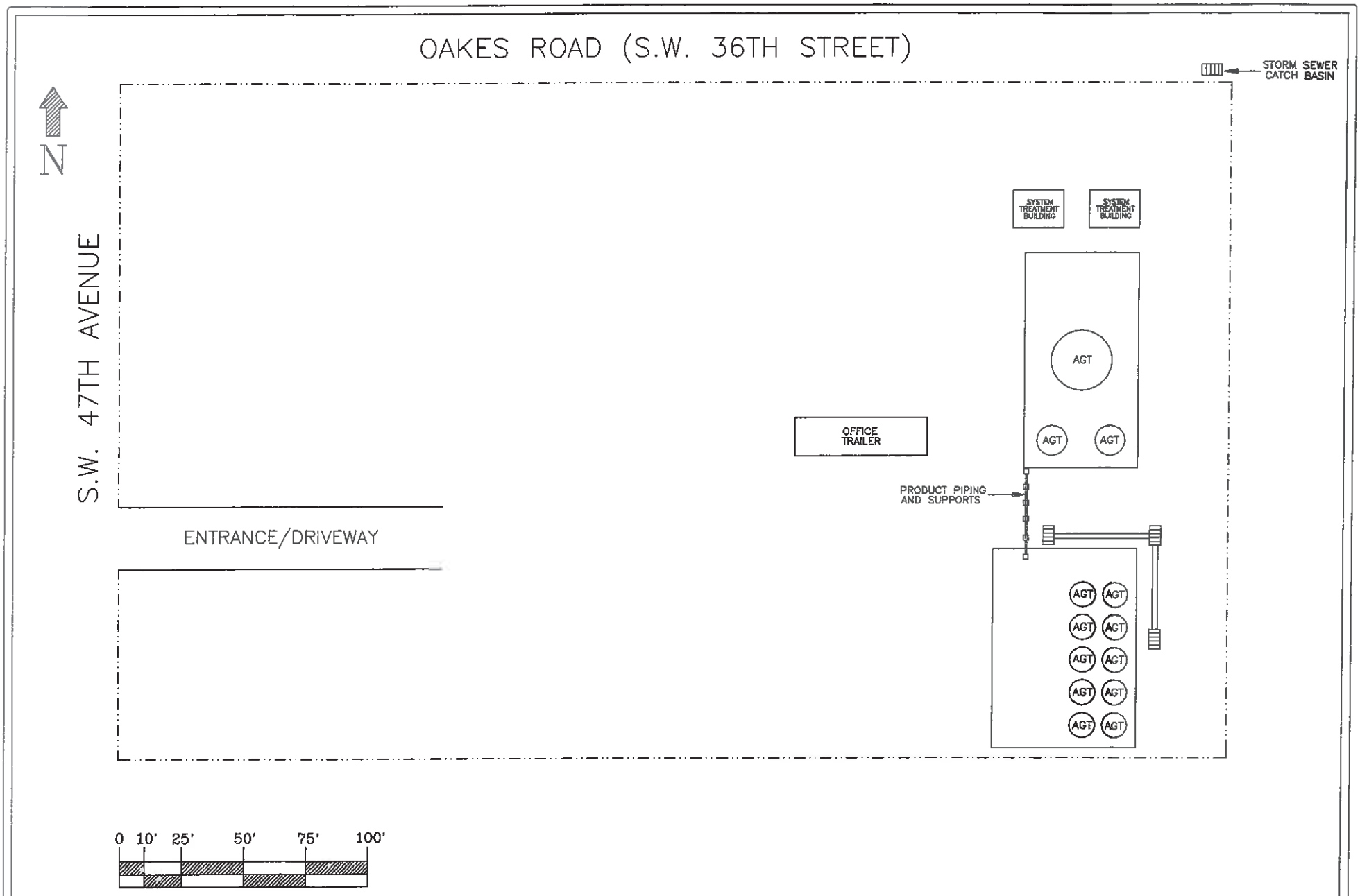
In an effort to be as thorough as possible, the excavation was eventually extended to the west of the tank farm systems, between the above ground piping supports and the office trailer. A site map depicting the extent of the final excavation is provided as Figure 6. Following the completion of the excavation activities, the excavated areas were backfilled to grade.

