United States
Environmental Protection
Agency

Office of
Emergency and
Remedial Response

EPA/ROD/R04-88/033
March1988

EPA

Superfund Record of Decision:

Alpha Chemical, FL

50272-101

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ha Chemical, FL
st Remedial Action - Final

5. Report Date 05/18/88

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401 M Street, S.W.
Washington, D.C. 20460

13. Type of Report & Period Covered
800/000

14.

15. Supplementary Notes

16. Abstract (Limit: 200 words)

The Alpha Chemical site, located in Kathleen, Florida, consists of over 32 acres, that comprise the Alpha Resins Corporation (ARC), a facility of the Alpha Chemical Corporation. Surface water from the site drains into a swampy, low-lying wetland area. Karst topography is evidenced by sinkholes in the area. The facility has produced unsaturated polyester resin for fiberglass manufacturers since 1967. A waste stream, erred to as the "water of reaction", is produced as a by-product of polyester resin mation. This waste stream is composed primarily of water containing small amounts of organics. ARC obtained a State permit in 1967 to place this waste stream in two unlined surface impoundments. The permit allowed for the ponds to act as percolation basins, allowing for the natural biodegradation of the organics. The percolation ponds have not been used since 1976. At that time, a thermal oxidizer was installed to incinerate the waste stream rather than place it in the percolation ponds. After switching to incineration, Pond 4 dried up. It was then used for one year as a solid waste landfill by ARC and its employees. In 1977, the landfill was covered with two feet of native soil. In 1982, ARC contacted the Florida Department of Environmental Regulations (DER) to obtain a permit to line Pond 3 with concrete for caustic wash water disposal. As a condition of the permit, DER required ARC to install ground water monitoring wells. In
(See Attached Sheet)

17. Document Analysis a. Descriptors
Record of Decision
Alpha Chemical, FL
First Remedial Action - Final
Contaminated Media: gw
Key Contaminants: organics (ethylbenzene)

b. Identifiers/Open-Ended Terms

c. COSATI Field/Group

18. bility Statement	19. Security Class (This Report) None	21. No. of Pages 53
	20. Security Class (This Page) None	22. Price

(See ANSI-Z39.18) *See Instructions on Reverse* OPTIONAL FORM 272 (4-77) (Formerly NTIS-35) Department of Commerce

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EPA/ROD/R04-88/033
A a Chemical, FL
I : Remedial Action - Final

16. ABSTRACT (continued)

April, 1983, a DER ground water assessment report indicated industrial impacts on the surficial aquifer. Further soil and ground water sampling investigation did not reveal a definable plume of contamination. Of the 23 organic constituents identified in the ground water, ethylbenzene was found to be the most frequently detected, having a high concentration of contamination.

The selected remedial action for this site includes placing a low permeable cap over the unlined pond area, and long-term ground water and surface water monitoring. The estimated capital cost for this remedial action is $142,400 with present worth O&M of $186,200.

DECLARATION FOR THE RECORD OF DECISION

ALPHA RESINS CORPORATION SITE
LAKELAND, FLORIDA

Statement of Purpose

This Decision Document presents the selected remedial action for the Alpha Resins Corporation site which was developed in accordance with the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act (SARA), and to the extent practicable, the National Contingency Plan (NCP).

The State of Florida was consulted in the selection of this remedy.

Statement of Basis

This decision is based upon the Administrative Record which is on file in the EPA Region IV office, 345 Courtland Street, N.E., Atlanta, Georgia and is available at the Florida Department of Environmental Regulation, 2600 Blair Stone Road, Tallahassee, Florida, 32399-2400.

Description of Selected Remedy

The remedy chosen is capping of the small unlined pond. Long-term monitoring of the ground and surface water will be conducted to assure the remedy is effective and that the landfill continues to meet ARAR's.

Declaration

The selected remedy is protective of human health and the environment, attains federal and state requirements that are applicable or relevant and appropriate (ARARs) and is cost effective. The ARARs are minimally exceeded in the current situation. The statutory preference for treatment was not satisfied because treatment of the waste material is not necessary to meet the standards of performance. Additionally, treatment would be significantly more expensive than the selected remedy. This remedy will reduce the generation of leachate at the site and thus effectively reduce the mobility of the wastes.

This remedy was chosen over an alternative technology because it is cost effective and utilizes a technology fully capable of meeting public health, welfare and environmental goals.

Lee A. Dillinger Jr. for

Greer Tidwell
Regional Administrator

May 18, 1988

Date

SITE NAME, LOCATION, AND DESCRIPTION

Alpha Resins Corporation is located three miles north of Lakeland, Florida at 4620 N. Galloway Road. (Figure 1) This facility is a wholly owned subsidiary of The Alpha Corporation of Tennessee. Land was purchased and the plant was constructed in 1967. Currently the facility boundaries encompass 32+ acres of land in the SE 1/4, Section 28, Township 27 S., Range 23 E of Polk County, Florida.

Prior to the construction of the Alpha Resins Plant in 1967, the site was used primarily for agricultural purposes. The land was clear of any construction, with the exception of some agriculture related structures such as sheds and barns. The land was also relatively clear of major vegetation and trees. No previous industrial practices are known to have existed at this site prior to utilization of the site by Alpha.

Since beginning operation in 1967, the plant has produced unsaturated polyester resins for manufacturers of fiberglass boats, shower stalls, cultured marble vanities, and other products which are key components of the construction and recreation industries. Polyester resins are produced by an esterification reaction of various difunctional organic alcohols and acids which yield ester salt and corresponding water.

The Alpha site is located within the Hillsborough River drainage basin which comprises approximately 4 percent of Polk County. Land in the Hillsborough river drainage basin is flat, fairly high, and often extensively overgrown with pine and palmetto. (Figure 2)

The Alpha site is located on a ridge in the Hillsborough River drainage basin which has restricted internal drainage. Surface water from the site drains into a swampy, low-lying wetland area at the southeastern corner of the property. Water drains from the swamp east-northeast into a bayhead east of Galloway Road.

Two aquifers exist at the Alpha site: a shallow unconfined aquifer comprised of unconsolidated coarse to fine sands and clayey sands; and the artesian Floridan Aquifer consisting of a thick sequence of limestones and dolomites with several distinct water-producing zones.

SITE SPECIFIC GEOLOGY & HYDROGEOLOGY

The Alpha site is located on the southwest limb of the Ocala Uplift, a northwest-southeast trending anticline in Polk County. Sand covered ridges of Pleistocene to Recent age overlie sandy clays and clayey sands of the Miocene age Hawthorn Formation at the site. Relatively impermeable clays and marls of the Hawthorn protect and confine the underlying Floridan aquifer system, the main source of ground water for the region. (Table 1)

Karst topography is evidenced by sinkholes in the area. Fifty-four sinkholes have been identified within a one-mile radius of the plant. The sinkholes follow a general northwest trend related to thinning of the Hawthorn

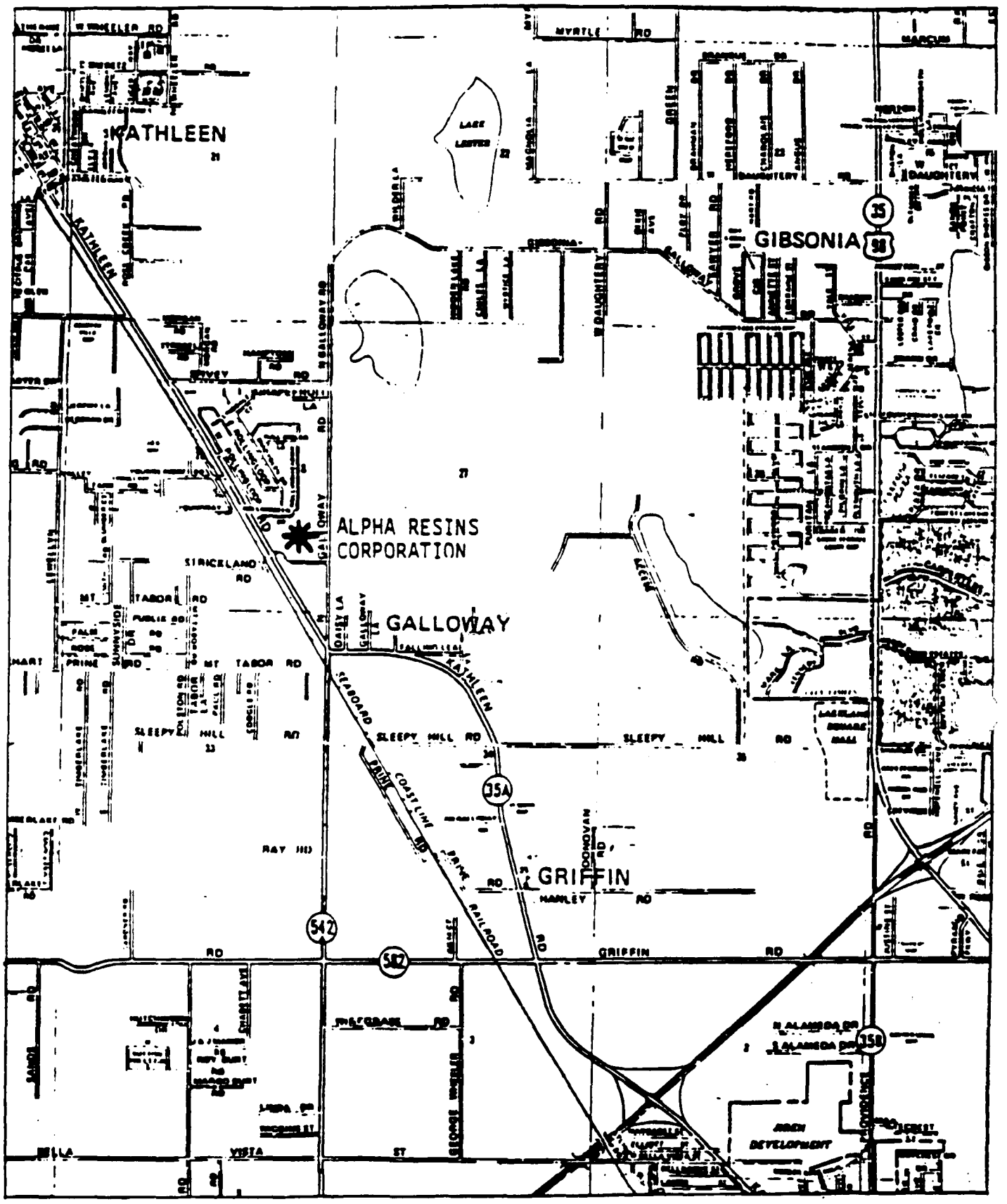

Figure 1

LOCATION MAP

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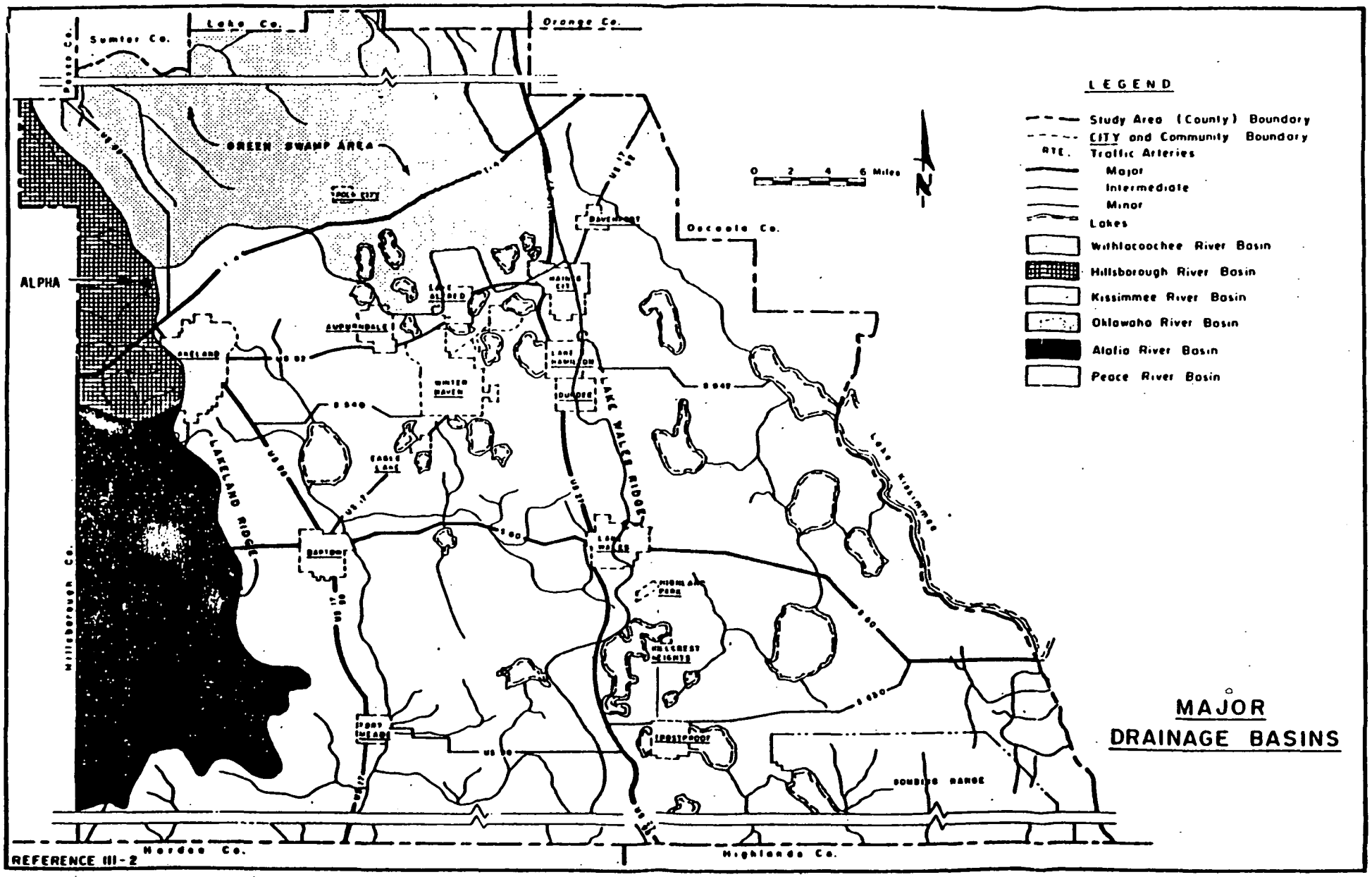


FIGURE 2 MAJOR DRAINAGE BASINS OF POLK COUNTY, FLORIDA.

