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BIOSLURPER STATUS REPORT
FOR SEPTEMBER THROUGH NOVEMBER 1998
NAVAL WEAPONS STATION - EARLE
COLTS NECK, NEW JERSEY

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SEPTEMBER THROUGH NOVEMBER 1998
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COLTS NECK, NEW JERSEY

TABLE OF CONTENTS

SECTION		PAGE
1.0	INTRODUCTION	1
2.0	SYSTEM OPERATIONS AND DIFFICULTIES ENCOUNTERED	1
	SEPTEMBER 1998	1
	OCTOBER 1998	1
	NOVEMBER 1998	1
	AUGUST 1998	7
3.0	EVALUATION OF SITE CONDITIONS	3
4.0	PRODUCT RECOVERY DATA	4
5.0	EFFLUENT AND AIR ANALYSIS	4
5.0	CONCLUSIONS	5

FIGURES

FIGURE	PAGE
FIGURE 1: RECOVERY WELL/SYSTEM LAYOUT	2

TABLES

TABLE 1: OIL EXTRACTED TO DATE	6
TABLE 2: GROUNDWATER EXTRACTED TO DATE	6
TABLE 3: TPH REMOVED VIA GROUNDWATER TREATMENT	7
TABLE 4: TPH REMOVED VIA AIR EXTRACTION	8
TABLE 5: BIOSLURPER UNIT NO.1 TPH EFFLUENT CONCENTRATIONS	9, 10
TABLE 6: BIOSLURPER UNIT NO.2 TPH EFFLUENT CONCENTRATIONS	10, 11

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TABLE OF CONTENTS

APPENDICES

APPENDIX A:	GRAPHS OF OIL/WATER EXTRACTED TO DATE
APPENDIX B:	GRAPHS OF WATER LEVELS AND PRODUCT THICKNESS DATA FROM EXTRACTION WELLS
APPENDIX C:	ANALYTICAL SUMMARY TABLES FOR AIR DISCHARGES AND ASSOCIATED DATA
APPENDIX D:	EFFLUENT ANALYTICAL RESULTS
APPENDIX E:	PRODUCT THICKNESS MAP AND LEVELS IN RECOVERY WELLS

1.0 INTRODUCTION

This report summarizes the third quarter results for the ongoing bioslurper operations at Site 16 at the Naval Weapons Station-Earle facility. The report summarizes the product recovered, groundwater treated, and the analytical results of the air and effluent discharges from the bioslurper systems. The operation period was from August 21 through November 30, 1998, however, the recovery numbers for the entire operational time are summarized in the report.

Bioslurper Unit #1 (located adjacent to Building C-16) recovers product from the following product extraction wells: 16MW-13, 16MW-14, 16MW-15, MW16-04, and vapor extraction wells: 16MW-22 and 16MW-23. Bioslurper Unit #2 (located north of Building C-50) extracts from 16MW-20, 16MW-16, C17/20MW-07, 16MW-17 and 16MW-19. Figure 1 depicts the locations of the extraction wells and bioslurping systems.

2.0 OPERATIONS AND DIFFICULTIES ENCOUNTERED

SEPTEMBER 1998

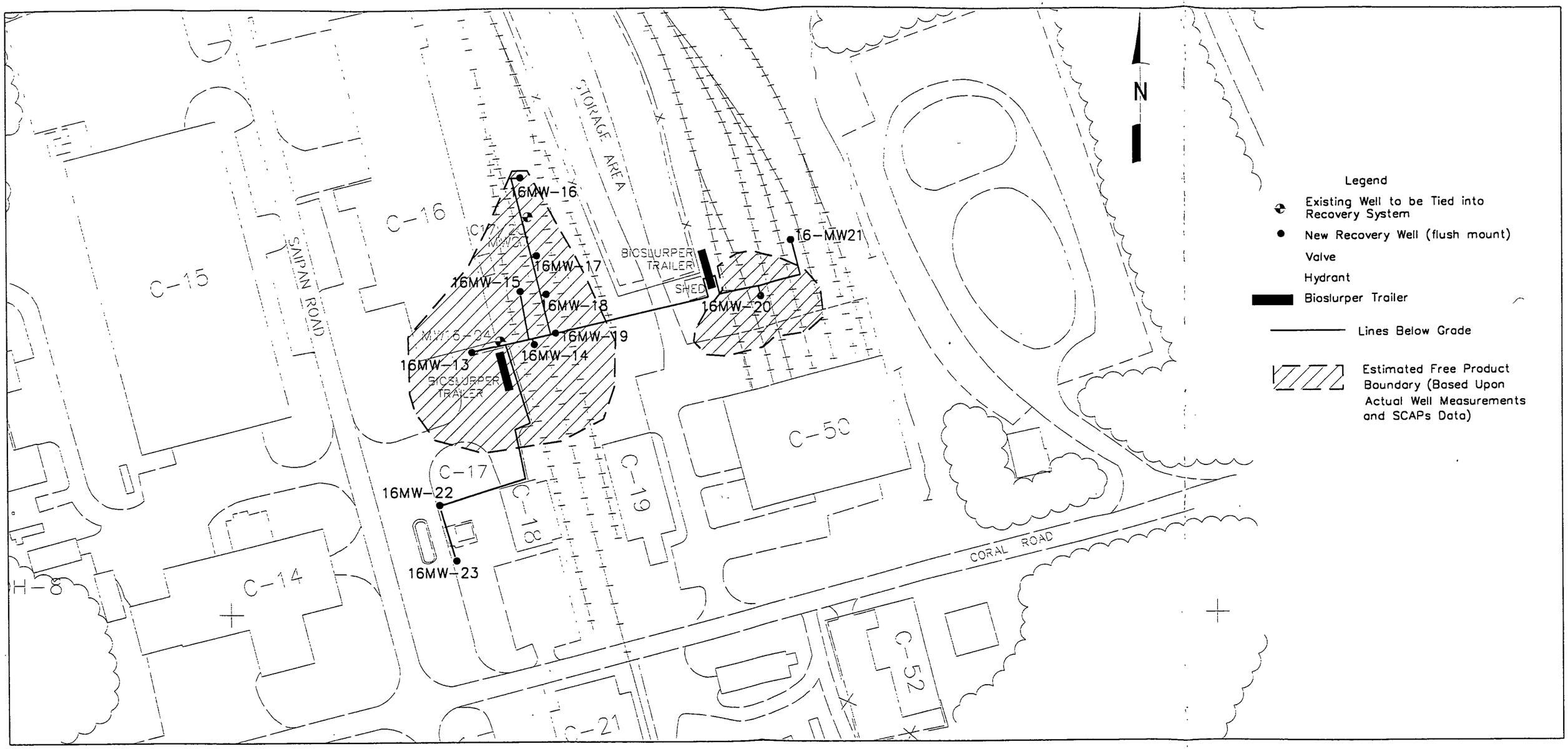
Bioslurper Unit #1 was operated for a total of 135.5 hours between September 1, 1998 and September 30, 1998, and Bioslurper Unit #2 was operated for a total of 72 hours. The total amount of groundwater extracted during this time period was 49,063 gallons, with approximately 280 gallons of free-phase oil removed. Appendix A provides a graphical representation of the amount of oil/groundwater extracted, and the operational hours for each Unit.

OCTOBER 1998

Bioslurper Unit #1 was operated for a total of 77 hours from October 1, 1998 through October 31, 1998, and Bioslurper Unit #2 was operated for a total of 20 hours. The total amount of groundwater extracted during March was 19,383 gallons, with approximately 280 gallons of free-phase oil also removed. Appendix A provides a graphical representation of the amount of oil/groundwater extracted, and the operational hours for each Unit.

NOVEMBER 1998

Bioslurper Unit #1 was operated for a total of 58.5 hours from November 1, 1998 through November 30, 1998, and Bioslurper Unit #2 was operated for a total of 22 hours. The total amount of groundwater extracted during November was 36,699 gallons, with approximately 170 gallons of free-phase oil also removed. Appendix A provides a



U.S. Navy RAC
Naval Weapons Station – Earle

Recovery Well /System Layout

FOSTER WHEELER ENVIRONMENTAL CORPORATION

SCALE	NO.	DATE	DESCRIPTION	PREP	CHECK	APPROVED	DRAWING NO.	DRAWN BY	APPROVED
1"=100'			Issued for Construction				Figure 1		C. Tippmann

SITEPLN1

graphical representation of the amount of oil/groundwater extracted, and the operational hours for each Unit.

Back-pressure problems in the groundwater treatment vessels of Bioslurper Unit No. 1 and vacuum loss on the liquid ring pump caused the system to be shut down from November 13, 1998 through November 20, 1998. The system was operated intermittently during this time period to evaluate the problems and determine the causes of the problems. The clay groundwater treatment units were vacuumed out and re-bedded with new filter media as part of the scheduled operation and maintenance. The back-pressure on the groundwater treatment system was determined to be one of the treatment vessels. The vessel was taken off line to evaluate during the next scheduled clay change-out. The piping assembly can be evaluated once the filter media is removed to determine the cause of the back-pressure. The vacuum loss on the liquid ring pump was determined to be a damaged gasket and iron fouling of the water recirculation lines between the liquid ring pump and the seal water tank that supplies potable water to the pump. The lines were taken apart and flushed to remove the iron blockage, and the gasket was replaced, returning the vacuum to normal operating parameters.

3.0 EVALUATION OF SITE CONDITIONS

Water level and product thickness measurements have been obtained periodically from the extraction wells since August 1997 to establish product thickness and groundwater elevation trends. Appendix B provides a graphical representation of the water levels and product thickness in the extraction wells. All of the product extraction wells contained measurable product, with the exception of 16MW-18 and 16MW-21. As expected, the vapor extraction wells (16MW-22 and 16MW-23) located near the former gas station, did not contain measurable free-product.

As depicted on the graphs in Appendix C, groundwater levels have been dropping since May due to seasonal changes. During the time period the systems were shut off (June 6, 1998 through August 3, 1998), measurements indicate that there was an increase in product thickness levels in the extraction wells. As soon as the systems were restarted, the product thickness levels returned to what they were prior the system being shut down.

The systems are being operated during working hours using the telemetry systems of the units. Bioslurper Unit #1 is being operated 7 to 9 hours a day, and Bioslurper Unit #2 is being operated 1 to 2 hours a day. As indicated on the graphs in Appendix A, increased system run times do not greatly increase the amount of free product recovered. By cycling the systems during the days and turning them off at night, the wells are allowed to recharge, and the O&M and disposal costs of the groundwater filter media are reduced.

4.0 PRODUCT RECOVERY DATA

Table 1 summarizes the amount of free-phase oil recovered from the Bioslurper Extraction Units. Appendix A provides a graphical representation of the amount of oil/groundwater extracted and the operational hours of the system. Table 2 summarizes the groundwater extracted/treated to date. Table 3 summarizes the volume of total petroleum hydrocarbons (TPH) removed via the groundwater treatment component of bioslurper systems. Table 4 summarizes the volume of TPH removed via the air extraction component of bioslurper systems.

5.0 EFFLUENT AND AIR ANALYSIS

The effluent and the air discharges from the bioslurper units are routinely sampled to ensure discharges are in compliance with the NJDEP air discharge permit and the requirements set forth by the Navy Weapons Station-Earle Sewer Treatment Plant. The air discharge is sampled for total volatile organics (including benzene) and total petroleum hydrocarbons (TPH). Appendix C summarizes the analytical results of the air discharge samples and the permit limits. Tables 4 and 5 summarize the TPH analytical results for the groundwater effluent discharge samples collected from the bioslurper treatment units. Laboratory results of the effluent samples are provided in Appendix D.

The effluent from the bioslurpers is analyzed weekly for TPH in order to ensure the discharge is within the NWS-Earle Sewer Treatment Plant's NJPDES Permit. The effluent is not sampled the week of clay and carbon change-out due to past analytical which historically demonstrates that the effluent concentration is non-detect for TPH immediately after the groundwater filter media change-out. The effluent is also occasionally sampled for a full range of organics, metals, PCBs, and pesticides to document that no elevated levels are being discharged to the sewer treatment plant. On October 2, 1998, the effluent of Unit #1 (16(A)EW-98-W90) and Unit #2 (16(B)EW-98-W79) were analyzed for volatile organic compounds (VOCs), semi-volatile organic compound (S-VOCs), PCBs/pesticides, and metals. No VOCs, S-VOCs, PCBs or pesticides were detected in the effluent samples collected in October 1998. Low levels of some metals were detected in the effluent, but none of the analytes are above discharge criteria.

As per the NJDEP Air Permits, the air discharge from the Bioslurper Units are sampled once a month and analyzed for volatile organics. The air discharge is also analyzed for TPH to evaluate the total TPH removed via the airstream. It should be noted that the September air samples, which were originally scheduled for September 30, 1998, were collected that same week, but on October 2, 1998. The samples were collected on October 2, 1998 instead of September 30, 1998 because the systems were down for filter media change-outs.

As indicated by the analytical results, both bioslurper units are operating within the permit requirements established for air and treated water discharge. The analytical results for the air samples are provided in Appendix C. The effluent analytical results are provided in Appendix D.

The air discharge sample collected from Bioslurper Unit #1 (16(A)VD14) on November 30, 1998 was elevated, but not above the discharge limits set in the NJDEP Air Discharge Permit. This sample was taken after the carbon units, but still contained some elevated concentrations. The vapor-phase carbon was changed out immediately after the sample was taken. The vapor phase activated carbon appears to become "spent" quicker in the cooler months because the condensation in the vapor settles out more readily in when it is cooler. The air treatment units of Bioslurper Unit No. 1 are located in a wooden shed next to the bioslurper trailer. As the vapor stream passes through the piping between the units, it is cooled and the condensate settles out more readily than in the warmer months. There are two vapor phase knock out tanks associated with the air stream prior to the carbon units, but water is still building up in the carbon units during the cooler weather. The carbon units shall be monitored more closely during the cooler weather to ensure they are changed out in a timely fashion.

6.0 CONCLUSIONS

The bioslurper systems are continuing to operate within the design capabilities. The product recovery numbers have decreased over the duration of the systems operations. The decrease in the volume of oil recovered is a function of the volume of oil available within the radii of influence of the recovery wells. It should be noted that while the bioslurpers are removing the available product within the radii of influence of the recovery wells, the recovery well placements at this point in time do not provide sufficient coverage of the entire free-phase plume. As depicted in Appendix E, the product thickness' in the recovery wells increase if the systems are turned off for an extended time (2 months). The increase in the product thickness' in the recovery wells after the system is turned off indicates that additional free-phase product is migrating, under natural conditions, to those wells while the system is off. The recovery wells are situated on the downgradient portion of the free-phase plume such that the wells can eventually recover the free-phase product, but the duration of the system operation would be decreased if additional wells were to be installed. In accordance to the original scope-of-work, this evaluation shall be presented in more detail after the one year of systems operation is completed.

TABLE 1
NAVAL WEAPONS STATION-EARLE BIOSLURPER UNITS
OIL EXTRACTED TO DATE

	Free-Phase Oil Extracted February (gallons)	**Free-Phase Oil Extracted March (gallons)**	**Free-Phase Oil Extracted April (gallons)**	**Free-Phase Oil Extracted May (gallons)**	**Free-Phase Oil Extracted August (gallons)**	**Free-Phase Oil Extracted September (gallons)**	**Free-Phase Oil Extracted October (gallons)**	**Free-Phase Oil Extracted November (gallons)**	**Total Free-Product Extracted to Date**
Bioslurper System #1	400	375	275	300	225	250	250	140	2,215 gallons
Bioslurper System #2	25	50	50	20	55	30	40	20	290 gallons
Total	**425**	**425**	**325**	**320**	**280**	**280**	**290**	**160**	**2,505 gallons**

TABLE 2
NAVAL WEAPONS STATION-EARLE BIOSLURPER UNITS
GROUNDWATER EXTRACTED/TREATED TO DATE

	Ground-water Extracted February (gallons)	**Ground-water Extracted March (gallons)**	**Ground-water Extracted April (gallons)**	**Ground-water Extracted May (gallons)**	**Ground-water Extracted August (gallons)**	**Ground-water Extracted September (gallons)**	**Ground-water Extracted October (gallons)**	**Ground-water Extracted November (gallons)**	**Total Ground-water Extracted/ Treated to Date**
Bioslurper System #1	2,675	26,169	23,898	12,799	16,498	34,612	29,974	20,503	167,128 gallons
Bioslurper System #2	5,282	20,586	22,607	6,584	13,537	14,451	27,805	16,196	127,048 gallons
Total	**7,957**	**46,755**	**46,505**	**19,383**	**30,035**	**49,063**	**57,779**	**36,699**	**294,176 gallons**

TABLE 3
NAVAL WEAPONS STATION-EARLE BIOSLURPER UNITS
TOTAL PETROLEUM HYDROCARBONS (TPH) REMOVED VIA GROUNDWATER TREATMENT

	TPH Extracted via Ground-water Treatment February (pounds)	**TPH Extracted via Ground-water Treatment March (pounds)**	**TPH Extracted via Ground-water Treatment April (pounds)**	**TPH Extracted via Ground-water Treatment May (pounds)**	**TPH Extracted via Ground-water Treatment August (pounds)**	**TPH Extracted via Ground-water Treatment September (pounds)**	**TPH Extracted via Ground-water Treatment October (pounds)**	**TPH Extracted via Ground-water Treatment November (pounds)**	**Total TPH Extracted via Groundwater to Date**
Bioslurper System #1	60.75	125.14	306.42	135.56	47.30	----	175.99	179.16	1030.32 pounds
Bioslurper System #2	4.25	14.17	32.40	9.61	----	13.99	2.37	4.26	81.05 pounds
Total	**65.00**	**139.31**	**338.82**	**145.17**	**47.30**	**13.99**	**178.36**	**179.16**	**1,111.37 pounds**

TABLE 4
NAVAL WEAPONS STATION-EARLE BIOSLURPER UNITS
TOTAL PETROLEUM HYDROCARBONS (TPH) REMOVED VIA AIR EXTRACTION

	TPH Removed via Vapor Extraction February (pounds)	**TPH Removed via Vapor Extraction March (pounds)**	**TPH Removed via Vapor Extraction April (pounds)**	**TPH Removed via Vapor Extraction May (pounds)**	**TPH Removed via Vapor Extraction August (pounds)**	**TPH Removed via Vapor Extraction September (pounds)***	**TPH Removed via Vapor Extraction October (pounds)**	**TPH Removed via Vapor Extraction November (pounds)**	**Total TPH Removed via Vapor Extraction to Date**
Bioslurper System #1	22.4	16.95	36.73	34.37	24.79	0	5.54	201.95	342.73 pounds
Bioslurper System #2	4.5	7.7	20.74	9.96	18.89	32.4	16.71	0	110.90 pounds
Total	**26.9**	**24.65**	**57.47**	**44.33**	**43.68**	**32.4**	**22.25**		**453.62 pounds**

* Air sample collected October 2, 1998.

TABLE 5:
BIOSLURPER UNIT NO.1
TOTAL PETROLEUM HYDROCARBON (TPH) EFFLUENT CONCENTRATIONS

EFFLUENT SAMPLES August 21, 1998	TPH Concentration (ppm)	EFFLUENT SAMPLES August 27, 1998	TPH Concentration (ppm)	EFFLUENT SAMPLES September 18, 1998	TPH Concentration (ppm)	EFFLUENT SAMPLES October 2, 1998	TPH Concentration (ppm)
Untreated Effluent **16(A)EW-98-W68**	186	Untreated Effluent **16(A)EW-98-W74**	173	Untreated Effluent **No sample Taken**	NA	Untreated Effluent **16(A)EW-98-W85**	573
After 1st Clay Unit **16(A)EW-98-W69**	113	After 1st Clay Unit **16(A)EW-98-W75**	82.7	After 1st Clay Unit **16(A)EW-98-W80**	150	After 1st Clay Unit **16(A)EW-98-W86**	409
After 2 Clay Units **16(A)EW-98-W70**	ND	After 2 Clay Units **16(A)EW-98-W76**	5.06	After 2 Clay Units **16(A)EW-98-W81**	134	After 2 Clay Units **16(A)EW-98-W87**	1.27
After 3 Clay Units **16(A)EW-98-W71**	ND	After 3 Clay Units **16(A)EW-98-W77**	ND	After 3 Clay Units **16(A)EW-98-W82**	ND	After 3 Clay Units **16(A)EW-98-W88**	ND
After 2 Clay Units and 1 Carbon Unit **16(A)EW-98-W72**	ND	After 2 Clay Units and 1 Carbon Unit **16(A)EW-98-W78**	ND	After 3 Clay Units and 1 Carbon Unit **16(A)EW-98-W83**	ND	After 3 Clay Units and 1 Carbon Unit **16(A)EW-98-W89**	ND
After 3 Clay Units and 2 Carbon Units (2/9/98) **16(A)EW-98-W73**	ND	After 3 Clay Units and 2 Carbon Units (2/9/98) **16(A)EW-98-W79**	1.84	After 3 Clay Units and 2 Carbon Units **16(A)EW-98-W84**	ND	After 3 Clay Units and 2 Carbon Units **16(A)EW-98-W90**	ND

The NWS-Earle Sewer Treatment Plant NJPDES Permit Discharge Limit for TPH is 10 ppm.

***= The laboratory only sent enough bottles to collect two aqueous samples.**

TABLE 5
(Page 2 of 2):
BIOSLURPER UNIT NO.1
TOTAL PETROLEUM HYDROCARBON (TPH) EFFLUENT CONCENTRATIONS

EFFLUENT SAMPLES October 23, 1998	**TPH Concentration (ppm)**	**EFFLUENT SAMPLES October 29-30, 1998**	**TPH Concentration (ppm)**	**EFFLUENT SAMPLES November 6, 1998**	**TPH Concentration (ppm)**
Untreated Effluent **16(A)EW-98-W91**	1300	Untreated Effluent **16(A)EW-98-W97**	834	Untreated Effluent **16(A)EW-98-W103**	12600
After 1st Clay Unit **16(A)EW-98-W92**	514	After 1st Clay Unit **16(A)EW-98-W98**	536	After 1st Clay Unit **16(A)EW-98-W104**	14700
After 2 Clay Units **16(A)EW-98-W93**	516	After 2 Clay Units **16(A)EW-98-W99**	254	After 2 Clay Units **16(A)EW-98-W105**	172
After 3 Clay Units **16(A)EW-98-W94**	ND	After 3 Clay Units **16(A)EW-98-W100**	6.77	After 3 Clay Units **16(A)EW-98-W106**	11.4
After 3 Clay Units and 1 Carbon Unit **16(A)EW-98-W95**	ND	After 3 Clay Units and 1 Carbon Unit **No Sample Taken**	NA	After 3 Clay Units and 1 Carbon Unit **16(A)EW-98-W107**	ND
After 3 Clay Units and 2 Carbon Units **16(A)EW-98-W96**	ND	After 3 Clay Units and 2 Carbon Units **16(A)EW-98-W101**	ND	After 3 Clay Units and 2 Carbon Units **16(A)EW-98-W108**	ND

The NWS-Earle Sewer Treatment Plant NJPDES Permit Discharge Limit for TPH is 10 ppm.

TABLE 6:
BIOSLURPER UNIT NO.2
TOTAL PETROLEUM HYDROCARBON (TPH) EFFLUENT CONCENTRATIONS

EFFLUENT SAMPLES August 21, 1998	TPH Concentration (ppm)	EFFLUENT SAMPLES August 27, 1998	TPH Concentration (ppm)	EFFLUENT SAMPLES September 18,1998	TPH Concentration (ppm)	EFFLUENT SAMPLES October 2, 1998	TPH Concentration (ppm)
Untreated Effluent **16(B)EW-98-W58**	172	Untreated Effluent **16(B)EW-98-W64**	11.9	Untreated Effluent **16(B)EW-98-W70**	116	Untreated Effluent **16(B)EW-98-W75**	18.1
After 1st Clay Unit **16(B)EW-98-W59**	1.11	After 1st Clay Unit **16(B)EW-98-W65**	ND	After 1st Clay Unit **16(B)EW-98-W71**	16.8	After 1st Clay Unit **16(B)EW-98-W76**	ND
After 2 Clay Units **16(B)EW-98-W60**	ND	After 2 Clay Units **16(B)EW-98-W66**	ND	After 2 Clay Units **16(B)EW-98-W72**	8.8	After 2 Clay Units **16(B)EW-98-W77**	ND
After 3 Clay Units **no sample taken**	ND	After 3 Clay Units **no sample taken**	ND	After 3 Clay Units **No sample Taken**	NA	After 3 Clay Units **No Sample Taken**	NA
After 2 Clay Units and 1 Carbon Unit **16(B)EW-98-W61**	ND	After 2 Clay Units and 1 Carbon Unit **16(B)EW-98-W67**	ND	After 3 Clay Units and 1 Carbon Unit **16(B)EW-98-W73**	ND	After 3 Clay Units and 1 Carbon Unit **16(B)EW-98-W78**	ND
After 3 Clay Units and 2 Carbon Units (2/9/98) **16(B)EW-98-W62**	ND	After 3 Clay Units and 2 Carbon Units (2/9/98) **16(B)EW-98-W68**	ND	After 3 Clay Units and 2 Carbon Units **16(B)EW-98-W74**	ND	After 3 Clay Units and 2 Carbon Units **16(B)EW-98-W79**	7.9

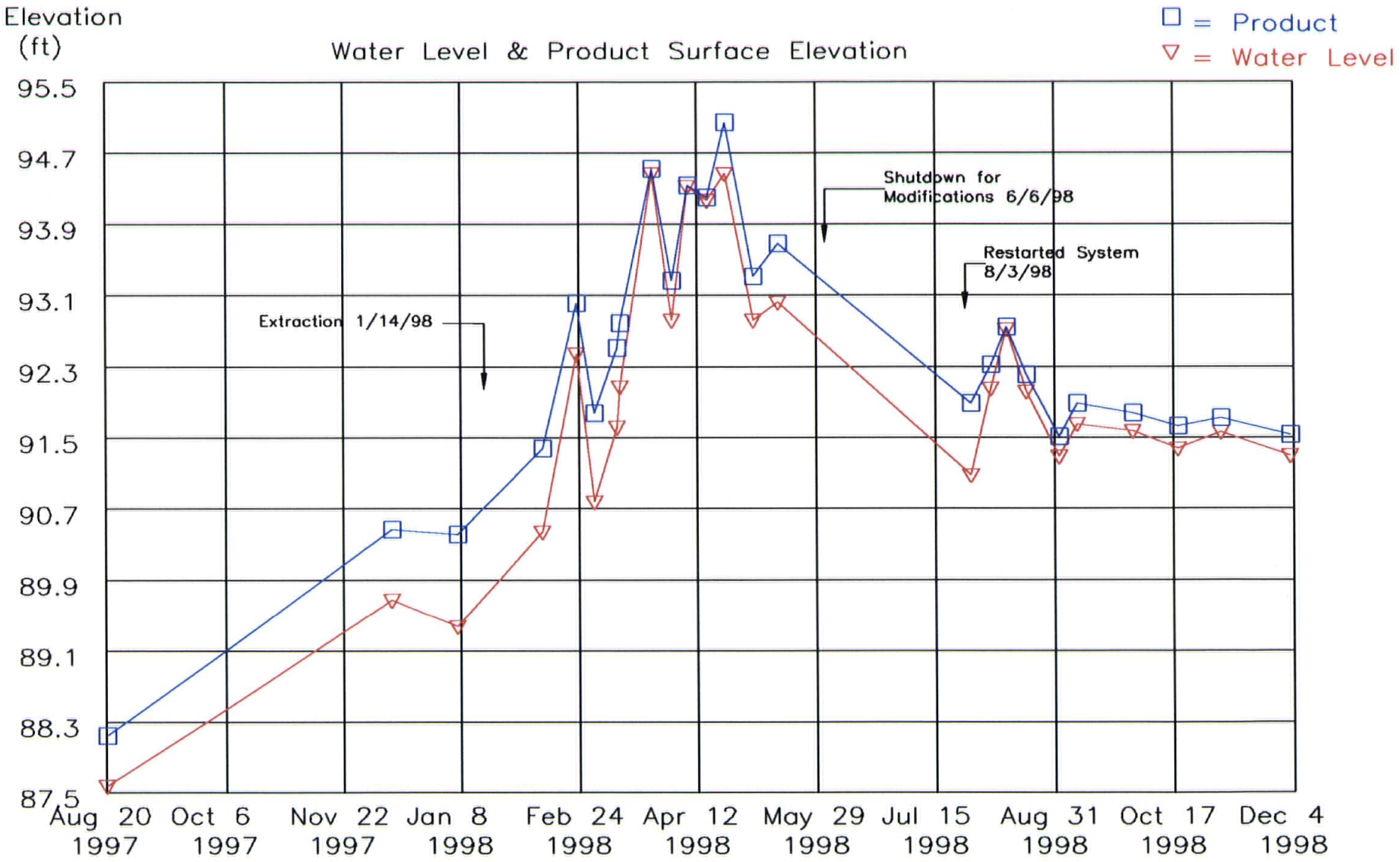
The NWS-Earle Sewer Treatment Plant NJPDES Permit Discharge Limit for TPH is 10 ppm.
***= The laboratory only sent enough bottles to collect two aqueous samples.**

TABLE 6
(Page 2 of 2)
BIOSLURPER UNIT NO.2
TOTAL PETROLEUM HYDROCARBON (TPH) EFFLUENT CONCENTRATIONS

EFFLUENT SAMPLES October 23, 1998	**TPH Concentration (ppm)**	**EFFLUENT SAMPLES October 29-30, 1998**	**TPH Concentration (ppm)**	**EFFLUENT SAMPLES November 6, 1998**	**TPH Concentration (ppm)**
Untreated Effluent **16(B)EW-98-W80**	20.3	Untreated Effluent **No Sample Taken**	NA	Untreated Effluent **16(B)EW-98-W87**	31.5
After 1st Clay Unit **16(B)EW-98-W81**	ND	After 1st Clay Unit **No Sample Taken**	NA	After 1st Clay Unit **16(B)EW-98-W88**	2.11
After 2 Clay Units **16(B)EW-98-W82**	ND	After 2 Clay Units **No Sample Taken**	NA	After 2 Clay Units **16(B)EW-98-W89**	ND
After 3 Clay Units **No Sample Taken**	NA	After 3 Clay Units **No Sample Taken**	NA	After 3 Clay Units **No Sample Taken**	NA
After 3 Clay Units and 1 Carbon Unit **16(B)EW-98-W83**	ND	After 3 Clay Units and 1 Carbon Unit **16(B)EW-98-W85**	ND	After 3 Clay Units and 1 Carbon Unit **16(B)EW-98-W90**	ND
After 3 Clay Units and 2 Carbon Units **16(B)EW-98-W84**	ND	After 3 Clay Units and 2 Carbon Units **16(B)EW-98-W86**	ND	After 3 Clay Units and 2 Carbon Units **16(B)EW-98-W91**	ND

The NWS-Earle Sewer Treatment Plant NJPDES Permit Discharge Limit for TPH is 10 ppm.

Well: 16MW-04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▽ = Water Level
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89.9
89.1
88.3
87.5
Extraction 1/14/98
Shutdown for Modifications 6/6/98
Restarted System 8/3/98
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Oct 17 1998
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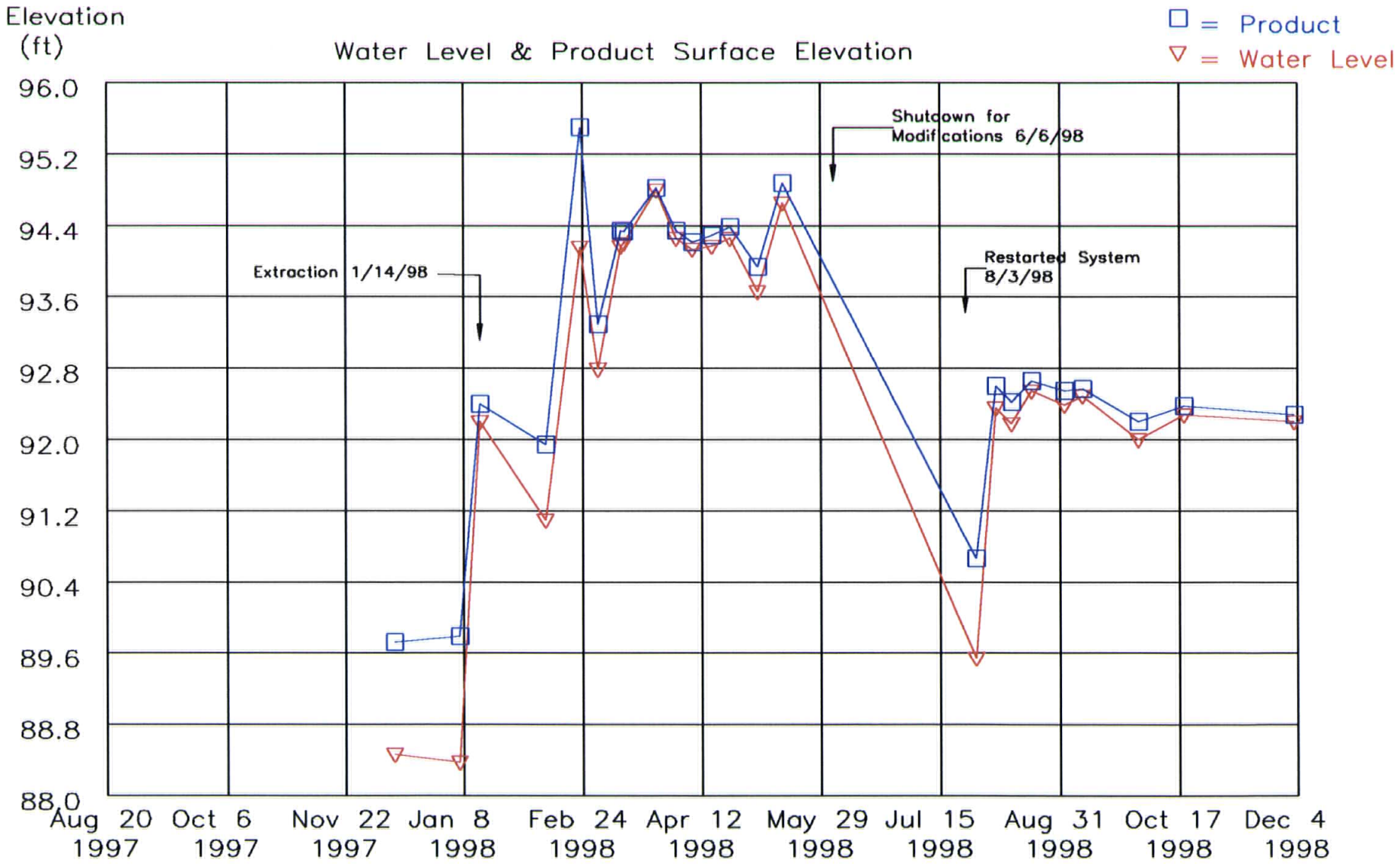
Well: C17MW-07



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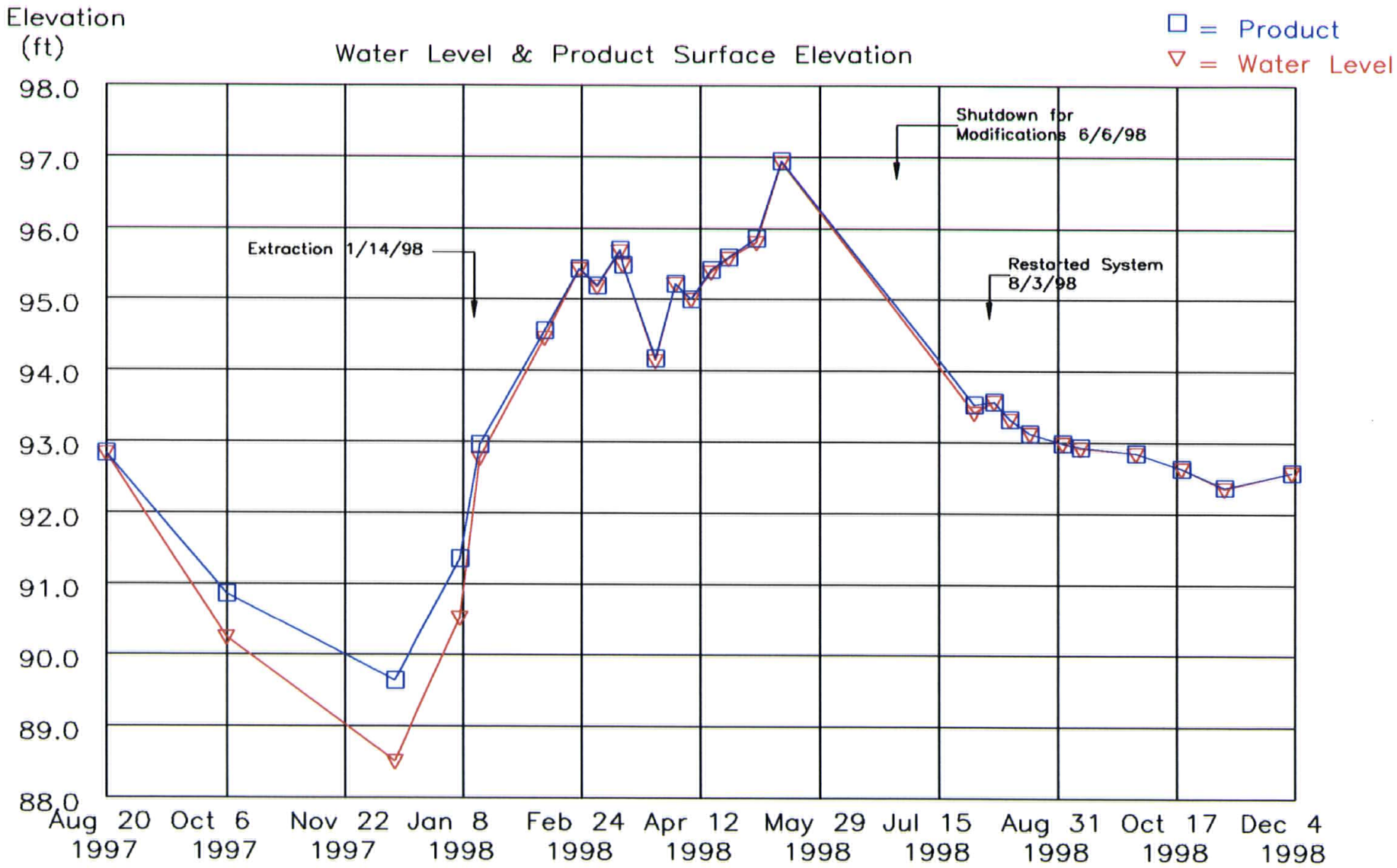
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Shutdown for Modifications 6/6/98
Restarted System 8/3/98
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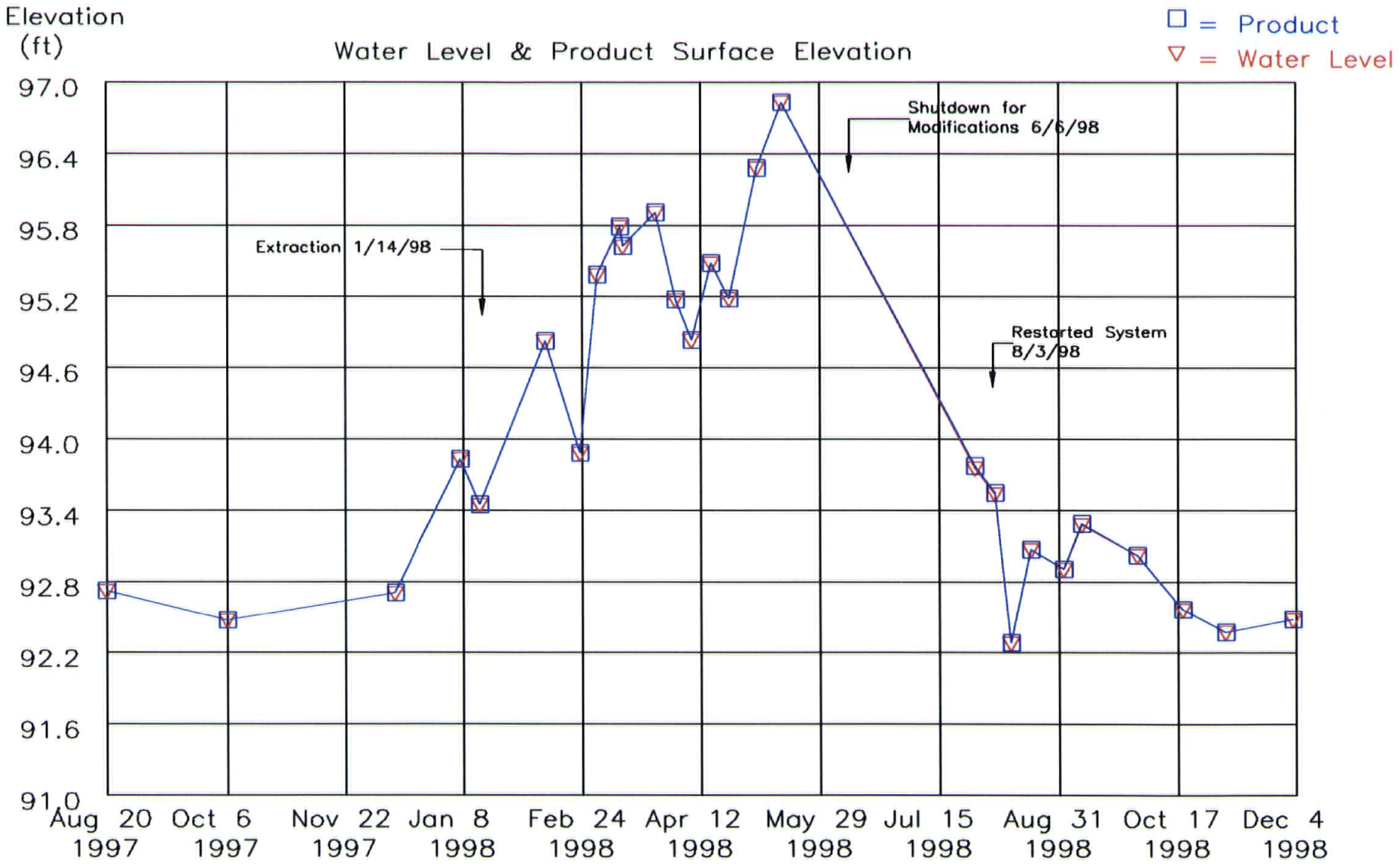
Jul 15 1998
Aug 31 1998
Oct 17 1998
Dec 4 1998