3.4 Groundwater Sampling

On October 31, 1996, a groundwater sample was collected from monitoring well MW-1 for analysis by EPA Methods 8260 (Volatile Organics) and 8270 (Semi-Volatile Organics). The analytical results indicated that all compounds were below detection limits. Copies of the groundwater analytical results and chain of custody form are provided in Appendix C. Photographs of on-site activities have been included in Appendix D.

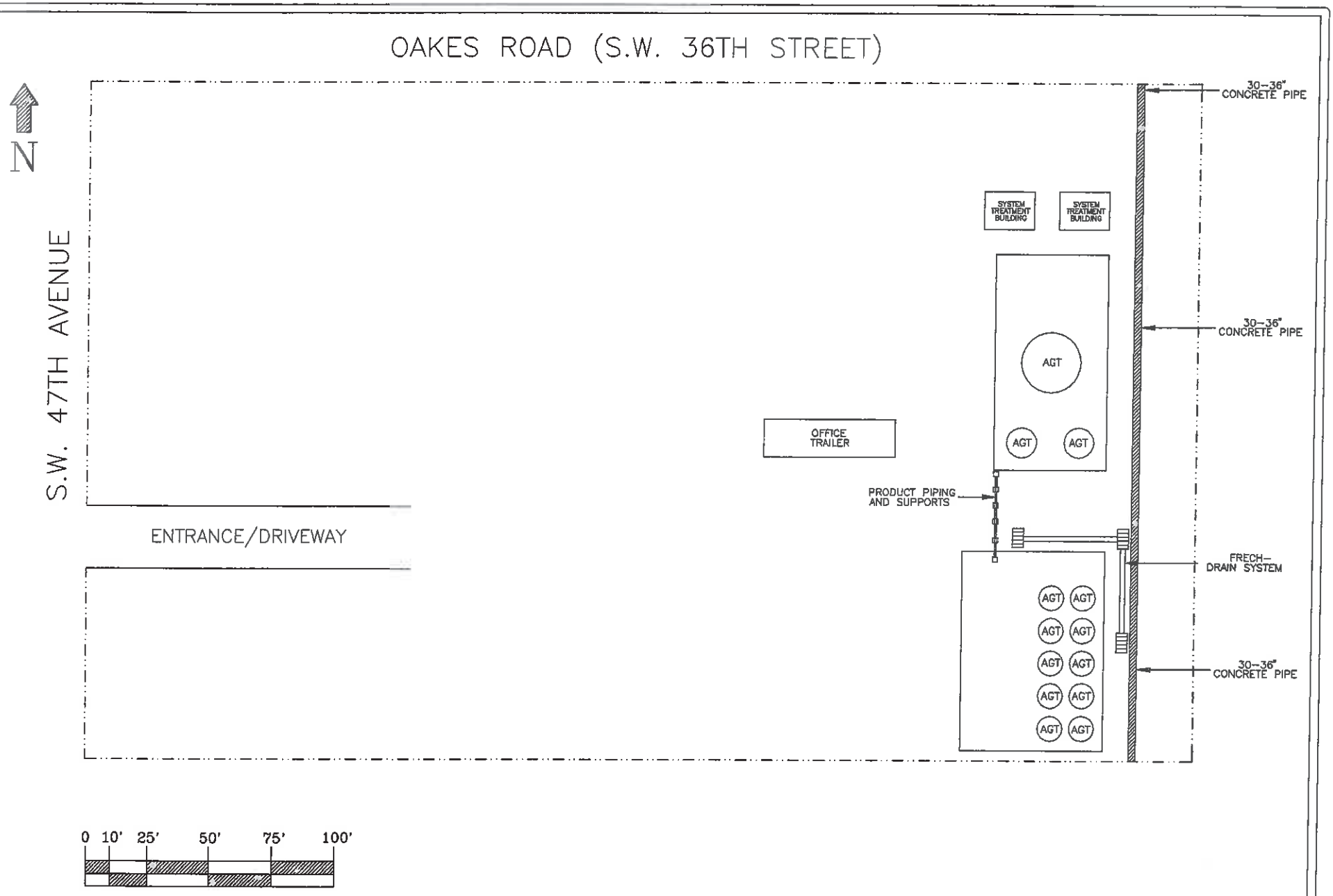
4.0 CONCLUSION

This IRA Report has summarized the field activities which took place in an effort to mitigate a discharge of free product that occurred from five above ground storage tanks at the subject site. The IRA included the recovery of free product, the excavation and stockpiling/storing of contaminated soil, the removal of subsurface structures considered to be a continual source of contamination, the transportation and thermal treatment of impacted soil, the backfilling of the excavated areas and a limited evaluation of the groundwater quality. A total of 1,958.42 tons of contaminated soil were transported to the Rinker Materials Corporation and thermally treated. On behalf of Perma-Fix, Aqua Terra will be initiating a contamination assessment at the subject site to determine the horizontal and vertical extent of contamination.

