7416 U-007-307.89

MIAMI CONSERVANCY DISTRICT, HYDROLOGIC DATA FOR THE HAMILTON-NEW BALTIMORE AREA 1992, THE WATER CONSERVATION SUBDISTRICT OF THE MIAMI CONSERVANCY DISTRICT, DAYTON, OH - (USED AS A REFERENCE IN OU5 RI REPORT)

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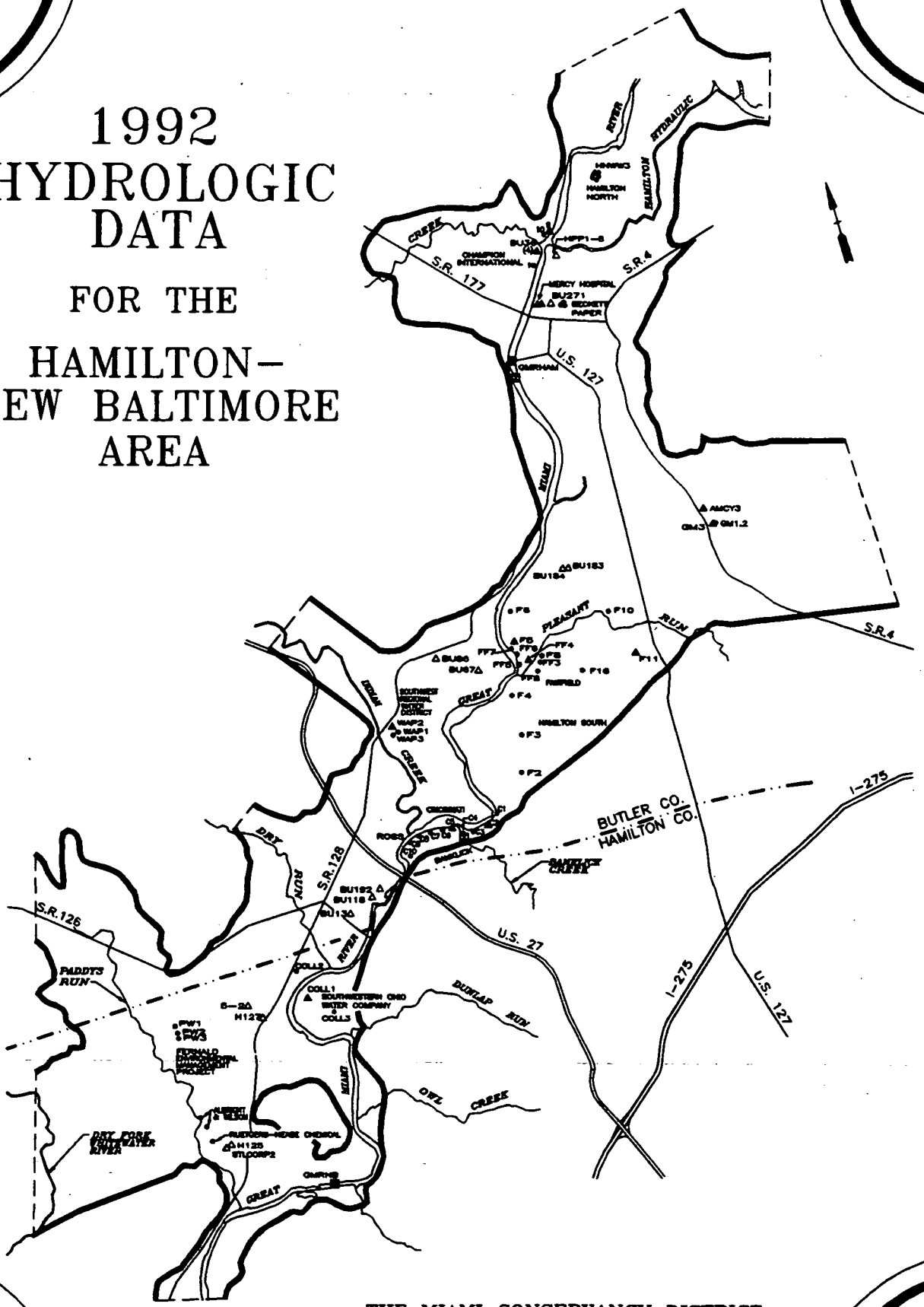
REPORT

1992 HYDROLOGIC DATA

FOR THE

HAMILTON–NEW BALTIMORE AREA



THE MIAMI CONSERVANCY DISTRICT
38 E. MONUMENT AVE.
DAYTON, OHIO 45402

7416

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The Water Conservation Subdistrict
of The Miami Conservancy District

Hydrologic Data for the Hamilton to New Baltimore Area

1992

May 1994

38 East Monument Avenue
Dayton, Ohio 45402

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PREFACE

This report is one of a series of hydrologic reports for the Hamilton to New Baltimore area prepared by the Water Conservation Subdistrict of The Miami Conservancy District in accordance with the Official Plan, Phase Two, which was approved for implementation in June, 1968.

The Water Conservation Subdistrict of The Miami Conservancy District continued, during 1992, to collect and quantify water resource data in the Hamilton to New Baltimore area, Ohio. This report was prepared by the staff of the Water Conservation Subdistrict under the general supervision of Paul M. Plummer, Engineer, and James L. Rozelle, General Manager and Chief Engineer.

Hydrologic data presented by the Water Conservation Subdistrict in this report is obtained from several agencies and industries that have an interest in the water resource management of the project area. Cooperation from the Cities of Cincinnati, Hamilton, and Fairfield; The Southwestern Ohio Water Company (SWOWC); The Southwest Regional Water District (SWRWD); Fernald Environmental Restoration Management Corporation(FERMCO); Champion International, Hamilton Mill; the Southwest District Office of the Ohio Environmental Protection Agency (OEPA); Ohio Department of Natural Resources, Division of Water (ODNR); the U.S. Geological Survey, Ohio District (USGS); and the National Oceanic and Atmospheric Administration, National Climatic Data Center (NOAA) make this report possible.

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INTRODUCTION

Background

The Official Plan, Phase Two, of the Water Conservation Subdistrict of The Miami Conservancy District (WCSD), developed from concern that excessive withdrawal of ground water would deplete the aquifer within the Hamilton-New Baltimore area. Prior to the Plan's conception, three water users (the City of Hamilton, City of Fairfield and Southwestern Ohio Water Company) were withdrawing approximately 23 million gallons of water per day (MGD) from the area. Plans by the City of Cincinnati to establish a major well field in the same area, brought concern by Butler County civic leaders that the ground water resources would be depleted.

As a result of a petition by the City of Hamilton and the Butler County Commissioners, a Butler Water Conservancy District (BWCD) was established in April, 1963, to regulate the water resources of the project area (Figure 1). Prior to this time the Water Conservation Subdistrict of The Miami Conservancy District had been organized in 1953, "to provide a water supply for domestic, industrial and public use, and to regulate the flow of streams and to conserve the waters thereof." Since the Butler Water Conservancy District had a similar interest in subsurface water, and their area of interest in part overlapped (the BWCD encompassed a larger portion of southern Butler County) the boundaries of the Water Conservation Subdistrict, it was agreed by all affected parties that more effective management could be performed by the WCSD. The BWCD was merged with the WCSD in June, 1967, and an Official Plan was prepared by October, 1967. This was to be Phase Two of the Water Conservation Subdistrict Official Plan (Phase One being a regional water quality management and monitoring plan). Its objectives were to:

1. Determine the supply of water.
2. Project short and long range use.
3. Develop and evaluate alternative programs to optimize the available water supply.

Amendment No.1 to the Official Plan was approved in 1980. It added a fourth objective to the Plan:

4. Monitor and evaluate water quality in the aquifer and make recommendations based thereon.

As stated in the Official Plan, Phase Two, the objectives were to be accomplished by "developing an observation network to collect data and information, providing staff to make necessary investigations, and receiving notices of proposed developments for increases in use of ground water." This report is one of a series of yearly hydrologic data reports as part of the continuing effort to accomplish the objectives stated in the Official Plan.

The 1980 Amendment also resulted in a restructuring of the Plan to allow the participants to enter into a contract or contracts with the WCSD for greater flexibility in dealing with the changing concerns of the group. One month after the Official Plan was amended, seven major ground water users from the project area entered into a five year agreement with the WCSD. Another such agreement was approved in 1986, extending the ground water management plan in the Hamilton to New Baltimore area through 1991, renewable through 1996. During the term of the 1986 Agreement, two amendments were approved. The first changed the participant list by removing Chevrolet-Pontiac-Canada Group, GMC, and adding Champion International, Hamilton Mill. The second authorized the Subdistrict to execute a contract with a consultant to initiate the first phase of a wellhead protection program, delineation of well or well field capture areas. During 1992, the delineation contract was completed.

Project Area Description

Originally, the geographical location of the project area was established to include the area within the buried valley from the Columbia Bridge in Hamilton southward to the Great Miami River bridge in New Baltimore. Concerns about ground water levels and quality in the vicinity of the Chem-Dyne Superfund site in north Hamilton, resulted in the expansion of the project area to include all of the City of Hamilton, to New Miami.

The limits of the project area, as stated by the Official Plan, Phase Two, "were determined by the extent of the buried valley aquifer, sources of recharge to the aquifer, and locations of principal well fields." The present area encompasses approximately 58 square miles and includes 18.5 stream miles of the Great Miami River. It is located in southern Butler and northern Hamilton Counties and is entirely contained between 39 degrees 15 minutes and 39 degrees 25 minutes north latitude, and 84 degrees 30 minutes and 84 degrees 42 minutes west longitude. A feature map is shown as Figure 2.

The topography of the project area is gently rolling, dissected by numerous streams whose drainage patterns were shaped by the advance and melting of the Pleistocene continental ice sheets. Glaciofluvial deposits, primarily sand and gravel laid down as valley train, occupy the bottom of the stream beds to a depth of as much as 200 feet in some places. This sand and gravel outwash formation is capable of storing a large quantity of ground water and is a high yielding aquifer. The buried valley aquifer in the Hamilton to New Baltimore area is the southern part of an extensive ground water basin which underlies the entire length of the Great Miami River from its mouth to Indian Lake, and is commonly referred to as the Miami Aquifer.

Scope

Water Quality

In cooperation with the WCSD, ground water quality samples are obtained by the USGS three times a year at wells: MI-44 (City of Troy well #4), MT-928 (City of Miamisburg well #8), BU-36 (owned by Champion International, Hamilton Mill), and H-19 (SWOWC's Collector #1). Chemical-quality analysis is performed on each sample with 32 parameters reported.

Stream water quality is assessed on the Great Miami River at New Baltimore by the USGS five times a year. The New Baltimore station is a part of USGS's National Stream Quality Accounting Network (NASQAN) with chemical, microbiological, temperature, and sediment parameters reported.

Ground and surface water samples are also obtained by the WCSD at selected sites around water pumping facilities. Twenty-two ground water and three stream water sites are currently in the sampling network. Chemical, physical, radiological, and volatile organic analyses are performed on each sample. In addition, some samples are analyzed for metal, microbiological, herbicide, and pesticide parameters.

Precipitation

The MCD manages a precipitation information network for the Great Miami River Basin and maintains a data base of the collected rainfall data. Forty rainfall stations are located throughout the basin and used to compute the basin's daily rainfall. Thirty-eight of the stations are used to compute monthly total and annual basin averages and departures from normal. The Hamilton station, located at the Hamilton caretaker's garage on the southeast end of Wayne Avenue, is part of the network. The station is serviced daily by the Hamilton caretaker.The location of MCD precipitation network stations is shown as Figure 3.

In addition, the MCD compiles precipitation data from four other stations within the project area, shown as Figure 4. They are:

Location	Operator
Fairfield (Fairfield WWTP)	Fairfield
Mill Road, Colerain Twp., Hamilton Co.	MCD
Fernald Environmental Management Project (FEMP)	FERMCO
Southwestern Ohio Water Company	SWOWC

The Fairfield station is part of NOAA's climatological data network with daily rainfall reported monthly in NOAA's Climatological Data, Ohio. The Mill Road rainfall station is located at a Cincinnati Metropolitan Sewer District lift station and is equipped with a continuous rainfall recorder. The other two gages are read manually.

Stream flow

Stream flow data is available from gauging stations on four streams in and around the project area. Miami Conservancy District (MCD) - USGS cooperative continuous stage recorders are located on the Great Miami River at Hamilton and on Sevenmile Creek near Camden. Daily discharge data are published for Hamilton and Camden. The MCD also operates a continuous stage recorder on Four Mile Creek at Oxford and on Indian Creek near Millville. Three of the four gauges: Hamilton, Oxford, and Camden are telemetric, which provide immediate information via telephone lines to MCD personnel thus shortening the time it takes to prepare flood forecasts. Miscellaneous stream flow measurements on the Great Miami River and its tributaries are routinely obtained by the MCD.

Water Use

Ground water withdrawal for public agencies is compiled from monthly operating reports submitted to the Division of Drinking and Ground Waters of the OEPA. Industrial pumpage rates are obtained by personal communication with personnel of SWOWC, Champion International, and FERMCO. Wastewater return flows for public agencies and industries are compiled from monthly operating reports submitted to the Water Pollution Control Division of the OEPA.

Water Levels

Ground water levels are continuously recorded in 16 observation wells. Eleven of these observation wells are serviced by the WCSD and 5 by ODNR. Of the eleven observation wells serviced by the WCSD, four are located in northern Hamilton to observe ground water levels in that highly industrialized area. The well names of the recording observation wells are:

BU177	BU39A	BU67	BU11
MW19	BU 8	BU14	BU13
MW20	BU56	C 2A	H 2
MW32	BU 7	BU12	H 4

Well BU56, an ODNR-operated well located at the Hamilton South Water Works, was abandoned in August 1992, during expansion of the water works plant.

The SWOWC obtains water levels monthly at all three of their Ranney collector wells, at the Great Miami River, and at other observation wells around the Ross, Ohio area. FERMCO measures depth to water in 400 wells on and around the FEMP. The Chem-Dyne Site Trust measures 130 wells twice a month on and around the Chem-Dyne site. Most of the large water users measure water levels in their respective wells on an irregular basis. The WCSD has located about 175 other wells along with 13 ponds and pits (Figure 5) in which water levels are periodically measured. The water level in one of these wells, BU179 in Ross, is measured monthly. North Hamilton observation wells are

located on Figure 6. Three wells: BU176, B39, and BU178 are measured monthly for water level. Well BU 5, an ODNR-operated well site located on Figure 6 at an unused production well at the Hamilton North Well Field, was equipped with a continuous water level recorder until July, 1990. At that time the recorder was removed for retrofitting of the production well, and the water level record discontinued.

WATER QUALITY

Water quality data for 1992 is available for MI-44 (City of Troy Well #4), MT-928 (City of Miamisburg Well #8), BU-36 (Champion International #4), H-19 (SWOWC Collector #1), and the Great Miami River at New Baltimore which the USGS monitors and reports in Water Resources Data - Ohio, Vol. 1, Ohio River Basin. Appendix A lists the USGS data.

Under the last Phase Two Agreement, an area-wide ground water quality monitoring network was implemented in 1987. The sampling program involves a series of sampling rounds to assess the quality of water around area pumping facilities and to establish a ground water quality data base. The first round of samples were collected in November and December, 1987. Samples were collected from seventeen wells and three stream sites. The second sampling round was completed in 1988. Samples were collected from nineteen wells and three stream sites in July. The third round was completed in November of 1989. In 1990, samples were obtained in July and September. There were no ground water quality samples collected in 1991 or 1992.

PRECIPITATION

Great Miami Basin

Precipitation in the Great Miami River Basin, was above normal in 1992. Following 1991, which was the eighth driest year of 80 years of record, the basin has once again experienced a wet year. Precipitation in the Great Miami River Basin currently averages 38.00 inches per year. The average precipitation in the basin for 1992 was 39.41 inches, 1.41 inches above the normal rainfall. Figure 7 shows the basin averages for 78 years of record. Maximum and minimum average annual precipitation for the basin occurred in 1950 and 1934 respectively. The 1950 average annual precipitation was 51.11 inches while the 1934 average annual precipitation was 24.43 inches. The yearly precipitation and departures from normal for the last twenty years is shown as Table 1, page 14. Cumulative departures over the past twenty years show above normal precipitation for the period.

Precipitation for the basin would have probably been below normal had it not been for the July record-setting average basin

rainfall. Through June, the accumulated monthly average rainfall was 2.84 inches below normal. The basin average of 8.92 inches during the month of July was 5.18 inches above normal - the maximum of record for that month. The bar graph of Figure 8 compares monthly rainfall amounts with the norm, and indicates maximum and minimum monthly amounts for the period of record. Table 2 lists the 1992 basin rainfall amounts by months with their respective departure from normal. The table indicates that only the months of April, July, August, and November had above normal average precipitation. Monthly average precipitation totals for the basin ranged from 8.92 inches in July to .90 inches in February.

Monthly rainfall summaries indicate February and December as months in which all basin rainfall stations reported below normal precipitation, while July and November were months in which all rainfall stations had above normal precipitation. April was the first month since April, 1991 that average basin rainfall was above normal. Several basin-wide storms of significant intensity occured in 1992, all from April- August. In those months four or more stations recorded 2 inches or more of rain in a 24-hour period. The most rain that any one station received in a day during the year was 6.02 inches, which occurred on July 13, 1992. That same day, the drainage area above Sidney and Lockington Dam (approximately 700 square miles) received an average of nearly 5 inches within a four hour period. High intensity storms of this magnitude covering an area this large are rare in the Great Miami River Basin. Four stations recorded 24-hour totals during that storm which are among the eleven top 24 hour maximum station rainfalls of record.

Hamilton-New Baltimore Area

Precipitation in the Hamilton to New Baltimore area averages about 40 inches per year. Rainfall data for Hamilton, for the last twenty years, is shown as Table 3. In 1992, precipitation at the Hamilton station totaled 36.03 inches, a yearly departure of 3.73 inches below normal. Unlike the Great Miami River Basin, precipitation for the Hamilton station was below normal. Interestingly, the storm of July 13 which brought record rainfall to the basin was a convectional storm centered over the northern part. That same day, the Hamilton station and other stations around it recorded zero precipitation. When compared with the other thirty-nine basin rainfall stations, the Hamilton station recorded the least amount of precipitation for the month of April and had the second highest total precipitation for the month of March. The station recorded the largest below normal departure for the months of January and April. The yearly precipitation total of 36.03 inches for the Hamilton station was the sixth lowest of yearly totals from all stations in the basin. Rainfall in the Hamilton area was below the basin average nine months, and above the basin average for March, August, and October. The

maximum yearly rainfall for the 82-year period of record of the Hamilton station is 55.33 inches, registered in 1990. The minimum yearly rainfall total of record is 22.06 inches recorded in 1934.

A graph of cumulative departures from normal for past 36-month intervals listed in Tables 1 and 3 is shown in Figure 9. The current trend of the Hamilton area and the basin rainfall is above normal.

Figure 10 is a comparison of yearly departures for Hamilton and the basin for the last twenty years. As would be expected, the departures are typically greater for a single station than for the basin as a whole and the departure is typically in the same direction. However, unequal distribution of precipitation over the basin can result in above normal basin precipitation while the precipitation in the Hamilton area is below normal, as was the case in 1992 as well as in 1981 and 1986. The opposite was true in 1977 and 1984 when local storms occurred which were centered in the Hamilton area.

The monthly precipitation, from the MCD Hamilton, New Baltimore, Fairfield, and Southwestern Ohio Water Company stations for their respective period of record is shown as Tables 4 to 7. Daily precipitation for the same four stations is shown as Tables 8 to 11.

RUNOFF

Runoff is that portion of precipitation which ultimately reaches a stream. At Hamilton, the drainage area of the Great Miami River encompasses 3,630 square miles. Runoff for the Great Miami River at Hamilton for the past twenty years is shown as Table 12. During the period, runoff has been above normal fourteen years. In 1992, runoff totaled 10.76 inches, 1.42 inches below normal. The below normal departure, opposite of the precipitation departure for the basin, indicates that the bulk of the heavy rainfall occurred during the dry summer months, and was soaked up by the ground. The departures for past 36 month intervals and the cumulative departures for the past 20 years were computed to determine the trend in runoff. Runoff is 6.31 inches above normal for the last three years and 31.74 inches above normal for the last 20 years. Runoff is closely associated with rainfall, shown as Figure 11. Thirty-six month cumulative departures of rainfall and runoff at Hamilton were plotted against each other. During the twenty-year period, both rainfall and runoff have been above normal 14 years, below normal 4 years, and had opposite departures 2 years. In 1992, both rainfall and runoff at Hamilton were above normal three months, below normal for six months, and departures were opposite for three months.

Annual mean discharge of the Great Miami River at Hamilton, in cubic feet per second (cfs), and range of monthly mean discharge, for the last twenty years, is shown as Table 13. The yearly mean discharge of 2,801 cfs, is the lowest mean discharge since the drought years of 1987-1988. The maximum monthly mean discharge in 1992, 7,406 cfs, occurred in July, and the minimum monthly discharge, 934 cfs, occurred in October. Monthly mean discharge for the Great Miami River at Hamilton for 1992, is listed in Table 14 and is shown as Figure 12, plotted against the monthly maximum and minimum discharge for the period of record: 1910 - 1992. The excessive rainfall which occurred in the northern part of the basin in July resulted in a monthy mean discharge that was only 589 cfs lower than the maximum for that month. The graph shows below average flows for the first five months of 1992; fairly normal flows for the months of June, September, and October; and excessive flows for the months of July and November. The maximum daily mean discharge for 1992, 24,800 cfs, occurred on July 17, and the minimum daily mean discharge was 617 cfs, on January 2.

The amount of ground water recharge is affected by the duration and amount of stream flow. A measure of ground water recharge which may result from high flows in the river is the number of days flow exceeds a certain discharge. A flow of 4,000 cfs for the Great Miami River at Hamilton has been arbitrarily selected and the number of days when flows equalled or exceeded 4,000 cfs, counted. The data is shown as Table 15 for the past 20 years. What is interesting about the table is that there were no high flow days the last three months of 1991 through the first three months of 1992, the time usually regarded as the ground water recharge season. During these months, it would be expected that large ground water withdrawals would have a noticable effect on the water table. The 52 days flow exceeded 4,000 cfs in 1992, is comparable to the number of days attained during years of drought.

WATER USE

Seven major ground water users in the Hamilton to New Baltimore area make up the Phase Two consortium: these being entities that pump more than 100,000 gallons per day from the aquifer. There are thousands of other industrial, commercial, agricultural, and private ground water users, but most of the water used is returned to the aquifer either through septic tanks or by surface infiltration. Table 16 provides a list of the seven major water users which comprise the consortium, the type of water supply, and the number of people serviced by their water system.

Ground water use in the Hamilton to New Baltimore area is listed as Table 17. Ground water use in the northern Hamilton area is listed separately as Table 18. A graph of the yearly totals from the major water users in the Hamilton to New Baltimore area, is shown as Figure 13. The labeled data points of Figure 13 refer to the first year of pumpage for a particular water user. Ground water withdrawal by the consortium totaled 58.99 MGD during 1992. The total water used decreased 3.56 MGD over last year, a decrease of approximately 5.7%. The decrease is due to a decrease in pumpage of all the major water users, with the exception of Hamilton South Works which had a slight increase over last year's water use. The largest decrease in use over the past year was 1.18 MGD by Cincinnati's Bolton Plant. A ratio of the total water use per day in the area versus the mileage of the primary stream (Great Miami River) computes to about 3.3 MGD per stream mile for 1992. Similarly, a ratio of total water use per day versus the project area, results in 1.4 MGD of water used per square mile in 1992.

Nearly all of the water pumped by the Cincinnati Bolton Plant and the Southwestern Ohio Water Company is diverted out of the basin. The average diversion during 1992 was 30.68 MGD, or 51% of the water withdrawn was diverted from the recharge area.

Wastewater is returned to the Great Miami River by the City of Hamilton and City of Fairfield wastewater treatment plants. Return flows from these two plants in 1992 were 21.41 MGD and 5.3 MGD respectively. Wastewater is also returned in significant amounts by other area industries. FERMCO returned 0.55 MGD, Champion International returned 0.23 MGD, and Proctor and Gamble Miami Valley Research Laboratory returned 0.25 MGD to the Great Miami River in 1992.

At the Chem-Dyne site, 25 wells pump ground water which is treated for VOC extraction and filtration, then either reinjected into the ground by 9 injection wells or discharged to the Great Miami River via the Ford Hydraulic Canal. In 1992, an average of 0.27 MGD of water was reinjected into the ground while an average of 0.89 MGD was discharged to the Ford Hydraulic Canal. Effective October 1, 1992, OEPA renewed the Site's National Pollutant Discharge Elimination System permit with modified discharge limits achievable by the treatment system at total flow discharge to the Canal. The injection system was shut down on October 19, and minor piping modifications were made in the treatment facility to allow total discharge of treated water to the Canal, while still maintaining the integrity of the injection system.

GROUND WATER LEVELS

Ground water levels in the Hamilton to New Baltimore area have been continuously monitored since 1943 when the Federal Works Administration first started pumping water in significant amounts from the aquifer. Currently, ground water levels are continuously recorded in 16 observation wells. A list of each, with its location, depth, and land surface elevation is shown as Tables 19 and 20. Tables 21 and 22 list the 1992 and record maximum, minimum, and mean depth to and elevation of ground water for 23 observation wells, during the years of operation. Examination of 1992 water levels reveals no new maximum or minimum water table elevations were established in 1992. Furthur examination shows that most of the lowest water levels occurred on either the first few days of the year, or just before the major rainstorm in July, while most of the the highest elevations occurred right after the July rainstorm or towards the end of the year. Yearly and period- of-record hydrographs for the observation wells are shown in Appendix B, Figures 14 to 52. The 1992 yearly hydrographs illustrate hydrologic conditions of the area for 1992; little variation in water table elevation throughout the year.

Annual maximum depths to water are listed as Tables 23 and 24 for each of the 16 recorder wells operated in 1992, and the four monthly observed wells. The elevations of the annual minimum were computed and are shown as Tables 25 and 26. Minimum elevations for 1992 are in most cases a little higher than last year.

Over 175 other wells have been located in which water levels are periodically measured during water level surveys conducted by the WCSD. The surveys can be used to construct water level maps and profiles. Twelve such surveys have been conducted since the inception of the Phase Two program, the latest taken in October, 1991.

CONCLUSIONS

In summary, the water resources in the Hamilton to New Baltimore area, during 1992, continued to meet domestic, agricultural, and commercial requirements. Precipitation for the year was slightly above normal. Runoff in 1992 was slightly below normal. Ground water use from the major water users decreased approximately 6% from last year. The yearly ground water fluctuation was minimal for 1992. All water supplies in the Hamilton to New Baltimore area come from ground water, except

those used for cooling by the Hamilton municipal power plant and Champion International. Limited infiltration coupled with large raw water output is a condition of concern to the continued viability of an aquifer, and may produce undesirable results. Fortunately, the buried valley aquifer which occupies the Hamilton to New Baltimore area is capable of storing and yielding a large quantity of water. Spieker(1968), constructed an analog model of the area which includes the Hamilton South, Fairfield, Cincinnati, and Southwestern Ohio Water Company well fields. He predicted that the safe yield of that portion of the aquifer was at least 84 MGD. The 1992 withdrawal of 56.53 MGD represents about 67% of the projected safe yield. The report Ground Water for Planning in Southwest Ohio, Report #23, Ohio Water Plan Inventory(1972) estimates that yields per valley mile along the Great Miami River south of Hamilton could range from 15 to 20 MGD. For a stream length of 14.7 miles in Spieker's project area, the yield would be 220 to 294 MGD. The 1992 withdrawal would be 19% to 26% of the potential yield estimated by Ground Water for Planning in Southwest Ohio. There appears to be enough water available to meet demand into the twenty-first century, that is assuming that the quality of water remains high enough for potable use. Although these estimates suggest that considerably more water could be extracted from the aquifer, wise management and drought contingency plans are imperative to meet future demand.

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The Water Conservation Subdistrict
of The Miami Conservancy District

TABLE 1

GREAT MIAMI RIVER BASIN
RAINFALL, INCHES
1973-1992

Year	Annual Average	Departure[1] Past 12 Months	Departure[1] Past 36 Months	Departure[1] Cumulative
1973	45.14	+ 7.14	+ 9.32	+ 7.14
1974	38.46	+ 0.46	+12.14	+ 7.60
1975	43.04	+ 5.04	+12.64	+12.64
1976	29.64	- 8.36	- 2.86	+ 4.28
1977	36.61	- 1.39	- 4.71	+ 2.89
1978	37.89	- 0.11	- 9.86	+ 2.78
1979	46.49	+ 8.49	+ 6.99	+11.27
1980	39.71	+ 1.71	+10.09	+12.98
1981	38.73	+ 0.73	+10.93	+13.71
1982	39.56	+ 1.56	+ 4.00	+15.27
1983	37.59	- 0.41	+ 1.88	+14.86
1984	37.91	- 0.09	+ 1.06	+14.77
1985	39.49	+ 1.49	+ 0.99	+16.26
1986	42.76	+ 4.76	+ 6.16	+21.02
1987	28.98	- 9.02	- 2.77	+12.00
1988	31.59	- 6.41	-10.67	+ 5.59
1989	43.75	+ 5.75	- 9.68	+11.34
1990	53.91	+15.91	+15.25	+27.25
1991	30.70	- 7.30	+14.36	+19.95
1992	39.41	+ 1.41	+10.02	+21.36

[1] Current base period is from 1915-1989. Normal = 38.00 inches.

The Water Conservation Subdistrict
of The Miami Conservancy District

TABLE 2

GREAT MIAMI RIVER BASIN
RAINFALL, INCHES
1992

Month	Monthly Average Total	Departure from Normal	Cumulative Monthly Departure
January	2.55	- .11	- .11
February	0.90	-1.30	-1.41
March	2.51	- .87	-2.28
April	4.22	+ .64	-1.64
May	2.98	- .98	-2.62
June	3.78	- .22	-2.84
July	8.92	+5.18	+2.34
August	3.64	+ .36	+2.70
September	2.21	- .69	+2.01
October	1.81	- .79	+1.22
November	4.90	+1.89	+3.11
December	0.99	-1.70	+1.41
Yearly Total	39.41	+1.41	

[1] Current base period is from 1915-1989. Normal = 38.00 inches.

The Water Conservation Subdistrict
of The Miami Conservancy District

TABLE 3

HAMILTON, OHIO
RAINFALL, INCHES
1973-1992

Year	Annual Rainfall	Departure[1] Past 12 Months	Departure[1] Past 36 Months	Departure[1] Cumulative
1973	48.01	+ 8.25	+ 6.08	+ 8.25
1974	42.95	+ 3.19	+14.56	+11.44
1975	44.98	+ 5.22	+16.66	+16.66
1976	32.74	- 7.02	+ 1.39	+ 9.64
1977	40.63	+ 0.87	- 0.93	+10.51
1978	37.99	- 1.77	- 7.92	+ 8.74
1979	49.62	+ 9.86	+ 8.96	+18.60
1980	43.41	+ 3.65	+11.74	+22.25
1981	35.84	- 3.92	+ 9.59	+18.33
1982	41.09	+ 1.33	+ 1.06	+19.66
1983	37.48	- 2.28	- 4.87	+17.38
1984	40.61	+ 0.85	- 0.10	+18.23
1985	44.21	+ 4.45	+ 3.02	+22.68
1986	34.96	- 4.80	+ 0.50	+17.88
1987	28.66	-11.10	-11.45	+ 6.78
1988	32.05	- 7.71	-23.61	- 0.93
1989	44.38	+ 4.62	-14.19	+ 3.69
1990	55.33	+15.57	+12.48	+19.26
1991	33.12	- 6.64	+13.55	+12.62
1992	36.03	- 3.73	+ 5.20	+ 8.89

[1] Base period 1911-1989. Normal = 39.76 inches.

THE MIAMI CONSERVANCY DISTRICT
MONTHLY PRECIPITATION TOTALS
82 YEARS OF RECORD
FOR HAMILTON MCD

TABLE 4

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1911											3.08	3.37	
1912		2.42	5.03	7.22		2.49	1.90	4.24	3.07	1.61		2.03	
1913	7.82	1.71	9.20	5.50	4.07	3.00	4.13	3.13	1.66		2.69	.79	
1914			2.48	2.90	1.52	2.67	2.97	7.44	.73	3.51	1.18	2.83	
1915	3.53	1.07	1.96	1.43	5.24	3.62	3.54	6.93	5.82	1.68	2.83	5.13	42.78
1916		1.18	2.83	2.08	5.09	5.92	4.13	1.70	2.20	1.95	1.86	2.51	
1917	5.25	1.79	4.01	2.58	6.11	5.09	5.15	2.01	2.22	3.77	.49	1.27	39.74
1918	4.52	2.49	3.32	3.29	4.24	5.54	4.76	6.30			1.81	3.27	
1919	1.78	.79	5.56	3.54	4.07	3.26	2.54	2.82	1.06	6.94	5.22	1.97	39.55
1920	2.68	1.17	3.68	4.23	4.01	2.44	3.76	6.62	4.48	1.24	2.67	2.28	39.26
1921	2.55	2.60	6.68	4.27	2.25		1.66	2.99	5.13	3.17	5.92	4.92	
1922	2.13	2.10	8.16	6.09	4.46	1.26	1.86	4.61	4.16	2.18	2.27	5.05	44.33
1923	3.10	3.02	3.64	2.58	3.28	3.25	1.21	4.18	2.55	1.39	2.94	6.75	37.89
1924	4.10	1.89	4.53	2.74	3.65	6.31	1.85	1.57	2.73	.18	1.33	4.51	35.39
1925	1.58	2.27	2.49	2.49	1.33	2.02	5.27	3.79	5.64	5.48	6.43	.84	39.63
1926	2.90	4.38	3.05	4.43	4.77	2.00	5.10	10.33	5.09	5.71	1.81	2.72	52.29
1927	5.15	1.98	3.86	4.77	4.78	5.03	2.45	3.01	4.20	2.68	7.03	4.41	49.35
1928	1.72	3.66	1.84	3.92	1.77	7.23	3.40	1.67	1.06	1.84	4.42	2.52	35.05
1929	4.45	3.17	3.48	4.14	9.23	5.35	6.85	2.08	4.11	4.02	4.03	3.41	54.32
1930	5.64	3.45	2.26	2.18	1.53	1.35	2.57	2.51	4.02	1.49	1.57	1.35	29.92
1931	1.11	1.55	2.36	4.85	2.09	3.45	5.15	5.80	5.58	2.27	3.59	4.18	41.98
1932	7.31	1.62	2.85	1.97	.73	4.98	5.43	4.82	5.77	2.36	3.55	5.21	46.60
1933	2.52	2.61	8.40	4.44	7.69	2.11	2.57	3.00	4.56	2.51	1.42	3.94	45.77
1934	1.49	1.23	3.26	.94	.99	3.98	2.22	1.12	3.18	.42	1.49	1.74	22.06
1935	3.03	.75	6.05	2.89	4.97	3.15	1.33	3.20	3.60	2.86	2.89	1.75	36.47
1936	1.63	2.46	2.70	3.28	1.36	.39	1.00	3.94	5.02	6.76	3.25	2.22	34.01
1937	13.96	1.44	1.13	3.28	3.30	3.89	2.41	3.54	5.48	4.72	1.76	3.59	48.50
1938	1.52	2.72	5.17	1.75	6.53	3.55	3.74	1.61	8.37	.72	2.97	1.51	40.16
1939	3.49	4.14	4.34	6.35	1.17	7.62	6.17	.78	.85	2.15	1.08	1.52	39.66
1940	1.52	3.55	2.47	9.00	6.30	3.47	.69	1.29	1.57	1.08	4.15	2.18	37.27
1941	2.03	.54	.73	2.40	2.28	4.29	3.46	2.59	1.95	4.53	2.23	3.47	30.50
1942	1.75	2.68	2.31	2.59	3.24	4.85	5.08	3.53	2.22	1.44	5.33	3.61	38.63
1943	.50	2.61	6.80	3.38	5.21	4.66	6.04	1.88	2.83	1.62	1.13	1.67	38.33
1944	.70	3.55	5.49	4.54	2.21	1.51	2.42	3.88	3.45	.31	2.64	2.65	33.35
1945	1.63	5.58	10.78	5.33	3.57	5.16	4.75	1.15	5.70	2.00	4.93	2.87	53.45
1946	1.35	4.20	4.96	1.56	7.04	2.94	3.99	3.40	1.05	2.91	2.58	2.88	38.86
1947	4.94	.23	1.47	8.02	8.83	5.96	4.60	6.95	2.46	1.85	2.34	1.06	48.71
1948	2.40	3.81	4.83	4.66	2.77	2.65	4.82	1.96	1.48	1.69	6.30	2.87	40.24
1949	9.93	2.76	4.50	1.25	1.66	6.76	3.89	3.25	2.94	2.48	.49	2.57	42.48
1950	9.98	4.47	2.52	3.78	3.16	7.01	3.68	4.70	5.49	2.34	4.94	2.63	54.70
1951	5.02	3.54	4.56	2.38	2.73	3.74	2.02	1.21	2.67	1.96	3.82	4.78	38.43
1952	4.58	2.74	3.98	3.96	4.09	4.64	1.40	2.12	4.32	1.07	1.96	3.07	37.93
1953	3.58	1.84	2.28	2.46	3.20	1.87	1.83	2.45	.88	.76	.78	1.55	23.48
1954	2.54	2.04	2.15	3.46	2.36	3.17	5.81	3.52	1.30	3.56	1.33	2.51	33.75

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THE MIAMI CONSERVANCY DISTRICT
MONTHLY PRECIPITATION TOTALS
82 YEARS OF RECORD
FOR HAMILTON MCD

