United States
Environmental Protection
Agency

Office of
Emergency and
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March 1985

EPA

Superfund Record of Decision:

Varsol Spill Site, FL

VARSOL SPILL SITE, DADE COUNTY, FL

Record of Decision
Abstract

The Biscayne Aquifer is the sole source of drinking water for three million residents of Southeast Florida. Three Biscayne Aquifer hazardous waste sites on the EPA National Priorities List were addressed as one management unit for the remedial investigation and feasibility study (RI/FS): 1) Varsol Spill Site (Miami International Airport), 2) Miami Drum Site, and 3) Northwest 58th Street Landfill. The Varsol Spill Site is located in the northeast section of Miami International Airport (MIA). Industrial operations associated with a typical commercial airport have resulted in hydrocarbon contamination of surface and ground waters in the vicinity of MIA. Since 1966 there have been approximately 15 hydrocarbon spills and leaks totalling approximately 2 million gallons, including the loss of an estimated 1.5 million gallons of varsol. In 1970, an unknown amount of jet fuel was spilled into a drainage canal on-site. In April of 1981, construction activities revealed a thick hydrocarbon layer floating on the water table in an excavated trench. One responsible party installed 54 shallow observation wells. Sampling results showed that the hydrocarbon layer diminished with time. In another area, Dade County installed 43 monitoring wells to determine the extent and magnitude of jet fuel spilled. Recovery operations for this jet fuel are currently underway.

The remedial investigation of the site showed no trace of varsol in and around the airport at this particular time, thus the recommended alternative for this site is no action. Several factors probably contributed to the dissipation of the hydrocarbon layer in the aquifer. For example, some of the solvent was recovered, biodegradation is believed to have taken place, and the hydrology of the area indicates that some of the solvent contributed to and became part of the "background" contamination in the aquifer. A further investigation of the dissipation of the hydrocarbon layer will be conducted. This will be addressed and the results will be presented in a separate ROD (Phase V) as part of the remedy for the three sites referred to as the Biscayne Aquifer Superfund Site.

Record of Decision
Remedial Alternative Selection

SITE: Varsol Spill Site, Dade County, Florida

DOCUMENTS REVIEWED

I am basing my decision on the following documents describing the analysis of cost-effectiveness of remedial alternatives for the Varsol Spill Site:

- Evaluation of the Clean-Up Activities Already Undertaken at the Miami Drum Services Hazardous Waste Site, Dade County, Florida, September 1, 1982

- Phase I--Compilation and Evaluation of Data for the Protection of the Biscayne Aquifer and Environment in North Dade County, Florida, October 15, 1982

- Remedial Investigation for Miami Drum Services Site, Florida, Florida Department of Environmental Regulation, Tallahassee, Florida 32301, November 1983

- Phase II--Sampling, Analytical, and Investigative Program for the Protection of the Biscayne Aquifer and Environment in North Dade County, Florida, February 1984

- Phase III---Feasibility of Remedial Actions for the Protection of the Biscayne Aquifer in Dade County, Florida, November 1984

- Record of Decision Summary of Remedial Alternative Selection, Biscayne Aquifer Sites, Dade County, Florida

  Background
  Phase I: Varsol Spill Site

- Responsiveness Summary

DESCRIPTION OF SELECTED REMEDY

In view of the fact that no trace of the varsol was found at this time in and around the airport, the recommended alternative for this site is no action.

Although large concentrations of spilled jet-A fuel were found in the groundwater near Concourse E of the airport, CERCLA (Superfund) does not address jet fuel spills. However, recovery of the fuel should continue and the contaminated groundwater there should be be treated in accordance with Dade County regulations.

FUTURE ACTIONS

While no varsol was found in and around the airport, the spill did occur. Several factors could contribute to the fact that no varsol is detectable at this time; some of the solvent was recovered. Biodegradation is believed to have destroyed some more, but the hydrology of the aquifer system strongly suggests that some of the solvent contributed to and became a part of the "background" contamination in the aquifer. This "background" contamination will be addressed in a separate Record of Decision (Phase V) as part of the remedy for the three sites referred to as the Biscayne Aquifer Superfund Sites.

DECLARATIONS

Consistent with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), and the National Contingency Plan (40 CFR Part 300), I have determined that the no action alternative is a cost effective remedy and provides adequate protection of public health, welfare and the environment. The State of Florida has been consulted and agrees with the approved remedy.

I have also determined that the action being taken is appropriate when balanced against the availability of Trust Fund monies for use at other sites.

3/29/85.
Date

John A. Little, Deputy for
Charles R. Jeter
Regional Administrator

cc: J. Silva, WD
J. Finger, ESD
H. Zeller, OPM

RECORD OF DECISION
SUMMARY OF REMEDIAL ALTERNATIVE SELECTION
BISCAYNE AQUIFER SITES, DADE COUNTY, FLORIDA

BACKGROUND

INTRODUCTION

Three sites proposed for the National Priorities List in October 1981 are located in northwest Dade County, Florida. After consulting with the State and County, EPA decided to address these sites as a single management unit for the performance of the RI/FS. A major reason for this decision is that all three sites affect the same general area of the Biscayne Aquifer. The agencies recognized that the effects of these sites on the aquifer could be interrelated and that some of the problems believed to exist would not be solely attributable to an individual site. This management scheme worked well for the RI/FS and is also appropriate for the remedy.

A package of five Records of Decision (RODs) that address the three sites is planned. One ROD was signed on September 13, 1982, for the Miami Drum source control. The second ROD (Varsol) is included herein. This ROD package will be completed in phases with the final ROD (Phase IV) planned for fall 1985. In general, the RODs are as follows:

- Phase I: Varsol Spill Site--immediate area soil and groundwater
- Phase II: Miami Drum--immediate area groundwater
- Phase IIa: Miami Drum--source control (soils and encountered groundwater), completed September 1982
- Phase III: 58th Street Landfill--immediate area soil, surface and groundwater
- Phase IV: Groundwater in three-site area

SITE LOCATION AND DESCRIPTION

The Biscayne Aquifer is the sole source of drinking water for three million residents of southeast Florida. Three Biscayne Aquifer hazardous waste sites on the EPA National Priorities List were addressed as one management unit for remedial investigation and feasibility study: (1) Varsol Spill Site (Miami International Airport), (2) Miami Drum

Site, and (3) Northwest 58th Street Landfill. These sites are located close to each other in north Dade County, Florida. The study area including these sites is defined in Figure 1. Locations of these sites and public well fields as well as private wells within the study area are shown in Figure 2. The topography in the study area is flat, approximately 5 feet above sea level.

The Varsol Spill Site is located in the northeast section of Miami International Airport (MIA). The airport is located less than one-half mile south of the lower Miami Springs municipal well field. The Miami Canal runs adjacent to the northeast corner of the airport, the Tamiami Canal runs immediately south of the airport, and two other canals are located near the western edge of the airport.

Miami Drum Services was an inactive drum recycling facility located west of Miami Springs at 7049 N.W. 70th Street in Miami. The dimensions of this site are 242 feet (north-south axis) by 230 feet (east-west axis), and it is located in a predominantly industrial area. The FEC Canal is located about one quarter of a mile east of the Miami Drum Site, and the Miami Canal is located less than one mile northeast of the site. The Medley well field is located approximately 750 feet west of this site, while the Miami Springs and Preston well fields are located about 5,000 feet southeast of the site.

The Northwest 58th Street Landfill consists of a one-square-mile area near the western perimeters of the Town of Medley and the City of Miami Springs. Present development adjacent to this landfill site consists of industrial uses to the south (Northwest 58th Street) and east (Northwest 87th Avenue), a rock pit operation to the north (Northwest 74th Street), and undeveloped land to the west (Northwest 97th Avenue). A new resource recovery plant is located directly west of, and adjacent to, the landfill. The Medley and Miami Springs municipal well fields are approximately one and one-half miles and two and one-half miles downgradient from the eastern edge of the landfill, respectively.