Well: 16MW-18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▽ = Water Level
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92.2
91.6
91.0
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Shutdown for Modifications 6/6/98
Restarted System 8/3/98
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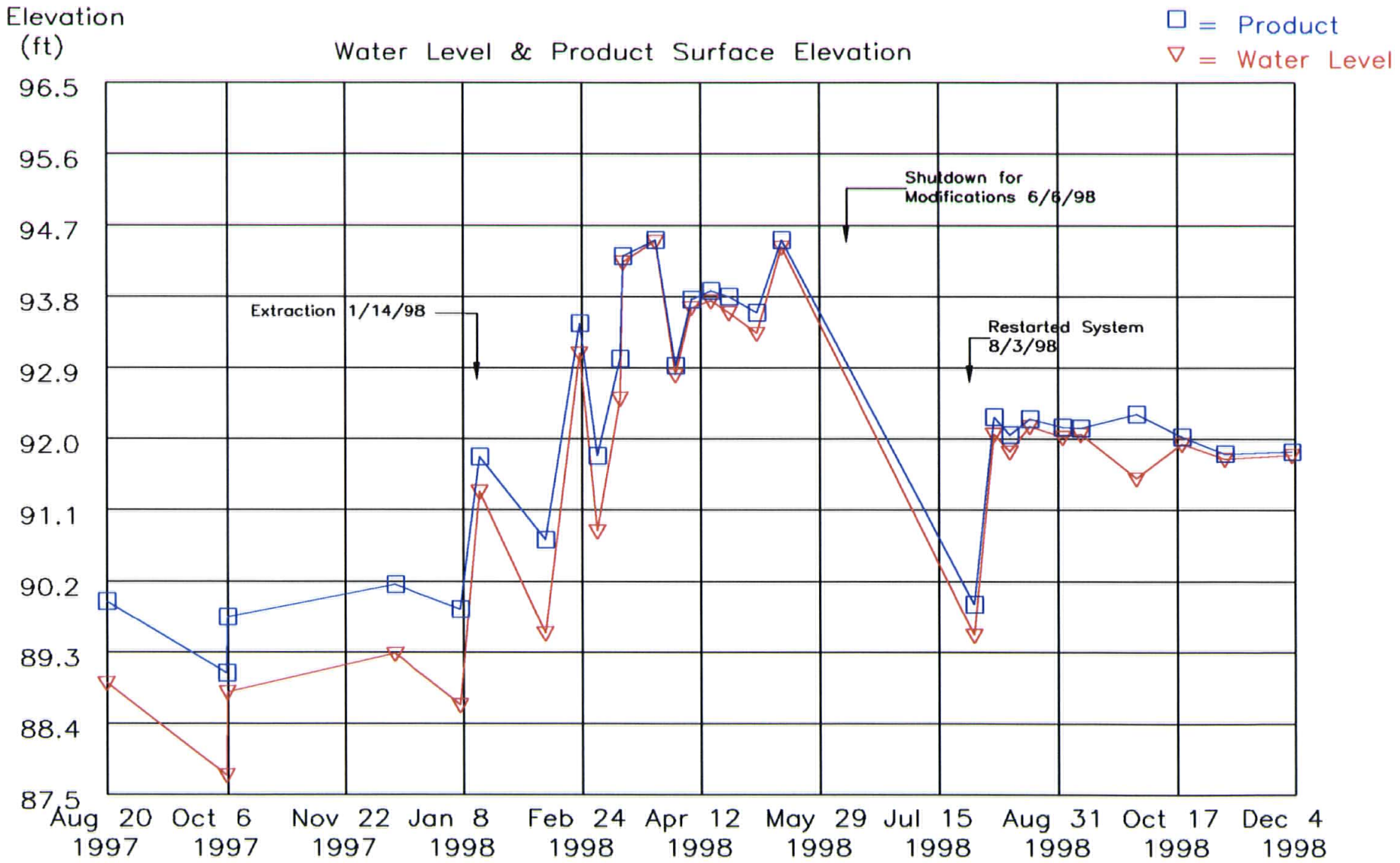
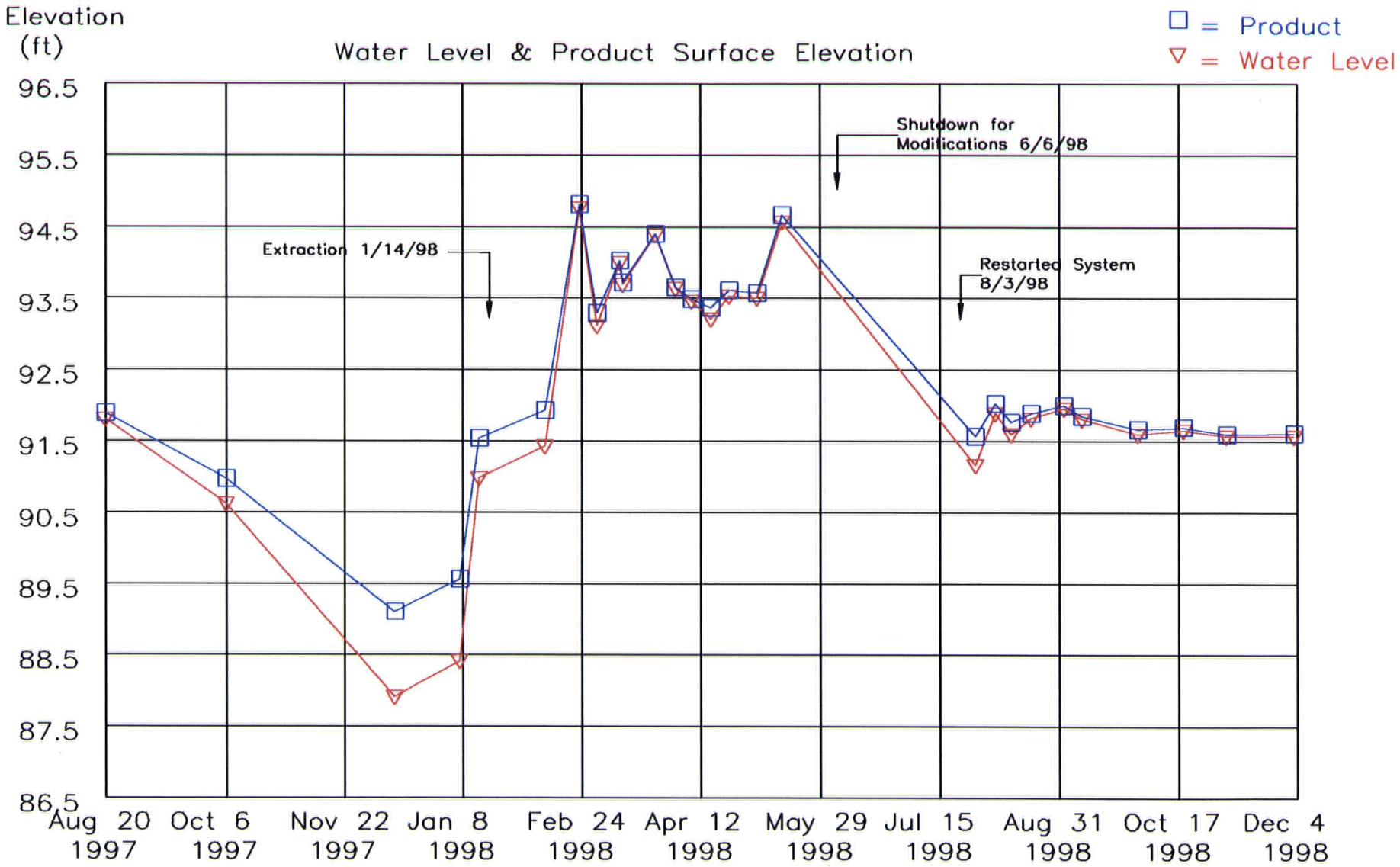
Feb 24 1998
Apr 12 1998
May 29 1998
Jul 15 1998
Aug 31 1998
Oct 17 1998
Dec 4 1998

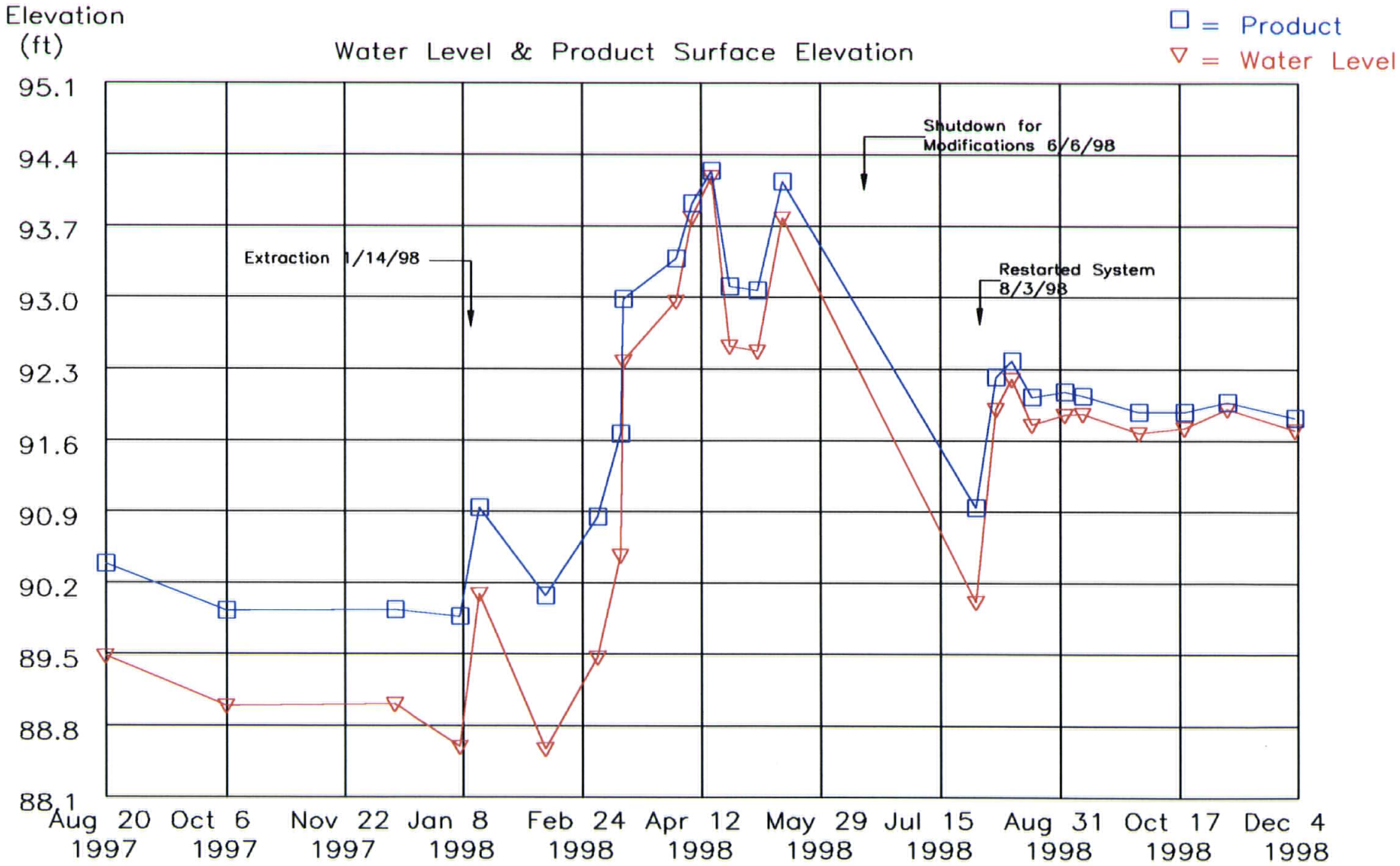
Well: 16MW-17


Elevation (ft)
Water Level & Product Surface Elevation
□ = Product
▽ = Water Level
96.5
95.6
94.7
93.8
92.9
92.0
91.1
90.2
89.3
88.4
87.5
Extraction 1/14/98
Shutdown for Modifications 6/6/98
Restarted System 8/3/98
Aug 20 1997
Oct 6 1997
Nov 22 1997
Jan 8 1998
Feb 24 1998
Apr 12 1998
May 29 1998
Jul 15 1998
Aug 31 1998
Oct 17 1998
Dec 4 1998

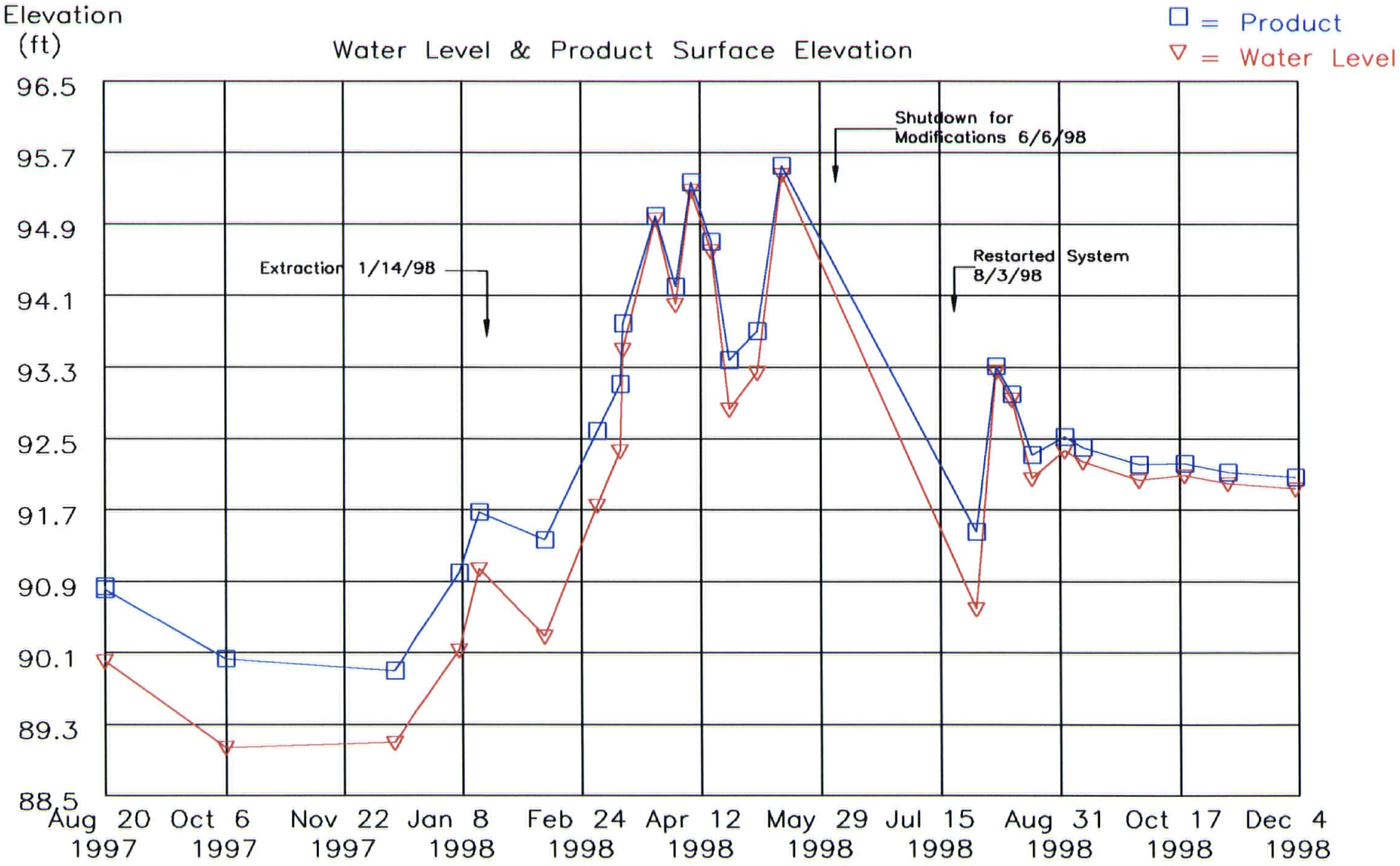
Well 16MW-16


Elevation (ft)
Water Level & Product Surface Elevation
□ = Product
▽ = Water Level
96.5
95.5
94.5
93.5
92.5
91.5
90.5
89.5
88.5
87.5
86.5
Extraction 1/14/98
Shutdown for Modifications 6/6/98
Restarted System 8/3/98
Aug 20 1997
Oct 6 1997
Nov 22 1997
Jan 8 1998
Feb 24 1998
Apr 12 1998
May 29 1998
Jul 15 1998
Aug 31 1998
Oct 17 1998
Dec 4 1998

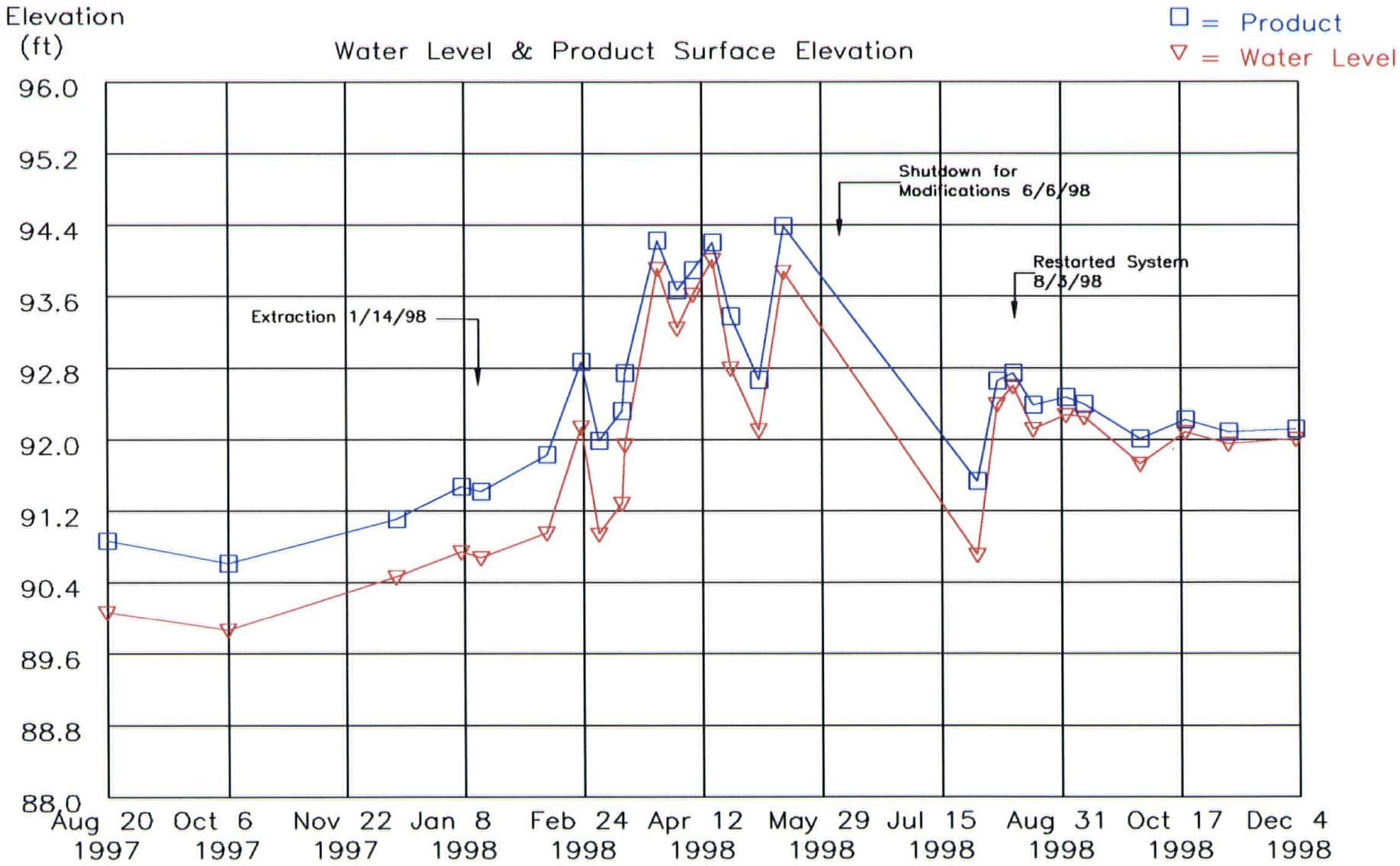
Well: 16MW-15


Elevation (ft)
Water Level & Product Surface Elevation
□ = Product
▽ = Water Level
95.1
94.4
93.7
93.0
92.3
91.6
90.9
90.2
89.5
88.8
88.1
Extraction 1/14/98
Shutdown for Modifications 6/6/98
Restarted System 8/3/98
Aug 20 1997
Oct 6 1997
Nov 22 1997
Jan 8 1998
Feb 24 1998
Apr 12 1998
May 29 1998
Jul 15 1998
Aug 31 1998
Oct 17 1998
Dec 4 1998

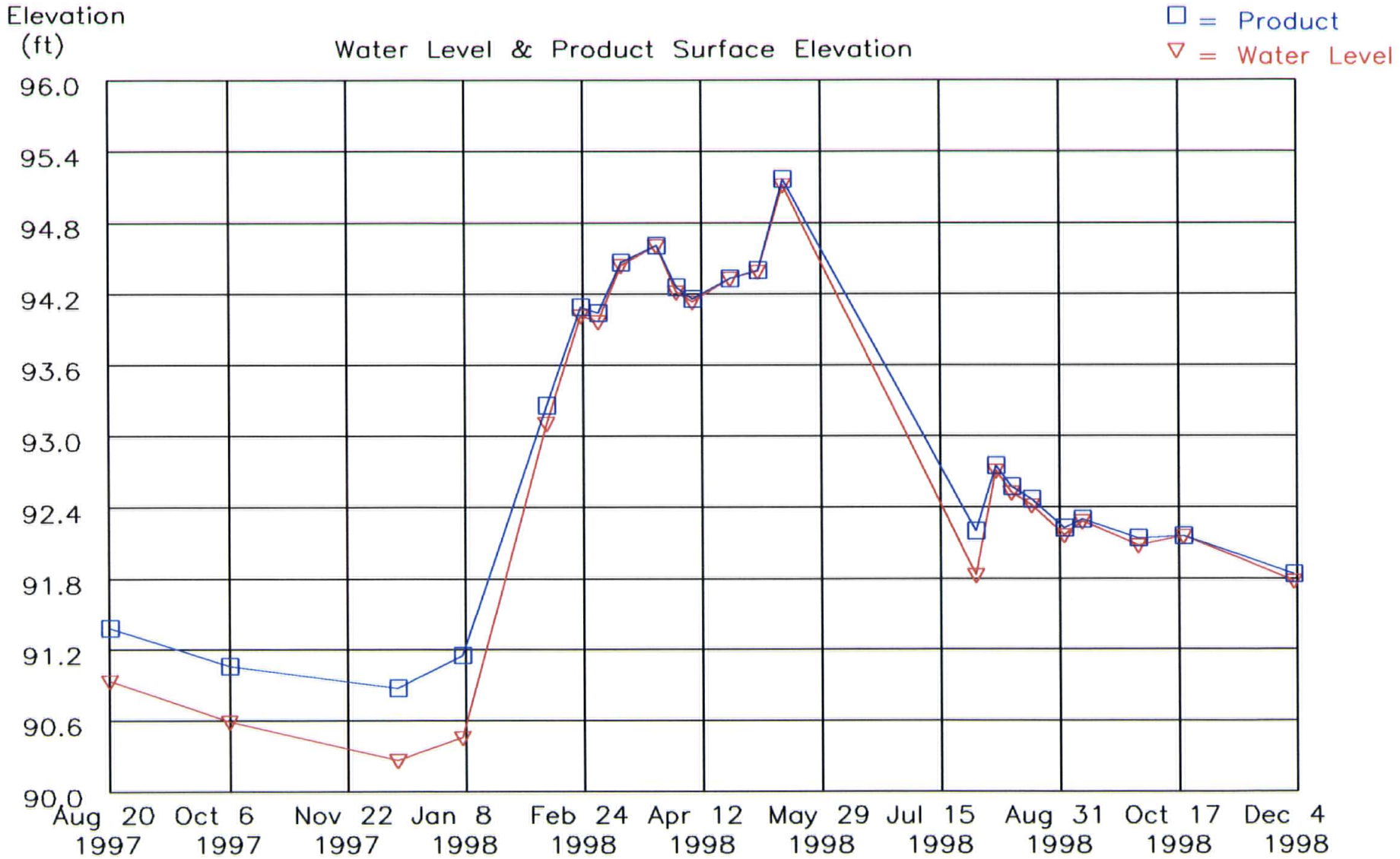
Well: 16MW-14


Elevation (ft)
Water Level & Product Surface Elevation
□ = Product
▽ = Water Level
96.5
95.7
94.9
94.1
93.3
92.5
91.7
90.9
90.1
89.3
88.5
Extraction 1/14/98
Shutdown for Modifications 6/6/98
Restarted System 8/3/98
Aug 20 1997
Oct 6 1997
Nov 22 1997
Jan 8 1998
Feb 24 1998
Apr 12 1998
May 29 1998
Jul 15 1998
Aug 31 1998
Oct 17 1998
Dec 4 1998

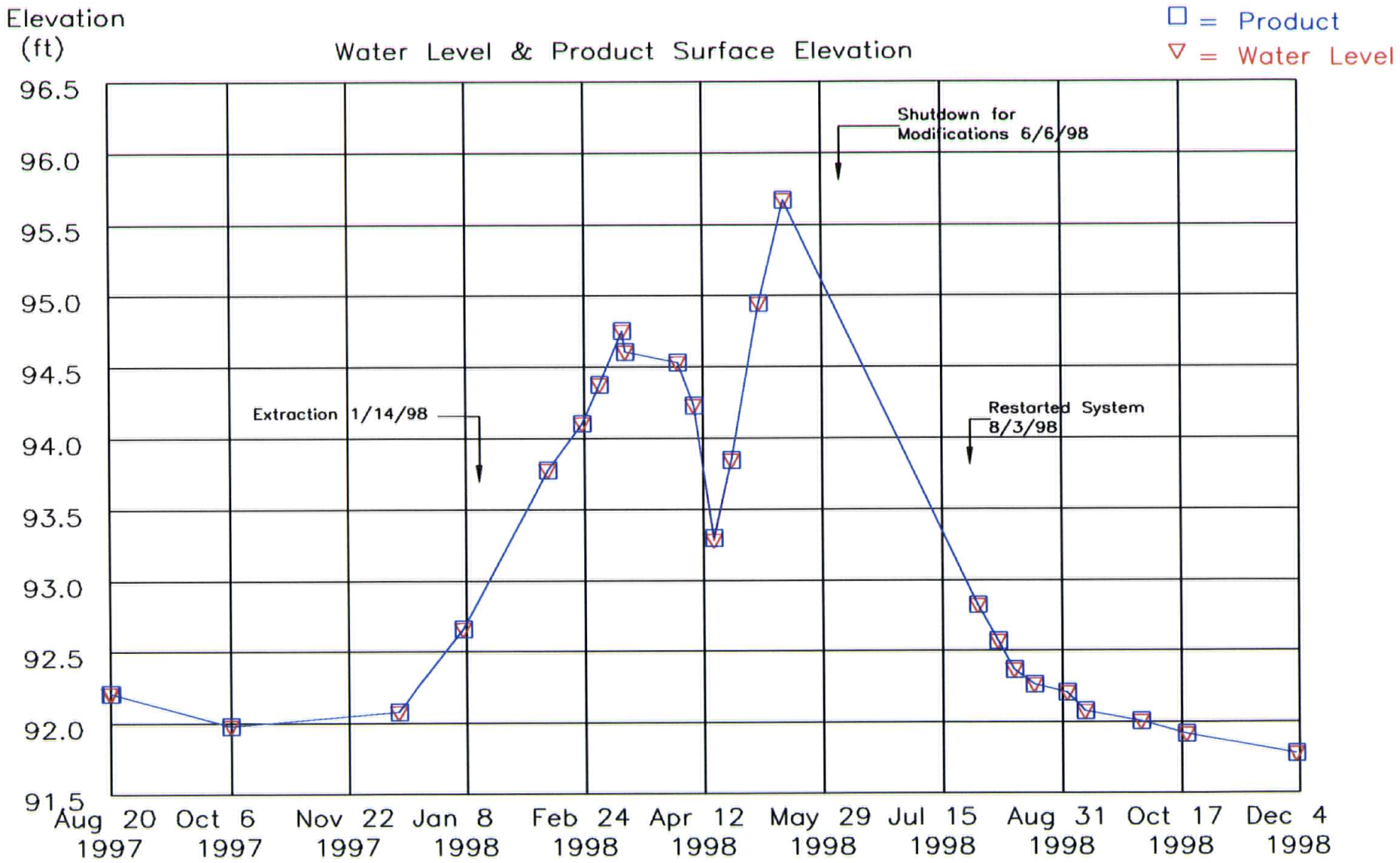
Well: 16MW-13


Elevation (ft)
Water Level & Product Surface Elevation
□ = Product
▽ = Water Level
96.0
95.2
94.4
93.6
92.8
92.0
91.2
90.4
89.6
88.8
88.0
Extraction 1/14/98
Shutdown for Modifications 6/6/98
Restarted System 8/3/98
Aug 20 1997
Oct 6 1997
Nov 22 1997
Jan 8 1998
Feb 24 1998
Apr 12 1998
May 29 1998
Jul 15 1998
Aug 31 1998
Oct 17 1998
Dec 4 1998

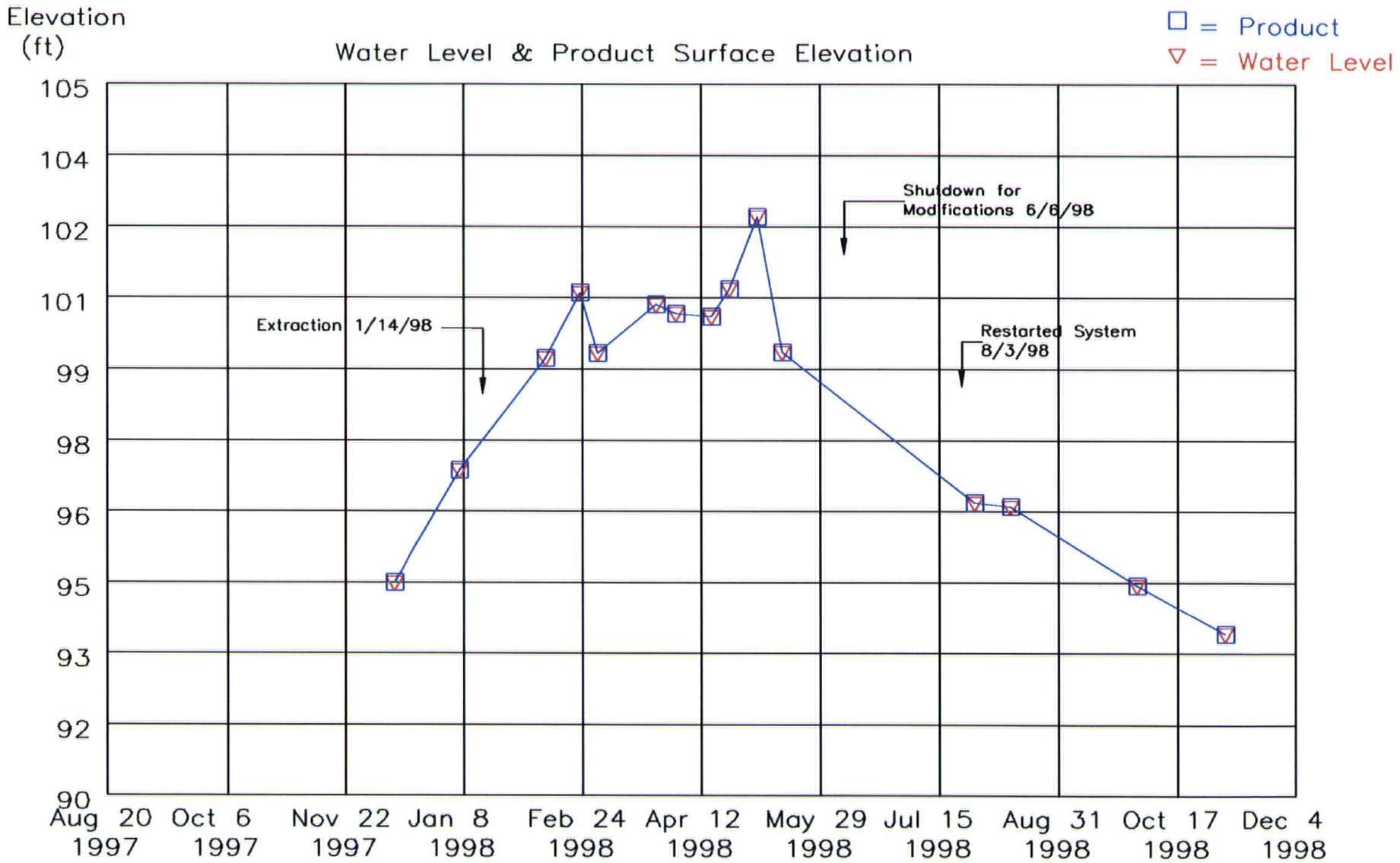
Well: 16MW-20


Elevation
(ft)
Water Level & Product Surface Elevation
□ = Product
▽ = Water Level
96.0
95.4
94.8
94.2
93.6
93.0
92.4
91.8
91.2
90.6
90.0
Aug 20 1997
Oct 6 1997
Nov 22 1997
Jan 8 1998
Feb 24 1998
Apr 12 1998
May 29 1998
Jul 15 1998
Aug 31 1998
Oct 17 1998
Dec 4 1998