TABLE 4 (cont.)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1955	1.98	4.97	5.48	2.95	3.21	3.43	2.85	1.15	7.73	3.77	3.68	.59	41.79
1956	2.14	3.68	3.11	4.84	4.30	5.33	5.27	2.89	2.07	1.12	1.63	3.28	39.66
1957	2.74	2.60	1.51	6.35	6.46	4.56	1.77	1.32	3.11	1.85	4.24	4.84	41.35
1958	2.04	.40	1.38	3.90	5.38	6.88	14.25	7.06	2.64	1.43	2.95	.61	48.92
1959	8.09	2.58	2.48	1.93	3.45	3.04	1.73	3.66	2.31	2.25	3.16	2.56	37.24
1960	2.41	2.99	.96	.94	4.19	5.86	3.27	2.74	1.48	1.92	2.08	1.70	30.54
1961	1.69	3.56	5.63	3.92	5.50	4.71	3.94	1.96	2.66	2.14	3.38	3.01	42.10
1962	2.88	4.39	3.05	.53	5.26	1.53	5.89	1.16	1.99	3.97	1.94	1.14	33.73
1963	1.41	.74	7.83	2.84	2.11	.65	3.93	3.66	.62	.14	.78	.83	25.54
1964	1.75	1.34	9.47	7.93	1.07	4.09	2.83	2.95	1.69	.42	2.01	3.86	39.41
1965	3.35	4.26	2.60	5.16	1.37	2.06	2.78	2.70	6.03	3.54	1.24	.75	35.84
1966	3.68	2.51	1.61	3.96	3.23	2.25	3.04	2.80	4.72	1.61	3.71	2.96	36.08
1967	.58	1.95	3.38	3.64	5.91	3.97	3.02	.54	1.45	3.96	3.09	4.27	35.76
1968	1.73	.37	2.61	3.29	9.85	5.49	5.46	3.39	3.08	2.45	3.48	3.80	45.00
1969	4.69	1.60	1.47	3.31	3.36	3.50	2.89	3.12	6.42	2.24	3.49	2.71	38.80
1970	1.04	1.51	4.50	6.92	2.26	5.84	4.07	2.93	3.44	3.32	2.62	2.97	41.42
1971	1.90	4.52	2.61	1.30	4.50	1.19	4.08	1.78	4.28	2.91	1.42	3.98	34.47
1972	1.31	1.43	2.92	6.08	4.57	4.03	2.84	2.34	4.39	2.12	7.18	3.67	42.88
1973	2.14	1.07	5.34	5.43	4.07	6.69	6.25	4.15	.83	4.04	5.52	2.48	48.01
1974	3.05	2.02	2.72	4.86	5.73	4.16	1.01	6.87	5.57	1.19	3.33	2.44	42.95
1975	3.87	4.37	6.86	4.67	1.25	4.60	1.57	4.23	4.13	4.64	1.65	3.14	44.98
1976	3.49	2.27	2.21	1.15	1.65	5.79	2.17	7.52	2.15	3.32	.61	.41	32.74
1977	1.23	1.40	4.13	3.16	2.91	3.99	1.97	5.19	2.42	6.49	2.97	4.77	40.63
1978	4.20	.06	2.68	2.09	3.20	4.21	5.46	5.43	.39	3.39	2.12	4.76	37.99
1979	4.18	3.04	1.40	4.67	2.96	5.39	5.10	6.05	7.07	1.84	5.34	2.58	49.62
1980	1.26	1.80	3.87	2.15	4.97	3.91	8.84	8.93	.93	3.30	2.13	1.32	43.41
1981	.28	2.80	1.87	5.43	6.19	2.57	3.78	2.08	3.25	2.19	2.74	2.66	35.84
1982	5.57	1.91	4.58	1.97	6.80	5.20	2.28	2.65	1.24	.53	4.42	3.94	41.09
1983	1.64	.74	2.84	4.33	8.88	1.09	1.33	1.16	1.42	7.23	4.25	2.57	37.48
1984	.71	2.40	3.06	4.69	4.59	1.80	5.05	1.80	4.39	2.98	5.26	3.88	40.61
1985	1.21	1.97	5.31	1.79	4.93	4.55	1.88	6.91	.30	4.16	9.49	1.71	44.21
1986	1.32	3.06	2.67	1.72	4.09	2.09	3.22	2.31	5.50	2.47	3.61	2.90	34.96
1987	1.05	.47	4.12	2.72	3.80	2.35	3.89	2.27	1.35	1.43	2.22	2.99	28.66
1988	1.65	4.67	2.55	3.42	1.24	1.22	3.84	1.53	2.44	2.55	3.69	3.25	32.05
1989	2.47	3.43	5.20	7.30	4.94	3.30	4.30	3.35	3.24	1.70	3.78	1.37	44.38
1990	1.84	3.89	2.90	3.16	10.26	4.11	4.81	4.06	3.29	6.67	2.33	8.01	55.33
1991	2.13	2.58	5.08	3.79	3.58	1.31	2.88	4.51	1.09	1.62	.88	2.73	32.18
1992	2.52	.78	2.99	2.73	2.41	3.36	7.69	3.97	1.80	1.98	4.85	.95	36.03
TOTAL	238.63	193.93	309.13	299.92	323.31	303.73	300.83	282.74	255.56	208.09	249.80	234.35	2978.50
AVG													39.71
AVG	3.06	2.42	3.82	3.70	4.04	3.80	3.71	3.49	3.19	2.63	3.08	2.86	39.82
MAX	1937	1945	1945	1940	1990	1939	1958	1926	1938	1983	1985	1990	
MONTH	13.96	5.58	10.78	9.00	10.26	7.62	14.25	10.33	8.37	7.23	9.49	8.01	
MIN	1981	1978	1941	1962	1932	1936	1940	1967	1985	1963	1917	1976	
MONTH	.28	.06	.73	.53	.73	.39	.69	.54	.30	.14	.49	.41	

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THE MIAMI CONSERVANCY DISTRICT
MONTHLY PRECIPITATION TOTALS
33 YEARS OF RECORD
FOR NEW BALTIMORE (FERMCO)

TABLE 5

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1960				1.24	3.92	6.04	4.60	1.98	.91	2.07	2.06	1.73	
1961	1.32	3.58	5.17	3.63	6.16	3.70	8.75	2.02	3.05	1.71	3.52	3.08	45.69
1962	3.47	4.60	3.31	.57	4.18	1.04	6.63	2.22	1.28	3.01	1.91	1.23	33.45
1963	1.55	.67	9.78	2.80	3.78	1.34	3.38	3.83	.45	.04	.75	.86	29.23
1964	1.96	1.21	11.15	7.46	.80	5.91	2.53	1.47	2.20	.67	2.09	4.07	41.52
1965	3.44	4.23	2.65	5.86	.82	2.38	3.24	3.39	6.56	3.31	1.36	1.39	38.63
1966	3.00	3.05	.93	4.83	2.87	3.16	2.56	2.99	4.42	.78	4.19	3.11	35.89
1967	.44	1.75	3.37	4.24	5.86	2.10	3.58	.60	1.36	2.51	3.74	3.42	32.97
1968	1.36	.30	3.38	2.02	10.36	2.71	5.22	2.61	3.51	1.24	3.37	3.49	39.57
1969	4.19	1.14	.91	2.97	2.20	3.17	3.58	2.95	5.26	1.53	3.31	2.46	33.67
1970	.98	1.51	3.74	5.20	1.96	3.11	4.18	1.83	3.74	3.11	2.08	2.87	34.31
1971	1.87	4.06	1.95	1.11	3.22	3.84	3.28	3.05	4.35	1.70	1.33	3.10	32.86
1972	1.70	1.08	2.84	5.49	4.87	1.99	1.88	1.98	4.27	3.12	5.46	4.00	38.68
1973	1.79	1.07	5.31	4.49	4.75	6.48	7.61	3.24	1.40	4.62	4.80	2.16	47.72
1974	2.65	2.06	2.90	5.56	4.92	4.21	1.17	7.09	5.24	1.03	3.71	1.89	42.43
1975	3.07	3.94	6.19	2.69	2.47	3.47	1.50	4.72	4.22	4.40	1.71	3.05	41.43
1976	3.09	1.85	2.01	.94	1.33	4.87	1.89	5.59	4.01	3.23	.61	.41	29.83
1977	1.60	1.18	4.15	2.73	3.27	3.57	1.65	5.16	1.33	5.70	3.37	4.47	38.18
1978	3.73	.19	2.21	2.58	4.02	5.80	4.58	4.99	.54	3.23	2.22	5.10	39.19
1979	3.33	3.17	1.10	4.22	2.94	4.47	4.05	6.09	7.37	1.48	4.72	2.50	45.44
1980	2.04	1.24	3.29	1.50	3.98	3.04	8.16	4.54	.88	3.26	2.09	.87	34.89
1981	.17	3.28	1.42	4.55	4.14	3.85	3.85	3.25	2.43	2.08	2.91	2.27	34.20
1982	6.05	1.20	4.18	1.43	4.79	3.51	2.11	1.98	.81	.62	4.23	3.62	34.53
1983	1.38	.62	2.37	4.20	7.95	1.56	2.33	1.20	.55	7.34	3.69	2.47	35.66
1984	.66	2.36	2.88	3.96	3.56	1.49	3.29	1.71	3.17	2.99	4.25	3.84	34.16
1985	.80	1.78	5.34	1.30	4.85	2.77	3.76	4.38	.54	3.82	8.98	2.41	40.73
1986	.90	3.01	3.09	1.61	2.06	3.44	3.01	2.82	5.87	2.64	3.67	2.72	34.84
1987	.82	1.08	2.85	2.33	2.14	3.00	5.47	1.11	1.09	1.05	1.54	2.41	24.89
1988	2.32	3.65	2.99	1.97	.40	.16	3.20	2.44	1.66	2.92	3.89	2.69	28.29
1989	1.82	4.88	5.18	6.86	5.28	2.74	4.21	4.57	1.50	2.34	2.86	4.37	46.61
1990	3.27	4.80	2.59	3.11	9.81	4.02	3.65	3.40	3.30	6.74	2.03	7.01	53.73
1991	2.37	3.40	4.34	4.48	2.61	.17	2.58	3.43	2.13	1.14	1.07	3.19	30.91
1992	3.87	.69	1.88	1.40	2.48	.46	4.05	1.68	2.05	2.01	3.95	.00	24.52
TOTAL	71.01	72.63	115.45	109.33	128.75	103.57	125.53	104.31	91.45	87.44	101.47	92.26	1178.65
AVG													36.83
AVG	2.22	2.27	3.61	3.31	3.90	3.14	3.80	3.16	2.77	2.65	3.07	2.80	36.71
MAX	1982	1989	1964	1964	1968	1973	1961	1974	1979	1983	1985	1990	
MONTH	6.05	4.88	11.15	7.46	10.36	6.48	8.75	7.09	7.37	7.34	8.98	7.01	
MIN	1981	1978	1969	1962	1988	1988	1974	1967	1963	1963	1976	1992	
MONTH	.17	.19	.91	.57	.40	.16	1.17	.60	.45	.04	.61	.00	

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THE MIAMI CONSERVANCY DISTRICT
MONTHLY PRECIPITATION TOTALS
37 YEARS OF RECORD
FOR FAIRFIELD WWTP

TABLE 6

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1956	2.03	4.15	2.85	5.00	5.10	3.45	3.33	2.95	1.40	.95	1.40	3.42	36.03
1957	2.85	2.60	1.15	6.82	6.90	5.66	1.45	1.20	3.25	2.00	4.15	4.70	42.73
1958	2.00	.55	1.45	3.70	4.35	6.15	13.25	2.85	2.70	1.25	2.15	.70	41.10
1959	7.25	2.40	2.40	1.45	2.37	2.15	1.60	1.55	1.85	2.00	3.18	2.05	30.25
1960	2.35	2.60	.50	.75	3.10	4.75	3.10	1.85	1.05	2.00	1.75	1.45	25.25
1961	1.50	4.40	4.83	3.55	5.35	3.25	6.85	1.90	1.45	1.65	3.35	2.90	40.98
1962	3.20	5.00	2.95	.65	3.50	1.85	5.35	2.25	1.15	3.40	2.65	.70	32.65
1963	1.30	.55	9.70	2.30	2.29	.55	3.95	4.97	.50	.10	.60	.85	27.66
1964	1.70	1.05	9.55	8.15	.65	4.80	1.90	2.05	1.85	.55	1.85	3.90	38.00
1965	3.45	5.45	2.10	5.30	1.50	3.80	2.90	3.65	5.25	3.45	1.60	.55	39.00
1966	3.75	2.85	1.15	4.40	2.55	2.65	3.70	3.55	4.15	1.10	3.40	2.90	36.15
1967	.40	1.60	3.00	3.60	5.45	2.80	3.35	.55	1.25	2.70	3.40	3.34	31.44
1968	1.40	.20	3.45	2.70	9.10	3.95	3.70	2.50	3.65	1.75	3.17	3.25	38.82
1969	3.60	1.10	1.23	2.80	2.25	3.40	5.10	3.07	5.04	1.55	3.30	2.66	35.10
1970	1.41	1.64	4.52	5.57	1.73	4.28	3.98	2.07	4.40	2.51	1.83	1.21	35.15
1971	1.63	5.31	2.41	.85	4.38	1.50	4.02	3.19	5.21	2.29	1.33	3.30	35.42
1972	1.58	1.95	1.97	5.85	3.90	2.98	3.33	1.81	4.51	2.91	6.59	3.44	40.82
1973	1.68	1.18	5.27	4.91	4.56	5.81	7.46	4.09	1.27	4.03	5.40	2.43	48.09
1974	3.05	1.74	3.01	5.74	4.98	4.48	.95	7.53	6.21	1.38	3.20	2.61	44.88
1975	3.13	4.25	6.13	3.88	1.61	3.79	2.07	3.69	4.37	4.98	2.22	3.43	43.55
1976	2.22	1.92	2.43	1.21	1.31	5.72	1.32	7.31	3.17	3.31	.54	.43	30.89
1977	1.97	1.32	4.17	3.47	2.33	3.93	2.90	5.30	2.08	7.32	4.08	4.67	43.54
1978	5.81	.24	2.80	3.22	3.92	5.35	6.66	6.11	.73	3.25	2.87	6.46	47.42
1979	3.70	3.93	.99	5.16	3.27	5.62	6.36	7.85	9.31	2.16	5.28	2.60	47.42
1980	3.41	1.26	5.21	2.65	4.08	3.58	9.64	7.80	1.07	3.61	2.30	1.18	45.79
1981	.10	3.23	2.33	6.00	5.26	3.55	4.96	2.53	3.63	2.23	2.42	2.62	38.86
1982	7.16	1.53	5.01	2.04	4.59	4.04	2.40	1.76	1.42	.58	4.41	3.83	38.77
1983	1.71	.93	1.98	4.63	8.62	1.83	2.43	1.77	1.55	7.63	4.17	2.90	40.15
1984	.83	2.47	3.24	4.68	4.39	1.54	6.10	2.64	4.73	3.23	5.27	3.87	42.99
1985	1.28	2.74	6.17	1.86	6.76	4.31	2.95	6.58	.32	4.32			
1986	1.45	4.70	3.22	1.84	4.53	3.94	3.01	2.74	5.77	2.71	4.01	3.16	41.08
1987	1.08	1.26	3.70	3.42	4.22	3.43	4.62	1.84	1.31	1.54	3.11	3.73	33.26
1988	2.19	5.78	3.08	3.90	1.60	1.38	3.26	1.32	3.02	2.31	4.98	3.50	36.32
1989	2.46	4.29	7.78	7.58	6.22	3.57	4.54	4.64	2.95	1.79	3.50	1.83	51.15
1990	2.33	4.80	2.89	3.28	9.86	4.81	5.24	5.51	4.24	7.35	2.45	9.15	61.91
1991	2.29	2.83	6.14	4.85	4.14	1.03	3.53	4.81	2.22	1.87	.76	4.54	39.01
1992	2.82	.95	3.04	2.97	2.82	3.05	9.43	4.42	1.84	2.48	4.58	1.02	39.42
TOTAL	92.07	94.75	133.80	140.73	153.54	132.73	160.69	132.20	109.87	100.24	111.25	105.28	1421.05
AVG													39.47
AVG	2.49	2.56	3.62	3.80	4.15	3.59	4.34	3.57	2.97	2.71	3.09	2.92	39.82
MAX	1959	1988	1963	1964	1990	1958	1958	1979	1979	1983	1972	1990	
MONTH	7.25	5.78	9.70	8.15	9.86	6.15	13.25	7.85	9.31	7.63	6.59	9.15	
MIN	1981	1968	1960	1962	1964	1963	1974	1967	1985	1963	1976	1976	
MONTH	.10	.20	.50	.65	.65	.55	.95	.55	.32	.10	.54	.43	

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THE MIAMI CONSERVANCY DISTRICT
MONTHLY PRECIPITATION TOTALS
4 YEARS OF RECORD
FOR SOUTHWESTERN OHIO WATER COMPANY
COLERAIN TOWNSHIP

TABLE 7

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1989								2.27	3.30	1.79	3.68	2.14	
1990	2.03	4.36	3.24	2.40	8.05	4.05	4.31	4.44	3.59	6.65	2.15	7.87	53.14
1991	2.29	2.63	4.63	4.46	2.80	.52	3.25	4.88	1.94	1.71	1.10	3.54	33.75
1992	2.87	.83	2.63	2.38	2.81	2.64	8.63	2.56	2.10	2.43	4.22	1.07	35.17
TOTAL	7.19	7.82	10.50	9.24	13.66	7.21	16.19	14.15	10.93	12.58	11.15	14.62	122.06
AVG													40.69
AVG	2.40	2.61	3.50	3.08	4.55	2.40	5.40	3.54	2.73	3.15	2.79	3.66	39.79
MAX	1992	1990	1991	1991	1990	1990	1992	1991	1990	1990	1992	1990	
MONTH	2.87	4.36	4.63	4.46	8.05	4.05	8.63	4.88	3.59	6.65	4.22	7.87	
MIN	1990	1992	1992	1992	1991	1991	1991	1989	1991	1991	1991	1992	
MONTH	2.03	.83	2.63	2.38	2.80	.52	3.25	2.27	1.94	1.71	1.10	1.07	

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THE WATER CONSERVATION SUBDISTRICT

OF THE MIAMI CONSERVANCY DISTRICT

TABLE 8

DAILY PRECIPITATION

HAMILTON

1992

MONTH \ DAY:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	TOTAL
JAN		T	1.00	.07					T	T	.01		.04	1.12	.05	.02				T			.04	.05	.02	.10						2.52
FEB	T							.02	T				.10	.06	.20	.18		.09	.12	.01				T								.78
MAR						.10	.36	.51		.22	.21	.01	T	T	.01		T	T	.77		.01	.02				.26	.07		.03	.08	.33	2.99
APR		T		.05	.07			.02	.30	.05	.20				.03	.07	.05	.15	.77	.23	.47	.06	T		.01	T	.01	.06		.13		2.73
MAY			.01		.09	.03	T		.60				.01	T	T	T		.31	.17					.46	T	.01	T			.71	.01	2.41
JUN				.22	T	.22	.23	.20								.16		1.96	.30		.01			.05	.01							3.36
JUL		.07	1.06	T		.30		.18	.07	.41	T	1.32			1.04	.01	.91	.41			.15	.01		.64	.03		.19	.04		.54	.31	7.69
AUG	.01		.06					.41	T	.32	T		.01		.01	T			.08				.04	T		.04	.26	2.73				3.97
SEP		.12	.04	T		.30		T	.02	.04	.01							.02	.32		.03	.82	.02				.06					1.80
OCT								T	.61		.01					1.13	.16				.02									T	.05	1.98
NOV	.01	.46	.16	.16	.18	.08				.01	.19	.44	1.30		.02			.13	.06		.39	.15	.85	T	.25	T	T	T	.01			4.85
DEC	.01	T	T				T	T	T	.20	.15	T				.02				.23			T			.06		.03	T	.25	T	.95

																															YEARLY TOTAL	36.03

T Denotes daily precipitation reported as Trace amount.

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THE WATER CONSERVATION SUBDISTRICT

OF THE MIAMI CONSERVANCY DISTRICT

TABLE 9

DAILY PRECIPITATION

NEW BALTIMORE (FERMCO)

1992

MONTH \ DAY:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	TOTAL
JAN		.88	.35	T									.25	1.20	T								.94		.25							3.87
FEB												T	.25	.18	.26								T									.69
MAR					.16	.12												.95		T		T			.15	.15			T	.35		1.88
APR	T		T	T					.15	.35						.20		.45		.25									T			1.40
MAY			T					T	.35				.44				.74	.12					.24			T			.47	.12		2.48
JUN			T	.02	T		.44				T			T	T			T					T	T						T		.46
JUL	T	T	T		.22											.12	.67			.02	.18		T	.12		.38	.60		.59	1.15		4.05
AUG										.38				T					T			T			T	1.30	T					1.68
SEP		T		T	.10					T								.70		T	1.15	.10										2.05
OCT								.58							1.43															T		2.01
NOV	.32	.21		.11	.11					.08	.25	1.21		.20			T	.07			.40	.80		.19								3.95
DEC		T													T				T						T				T			.00
																															YEARLY TOTAL	24.52

T Denotes daily precipitation reported as Trace amount.

000031

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THE WATER CONSERVATION SUBDISTRICT

OF THE MIAMI CONSERVANCY DISTRICT

TABLE 10

DAILY PRECIPITATION

FAIRFIELD WWTP

1992

MONTH \ DAY:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	TOTAL
JAN			1.12	.13					T	T			.03	1.24	.12								.03	.13	.02	T						2.82
FEB								.04					.16	.05	.15	.37		T	.18	T												.95
MAR				.06			.35	.14		.32	.34	T							1.00		T	.02				.25			.09	.08	.39	3.04
APR	.02			.08	.13				.35	.05	.30				.10		.21	.15	.47	.23	.62	.09					T	.06		.11		2.97
MAY					.06	.02			.65				T		T			.59	.12				.13	.42		.03				.76	.04	2.82
JUN				.27	T	.32	.09	.38							.04	.05		1.28	.57		T			.05								3.05
JUL			1.10			.09		.20	.07	.06	.08	2.35			1.00		.69				.80			.32		.10	.35	.08		1.12	1.02	9.43
AUG			.05					.08	.27	.62	.58				.02				.04							.07	.30	2.37	.02			4.42
SEP		.06	.05			.16					.04							.03	.27			1.20					.03					1.84
OCT									.58		.03					1.62	.19		.03												.03	2.48
NOV	T	.49	.16	.16	.21		T			.02	.17	.45	1.02					.09			.37	.13	1.03		.28				T			4.58
DEC		.01	.03							.24	.15					T				.26						.05				.23	.05	1.02
																															YEARLY TOTAL	39.42

T Denotes daily precipitation reported as trace amount.

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THE WATER CONSERVATION SUBDISTRICT

OF THE MIAMI CONSERVANCY DISTRICT

TABLE 11

DAILY PRECIPITATION

SW. OHIO WATER CO.

1992

MONTH / DAY:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	TOTAL
JAN		.95	.40						.02			.05	.49	.78								.04	.07		.07							2.87
FEB								.02				.03	.14	.03	.40			.18	.03													.83
MAR						.20	.21	.03		.37	.02	.04		.02				.80		.06		.05			.22	.13	.02		.06	.40		2.63
APR	.02		.03	.18					.25	.35				.03		.23		.47		.35	.25	.02					.06		.02	.12		2.38
MAY				.04	.15			.25	.25				.32			.61	.22						.26	.05		.02			.46	.18		2.81
JUN			.18	.26	.13		.80							.20	.02			1.02					.03									2.64
JUL	.25	.52	.25		.27		.18			.48	.29	1.85		.20	.50	.10	1.00			.25	.12			.20	.02	.46	.19		.47	1.03		8.63
AUG			.03				.10	.09		.38			.02		.02										.09	.06	1.65	.12				2.56
SEP		.06	.03	.07	.07					.05								.52		.02	1.10	.15				.03						2.10
OCT								.70		.03					1.41	.15				.05										.09		2.43
NOV	.50	.15		.16	.17					.13	.34	.99					.02	.12			.39	.93		.26		.02		.04				4.22
DEC		.05							.07	.28					.02			.07	.14	.05					.01			.02	.21	.01	.14	1.07
YEARLY TOTAL																																35.17

T Denotes daily precipitation reported as Trace amount.

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The Water Conservation Subdistrict
of The Miami Conservancy District

TABLE 12

GREAT MIAMI RIVER AT HAMILTON, OHIO
RUNOFF, INCHES
1973-1992

Year	Annual Runoff	Departure[1] Past 12 Months	Departure[1] Past 36 Months	Departure[1] Cumulative
1973	18.38	+ 6.20	+ 6.92	+ 6.20
1974	14.17	+ 1.99	+12.37	+ 8.19
1975	16.15	+ 3.97	+12.16	+12.16
1976	8.60	- 3.58	+ 2.38	+ 8.58
1977	8.41	- 3.77	- 3.38	+ 4.81
1978	13.67	+ 1.49	- 5.86	+ 6.30
1979	20.48	+ 8.30	+ 6.02	+14.60
1980	15.39	+ 3.21	+13.00	+17.81
1981	12.30	+ 0.12	+11.63	+17.93
1982	16.65	+ 4.47	+ 7.80	+22.40
1983	11.22	- 0.96	+ 3.63	+21.44
1984	13.45	+ 1.27	+ 4.78	+22.71
1985	14.09	+ 1.91	+ 2.22	+24.62
1986	16.69	+ 4.51	+ 7.69	+29.13
1987	7.91	- 4.27	+ 2.15	+24.86
1988	6.65	- 5.53	- 5.29	+19.33
1989	18.28	+ 6.10	- 3.70	+25.43
1990	19.90	+ 7.72	+ 8.29	+33.15
1991	12.19	+ .01	+13.83	+33.16
1992	10.76	- 1.42	+ 6.31	+31.74

[1] Current base period 1951-1989. Normal = 12.18 inches.

The Water Conservation Subdistrict
of the Miami Conservancy District

TABLE 13

GREAT MIAMI RIVER AT HAMILTON
MEAN DISCHARGE, CUBIC FEET PER SECOND (cfs)
1973-1992

Year	Annual[1] Mean Discharge	Range of Monthly Mean Discharge			
		Maximum	Month	Minimum	Month
1972	4,389	10,500	Apr	717	Aug
1973	4,944	11,150	Mar	1,239	Sept
1974	3,799	9,596	Jan	910	Oct
1975	4,336	12,300	Feb	1,213	Nov
1976	2,277	7,981	Feb	516	Dec
1977	2,247	9,346	Dec	434	Jan
1978	3,611	13,520	Mar	1,108	Oct
1979	5,299	8,944	Mar	2,309	June
1980	4,218	9,869	Mar	1,060	Nov
1981	3,284	8,073	June	923	Jan
1982	4,469	12,620	Feb	658	Oct
1983	3,048	8,925	May	449	Sept
1984	3,653	10,130	Apr	733	Sept
1985	3,802	7,685	Nov	524	Sept
1986	4,499	8,948	Feb	928	Aug
1987	2,128	5,205	Apr	580	Oct
1988	1,830	6,017	Feb	408	Aug
1989	4,337	10,730	May	983	Dec
1990	5,728	13,280	Dec	1,748	Sept
1991	3,208	9,620	Jan	460	Nov
1992	2,801	7,406	July	934	Oct

[1]Average

The Miami Conservancy District
Water Conservation Subdistrict

TABLE 14

Great Miami River at Hamilton
Monthy Mean Discharge, cfs

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVE. MEAN
* Maximum	29460	14410	30300	15570	14500	14490	7995	7613	4382	8350	10065	13280	
* Minimum	434	502	826	1219	602	445	335	376	319	279	287	323	
1992	1265	1133	1446	4932	1664	3192	7406	2483	1095	934	6090	1996	2801
* Mean	4370	5140	6533	5984	3972	3008	2117	1575	987	973	2016	3570	

* Period of Record: 1910 - 1992

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The Water Conservation Subdistrict
of The Miami Conservancy District

TABLE 15

NUMBER OF DAYS MEAN FLOW EXCEEDED 4,000 cfs
GREAT MIAMI RIVER AT HAMILTON
1973-1992

Year	Period: January 1-March 31	Period: April 1-September 30	Period: October 1-December 31	Total
1973	51	92	16	159
1974	54	32	16	102
1975	78	26	6	110
1976	43	3	0	46
1977	15	11	21	47
1978	27	68	10	105
1979	34	64	27	125
1980	42	65	0	107
1981	17	75	7	99
1982	69	39	9	117
1983	9	34	13	56
1984	39	46	22	107
1985	35	20	31	86
1986	55	29	29	113
1987	4	35	0	39
1988	27	8	6	41
1989	35	79	3	117
1990	49	66	37	152
1991	69	21	0	90
1992	0	37	15	52

The Water Conservation Subdistrict
of The Miami Conservancy District

TABLE 16

MAJOR WATER USERS
HAMILTON-NEW BALTIMORE AREA

NAME of WATER USER	TYPE of WATER SUPPLY	NUMBER of PEOPLE SERVED
POTABLE WATER		
1. CINCINNATI BOLTON PLANT	MUNICIPAL	86,000*
2. HAMILTON	MUNICIPAL	60,000
3. FAIRFIELD	MUNICIPAL	35,000
4. FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORP.	NON-COMMUNITY	1,100
5. SW. REGIONAL WATER DISTRICT	PUBLIC	25,800
NONPOTABLE WATER		
6. SOUTHWESTERN OHIO WATER COMPANY	INDUSTRIAL	13 Industries
7. CHAMPION INTERNATIONAL HAMILTON MILL	INDUSTRIAL	1 Factory

* about 10% of population of Greater Cincinnati

TABLE 17

HAMILTON-NEW BALTIMORE AREA WATER USE
Million Gallons per Day

Year	Hamilton South	Fairfield City (1)	Southwestern Ohio Water Company	Sw. Regional Water District (2)	Cincinnati Bolton Plant	Fernald Envrmntl. Resoration Mgt. Corporation (3)	General Motors Corporation	TOTAL
1952			9.77 (4)			(5)	(5)	9.77
53			11.86					11.86
54			11.39					11.39
55			13.93					13.93
56	5.26 (4)	(4)	13.35					18.61
57	7.82	.17	14.72					22.71
58	7.70	.20	13.05					20.95
59	7.71	.31	14.79					22.81
1960	7.39	.36	14.37					22.12
61	7.35	.40	12.95					20.70
62	7.39	.47	12.61					20.47
63	7.83	.58	12.86					21.27
64	7.57	.66	13.87					22.10
65	7.93	.62	14.20					22.75
66	7.87	.71	15.69					24.27
67	7.70	.87	17.89					26.46
68	8.17	.91	18.34					27.42
69	8.32	.92	17.08					26.32
1970	8.71	.96	16.99					26.66
71	9.15	1.09	16.77	.01(4)		.73 (6)	.14	27.89
72	9.39	1.15	17.19	.42		.73 (6)	.17	29.05
73	8.80	1.15	17.68	.60		.73 (6)	.15	29.11
74	10.06	1.30	16.71	.67		.73 (6)	.13	29.60
75	11.07	1.34	14.85	.77		.63	.12	28.78
76	11.62	1.36	16.04	.84	1.93 (4)	.48	.13	32.40
77	11.28	1.33	16.72	.86	12.30	.31	.14	42.94
78	12.11	1.40	17.66	1.06	13.34	.32	.15	46.04
79	11.77	1.29	18.07	1.32	10.73	.27	.15	43.60
1980	12.12	1.12	17.84	1.38	11.73	.35	.14	44.68
81	12.47	.79	16.75	1.42	15.05	.39	.14	47.01
82	13.14	.65	16.12	1.49	14.93	.36	.12	46.81
83	12.51	1.59	16.46	1.68	14.86	.31	.13	47.54
84	12.92	1.72	17.38	1.73	15.10	.42	.13	49.40
85	12.58	2.57	17.98	1.74	14.90	.44	.12	50.33
86	12.28	3.69	18.44	1.83	15.94	.48	.10	52.76
87	13.53	4.01	18.94	1.98	15.21	.46	.09	54.22
88	14.51	4.65	17.93	2.19	17.32	.38	.05	57.03
89	14.46	4.36	17.17	2.09	16.00	.31	(7)	54.39
1990	14.81	4.49	17.12	2.05	16.63	.27		55.37
91	15.34	5.20	18.51	2.32	17.16	.32		58.85
92	15.42	4.56	18.09	2.18	15.98	.30		56.53

(1) Does not include water purchased from Hamilton until July 1985 and from Cincinnati until September 1984.
(2) Formerly The Water Association(1971-1992).
(3) Formerly National Lead of Ohio(1954-1986). Formerly Westinghouse Materials Co. of Ohio(1986-1991).
Formerly Westinghouse Environmental Management Co. of Ohio(1991-1992).
(4) First year for ground water pumpage.
(5) No data available prior to 1971.
(6) Estimated.

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The Water Conservation Subdistrict
of The Miami Conservancy District

TABLE 18

NORTHERN HAMILTON AREA WATER USE
Million Gallons per Day

Year	Champion Papers Hamilton Mill	Chem-Dyne Site Trust	Hamilton North	TOTAL
1956			1.41	1.41
1957			.28	.28
1958			.33	.33
1959			.70	.70
1960			.95	.95
1961			.95	.95
1962			1.12	1.12
1963			.66	.66
1964	(1)		1.45	1.45
1965	4.47		1.50	5.97
1966	4.18		1.46	5.64
1967	4.70		1.35	6.05
1968	4.57		.99	5.56
1969	4.04		1.03	5.07
1970	3.85		1.25	5.10
1971	3.30		1.27	4.57
1972	3.25		.92	4.17
1973	3.50		.55	4.05
1974	3.50		.42	3.92
1975	3.40		.45	3.85
1976	3.32		.42	3.74
1977	3.34		.51	3.85
1978	3.18		.46	3.64
1979	3.29		.72	4.01
1980	3.15		.26	3.41
1981	2.90		.34	3.24
1982	2.64		.63	3.27
1983	2.47		.32	2.79
1984	2.32		.31	2.63
1985	2.20		.72	2.92
1986	2.41	(2)	.60	3.01
1987	2.44	.65	.65	3.74
1988	2.20	.74	1.84	4.78
1989	1.91	.99	1.36	4.26
1990	1.50	.97	1.51	3.98
1991	1.08	1.04	2.62	4.74
1992	.78	1.16	1.68	3.62

(1) No data available prior to 1965.
Water use from production wells estimated.
(2) First year for ground water pumpage.

The Water Conservation Subdistrict
of The Miami Conservancy District

TABLE 19

LOCATION AND CONSTRUCTION
OF RECORDING OBSERVATION WELLS

Well Name	State Plane Coord. East	North	Latitude (DD MM SS)	Longitude (DD MM SS)	Well Depth	Land Surface Elevation	Bottom Elevation	Identification	Location
BU 7	1411400	494100	39 20 17	84 34 52	176	572.54	396.54	ODNR Recorder	Carl Schiering farm: [redacted]
BU 8	1428550	496780	39 20 48	84 31 14	200	630.00	430.00	ODNR Recorder	Sw. Corner of Symmes & Gilmore Rds., Hamilton
BU11	1398000	486200	39 18 55	84 37 40	110	539.89	429.89	MCD Recorder	South end of Cincinnati wellfield, Fairfield
BU12	1399850	486800	39 19 04	84 37 18	157	547.70	390.70	MCD Recorder	Center of Cincinnati wellfield, Fairfield
BU13	1393100	484300	39 18 36	84 35 40	154	547.10	393.10	MCD Recorder	Lark Street - Ross, Ohio
BU14	1405150	486700	39 19 07	84 36 09	96.0	563.72	467.72	MCD Recorder	East end of Cincinnati wellfield, Fairfield
* BU56	1415300	494500	39 20 21	84 34 03	58.0	583.60	525.60	ODNR Recorder	Hamilton South Water Works
BU67	1406400	495595	39 20 36	84 36 00	60.1	555.49	495.37	ODNR Recorder	Champion Papers Landfill: Hodapp site on SR.128
C 2A	1403540	486368	39 18 59	84 36 32	101	561.00	460.00	MCD Recorder	Cincinnati Water Plant: 6800 River Rd., Fairfiel
** BU80	1396450	489500	39 19 28	84 37 58	92.0	568.63	476.63	MCD Recorder	East of barn on farm at SR.128 & Kraus Ln., Ross
***BU179	1395730	487080	39 19 04	84 38 10	43.2	559.68	516.51	MCD Well	B & R Storage, 3905 Kraus Lane - Ross, Ohio
H 2	1389850	478300	39 17 33	84 39 24	89.0	534.30	445.30	ODNR Recorder	Wilhelm farm: [redacted]
H 4	1389050	482450	39 18 17	84 39 33	100	541.80	441.80	ODNR Recorder	SR.128 at Hamilton-Butler County line

(DD MM SS) Degrees Minutes Seconds
* Well destroyed in August, 1992, for Hamilton South Works expansion.
** Recorder removed in August, 1977. Discontinued in 1985.
*** Monthly observation only.

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The Water Conservation Subdistrict
of The Miami Conservancy District

TABLE 20

LOCATION AND CONSTRUCTION
OF RECORDING OBSERVATION WELLS
IN NORTH HAMILTON

Well Name	State Plane Coord. East	State Plane Coord. North	Latitude (DD MM SS)	Longitude (DD MM SS)	Well Depth	Land Surface Elevation	Bottom Elevation	Identification	Location
* BU39	1418300	516200	39 24 01	84 33 28	125.3	591.01	465.74	MCD Recorder	Se. Corner of Third & Dayton Sts., Hamilton at Ohio Casualty Insurance Co.
BU39A	1418330	516500	39 24 00	84 33 30	177.9	590.95	413.10	MCD Recorder	Se. Corner of Third & Dayton Sts., Hamilton at Ohio Casualty Insurance Co.
MW19	1418705	519652	39 24 30	84 33 28	66.0	591.01	525.03	MCD Recorder	Se. of the Black St. bridge, Hamilton; Chem-Dyne monitoring well
MW20	1418684	519659	39 24 30	84 33 28	40.0	591.11	551.14	MCD Recorder	Se. of the Black St. bridge, Hamilton; Chem-Dyne monitoring well
MW32	1418674	519662	39 24 30	84 33 27	95.5	591.30	495.85	MCD Recorder	Se. of the Black St. bridge, Hamilton; Chem-Dyne monitoring well
** BU178	1418160	518880	39 24 27	84 33 30	170	594.41	424.41	MCD Well	Se. of the Black St. bridge, Hamilton, at Champion Papers warehouse
** B39	1419350	520350	39 24 38	84 33 19	155.1	591.18	436.10	MCD Well	Third St. substation across street from Hamilton Power Plant
** BU176	1421120	522170	39 24 59	84 32 52	50.0	584.04	534.04	MCD Well	[redacted] Glenn Bonham, owner
BU177	1421300	522000	39 24 58	84 32 50	51.5	596.56	545.06	MCD Recorder	[redacted] Glenn Bonham, owner
*** BU 5	1424080	524020	39 25 15	84 32 20	110	590.00	480.00	ODNR Recorder	Hamilton North Water Works

(DD MM SS) Degrees Minutes Seconds
* Recorder removed 11/28/88 and well abandoned.
** Monthly observation only.
*** Recorder removed 7/26/90.