TABLE 1

STRATIGRAPHIC UNITS AND AQUIFER SYSTEMS AT THE ALPHA SITE

Geologic Age	Stratigraphic Unit	Thickness (in feet)	Lithologic Characteristics	Aquifer Systems	Water-bearing Properties
Recent and Pleistocene	Recent and Pleistocene deposits	29.5' - 35.0'	Coarse to fine sands, and clayey sands	Shallow aquifer	Surficial deposits yield small amounts of water
Miocene (middle to late)	Hawthorn Formation	70'-79'	Gray to green calacareous, phosphatic, sandy clays and clayey sands. Dolomite lenses and small, fine sand lenses	Aquitard/ Aquiclude	Relatively impermeable clays and sandy clays yields small supplies of water
Eocene	Ocala group	Drilled 36' into formation	White to cream, chalk massive fossiliferous marine limestone, cherty	Floridan Aquifer system	Marine limestone formations. Utilized as the primary source of water in the area.

Formation. The sinkholes vary in size from approximately 410 acres to less than one-quarter of an acre and are the result of chemical weathering of carbonate rocks. (Figure 3)

The geology of the upper 32 to 40 feet at the Alpha Resins site consists of unconsolidated sands, sandy clays, and clayey sands. Fine grained quartz sands occur from ground surface to depths of approximately 17 to 35 feet. Below the sands are found clays and clayey sands to a depth of approximately 50 feet. From 50 to 100 feet below ground surface are found clayey sands interbedded with limestone and dolomites. The lower several feet of these clays and clayey sands lie unconformably above the Floridan Aquifer which begins at depths varying from 95 to 100 feet below ground surface. (Figure 4)

Surface Aquifer Characteristics - ground water levels, flow direction, and flow rate - were determined for the surficial aquifer. Eighteen piezometers were installed in August, 1983, and water level measurements recorded on March 19, 1984 during a period of stable hydrologic conditions.

In places, the surficial aquifer may be divided into a shallow surficial aquifer and a deeper surficial aquifer by varying layers of clayey sand and sandy clay ranging from 1 to 13 feet thick. The deeper surficial aquifer at a depth of 12 to 16 feet is in a clayey sand layer overlying the thick clay confining unit. Differentiation of the shallow and deeper surficial aquifers varies across the site. The shallow and deeper surficial aquifers appear to be interconnected in the area between monitoring wells AC-102, AC-106, and AC-107 but separated elsewhere by a less permeable unit of sandy clay.

Ground water flow in the surficial aquifer is towards the south/southeast at flow rates varying from 3.45×10^{-2} feet/day for the northwest corner of the site to 1.18×10^{-2} feet/day for the southeast corner of the property based on an assumed porosity of 20% and a permeability of 2.83×10^{-1} feet/day for the surficial aquifer. (Figure 5)

Ground water flow in the surficial aquifer is apparently limited to downgradient and lateral flow with only minor vertical percolation downward in the sediments. Downward percolation of ground water is limited due to the surficial aquifer being underlain by impermeable clay and marls of the Hawthorn formation.

Ground water flow in the Floridan aquifer system, the main ground water supply in the area, was determined from a well inventory in the immediate area of the Alpha site. (Figure 6) The Floridan aquifer is an artesian system due to the confining nature of the overlying, relatively impermeable sediments.

SITE HISTORY

The Alpha Chemical Company owns and operates a customized polyester resin manufacturing facility which is about 32+ acres in size and located in Kathleen, Florida, near Lakeland. Since the beginning of operations in 1967, the plant has produced unsaturated polyester resins. Polyester resins are produced by an esterification reaction of various difunctional organic

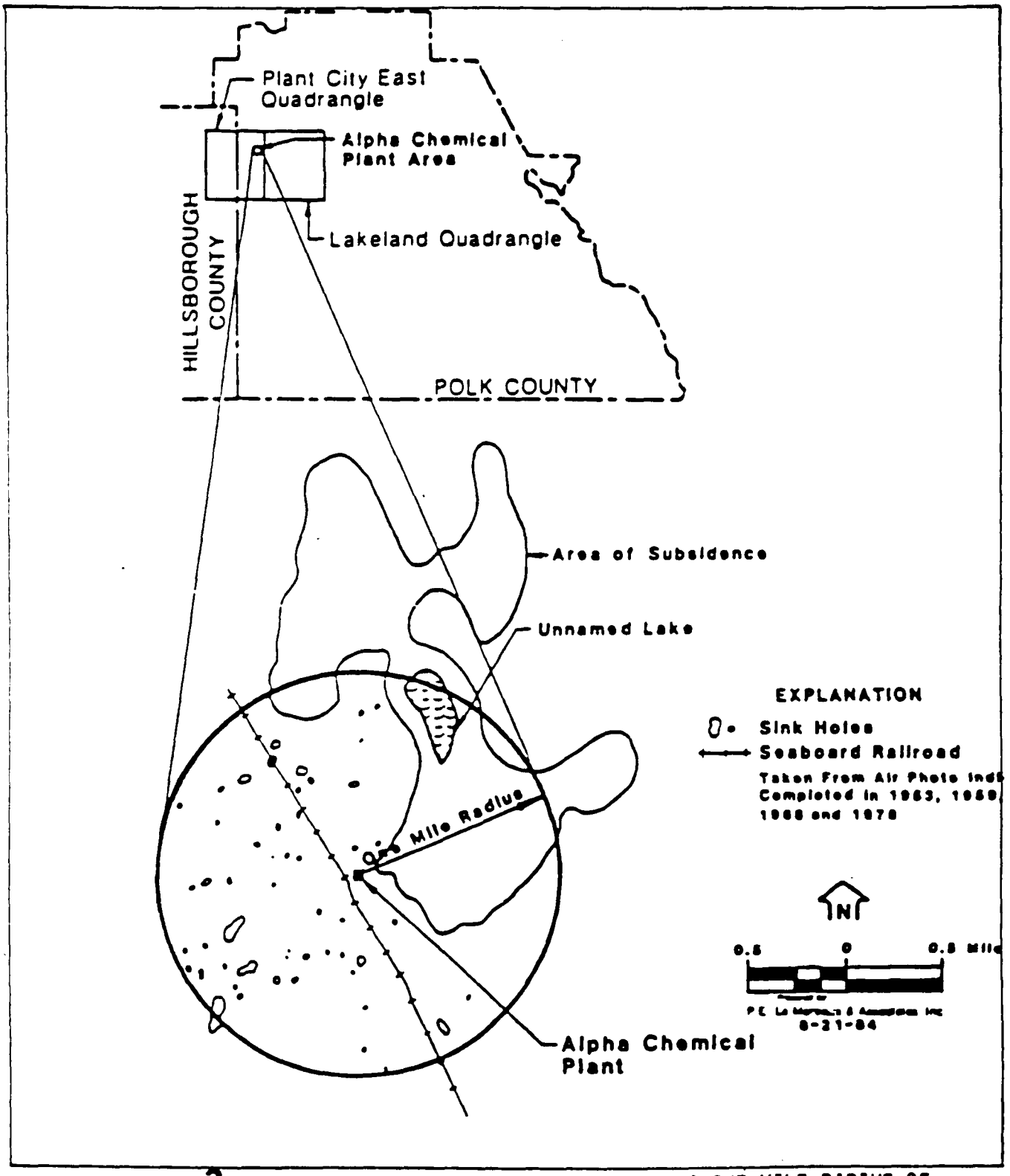


FIGURE 3 LOCATION OF KARST FEATURES WITHIN A ONE MILE RADIUS OF THE ALPHA RESINS PLANT.

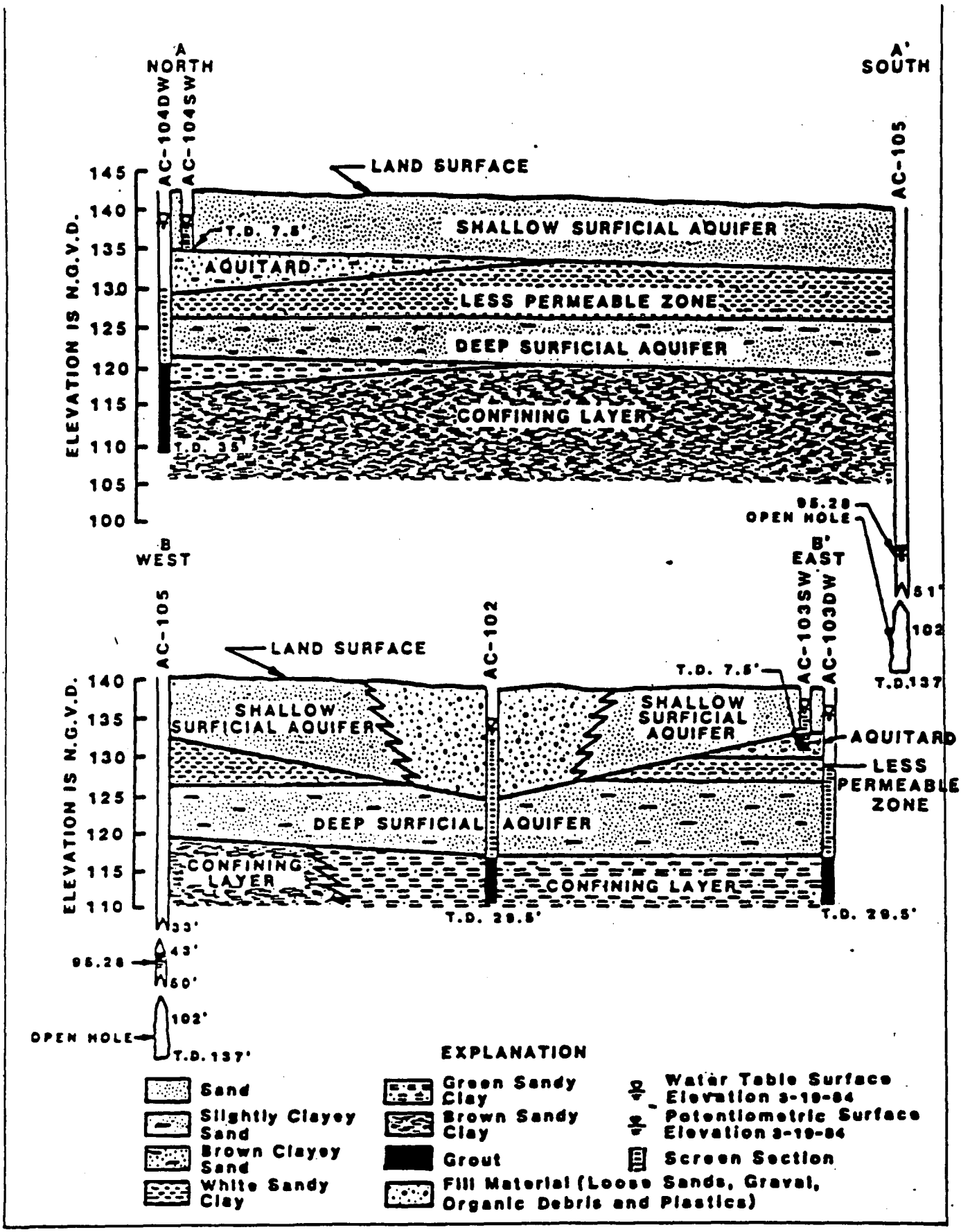


FIGURE 4 HYDROGEOLOGIC CROSS-SECTION OF THE ALPHA SITE.