The average annual rainfall over the study area is approximately 60 inches, of which as much as 80 percent falls during the rainy season (June to September). Parts of the study area are inundated intermittently during the rainy season, and swampy conditions persist for several weeks each year, mainly due to rising water table. The major drainage systems of the area are the Miami and Tamiami Canals draining into the Biscayne Bay. The secondary drainage systems include the 58th Street, Dressel, and 25th Street Canals. The water table beneath the study area is located approximately 2 to 3 feet below the natural land surface.

The Biscayne Aquifer, which is a highly permeable, wedge-shaped, unconfined shallow aquifer composed of limestone and sandstone, underlies the study area. The top of the aquifer is near the natural ground surface, and its base is approximately 60 feet below ground surface in the Northwest well field area and approximately 105 feet below ground surface in the Miami International Airport area. Figure 3 shows the geologic section of the Biscayne Aquifer in the Miami Springs/Preston well field area. In general, this aquifer is divisible, from top to bottom, into three distinct water-producing zones, each zone being 15 to 20 feet thick. These zones are separated by generally dense, silty to sandy limestones and well-cemented quartz sands that act as aquitards. The cone of depression resulting from the withdrawal of approximately 150 million gallons per day (mgd) of water from the Miami Springs and Preston well fields encompasses the northern half of the Airport, all of the Miami Drum Site, and extends as far west as one-half mile east of the 58th Street Landfill. The cone of depression corresponding to a drawdown of 0.25 foot that results from the withdrawal of 150 mgd of water from the new Northwest well field and 75 mgd of water from the Miami Springs well field encompasses the western edge of the 58th Street Landfill.

SITE HISTORY

Varsol Spill Site

Industrial operations associated with a typical commercial airport have resulted in hydrocarbon contamination of surface and groundwaters in the vicinity of MIA. Since 1966, approximately 15 hydrocarbon spills and leaks have been recorded. The total discharge of hydrocarbon materials is estimated to be approximately 2 million gallons. This includes the loss of an estimated 1.5 million gallons of varsol discovered at the Eastern Airlines maintenance base in the northeast section of the airport around 1970. During 1970 a jet fuel spill of approximately 66,000 gallons was discovered near the west central area of Eastern Airlines properties. In 1970, National Airlines accidentally spilled an unknown amount of jet fuels into the drainage canals that ultimately discharge into the Tamiami Canal. They were ordered to stop discharging cleaning solvents and degreasers to an airport drainage canal at this time. In 1981, Braniff Airlines was ordered to stop this same practice after it was discovered. Several other smaller spills and discharges of jet oil, aviation gas, cleaning solvents, and degreasers have also occurred at the airport. Several areas within MIA have heavy accumulations of oil lying on the ground. This is often the result of employees from various aircraft

maintenance operations discharging oily wastes onto the ground and into storm sewers. Another major underground jet fuel spill was discovered in 1983 in the vicinity of Concourse E as a result of ongoing construction and improvements in the area.

Removal of underground hydrocarbons at the airport was attempted in the early 1970's primarily at the Eastern Airlines maintenance base. Hydrocarbon decontamination separator trenches were installed by Eastern Airlines in 1971 to remove the 1.5 million gallons of varsol that had spilled underground. The recovery operations were terminated in August 1973 due to slime build-up in the trenches and the extremely slow natural migration of hydrocarbons into the trenches. Actual recovered volumes were approximately 133,000 gallons of hydrocarbons, or less than 10 percent of the estimated spill volume. Other recovery procedures at the airport have been implemented only in conjunction with dewatering operations at construction sites within the airport and have been unsuccessful in removing substantial quantities of hydrocarbons. During April 1981, construction activities in the west-central area of the Eastern Airlines maintenance base revealed a thick hydrocarbon layer floating on the water table in an excavated trench, probably from previous fuel spills. Eastern Airlines installed 54 shallow observation wells during the early 1970's at their maintenance base (the general area of the varsol spill). Measurements of fluid levels in these monitoring wells, specifically the water-table depth and hydrocarbon thickness in the upper layer of the water table, were taken twice per year, during the dry season and the wet season, from 1975 to 1981. The hydrocarbon layer thickness, according to these data, shows a declining trend with time, and, in some wells, the presence of the layer could not be detected in the second year. In the Concourse E area, Dade County installed 43 monitoring wells to determine the extent and magnitude of jet fuel spilled. Dade County also installed three recovery wells in the Concourse E area and started the recovery operation in mid-1983. Through May 1984, over 102,000 gallons of jet fuel had been recovered from this area. Recovery operations are continuing in this area.

Miami Drum Site

The privately-owned Miami Drum Services (MDS) facility operated for approximately 15 years before Dade County, through a local court order, forced MDS to cease operation in June 1981. As many as 5,000 drums of various chemical waste materials, including corrosives, solvents, phenols, and toxic metals, were observed on the site while the

company was operating. Drums were washed with a caustic cleaning solution, which, along with drum residues containing industrial solvents, acids, and heavy metals, was disposed of onsite in open, unlined pits. Eventually, the surface soils on the site became saturated.

The abandoned Miami Drum Site was acquired by Dade County for construction of the Palmetto Yard maintenance facility of the Dade County Rapid Rail Transit Project. Based on a brief study, extensive soil borings were performed at the site during December 1981 and cores up to 10 feet deep were analyzed for contaminants. Dade County contracted O. H. Materials Company and directed them to remove the 400 to 500 existing drums from the site, excavate contaminated soils based on these analyses, and relocate them to an existing, approved disposal facility. In addition to this action, the contaminated water encountered during excavation was removed, treated, and disposed of onsite. At the present time, the maintenance facility of the Dade County Rapid Rail Transit system is operating at this site.

Northwest 58th Street Landfill Site

This landfill is owned by Dade County. It began operation in 1952 as an open dump. Some waste was placed into shallow trenches dug below the water table, resulting in deposition of some refuse in the saturated zone of the aquifer. Open burning of waste was used as a volume reduction method until 1950, when a ban was placed on such burning. Since the ban, waste has accumulated at a rate approximately three times the 1960-61 rate. Since its startup in 1952, this facility has received from 100,000 to 1,000,000 tons per year of municipal solid waste. Garbage from domestic and industrial sources comprises about 65 percent of the wastes disposed of at the site. The remainder is from other sources and includes street debris, discarded autos and appliances, furniture, tree trimmings, liquid wastes, and other rubbish. The estimated recent disposal rate (applicable through July 1982) for garbage and trash was about 90,000 tons per month; for liquid wastes, consisting mainly of grease trap pump-outs, it was about 200,000 to 400,000 gallons per month. Since January 1975, this landfill has been receiving daily cover provided by muck and crushed rock from quarry overburden and, more recently, calcium carbonate sludge from the Miami Dade Water and Sewer Authority water treatment plants. Since September 1982, the landfill has been closed for all purposes, except for the disposal of construction debris.

This site is not permitted as a sanitary landfill by the Florida Department of Environmental Regulation (FDER). According to preliminary close-out plans for the landfill,

it is classified as an open dump and has been operating in violation of a consent order between the FDER and Metro Dade County dated July 30, 1979. Final close-out plans for this landfill are being prepared at this time.

CURRENT SITE STATUS

The initial study, conducted in 1982, involved compiling and evaluating existing data relevant to the contamination problem. This evaluation generally indicated the presence of dispersed, low-level concentrations of numerous toxic contaminants in the groundwater beneath the study area. This was based on limited pertinent data, mostly inorganics. A general lack of pertinent groundwater monitoring data, especially organics, was found.