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The Water Conservation Subdistrict
of The Miami Conservancy District

TABLE 21

MAXIMUM, MINIMUM, AND MEAN
WATER LEVELS IN RECORDING OBSERVATION WELLS
(in feet)

Well Name	1992 Maximum DBLS	1992 Maximum Elevation	1992 Maximum Date	1992 Minimum DBLS	1992 Minimum Elevation	1992 Minimum Date	1992 Mean Elevation	1992 Number Values	Period of Record	Period of Record Maximum DBLS	Period of Record Maximum Elevation	Period of Record Maximum Date	Period of Record Minimum DBLS	Period of Record Minimum Elevation	Period of Record Minimum Date	Period of Record Mean Elevation	Period of Record Number Values
BU 7	32.04	540.50	03/02	28.80	543.74	12/01	541.90	366	1943-1992	33.70	538.84	08/19/88	11.45	561.09	06/06/47	546.95	17110
BU 8	58.00	572.00	07/12	51.92	578.08	12/11	574.25	366	1944-1992	71.70	558.30	10/24/44	38.24	591.76	06/08/47	577.43	16473
BU11	21.97	517.92	01/02	5.12	534.77	07/17	524.29	874	1968-1992	23.50	516.39	11/03/88	**	542.48	05/27/89	526.27	10239
BU12	24.86	522.84	01/04	13.74	533.96	07/20	527.78	365	1968-1992	28.38	519.32	07/11/88	**	549.61	05/24/68	529.55	11521
BU13	27.51	519.59	01/02	20.26	526.84	07/19-20	522.36	229	1968-1992	27.62	519.48	11/04/88	12.70	534.40	01/02/91	524.14	5071
BU14	33.93	529.79	01/14	24.74	538.98	07/20	533.83	474	1969-1992	34.32	529.40	02/01/88	11.76	551.96	02/24/75	536.20	8215
* BU56	38.77	544.83	03/31	36.49	547.11	08/13-14	545.49	213	1969-1992	41.00	542.60	11/09/88 11/10/88	26.81	556.79	04/10/75	549.24	6319
BU67	15.82	539.67	01/02	9.79	545.70	07/19-20	542.04	202	1972-1992	16.65	538.84	10/16/88	**	558.42	02/24/75	543.91	4376
C 2A	35.53	525.47	02/21	24.48	536.52	07/22	530.70	279	1976-1992	37.34	523.66	02/01/88	13.01	547.99	05/26/89	532.40	4978
BU80	Recorder removed in August, 1977; discontinued in 1985.								1972-1985	41.97	526.66	10/03/85	31.03	537.60	02/26/75	532.35	1040
*** BU179	34.96	524.72	01/16	30.23	529.45	08/07	527.03	13	1984-1992	39.02	520.66	05/23/86	24.14	535.54	01/04/91	527.76	83
H 2	22.46	511.84	02/03	14.93	519.37	07/22-23	515.12	364	1952-1992	24.37	509.93	09/13-14/72 09/24-25/72	**	-?-	01/22/59	516.55	13810
H 4	30.56	511.24	03/19-20	22.66	519.14	08/03	515.49	308	1955-1992	32.23	509.57	12/05/71	**	-?-	01/22/59	517.96	13104

(DD MM SS) Degrees Minutes Seconds
(DBLS) Depth Below Land Surface
* BU56 discontinued 8/18/92
** Above land surface

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TABLE 22

MAXIMUM, MINIMUM, AND MEAN
WATER LEVELS IN RECORDING OBSERVATION WELLS
IN NORTH HAMILTON
(in feet)

	1992								PERIOD OF RECORD								
Well Name	Maximum DBLS	Maximum Elevation	Maximum Date	Minimum DBLS	Minimum Elevation	Minimum Date	Mean Elevation	Number Values	Period of Record	Maximum DBLS	Maximum Elevation	Maximum Date	Minimum DBLS	Minimum Elevation	Minimum Date	Mean Elevation	Number Values
BU39	Recorder removed 11/28/88 and well abandoned.								1983-1988	33.94	557.07	09/21/87	26.89	564.12	04/26/84	560.30	3139
BU39A	27.13	563.82	07/10	24.79	566.16	11/26	564.57	601	1990-1992	27.92	563.03	10/28-29/91 10/31/91	20.80	570.15	01/03/91	565.04	1086
HW19	28.92	562.09	07/08	25.42	565.59	11/25	562.88	282	1984-1992	33.38	557.63	09/22/87- 09/25/87	20.66	570.35	01/01/91 01/02/91	561.86	2120
HW20	28.45	562.66	01/01-02	21.78	569.33	07/17	563.92	331	1984-1992	31.23	559.88	07/12/88	19.34	571.77	01/02/91	563.33	2040
HW32	29.30	562.00	01/01-02	25.69	565.61	11/24-25	562.86	328	1984-1992	34.00	557.30	09/23/87 09/25/87	23.31	567.99	01/05/91	561.80	2367
* BU178	31.43	562.98	07/09	29.45	564.96	11/20	563.57	13	1983-1992	35.26	559.15	09/25/87	25.49	568.92	05/26/89	562.77	113
* B39	26.43	564.75	01/16	25.13	566.05	12/15	565.24	12	1986-1992	31.19	559.99	01/15/88	22.75	568.43	05/31/91	564.82	61
* BU176	15.60	568.44	07/09	11.04	573.00	12/15	570.73	11	1983-1992	17.05	566.99	08/01/88	8.14	575.90	05/26/89	571.22	94
BU177	28.62	567.94	07/11	23.51	573.05	12/15	570.27	570	1983-1992	30.92	565.64	08/20/88	19.48	577.08	01/02/91	570.75	3307
BU 5	Recorder removed 7/26/90.								1939-1990	42.05	547.95	09/16-17/54	4.80	585.20	01/23/59	567.67	17348

(DD MM SS) Degrees Minutes Seconds
(DBLS) Depth Below Land Surface
* Monthly observation only

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TABLE 23

ANNUAL MAXIMUM
DEPTH BELOW LAND SURFACE
HAMILTON-NEW BALTIMORE WELLS
(in feet)

WELL NAME	BU 7	BU 8	BU11	BU12	BU13	BU14	BU56	BU67	C 2A	BU80	BU179	H 2	H 4
LAND SURF. ELEV	572.54	630.00	539.89	547.70	547.10	563.72	583.60	555.49	561.00	568.63	559.68	534.30	541.80
1943	26.12												
1944	28.10	71.70											
1945	28.01	66.02											
1946	22.96	54.13											
1947	22.56	54.01											
1948	23.63	53.42											
1949	24.97	56.40											
1950	24.55	56.30											
1951	26.75	56.95											
1952	24.45	57.60										18.80	
1953	25.15	59.30										19.80	
1954	25.85	66.90										21.70	
1955	25.50	67.15										21.75	26.15
1956	28.25	62.00										19.90	26.93
1957	28.25	60.45										20.00	26.53
1958	26.38	58.00										17.35	22.93
1959	28.43	59.93										17.40	26.92
1960	29.52	64.25										21.74	28.33
1961	29.04	65.40										22.13	28.81
1962	28.80	60.74										19.68	26.18
1963	28.67	62.36										19.80	26.55
1964	28.80	64.38										20.05	27.25
1965	27.99	61.13										19.31	27.02
1966	28.75	59.42										22.18	29.68
1967	28.75	59.18										22.50	30.25
1968	28.33	58.90	12.19	16.13								22.85	29.94
1969	28.93	58.54	12.40	16.35	26.17	28.41						22.68	30.15
1970	29.44	58.64	12.73	17.21	26.49	28.62	37.67	12.30		38.77		22.92	30.92
1971	29.30	59.08	12.78	17.29	27.22	28.80	37.36	13.40		40.38		24.30	32.23
1972	28.32	58.79	12.72	17.35	26.97	27.81	36.12	12.64		40.30		24.37	32.14
1973	28.10	51.66	12.13	16.90	25.93	28.30	34.51	12.13		38.47		22.29	29.31
1974	28.44	50.84	12.11	17.01	25.35	28.20	37.28	12.41		38.76		21.74	28.06
1975	29.33	54.30	12.24	16.90	24.58	28.10	36.05	12.76		39.14		19.32	24.95
1976	30.68	59.78	20.68	20.89	26.54	30.31	38.10	13.99	32.66	40.29		22.26	29.56
1977	31.17	61.75	21.43	21.74	27.18	30.51	39.11	14.52	33.35	40.62		23.46	30.91
1978	29.85	56.56	21.21	19.80	25.63	28.93	36.80	13.70	31.80	39.26		20.90	27.72
1979	26.81	50.64	20.50	19.18	24.90	28.16	34.26	12.66	30.77	36.57		17.76	23.18
1980	29.09	51.31	19.90	20.76	25.00	30.00	35.65	14.04	34.10	39.43		20.90	25.79
1981	30.32	57.34	19.02	21.80	25.27	30.16	36.47	14.83	33.01	41.31		21.58	27.02
1982	30.32	57.37	20.21	22.87	25.73	31.10	36.53	15.24	32.21	41.89		18.77	25.39
1983	30.59	56.92	18.20	21.45	25.80	31.38	36.48	15.67	33.04	41.46		18.03	24.41
1984	30.38	54.34	19.61	19.84	25.58	31.82	37.35	15.16	34.62	40.59		19.06	25.38
1985	29.46	53.63	21.13	25.86	26.15	30.56	35.94	15.30	31.28	41.97		19.74	25.92
1986	30.16	55.42	19.23	24.24	25.92	30.93	36.17	14.85	34.00		39.02	19.68	25.79
1987	32.95	59.93	15.92	23.83	26.58	33.47	40.45	15.93	35.80		35.30	20.48	27.36
1988	33.70	61.83	23.50	28.38	27.62	34.32	41.00	16.65	37.34		36.49	21.95	29.54
1989	32.70	61.61	19.50	23.54	25.87	32.00	40.57	15.07	33.32		33.71	21.06	28.27
1990	31.18	53.30	18.38	22.83	24.92	30.45	37.92	14.11	32.53		32.49	18.98	24.81
1991	32.05	56.31	22.00	25.24	27.60	34.05	38.29	15.89	34.79		36.03	23.04	29.01
1992	32.04	58.00	21.97	24.86	27.51	33.93	38.77	15.82	35.53		34.96	22.46	30.56
AVERAGE	28.48	58.65	17.67	20.89	26.10	30.43	37.34	14.31	33.54	39.95	35.43	20.85	27.68
STND DEVIATION	2.52	4.52	3.95	3.45	.90	2.03	1.78	1.35	1.71	1.44	2.09	1.84	2.35

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The Water Conservation Subdistrict
of The Miami Conservancy District

TABLE 24

ANNUAL MAXIMUM
DEPTH BELOW LAND SURFACE
NORTH HAMILTON WELLS
(in feet)

WELL NAME	MW19	MW20	MW32	B39	BU39	BU39A	BU176	BU177	BU178
LAND SURFACE ELEVATION	591.01	591.11	591.30	591.18	591.01	590.95	584.04	596.56	594.41
1983					32.09		15.04	28.22	33.14
1984	32.31	30.29	33.09		33.00		15.22	28.38	34.35
1985	32.54	30.46	33.23		33.16		15.52	28.51	34.59
1986	32.76	30.35	33.18	30.14	32.87		14.54	28.06	34.22
1987	33.38	31.21	34.00	29.97	33.94		15.74	29.08	35.26
1988	33.04	31.23	33.39	31.19	33.24		17.05	30.92	35.07
1989	30.59	29.85	31.17	29.88			13.78	27.12	33.00
1990	28.44	28.07	28.81	26.42		26.38	13.52	27.09	30.98
1991	29.35	28.88	29.69	26.44		27.92	15.94	29.83	31.90
1992	28.92	28.45	29.30	26.43		27.13	15.60	28.62	31.43
AVERAGE	31.26	29.87	31.76	28.64	33.05	27.14	15.20	28.58	33.39
STND DEVIATION	1.94	1.15	2.03	2.11	.60	.77	1.04	1.16	1.54

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TABLE 25

ANNUAL MINIMUM
GROUND WATER ELEVATION
HAMILTON-NEW BALTIMORE WELLS
(feet above mean sea level)

WELL NAME / LAND SURF. ELEV	BU 7 / 572.54	BU 8 / 630.00	BU11 / 539.89	BU12 / 547.70	BU13 / 547.10	BU14 / 563.72	BU56 / 583.60	BU67 / 555.49	C 2A / 561.00	BU80 / 568.63	BU179 / 559.68	H 2 / 534.30	H 4 / 541.80
1943	546.42												
1944	544.44	558.30											
1945	544.53	563.98											
1946	549.58	575.87											
1947	549.98	575.99											
1948	548.91	576.58											
1949	547.57	573.60											
1950	547.99	573.70											
1951	545.79	573.05											
1952	548.09	572.40										515.50	
1953	547.39	570.70										514.50	
1954	546.69	563.10										512.60	
1955	547.04	562.85										512.55	515.65
1956	544.29	568.00										514.40	514.87
1957	544.29	569.55										514.30	515.27
1958	546.16	572.00										516.95	518.87
1959	544.11	570.07										516.90	514.88
1960	543.02	565.75										512.56	513.47
1961	543.50	564.60										512.17	512.99
1962	543.74	569.26										514.62	515.62
1963	543.87	567.64										514.50	515.25
1964	543.74	565.62										514.25	514.55
1965	544.55	568.87										514.99	514.78
1966	543.79	570.58										512.12	512.12
1967	543.79	570.82										511.80	511.55
1968	544.21	571.10	527.70	531.57								511.45	511.86
1969	543.61	571.46	527.49	531.35	520.93	535.31						511.62	511.65
1970	543.10	571.36	527.16	530.49	520.61	535.10	545.93	543.19		529.86		511.38	510.88
1971	543.24	570.92	527.11	530.41	519.88	534.92	546.24	542.09		528.25		510.00	509.57
1972	544.22	571.21	527.17	530.35	520.13	535.91	547.48	542.85		528.33		509.93	509.66
1973	544.44	578.34	527.76	530.80	521.17	535.42	549.09	543.36		530.16		512.01	512.49
1974	544.10	579.16	527.78	530.69	521.75	535.52	546.32	543.08		529.87		512.56	513.74
1975	543.21	575.70	527.65	530.80	522.52	535.62	547.55	542.73		529.49		514.98	516.85
1976	541.86	570.22	519.21	526.81	520.56	533.41	545.50	541.50	528.34	528.34		512.04	512.24
1977	541.37	568.25	518.46	525.96	519.92	533.21	544.49	540.97	527.65	528.01		510.84	510.89
1978	542.69	573.44	518.68	527.90	521.47	534.79	546.80	541.79	529.20	529.37		513.40	514.08
1979	545.73	579.36	519.39	528.52	522.20	535.56	549.34	542.83	530.23	532.06		516.54	518.62
1980	543.45	578.69	519.99	526.94	522.10	533.72	547.95	541.45	526.90	529.20		513.40	516.01
1981	542.22	572.66	520.87	525.90	521.83	533.56	547.13	540.66	527.99	527.32		512.72	514.78
1982	542.22	572.63	519.68	524.83	521.37	532.62	547.07	540.25	528.79	526.74		515.53	516.41
1983	541.95	573.08	521.69	526.25	521.30	532.34	547.12	539.82	527.96	527.17		516.27	517.39
1984	542.16	575.66	520.28	527.86	521.52	531.90	546.25	540.33	526.38	528.04		515.24	516.42
1985	543.08	576.37	518.76	521.84	520.95	533.16	547.66	540.19	529.72	526.66		514.56	515.88
1986	542.38	574.58	520.66	523.46	521.18	532.79	547.43	540.64	527.00		520.66	514.62	516.01
1987	539.59	570.07	523.97	523.87	520.52	530.25	543.15	539.56	525.20		524.38	513.82	514.44
1988	538.84	568.17	516.39	519.32	519.48	529.40	542.60	538.84	523.66		523.19	512.35	512.26
1989	539.84	568.39	520.39	524.16	521.23	531.72	543.03	540.42	527.68		525.97	513.24	513.53
1990	541.36	576.70	521.51	524.87	522.18	533.27	545.68	541.38	528.47		527.19	515.32	516.99
1991	540.49	573.69	517.89	522.46	519.50	529.67	545.31	539.60	526.21		523.65	511.26	512.79
1992	540.50	572.00	517.92	522.84	519.59	529.79	544.83	539.67	525.47		524.72	511.84	511.24
MAXIMUM	549.98	579.36	527.78	531.57	522.52	535.91	549.34	543.36	530.23	532.06	527.19	516.95	518.87
MINIMUM	538.84	558.30	516.39	519.32	519.48	529.40	542.60	538.84	523.66	526.66	520.66	509.93	509.57

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The Water Conservation Subdistrict
of The Miami Conservancy District

TABLE 26

ANNUAL MINIMUM
GROUND WATER ELEVATION
NORTH HAMILTON WELLS
(in feet)

WELL NAME	MW19	MW20	MW32	B39	BU39	BU39A	BU176	BU177	BU178
LAND SURFACE ELEVATION	591.01	591.11	591.30	591.18	591.01	590.95	584.04	596.56	594.41
1983					558.92		569.00	568.34	561.27
1984	558.70	560.82	558.21		558.01		568.82	568.18	560.06
1985	558.47	560.65	558.07		557.85		568.52	568.05	559.82
1986	558.25	560.76	558.12	561.04	558.14		569.50	568.50	560.19
1987	557.63	559.90	557.30	561.21	557.07		568.30	567.48	559.15
1988	557.97	559.88	557.91	559.99	557.77		566.99	565.64	559.34
1989	560.42	561.26	560.13	561.30			570.26	569.44	561.41
1990	562.57	563.04	562.49	564.76		564.57	570.52	569.47	563.43
1991	561.66	562.23	561.61	564.74		563.03	568.10	566.73	562.51
1992	562.09	562.66	562.00	564.75		563.82	568.44	567.94	562.98
MAXIMUM	562.57	563.04	562.49	564.76	558.92	564.57	570.52	569.47	563.43
MINIMUM	557.63	559.88	557.30	559.99	557.07	563.03	566.99	565.64	559.15
AVERAGE	559.75	561.24	559.54	562.54	557.96	563.81	568.85	567.98	561.02

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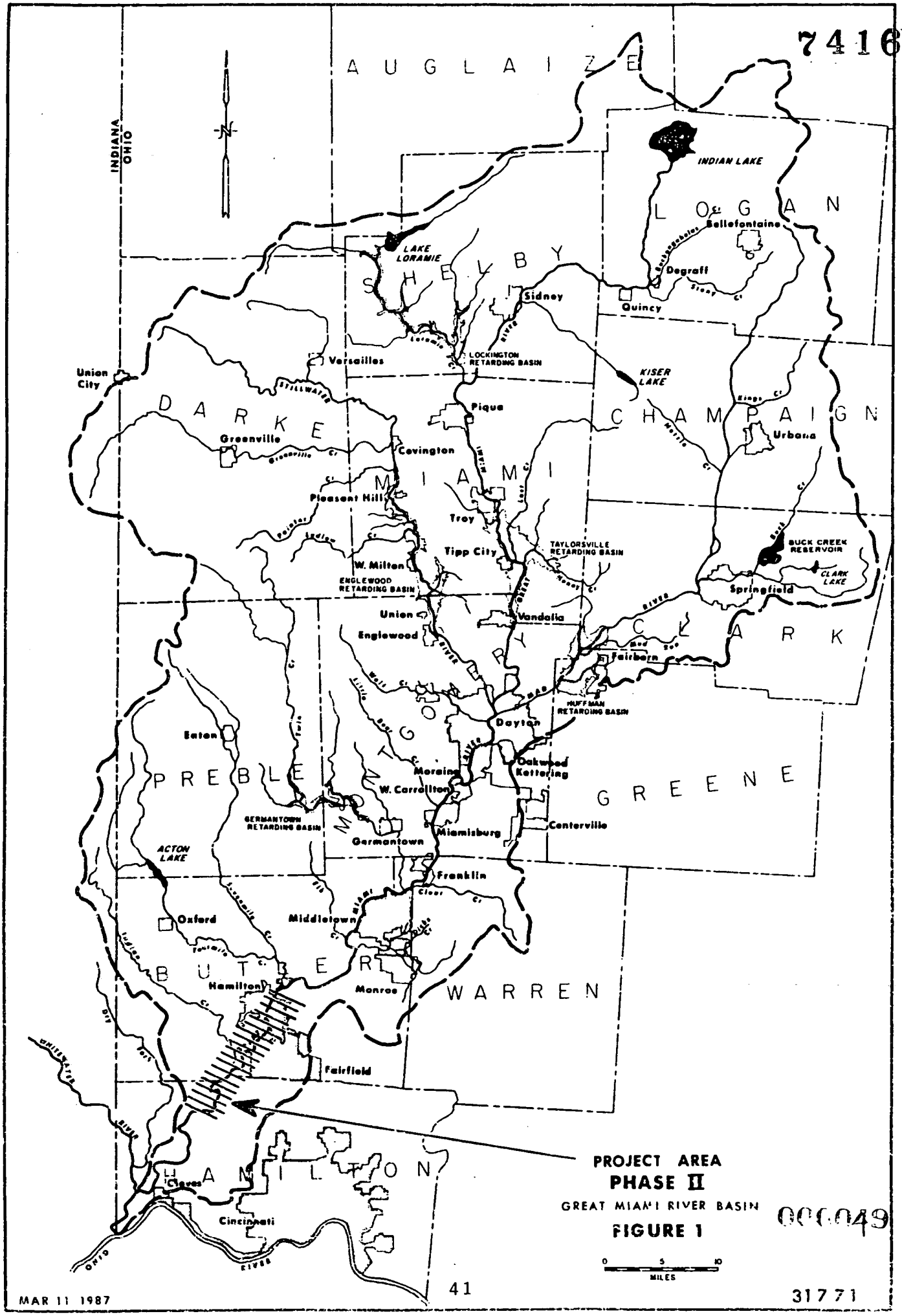
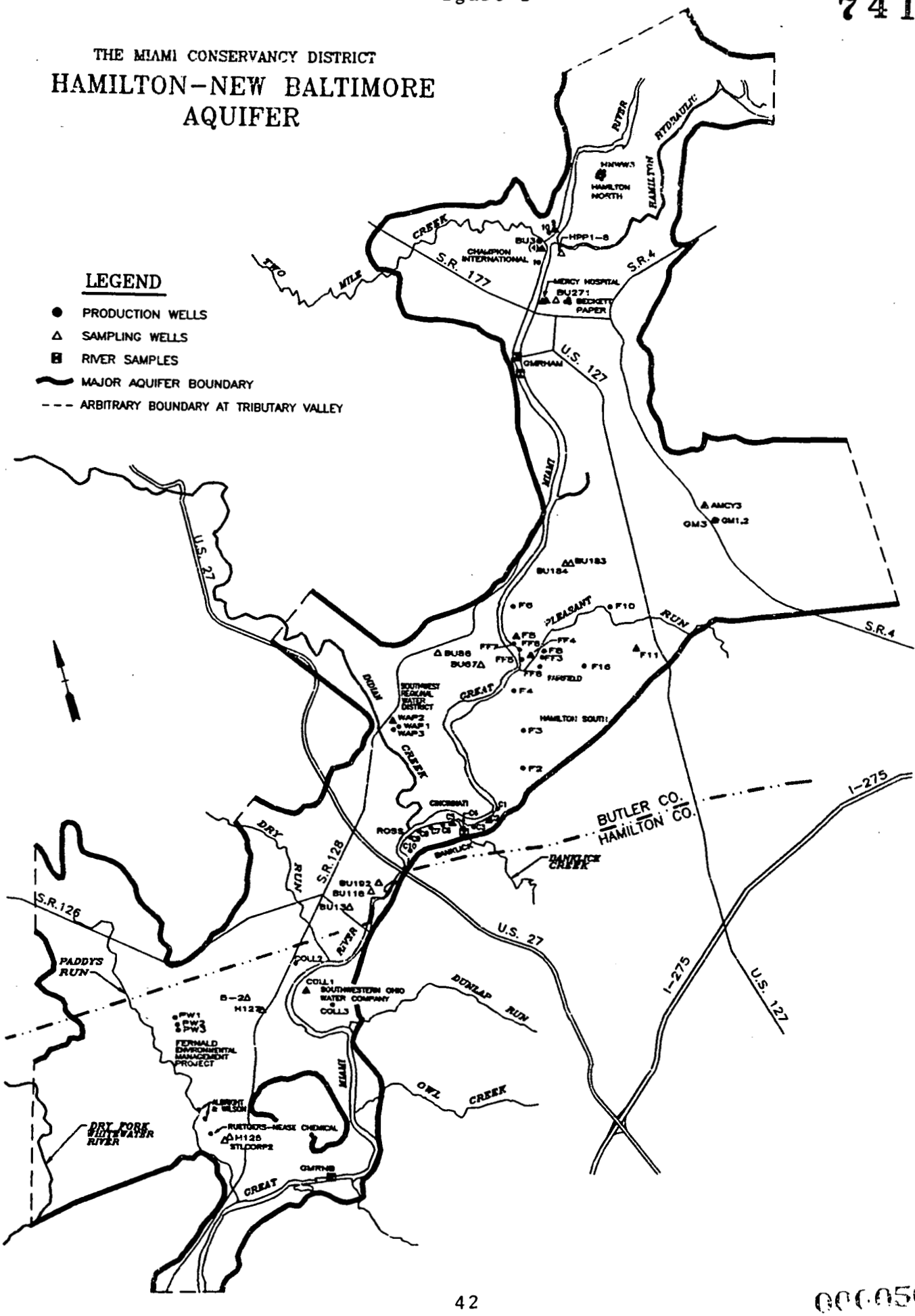

AUGLAIZE
INDIANA
OHIO
N
INDIAN LAKE
LOGAN
Bellefontaine
Degraff
Quincy
LAKE LORAMIE
SHELBY
Sidney
LOCKINGTON RETARDING BASIN
Versailles
Union City
KISER LAKE
DARKE
Piqua
CHAMPAIGN
Urbana
Greenville
Covington
MIAMI
Pleasant Hill
Troy
Tipp City
TAYLORSVILLE RETARDING BASIN
BUCK CREEK RESERVOIR
CLARK LAKE
W. Milton
ENGLEWOOD RETARDING BASIN
Springfield
Union
Vandalia
Englewood
CLARK
Fairborn
HUFFMAN RETARDING BASIN
Dayton
Eaton
MONTGOMERY
Oakwood
Kettering
PREBLE
Moraine
W. Carrollton
GREENE
GERMANTOWN RETARDING BASIN
Miamisburg
Centerville
Germantown
ACTON LAKE
Franklin
Oxford
Middletown
BUTLER
Hamilton
Monroe
WARREN
Fairfield
HAMILTON
Cleves
Cincinnati
OHIO RIVER
PROJECT AREA
PHASE II
GREAT MIAMI RIVER BASIN
FIGURE 1
0 5 10
MILES

Figure 2

7416



000050

2/7/94

MCD 32350B

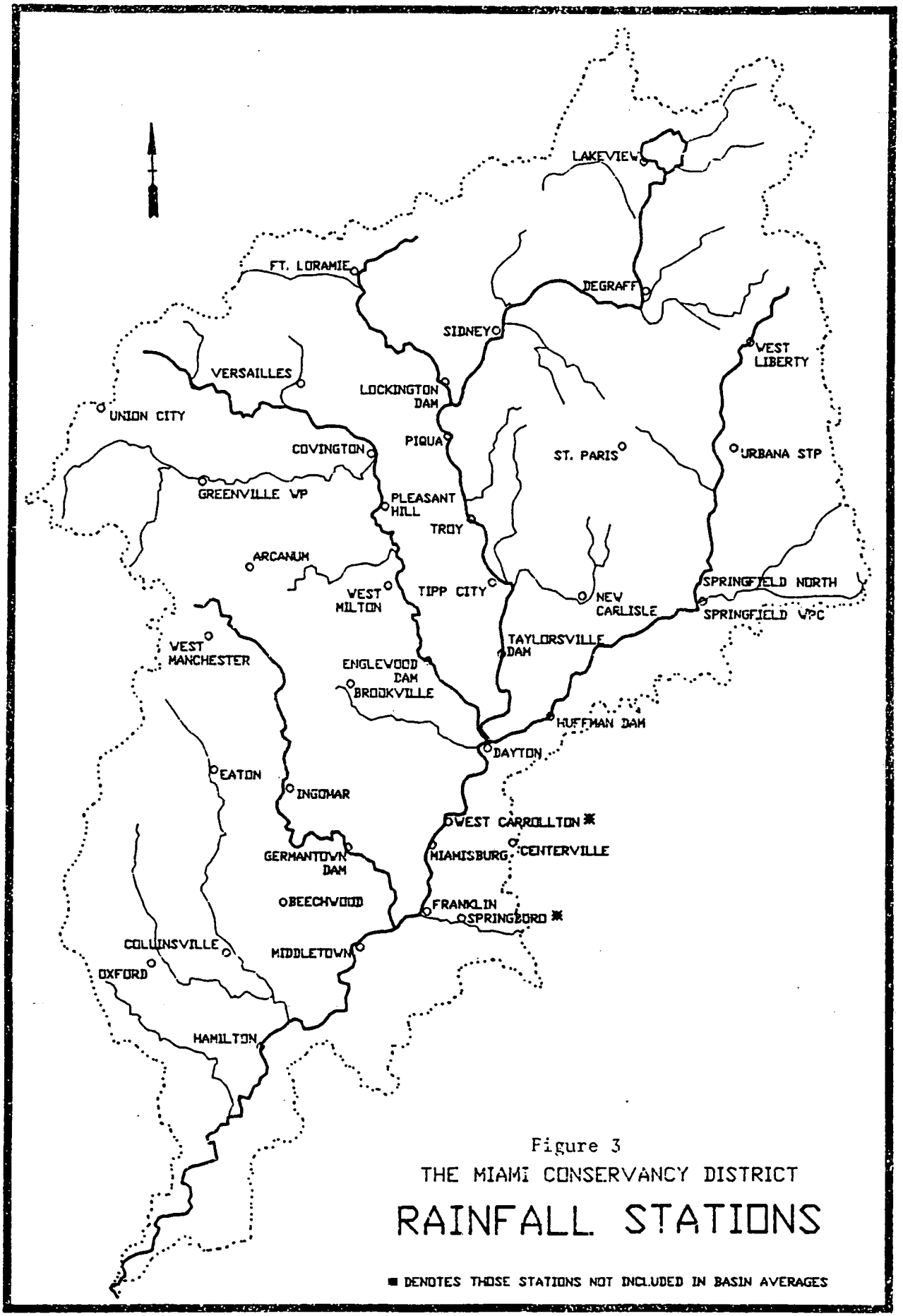
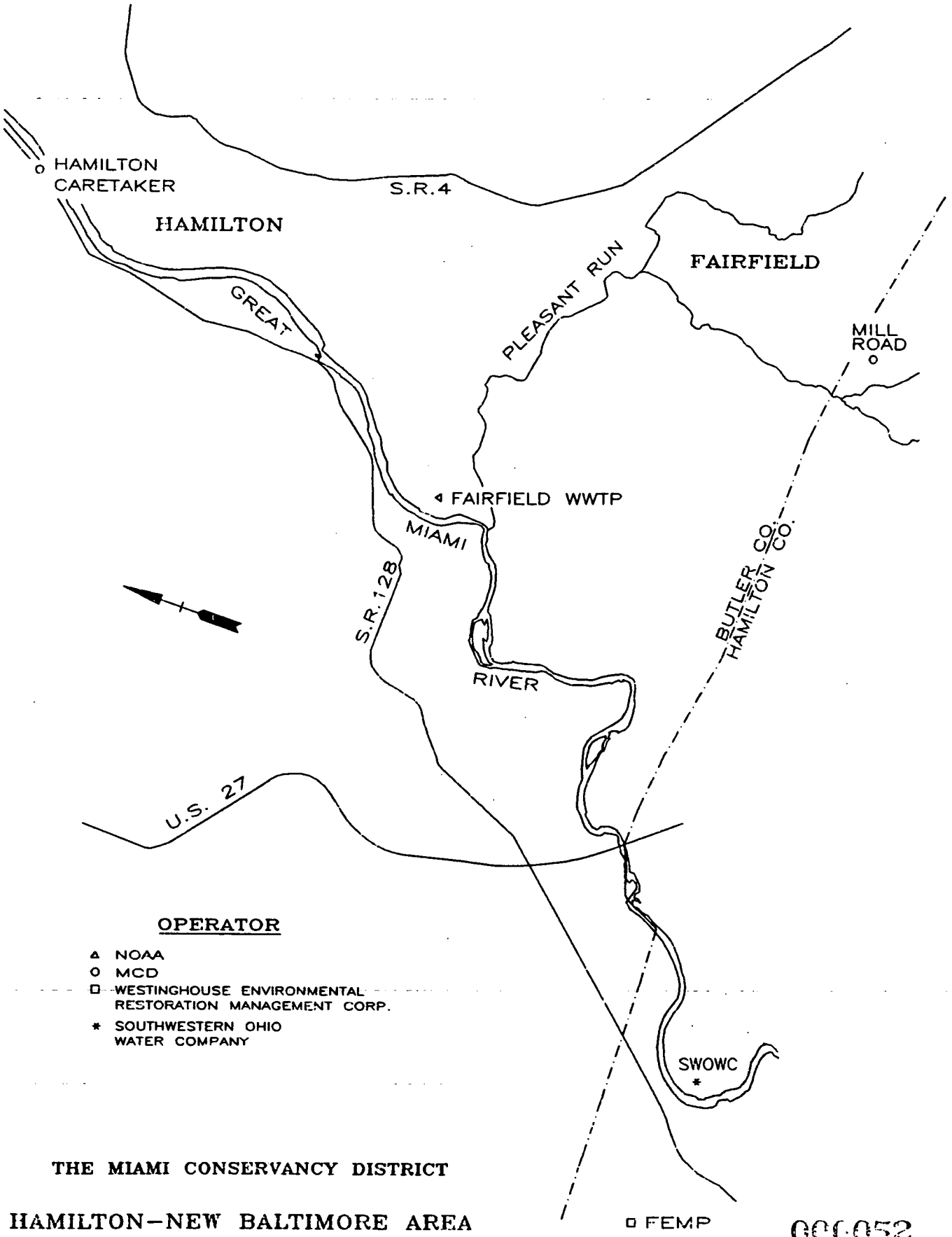


Figure 3

THE MIAMI CONSERVANCY DISTRICT

RAINFALL STATIONS

✱ DENOTES THOSE STATIONS NOT INCLUDED IN BASIN AVERAGES



THE MIAMI CONSERVANCY DISTRICT

HAMILTON–NEW BALTIMORE AREA
RAINFALL STATIONS

FIGURE 4

000052

MCD 31772D

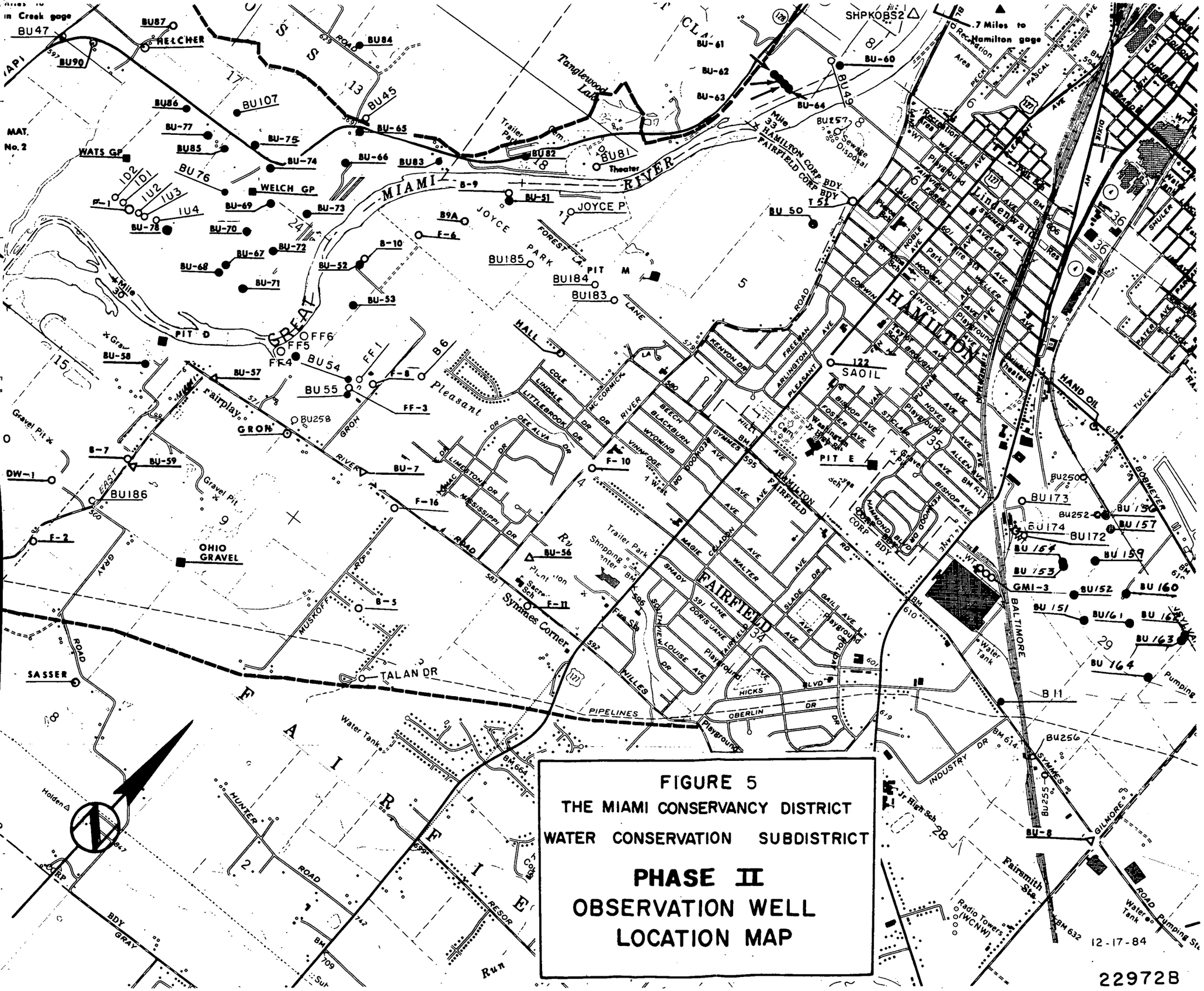
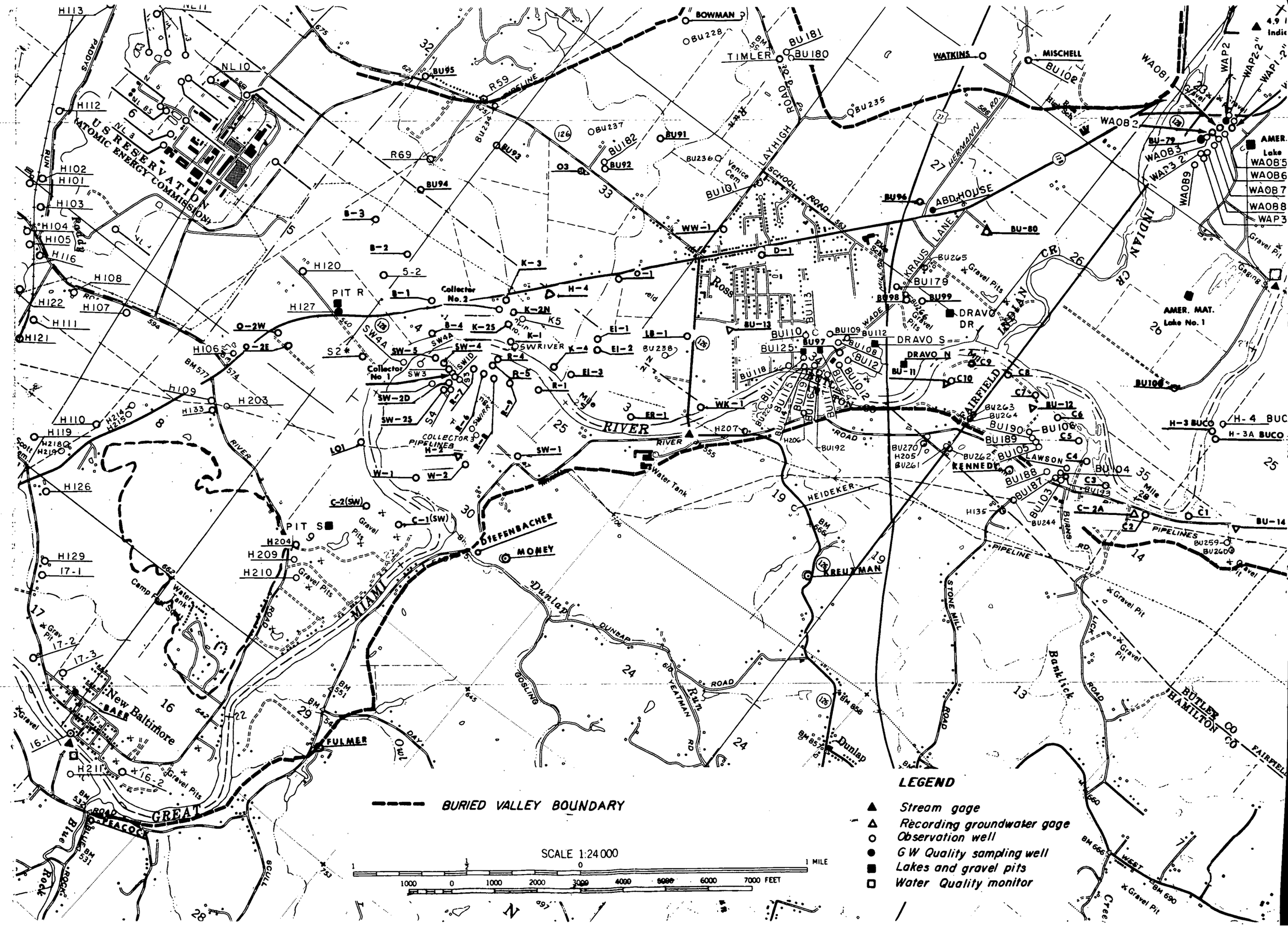
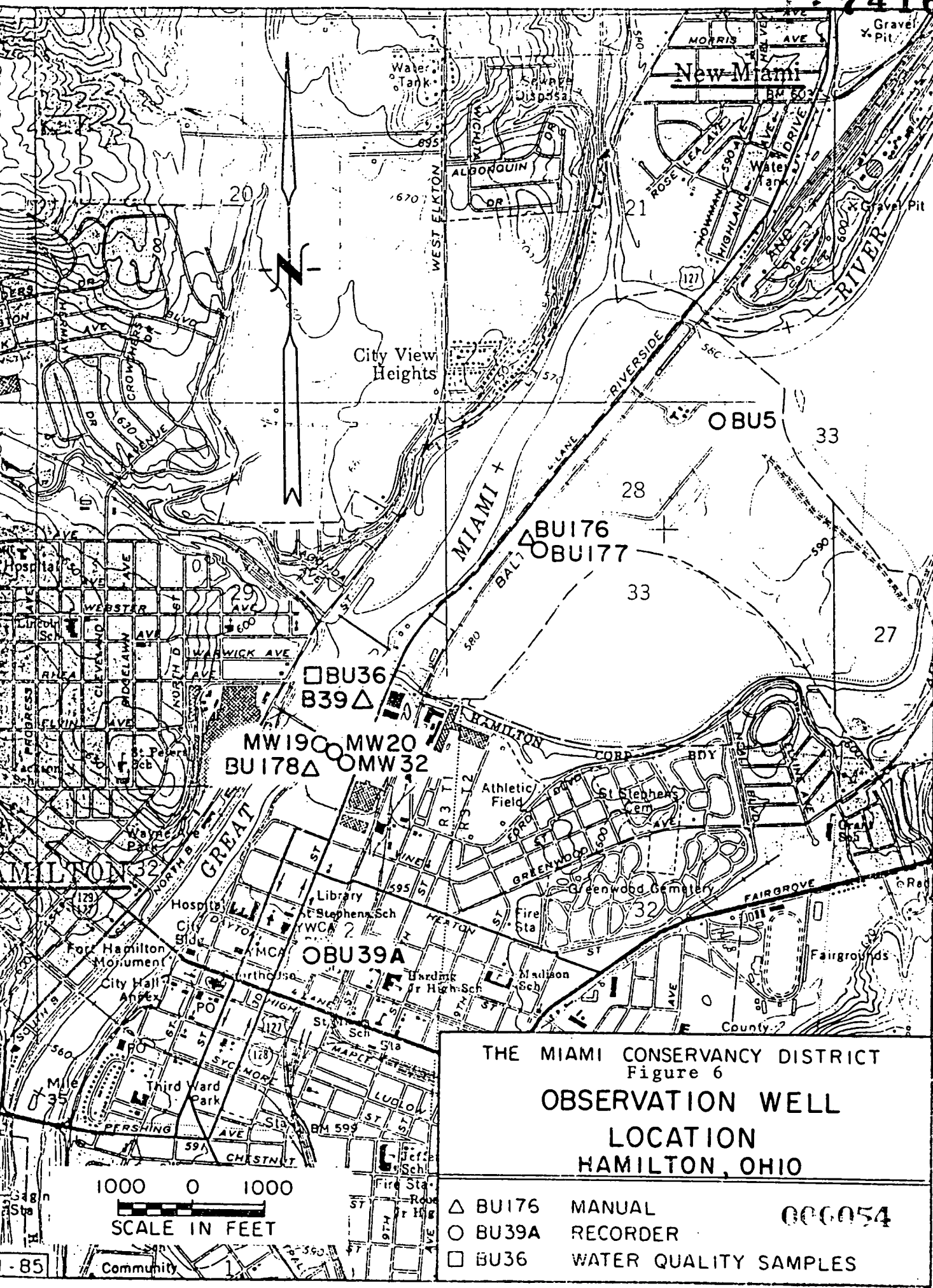