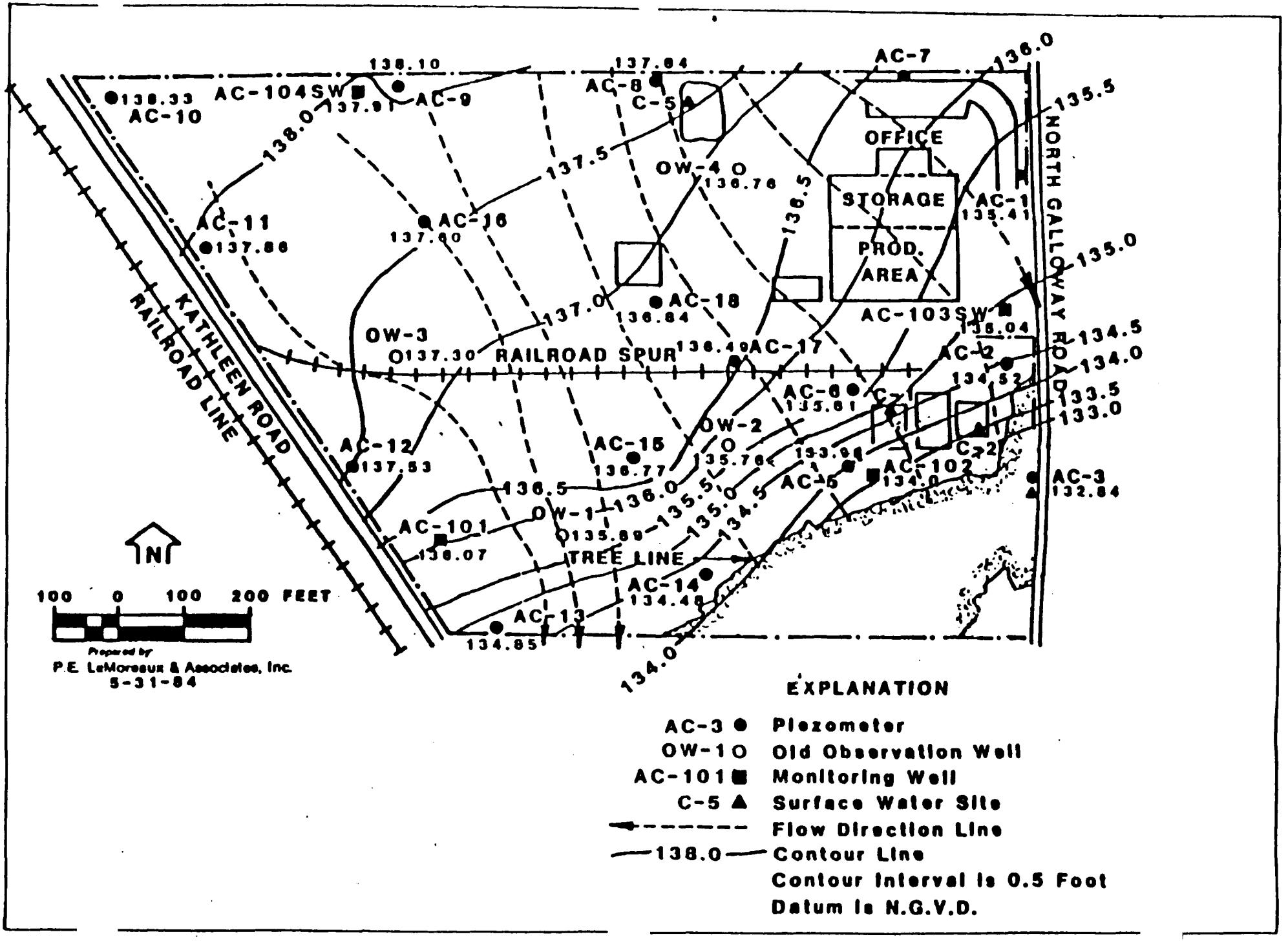


FIGURE 5 : GROUNDWATER CONTOUR MAP OF THE SURFICIAL AQUIFER AT THE ALPHA SITE

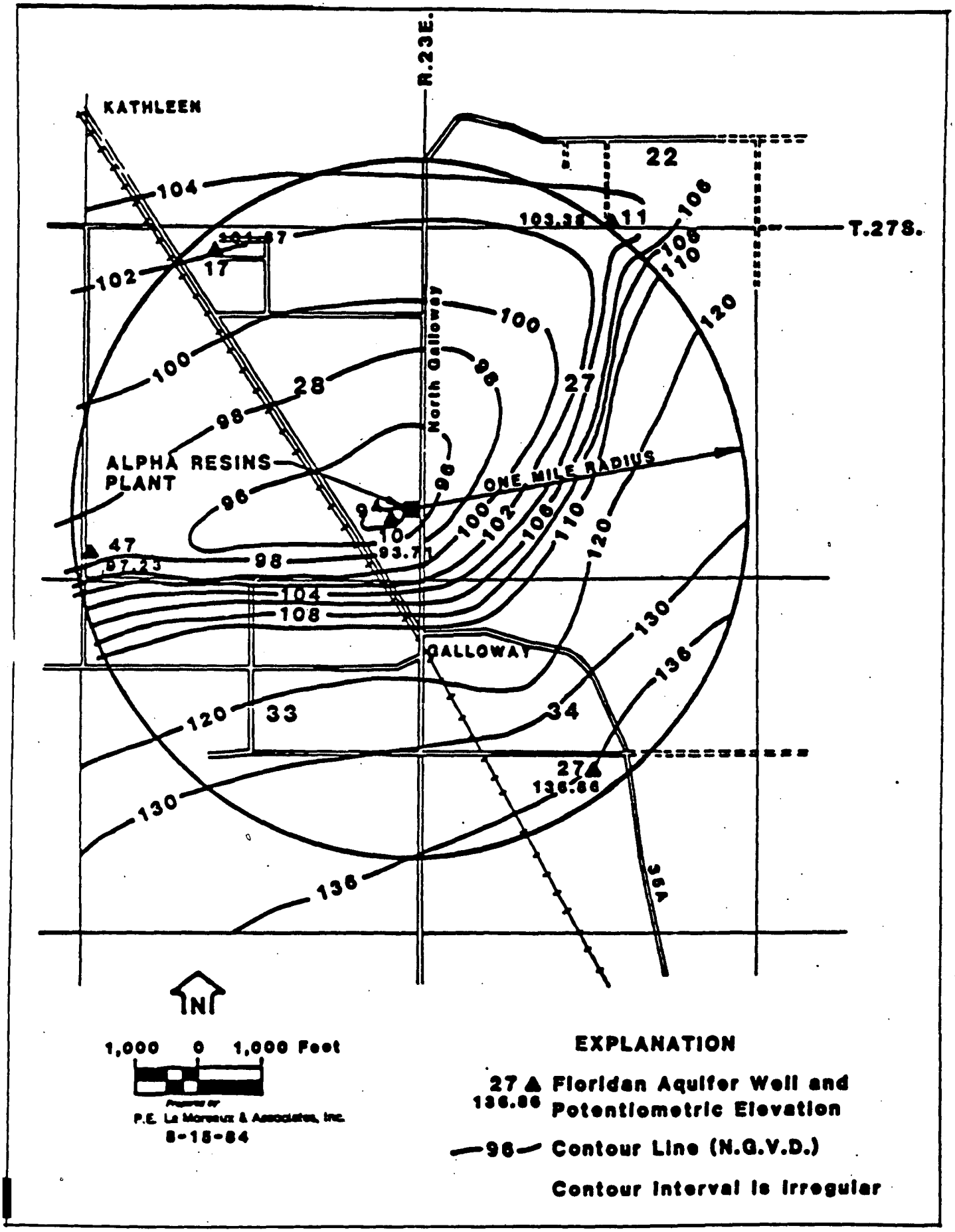


FIGURE 6 POTENTIOMETRIC SURFACE MAP OF THE FLORIDAN AQUIFER - 6/26/84.

alcohols and acids which yield ester salts and corresponding water. During 1986, Alpha used an average of 430,00 gallons per day of non-contact cooling water. This water is discharged through the cooling water pond and into the swamp. Peak daily demands in 1987 resulted in as much as 750,000 gallons of water being discharged into the swamp. As a result of the reactions which produce polyester resins, a waste stream referred to as the 'water of reaction' is generated. This waste stream is composed primarily of water containing small amounts of organics. A waste stream of noncontact (noncontaminated) cooling water is also generated as a result of the production process. The cooling water is used to slow the resin production reactions.

In conjunction with the building of the plant in 1967, one small 80,000 gallon unlined surface pond (referenced as Pond number 1) was constructed to receive the noncontact (noncontaminated) cooling water and one large unlined surface impoundment (referenced as Pond number 2-3) was constructed to receive the 'water of reaction' waste stream from the plant (See Figure 7). In 1972, a third unlined surface impoundment (referenced as Pond number 4) was constructed to contain additional 'water of reaction'. Dimensions of Pond number 2-3 when it was originally constructed were approximately 110 feet by 90 feet and 4 feet deep with 2 feet of freeboard. Pond number 4 was approximately 100 feet by 200 feet and 4 feet deep with 2 feet of freeboard.

Alpha obtained a permit from the Florida Department of Environmental Regulation (Operation Permit No. 1053-2182) to place this waste stream in the two unlined surface impoundments (Pond 2-3 and 4) from 1967 to 1976. The permit was obtained for the ponds to act as percolation basins, allowing natural biodegradation of the organics in the 'water of reaction' as they were exposed to the environment.

As a measure for minimizing odor and treating the 'water of reaction' in a more environmentally sound manner, a thermal oxidizer was installed at the facility in 1976. Incineration of the water of reaction by the thermal oxidizer also provided for energy recovery which was funneled back into the production process. After the installation of the thermal oxidizer, the water of reaction was no longer placed into the ponds. All of the water of reaction has been incinerated since 1976.

Immediately after the installation of the thermal oxidizer, Pond number 4 began to dry up. By 1977, Pond number 4 was completely dry. For a period of one year the pond was used as a solid waste landfill for Alpha and Alpha employees. According to Alpha, the following items are indicative of the types of materials placed in the pond: boxes, pallets, old resin drums, tires, empty bags, grass cuttings, old furniture, and shrubbery. The resin drums placed in the pond were either empty or contained discarded resins.

The resins in these drums are most likely solid since the solidification reaction occurs quickly regardless of whether the appropriate catalyst is added.

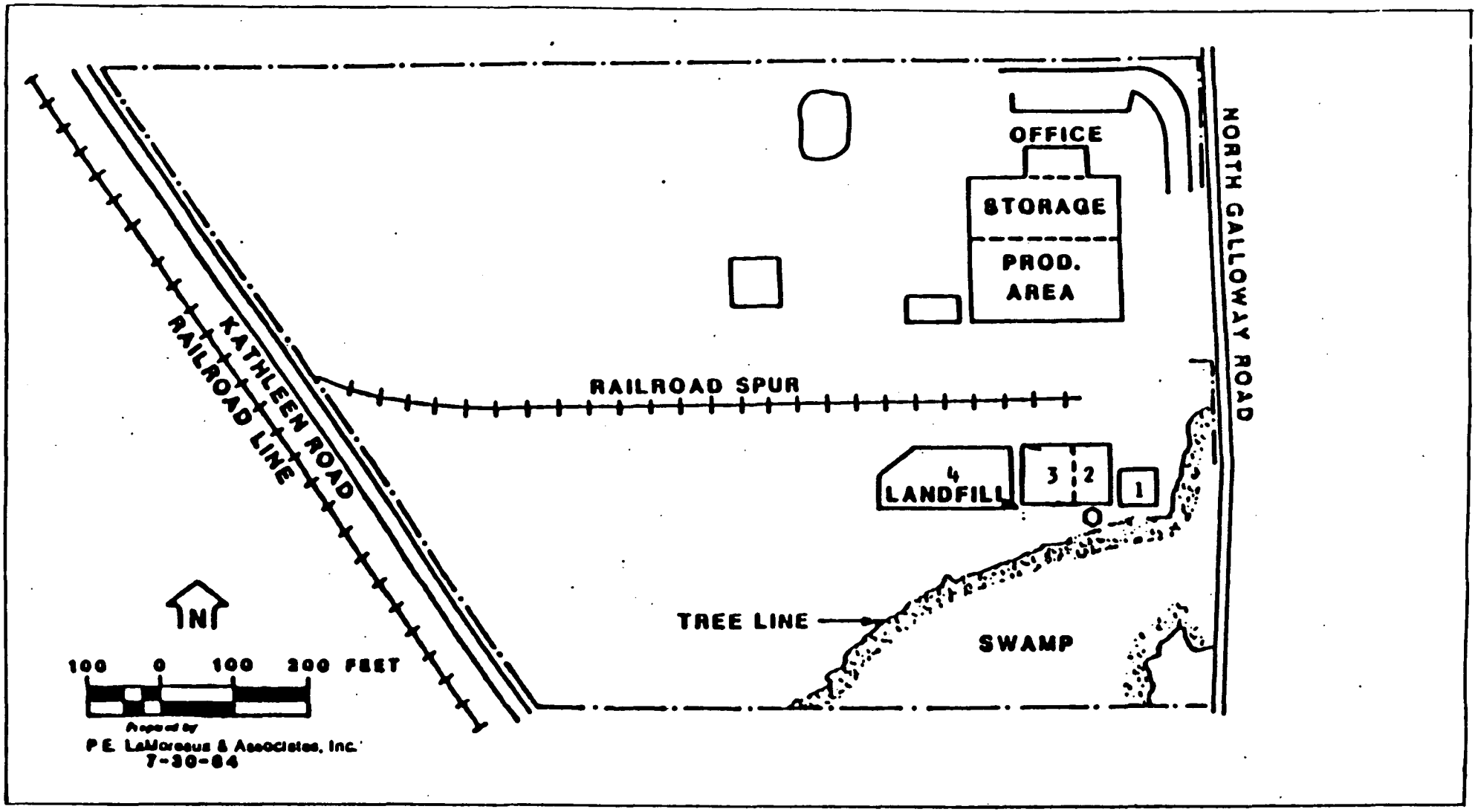


FIGURE 7 Site Map of the Alpha Facility showing location of the ponds.