The Remedial Investigation (RI), begun in late 1982, consisted of a unified, planned, and intensive sampling effort to fill in the data gaps found in the Phase I study and to determine the magnitude and extent of groundwater contamination. Criteria for data classification were developed from existing literature, and were based on effects to human health. Data evaluation based on the RI indicated that widespread low to moderate levels of several toxic contaminants, mostly in the volatile organics category, are present in groundwater throughout the study area. Vinyl chloride was the most common contaminant detected and its concentration exceeded the FDER standard of one µg/L (set in 1984). No concentrated priority pollutant plume could be found.

Earlier investigations by Eastern Airlines, based on varsol fluid level measurements on top of the water table, showed declining thickness of the varsol layer with respect to time. By 1981, most of Eastern Airlines data showed no hydrocarbon thickness at the Varsol Spill Site. The RI in 1982 and 1983 did not find any plume or pockets of the varsol in groundwater at and around the spill site and in the neighboring lower Miami Springs area.

In late 1981 (prior to cleanup of the contaminated soils), the Florida Department of Environmental Regulation (FDER) contracted with Technos, Inc., to determine the extent of groundwater pollution associated with the Miami Drum Site. Geophysical measurements using electromagnetics (EM) and ground penetrating radar (GPR) provided the data for this study. The EM results showed a significant conductivity anomaly coincident with the site. The conductivity anomaly provided evidence of a strong plume-like trend to the southeast in the direction of groundwater flow and towards the Miami Springs/Preston well fields. Several less significant conductivity lobes were also detected towards

the west and north of the site toward the Medley well field. However, the RI as well as a separate remedial investigation conducted during 1983 by FDER at the Miami Drum Site found no evidence of a contaminant plume from the site.

During the late 1970's, investigations by the U. S. Geological Survey and Technos, Inc., had determined that, based on the dissolved inorganic content of the groundwater, leachate from the 58th Street Landfill had infiltrated the Biscayne Aquifer beneath and adjacent to the landfill site in the form of a groundwater plume moving in an easterly direction along with the natural downgradient water movement. However, based on extensive priority pollutant data (heavy metals as well as organics) that were non-existent during the earlier USGS and Technos studies, no groundwater contaminant plume was found in the vicinity of the landfill from the 1982-1983 RI.

The results of these investigations indicate that, at this time, there is no concentrated contaminant plume emanating from any of the three sites in the study area. However, widespread, low, dispersed levels of volatile organic chemicals have been found all over the study area; plumes have blended together and have now, with time, become indistinguishable with the general poor groundwater quality in the study area. The main explanation for this is the geohydrologic conditions within the study area: the high transmissivity of the Biscayne Aquifer; the widespread interaction of groundwater with surface-water bodies throughout the study area; and the high, continuous pumping of groundwater at the several municipal well fields. The overall groundwater quality in the study area will be addressed in Phase IV.

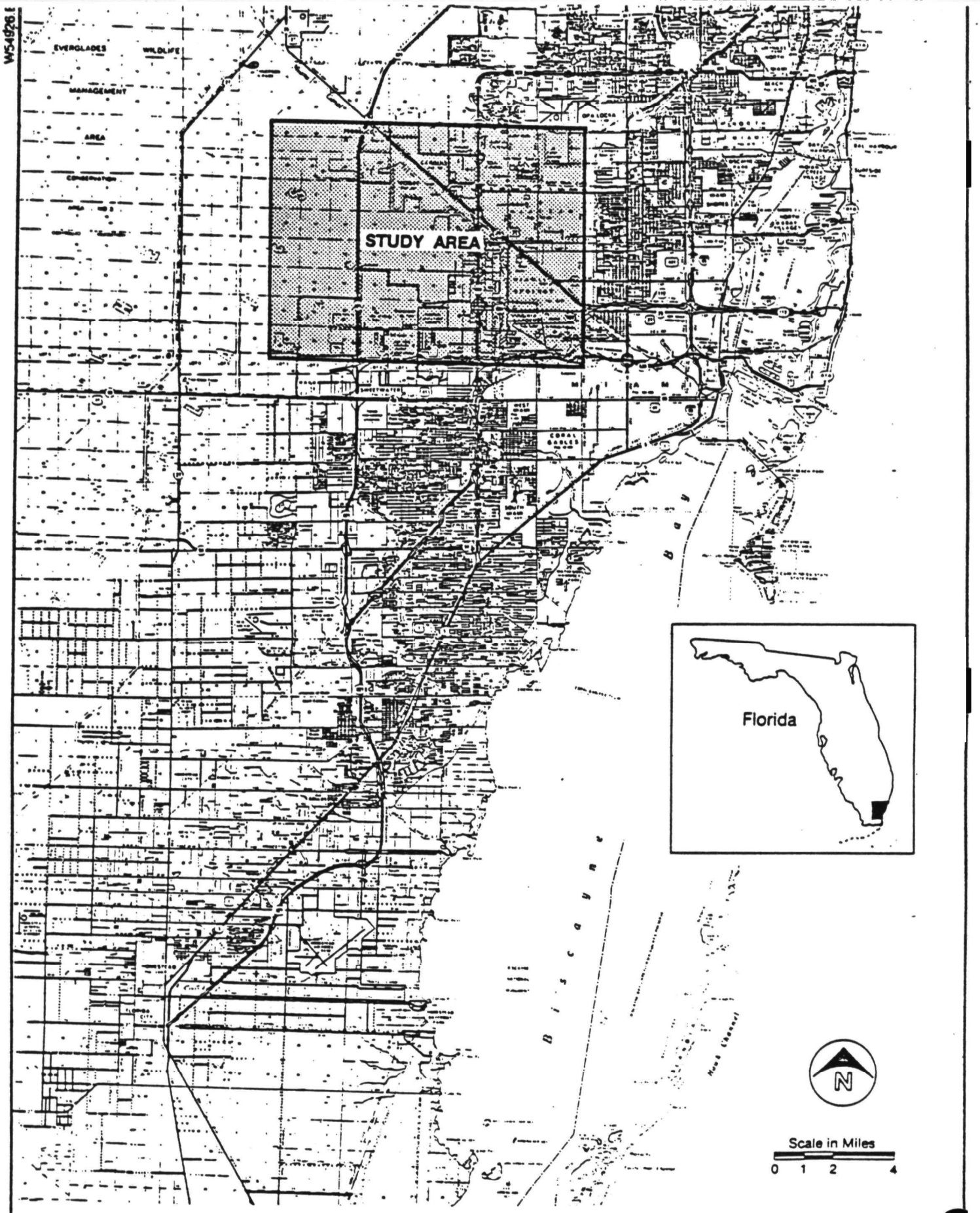

FIGURE 1.
Project location.

