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- Consulting Hydrogeologists
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384

October 15, 1999

Mr. Richard Spiese
Hazardous Materials Management Division
Agency of Natural Resources
103 South Main Street
Waterbury, VT 05671-0404

Re: Midway Oil Former Plaza Mobil, Rutland, Vermont
VDEC Site # (89-0384)

Dear Richard:

Please find enclosed the Quarterly Groundwater Monitoring and Site Performance Report for the period May 1999 - July 1999 for the former Plaza Mobil in Rutland, Vermont.

Please feel free to contact me at 658-0820 if you have any questions or concerns with regard to this site.

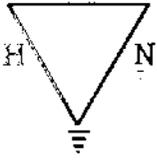
Sincerely,

Miles Waite, Ph.D.
Senior Hydrogeologist

MW/jm

Enclosure

cc: Joe Merone



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**MIDWAY OIL CORP.
FORMER PLAZA MOBIL STATION
Rutland, Vermont**

**QUARTERLY GROUNDWATER MONITORING
AND SITE PERFORMANCE REPORT**

May - July 1999

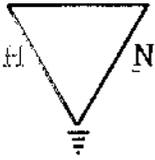
Prepared by:

Heindel and Noyes

Prepared for:

Midway Oil Corp.

October 15, 1999



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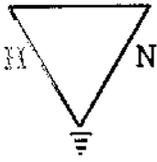
MIDWAY OIL CORP. FORMER PLAZA MOBIL STATION Rutland, Vermont

QUARTERLY GROUNDWATER MONITORING AND SITE PERFORMANCE REPORT

May - July 1999

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MIDWAY OIL CORP. FORMER PLAZA MOBIL STATION Rutland, Vermont

QUARTERLY GROUNDWATER MONITORING AND SITE PERFORMANCE REPORT

1.0 INTRODUCTION

The following report summarizes the results of site monitoring performed by Heindel and Noyes (H&N) at the former Plaza Mobil Station in Rutland, Vermont (Appendix 1, page 1) for the period of May through July 1999. Activities performed onsite during this reporting period consisted of operation and monitoring of the air sparging (AS) and soil vapor extraction systems (VES), groundwater sample collection, and free phase product monitoring in well MW-3.

A layout of the site can be seen in the site plan in Appendix 1, page 2. Results of the groundwater monitoring are presented in Section 2.0, the performance monitoring of the remediation system is detailed in Section 3.0, our estimates of hydrocarbon removal are presented in Section 4.0, and conclusions and recommendations are presented in Section 5.0.

2.0 GROUNDWATER MONITORING

Groundwater monitoring is performed regularly at the site by H&N. This includes biweekly groundwater elevation and free product measurements, and quarterly groundwater sampling. Groundwater samples were collected on July 30, 1999 and submitted to Endyne laboratory of Williston, Vermont. Samples from wells MW-1, MW-2, and MW-3 were analyzed for the presence of benzene, toluene, ethylbenzene, xylenes (BTEX), and methyl tert butyl ether (MTBE) via EPA Method 8260. All other samples were analyzed via EPA Method 8021B. The remainder of this section presents the groundwater data collected.

2.1 Groundwater Elevation Data

Groundwater elevation monitoring data are presented Appendix 2, page 1. Review of these data indicates that groundwater elevations continue to be atypically high, especially for summer months. Trend graphs of water levels in monitoring wells onsite over the course of the last 20 months are included in Appendix 2, pages 2-5. These graphs show that, with the exception of the three offsite wells (MW-11, MW-12, and MW-13), water levels have been elevated since late 1998. It should be noted that this time coincides with the closing gas pumping operations at the site. Because the site remediation system has been in constant use this quarter, we do not believe the water level changes are related to its operation. Rather, we are considering the possibility of an external source of water into the subsurface, possibly from a leaking water line. Note that there is a water service into the building that was used for the gas pumping operation.

A groundwater contour map for July 30, 1999 is presented in Appendix 1, page 2. The map shows a groundwater mound in the vicinity of the gas tanks, with lateral flow away from the mound to the south, east and west. Historically, groundwater flow is strictly from east to west. Often, changes in the direction of local groundwater flow can cause respective changes in the distribution of subsurface contamination. This topic is addressed in Section 2.3. Please note that no water level data was collected from well MW-12 due to a parked vehicle blocking its access.

2.2 Free Phase Product

Over the course of this quarter, regular product checks have been performed in MW-3 as part of the site monitoring. Well MW-3, located in the vicinity of the former USTs, is the only well that has historically shown evidence of free product. The free product measurements from MW-3 since 1997 are presented graphically in Appendix 2, page 6. No free product was detected at all this quarter, and has not been detected since early January 1999. Again, there is a time correspondence between the disappearance of free product and closing of the gas pumping operations onsite.

2.3 Groundwater Quality Sampling

Groundwater quality samples were collected from monitoring wells at the site on July 30, 1999. Note that well MW-12 was sampled at a later date (August 4, 1999), because it was inaccessible on July 30. Groundwater samples were collected after wells were purged of at least three well volumes or until dry, and were placed on ice until transport

to the lab. All samples were analyzed by Endyne, Inc. of Williston, Vermont via EPA Method 8021B. Additionally, wells MW-1, MW-2, and MW-3 were analyzed using the mass spectrometer (MS), which allows for the evaluation of the gas chromatograms. A tabulated summary of select laboratory results is included as pages Appendix 2, page 7 - 8. Charts tracking contaminant concentration trends over time are presented for each monitoring well in Appendix 2, pages 9 - 20. The full laboratory reports are included in Appendix 4.

Of the twelve wells sampled, steady or decreasing trends were noted in eight wells (MW-1, MW-6, MW-7, MW-8, MW-9, MW-11, and MW-13), while rising trends or spikes in the contaminant concentrations were noted in five wells (MW-2, MW-3, MW-4, MW-5, and MW-12). These rising trends are summarized below:

- Rising trends in contaminant levels continue in wells MW-2 and MW-5 (refer to Appendix 2, pages 10 and 13). In MW-2, there was a four-fold increase in BTEX concentration and a three-fold increase in MTBE concentration since the previous quarter. This increase allows the possibility that both the BTEX and MTBE plumes are spreading offsite to the east.
- A small jump in the BTEX concentration was noted in well MW-3. However, when compared to the historic levels (refer to Appendix 2, page 11), the water quality is presently better than it has been during most of the site's history.
- Although no BTEX compounds were noted above detection limits in well MW-4, the MTBE concentration nearly doubled. This increase allows the possibility that the MTBE plume is spreading offsite toward the north.
- After a decline in concentrations in well MW-12 over the past two years, a large increase in the MTBE concentration was noted since it was last sampled in October 1998 (refer to Appendix 2, page 19). This increase allows the possibility that the MTBE plume is spreading toward the west.

The areal extent of the BTEX and MTBE contamination detected in July 1999 are shown on the maps included in Appendix 1, pages 3-4. Because of the appearance of significant BTEX levels in MW-5 and significant MTBE levels in MW-12, the lateral extent of these plumes cannot be constrained. Although they are still centered around the "core area" of the site, the BTEX plume has extended to the east of the site, and the MTBE plume is possibly spreading offsite to the north, east and west. Traditionally, the east is the upgradient direction. However, the water table surface has been atypical

over the last three quarters, and it now appears that there is a groundwater mound centered around the three USTs. This could cause a change in the subsurface flow patterns, which would explain the changes we are seeing in the contaminant distribution at the site.

Total and reconstructed ion chromatographs for samples obtained in July from monitoring wells MW-1, MW-2, and MW-3 are presented in Appendix 4, pages 4-11. The chromatographic patterns indicate that the makeup of the contamination continues to be gasoline-related compounds. In MW-1, a large component in the dissolved phase is has ionic weight of 57 (aliphatic hydrocarbon), corresponding to Benzene. In MW-2 and MW-3, the major components of the dissolved phase contamination have ionic weights of 105 and 91 (alkylated hydrocarbons), corresponding to the heavier compounds like Toluene, Xylenes, and Trimethylbenzenes. In MW-2 there were four unidentified peaks in the chromatogram, and in MW-3 there were greater than ten unidentified peaks. In terms of abundance, there were increases in the levels of alkylated hydrocarbons detected in wells MW-2 and MW-3 compared to last quarter. Conversely, there was a decrease in the abundance of some of these compounds in MW-1 compared to last quarter. These changes in concentration have been previously discussed.

3.0 VAPOR EXTRACTION SYSTEM AND AIR SPARGER PERFORMANCE

The vapor extraction system (VES) and air sparger (AS) were monitored on a regular basis to determine hydrocarbon removal efficiencies and to ensure vapor effluent to the atmosphere in compliance with VDEC regulations. The effluent concentration, measured downstream of both of the activated carbon treatment tanks, was in compliance throughout the duration of this quarter. All data collected during the weekly to biweekly monitoring is included in Appendix 3. Refer to the site plan in Appendix 1, page 2, for locations of the vapor and air sparging wells.

3.1 System Performance and Site Response

VES blower vacuum hovered around 40 inches of water (in. H₂O), with the exception of a vacuum of 58 inches on July 23, 1999. Sparge pressures ranged between 5.5 and 7 pounds per square inch (psi). These data are presented in Appendix 3, page 1. Minor adjustments to the AS and VES systems were performed during each site visit to ensure sufficient air removal and injection ratios. The operating air flow rates of the VES wells (extraction) and the sparge wells (injection) can be seen in Appendix 3, page

3. The extraction/injection ratio ranged over the course of the quarter from 0.40 to 2.11, averaging at 0.88.

PID readings from the individual VES wells are presented in Appendix 3, page 2. These data indicate fluctuating vapor concentrations over the course of the monitoring period. There were no notable increases; the largest decrease was noted in vapor well V-3. The best indicator of changing vapor conditions is the VES influent concentration, which generally decreased over the quarter. The vapor concentration measured at the end of the quarter on July 23, 1999 was 10.4 ppm. Refer to Appendix 3, page 4 to observe a graphical depiction of the vapor influent levels measured over the history of the site.

Biologic indicator parameters temperature, CO₂, O₂, and CH₄ have also been monitored and are presented on Appendix 3, page 2. The temperature of the influent air generally increased over the quarter, with a low of 56.9° F measured on May 13, 1999. One effect of the temperature change was on the CO₂ levels measured from the VES influent. Attributable to increased biological activity that occurs with higher soil temperature, CO₂ levels typically increase over the summer months. To graphically visualize the correlation between temperature and CO₂, refer to Appendix 3, page 5. A trend graph for the total VES influent that includes O₂ concentration and PID level as a function of temperature is included in Appendix 3, Page 4.

3.2 VES System Effluent

PID levels measured in the effluent of the vapor carbon beds are also reported in Appendix 3, page 2. As seen from these data, the effluent concentration ranged between 0.6 and 2.2 ppm, all below the 5-ppm threshold set by the VDEC. Although it is hard to judge given the recent fluctuations we are seeing in the influent concentration, we do not predict the need for carbon regeneration in the near future.

4.0 HYDROCARBON REMOVAL

Remedial activities have included the removal of hydrocarbons by both physical (direct) and biologic (indirect) processes. Physical removal occurs in the unsaturated zone by air stripping stimulated by the VES, and in the saturated zone by air exchange caused by the AS system. Physical removal has also been achieved utilizing adsorbent socks and manual bailing of free phase product from MW-3.

4.1 Free Phase Hydrocarbon Removal

Because no free product was detected in well MW-3 this quarter, there was no need to remove free product by manual bailing during the site visits. As a precautionary measure, we continue to utilize absorbent socks in this well to draw any product away from the water. A graphical depiction of free product levels over the last 2.5 years is presented in Appendix 2, pages 6.

4.2 Vapor Phase Hydrocarbon Removal

The amount of vapor phase hydrocarbon removed from the site is calculated from PID readings of air extracted from the soil and is also measured directly as the volume of product recovered during carbon filter regeneration activities.

4.2.1 Carbon Regeneration

No carbon regeneration was necessary during this quarter, largely due to the efficiency of the new carbon. To date a total of 278 gallons of petroleum hydrocarbons have been recovered from regeneration of the drums and beds used onsite.

4.2.2 PID Based Calculations

Sampling of the VES influent port to the carbon filters provides overall characteristics of the air being extracted from the unsaturated zone by the VES system. PID readings and airflow measurements from this port are utilized to calculate the rate at which hydrocarbons are being physically removed from the subsurface by the VES. A summary of the physical recovery rate is included as Appendix 3, page 6. Vapor hydrocarbon recovery rates over time are graphically presented in Appendix 3, page 7.

The summary PID statistics indicate that a total of 3.9 gallons of hydrocarbon were recovered during this reporting period, bringing the total volume recovered to date to 141.0 gallons. The summary data are compiled from measurements taken between 1994 through 1999. In addition, approximately 35 gallons of hydrocarbons were removed in 1993, bringing the grand total of physical hydrocarbon removal with the VES system to 176.0 gallons.

It should be noted that PID based calculations are expected to underestimate hydrocarbon removal as the PID is less sensitive to single chain and branch chain aliphatic hydrocarbons in the air stream. This is evidenced by the carbon regeneration recovery of 278 gallons versus the PID calculated recovery of 176.0 gallons.

4.3 *Biologic Hydrocarbon Removal*

Air monitoring of the concentrations of O₂ and CO₂ in the incoming air stream at the VES influent, coupled with air flow rates, can be utilized to determine biologic hydrocarbon degradation/consumption rates. The methodology used to determine the biologic hydrocarbon degradation rate was presented in H&N Report #4078 on March 19, 1997.

Hydrocarbon removal rates estimated using the CO₂ and O₂ data are presented in Appendix 3, page 6. Based on the influent levels above background concentrations, the aerobic degradation this quarter is estimated to be 46.1 gallons of hydrocarbon.

4.4 *Total Hydrocarbon Removal*

Based on the discussions above, total hydrocarbon removal during the reporting period is estimated as follows:

Vapor Phase Removal:	3.9 Gallons
Biodegradation (Average of CO ₂ and O ₂ values)	<u>46.1</u> Gallons
Total	50.0 Gallons

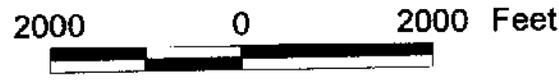
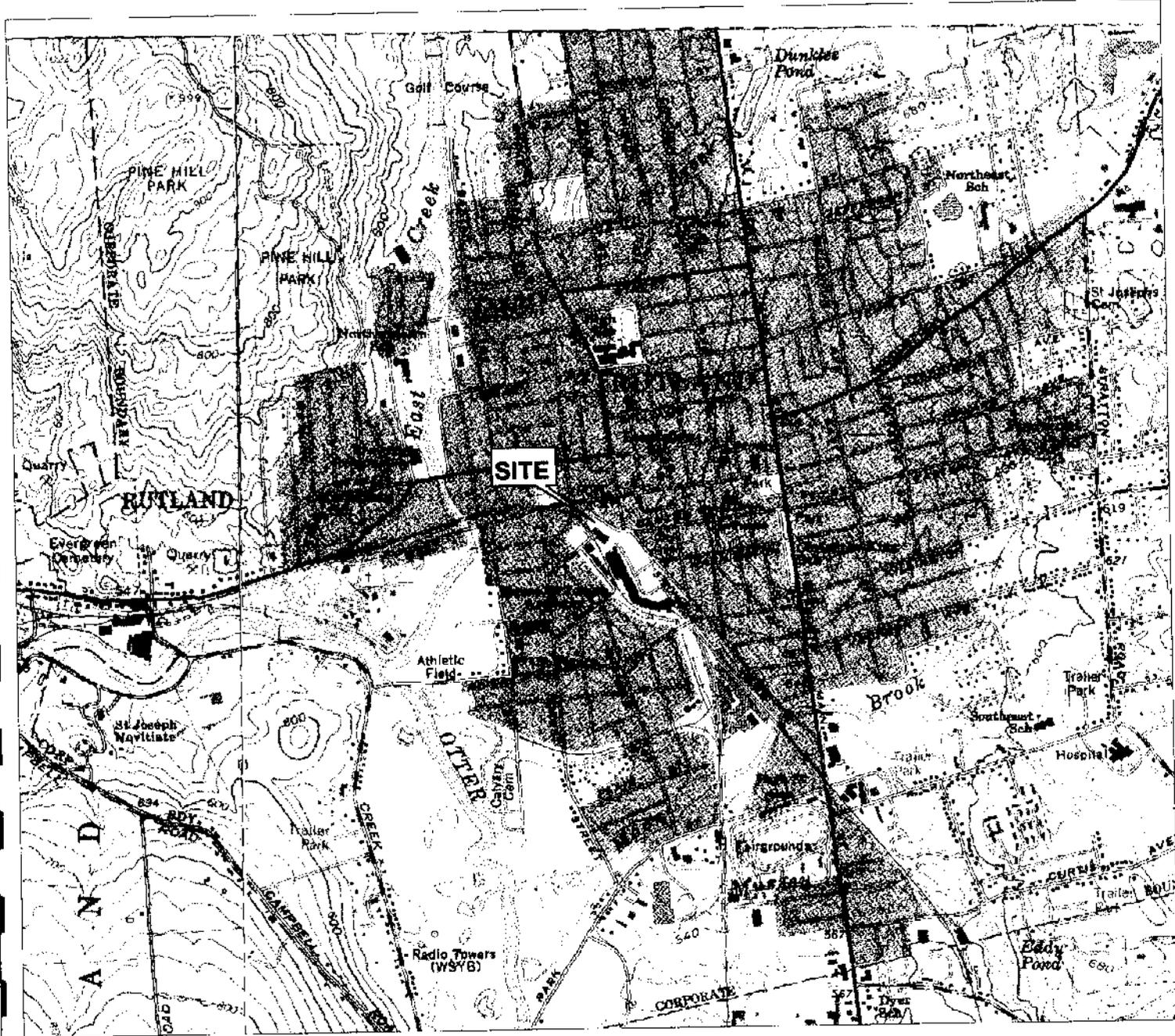
5.0 CONCLUSIONS AND RECOMMENDATIONS

- The VES/AS system has been fully operational over the course of this quarter, with effluent discharge in full compliance with VDEC regulations. As a result of the system operation, approximately 3.9 gallons of hydrocarbon have been removed via physical methods, and 50 gallons have been removed via biological degradation.
- No free phase product was measured in well MW-3 during this reporting period. An absorbent sock continues to be used as a precautionary measure.
- Groundwater elevations continue to be atypically high in most of the onsite wells, especially considering the dry summer. One result of the changing hydrology is that

there is now a groundwater mound centered around the three USTs. Because there is the chance of an external source of water into the subsurface, possibly from a leaking water line (note that there is a water service into the pumping station building), this should be explored during the future UST removal planned for this fall.

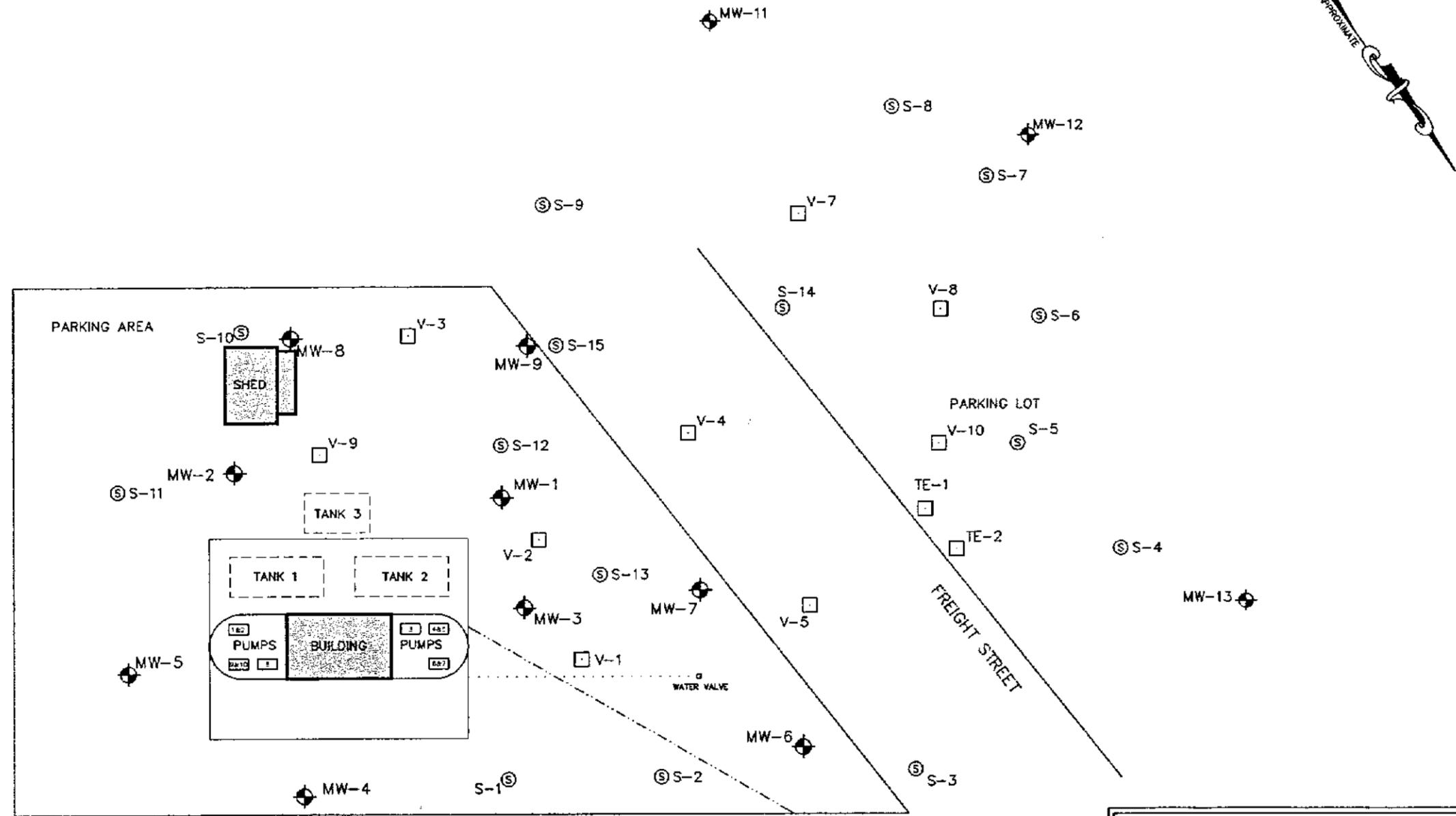
- The lateral bounds of the dissolved phase plume have extended beyond the site boundaries due to atypical increases in the contaminant concentration in wells MW-2, MW-5 and MW-12. This may be a result of the groundwater mound centered around the three USTs. It is possible that a consequence of groundwater flowing radially outward from this portion of the site, typically the "core" of contamination, we are seeing corresponding increasing levels in the perimeter wells.
- Although future monitoring will enable us to track continued changes in the contaminant distribution, it may be prudent to install two additional monitoring wells on the eastern boundary of the site. Data from this portion of the site would help determine if there is in fact offsite migration. It may also answer the question as to whether there is an offsite source to the east of the site that is responsible for the changing concentrations.
- It is recommended that continued bi-weekly monitoring and maintenance of the remedial system be performed. Quarterly groundwater quality sampling should also continue to occur.