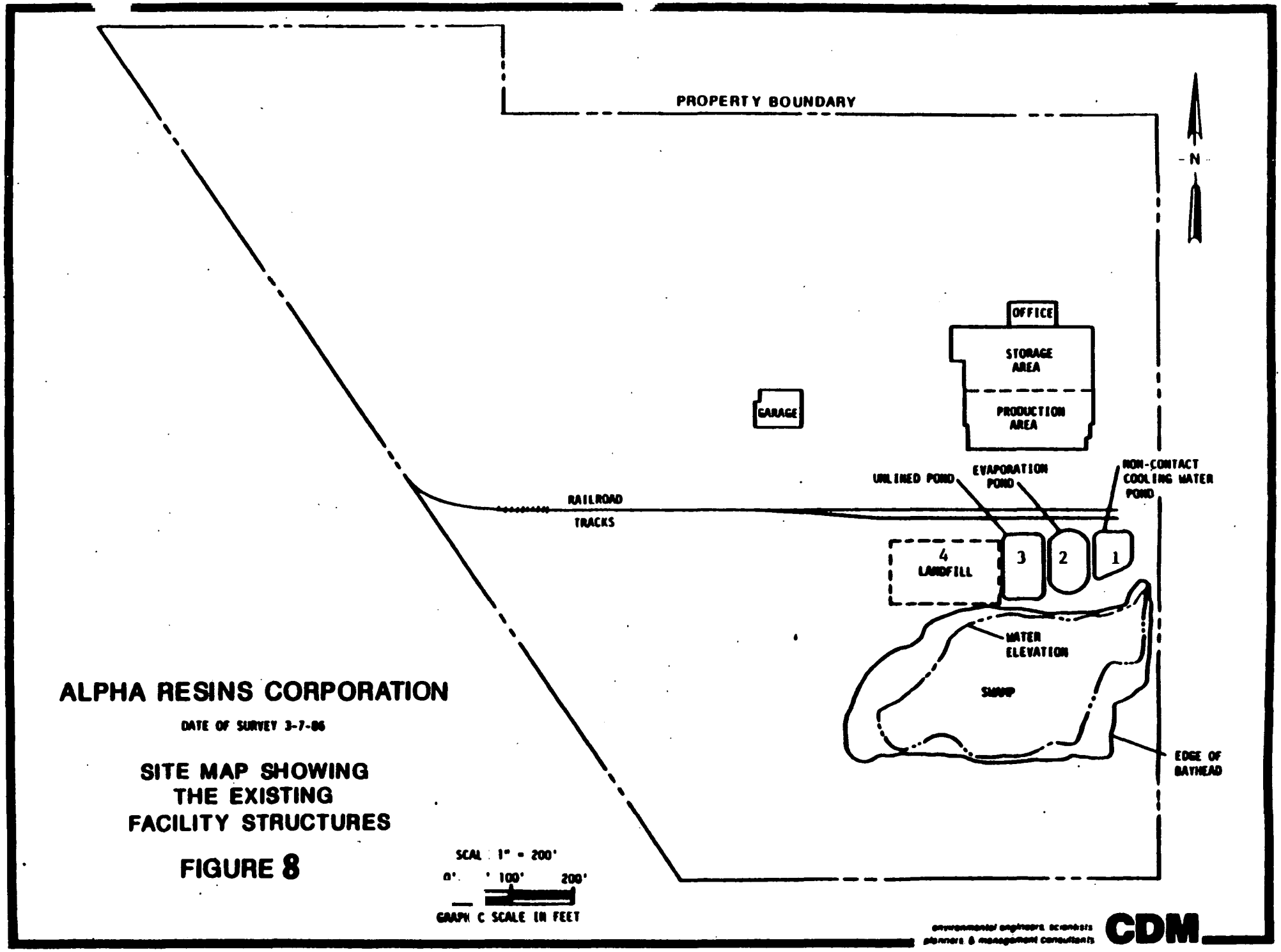
In addition to the above items, solid phthalic acid was also placed in one corner of the landfill (Pond number 4). Phthalic anhydride is one of the primary raw materials used in the production of resins. When phthalic anhydride is exposed to water it is converted to phthalic acid and is no longer suitable for use in the resin process. Eighty thousand pounds of nonusable solid phthalic acid was placed in the landfill.

In 1977, in addition to Pond number 4 drying up, Pond number 2-3 also began to dry up. A dam was constructed through the middle of Pond number 2-3, creating two ponds, which are now referred to as Pond number 2 (east side), and Pond number 3 (west side). Sludge and water were pumped from the east side (Pond number 2) into the west side (Pond number 3) at the time of division. Pond number 2 was then lined with concrete to be used exclusively for purposes of storing and evaporating caustic floor wash waste from the plant. The caustic waste stream which enters the lined Pond number 2 is never discharged to the environment. Use of Pond number 3 was discontinued completely. (Figure 8)

In November 1981, EPA's Field Investigation Team (FIT) contractor conducted an investigation of on-site wells at the Alpha plant and at selected off-site wells in the surrounding area. According to the findings of the investigation, butanone was detected in two off-site wells in the vicinity of the plant. Also, a shallow well on-site was found to contain detectable levels of arsenic, cadmium, chromium, and lead. Based upon the results of this investigation, the Alpha site was given a Hazard Ranking System Score (HRS) of 55.6 (ground water route = 96.15, surface water route = 5.24, air route = 0). The detection of arsenic at levels above background concentrations was important in the decision to place Alpha on the NPL in 1982. Arsenic was not found in subsequent investigations, including the Remedial Investigation site work.

In 1982, The Alpha Corporation contacted Florida DER to obtain a permit to line Pond number 3 with concrete so that the pond could also be used to store and evaporate caustic wash water. At this time, Florida DER required that groundwater monitoring wells be installed as a condition of the permit.

In April 1983, DER published a detailed Environmental Groundwater Assessment report which discussed the results of the sampling efforts. The results showed no contamination of the private off-site wells in which butanone was previously reported. The investigation found only on-site indications of industrial impacts to the surficial aquifer. Contaminants detected on-site were ethylbenzene, xylene, napthalene, and benzene. No metals, including arsenic, were detected in any of the wells. No contamination of the Floridan aquifer on-site or off-site was detected, and there was no indication of any impact on the surficial aquifer beyond the property boundary. As a result of this resampling effort, the HRS score for this site was recalculated and lowered to 43.2. A HRS score of 28.5 is sufficient for a site to be placed on the NPL. The site was proposed for the NPL in October 1981 and went final in December 1982.



ALPHA RESINS CORPORATION

DATE OF SURVEY 3-7-86

SITE MAP SHOWING THE EXISTING FACILITY STRUCTURES

FIGURE 8

TABLE 2

Sampling and Analysis Results
Groundwater

GROUP	Wells AC-102	AC-104DW	AC-106	AC-107	AC-107 (Duplicate)	AC-107 (Resampled)	Sand Points SP-1	SP-1 (Resampled)	SP-2	SP-3	SP-4	SP-5	SP-6	SP-7	SP-8	SP-9	SP-10	SP-12
	Date of Sampling																	
	11-84	11-84	11-84	11-84	11-84	8-85	11-84	8-85	11-84	11-84	11-84	8-85	8-85	8-85	8-85	8-85	8-85	8-85
Halogenated Volatile Organics																		
1) Bromoethane	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2) Chloroform	--	--	--	--	--	--	0.004	--	--	--	--	--	--	--	--	--	--	--
3) 1,1-Dichloroethane	--	--	--	--	--	--	0.004	--	--	--	--	--	--	--	--	--	--	--
4) 1,2-Dichloropropane	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
5) Methylene Chloride	--	--	--	--	--	--	--	--	0.014	--	0.019	--	--	--	--	--	--	--
Non-Halogenated Volatile Organics																		
1) Benzene	0.003	--	--	--	--	--	--	--	0.002	--	0.001	--	--	--	--	--	--	--
2) Ethylbenzene	0.698	--	22.6	2.64	5.85	0.028	0.019	--	0.724	0.199	0.115	--	--	0.106	--	--	--	--
3) Styrene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4) Toluene	0.040	--	--	--	0.120	--	0.005	--	0.019	--	0.002	--	--	--	--	--	--	--
5) Xylene	0.009	--	0.610	0.424	0.692	--	--	--	--	0.013	--	--	--	--	--	--	--	--
Phenols																		
1) 2,4-Dimethyl Phenol	--	--	0.002J			--		--	0.004J			--	--	--	--	--	--	--
2) 2-Methyl Phenol	0.002J	--	--			NA		NA	--			NA	NA	NA	NA	NA	NA	NA
3) 4-Methyl Phenol	0.051	--	0.023			NA		NA	0.014			NA	NA	NA	NA	NA	NA	NA
4) Phenol	0.005J	--	0.011			--		--	0.004J				--	--	--	--	--	--
Polynuclear Aromatic Hydrocarbons																		
1) Naphthalene	0.014	--	--			--		--	--			--	--	--	--	--	--	--
2) 2-Methylnaphthalene	0.007J	--	--			NA		NA	--			NA	NA	NA	NA	NA	NA	NA
Phthalates																		
1) Benzyl Butyl Phthalate	--	--	0.073			--		--	0.021			--	--	--	--	--	--	--
2) Bis (2 Ethylhexyl) Phthalate	--	--	--			--		0.062	--			--	--	0.013	0.490	--	0.084	0.110
3) Di-N-Butyl Phthalate	--	--	0.016			--		--	--			--	--	--	--	--	--	--
4) Dimethylphthalate	--	--	--			--		--	--			--	--	--	--	--	--	--
5) Pnthalic Acid (tentative)	*0.05JN	*.004JN	*.40JN			NA		NA	*0.200JN			NA	NA	NA	NA	NA	NA	NA
Others																		
1) Benzoic Acid	10.00	0.03J	17.00			*0.6JN		--	15.00			--	--	*4.9JN	*0.13JN	--	--	*0.16JN
2) Benzyl Alcohol	0.020	--	0.025			NA		NA	0.041			NA	NA	NA	NA	NA	NA	NA
3) Isophorone	--	--	--			--		--	0.002J			--	--	--	--	--	--	--

All results reported in mg/l for water samples.

Trip Blank	Field Blank	Blank	Detection Limit	Detection Limit
11-84	11-84	8-85	11-84	8-85
--	--	NA	0.001	0.01
--	--	NA	0.001	0.01
--	--	NA	0.001	0.01
--	--	NA	0.001	0.01
--	0.285	NA	0.001	0.01
--	--	NA	0.001	0.01
--	--	NA	0.001	0.01
--	--	NA	0.001	0.01
--	0.002	NA	0.001	0.01
--	--	NA	0.001	0.01
		--	0.01	0.025
		--	0.01	X
		--	0.01	X
		--	0.01	0.025
		--	0.01	0.01
		--	0.01	X
		--	0.01	0.01
		--	0.01	0.01
		--	0.01	0.01
		--	0.01	0.01
		--	X	X
		--	0.01	X
		--	0.01	0.01

TABLE 3

ing and Analysis Results
Soil/waste, Soil/sludge and Soil/sediment

GROUP	A-2'	A-4'	A-6'	A-8'	B-2'	B-4'	B-6'	B-8'	C-2'	C-4'	C-6'	C-8'	D-2'	D-4'	D-6'	D-8'	SW-2	SW-3	SW-1	Unlinded Pond
Date	11-84	11-84	11-84	11-84	11-84	11-84	11-84	11-84	11-84	11-84	11-84	11-84	11-84	11-84	11-84	11-84	11-84	11-84	11-84	11-84
Halogenated Volatile Organics																				
1) Bromomethane	--	--	--	--	--	0.099	--	--	--	0.220	--	--	--	--	--	--	--	--	--	--
2) Chloroform	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3) 1,1-Dichloroethane	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4) 1,2-Dichloropropane	--	--	--	--	--	--	--	--	--	0.224	--	--	--	--	--	--	--	--	--	--
5) Methylene Chloride	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Non-Halogenated Volatile Organics																				
1) Benzene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2) Ethylbenzene	0.612	--	--	--	--	7.74	4.54	219.0	5.18	1.70	1.42	1.10	0.316	0.432	0.219	0.211	0.880	0.962	1.04	0.729
3) Styrene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4) Toluene	--	--	--	--	--	--	--	--	0.394	--	--	--	--	--	--	--	--	--	--	--
5) Xylene	14.5	--	--	--	--	4.62	0.84	0.600	6.20	1.10	--	--	--	0.928	--	--	1.96	--	--	--
Phenols																				
1) 2,4-Dimethyl Phenol						--		--										--		
2) 2-Methyl Phenol						--		--										--		
3) 4-Methyl Phenol						--		--										--		
4) Phenol						--		--										--		
Mononuclear Aromatic Hydrocarbons																				
1) Naphthalene						--		--										--		
2) 2-Methylnaphthalene						NA		NA										NA		
Phthalates																				
1) Benzyl Butyl Phthalate						--		--										--		
2) Bis (2 Ethylhexyl)Phthalate						--		--										--		
3) Di-N-Butyl Phthalate						--		--										--		
4) Diethylphthalate						--		--										--		
5) Phthalic Acid (tentative)						*70JN		*30JN										--		
Others																				
1) Benzoic Acid						10.J		--										--		
2) Benzyl Alcohol						--		--										--		
3) Isophorone						--		--										--		

All results reported in mg/kg for soil/waste, soil/sludge and soil/sediment samples.

Comp A	Comp C	Comp D	Detection Limit	Detection Limit
9-85	8-85	8-85	11-84	8-85
--	--	--	0.01	0.10
--	--	--	0.01	0.10
--	--	--	0.01	0.10
--	--	--	0.01	0.10
--	--	--	0.01	0.10
--	--	--	0.01	0.10
0.6	461	--	0.01	0.10
1.6	1430	0.4	0.01	0.10
--	--	--	0.01	0.10
--	--	--	0.01	0.10
--	--	--	8.2	0.5
NA	NA	NA	8.2	X
NA	NA	NA	8.2	X
--	--	--	8.2	0.5
--	--	--	8.2	0.02
NA	NA	NA	X	X
--	--	--	0.01	0.20
--	--	--	0.01	0.20
--	--	--	0.01	0.20
8.5	--	7.3	0.01	0.20
NA	NA	NA		
--	*3.1JN	--	0.01	--
NA	NA	NA		
--	--	--		0.20

KEY

-- = material was analyzed for but not detected
NA = not analyzed for
J = estimated value
N = presumptive evidence of presence of materia
X = no detection limit reported
* = tentative identification

TABLE 4

ALPHA RESINS CORPORATION

RESULTS OF GROUNDWATER MONITORING FOR INDICATOR CHEMICALS
June 1987

C.A.S. #	Chemical Name	AC-104	AC-102	AC-105	AC-106	AC-107	SP-4	SP-6	SP-7	SP-8	SP-9	SW-1	Blank
100-41-4	Ethyl benzene	--	0.072	--	8.20	0.40	--	--	--	--	--	--	--
100-42-5	Styrene	--	--	--	0.470	--	--	--	--	--	--	--	--
108-38-3	m-Xylene	--	--	--	--	0.016	--	--	--	--	--	--	--
106-42-3	o,p-Xylene	--	0.005	--	--	0.030	--	--	--	--	--	--	--
65-85-0	Benzoic Acid	--	--	--	9.800	26.00	--	--	--	--	--	--	--
78-87-5	1,2 Dichloropropane	--	--	--	--	--	--	--	--	--	--	--	--

units - mg/l
-- = analysed but not detected
B = found in blank
J = estimated, < detection limit

Until May 1984, there was a question as to whether Pond number 2 qualified as a RCRA regulated unit. Testing was performed in mid-1984 to determine if the pond was a RCRA regulated hazardous waste unit. Sampling was performed by P.E. LaMoreaux and Associates (PELA) and the samples were split between PELA, Mead CompuChem, and Savannah Labs. The samples were analyzed for corrosives, reactivity, ignitability, and EP Toxicity characteristics. The results of the sampling showed that the pond was not a hazardous waste unit regulated under RCRA. Therefore, there are no RCRA regulated land treatment, disposal or storage units on-site at the Alpha facility.