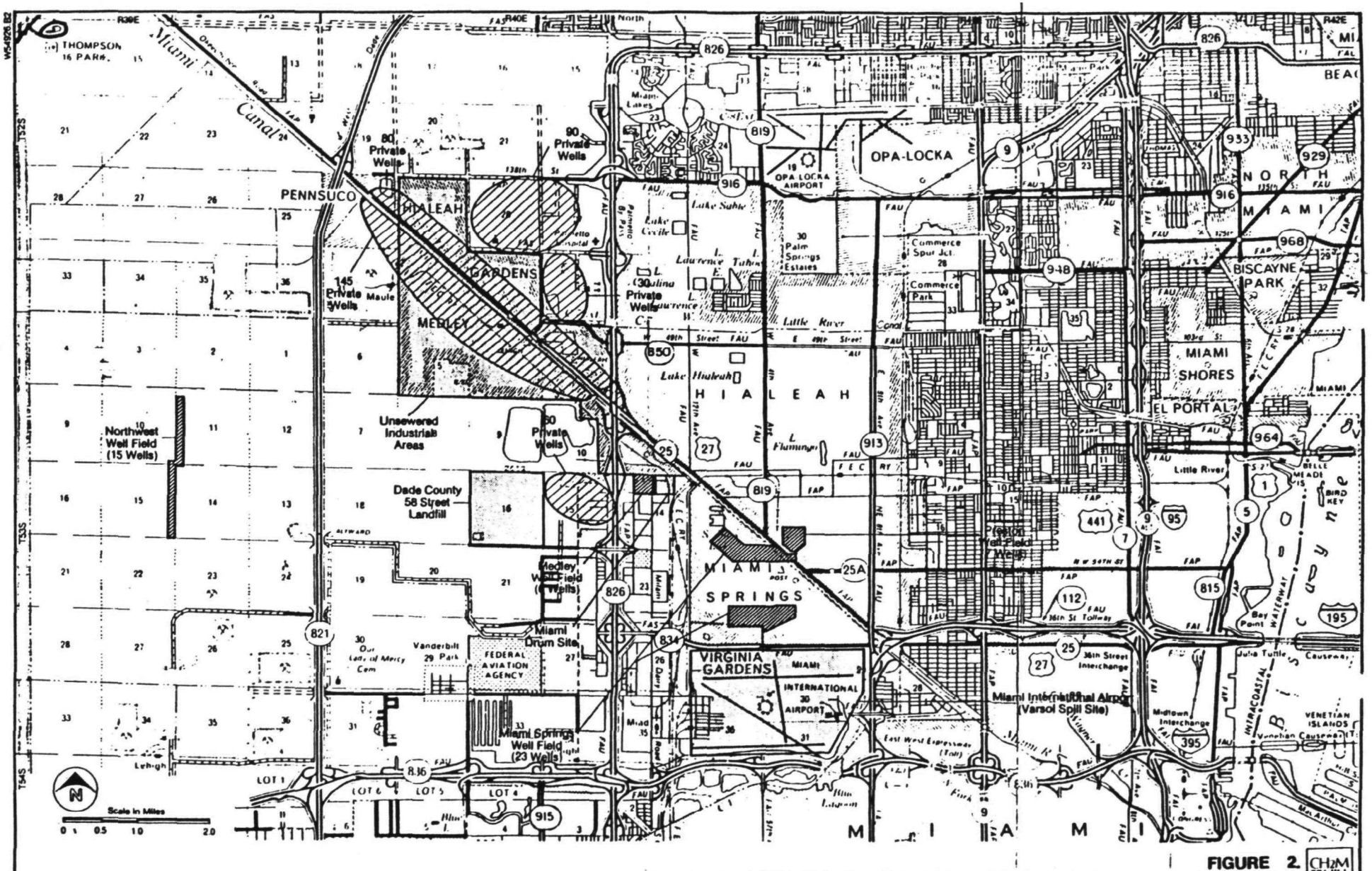

FIGURE 2.
Location of potential contamination sites, public well fields, and private wells in the study area.

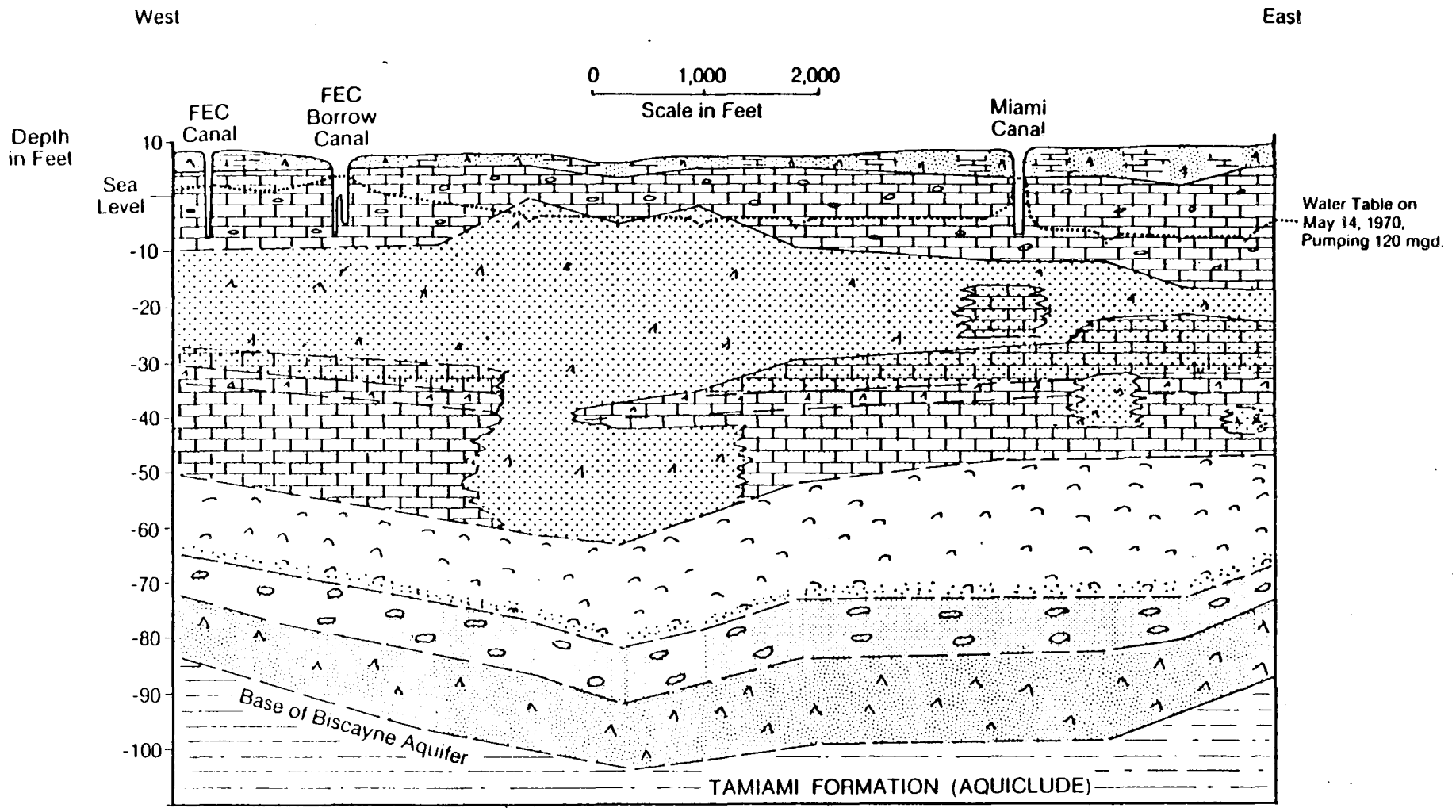

FIGURE 3.

Section of the Biscayne Aquifer in the Miami Springs – Preston Well Field Area.

Source: [redacted] 1972

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RECORD OF DECISION
SUMMARY OF REMEDIAL ALTERNATIVE SELECTION
BISCAYNE AQUIFER SITES, DADE COUNTY, FLORIDA

PHASE I: VARSOL SPILL SITE

ALTERNATIVES EVALUATION

During the Remedial Investigation (RI), wells along NW 36th Street were sampled for all priority pollutants. The varsol spill was the result of underground pipeline leak(s) near 36th Street in the northeast corner of the Miami International Airport. In addition, newly constructed wells and existing wells, including some municipal production wells were sampled in the area north of the airport because the migration of the varsol toward the Lower Miami Springs wellfield was of concern. The location of the wells sampled and the geographical areas defined for data evaluation are shown in Figure 4. Oil and grease samples were also collected at most of the above wells as an indicator of any varsol remaining on the water table or in the soil at these locations.