USGS Topography Map of Midway Mobil - Rutland, Vermont



 INFORMATION & VISUALIZATION SERVICES

PARKING AREA



LEGEND

- ⊙ S-13 AIR SPARGING WELL
(LINE VELOCITY IN FT./MIN FOR EACH DATE)
- ◆ MW-5 2" PVC MONITORING WELL
PRESSURE (+) OR VACUUM (-) IN INCHES
OF WATER FOR EACH DATE
- V-10 VES WELL
VES WELL WITH PID IN ppm AND VACUUM
IN INCHES OF WATER FOR EACH DATE.
- WATER LINE
- - - - - TELEPHONE UTILITIES

TANK 1 - SPECIAL UNLEADED 10,000 GALLON
 TANK 2 - REGULAR UNLEADED 10,000 GALLON
 TANK 3 - PREMIUM UNLEADED 4,000 GALLON

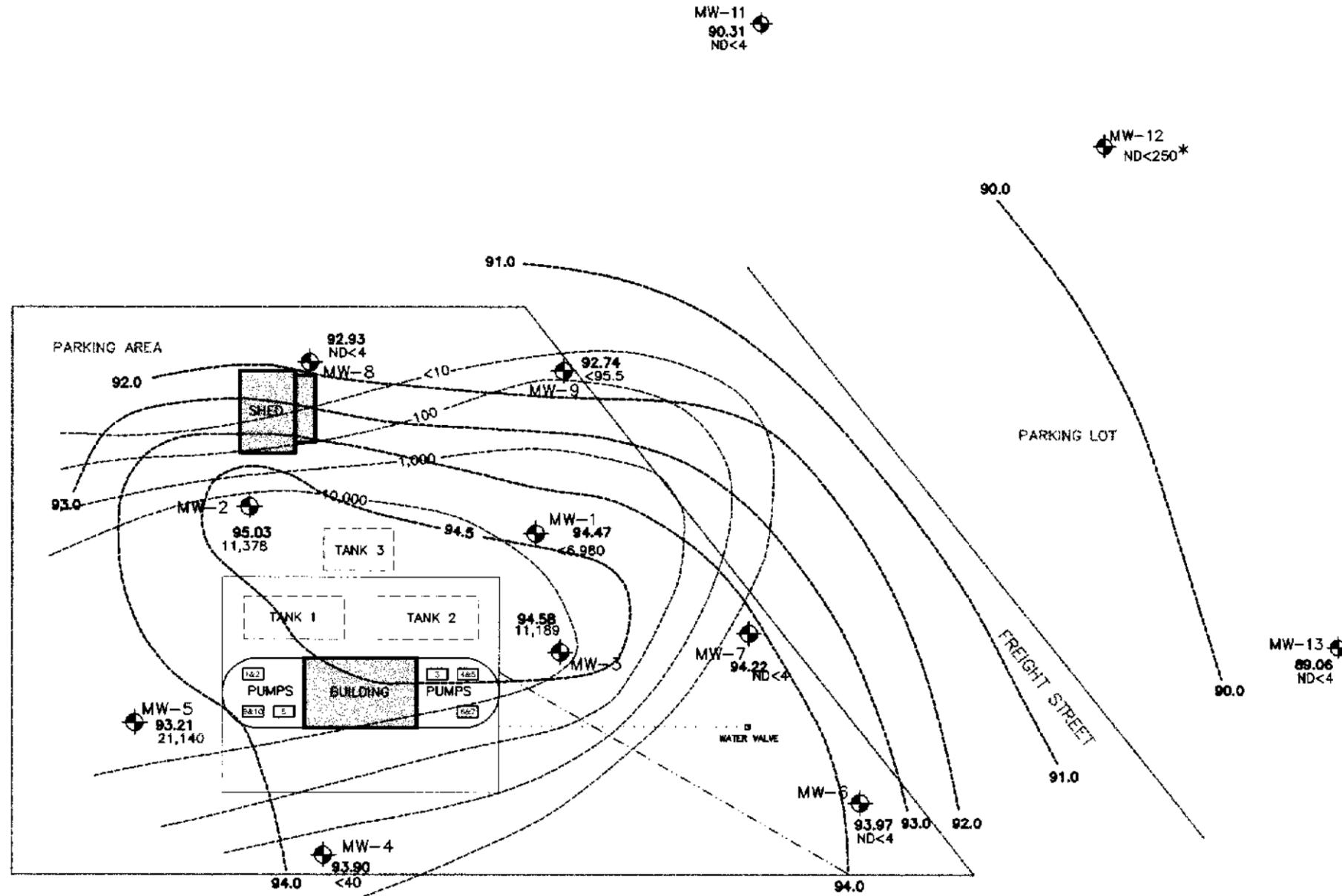
BASE MAP INFORMATION PROVIDED BY LINCOLN APPLIED GEOLOGY INC.
 MONITORING WELL LOCATIONS SURVEYED BY ROBERTS AND FRANZONI INC.
 SAMPLING AND DATA INTERPRETATION BY WH&N INC.

Heindel and Noyes
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 • Environmental Engineering •
 CONSULTING SCIENTISTS AND ENGINEERS
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 BURLINGTON, VERMONT 05406-4709
 Prepared By:
Information & Visualization Services

DATE: SEPTEMBER 16, 1999
 PROJECT NO. 93165.1
 DRAWN BY: S. Smith
 PROJ. MGR: M. Waite
 APPROVED: J. Noyes
 DRAFT FINAL

Midway Mobil
 Rutland, Vermont
SITE PLAN
 FILE: C:\MIDWAY\SITEPLAN
 SCALE: 1" = 20'

PARKING AREA



EVELYN STREET

FREIGHT STREET

LEGEND	
	MW-5 2" PVC MONITORING WELL
	WATER LINE
	TELEPHONE UTILITIES
	TANK 1 -SPECIAL UNLEADED 10,000 GALLON
	TANK 2 -REGULAR UNLEADED 10,000 GALLON
	TANK 3 -PREMIUM UNLEADED 4,000 GALLON
	WATER TABLE ELEVATION CONTOUR (FEET)
	BTEX CONCENTRATION CONTOUR (ppb)
ND	NONE DETECTED

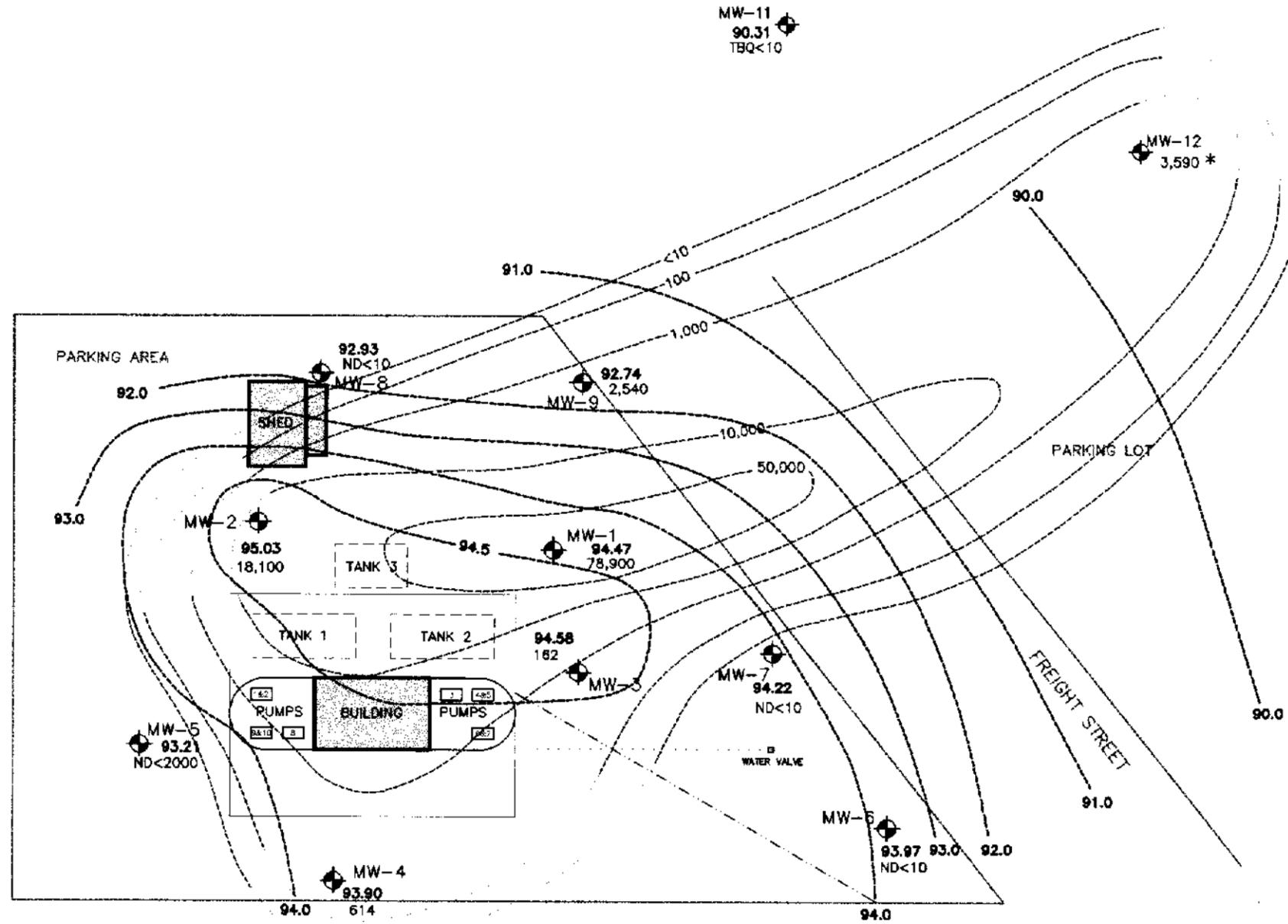
BASE MAP INFORMATION PROVIDED BY LINCOLN APPLIED GEOLOGY INC.
 MONITORING WELL LOCATIONS SURVEYED BY ROBERTS AND FRANZONI INC.
 SAMPLING AND DATA INTERPRETATION BY WH&N INC.
 * SAMPLE COLLECTED ON 8/4/99

Heindel and Noyes
 • Hydrogeology • Ecology •
 • Environmental Engineering •
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DATE: SEPTEMBER 28, 1999
PROJECT NO. 93165.1
DRAWN BY: L. Smith
PROJ. MGR: M. Waite
APPROVED: J. Noyes
<input type="checkbox"/> DRAFT <input type="checkbox"/> FINAL

Midway Mobil
 VERMONT
 RUTLAND,
 WATER TABLE AND BTEX CONCENTRATION CONTOUR MAP - 7/30/99
 SCALE: 1" = 20'
 FILE: C:\MIDWAY\SITEPLAN

PARKING AREA



EVELYN STREET

FREIGHT STREET

BASE MAP INFORMATION PROVIDED BY LINCOLN APPLIED GEOLOGY INC.
 MONITORING WELL LOCATIONS SURVEYED BY ROBERTS AND FRANZONI INC.
 SAMPLING AND DATA INTERPRETATION BY WH&N INC.
 * SAMPLE COLLECTED ON 8/4/99

LEGEND

MW-5 2" PVC MONITORING WELL
 WATER LINE
 TELEPHONE UTILITIES
 TANK 1 - SPECIAL UNLEADED 10,000 GALLON
 TANK 2 - REGULAR UNLEADED 10,000 GALLON
 TANK 3 - PREMIUM UNLEADED 4,000 GALLON
 WATER TABLE ELEVATION CONTOUR (FEET)
 MTBE CONCENTRATION CONTOUR (ppb)
 INTERPOLATED MTBE CONCENTRATION CONTOUR (ppb)
 ND NONE DETECTED

Heindel and Noyes
 • Hydrogeology • Ecology •
 • Environmental Engineering •
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 Prepared By: *Information & Visualization Services*

DATE: SEPTEMBER 28, 1999
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 DRAWN BY: S. Smith
 PROJ. MGR: M. Waite
 APPROVED: J. Noyes

DRAFT FINAL

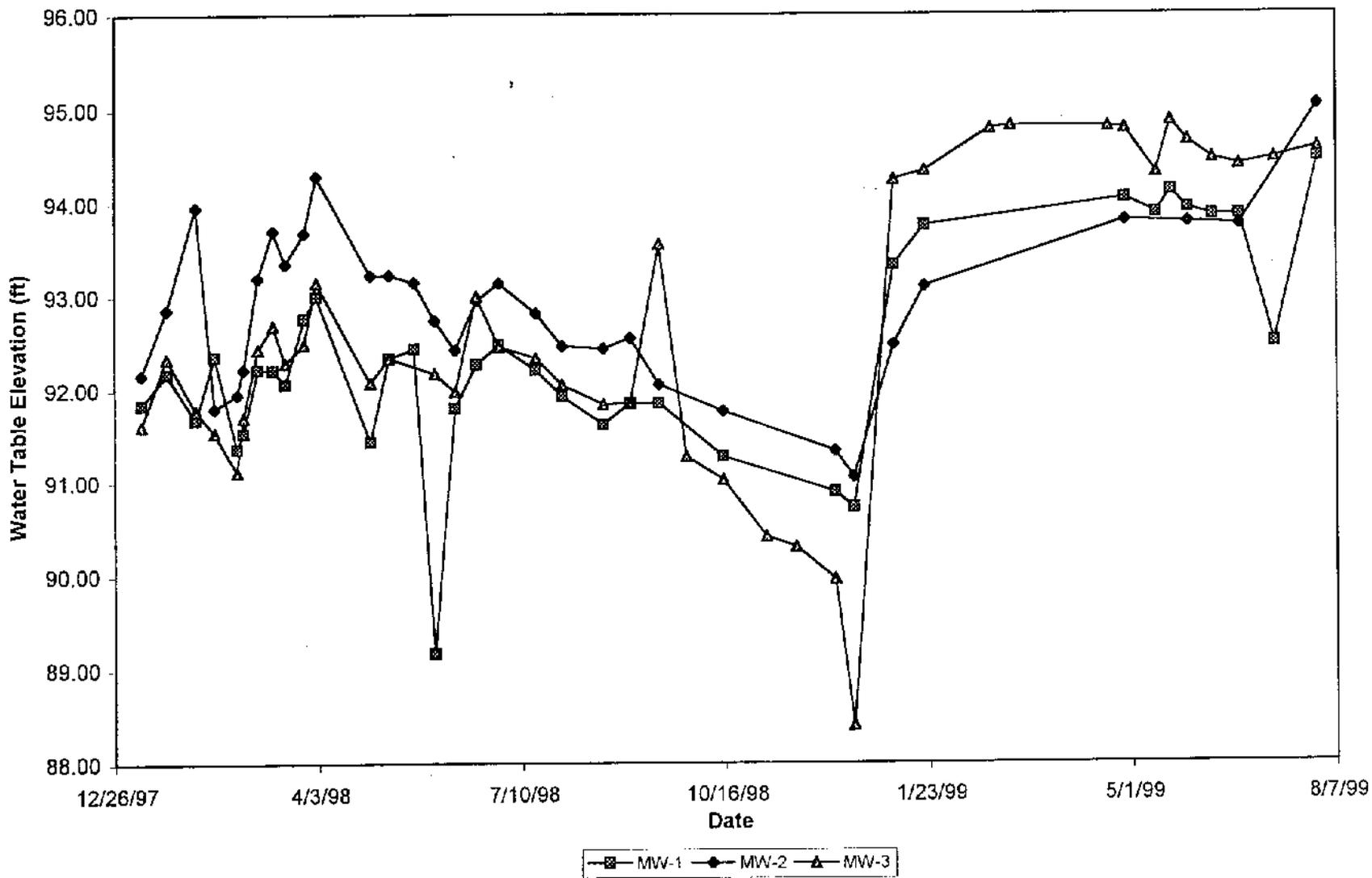
Midway Mobil
 VERMONT
 RUTLAND,
 WATER TABLE AND MTBE CONCENTRATION CONTOUR MAP - 7/30/99
 SCALE: 1" = 20'
 FILE: C:\MIDWAYSITEPLAN

**Midway Oil - Plaza Mobil/BP
Rutland, Vermont
Water Table Elevations (ft)**

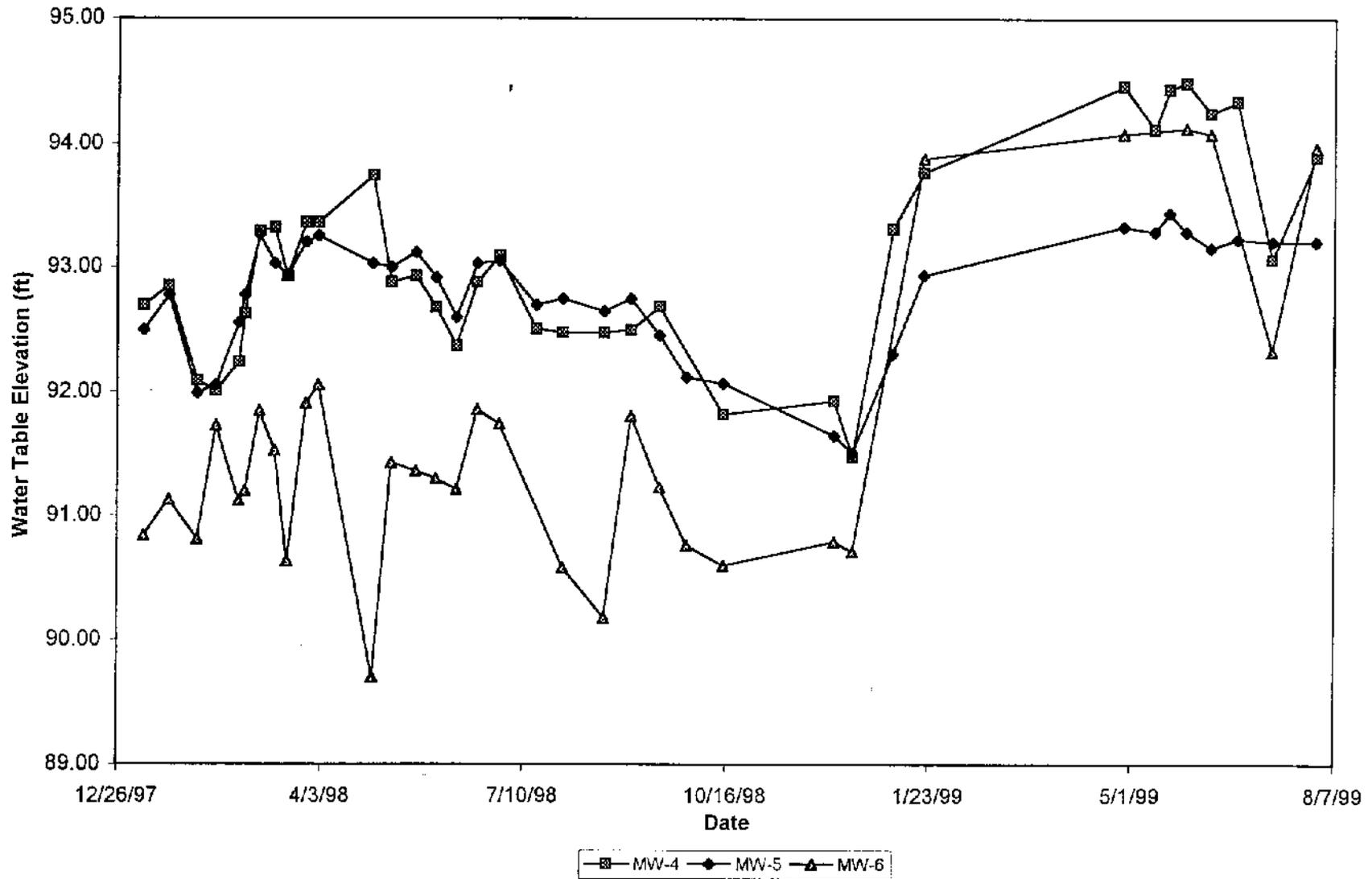
Well	T.O.P. (ft)	2/22/99	3/4/99	4/20/99	4/28/99	5/13/99	5/20/99	5/28/99	6/9/99	6/22/99	7/9/99	7/30/99
MW-01	99.81*				94.04	93.88	94.12	93.93	93.85	93.86	92.49	94.47
MW-02	100.15				93.80			93.78		93.75		95.03
MW-03	100.00	94.79	94.82	94.81	94.79	94.32	94.87	94.66	94.47	94.40	94.47	94.58
MW-04	99.98				94.46	94.12	94.44	94.49	94.25	94.34	93.07	93.90
MW-05	99.98				93.33	93.29	93.44	93.29	93.16	93.23	93.21	93.21
MW-06	99.08				94.08			94.13	94.08		92.33	93.97
MW-07	99.16				94.36	94.16	94.45	94.45	94.38	94.31	93.82	94.22
MW-08	99.67				93.40	93.09	93.47	93.24	93.07	92.97	92.60	92.93
MW-09	99.61				93.17	93.01	93.03	92.86	92.81	92.72		92.74
MW-11	99.33				92.17	90.05		90.08	90.12	90.10	89.99	90.31
MW-12	99.00											
MW-13	98.65				89.08	88.96		89.20	89.05	89.07	89.20	89.06
TE-02	98.93											

*New top of pipe elevation as of 7/9/99.

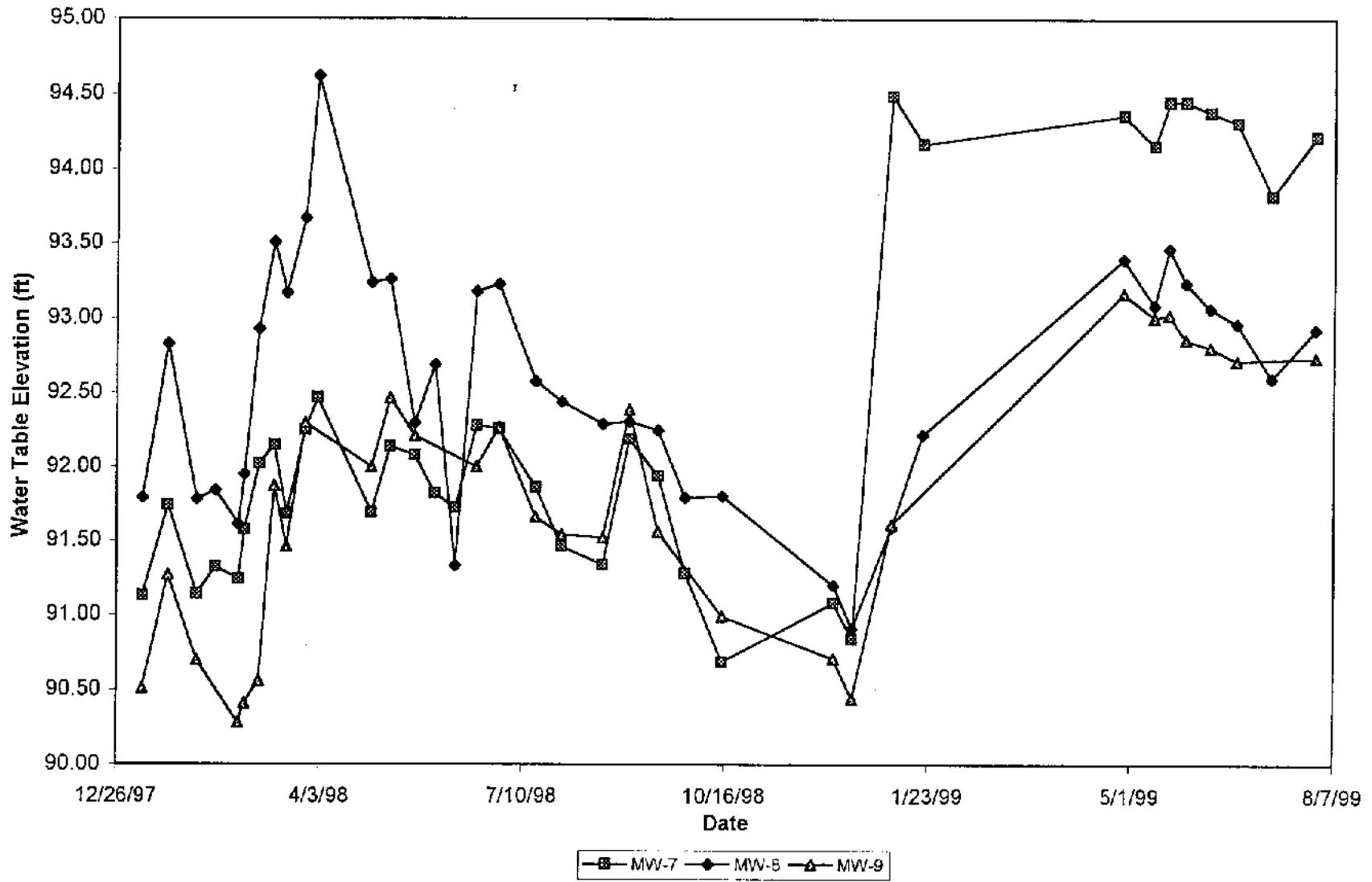
Midway Oil - Former Plaza Mobil Water Table Trend