In 1984, a Remedial Investigation (RI) began at the Alpha Resins Corporation facility. The investigation consisted of sampling and analysis of soil on-site and groundwater on and off-site. The soil and groundwater sampling investigations were centered around an area considered to be the probable source of contamination. Specifically, this area is the location of the previously used percolation ponds, one of which is now dry and one of which was used as a solid waste landfill.

A total of 18 groundwater samples were collected and analyzed from ground water monitoring wells and sand point wells. (Table 2) Additionally, seven samples were collected from private wells within a two mile radius of the facility. Nineteen soil/waste samples were taken from the inactive solid waste landfill which, until 1976, had been used as a percolation pond. The soil/sediment samples were collected from the swamp located to the south of the landfill and the ponds area.

Soil and ground water sampling on-site indicated the presence of low levels of 23 positively identified organic constituents. Of the 23 organic constituents positively identified, ethylbenzene was found as the most prevalent contaminant at the site, both in concentration and in the number of samples in which it was detected. (Table 3)

Other positively identified organic constituents include phthalates, halogenated, and non-halogenated volatile organics, phenols, polynuclear aromatic hydrocarbons, and non-priority pollutants such as benzyl alcohol and benzoic acid.

Concentrations of constituents found in water samples were typically less than 1 ppm, except for ethylbenzene which was detected at a high of 22.6 ppm. Concentrations of constituents found in soil/sediment and soil/waste samples ranged from a high of 1480 ppm to less than 1 ppm. Styrene was detected only in the soil/waste samples and occurred at the highest concentration of all positively identified constituents at 1480 ppm. This concentration was found in one sample from the landfill, and is likely the result of a direct placement of some of this material in the landfill.
During the initial sampling effort, inorganic metal constituents were tested for but were detected at or below background levels; therefore, these inorganic constituents were not re-tested for during the final round of sampling.

On-site contaminants were noted only in the surficial aquifer, not in the Floridan aquifer. No contaminants were detected in any of the private well samples off-site.

Based upon the results of the hydrological investigation conducted at the site and the results of sampling and analysis performed during the Remedial Investigation, it has been concluded that the potential for off-site migration of contaminants via the surface aquifer does exist. Although the level of contaminants detected in the ground water are low, it was recommended that an Endangerment Assessment (EA) be performed to determine the hazard, if any, these contaminants pose to human health and the environment.

During 1986, an Endangerment Assessment was performed, using the approach as outlined in EPA's Superfund Health Assessment Manual (U. S. EPA, 1985), that focused upon the findings of the RI. The EA evaluated resources, populations, and environment threatened and human exposure.

Resources, Populations, and Environment Threatened- The site is located on developed land cleared of native cover except for the wetlands (swamp). The wetlands in the southeastern corner of the property drain east/northeasterly to the wetlands east of Galloway Road.

Human Exposure- The most probable pathway for human exposure is via contaminated groundwater from the surficial aquifer. Since air and surface water runoff are not important pathways at the site, groundwater movement of contamination potentially poses the most likely vehicle for the contamination to affect the human population. Drinking of contaminated water would appear to be the most likely way for the contamination to affect humans; however, the primary drinking water source in the area is the Floridan aquifer.

The EA concluded the following:

- Contaminant concentrations detected are low, as are the number of contaminated samples. The data do not suggest that any large source or plume exists.

- Off-site transport and exposure is expected to be minimal for two reasons: (1) the primary exposure is the discharge of ground water from the surface aquifer into the swamp on the Alpha property, where biotic receptors may potentially be exposed, and, (2) a limited number of human receptors are close to the site.

- The estimated exposure concentration are based on a number of highly conservative assumptions.

- Using their conservative assumptions, the risk calculations showed no expected increase in risk over background because of present conditions at the Alpha facility.

ENFORCEMENT SUMMARY

In March 1985 two consent orders were signed between the FDER and Alpha Resins Corporation.

One consent order dealt with penalties which required a $5,000.00 payment from Alpha for permit and groundwater violations. The other consent order required the Alpha Resins Corporation to perform a Remedial Investigation, Endangerment Assessment, and if necessary, a Feasibility Study in order to carry out a Remedial Action.

A condition of this consent order required that the investigations and studies be prepared in a manner consistent with the requirements of the Comprehensive Environmental Response Compensation and Liability Act and implementing federal regulations and federal guidance documents developed by the USEPA. Under this condition, EPA was to review and comment on all reports and proposals related to the site.

In November 1981, the EPA's Field Investigation Team (FIT) performed an investigation of on-site and off-site groundwater wells at the site. In April 1982, a groundwater assessment was performed by the FDER.

The Alpha Resins Corporation, the Responsible Party, has cooperated with the FDER and the EPA and has conducted a Remedial Investigation, an Endangerment Assessment, and a Feasibility Study for the site. These studies have been fully funded by the Alpha resins Corporation and the Remedial Action is to be performed by Alpha as well.

CURRENT SITE STATUS

The area where contamination has been detected at the landfill and ponds area contains no structures which would interfere with or hinder remedial actions taken at the site.

The percolation ponds have not been used since 1976. At that time a thermal oxidizer was installed to incinerate the 'water of reaction' from the resin production process that was previously placed in the percolation ponds.

After switching to use of the thermal oxidizer, percolation pond #4 dried up. It was then used for 1 year as a landfill. The landfill was covered with 2 feet of native soil in 1977. In 1984, an extensive groundwater monitoring system was installed to monitor for groundwater contamination at the site. During 1985 and 1986, an RI was conducted at the site to properly characterize the nature and extent of contamination.

As discussed in the RI report, 18 groundwater samples were collected and analyzed from groundwater monitor wells and sand point wells. These wells were screened in the surficial aquifer. The analyses of the samples showed low levels of several organic compounds. Seven groundwater samples were collected from private wells within a 2-mile radius of the facility. Nineteen soil/waste samples were taken from the closed solid waste landfill, which up to 1976 has been used as a percolation pond. One soil/sludge sample was also collected from the unlined pond which was previously used as a percolation pond. The soil/sediment samples were collected from the swamp located to the south of the landfill and the ponds area.

Soil and groundwater sampling on-site during the RI indicated the presence of low levels of 23 positively identified organic constituents. Ethylbenzene was found as the most prevalent contaminant at the site, both in concentration and in the number of samples in which it was detected.

Other positively identified organic constituents include phthalates, halogenated and non-halogenated volatile organics, phenols, polynuclear aromatic hydrocarbons, and non-priority pollutants such as benzyl alcohol and benzoic acid.

Concentrations of constituents found in water samples were typically less than 1 ppm, except for ethylbenzene which was detected at a high of 22.6 ppm.

Concentrations of constituents found in soil/sediment and soil/waste samples ranged from a high of 1480 ppm to less than 1 ppm. Styrene was detected only in the soil/waste samples and occurred at the highest concentration of all positively identified constituents at 1480 ppm. This concentration was found in one sample from the landfill, and is likely the result of a direct placement of some of this material in the landfill.

Inorganic metal constituents were tested for during the initial sampling effort, but were detected at or below background levels; therefore, these inorganic constituents were not re-tested for during the final round of sampling.

On-site contaminants were noted in the surficial aquifer, not the Floridan aquifer. No contaminants were detected in any of the private well samples off-site.

No definable plume of contamination was shown to exist at the site. The positively identified constituents detected at the site were found to be sporadic regarding their location and concentration.

Sampling and analysis of all groundwater monitor wells and sand point wells was conducted again in June 1987. The results of this sampling effort showed an overall trend of decreased levels of constituents in the groundwater. (Table 4) No positively identified constituents were detected in the shallow monitor wells located immediately south of the swamp.

The pathway of greatest concern is contaminant migration via groundwater of the surficial aquifer. The surficial aquifer is not a primary source of drinking water in the area. Testing of groundwater from a private drinking water well in the surficial aquifer on land adjacent to the Alpha property showed no contamination.

The surficial aquifer is separated from the Floridan aquifer by an underlying confining clay layer. Testing of potable water from six nearby wells drawing from the Floridan aquifer showed no contamination.

ALTERNATIVES EVALUATION

REMEDIAL ACTION ALTERNATIVES DESCRIPTION

Three categories of Remedial Action Alternatives are applicable to the Alpha Site. These three categories are as follows:

- Alternatives that comply with all applicable and/or relevant and appropriate public health and environmental standards including:

  Alternatives for off-site treatment and/or disposal

- Alternatives that exceed requirements of all applicable and/or relevant and appropriate public health and environmental standards

- No action alternative

ALTERNATIVE WHICH MEETS ALL APPLICABLE OR RELEVANT AND APPROPRIATE PUBLIC HEALTH AND ENVIRONMENTAL STANDARDS

CAPPING AND MONITORING

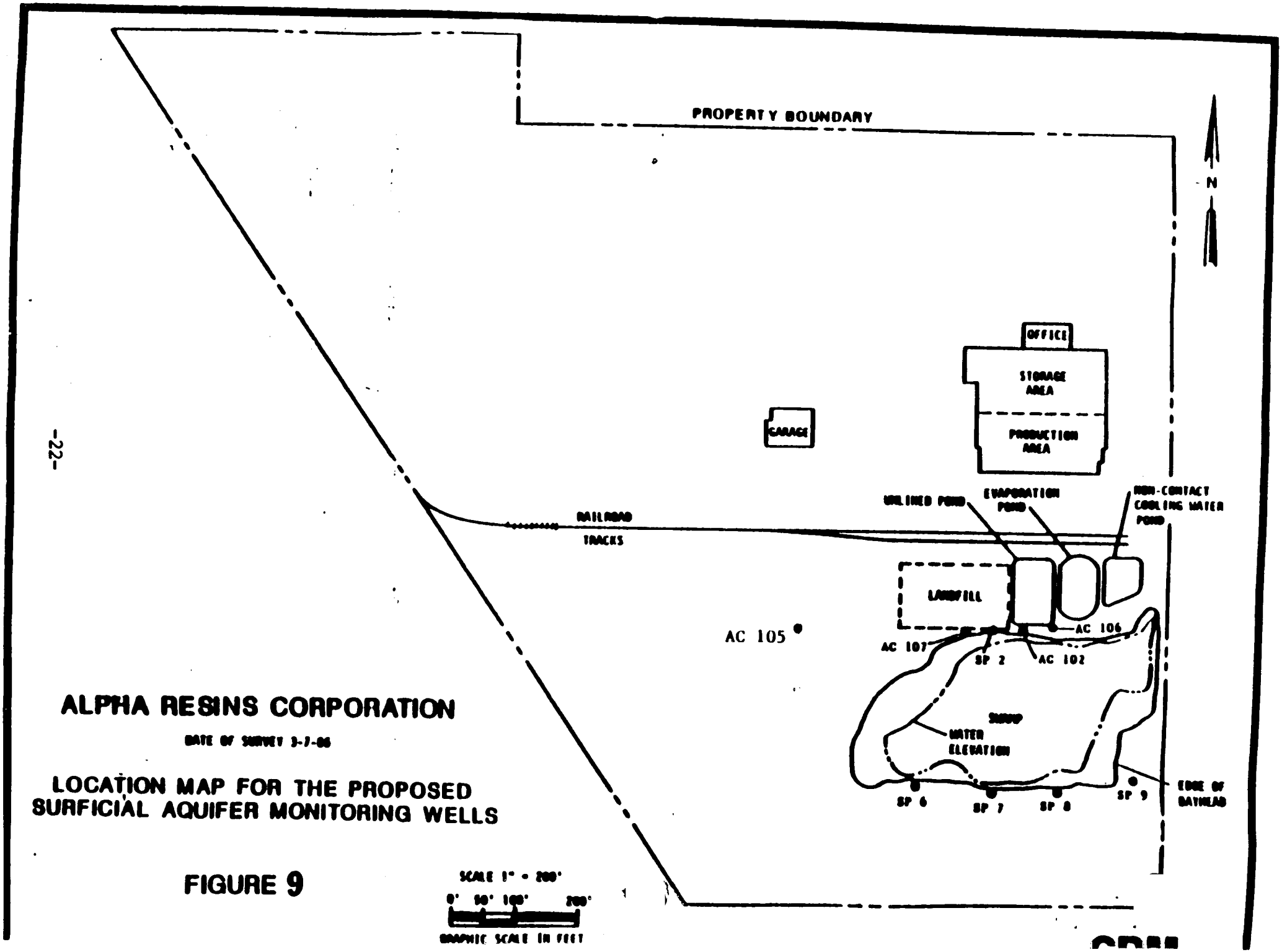
This alternative involves capping the unlined pond area and monitoring of the surficial aquifer.