A summary of the results for the airport area and the Lower Miami Springs area are shown in Tables 1 and 2, respectively. The analytical results for the airport area are comparable to those in the other geographical areas. Table 3 lists the mean values of vinyl chloride, trans-1,2-dichloroethene (the two VOCs most commonly detected), as well as the total concentrations of all priority pollutant VOCs detected. This table indicates that the airport area water is of similar quality as that all over the remaining study area. This can also be seen from Figure 5, which shows positive VOC results all over the study area. Table 4 lists in decreasing order the mean concentration of vinyl chloride detected in each well in the study area. Wells with mean concentrations of vinyl chloride below 1.0 µg/L are not listed. Table 5 presents similar information for total volatile organics (priority pollutants). Tables 4 and 5 also confirm the conclusion that water quality at this site is similar to that all over the study area.

No oil and grease were detected in the wells along 36th Street. In the Lower Miami Springs area, oil and grease were found at the minimum detection limit of 5 mg/L in two wells, A-3 and A-4, but only once out of the five times they were sampled. These results do not show any evidence of any varsol remaining in the soil or water at this time.

The wells along 36th Street and immediately north of it in the Lower Miami Springs area were sampled again in October 1983 (in addition to the six samples collected in November 1982 and March 1983). The results of this additional sampling agree with the earlier findings summarized above.

These results show that the varsol spilled during the late 1960's at the airport is not present at this time at this location. Also, there is no evidence of its migration toward the Miami Springs municipal well field. The hydrocarbon layer thickness was non-existent during the late 1970's, according to Eastern Airlines studies, and the 1982 and 1983 RI also confirms this conclusion. These findings give further impetus to the following statement in the report of our initial evaluation (October 1982): "A study of this problem has indicated that some microbial decomposition of the underground hydrocarbons is being accomplished by bacteria present in the soils." These results call for no action at this site.

RECOMMENDED ALTERNATIVE

In view of the fact that no trace of the varsol was found at this time in and around the airport, the recommended alternative for this site is no action.

Although large concentrations of spilled jet-A fuel were found in the groundwater near Concourse E of the airport, CERCLA (Superfund) does not address jet fuel spills. However, recovery of the fuel should continue and the contaminated groundwater there should be treated in accordance with Dade County regulations.

FUTURE ACTIONS

While no varsol was found in and around the airport, the spill did occur. Several factors could contribute to the fact that no varsol is detectable at this time. Some of the solvent was recovered and biodegradation is believed to have destroyed some more; however, the hydrology of the aquifer system strongly suggests that some of the solvent contributed to and became a part of the "background" contamination in the aquifer, as shown in attached Tables and Figures. This "background" contamination will be addressed in a separate Record of Decision (Phase IV) as part of the remedy for the three sites referred to as the Biscayne Aquifer Superfund Sites.

		PARAMETER	WELL DESIGNATION																	
			MW1		MW2		MW3		MW4		√5		MW6		MW7		MW8		MW9	MW11
			S	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D	D	D
PRIORITY POLLUTANTS	INORGANICS	ARSENIC			○								○							
		CADMIUM													○				○	○
		CHROMIUM	○		○	○					○	○	○	○	○					○
		LEAD	○				○				○	○		○					○	○
		MERCURY				○		○												○
		SELENIUM		○										○						
		ZINC	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	VOLATILE OGRANICS	CHLOROBENZENE				○						○		○						○
		CHLOROETHANE				△				△		△								
		1,1-DICHLOROETHANE								○			○	○						
		TRANS-1,2-DICHLOROETHENE							○	○				○						○
		1,1,2,2-TETRACHLOROETHANE										●						●		
		TOLUENE							○			○						○		
		1,1,1-TRICHLOROETHANE											○	○		○				○
		TRICHLOROETHENE				○	○			○										
		VINYL CHLORIDE					○	○		○	○	○		●		○				●
	TOTAL RECOVERABLE PHENOLS					△					△	△			△	△	△		△	△
OTHER ORGANIC COMPOUNDS	ACETONE								△											
	DIMETHYL SULFIDE																	△		
	METHYL BUTYL KETONE								△			△			△					
	METHYL ETHYL KETONE								△											
	METHYL ISOBUTYL KETONE								△											
	STYRENE												○				○			
	UNIDENTIFIED COMPOUNDS (EXTRACTABLE)						△													

LEGEND

△ Detected in at least one sample, no criteria given.*

○ Detected in at least one sample, but at levels less than established criteria.*

● Detected in at least one sample at levels above criteria.*

*Criteria in RI Report (Feb. 1984, Table 4-2)

TABLE 1.
Contaminants Detected in the Airport Monitoring Wells Along 36th St.

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		PARAMETER	WELL DESIGNATION																				
			S-19	F-441	F-414	MS-1	MS-2	MS-3	MS-4	MS-8	A-	A-4b	A-4c	A-4d	A-3a	A-3b	A-3c	A-3d	A-1a	A-1b	A-1c	A-1d
PRIORITY POLLUTANTS	INORGANICS	ARSENIC		○																		
		CADMIUM			○	○					○											
		CHROMIUM	○		○	○	○		○													
		COPPER		○			○															
		LEAD	○	○	○																	
		MERCURY					○	○			○											
		SELENIUM		○	○						○	○	○									
		ZINC	○	○	○	○	○	○	○	○	○	○	○		○	○	○		○	○	○	
	VOLATILE OGRANICS	BENZENE			○							●										
		CHLOROBENZENE			○		○	○		○	○					○	○				○	
		CHLOROETHANE														△	△					
		CHLOROMETHANE											△									
		1,1-DICHLOROETHANE										○									○	
		TRANS-1,2-DICHLOROETHENE			○		○	○		○	○											
		ETHYL BENZENE			○						○											
		METHYLENE CHLORIDE	●	●	●																	
		1,1,2,2-TETRACHLOROETHANE							●													
		TETRACHLOROETHENE																	○		○	
		TOLUENE		○	○						○	○	○									
		VINYL CHLORIDE			●	○	○	●		●	○	○	○			○	○				○	
	TOTAL RECOVERABLE PHENOLS					△																
OIL & GREASE														○				○				
OTHER ORGANIC COMPOUNDS		ACETONE		△	△																	
		C8 ALKYLPHENOL						△														
		DIMETHYLHEPTANE			△																	
		METHYL BUTYL KETONE									△											
		METHYL SULFIDE	△																			
		STYRENE									○											
		M-XYLENE			○																	
		O&P-XYLENE		○	○						○	○										
		UNIDENTIFIED COMPOUNDS (EXTRACTABLE)										△							△		△	

LEGEND

△ Detected in at least one sample, no criteria given.*

○ Detected in at least one sample, but at levels less than established criteria.*

● Detected in at least one sample at levels above criteria.*

*Criteria in RI Report (Feb. 1984, Table 4-2)

TABLE 2.
Contaminants Detected in the Lower Miami Springs Area.

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Table 3
MEAN VALUES OF SELECT ANALYTICAL PARAMETERS
FOR VARIOUS GEOGRAPHICAL AREAS

Geographical Area	Total VOCs	Vinyl Chloride	Trans-1,2-dichloroethene
Airport Monitoring Wells	10	3.5	1.1
Lower Miami Springs Wells	20	8.7	3.6
Upper Miami Springs Wells	33	17	7.3
Hialeah Area Wells	57	23	28
58th Street Landfill Wells	6.2	0.31	0.53
Unsewered Industrial Area Wells	1.0	0.25	0.25

Notes: 1. All values reported in µg/L.

2. There are fewer monitoring wells in the Unsewered Industrial Area than in other areas. Results of analyses from these wells might not be indicative of the water quality of the whole area.