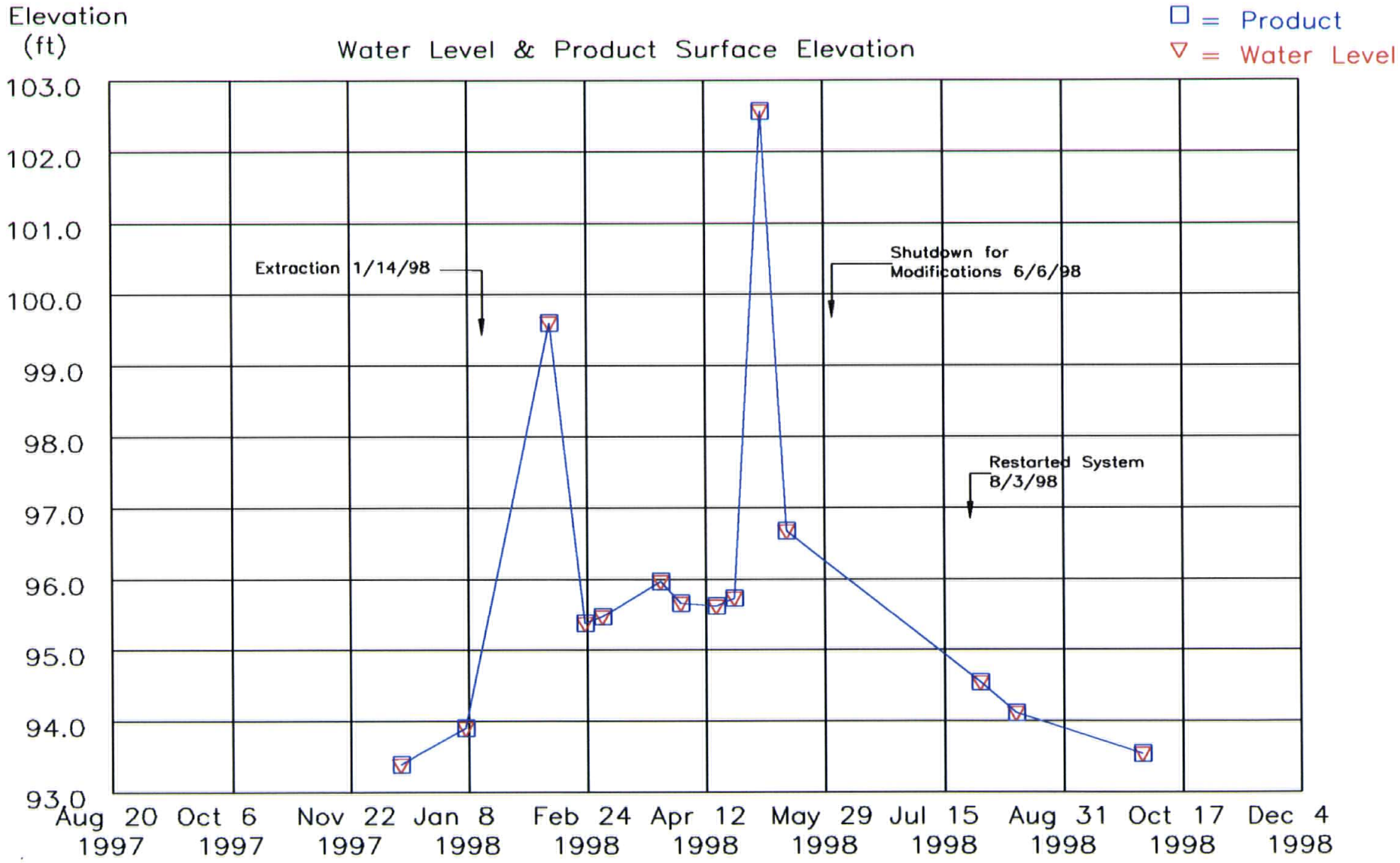
Well: 16MW-21

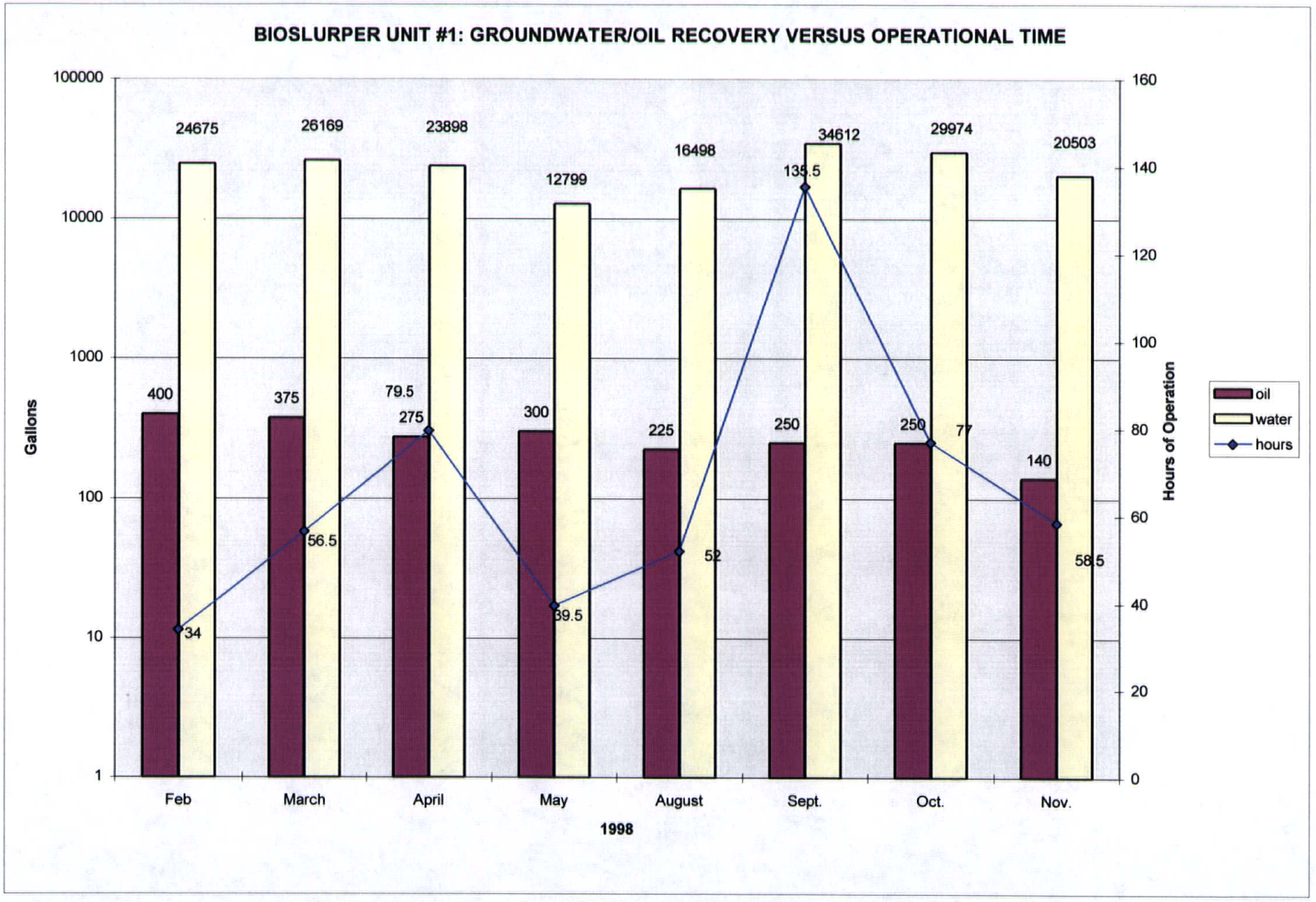

Elevation (ft)
Water Level & Product Surface Elevation
□ = Product
▽ = Water Level
96.5
96.0
95.5
95.0
94.5
94.0
93.5
93.0
92.5
92.0
91.5
Shutdown for Modifications 6/6/98
Extraction 1/14/98
Restarted System 8/3/98
Aug 20 1997
Oct 6 1997
Nov 22 1997
Jan 8 1998
Feb 24 1998
Apr 12 1998
May 29 1998
Jul 15 1998
Aug 31 1998
Oct 17 1998
Dec 4 1998

Well: 16MW-22

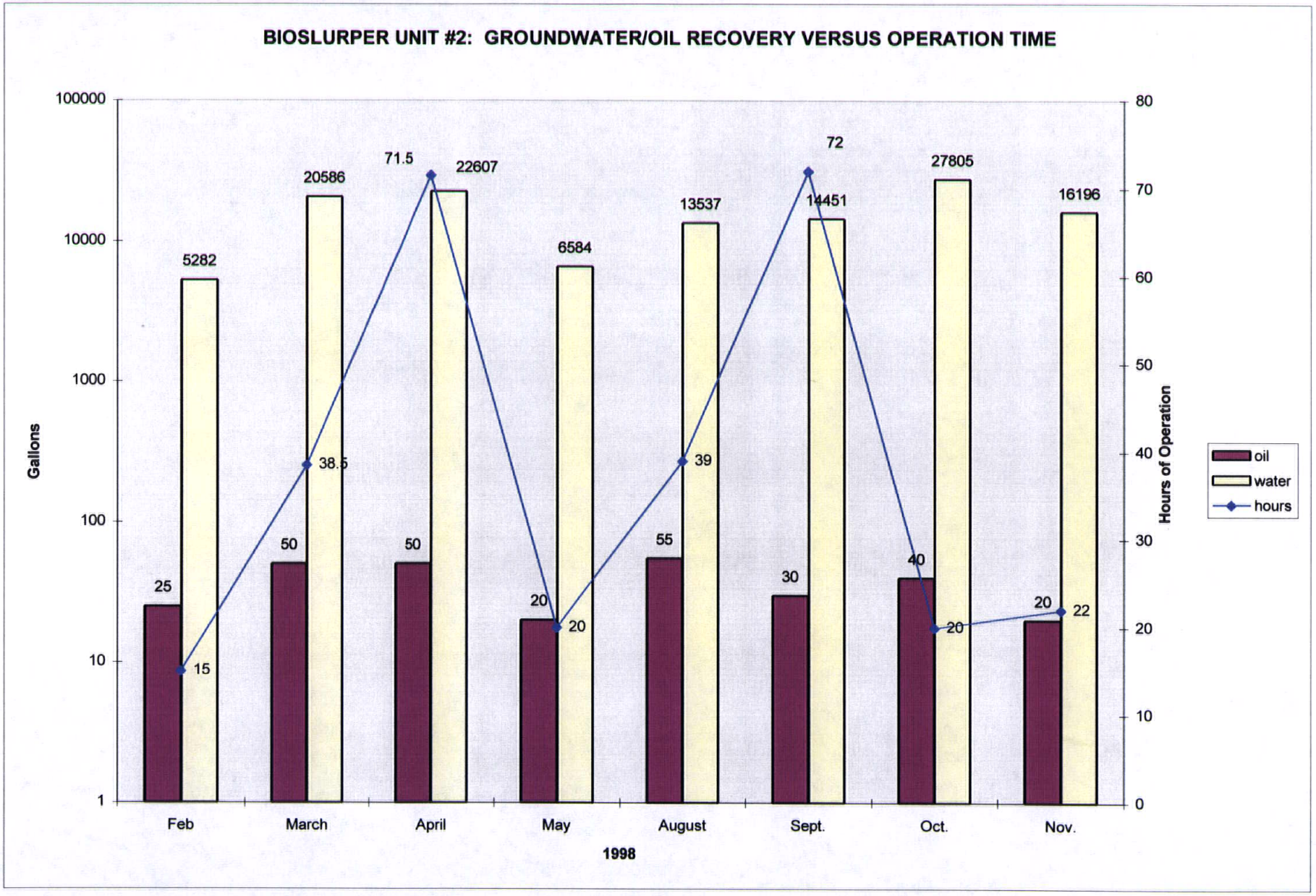

Elevation (ft)
Water Level & Product Surface Elevation
□ = Product
▽ = Water Level
105
104
102
101
99
98
96
95
93
92
90
Extraction 1/14/98
Shutdown for Modifications 6/6/98
Restarted System 8/3/98
Aug 20 1997
Oct 6 1997
Nov 22 1997
Jan 8 1998
Feb 24 1998
Apr 12 1998
May 29 1998
Jul 15 1998
Aug 31 1998
Oct 17 1998
Dec 4 1998

Well: 16MW-23


Elevation (ft)
Water Level & Product Surface Elevation
□ = Product
▽ = Water Level
103.0
102.0
101.0
100.0
99.0
98.0
97.0
96.0
95.0
94.0
93.0
Extraction 1/14/98
Shutdown for Modifications 6/6/98
Restarted System 8/3/98
Aug 20 1997
Oct 6 1997
Nov 22 1997
Jan 8 1998
Feb 24 1998
Apr 12 1998
May 29 1998
Jul 15 1998
Aug 31 1998
Oct 17 1998
Dec 4 1998


BIOSLURPER UNIT #1: GROUNDWATER/OIL RECOVERY VERSUS OPERATIONAL TIME
Gallons
Hours of Operation
100000
10000
1000
100
10
1
160
140
120
100
80
60
40
20
0
24675
26169
23898
12799
16498
34612
29974
20503
400
375
275
300
225
250
250
140
34
56.5
79.5
39.5
52
135.5
77
58.5
Feb
March
April
May
August
Sept.
Oct.
Nov.
1998
oil
water
hours

Bios1.xls


BIOSLURPER UNIT #2: GROUNDWATER/OIL RECOVERY VERSUS OPERATION TIME
Gallons
Hours of Operation
100000
10000
1000
100
10
1
80
70
60
50
40
30
20
10
0
5282
20586
22607
6584
13537
14451
27805
16196
25
50
50
20
55
30
40
20
15
38.5
71.5
20
39
72
20
22
Feb
March
April
May
August
Sept.
Oct.
Nov.
1998
oil
water
hours

Bios2.xls

Water Level Product Thickness Data

Date: 12/22/98

SITE	DATE	MP ELEVATION (feet)	TIME	DEPTH TO WATER (feet)	FLOATING PRODUCT THICKNESS (feet)	WATER ELEV. (feet)	△ WATER ELEV.(1) (feet)	EQUIV. FRESH WATER HEAD (feet)
16MW-04	08/20/97	101.23000	11:34	13.65	0.57	87.58	NA	88.06
16MW-04	12/12/97	101.23000	00:00	11.55	0.78	89.68	2.10	90.35
16MW-04	01/07/98	101.23000	11:02	11.85	1.03	89.38	-0.30	90.26
16MW-04	02/10/98	101.23000	00:00	10.78	0.93	90.45	1.07	91.24
16MW-04	02/24/98	101.23000	00:00	8.78	0.56	92.45	2.00	92.93
16MW-04	03/03/98	101.23000	00:00	10.45	1.00	90.78	-1.67	91.63
16MW-04	03/12/98	101.23000	00:00	9.60	0.88	91.63	0.85	92.38
16MW-04	03/13/98	101.23000	00:00	9.15	0.71	92.08	0.45	92.69
16MW-04	03/26/98	101.23000	00:00	6.76	0.05	94.47	2.39	94.51
16MW-04	04/03/98	101.23000	00:00	8.40	0.44	92.83	-1.64	93.20
16MW-04	04/09/98	101.23000	00:00	6.90	0.01	94.33	1.50	94.34
16MW-04	04/17/98	101.23000	00:00	7.06	0.04	94.17	-0.16	94.20
16MW-04	04/24/98	101.23000	00:00	6.76	0.57	94.47	0.30	94.96
16MW-04	05/05/98	101.23000	00:00	8.40	0.48	92.83	-1.64	93.31
16MW-04	05/15/98	101.23000	00:00	8.20	0.65	93.03	0.20	93.58
16MW-04	07/30/98	101.23000	00:00	10.15	0.81	91.08	-1.95	91.77
16MW-04	08/07/98	101.23000	00:00	9.17	0.27	92.06	0.98	92.29
16MW-04	08/13/98	101.23000	00:00	8.50	0.02	92.73	0.67	92.74
16MW-04	08/21/98	101.23000	00:00	9.20	0.19	92.03	-0.70	92.19
16MW-04	09/03/98	101.23000	00:00	9.94	0.23	91.29	-0.74	91.48
16MW-04	09/10/98	101.23000	00:00	9.57	0.24	91.66	0.37	91.86
16MW-04	10/02/98	101.23000	00:00	9.65	0.20	91.58	-0.08	91.75
16MW-04	10/20/98	101.23000	00:00	9.85	0.26	91.38	-0.20	91.60
16MW-04	11/06/98	101.23000	00:00	9.66	0.16	91.57	0.19	91.70
16MW-04	12/03/98	101.23000	00:00	9.93	0.23	91.30	-0.27	91.50
16MW-13	08/20/97	100.97000	00:00	10.90	0.80	90.07	NA	90.75
16MW-13	08/20/97	100.97000	08:45	10.90	0.80	90.07	0.00	90.75
16MW-13	10/06/97	100.97000	10:45	11.10	0.74	89.87	-0.20	90.50
16MW-13	12/12/97	100.97000	08:30	10.50	0.64	90.47	0.60	91.01
16MW-13	01/07/98	100.97000	09:35	10.22	0.73	90.75	0.28	91.37
16MW-13	01/15/98	100.97000	07:30	10.29	0.74	90.68	-0.07	91.31
16MW-13	02/10/98	100.97000	00:00	10.01	0.87	90.96	0.28	91.70
16MW-13	02/24/98	100.97000	00:00	8.82	0.71	92.15	1.19	92.76
16MW-13	03/03/98	100.97000	00:00	10.02	1.04	90.95	-1.20	91.83
16MW-13	03/12/98	100.97000	00:00	9.67	1.02	91.30	0.35	92.17

(1) Change in Water Elevation since last reported measurement

D = Dry NA = Not Available

(2) Measurements Based on Mean Sea Level

Water Level Product Thickness Data

Date: 12/22/98

SITE	DATE	MP ELEVATION (feet)	TIME	DEPTH TO WATER (feet)	FLOATING PRODUCT THICKNESS (feet)	WATER ELEV. (feet)	△ WATER ELEV.(1) (feet)	EQUIV. FRESH WATER HEAD (feet)
16MW-13	03/13/98	100.97000	00:00	9.02	0.80	91.95	0.65	92.63
16MW-13	03/26/98	100.97000	00:00	7.05	0.30	93.92	1.97	94.17
16MW-13	04/03/98	100.97000	00:00	7.72	0.41	93.25	-0.67	93.60
16MW-13	04/09/98	100.97000	00:00	7.34	0.26	93.63	0.38	93.85
16MW-13	04/17/98	100.97000	00:00	6.95	0.18	94.02	0.39	94.17
16MW-13	04/24/98	100.97000	00:00	8.16	0.57	92.81	-1.21	93.29
16MW-13	05/05/98	100.97000	00:00	8.85	0.55	92.12	-0.69	92.67
16MW-13	05/15/98	100.97000	00:00	7.09	0.51	93.88	1.76	94.39
16MW-13	07/30/98	100.97000	00:00	10.25	0.81	90.72	-3.16	91.41
16MW-13	08/07/98	100.97000	00:00	8.57	0.26	92.40	1.68	92.62
16MW-13	08/13/98	100.97000	00:00	8.36	0.14	92.61	0.21	92.72
16MW-13	08/21/98	100.97000	00:00	8.84	0.27	92.13	-0.48	92.36
16MW-13	09/03/98	100.97000	00:00	8.69	0.20	92.28	0.15	92.45
16MW-13	09/10/98	100.97000	00:00	8.71	0.15	92.26	-0.02	92.38
16MW-13	10/02/98	100.97000	00:00	9.23	0.27	91.74	-0.52	91.97
16MW-13	10/20/98	100.97000	00:00	8.88	0.14	92.09	0.35	92.20
16MW-13	11/06/98	100.97000	00:00	9.01	0.13	91.96	-0.13	92.07
16MW-13	12/03/98	100.97000	00:00	8.95	0.10	92.02	0.06	92.10
16MW-14	08/20/97	100.66000	00:00	10.64	0.82	90.02	NA	90.72
16MW-14	08/20/97	100.66000	08:48	10.64	0.80	90.02	0.00	90.70
16MW-14	10/06/97	100.66000	10:45	11.61	0.99	89.05	-0.97	89.89
16MW-14	12/12/97	100.66000	08:30	11.55	0.79	89.11	0.06	89.78
16MW-14	01/07/98	100.66000	09:49	10.52	0.86	90.14	1.03	90.87
16MW-14	01/07/98	100.66000	09:56	10.52	0.86	90.14	0.00	90.87
16MW-14	01/15/98	100.66000	07:30	9.61	0.63	91.05	0.91	91.59
16MW-14	02/10/98	100.66000	00:00	10.36	1.07	90.30	-0.75	91.21
16MW-14	03/03/98	100.66000	00:00	8.90	0.83	91.76	1.46	92.47
16MW-14	03/12/98	100.66000	00:00	8.29	0.74	92.37	0.61	93.00
16MW-14	03/13/98	100.66000	00:00	7.15	0.28	93.51	1.14	93.75
16MW-14	03/26/98	100.66000	00:00	5.70	0.03	94.96	1.45	94.98
16MW-14	04/03/98	100.66000	00:00	6.66	0.20	94.00	-0.96	94.17
16MW-14	04/09/98	100.66000	00:00	5.38	0.09	95.28	1.28	95.35
16MW-14	04/17/98	100.66000	00:00	6.05	0.09	94.61	-0.67	94.69
16MW-14	04/24/98	100.66000	00:00	7.82	0.54	92.84	-1.77	93.30
16MW-14	05/05/98	100.66000	00:00	7.41	0.46	93.25	0.41	93.64

(1) Change in Water Elevation since last reported measurement

D = Dry NA = Not Available

(2) Measurements Based on Mean Sea Level

Water Level Product Thickness Data

Date: 12/22/98

SITE	DATE	MP ELEVATION (feet)	TIME	DEPTH TO WATER (feet)	FLOATING PRODUCT THICKNESS (feet)	WATER ELEV. (feet)	△ WATER ELEV.(1) (feet)	EQUIV. FRESH WATER HEAD (feet)
16MW-14	05/15/98	100.66000	00:00	5.20	0.10	95.46	2.21	95.54
16MW-14	07/30/98	100.66000	00:00	10.05	0.85	90.61	-4.85	91.33
16MW-14	08/07/98	100.66000	00:00	7.40	0.05	93.26	2.65	93.30
16MW-14	08/13/98	100.66000	00:00	7.71	0.05	92.95	-0.31	92.99
16MW-14	08/21/98	100.66000	00:00	8.60	0.27	92.06	-0.89	92.29
16MW-14	09/03/98	100.66000	00:00	8.29	0.16	92.37	0.31	92.50
16MW-14	09/10/98	100.66000	00:00	8.41	0.15	92.25	-0.12	92.37
16MW-14	10/02/98	100.66000	00:00	8.62	0.18	92.04	-0.21	92.19
16MW-14	10/20/98	100.66000	00:00	8.57	0.13	92.09	0.05	92.20
16MW-14	11/06/98	100.66000	00:00	8.65	0.11	92.01	-0.08	92.10
16MW-14	12/03/98	100.66000	00:00	8.71	0.12	91.95	-0.06	92.05
16MW-15	08/20/97	100.98000	00:00	11.49	0.89	89.49	NA	90.25
16MW-15	08/20/97	100.98000	08:55	11.49	0.89	89.49	0.00	90.25
16MW-15	08/20/97	100.98000	09:12	11.49	0.89	89.49	0.00	90.25
16MW-15	10/06/97	100.98000	10:45	11.98	0.93	89.00	-0.49	89.79
16MW-15	12/12/97	100.98000	08:30	11.96	0.92	89.02	0.02	89.80
16MW-15	01/07/98	100.98000	10:05	12.38	1.27	88.60	-0.42	89.68
16MW-15	01/15/98	100.98000	07:30	10.88	0.84	90.10	1.50	90.81
16MW-15	02/10/98	100.98000	00:00	12.40	1.49	88.58	-1.52	89.85
16MW-15	03/03/98	100.98000	00:00	11.50	1.37	89.48	0.90	90.65
16MW-15	03/12/98	100.98000	00:00	10.50	1.19	90.48	1.00	91.49
16MW-15	03/13/98	100.98000	00:00	8.60	0.60	92.38	1.90	92.89
16MW-15	04/03/98	100.98000	00:00	8.01	0.41	92.97	0.59	93.32
16MW-15	04/09/98	100.98000	00:00	7.19	0.13	93.79	0.82	93.90
16MW-15	04/17/98	100.98000	00:00	6.79	0.05	94.19	0.40	94.23
16MW-15	04/24/98	100.98000	00:00	8.45	0.57	92.53	-1.66	93.02
16MW-15	05/05/98	100.98000	00:00	8.50	0.59	92.48	-0.05	93.07
16MW-15	05/15/98	100.98000	00:00	7.20	0.36	93.78	1.30	94.08
16MW-15	07/30/98	100.98000	00:00	10.96	0.92	90.02	-3.76	90.80
16MW-15	08/07/98	100.98000	00:00	9.06	0.30	91.92	1.90	92.18
16MW-15	08/13/98	100.98000	00:00	8.77	0.17	92.21	0.29	92.35
16MW-15	08/21/98	100.98000	00:00	9.22	0.27	91.76	-0.45	91.99
16MW-15	09/03/98	100.98000	00:00	9.12	0.22	91.86	0.10	92.04
16MW-15	09/10/98	100.98000	00:00	9.11	0.17	91.87	0.01	92.01
16MW-15	10/02/98	100.98000	00:00	9.30	0.20	91.68	-0.19	91.85

(1) Change in Water Elevation since last reported measurement

D = Dry NA = Not Available

(2) Measurements Based on Mean Sea Level

SITE	DATE	MP ELEVATION (feet)	TIME	DEPTH TO WATER (feet)	FLOATING PRODUCT THICKNESS (feet)	WATER ELEV. (feet)	△ WATER ELEV.(1) (feet)	EQUIV. FRESH WATER HEAD (feet)
16MW-15	10/20/98	100.98000	00:00	9.25	0.16	91.73	0.05	91.86
16MW-15	11/06/98	100.98000	00:00	9.06	0.06	91.92	0.19	91.97
16MW-15	12/03/98	100.98000	00:00	9.27	0.11	91.71	-0.21	91.80
16MW-16	08/20/97	98.82000	00:00	7.01	0.08	91.81	NA	91.87
16MW-16	08/20/97	98.82000	09:12	7.01	0.08	91.81	0.00	91.87
16MW-16	10/06/97	98.82000	10:45	8.19	0.35	90.63	-1.18	90.93
16MW-16	12/12/97	98.82000	08:30	10.90	1.20	87.92	-2.71	88.94
16MW-16	01/07/98	98.82000	10:10	10.40	1.15	88.42	0.50	89.40
16MW-16	01/15/98	98.82000	07:30	7.83	0.56	90.99	2.57	91.46
16MW-16	02/10/98	98.82000	00:00	7.38	0.49	91.44	0.45	91.85
16MW-16	02/24/98	98.82000	00:00	4.05	0.05	94.77	3.33	94.81
16MW-16	03/03/98	98.82000	00:00	5.70	0.17	93.12	-1.65	93.26
16MW-16	03/12/98	98.82000	00:00	4.81	0.02	94.01	0.89	94.03
16MW-16	03/13/98	98.82000	00:00	5.12	0.02	93.70	-0.31	93.71
16MW-16	03/26/98	98.82000	00:00	4.42	0.01	94.40	0.70	94.40
16MW-16	04/03/98	98.82000	00:00	5.17	0.01	93.65	-0.75	93.66
16MW-16	04/09/98	98.82000	00:00	5.35	0.02	93.47	-0.18	93.48
16MW-16	04/17/98	98.82000	00:00	5.60	0.14	93.22	-0.25	93.34
16MW-16	04/24/98	98.82000	00:00	5.28	0.07	93.54	0.32	93.60
16MW-16	05/05/98	98.82000	00:00	5.32	0.07	93.50	-0.04	93.57
16MW-16	05/15/98	98.82000	00:00	4.25	0.10	94.57	1.07	94.66
16MW-16	07/30/98	98.82000	00:00	7.64	0.39	91.18	-3.39	91.51
16MW-16	08/07/98	98.82000	00:00	6.92	0.14	91.90	0.72	92.01
16MW-16	08/13/98	98.82000	00:00	7.22	0.17	91.60	-0.30	91.74
16MW-16	08/21/98	98.82000	00:00	6.99	0.07	91.83	0.23	91.89
16MW-16	09/03/98	98.82000	00:00	6.86	0.04	91.96	0.13	91.99
16MW-16	09/10/98	98.82000	00:00	7.01	0.04	91.81	-0.15	91.84
16MW-16	10/02/98	98.82000	00:00	7.22	0.08	91.60	-0.21	91.66
16MW-16	10/20/98	98.82000	00:00	7.16	0.04	91.66	0.06	91.69
16MW-16	11/06/98	98.82000	00:00	7.25	0.03	91.57	-0.09	91.59
16MW-16	12/03/98	98.82000	00:00	7.24	0.03	91.58	0.01	91.60
16MW-17	08/20/97	99.79000	00:00	10.87	1.03	88.92	NA	89.80
16MW-17	08/20/97	99.79000	09:07	10.87	1.03	88.92	0.00	89.80
16MW-17	10/06/97	99.79000	00:00	12.03	1.28	87.76	-1.16	88.85

(1) Change in Water Elevation since last reported measurement D = Dry NA = Not Available

(2) Measurements Based on Mean Sea Level

Water Level Product Thickness Data

Date: 12/22/98

SITE	DATE	MP ELEVATION (feet)	TIME	DEPTH TO WATER (feet)	FLOATING PRODUCT THICKNESS (feet)	WATER ELEV. (feet)	△ WATER ELEV.(1) (feet)	EQUIV. FRESH WATER HEAD (feet)
16MW-17	10/06/97	99.79000	10:45	10.98	0.94	88.81	1.05	89.61
16MW-17	12/12/97	99.79000	08:30	10.50	0.87	89.29	0.48	90.03
16MW-17	01/07/98	99.79000	10:23	11.15	1.21	88.64	-0.65	89.67
16MW-17	01/15/98	99.79000	07:30	8.45	0.43	91.34	2.70	91.71
16MW-17	02/10/98	99.79000	00:00	10.24	1.17	89.55	-1.79	90.55
16MW-17	02/24/98	99.79000	00:00	6.70	0.37	93.09	3.54	93.40
16MW-17	03/03/98	99.79000	00:00	8.95	0.95	90.84	-2.25	91.65
16MW-17	03/12/98	99.79000	00:00	7.27	0.49	92.52	1.68	92.94
16MW-17	03/13/98	99.79000	00:00	5.55	0.07	94.24	1.72	94.30
16MW-17	03/26/98	99.79000	00:00	5.29	0.01	94.50	0.26	94.51
16MW-17	04/03/98	99.79000	00:00	6.97	0.10	92.82	-1.68	92.91
16MW-17	04/09/98	99.79000	00:00	6.12	0.09	93.67	0.85	93.75
16MW-17	04/17/98	99.79000	00:00	6.04	0.13	93.75	0.08	93.86
16MW-17	04/24/98	99.79000	00:00	6.19	0.20	93.60	-0.15	93.77
16MW-17	05/05/98	99.79000	00:00	6.45	0.27	93.34	-0.26	93.61
16MW-17	05/15/98	99.79000	00:00	5.36	0.09	94.43	1.09	94.50
16MW-17	07/30/98	99.79000	00:00	10.26	0.39	89.53	-4.90	89.86
16MW-17	08/07/98	99.79000	00:00	7.72	0.21	92.07	2.54	92.24
16MW-17	08/13/98	99.79000	00:00	7.95	0.22	91.84	-0.23	92.02
16MW-17	08/21/98	99.79000	00:00	7.62	0.09	92.17	0.33	92.24
16MW-17	09/03/98	99.79000	00:00	7.76	0.12	92.03	-0.14	92.13
16MW-17	09/10/98	99.79000	00:00	7.72	0.07	92.07	0.04	92.13
16MW-17	10/02/98	99.79000	00:00	8.28	0.81	91.51	-0.56	92.20
16MW-17	10/20/98	99.79000	00:00	7.85	0.09	91.94	0.43	92.01
16MW-17	11/06/98	99.79000	00:00	8.04	0.07	91.75	-0.19	91.81
16MW-17	12/03/98	99.79000	00:00	7.99	0.04	91.80	0.05	91.83
16MW-18	08/20/97	100.69000	00:00	7.96	0.00	92.73	NA	92.73
16MW-18	08/20/97	100.69000	09:03	7.96	0.00	92.73	0.00	92.73
16MW-18	10/06/97	100.69000	10:45	8.21	0.00	92.48	-0.25	92.48
16MW-18	12/12/97	100.69000	08:30	7.98	0.00	92.71	0.23	92.71
16MW-18	01/07/98	100.69000	10:30	6.85	0.00	93.84	1.13	93.84
16MW-18	01/15/98	100.69000	07:30	7.24	0.00	93.45	-0.39	93.45
16MW-18	02/10/98	100.69000	00:00	5.86	0.00	94.83	1.38	94.83
16MW-18	02/24/98	100.69000	00:00	6.80	0.00	93.89	-0.94	93.89
16MW-18	03/03/98	100.69000	00:00	5.30	0.00	95.39	1.50	95.39

(1) Change in Water Elevation since last reported measurement

D = Dry NA = Not Available

(2) Measurements Based on Mean Sea Level

SITE	DATE	MP ELEVATION (feet)	TIME	DEPTH TO WATER (feet)	FLOATING PRODUCT THICKNESS (feet)	WATER ELEV. (feet)	△ WATER ELEV.(1) (feet)	EQUIV. FRESH WATER HEAD (feet)
16MW-18	03/12/98	100.69000	00:00	4.89	0.00	95.80	0.41	95.80
16MW-18	03/13/98	100.69000	00:00	5.06	0.00	95.63	-0.17	95.63
16MW-18	03/26/98	100.69000	00:00	4.78	0.00	95.91	0.28	95.91
16MW-18	04/03/98	100.69000	00:00	5.51	0.00	95.18	-0.73	95.18
16MW-18	04/09/98	100.69000	00:00	5.85	0.00	94.84	-0.34	94.84
16MW-18	04/17/98	100.69000	00:00	5.20	0.00	95.49	0.65	95.49
16MW-18	04/24/98	100.69000	00:00	5.50	0.00	95.19	-0.30	95.19
16MW-18	05/05/98	100.69000	00:00	4.40	0.00	96.29	1.10	96.29
16MW-18	05/15/98	100.69000	00:00	3.85	0.00	96.84	0.55	96.84
16MW-18	07/30/98	100.69000	00:00	6.93	0.01	93.76	-3.08	93.77
16MW-18	08/07/98	100.69000	00:00	7.14	0.00	93.55	-0.21	93.55
16MW-18	08/13/98	100.69000	00:00	8.40	0.00	92.29	-1.26	92.29
16MW-18	08/21/98	100.69000	00:00	7.61	0.00	93.08	0.79	93.08
16MW-18	09/03/98	100.69000	00:00	7.78	0.00	92.91	-0.17	92.91
16MW-18	09/10/98	100.69000	00:00	7.40	0.00	93.29	0.38	93.29
16MW-18	10/02/98	100.69000	00:00	7.66	0.00	93.03	-0.26	93.03
16MW-18	10/20/98	100.69000	00:00	8.12	0.00	92.57	-0.46	92.57
16MW-18	11/06/98	100.69000	00:00	8.31	0.00	92.38	-0.19	92.38
16MW-18	12/03/98	100.69000	00:00	8.20	0.00	92.49	0.11	92.49
16MW-19	08/20/97	100.54000	08:57	7.70	0.00	92.84	NA	92.84
16MW-19	10/06/97	100.54000	10:45	10.29	0.62	90.25	-2.59	90.77
16MW-19	12/12/97	100.54000	08:30	12.02	1.12	88.52	-1.73	89.47
16MW-19	01/07/98	100.54000	10:37	10.00	0.82	90.54	2.02	91.24
16MW-19	01/15/98	100.54000	07:30	7.76	0.18	92.78	2.24	92.93
16MW-19	02/10/98	100.54000	00:00	6.07	0.09	94.47	1.69	94.55
16MW-19	02/24/98	100.54000	00:00	5.10	0.00	95.44	0.97	95.44
16MW-19	03/03/98	100.54000	00:00	5.35	0.01	95.19	-0.25	95.20
16MW-19	03/12/98	100.54000	00:00	4.85	0.01	95.69	0.50	95.70
16MW-19	03/13/98	100.54000	00:00	5.05	0.00	95.49	-0.20	95.49
16MW-19	03/26/98	100.54000	00:00	6.40	0.03	94.14	-1.35	94.16
16MW-19	04/03/98	100.54000	00:00	5.31	0.00	95.23	1.09	95.23
16MW-19	04/09/98	100.54000	00:00	5.54	0.00	95.00	-0.23	95.00
16MW-19	04/17/98	100.54000	00:00	5.15	0.03	95.39	0.39	95.42
16MW-19	04/24/98	100.54000	00:00	4.95	0.01	95.59	0.20	95.59
16MW-19	05/05/98	100.54000	00:00	4.73	0.05	95.81	0.22	95.86

(1) Change in Water Elevation since last reported measurement

D = Dry NA = Not Available

(2) Measurements Based on Mean Sea Level

Water Level Product Thickness Data

Date: 12/22/98

SITE	DATE	MP ELEVATION (feet)	TIME	DEPTH TO WATER (feet)	FLOATING PRODUCT THICKNESS (feet)	WATER ELEV. (feet)	△ WATER ELEV.(1) (feet)	EQUIV. FRESH WATER HEAD (feet)
16MW-19	05/15/98	100.54000	00:00	3.60	0.01	96.94	1.13	96.95
16MW-19	07/30/98	100.54000	00:00	7.12	0.11	93.42	-3.52	93.51
16MW-19	08/07/98	100.54000	00:00	6.97	0.00	93.57	0.15	93.57
16MW-19	08/13/98	100.54000	00:00	7.22	0.00	93.32	-0.25	93.32
16MW-19	08/21/98	100.54000	00:00	7.41	0.00	93.13	-0.19	93.13
16MW-19	09/03/98	100.54000	00:00	7.55	0.00	92.99	-0.14	92.99
16MW-19	09/10/98	100.54000	00:00	7.61	0.00	92.93	-0.06	92.93
16MW-19	10/02/98	100.54000	00:00	7.69	0.00	92.85	-0.08	92.85
16MW-19	10/20/98	100.54000	00:00	7.90	0.00	92.64	-0.21	92.64
16MW-19	11/06/98	100.54000	00:00	8.17	0.00	92.37	-0.27	92.37
16MW-19	12/03/98	100.54000	00:00	7.95	0.00	92.59	0.22	92.59
16MW-20	08/20/97	100.82000	09:26	9.88	0.44	90.94	NA	91.31
16MW-20	10/06/97	100.82000	10:45	10.22	0.46	90.60	-0.34	90.99
16MW-20	12/12/97	100.82000	08:30	10.55	0.61	90.27	-0.33	90.79
16MW-20	01/07/98	100.82000	10:49	10.36	0.69	90.46	0.19	91.05
16MW-20	02/10/98	100.82000	00:00	7.71	0.15	93.11	2.65	93.23
16MW-20	02/24/98	100.82000	00:00	6.80	0.08	94.02	0.91	94.08
16MW-20	03/03/98	100.82000	00:00	6.85	0.07	93.97	-0.05	94.03
16MW-20	03/12/98	100.82000	00:00	6.37	0.02	94.45	0.48	94.46
16MW-20	03/26/98	100.82000	00:00	6.21	0.00	94.61	0.16	94.61
16MW-20	04/03/98	100.82000	00:00	6.60	0.04	94.22	-0.39	94.25
16MW-20	04/09/98	100.82000	00:00	6.68	0.02	94.14	-0.08	94.15
16MW-20	04/24/98	100.82000	00:00	6.48	0.00	94.34	0.20	94.34
16MW-20	05/05/98	100.82000	00:00	6.42	0.00	94.40	0.06	94.40
16MW-20	05/15/98	100.82000	00:00	5.70	0.05	95.12	0.72	95.16
16MW-20	07/30/98	100.82000	00:00	8.98	0.36	91.84	-3.28	92.15
16MW-20	08/07/98	100.82000	00:00	8.11	0.04	92.71	0.87	92.75
16MW-20	08/13/98	100.82000	00:00	8.29	0.05	92.53	-0.18	92.57
16MW-20	08/21/98	100.82000	00:00	8.40	0.05	92.42	-0.11	92.46
16MW-20	09/03/98	100.82000	00:00	8.65	0.06	92.17	-0.25	92.22
16MW-20	09/10/98	100.82000	00:00	8.53	0.01	92.29	0.12	92.30
16MW-20	10/02/98	100.82000	00:00	8.73	0.05	92.09	-0.20	92.13
16MW-20	10/20/98	100.82000	00:00	8.66	0.00	92.16	0.07	92.16
16MW-20	12/03/98	100.82000	00:00	9.03	0.06	91.79	-0.37	91.84