A cap will be placed over the entire surface of the unlined pond area to prevent the vertical migration of water through the unlined pond. The cap will be designed to achieve a permeability of 10^{-7} cm/sec and graded to divert water away from the unlined pond area.

Groundwater monitoring will be conducted for the surficial aquifer using the following system of wells: AC-107, AC-106, AC-102, SP-2, SP-6, SP-7, SP-8, and SP-9 to determine the effectiveness of the remedy. (Figure 9) Groundwater samples will be collected quarterly and will be analyzed for the following indicator chemicals: ethylbenzene, styrene and xylenes. After one year of quarterly sampling, the data will be reviewed. At this time EPA's Regional Administrator may choose, based upon experience gained during the first year's sampling, to alter the frequency of monitoring, the number of wells sampled, the parameters being analyzed for, or any combination of these.

OFF SITE DISPOSAL

The alternative for off-site disposal involves excavation, transportation and off-site landfilling of the contaminated soil.



ALPHA RESINS CORPORATION

DATE OF SURVEY 3-7-86

LOCATION MAP FOR THE PROPOSED SURFICIAL AQUIFER MONITORING WELLS

FIGURE 9

The excavation portion of the action involves removing an estimated 5185 cubic yards of soil and waste from the landfill which is 100 feet wide, 200 feet long and 7 feet deep. The excavated soil and waste will be stockpiled prior to being loaded on trailers, each with a capacity of 20 cubic yards, for transportation to a permitted TSD facility. Once the excavation of contaminated soil and waste in the landfill has been completed, the excavation area will be backfilled and graded to minimize erosion.

In addition to the excavation work at the landfill, soil and sediment will be excavated from the bottom of the unlined pond to an estimated depth of 2 feet. The estimated 400 cubic yards of excavated soil and sediment will be stockpiled, along with the soil and waste from the landfill, prior to shipment to a permitted TSD facility for disposal.

ALTERNATIVE WHICH EXCEEDS ALL APPLICABLE OR RELEVANT AND APPROPRIATE PUBLIC HEALTH AND ENVIRONMENTAL STANDARDS

The alternative to be evaluated for this category consists of groundwater collection and treatment.

Groundwater will be collected by an interceptor drain/barrier wall to be installed in the surficial aquifer hydraulically downgradient of the landfill and the unlined pond area. The drain would be installed on top of the low permeability clay at the location shown on Figure 10. A geologic cross-section along the length of the drain showing the approximate location of the proposed interceptor drain is included. (Figure 11)

Due to the length of the interceptor drain, its position on top of the clay, and the impermeable barrier walls below the drain, the system would be effective in controlling all of the groundwater from the upgradient areas.

The advantages to using an interceptor drain/barrier wall system over the use of withdrawal wells are several. They include the following:

- The shallow depth (20 feet) of the surficial aquifer below the landfill and pond area are compatible with this type of system.

- A limited volume of water would be collected from an interceptor drain/barrier wall system. Collection wells would draw water in a radial pattern resulting in greater volumes of water and an additional organic loading from swamp water to be treated by the wastewater treatment system

- The passive nature of the drain system - A sump pump is the only equipment which would need to be maintained on a routine basis.

The collected groundwater would be filtered to remove particulates and then carbon filtered to remove organic compounds, which include the organic priority pollutants. Samples of the treated groundwater would be collected and analyzed to ensure the groundwater has been properly treated. The treated groundwater would then be discharged along with Alpha's non-contact

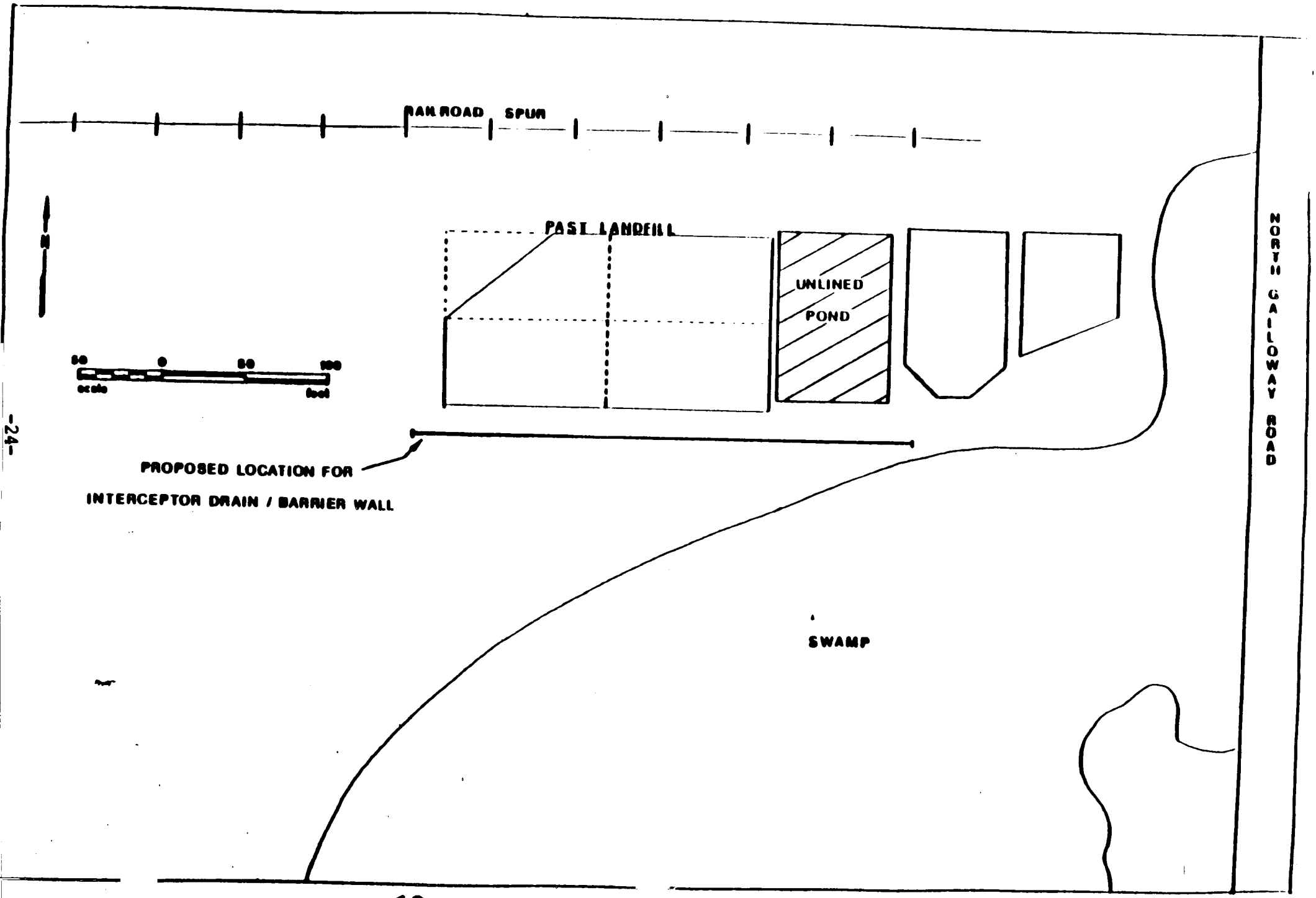


FIGURE 10 : LOCATION OF INTERCEPTOR DRAIN / BARRIER WALL

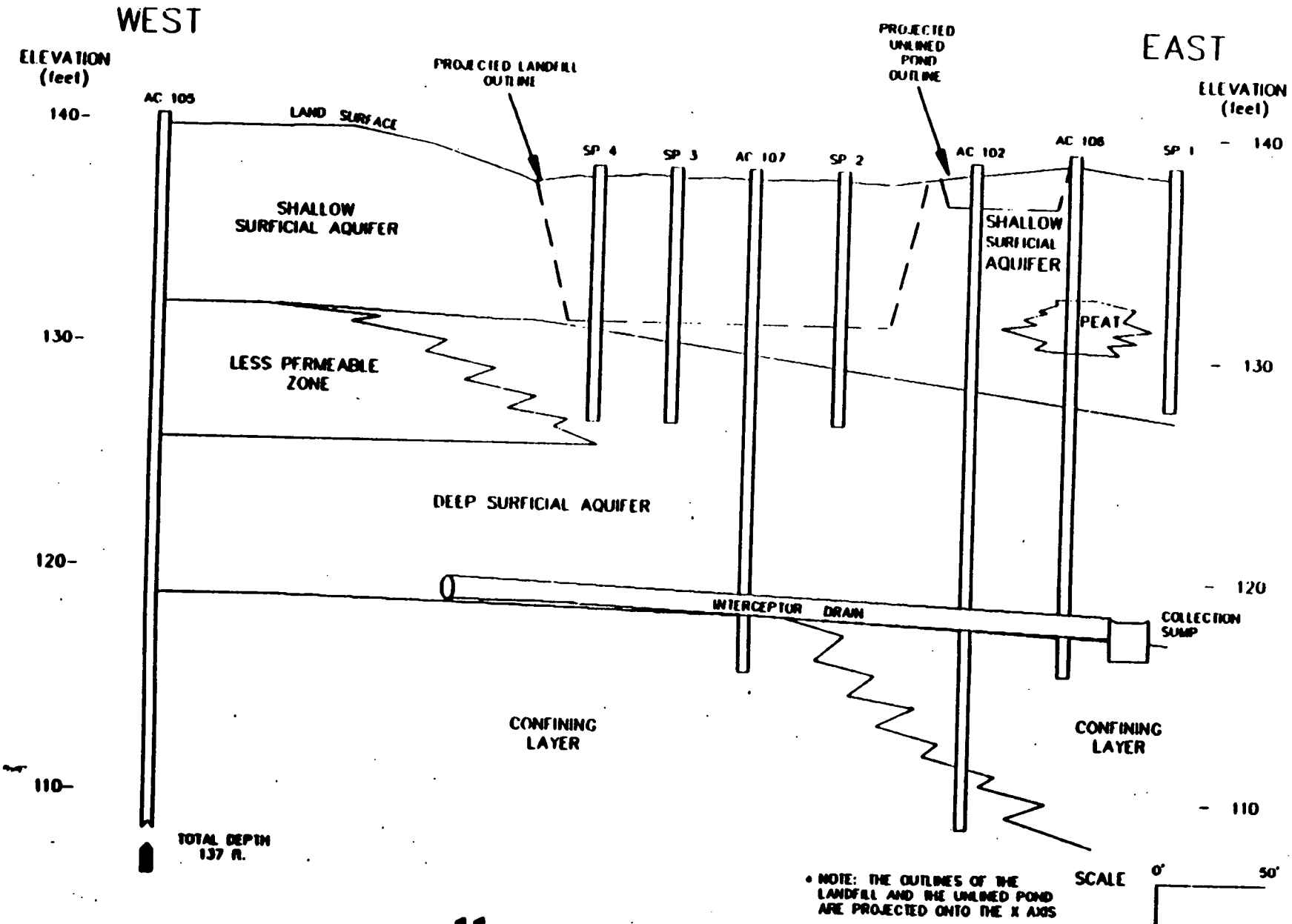
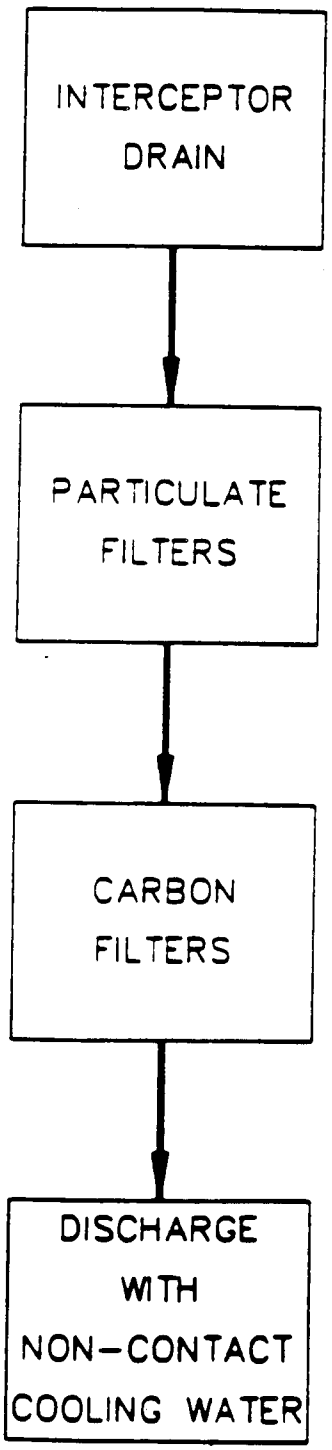


FIGURE 11 : GEOLOGIC CROSS SECTION BELOW THE LANDFILL AND UNLINED POND ALONG THE LINE FROM MONITORING WELL AC 105 TO SP 1.

FIGURE 12

PROCESS FLOW DIAGRAM FOR GROUND WATER COLLECTION AND TREATMENT



cooling water to the swamp. Figure 12 shows a process flow diagram for a groundwater collection and treatment system.

NO ACTION WITH LONG-TERM MONITORING

The No Action with Long-Term Monitoring Alternative at the Alpha site involves periodic monitoring of groundwater in the surficial aquifer. The groundwater monitoring system will consist of the following wells: AC-107, AC-106, AC-102, AC-105, SP-2, SP-6, SP-7, SP-8, and SP-9. Monitor well locations are shown on Figure 13. Additionally, surface water samples from the swamp and from the culvert leaving the property will be collected.