Table 4
MEAN CONCENTRATION OF VINYL CHLORIDE
DETECTED AT INDIVIDUAL SAMPLING STATIONS

Well No.	Location	Mean Concentration (µg/L)
C-1B(51)	Upper Miami Springs Area	142
C-1C(101)	Upper Miami Springs Area	111
G-1280(54)	Hialeah Area	100
F-414(65)	Lower Miami Springs Area	68
F-255(82)	Hialeah Area	59
MS-9(105)	Upper Miami Springs Area	51
MS-8(64)	Lower Miami Springs Area	37
P-5(85)	Hialeah Area	32
MW-6D(55)	Airport Monitoring Wells	24
MW-11D(55)	Airport Monitoring Wells	23
P-3(85)	Hialeah Area	19
LM-10(30)	Upper Miami Springs Area	17
MS-3(62)	Lower Miami Springs Area	16
P-2(85)	Hialeah Area	12
MS-19(106)	Upper Miami Springs Area	10
MS-20(106)	Upper Miami Springs Area	10
TP-MSR	Hialeah Water Treatment Plant--Raw	9.8
MS-2(96)	Lower Miami Springs Area	9.5
TP-PR	Preston Water Treatment Plant--Raw	9.3
F-239(53)	Hialeah Area	8.9
LM-10(60)	Upper Miami Springs Area	8.0
MS-12(85)	Hialeah Area	6.5
MW-5D(56)	Airport Monitoring Wells	6.2
TP-MSF	Hialeah Water Treatment Plant--Finished	6.1
M-3(132)	Upper Miami Springs Area	5.5
TP-PF	Preston Water Treatment Plant--Finished	5.3
MS-23(97)	Upper Miami Springs Area	5.2
P-7(85)	Hialeah Area	5.1
P-4(85)	Hialeah Area	4.6
MW-4D(71)	Airport Monitoring Wells	3.5

Table 4
(continued)

Well No.	Location	Mean Concentration (µg/L)
MS-1(67)	Lower Miami Springs Area	3.5
A-1C(86)	Lower Miami Springs Area	3.3
MW-7D(53)	Airport Monitoring Wells	2.9
P-1(85)	Hialeah Area	2.1
A-3C(88)	Lower Miami Springs Area	1.8
MW-3S(12)	Airport Monitoring Wells	1.6
A-4B(50)	Lower Miami Springs Area	1.6
A-3B(51)	Lower Miami Springs Area	1.6
LM-9(30)	58th Street Landfill Area	1.3
M-1(132)	Upper Miami Springs Area	1.3
MW-5S(11)	Airport Monitoring Wells	1.2
M-2(131)	Upper Miami Springs Area	1.0

Note: All other stations have mean concentrations less than 1.0 µg/L.

Table 5
MEAN CONCENTRATION OF TOTAL VOLATILE ORGANICS
(PRIORITY POLLUTANTS) DETECTED AT INDIVIDUAL SAMPLING STATIONS

Well No.	Location	Mean Concentration (µg/L)
C-1B(51)	Upper Miami Springs Area	166
C-1C(101)	Upper Miami Springs Area	151
G-1280(54)	Hialeah Area	146
F-414(65)	Lower Miami Springs Area	137
MS-20(106)	Upper Miami Springs Area	119
F-255(82)	Hialeah Area	108
F-239(53)	Hialeah Area	102
MS-9(105)	Upper Miami Springs Area	101
P-5(85)	Hialeah Area	80
MS-8(64)	Lower Miami Springs Area	76
MW-3S(12)	Airport Monitoring Wells	56
TP-MSF	Hialeah Water Treatment Plant--Finished	54
MW-6S(11)	Airport Monitoring Wells	46
LM-10(30)	Upper Miami Springs Area	43
P-2(85)	Hialeah Area	38
P-7(85)	Hialeah Area	37
P-3(85)	Hialeah Area	36
TP-PR	Preston Water Treatment Plant--Raw	35
TP-MSR	Hialeah Water Treatment Plant--Raw	27
MS-19(106)	Upper Miami Springs Area	26
MS-3(62)	Lower Miami Springs Area	26
TP-PF	Preston Water Treatment Plant--Finished	26
LM-10(60)	Upper Miami Springs Area	25
MW-1S(11)	Airport Monitoring Wells	25
M-2(131)	Upper Miami Springs Area	25
MW-9D(42)	Airport Monitoring Wells	20
MS-22(92)	Upper Miami Springs Area	20
MS-2(96)	Lower Miami Springs Area	19
A-3B(51)	Lower Miami Springs Area	18
MS-12(85)	Hialeah Area	16

Table 5
(continued)

Well No.	Location	Mean Concentration (µg/L)
A-4C(90)	Lower Miami Springs Area	16
P-1(85)	Hialeah Area	15
LM-4A(20)	58th Street Landfill Area	14
MS-23(97)	Upper Miami Springs Area	13
MW-2D(47)	Airport Monitoring Wells	13
LM-5A(10)	58th Street Landfill Area	13
B-5A(18)	Unsewered Industrial Area	12
P-4(85)	Hialeah Area	12
MW-2S(11)	Airport Monitoring Wells	12
MW-15D(55)	Other Sampling Stations	12
M-1(132)	Upper Miami Springs Area	11
LM-4A(40)	58th Street Landfill Area	11
LM-9(10)	58th Street Landfill Area	10
A-4A(18)	Lower Miami Springs Area	10
LM-4A(64)	58th Street Landfill	10
LM-9(30)	58th Street Landfill	9.0
LM-5A(30)	58th Street Landfill	8.8
M-6(131)	Upper Miami Springs Area	8.2
F-441(57)	Lower Miami Springs Area	8.1
LM-8(30)	58th Street Landfill Area	7.6
A-1(C)(86)	Lower Miami Springs Area	7.3
LM-8(60)	58th Street Landfill Area	7.2
G-1368(38)	Hialeah Area	7.0
MW-4S(12)	Airport Monitoring Wells	6.1
LM-6A(60)	58th Street Landfill Area	5.7
LM-5A(60)	58th Street Landfill Area	5.7
M-3(132)	Upper Miami Springs Area	4.8
LM-8(10)	58th Street Landfill Area	4.3
LM-6A(10)	58th Street Landfill Area	3.7
MS-1(67)	Lower Miami Springs Area	3.5
M-4(129)	Upper Miami Springs Area	3.3

Table 5
(continued)

Well No.	Location	Mean Concentration (µg/L)
LM-7A(60)	Upper Miami Springs Area	3.0
LM-6A(30)	58th Street Landfill	3.0
A-4A(18)	Lower Miami Springs Area	2.7
MW-8S(11)	Airport Monitoring Wells	2.5
MS-17(106)	Upper Miami Springs Area	2.2
MW-11D(55)	Airport Monitoring Wells	2.2
A-4B(50)	Lower Miami Springs Area	2.0
LM-1(10)	Other Sampling Stations	1.9
B-4B(51)	Unsewered Industrial Area	1.5
LM-10(10)	Upper Miami Springs Area	1.5
MW-1D(53)	Airport Monitoring Wells	1.0
MW-4D(71)	Airport Monitoring Wells	1.0
MS-16(106)	Upper Miami Springs Area	1.0

Note: All other stations have mean concentrations less than 1.0µg/L.