(1) Change in Water Elevation since last reported measurement

D = Dry NA = Not Available

(2) Measurements Based on Mean Sea Level

Water Level Product Thickness Data

SITE	DATE	MP ELEVATION (feet)	TIME	DEPTH TO WATER (feet)	FLOATING PRODUCT THICKNESS (feet)	WATER ELEV. (feet)	△ WATER ELEV.(1) (feet)	EQUIV. FRESH WATER HEAD (feet)
16MW-21	08/20/97	99.78000	00:00	7.57	0.00	92.21	NA	92.21
16MW-21	08/20/97	99.78000	09:35	7.57	0.00	92.21	0.00	92.21
16MW-21	10/06/97	99.78000	10:45	7.80	0.00	91.98	-0.23	91.98
16MW-21	12/12/97	99.78000	08:30	7.70	0.00	92.08	0.10	92.08
16MW-21	01/07/98	99.78000	10:58	7.12	0.00	92.66	0.58	92.66
16MW-21	02/10/98	99.78000	00:00	6.00	0.00	93.78	1.12	93.78
16MW-21	02/24/98	99.78000	00:00	5.67	0.00	94.11	0.33	94.11
16MW-21	03/03/98	99.78000	00:00	5.40	0.00	94.38	0.27	94.38
16MW-21	03/12/98	99.78000	00:00	5.03	0.00	94.75	0.37	94.75
16MW-21	03/13/98	99.78000	00:00	5.17	0.00	94.61	-0.14	94.61
16MW-21	04/03/98	99.78000	00:00	5.25	0.00	94.53	-0.08	94.53
16MW-21	04/09/98	99.78000	00:00	5.55	0.00	94.23	-0.30	94.23
16MW-21	04/17/98	99.78000	00:00	6.49	0.01	93.29	-0.94	93.30
16MW-21	04/24/98	99.78000	00:00	5.93	0.00	93.85	0.56	93.85
16MW-21	05/05/98	99.78000	00:00	4.83	0.00	94.95	1.10	94.95
16MW-21	05/15/98	99.78000	00:00	4.10	0.00	95.68	0.73	95.68
16MW-21	07/30/98	99.78000	00:00	6.95	0.00	92.83	-2.85	92.83
16MW-21	08/07/98	99.78000	00:00	7.21	0.00	92.57	-0.26	92.57
16MW-21	08/13/98	99.78000	00:00	7.41	0.00	92.37	-0.20	92.37
16MW-21	08/21/98	99.78000	00:00	7.51	0.00	92.27	-0.10	92.27
16MW-21	09/03/98	99.78000	00:00	7.57	0.00	92.21	-0.06	92.21
16MW-21	09/10/98	99.78000	00:00	7.70	0.00	92.08	-0.13	92.08
16MW-21	10/02/98	99.78000	00:00	7.77	0.00	92.01	-0.07	92.01
16MW-21	10/20/98	99.78000	00:00	7.86	0.00	91.92	-0.09	91.92
16MW-21	12/03/98	99.78000	00:00	8.00	0.00	91.78	-0.14	91.78
16MW-22	12/12/97	102.22000	00:00	7.70	0.00	94.52	NA	94.52
16MW-22	01/07/98	102.22000	00:00	5.34	0.00	96.88	2.36	96.88
16MW-22	02/10/98	102.22000	00:00	2.98	0.00	99.24	2.36	99.24
16MW-22	02/24/98	102.22000	00:00	1.60	0.00	100.62	1.38	100.62
16MW-22	03/03/98	102.22000	00:00	2.87	0.00	99.35	-1.27	99.35
16MW-22	03/26/98	102.22000	00:00	1.85	0.00	100.37	1.02	100.37
16MW-22	04/03/98	102.22000	00:00	2.05	0.00	100.17	-0.20	100.17
16MW-22	04/17/98	102.22000	00:00	2.10	0.00	100.12	-0.05	100.12
16MW-22	04/24/98	102.22000	00:00	1.52	0.00	100.70	0.58	100.70
16MW-22	05/05/98	102.22000	00:00	0.00	0.00	102.22	1.52	102.22

(1) Change in Water Elevation since last reported measurement

D = Dry NA = Not Available

(2) Measurements Based on Mean Sea Level

SITE	DATE	MP ELEVATION (feet)	TIME	DEPTH TO WATER (feet)	FLOATING PRODUCT THICKNESS (feet)	WATER ELEV. (feet)	△ WATER ELEV.(1) (feet)	EQUIV. FRESH WATER HEAD (feet)
16MW-22	05/15/98	102.22000	00:00	2.86	0.00	99.36	-2.86	99.36
16MW-22	07/30/98	102.22000	00:00	6.03	0.00	96.19	-3.17	96.19
16MW-22	08/13/98	102.22000	00:00	6.10	0.00	96.12	-0.07	96.12
16MW-22	10/02/98	102.22000	00:00	7.78	0.00	94.44	-1.68	94.44
16MW-22	11/06/98	102.22000	00:00	8.79	0.00	93.43	-1.01	93.43
16MW-23	12/12/97	102.58000	08:30	9.19	0.00	93.39	NA	93.39
16MW-23	01/07/98	102.58000	09:35	8.67	0.00	93.91	0.52	93.91
16MW-23	01/07/98	102.58000	09:49	8.67	0.00	93.91	0.00	93.91
16MW-23	02/10/98	102.58000	00:00	2.98	0.00	99.60	5.69	99.60
16MW-23	02/24/98	102.58000	00:00	7.20	0.00	95.38	-4.22	95.38
16MW-23	03/03/98	102.58000	00:00	7.10	0.00	95.48	0.10	95.48
16MW-23	03/26/98	102.58000	00:00	6.60	0.00	95.98	0.50	95.98
16MW-23	04/03/98	102.58000	00:00	6.90	0.00	95.68	-0.30	95.68
16MW-23	04/17/98	102.58000	00:00	6.95	0.00	95.63	-0.05	95.63
16MW-23	04/24/98	102.58000	00:00	6.84	0.00	95.74	0.11	95.74
16MW-23	05/05/98	102.58000	00:00	0.00	0.00	102.58	6.84	102.58
16MW-23	05/15/98	102.58000	00:00	5.89	0.00	96.69	-5.89	96.69
16MW-23	07/30/98	102.58000	00:00	8.03	0.00	94.55	-2.14	94.55
16MW-23	08/13/98	102.58000	00:00	8.46	0.00	94.12	-0.43	94.12
16MW-23	10/02/98	102.58000	00:00	9.03	0.00	93.55	-0.57	93.55
C17MW-07	12/12/97	100.16000	00:00	11.69	1.26	88.47	NA	89.54
C17MW-07	01/07/98	100.16000	00:00	11.78	1.42	88.38	-0.09	89.58
C17MW-07	01/15/98	100.16000	00:00	7.95	0.19	92.21	3.83	92.37
C17MW-07	02/10/98	100.16000	00:00	9.05	0.83	91.11	-1.10	91.82
C17MW-07	02/24/98	100.16000	00:00	6.00	1.35	94.16	3.05	95.31
C17MW-07	03/03/98	100.16000	00:00	7.36	0.49	92.80	-1.36	93.21
C17MW-07	03/12/98	100.16000	00:00	5.99	0.18	94.17	1.37	94.32
C17MW-07	03/13/98	100.16000	00:00	5.96	0.13	94.20	0.03	94.31
C17MW-07	03/26/98	100.16000	00:00	5.35	0.01	94.81	0.61	94.82
C17MW-07	04/03/98	100.16000	00:00	5.90	0.09	94.26	-0.55	94.33
C17MW-07	04/09/98	100.16000	00:00	6.02	0.08	94.14	-0.12	94.20
C17MW-07	04/17/98	100.16000	00:00	5.99	0.12	94.17	0.03	94.27
C17MW-07	04/24/98	100.16000	00:00	5.90	0.13	94.26	0.09	94.37
C17MW-07	05/05/98	100.16000	00:00	6.50	0.27	93.66	-0.60	93.93

(1) Change in Water Elevation since last reported measurement

D = Dry NA = Not Available

(2) Measurements Based on Mean Sea Level

Water Level Product Thickness Data

Date: 12/22/98

SITE	DATE	MP ELEVATION (feet)	TIME	DEPTH TO WATER (feet)	FLOATING PRODUCT THICKNESS (feet)	WATER ELEV. (feet)	△ WATER ELEV.(1) (feet)	EQUIV. FRESH WATER HEAD (feet)
C17MW-07	05/15/98	100.16000	00:00	5.50	0.22	94.66	1.00	94.84
C17MW-07	07/30/98	100.16000	00:00	10.61	1.12	89.55	-5.11	90.50
C17MW-07	08/07/98	100.16000	00:00	7.80	0.24	92.36	2.81	92.56
C17MW-07	08/13/98	100.16000	00:00	7.98	0.25	92.18	-0.18	92.39
C17MW-07	08/21/98	100.16000	00:00	7.61	0.11	92.55	0.37	92.64
C17MW-07	09/03/98	100.16000	00:00	7.76	0.15	92.40	-0.15	92.52
C17MW-07	09/10/98	100.16000	00:00	7.67	0.08	92.49	0.09	92.56
C17MW-07	10/02/98	100.16000	00:00	8.16	0.20	92.00	-0.49	92.17
C17MW-07	10/20/98	100.16000	00:00	7.88	0.10	92.28	0.28	92.36
C17MW-07	12/03/98	100.16000	00:00	7.96	0.08	92.20	-0.08	92.26

(1) Change in Water Elevation since last reported measurement

D = Dry NA = Not Available

(2) Measurements Based on Mean Sea Level

U.S. Navy RAC Contract No. 62472-94-D-0398
Naval Weapons Station-Earle: Bioslurper No. 1
Analytical Results of Air Samples

Bioslurper Unit #1

SAMPLE NO. 16(A)VD-10 Compound	Molecular Weight (lbs/lbs-mol)	Conversion Constant (cu. ft/lbs-mol	Time Conversion (min/hr)	Sample Date: 8/13/98 Weekly Flow Rate (cu. ft/min)	Compound Conc. (ppm(v))	Compound Emission Limit ppm(v)	Output Rate (lbs/hr)	Emission Limits (lbs/hr)
Acetone	58.1	384.6	60.0	58.0	0.0	N/A	0.00E+00	
Benzene	78.0	384.6	60.0	58.0	0.002	7.0	1.41E-06	8.00E-03
Toluene	92.0	384.6	60.0	58.0	0.1	N/A	8.32E-05	
Ethylbenzene	106.0	384.6	60.0	58.0	0.0	N/A	0.00E+00	
m,p-Xylenes	106.0	384.6	60.0	58.0	0.001	N/A	9.59E-07	
o-Xylene	106.0	384.6	60.0	58.0	0.0	N/A	0.00E+00	
1,3,5-Trimethylbenzene	120.0	384.6	60.0	58.0	0.001	N/A	1.09E-06	
1,2,4-Trimethylbenzene	120.0	384.6	60.0	58.0	0.0	N/A	0.00E+00	
				Total Emissions:	0.104	27	8.67E-05	3.50E-02

Formula: Output Rate per Compound = $\frac{(\text{Mol. Wt.})\times(\text{Time Conv.})\times(\text{Concentration})\times(\text{Flow Rate})}{(\text{Conv. Constant})\times 10^{6}}$

U.S. Navy RAC Contract No. 62472-94-D-0398
Naval Weapons Station-Earle: Bioslurper No. 1
Analytical Results of Air Samples

Bioslurper Unit #1

SAMPLE NO. 16(A)VD-12				Sample Date: 10/2/98				
Compound	Molecular Weight (lbs/lbs-mol)	Conversion Constant (cu. ft/lbs-mol	Time Conversion (min/hr)	Weekly Flow Rate (cu. ft/min)	Compound Conc. (ppm(v))	Compound Emission Limit ppm(v)	Output Rate (lbs/hr)	Emission Limits (lbs/hr)
Acetone	58.1	384.6	60.0	77.6	0.0	N/A	0.00E+00	
Benzene	78.0	384.6	60.0	77.6	0.000	7.0	0.00E+00	8.00E-03
Toluene	92.0	384.6	60.0	77.6	0.0	N/A	0.00E+00	
Ethylbenzene	106.0	384.6	60.0	77.6	0.0	N/A	0.00E+00	
m,p-Xylenes	106.0	384.6	60.0	77.6	0.000	N/A	0.00E+00	
o-Xylene	106.0	384.6	60.0	77.6	0.0	N/A	0.00E+00	
1,3,5-Trimethylbenzene	120.0	384.6	60.0	77.6	0.000	N/A	0.00E+00	
1,2,4-Trimethylbenzene	120.0	384.6	60.0	77.6	0.0	N/A	0.00E+00	
				Total Emissions:	0.000	27.5	0.00E+00	3.50E-02

Formula: Output Rate per Compound = $\frac{(\text{Mol. Wt.})\times(\text{Time Conv.})\times(\text{Concentration})\times(\text{Flow Rate})}{(\text{Conv. Constant})\times 10^{6}}$

U.S. Navy RAC Contract No. 62472-94-D-0398
Naval Weapons Station-Earle: Bioslurper No. 1
Analytical Results of Air Samples

Bioslurper Unit #1

SAMPLE NO. 16(A)VD-13				Sample Date: 10/30/98				
Compound	Molecular Weight (lbs/lbs-mol)	Conversion Constant (cu. ft/lbs-mol	Time Conversion (min/hr)	Weekly Flow Rate (cu. ft/min)	Compound Conc. (ppm(v))	Compound Emission Limit ppm(v)	Output Rate (lbs/hr)	Emission Limits (lbs/hr)
Acetone	58.1	384.6	60.0	71.0	0.0	N/A	0.00E+00	
Benzene	78.0	384.6	60.0	71.0	0.000	7.0	0.00E+00	8.00E-03
Toluene	92.0	384.6	60.0	71.0	0.0	N/A	0.00E+00	
Ethylbenzene	106.0	384.6	60.0	71.0	0.0	N/A	0.00E+00	
m,p-Xylenes	106.0	384.6	60.0	71.0	0.000	N/A	0.00E+00	
o-Xylene	106.0	384.6	60.0	71.0	0.0	N/A	0.00E+00	
1,3,5-Trimethylbenzene	120.0	384.6	60.0	71.0	0.000	N/A	0.00E+00	
1,2,4-Trimethylbenzene	120.0	384.6	60.0	71.0	0.0	N/A	0.00E+00	
				Total Emissions:		27.5	0.00E+00	3.50E-02

Formula: Output Rate per Compound = $\frac{(\text{Mol. Wt.})\times(\text{Time Conv.})\times(\text{Concentration})\times(\text{Flow Rate})}{(\text{Conv. Constant})\times 10^{6}}$

U.S. Navy RAC Contract No. 62472-94-D-0398
Naval Weapons Station-Earle: Bioslurper No. 2
Analytical Results of Air Samples

Bioslurper Unit # 2

SAMPLE NO. 16(B)VD-10				Sample Date: 8/14/98				
Compound	Molecular Weight (lbs/lbs-mol)	Conversion Constant (cu. ft/lbs-mol	Time Conversion (min/hr)	Weekly Flow Rate (cu. ft/min)	Compound Conc. (ppm(v))	Compound Emission Limit ppm(v)	Output Rate (lbs/hr)	Emission Limits (lbs/hr)
Acetone	58.1	384.6	60.0	80.0	0.0	N/A	0.00E+00	
Benzene	78.0	384.6	60.0	80.0	0.50	7.0	4.87E-04	8.00E-03
Toluene	92.0	384.6	60.0	80.0	1.10	N/A	1.26E-03	
Ethylbenzene	106.0	384.6	60.0	80.0	1.7	N/A	2.25E-03	
m,p-Xylenes	106.0	384.6	60.0	80.0	4.1	N/A	5.42E-03	
o-Xylene	106.0	384.6	60.0	80.0	1.6	N/A	2.12E-03	
1,3,5-Trimethylbenzene	120.0	384.6	60.0	80.0	1.6	N/A	2.40E-03	
1,2,4-Trimethylbenzene	120.0	384.6	60.0	80.0	3.6	N/A	5.39E-03	
				Total Emissions:	14.2	27	1.93E-02	3.50E-02

Formula: Output Rate per Compound = $\frac{(\text{Mol. Wt.})\times(\text{Time Conv.})\times(\text{Concentration})\times(\text{Flow Rate})}{(\text{Conv. Constant})\times 10^{6}}$

U.S. Navy RAC Contract No. 62472-94-D-0398
Naval Weapons Station-Earle: Bioslurper No. 2
Analytical Results of Air Samples

Bioslurper Unit # 2

SAMPLE NO. 16(B)VD-12 Compound	Molecular Weight (lbs/lbs-mol)	Conversion Constant (cu. ft/lbs-mol	Time Conversion (min/hr)	Sample Date: 10/2/98 Weekly Flow Rate (cu. ft/min)	Compound Conc. (ppm(v))	Compound Emission Limit ppm(v)	Output Rate (lbs/hr)	Emission Limits (lbs/hr)
Acetone	58.1	384.6	60.0	93.0	0.0	N/A	0.00E+00	
Benzene	78.0	384.6	60.0	93.0	**0.00**	**7.0**	**0.00E+00**	**8.00E-03**
Toluene	92.0	384.6	60.0	93.0	0.00	N/A	0.00E+00	
Ethylbenzene	106.0	384.6	60.0	93.0	0.0	N/A	0.00E+00	
m,p-Xylenes	106.0	384.6	60.0	93.0	0.0	N/A	0.00E+00	
o-Xylene	106.0	384.6	60.0	93.0	0.0	N/A	0.00E+00	
1,3,5-Trimethylbenzene	120.0	384.6	60.0	93.0	0.0	N/A	0.00E+00	
1,2,4-Trimethylbenzene	120.0	384.6	60.0	93.0	1.2	N/A	2.09E-03	
			Total Emissions:		**1.2**	**27.5**	**2.09E-03**	**3.50E-02**

Formula: Output Rate per Compound = $\frac{(\text{Mol. Wt.})\times(\text{Time Conv.})\times(\text{Concentration})\times(\text{Flow Rate})}{(\text{Conv. Constant})\times 10^{6}}$

U.S. Navy RAC Contract No. 62472-94-D-0398
Naval Weapons Station-Earle: Bioslurper No. 2
Analytical Results of Air Samples

Bioslurper Unit # 2

SAMPLE NO. 16(B)VD-13				Sample Date: 10/30/98				
Compound	Molecular Weight (lbs/lbs-mol)	Conversion Constant (cu. ft/lbs-mol	Time Conversion (min/hr)	Weekly Flow Rate (cu. ft/min)	Compound Conc. (ppm(v))	Compound Emission Limit ppm(v)	Output Rate (lbs/hr)	Emission Limits (lbs/hr)
Acetone	58.1	384.6	60.0	83.0	0.0	N/A	0.00E+00	
Benzene	78.0	384.6	60.0	83.0	0.00	7.0	0.00E+00	8.00E-03
Toluene	92.0	384.6	60.0	83.0	0.00	N/A	0.00E+00	
Ethylbenzene	106.0	384.6	60.0	83.0	0.0	N/A	0.00E+00	
m,p-Xylenes	106.0	384.6	60.0	83.0	1.2	N/A	1.65E-03	
o-Xylene	106.0	384.6	60.0	83.0	0.0	N/A	0.00E+00	
1,3,5-Trimethylbenzene	120.0	384.6	60.0	83.0	0.0	N/A	0.00E+00	
1,2,4-Trimethylbenzene	120.0	384.6	60.0	83.0	2.4	N/A	3.73E-03	
				Total Emissions:	3.6	27.5	5.38E-03	3.50E-02

Formula: Output Rate per Compound = $\frac{(\text{Mol. Wt.})\times(\text{Time Conv.})\times(\text{Concentration})\times(\text{Flow Rate})}{(\text{Conv. Constant})\times 10^{6}}$

U.S. Navy RAC Contract No. 62472-94-D-0398
Naval Weapons Station-Earle: Bioslurper No. 1
Analytical Results of Air Samples

Bioslurper Unit #1

SAMPLE NO. 16(A)VD14 Compound	Molecular Weight (lbs/lbs-mol)	Conversion Constant (cu. ft/lbs-mol	Time Conversion (min/hr)	Weekly Flow Rate (cu. ft/min)	Compound Conc. (ppm(v))	Compound Emission Limit ppm(v)	Output Rate (lbs/hr)	Emission Limits (lbs/hr)
				Sample Date: 11/30/98				
Acetone	58.1	384.6	60.0	67.5	20.0	N/A	1.22E-02	
Benzene	78.0	384.6	60.0	67.5	**4.600**	**7.0**	**3.78E-03**	**8.00E-03**
Toluene	92.0	384.6	60.0	67.5	1.2	N/A	1.16E-03	
Ethylbenzene	106.0	384.6	60.0	67.5	0.0	N/A	0.00E+00	
m,p-Xylenes	106.0	384.6	60.0	67.5	0.000	N/A	0.00E+00	
o-Xylene	106.0	384.6	60.0	67.5	0.0	N/A	0.00E+00	
1,3,5-Trimethylbenzene	120.0	384.6	60.0	67.5	0.000	N/A	0.00E+00	
1,2,4-Trimethylbenzene	120.0	384.6	60.0	67.5	0.0	N/A	0.00E+00	
				Total Emissions:	**25.800**	**27.5**	**1.72E-02**	**3.50E-02**

Formula: Output Rate per Compound = $\frac{(\text{Mol. Wt.})\times(\text{Time Conv.})\times(\text{Concentration})\times(\text{Flow Rate})}{(\text{Conv. Constant})\times 10^{6}}$

U.S. Navy RAC Contract No. 62472-94-D-0398
Naval Weapons Station-Earle: Bioslurper No. 2
Analytical Results of Air Samples

Bioslurper Unit # 2

SAMPLE NO. 16(B)VD14 Compound	Molecular Weight (lbs/lbs-mol)	Conversion Constant (cu. ft/lbs-mol	Time Conversion (min/hr)	Sample Date: 11/30/98 Weekly Flow Rate (cu. ft/min)	Compound Conc. (ppm(v))	Compound Emission Limit ppm(v)	Output Rate (lbs/hr)	Emission Limits (lbs/hr)
Acetone	58.1	384.6	60.0	83.0	0.0	N/A	0.00E+00	
Benzene	78.0	384.6	60.0	83.0	0.00	7.0	0.00E+00	8.00E-03
Toluene	92.0	384.6	60.0	83.0	0.00	N/A	0.00E+00	
Ethylbenzene	106.0	384.6	60.0	83.0	0.0	N/A	0.00E+00	
m,p-Xylenes	106.0	384.6	60.0	83.0	0.0	N/A	0.00E+00	
o-Xylene	106.0	384.6	60.0	83.0	0.0	N/A	0.00E+00	
1,3,5-Trimethylbenzene	120.0	384.6	60.0	83.0	0.0	N/A	0.00E+00	
1,2,4-Trimethylbenzene	120.0	384.6	60.0	83.0	0.0	N/A	0.00E+00	
			Total Emissions:		0.0	27.5	0.00E+00	3.50E-02

Formula: Output Rate per Compound = $\frac{(\text{Mol. Wt.})\times(\text{Time Conv.})\times(\text{Concentration})\times(\text{Flow Rate})}{(\text{Conv. Constant})\times 10^{6}}$

VOLATILE ORGANIC ANALYSIS

CLIENT NAME:	Foster Wheeler Environmental	**CLIENT SAMPLE ID:**	16 (A) VD-11
PROJECT #:	---	**AAI RFS#**	9824303
PROJECT NAME:	NWS-Earle	**AAI ID#:**	9824303-001
MATRIX:	Air/Canister		
SAMPLE VOLUME:	0.05 Liter	**DATE SAMPLED:**	8/28/98
INITIAL PRESSURE:	1.00 psia	**DATE RECEIVED:**	8/28/98
FINAL PRESSURE:	1.00 psia	**DATE ANALYZED:**	9/1/98
PRES. DILUTION :	1.00		
DILUTION FACTOR:	1	**ANALYTICAL METHOD:**	EPA TO14 (GC/MS)

CAS NUMBER	COMPOUND	CONCENTRATION mg/m3	PQL	ppm(v)	PQL
74-87-3	Chloromethane	ND<	0.100	ND<	0 048
74-83-9	Bromomethane	ND<	0 100	ND<	0.026
75-01-04	Vinyl Chloride	ND<	0 100	ND<	0.039
75-00-3	Chloroethane	ND<	0.100	ND<	0.038
75-69-4	Freon 11	ND<	0 100	ND<	0 018
75-35-4	1,1-Dichloroethene	ND<	0 100	ND<	0 025
76-13-1	Freon 113	ND<	0 100	ND<	0 013
75-09-2	Methylene Chloride	ND<	0.100	ND<	0.029
75-35-3	1,1-Dichloroethane	ND<	0.100	ND<	0.025
156-60-5	trans-1,2-Dichloroethene	ND<	0.100	ND<	0.025
156-59-2	cis-1,2-Dichloroethene	ND<	0 100	ND<	0 025
67-66-3	Chloroform	ND<	0 100	ND<	0 020
71-55-6	1,1,1-Trichloroethane	ND<	0.100	ND<	0 018
56-23-5	Carbon Tetrachloride	ND<	0 100	ND<	0.016
71-43-2	Benzene	ND<	0.100	ND<	0 031
107-06-2	1,2-Dichloroethane	ND<	0 100	ND<	0.025
79-01-6	Trichloroethene	ND<	0.100	ND<	0.019
78-87-5	1,2-Dichloropropane	ND<	0 100	ND<	0 022
10061-02-6	trans-1,3-Dichloropropene	ND<	0 100	ND<	0 022
108-88-3	Toluene	ND<	0 100	ND<	0.027
10061-01-5	cis-1,3-Dichloropropene	ND<	0 100	ND<	0.022
79-00-5	1,1-2-Trichloroethane	ND<	0 100	ND<	0.018
127-18-4	Tetrachloroethene	ND<	0.100	ND<	0.015
106-93-4	Ethylene Dibromide	ND<	0 100	ND<	0.013
108-90-7	Chlorobenzene	ND<	0 100	ND<	0 022
100-41-4	Ethylbenzene	ND<	0.100	ND<	0 023
1330-20-7	m,p-Xylene	ND<	0 100	ND<	0.023
95-47-6	o-Xylene	ND<	0.100	ND<	0.023
100-42-5	Styrene	ND<	0.100	ND<	0.023
79-34-5	1,1,2,2-Tetrachlorethane	ND<	0 100	ND<	0.015
108-67-8	1,3,5-Trimethyl Benzene	ND<	0.100	ND<	0.020
95-63-6	1,2,4-Trimethyl Benzene	ND<	0.100	ND<	0.020
541-73-1	1,3-Dichlorobenzene	ND<	0.100	ND<	0.017
106-46-7	1,4-Dichlorobenzene	ND<	0.100	ND<	0 017
100-44-7	Chlorotoluene	ND<	0.100	ND<	0 019
95-50-1	1,2-Dichlorobenzene	ND<	0 100	ND<	0.017
67-64-1	Acetone	ND<	0.100	ND<	0.042
78-93-3	2-Butanone	ND<	0.100	ND<	0.034
108-10-1	4-methyl-2-pentanone	ND<	0.100	ND<	0.024
591-78-6	2-Hexanone	ND<	0 100	ND<	0.024

Surrogate Recovery	% Recovery	
1,2-Dichloroethane-D4 (SS1)	116	70-130
Toluene-d8 (SS2)	95	70-130
4- Bromofluorobenzene (SS3)	103	70-130

ND- Not detected

TR - Trace

*Value outside QC limits due to matrix interfence

VOLATILE ORGANIC ANALYSIS

CLIENT NAME:	Foster Wheeler Environmental	CLIENT SAMPLE ID:	16 (B) VD-11
PROJECT #:	---	AAI RFS#	9824303
PROJECT NAME:	NWS-Earle	AAI ID#:	9824303-002
MATRIX:	Air/Canister		
SAMPLE VOLUME:	0.05 Liter	DATE SAMPLED:	8/28/98
INITIAL PRESSURE:	1.00 psia	DATE RECEIVED:	8/28/98
FINAL PRESSURE:	1.00 psia	DATE ANALYZED:	9/1/98
PRES. DILUTION :	1.00		
DILUTION FACTOR:	1	ANALYTICAL METHOD:	EPA TO14 (GC/MS)

CAS NUMBER	COMPOUND	CONCENTRATION mg/m3	PQL	ppm(v)	PQL
74-87-3	Chloromethane	ND<	0 100	ND<	0.048
74-83-9	Bromomethane	ND<	0.100	ND<	0.026
75-01-04	Vinyl Chloride	ND<	0.100	ND<	0.039
75-00-3	Chloroethane	ND<	0.100	ND<	0.038
75-69-4	Freon 11	ND<	0 100	ND<	0.018
75-35-4	1,1-Dichloroethene	ND<	0.100	ND<	0.025
76-13-1	Freon 113	ND<	0.100	ND<	0.013
75-09-2	Methylene Chloride	ND<	0 100	ND<	0.029
75-35-3	1,1-Dichloroethane	ND<	0 100	ND<	0.025
156-60-5	trans-1,2-Dichloroethene	ND<	0.100	ND<	0.025
156-59-2	cis-1,2-Dichloroethene	ND<	0 100	ND<	0.025
67-66-3	Chloroform	ND<	0 100	ND<	0 020
71-55-6	1,1,1-Trichloroethane	ND<	0.100	ND<	0.018
56-23-5	Carbon Tetrachloride	ND<	0.100	ND<	0.016
71-43-2	Benzene	ND<	0 100	ND<	0.031
107-06-2	1,2-Dichloroethane	ND<	0 100	ND<	0.025
79-01-6	Trichloroethene	ND<	0.100	ND<	0 019
78-87-5	1,2-Dichloropropane	ND<	0 100	ND<	0.022
10061-02-6	trans-1,3-Dichloropropene	ND<	0 100	ND<	0.022
108-88-3	Toluene	ND<	0 100	ND<	0.027
10061-01-5	cis-1,3-Dichloropropene	ND<	0.100	ND<	0.022
79-00-5	1,1-2-Trichloroethane	ND<	0.100	ND<	0.018
127-18-4	Tetrachloroethene	ND<	0.100	ND<	0.015
106-93-4	Ethylene Dibromide	ND<	0.100	ND<	0.013
108-90-7	Chlorobenzene	ND<	0 100	ND<	0.022
100-41-4	Ethylbenzene	ND<	0.100	ND<	0.023
1330-20-7	m,p-Xylene	ND<	0.100	ND<	0.023
95-47-6	o-Xylene	ND<	0 100	ND<	0.023
100-42-5	Styrene	ND<	0 100	ND<	0.023
79-34-5	1,1,2,2-Tetrachlorethane	ND<	0 100	ND<	0.015
108-67-8	1,3,5-Trimethyl Benzene	ND<	0.100	ND<	0.020
95-63-6	1,2,4-Trimethyl Benzene	ND<	0.100	ND<	0.020
541-73-1	1,3-Dichlorobenzene	ND<	0.100	ND<	0.017
106-46-7	1,4-Dichlorobenzene	ND<	0.100	ND<	0.017
100-44-7	Chlorotoluene	ND<	0.100	ND<	0.019
95-50-1	1,2-Dichlorobenzene	ND<	0.100	ND<	0.017
67-64-1	Acetone	ND<	0.100	ND<	0.042
78-93-3	2-Butanone	ND<	0 100	ND<	0.034
108-10-1	4-methyl-2-pentanone	ND<	0.100	ND<	0.024
591-78-6	2-Hexanone	ND<	0 100	ND<	0.024

Surrogate Recovery	% Recovery	
1,2-Dichloroethane-D4 (SS1)	119	70-130
Toluene-d8 (SS2)	93	70-130
4- Bromofluorobenzene (SS3)	104	70-130

ND- Not detected

TR - Trace

*Value outside QC limits due to matrix interfence.

VOLATILE ORGANIC ANALYSIS

CLIENT NAME:	Foster Wheeler Environmental	**CLIENT SAMPLE ID:**	Method Blank
PROJECT #:	---	**AAI RFS#**	9824303
PROJECT NAME:	NWS-Earle	**AAI ID#:**	Method Blank
MATRIX:	Air/Canister		
SAMPLE VOLUME:	0.5 Liter	**DATE SAMPLED:**	8/28/98
INITIAL PRESSURE:	1.00 psia	**DATE RECEIVED:**	8/28/98
FINAL PRESSURE:	1.00 psia	**DATE ANALYZED:**	9/1/98
PRES. DILUTION :	1.00		
DILUTION FACTOR:	1	**ANALYTICAL METHOD:**	EPA TO14 (GC/MS)

CAS NUMBER	COMPOUND	CONCENTRATION mg/m3	PQL	ppm(v)	PQL
74-87-3	Chloromethane	ND<	0.010	ND<	0.005
74-83-9	Bromomethane	ND<	0 010	ND<	0.003
75-01-04	Vinyl Chloride	ND<	0 010	ND<	0.004
75-00-3	Chloroethane	ND<	0.010	ND<	0.004
75-69-4	Freon 11	ND<	0 010	ND<	0.002
75-35-4	1,1-Dichloroethene	ND<	0 010	ND<	0.003
76-13-1	Freon 113	ND<	0 010	ND<	0.001
75-09-2	Methylene Chloride	ND<	0.010	ND<	0 003
75-35-3	1,1-Dichloroethane	ND<	0.010	ND<	0.002
156-60-5	trans-1,2-Dichloroethene	ND<	0 010	ND<	0.003
156-59-2	cis-1,2-Dichloroethene	ND<	0.010	ND<	0.003
67-66-3	Chloroform	ND<	0.010	ND<	0.002
71-55-6	1,1,1-Trichloroethane	ND<	0 010	ND<	0 002
56-23-5	Carbon Tetrachloride	ND<	0.010	ND<	0 002
71-43-2	Benzene	ND<	0.010	ND<	0 003
107-06-2	1,2-Dichloroethane	ND<	0 010	ND<	0.002
79-01-6	Trichloroethene	ND<	0.010	ND<	0.002
78-87-5	1,2-Dichloropropane	ND<	0 010	ND<	0.002
10061-02-6	trans-1,3-Dichloropropene	ND<	0 010	ND<	0.002
108-88-3	Toluene	ND<	0 010	ND<	0.003
10061-01-5	cis-1,3-Dichloropropene	ND<	0 010	ND<	0.002
79-00-5	1,1-2-Trichloroethane	ND<	0.010	ND<	0.002
127-18-4	Tetrachloroethene	ND<	0 010	ND<	0.001
106-93-4	Ethylene Dibromide	ND<	0 010	ND<	0.001
108-90-7	Chlorobenzene	ND<	0 010	ND<	0 002
100-41-4	Ethylbenzene	ND<	0.010	ND<	0.002
1330-20-7	m,p-Xylene	ND<	0 010	ND<	0 002
95-47-6	o-Xylene	ND<	0 010	ND<	0.002
100-42-5	Styrene	ND<	0.010	ND<	0 002
79-34-5	1,1,2,2-Tetrachlorethane	ND<	0 010	ND<	0.001
108-67-8	1,3,5-Trimethyl Benzene	ND<	0 010	ND<	0.002
95-63-6	1,2,4-Trimethyl Benzene	ND<	0.010	ND<	0.002
541-73-1	1,3-Dichlorobenzene	ND<	0.010	ND<	0.002
106-46-7	1,4-Dichlorobenzene	ND<	0.010	ND<	0.002
100-44-7	Chlorotoluene	ND<	0 010	ND<	0.002
95-50-1	1,2-Dichlorobenzene	ND<	0 010	ND<	0.002
67-64-1	Acetone	ND<	0.010	ND<	0 004
78-93-3	2-Butanone	ND<	0.010	ND<	0.003
108-10-1	4-methyl-2-pentanone	ND<	0.010	ND<	0.002
591-78-6	2-Hexanone	ND<	0 010	ND<	0.002

Surrogate Recovery	% Recovery	
1,2-Dichloroethane-D4 (SS1)	119	70-130
Toluene-d8 (SS2)	98	70-130
4- Bromofluorobenzene (SS3)	91	70-130

ND- Not detected

TR - Trace

*Value outside QC limits due to matrix interfence.