FIGURE 5
THE MIAMI CONSERVANCY DISTRICT
WATER CONSERVATION SUBDISTRICT

PHASE II
OBSERVATION WELL LOCATION MAP


U.S. RESERVATION
ATOMIC ENERGY COMMISSION
BOWMAN
TIMLER
WATKINS
MISCHELL
ABDHOUSE
DRAVO DR
DRAVO S
DRAVO N
KENNEDY
LAWSON
HEIDEKER
KREUTMAN
STIEFENBACHER
MONEY
FULMER
PEACOCK
New Baltimore
BAER
Dunlap
Ross
FAIRFIELD
MIAMI
RIVER
GREAT
INDIAN
CR
Collector No. 1
Collector No. 2
COLLECTOR PIPELINES
PIPELINES
PIPELINE
Water Tank
Gravel Pits
Gravel Pit
AMER. MAT. Lake No. 1
AMER. Lake
BUTLER CO
HAMILTON CO
BURIED VALLEY BOUNDARY
LEGEND
Stream gage
Recording groundwater gage
Observation well
G W Quality sampling well
Lakes and gravel pits
Water Quality monitor
SCALE 1:24 000
1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
N



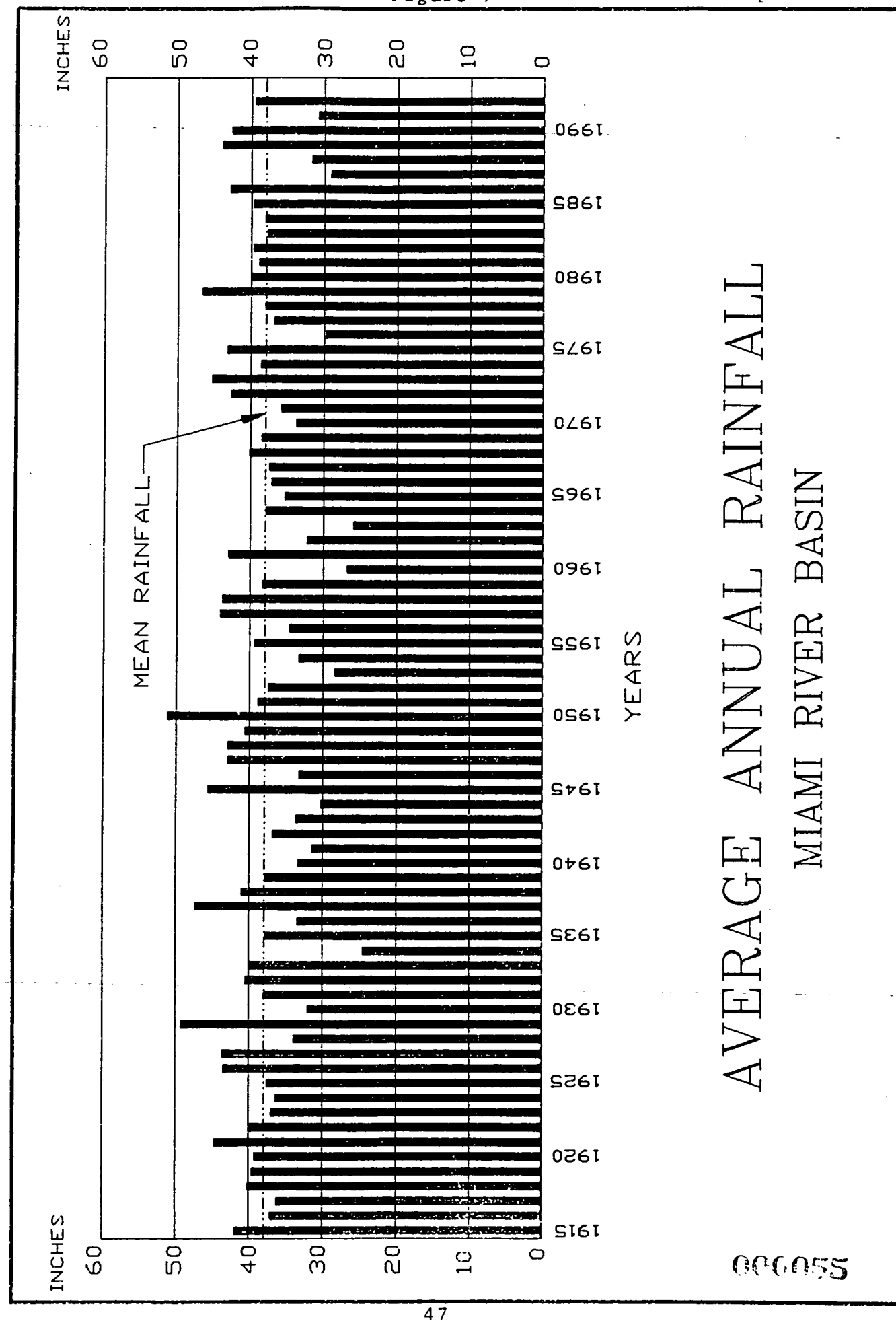
THE MIAMI CONSERVANCY DISTRICT
Figure 6

OBSERVATION WELL LOCATION
HAMILTON, OHIO

△ BU176 MANUAL
○ BU39A RECORDER
□ BU36 WATER QUALITY SAMPLES

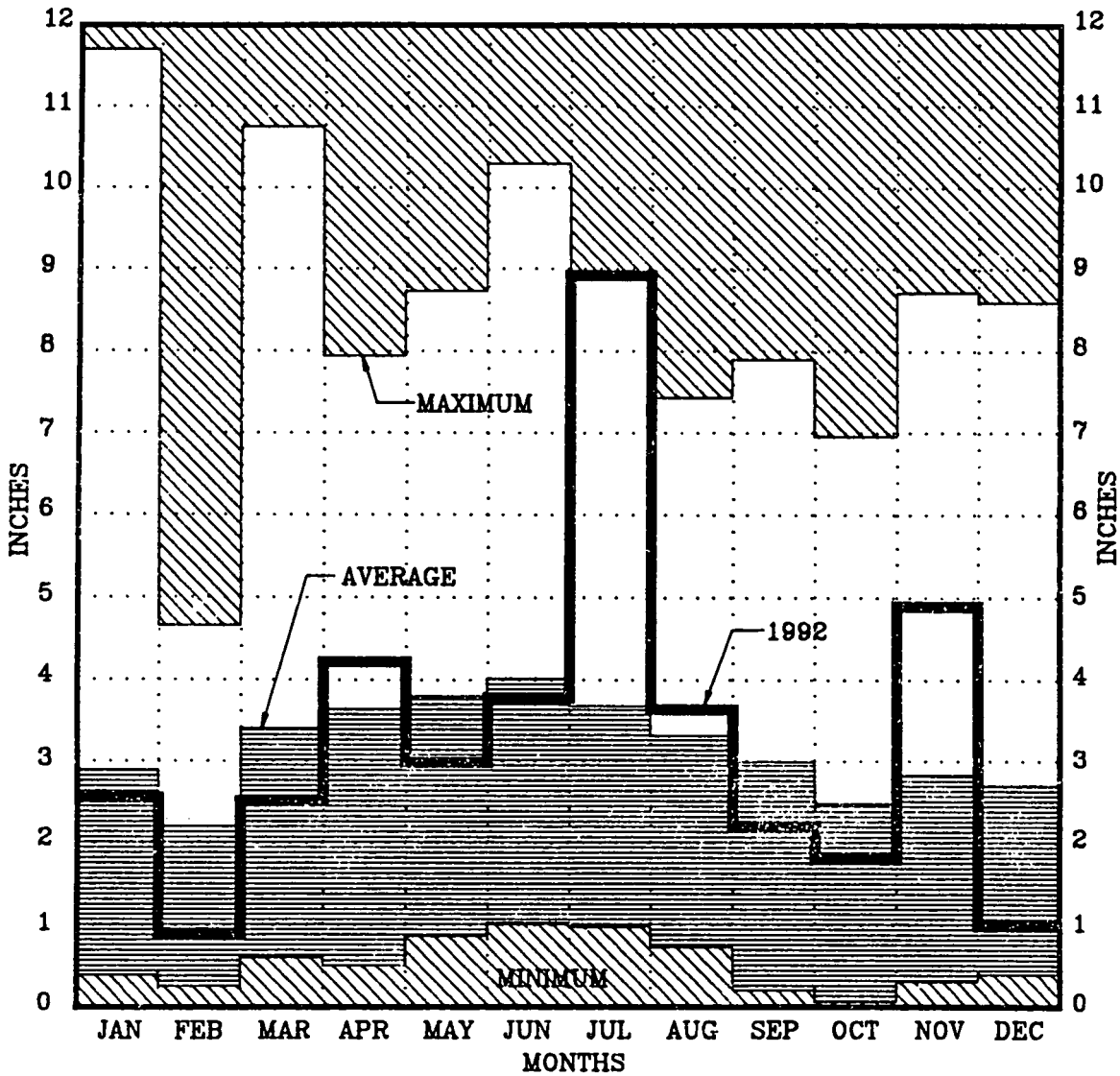
000054

Figure 7


AVERAGE ANNUAL RAINFALL
MIAMI RIVER BASIN
INCHES
60
50
40
30
20
10
0
MEAN RAINFALL
YEARS
1915
1920
1925
1930
1935
1940
1945
1950
1955
1960
1965
1970
1975
1980
1985
1990

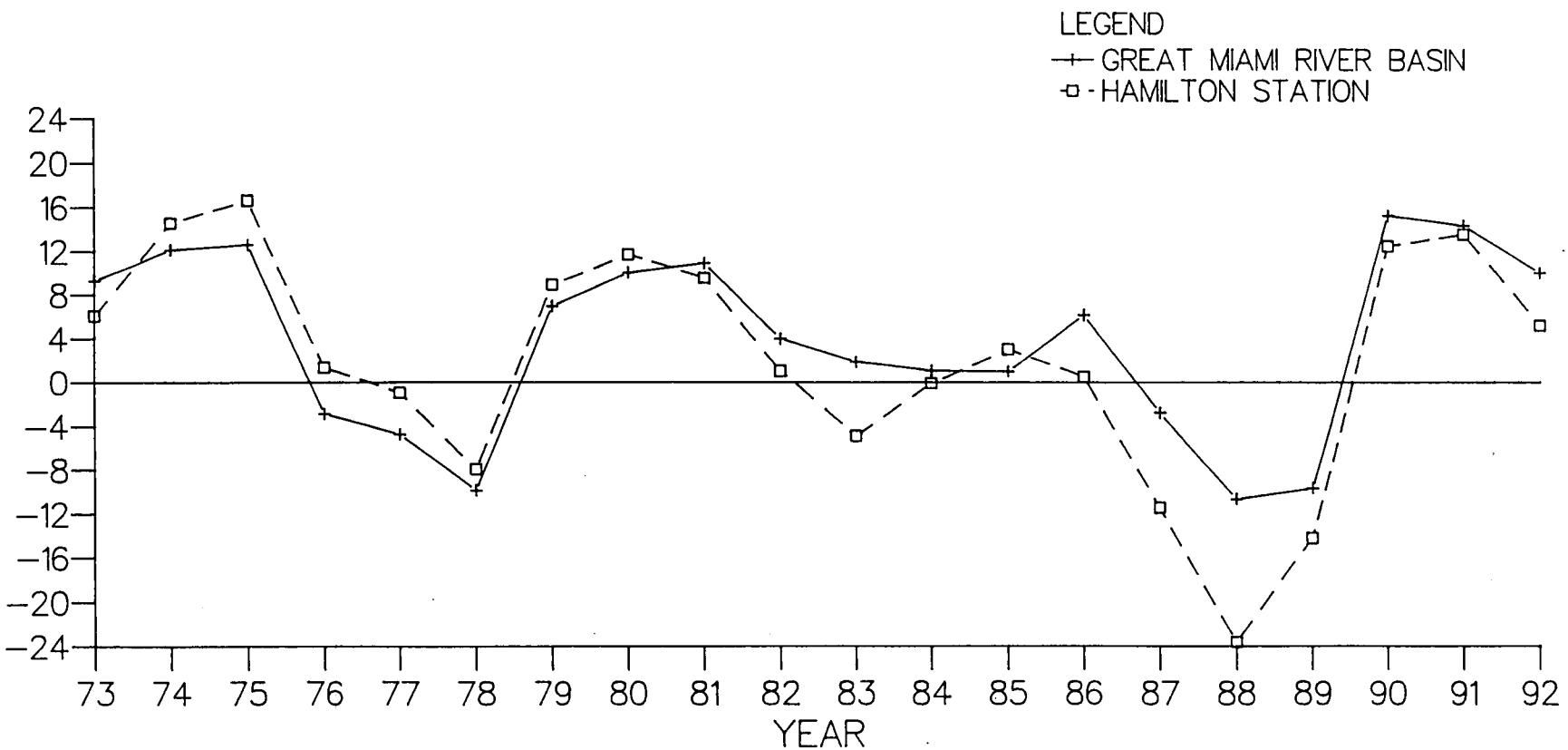
GREAT MIAMI RIVER BASIN PRECIPITATION

1992 AND AVERAGE MONTHLY PRECIPITATION
MAXIMUM & MINIMUM MONTHLY PRECIPITATION 1913 – 1992



THE MIAMI CONSERVANCY DISTRICT
RAINFALL TRENDS
1973–1992

36 MONTH CUMULATIVE DEPARTURES



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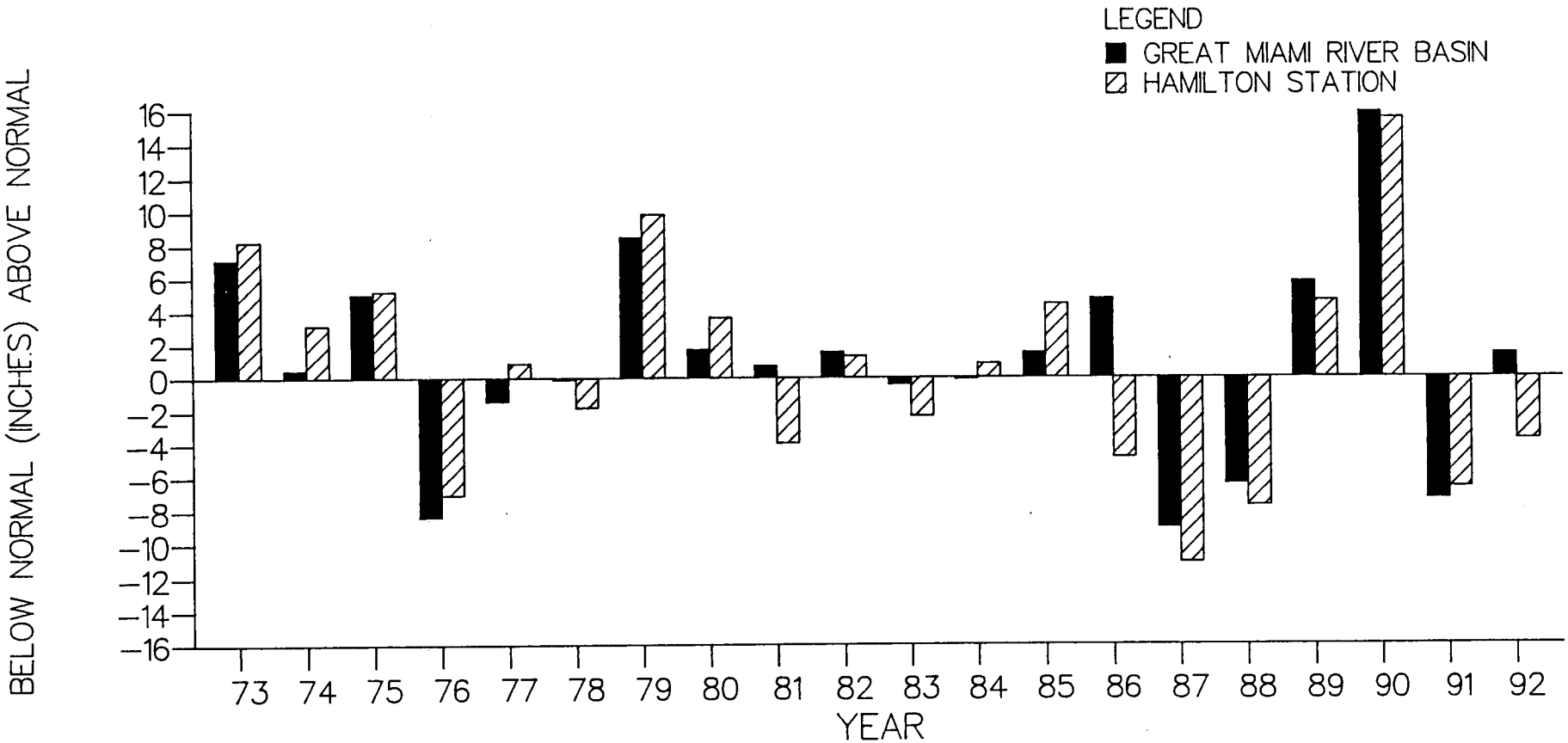
MCD33710

Figure 9

2416

THE MIAMI CONSERVANCY DISTRICT
RAINFALL
1973–1992

YEARLY DEPARTURES



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MCD33711

Figure 10

8500000

74 16

THE MIAMI CONSERVANCY DISTRICT
RAINFALL & RUNOFF AT HAMILTON
1973–1992

36 MONTH CUMULATIVE DEPARTURES

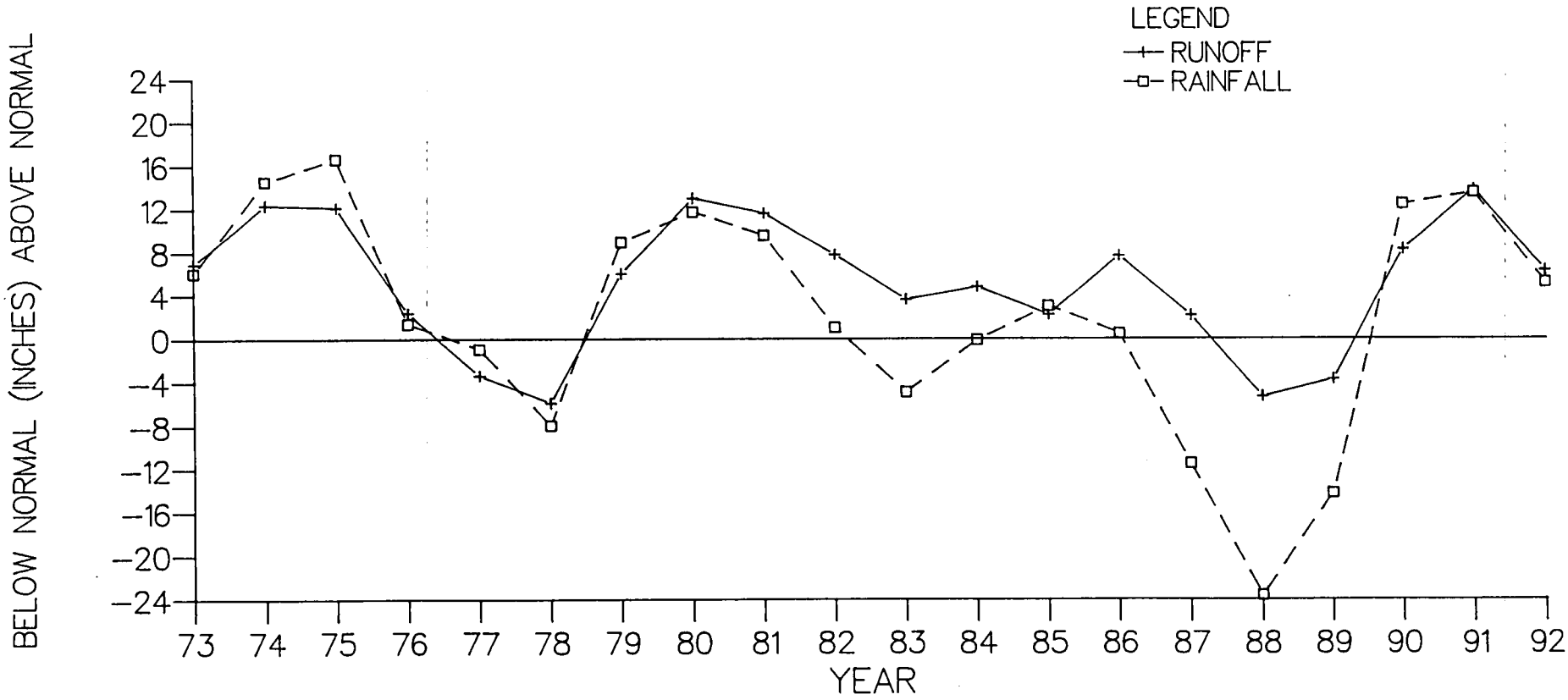

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Figure 11

6:0000

74116

Figure 12

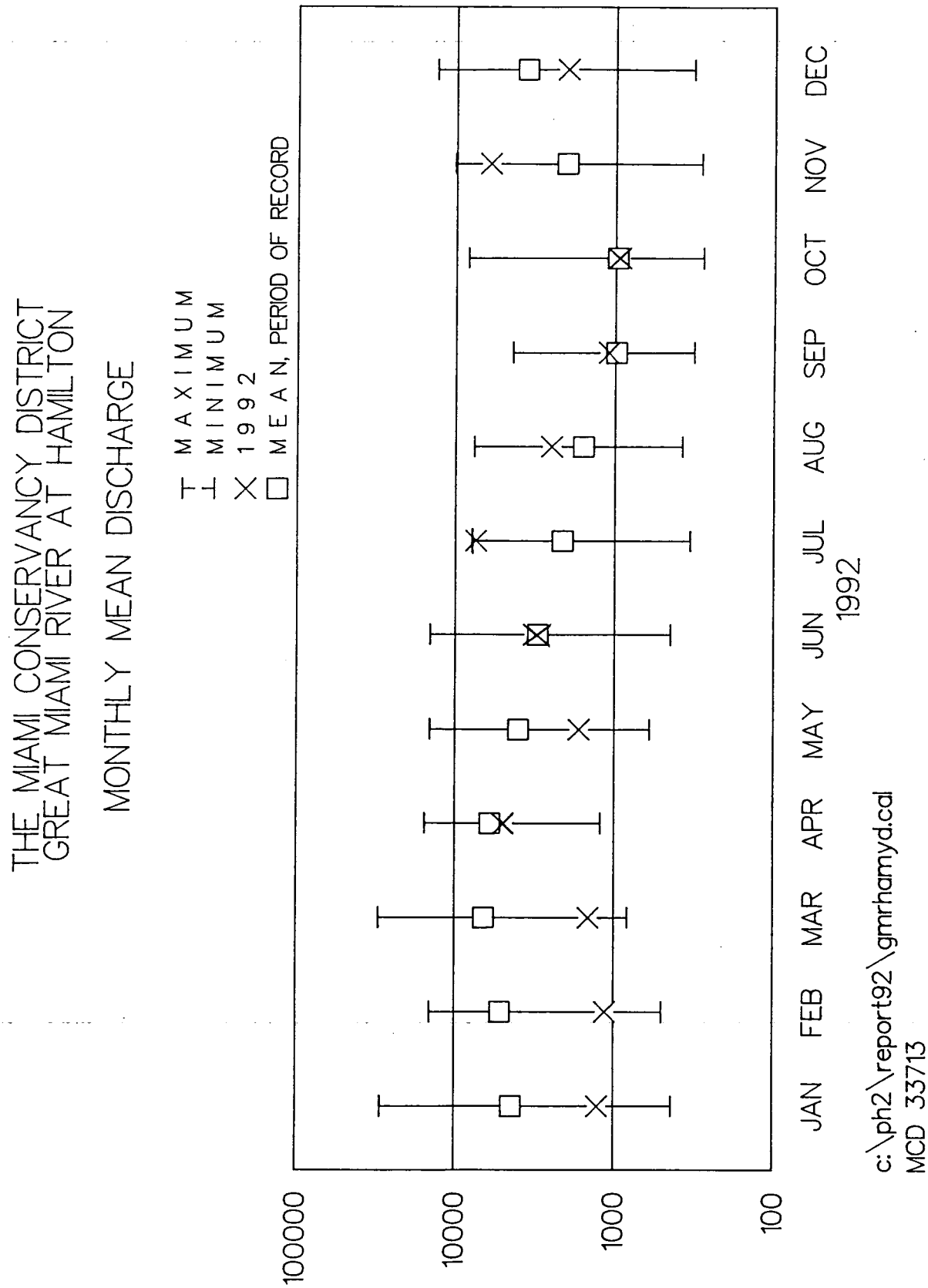
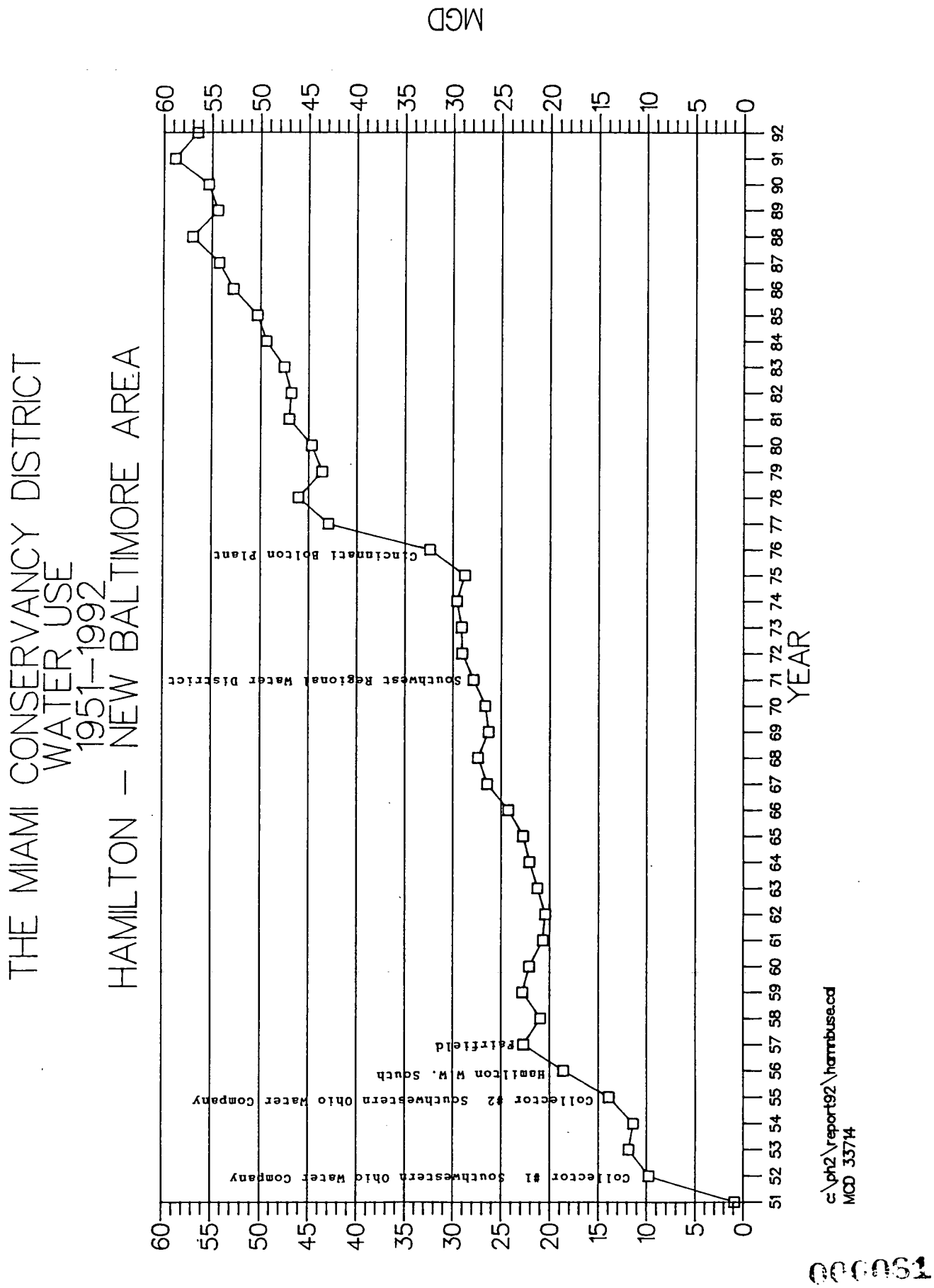

THE MIAMI CONSERVANCY DISTRICT
GREAT MIAMI RIVER AT HAMILTON
MONTHLY MEAN DISCHARGE
MAXIMUM
MINIMUM
1992
MEAN, PERIOD OF RECORD
100000
10000
1000
100
DISCHARGE, CFS
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC
1992
c:\ph2\report92\gmrhamyd.cal
MCD 33713

Figure 13


THE MIAMI CONSERVANCY DISTRICT
WATER USE
1951–1992
HAMILTON – NEW BALTIMORE AREA
MGD
YEAR
Collector #1 Southwestern Ohio Water Company
Collector #2 Southwestern Ohio Water Company
Hamilton W.W. South
Fairfield
Southwest Regional Water District
Cincinnati Bolton Plant
c:\ph2\report92\hamnbuse.cd
MCD 33714

7416

APPENDIX A

U.S. Geological Survey

Water Quality Data

000052

TABLE A-1
UNITED STATES DEPARTMENT OF INTERIOR - GEOLOGICAL SURVEY
400208084112900 - MI 44 - CITY OF TROY - WELL #4

WATER QUALITY DATA

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM) (00095)	PH (STANDARD UNITS) (00400)	TEMPERATURE AIR (DEG C) (00020)	TEMPERATURE WATER (DEG C) (00010)	OXYGEN DEMAND, CHEMICAL (HIGH LEVEL) (MG/L) (00340)	CALCIUM DISSOLVED (MG/L AS CA) (00915)	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	SODIUM, DISSOLVED (MG/L AS NA) (00930)	POTASSIUM, DISSOLVED (MG/L AS K) (00935)	BICARBONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)
11/25/91	1000	748	7.8	-3.5	11.5	<10	87	35	21	2.3	357
04/15/92	1030	767	7.7	12.5	13.5	11	86	32	22	2.5	360
08/12/92	1010	740	7.6	22.0	15.0	<10	86	32	21	2.5	369
11/24/92	0930	712	7.7	9.5	13.0	<10	77	30	20	2.4	369

	ALKALINITY WAT WH TOT FET FIELD MG/L AS CACO3 (00410)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L) (70300)	NITROGEN, NITRITE TOTAL (MG/L AS N) (00615)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	ARSENIC TOTAL (UG/L AS AS) (01002)	ARSENIC DISSOLVED (UG/L AS AS) (01000)
11/25/91	293	73	33	0.80	13	487	<0.010	<0.050	<1	<1
04/15/92	295	69	38	0.80	13	432	<0.010	<0.050	--	--
08/12/92	300	70	35	0.80	13	425	<0.010	<0.050	2	2
11/24/92	301	61	22	0.90	14	413	0.010	<0.050	1	1

	CHROMIUM, DISSOLVED (UG/L AS CR) (01030)	COPPER, TOTAL RECOVERABLE (UG/L AS CU) (01042)	COPPER, DISSOLVED (UG/L AS CU) (01040)	IRON, DISSOLVED (UG/L AS FE) (01046)	LEAD, TOTAL RECOVERABLE (UG/L AS PB) (01051)	LEAD, DISSOLVED (UG/L AS PB) (01049)	MANGANESE, DISSOLVED (UG/L AS MN) (01056)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN) (01092)	ZINC, DISSOLVED (UG/L AS ZN) (01090)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)
11/25/91	<1	--	<1	1000	5	<1	58	100	20	1.2
04/15/92	--	--	--	1200	--	--	52	--	--	1.0
08/12/92	<1	2	<1	880	1	<1	56	50	27	1.3
11/24/92	<1	<1	<1	1200	<1	<1	46	20	16	1.2

TABLE A-2
UNITED STATES DEPARTMENT OF INTERIOR - GEOLOGICAL SURVEY
393757084173600 - MT928 - CITY OF MIAMISBURG - WELL #8

- 7416

WATER QUALITY DATA

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM) (00095)	PH (STANDARD UNITS) (00400)	TEMPERATURE AIR (DEG C) (00020)	TEMPERATURE WATER (DEG C) (00010)	OXYGEN DEMAND, CHEMICAL (HIGH LEVEL) (MG/L) (00340)	CALCIUM DISSOLVED (MG/L AS CA) (00915)	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	SODIUM, DISSOLVED (MG/L AS NA) (00930)	POTASSIUM, DISSOLVED (MG/L AS K) (00935)	BICARBONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)
11/25/91	1310	919	7.6	-1.5	14.5	12	94	29	50	4.3	353
04/15/92	1245	906	7.6	21.0	16.5	12	86	29	52	4.2	333
08/12/92	1300	815	7.7	31.5	15.5	<10	85	28	41	2.6	344
11/24/92	1200	795	7.6	11.5	15.0	<10	79	28	39	3.7	318

	ALKALINITY WAT WH TOT FET FIELD MG/L AS CACO3 (00410)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L) (70300)	NITROGEN, NITRITE TOTAL (MG/L AS N) (00615)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	ARSENIC TOTAL (UG/L AS AS) (01002)	ARSENIC DISSOLVED (UG/L AS AS) (01000)
11/25/91	288	77	87	0.30	9.7	518	0.020	1.10	<1	<1
04/15/92	273	81	84	0.30	8.7	513	0.030	1.70	--	--
08/12/92	280	75	68	0.30	8.5	466	0.020	2.00	1	1
11/24/92	259	73	59	0.40	8.9	455	0.040	1.40	1	1

	CHROMIUM, DISSOLVED (UG/L AS CR) (01030)	COPPER, TOTAL RECOVERABLE (UG/L AS CU) (01042)	COPPER, DISSOLVED (UG/L AS CU) (01040)	IRON, DISSOLVED (UG/L AS FE) (01046)	LEAD, TOTAL RECOVERABLE (UG/L AS PB) (01051)	LEAD, DISSOLVED (UG/L AS PB) (01049)	MANGANESE, DISSOLVED (UG/L AS MN) (01056)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN) (01092)	ZINC, DISSOLVED (UG/L AS ZN) (01090)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)
11/25/91	<1	--	4	12	6	<1	170	30	10	1.2
04/15/92	--	--	--	25	--	--	190	--	--	1.3
08/12/92	<1	6	4	10	2	<1	170	30	9	1.4
11/24/92	<1	7	4	11	<1	<1	170	10	9	1.5

000064

TABLE A-3
UNITED STATES DEPARTMENT OF INTERIOR - GEOLOGICAL SURVEY
392445084333000 - BU36 - CHAMPION INTERNATIONAL - WELL #4 - HAMILTON OHIO

WATER QUALITY DATA

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM) (00095)	PH (STANDARD UNITS) (00400)	TEMPERATURE AIR (DEG C) (00020)	TEMPERATURE WATER (DEG C) (00010)	OXYGEN DEMAND, CHEMICAL (HIGH LEVEL) (MG/L) (00340)	CALCIUM DISSOLVED (MG/L AS CA) (00915)	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	SODIUM, DISSOLVED (MG/L AS NA) (00930)	POTASSIUM, DISSOLVED (MG/L AS K) (00935)	BICARBONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)
11/26/91	1150	883	7.5	8.5	15.5	<10	110	34	34	3.8	372
04/16/92	1230	894	7.3	24.0	17.0	11	110	32	32	3.7	377
08/13/92	1130	885	7.5	26.5	16.5	<10	110	32	31	3.7	383
11/18/92	1330	887	7.4	9.5	15.5	<10	100	31	31	3.6	366

	ALKALINITY WAT WH TOT FET FIELD MG/L AS CACO3 (00410)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L) (70300)	NITROGEN, NITRITE TOTAL (MG/L AS N) (00615)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	ARSENIC TOTAL (UG/L AS AS) (01002)	ARSENIC DISSOLVED (UG/L AS AS) (01000)
11/26/91	306	96	58	0.20	11	546	<0.010	2.20	<1	<1
04/16/92	306	87	59	0.10	11	520	<0.010	1.90	--	--
08/13/92	313	96	63	0.20	11	516	<0.010	1.80	<1	<1
11/18/92	302	93	56	0.20	9.6	514	<0.010	1.70	<1	<1

	CHROMIUM, DISSOLVED (UG/L AS CR) (01030)	COPPER, TOTAL RECOVERABLE (UG/L AS CU) (01042)	COPPER, DISSOLVED (UG/L AS CU) (01040)	IRON, DISSOLVED (UG/L AS FE) (01046)	LEAD, TOTAL RECOVERABLE (UG/L AS PB) (01051)	LEAD, DISSOLVED (UG/L AS PB) (01049)	MANGANESE, DISSOLVED (UG/L AS MN) (01056)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN) (01092)	ZINC, DISSOLVED (UG/L AS ZN) (01090)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)
11/26/91	10	--	1	<3	1	<1	3	30	33	0.9
04/16/92	--	--	--	<3	--	--	1	--	--	0.9
08/13/92	10	3	2	<3	1	<1	3	20	23	0.9
11/18/92	8	4	2	6	1	<1	3	10	7	0.7

TABLE A-4

UNITED STATES DEPARTMENT OF INTERIOR - GEOLOGICAL SURVEY

391748084393800 - H19 - SOUTHWESTERN OHIO WATER COMPANY - COLLECTOR WELL #1

7416

WATER QUALITY DATA

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM) (00095)	PH (STANDARD UNITS) (00400)	TEMPERATURE AIR (DEG C) (00020)	TEMPERATURE WATER (DEG C) (00010)	OXYGEN DEMAND, CHEMICAL (HIGH LEVEL) (MG/L) (00340)	CALCIUM DISSOLVED (MG/L AS CA) (00915)	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	SODIUM, DISSOLVED (MG/L AS NA) (00930)	POTASSIUM, DISSOLVED (MG/L AS K) (00935)	BICARBONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)
11/26/91	1015	780	7.7	14.0	17.0	10	82	29	39	4.1	292
04/16/92	1045	811	7.6	25.5	17.5	12	87	30	37	4.1	310
08/13/92	1000	754	7.7	23.5	17.5	<10	81	28	31	3.9	293
11/18/92	1210	777	7.7	9.0	18.0	<10	75	27	36	4.2	279

	ALKALINITY WAT WH TOT FET FIELD MG/L AS CACO3 (00410)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L) (70300)	NITROGEN, NITRITE TOTAL (MG/L AS N) (00615)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	ARSENIC TOTAL (UG/L AS AS) (01002)	ARSENIC DISSOLVED (UG/L AS AS) (01000)
11/26/91	238	83	65	0.40	<0.10	493	0.010	0.78	<1	<1
04/16/92	254	80	63	0.30	8.7	468	0.020	1.50	--	--
08/13/92	239	80	58	0.30	8.3	428	0.030	3.10	<1	<1
11/18/92	230	82	60	0.40	7.9	442	0.030	1.90	<1	<1