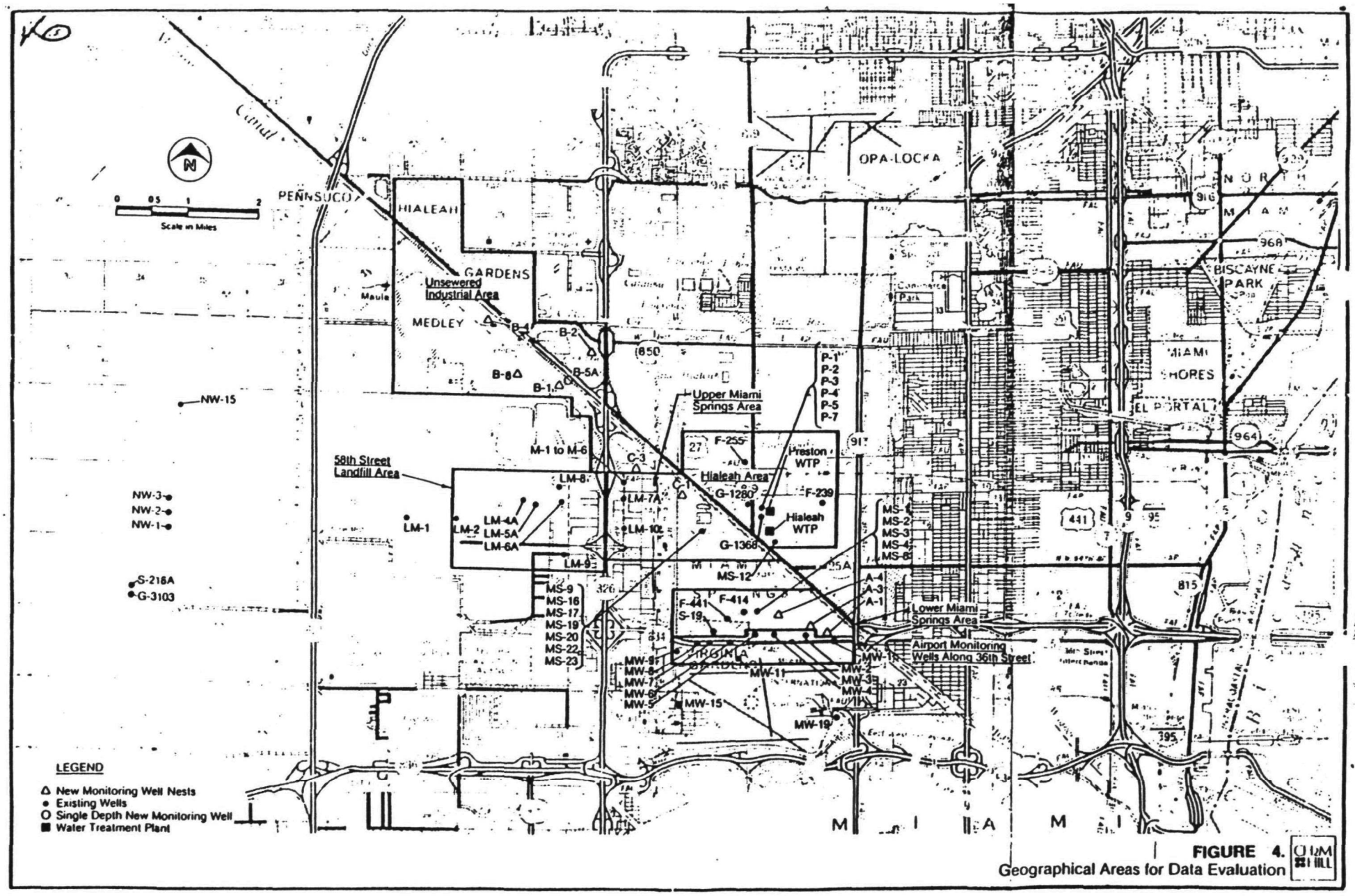
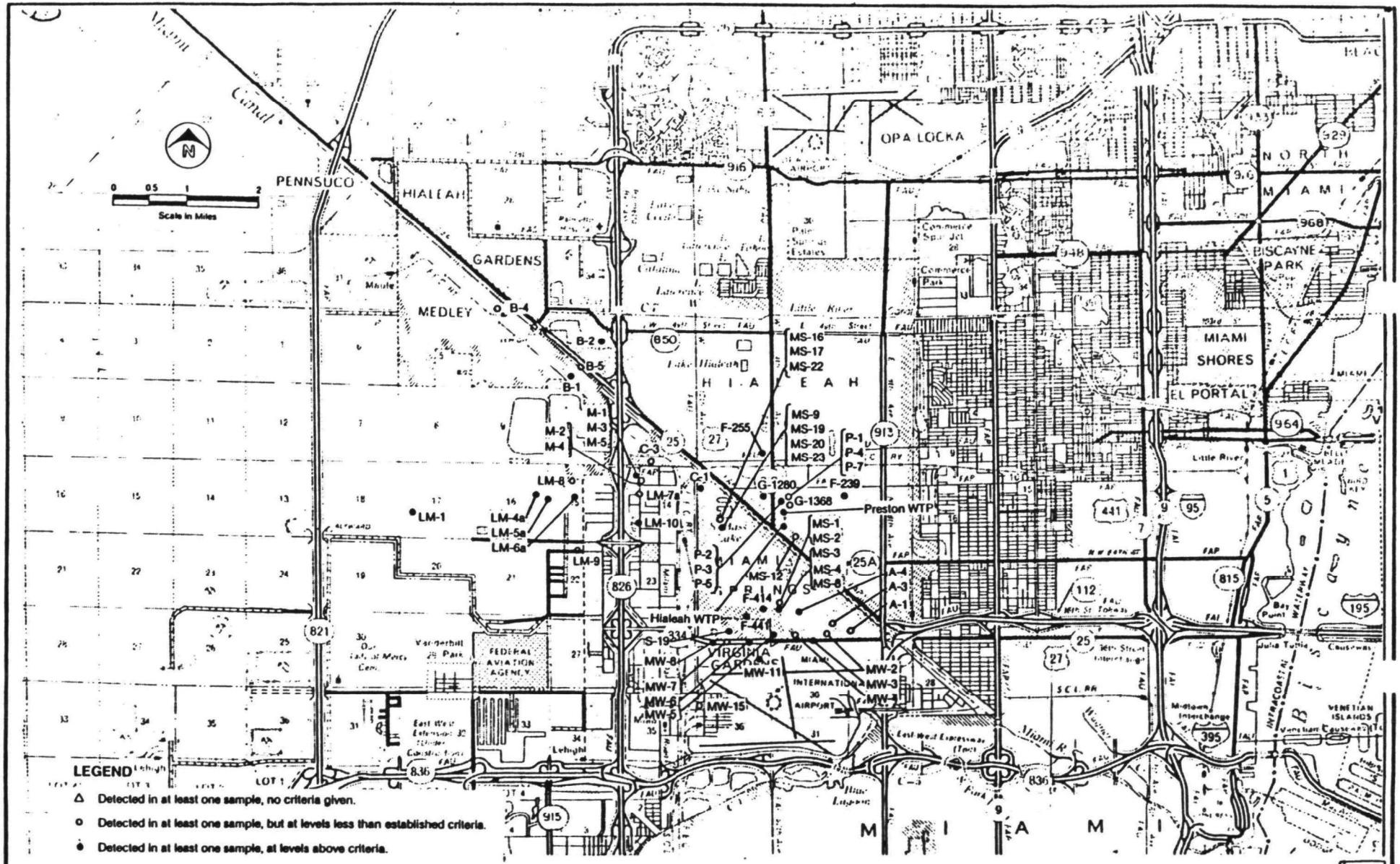


FIGURE 4.
Geographical Areas for Data Evaluation



NOTE: The criteria listed in Table 4-2 are for data classification purposes only, and are not intended to be used as a standard unless the criteria is a published standard. (See RI Report, Feb. 1984)

FIGURE 5. Wells Showing Positive Results for Volatile Organics (Priority Pollutants).

CH2M HILL

COMMUNITY RELATIONS
RESPONSIVENESS SUMMARY
BISCAYNE AQUIFER SITES
FEASIBILITY STUDY

INTRODUCTION

EPA held a public meeting on February 7, 1985 at the Miami Springs City Hall to discuss the Feasibility Study (FS) report for the Biscayne Aquifer site and to accept public comment. The meeting, held from 7:30 to 11:00 p.m., was attended by 34 people.

James Orban, EPA's site manager for the project, chaired the meeting. He was assisted by Udai Singh and Ken Cable from CH2M HILL, EPA'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. Orban then requested questions and comments from the audience and stated that EPA would also accept written comments until February 28, 1985. He indicated that all comments would be considered in the decision making process and that a written response to the comments would be included in the Record of Decision.