All groundwater samples and surface water samples will be collected quarterly except for the groundwater sample from Well AC-105 (Floridan), which will be sampled semiannually for the first year and annually thereafter. Samples will then be analyzed for ethylbenzene, styrene and xylenes. Monitoring will be performed until Alpha petitions for and receives from FDER and EPA a reduction in the requirement for groundwater monitoring.

NO ACTION ALTERNATIVE

Under the No Action Alternative, no remedial activities would be performed. This remedy is currently unacceptable because well AC-106 is not in compliance with ARAR's, e.g. primary drinking water standards.

CONTAMINATION MIGRATION

The major exposure pathway to human receptors is through the movement of contaminated ground water in the surficial aquifer. The ground water flow regime can be summarized as follows:

- An impermeable confining clay layer, approximately 20 plus feet thick, separates the surficial aquifer from the deep Floridan artesian aquifer. The Floridan aquifer is the primary source of drinking water for the area.

- Water levels in the surficial aquifer under the landfill are approximately 4 feet below the surface. Soil/waste samples collected at 4 feet and below could be in the saturated zone.

- The surficial aquifer has a relatively low permeability ranging from 2.83×10^{-1} feet/day [1×10^{-4} centimeters/second (cm/sec)] to 1.8×10^{-2} feet/day (4×10^{-6} cm/sec). The surficial aquifer contributes ground water to the swamp southeast of the landfill area.

- The volatile organic compounds (ethylbenzene and xylene) found in the soils and ground water are generally lighter than water (specific gravity = 0.867 and 0.89, respectively); consequently, if any gravity separation can take place in the aquifer, these constituents will be found at higher concentrations near the surface in ground water from the surficial aquifer.

Other factors related to the environmental fate of the aliphatic hydrocarbons, ethylbenze and xylene, found in soils and ground water include:

- These compounds are amenable to evaporation if there is an air interface involved, e.g., in the swamp surface water.

- They have relatively low soil adsorption coefficients and moderate water solubility; consequently, they are mobile in the soil environment.

- They are not subject to hydrolysis in the aqueous environment; thus, they will remain in slow-moving ground water and will not attenuate to a high degree.

The air pathway was not considered critical for two reasons: (1) concentrations of the aliphatic hydrocarbons, particularly ethylbenzene and xylene, are relatively low in soil near the top of the landfill and the contaminated soils are covered with at least 2 feet of clean fill, and (2) most of the contaminant mass was detected in samples in the saturated zone and, thus, is less susceptible to volatilization to the atmosphere. Volatilization from surface water (swamp) would be minimal because of the low concentrations detected in shallow wells and the low discharge rate of ground water into the swamp.

EXPOSURE ASSESSMENT

Data gathered during the Remedial Investigation (RI), the Endangerment Assessment (EA) and the Feasibility Study (FS) performed at the Alpha Resins site is summarized in Tables 2 and 3.

Concentrations of constituents found in soil/sediment and soil/waste samples ranged from a high of 1480 ppm to less than 1 ppm. Styrene was detected only in the soil/waste samples and occurred at the highest concentration of all positively identified constituents at 1480 ppm. This concentration was found in one sample from the landfill, and is likely the result of a direct placement of some of this material in the landfill.

Inorganic metal constituents were tested for during the initial sampling effort, but were detected at or below background levels; therefore, these inorganic constituents were not re-tested for during the final round of sampling.

Onsite contaminants were noted in the surficial aquifer, not the Floridan aquifer. No contaminants were detected in any of the private well samples offsite.

No definable plume of contamination was shown to exist at the site. The positively identified constituents detected at the site were found to be sporadic in nature regarding their location and concentration.

Sampling and analysis of all groundwater monitor wells and sand point wells was conducted again in June 1987. See Table 4 for the results of this sampling effort. The results of this sampling effort showed an overall trend of decreased levels of constituents in the groundwater. No positively identified constituents were detected in the shallow monitor wells located immediately south of the swamp.

Groundwater from the landfill and unlined pond area discharge mainly to the surface water in the swamp with a portion underflowing the swamp and remaining in the surficial aquifer on site. The endangerment assessment concluded that the resulting concentrations entering the swamp via groundwater discharge would be significantly below groundwater and surface water standards. Contamination detected in wells immediately adjacent to the landfill are below groundwater standards. However, at the well (AC-106) immediately downgradient of the unlined pond, concentrations have consistently exceeded groundwater standards. The concentrations detected in this well have decreased with successive sampling events.

COST ANALYSIS OF REMEDIAL ACTION ALTERNATIVES

The cost analysis involved the determination of two critical cost elements for each of the remedial action alternatives. The two cost elements are (1) present worth cost, and (2) the cash flow (operation and maintenance) over the life of each alternative. These cost elements for each alternative are presented in Table 5. The details of the cost analysis of the selected remedy is presented in Table 6.

In reviewing the Cost Analysis, it should be noted that alternatives which include groundwater monitoring have their costs based upon quarterly sampling and analysis of eight wells and two surface water samples for ethylbenzene, styrene and xylenes.

DESCRIPTION OF THE SELECTED REMEDY

Four remedial alternatives have been discussed for the Alpha Resins Site.

Data obtained from monitor wells located immediately downgradient from the landfill area indicates the landfill is meeting all ARAR's for this site. (Figure 14) Concurrent data obtained from the monitor wells located immediately downgradient from the unlined pond area indicates ARAR's are being exceeded in this area. (Table 7)

Contaminant concentrations in wells immediately downgradient of the landfill are below all applicable or relevant and appropriate (ARAR) State and federal standards. While additional remedial action at the landfill is not necessary, the nature of landfills and the continued degradation of containers in the landfill argue strongly for continued monitoring. The well immediately downgradient of the unlined pond area currently exceeds ARAR's. Constructing a low permeability cap over the pond area will substantially reduce leachate generation and should result in meeting ARARs at the well downgradient of the pond. Continued monitoring to assure the effectiveness of the cap in meeting ARAR's is necessary.

In summary, the selected remedy for this site is to place a low permeability cap over the unlined pond area which, the EPA believes, will reduce percolation of atmospheric precipitation into the unlined pond and reduce leachate production into the surficial aquifer. In addition, for both the unlined pond and landfill long term monitoring of ground and surface water will be required to ensure the remedy is effective and to be certain the landfill continues to meet ARAR's.

COMPLIANCE WITH SECTION 121 SARA

The remedy selected for the Alpha Resins site is considered to be the most effective alternative in terms of removing the threats posed by the site, and is considered the most effective choice given both the clean-up technologies available and the size of the site. The remedy provides protection which will meet all ARAR's (applicable or relevant, and appropriate requirements) and is cost effective. Finally, the remedy utilizes permanent treatment technologies to the maximum extent practicable given the nature and volume of contaminated materials.

OPERATION & MAINTENANCE

Operation and Maintenance for the selected remedy at the Alpha Resins site will consist of maintenance of the cap over the unlined pond area and long-term monitoring of ground and surface water. For a 30 year maintenance and monitoring program the total cost in 1988 dollars would be $186,207.00. This cost summary is explained in Table 7.

CONSISTENCY WITH ARAR'S

Applicable or relevant and appropriate requirements (ARAR's) for the Alpha Resins site were identified which apply to the site prior to remedial activity. They are:

1. Chapter 17-3, Florida Administrative Code (FAC), Water Quality Standards. (contains requirements for groundwater monitoring plans.

2. Clean Water Act, water quality criteria.

3. Resource Conservation and Recovery Act, alternate concentration limits.
4. Chapter 17-4, FAC, Permits; specifically 17-4.07 and 17-4.245(6)(d).

5. Chapter 17-7, Florida Administrative Code (FAC), Resource Recovery and Management.

6. 17-25, FAC, regulations for Stormwater Discharge.

7. 17-30, FAC, Hazardous Waste

8. 17-40, FAC, Water Policy

9. 40D-2, FAC, Rules of the Southwest Florida Water Management District (Consumption Use Permit)

The Florida Statutes which support most of the preceding regulations are 403.087 and 403.707 which deal with permits and landfills, respectively.

The selected remedy of capping the unlined pond with long-term monitoring of both ground and surface water will achieve compliance with all of the identified ARAR's.

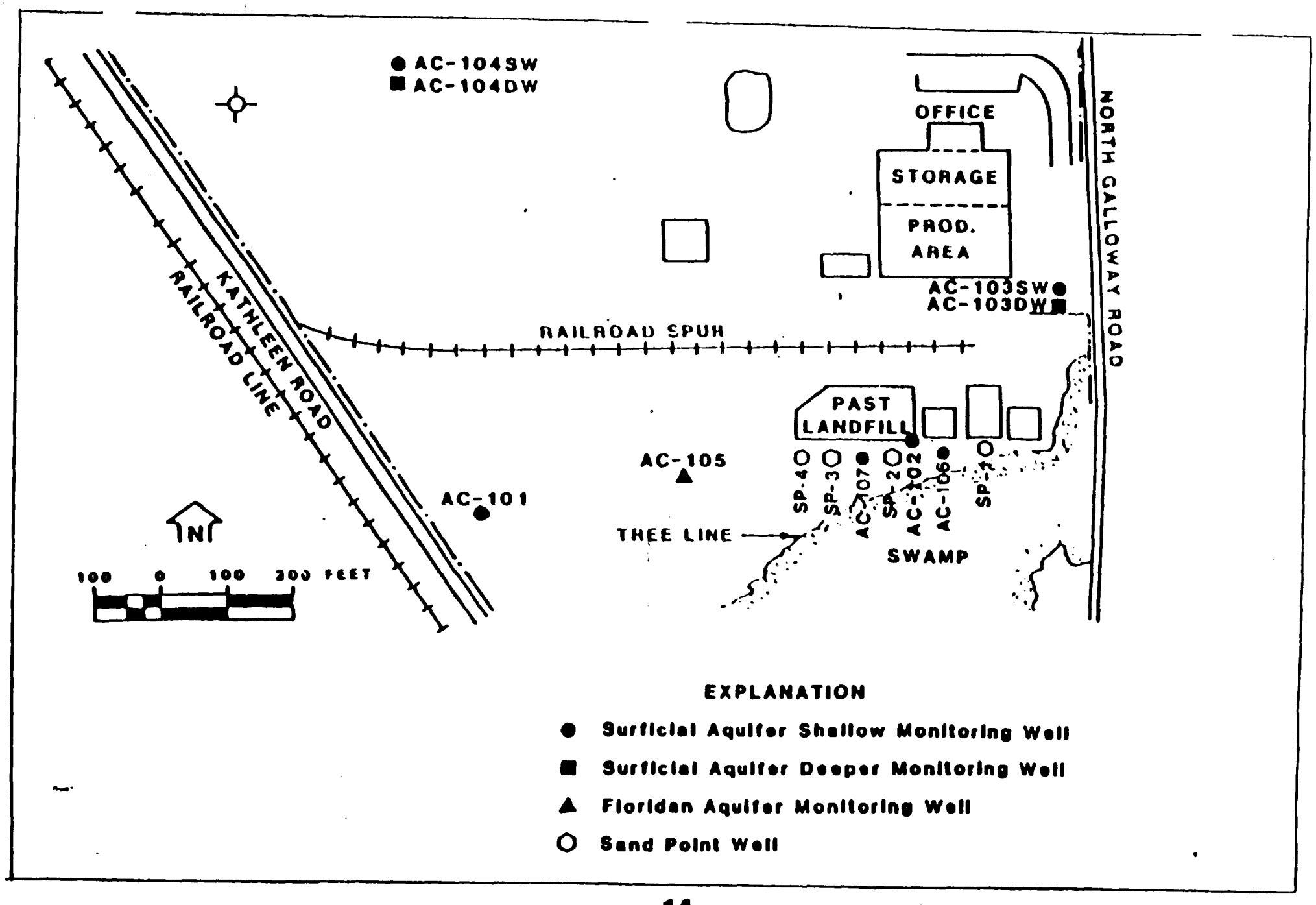


FIGURE 14

LOCATION OF THE INITIAL GROUNDWA SAMPLES

TABLE 5

SUMMARY OF COST ANALYSIS FOR REMEDIAL ACTION ALTERNATIVES

Alternative	Description		Cost Estimate ($1,000)		
	Capital	O & M	Capital		O & M
1) Offsite Disposal	Excavation and disposal of contaminated soil at a hazardous waste landfill		None	2,813.6	155.6
2) Capping & groundwater	Cap unlined Pond area. Monitoring		Maintain cap and monitor groundwater	Clay: 142.4 Concrete: 244.0	186.2 161.3
3) Groundwater collection and treatment	Install interceptor drain and carbon filter system system		Provide energy labor and material to collect and treat groundwater. Monitor groundwater	795.7	213.0
4) No Action with long term groundwater monitoring	None		Monitor groundwater	0	155.6

Groundwater monitoring costs are based on quarterly sampling of the monitor wells for Styrene, Ethylbenzene, and Xylenes.