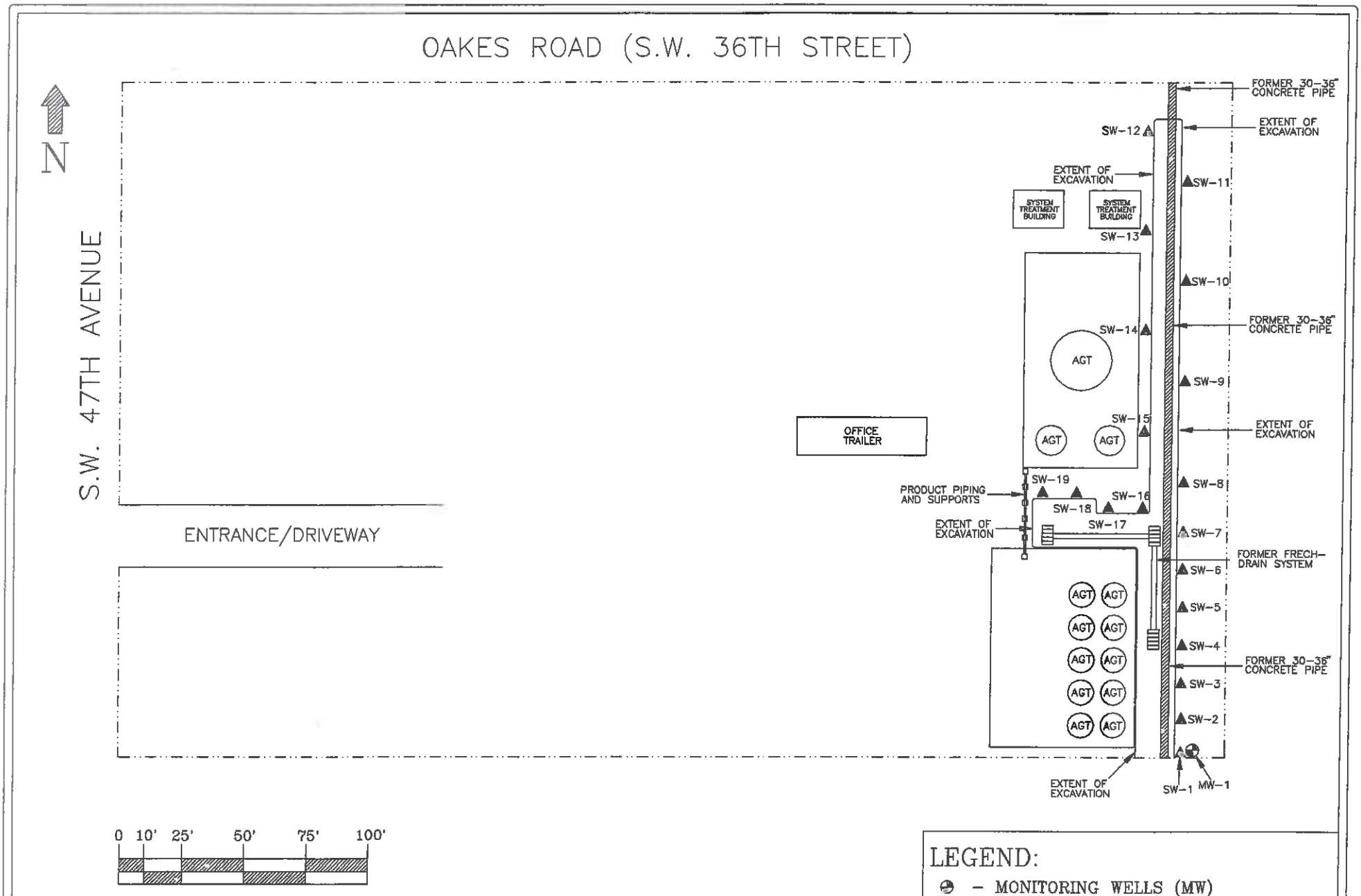


AQUA TERRA, INC.
ENVIRONMENTAL CONSULTANTS

FIGURE 1: SITE MAP	DRAWN BY: RKM
PROJECT NAME: PERMA-FIX ENVIRONMENTAL SERVICES	10/31/96
ADDRESS: 3670 S.W. 47TH AVENUE, DAVIE, FLORIDA	PROJ. #: AT-1239