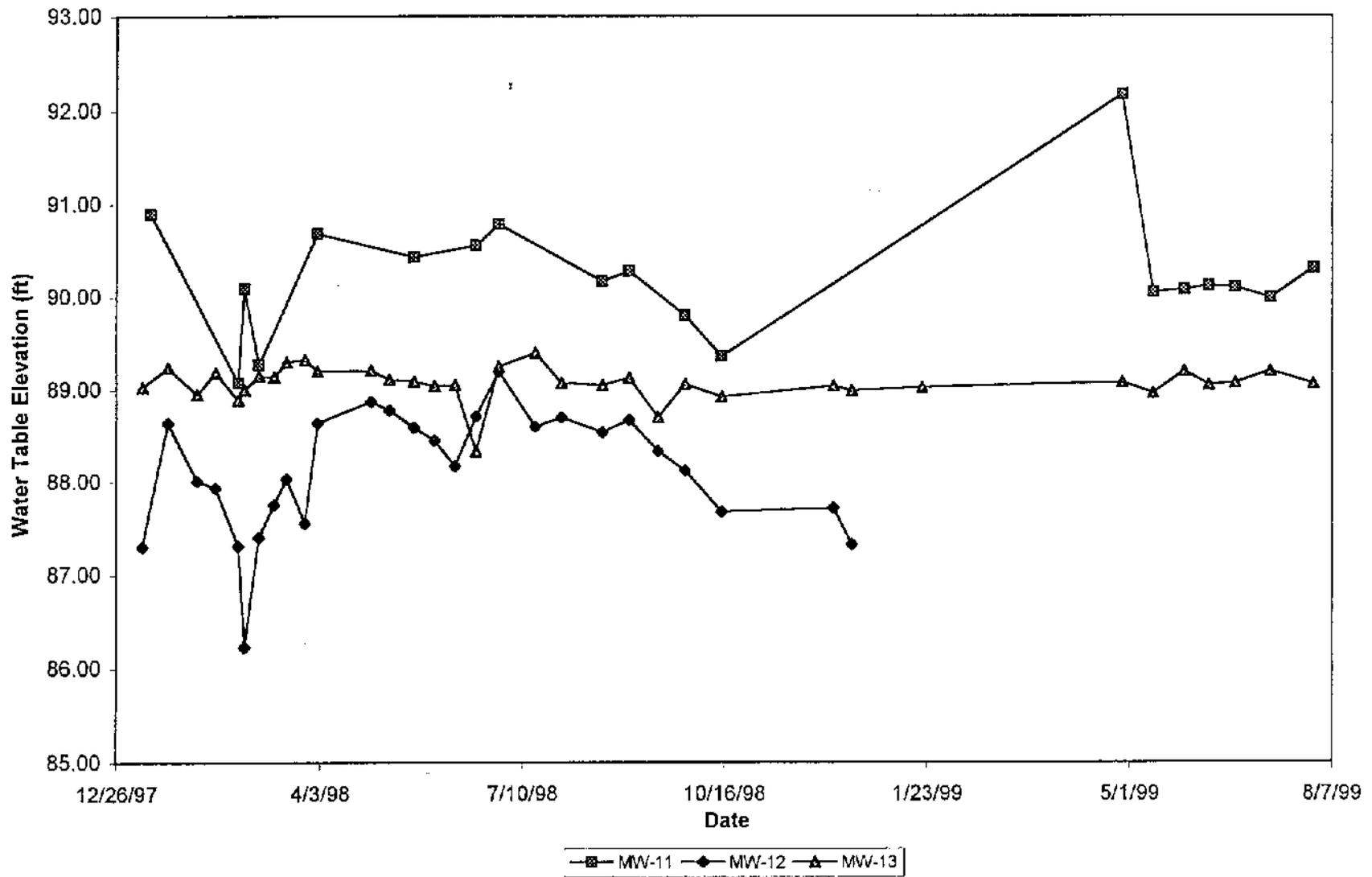
Midway Oil - Former Plaza Mobil Water Table Trend



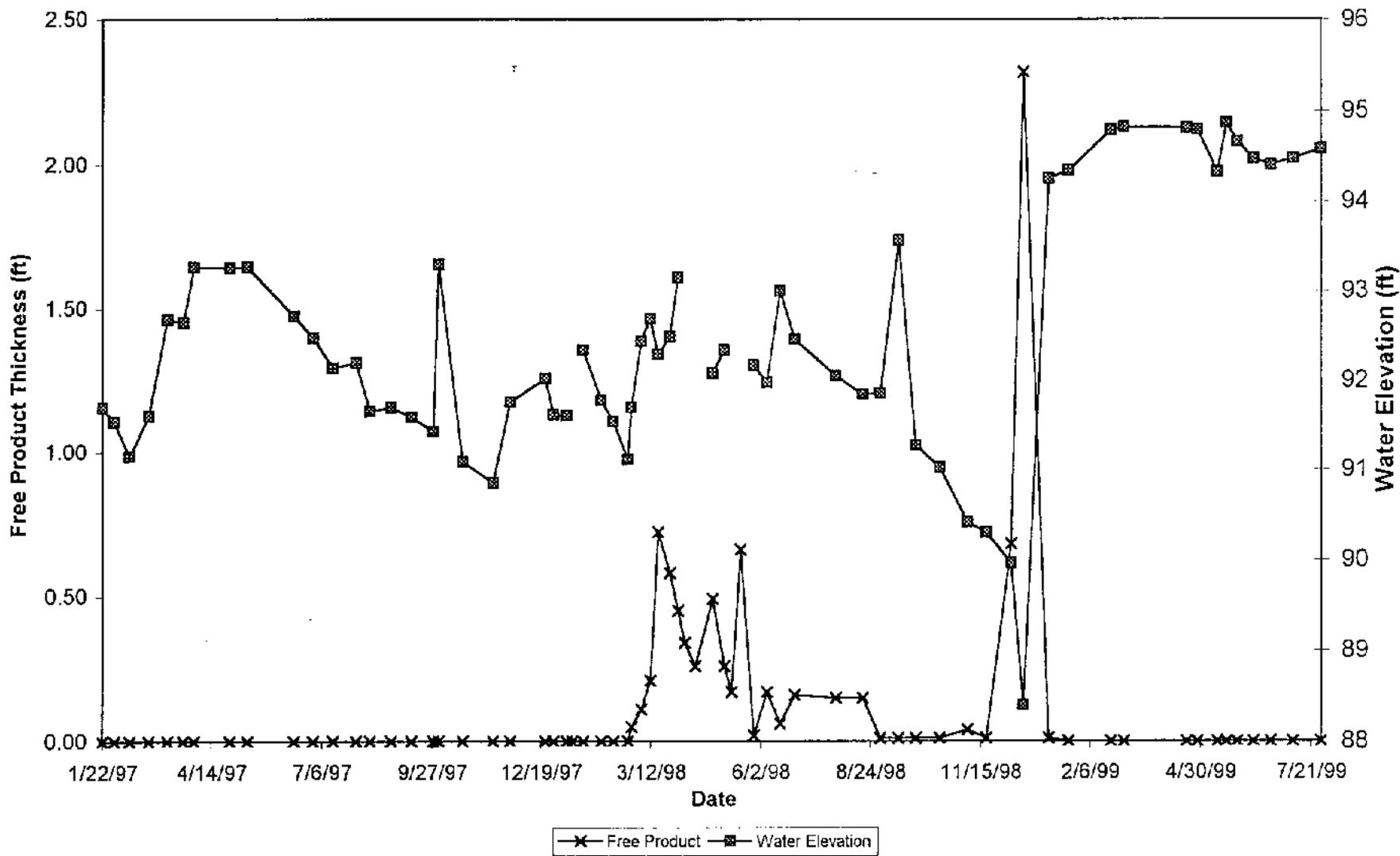
Midway Oil - Former Plaza Mobil Water Table Trend



Midway Oil - Former Plaza Mobil Water Table Trend



Midway Oil - Plaza Mobil/BP MW-3 Free Product



**Midway Oil - Plaza Mobil/BP
Rutland, Vermont
Water Quality Summary (ppb)**

Well	Compound	7/31/1998	10/16/1998	1/21/1999	4/28/1999	5/20/1999	7/30/1999
MW-01	Benzene	522	1,560	1,950	3,650		2,020
	Toluene	ND < 200	ND < 1,000	2,590	6,190		1,680
	Ethylbenzene	ND < 200	ND < 1,000	TBQ < 500	1,020		ND / < 1000
	Xylenes	ND < 200	ND < 2,000	2,990	7,870		2,280
	Total BTEX	< 1122	< 5,560	< 8,030	< 18,730		< 6,980
	MTBE	33400	68,400	51,000	91,500		78,900
	UIP	0	0	0	4		0
MW-02	Benzene	ND < 1	ND < 1	44.9	354		1,450
	Toluene	ND < 1	ND < 1	243	662		4,140
	Ethylbenzene	ND < 1	ND < 1	22.8	ND / < 100		548
	Xylenes	21.1	20.2	319	1,300		5,240
	Total BTEX	< 24	< 23	629.7	< 2,416		11,378
	MTBE	ND	ND < 2	472	5,940		18,100
	UIP	> 10	> 10	> 10	> 10		4
MW-03	Benzene	10,300	11,900	1,900		205.0	174.0
	Toluene	29,700	3,100	8,460		2,380	4,320
	Ethylbenzene	3,810	47,500	1,510		462.0	865.0
	Xylenes	28,500	31,500	10,700		3,650	5,830
	Total BTEX	72,310	94,000	22,570		6,697	11,189
	MTBE	46,700	22,200	972		ND / < 100	162
	UIP	> 10	> 10	> 10		> 10	> 10
MW-04	Benzene	7.5	63.5	1.4	ND / < 1		TBQ / < 10
	Toluene	ND < 1	1	ND < 1	ND / < 1		ND / < 10
	Ethylbenzene	ND < 1	6.6	ND < 1	ND / < 1		ND / < 10
	Xylenes	ND < 1	ND < 1	ND < 1	ND / < 1		ND / < 10
	Total BTEX	< 10.5	< 72.1	< 4.4	< 4.0		< 40.0
	MTBE	30.8	97.2	TBQ < 10	327		614
	UIP	7	> 10	0	0		0
MW-05	Benzene	21.6	1.7	ND < 1		859	1,340
	Toluene	2.7	ND < 1	ND < 1		6,250	10,600
	Ethylbenzene	1.4	ND < 1	ND < 1		757	1,070
	Xylenes	15.5	ND < 1	ND < 1		6,840	8,130
	Total BTEX	41.2	< 4.7	< 4		14,706	21,140
	MTBE	ND < 10	ND < 10	29.9		2,030	ND / < 2000
	UIP	> 10	0	0		> 10	> 10
MW-06	Benzene		ND < 1	ND < 1	ND < 1		ND < 1
	Toluene		ND < 1	ND < 1	ND < 1		ND < 1
	Ethylbenzene		ND < 1	ND < 1	ND < 1		ND < 1
	Xylenes		ND < 1	ND < 1	ND < 1		ND < 1
	Total BTEX		ND / < 4	ND / < 4	ND / < 4		ND / < 4
	MTBE		ND < 10	ND < 10	ND < 10		ND < 10
	UIP		0	0	0		0
MW-07	Benzene	ND < 5	ND < 20	ND < 2	ND < 1		ND < 1
	Toluene	ND < 5	ND < 20	ND < 2	ND < 1		ND < 1
	Ethylbenzene	ND < 5	ND < 20	ND < 2	ND < 1		ND < 1
	Xylenes	ND < 5	ND < 20	ND < 2	ND < 1		ND < 1
	Total BTEX	ND / < 20	ND / < 40	ND / < 8	ND / < 4		ND / < 4
	MTBE	145	ND < 10	134	TBQ < 10		ND < 10
	UIP	0	0	0	0		0

Blank = Not sampled
ND = None detected

TBQ = Total below quantitation limits
FP = Free product

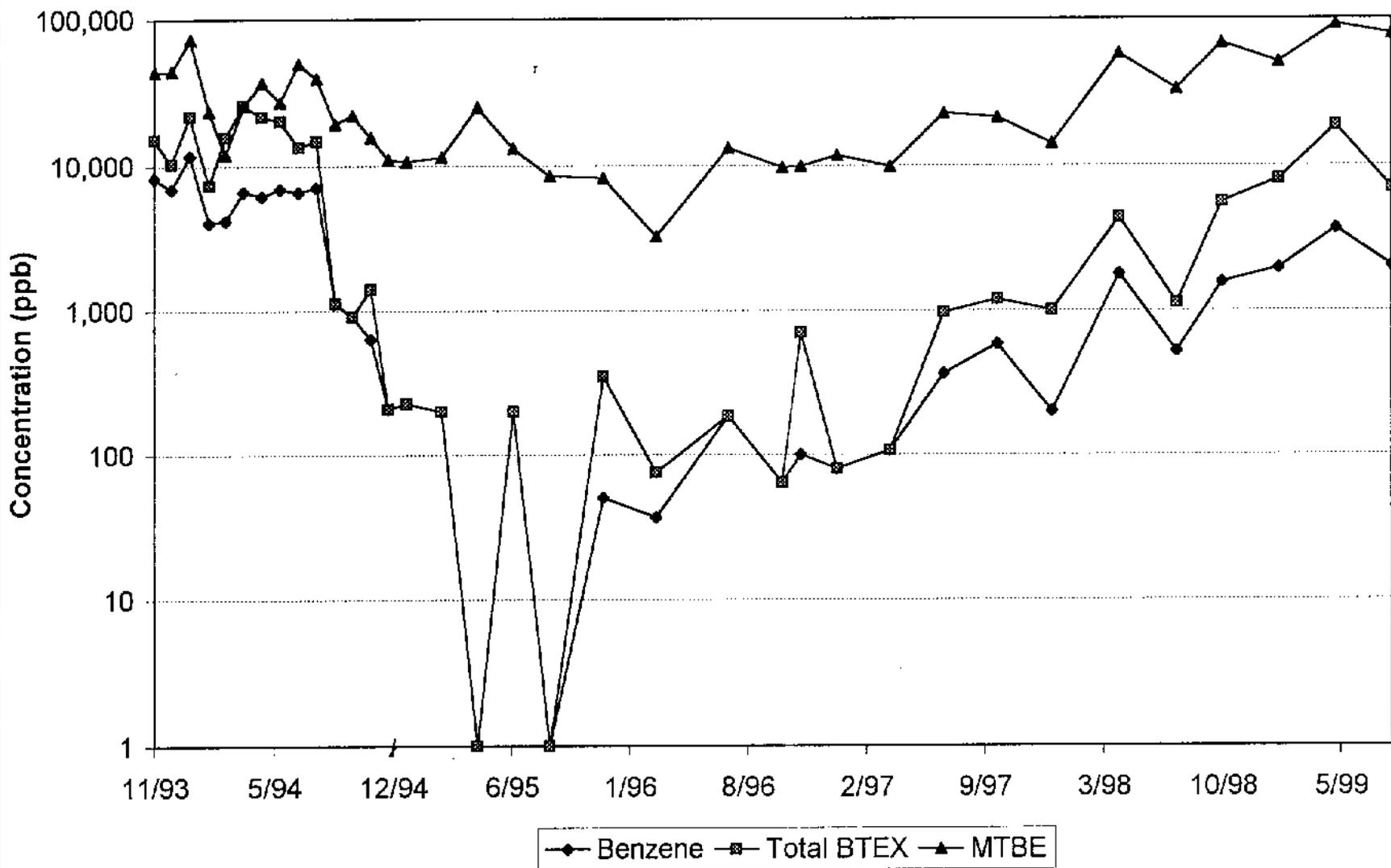
**Midway Oil - Plaza Mobil/BP
Rutland, Vermont
Water Quality Summary (ppb)**

Well	Compound	7/31/1998	10/16/1998	1/21/1999	4/28/1999	5/20/1999	7/30/1999
MW-08	Benzene	ND < 5	ND < 1	ND < 1	ND < 1		ND < 1
	Toluene	ND < 5	ND < 1	ND < 1	ND < 1		ND < 1
	Ethylbenzene	ND < 5	ND < 1	ND < 1	ND < 1		ND < 1
	Xylenes	ND < 5	ND < 1	ND < 1	ND < 1		ND < 1
	Total BTEX	ND / < 20	ND / < 4	ND / < 4	ND / < 4		ND / < 4
	MTBE	186	13.5	ND < 10	ND < 10		ND < 10
	UIP	0	0	0	0		0
MW-09	Benzene	ND < 1	ND < 1		257		35.5
	Toluene	ND < 1	3.5		207		ND < 20
	Ethylbenzene	ND < 1	ND < 1		ND < 200		ND < 20
	Xylenes	ND < 1	6.2		293		ND < 20
	Total BTEX	ND / < 4	< 11.7		< 957.0		< 95.5
	MTBE	30.4	ND < 10		21,200		2,540
	UIP	0	> 10		4		0
MW-11	Benzene		ND < 1		ND < 1		ND < 1
	Toluene		ND < 1		ND < 1		ND < 1
	Ethylbenzene		ND < 1		ND < 1		ND < 1
	Xylenes		ND < 1		ND < 1		ND < 1
	Total BTEX		ND / < 4		ND / < 4		ND / < 4
	MTBE		ND < 10		ND < 10		TBQ / < 10
	UIP		0		0		0
MW-12	Benzene	ND < 1	ND < 1				ND < 50
	Toluene	3.8	ND < 1				ND < 50
	Ethylbenzene	ND < 1	ND < 1				ND < 50
	Xylenes	3.1	ND < 1				ND < 100
	Total BTEX	< 8.9	ND / < 4				ND / < 250
	MTBE	122	106				3,590
	UIP	3	0				0
MW-13	Benzene	ND < 1	ND < 1	ND < 1	ND < 1		ND < 1
	Toluene	ND < 1	ND < 1	ND < 1	ND < 1		ND < 1
	Ethylbenzene	ND < 1	ND < 1	ND < 1	ND < 1		ND < 1
	Xylenes	ND < 1	ND < 1	ND < 1	ND < 1		ND < 1
	Total BTEX	ND / < 4	ND / < 4	ND / < 4	ND / < 4		ND / < 4
	MTBE	ND < 10	ND < 10	ND < 10	ND < 10		ND < 10
	UIP	0	0	0	0		0