ANALYTICAL RESULTS

AAI RFS #: 9824303

Client Name: Foster Wheeler Environmental
Project Name: NWS-Earle
Project #: ---
Matrix: Air/Canister

Date(s) Sampled: 8/28/98
Date(s) Analyzed: 9/2/98
Analytical Method: CARB/EPA
Chemist: HA

	Units	16 (A) VD-11 9824303 -001	16 (B) VD-11 9824303 -002	Method Blank
EPA 8015mod				
TPH as gasoline	(ppm(v))	560	360	ND<10

	Units	16 (A) VD-11 9824303 -001	16 (B) VD-11 9824303 -002	Method Blank
EPA 8015mod				
TPH as gasoline	(mg/m3)	1,994	1,270	ND<1.0

QUALITY CONTROL

AAI RFS #: 9824303

Client Name: Foster Wheeler Environmental
Project Name: NWS-Earle
Project #: ---
Matrix: Air/Canister

Date(s) Sampled: 8/28/98
Date(s) Analyzed: 9/2/98
Analytical Method: CARB/EPA
Chemist. HA

	Sample Result 9824303-002 (ppm(v))	Duplicate Result 9824303-002 (ppm(v))	RPD (%)	Quality Control Limits (%)
EPA 8015mod				
TPH as gasoline	360	350	3	30

	Sample Result 9824303-002 (mg/m3)	Duplicate Result 9824303-002 (mg/m3)	RPD (%)	Quality Control Limits (%)
EPA 8015mod				
TPH as gasoline	1,270	1,230	3	30

[redacted]

~~15 Wiggins Ave., Bedford, MA 01730~~
~~Telephone: (781) 275-3330~~
~~Fax: (781) 275-7470~~

APOLLO ANALYTICAL

CHAIN OF CUSTODY RECORD

WORK ORDER #: ____-____-____

DUE DATE : ____-____-____

COMPANY: Foster Wheeler Environmental
ADDRESS: One Oxford Valley Suite 200
Langhorne, PA 19047
PHONE #: (215) 702-4015 FAX #: (215) 702-4045
P.O. #:
PROJECT MANAGER: Mike Heffron
PROJECT ID/LOCATION: Navy Weapons - Earle

SAMPLE TYPE	CONTAINER TYPE
1. WASTEWATER	P - PLASTIC
2. SOIL	G - GLASS
3. SLUDGE	V - VOA
4. OIL	
5. DRINKING WATER	
6. WATER (GW/MW/SW)	
7. OTHER (SPECIFY	

ANALYSES

TOXIKON #	SAMPLE IDENTIFICATION	SAMPLE TYPE	CONTAINER SIZE	CONTAINER TYPE	CONTAINER #	SAMPLING DATE	SAMPLING TIME	PRESERVATIVE	TPH	Total VOCs Toxi											SPECIAL INSTRUCTIONS/ COMMENTS
-001	16(A) VD-11	Air	Summa		1	8/28/98	11:20	N/A	X	X											
-002	16(B) VD-11	Air	Summa		1	8/28/98	12:30	N/A	X	X											

SAMPLED BY: [signature]	DATE: 8 - 28 - 98 TIME: - -	QUOTATION #: AAI RFS# 9824303	
RELINQUISHED BY: [signature]	DATE: 8 - 28 - 98 TIME: - -	RECEIVED BY: Leticia Zelaya	DATE: 8 - 31 - 98 TIME: 12:00 -
RELINQUISHED BY:	DATE: - - TIME: - -	RECEIVED FOR LAB BY:	DATE: - - TIME: - -
METHOD OF SHIPMENT		COOLER TEMPERATURE	

2 Day Turn-Around

☒ RUSH ..... BUSINESS DAY TURN AROUND
☐ ROUTINE

Sample disposal information
Are there any other known or suspected contaminants in these samples other than those listed above?
Yes ____ No ____ If Yes, 1st Known _____

VOLATILE ORGANIC ANALYSIS

CLIENT NAME:	Foster Wheeler Environmental	**CLIENT SAMPLE ID:**	16 (A) VD12
PROJECT #:	--	**AAI RFS#**	9827903
PROJECT NAME:	NWS-Earle	**AAI ID#:**	9827903-001
MATRIX:	Air/Canister		
SAMPLE VOLUME:	0.005 Liter	**DATE SAMPLED:**	10/2/98
INITIAL PRESSURE:	1.00 psia	**DATE RECEIVED:**	10/6/98
FINAL PRESSURE:	1.00 psia	**DATE ANALYZED:**	10/8/98
PRES. DILUTION :	1 00		
DILUTION FACTOR:	1	**ANALYTICAL METHOD:**	EPA TO14 (GC/MS)

CAS NUMBER	COMPOUND	CONCENTRATION mg/m3	PQL	ppm(v)	PQL
74-87-3	Chloromethane	ND<	1.000	ND<	0.484
74-83-9	Bromomethane	ND<	1.000	ND<	0.258
75-01-04	Vinyl Chloride	ND<	1.000	ND<	0.391
75-00-3	Chloroethane	ND<	1 000	ND<	0.379
75-69-4	Freon 11	ND<	1 000	ND<	0.178
75-35-4	1,1-Dichloroethene	ND<	1.000	ND<	0.252
76-13-1	Freon 113	ND<	1 000	ND<	0.131
75-09-2	Methylene Chloride	ND<	1.000	ND<	0 288
75-35-3	1,1-Dichloroethane	ND<	1.000	ND<	0.247
156-60-5	trans-1,2-Dichloroethene	ND<	1.000	ND<	0.252
156-59-2	cis-1,2-Dichloroethene	ND<	1.000	ND<	0.252
67-66-3	Chloroform	ND<	1.000	ND<	0.205
71-55-6	1,1,1-Trichloroethane	ND<	1.000	ND<	0.183
56-23-5	Carbon Tetrachloride	ND<	1 000	ND<	0.159
71-43-2	Benzene	ND<	1.000	ND<	0.313
107-06-2	1,2-Dichloroethane	ND<	1.000	ND<	0 247
79-01-6	Trichloroethene	ND<	1 000	ND<	0.186
78-87-5	1,2-Dichloropropane	ND<	1 000	ND<	0.216
10061-02-6	trans-1,3-Dichloropropene	ND<	1.000	ND<	0.220
108-88-3	Toluene	ND<	1.000	ND<	0.265
10061-01-5	cis-1,3-Dichloropropene	ND<	1.000	ND<	0.220
79-00-5	1,1-2-Trichloroethane	ND<	1.000	ND<	0.183
127-18-4	Tetrachloroethene	ND<	1.000	ND<	0.148
106-93-4	Ethylene Dibromide	ND<	1.000	ND<	0.130
108-90-7	Chlorobenzene	ND<	1.000	ND<	0.217
100-41-4	Ethylbenzene	ND<	1.000	ND<	0.230
1330-20-7	m,p-Xylene	ND<	1.000	ND<	0.230
95-47-6	o-Xylene	ND<	1.000	ND<	0.230
100-42-5	Styrene	ND<	1.000	ND<	0.235
79-34-5	1,1,2,2-Tetrachlorethane	ND<	1 000	ND<	0.146
108-67-8	1,3,5-Trimethyl Benzene	ND<	1.000	ND<	0.203
95-63-6	1,2,4-Trimethyl Benzene	ND<	1 000	ND<	0.203
541-73-1	1,3-Dichlorobenzene	ND<	1.000	ND<	0.166
106-46-7	1,4-Dichlorobenzene	ND<	1.000	ND<	0 166
100-44-7	Chlorotoluene	ND<	1.000	ND<	0.193
95-50-1	1,2-Dichlorobenzene	ND<	1.000	ND<	0.166
67-64-1	Acetone	ND<	1.000	ND<	0.422
78-93-3	2-Butanone	ND<	1.000	ND<	0.340
108-10-1	4-methyl-2-pentanone	ND<	1.000	ND<	0.245
591-78-6	2-Hexanone	ND<	1 000	ND<	0.244

Surrogate Recovery	% Recovery	
1,2-Dichloroethane-D4 (SS1)	107	70-130
Toluene-d8 (SS2)	85	70-130
4- Bromofluorobenzene (SS3)	112	70-130

ND- Not detected

TR - Trace

*Value outside QC limits due to matrix interfence.

VOLATILE ORGANIC ANALYSIS

CLIENT NAME:	Foster Wheeler Environmental	**CLIENT SAMPLE ID:**	16 (B) VD12
PROJECT #:	—	**AAI RFS#**	9827903
PROJECT NAME:	NWS-Earle	**AAI ID#:**	9827903-002
MATRIX:	Air/Canister		
SAMPLE VOLUME:	0.005 Liter	**DATE SAMPLED:**	10/2/98
INITIAL PRESSURE:	1.00 psia	**DATE RECEIVED:**	10/6/98
FINAL PRESSURE:	1.00 psia	**DATE ANALYZED:**	10/8/98
PRES. DILUTION :	1.00		
DILUTION FACTOR:	1	**ANALYTICAL METHOD:**	EPA TO14 (GC/MS)

CAS NUMBER	COMPOUND	CONCENTRATION mg/m3	PQL	ppm(v)	PQL
74-87-3	Chloromethane	ND<	1.000	ND<	0.484
74-83-9	Bromomethane	ND<	1.000	ND<	0.258
75-01-04	Vinyl Chloride	ND<	1.000	ND<	0.391
75-00-3	Chloroethane	ND<	1 000	ND<	0.379
75-69-4	Freon 11	ND<	1.000	ND<	0 178
75-35-4	1,1-Dichloroethene	ND<	1.000	ND<	0.252
76-13-1	Freon 113	ND<	1 000	ND<	0.131
75-09-2	Methylene Chloride	ND<	1.000	ND<	0 288
75-35-3	1,1-Dichloroethane	ND<	1.000	ND<	0.247
156-60-5	trans-1,2-Dichloroethene	ND<	1.000	ND<	0.252
156-59-2	cis-1,2-Dichloroethene	ND<	1.000	ND<	0 252
67-66-3	Chloroform	ND<	1.000	ND<	0.205
71-55-6	1,1,1-Trichloroethane	ND<	1.000	ND<	0.183
56-23-5	Carbon Tetrachloride	ND<	1.000	ND<	0 159
71-43-2	Benzene	ND<	1 000	ND<	0.313
107-06-2	1,2-Dichloroethane	ND<	1.000	ND<	0.247
79-01-6	Trichloroethene	ND<	1.000	ND<	0.186
78-87-5	1,2-Dichloropropane	ND<	1.000	ND<	0.216
10061-02-6	trans-1,3-Dichloropropene	ND<	1.000	ND<	0.220
108-88-3	Toluene	ND<	1.000	ND<	0.265
10061-01-5	cis-1,3-Dichloropropene	ND<	1.000	ND<	0.220
79-00-5	1,1-2-Trichloroethane	ND<	1.000	ND<	0 183
127-18-4	Tetrachloroethene	ND<	1.000	ND<	0.148
106-93-4	Ethylene Dibromide	ND<	1.000	ND<	0.130
108-90-7	Chlorobenzene	ND<	1.000	ND<	0.217
100-41-4	Ethylbenzene	ND<	1.000	ND<	0.230
1330-20-7	m,p-Xylene	ND<	1.000	ND<	0.230
95-47-6	o-Xylene	ND<	1.000	ND<	0.230
100-42-5	Styrene	ND<	1 000	ND<	0.235
79-34-5	1,1,2,2-Tetrachlorethane	ND<	1.000	ND<	0.146
108-67-8	1,3,5-Trimethyl Benzene	ND<	1.000	ND<	0.203
95-63-6	1,2,4-Trimethyl Benzene	5.8	1.000	1 2	0 203
541-73-1	1,3-Dichlorobenzene	ND<	1.000	ND<	0.166
106-46-7	1,4-Dichlorobenzene	ND<	1.000	ND<	0.166
100-44-7	Chlorotoluene	ND<	1.000	ND<	0.193
95-50-1	1,2-Dichlorobenzene	ND<	1 000	ND<	0.166
67-64-1	Acetone	ND<	1.000	ND<	0.422
78-93-3	2-Butanone	ND<	1.000	ND<	0.340
108-10-1	4-methyl-2-pentanone	ND<	1.000	ND<	0.245
591-78-6	2-Hexanone	ND<	1.000	ND<	0.244

Surrogate Recovery	% Recovery	
1,2-Dichloroethane-D4 (SS1)	106	70-130
Toluene-d8 (SS2)	93	70-130
4- Bromofluorobenzene (SS3)	110	70-130

ND- Not detected

TR - Trace

*Value outside QC limits due to matrix interfence.

VOLATILE ORGANIC ANALYSIS

CLIENT NAME:	Foster Wheeler Environmental	CLIENT SAMPLE ID:	Method Blank
PROJECT #:	—	AAI RFS#	9827903
PROJECT NAME:	NWS-Earle	AAI ID#:	Method Blank
MATRIX:	Air/Canister		
SAMPLE VOLUME:	0.005 Liter	DATE SAMPLED:	10/2/98
INITIAL PRESSURE:	1.00 psia	DATE RECEIVED:	10/6/98
FINAL PRESSURE:	1.00 psia	DATE ANALYZED:	10/8/98
PRES. DILUTION :	1.00		
DILUTION FACTOR:	1	ANALYTICAL METHOD:	EPA TO14 (GC/MS)

CAS NUMBER	COMPOUND	CONCENTRATION mg/m3	PQL	ppm(v)	PQL
74-87-3	Chloromethane	ND<	1.000	ND<	0.484
74-83-9	Bromomethane	ND<	1.000	ND<	0.258
75-01-04	Vinyl Chloride	ND<	1.000	ND<	0.391
75-00-3	Chloroethane	ND<	1.000	ND<	0.379
75-69-4	Freon 11	ND<	1.000	ND<	0.178
75-35-4	1,1-Dichloroethene	ND<	1 000	ND<	0.252
76-13-1	Freon 113	ND<	1.000	ND<	0.131
75-09-2	Methylene Chloride	ND<	1.000	ND<	0.288
75-35-3	1,1-Dichloroethane	ND<	1.000	ND<	0.247
156-60-5	trans-1,2-Dichloroethene	ND<	1 000	ND<	0.252
156-59-2	cis-1,2-Dichloroethene	ND<	1 000	ND<	0.252
67-66-3	Chloroform	ND<	1 000	ND<	0.205
71-55-6	1,1,1-Trichloroethane	ND<	1.000	ND<	0.183
56-23-5	Carbon Tetrachloride	ND<	1 000	ND<	0.159
71-43-2	Benzene	ND<	1 000	ND<	0.313
107-06-2	1,2-Dichloroethane	ND<	1 000	ND<	0.247
79-01-6	Trichloroethene	ND<	1 000	ND<	0.186
78-87-5	1,2-Dichloropropane	ND<	1.000	ND<	0.216
10061-02-6	trans-1,3-Dichloropropene	ND<	1 000	ND<	0.220
108-88-3	Toluene	ND<	1.000	ND<	0.265
10061-01-5	cis-1,3-Dichloropropene	ND<	1 000	ND<	0.220
79-00-5	1,1-2-Trichloroethane	ND<	1 000	ND<	0.183
127-18-4	Tetrachloroethene	ND<	1.000	ND<	0.148
106-93-4	Ethylene Dibromide	ND<	1.000	ND<	0.130
108-90-7	Chlorobenzene	ND<	1.000	ND<	0.217
100-41-4	Ethylbenzene	ND<	1.000	ND<	0.230
1330-20-7	m,p-Xylene	ND<	1.000	ND<	0.230
95-47-6	o-Xylene	ND<	1.000	ND<	0.230
100-42-5	Styrene	ND<	1.000	ND<	0.235
79-34-5	1,1,2,2-Tetrachlorethane	ND<	1.000	ND<	0.146
108-67-8	1,3,5-Trimethyl Benzene	ND<	1.000	ND<	0.203
95-63-6	1,2,4-Trimethyl Benzene	ND<	1.000	ND<	0.203
541-73-1	1,3-Dichlorobenzene	ND<	1 000	ND<	0.166
106-46-7	1,4-Dichlorobenzene	ND<	1.000	ND<	0.166
100-44-7	Chlorotoluene	ND<	1.000	ND<	0.193
95-50-1	1,2-Dichlorobenzene	ND<	1 000	ND<	0.166
67-64-1	Acetone	ND<	1.000	ND<	0.422
78-93-3	2-Butanone	ND<	1.000	ND<	0.340
108-10-1	4-methyl-2-pentanone	ND<	1 000	ND<	0.245
591-78-6	2-Hexanone	ND<	1.000	ND<	0.244

ANALYTICAL RESULTS

AAI RFS #: 9827903

Client Name: Foster Wheeler Environmental
Project Name: NWS-Earle
Project #: ---
Matrix: Air/Canister

Date(s) Sampled: 10/2/98
Date(s) Analyzed: 10/8/98
Analytical Method. CARB/EPA
Chemist: HA

	Units	16 (A) VD12 9827903 -001	16 (B) VD12 9827903 -002	Method Blank
EPA 8015mod				
TPH as gasoline	(ppm(v))	ND<10	370	ND<10

	Units	16 (A) VD12 9827903 -001	16 (B) VD12 9727903 -002	Method Blank
EPA 8015mod				
TPH as gasoline	(mg/m3)	ND<1.0	1,300	ND<1.0

QUALITY CONTROL

AAI RFS #: 9827903

Client Name: Foster Wheeler Environmental
Project Name: NWS-Earle
Project #: —
Matrix: Air/Canister

Date(s) Sampled: 10/2/98
Date(s) Analyzed: 10/8/98
Analytical Method: CARB/EPA
Chemist: HA

	Sample Result 9827903-002 (ppm(v))	Duplicate Result 9827903-002 (ppm(v))	RPD (%)	Quality Control Limits (%)
EPA 8015mod				
TPH as gasoline	370	340	8	30

	Sample Result 9827903-002 (mg/m3)	Duplicate Result 9827903-002 (mg/m3)	RPD (%)	Quality Control Limits (%)
EPA 8015mod				
TPH as gasoline	1,300	1,200	8	30

[redacted] Apollo Analytical
15 Wiggins Ave., Bedford, MA 01730
Telephone: (781) 275-3330
Fax: (781) 275-7478

CHAIN OF CUSTODY RECORD

WORK ORDER #: ____-____-____

DUE DATE : ____-____-____

COMPANY: Foster Wheeler Enviro
ADDRESS: One Oxford Valley Ste 200
Langhorne, PA 19047
PHONE #: (215) 202-4015 FAX #: (215) 202-4015
P.O. #: NWS-Earle
PROJECT MANAGER: Mike Heffron
PROJECT ID/LOCATION: NWS-Earle

SAMPLE TYPE	CONTAINER TYPE
1. WASTEWATER	P - PLASTIC
2. SOIL	G - GLASS
3. SLUDGE	V - VOA
4. OIL	
5. DRINKING WATER	
6. WATER (GW/MW/SW)	
7. OTHER (SPECIFY	

TOXIKON #	SAMPLE IDENTIFICATION	SAMPLE TYPE	CONTAINER SIZE	CONTAINER TYPE	CONTAINER #	SAMPLING DATE	SAMPLING TIME	PRESERVATIVE	TPH	VOCs	SPECIAL INSTRUCTIONS/ COMMENTS
001	16(A)VD12	Air	Summa		1	10/2/98	14:55	N/A	X	X	
002	16(B)VD12	Air	Canister		1	10/2/98	15:00		X	X	

SAMPLED BY: [signature] DATE: 10-2-98 TIME: - -

RELINQUISHED BY: [signature] DATE: 10-2-98 TIME: - -

RELINQUISHED BY: DATE: - - TIME: - -

METHOD OF SHIPMENT

QUOTATION #: AAI RFS# 9827903

RECEIVED BY: DATE: - - TIME: - -

RECEIVED FOR LAB BY: Leticia Zelaya DATE: 10-06-98 TIME: 12:00 P.M.

COOLER TEMPERATURE

3 DAY

☒ RUSH ..... ~~BUSINESS DAY TURNAROUND~~

☐ ROUTINE

Sample disposal information

Are there any other known or suspected contaminants in these samples other than those listed abov ?

Yes No If Yes 1st Known

Oct-08-98 09:35P APOLLO ANALYTICS INC. 714 751 6414 P.07

VOLATILE ORGANIC ANALYSIS

CLIENT NAME:	Foster Wheeler Environmental	**CLIENT SAMPLE ID:**	16 (A) VD13
PROJECT #:	---	**AAI RFS#**	9830605
PROJECT NAME:	NWS-Earle	**AAI ID#:**	9830605-002
MATRIX:	Air/Canister		
SAMPLE VOLUME:	0.005 Liter	**DATE SAMPLED:**	10/30/98
INITIAL PRESSURE:	1.00 psia	**DATE RECEIVED:**	11/2/98
FINAL PRESSURE:	1.00 psia	**DATE ANALYZED:**	11/2/98
PRES. DILUTION :	1.00		
DILUTION FACTOR:	1	**ANALYTICAL METHOD:**	EPA TO14 (GC/MS)

CAS NUMBER	COMPOUND	CONCENTRATION mg/m3	PQL	ppm(v)	PQL
74-87-3	Chloromethane	ND<	1.000	ND<	0.484
74-83-9	Bromomethane	ND<	1.000	ND<	0.258
75-01-04	Vinyl Chloride	ND<	1.000	ND<	0.391
75-00-3	Chloroethane	ND<	1.000	ND<	0.379
75-69-4	Freon 11	ND<	1.000	ND<	0.178
75-35-4	1,1-Dichloroethene	ND<	1.000	ND<	0.252
76-13-1	Freon 113	ND<	1.000	ND<	0.131
75-09-2	Methylene Chloride	ND<	1.000	ND<	0.288
75-35-3	1,1-Dichloroethane	ND<	1.000	ND<	0.247
156-60-5	trans-1,2-Dichloroethene	ND<	1.000	ND<	0.252
156-59-2	cis-1,2-Dichloroethene	ND<	1.000	ND<	0.252
67-66-3	Chloroform	ND<	1.000	ND<	0.205
71-55-6	1,1,1-Trichloroethane	ND<	1.000	ND<	0.183
56-23-5	Carbon Tetrachloride	ND<	1.000	ND<	0.159
71-43-2	Benzene	ND<	1.000	ND<	0.313
107-06-2	1,2-Dichloroethane	ND<	1.000	ND<	0.247
79-01-6	Trichloroethene	ND<	1.000	ND<	0.186
78-87-5	1,2-Dichloropropane	ND<	1 000	ND<	0.216
10061-02-6	trans-1,3-Dichloropropene	ND<	1.000	ND<	0.220
108-88-3	Toluene	ND<	1.000	ND<	0.265
10061-01-5	cis-1,3-Dichloropropene	ND<	1 000	ND<	0 220
79-00-5	1,1-2-Trichloroethane	ND<	1.000	ND<	0.183
127-18-4	Tetrachloroethene	ND<	1 000	ND<	0.148
106-93-4	Ethylene Dibromide	ND<	1.000	ND<	0.130
108-90-7	Chlorobenzene	ND<	1 000	ND<	0.217
100-41-4	Ethylbenzene	ND<	1 000	ND<	0.230
1330-20-7	m,p-Xylene	ND<	1.000	ND<	0.230
95-47-6	o-Xylene	ND<	1.000	ND<	0.230
100-42-5	Styrene	ND<	1.000	ND<	0.235
79-34-5	1,1,2,2-Tetrachlorethane	ND<	1 000	ND<	0.146
108-67-8	1,3,5-Trimethyl Benzene	ND<	1.000	ND<	0.203
95-63-6	1,2,4-Trimethyl Benzene	ND<	1.000	ND<	0.203
541-73-1	1,3-Dichlorobenzene	ND<	1.000	ND<	0.166
106-46-7	1,4-Dichlorobenzene	ND<	1.000	ND<	0.166
100-44-7	Chlorotoluene	ND<	1.000	ND<	0.193
95-50-1	1,2-Dichlorobenzene	ND<	1.000	ND<	0.166
67-64-1	Acetone	ND<	1.000	ND<	0.422
78-93-3	2-Butanone	ND<	1.000	ND<	0.340
108-10-1	4-methyl-2-pentanone	ND<	1.000	ND<	0.245
591-78-6	2-Hexanone	ND<	1.000	ND<	0.244

Surrogate Recovery	% Recovery	
1,2-Dichloroethane-D4 (SS1)	64*	70-130
Toluene-d8 (SS2)	101	70-130
4- Bromofluorobenzene (SS3)	102	70-130

ND- Not detected

TR - Trace

*Value outside QC limits due to matrix interfence.

VOLATILE ORGANIC ANALYSIS

CLIENT NAME:	Foster Wheeler Environmental	CLIENT SAMPLE ID:	16 (B) VD13
PROJECT #:	---	AAI RFS#	9830605
PROJECT NAME:	NWS-Earle	AAI ID#:	9830605-001
MATRIX:	Air/Canister		
SAMPLE VOLUME:	0 005 Liter	DATE SAMPLED:	10/30/98
INITIAL PRESSURE:	1.00 psia	DATE RECEIVED:	11/2/98
FINAL PRESSURE:	1.00 psia	DATE ANALYZED:	11/2/98
PRES. DILUTION :	1.00		
DILUTION FACTOR:	1	ANALYTICAL METHOD:	EPA TO14 (GC/MS)

CAS NUMBER	COMPOUND	CONCENTRATION mg/m3	PQL	ppm(v)	PQL
74-87-3	Chloromethane	ND<	1.000	ND<	0.484
74-83-9	Bromomethane	ND<	1.000	ND<	0.258
75-01-04	Vinyl Chloride	ND<	1.000	ND<	0.391
75-00-3	Chloroethane	ND<	1.000	ND<	0.379
75-69-4	Freon 11	ND<	1.000	ND<	0.178
75-35-4	1,1-Dichloroethene	ND<	1.000	ND<	0.252
76-13-1	Freon 113	ND<	1.000	ND<	0.131
75-09-2	Methylene Chloride	ND<	1.000	ND<	0.288
75-35-3	1,1-Dichloroethane	ND<	1 000	ND<	0.247
156-60-5	trans-1,2-Dichloroethene	ND<	1.000	ND<	0.252
156-59-2	cis-1,2-Dichloroethene	ND<	1.000	ND<	0.252
67-66-3	Chloroform	ND<	1.000	ND<	0.205
71-55-6	1,1,1-Trichloroethane	ND<	1.000	ND<	0.183
56-23-5	Carbon Tetrachloride	ND<	1.000	ND<	0.159
71-43-2	Benzene	ND<	1.000	ND<	0.313
107-06-2	1,2-Dichloroethane	ND<	1.000	ND<	0.247
79-01-6	Trichloroethene	ND<	1 000	ND<	0.186
78-87-5	1,2-Dichloropropane	ND<	1.000	ND<	0.216
10061-02-6	trans-1,3-Dichloropropene	ND<	1.000	ND<	0.220
108-88-3	Toluene	ND<	1.000	ND<	0.265
10061-01-5	cis-1,3-Dichloropropene	ND<	1 000	ND<	0.220
79-00-5	1,1-2-Trichloroethane	ND<	1.000	ND<	0.183
127-18-4	Tetrachloroethene	ND<	1.000	ND<	0.148
106-93-4	Ethylene Dibromide	ND<	1.000	ND<	0.130
108-90-7	Chlorobenzene	ND<	1.000	ND<	0.217
100-41-4	Ethylbenzene	ND<	1 000	ND<	0.230
1330-20-7	m,p-Xylene	5.4	1 000	1.2	0.230
95-47-6	o-Xylene	ND<	1.000	ND<	0.230
100-42-5	Styrene	ND<	1 000	ND<	0.235
79-34-5	1,1,2,2-Tetrachlorethane	ND<	1.000	ND<	0.146
108-67-8	1,3,5-Trimethyl Benzene	ND<	1.000	ND<	0.203
95-63-6	1,2,4-Trimethyl Benzene	12	1 000	2.4	0.203
541-73-1	1,3-Dichlorobenzene	ND<	1.000	ND<	0.166
106-46-7	1,4-Dichlorobenzene	ND<	1.000	ND<	0.166
100-44-7	Chlorotoluene	ND<	1.000	ND<	0.193
95-50-1	1,2-Dichlorobenzene	ND<	1.000	ND<	0.166
67-64-1	Acetone	ND<	1.000	ND<	0.422
78-93-3	2-Butanone	ND<	1.000	ND<	0.340
108-10-1	4-methyl-2-pentanone	ND<	1.000	ND<	0.245
591-78-6	2-Hexanone	ND<	1 000	ND<	0.244

Surrogate Recovery	% Recovery	
1,2-Dichloroethane-D4 (SS1)	101	70-130
Toluene-d8 (SS2)	120	70-130
4- Bromofluorobenzene (SS3)	105	70-130

ND- Not detected

TR - Trace

*Value outside QC limits due to matrix interfence.

VOLATILE ORGANIC ANALYSIS

CLIENT NAME:	Foster Wheeler Environmental	CLIENT SAMPLE ID:	Method Blank
PROJECT #:	---	AAI RFS#	9830605
PROJECT NAME:	NWS-Earle	AAI ID#:	Method Blank
MATRIX:	Air/Canister		
SAMPLE VOLUME:	0.005 Liter	DATE SAMPLED:	10/30/98
INITIAL PRESSURE:	1.00 psia	DATE RECEIVED:	11/2/98
FINAL PRESSURE:	1.00 psia	DATE ANALYZED:	11/2/98
PRES. DILUTION :	1.00		
DILUTION FACTOR:	1	ANALYTICAL METHOD:	EPA TO14 (GC/MS)

CAS NUMBER	COMPOUND	CONCENTRATION mg/m3	PQL	ppm(v)	PQL
74-87-3	Chloromethane	ND<	1.000	ND<	0.484
74-83-9	Bromomethane	ND<	1.000	ND<	0.258
75-01-04	Vinyl Chloride	ND<	1.000	ND<	0.391
75-00-3	Chloroethane	ND<	1.000	ND<	0.379
75-69-4	Freon 11	ND<	1.000	ND<	0.178
75-35-4	1,1-Dichloroethene	ND<	1.000	ND<	0.252
76-13-1	Freon 113	ND<	1.000	ND<	0.131
75-09-2	Methylene Chloride	ND<	1.000	ND<	0.288
75-35-3	1,1-Dichloroethane	ND<	1.000	ND<	0.247
156-60-5	trans-1,2-Dichloroethene	ND<	1.000	ND<	0.252
156-59-2	cis-1,2-Dichloroethene	ND<	1.000	ND<	0.252
67-66-3	Chloroform	ND<	1.000	ND<	0.205
71-55-6	1,1,1-Trichloroethane	ND<	1.000	ND<	0.183
56-23-5	Carbon Tetrachloride	ND<	1.000	ND<	0.159
71-43-2	Benzene	ND<	1.000	ND<	0.313
107-06-2	1,2-Dichloroethane	ND<	1.000	ND<	0.247
79-01-6	Trichloroethene	ND<	1.000	ND<	0.186
78-87-5	1,2-Dichloropropane	ND<	1.000	ND<	0.216
10061-02-6	trans-1,3-Dichloropropene	ND<	1.000	ND<	0.220
108-88-3	Toluene	ND<	1.000	ND<	0.265
10061-01-5	cis-1,3-Dichloropropene	ND<	1.000	ND<	0.220
79-00-5	1,1-2-Trichloroethane	ND<	1.000	ND<	0.183
127-18-4	Tetrachloroethene	ND<	1.000	ND<	0.148
106-93-4	Ethylene Dibromide	ND<	1.000	ND<	0.130
108-90-7	Chlorobenzene	ND<	1.000	ND<	0.217
100-41-4	Ethylbenzene	ND<	1.000	ND<	0.230
1330-20-7	m,p-Xylene	ND<	1.000	ND<	0.230
95-47-6	o-Xylene	ND<	1.000	ND<	0.230
100-42-5	Styrene	ND<	1.000	ND<	0.235
79-34-5	1,1,2,2-Tetrachlorethane	ND<	1.000	ND<	0.146
108-67-8	1,3,5-Trimethyl Benzene	ND<	1.000	ND<	0.203
95-63-6	1,2,4-Trimethyl Benzene	ND<	1.000	ND<	0.203
541-73-1	1,3-Dichlorobenzene	ND<	1.000	ND<	0.166
106-46-7	1,4-Dichlorobenzene	ND<	1.000	ND<	0.166
100-44-7	Chlorotoluene	ND<	1.000	ND<	0.193
95-50-1	1,2-Dichlorobenzene	ND<	1.000	ND<	0.166
67-64-1	Acetone	ND<	1.000	ND<	0.422
78-93-3	2-Butanone	ND<	1.000	ND<	0.340
108-10-1	4-methyl-2-pentanone	ND<	1.000	ND<	0.245
591-78-6	2-Hexanone	ND<	1.000	ND<	0.244

Surrogate Recovery	% Recovery	
1,2-Dichloroethane-D4 (SS1)	94	70-130
Toluene-d8 (SS2)	96	70-130
4- Bromofluorobenzene (SS3)	104	70-130

ND- Not detected

TR - Trace

*Value outside QC limits due to matrix interfence.

ANALYTICAL RESULTS

AAI RFS #: 9830605

Client Name: Foster Wheeler Environmental
Project Name: NWS-Earle
Project #: ---
Matrix: Air/Canister

Date(s) Sampled: 10/30/98
Date(s) Analyzed: 11/2/98
Analytical Method: CARB/EPA
Chemist: HA

	Units	16 (B) VD13 9830605 -001	16 (A) VD13 9830605 -002	Method Blank
EPA 8015mod				
TPH as gasoline	(ppm(v))	253	74	ND<10

	Units	16 (B) VD13 9830605 -001	16 (A) VD13 9830605 -002	Method Blank
EPA 8015mod				
TPH as gasoline	(mg/m3)	888	260	ND<1.0

QUALITY CONTROL

AAI RFS #: 9830605

Client Name: Foster Wheeler Environmental
Project Name: NWS-Earle
Project #: ---
Matrix: Air/Canister

Date(s) Sampled: 10/30/98
Date(s) Analyzed: 11/2/98
Analytical Method: CARB/EPA
Chemist: HA

	Sample Result 9830605-001 (ppm(v))	Duplicate Result 9830605-001 (ppm(v))	RPD (%)	Quality Control Limits (%)
EPA 8015mod				
TPH as gasoline	253	243	4	30

	Sample Result 9830605-001 (mg/m3)	Duplicate Result 9830605-001 (mg/m3)	RPD (%)	Quality Control Limits (%)
EPA 8015mod				
TPH as gasoline	888	854	4	30

VOLATILE OR ANIC ANALYSIS

CLIENT NAME:	Foster Wheeler Environmental	CLIENT SAMPLE ID:	16 (A) VD-14
PROJECT #:	—	AAI RFS#	9834103
PROJECT NAME:	NWS-Earle	AAI ID#:	9834103-001
MATRIX:	Air/Canister		
SAMPLE VOLUME:	0.005 Liter	DATE SAMPLED:	11/30/98
INITIAL PRESSURE:	1.00 psia	DATE RECEIVED:	12/7/98
FINAL PRESSURE:	1.00 psia	DATE ANALYZED:	12/8/98
PRES. DILUTION :	1.00		
DILUTION FACTOR:	1	ANALYTICAL METHOD:	EPA TO14 (GC/MS)

CAS NUMBER	COMPOUND	CONCENTRATION mg/m3	PQL	ppm(v)	PQL
74-87-3	Chloromethane	ND<	1.0	ND<	0.5
74-83-9	Bromomethane	ND<	1.0	ND<	0.3
75-01-04	Vinyl Chloride	ND<	1.0	ND<	0.4
75-00-3	Chloroethane	ND<	1.0	ND<	0 4
75-69-4	Freon 11	ND<	1.0	ND<	0.2
75-35-4	1,1-Dichloroethene	ND<	1.0	ND<	0.3
76-13-1	Freon 113	ND<	1.0	ND<	0 1
75-09-2	Methylene Chloride	ND<	1.0	ND<	0.3
75-35-3	1,1-Dichloroethane	ND<	1 0	ND<	0 2
156-60-5	trans-1,2-Dichloroethene	ND<	1.0	ND<	0 3
156-59-2	cis-1,2-Dichloroethene	ND<	1.0	ND<	0 3
67-66-3	Chloroform	ND<	1.0	ND<	0.2
71-55-6	1,1,1-Trichloroethane	ND<	1.0	ND<	0.2
56-23-5	Carbon Tetrachloride	ND<	1.0	ND<	0 2
71-43-2	Benzene	22	1.0	4.6	0.3
107-06-2	1,2-Dichloroethane	ND<	1.0	ND<	0.2
79-01-6	Trichloroethene	ND<	1.0	ND<	0 2
78-87-5	1,2-Dichloropropane	ND<	1 0	ND<	0 2
10061-02-6	trans-1,3-Dichloropropene	ND<	1.0	ND<	0.2
108-88-3	Toluene	4.6	1 0	1.2	0 3
10061-01-5	cis-1,3-Dichloropropene	ND<	1.0	ND<	0.2
79-00-5	1,1-2-Trichloroethane	ND<	1.0	ND<	0.2
127-18-4	Tetrachloroethene	ND<	1.0	ND<	0 1
106-93-4	Ethylene Dibromide	ND<	1.0	ND<	0 1
108-90-7	Chlorobenzene	ND<	1.0	ND<	0.2
100-41-4	Ethylbenzene	ND<	1.0	ND<	0.2
1330-20-7	m,p-Xylene	ND<	1 0	ND<	0 2
95-47-6	o-Xylene	ND<	1.0	ND<	0.2
100-42-5	Styrene	ND<	1.0	ND<	0 2
79-34-5	1,1,2,2-Tetrachloroethane	ND<	1 0	ND<	0 1
108-67-8	1,3,5-Trimethyl Benzene	ND<	1.0	ND<	0.2
95-63-6	1,2,4-Trimethyl Benzene	ND<	1.0	ND<	0.2
541-73-1	1,3-Dichlorobenzene	ND<	1.0	ND<	0.2
106-46-7	1,4-Dichlorobenzene	ND<	1.0	ND<	0.2
100-44-7	Chlorotoluene	ND<	1.0	ND<	0.2
95-50-1	1,2-Dichlorobenzene	ND<	1.0	ND<	0 2
67-64-1	Acetone	47.5	1.0	20	0 4
78-93-3	2-Butanone	ND<	1.0	ND<	0 3
108-10-1	4-methyl-2-pentanone	ND<	1.0	ND<	0.2
591-78-6	2-Hexanone	ND<	1.0	ND<	0.2

Surrogate Recovery	% Recovery	
1,2-Dichloroethane-D4 (SS1)	78	70-130
Toluene-d8 (SS2)	126	70-130
4- Bromofluorobenzene (SS3)	113	70-130

ND- Not detected

TR - Trace

*Value outside QC limits due to matrix interference

VOLATILE ORGANIC ANALYSIS

CLIENT NAME:	Foster Wheeler Environmental	CLIENT SAMPLE ID:	16 (B) VD-14
PROJECT #:	—	AAI RFS#	9834103
PROJECT NAME:	NWS-Earle	AAI ID#:	9834103-002
MATRIX:	Air/Canister		
SAMPLE VOLUME:	0.005 Liter	DATE SAMPLED:	11/30/98
INITIAL PRESSURE:	1.00 psia	DATE RECEIVED:	12/7/98
FINAL PRESSURE:	1 00 psia	DATE ANALYZED:	12/8/98
PRES. DILUTION :	1.00		
DILUTION FACTOR:	1	ANALYTICAL METHOD:	EPA TO14 (GC/MS)

CAS NUMBER	COMPOUND	CONCENTRATION mg/m3	PQL	ppm(v)	PQL
74-87-3	Chloromethane	ND<	1.0	ND<	0.5
74-83-9	Bromomethane	ND<	1 0	ND<	0 3
75-01-04	Vinyl Chloride	ND<	1.0	ND<	0.4
75-00-3	Chloroethane	ND<	1 0	ND<	0.4
75-69-4	Freon 11	ND<	1 0	ND<	0.2
75-35-4	1,1-Dichloroethene	ND<	1.0	ND<	0.3
76-13-1	Freon 113	ND<	1 0	ND<	0.1
75-09-2	Methylene Chloride	ND<	1.0	ND<	0.3
75-35-3	1,1-Dichloroethane	ND<	1 0	ND<	0.2
156-60-5	trans-1,2-Dichloroethene	ND<	1 0	ND<	0.3
156-59-2	cis-1,2-Dichloroethene	ND<	1.0	ND<	0.3
67-66-3	Chloroform	ND<	1.0	ND<	0.2
71-55-6	1,1,1-Trichloroethane	ND<	1.0	ND<	0.2
56-23-5	Carbon Tetrachloride	ND<	1.0	ND<	0 2
71-43-2	Benzene	ND<	1 0	ND<	0 3
107-06-2	1,2-Dichloroethane	ND<	1 0	ND<	0.2
79-01-6	Trichloroethene	ND<	1.0	ND<	0.2
78-87-5	1,2-Dichloropropane	ND<	1 0	ND<	0 2
10061-02-6	trans-1,3-Dichloropropene	ND<	1 0	ND<	0 2
108-88-3	Toluene	ND<	1.0	ND<	0 3
10061-01-5	cis-1,3-Dichloropropene	ND<	1.0	ND<	0.2
79-00-5	1,1-2-Trichloroethane	ND<	1.0	ND<	0.2
127-18-4	Tetrachloroethene	ND<	1 0	ND<	0.1
106-93-4	Ethylene Dibromide	ND<	1.0	ND<	0 1
108-90-7	Chlorobenzene	ND<	1 0	ND<	0.2
100-41-4	Ethylbenzene	ND<	1.0	ND<	0.2
1330-20-7	m,p-Xylene	ND<	1 0	ND<	0.2
95-47-6	o-Xylene	ND<	1.0	ND<	0.2
100-42-5	Styrene	ND<	1 0	ND<	0 2
79-34-5	1,1,2,2-Tetrachlorethane	ND<	1.0	ND<	0.1
108-67-8	1,3,5-Trimethyl Benzene	ND<	1.0	ND<	0.2
95-63-6	1,2,4-Trimethyl Benzene	ND<	1 0	ND<	0 2
541-73-1	1,3-Dichlorobenzene	ND<	1 0	ND<	0.2
106-46-7	1,4-Dichlorobenzene	ND<	1.0	ND<	0 2
100-44-7	Chlorotoluene	ND<	1.0	ND<	0.2
95-50-1	1,2-Dichlorobenzene	ND<	1 0	ND<	0.2
67-64-1	Acetone	ND<	1.0	ND<	0 4
78-93-3	2-Butanone	ND<	1.0	ND<	0.3
108-10-1	4-methyl-2-pentanone	ND<	1.0	ND<	0.2
591-78-6	2-Hexanone	ND<	1.0	ND<	0.2

Surrogate Recovery	% Recovery	
1,2-Dichloroethane-D4 (SS1)	73	70-130
Toluene-d8 (SS2)	118	70-130
4- Bromofluorobenzene (SS3)	115	70-130

ND- Not detected

TR - Trace

*Value outside QC limits due to matrix interfence.