	CHROMIUM, DISSOLVED (UG/L AS CR) (01030)	COPPER, TOTAL RECOVERABLE (UG/L AS CU) (01042)	COPPER, DISSOLVED (UG/L AS CU) (01040)	IRON, DISSOLVED (UG/L AS FE) (01046)	LEAD, TOTAL RECOVERABLE (UG/L AS PB) (01051)	LEAD, DISSOLVED (UG/L AS PB) (01049)	MANGANESE, DISSOLVED (UG/L AS MN) (01056)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN) (01092)	ZINC, DISSOLVED (UG/L AS ZN) (01090)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)
11/26/91	<1	--	2	22	4	<1	310	50	24	1.3
04/16/92	--	--	--	360	--	--	210	--	--	3.1
08/13/92	<1	2	1	69	2	<1	250	120	120	1.4
11/18/92	<1	2	2	48	<1	<1	230	100	83	1.0

000036

TABLE A-5
UNITED STATES DEPARTMENT OF INTERIOR - GEOLOGICAL SURVEY
03274600 - GREAT MIAMI RIVER AT NEW BALTIMORE OHIO

WATER QUALITY DATA

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	TUR-BID-ITY (NTU) (00076)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)
11/06/91	1015	453	1010	8.8	7.0	7.5	11	12.3	104	110	220
01/08/92	1315	813	795	8.3	5.0	6.0	6.0	13.0	106	450	160
05/20/92	1045	1620	821	8.2	22.5	22.0	2.5	8.5	97	230	950
07/08/92	1330	918	732	8.5	32.0	25.5	8.5	10.8	134	270	100
09/16/92	1320	865	718	8.0	28.0	23.5	13	11.9	141	68	340
11/18/92	0940	4850	604	8.4	9.5	7.5	26	11.4	95	2800	1200

	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	BICAR-BONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)	CAR-BONATE WATER DIS IT FIELD MG/L AS CO3 (00452)	ALKA-LINITY WAT WH TOT FET FIELD MG/L AS CACO3 (00410)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)
11/06/91	350	84	35	86	5.1	293	15	264	130	130	0.70
01/08/92	300	77	27	47	4.7	247	3	207	89	75	0.40
05/20/92	310	71	31	48	3.7	244	0	202	95	78	0.40
07/08/92	280	63	29	45	4.0	204	17	195	87	79	0.40
09/16/92	280	59	31	53	4.6	223	0	184	86	81	0.40
11/18/92	260	65	23	16	3.8	239	2	199	58	32	0.30

TABLE A-5 (cont.)
UNITED STATES DEPARTMENT OF INTERIOR - GEOLOGICAL SURVEY
03274600 - GREAT MIAMI RIVER AT NEW BALTIMORE OHIO

WATER QUALITY DATA

DATE	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	PHOS-PHORUS DIS-SOLVED (MG/L AS P) (00666)	PHOS-PHORUS ORTHO, DIS-SOLVED (MG/L AS P) (00671)	ALUM-INUM, DIS-SOLVED (UG/L AS AL) (01106)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)
11/06/91	5.1	602	3.30	0.020	0.010	1.0	0.620	0.520	0.430	<10	91
01/08/92	4.8	453	3.70	0.100	0.110	0.70	0.450	0.400	0.350	<10	69
05/20/92	0.07	471	2.30	0.020	0.020	2.0	0.330	0.120	0.110	10	81
07/08/92	0.12	436	2.60	0.020	0.030	0.60	0.190	0.120	0.080	20	67
09/16/92	0.06	440	1.40	0.020	0.010	1.9	0.310	0.050	0.030	<10	75
11/18/92	6.6	356	4.00	0.080	0.090	0.90	0.210	0.130	0.130	10	56

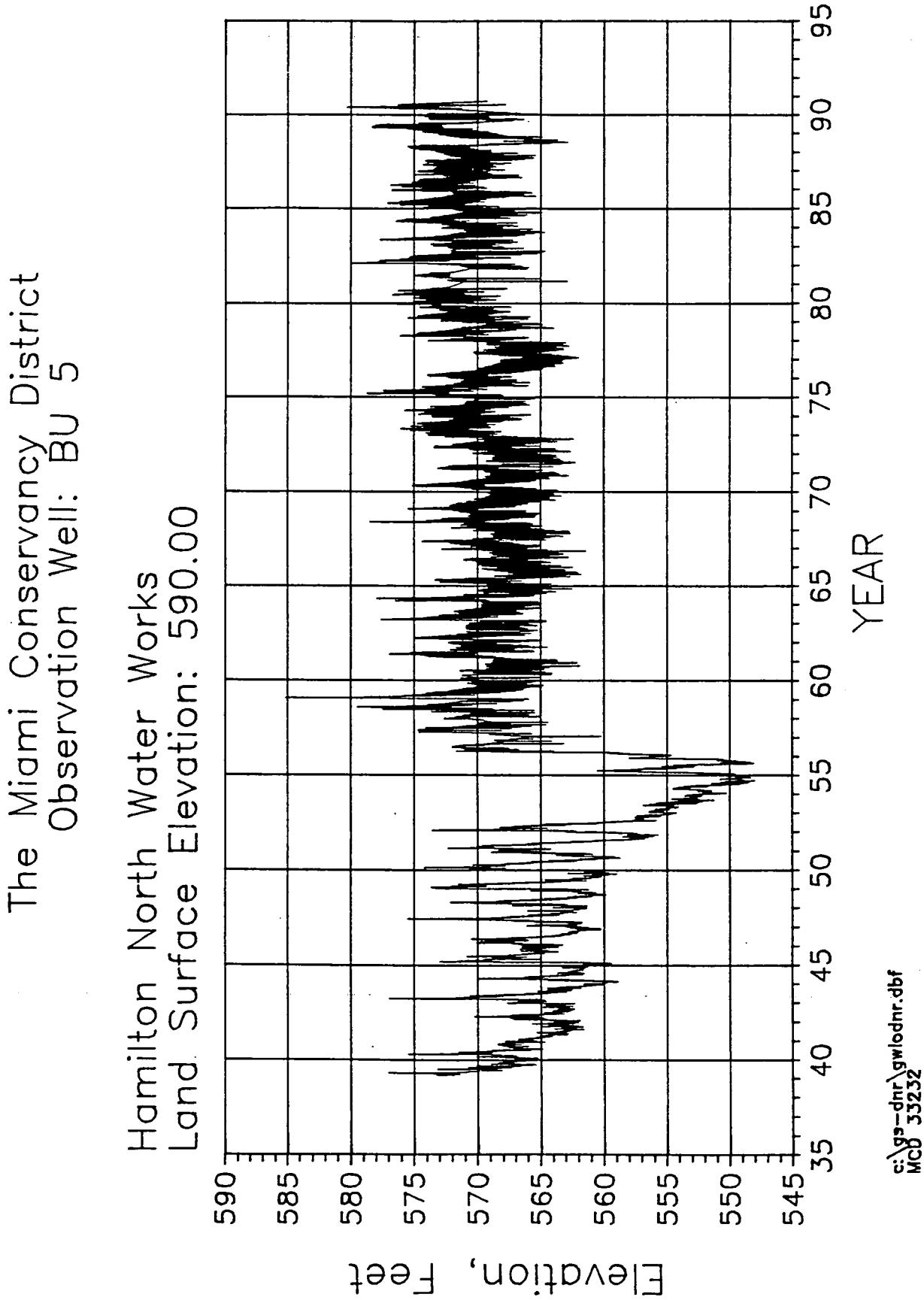
	COBALT, DIS-SOLVED (UG/L AS CO) (01035)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO) (01060)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)	VANA-DIUM, DIS-SOLVED (UG/L AS V) (01085)	SEDI-MENT, SUS-PENDED (MG/L) (80154)
11/06/91	<3	8	14	6	10	5	2	<1.0	760	<6	18
01/08/92	<3	12	8	9	<10	4	<1	<1.0	690	<6	22
05/20/92	<3	8	9	2	<10	5	<1	<1.0	820	<6	54
07/08/92	<3	16	5	2	<10	3	1	<1.0	680	<6	61
09/16/92	<3	5	15	1	<10	4	<1	<1.0	750	<6	72
11/18/92	<3	28	<4	6	<10	2	1	<1.0	630	<6	43

APPENDIX B

Hydrographs

000039

Figure 14


The Miami Conservancy District
Observation Well: BU 5
Hamilton North Water Works
Land Surface Elevation: 590.00
Elevation, Feet
590
585
580
575
570
565
560
555
550
545
35
40
45
50
55
60
65
70
75
80
85
90
95
YEAR
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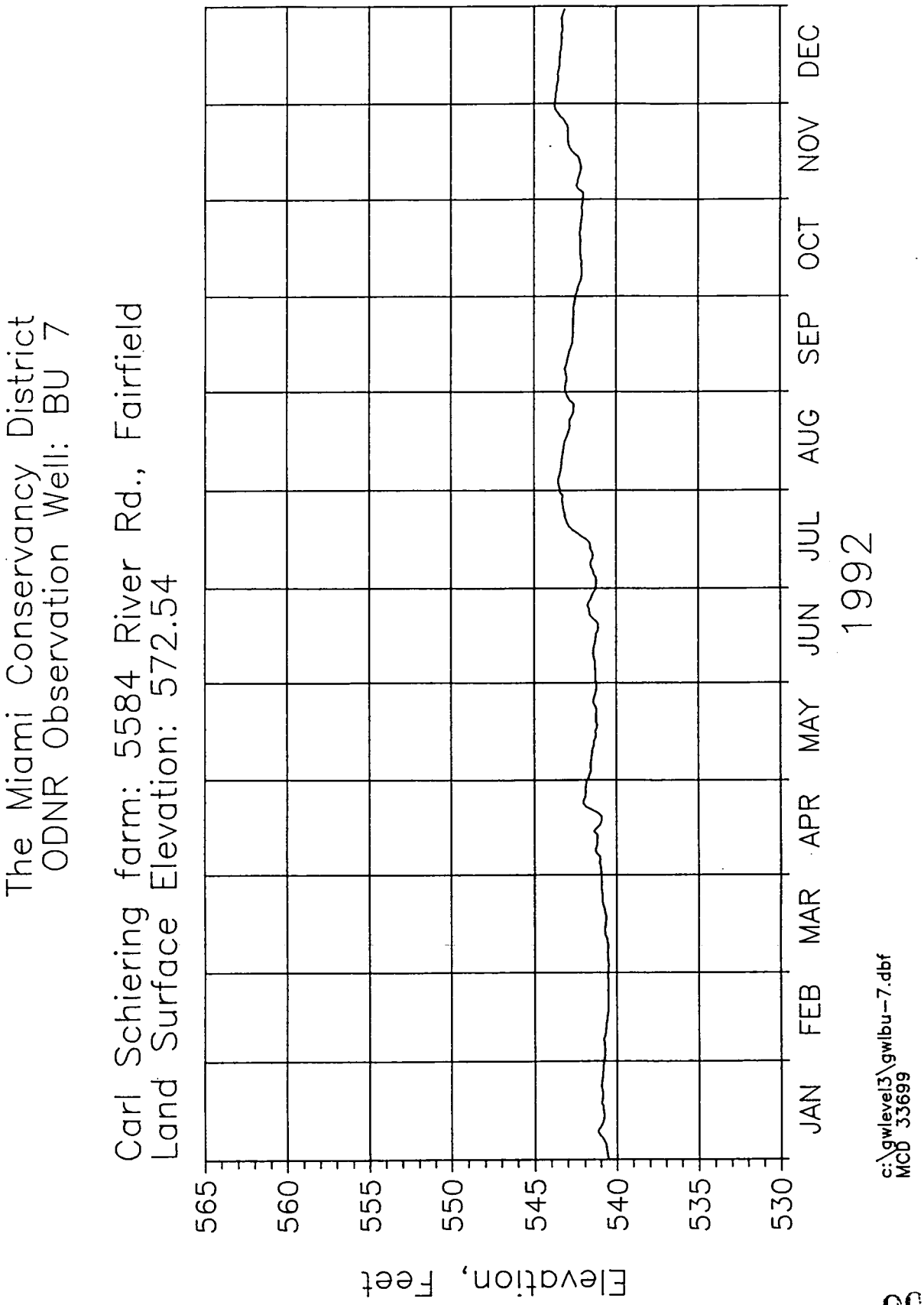
McD 33232

Figure 15


The Miami Conservancy District
ODNR Observation Well: BU 7
Carl Schiering farm: 5584 River Rd., Fairfield
Land Surface Elevation: 572.54
565
560
555
550
545
540
535
530
Elevation, Feet
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC
1992
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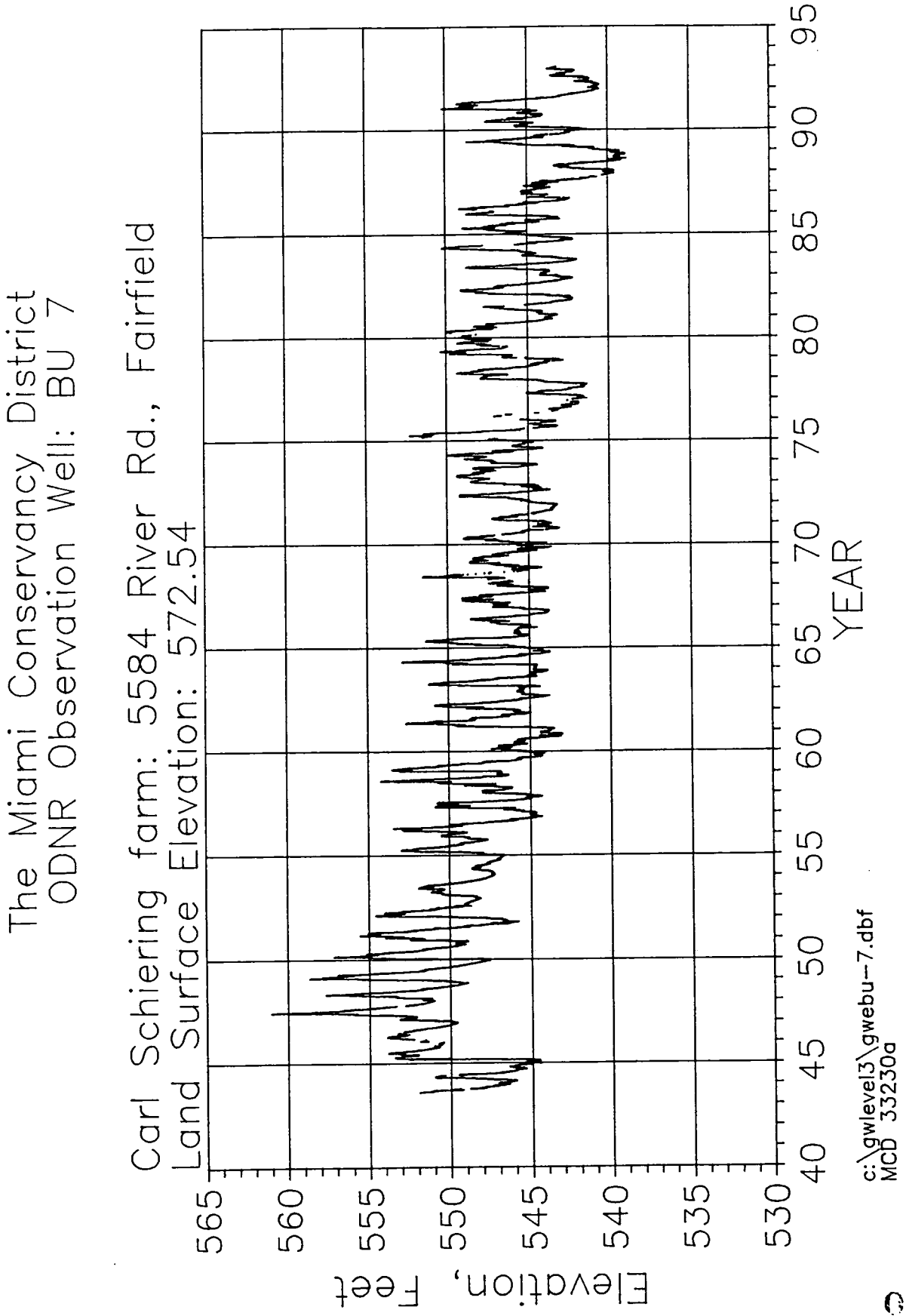
MCD 33699

Figure 16


The Miami Conservancy District
ODNR Observation Well: BU 7
Carl Schiering farm: 5584 River Rd., Fairfield
Land Surface Elevation: 572.54
Elevation, Feet
565
560
555
550
545
540
535
530
40
45
50
55
60
65
70
75
80
85
90
95
YEAR
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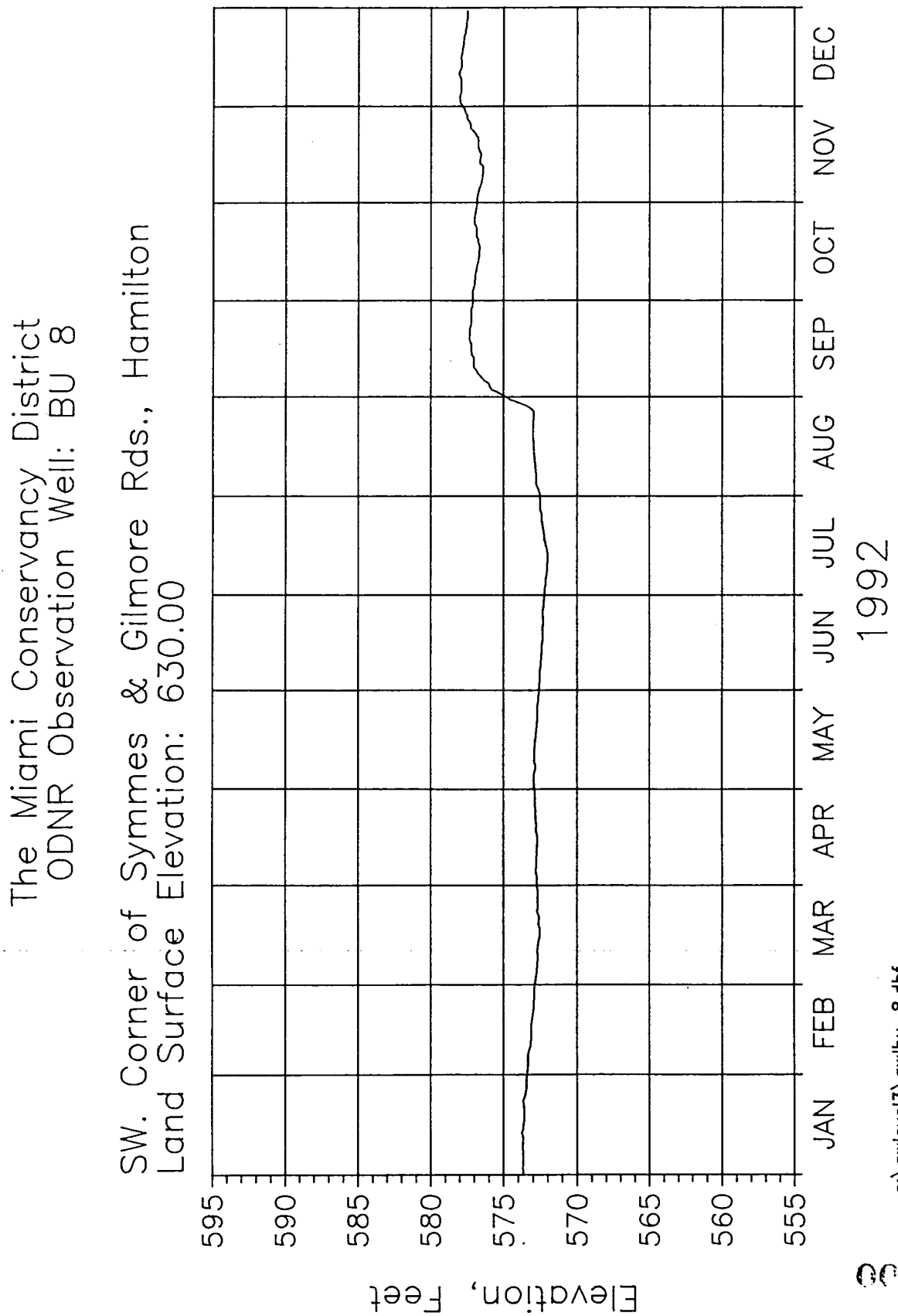
MCD 33230a

Figure 17


The Miami Conservancy District
ODNR Observation Well: BU 8
SW. Corner of Symmes & Gilmore Rds., Hamilton
Land Surface Elevation: 630.00
595
590
585
580
575
570
565
560
555
Elevation, Feet
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC
1992
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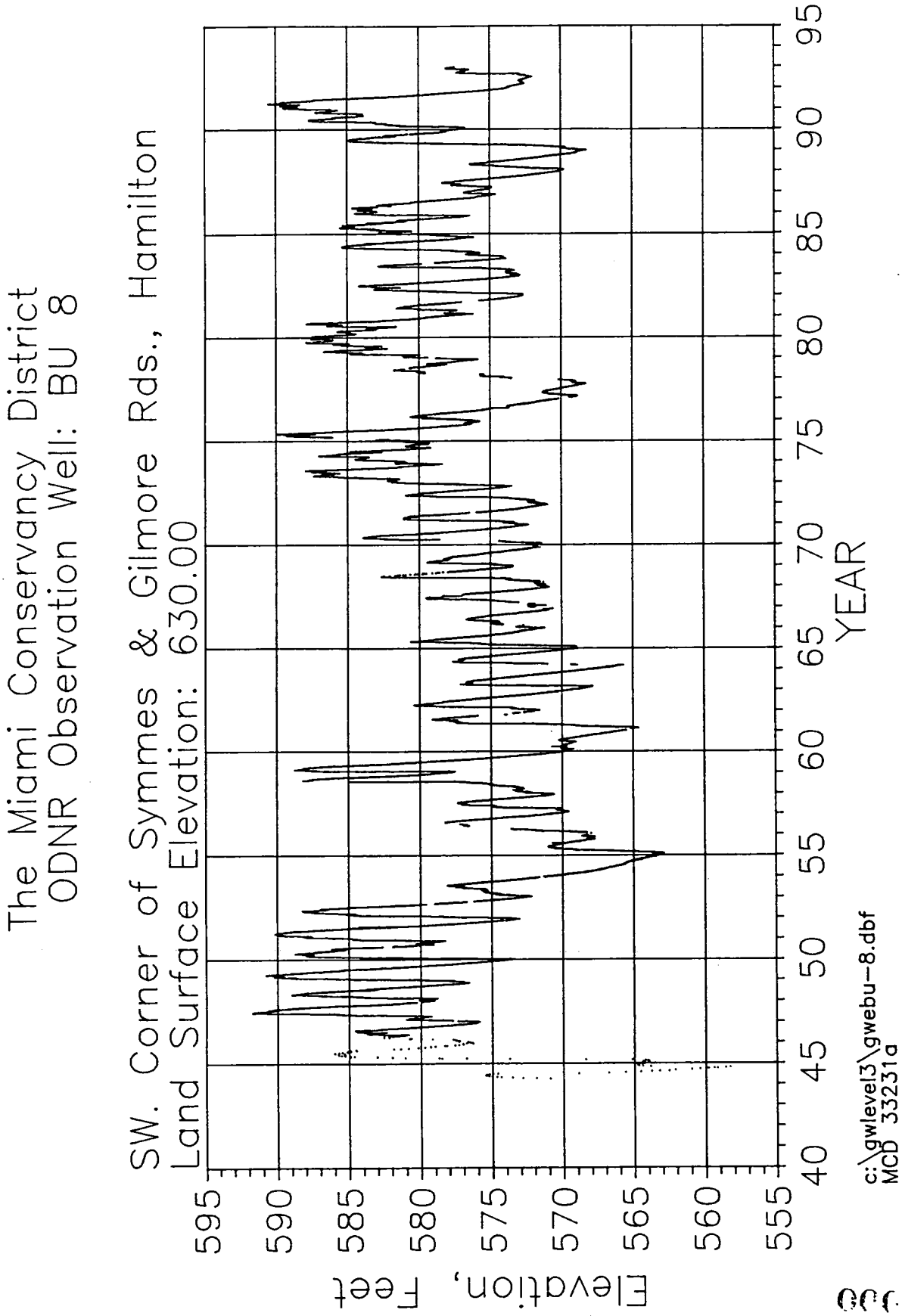
MCD 33698


The Miami Conservancy District
ODNR Observation Well: BU 8
SW. Corner of Symmes & Gilmore Rds., Hamilton
Land Surface Elevation: 630.00
Elevation, Feet
595
590
585
580
575
570
565
560
555
YEAR
40
45
50
55
60
65
70
75
80
85
90
95
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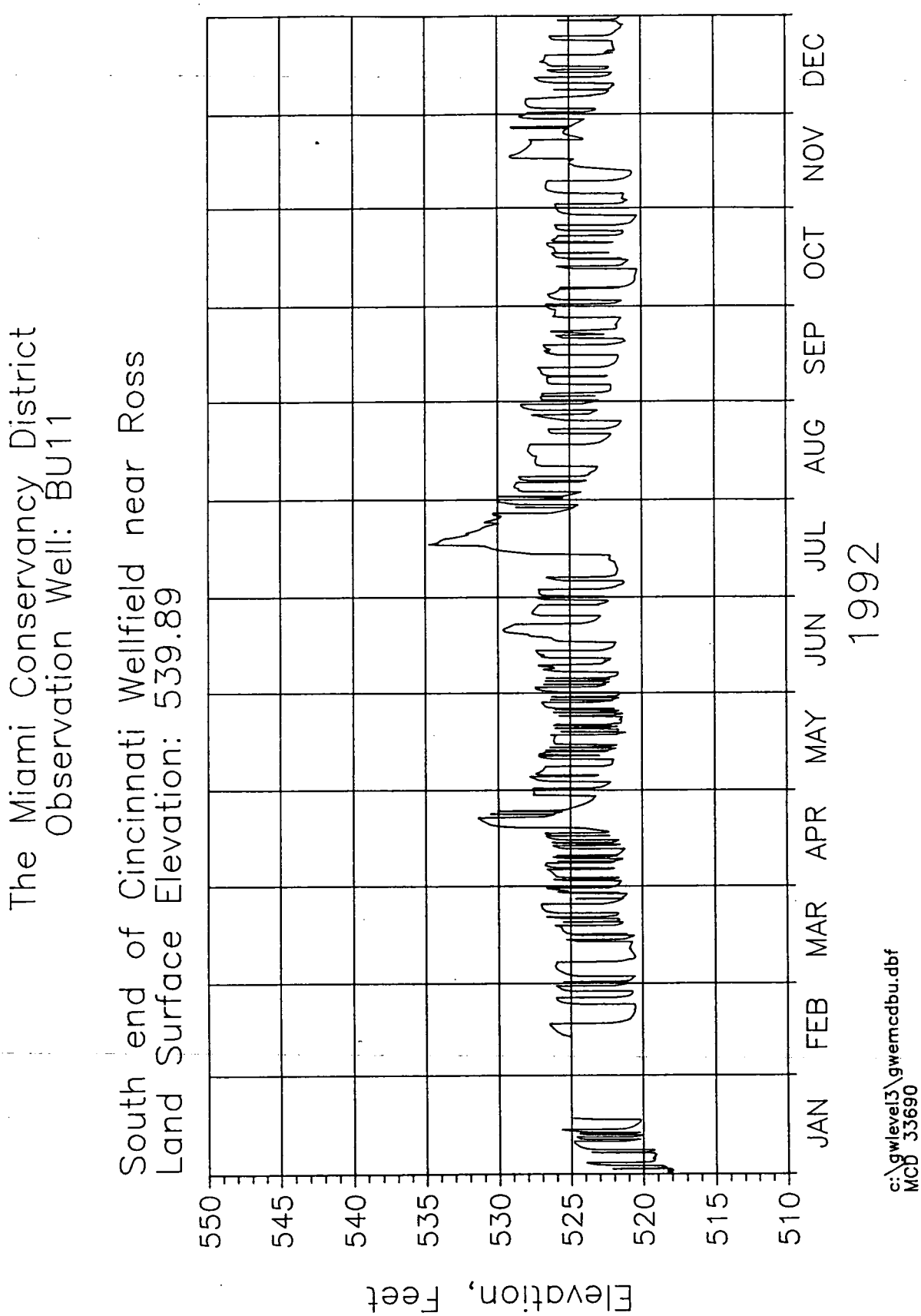
MCD 33231a

Figure 19


The Miami Conservancy District
Observation Well: BU11
South end of Cincinnati Wellfield near Ross
Land Surface Elevation: 539.89
Elevation, Feet
550
545
540
535
530
525
520
515
510
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC
1992
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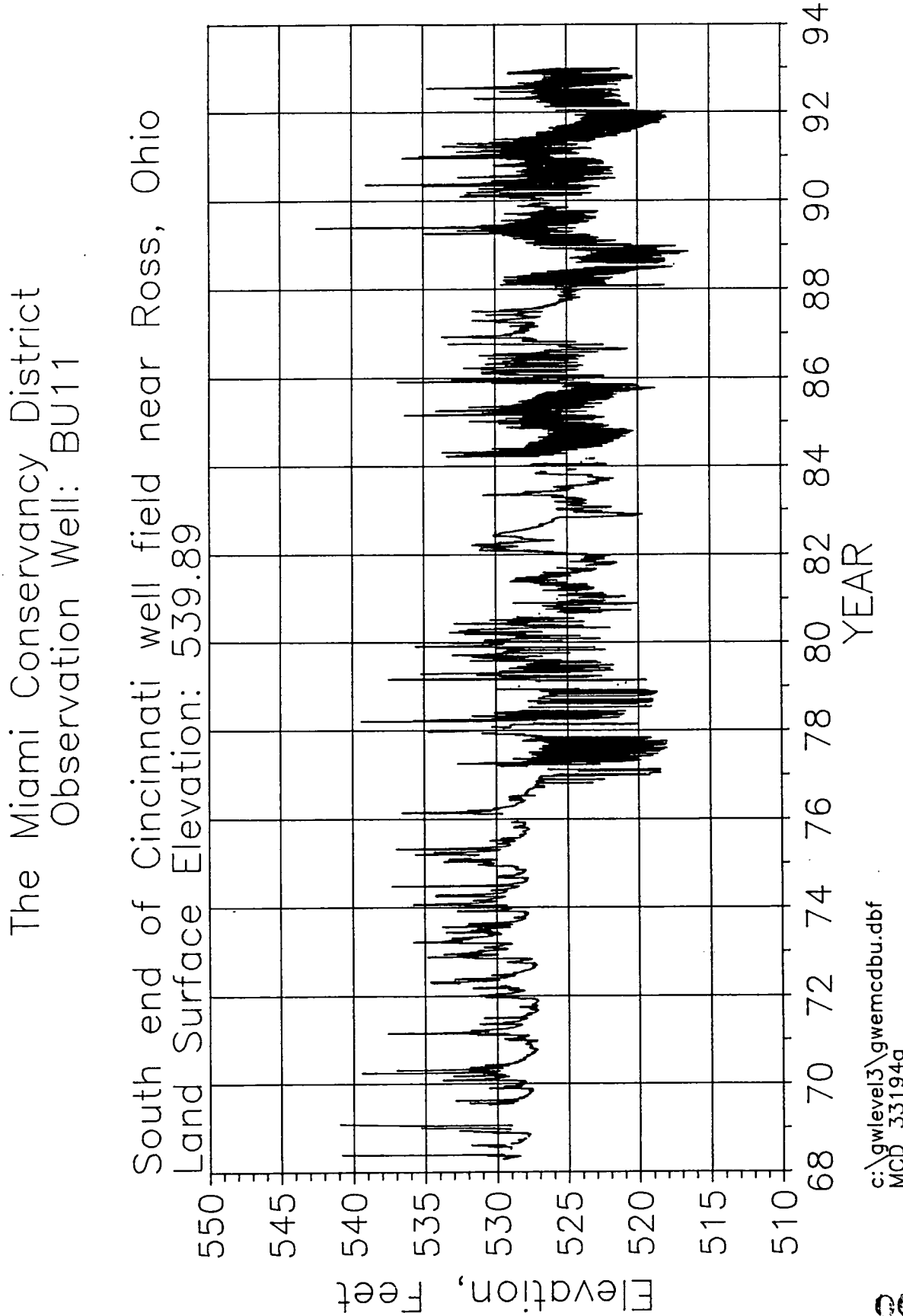
MCD 33690

Figure 20


The Miami Conservancy District
Observation Well: BU11
South end of Cincinnati well field near Ross, Ohio
Land Surface Elevation: 539.89
Elevation, Feet
550
545
540
535
530
525
520
515
510
68
70
72
74
76
78
80
82
84
86
88
90
92
94
YEAR
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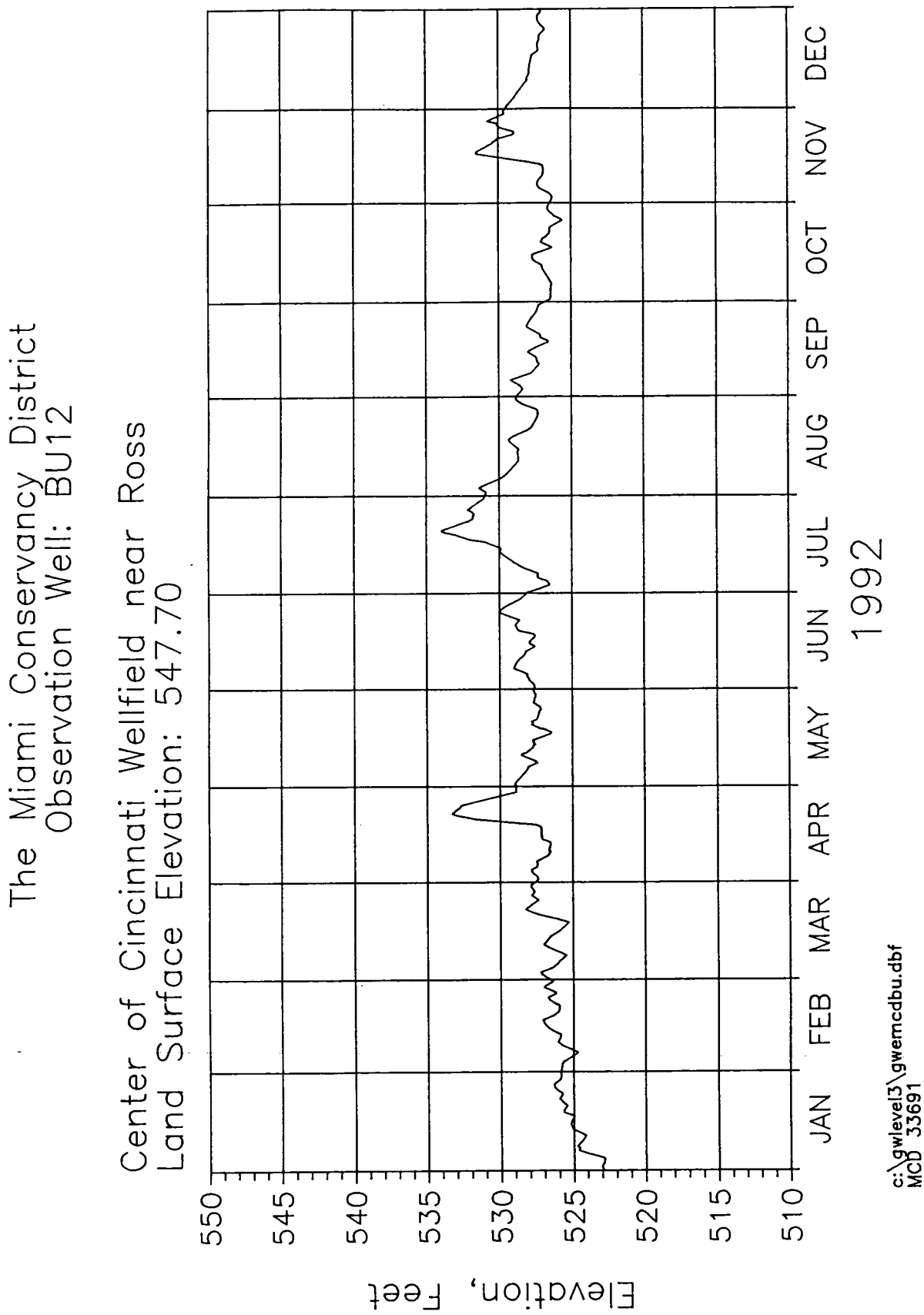
MCD 33194a

Figure 21


The Miami Conservancy District
Observation Well: BU12
Center of Cincinnati Wellfield near Ross
Land Surface Elevation: 547.70
Elevation, Feet
550
545
540
535
530
525
520
515
510
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC
1992
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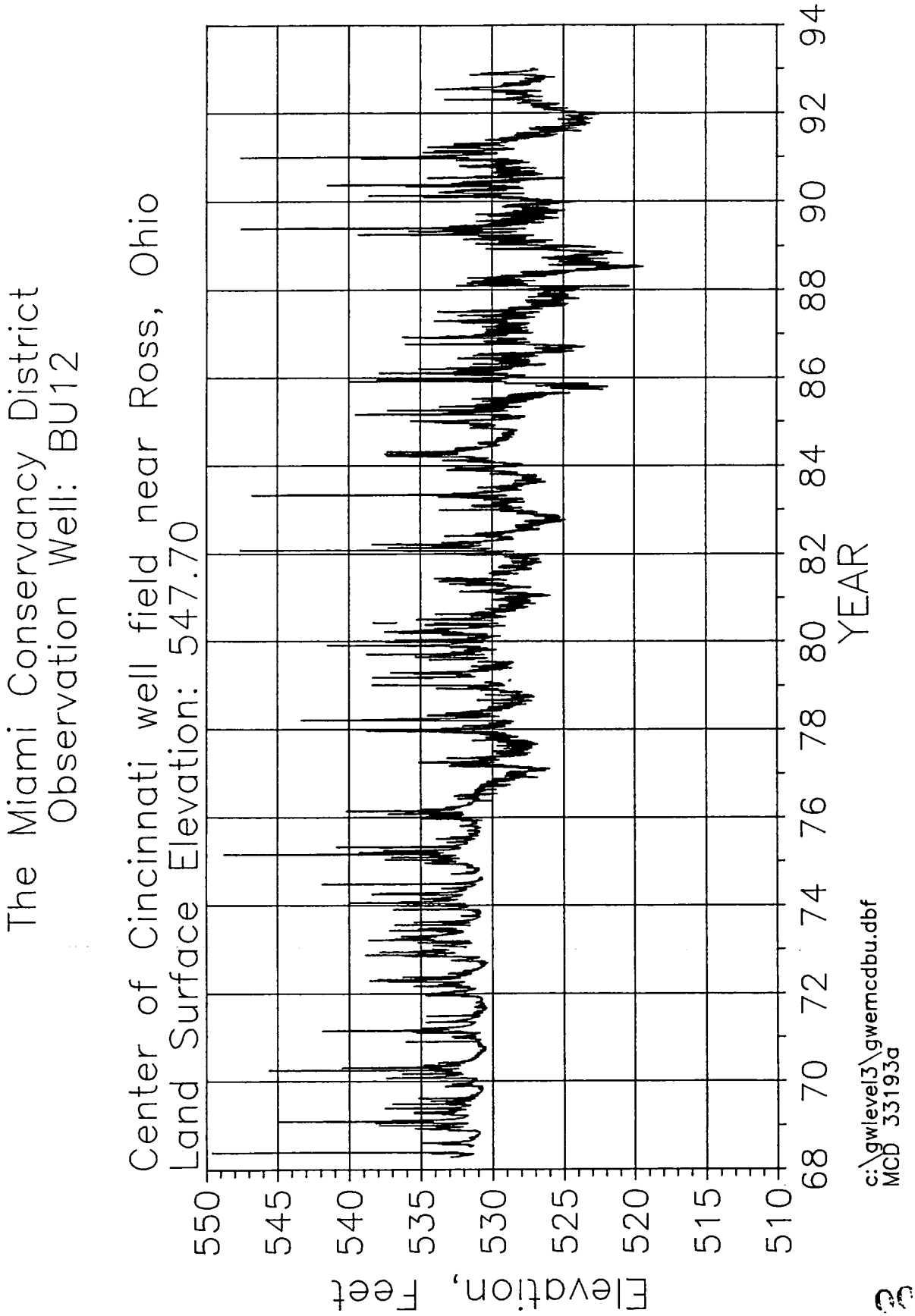
MCD 33691