Operation and Maintenance Costs

Table 6

Site Name: Alpha Resins Corporation
Site Location: Kathleen, Florida
Technology: Clay Capping of Landfill and Unlined Pond Area

OPERATION & MAINTENANCE COSTS

Date: January 6, 1988

ITEM DESCRIPTION	UNITS	QUANTITY	UNIT PRICE DOLLARS	TOTAL ANNUAL COST, DOLLARS	OPERATION TIME, YEARS	PRESENT WORTH
INSPECTION	ea	1	$500	$500	30	$4,713
MOWING	ea	12	$200	$2,400	30	$22,625
MAINTENANCE	ea	2	$1,000	$2,000	30	$18,854
SHORT TERM MONITORING						
Personnel and Supplies	day	3	$1,500	$4,500	4	$14,264
Laboratory	ea	30	$500	$15,000	4	$47,548
LONG TERM MONITORING						
Personnel and Supplies	day	1	$1,500	$1,500	30	$14,140
Laboratory	ea	10	$500	$5,000	30	$47,135
SUBTOTAL						$169,279
CONTINGENCY - Cost Based on 10% of Subtotal						$16,928
TOTAL						$186,207

O&M_2.WK1

Table 7 Environmental Criteria Based on Potential Health Effects (ARARs)

Chemical	Maximum Sampled Observed Concentration	Maximum Sample Observed Concentration Groundwater ONLY	Estimated Maximum In-Stream Concentration	Recommended Maximum Contaminant Levels (RMCL)[a]	Allowable Daily Intakes (ADIs)[b]	Inhalation Recommended Time-Weighted Averages (TWA, OSHA)[c]	Ambient Criteria for Protection of Fresh Water Life
Benzoic Acid	17 mg/kg	26.0 mg/l	0.02 mg/l	NR	NR	NR	23 mg/l[d]
1,2-Dichloro-propane	0.224 mg/kg	ND	5×10^{-5} mg/l	0.006 mg/l	Not Set	75 ppm	1.4 mg/l[e]
Ethylbenzene	461 mg/kg	8.2 mg/l	0.15 mg/l	0.680 mg/l	3.40 mg/D	100 ppm	1.4 mg/l[e]
Styrene	1,480 mg/kg	0.470 mg/l	0.0004 mg/l	0.140 mg/l	NR	100 ppm	0.9 mg/l[g]
Xylene	14.5 mg/kg	0.046 mg/l	0.006 mg/l	0.440 mg/l	2.20 mg/D	100 ppm	6.0 mg/l[f]

[a]Federal Register, 1985, "Proposal Rulemaking for National Primary Drinking Water Regulation".

[b]USEPA, 1984, "Summary of Currently Acceptable Daily Intakes (ADIs) for Oral Exposure".

[c]OSHA, 1981, "General Industry Safety and Health Standards", 29 CFR1910.

[d]USEPA, 1980, "Dicholoropropanes/Dichloropropenes: Ambient Water Quality Criteria."

[e]USEPA, 1980, "Ambient Water Quality Criteria for Ethylbenzene".

[f]USEPA, 1984, "Health Effects Assessment for Xylene".

[g]Sittig, 1985, Handbook of Toxic and Hazardous Chemicals and Carcinogens

NA = Not applicable

NR = None reported in toxicology database.

ND = Not detected

Future Actions

When the construction of the cap is accepted as complete by EPA and FDER, EPA will begin the process to delete the site from the NPL.

COMMUNITY RESPONSIVENESS SUMMARY
ALPHA RESINS CORPORATION SITE
Lakeland, Florida

The Alpha Resins Corporation has been the subject of preliminary assessments by the United States Environmental Protection Agency and the Florida Department of Environmental Regulation in 1981 and 1982 respectively. The Alpha Resins contractor carried out a Remedial Investigation and an Endangerment Assessment that were completed by October, 1986. The Feasibility Study was completed in February, 1988.

The use of unlined percolation ponds, which was then permitted by the FDER, led to low level contamination of onsite soil and the surficial ground water aquifer. One of the ponds was used as a solid waste landfill for a short period of time and has also probably contributed to the present conditions at the site. The site was placed on the National Priorities List (NPL) in October, 1981. Since this time the FDER, EPA, and Alpha Resins Corporation have kept the local community informed through notices in the newspapers, public meetings and through updates of information to the local site information repository.

This Community Responsiveness Summary has been prepared to present a summary of the EPA's and FDER's community relations activities with respect to the Alpha Resins site.

The Response Summary is divided into three section:

Section 1 - Overview - This section discusses the FDER's and EPA's recommended alternative and possible public reaction to this alternative.

Section 2 - Community Relations Activities - This section describes community relations activities performed by the FDER and EPA.

Section 3 - Community Relations Responsiveness Summary - This section describes FDER and EPA responses to questions asked during a February 22, 1988 public meeting held to discuss the results of the Feasibility Study (FS) performed for this site and to answer questions about the proposed remedy for the site.

1.0 OVERVIEW

1.1 Recommended Alternative

The recommended alternative for this site is capping of the small unlined pond with long-term ground water monitoring. Low levels of organics are present in the on-site soils and surficial ground water aquifer. Health-based standards for ethylbenzene are exceeded in one well which is

directly downgradient from the small unlined pond. Capping will reduce infiltration of rainwater through the unlined pond, thus reducing the concentrations of contaminants.

The recommended alternative also includes long-term monitoring of ground water and surface water to assure that conditions at the site are not degrading. By continuing to monitor the site, the natural attenuation of the organics in the ground water can be monitored on a long-term basis. In the unlikely event that conditions worsen, a contingency plan with human health-based and aquatic standards will be developed to assess site conditions and implement remedial actions if necessary.

1.2 Expected Public Reaction

Overall, the public is satisfied with the findings of the Remedial Investigation/Feasibility Study and with the recommended alternative. There were a moderate number of people attending the two public meetings that were held and most people were concerned with conditions and events of the past that did not pertain to existing conditions at the Alpha Resins site. The FDER and the USEPA did not receive any comments during the three week public comment period (February 22, 1988 to March 11, 1988) subsequent to the public meeting that was held to discuss the Feasibility Study.

2.0 Community Relations Activities

A number of community relations activities have been conducted at the Alpha Resins site by the FDER, EPA, and the Alpha Resins Corporation. A public information repository was established at the Lakeland library, Lakeland, Florida. The Remedial Investigation and Endangerment Assessment were placed in the repository in November, 1986 and the Feasibility Study in February, 1988.

Two public meetings have been conducted for the Alpha Resins site. The first was held on November 6, 1986 for the purpose of discussing the Remedial Investigation and the Endangerment Assessment. The second, held on February 22, 1988 was to discuss the findings of the Feasibility Study and the recommended alternative for the Alpha Resins site. Both meetings were held in Lakeland, Florida and turnout was moderate. Public concerns were expressed and were addressed by the FDER, EPA, and Alpha contractors. Problems of the past with odors from air emissions were solved with the installation of an incinerator. The only real concern that is remaining was a complaint by neighbors who claim their water was contaminated with butanone. A later study showed this to be a laboratory or sampling error and that there was no ground water contamination in any private, off-site water wells.

Prior to and throughout the Remedial Investigation/Feasibility Study process the public has been informed of site conditions, ongoing studies, and the future intent of the FDER and EPA with respect to remedial action. There was little or no opposition to the recommended alternative at the latest public

meeting and no comments were received. FDER published the proposed plan in the local community newspaper. FDER also published a fact sheet prior to the public meeting containing addresses to which public comments would be received.

3.0 Community Relations Responsiveness Summary

COMMUNITY RELATIONS
RESPONSIVENESS SUMMARY
ALPHA RESINS SITE
Lakeland, Florida

INTRODUCTION

EPA and DER held a public meeting on February 22, 1988 at the Providence Community Center in Lakeland, Florida to discuss the Feasibility Study (FS) Report for the Alpha Resins site and to accept public comment. The meeting, held from 7:00 to 9:30 p.m., was attended by 12 people.

Joe Applegate, DER's site manager for the project, chaired the meeting. He was assisted by Janet Hart and Mark Potts from CDM, Alpha Resin's technical consultant. They provided a brief description of the site history, the nature of the problem, and the findings of the Remedial Investigation (RI). This was followed by a more detailed presentation of the cleanup alternatives considered and the recommended actions.

Mr. Applegate then requested questions and comments from the audience and stated Mr. J. Sam Vance from EPA, would also accept written comments until March 11, 1988.

SUMMARY OF PUBLIC COMMENT AND AGENCY RESPONSE

Questions and comments offered at the meeting are summarized below. They are divided into three categories: General comments relating to the project as a whole, those relating to past DER and EPA Groundwater Investigations, and those concerning the proposed remedy for the site. No written comments were received during the public comment period.

General Comments/Questions

1. Health Effects: Citizens asked about the health effects of ethylbenzene, xylene and styrene.

   Response: References were made to information available in the exposure assessment about these chemicals. No speaker was able to give precise answers as none of them were toxicologists

2. What Separates the Surficial Aquifer from the Floridan Aquifer Beneath:

Citizens asked speakers to explain why water from the surficial aquifer does not go down into the Floridan Aquifer below.

Response: Speakers explained this was a classical case of Floridan geology. There is a surficial aquifer, a clay confining layer, and the underlying Floridan Aquifer. The clay layer at the Alpha site is very continuous and impedes the flow of water down into the Floridan Aquifer.

3. Move the Material in the Landfill Off-site: Citizen asked who pays for excavating and moving all of the landfill materials.

Response: Speaker stated Alpha would pay for it and one of the main reasons this was not recommended as a treatment alternative was because the benefit gained was not warranted by the cost. Another speaker noted that according to current industry practice, landfilling of wastes is not considered a permanent solution.

4. Resin Barrels in the Landfill: Citizens asked about what the Agencies were going to do about the barrels of resins dumped in the landfill.

Response: Speaker responded by explaining once the resins have hardened they are no longer considered a hazardous waste and the sampling showed that the contents were not causing a problem.

5. Air Quality in the Plant Vicinity: Citizens asked why air quality has not been addressed in past and current studies.

Response: Speaker explained that local DER district offices are responsible for monitoring air quality at this facility. Complaints and concerns would be more effectively directed towards that office.

Questions Relating to Past DER and EPA Groundwater Investigations

1. Phthalic Acid in the Landfill: Citizen asked about the toxicity and amount of phthalic acid dumped in the landfill.

Response: Speaker answered the testing has not shown a significant amount of phthalic acid concentration in the water samples from wells located near the landfill. The primary source of this contaminant is more likely the past use of the unlined percolation pond.

2. Offsite Testing to the East of the Alpha Property: Citizens asked about the testing of water and soil to the east of the Alpha property where water drains into the swamp from the swamp on the Alpha site.

Response: Both DER and EPA sampled water leaving the Alpha swamp and entering this swamp and it has always met health-based and drinking water standards. Soils have not been tested based on the results of the water quality data.

3. Surficial Aquifer North of the Spray Fields, West and South where Robinson Property is: Citizens asked if the surficial aquifer north of the spray fields and west and south on the Alpha site is now clean.

   Response: DER responded by saying all testing indicates they are clean and that the surficial aquifer damage is confined to the immediate area of the unlined percolation pond.

4. 1984 Analysis Revealing Butanone in Citizen's Well: Citizen asked about 1984 letter from EPA informing them butanone had been detected in their well.

   Response: Speaker explained that because of incorrect laboratory practices used in cleaning the sample bottles butanone was detected in the analysis. Specifically, non laboratory grade acetone was used to rinse the sample bottles. This grade of acetone contains butanone as a contaminant which was detected in all of the samples taken during that sampling event, including the laboratory provided blanks and spikes used for Quality Assurance/Control.

5. Citizen Concern for Data Obtained from Most Recent Groundwater Investigation Citizen stated there was a problem in believing the data both EPA and DER collect because of the past errors in lab data.

   Response: Speaker responds that DER certifies the labs doing these analyses and that EPA splits samples with these labs as an additional Quality Assurance/Control.

6. Exclusion of (Heavy) Metals from Analysis of Water Samples: Citizen asked why (heavy) metals were excluded from June 1986 sampling of ground and surface water.

   Response: After the first analysis (November, 1981) of the site in which arsenic was detected, arsenic was never again detected after that. Metals were then excluded from the June 1986 analyses because they had not been detected in samples taken since that first time.

Comments on the Proposed Remedy for the Site

1. Feasibility Study States Cap would not be Cost Effective Citizen states the feasibility study indicates a cap would not be cost effective because of the small amount of rain water likely to be contaminated when it filters down to the waste. He then goes on to ask if EPA agrees with that assessment and why EPA recommends capping the unlined pond instead of recommending the no action alternative.

   Response: Speaker responed by explaining EPA has evaluated a number of sites where natural attenuation reduces toxicity and mobility of wastes to a point where they are no longer a problem. EPA agrees with most of the assumptions made in the FS however, EPA's calculations on the amount of rainfall entering the unlined pond predict a greater benefit from the cap than the FS concludes.

2. Air Quality: Citizen asked who will monitor the air around the Alpha Resins Plant.

   Response: Speaker responded that as far as this study goes, this is not an air problem. For problems with air, citizens should call the local DER in Tampa and have them come and check into it.

3. Long-Term Monitoring Citizen asked if they (citizens) could be comfortable knowing monitoring of the ground and surface water would be continued for as long as the water shows some form of contamination, possibly as long as 20 or 30 years.

   Response: Speaker responded that a more accurate description might be to say action levels, if exceeded, would be used to determine whether the chosen remedy is effective. These action levels are established at values below recommended maximum contaminant levels. If monitoring over time indicates a decreasing trend of contamination, then monitoring frequency will probably be reduced.

4. Collection of Samples: Citizen asked who would collect the samples of ground and surface water. Would it be a contractor or Alpha personnel?

   Response: Speaker explained that decision was not made at this time, however EPA and DER typically split these samples with the people collecting them to monitor for Quality Assurance/Control.

5. How Long Between the Three Week Comment Period and Eventual Settlement Agreement with Alpha: Citizen asked how long a time between the three week comment period and a settlement agreement was likely to elapse.

   Response: Speaker explained there is preparation of a Record of Decision envisioned by April 1, 1988. Law allows for a 120 day negotiation period. Alpha would have 60 days to make a good faith offer to EPA to design and construct a remedy. There is an additional 60 day period to complete negotiations on an agreement with EPA. This represents the 120 day total.

6. If Monitoring Stops, Would it be Made Public: Citizen asked if monitoring were stopped, is this a decision that would be made public or would there be another public meeting to discuss that decision.

   Response: Speaker responded by answering that it would be a part of the public record, however no requirement exists, at this time, for a public meeting to discuss that decision.