VOLATILE ORGANIC ANALYSIS

CLIENT NAME:	Foster Wheeler Environmental	**CLIENT SAMPLE ID:**	Method Blank
PROJECT #:	---	**AAI RFS#**	9834103
PROJECT NAME:	NWS-Earle	**AAI ID#:**	Method Blank
MATRIX:	Air/Canister		
SAMPLE VOLUME:	0.005 Liter	**DATE SAMPLED:**	11/30/98
INITIAL PRESSURE:	1.00 psia	**DATE RECEIVED:**	12/7/98
FINAL PRESSURE:	1.00 psia	**DATE ANALYZED:**	12/8/98
PRES. DILUTION :	1.00		
DILUTION FACTOR:	1	**ANALYTICAL METHOD:**	EPA TO14 (GC/MS)

CAS NUMBER	COMPOUND	CONCENTRATION mg/m3	PQL	ppm(v)	PQL
74-87-3	Chloromethane	ND<	1 0	ND<	0 5
74-83-9	Bromomethane	ND<	1 0	ND<	0 3
75-01-04	Vinyl Chloride	ND<	1 0	ND<	0.4
75-00-3	Chloroethane	ND<	1.0	ND<	0 4
75-69-4	Freon 11	ND<	1.0	ND<	0 2
75-35-4	1,1-Dichloroethene	ND<	1 0	ND<	0 3
76-13-1	Freon 113	ND<	1.0	ND<	0 1
75-09-2	Methylene Chloride	ND<	1.0	ND<	0.3
75-35-3	1,1-Dichloroethane	ND<	1 0	ND<	0 2
156-60-5	trans-1,2-Dichloroethene	ND<	1.0	ND<	0 3
156-59-2	cis-1,2-Dichloroethene	ND<	1 0	ND<	0 3
67-66-3	Chloroform	ND<	1 0	ND<	0.2
71-55-6	1,1,1-Trichloroethane	ND<	1.0	ND<	0 2
56-23-5	Carbon Tetrachloride	ND<	1.0	ND<	0.2
71-43-2	Benzene	ND<	1.0	ND<	0.3
107-06-2	1,2-Dichloroethane	ND<	1.0	ND<	0 2
79-01-6	Trichloroethene	ND<	1.0	ND<	0.2
78-87-5	1,2-Dichloropropane	ND<	1.0	ND<	0.2
10061-02-6	trans-1,3-Dichloropropene	ND<	1 0	ND<	0.2
108-88-3	Toluene	ND<	1 0	ND<	0 3
10061-01-5	cis-1,3-Dichloropropene	ND<	1 0	ND<	0 2
79-00-5	1,1-2-Trichloroethane	ND<	1.0	ND<	0.2
127-18-4	Tetrachloroethene	ND<	1 0	ND<	0.1
106-93-4	Ethylene Dibromide	ND<	1.0	ND<	0.1
108-90-7	Chlorobenzene	ND<	1.0	ND<	0 2
100-41-4	Ethylbenzene	ND<	1.0	ND<	0.2
1330-20-7	m,p-Xylene	ND<	1 0	ND<	0 2
95-47-6	o-Xylene	ND<	1 0	ND<	0 2
100-42-5	Styrene	ND<	1.0	ND<	0.2
79-34-5	1,1,2,2-Tetrachlorethane	ND<	1.0	ND<	0 1
108-67-8	1,3,5-Trimethyl Benzene	ND<	1.0	ND<	0.2
95-63-6	1,2,4-Trimethyl Benzene	ND<	1.0	ND<	0.2
541-73-1	1,3-Dichlorobenzene	ND<	1.0	ND<	0.2
106-46-7	1,4-Dichlorobenzene	ND<	1 0	ND<	0.2
100-44-7	Chlorotoluene	ND<	1.0	ND<	0.2
95-50-1	1,2-Dichlorobenzene	ND<	1 0	ND<	0.2
67-64-1	Acetone	ND<	1.0	ND<	0.4
78-93-3	2-Butanone	ND<	1.0	ND<	0.3
108-10-1	4-methyl-2-pentanone	ND<	1 0	ND<	0 2
591-78-6	2-Hexanone	ND<	1.0	ND<	0 2

Surrogate Recovery	% Recovery	
1,2-Dichloroethane-D4 (SS1)	86	70-130
Toluene-d8 (SS2)	116	70-130
4- Bromofluorobenzene (SS3)	112	70-130

ND- Not detected

TR - Trace

*Value outside QC limits due to matrix interfence.

QUALITY CONTROL

AAI RFS #: 9834103

Client Name Foster Wheeler Environmental
Project Name. NWS-Earle
Project #: —
Matrix Air/Canister

Date(s) Sampled: 11/30/98
Date(s) Analyzed: 12/7/98
Analytical Method: CARB/EPA
Chemist: HA

	Sample Result 9834103-001 (ppm(v))	Duplicate Result 9834103-001 (ppm(v))	RPD (%)	Quality Control Limits (%)
EPA 8015mod				
TPH as gasoline	4,000	3,800	5	30

	Sample Result 9834103-001 (mg/m3)	Duplicate Result 9834103-001 (mg/m3)	RPD (%)	Quality Control Limits (%)
EPA 8015mod				
TPH as gasoline	14,000	13,300	5	30

ANALYTICAL RESULTS

AAI RFS #: 9834103

Client Name: Foster Wheeler Environmental
Project Name NWS-Earle
Project #: —
Matrix: Air/Canister

Date(s) Sampled: 11/30/98
Date(s) Analyzed. 12/7/98
Analytical Method: CARB/EPA
Chemist: HA

	Units	16 (A) VD-14 9834103 -001	16 (B) VD-14 9834103 -002	16 (A) GSVD01 9834103 -003	Method Blank
EPA 8015mod					
TPH as gasoline	(ppm(v))	4,000	ND<10	1,300	ND<10

	Units	16 (A) VD-14 9834103 -001	16 (B) VD-14 9834103 -002	16 (A) GSVD01 9834103 -003	Method Blank
EPA 8015mod					
TPH as gasoline	(mg/m3)	14,000	ND<1.0	4,500	ND<1 0

 TOXIKON CORP. REPORT Work Order # 98-08-490

Received: 08/24/98 09/08/98 10:04:22

REPORT TO: FOSTER & WHEELER
1 OXFORD VALLEY, SUITE 200
LANGHORNE, PA. 19047
215-702-4007 FAX: 4045
ATTEN MICHAEL HEFFRON

PREPARED BY: TOXIKON CORPORATION
15 WIGGINS AVE
BEDFORD, MA 01730
ATTEN PAUL LEZBERG
PHONE (617)275-3330

CERTIFIED BY

CONTACT CHUCKC

CLIENT FOSTER SAMPLES 11
COMPANY FOSTER & WHEELER
FACILITY 1 OXFORD VALLEY, SUITE 200
LANGHORNE, PA. 19047

MA CERT # M-MA064: TRACE METALS, SULFATE,CYANIDE,RES. FREE CHLORINE, Ca, TOTAL ALK., TDS, pH, THMs, VOC, PEST.,NUTRIENTS. DEMAND. O&G, PHENOLICS, PCBs . CT DHS #PH-0563, NY #10778 FL HRS E87143, NJ DEP 59538, NC DNR286, SC 88002, NH 204091-C.

WORK ID NAVAL WEAPONS STATION EARLE
TAKEN 8/21/98
TRANS
TYPE WATER
P.O. #
INVOICE under separate cover

VERIFIED BY:

SAMPLE IDENTIFICATION

01 16AEW98W68
02 16AEW98W69
03 16AEW98W70
04 16AEW98W71
05 16AEW98W72
06 16AEW98W73
07 16BEW98W58
08 16BEW98W59
09 16BEW98W60
10 16BEW98W61
11 16BEW98W62

TEST CODES and NAMES used on this workorder

TPH IR TPH BY IR

Received: 08/24/98 Results by Sample

SAMPLE ID 16AEW98W68 SAMPLE # 01 FRACTIONS: A
Date & Time Collected 08/21/98 09:10:00 Category WATER

TPH_IR 186
mg/L DL=1.0

SAMPLE ID 16AEW98W69 SAMPLE # 02 FRACTIONS: A
Date & Time Collected 08/21/98 09:15:00 Category WATER

TPH_IR 113
mg/L DL=1.0

SAMPLE ID 16AEW98W70 SAMPLE # 03 FRACTIONS: A
Date & Time Collected 08/21/98 09:17:00 Category WATER

TPH_IR ND
mg/L DL=1.0

SAMPLE ID 16AEW98W71 SAMPLE # 04 FRACTIONS: A
Date & Time Collected 08/21/98 09:20:00 Category WATER

TPH_IR ND
mg/L DL=1.0

SAMPLE ID 16AEW98W72 SAMPLE # 05 FRACTIONS: A
Date & Time Collected 08/21/98 09:20:00 Category WATER

TPH_IR ND
mg/L DL=1.0

SAMPLE ID 16AEW98W73 SAMPLE # 06 FRACTIONS: A
Date & Time Collected 08/21/98 09:22:00 Category WATER

TPH_IR ND
mg/L DL=1.0

SAMPLE ID 16BEW98W58 SAMPLE # 07 FRACTIONS: A
Date & Time Collected 08/21/98 09:35:00 Category WATER

TPH_IR 172
mg/L DL=1.0

SAMPLE ID 16BEW98W59 SAMPLE # 08 FRACTIONS: A
Date & Time Collected 08/21/98 09:40:00 Category WATER

TPH_IR 1.11
mg/L DL=1.0

Received: 08/24/98

Results by Sample

SAMPLE ID 16BEW98W60 SAMPLE # 09 FRACTIONS: A

Date & Time Collected 08/21/98 09:45:00 Category WATER

TPH_IR ND

mg/L DL=1.0

SAMPLE ID 16BEW98W61 SAMPLE # 10 FRACTIONS: A

Date & Time Collected 08/21/98 09:50:00 Category WATER

TPH_IR ND

mg/L DL=1.0

SAMPLE ID 16BEW98W62 SAMPLE # 11 FRACTIONS: A

Date & Time Collected 08/21/98 09:55:00 Category WATER

TPH_IR ND

mg/L DL=1.0

Received: 08/24/98 Test Methodology

TEST CODE TPH IR NAME TPH BY IR

EPA METHOD: 418.1 for water sample.

Reference: Methods for Chemical Analysis of Water and Wastes.
EPA 600/4-79-020 (Revised, March 1983). EPA/EMSL, Cincinnati, OH.

EPA METHOD: 9071/9073

Reference: Test Methods for Evaluating Solid Waste: Physical/Chemical Methods.
EPA SW-846 (Third Edition) 1986. Office of Solid Waste, USEPA.

TOXIKON
15 Wiggins Ave , Bedford, MA 01730
Telephone: (781) 275-3330
Fax: (781) 275-7478

CHAIN OF CUSTODY RECORD

WORK ORDER #: 1284 - B017 - 440

DUE DATE : 09 - 04 - 98

COMPANY: Foster Wheeler Environmental Corp.
ADDRESS: One Oxford Valley, Suite 220
Langhorne, PA 19047-1829
PHONE #: (215) 702 4000 FAX #: (215) 702 4045
P.O. #:
PROJECT MANAGER: Mike Heffron
PROJECT ID/LOCATION: Naval Weapons Station Earle

SAMPLE TYPE
1. WASTEWATER
2. SOIL
3. SLUDGE
4. OIL
5. DRINKING WATER
6. WATER (GW/MW/SW)
7. OTHER (SPECIFY

CONTAINER TYPE
P - PLASTIC
G - GLASS
V - VOA

ANALYSES

TOXIKON #	SAMPLE IDENTIFICATION	SAMPLE TYPE	CONTAINER SIZE	CONTAINER TYPE	CONTAINER #	SAMPLING DATE	SAMPLING TIME	PRESERVATIVE	TPH												SPECIAL INSTRUCTIONS/ COMMENTS
1	16AEW98W68	6		G		8-21-98	0910	H_2SO_4	X												
2	16AEW98W69						0915		X												
3	16AEW98W70						0917		X												
4	16AEW98W71						0920		X												
5	16AEW98W72						0920		X												
6	16AEW98W73						0922		X												
7	16BEW98W58						0935		X												
8	16BEW98W59						0940		X												
9	16BEW98W60						0945		X												
10	16BEW98W61						0950		X												
11	16BEW98W62						0955		X												
~~12~~	~~16BEW98W63~~						~~1000~~														

SAMPLED BY: Bryan R Sladky
DATE: 8 - 21 - 98
TIME: 0910 - 1000

RELINQUISHED BY: Bryan R Sladky
DATE: 8 - 21 - 98
TIME: 1015 -

RELINQUISHED BY:
DATE: - -
TIME: - -

METHOD OF SHIPMENT

QUOTATION #:

RECEIVED BY:
DATE: - -
TIME: - -

RECEIVED FOR LAB BY: J. Mattice
DATE: 08 - 24 - 98
TIME: 2030 -

COOLER TEMPERATURE R-7

☐ RUSH ..... BUSINESS DAY TURN AROUND
☒ ROUTINE

Sample disposal information
Are there any other known or suspected contaminants in these samples other than those listed above?
Yes ____ No ____ If Yes, 1st Known _____

 TOXIKON CORP. REPORT Work Order # 98-08-607

Received: 08/29/98 09/04/98 11:47:48

REPORT FOSTER & WHEELER
TO 1 OXFORD VALLEY, SUITE 200
LANGHORNE, PA. 19047
215-702-4007 FAX: 4045
ATTEN MICHAEL HEFFRON

PREPARED TOXIKON CORPORATION
BY 15 WIGGINS AVE
BEDFORD, MA 01730
ATTEN PAUL LEZBERG
PHONE (617)275-3330

CERTIFIED BY

CONTACT CHUCKC

CLIENT FOSTER SAMPLES 11
COMPANY FOSTER & WHEELER
FACILITY 1 OXFORD VALLEY, SUITE 200
LANGHORNE, PA. 19047

MA CERT # M-MA064: TRACE METALS, SULFATE,CYANIDE,RES. FREE CHLORINE, Ca, TOTAL ALK., TDS, pH, THMs, VOC, PEST.,NUTRIENTS. DEMAND. O&G, PHENOLICS, PCBs . CT DHS #PH-0563, NY #10778 FL HRS E87143, NJ DEP 59538, NC DNR286, SC 88002, NH 204091-C.

WORK ID NWS-EARLE
TAKEN 8/27/98
TRANS
TYPE WATER
P.O. #
INVOICE under separate cover

VERIFIED BY:

SAMPLE IDENTIFICATION

01 16(A)EW98W74
02 16(A)EW98W75
03 16(A)EW98W76
04 16(A)EW98W77
05 16(A)EW98W78
06 16(A)EW98W79
07 16(B)EW98W64
08 16(B)EW98W65
09 16(B)EW98W66
10 16(B)EW98W67
11 16(B)EW98W68

TEST CODES and NAMES used on this workorder

TPH IR TPH BY IR

Received: 08/29/98 Results by Sample

SAMPLE ID 16(A)EW98W74 SAMPLE # 01 FRACTIONS: A
Date & Time Collected 08/27/98 11:00:00 Category WATER

TPH_IR 173
mg/L DL=1.0

SAMPLE ID 16(A)EW98W75 SAMPLE # 02 FRACTIONS: A
Date & Time Collected 08/27/98 11:02:00 Category WATER

TPH_IR 82.7
mg/L DL=1.0

SAMPLE ID 16(A)EW98W76 SAMPLE # 03 FRACTIONS: A
Date & Time Collected 08/27/98 11:04:00 Category WATER

TPH_IR 5.06
mg/L DL=1.0

SAMPLE ID 16(A)EW98W77 SAMPLE # 04 FRACTIONS: A
Date & Time Collected 08/27/98 11:06:00 Category WATER

TPH_IR ND
mg/L DL=1.0

SAMPLE ID 16(A)EW98W78 SAMPLE # 05 FRACTIONS: A
Date & Time Collected 08/27/98 11:08:00 Category WATER

TPH_IR ND
mg/L DL=1.0

SAMPLE ID 16(A)EW98W79 SAMPLE # 06 FRACTIONS: A
Date & Time Collected 08/27/98 11:10:00 Category WATER

TPH_IR 1.84
mg/L DL=1.0

SAMPLE ID 16(B)EW98W64 SAMPLE # 07 FRACTIONS: A
Date & Time Collected 08/27/98 12:00:00 Category WATER

TPH_IR 11.9
mg/L DL=1.0

SAMPLE ID 16(B)EW98W65 SAMPLE # 08 FRACTIONS: A
Date & Time Collected 08/27/98 12:02:00 Category WATER

TPH_IR ND
mg/L DL=1.0

Received: 08/29/98

Results by Sample

SAMPLE ID 16(B)EW98W66 SAMPLE # 09 FRACTIONS: A

Date & Time Collected 08/27/98 12:04:00 Category WATER

TPH_IR ND

mg/L DL=1.0

SAMPLE ID 16(B)EW98W67 SAMPLE # 10 FRACTIONS: A

Date & Time Collected 08/27/98 12:06:00 Category WATER

TPH_IR ND

mg/L DL=1.0

SAMPLE ID 16(B)EW98W68 SAMPLE # 11 FRACTIONS: A

Date & Time Collected 08/27/98 12:08:00 Category WATER

TPH_IR ND

mg/L DL=1.0

Received: 08/29/98

Test Methodology

TEST CODE TPH IR NAME TPH BY IR

EPA METHOD: 418.1 for water sample.

Reference: Methods for Chemical Analysis of Water and Wastes.
EPA 600/4-79-020 (Revised, March 1983). EPA/EMSL, Cincinnati, OH.

EPA METHOD: 9071/9073

Reference: Test Methods for Evaluating Solid Waste: Physical/Chemical Methods.
EPA SW-846 (Third Edition) 1986. Office of Solid Waste, USEPA.

TOXIKON
15 Wiggins Ave., Bedford, MA 01730
Telephone: (781) 275-3330
Fax: (781) 275-7478

CHAIN OF CUSTODY RECORD

WORK ORDER #: 98-08-007

DUE DATE : 9-2-98

COMPANY: Foster Wheeler Environmental
ADDRESS: One Oxford Valley Suite 200
Langhorne, PA 19047
PHONE #: (215) 702-4015 FAX #: (215) 702-4045
P.O. #:
PROJECT MANAGER: Mike Heffron
PROJECT ID/LOCATION: VWS - Earle

SAMPLE TYPE: 1. WASTEWATER 2. SOIL 3. SLUDGE 4. OIL 5. DRINKING WATER 6. WATER (GW/MW/SW) 7. OTHER (SPECIFY

CONTAINER TYPE: P - PLASTIC G - GLASS V - VOA

ANALYSES

TOXIKON #	SAMPLE IDENTIFICATION	SAMPLE TYPE	CONTAINER SIZE	CONTAINER TYPE	CONTAINER #	SAMPLING DATE	SAMPLING TIME	PRESERVATIVE	TPH											SPECIAL INSTRUCTIONS/ COMMENTS
1	16(A)EW98W74	GW	1l	G	1	8/27/98	11:00	H_2SO_4	X											☆ 72 hr.
2	16(A)EW98W75						11:02		X											Turn-Around
3	16(A)EW98W76						11:04		X											
4	16(A)EW98W77						11:06		X											
5	16(A)EW98W78						11:08		X											
6	16(A)EW98W79						11:10		X											
7	16(B)EW98W64	GW	1l	G	1	8/27/98	12:00	H_2SO_4	X											
8	16(B)EW98W65						12:02		X											
9	16(B)EW98W66						12:04		X											
10	16(B)EW98W67						12:06		X											
11	16(B)EW98W68						12:08		X											

SAMPLED BY:	DATE: 8-27-98	QUOTATION #:	
	TIME: - -		
RELINQUISHED BY:	DATE: 8-28-98	RECEIVED BY:	DATE: - -
	TIME: - -		TIME: - -
RELINQUISHED BY:	DATE: - -	RECEIVED FOR LAB BY:	DATE: 8-29-98
	TIME: - -		TIME: 10-10-00
METHOD OF SHIPMENT		COOLER TEMPERATURE 1.10	

☆ 72 hr. - Turn-around

☑ RUSH ..... BUSINESS DAY TURN AROUND
☐ ROUTINE

Sample disposal information
Are there any other known or suspected contaminants in these samples other than those listed above?
Yes ____ No ____ If Yes, 1st Known

Page 1
Received: 09/18/98

TOXIKON CORP. REPORT
09/24/98 11:16:31

Work Order # 98-09-387

REPORT TO
FOSTER & WHEELER
1 OXFORD VALLEY, SUITE 200
LANGHORNE, PA. 19047
215-702-4007 FAX: 4045
ATTEN MICHAEL HEFFRON

PREPARED BY
TOXIKON CORPORATION
15 WIGGINS AVE
BEDFORD, MA 01730
ATTEN PAUL LEZBERG
PHONE (617)275-3330

CERTIFIED BY

CONTACT CHUCKC

CLIENT FOSTER SAMPLES 10
COMPANY FOSTER & WHEELER
FACILITY 1 OXFORD VALLEY, SUITE 200
LANGHORNE, PA. 19047

MA CERT # M-MA064: TRACE METALS, SULFATE, CYANIDE, RES. FREE CHLORINE, Ca, TOTAL ALK., TDS, pH, THMs, VOC, PEST., NUTRIENTS. DEMAND, O&G, PHENOLICS, PCBs . CT DHS #PH-0563, NY #10778 FL HRS E87143, NJ DEP 59538, NC DNR286, SC 88002, NH 204091-C.

WORK ID NWS EARLE
TAKEN 9/18/98
TRANS
TYPE WATER
P.O. #
INVOICE under separate cover

VERIFIED BY:

SAMPLE IDENTIFICATION

01 16(A)EW98-W80 1st Clay
02 16(A)EW98-W81 2nd Clay
03 16(A)EW98-W82 ~~[illegible]~~ 3rd Clay
04 16(A)EW98-W83 ~~[illegible]~~ 1st Carbon
05 16(A)EW98-W84 2nd Carbon
06 16(B)EW98-W70 Oil w Sep.
07 16(B)EW98-W71 1st clay
08 16(B)EW98-W72 2nd clay
09 16(B)EW98-W73 1st carbon
10 16(B)EW98-W74 2nd carbon

TEST CODES and NAMES used on this workorder

TPH IR TPH BY IR

Received: 09/18/98

TOXIKON CORP. REPORT

Results by Sample

Work Order # 98-09-387

SAMPLE ID 16(A)EW98-W80 SAMPLE # 01 FRACTIONS: A
Date & Time Collected 09/18/98 10:45:00 Category WATER

TPH_IR 150
mg/L DL=1.0

SAMPLE ID 16(A)EW98-W81 SAMPLE # 02 FRACTIONS: A
Date & Time Collected 09/18/98 10:47:00 Category WATER

TPH_IR 134
mg/L DL=1.0

SAMPLE ID 16(A)EW98-W82 SAMPLE # 03 FRACTIONS: A
Date & Time Collected 09/18/98 10:49:00 Category WATER

TPH_IR ND
mg/L DL=1.0

SAMPLE ID 16(A)EW98-W83 SAMPLE # 04 FRACTIONS: A
Date & Time Collected 09/18/98 10:52:00 Category WATER

TPH_IR ND
mg/L DL=1.0

SAMPLE ID 16(A)EW98-W84 SAMPLE # 05 FRACTIONS: A
Date & Time Collected 09/18/98 10:54:00 Category WATER

TPH_IR ND
mg/L DL=1.0

SAMPLE ID 16(B)EW98-W70 SAMPLE # 06 FRACTIONS: A
Date & Time Collected 09/18/98 11:30:00 Category WATER

TPH_IR 116
mg/L DL=1.0

SAMPLE ID 16(B)EW98-W71 SAMPLE # 07 FRACTIONS: A
Date & Time Collected 09/18/98 11:32:00 Category WATER

TPH_IR 16.8
mg/L DL=1.0

SAMPLE ID 16(B)EW98-W72 SAMPLE # 08 FRACTIONS: A
Date & Time Collected 09/18/98 11:34:00 Category WATER

TPH_IR 8.80
mg/L DL=1.0

Received: 09/18/98

TOXIKON CORP. REPORT
Results by Sample

Work Order # 98-09-387

SAMPLE ID 16(B)EW98-W73 SAMPLE # 09 FRACTIONS: A
Date & Time Collected 09/18/98 11:36:00 Category WATER

TPH_IR ND
mg/L DL=1.0

SAMPLE ID 16(B)EW98-W74 SAMPLE # 10 FRACTIONS: A
Date & Time Collected 09/18/98 11:38:00 Category WATER

TPH_IR ND
mg/L DL=1.0

TOXIKON
5 Wiggins Ave., Bedford, MA 01730
Telephone: (781) 275-3330
Fax: (781) 275-7478

CHAIN OF CUSTODY RECORD

WORK ORDER #: 98.09.387

DUE DATE : 09.24.98

COMPANY: Foster Wheeler Energy
ADDRESS: One Oxford Valley Suite 200
Langhorne PA 19047
PHONE #: (215) 702-4015 FAX #: (215) 702-4047
P.O. #: NWS-Earp
PROJECT MANAGER: Mike Heffron
PROJECT ID/LOCATION:

SAMPLE TYPE: 1. WASTEWATER 2. SOIL 3. SLUDGE 4. OIL 5. DRINKING WATER 6. WATER (GW/MW/SW) 7. OTHER (SPECIFY

CONTAINER TYPE: P - PLASTIC G - GLASS V - VOA

ANALYSES: TPH

TOXIKON #	SAMPLE IDENTIFICATION	SAMPLE TYPE	CONTAINER SIZE	CONTAINER TYPE	CONTAINER #	SAMPLING DATE	SAMPLING TIME	PRESERVATIVE	TPH	SPECIAL INSTRUCTIONS/ COMMENTS
2	16(A)EW98-W80	GW	1L	G	1	9/18/98	10:45	H_2SO_4	X	pH2
2	16(A)EW98-W81						10:47		X	pH2
2	16(A)EW98-W82						10:49		X	pH3
2	16(A)EW98-W83						10:52		X	pH3
2	16(A)EW98-W84						10:54		X	pH=2
2	16(B)EW98-W70						11:30		X	pH=2
2	16(B)EW98-W71						11:32		X	pH=2
2	16(B)EW98-W72						11:34		X	pH=2
2	16(B)EW98-W73						11:36		X	pH=2
2	16(B)EW98-W74						11:38		X	pH=2

SAMPLED BY: DATE: 9-18-98 TIME: - -

RELINQUISHED BY: DATE: 9-21-98 TIME: - -

RELINQUISHED BY: DATE: - - TIME: - -

METHOD OF SHIPMENT

QUOTATION #:

RECEIVED BY: M. Dudek DATE: 9-22-98 TIME: 0915

RECEIVED FOR LAB BY: R. Morlar DATE: 09-22-98 TIME: 12-12

COOLER TEMPERATURE 18°

72 hr. turn-around

☐ RUSH ..... BUSINESS DAY TURN AROUND
☐ ROUTINE

Sample disposal information
Are there any other known or suspected contaminants in these samples other than those listed above ?
Yes ____ No ____ If Yes, 1st Known ____

FROM : TOXIKON PHONE NO. : 6172711135 Sep. 24 1998 10:50AM P5

 TOXIKON CORP. REPORT Work Order # 98-10-063

Received: 10/05/98 10/13/98 08:58:43

REPORT TO: FOSTER & WHEELER
1 OXFORD VALLEY, SUITE 200
LANGHORNE, PA. 19047
215-702-4007 FAX: 4045
ATTEN MICHAEL HEFFRON

PREPARED BY: TOXIKON CORPORATION
15 WIGGINS AVE
BEDFORD, MA 01730
ATTEN PAUL LEZBERG
PHONE (617)275-3330

CERTIFIED BY
CONTACT CHUCKC

CLIENT FOSTER SAMPLES 11
COMPANY FOSTER & WHEELER
FACILITY 1 OXFORD VALLEY, SUITE 200
LANGHORNE, PA. 19047

MA CERT # M-MA064: TRACE METALS, SULFATE,CYANIDE,RES. FREE CHLORINE, Ca, TOTAL ALK., TDS, pH, THMs, VOC, PEST.,NUTRIENTS. DEMAND. O&G, PHENOLICS, PCBs . CT DHS #PH-0563, NY #10778 FL HRS E87143, NJ DEP 59538, NC DNR286, SC 88002, NH 204091-C.

WORK ID NWS-EARLE
TAKEN 10/2/98
TRANS
TYPE WATER
P.O. #
INVOICE under separate cover

VERIFIED BY:

SAMPLE IDENTIFICATION

01 16(A) EW98-W85 o/w/sep.
02 16(A) EW98-W86 1st clay
03 16(A) EW98-W87 2nd clay
04 16(A) EW98-W88 3-d clay
05 16(A) EW98-W89 1st carbon
06 16(A) EW98-W90 2-d carbon
07 16(B) EW98-W75 o/w sep
08 16(B) EW98-W76 1st clay
09 16(B) EW98-W77 2nd clay
10 16(B)EW98W78 1st carbon
11 16(B) EW98W79 2-d carbon

TEST CODES and NAMES used on this workorder

8260	PURGEABLE ORGANICS VOA
8270	A/BN EXTRACTABLES
MEX HG	METALS, EXT. FOR MERCURY
MEX TW	METALS, TOTAL EXT., WATER
PH W	PH - AQUEOUS
TALW	TAL METALS
TPH IR	TPH BY IR

Received: 10/05/98 Results by Sample

SAMPLE ID 16(A) EW98-W85 SAMPLE # 01 FRACTIONS: A
Date & Time Collected 10/02/98 14:00:00 Category WATER

TPH_IR 573
mg/L DL=1.0

SAMPLE ID 16(A) EW98-W86 SAMPLE # 02 FRACTIONS: A
Date & Time Collected 10/02/98 14:02:00 Category WATER

TPH_IR 409
mg/L DL=1.0

SAMPLE ID 16(A) EW98-W87 SAMPLE # 03 FRACTIONS: A
Date & Time Collected 10/02/98 14:04:00 Category WATER

TPH_IR 1.20
mg/L DL=1.0

SAMPLE ID 16(A) EW98-W88 SAMPLE # 04 FRACTIONS: A
Date & Time Collected 10/02/98 14:06:00 Category WATER

TPH_IR ND
mg/L DL=1.0

SAMPLE ID 16(A) EW98-W89 SAMPLE # 05 FRACTIONS: A
Date & Time Collected 10/02/98 14:08:00 Category WATER

TPH_IR ND
mg/L DL=1.0

SAMPLE ID 16(A) EW98-W90 SAMPLE # 06 FRACTIONS: A
Date & Time Collected 10/02/98 14:10:00 Category WATER

PH_W 6.2 TPH_IR ND
PH UNITS mg/L DL=1.0

 TOXIKON CORP. REPORT Work Order # 98-10-063

Received: 10/05/98 Results by Sample

SAMPLE ID 16(A) EW98-W90 FRACTION 06A TEST CODE 8260 NAME PURGEABLE ORGANICS VOA

Date & Time Collected 10/02/98 14:10:00 Category WATER

EPA 8260 PURGEABLE ORGANICS

	RESULT	LIMIT		RESULT	LIMIT
Chloromethane	ND	10	o-Xylene	ND	5.0
Bromomethane	ND	5.0	m+p-Xylene	ND	5.0
Vinyl Chloride	ND	2.0	1,2-Dichlorobenzene	ND	5.0
Chloroethane	ND	10	1,3-Dichlorobenzene	ND	5.0
Methylene Chloride	ND	10	1,4-Dichlorobenzene	ND	5.0
1,1-Dichloroethene	ND	5.0	Naphthalene	ND	10
Trichlorofluoromethane	ND	10	n-Propylbenzene	ND	10
1,1-Dichloroethane	ND	5.0	Bromobenzene	ND	5.0
Trans-1,2-Dichloroethene	ND	5.0	Bromchloromethane	ND	5.0
Chloroform	ND	5.0	n-Butylbenzene	ND	10
1,2-Dichloroethane	ND	5.0	sec-Butylbenzene	ND	10
1,1,1-Trichloroethane	ND	5.0	tert-Butylbenzene	ND	10
Carbon Tetrachloride	ND	5.0	2-Chlorotoluene	ND	5.0
Bromodichloromethane	ND	5.0	4-Chlorotoluene	ND	5.0
1,2-Dichloropropane	ND	5.0	1,2-Dibromo-3-chloropropane	ND	5.0
Trichloroethene	ND	5.0	1,2-Dibromoethane	ND	5.0
Dibromochloromethane	ND	5.0	Dibromomethane	ND	5.0
1,1,2-Trichloroethane	ND	5.0	Dichlorodifluoromethane	ND	10
Benzene	ND	5.0	cis-1,2-Dichloroethene	ND	5.0
1,1-Dichloropropene	ND	5.0	1,3-Dichloropropane	ND	5.0
2-2-Dichlorpropane	ND	5.0	1,1,1,2-Tetrachloroethane	ND	5.0
Bromoform	ND	5.0	1,2,3-Trichlorobenzene	ND	5.0
Hexachlorobutadiene	ND	10	1,1,2,2-Tetrachloroethane	ND	5.0
Isopropylbenzene	ND	10	1,2,4-Trichlorobenzene	ND	5.0
Tetrachloroethene	ND	5.0	1,2,3-Trichloropropane	ND	5.0
Methyl tertiary butyl ether	ND	5.0	1,2,4-Trimethylbenzene	ND	10
Toluene	ND	5.0	1,3,5-Trimethylbenzene	ND	10
Chlorobenzene	ND	5.0	cis-1,3-Dichloropropene	ND	5.0
Ethyl Benzene	ND	5.0	trans-1,3-Dichloropropene	ND	5.0
p-Isopropyltoluene	ND	10	Styrene	ND	5.0

Notes and definitions for this report:

DATE RUN 10/09/98

ANALYST JPM

INSTRUMENT D

DIL. FACTOR 1

UNITS ug/L

COMMENTS

ND = Not detected at detection limit

 TOXIKON CORP. REPORT Work Order # 98-10-063

Received: 10/05/98 Results by Sample

SAMPLE ID 16(A) EW98-W90 FRACTION 06A TEST CODE 8270 NAME A/BN EXTRACTABLES

Date & Time Collected 10/02/98 14:10:00 Category WATER

	RESULT	LIMIT		RESULT	LIMIT
BASE NEUTRAL EXTRACTABLES					
bis(-2-Chloroethyl) ether	ND	11	Chrysene	ND	11
1,3-Dichlorobenzene	ND	11	Di-n-octyl phthalate	ND	11
1,4-Dichlorobenzene	ND	11	Benzo(b)fluoranthene	ND	11
1,2-Dichlorobenzene	ND	11	Benzo(k)fluoranthene	ND	11
bis(2-Chloroisopropyl) ether	ND	11	Benzo(a)pyrene	ND	11
N-Nitroso-Di-N-Propylamine	ND	11	Indeno(1,2,3-cd)pyrene	ND	11
Hexachloroethane	ND	11	Dibenz(a,h)anthracene	ND	11
Nitrobenzene	ND	11	Benzo(g,h,i)perylene	ND	11
Isophorone	ND	11	2-Methylnaphthalene	ND	11
bis(2-Chloroethoxy) methane	ND	11	Benzidine	ND	11
1,2,4-Trichlorobenzene	ND	11	Dibenzofuran	ND	11
Naphthalene	ND	11			
Hexachlorobutadiene	ND	11	ACID EXTRACTABLES		
Hexachlorocyclopentadiene	ND	11	Phenol	ND	11
2-Chloronaphthalene	ND	11	2-Chlorophenol	ND	11
Dimethyl phthalate	ND	11	Benzyl Alcohol	ND	22
Acenaphthylene	ND	11	2-Methylphenol	ND	11
Acenaphthene	ND	11	4+3-Methylphenol	ND	11
2,4-Dinitrotoluene	ND	11	2-Nitrophenol	ND	11
2,6-Dinitrotoluene	ND	11	2,4-Dimethylphenol	ND	11
Diethylphthalate	ND	11	Benzoic Acid	ND	56
4-Chlorophenyl phenyl ether	ND	11	2,4-Dichlorophenol	ND	11
Fluorene	ND	11	4-Chloroaniline	ND	11
N-Nitrosodiphenylamine	ND	11	4-Chloro-3-methylphenol	ND	11
4-Bromophenyl phenyl ether	ND	11	2,4,6-Trichlorophenol	ND	11
Hexachlorobenzene	ND	11	2,4,5-Trichlorophenol	ND	11
Phenanthrene	ND	11	2-Nitroaniline	ND	28
Anthracene	ND	11	3-Nitroaniline	ND	28
Di-n-butylphthalate	ND	11	2,4-Dinitrophenol	ND	28
Fluoranthene	ND	11	4-Nitrophenol	ND	28
Pyrene	ND	11	4-Nitroaniline	ND	28
Butyl benzyl phthalate	ND	11	4,6-Dinitro-2-methylphenol	ND	28
3,3'-Dichlorobenzidine	ND	22	Pentachlorophenol	ND	28
Benzo (a) anthracene	ND	11	2,6- Dichlorophenol	ND	28
bis (2-ethylhexyl)phthalate	ND	11			

Notes and Definitions for this Report:

UNITS: ug/L
EXTRACTED: 10/07/98
DATE RUN: 10/08/98
ANALYST: PAC
INSTRUMENT: C
DIL. FACTOR: 1
ND = not detected at detection limit

Received: 10/05/98 Results by Sample

SAMPLE ID 16(A) EW98-W90 FRACTION 06A TEST CODE TALW NAME TAL METALS
Date & Time Collected 10/02/98 14:10:00 Category WATER

TAL METALS

	RESULT	LIMIT
Silver	ND	0.005
Cadmium	ND	0.005
Chromium	ND	0.005
Copper	0.008	0.005
Nickel	0.017	0.005
Lead	ND	0.005
Zinc	0.097	0.005
Arsenic	ND	0.005
Selenium	ND	0.005
Beryllium	ND	0.004
Antimony	ND	0.005
Thallium	ND	0.005
Barium	0.435	0.005
Iron	0.206	0.010
Manganese	0.617	0.005
Cobalt	ND	0.005
Vanadium	ND	0.005
Aluminum	ND	0.050
Calcium	48.3	0.100
Potassium	1.92	0.500
Sodium	104	5.00
Magnesium	8.19	0.050
Mercury	ND	0.0005

Notes and Definitions for this Report:

EXTRACTED..... 10/07/98
DATE RUN..... 10/08/98
ANALYST..... AS
INSTRUMENT.... ICP
CONC FACTOR... 1
UNITS..... mg/L

ND = not detected at detection limit

Received: 10/05/98

Results by Sample

SAMPLE ID 16(B) EW98-W75 SAMPLE # 07 FRACTIONS: A
Date & Time Collected 10/02/98 14:40:00 Category WATER

TPH_IR 18.1
mg/L DL=1.0

SAMPLE ID 16(B) EW98-W76 SAMPLE # 08 FRACTIONS: A
Date & Time Collected 10/02/98 14:42:00 Category WATER

TPH_IR ND
mg/L DL=1.0

SAMPLE ID 16(B) EW98-W77 SAMPLE # 09 FRACTIONS: A
Date & Time Collected 10/02/98 14:44:00 Category WATER

TPH_IR ND
mg/L DL=1.0

SAMPLE ID 16(B)EW98W78 SAMPLE # 10 FRACTIONS: A
Date & Time Collected 10/02/98 14:46:00 Category WATER

TPH_IR ND
mg/L DL=1.0

SAMPLE ID 16(B) EW98W79 SAMPLE # 11 FRACTIONS: A
Date & Time Collected 10/02/98 14:48:00 Category WATER

PH_W 7.9 TPH_IR ND
PH UNITS mg/L DL=1.0

Received: 10/05/98 Results by Sample

SAMPLE ID 16(B) EW98W79 FRACTION 11A TEST CODE 8260 NAME PURGEABLE ORGANICS VOA
Date & Time Collected 10/02/98 14:48:00 Category WATER

EPA 8260 PURGEABLE ORGANICS

	RESULT	LIMIT		RESULT	LIMIT
Chloromethane	ND	10	o-Xylene	ND	5.0
Bromomethane	ND	5.0	m+p-Xylene	ND	5.0
Vinyl Chloride	ND	2.0	1,2-Dichlorobenzene	ND	5.0
Chloroethane	ND	10	1,3-Dichlorobenzene	ND	5.0
Methylene Chloride	ND	10	1,4-Dichlorobenzene	ND	5.0
1,1-Dichloroethene	ND	5.0	Naphthalene	ND	10
Trichlorofluoromethane	ND	10	n-Propylbenzene	ND	10
1,1-Dichloroethane	ND	5.0	Bromobenzene	ND	5.0
Trans-1,2-Dichloroethene	ND	5.0	Bromchloromethane	ND	5.0
Chloroform	ND	5.0	n-Butylbenzene	ND	10
1,2-Dichloroethane	ND	5.0	sec-Butylbenzene	ND	10
1,1,1-Trichloroethane	ND	5.0	tert-Butylbenzene	ND	10
Carbon Tetrachloride	ND	5.0	2-Chlorotoluene	ND	5.0
Bromodichloromethane	ND	5.0	4-Chlorotoluene	ND	5.0
1,2-Dichloropropane	ND	5.0	1,2-Dibromo-3-chloropropane	ND	5.0
Trichloroethene	ND	5.0	1,2-Dibromoethane	ND	5.0
Dibromochloromethane	ND	5.0	Dibromomethane	ND	5.0
1,1,2-Trichloroethane	ND	5.0	Dichlorodifluoromethane	ND	10
Benzene	ND	5.0	cis-1,2-Dichloroethene	ND	5.0
1,1-Dichloropropene	ND	5.0	1,3-Dichloropropane	ND	5.0
2-2-Dichlorpropane	ND	5.0	1,1,1,2-Tetrachloroethane	ND	5.0
Bromoform	ND	5.0	1,2,3-Trichlorobenzene	ND	5.0
Hexachlorobutadiene	ND	10	1,1,2,2-Tetrachloroethane	ND	5.0
Isopropylbenzene	ND	10	1,2,4-Trichlorobenzene	ND	5.0
Tetrachloroethene	ND	5.0	1,2,3-Trichloropropane	ND	5.0
Methyl tertiary butyl ether	ND	5.0	1,2,4-Trimethylbenzene	ND	10
Toluene	ND	5.0	1,3,5-Trimethylbenzene	ND	10
Chlorobenzene	ND	5.0	cis-1,3-Dichloropropene	ND	5.0
Ethyl Benzene	ND	5.0	trans-1,3-Dichloropropene	ND	5.0
p-Isopropyltoluene	ND	10	Styrene	ND	5.0

Notes and definitions for this report:

DATE RUN 10/09/98
ANALYST JPM
INSTRUMENT D
DIL. FACTOR 1
UNITS ug/L
COMMENTS

ND = Not detected at detection limit.