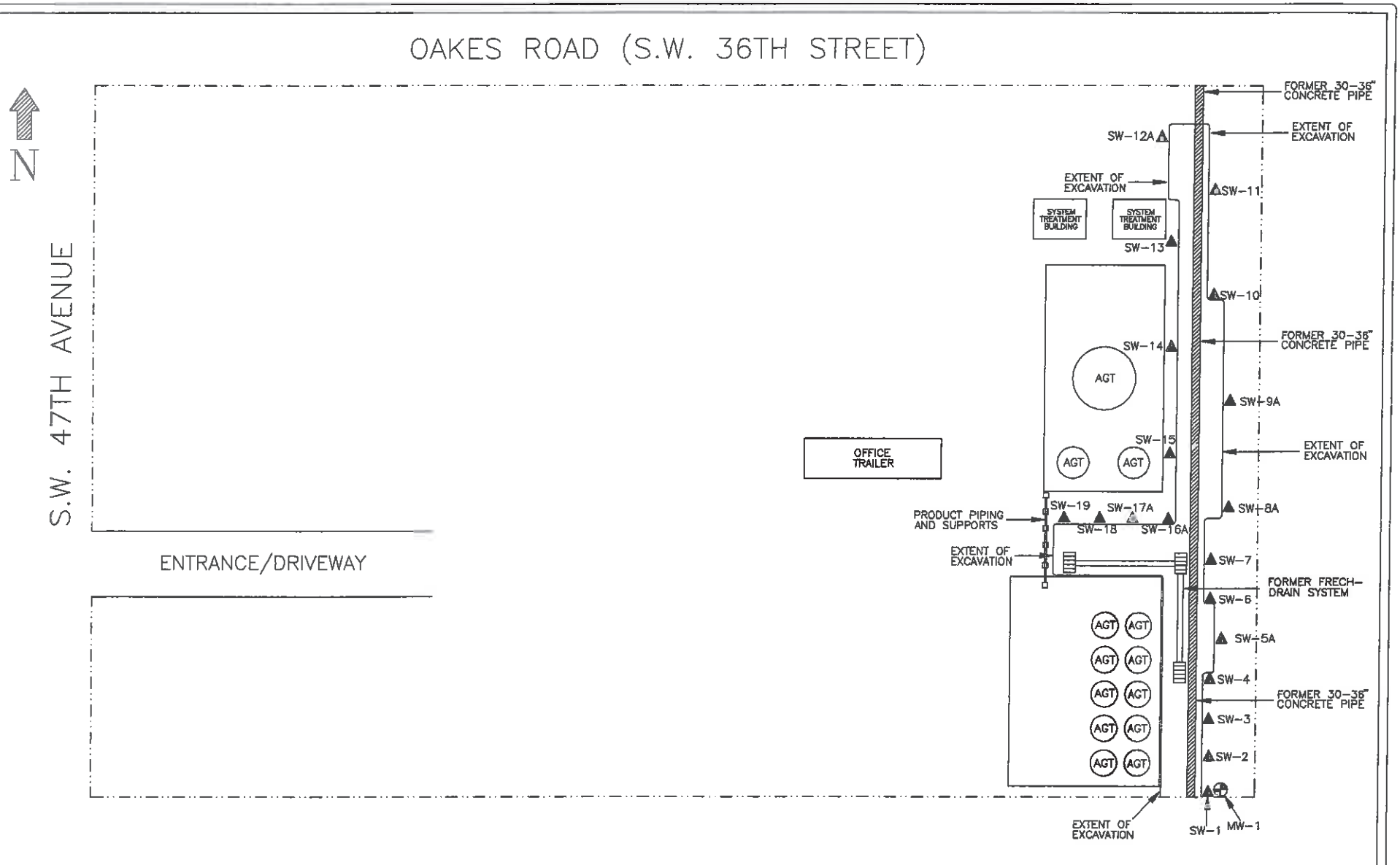


AQUA TERRA, INC. ENVIRONMENTAL CONSULTANTS	FIGURE 2: SITE MAP WITH CONCRETE PIPE LOCATION	DRAWN BY: RKM
	PROJECT NAME: PERMA-FIX ENVIRONMENTAL SERVICES	10/31/96
	ADDRESS: 3670 S.W. 47TH AVENUE, DAVIE, FLORIDA	PROJ. #: AT-1239



AQUA TERRA, INC.
ENVIRONMENTAL CONSULTANTS

FIGURE 3: SITE MAP WITH MONITORING WELL AND SOIL (EXCAVATION WALL) SAMPLING LOCATIONS-INITIAL EXCAVATION AREA	DRAWN BY: RKM
PROJECT NAME: PERMA-FIX ENVIRONMENTAL SERVICES	10/31/96
ADDRESS: 3670 S.W. 47TH AVENUE, DAVIE, FLORIDA	PROJ. #: AT-1239