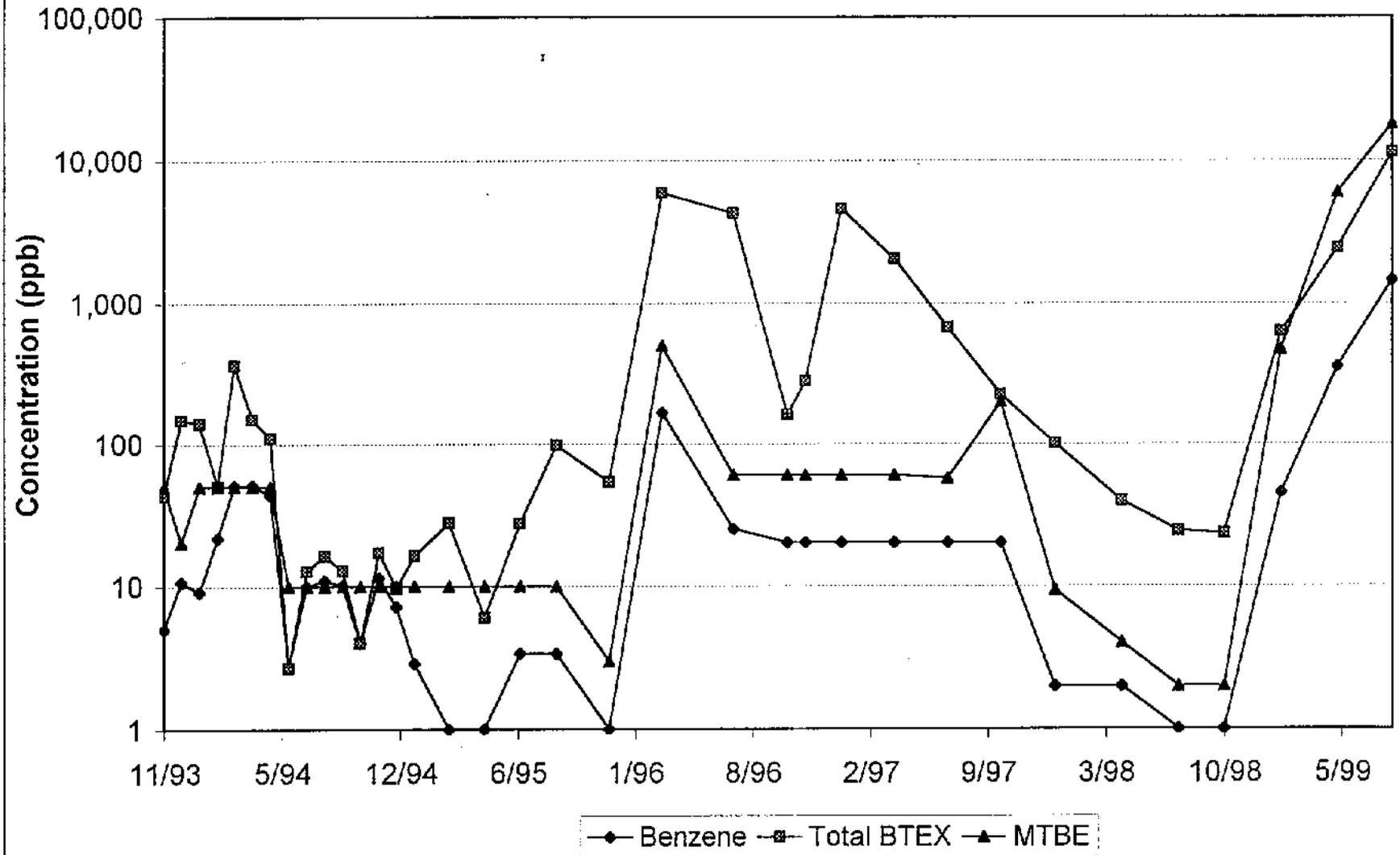
Blank = Not sampled
ND = None detected

TBQ = Total below quantitation limits
FP = Free product

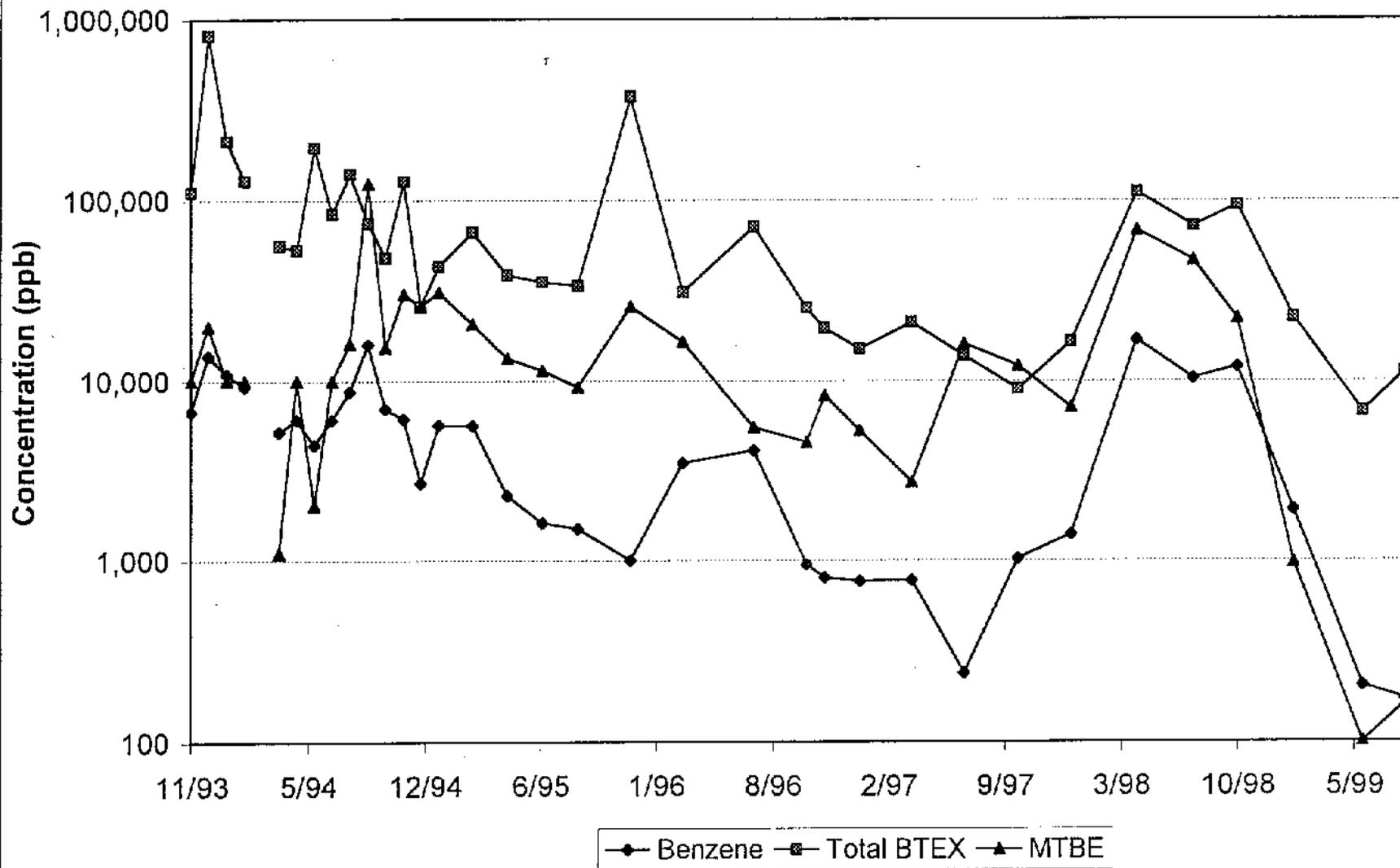
Former Midway Oil MW-1 Water Quality



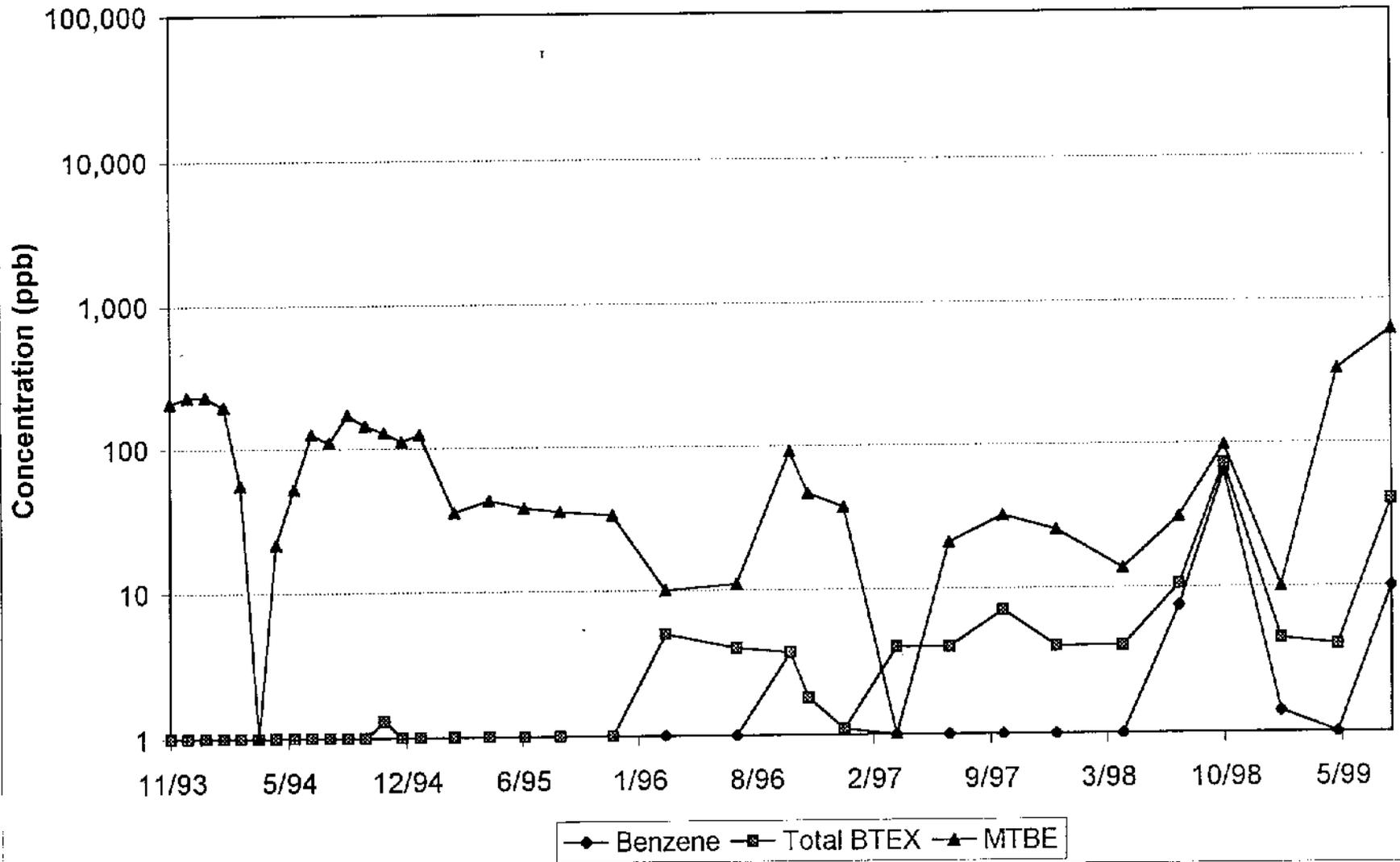
Former Midway Oil MW-2 Water Quality



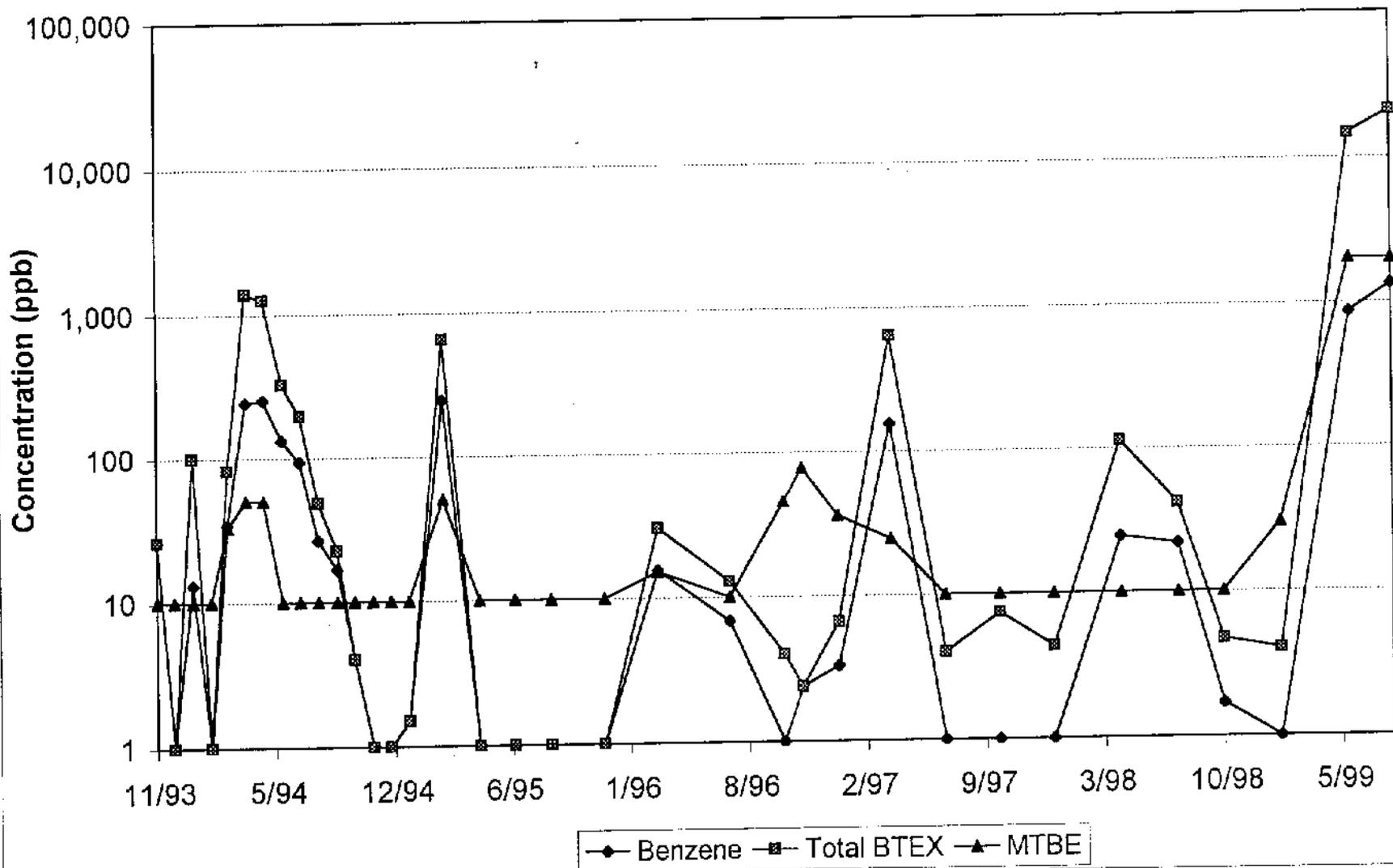
Former Midway Oil MW-3 Water Quality



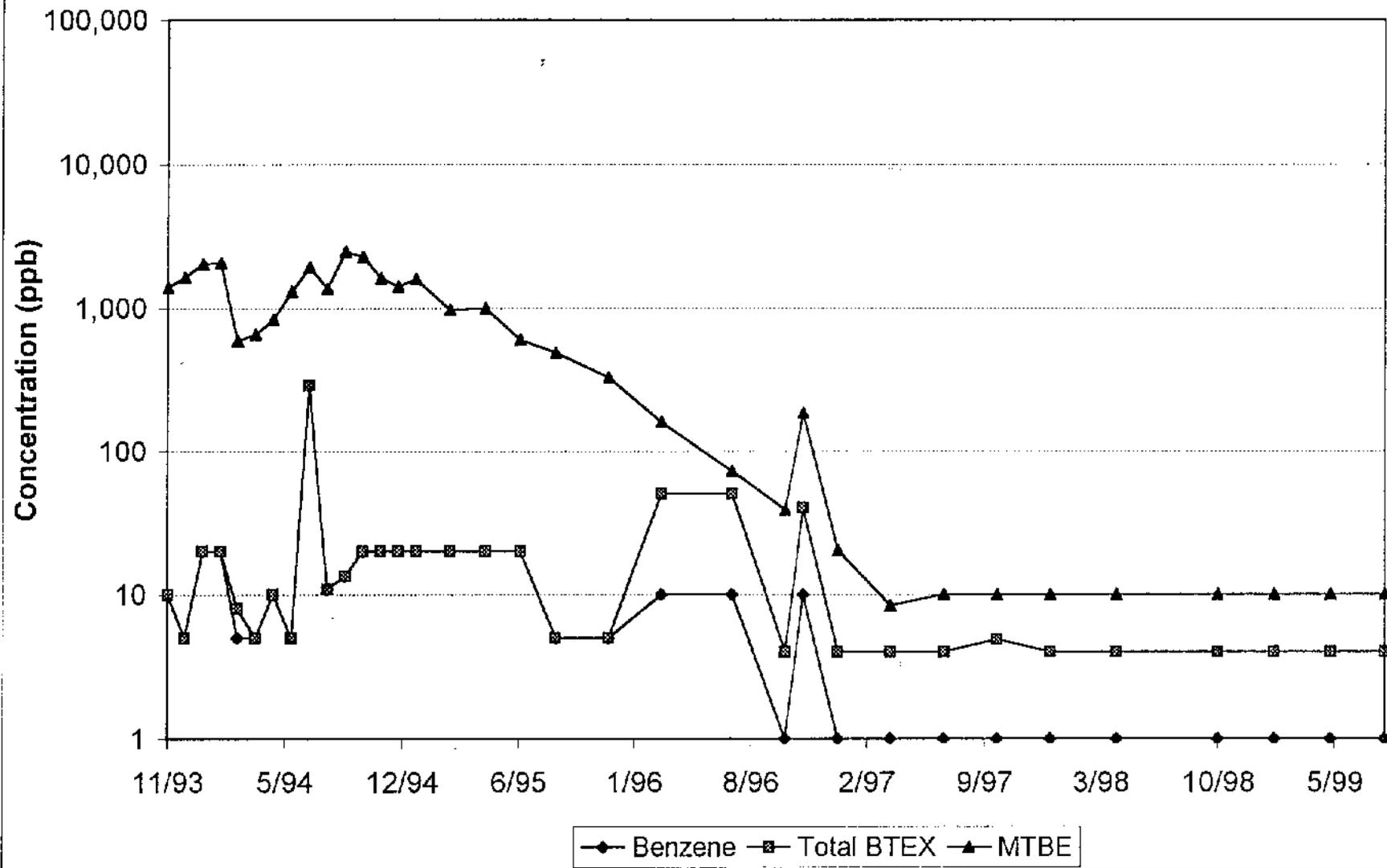
Former Midway Oil MW-4 Water Quality



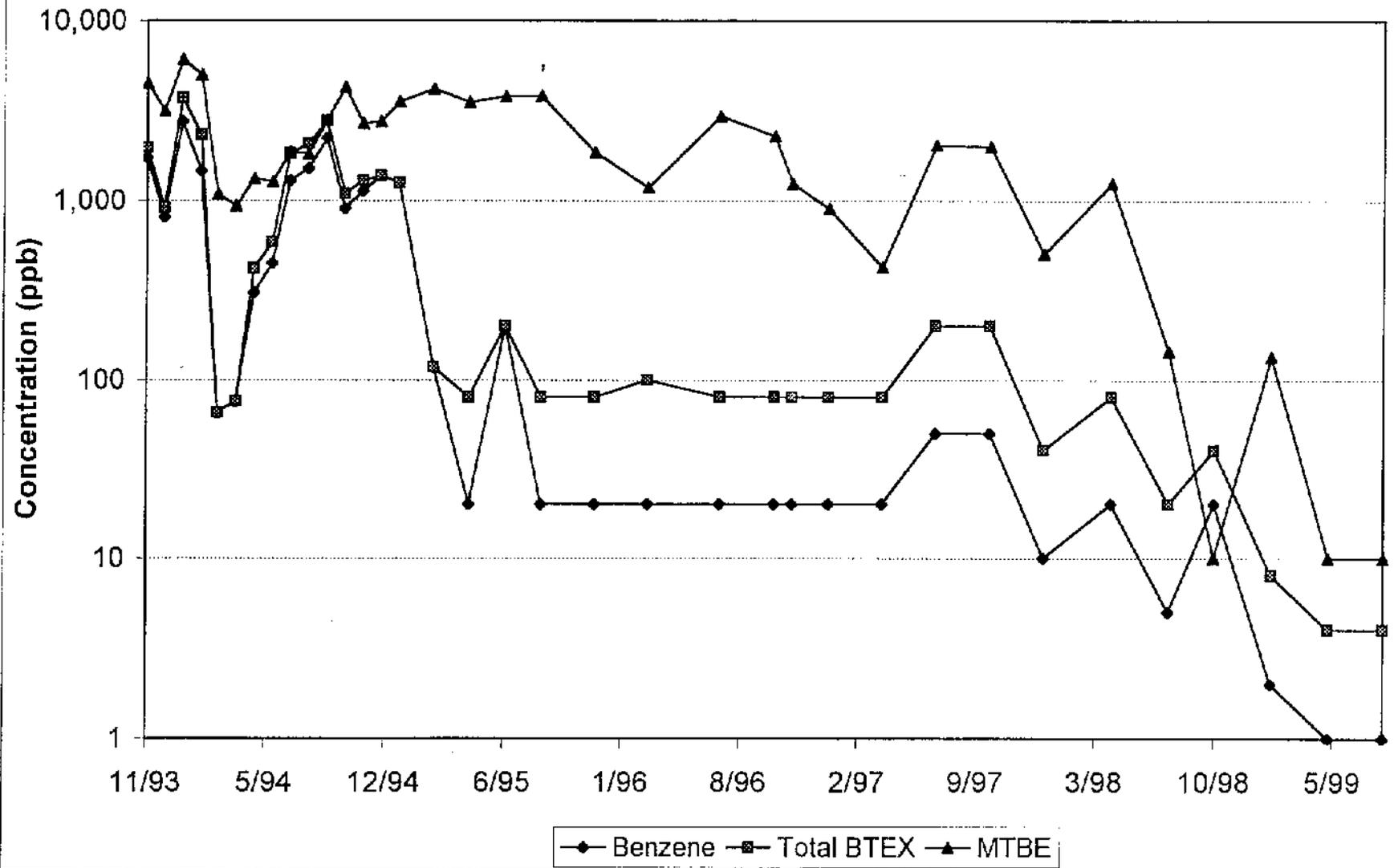
Former Midway Oil MW-5 Water Quality



Former Midway Oil MW-6 Water Quality



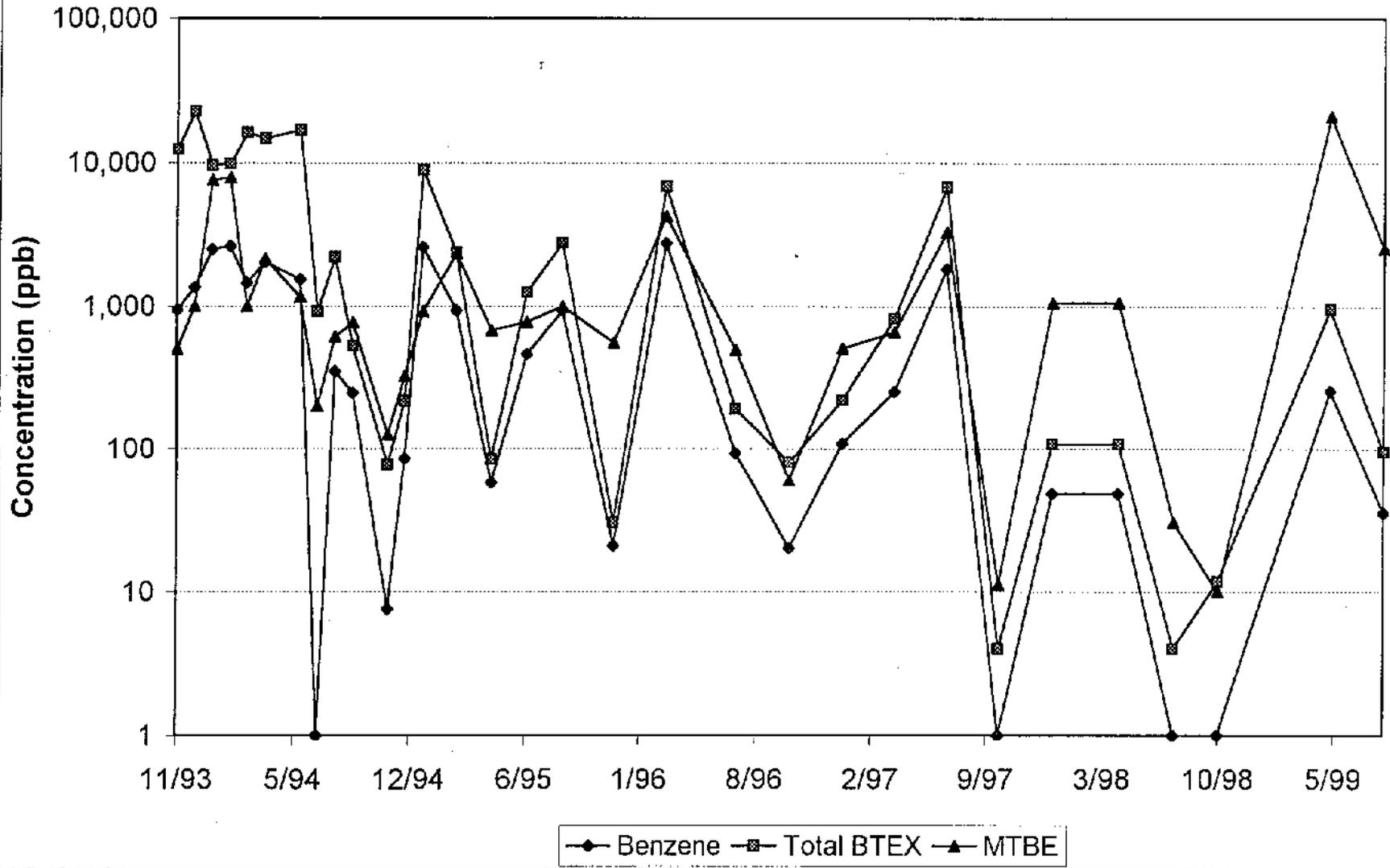
Former Midway Oil MW-7 Water Quality



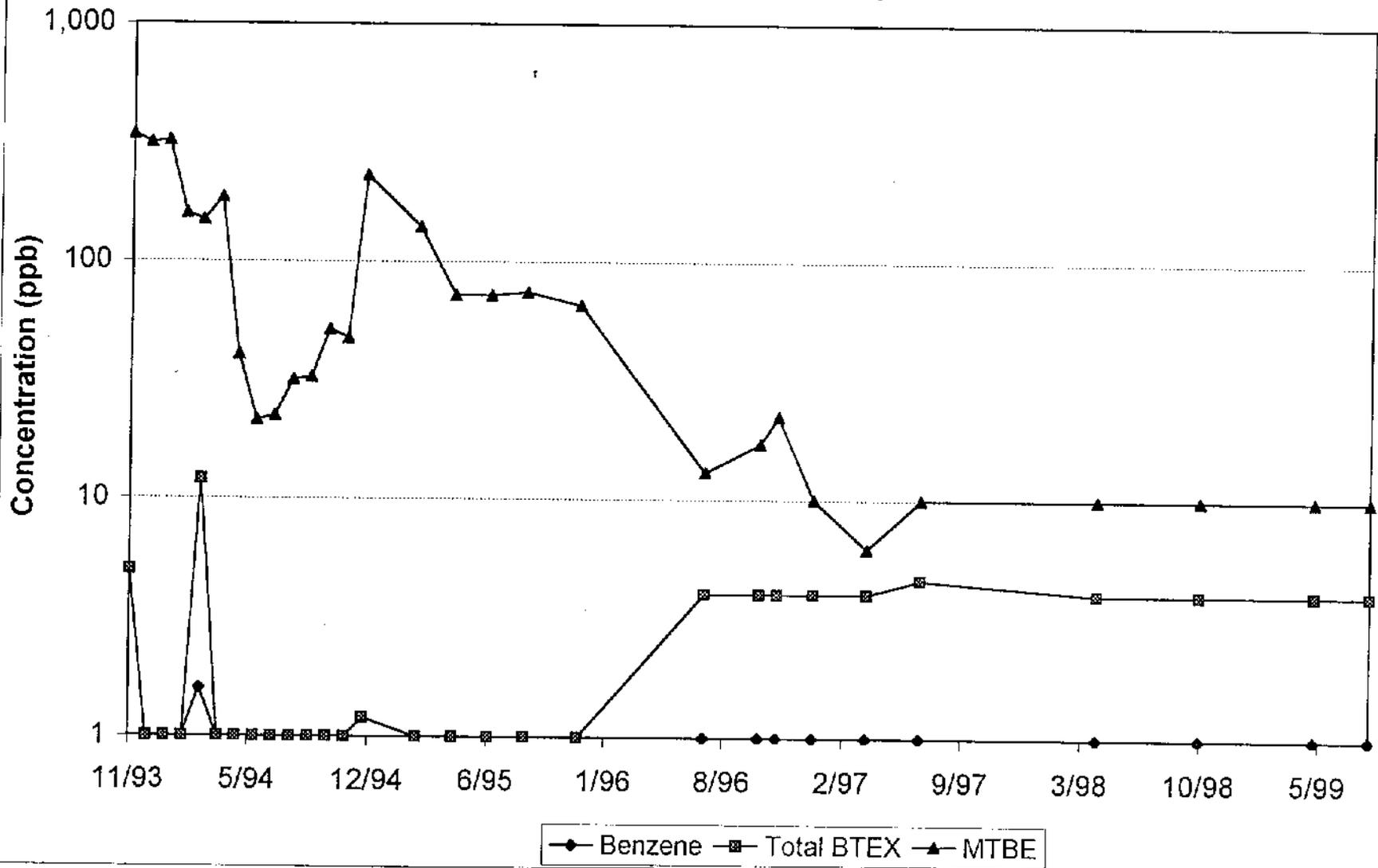
Former Midway Oil MW-8 Water Quality



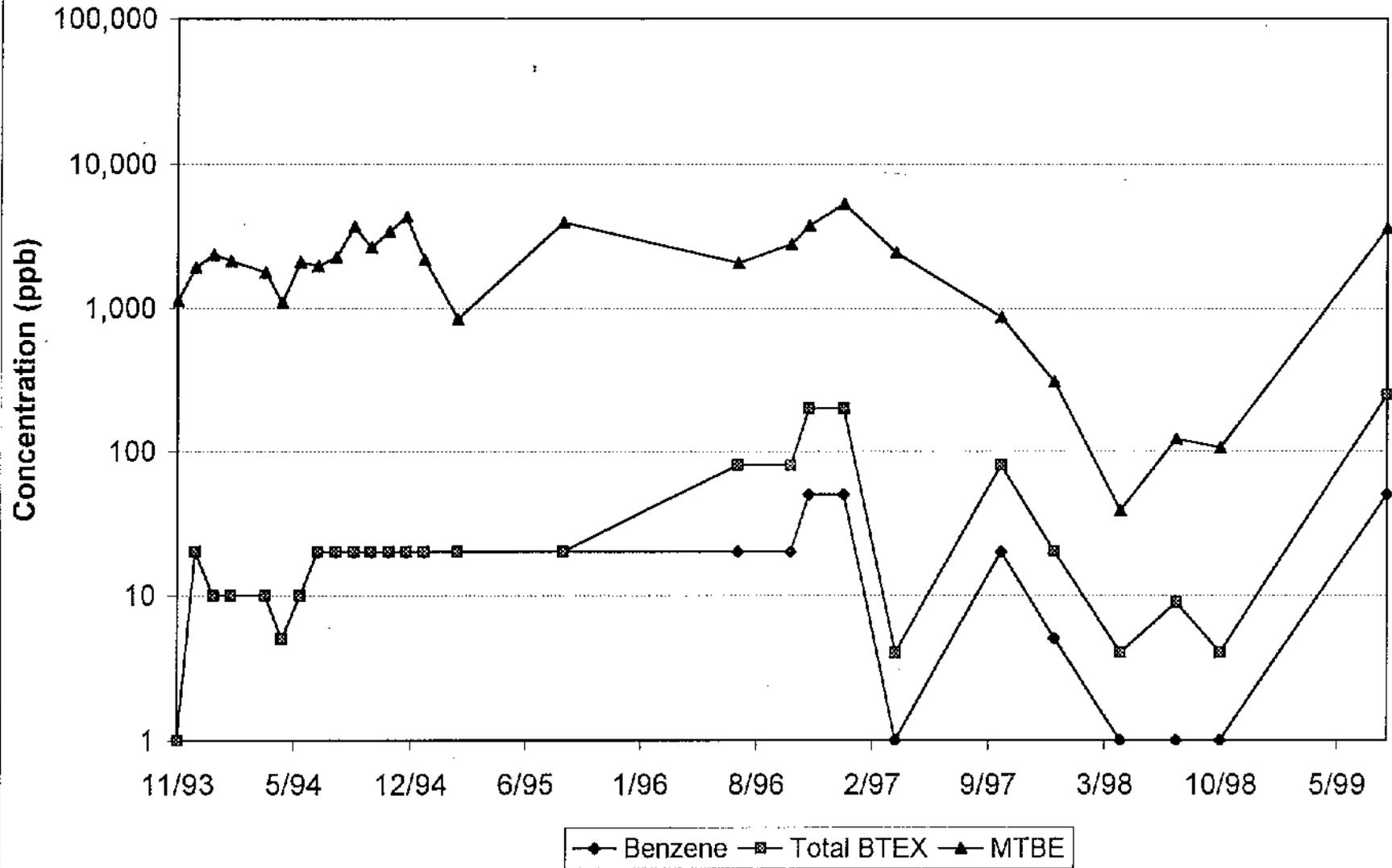
Former Midway Oil MW-9 Water Quality



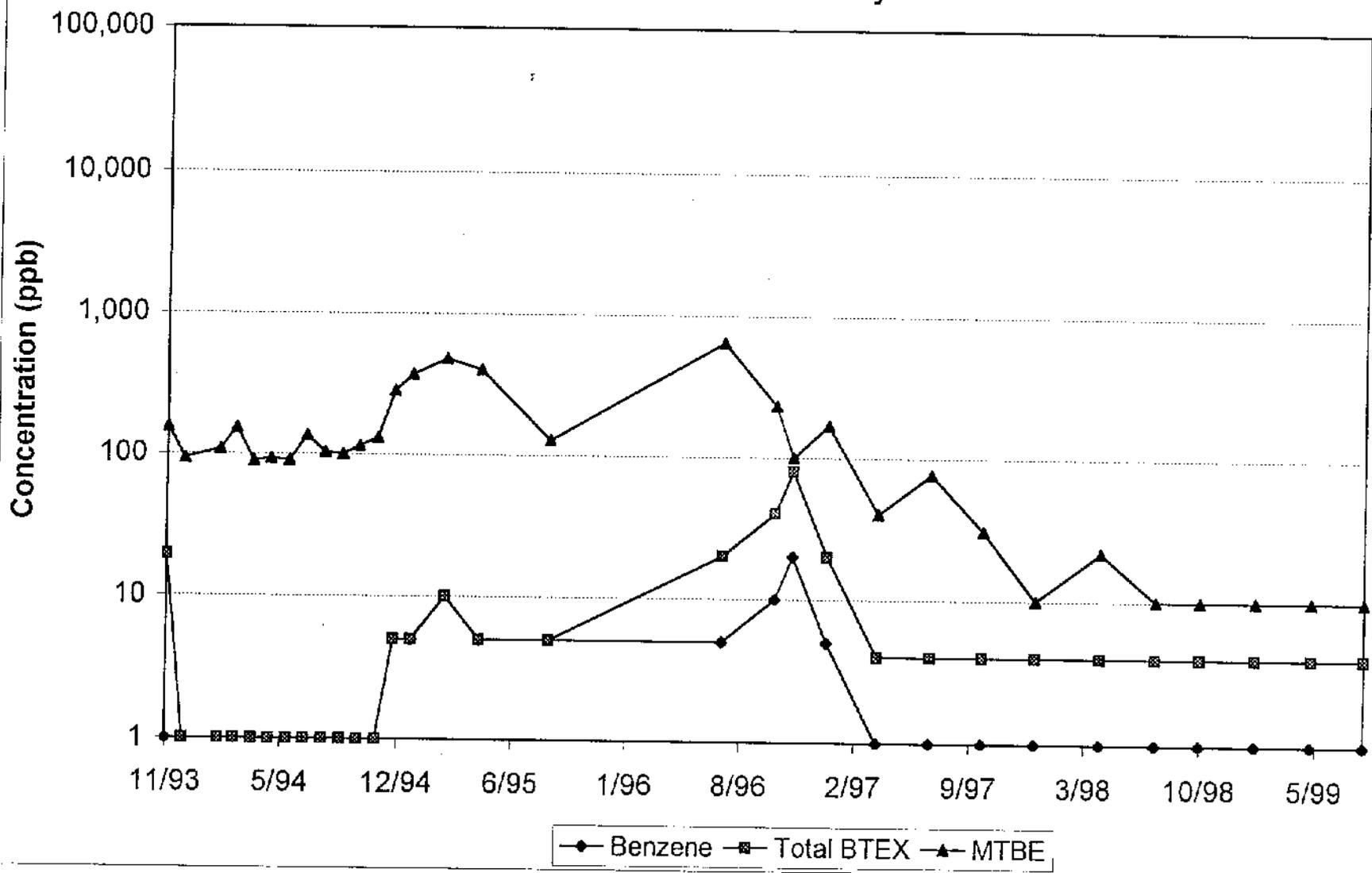
Former Midway Oil MW-11 Water Quality



Former Midway Oil MW-12 Water Quality



Former Midway Oil MW-13 Water Quality



Midway Oil - Plaza Mobil/BP
Rutland, Vermont
Blower and Sparger Monitoring Data

		Units	2/22/1999	3/4/1999	3/30/1999	4/20/1999	4/28/1999	5/13/1999	5/28/1999	6/9/1999	6/22/1999	7/9/1999	7/23/1999
Vacuum Blower	Vacuum Gauge	" H ₂ O	41	41	40	40	40	40	40	40	41	42	58
	Pressure Gauge	" H ₂ O	6.0	4.0	5.0	2.0	4.0	2.5	2.0	2.0	1.0	1.0	2.0
Sparger	Pressure Gauge	psi	8	5.5	5.5	6	8.5	7	6	6	5.5	6.5	6
	Line Velocity	ft/min	2700	850	1800	1317	1300	1200	1200	1380	2900	2180	1461

**Midway Oil - Plaza Mobil/BP
Rutland, Vermont
Headspace Gas Results and PID Readings**

Temperature (F)	Location	2/22/1999	3/4/1999	3/30/1999	4/20/1999	4/28/1999	5/13/1999	5/28/1999	6/9/1999	6/22/1999	7/9/1999	7/23/1999	8/4/1999
Background		25.2	61.4	62.4	65.6	59.3	50.0	79.8	83.1		84.0	93.7	
VES-01		27.2	58.2	61.3	66.5	57.3	56.1	76.0	78.7	84.5	81.6	97.3	76.8
VES-02		28.4	55.8	56.8	58.3	58.0	57.0	81.8	79.1	83.8	83.1	98.7	75.1
VES-03		28.8	57.4	58.2	64.5	56.6	55.9	74.0	78.6	83.2	81.4	96.6	76.4
VES-04		29.0	57.6	59.7	66.9	56.6	58.1	82.4	78.6	83.4	84.3	99.4	76.4
VES-05		26.2	59.2	60.7	68.3	57.3	58.2	84.0	80.7	86.1	84.5	98.5	77.1
VES-06		off	off	off	off	off	off	off	off	off	off	off	off
VES-07		off	off	off	off	off	off	off	off	off	off	off	off
VES-08		off	off	off	off	off	off	off	off	off	off	off	off
VES-09		29.0	56.6	56.6	67.0	56.8	57.6	80.8	80.0	80.0	82.2	98.5	74.4
VES-10		off	off	off	off	off	off	off	off	off	off	off	off
TE		29.2	54.8	54.8	59.7	55.9	54.3	83.0	75.0	78.7	80.1	98.7	75.7
Total Influent		27.8	57.2	56.1	63.4	57.0	56.9	74.4	76.8	82.9	80.0	98.7	77.1
Effluent													

Methane (%)	Location	2/22/1999	3/4/1999	3/30/1999	4/20/1999	4/28/1999	5/13/1999	5/28/1999	6/9/1999	6/22/1999	7/9/1999	7/23/1999	8/4/1999
VES-01		0.27	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.09		0.00	0.31
VES-02		0.18	0.47	0.09	0.00	0.00	0.00	0.14	0.14	0.18		0.00	0.12
VES-03		0.05	0.05	0.00	0.00	0.05	0.05	0.05	0.05	0.09		0.00	0.26
VES-04		0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09		0.00	0.14
VES-05		0.05	0.05	0.00	0.00	0.03	0.00	0.00	0.00	0.05		0.00	0.18
VES-06		off	off	off	off	off	off	off	off	off		off	off
VES-07		off	off	off	off	off	off	off	off	off		off	off
VES-08		off	off	off	off	off	off	off	off	off		off	off
VES-09		0.10	0.09	0.00	0.00	0.00	0.00	0.05	0.00	0.09		0.00	0.05
VES-10		off	off	off	off	off	off	off	off	off		off	off
TE		0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05		0.00	0.14
Total Influent		0.10	0.05	0.04	0.00	0.00	0.00	0.00	0.00	0.05		0.00	0.17
Effluent		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.14

Carbon Dioxide (%)	Location	2/22/1999	3/4/1999	3/30/1999	4/20/1999	4/28/1999	5/13/1999	5/28/1999	6/9/1999	6/22/1999	7/9/1999	7/23/1999	8/4/1999
VES-01		0.28	0.21	0.44	0.05	0.00	0.00	0.13	0.89	0.69		0.09	0.69
VES-02		0.13	0.12	0.12	0.04	0.00	0.00	0.77	0.85	0.69		0.37	0.53
VES-03		0.12	0.12	0.08	0.08	0.08	0.07	0.21	0.29	0.21		0.33	0.53
VES-04		0.40	0.33	0.33	0.25	0.24	0.26	0.41	0.41	0.37		0.37	0.86
VES-05		0.20	0.20	0.68	0.53	0.49	0.55	1.17	0.77	0.73		0.65	1.78
VES-06		off	off	off	off	off	off	off	off	off		off	off
VES-07		off	off	off	off	off	off	off	off	off		off	off