Received: 10/05/98 Results by Sample

SAMPLE ID 16(B) EW98W79 FRACTION 11A TEST CODE 8270 NAME A/BN EXTRACTABLES

Date & Time Collected 10/02/98 14:48:00 Category WATER

BASE NEUTRAL EXTRACTABLES	RESULT	LIMIT		RESULT	LIMIT
bis(-2-Chloroethyl) ether	ND	12	Chrysene	ND	12
1,3-Dichlorobenzene	ND	12	Di-n-octyl phthalate	ND	12
1,4-Dichlorobenzene	ND	12	Benzo(b)fluoranthene	ND	12
1,2-Dichlorobenzene	ND	12	Benzo(k)fluoranthene	ND	12
bis(2-Chloroisopropyl) ether	ND	12	Benzo(a)pyrene	ND	12
N-Nitroso-Di-N-Propylamine	ND	12	Indeno(1,2,3-cd)pyrene	ND	12
Hexachloroethane	ND	12	Dibenz(a,h)anthracene	ND	12
Nitrobenzene	ND	12	Benzo(g,h,i)perylene	ND	12
Isophorone	ND	12	2-Methylnaphthalene	ND	12
bis(2-Chloroethoxy) methane	ND	12	Benzidine	ND	12
1,2,4-Trichlorobenzene	ND	12	Dibenzofuran	ND	12
Naphthalene	ND	12			
Hexachlorobutadiene	ND	12	ACID EXTRACTABLES		
Hexachlorocyclopentadiene	ND	12	Phenol	ND	12
2-Chloronaphthalene	ND	12	2-Chlorophenol	ND	12
Dimethyl phthalate	ND	12	Benzyl Alcohol	ND	24
Acenaphthylene	ND	12	2-Methylphenol	ND	12
Acenaphthene	ND	12	4+3-Methylphenol	ND	12
2,4-Dinitrotoluene	ND	12	2-Nitrophenol	ND	12
2,6-Dinitrotoluene	ND	12	2,4-Dimethylphenol	ND	12
Diethylphthalate	ND	12	Benzoic Acid	ND	59
4-Chlorophenyl phenyl ether	ND	12	2,4-Dichlorophenol	ND	12
Fluorene	ND	12	4-Chloroaniline	ND	12
N-Nitrosodiphenylamine	ND	12	4-Chloro-3-methylphenol	ND	12
4-Bromophenyl phenyl ether	ND	12	2,4,6-Trichlorophenol	ND	12
Hexachlorobenzene	ND	12	2,4,5-Trichlorophenol	ND	12
Phenanthrene	ND	12	2-Nitroaniline	ND	30
Anthracene	ND	12	3-Nitroaniline	ND	30
Di-n-butylphthalate	ND	12	2,4-Dinitrophenol	ND	30
Fluoranthene	ND	12	4-Nitrophenol	ND	30
Pyrene	ND	12	4-Nitroaniline	ND	30
Butyl benzyl phthalate	ND	12	4,6-Dinitro-2-methylphenol	ND	30
3,3'-Dichlorobenzidine	ND	24	Pentachlorophenol	ND	30
Benzo (a) anthracene	ND	12	2,6- Dichlorophenol	ND	30
bis (2-ethylhexyl)phthalate	ND	12			

Notes and Definitions for this Report:

UNITS: ug/L
EXTRACTED: 10/07/98
DATE RUN: 10/08/98
ANALYST: PAC
INSTRUMENT: C
DIL. FACTOR: 1
ND = not detected at detection limit

Received: 10/05/98 Results by Sample

SAMPLE ID 16(B) EW98W79 FRACTION 11A TEST CODE TALW NAME TAL METALS
Date & Time Collected 10/02/98 14:48:00 Category WATER

TAL METALS

	RESULT	LIMIT
Silver	ND	0.005
Cadmium	ND	0.005
Chromium	ND	0.005
Copper	ND	0.005
Nickel	ND	0.005
Lead	ND	0.005
Zinc	0.050	0.005
Arsenic	0.008	0.005
Selenium	ND	0.005
Beryllium	ND	0.004
Antimony	ND	0.005
Thallium	ND	0.005
Barium	0.445	0.005
Iron	0.157	0.010
Manganese	0.312	0.005
Cobalt	ND	0.005
Vanadium	ND	0.005
Aluminum	ND	0.050
Calcium	61.7	0.100
Potassium	1.78	0.500
Sodium	50.4	0.500
Magnesium	9.25	0.050
Mercury	0.0006	0.0005

Notes and Definitions for this Report:

EXTRACTED..... 10/07/98
DATE RUN..... 10/08/98
ANALYST..... AS
INSTRUMENT.... ICP
CONC FACTOR... 1
UNITS..... mg/L

ND = not detected at detection limit

TEST CODE 8260 NAME PURGEABLE ORGANICS VOA

EPA METHOD: 8260B: Gas Chromatography/Mass Spectrometry for Volatile Organics.

Reference: Test Methods for Evaluating Solid Wastes: Physical/Chemical Methods.
EPA SW-846 Final Update III, 1996. Office of Solid Waste, USEPA.

SOIL RESULTS ARE REPORTED ON A DRY WEIGHT BASIS.

TEST CODE 8270 NAME A/BN EXTRACTABLES

EPA METHOD: 8270C: Gas Chromatography / Mass Spectrometry for Semivolatile Organics; Capillary Column Technique.

Reference: Test Methods for Evaluating Solid Wastes: Physical/Chemical Methods.
EPA SW-846 FINAL UPDATE 111, 1996. Office of Solid Waste, USEPA.

TEST CODE MEX HG NAME METALS, EXT. FOR MERCURY

REFERENCE:
EPA METHOD 245.1 Mercury. Methods for Chemical Analysis of Water and Wastes. EPA 600/4-79-020.

EPA METHOD 7470.Mercury in Liquid Waste.
or
EPA METHOD 7471.Mercury in Solid or Semisolid Waste.
Test Methods for Evaluating Solid Waste:Physical/Chemical Methods.
EPA SW-846 (Third Edition) 1986. Office of Solid Waste, USEPA>

TEST CODE MEX TW NAME METALS, TOTAL EXT., WATER

REFERENCE:
EPA METHOD 3005. Acid Digestion of Waters for Total Recoverable or Dissolved Metals for Analysis by Flame Atomic Absorption Spectroscopy or Inductively Coupled Plasma Spectroscopy. Test Methods for Evaluating Physical/Chemical Methods. SW 846, 3rd Edition.

Wastewater digestion
40CFR Part 136 Appendix C-Preparation for Inductively Coupled Plasma-Atomic Emission Spectrometric Method for Trace Element Analysis of Water and Wastes Method 200.7. Protection of Environment, 1991.

TEST CODE PH W NAME PH - AQUEOUS

EPA METHOD: 150.1

Reference: Methods for Chemical Analysis of Water and Wastes.
EPA 600/4-79-020 (Revised, March 1983). EPA/EMSL.

TEST CODE TALW NAME TAL METALS

REFERENCE METHODS: 6010A (ICAP), 7000A (GFAA), 7470 (Hg)
Test Methods for Evaluating Solid Waste: Physical/Chemical Methods,
SW-846 Third Edition, Final Update I, 1992

TEST CODE TPH IR NAME TPH BY IR

EPA METHOD: 418.1 for water sample.

Reference: Methods for Chemical Analysis of Water and Wastes.
EPA 600/4-79-020 (Revised, March 1983). EPA/EMSL, Cincinnati, OH.

EPA METHOD: 9071/9073

Reference: Test Methods for Evaluating Solid Waste: Physical/Chemical Methods.
EPA SW-846 (Third Edition) 1986. Office of Solid Waste, USEPA.

TOXIKON
15 Wiggins Ave., Bedford, MA 01730
Telephone: (781) 275-3330
Fax: (781) 275-7478

CHAIN OF CUSTODY RECORD

WORK ORDER #: 98-10-063

DUE DATE : 10-12-98

COMPANY: Foster Wheeler Env. Corp.
ADDRESS: One Oxford Valley, Suite 200
Langhorne, PA 19047
PHONE #: (215) 702-4045 FAX #: (215) 702-4045
P.O. #: NWS-Earle
PROJECT MANAGER: Mike Heffron
PROJECT ID/LOCATION: NWS Earle

SAMPLE TYPE: 1. WASTEWATER 2. SOIL 3. SLUDGE 4. OIL 5. DRINKING WATER 6. WATER (GW/MW/SW) 7. OTHER (SPECIFY

CONTAINER TYPE: P - PLASTIC G - GLASS V - VOA

ANALYSES

TOXIKON #	SAMPLE IDENTIFICATION	SAMPLE TYPE	CONTAINER SIZE	CONTAINER TYPE	CONTAINER #	SAMPLING DATE	SAMPLING TIME	PRESERVATIVE	TPH	VOA 8260	SVOA 8270	metals TAL	pH									SPECIAL INSTRUCTIONS/ COMMENTS
1	16(A) EW98-W85	GW	1L	G		10/2/98	14:00	H_2SO_4	X													
2	16(A) EW98-W86	↓	1L	G		10/2/98	14:02	H_2SO_4	X													
3	16(A) EW98-W87		1L	G		10/2/98	14:04	H_2SO_4	X													
4	16(A) EW98-W88		1L	G		10/2/98	14:06	H_2SO_4	X													
5	16(A) EW98-W89		1L	G		10/2/98	14:08	H_2SO_4	X													
6	16(A) EW98-W90	↓	multiple			10/2/98	14:10	multiple	X	X	X	X	X									
7	16(B) EW98-W75		1l	G		10/2/98	14:40	H_2SO_4	X													
8	16(B) EW98-W76		1l	↓		↓	14:42	↓	X													
9	16(B) EW98-W77		1l				14:44		X													
10	16(B) EW98-W78		1l	↓			14:46	↓	X													
11	16(B) EW98-W79		multiple			↓	14:48	multiple	X	X	X	X	X									
–																						
–																						

SAMPLED BY: [signature] DATE: 10-2-98 TIME: - -
QUOTATION #:
RELINQUISHED BY: [signature] DATE: 10-2-98 TIME: - -
RECEIVED BY: [signature] DATE: 10-5-98 TIME: 16-30
RELINQUISHED BY: DATE: - - TIME: - -
RECEIVED FOR LAB BY: DATE: - - TIME: - -
METHOD OF SHIPMENT
COOLER TEMPERATURE

☒ RUSH ..... BUSINESS DAY TURN AROUND
☐ ROUTINE

Sample disposal information
Are there any other known or suspected contaminants in these samples other than those listed above?
Yes ____ No ____ If Yes, 1st Known _____

CASE NARRATIVE

Work Order: 9810063

All samples were analyzed within the method holding times.

No target compounds were detected in the method blanks.

TOXIKON

SEMI-VOLATILE LABORATORY CONTROL SPIKE /
LABORATORY CONTROL SPIKE DUPLICATE RECOVERY

WORK ORDER #: 9810063

MATRIX: WATER

BATCH #: 9810063

UNITS: ug/L

TOXIKON PROJECT #: 9810063

COMPOUND	CONC. SPIKE ADDED (ug)	SAMPLE RESULT	CONC. LCS	CONC LCSD	%REC LCS		%REC LCSD		RPD	
1,4-DICHLOROBENZENE	50	0.00	31.0	32 0	62	OK	64	OK	3	OK
N-NITROSO-DI-NPROPYLAMINE	50	0.00	33.0	38 0	66	OK	76	OK	14	OK
1,2,4-TRICHLOROBENZENE	50	0.00	34 0	38.0	68	OK	76	OK	11	OK
ACENAPHTHENE	50	0.00	36.0	41.0	72	OK	82	OK	13	OK
2,4-DINITROTOLUENE	50	0.00	39.0	44.0	78	OK	88	OK	12	OK
PYRENE	50	0.00	40.0	42.0	80	OK	84	OK	5	OK
PHENOL	100	0.00	24.0	28.0	24	OK	28	OK	15	OK
2-CHLOROPHENOL	100	0.00	70.0	76.0	70	OK	76	OK	8	OK
4-CHLORO-3-METHYLPHENOL	100	0.00	77.0	86.0	77	OK	86	OK	11	OK
4-NITROPHENOL	100	0 00	23 0	25.0	23	OK	25	OK	8	OK
PENTACHLOROPHENOL	100	0.00	70.0	72.0	70	OK	72	OK	3	OK

COMPOUND	QC LIMITS *	
	RPD	RECOVERY
1,4-DICHLOROBENZENE	28	36 - 97
N-NITROSO-DI-NPROPYLAMINE	38	41 - 116
1,2,4-TRICHLOROBENZENE	28	39 - 98
ACENAPHTHENE	31	46 - 118
2,4-DINITROTOLUENE	38	24 - 96
PYRENE	31	26 - 127
PHENOL	42	12 - 110
2-CHLOROPHENOL	40	27 - 123
4-CHLORO-3-METHYLPHENOL	42	23 - 97
4-NITROPHENOL	50	10 - 80
PENTACHLOROPHENOL	50	9 - 103

OF % LCS/LCSD OF 12
BN OUT: 0

OF % LCS/LCSD OF 10
ACIDS OUT: 0

OF RPD OF 6
BN OUT: 0

OF RPD OF 5
ACIDS OUT. 0

TOXIKON

QC SUMMARY - METALS

PROJECT : 9810063
MATRIX : WATER

SPIKE SAMPLE: 9810063.6
HG SPIKE SAMPLE: 9810063.6

ANALYTE	METHOD BLANK	LCS (% REC)	MS (% REC)	DUPLICATE (% RPD)
Ag	ND	94.7	93	0
Al	0.082	103.7	120.1	0
As	ND	94.5	93.8	0
Ba	0.005	104.2	100.6	2.387
Be	ND	102.3	101.3	0
Ca	ND	99.3	INT	2.695
Cd	ND	99.5	95.4	0
Co	ND	99.4	98	0
Cr	ND	101.1	97.4	0
Cu	0.007	101.2	98.6	14.1
Fe	0.087	116.8	INT	21.4
K	ND	95.8	90	1.651
Mg	ND	97.8	104.3	2.674
Mn	0.024	103.3	102.8	2.969
Na	ND	111	INT	2.182
Ni	0.007	101	95.1	47.059
Pb	ND	97.2	96.7	0
Sb	ND	94.4	93.5	0
Se	ND	86.8	88.7	0
Tl	ND	92	93.4	0
V	ND	99.4	96.6	0
Zn	0.066	108	86.8	51.39
Hg	ND	100.1	106	0

ACCEPTANCE CRITERIA

ANALYTE	METHOD BLANK	MS (% REC)	LCS (% REC)	DUPLICATE (% RPD)
Ag	BDL	65 - 125	80 - 120	<25
Hg	BDL	75 - 125	80 - 120	<25
All Others	BDL	80 - 120	80 - 120	<25

TOXIKON

QA/QC REPORT

WET CHEM

WORK ORDER: 9810063
MATRIX: WATER

PARAMETER	DUPLICATE PERCENT RPD	CONTROL LIMITS	CONTROL SPIKE PERCENT RECOVERY	MATRIX SPIKE PERCENT RECOVERY	CONTROL LIMITS
TPH_IR	NA	0-25	94	NA	80-120
pH	0	0-25	NA	NA	80-120

TOXIKON

GC/MS VOLATILE SURROGATE % RECOVERY (METHOD 8260)

PROJECT # : 9810063
MATRIX : WATER

SAMPLE NUMBER	S1 (DBF) #	S2 (TOL) #	S3 (BFB) #
METHOD BLANK	108.7	99.3	104.6
LCS	114.2	99.3	102.3
MS9810090.3	117.1	96.4	99.9
MSD9810090.3	117.9	96.9	100.9
9810063.6	96.2	89.2	89.2
9810063.11	97.3	88.1	92.6

	QC LIMITS	
	SOIL	WATER
S1 (DBF) = Dibromofluoromethane	(80 - 120)	(86 - 118)
S2 (TOL) = Toluene-d8	(81 - 117)	(88 - 110)
S3 (BFB) = 4-Bromofluorobenzene	(74 - 121)	(86 - 115)

TOXIKON CORP

VOLATILE MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

DATE RUN: Oct 08,1998

METHOD: 8260

WORK ORDER#: 9810063

MATRIX: WATER

SAMPLE #: MS/MSD 9810090.3

UNITS: ug/L

DATA FILES: D4346
D4347

TOXIKON PROJECT#: 9810063

COMPOUND	CONC. SPIKE ADDED (ug)	SAMPLE RESULT	CONC. MS	CONC. MSD	%REC MS		%REC MSD		RPD		QC LIMITS * RPD	QC LIMITS * RECOVERY
1,1-Dichloroethene	50	0.00	52.80	51 25	106	OK	103	OK	3	OK	14	61 - 145
Benzene	50	0.00	49.88	49.21	100	OK	98	OK	1	OK	11	76 - 127
Trichlorethene	50	0.00	48.43	48.43	97	OK	97	OK	0	OK	24	62 - 137
Toluene	50	0.00	47 30	46.70	95	OK	93	OK	1	OK	13	76 - 125
Chlorobenzene	50	0.00	46.87	47.38	94	OK	95	OK	1	OK	13	75 - 130

RPD: 0 out of 5 outside limits

Spike Recovery: 0 out of 10 outside limits

* = Values outside of QC limits

TOXIKON

SEMIVOLATILE SURROGATE RECOVERY

MATRIX: WATER

UNITS: ug/L

TOXIKON PROJECT# 9810063

	BASE NEUTRALS						ACIDS							
SAMPLE #	Nitro-Benzene-d5		Fluoro-Biphenyl		Terphenyl -d14		2-Fluoro-phenol		Phenol -d5		2,4,6-Tribromo phenol		BN'S OUT	ACIDS OUT
01 Method Blank	68	OK	65.2	OK	94.1	OK	41.5	OK	22.3	OK	92.8	OK	0	0
02 LCS	75	OK	76.3	OK	88.2	OK	45.6	OK	26.2	OK	97.9	OK	0	0
03 LCSD	84	OK	82.2	OK	93	OK	44.1	OK	29.9	OK	92.9	OK	0	0
04 9810063.6	78	OK	76.7	OK	90.5	OK	36.3	OK	26.9	OK	84	OK	0	0
05 9810063.11	84	OK	82.3	OK	93.9	OK	46.2	OK	32.4	OK	101.5	OK	0	0
06													0	0
07													0	0
08													0	0
09													0	0
10													0	0
11													0	0
12													0	0
13													0	0
14													0	0
15													0	0
16													0	0
17													0	0
18													0	0
19													0	0
20													0	0
21													0	0
22													0	0
23													0	0
24													0	0

D - Indicates Diluted Out
INT - Indicates Interference

Nitrobenzene-d5	35	-	114
Fluorobiphenyl	43	-	116
Terphenyl-d14	33	-	141
2-Fluorophenol	21	-	100
Phenol	10	-	94
2,4,6-Tribromophenol	10	-	123

Page 1 TOXIKON CORP. REPORT Work Order # 98-10-455
Received: 10/23/98 10/28/98 13:14:01

REPORT TO
FOSTER & WHEELER
1 OXFORD VALLEY, SUITE 200
LANGHORNE, PA. 19047
215-702-4007 FAX: 4045
ATTEN MICHAEL HEFFRON

PREPARED BY
TOXIKON CORPORATION
15 WIGGINS AVE
BEDFORD, MA 01730
ATTEN PAUL LEZBERG
PHONE (617)275-3330

CERTIFIED BY
CONTACT JAYSON

CLIENT FOSTER SAMPLES 11
COMPANY FOSTER & WHEELER
FACILITY 1 OXFORD VALLEY, SUITE 200
LANGHORNE, PA. 19047

MA CERT # M-MA064: TRACE METALS, SULFATE, CYANIDE, RES. FREE CHLORINE, Ca, TOTAL ALK., TDS, pH, THMs, VOC, PEST., NUTRIENTS, DEMAND, O&G, PHENOLICS, PCBs. CT DHS #PH-0563, NY #10778 FL HRS E87143, NJ DEP 59538, NC DNR286, SC 88002, NH 204091-C.

WORK ID NWS EARLE
TAKEN 10/23/98
TRANS
TYPE WATER
P.O. #
INVOICE under separate cover

VERIFIED BY: Susan Theriault

SAMPLE IDENTIFICATION	
01	16(A)EW98W91 old sep
02	16(A)EW98W92 1st clay
03	16(A)EW98W93 2nd clay
04	16(A)EW98W94 3rd clay
05	16(A)EW98W95 1st carb.
06	16(A)EW98W96 2nd carbon
07	16(B)EW98W80 old sep
08	16(B)EW98W81 1st clay
09	16(B)EW98W82 2nd clay
10	16(B)EW98W83 1st carbon
11	16(B)EW98W84 2nd carb.

TEST CODES and NAMES used on this workorder

TPH IR TPH BY IR

 TOXIKON CORP. REPORT Work Order # 98-10-455

Received: 10/23/98 Results by Sample

SAMPLE ID 16(A)EW98W91 SAMPLE # 01 FRACTIONS: A
Date & Time Collected 10/23/98 14:00:00 Category WATER

TPH_IR 1300
mg/L DL=1.0

SAMPLE ID 16(A)EW98W92 SAMPLE # 02 FRACTIONS: A
Date & Time Collected 10/23/98 14:02:00 Category WATER

TPH_IR 514
mg/L DL=1.0

SAMPLE ID 16(A)EW98W93 SAMPLE # 03 FRACTIONS: A
Date & Time Collected 10/23/98 14:04:00 Category WATER

TPH_IR 516
mg/L DL=1.0

SAMPLE ID 16(A)EW98W94 SAMPLE # 04 FRACTIONS: A
Date & Time Collected 10/23/98 14:06:00 Category WATER

TPH_IR ND
mg/L DL=1.0

SAMPLE ID 16(A)EW98W95 SAMPLE # 05 FRACTIONS: A
Date & Time Collected 10/23/98 14:08:00 Category WATER

TPH_IR ND
mg/L DL=1.0

SAMPLE ID 16(A)EW98W96 SAMPLE # 06 FRACTIONS: A
Date & Time Collected 10/23/98 14:10:00 Category WATER

TPH_IR ND
mg/L DL=1.0

SAMPLE ID 16(B)EW98W80 SAMPLE # 07 FRACTIONS: A
Date & Time Collected 10/23/98 14:20:00 Category WATER

TPH_IR 20.3
mg/L DL=1.0

SAMPLE ID 16(B)EW98W81 SAMPLE # 08 FRACTIONS: A
Date & Time Collected 10/23/98 14:22:00 Category WATER

TPH_IR ND
mg/L DL=1.0

 TOXIKON CORP. REPORT Work Order # 98-10-455

Received: 10/23/98 Results by Sample

SAMPLE ID 16(B)EW98W82 SAMPLE # 09 FRACTIONS: A

Date & Time Collected 10/23/98 14:24:00 Category WATER

TPH_IR ND

mg/L DL=1.0

SAMPLE ID 16(B)EW98W83 SAMPLE # 10 FRACTIONS: A

Date & Time Collected 10/23/98 14:26:00 Category WATER

TPH_IR ND

mg/L DL=1.0

SAMPLE ID 16(B)EW98W84 SAMPLE # 11 FRACTIONS: A

Date & Time Collected 10/23/98 14:28:00 Category WATER

TPH_IR ND

mg/L DL=1.0

Received: 10/23/98 Test Methodology

TEST CODE TPH IR NAME TPH BY IR

EPA METHOD: 418.1 for water sample.

Reference: Methods for Chemical Analysis of Water and Wastes.
EPA 600/4-79-020 (Revised, March 1983). EPA/EMSL, Cincinnati, OH.

EPA METHOD: 9071/9073

Reference: Test Methods for Evaluating Solid Waste: Physical/Chemical Methods.
EPA SW-846 (Third Edition) 1986. Office of Solid Waste, USEPA.

TOXIKON
15 Wiggins Ave., Bedford, MA 01730
Telephone: (781) 275-3330
Fax: (781) 275-7478

CHAIN OF CUSTODY RECORD

WORK ORDER #: 76-10-95

DUE DATE : 10-28-98

COMPANY: Foster Wheeler Enviro
ADDRESS: One Orfan Valley Suite 200
Langhorne PA 19047
PHONE #: (215) 702-4010 FAX #: (215) 702-4075
P.O. #:
PROJECT MANAGER: Mike Heffron
PROJECT ID/LOCATION: NUS-Ewle

SAMPLE TYPE: 1. WASTEWATER, 2. SOIL, 3. SLUDGE, 4. OIL, 5. DRINKING WATER, 6. WATER (GW/MW/SW), 7. OTHER (SPECIFY

CONTAINER TYPE: P - PLASTIC, G - GLASS, V - VOA

ANALYSES: TPH

TOXIKON #	SAMPLE IDENTIFICATION	SAMPLE TYPE	CONTAINER SIZE	CONTAINER TYPE	CONTAINER #	SAMPLING DATE	SAMPLING TIME	PRESERVATIVE	TPH	SPE INSTRUCTI COMME
1	1(GA)EW98W91	GW	1 l	G	1	10/23/98	14:00	H_2SO_4	✓	pH 2
2	1(GA)EW98W92						14:02		✓	pH 2
3	1(GA)EW98W93						14:04		✓	pH 2
4	1(GA)EW98W94						14:06		✓	pH 2
5	1(GA)EW98W95						14:08		✓	pH 2
6	1(GA)EW98W96						14:10		✓	pH 2
7	1(GB)EW98W80						14:20		✓	pH 2
8	1(GB)EW98W81						14:22		✓	pH 2
9	1(GB)EW98W82						14:24		✓	pH 2
10	1(GB)EW98W83						14:26		✓	pH 2
11	1(GB)EW98W84						14:28		✓	pH 2

SAMPLED BY: [signature] DATE: 10-23-98 TIME: - -

RELINQUISHED BY: [signature] DATE: 10-23-98 TIME: - -

RELINQUISHED BY: DATE: - - TIME: - -

METHOD OF SHIPMENT

QUOTATION #:

RECEIVED BY. DATE: - - TIME: - -

RECEIVED FOR LAB BY: [signature] DATE: 10-23-98 TIME: 12-00

COOLER TEMPERATURE 6.9°C

72 hr. Turn-Around

☒ RUSH ..... BUSINESS DAY TURN AROUI
☐ ROUTINE

Sample disposal information
Are there any other known or suspected contaminants in these samples other than those listed above?
Yes ____ No ____ If Yes, 1st Known ____

10-28-98 03:17PM FROM TOXIKON TO 12157024045 P006

TOXIKON CORP. REPORT

Work Order # 98-10-587

Received: 10/31/98

11/03/98 11:15:02

REPORT TO
FOSTER & WHEELER
1 OXFORD VALLEY, SUITE 200
LANGHORNE, PA. 19047
215-702-4007 FAX: 4045
ATTEN MICHAEL HEFFRON

PREPARED BY
TOXIKON CORPORATION
15 WIGGINS AVE
BEDFORD, MA 01730
ATTEN PAUL LEZBERG
PHONE (617)275-3330

CERTIFIED BY

CONTACT JAYSON

CLIENT FOSTER SAMPLES 7
COMPANY FOSTER & WHEELER
FACILITY 1 OXFORD VALLEY, SUITE 200
LANGHORNE, PA. 19047

MA CERT # M-MA064: TRACE METALS, SULFATE,CYANIDE,RES. FREE CHLORINE, Ca, TOTAL ALK., TDS, pH, THMs, VOC, PEST.,NUTRIENTS. DEMAND. O&G, PHENOLICS, PCBs . CT DHS #PH-0563, NY #10778 FL HRS E87143, NJ DEP 59538, NC DNR286, SC 88002, NH 204091-C.

WORK ID NWS-EARLE
TAKEN 10/29-10/30/98
TRANS
TYPE WATER
P.O. #
INVOICE under separate cover

VERIFIED BY:

SAMPLE IDENTIFICATION

01 16(A)EW98W97
02 16(A)EW98W98
03 16(A)EW98W99
04 16(A)EW98W100
05 16(A)EW98101
06 16(B)EW98W85
07 16(B)EW98W86

TEST CODES and NAMES used on this workorder

TPH IR TPH BY IR

Received: 10/31/98

Results by Sample

SAMPLE ID 16(A)EW98W97 SAMPLE # 01 FRACTIONS: A
Date & Time Collected 10/29/98 10:00:00 Category WATER

TPH_IR 834
mg/L DL=1.0

SAMPLE ID 16(A)EW98W98 SAMPLE # 02 FRACTIONS: A
Date & Time Collected 10/29/98 10:02:00 Category WATER

TPH_IR 536
mg/L DL=1.0

SAMPLE ID 16(A)EW98W99 SAMPLE # 03 FRACTIONS: A
Date & Time Collected 10/29/98 10:04:00 Category WATER

TPH_IR 254
mg/L DL=1.0

SAMPLE ID 16(A)EW98W100 SAMPLE # 04 FRACTIONS: A
Date & Time Collected 10/29/98 10:08:00 Category WATER

TPH_IR 6.77
mg/L DL=1.0

SAMPLE ID 16(A)EW98101 SAMPLE # 05 FRACTIONS: A
Date & Time Collected 10/29/98 10:10:00 Category WATER

TPH_IR ND
mg/L DL=1.0

SAMPLE ID 16(B)EW98W85 SAMPLE # 06 FRACTIONS: A
Date & Time Collected 10/30/98 08:30:00 Category WATER

TPH_IR ND
mg/L DL=1.0

SAMPLE ID 16(B)EW98W86 SAMPLE # 07 FRACTIONS: A
Date & Time Collected 10/30/98 08:34:00 Category WATER

TPH_IR ND
mg/L DL=1.0

TEST CODE TPH IR NAME TPH BY IR

EPA METHOD: 418.1 for water sample.

Reference: Methods for Chemical Analysis of Water and Wastes.
EPA 600/4-79-020 (Revised, March 1983). EPA/EMSL, Cincinnati, OH.

EPA METHOD: 9071/9073

Reference: Test Methods for Evaluating Solid Waste: Physical/Chemical Methods.
EPA SW-846 (Third Edition) 1986. Office of Solid Waste, USEPA.

TOXIKON
15 Wiggins Ave., Bedford, MA 01730
Telephone: (781) 275-3330
Fax; (781) 275-7478

CHAIN OF CUSTODY RECORD

WORK ORDER #: 98-10-587
DUE DATE : 11-4-98

COMPANY: FOSTER WHEELER ENVIRONMENTAL
ADDRESS: ONE OXFORD VALLEY SUITE 200
LANGHORNE, PA 19047
PHONE #: (215) 702-4026 FAX #: (215) 702-4045
P.O. #: Mike Hoffman
PROJECT MANAGER: ~~JOHN MAGEE~~
PROJECT ID/LOCATION: NWS-Earle

SAMPLE TYPE	CONTAINER TYPE
1. WASTEWATER	P - PLASTIC
2. SOIL	G - GLASS
3. SLUDGE	V - VOA
4. OIL	
5. DRINKING WATER	
6. WATER (GW/MW/SW)	
7. OTHER (SPECIFY	

ANALYSES: TPH

TOXIKON #	SAMPLE IDENTIFICATION	SAMPLE TYPE	CONTAINER SIZE	CONTAINER TYPE	CONTAINER #	SAMPLING DATE	SAMPLING TIME	PRESERVATIVE	TPH	SPECIAL INSTRUCTIONS/ COMMENTS
1	16(A)EW98W97	GW	1L	G	1	10/29/98	10:00	H_2SO_4	+	pH 2
2	16(A)EW98W98						10:02		+	pH 2
3	16(A)EW98W99						10:04		+	pH 2
4	16(A)EW98W100 (2) 70						10:08		+	pH 2
5	16(A)EW98W101 (2) 70						10:10		+	pH 2
6	16(B)EW98W85					10/30/98	8:30		+	pH 2
7	16(B)EW98W86					10/30/98	8:34		+	pH 2

SAMPLED BY: [signature] DATE: 10-30-98 TIME: - -
RELINQUISHED BY: [signature] DATE: 10-30-98 TIME: - -
RELINQUISHED BY: DATE: - - TIME: - -
METHOD OF SHIPMENT

QUOTATION #:
RECEIVED BY: DATE: - - TIME: - -
RECEIVED FOR LAB BY: [signature] DATE: 10-31-98 TIME: 12-30-—
COOLER TEMPERATURE

72 hr.
☒ RUSH ..... ~~BUSINESS DAY TURN AROUND~~
☐ ROUTINE

Sample disposal information
Are there any other known or suspected contaminants in these samples other than those listed above?
Y[redacted] N[redacted] If [redacted] 1st K[redacted]

CASE NARRATIVE

Work Order: 9810587

All samples were analyzed within the method holding times.

No target compounds were detected in the method blanks.

TOXIKON

QA/QC REPORT

WET CHEMISTRY

WORK ORDER: 9810587
MATRIX: WATER

PARAMETER	DUPLICATE PERCENT RPD	CONTROL LIMITS	CONTROL SPIKE PERCENT RECOVERY	MATRIX SPIKE PERCENT RECOVERY	CONTROL LIMITS
TPH_IR	NA	0-25	97	NA	80-120

TOXIKON

ISO-9001 Certified
Celebrating 20 Years of
Exc llence

FACSIMILE INSTRUCTION SHEET

Date: 11/3/98

Name: Michael Heffron

Company: Foster & Wheeler

Fax #: 215-702-4045

From: Heather McCullough

Total No. of Pages Including Cover Sheet: 6

If you do not receive all of the pages, please call (781) 275-3330.
Thank you. Notes:

STATEMENT OF CONFIDENTIALITY

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REMEMBER! CONTACT US IMMEDIATELY IF YOU ARE NOT THE INTENDED RECIPIENT.

15 Wiggins Avenue • Bedford, Massachusetts 01730
(781) 275-3330

Page 1 TOXIKON CORP. REPORT Work Order # 98-11-149

Received: 11/09/98 11/11/98 14:18:00

REPORT TO
FOSTER & WHEELER
1 OXFORD VALLEY, SUITE 200
LANGHORNE, PA. 19047
215-702-4007 FAX: 4045
ATTEN MICHAEL HEFFRON

PREPARED BY
TOXIKON CORPORATION
15 WIGGINS AVE
BEDFORD, MA 01730
ATTEN PAUL LEZBERG
PHONE (617)275-3330

CERTIFIED BY

CONTACT JAYSON

CLIENT FOSTER SAMPLES 11
COMPANY FOSTER & WHEELER
FACILITY 1 OXFORD VALLEY, SUITE 200
LANGHORNE, PA. 19047

MA CERT # M-MA064: TRACE METALS, SULFATE,CYANIDE,RES. FREE CHLORINE, Ca, TOTAL ALK., TDS, pH, THMs, VOC, PEST., NUTRIENTS, DEMAND. O&G, PHENOLICS, PCBs . CT DHS #PH-0563, NY #10778 FL HRS E87143, NJ DEP 59538, NC DNR286, SC 88002, NH 204091-C.