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ENVIRONMENTAL CONSULTANTS

FIGURE 4: SITE MAP WITH MONITORING WELL AND SOIL (EXCAVATION WALL) SAMPLING LOCATIONS-EXPANDED EXCAVATION

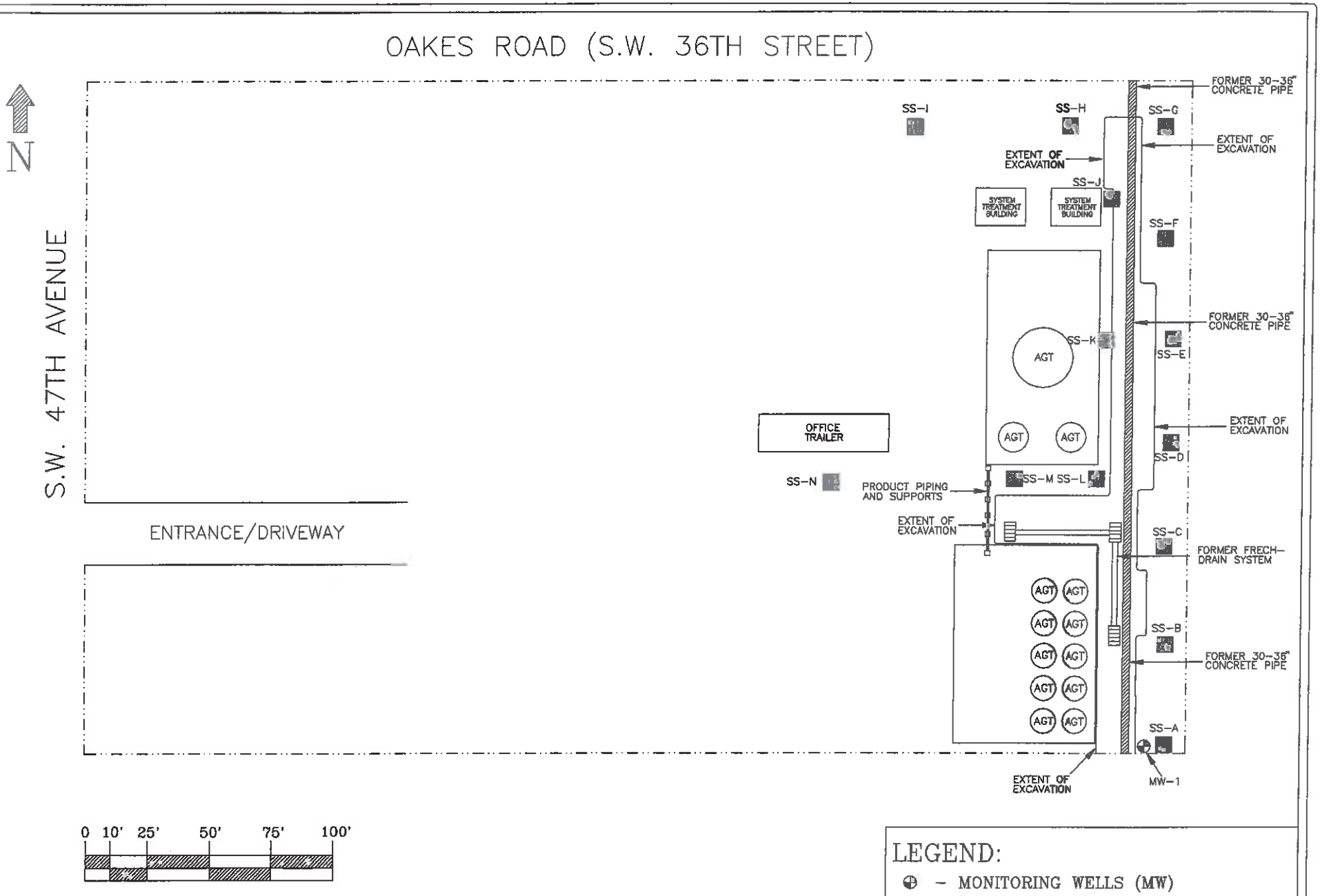
PROJECT NAME: PERMA-FIX ENVIRONMENTAL SERVICES