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 pertaining to specific sites, and those concerning recommended cleanup activities for the area's groundwater. No written comments were received during the public comment period.

GENERAL COMMENTS/QUESTIONS

1. Public Involvement: Speakers thought that public notice for the meeting was inadequate, that there had not been sufficient involvement of citizens during the study process, and that the plans had been prepared "behind closed doors".

   Response: Public notice for the meeting was provided by display advertisements in the Ft. Lauderdale News and the Miami Herald. A press release announcing the meeting was distributed to all local newspapers. The RI and FS reports were available for public review at the Palm Beach, Dade and Broward County offices. EPA

had previously implemented an extensive community relations program for the site.

A public meeting was held in September 1982 to present the results of the initial study and to outline the plans for Remedial Investigations. Three issues of Remedies, a newsletter summarizing project activities and reports, were mailed to over 400 individuals and organizations in October 1983, March 1984 and July 1984.

A public meeting to present the Remedial Investigation findings, outline the Feasibility Study activities, and solicit comments on possible cleanup alternatives to be evaluated was held in October 1983. Preliminary results of the detailed evaluation of the remedial action alternatives were explained in a public meeting in March 1984. Also presented for comments and suggestions at this meeting was the preliminary outline of the program for the protection of the Biscayne Aquifer.

EPA sponsored another public meeting in July 1984 to present and receive public comment on the recommended alternatives and the Biscayne Aquifer Protection Plan. Two workshops on study findings, risk assessments, and proposed cleanup and prevention activities were held for the press, elected and appointed officials and the general public during July 1984. EPA believes these activities provided excellent opportunities in both formal and informal settings for two-way communication between interested citizens and the agencies: EPA, Florida Department of Environmental Regulation, Dade County Department of Environmental Resources Management, and the Centers for Disease Control.

2. Funding for Cleanup: Questions concerned the availability of EPA funds for implementation of cleanup activities, private sector responsibility for cleanup, and incentives to encourage private sector site cleanup. Commentors indicated that water user charges should not be used to fund cleanup actions.

   Response: EPA has identified the responsible parties, and will influence these parties to do what is necessary to cleanup the site. EPA will also use available Superfund monies to implement the cleanup.

3. Local Agencies: Speakers expressed a lack of confidence in the ability of county agencies to deal with hazardous waste issues. They were critical of the County's hydrocarbon removal operation at the airport, the lack of technical training of Dade County

Department of Community Affairs staff, inaccuracies in the County's report on Munisport landfill, operation of the 58th Street landfill, and the lack of information about contamination on the west side of the airport.

Response: EPA pursued the Remedial Investigation and Feasibility Study for the Biscayne Aquifer and made recommendations for cleanup activities under the authority of the Superfund program. Expenditure of program funds is limited to cleanup of existing uncontrolled hazardous waste sites and cannot be extended to cover costs of developing and implementing plans designed to prevent the occurrence of future hazardous waste disposal problems. These are responsibilities of local agencies.

4. Federal Agencies: Commentors indicated that the process for study and cleanup of sites takes too long, and that EPA should have proposed an Environmental Impact Statement (EIS) on the use of wetlands near the Northwest well field for industrial development.

Response: EPA recognizes that the length of the Remedial Investigation and Feasibility Study process causes frustration among local residents who are concerned about the effects of the sites on their health and property values. Yet, if the problems are to be effectively solved it is essential that they be thoroughly understood before long term cleanup actions are recommended. At Biscayne Aquifer, this required extensive testing at a number of different sites and evaluation of 12 source control and 10 offsite remedial action alternatives. These activities were accomplished as expediently as possible.

Responsibility for implementation of an EIS rests within a different division of EPA. Officials will refer the request to the appropriate section within EPA for further consideration.

SITE SPECIFIC COMMENTS/QUESTIONS

1. Varsol Spill Site: Commentors thought the presence of hydrocarbons at the airport site should have been a target for Superfund action.

Response: As the speaker indicated, hydrocarbons are not included in the list of hazardous substances regulated by the Superfund program. The project studies did assist the State and local officials in identifying and addressing the problem. However, formal Superfund action is not appropriate.

Over 1.5 million gallons of Varsol were believed to have been spilled at the site in 1968. EPA conducted an extensive sampling program at the site, but was unable to confirm the presence of a plume of toxic substances. It is possible that the solvent was biodegraded or dispersed through the aquifer.

2. Miami Drum Site and 58th Street Landfill:

   a. Speakers suggested that EPA in its RI did not identify a contaminant plume at the 58th Street landfill because it did not have much concern about contaminant migration since the adjacent Miami Springs well field is only used as a back-up water supply source.

      Response: The presence of a contaminant plume in groundwater downgrade of the 58th Street landfill was documented in the late 1970s by the U.S. Geological Survey and various studies by consultants; however, that was a non-toxic, non-organic substance survey. Between November 1982 and March 1983 EPA conducted a more comprehensive survey; a series of six sampling programs which tested for all 129 priority pollutants, including organic as well as inorganic toxic substances.

   b. Speakers thought EPA's focus on municipal drinking water and groundwater was too narrow and did not permit sufficient consideration of problems that require attention at these sites. They were concerned about cleanup and closure of the 58th Street landfill and felt these activities should be included as recommended remedial actions.

      Response: EPA considered a wide range of alternatives for remedial action at the sites, related both to specific sources of contamination as well as to the offsite, area-wide nature of the problem. EPA did include in the FS an analysis of remedial alternatives for the 58th Street landfill, including proper closure.

RECOMMENDED ACTION COMMENTS/QUESTIONS

1. Recommendation Development: One speaker questioned the process of developing recommendations for cleanup actions and indicated he did not feel the recommendations covered all problems identified by project studies. He suggested consideration of a variation of Alternative 3 that would keep Preston and Miami Springs well fields open for emergency back-up

and would implement plans to minimize future contamination in the Miami Springs area.

Response: EPA performed a detailed evaluation of Alternative 3 and found that it was not cost-effective (the total present worth cost for Alternative 3 was over $23 million as compared to the cost of the recommended alternative; $8.5 million). Alternative 3 also would not satisfy one of the important goals of the study; to cleanup the aquifer, which will be accomplished by pumping from the Miami Springs and Preston well fields.

2. Biscayne Aquifer Protection Plan: Speakers identified the need for federal protection of wetlands in the Northwest well field area. They suggested preparation of an EIS or use of EPA's veto power over Corps of Engineers' 404C permits to control land development near the new Northwest well field.

   Response: The suggested actions are not within the domain of the Superfund branch at EPA. Officials will refer this recommendation for consideration to the proper division within EPA.

3. Air Stripping: Commentors were concerned about the health effects of airborne pollution on people living near the proposed tower sites. They asked about the benefits of air stripping and the end result of the remedial action on water quality.

   Response: EPA completed a detailed estimate of air pollution resulting from air stripping towers and found that air stripping meets all state air emission requirements and is far below allowable air emission limits. It will not have adverse impacts upon the environment or human health. The benefit of air stripping is that it will be removing 97 percent to over 99 percent of the volatile organic compounds from the water withdrawn from the Miami Springs and Preston municipal well fields, thus considerably improving the quality of potable water in the study area.

4. Effect on Land Values: One speaker was concerned about the effect of the cleanup activities on land values in her Miami Springs neighborhood. She wanted to know the effect of the recommended alternative on her property value.

   Response: The Miami Springs and Preston well fields had been pumping for 20 to 30 years, artificially lowering the water table in the area. When pumping began at the new Northwest well field and the Miami

Springs and Preston well fields were shut down, the water table in the area rose, causing flooding of residential properties.

EPA's recommendation is to begin pumping the Miami Springs and Preston well fields, and to treat the water by air stripping so as to provide clean water to the public. Although this study was not meant to address the flooding problem at the sites, the effect of the recommended action is to return the water table to its former position, thus resolving the flooding problem.

WDR91/001