VES-08		off	off	off	off	off	off	off	off	off		off	off
VES-09		0.08	0.04	0.04	0.12	0.04	0.02	0.21	0.13	0.12		0.21	0.25
VES-10		off	off	off	off	off	off	off	off	off		off	off
TE		0.12	0.12	0.16	0.29	0.25	0.27	0.49	0.41	0.49		0.53	0.57
Total Influent		0.16	0.20	0.20	0.17	0.17	0.19	0.37	0.09	0.45		0.37	0.57
Effluent		0.04	0.14	0.17	0.08	0.08	0.09	0.05	0.21	0.21		0.05	0.25

Oxygen (%)	Location	2/22/1999	3/4/1999	3/30/1999	4/20/1999	4/28/1999	5/13/1999	5/28/1999	6/9/1999	6/22/1999	7/9/1999	7/23/1999	8/4/1999
VES-01		20.2	20.5	18.7	20.8	20.9	20.9	20.7	19.7	20.1		20.8	20.0
VES-02		20.5	20.2	20.7	20.8	20.9	20.9	19.8	19.8	20.0		20.4	20.2
VES-03		20.6	20.8	20.8	20.8	20.8	20.8	20.7	20.5	20.7		20.5	20.2
VES-04		20.2	20.5	20.6	20.6	20.6	20.6	20.4	20.5	20.5		20.4	19.8
VES-05		20.8	20.6	19.9	20.0	20.2	20.3	18.8	19.6	19.8		20.0	18.5
VES-06		off	off	off	off	off	off	off	off	off		off	off
VES-07		off	off	off	off	off	off	off	off	off		off	off
VES-08		off	off	off	off	off	off	off	off	off		off	off
VES-09		20.6	20.8	20.8	20.7	20.8	20.8	20.7	20.7	20.8		20.7	20.6
VES-10		off	off	off	off	off	off	off	off	off		off	off
TE		20.6	20.8	20.7	20.6	20.6	20.6	20.5	20.4	20.3		20.1	20.2
Total Influent		20.6	20.7	20.5	20.7	20.7	20.7	20.5	20.8	20.4		20.3	20.2
Effluent		20.8	20.8	20.7	20.8	20.8	20.8	20.8	20.7	20.7		20.9	20.6

PID (ppm)	Location	2/22/1999	3/4/1999	3/30/1999	4/20/1999	4/28/1999	5/13/1999	5/28/1999	6/9/1999	6/22/1999	7/9/1999	7/23/1999	8/4/1999
VES-01		138.0	63.9	65.0	0.7	2.3	1.9	0.1	15.1	8.1	0.1	1.2	5.9
VES-02		152.0	139.9	11.9	7.3	6.8	6.5	0.1	18.5	39.0	0.1	2.4	18.3
VES-03		16.3	19.9	25.0	0.9	132.0	120.0	0.1	38.9	25.0	0.1	40.0	17.4
VES-04		4.5	4.0	0.8	1.5	3.8	4.9	0.1	1.5	1.1	0.1	4.2	0.7
VES-05		23.0	20.9	1.8	1.8	2.2	0.9	0.1	3.1	2.0	0.1	3.5	1.6
VES-06		off	off	off	off	off	off	off	off	off		off	off
VES-07		off	off	off	off	off	off	off	off	off		off	off
VES-08		off	off	off	off	off	off	off	off	off		off	off
VES-09		57.0	50.9	18.0	40.0	25.0	27.0	0.1	7.5	9.5	0.1	2.2	10.5
VES-10		off	off	off	off	off	off	off	off	off		off	off
TE		1.7	1.8	2.2	0.4	1.3	1.3	1.0	0.4	1.0	0.1	0.2	0.6
Total Influent		50.0	33.9	50.0	24.0	68.0	70.0	0.1	14.5	15.9	0.1	13.2	10.4
Effluent		0.9	1.5	2.1	0.9	0.6	0.6	0.7	1.5	2.2	2.1	1.5	1.4

Note: Background readings subtracted from methane, carbon dioxide, and PID reported readings.

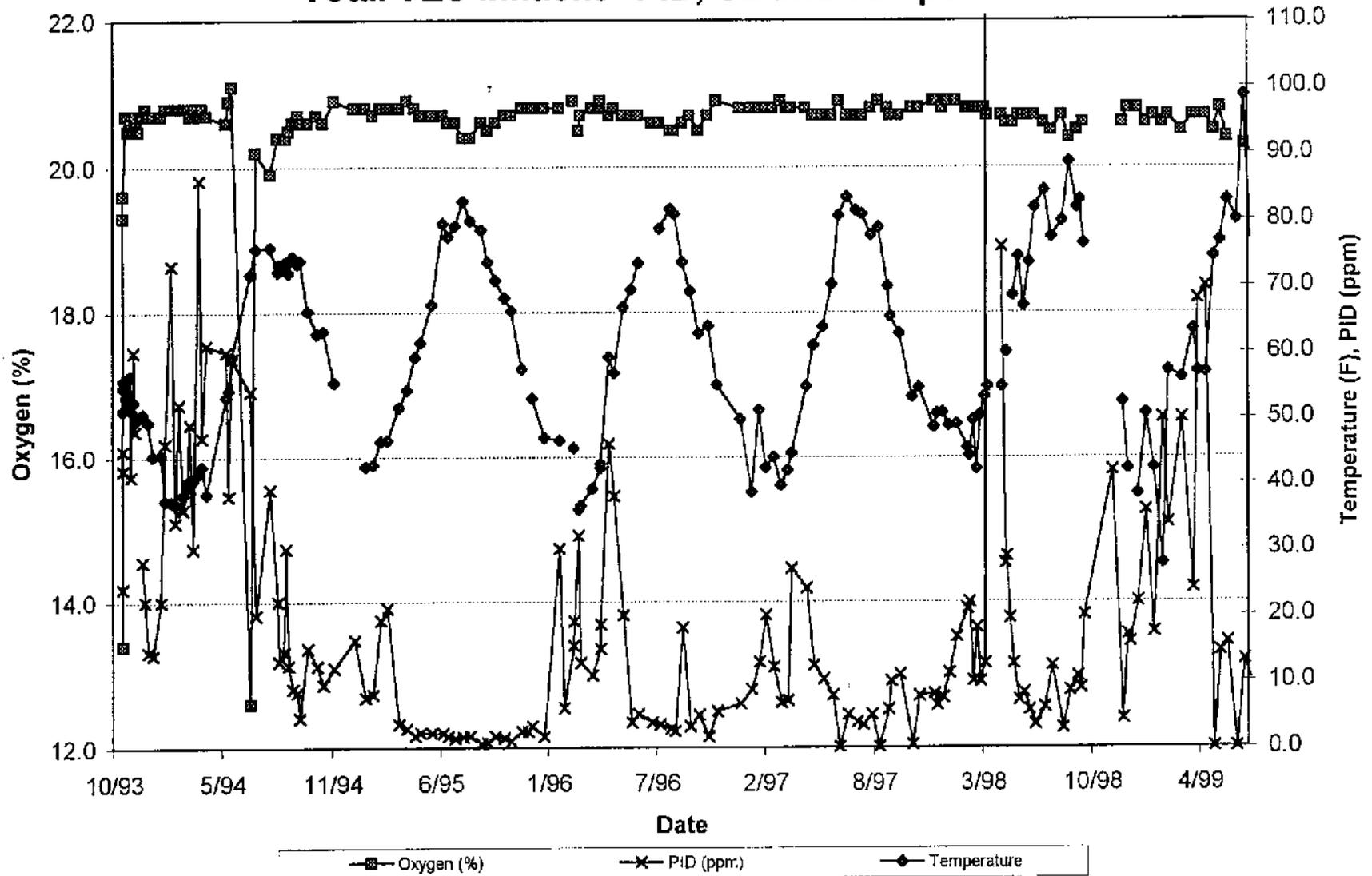
Midway Oil - Plaza Mobil/BP
Rutland, Vermont
Flow and Vacuum Readings

Flow (ft ³ /min)	Location	2/22/1999	3/4/1999	3/30/1999	4/20/1999	4/28/1999	5/13/1999	5/28/1999	6/9/1999	6/22/1999	7/9/1999	7/23/1999	8/4/1999
	VES-01	6.3	3.3	8.7	11.5	11.1	10.9	11.3	12.2	10.0	17.4	0.9	13.1
	VES-02	13.1	10.9	10.9	10.7	10.9	10.9	10.7	10.9	11.3	8.0	1.2	7.6
	VES-03	15.3	10.4	39.2	17.4	11.1	11.3	10.7	11.8	15.3	18.5	2.3	8.7
	VES-04	13.1	3.3	9.8	12.3	10.9	10.5	11.1	11.8	9.8	8.7	0.8	7.8
	VES-05	6.5	1.6	7.8	10.6	9.8	9.2	10.0	12.9	9.8	8.3	1.2	8.7
	VES-06												
	VES-07												
	VES-08												
	VES-09	10.9	4.9	10.0	11.1	10.9	10.0	10.7	12.0	12.0	8.9	0.7	9.0
	VES-10												
	TE	10.7	6.3	10.9	13.0	10.2	10.7	10.5	12.9	12.6	13.5	1.9	7.6
	Total Influent	85.0	37.1	91.6	43.6	28.3	27.3	27.3	34.9	82.8	86.1	4.9	41.4
	AS-01	1.3	0.7	1.1	1.5	0.9	0.9	1.1	4.4	2.2	0.0	1.0	1.1
	AS-02	1.6	1.5	2.0	2.2	1.7	1.9	1.6	4.8	2.8	0.0	3.1	2.2
	AS-03	2.0	3.8	1.5	1.2	1.1	1.3	1.1	3.9	1.2	6.5	3.5	2.2
	AS-04												
	AS-05	12.0	14.7	9.8	15.0	14.6	14.2	14.2	19.6	18.5	20.7	21.7	20.7
	AS-06												
	AS-07												
	AS-08												
	AS-09		2.2	3.3	5.7	5.2	5.0	4.8	7.2	4.8	7.1	8.2	6.0
	AS-10	10.9	9.8	8.3	11.2	10.7	10.5	10.5	12.9	14.2	13.6	13.8	13.1
	AS-11	1.7	1.6	2.6	1.0	1.7	1.5	1.6	3.9	2.4	4.9	4.4	3.9
	AS-12	7.6	4.1	6.1	11.9	15.0	15.5	14.6	9.8	8.3	11.3	9.4	5.5
	AS-13	8.7	7.6	5.5	11.8	13.5	14.2	13.7	10.2	9.8	10.9	9.5	7.6
	AS-14												
	AS-15	7.6	3.8	3.3	4.4	4.4	3.9	4.6	4.8	3.2	6.5	8.1	4.4
	Total Sparger	53.5	49.9	43.4	65.9	68.9	68.8	67.8	81.5	67.4	81.6	82.8	66.6

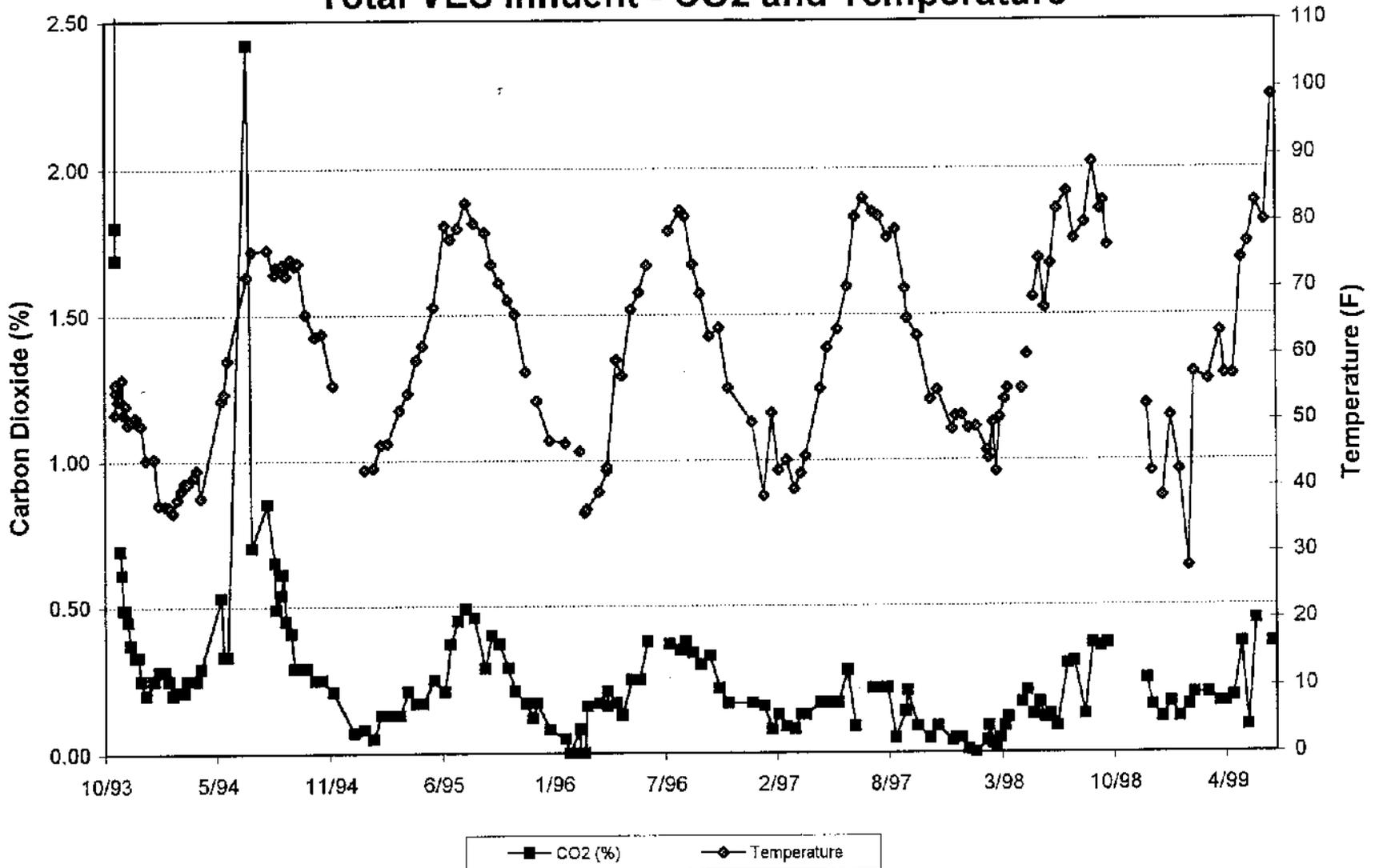
Extraction/Injection ratio	2/22/1999	3/4/1999	3/30/1999	4/20/1999	4/28/1999	5/13/1999	5/28/1999	6/9/1999	6/22/1999	7/9/1999	7/23/1999	8/4/1999
	1.59	0.74	2.11	0.66	0.41	0.40	0.40	0.43	1.23	1.05	0.06	0.62