Figure 22


The Miami Conservancy District
Observation Well: BU12
Center of Cincinnati well field near Ross, Ohio
Land Surface Elevation: 547.70
Elevation, Feet
550
545
540
535
530
525
520
515
510
68
70
72
74
76
78
80
82
84
86
88
90
92
94
YEAR
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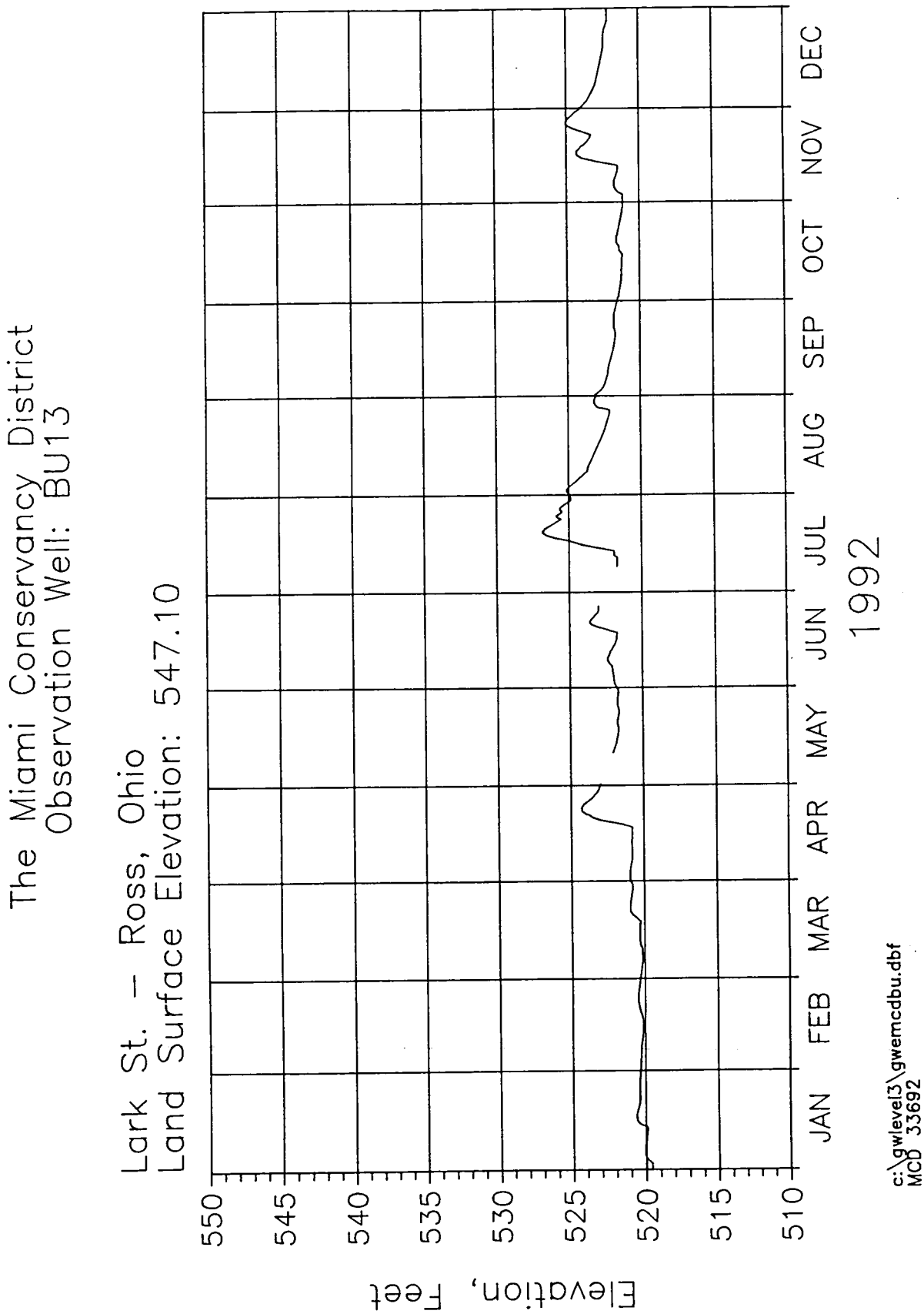
McD 33193a

Figure 23


The Miami Conservancy District
Observation Well: BU13
Lark St. - Ross, Ohio
Land Surface Elevation: 547.10
Elevation, Feet
550
545
540
535
530
525
520
515
510
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC
1992
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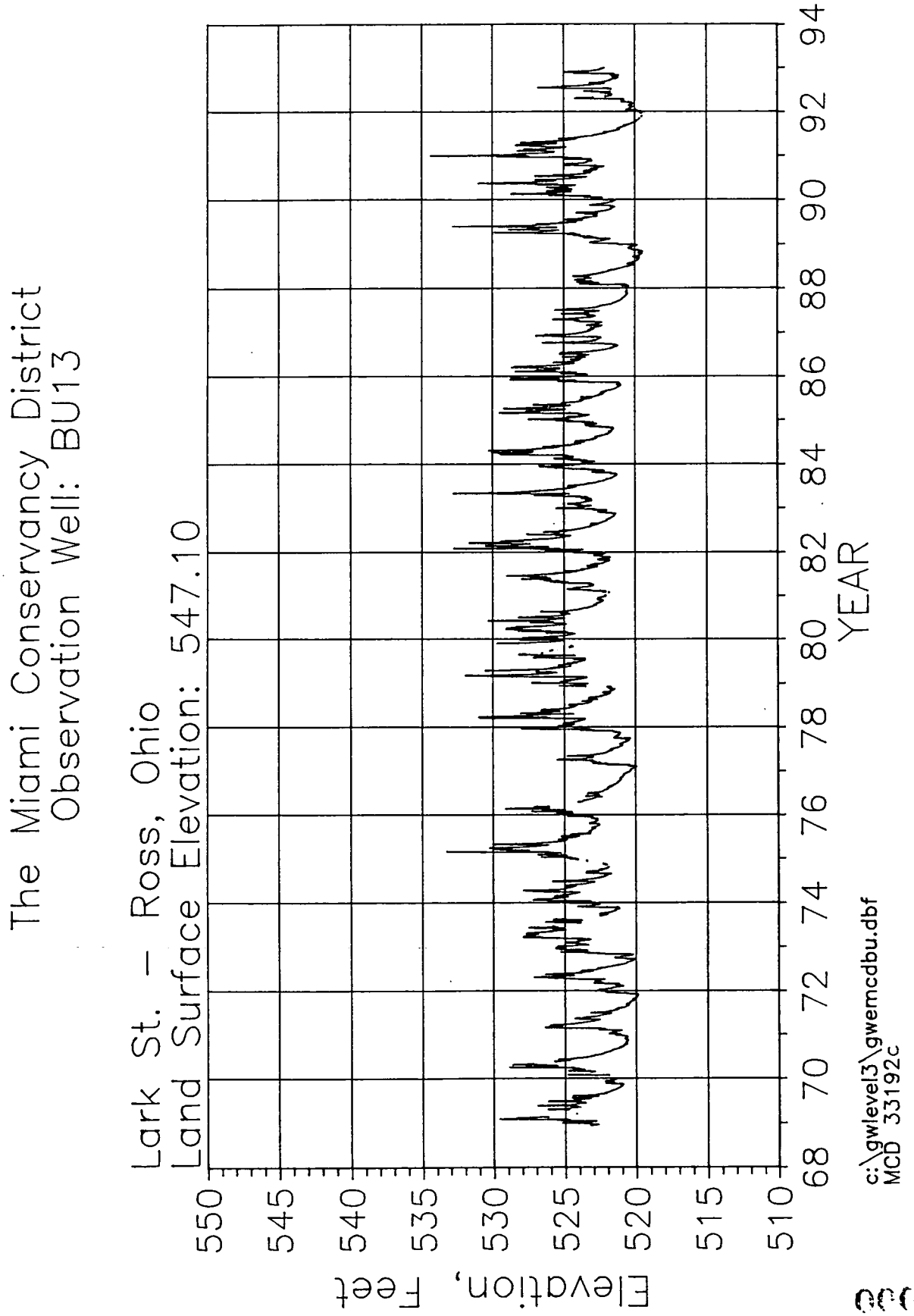
MCD 33692

Figure 24


The Miami Conservancy District
Observation Well: BU13
Lark St. - Ross, Ohio
Land Surface Elevation: 547.10
Elevation, Feet
550
545
540
535
530
525
520
515
510
68
70
72
74
76
78
80
82
84
86
88
90
92
94
YEAR
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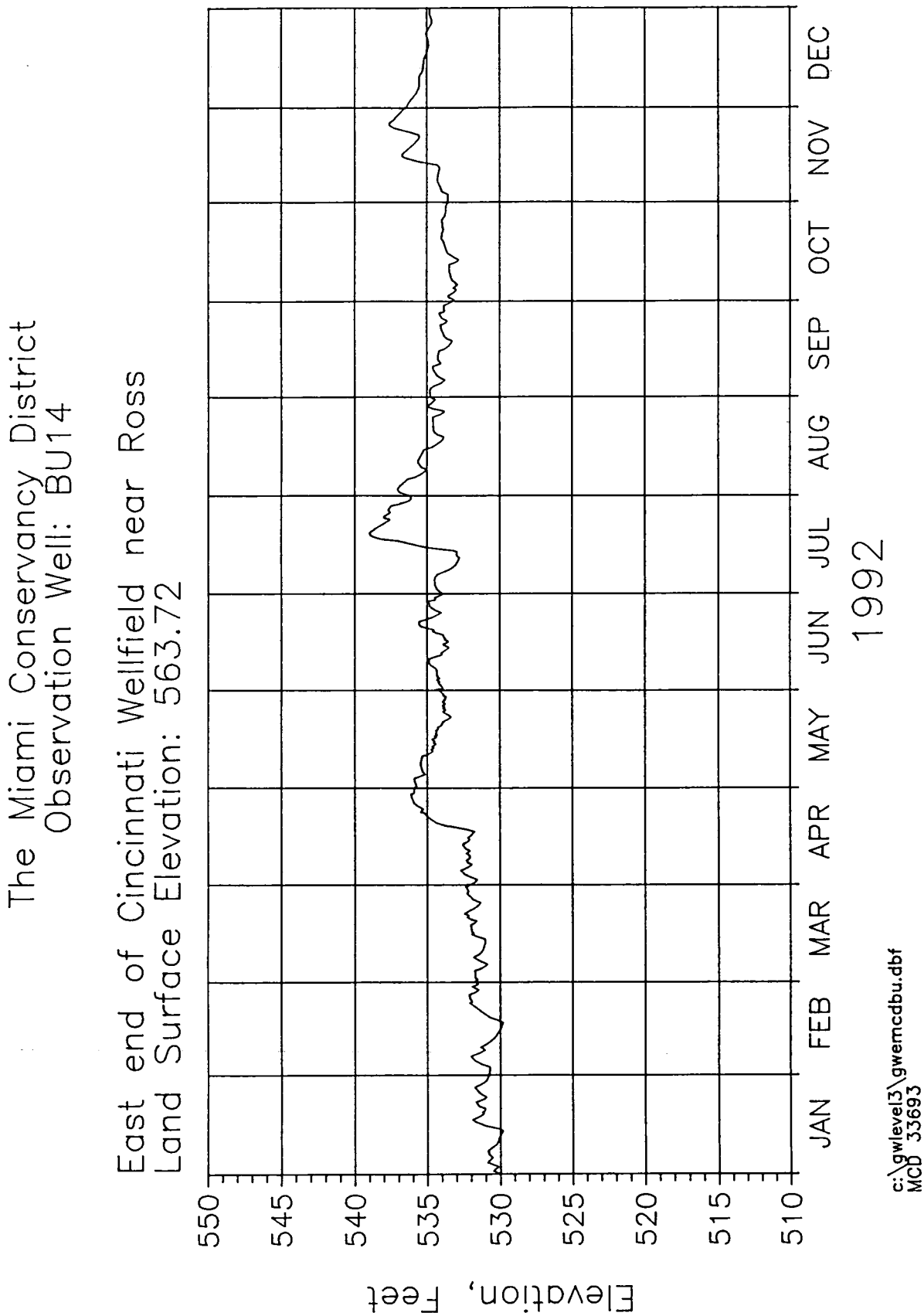
MCD 33192c

Figure 25


The Miami Conservancy District
Observation Well: BU14
East end of Cincinnati Wellfield near Ross
Land Surface Elevation: 563.72
Elevation, Feet
550
545
540
535
530
525
520
515
510
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC
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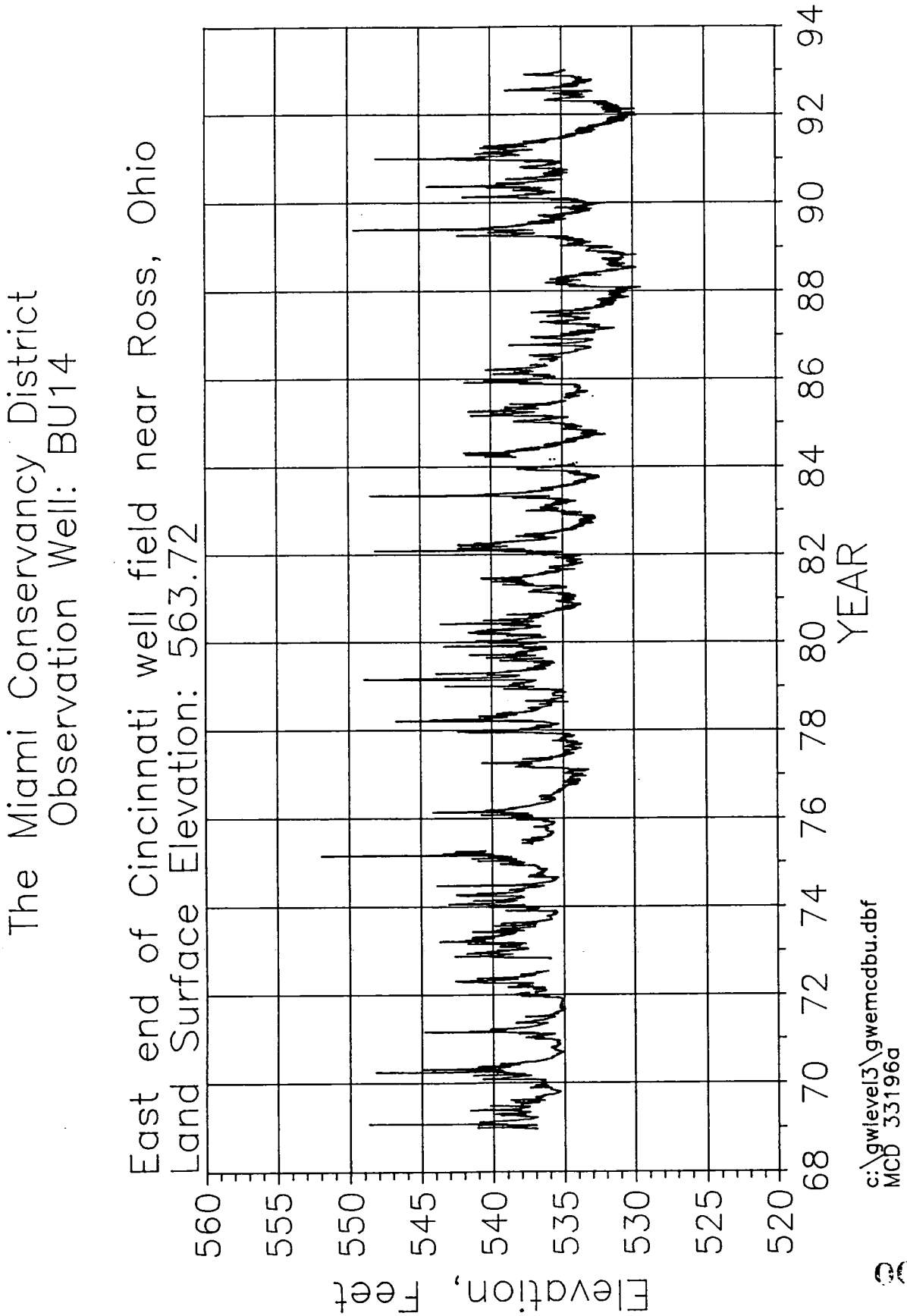
MCD 33693

Figure 26


The Miami Conservancy District
Observation Well: BU14
East end of Cincinnati well field near Ross, Ohio
Land Surface Elevation: 563.72
Elevation, Feet
560
555
550
545
540
535
530
525
520
68
70
72
74
76
78
80
82
84
86
88
90
92
94
YEAR
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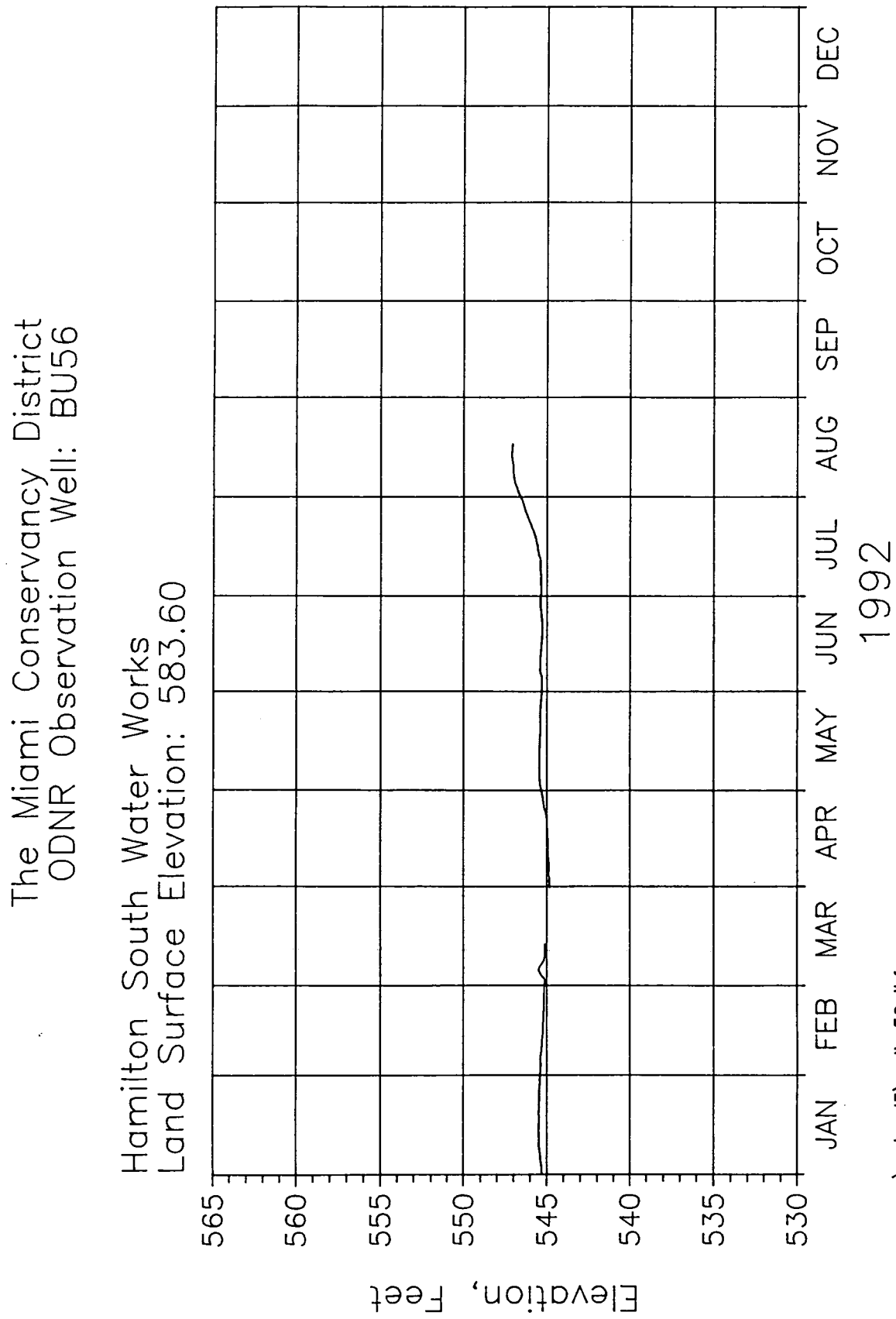
McD 33196a

Figure 27

7416



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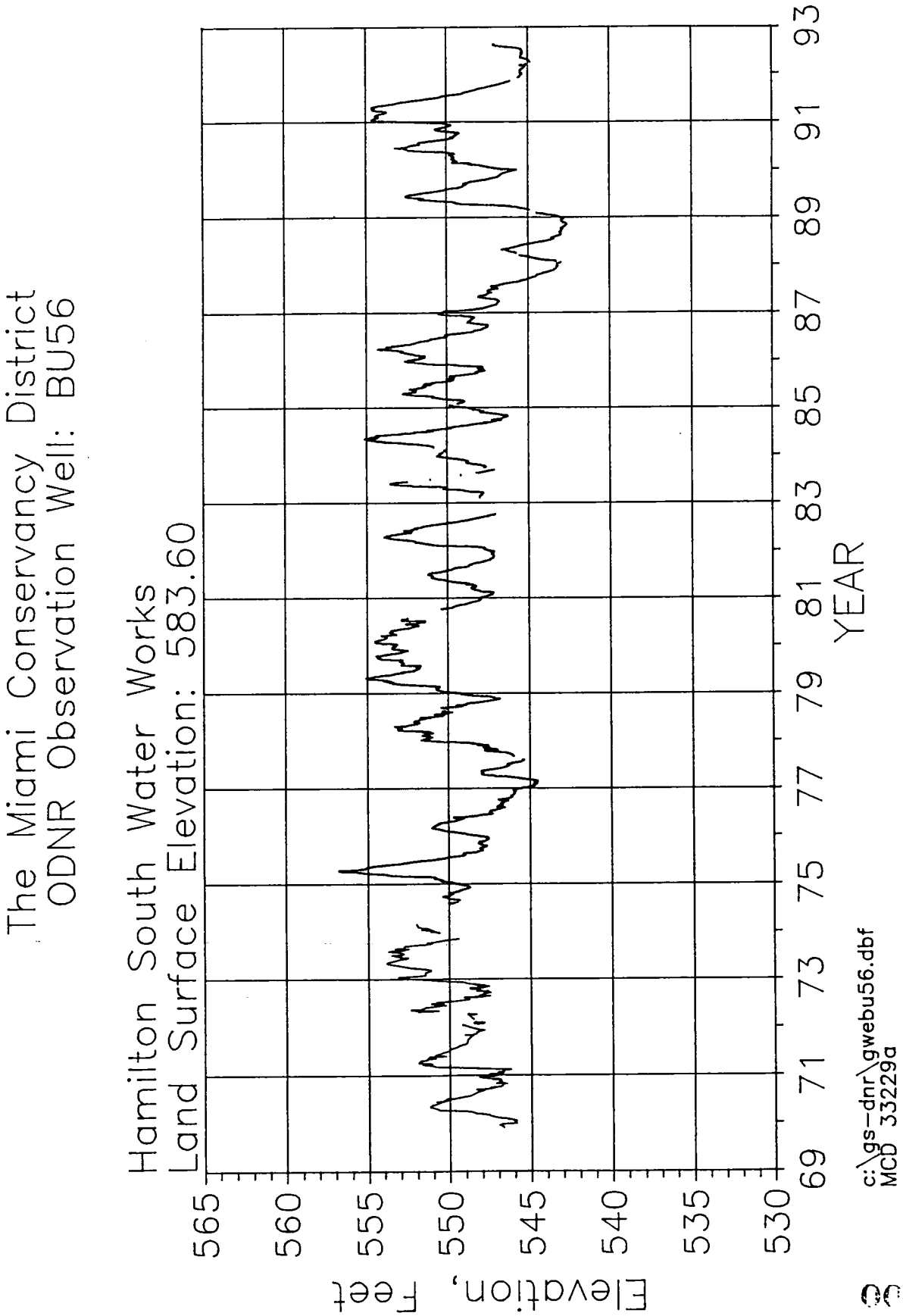

The Miami Conservancy District
ODNR Observation Well: BU56
Hamilton South Water Works
Land Surface Elevation: 583.60
Elevation, Feet
565
560
555
550
545
540
535
530
69
71
73
75
77
79
81
83
85
87
89
91
93
YEAR
c:\gs-dnr\gwebu56.dbf
MCD 33229a

Figure 29

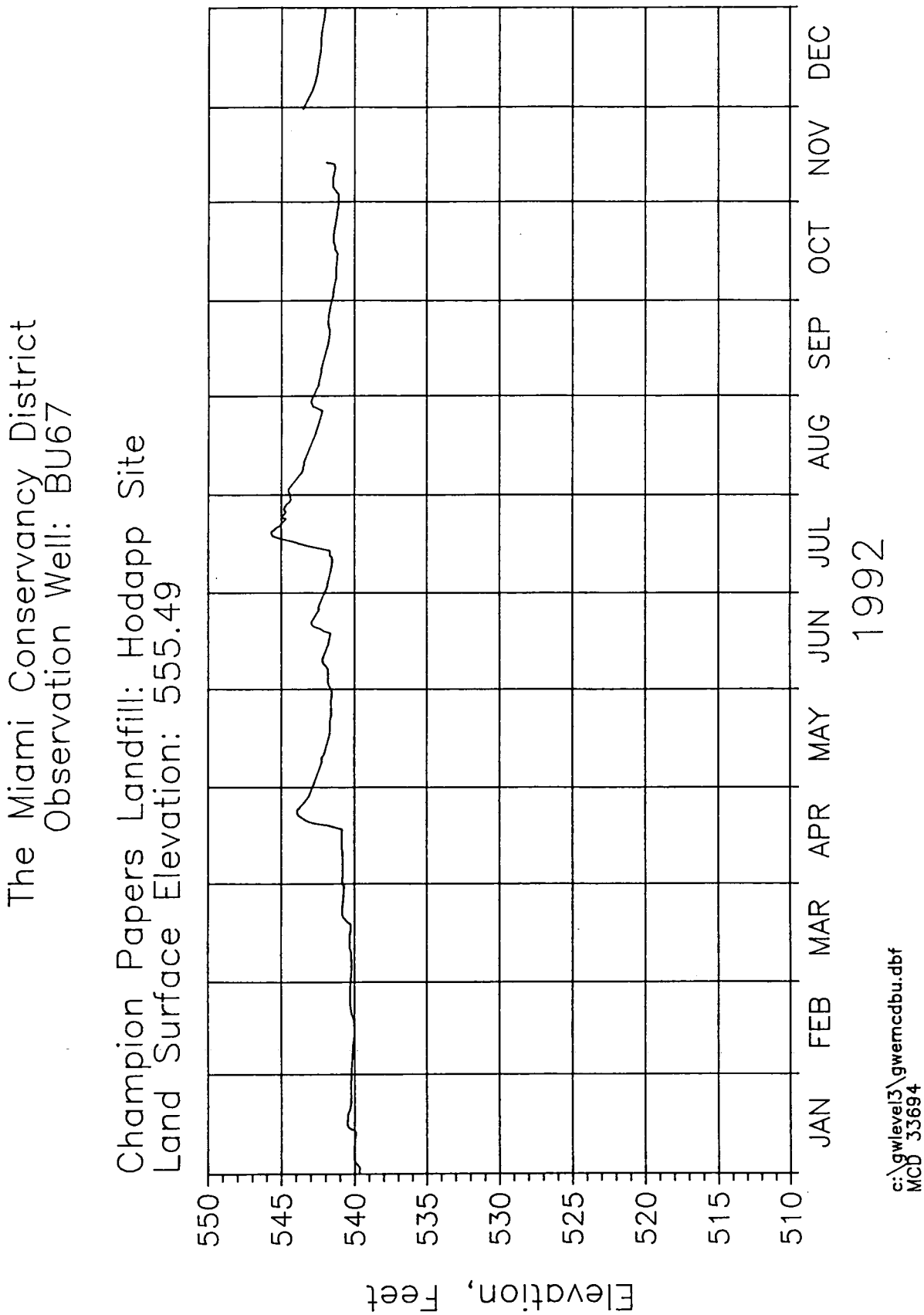

The Miami Conservancy District
Observation Well: BU67
Champion Papers Landfill: Hodapp Site
Land Surface Elevation: 555.49
Elevation, Feet
550
545
540
535
530
525
520
515
510
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC
1992
c:\gwlevel3\gwemcdbu.dbf
McD 33694

Figure 30

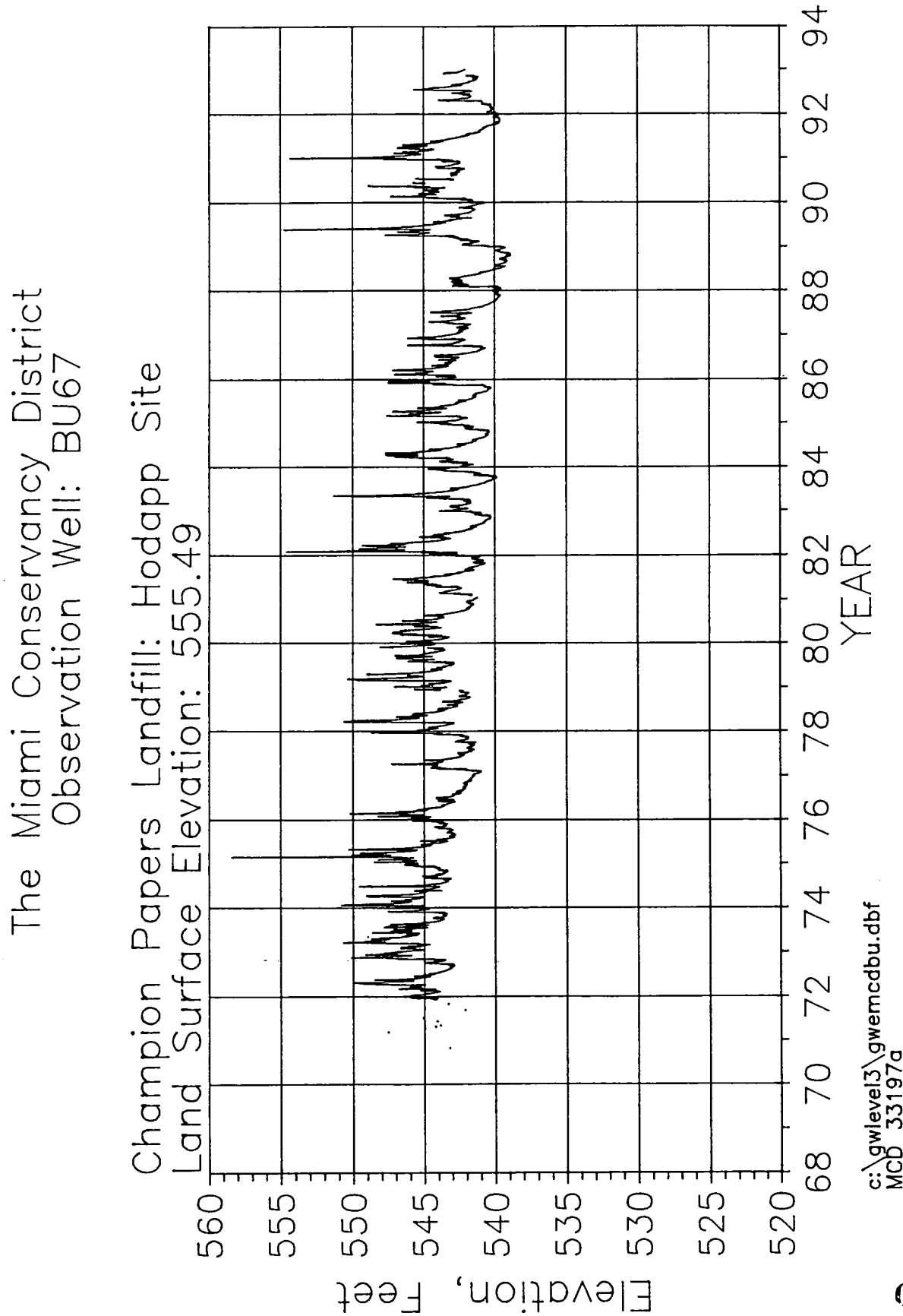
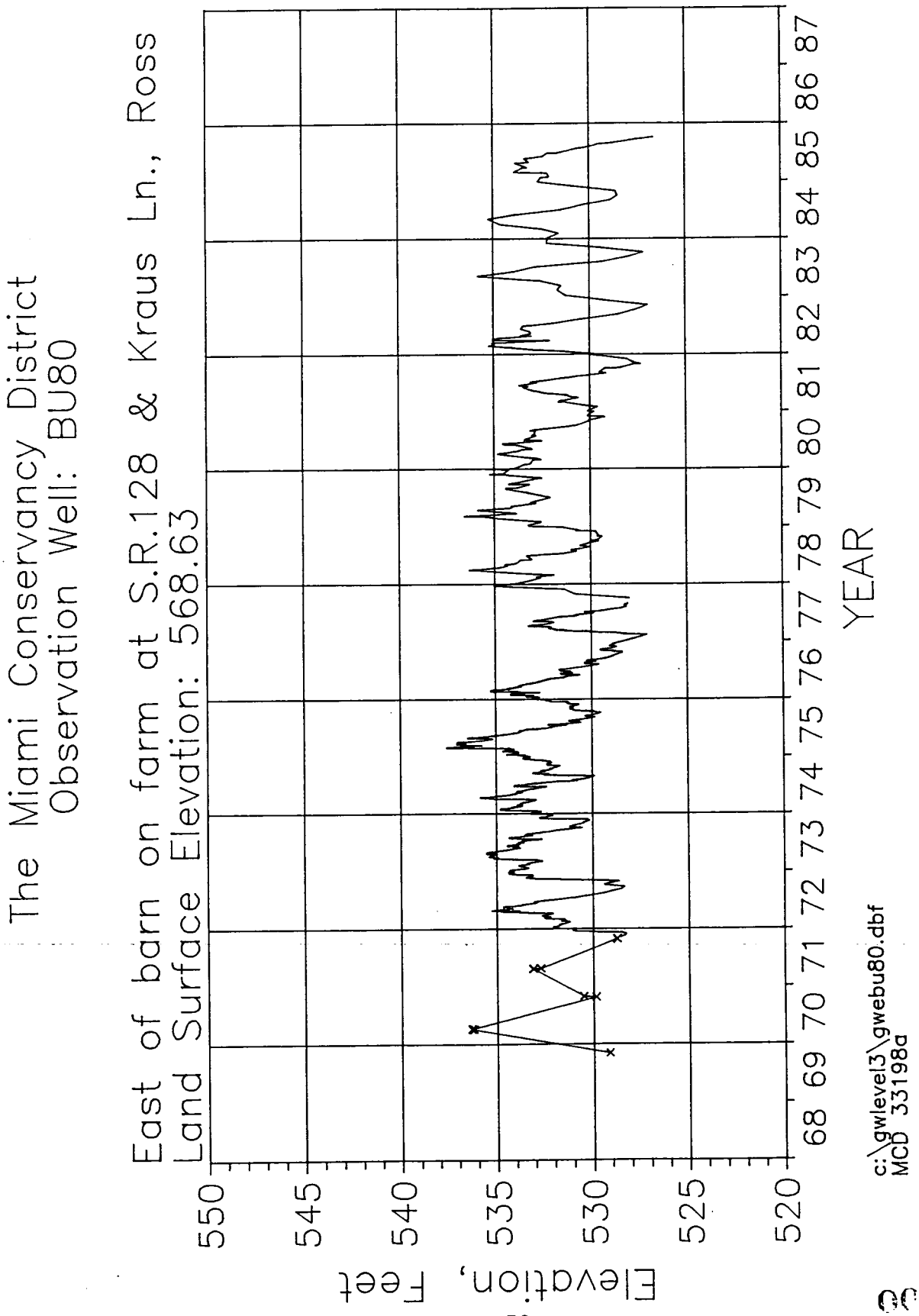
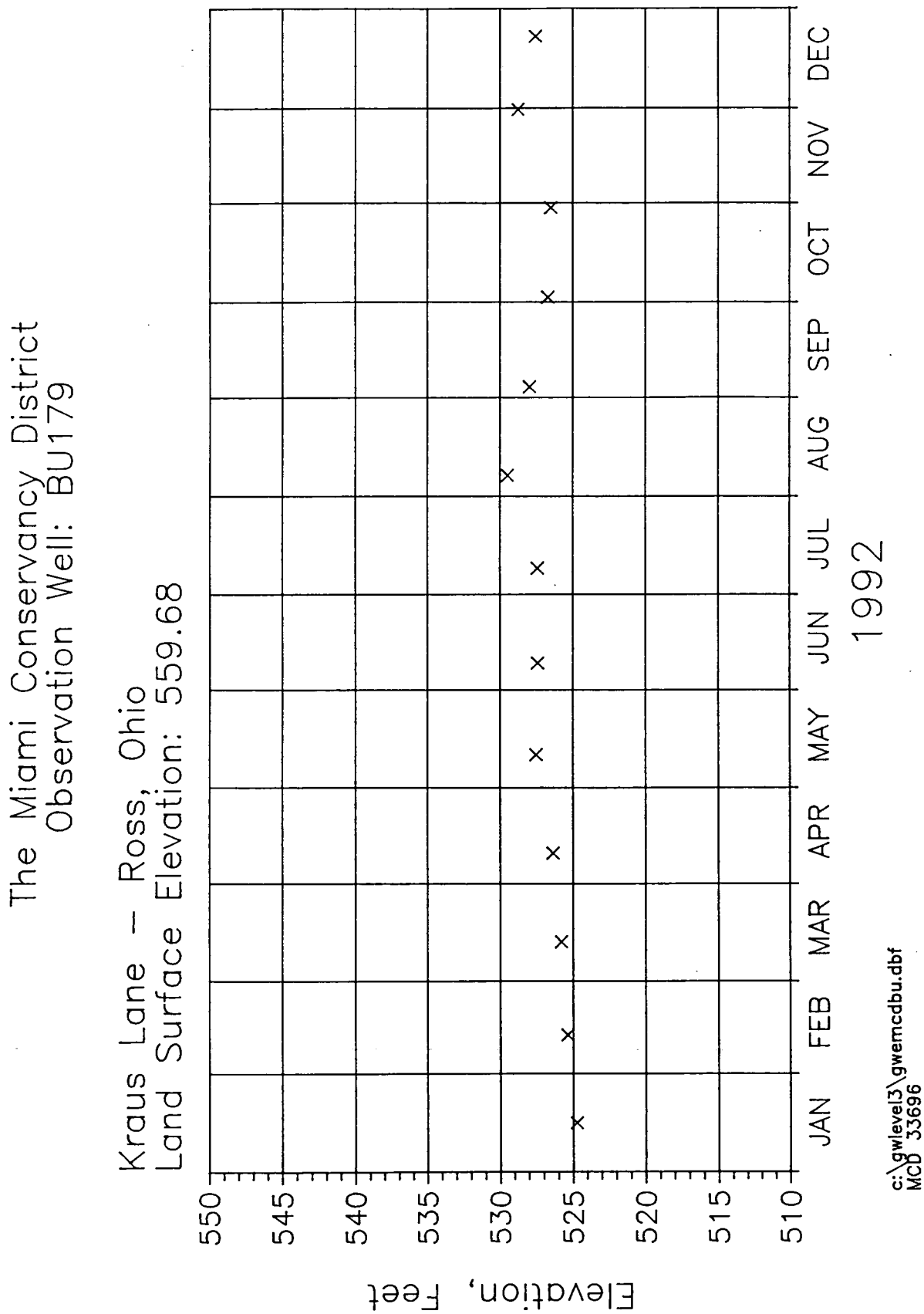

The Miami Conservancy District
Observation Well: BU67
Champion Papers Landfill: Hodapp Site
Land Surface Elevation: 555.49
Elevation, Feet
560
555
550
545
540
535
530
525
520
68
70
72
74
76
78
80
82
84
86
88
90
92
94
YEAR
c:\gwlevel3\gwemcdbu.dbf
McD 33197a

Figure 31


The Miami Conservancy District
Observation Well: BU80
East of barn on farm at S.R.128 & Kraus Ln., Ross
Land Surface Elevation: 568.63
Elevation, Feet
550
545
540
535
530
525
520
68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87
YEAR
c:\gwlevel3\gwebu80.dbf
MCD 33198a