WORK ID NWS-EARLE
TAKEN 11/6/98
TRANS
TYPE WATER
P.O. # NWS-EARLE
INVOICE under separate cover

VERIFIED BY:

SAMPLE IDENTIFICATION

01 16(A)EW98W103
02 16(A)EW98W104
03 16(A)EW98W105
04 16(A)EW98W106
05 16(A)EW98W107
06 16(A)EW98W108
07 16(B)EW98W87
08 16(B)EW98W88
09 16(B)EW98W89
10 16(B)EW98W90
11 16(B)EW98W91

TEST CODES and NAMES used on this workorder

TPH IR TPH BY IR

TOXIKON CORP. REPORT

Work Order # 98-11-149

Received: 11/09/98

Results by Sample

SAMPLE ID 16(A)EW98W103 SAMPLE # 01 FRACTIONS: A
Date & Time Collected 11/06/98 13:20:00 Category WATER

TPH_IR 12600
mg/L DL=1.0

SAMPLE ID 16(A)EW98W104 SAMPLE # 02 FRACTIONS: A
Date & Time Collected 11/06/98 13:22:00 Category WATER

TPH_IR 14700
mg/L DL=1.0

SAMPLE ID 16(A)EW98W105 SAMPLE # 03 FRACTIONS: A
Date & Time Collected 11/06/98 13:24:00 Category WATER

TPH_IR 172
mg/L DL=1.0

SAMPLE ID 16(A)EW98W106 SAMPLE # 04 FRACTIONS: A
Date & Time Collected 11/06/98 13:26:00 Category WATER

TPH_IR 11.4
mg/L DL=1.0

SAMPLE ID 16(A)EW98W107 SAMPLE # 05 FRACTIONS: A
Date & Time Collected 11/06/98 13:28:00 Category WATER

TPH_IR ND
mg/L DL=1.0

SAMPLE ID 16(A)EW98W108 SAMPLE # 06 FRACTIONS: A
Date & Time Collected 11/06/98 13:30:00 Category WATER

TPH_IR ND
mg/L DL=1.0

SAMPLE ID 16(B)EW98W87 SAMPLE # 07 FRACTIONS: A
Date & Time Collected 11/06/98 14:00:00 Category WATER

TPH_IR 31.5
mg/L DL=1.0

SAMPLE ID 16(B)EW98W88 SAMPLE # 08 FRACTIONS: A
Date & Time Collected 11/06/98 14:02:00 Category WATER

TPH_IR 2.11
mg/L DL=1.0

 TOXIKON CORP. REPORT Work Order # 98-11-149

Received: 11/09/98 Results by Sample

SAMPLE ID 16(B)EW98W89 SAMPLE # 09 FRACTIONS: A
Date & Time Collected 11/06/98 14:04:00 Category WATER

TPH_IR ND
mg/L DL=1.0

SAMPLE ID 16(B)EW98W90 SAMPLE # 10 FRACTIONS: A
Date & Time Collected 11/06/98 14:06:00 Category WATER

TPH_IR ND
mg/L DL=1.0

SAMPLE ID 16(B)EW98W91 SAMPLE # 11 FRACTIONS: A
Date & Time Collected 11/06/98 14:08:00 Category WATER

TPH_IR ND
mg/L DL=1.0

Received: 11/09/98

Test Methodology

TEST CODE TPH_IR NAME TPH BY IR

EPA METHOD: 418.1 for water sample.

Reference: Methods for Chemical Analysis of Water and Wastes.
EPA 600/4-79-020 (Revised, March 1983). EPA/EMSL, Cincinnati, OH.

EPA METHOD: 9071/9073

Reference: Test Methods for Evaluating Solid Waste: Physical/Chemical Methods.
EPA SW-846 (Third Edition) 1986. Office of Solid Waste, USEPA.

TOXIKON
15 Wiggins Ave., Bedford, MA 01730
Telephone: (781) 275-3330
Fax: (781) 275-7478

CHAIN OF CUSTODY RECORD

WORK ORDER #: 98-11-1[illegible]
DUE DATE : 11-11-9[illegible]

COMPANY: Foster Wheeler Environ
ADDRESS: One Oxford Valley Suite 200
Langhorne PA 19047
PHONE #: (215) 702 4015 FAX #: (215) 702-4045
P.O. #: NWS - Earle
PROJECT MANAGER: Mike Heffern
PROJECT ID/LOCATION: NWS - Earle

SAMPLE TYPE	CONTAINER TYPE
1. WASTEWATER	P - PLASTIC
2. SOIL	G - GLASS
3. SLUDGE	V - VOA
4. OIL	
5. DRINKING WATER	
6. WATER (GW/MW/SW)	
7. OTHER (SPECIFY	

ANALYSES: TPH

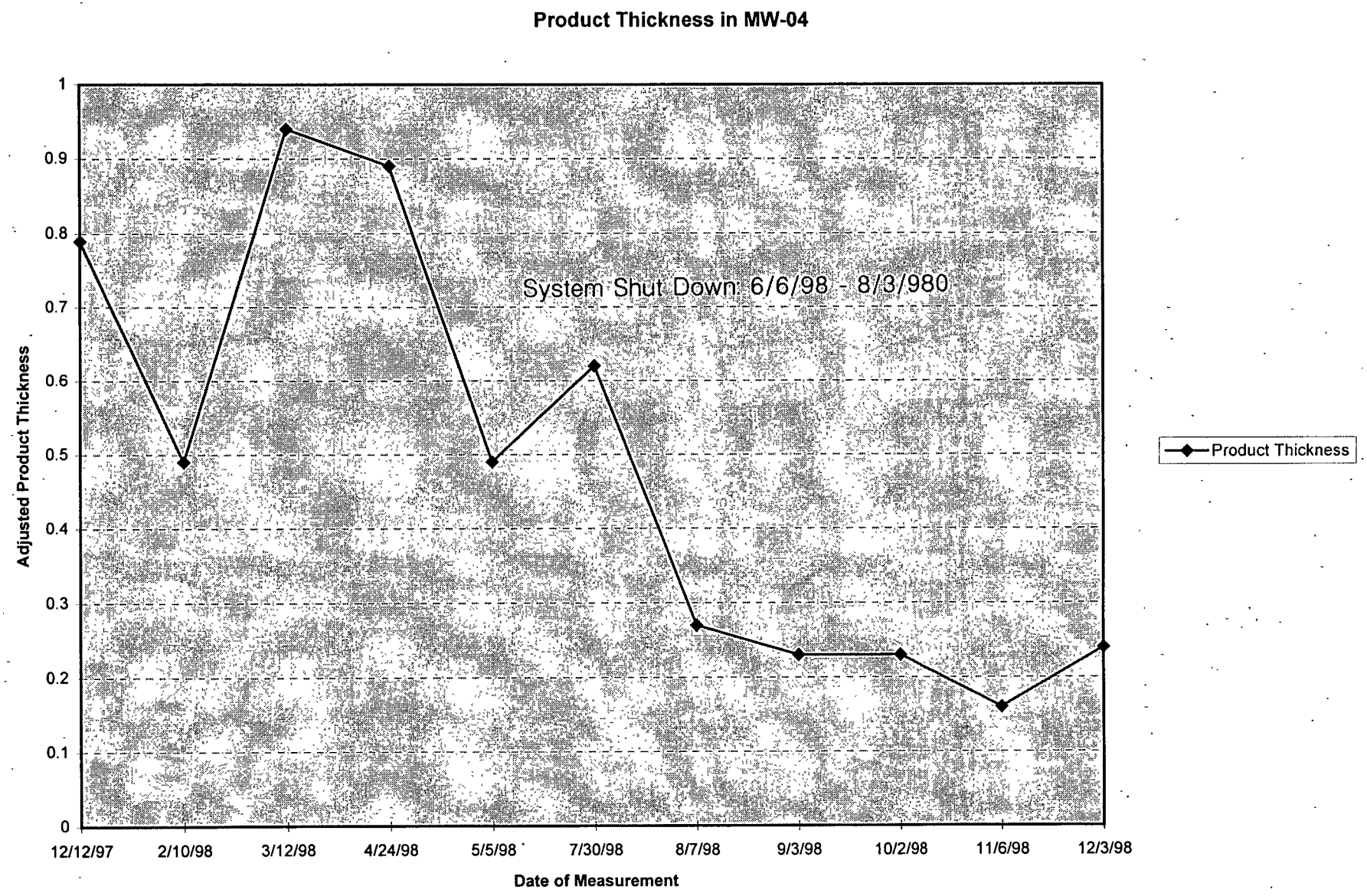
TOXIKON #	SAMPLE IDENTIFICATION	SAMPLE TYPE	CONTAINER SIZE	CONTAINER TYPE	CONTAINER #	SAMPLING DATE	SAMPLING TIME	PRESERVATIVE	TPH	SPE INSTRUCT COMM
1	16(A)EW98W103	GW	1l	G	1	11/6/98	13:20	H_2SO_4	X	
2	16(A)EW98W104						13:22			
3	16(B)EW98W105						13:24			
4	16(B)EW98W106						13:26			
5	16(A)EW98W107						13:28			
6	16(A)EW98W108						13:30			
7	16(B)EW98W87						14:00			
8	16(B)EW98W88						14:02			
9	16(B)EW98W89						14:04			
10	16(B)EW98W90						14:06			
11	16(B)EW98W91						14:08			

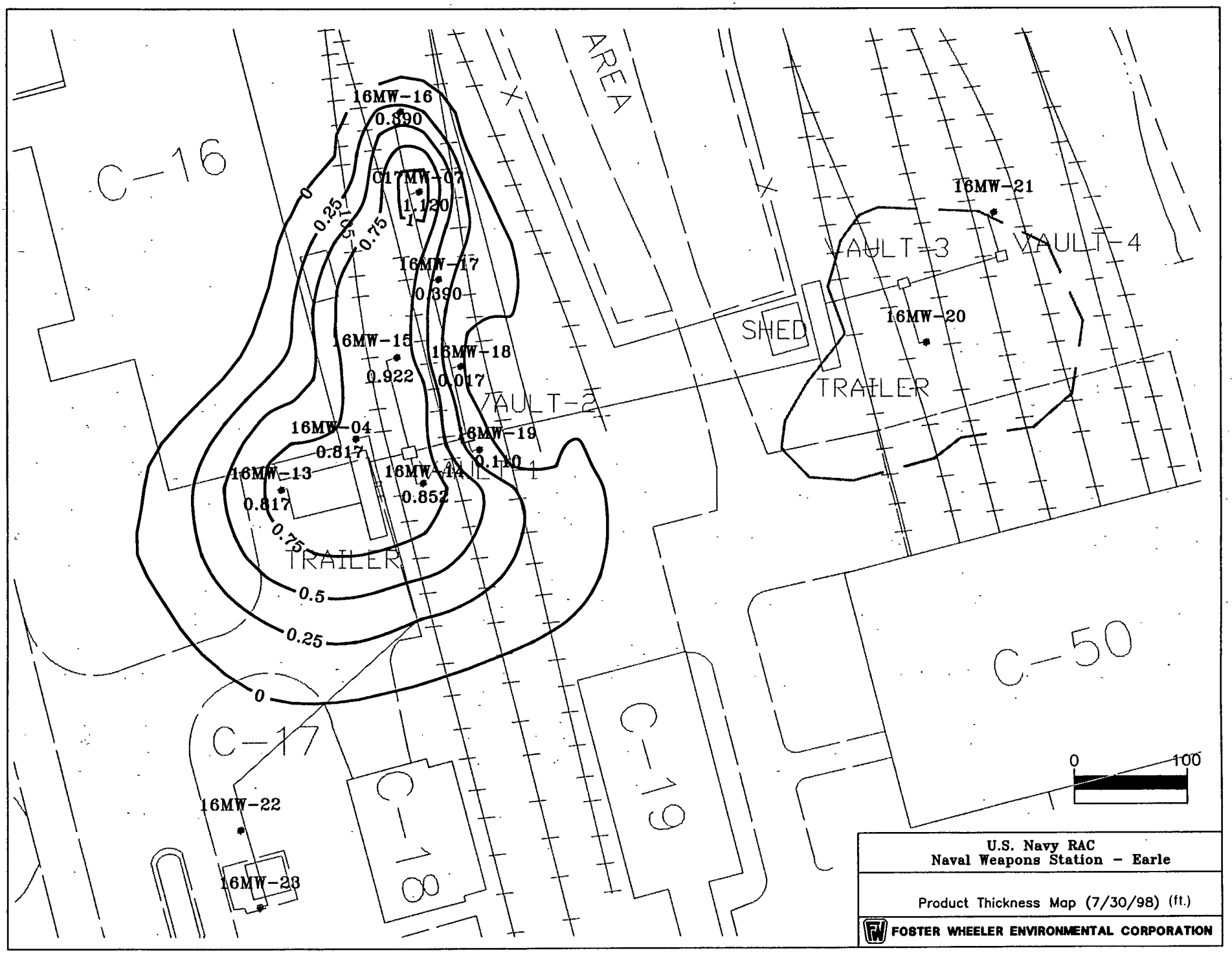
SAMPLED BY: [signature] DATE: 11-6-98 TIME: -
RELINQUISHED BY: [signature] DATE: 11-6-98 TIME: -
RELINQUISHED BY: DATE: - TIME: -
METHOD OF SHIPMENT

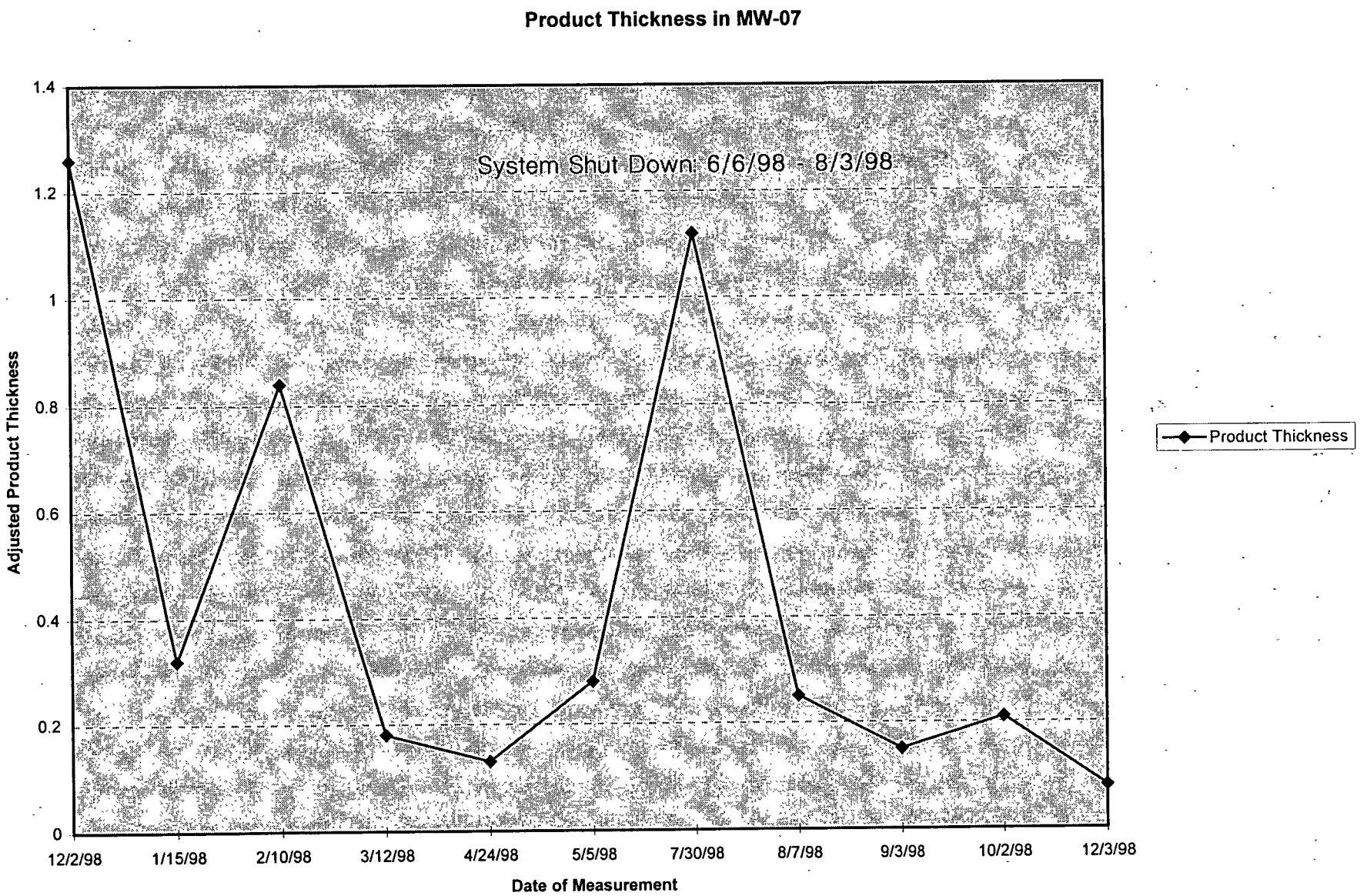
QUOTATION #:
RECEIVED BY: DATE: - TIME: -
RECEIVED FOR LAB BY: [signature] DATE: 11-09-98 TIME: 13-25
COOLER TEMPERATURE 2°C

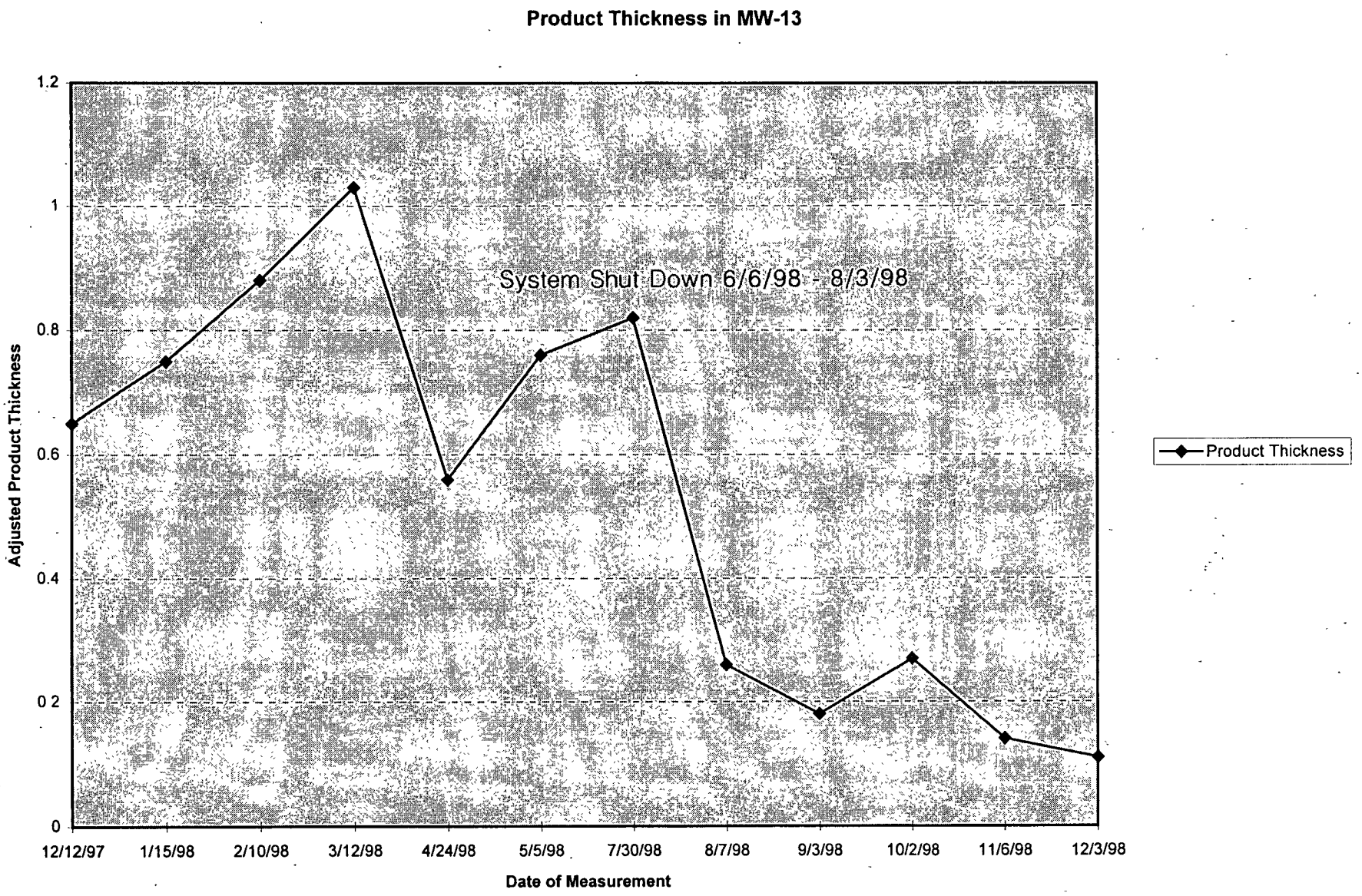
72 hr. Turn-Around
☒ RUSH ..... BUSINESS DAY TURN AROUN
☐ ROUTINE

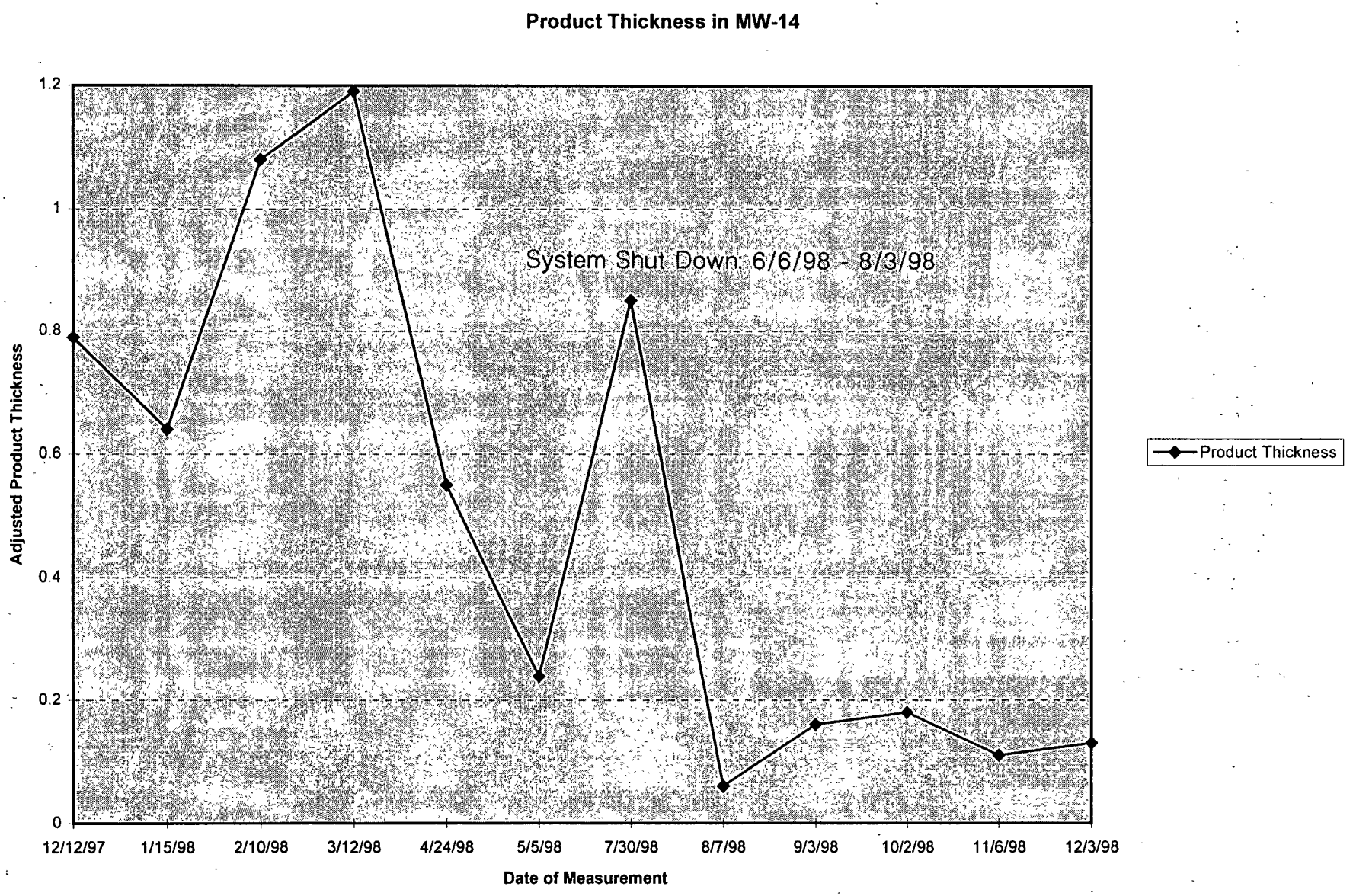
Sample disposal information
Are there any other known or suspected contaminants in these samples other than those listed above?
Yes [redacted] No [redacted] Yes [redacted] Know[redacted]

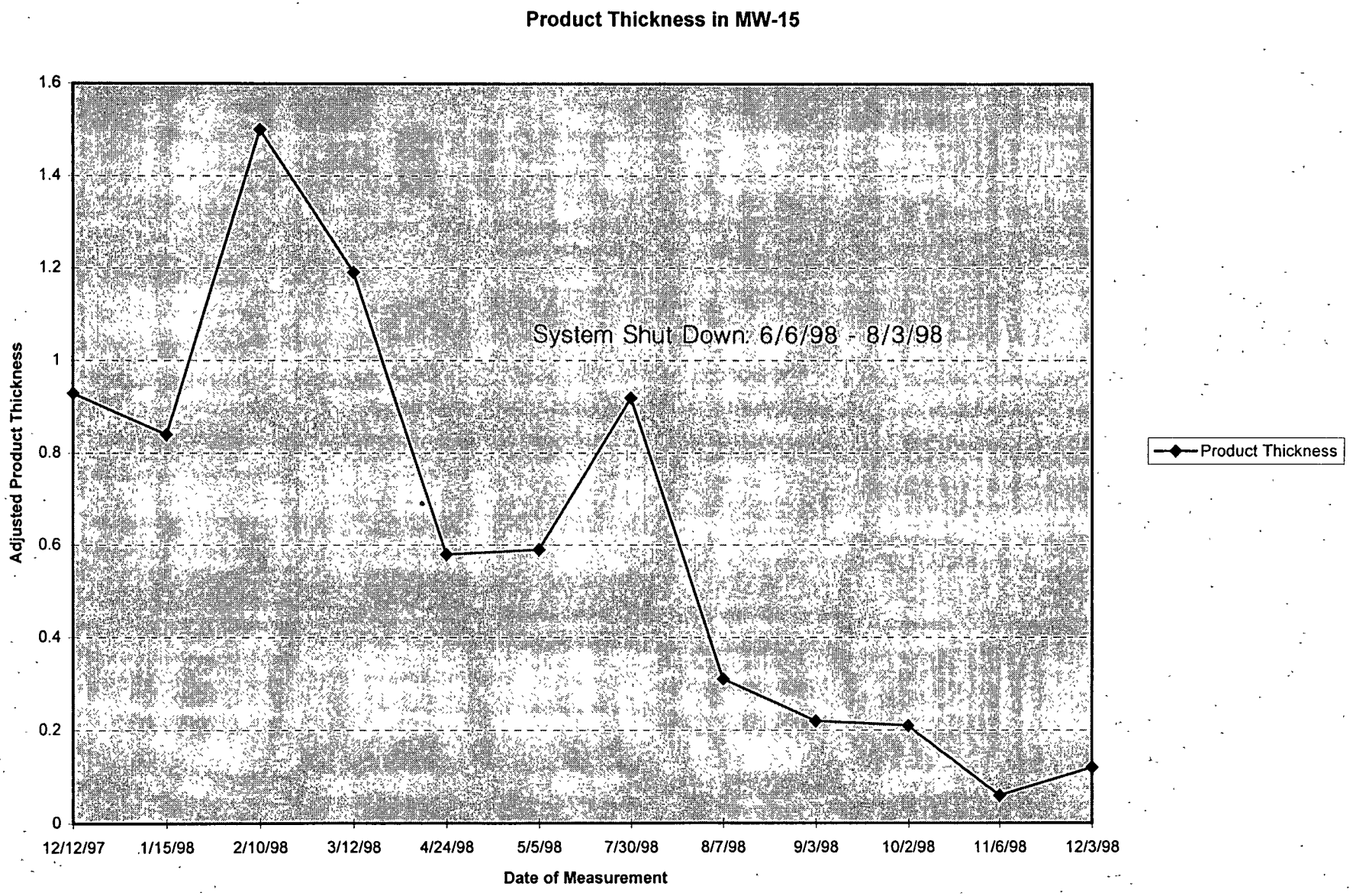

Product Thickness in MW-04
System Shut Down: 6/6/98 - 8/3/980
Adjusted Product Thickness
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
12/12/97
2/10/98
3/12/98
4/24/98
5/5/98
7/30/98
8/7/98
9/3/98
10/2/98
11/6/98
12/3/98
Date of Measurement
Product Thickness

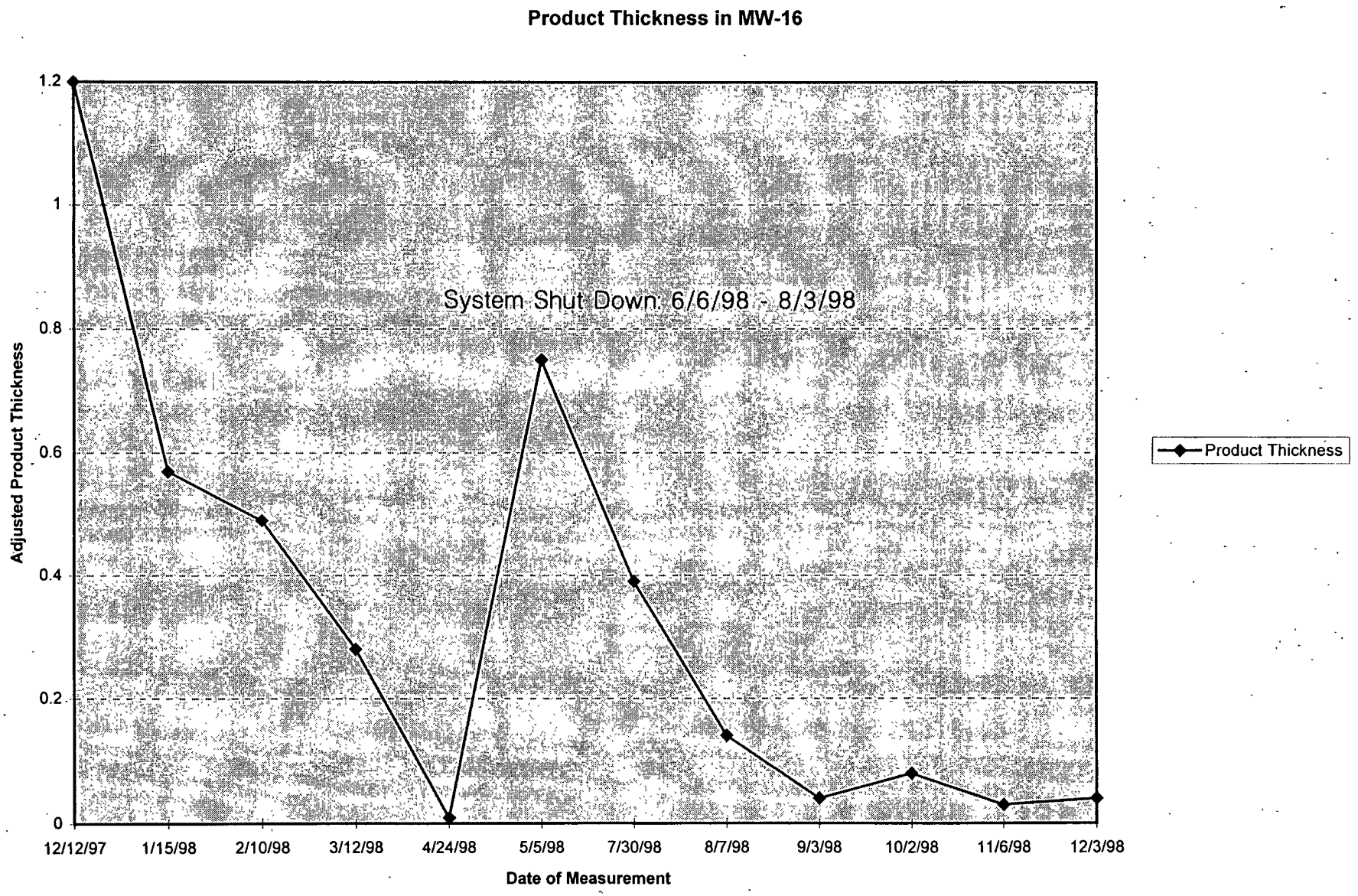

C-16
AREA
16MW-16
0.890
C17MW-07
1.120
16MW-17
0.390
16MW-15
0.922
16MW-18
0.017
16MW-04
0.817
16MW-19
0.110
16MW-13
0.817
16MW-14
0.852
VAULT-2
TRAILER
0
0.25
0.5
0.75
1
16MW-21
VAULT-3
VAULT-4
SHED
16MW-20
TRAILER
C-50
C-17
C-18
C-19
16MW-22
16MW-23
0
100
U.S. Navy RAC
Naval Weapons Station - Earle
Product Thickness Map (7/30/98) (ft.)
FOSTER WHEELER ENVIRONMENTAL CORPORATION

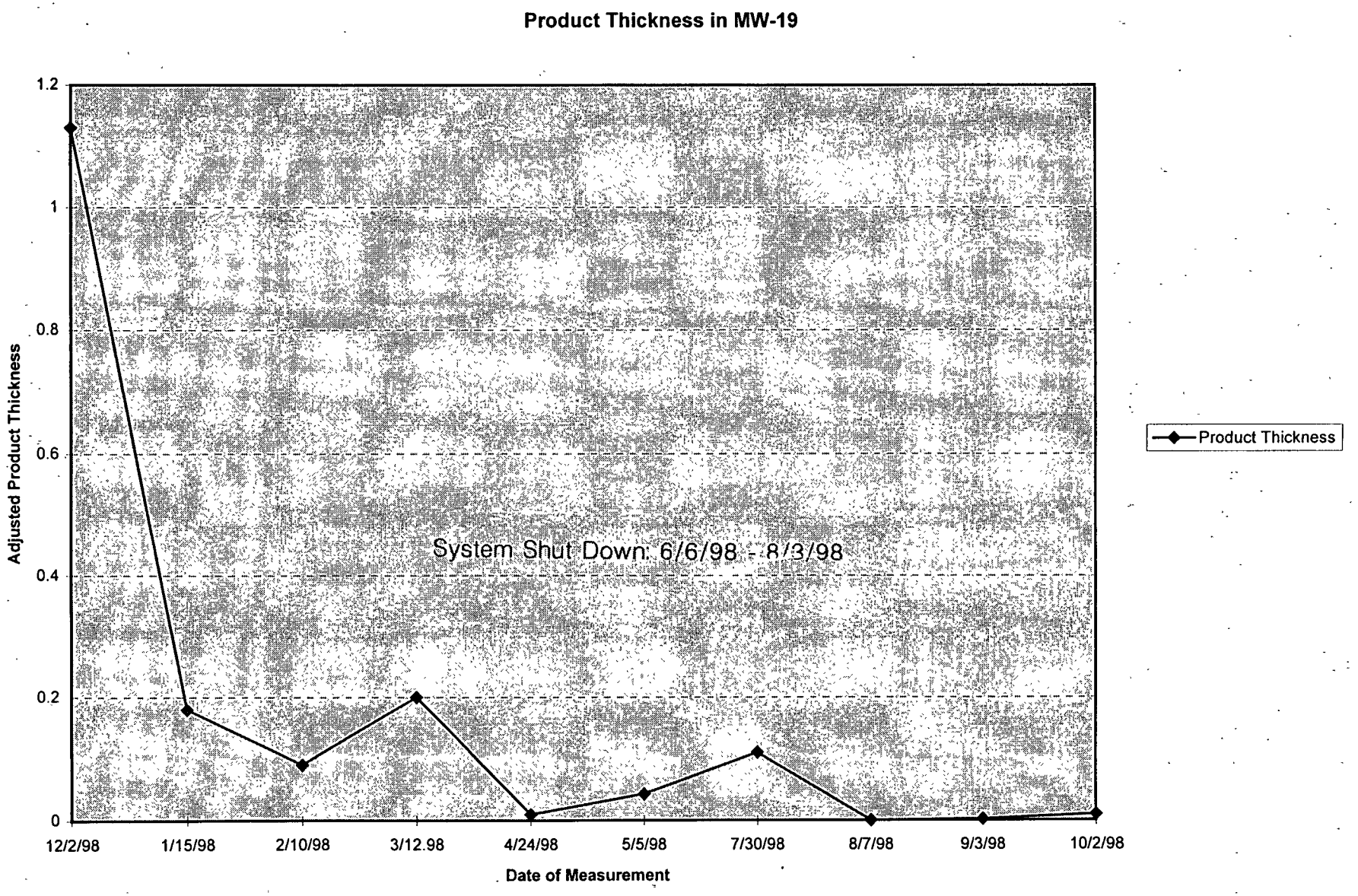

Product Thickness in MW-07
System Shut Down: 6/6/98 - 8/3/98
Adjusted Product Thickness
1.4
1.2
1
0.8
0.6
0.4
0.2
0
12/2/98
1/15/98
2/10/98
3/12/98
4/24/98
5/5/98
7/30/98
8/7/98
9/3/98
10/2/98
12/3/98
Date of Measurement
Product Thickness


Product Thickness in MW-13
System Shut Down 6/6/98 - 8/3/98
Adjusted Product Thickness
1.2
1
0.8
0.6
0.4
0.2
0
12/12/97
1/15/98
2/10/98
3/12/98
4/24/98
5/5/98
7/30/98
8/7/98
9/3/98
10/2/98
11/6/98
12/3/98
Date of Measurement
Product Thickness


Product Thickness in MW-14
System Shut Down: 6/6/98 - 8/3/98
Adjusted Product Thickness
1.2
1
0.8
0.6
0.4
0.2
0
12/12/97
1/15/98
2/10/98
3/12/98
4/24/98
5/5/98
7/30/98
8/7/98
9/3/98
10/2/98
11/6/98
12/3/98
Date of Measurement
Product Thickness


Product Thickness in MW-15
System Shut Down: 6/6/98 - 8/3/98
Adjusted Product Thickness
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
12/12/97
1/15/98
2/10/98
3/12/98
4/24/98
5/5/98
7/30/98
8/7/98
9/3/98
10/2/98
11/6/98
12/3/98
Date of Measurement
Product Thickness


Product Thickness in MW-16
System Shut Down: 6/6/98 - 8/3/98
Adjusted Product Thickness
1.2
1
0.8
0.6
0.4
0.2
0
12/12/97
1/15/98
2/10/98
3/12/98
4/24/98
5/5/98
7/30/98
8/7/98
9/3/98
10/2/98
11/6/98
12/3/98
Date of Measurement
Product Thickness


Product Thickness in MW-19
Adjusted Product Thickness
1.2
1
0.8
0.6
0.4
0.2
0
System Shut Down: 6/6/98 - 8/3/98
12/2/98
1/15/98
2/10/98
3/12.98
4/24/98
5/5/98
7/30/98
8/7/98
9/3/98
10/2/98
Date of Measurement
Product Thickness