Vacuum ("H ₂ O)	Location	2/22/1999	3/4/1999	3/30/1999	4/20/1999	4/28/1999	5/13/1999	5/28/1999	6/9/1999	6/22/1999	7/9/1999	7/23/1999	8/4/1999
	VES-01	39	38	33	36	36	37	37	40	36	32	32	29
	VES-02	39	38	34	35	35	38	38	38	37	32	32	28
	VES-03	39	38	33	37	37	40	40	40	35	32	32	28
	VES-04	39	38	32	36	36	40	40	38	36	32	32	27
	VES-05	39	38	32	35	35	36	36	38	34	32	32	28
	VES-06												
	VES-07												
	VES-08												
	VES-09	39	40	34	35	35	40	40	38	37	32	32	27
	VES-10												
	TE	1.40	1.60	1.30	1.00	1.00	1.00	1.00	1.20	1.20	1.30	1.30	1.00
	Total Influent	40	40	40	35	35	38	38	40	37	35	35	30

Midway Oil - Plaza Mobil/BP Total VES Influent - PID, O2 and Temperature



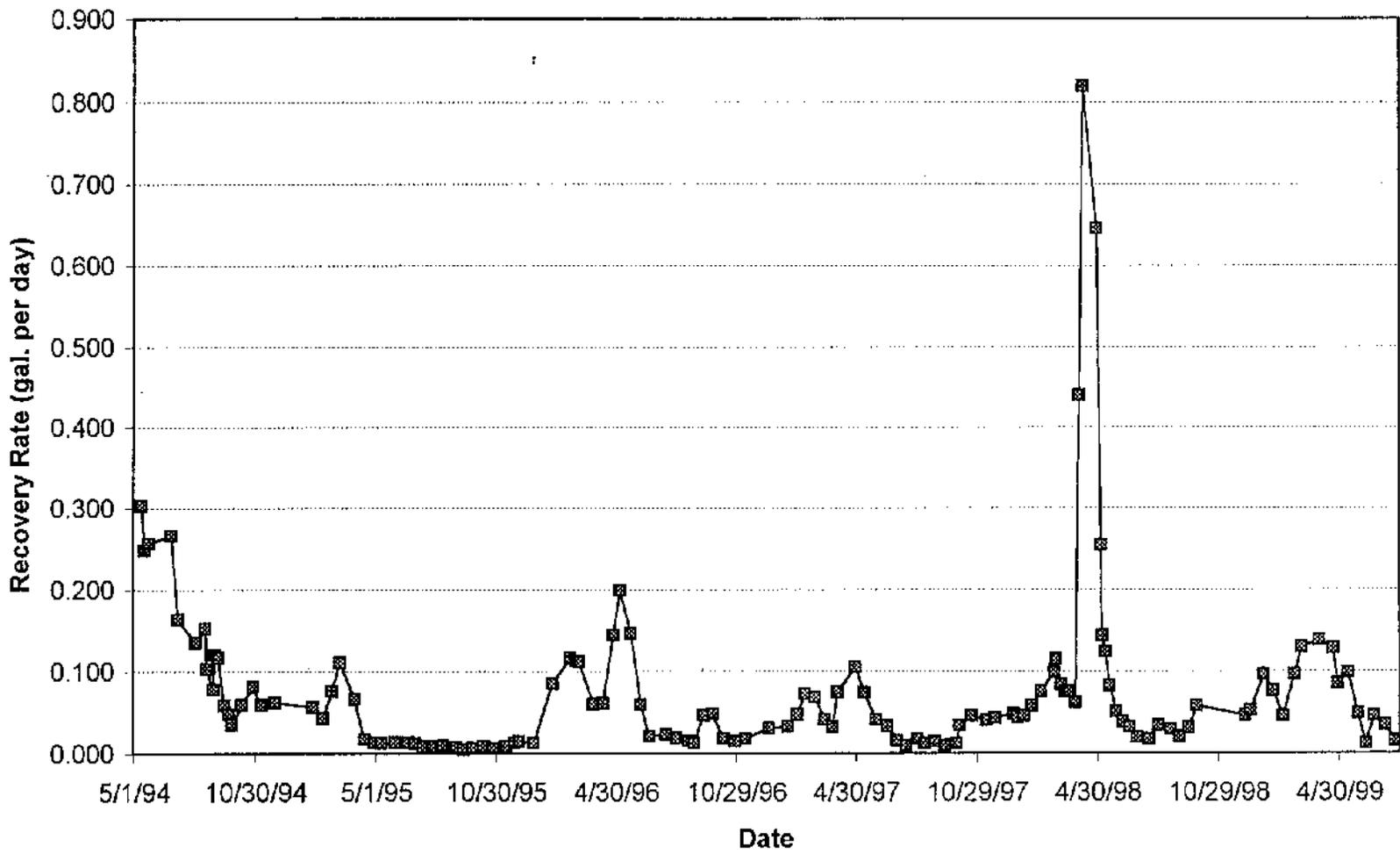
Midway Oil - Plaza Mobil/BP Total VES Influent - CO2 and Temperature



**Midway Oil - Plaza Mobil/BP
Rutland, Vermont
Petroleum Hydrocarbon Removal Calculations with PID Readings
VES Influent**

Hydrocarbon Removal	Characteristic	Units	3/30/1999	4/20/1999	4/28/1999	5/13/1999	5/28/1999	6/9/1999	6/22/1999	7/9/1999	7/23/1999
Input	Diameter of pipe	2 in									
	Velocity	ft/min	4200	2000	1300	1250	1250	1600	3800	3950	226
	PID	ppm	50.0	24.0	68.0	70.0	0.1	14.5	15.9	0.1	13.2
	CO2	%	0.20	0.17	0.17	0.19	0.37	0.09	0.45		0.37
	CO2 Bkg	%	0.15	0.15	0.15	0.15	0.15	0.15	0.15		0.15
	O2	%	20.5	20.7	20.7	20.7	20.5	20.8	20.4		20.3
Physical	Avg PID	ppm	42.0	37.0	46.0	69.0	35.1	7.3	15.2	8.0	6.7
	HC	lb/d	0.995	0.923	0.610	0.708	0.352	0.084	0.330	0.249	0.112
	HC	gal/d	0.138	0.128	0.084	0.098	0.049	0.012	0.046	0.035	0.015
	HC	gal/period	3.581	2.681	0.676	1.469	0.731	0.139	0.594	0.587	0.216
	Total HC	gal	133.9	136.6	137.3	138.8	139.5	139.6	140.2	140.8	141.0
Biological CO2 Calculations	HC	gal/period	6.097	3.623	0.420	0.912	3.875	2.175	6.697		10.225
	HC	gal/d	0.235	0.173	0.052	0.061	0.258	0.181	0.515		0.730
	Total HC	gal	699.6	703.2	703.6	704.5	708.4	710.6	717.3	717.3	727.5
Biological O2 Calculations	HC	gal/period	23.71	20.13	2.45	3.55	5.80	4.23	10.85		19.88
	HC	gal/d	0.91	0.96	0.31	0.24	0.39	0.35	0.83		1.42
	Total HC	gal	1090.0	1110.2	1112.6	1116.2	1122.0	1126.2	1137.0	1137.0	1156.9

Midway Oil - Plaza Mobil/BP Vapor Recovery Rate



—■— Recovery Rate



ENDYNE, INC.

L1-1
Laboratory Services

32 James Brown Drive
Williston, Vermont 05495
(802) 879-4333
FAX 879-7103

REPORT OF LABORATORY ANALYSIS

CLIENT: Heindel & Noyes
PROJECT NAME: Midway
REPORT DATE: August 12, 1999
DATE SAMPLED: July 30, 1999

ORDER ID: 3391
REF.#: 142,001 - 142,013

Enclosed please find the results of the analyses performed for the samples referenced on the attached chain of custody. Chain of custody indicated sample preservation with HCl.

All samples were prepared and analyzed by requirements outlined in the referenced method and within the specified holding times. All instrumentation was calibrated with the appropriate frequency and verified by the requirements outlined in the referenced method. Blank contamination was not observed at levels affecting the analytical results.

Analytical method precision and accuracy was monitored by laboratory control standards which included matrix spike, duplicate and quality control analyses. These standards were determined to be within established laboratory method acceptance limits.

Individual sample performance was monitored by the addition of surrogate analytes to each sample. All surrogate recovery data was determined to be within laboratory QA/QC guidelines unless otherwise noted.

Reviewed by,

Harry B. Locker, Ph.D.
Laboratory Director

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 FAX 879-7103

EPA METHOD 8021B--PURGEABLE AROMATICS

CLIENT: Heindel & Noyes	DATE RECEIVED: August 2, 1999
PROJECT NAME: Midway	REPORT DATE: August 12, 1999
CLIENT PROJ. #: NI	ORDER ID: 3391

Ref. #:	142,001	142,002	142,003	142,004	142,005
Site:	MW-3	MW-6	MW-4	MW-5	MW-2
Date Sampled:	7/30/99	7/30/99	7/30/99	7/30/99	7/30/99
Time Sampled:	1:27	10:14	9:57	10:28	10:22
Sampler:	P.D.	P.D.	P.D.	P.D.	P.D.
Date Analyzed:	8/10/99	8/11/99	8/12/99	8/12/99	8/10/99
UIP Count:	>10	0	0	>10	4
Dil. Factor (%):	2	100	10	~ 0.5	0.5
Surr % Rec. (%):	100	98	92	92	104
Parameter	Conc. (ug/L)				
MTBE	162.	<10	614.	<2000	18,100.
Benzene	174.	<1	TBQ <10	1,340.	1,450.
Toluene	4,320.	<1	<10	10,600.	4,140.
Ethylbenzene	865.	<1	<10	1,070.	548.
Xylenes	5,830.	<1	<10	8,130.	5,240.
1,3,5 Trimethyl Benzene	573.	<1	<10	623.	472.
1,2,4 Trimethyl Benzene	1,710.	<1	<10	1,960.	1,360.
Naphthalene	TBQ <250	<1	<10	423.	<1000

Ref. #:	142,006	142,007	142,008	142,009	142,010
Site:	Duplicate	MW-8	MW-1	MW-7	MW-9
Date Sampled:	7/30/99	7/30/99	7/30/99	7/30/99	7/30/99
Time Sampled:	10:22	12:45	11:09	10:55	12:33
Sampler:	P.D.	P.D.	P.D.	P.D.	P.D.
Date Analyzed:	8/10/99	8/12/99	8/10/99	8/12/99	8/12/99
UIP Count:	4	0	0	0	0
Dil. Factor (%):	0.5	100	0.1	100	5
Surr % Rec. (%):	101	99	101	92	95
Parameter	Conc. (ug/L)				
MTBE	19,000.	<10	78,900.	<10	2,540.
Benzene	1,410.	<1	2,020.	<1	35.5
Toluene	3,980.	<1	1,680.	<1	<20
Ethylbenzene	520.	<1	<1000	<1	<20
Xylenes	5,110.	<1	2,280.	<1	<20
1,3,5 Trimethyl Benzene	494.	<1	<1000	<1	<20
1,2,4 Trimethyl Benzene	1,290.	<1	TBQ <1000	<1	<20
Naphthalene	<1000	<1	<5000	<1	<20

Note: UIP = Unidentified Peaks TBQ = Trace Below Quantitation NI = Not Indicated



ENDYNE, INC.

Laboratory Services

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EPA METHOD 8021B--PURGEABLE AROMATICS

CLIENT: Heindel & Noyes

DATE RECEIVED: August 2, 1999

PROJECT NAME: Midway

REPORT DATE: August 12, 1999

CLIENT PROJ. #: NI

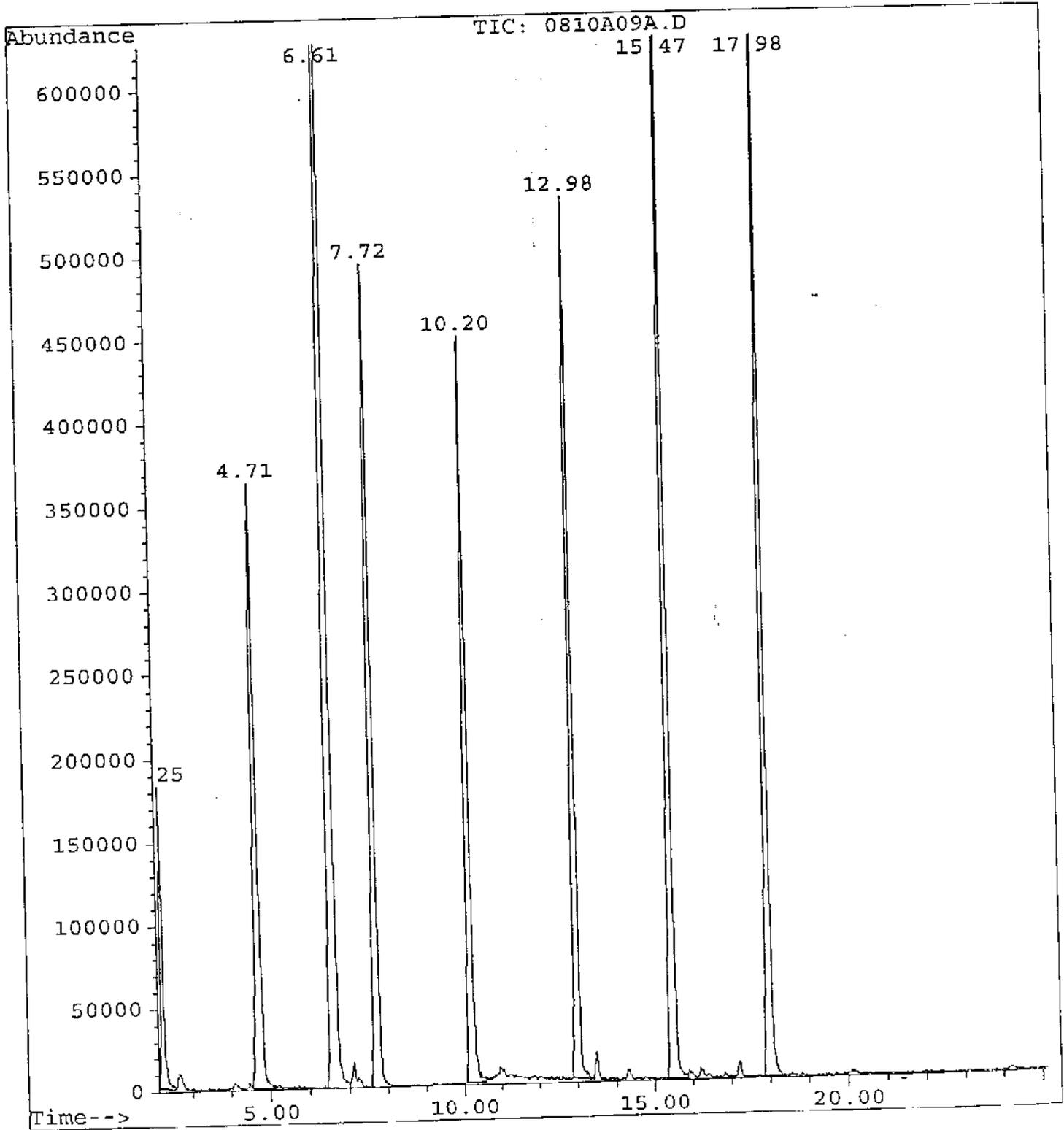
ORDER ID: 3391

Ref. #:	142,011	142,012	142,013		
Site:	MW-11	MW-13	Trip Blank		
Date Sampled:	7/30/99	7/30/99	7/30/99		
Time Sampled:	1:10	12:57	9:17		
Sampler:	P.D.	P.D.	P.D.		
Date Analyzed:	8/12/99	8/12/99	8/12/99		
UIP Count:	0	0	0		
Dil. Factor (%):	100	100	100		
Surr % Rec. (%):	93	93	104		
Parameter	Conc. (ug/L)	Conc. (ug/L)	Conc. (ug/L)		
MTBE	TBQ <10	<10	<10		
Benzene	<1	<1	<1		
Toluene	<1	<1	<1		
Ethylbenzene	<1	<1	<1		
Xylenes	<1	<1	<1		
1,3,5 Trimethyl Benzene	<1	<1	<1		
1,2,4 Trimethyl Benzene	<1	<1	<1		
Naphthalene	<1	<1	<1		

Note: UIP = Unidentified Peaks TBQ = Trace Below Quantitation NI = Not Indicated

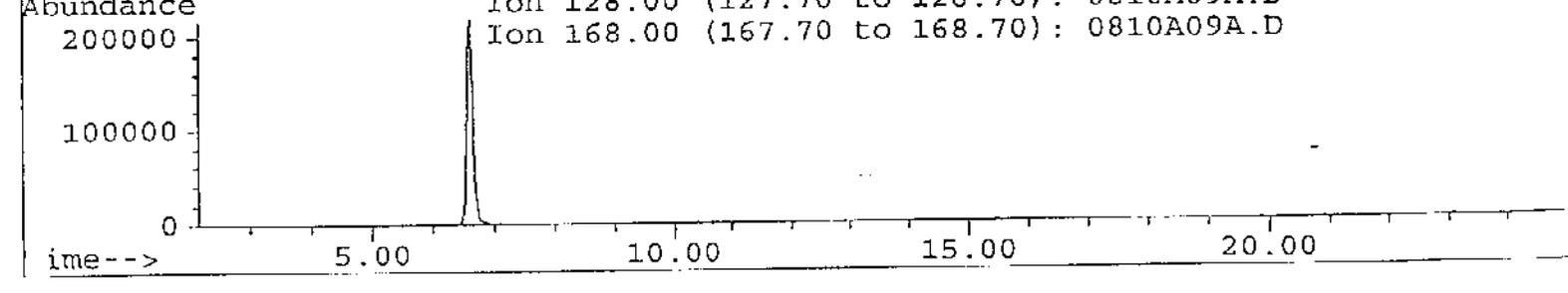
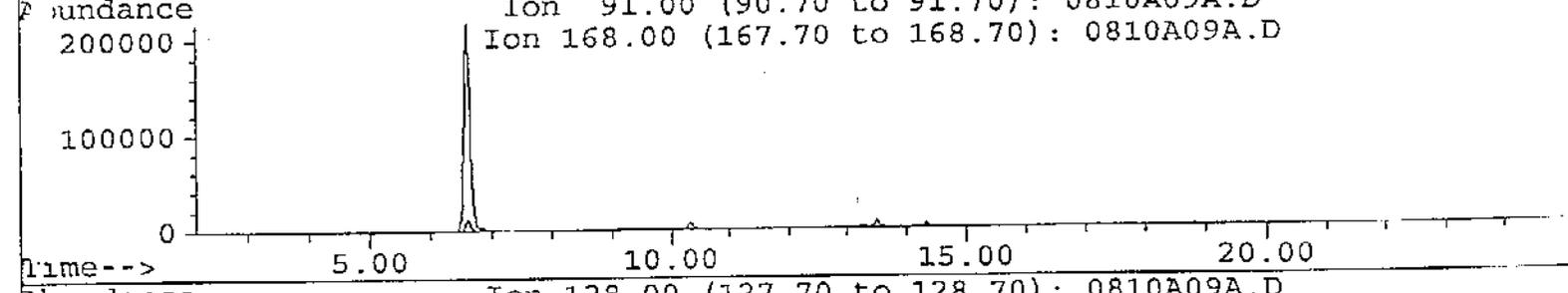
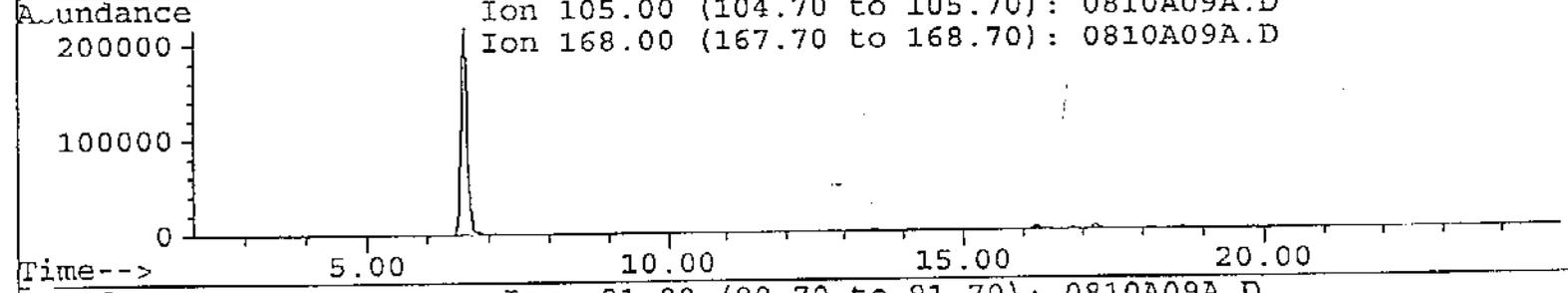
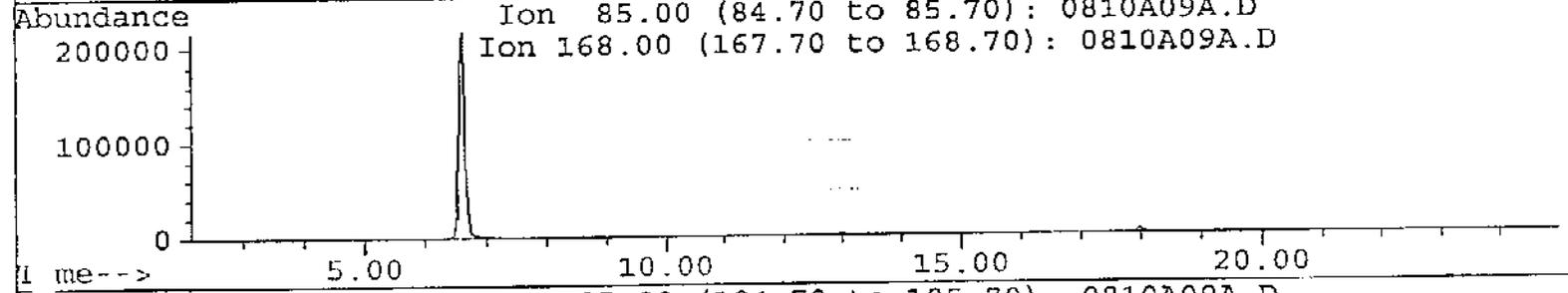
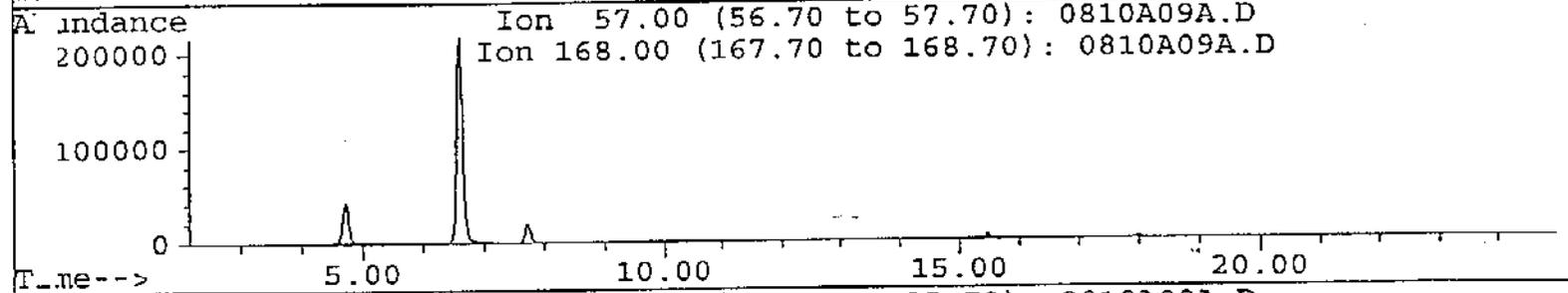
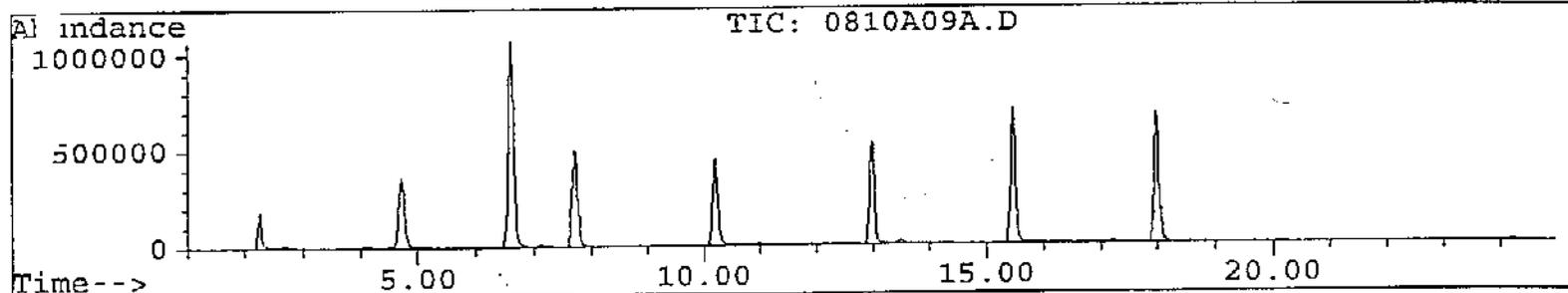
File : 0810A09A.D
Sample Name : 142008 0.1%
Current Method: 826-0724.M
Instrument : MS_5970
Acquired : 10 Aug 99 2:48 pm
Date of report: 08/10/99
Operator :