7416


The Miami Conservancy District
Observation Well: BU179
Kraus Lane - Ross, Ohio
Land Surface Elevation: 559.68
Elevation, Feet
550
545
540
535
530
525
520
515
510
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC
1992
c:\gwlevel3\gwemcdbu.dbf
McD 33696

000038

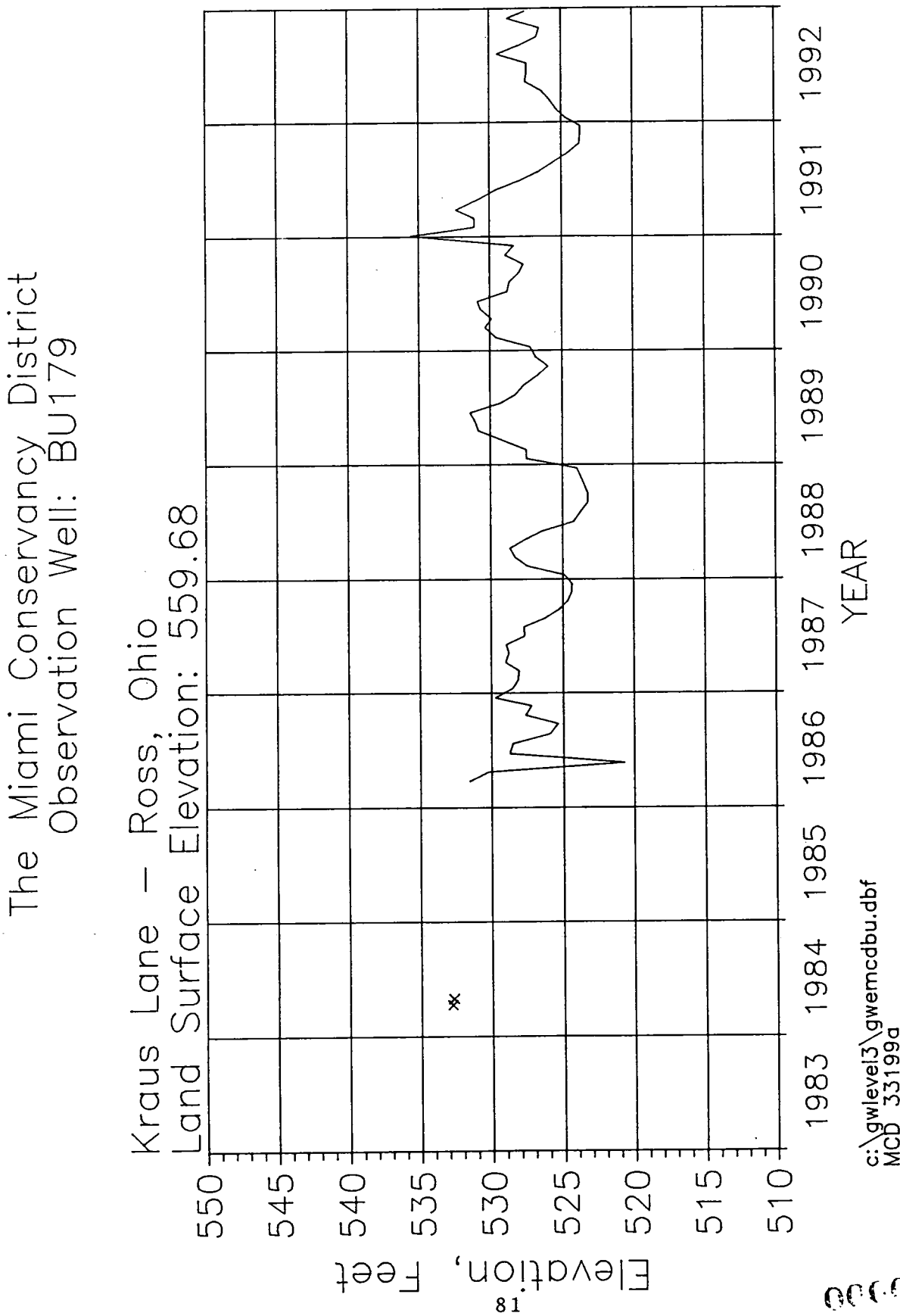
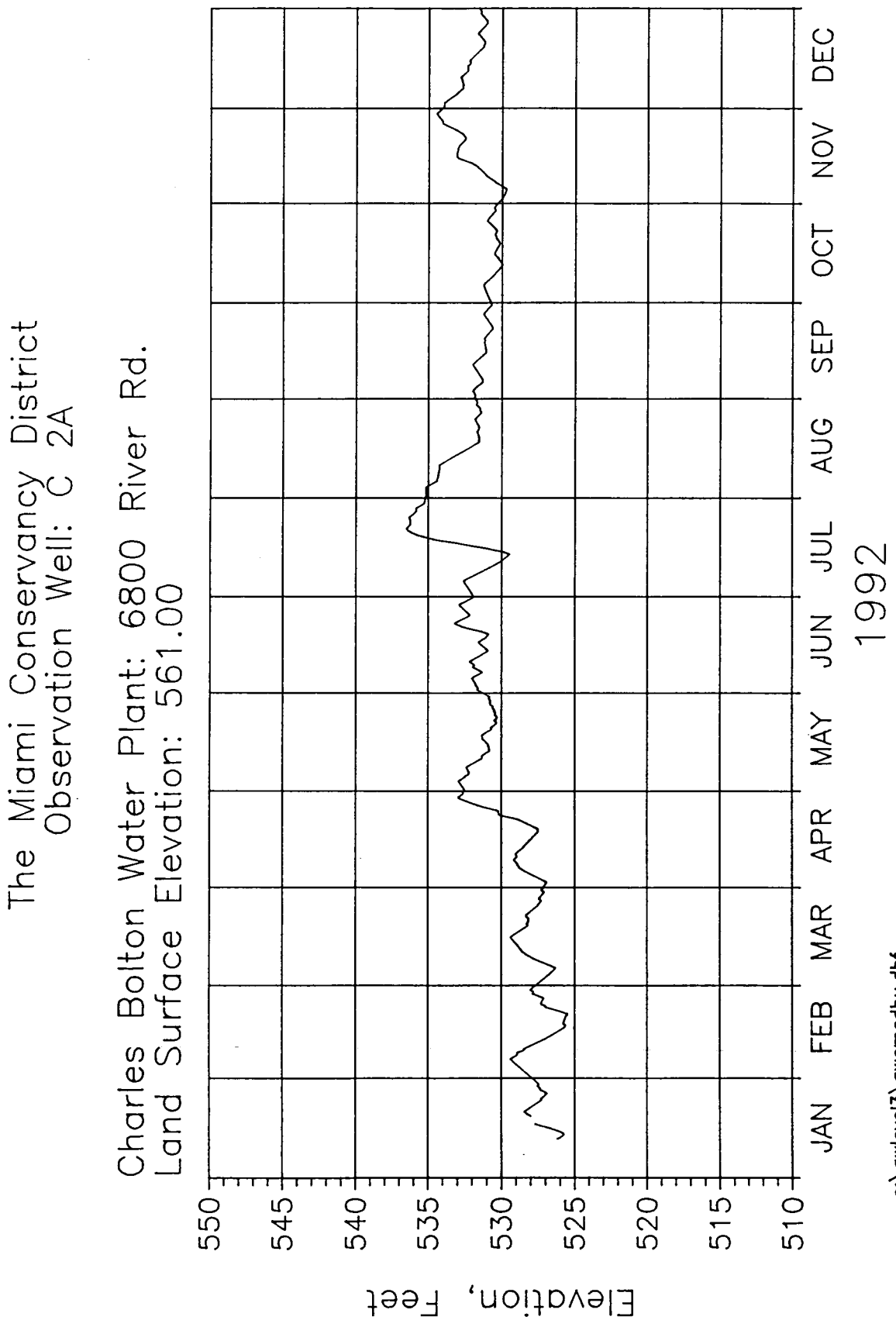

The Miami Conservancy District
Observation Well: BU179
Kraus Lane – Ross, Ohio
Land Surface Elevation: 559.68
Elevation, Feet
550
545
540
535
530
525
520
515
510
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
YEAR
c:\gwlevel3\gwemcdbu.dbf
MCD 33199a

Figure 34


The Miami Conservancy District
Observation Well: C 2A
Charles Bolton Water Plant: 6800 River Rd.
Land Surface Elevation: 561.00
550
545
540
535
530
525
520
515
510
Elevation, Feet
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC
1992
c:\gwlevel3\gwemcdbu.dbf
MCD 33695

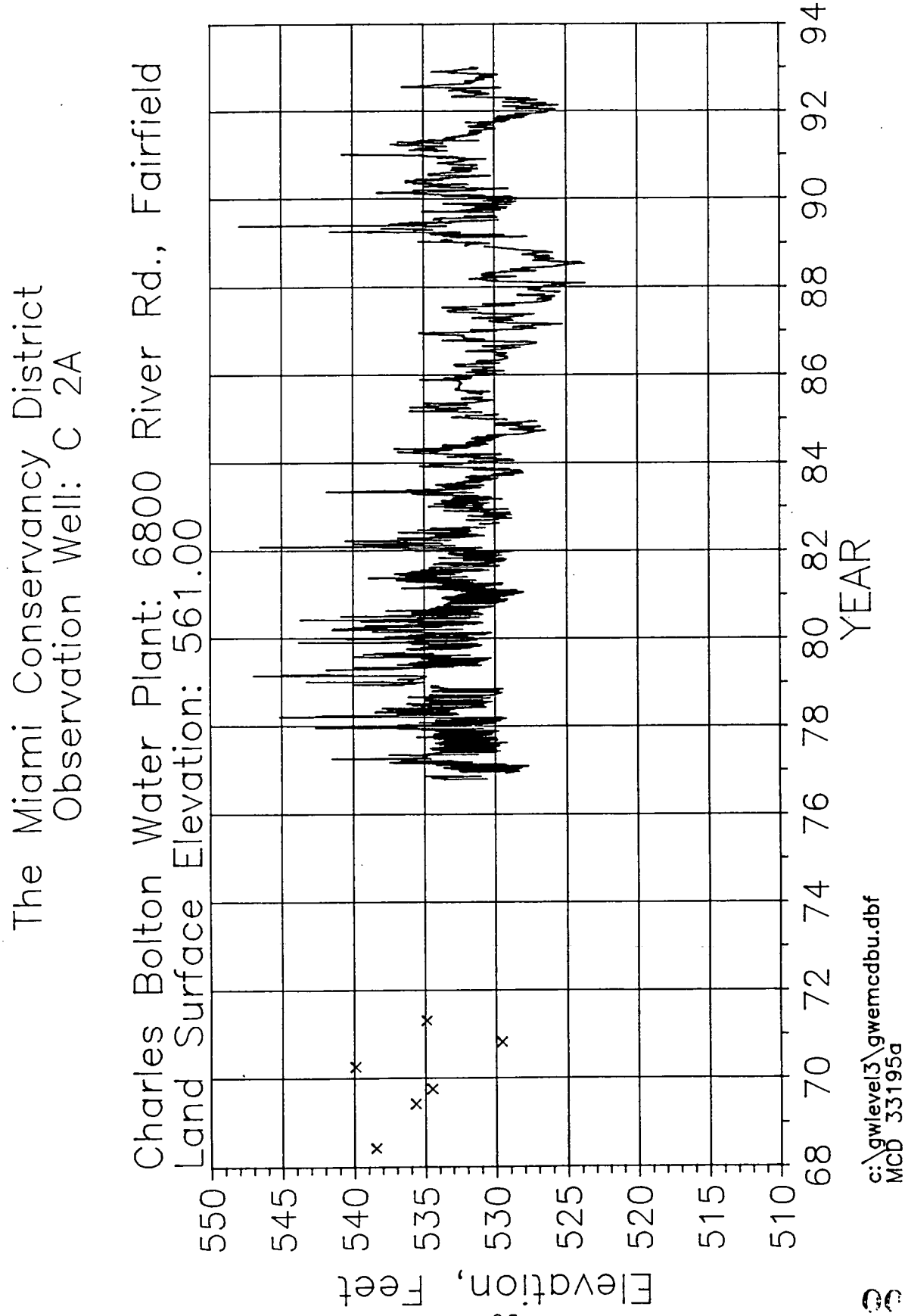
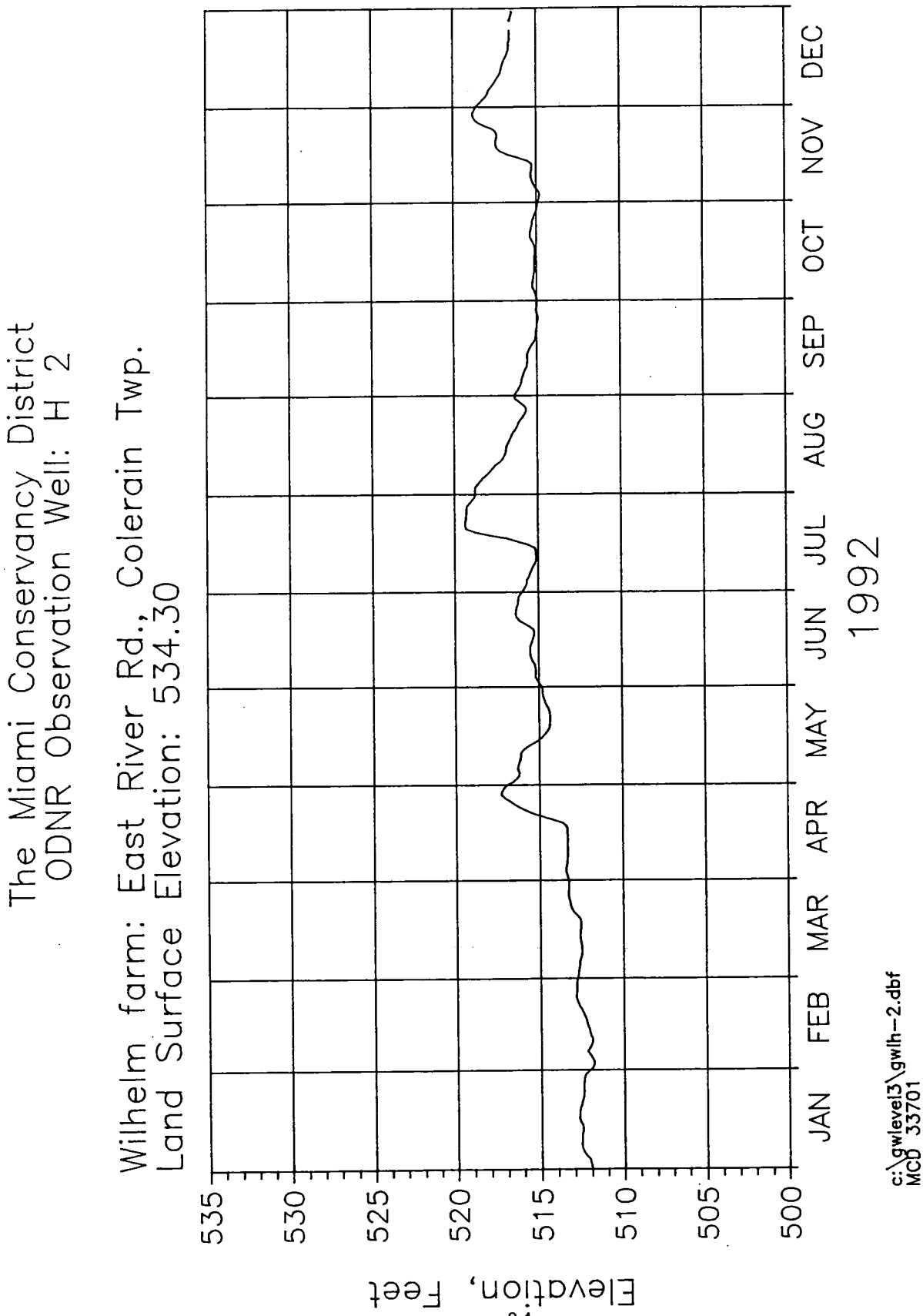
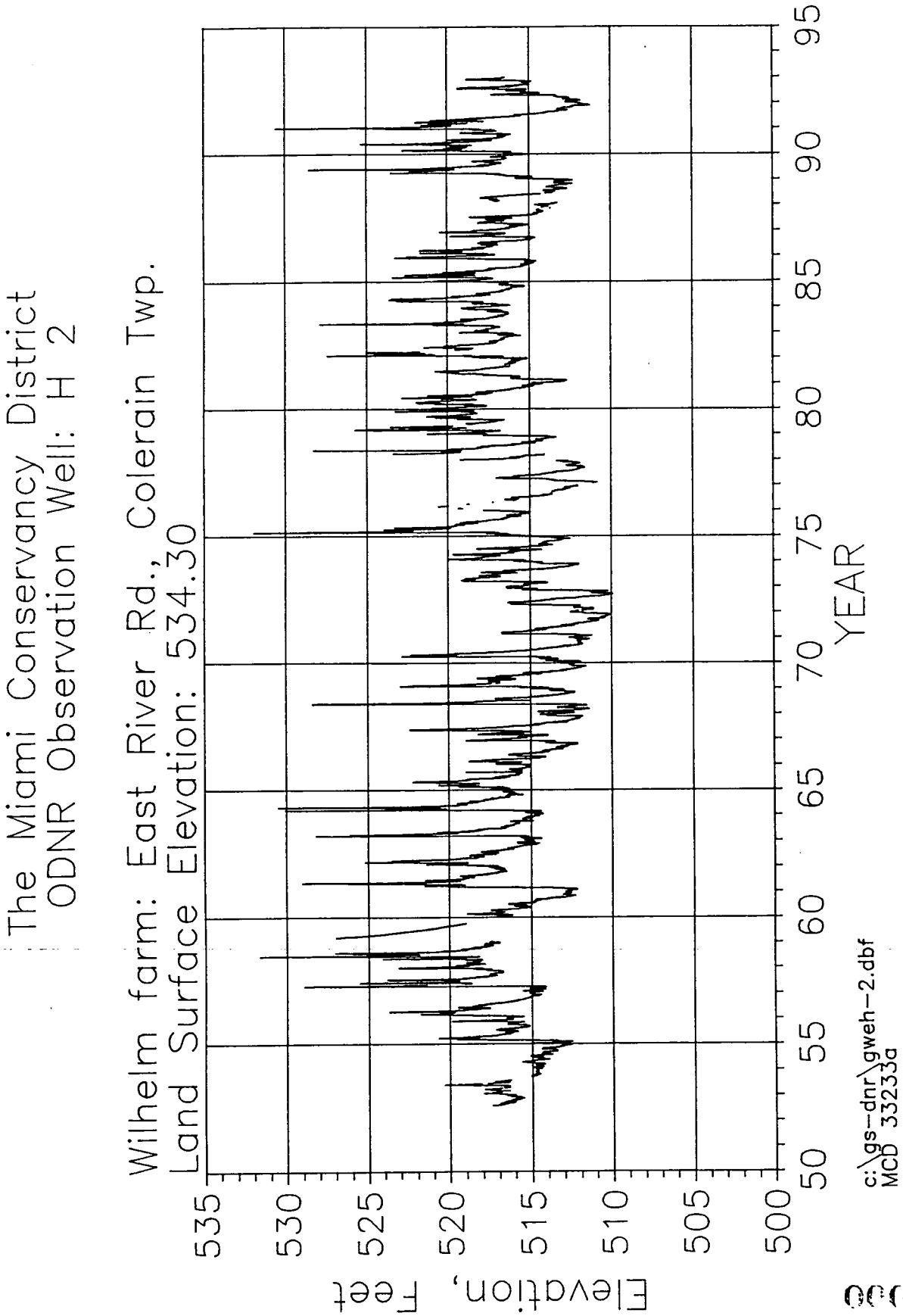

The Miami Conservancy District
Observation Well: C 2A
Charles Bolton Water Plant: 6800 River Rd., Fairfield
Land Surface Elevation: 561.00
Elevation, Feet
550
545
540
535
530
525
520
515
510
68
70
72
74
76
78
80
82
84
86
88
90
92
94
YEAR
c:\gwlevel3\gwemcdbu.dbf
McD 33195a

Figure 36


The Miami Conservancy District
ODNR Observation Well: H 2
Wilhelm farm: East River Rd., Colerain Twp.
Land Surface Elevation: 534.30
535
530
525
520
515
510
505
500
Elevation, Feet
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC
1992
c:\gwlevel3\gwlh-2.dbf
McD 33701


The Miami Conservancy District
ODNR Observation Well: H 2
Wilhelm farm: East River Rd., Colerain Twp.
Land Surface Elevation: 534.30
Elevation, Feet
535
530
525
520
515
510
505
500
YEAR
50
55
60
65
70
75
80
85
90
95
c:\gs-dnr\gweh-2.dbf
MCD 332330

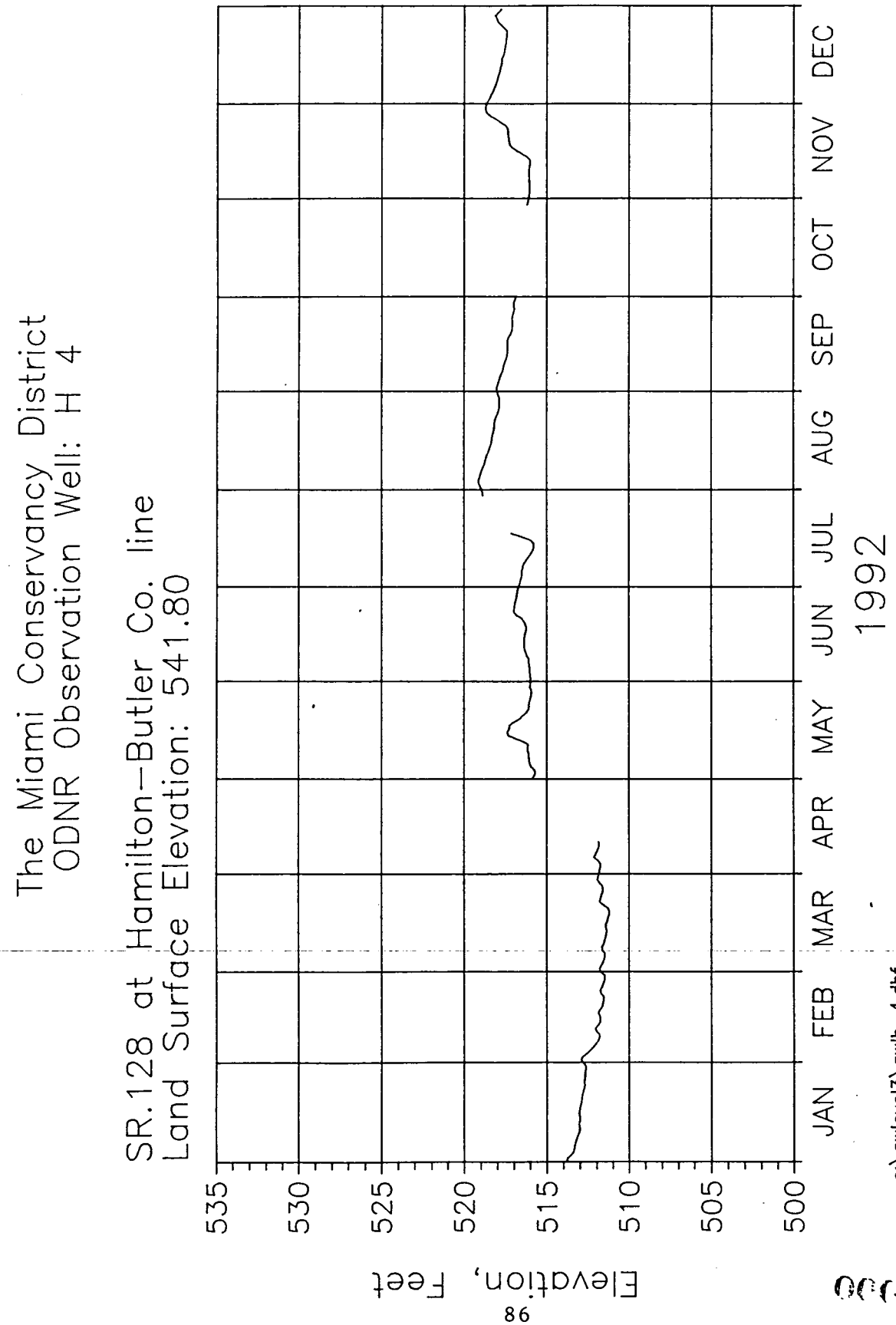
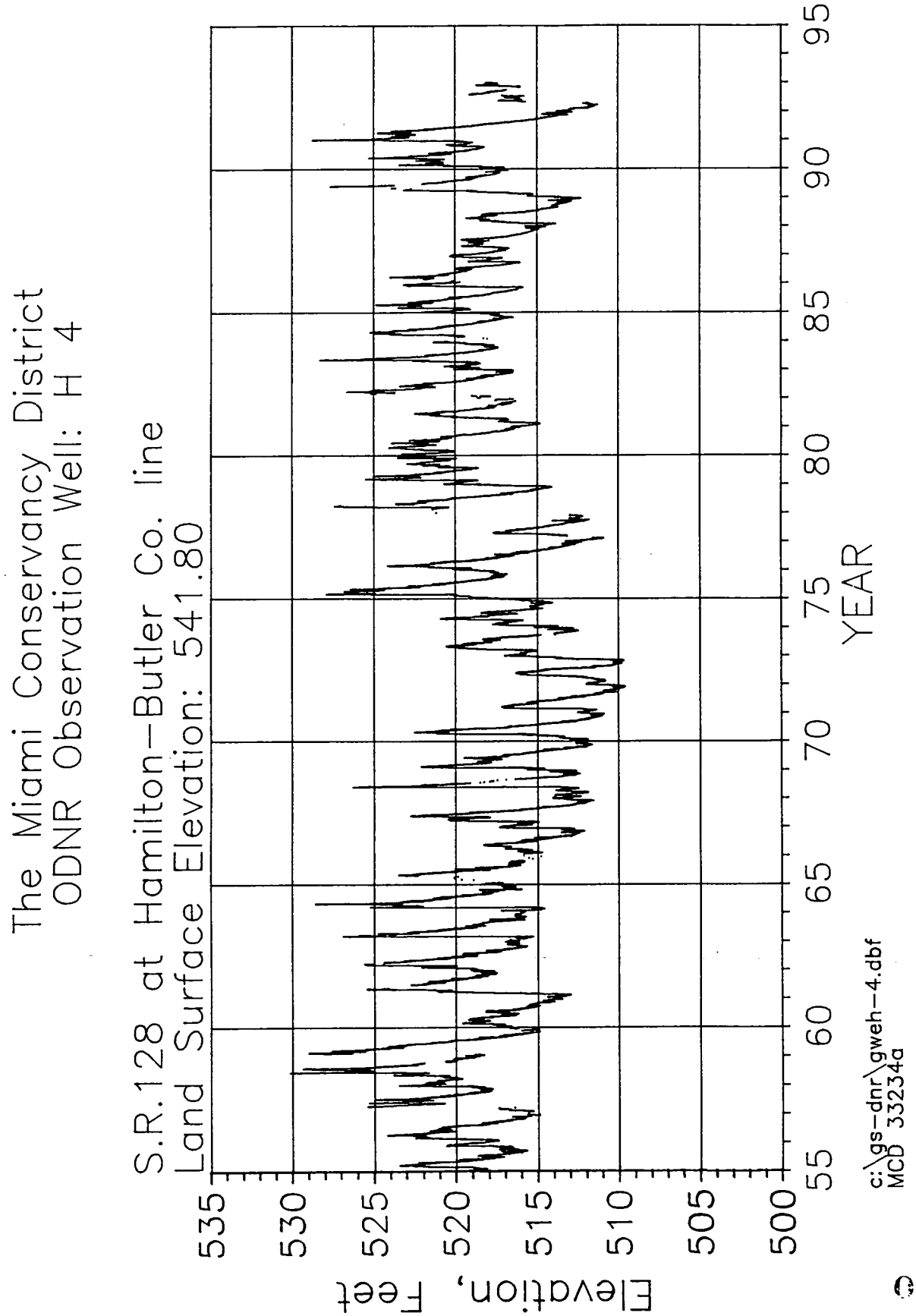

The Miami Conservancy District
ODNR Observation Well: H 4
SR.128 at Hamilton-Butler Co. line
Land Surface Elevation: 541.80
535
530
525
520
515
510
505
500
Elevation, Feet
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC
1992
c:\gwlevel3\gwlh-4.dbf
MCD 33702

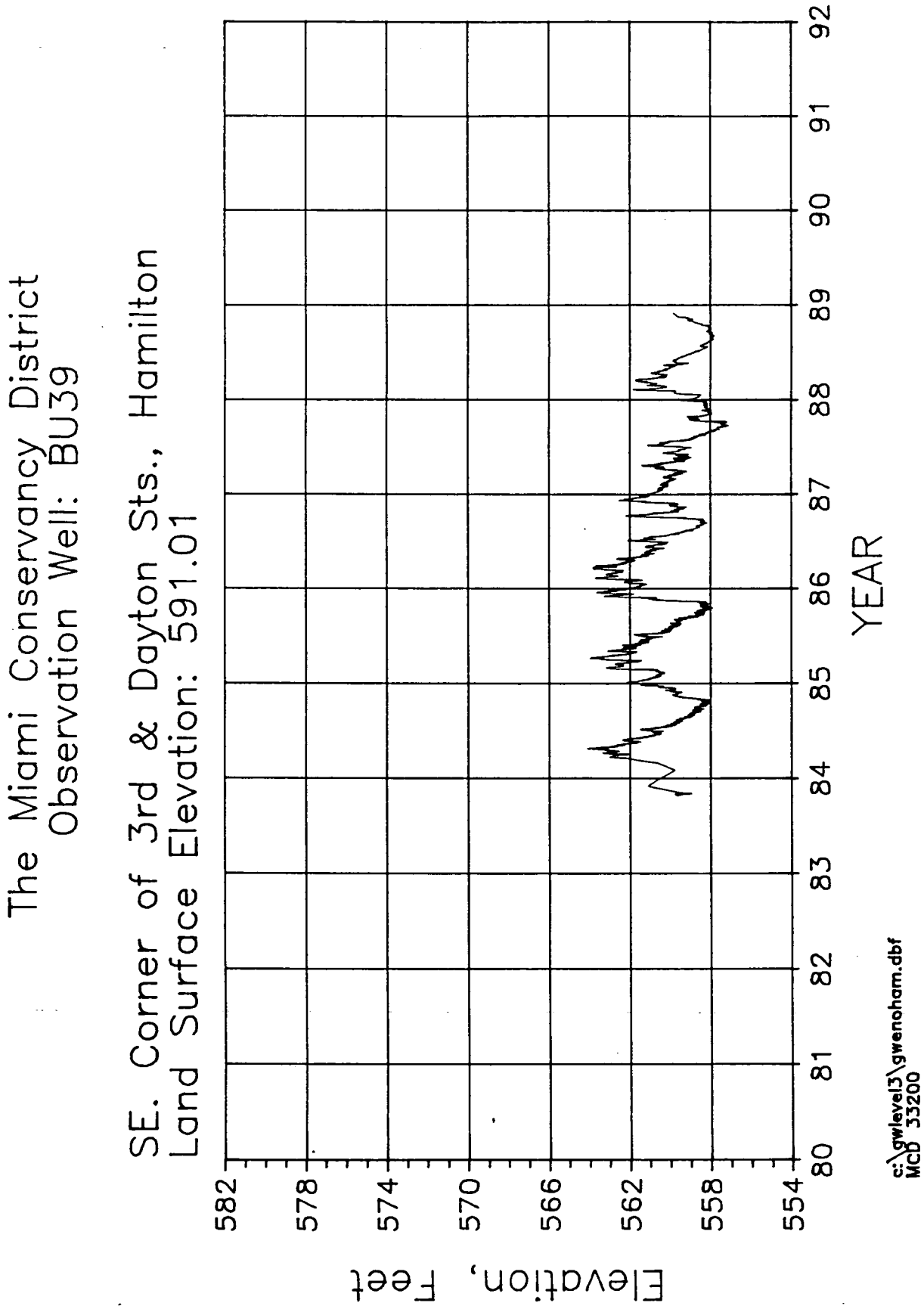
Figure 39

7416



000095

7416


The Miami Conservancy District
Observation Well: BU39
SE. Corner of 3rd & Dayton Sts., Hamilton
Land Surface Elevation: 591.01
Elevation, Feet
582
578
574
570
566
562
558
554
80
81
82
83
84
85
86
87
88
89
90
91
92
YEAR
c:\gwlevel3\gwenoham.dbf
MCD 33200

960000

Figure 41

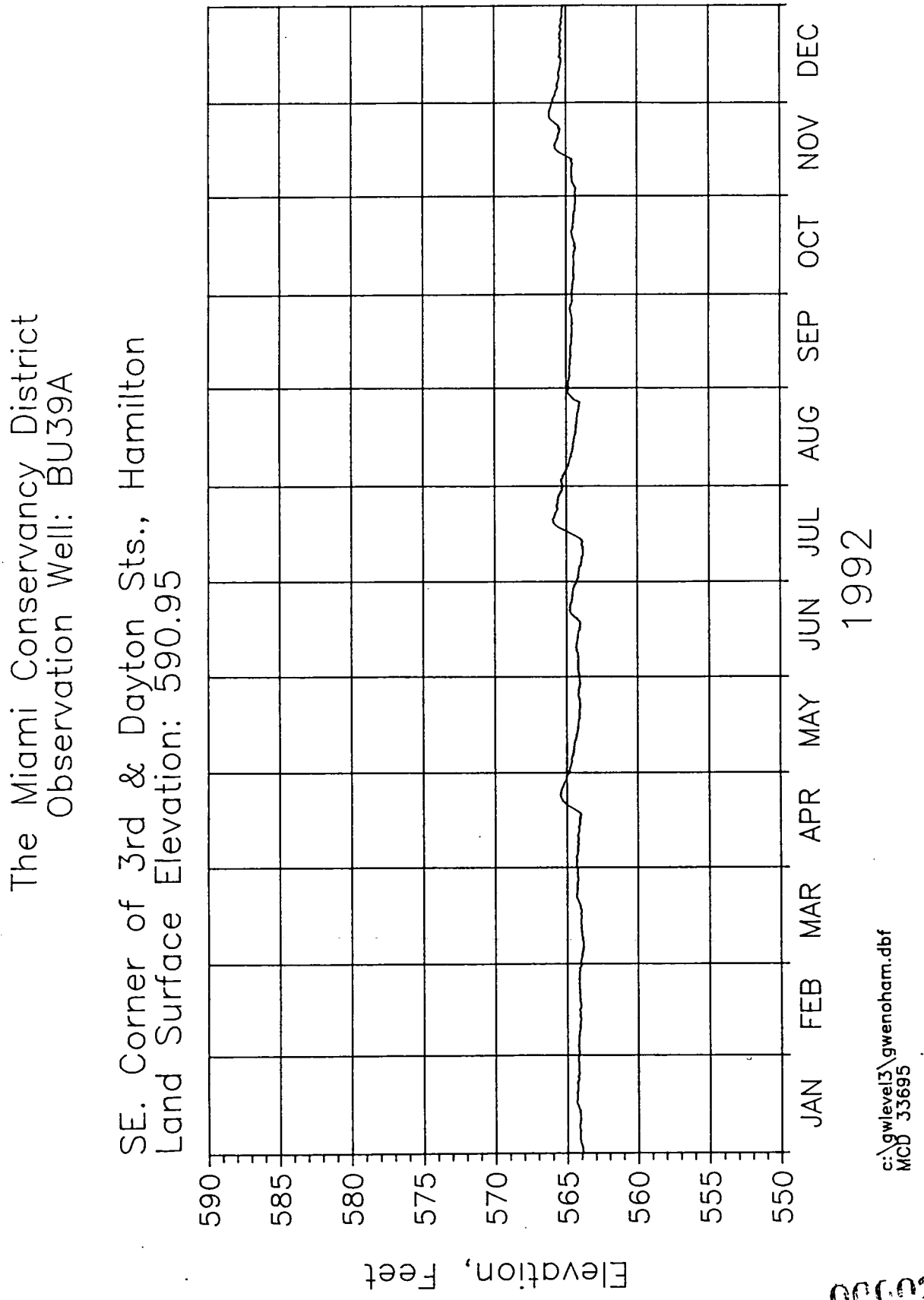

The Miami Conservancy District
Observation Well: BU39A
SE. Corner of 3rd & Dayton Sts., Hamilton
Land Surface Elevation: 590.95
590
585
580
575
570
565
560
555
550
Elevation, Feet
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC
1992
c:\gwlevel3\gwenoham.dbf
MCD 33695

Figure 42

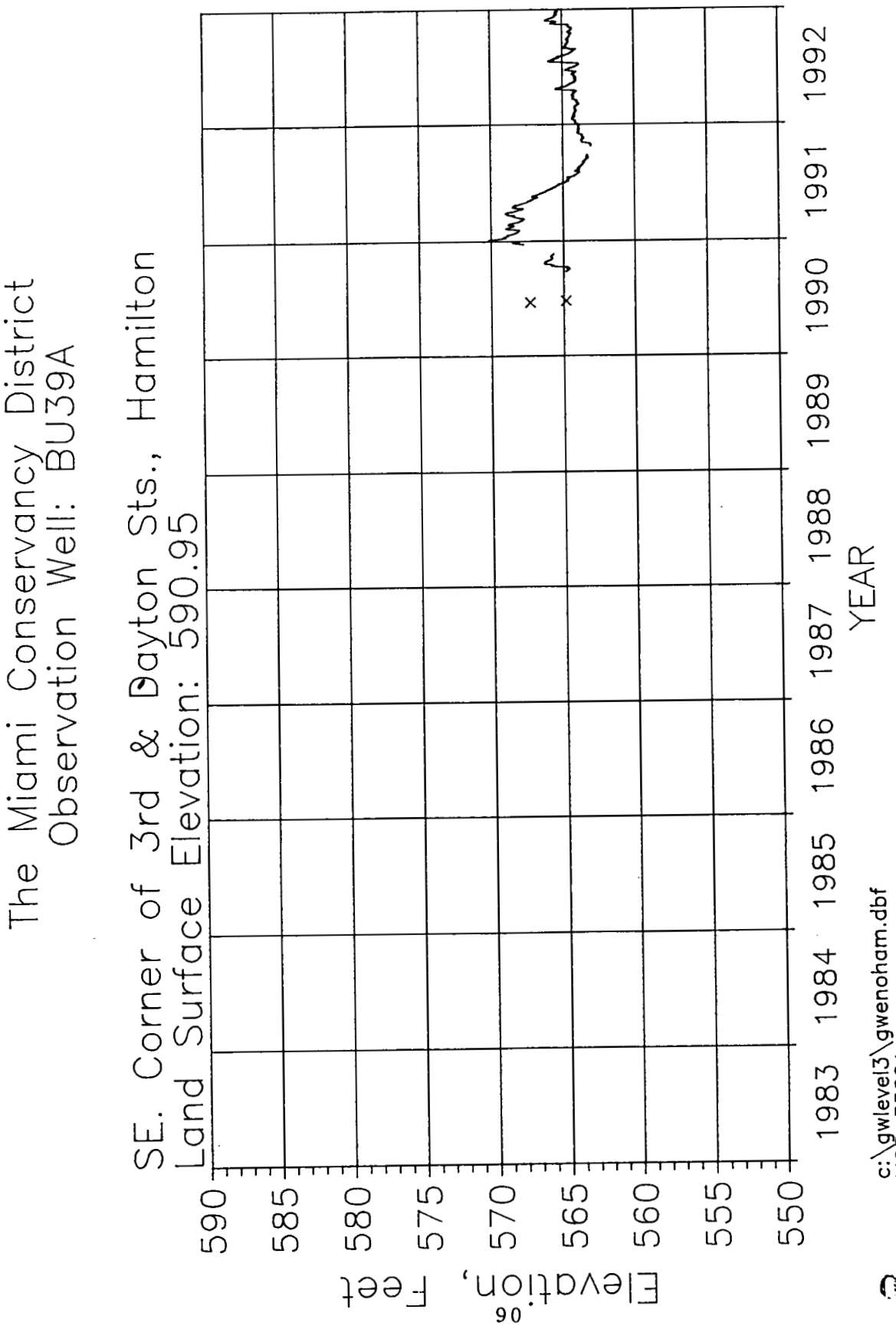

The Miami Conservancy District
Observation Well: BU39A
SE. Corner of 3rd & Dayton Sts., Hamilton
Land Surface Elevation: 590.95
590
585
580
575
570
565
560
555
550
Elevation, Feet
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
YEAR
c:\gwlevel3\gwenham.dbf
MCD 33201a