ADDRESS: 3670 S.W. 47TH AVENUE, DAVIE, FLORIDA

DRAWN BY: RKM

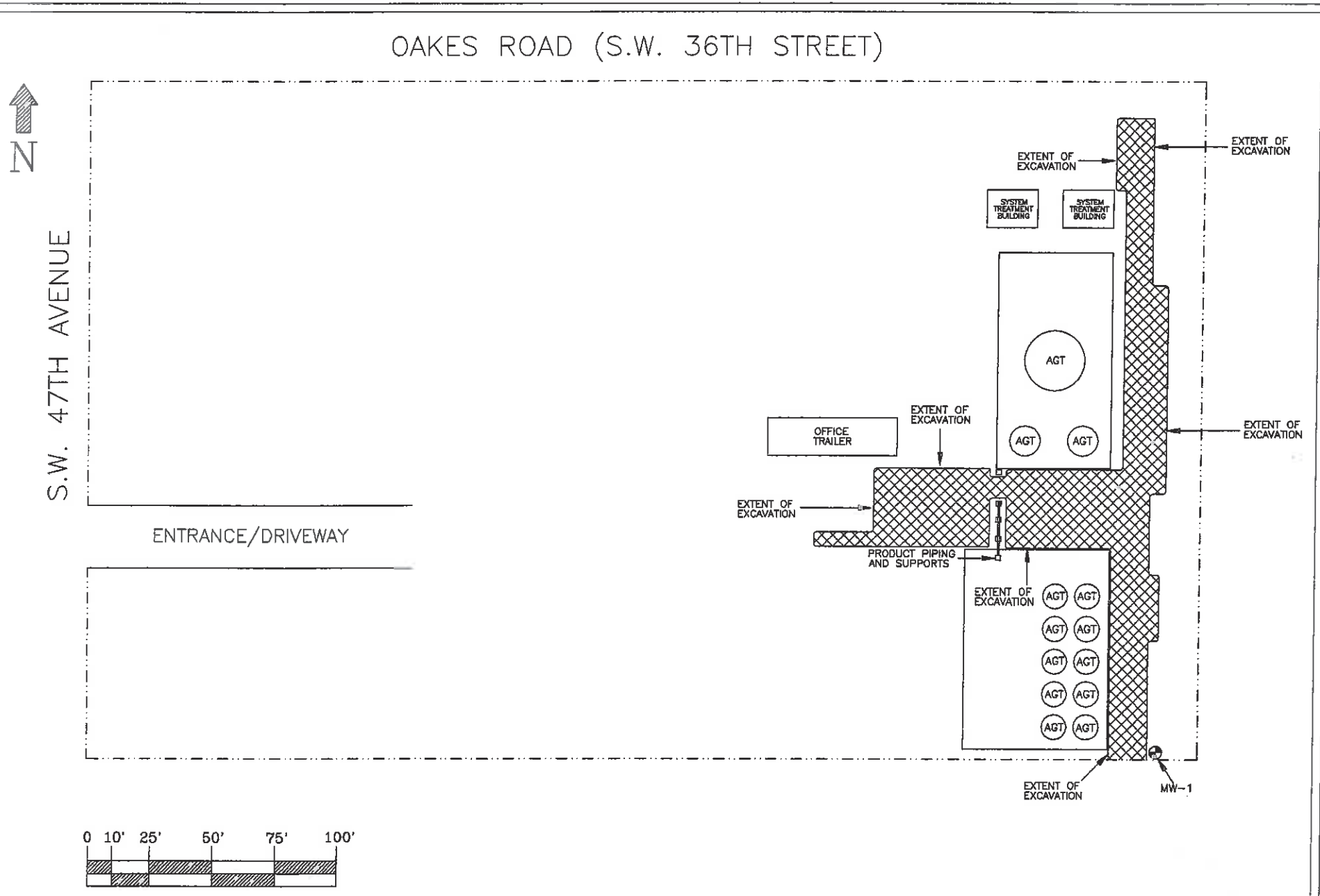
11/6/96

PROJ. #: AT-1239



AQUA TERRA, INC.
ENVIRONMENTAL CONSULTANTS

FIGURE 5: SITE MAP WITH MONITORING WELL AND SOIL (SURFACE) SAMPLING LOCATIONS	DRAWN BY: RKM
PROJECT NAME: PERMA-FIX ENVIRONMENTAL SERVICES	11/7/96
ADDRESS: 3670 S.W. 47TH AVENUE, DAVIE, FLORIDA	PROJ. #: AT-1239



AQUA TERRA, INC. ENVIRONMENTAL CONSULTANTS	FIGURE 6: SITE MAP WITH MONITORING WELL AND FINAL EXCAVATION AREA	DRAWN BY: RKM
	PROJECT NAME: PERMA-FIX ENVIRONMENTAL SERVICES	11/14/96
	ADDRESS: 3670 S.W. 47TH AVENUE, DAVIE, FLORIDA	PROJ. #: AT-1239