MW-1

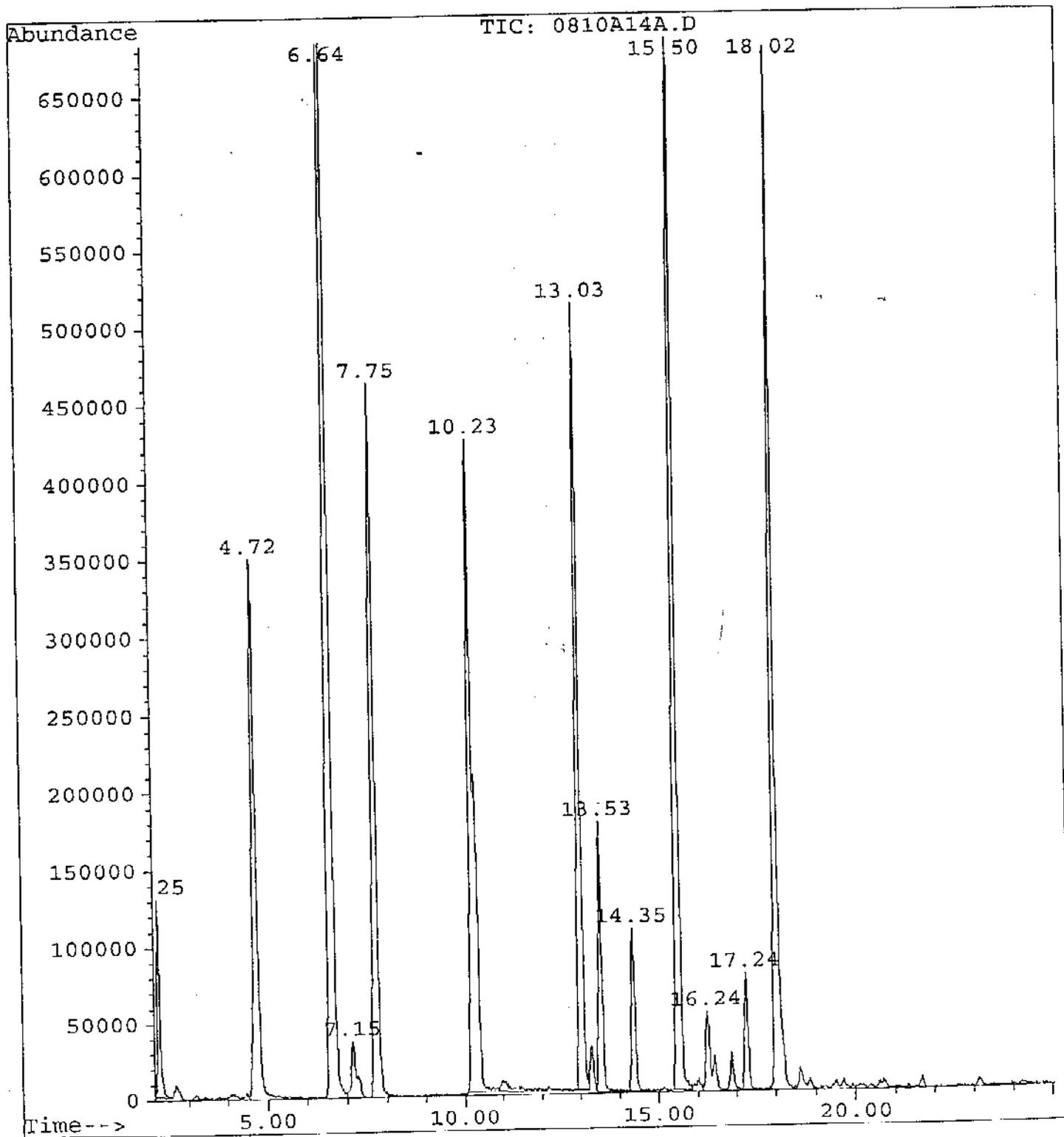


File : 0810A09A.D
Sample Name : 142008 0.1%
Current Method: 826-0724.M
Instrument : MS_5970
Acquired : 10 Aug 99 2:48 pm
Date of report: 08/11/99

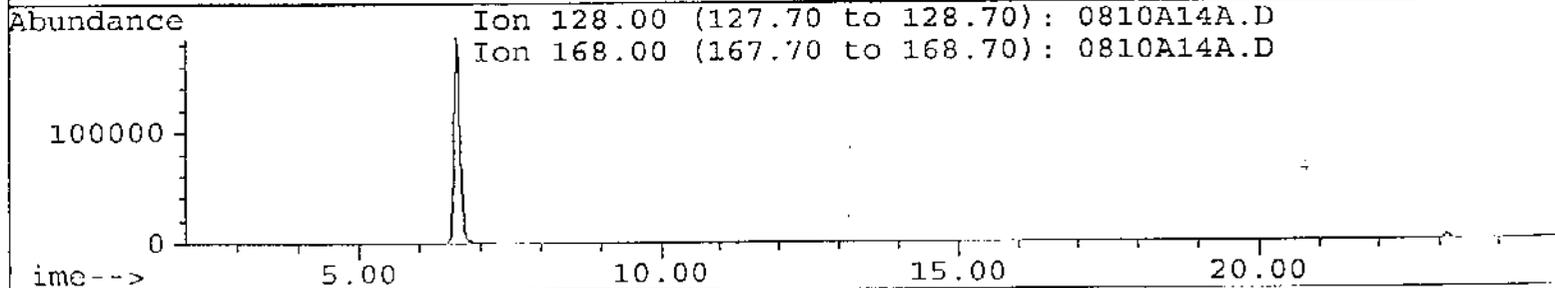
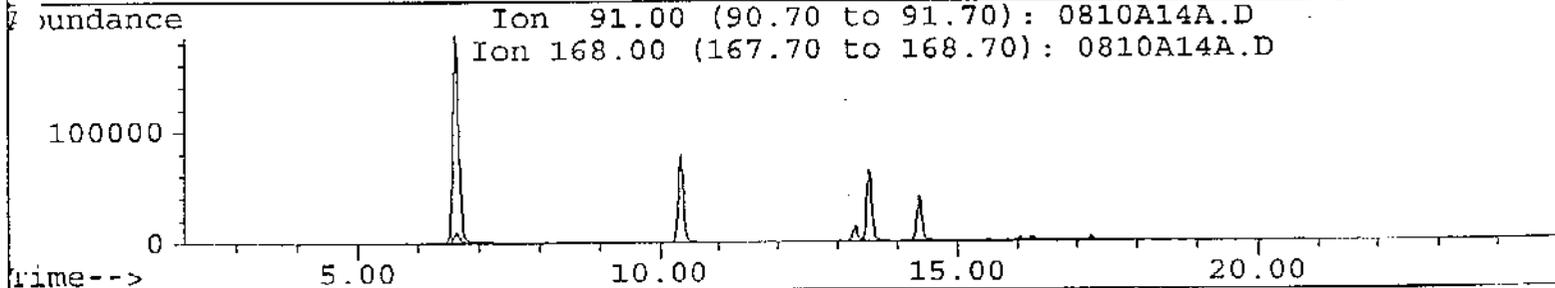
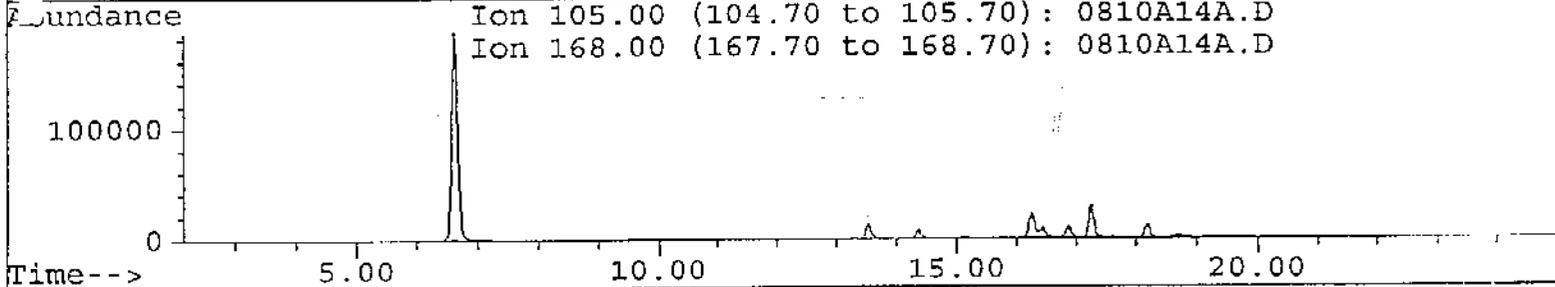
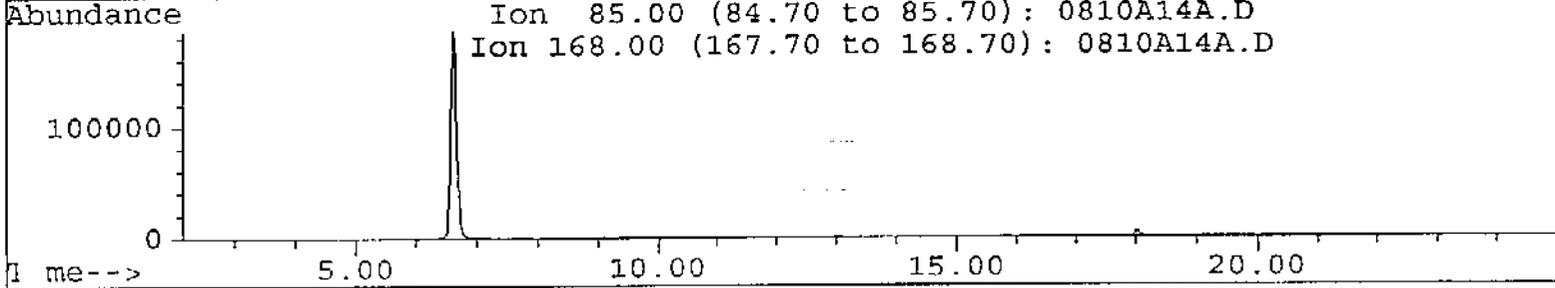
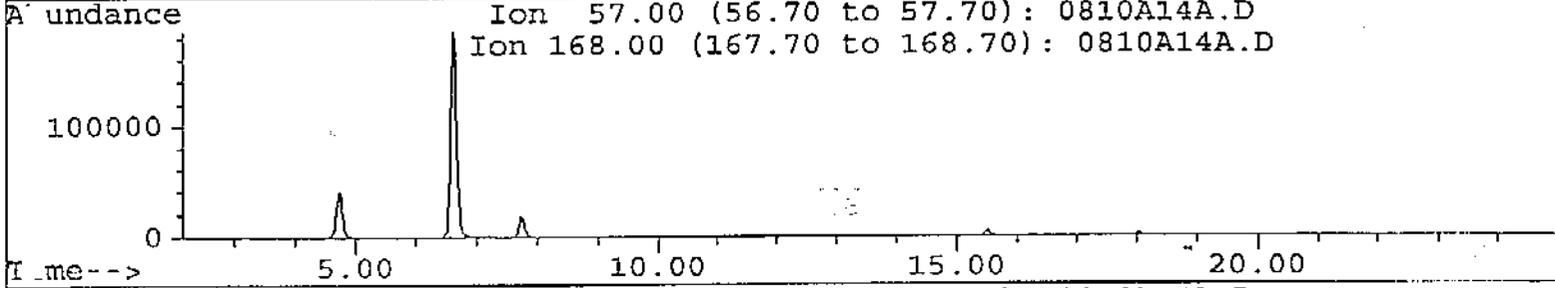
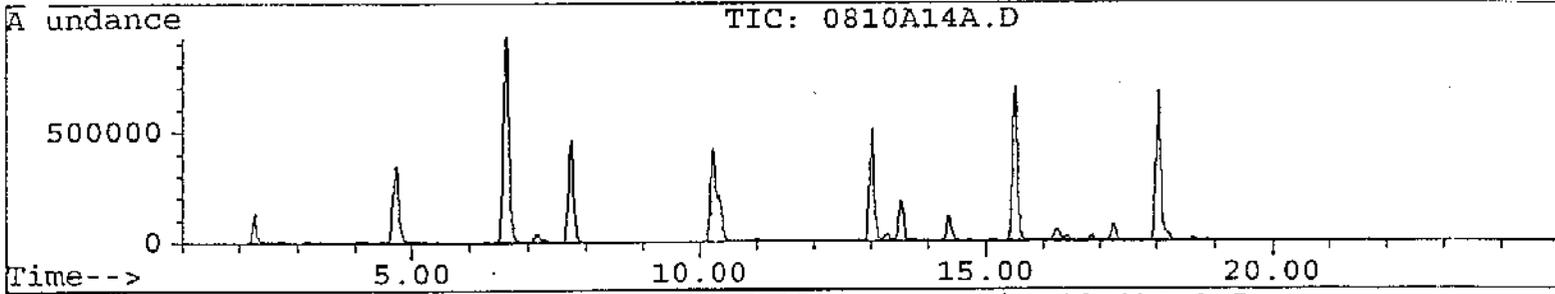
MW-1



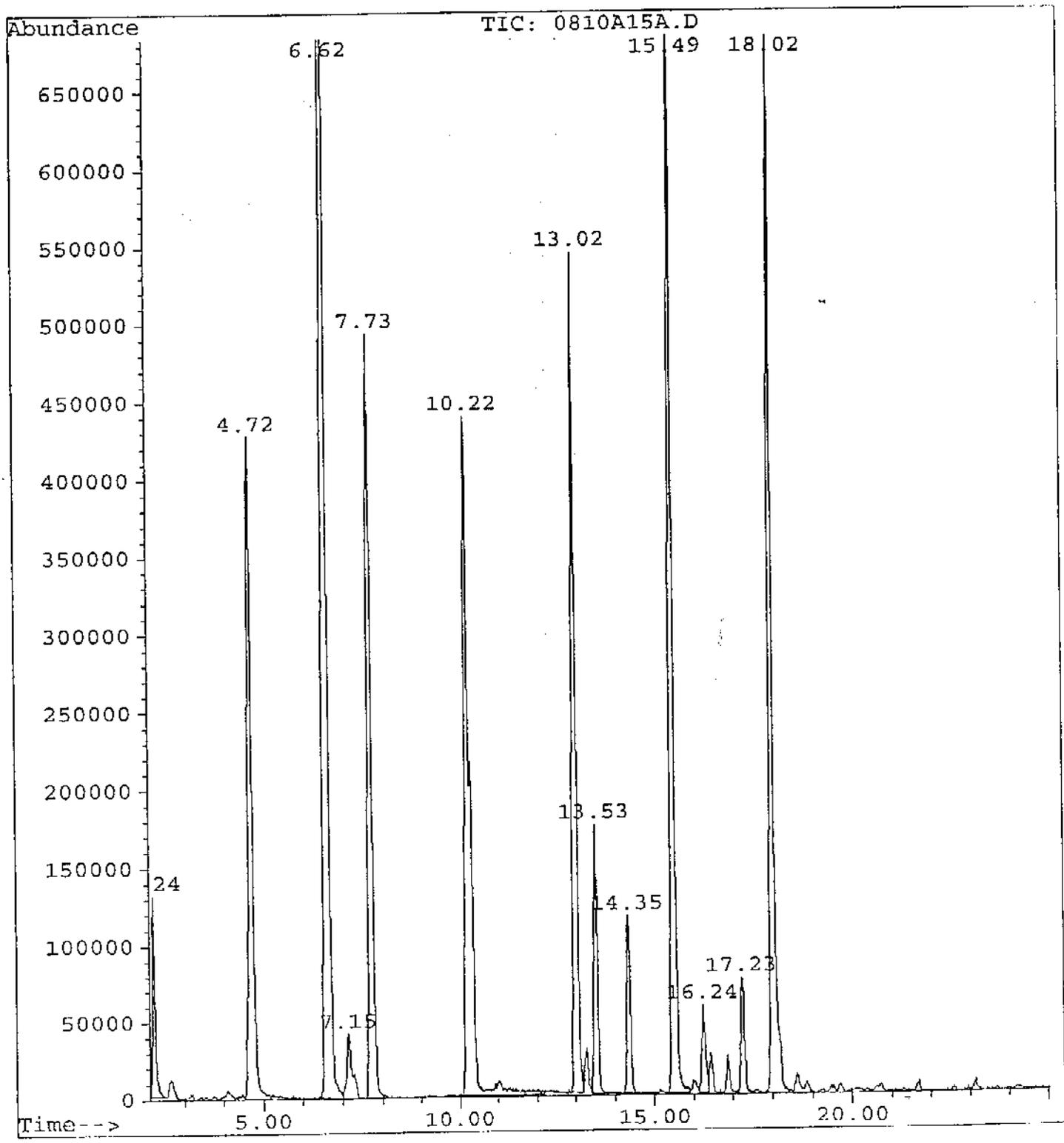
File : 0810A14A.D
Sample Name : 142005 0.5% MW-2
Current Method: 826-0724.M
Instrument : MS_5970
Acquired : 10 Aug 99 5:58 pm
Date of report: 08/11/99
Operator :



File : 0810A14A.D
Sample Name : 142005 0.5%
Current Method: 826-0724.M MW-2
Instrument : MS_5970
Acquired : 10 Aug 99 5:58 pm
Date of report: 08/11/99

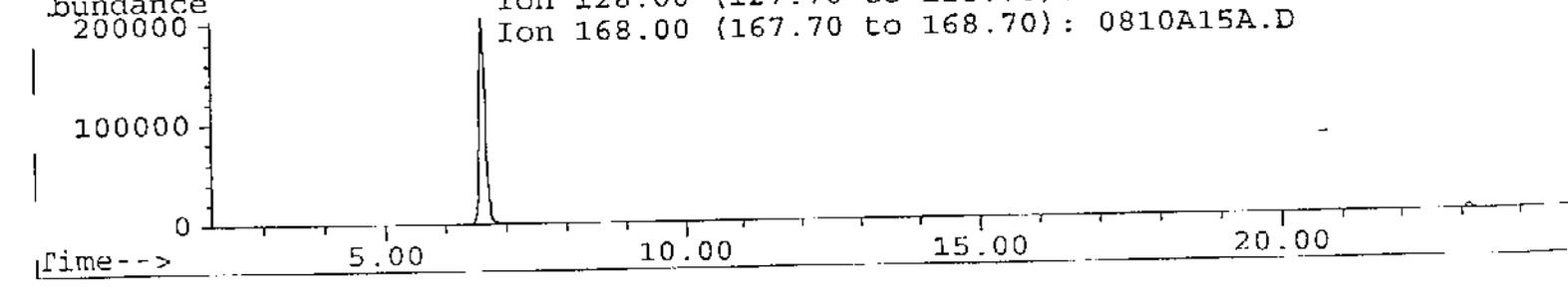
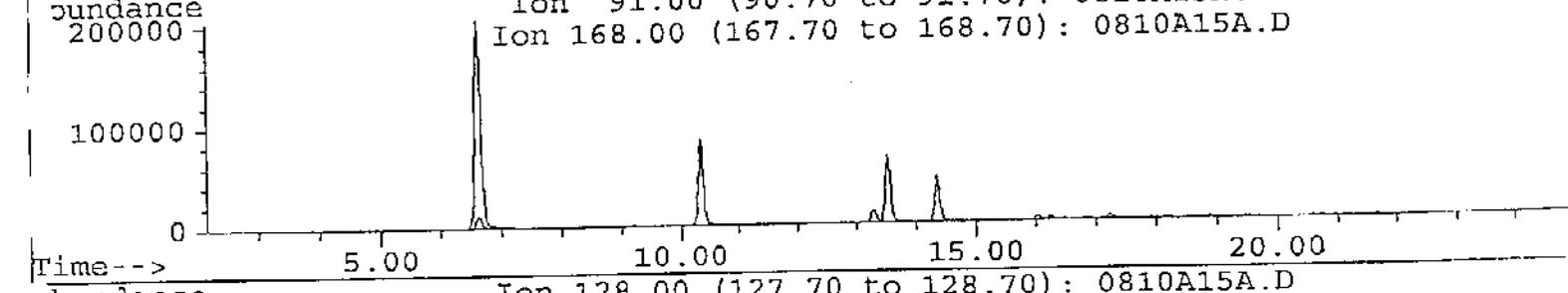
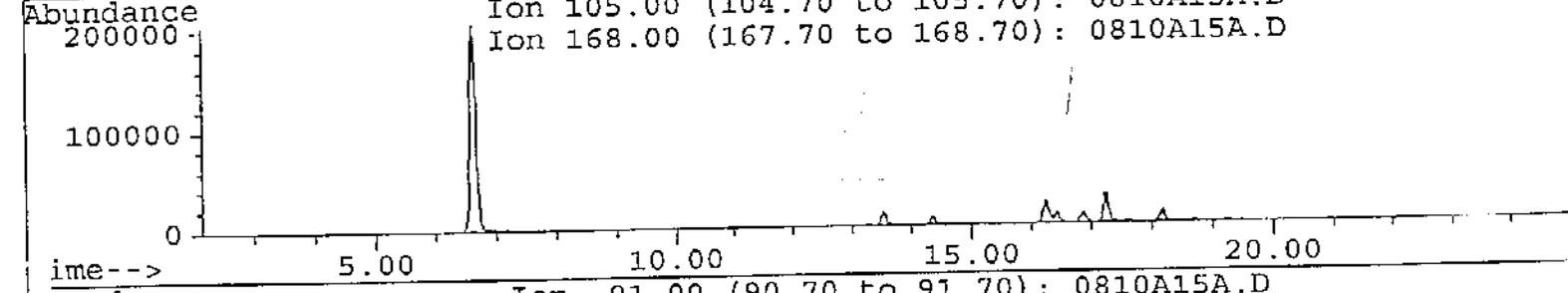
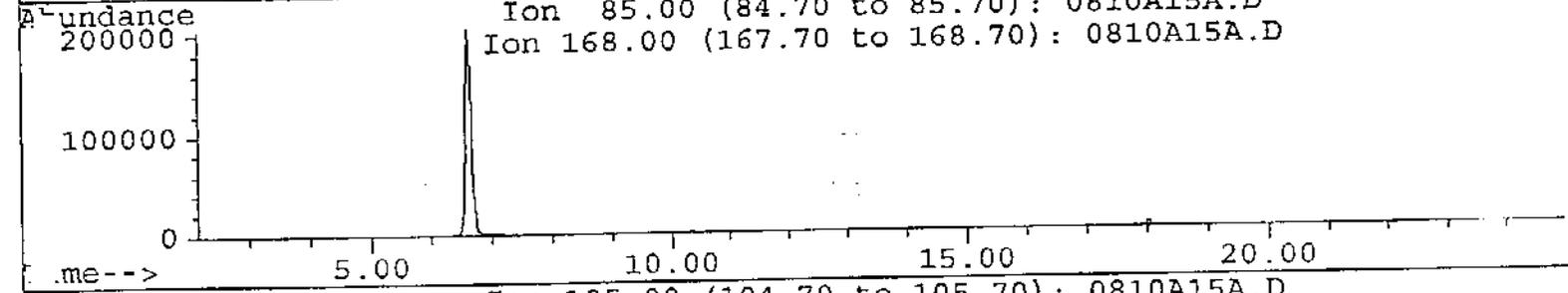
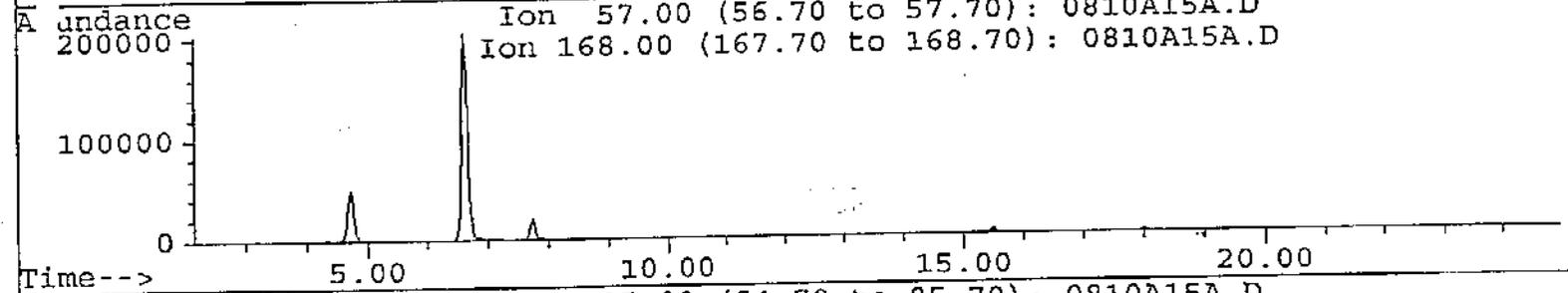
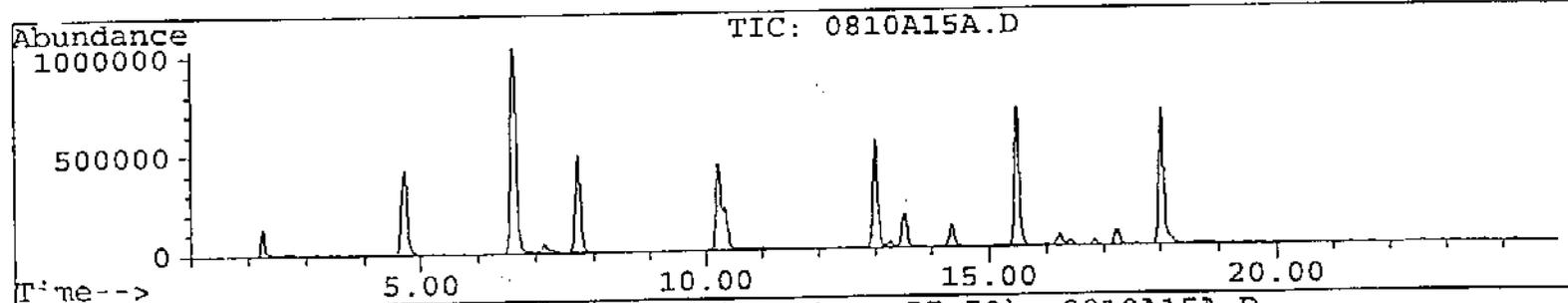