Figure 43

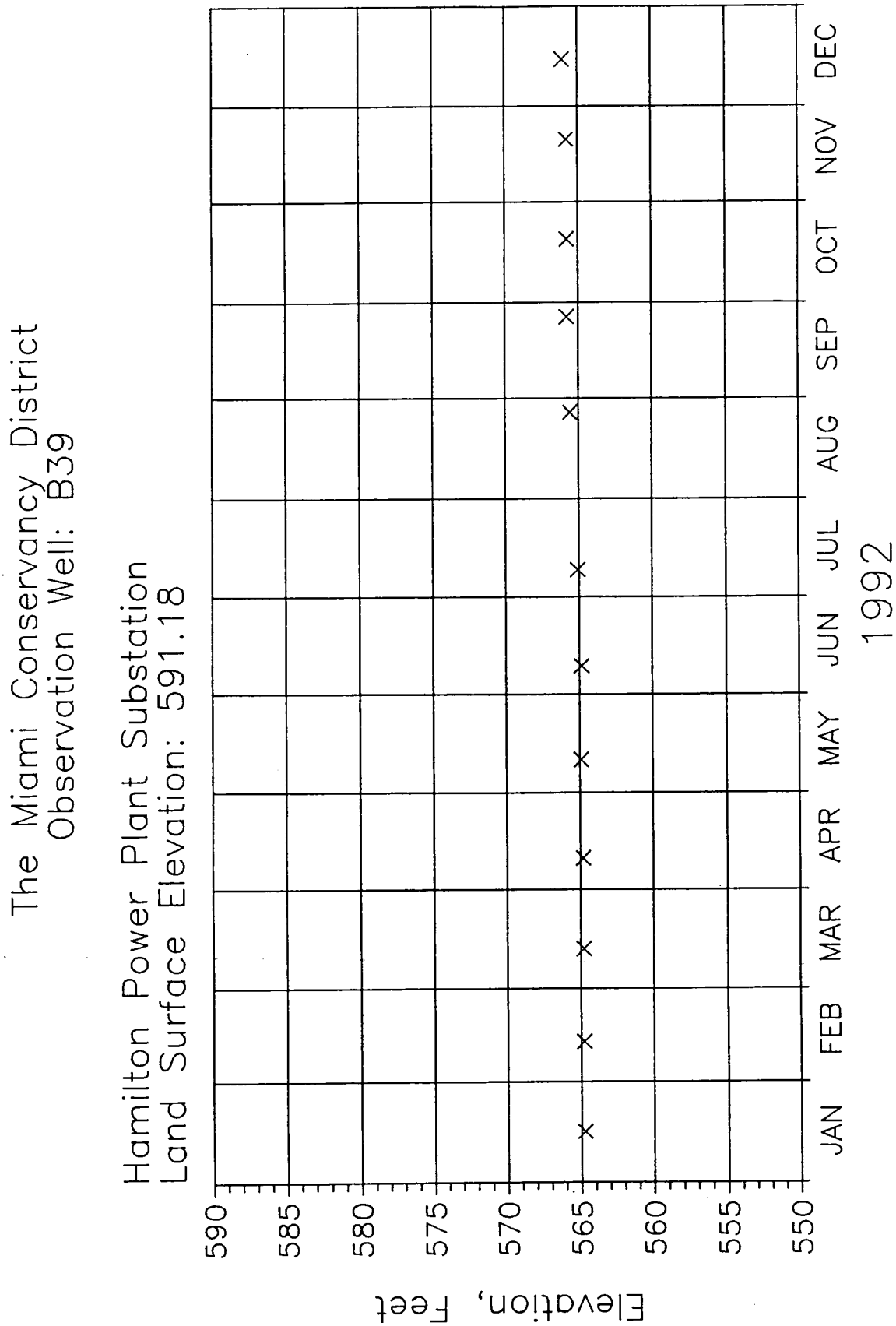
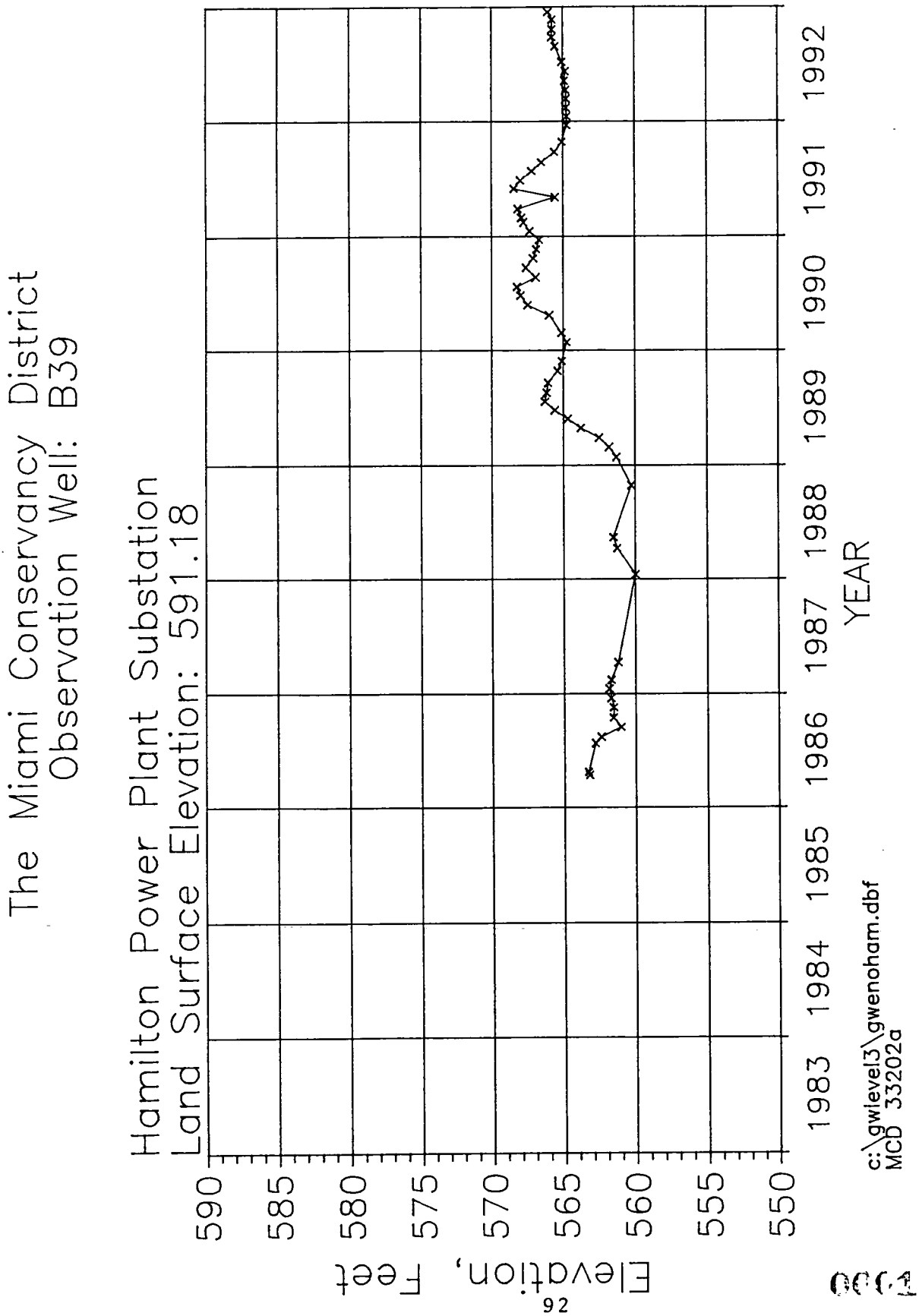

The Miami Conservancy District
Observation Well: B39
Hamilton Power Plant Substation
Land Surface Elevation: 591.18
590
585
580
575
570
565
560
555
550
Elevation, Feet
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC
1992
c:\gwlevel3\gwenoham.dbf
MCD 33689

Figure 44


The Miami Conservancy District
Observation Well: B39
Hamilton Power Plant Substation
Land Surface Elevation: 591.18
590
585
580
575
570
565
560
555
550
Elevation, Feet
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
YEAR
c:\gwlevel3\gwenoham.dbf
McD 33202a

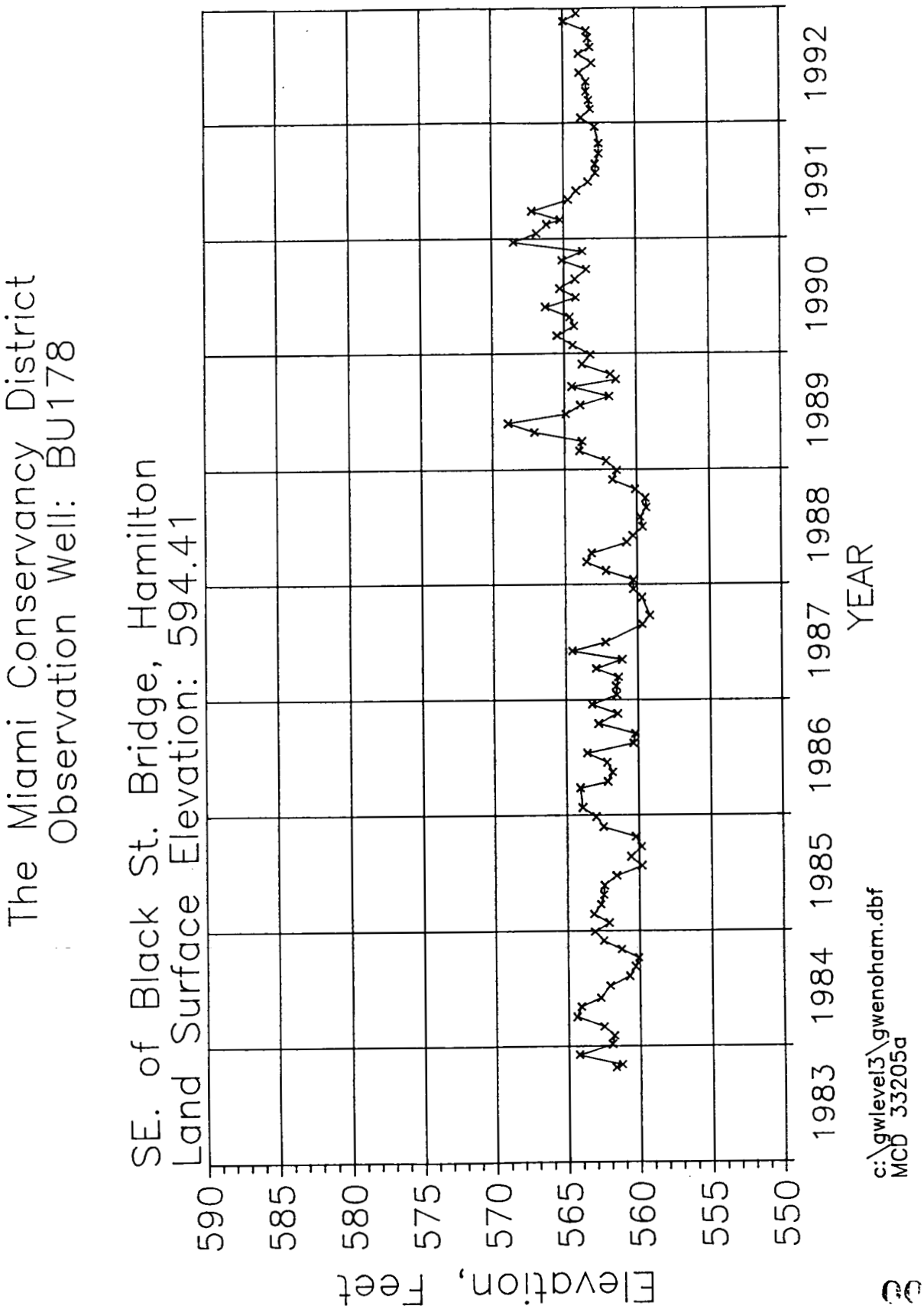

The Miami Conservancy District
Observation Well: BU178
SE. of Black St. Bridge, Hamilton
Land Surface Elevation: 594.41
590
585
580
575
570
565
560
555
550
Elevation, Feet
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
YEAR
c:\gwlevel3\gwenoham.dbf
MCD 33205a

Figure 46

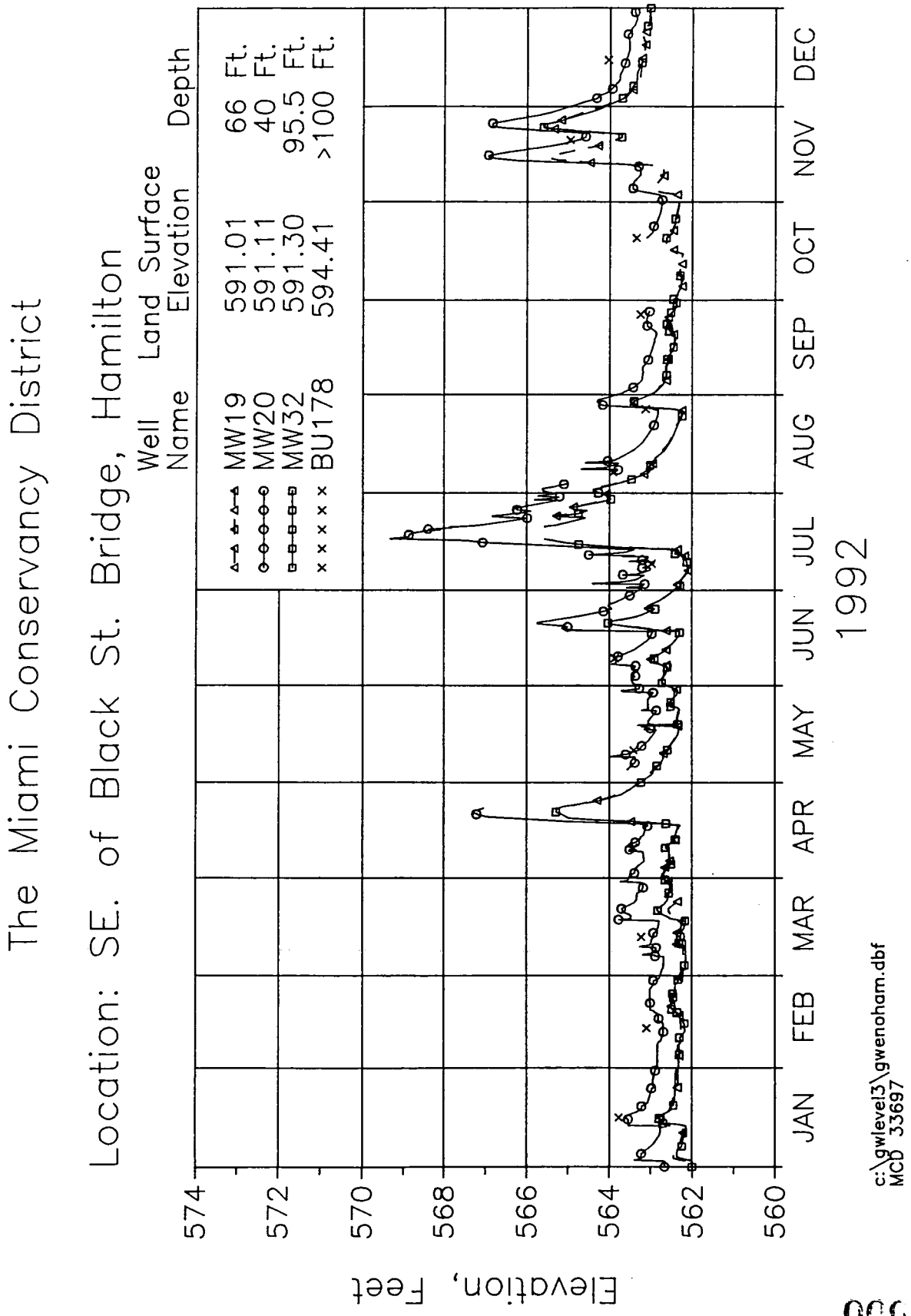
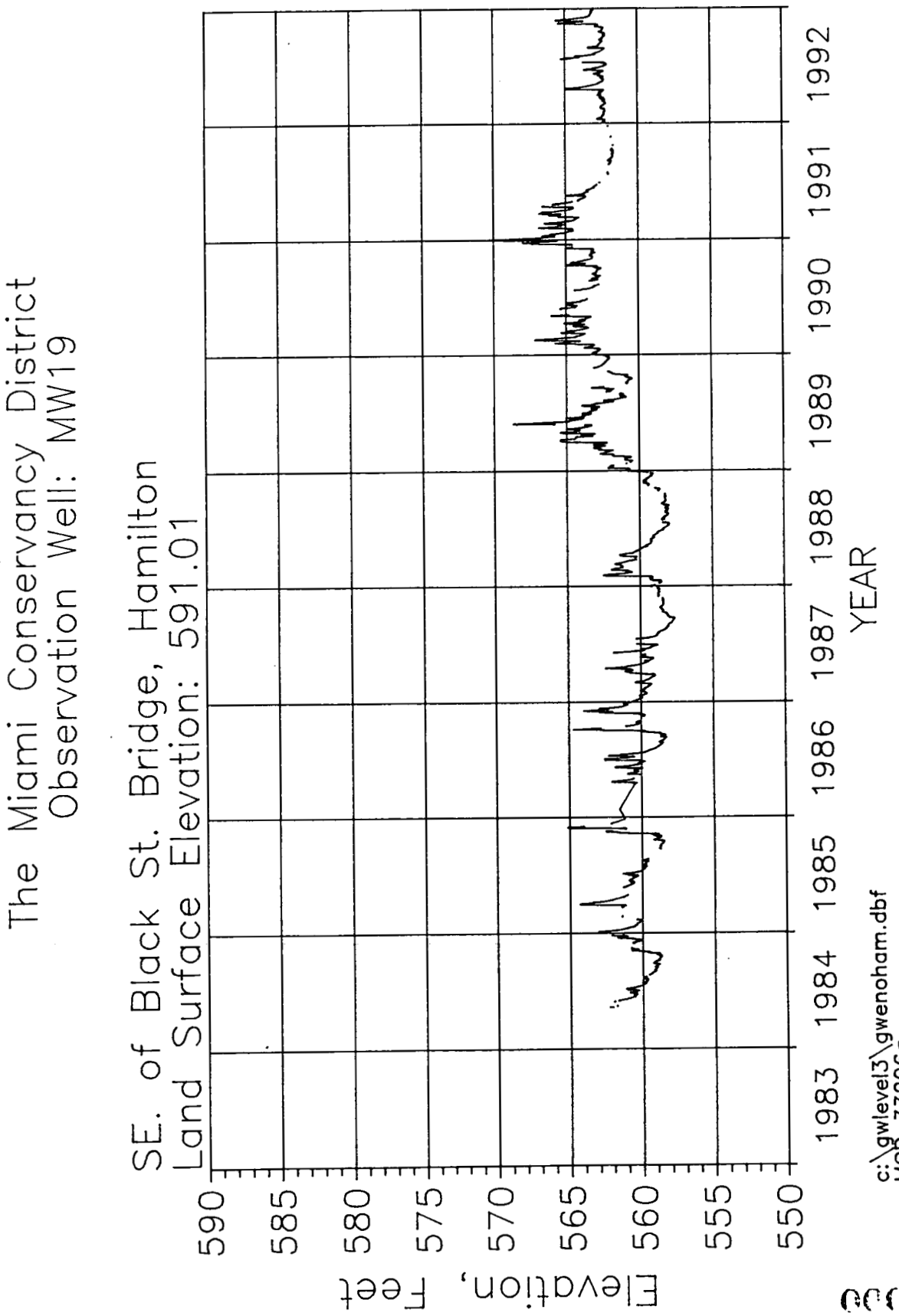
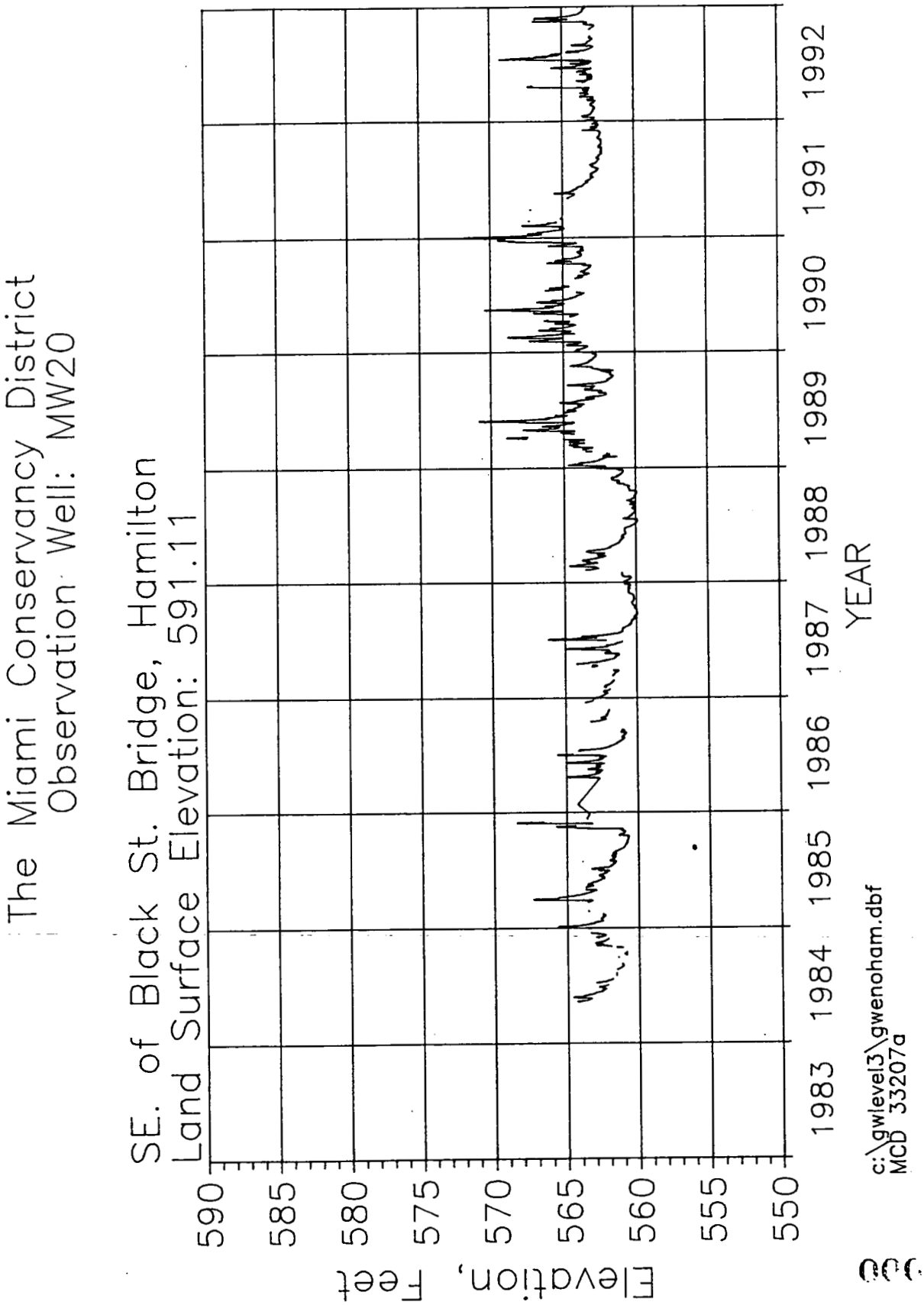

The Miami Conservancy District
Location: SE. of Black St. Bridge, Hamilton
Well Name
Land Surface Elevation
Depth
MW19 591.01 66 Ft.
MW20 591.11 40 Ft.
MW32 591.30 95.5 Ft.
BU178 594.41 >100 Ft.
574
572
570
568
566
564
562
560
Elevation, Feet
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC
1992
c:\gwlevel3\gwenoham.dbf
McD 33697

Figure 47


The Miami Conservancy District
Observation Well: MW19
SE. of Black St. Bridge, Hamilton
Land Surface Elevation: 591.01
590
585
580
575
570
565
560
555
550
Elevation, Feet
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
YEAR
c:\gwlevel3\gwenoham.dbf
McD 33206a


The Miami Conservancy District
Observation Well: MW20
SE. of Black St. Bridge, Hamilton
Land Surface Elevation: 591.11
590
585
580
575
570
565
560
555
550
Elevation, Feet
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
YEAR
c:\gwlevel3\gwenoham.dbf
McD 33207a

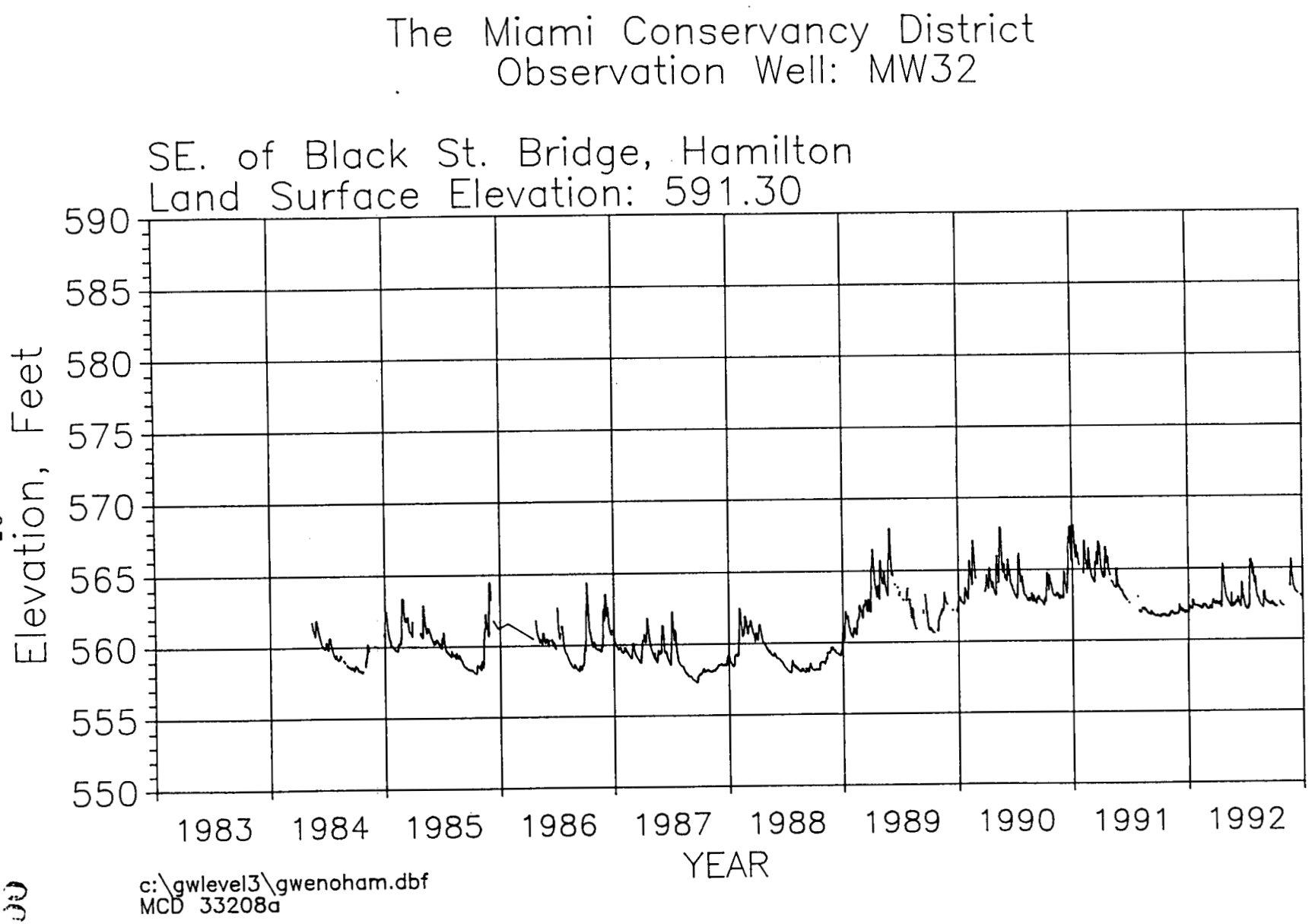
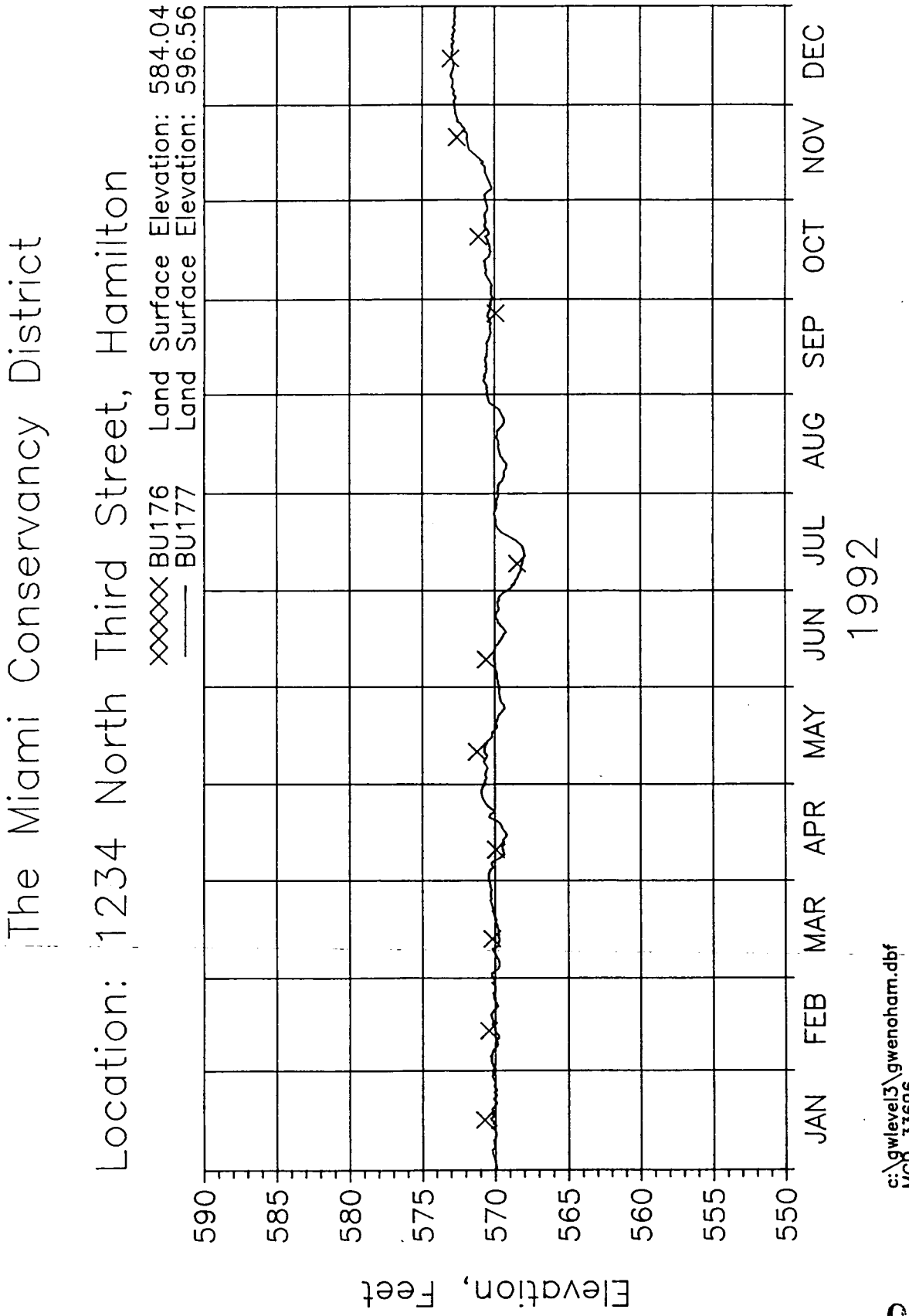
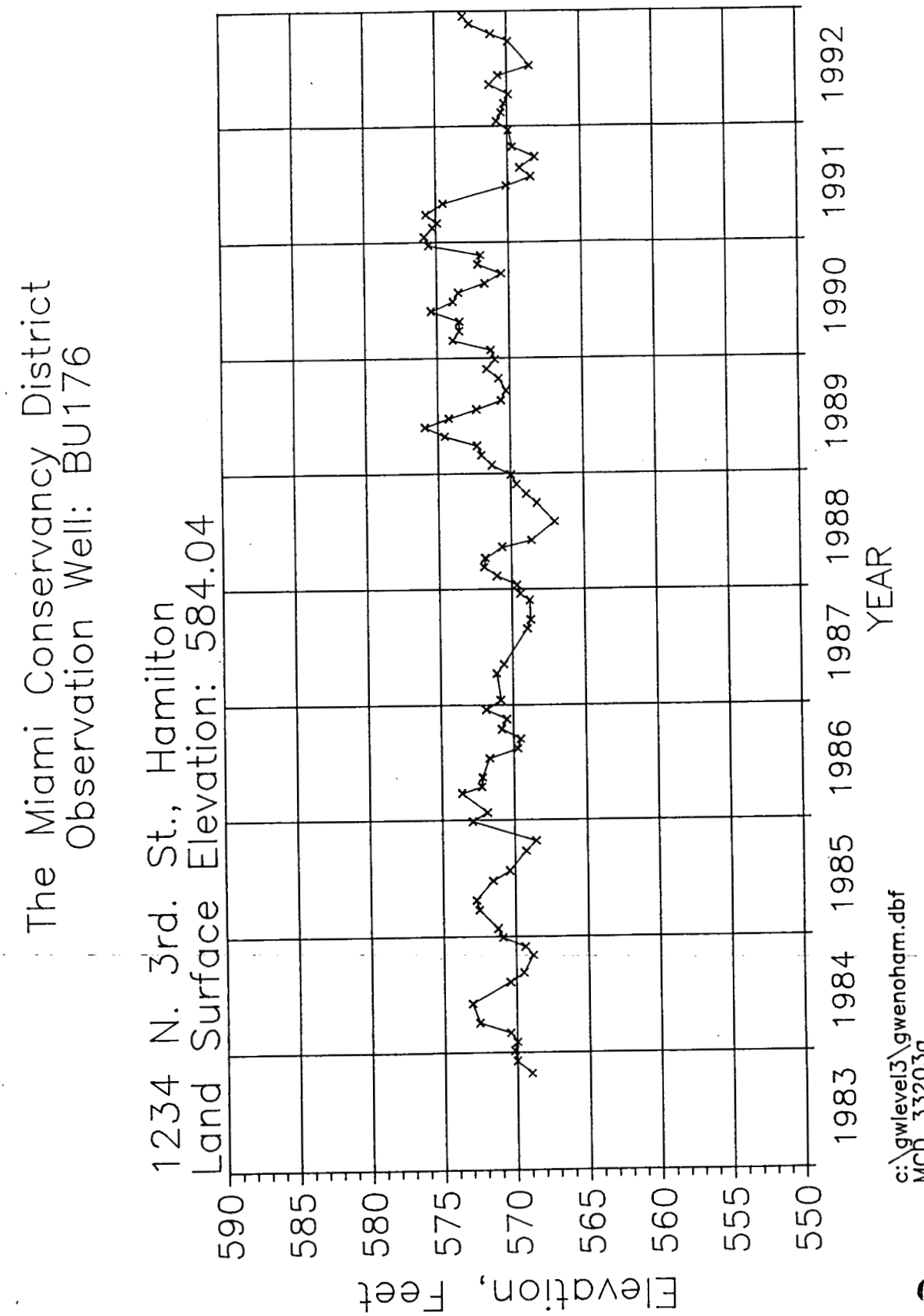

The Miami Conservancy District
Observation Well: MW32
SE. of Black St. Bridge, Hamilton
Land Surface Elevation: 591.30
590
585
580
575
570
565
560
555
550
Elevation, Feet
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
YEAR
c:\gwlevel3\gwenoham.dbf
MCD 33208a

Figure 49

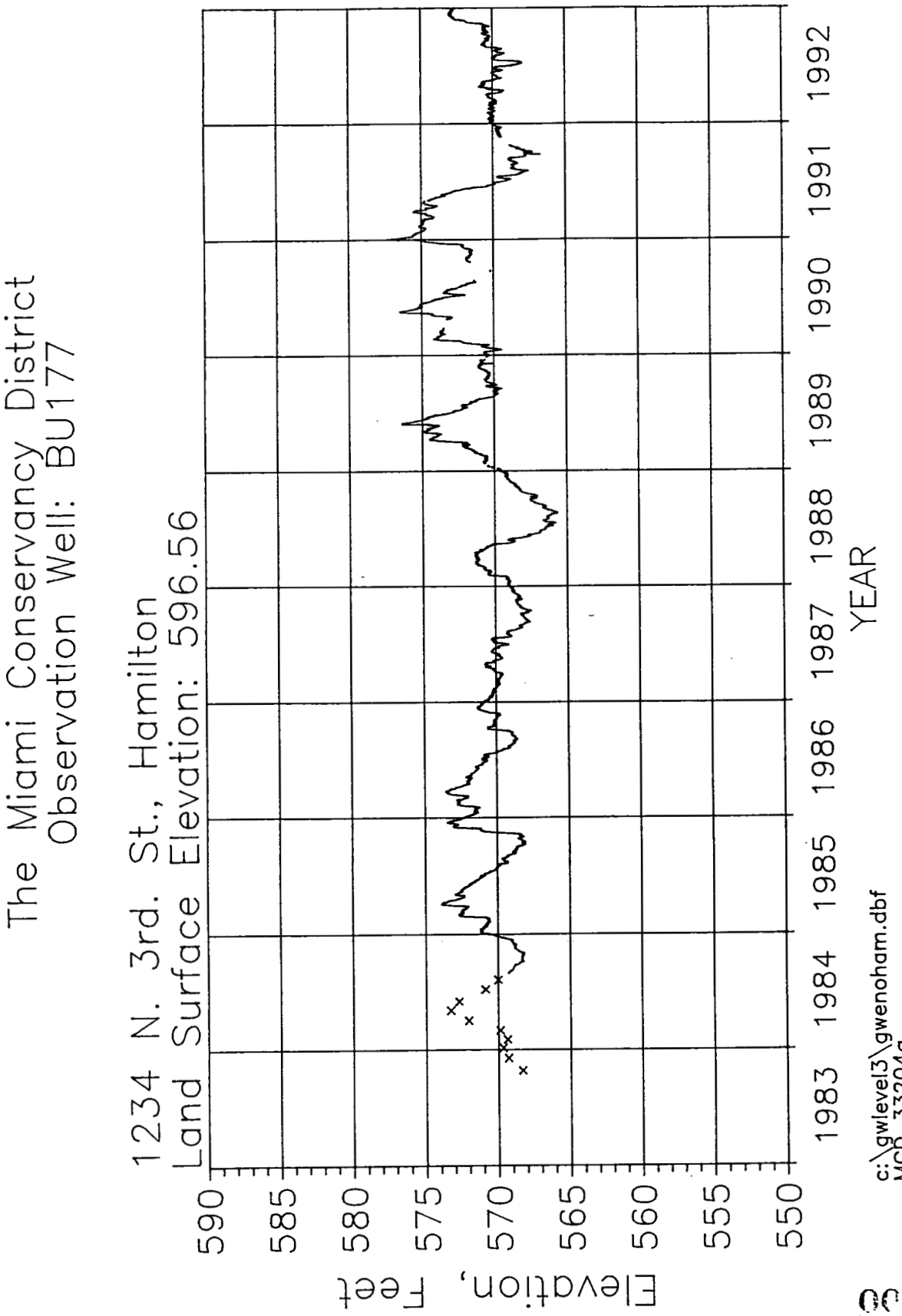
Figure 50


The Miami Conservancy District
Location: 1234 North Third Street, Hamilton
BU176 Land Surface Elevation: 584.04
BU177 Land Surface Elevation: 596.56
590
585
580
575
570
565
560
555
550
Elevation, Feet
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC
1992
c:\gwlevel3\gwenoham.dbf
MCD 33696

-7416


The Miami Conservancy District
Observation Well: BU176
1234 N. 3rd. St., Hamilton
Land Surface Elevation: 584.04
590
585
580
575
570
565
560
555
550
Elevation, Feet
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
YEAR
c:\gwlevel3\gwenoham.dbf
MCD 33203a

000107

Figure 52

7416