TABLE 1
SUMMARY OF SOIL ANALYTICAL DATA (WALLS OF INITIAL EXCAVATION)
PERMA-FIX ENVIRONMENTAL SERVICES FACILITY
OCTOBER 29, 1996

LOCATION	DEPTH (FEET)	TRPH (C_7 -C_{40}) - FL PRO	DETECTION LIMIT
SW-1	6"	66	25
	18"	BDL	25
	30"	BDL	25
SW-2	6"	BDL	25
	18"	BDL	50
	30"	BDL	25
SW-3	6"	BDL	25
	18"	BDL	50
	30"	BDL	25
SW-4	6"	BDL	50
	18"	BDL	25
	30"	BDL	25
SW-5	6"	38	25
	18"	72	25
	30"	BDL	25
SW-6	6"	150	25
	18"	39	25
	30"	BDL	25
SW-7	6"	BDL	50
	18"	BDL	25
	30"	BDL	25
SW-8	6"	BDL	25
	18"	BDL	25
	30"	110	25
SW-9	6"	BDL	25
	18"	210	25
	30"	BDL	25
SW-10	6"	BDL	25
	18"	BDL	25
	30"	BDL	25
SW-11	6"	BDL	25
	18"	BDL	25
	30"	BDL	25

TABLE 1 (CONTINUED)
SUMMARY OF SOIL ANALYTICAL DATA (WALLS OF INITIAL EXCAVATION)
PERMA-FIX ENVIRONMENTAL SERVICES FACILITY
OCTOBER 29, 1996

LOCATION	DEPTH (FEET)	TRPH (C_9 -C_{40}) - FL PRO	DETECTION LIMIT
SW-12	6"	160	25
	18"	340	25
	30"	BDL	25
SW-13	6"	BDL	25
	18"	BDL	25
	30"	BDL	25
SW-14	6"	55	25
	18"	35	25
	30"	BDL	25
SW-15	6"	BDL	25
	18"	BDL	25
	30"	26	25
SW-16	6"	120	25
	18"	29	25
	30"	BDL	25
SW-17	6"	2,000	250
	18"	1,100	130
	30"	58	25
SW-18	6"	BDL	25
	18"	BDL	25
	30"	BDL	25
SW-19	6"	BDL	25
	18"	BDL	25
	30"	110	25

NOTES:

All concentrations in milligrams per kilogram
BDL = Below Detection Limits

TABLE 2
SUMMARY OF SOIL ANALYTICAL DATA - (WALL OF EXPANDED EXCAVATION)
PERMA-FIX ENVIRONMENTAL SERVICES FACILITY

LOCATION	DEPTH (FEET)	TRPH (C_6-C_{40}) - FL PRO	DETECTION LIMIT	DATE OF SAMPLING
SW-5A	18"	BDL	25	11/5/96
SW-8A	30"	BDL	25	11/5/96
SW-9A	18"	BDL	25	11/4/96
SW-12A	6"	BDL	25	11/5/96
	18"	BDL	25	11/5/96
SW-16A	6"	BDL	25	11/6/96
SW-17A	6"	BDL	25	11/6/96
	18"	130	25	11/6/96
	30"	BDL	25	11/6/96

UFD)
LLS OF INITIAL EXCAVATION)
ERVICES FACILITY
, 1996

		H (C_6-C_{40}) - FL PRO	DETECTION LIMIT
		160	25
		340	25
		BDL	25
		BDL	25
		BDL	25
		BDL	25
	5'	55	25
	10'	35	25
		BDL	25
	5'	BDL	25
	10'	BDL	25
		26	25
	5'	120	25
	10'	29	25
		BDL	25
	5'	2,000	250
	10'	1,100	130
		58	25
	5'	BDL	25
	10'	BDL	25
		BDL	25
	5'	BDL	25
	10'	BDL	25
		110	25