File : 0810A15A.D
Sample Name : 142006 0.5%
Current Method: 826-0724.M
Instrument : MS_5970
Acquired : 10 Aug 99 6:36 pm
Date of report: 08/11/99
Operator :
MW-2 dup

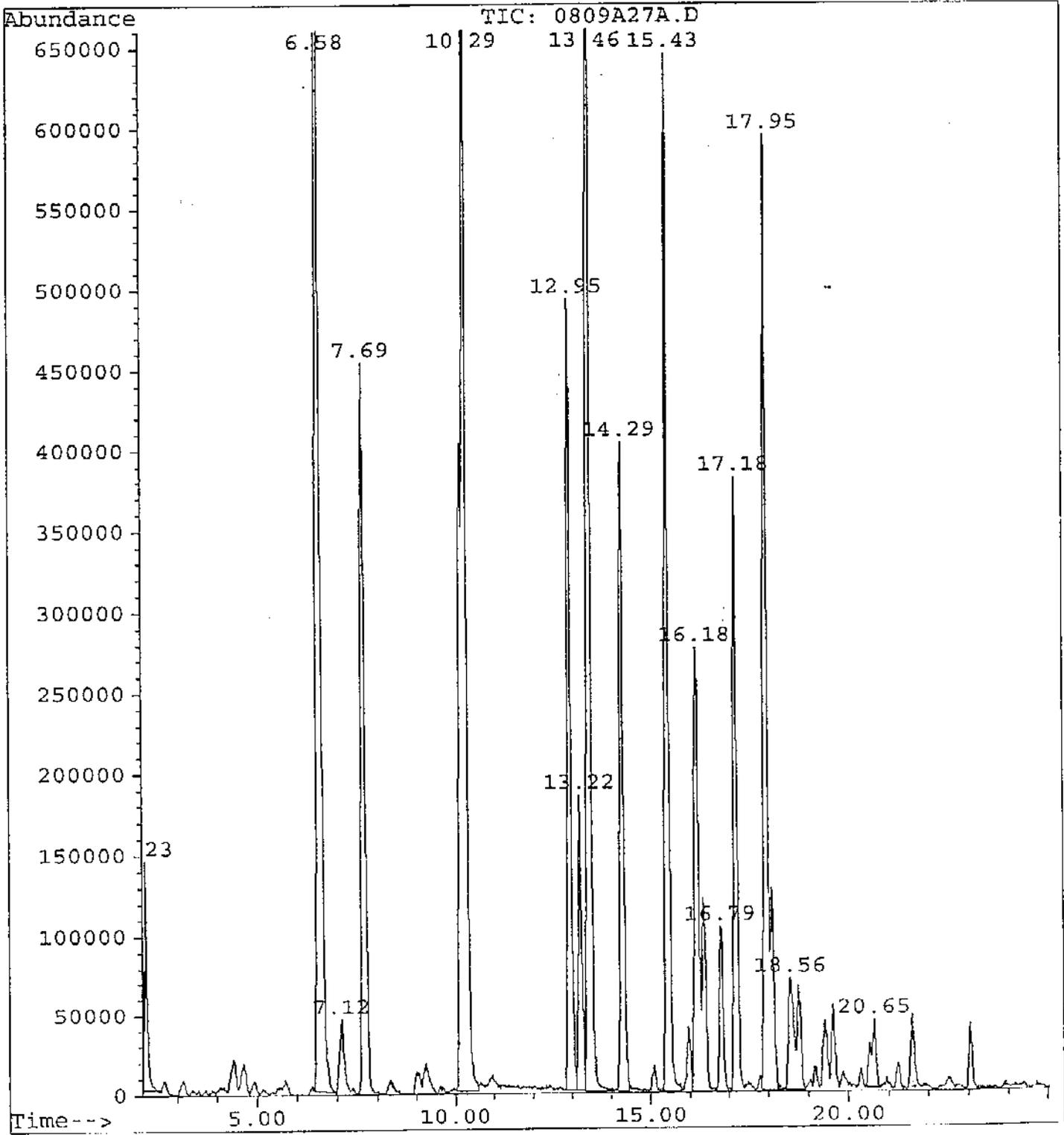


File : 0810A15A.D
Sample Name : 142006 0.5%
Current Method: 826-0724.M
Instrument : MS_5970
Acquired : 10 Aug 99 6:36 pm
Date of report: 08/11/99

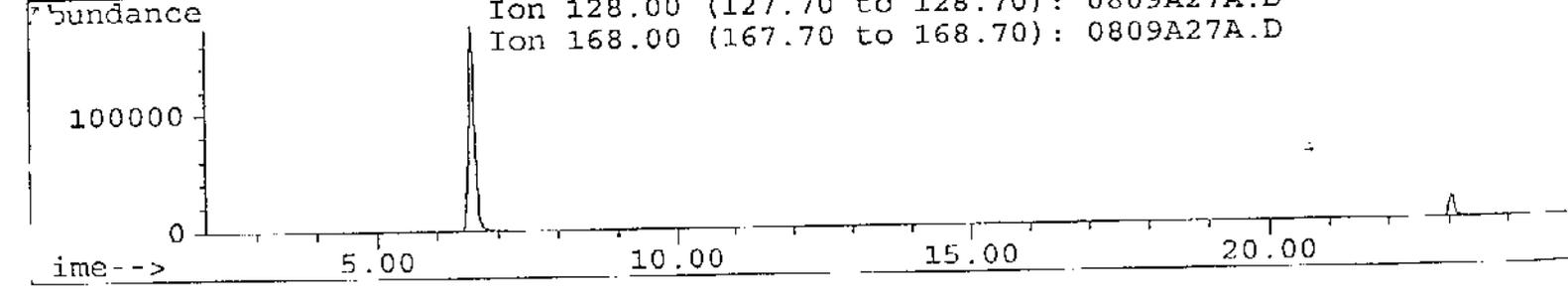
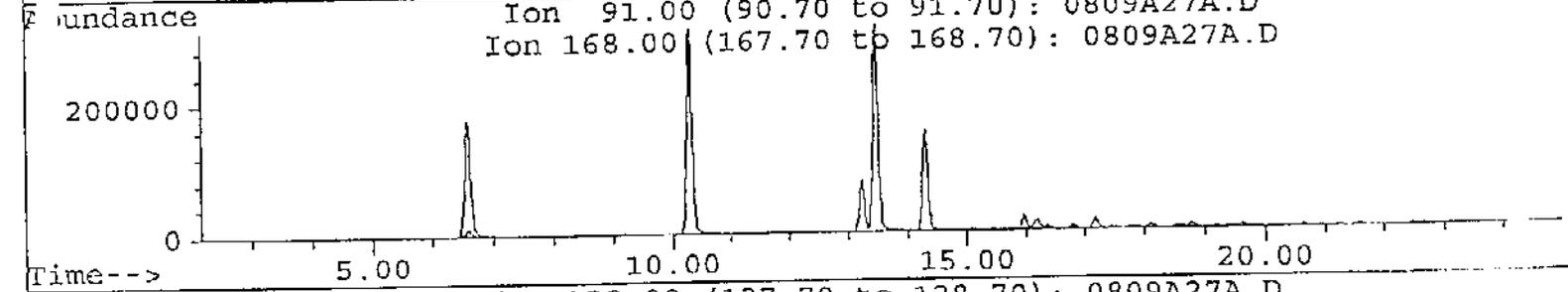
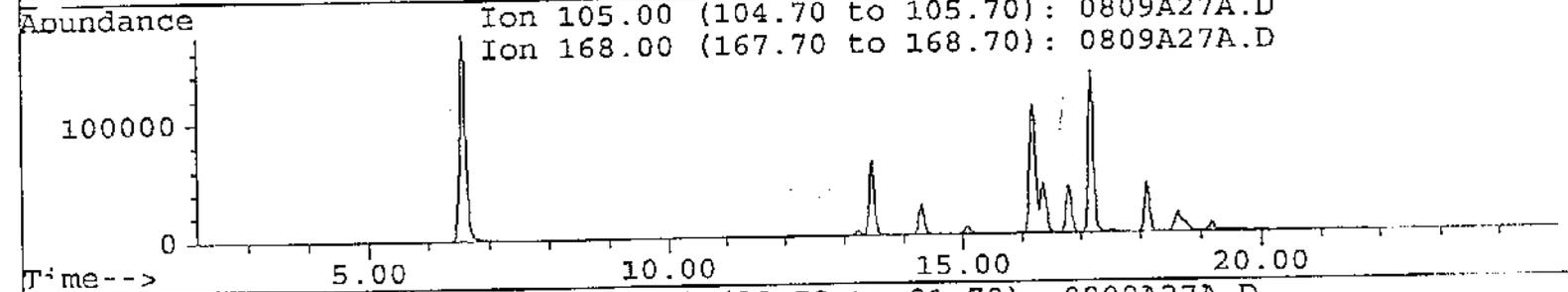
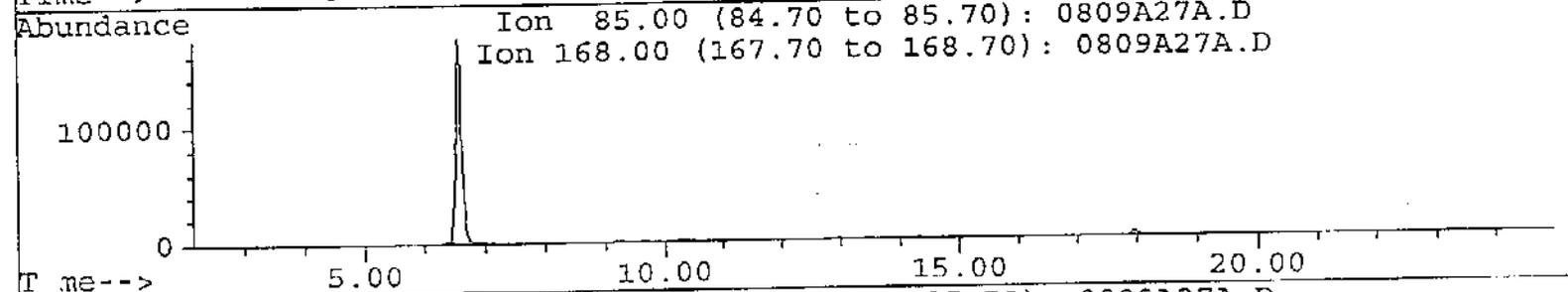
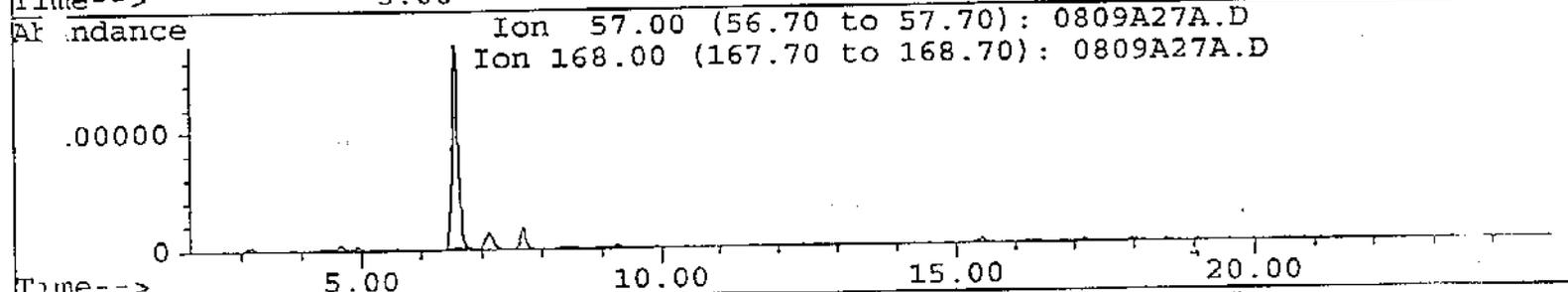
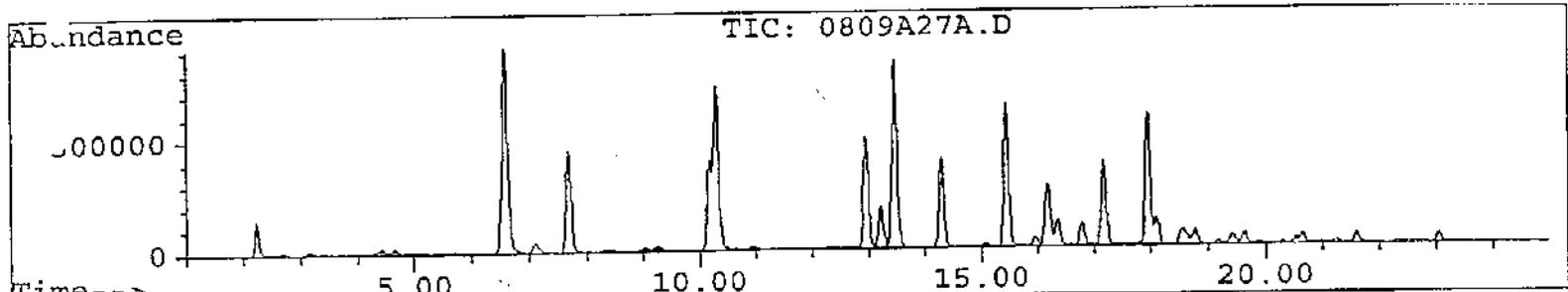
MW-2 dup



File : 0809A27A.D
Sample Name : 142001 2.0% MW-3
Current Method: 826-0724.M
Instrument : MS_5970
Acquired : 10 Aug 99 12:29 am
Date of report: 08/11/99
Operator :



File : 0809A27A.D
Sample Name : 142001 2.0%
Current Method: 826-0724.M MW-3
Instrument : MS_5970
Acquired : 10 Aug 99 12:29 am
Date of report: 08/11/99



CHAIN-OF-CUSTODY RECORD

10019 31232

Project Name: <i>M. Shury</i> Site Location: <i>R. Island, VT</i>	Reporting Address: <i>Herndel & Mipes</i>	Billing Address: <i>Herndel</i>
Endyne Project Number: <i>3391</i>	Company: <i>H&N</i> Contact Name/Phone #: <i>M. Mipes 656-0820</i>	Sampler Name: <i>Herndel</i> Phone #: <i>656-0820</i>

Lab #	Sample Location	Matrix	G R A B	C O M P	Date/Time	Sample Containers		Field Results/Remarks	Analysis Required	Sample Preservation	Rush
						No.	Type/Size				
142001	MW-3	GW	X		7/30/99 1327	2	40 ml	heavy stream	COZIR	HCL	
142002	MW-6				1014				COZIR		
142003	MW-4				0957						
142004	MW-5				1028						
142005	MW-2				1027				COZIR		
142006	MW-2 dup				1027				" "		
142007	MW-8				1245				COZIR		
142008	MW-1				1109				COZIR		
142009	MW-7				1055				COZIR		
142010	MW-9				1233						
142011	MW-11				1310						
142012	MW-13		V	V	1257	V	V				

Relinquished by: Signature <i>Jane Wuesthberg</i>	Received by: Signature <i>[Signature]</i>	Date/Time <i>7/30/99</i>
Relinquished by: Signature	Received by: Signature	Date/Time

New York State Project: Yes No

Requested Analyses

1	pH	6	TKN	11	Total Solids	16	Metals (Specify)	21	EPA 624	26	EPA 8270 H/N or Acid
2	Chloride	7	Total P	12	TSS	17	Coliform (Specify)	22	EPA 625 H/N or A	27	EPA 8010/8020
3	Ammonia N	8	Total Diss. P	13	TDS	18	COD	23	EPA 418.1	28	EPA 8080 Pest/PCB
4	Nitrite N	9	BOD ₅	14	Turbidity	19	BTEX	24	EPA 608 Pest/PCB		
5	Nitrate N	10	Alkalinity	15	Conductivity	20	EPA 601/602	25	EPA 8240		
29	TCCLP (Specify: volatiles, semi-volatiles, metals, pesticides, herbicides)										
30	Other (Specify):										

CHAIN-OF-CUSTODY RECORD

208

31233

Project Name: <i>M. duway</i>	Reporting Address: <i>Heindel & Noyes</i>	Billing Address:
Site Location: <i>Rutland Vt.</i>		<i>HFN</i>
Endyne Project Number: <i>3391</i>	Company: <i>H&N</i>	Sampler Name: <i>Patricia Stewart</i>
	Contact Name/Phone #: <i>Milva Weirite 658-0820</i>	Phone #: <i>658-0820</i>

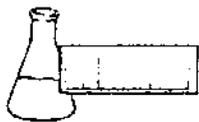
Lab #	Sample Location	Matrix	G R A B	C O M P	Date/Time	Sample Containers		Field Results/Remarks	Analysis Required	Sample Preservation	Rush
						No.	Type/Size				
<i>142013</i>	<i>Trip Blank</i>	<i>H₂O</i>	<i>X</i>		<i>7/20/99</i> <i>0917</i>	<i>2</i>	<i>40 ml</i>	<i>(Spring Water)</i>	<i>0021 B</i>	<i>HCL</i>	

Relinquished by: Signature <i>[Signature]</i>	Received by: Signature <i>[Signature]</i>	Date/Time <i>8/1/99 2:00</i>
Relinquished by: Signature	Received by: Signature	Date/Time

New York State Project: Yes No

Requested Analyses

1	pH	6	TKN	11	Total Solids	16	Metals (Specify)	21	EPA 624	26	EPA 8270 B/N or Acid
2	Chloride	7	Total P	12	TSS	17	Coliform (Specify)	22	EPA 625 B/N or A	27	EPA 8010/8020
3	Ammonia N	8	Total Diss. P	13	TDS	18	COD	23	EPA 418.1	28	EPA 8080 Pest/PCB
4	Nitrite N	9	BOD ₅	14	Turbidity	19	BTEX	24	EPA 608 Pest/PCB		
5	Nitrate N	10	Alkalinity	15	Conductivity	20	EPA 601/602	25	EPA 8240		
29	TCLP (Specify: volatiles, semi-volatiles, metals, pesticides, herbicides)										
30	Other (Specify):										



ENDYNE, INC.

Laboratory Services

32 James Brown Drive
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LABORATORY REPORT

CLIENT: Heindel & Noyes
PROJECT: Midway
REPORT DATE: August 13, 1999

ORDER ID: 3459
DATE RECEIVED: August 5, 1999

Enclosed please find the results of the analyses performed for the samples referenced on the attached chain of custody. Different groups of analyses may be reported under separate cover.

All samples were prepared and analyzed by requirements outlined in the referenced methods and within the specified holding times.

All instrumentation was calibrated with the appropriate frequency and verified by the requirements outlined in the referenced methods.

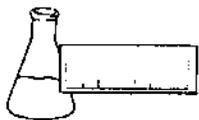
Blank contamination was not observed at levels affecting the analytical results.

Analytical method precision and accuracy was monitored by laboratory control standards which included matrix spike, duplicate and quality control analyses. These standards were determined to be within established laboratory method acceptance limits, unless otherwise noted.

Reviewed by,

Harry B. Locker, Ph.D.
Laboratory Director

enclosures



ENDYNE, INC.

Laboratory Services

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Williston, Vermont 05495
(802) 879-4333
FAX 879-7103

LABORATORY REPORT

CLIENT: Heindel & Noyes
PROJECT: Midway
REPORT DATE: August 13, 1999

ORDER ID: 3459
DATE RECEIVED: August 5, 1999
SAMPLER: PD
ANALYST: 725

Ref. Number: 142209

Site: MW-12

Date Sampled: August 4, 1999

Time: 9:37 AM

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Method</u>	<u>Analysis Date</u>
MTBE	3,590.	ug/L	SW 8021B	8/12/99
Benzene	< 50.0	ug/L	SW 8021B	8/12/99
Toluene	< 50.0	ug/L	SW 8021B	8/12/99
Ethylbenzene	< 50.0	ug/L	SW 8021B	8/12/99
Xylenes, Total	< 100.	ug/L	SW 8021B	8/12/99
1,3,5 Trimethyl Benzene	< 50.0	ug/L	SW 8021B	8/12/99
1,2,4 Trimethyl Benzene	< 50.0	ug/L	SW 8021B	8/12/99
Naphthalene	< 250.	ug/L	SW 8021B	8/12/99
UIP's	0.		SW 8021B	8/12/99
Surrogate 1	102.	%	SW 8021B	8/12/99

