8502 OPA

32

U.S. ENVIRONMENTAL PROTECTION AGENCY
POLLUTION REPORT

I. HEADING

DATE:	**8/31/97**
SUBJECT:	Naples Truck Stop Removal Action, Vernal, UT
FROM:	H. Hays Griswold, OSC Phone: (303) 312-6809
TO:	Director, ERD
POLREP No.:	**POLREP 49**

II. BACKGROUND

SITE No.:	43P808L008
Case No.:	U940169
FPN No.:	114009
D.O. No.:	NA
Response Agency:	EPA Region VIII
Address:	999 18th Street, Suite 500 Denver, CO 80202
Response Authority:	CWA, OPA (1990)
Party Conducting Action:	EPA (PRFA w/USACE)
ERNS No.:	U940169
NPL Status:	NA
State Notification:	State requested EPA action
Action Memorandum Status:	NA
Start Date:	February 22, 1994
Demobilization Date:	NA
Completion Date:	To Be Determined

III. SITE INFORMATION

A. Incident Category

The incident occurred at an active facility - a Service Station/Truck Stop/Petroleum Bulk Distributor.

B. Site Description

1. Site Description

No change from previous Polreps.

2. Description of Threat

No change.

C. Site Evaluation Results

Preliminary sampling results of water effluent to POTW with recovery wells RW-1, RW-2, RW-3, RW-4, RW-9, RW-10, RW-11 and RW-12 in operation indicated levels of TPH as gasoline at **8.16 mg/l**, below the discharge limit of 25 mg/l for TPH (sample collected on **8/5/97**). Water analysis was performed for gasoline/BTEX by EPA test methods M8015V and SW8020.

Preliminary results of air samples collected from the treatment system on **8/5/97** indicated **1600 ppmv** for total volatile petroleum hydrocarbons (TVPH) as gasoline within the final air influent to the vapor treatment unit. **The effluent concentration from the vapor treatment system was reported at 4.7 ppmv**. This value is higher than the last reported value collected in **July** of **880 ppmv** for TVPH. **The increase indicates continuous capture of TPH impacted groundwater plume.** These air samples were analyzed according to modified EPA Method MTO-3S.

Monthly groundwater sampling from fourteen of the fifteen existing monitoring wells continues to indicate detectable levels of hydrocarbon contamination within **seven** of the tested wells. A maximum concentration of **21.6 mg/l** hydrocarbons as gasoline was detected from monitoring well No. MW10 located in the center of the suspected plume of groundwater contamination. This level of contamination is **higher** than the previous month's value of **15 mg/l** within the same well. Water analysis was performed for gasoline/BTEX by EPA test methods M8015V and SW8020.

IV. RESPONSE INFORMATION

A. Situation

Date of Notification:	2/08/94
Date of Discovery:	11/01/93
Date Action Started:	2/15/94
Material Involved:	Unleaded Gasoline
Quantity Discharged:	7000 + gallons
Substantial Threat:	Yes
Resource Affected:	Unnamed tributary to Ashley Creek, tributary to Green River
Source Identification:	Naples Truck Stop

1. Removal Actions to Date

Removal of contaminated water and soil vapor continues through operation of the dual-phase groundwater pump-and-treat system.

In **August** 1997, approximately **556,000** gallons of water were extracted and discharged to the POTW (based on flow measurements for the month of **August**).

2. **Enforcement**

No change from previous Polreps.

B. Planned Removal Actions

Continue to operate, maintain and sample from the operating system unless notified otherwise by USACE/EPA.

C. Next Steps

Continue to monitor the system, including monthly analysis of soil vapor samples at the exhaust of the water treatment system. Continue to monitor effluent to POTW water samples to ensure water can be directly discharged to POTW without treatment.

D. Key Issues

Table 1 shows preliminary results of water sampling from the monitoring wells for **August and final results for July 1997.**

Table 1- Hydrocarbon Concentrations (as Gasoline)

Well No.	TPH Concentration in July (mg/l)	**TPH Concentration in August (mg/l)**
MW01	ND	**ND**
MW02	1.5	**1.88**
MW03	ND	**ND**
MW04	2.3	**0.911**
MW06	ND	**ND**
MW08	2.1	**2.54**
MW09	0.9	**4.93**
MW10	15	**21.6**
MW14	ND	**0.0482 (J)**
MW15	ND	**ND**
VMP01	ND	**ND**
VMP02	10	**20.8**
NGMW01	ND	**ND**
NGMW06	ND	**ND**

V. COST INFORMATION

Project Ceiling . . . . . $ 2,350,000.00

	Costs to Date	Ceiling
Extramural		
TAT	$ 60,000	$ 70,000
USACE (Omaha)	$ 850,000	$ 1,300,000
USACE (Sacramento)	$1,049,629	$ 1,366,929
Intramural		
Direct Reimbursable	$ 9,000	$ 30,000
Direct Recoverable	$ 9,000	

The above accounting of expenditures is an estimate based on figures known to the OSC at the time this report is written. The cost accounting provided in this report does not necessarily represent an exact monetary figure which the government may include in any claim for cost recovery.

REMOVAL CONTINUES:
H. Hays Griswold, OSC
1500 hrs, August 31, 1997

cc:
Rich Haavisto, USACE-Sacramento
Larry Leahy, USACE-Omaha
Mike Sajadi, JEG
Al Meyers, IT Corp.
Renee Zollinger, Kleinfelder

ATTACHMENT A

QUARTERLY MONITORING RESULTS FOR MAY, JUNE, AND JULY 1997

TABLE OF CONTENTS:

I. Standard List of Abbreviations

II. Data Quality Assessment

III. Summary of Analytical Data from Site Monitoring Wells

IV. Summary of Analytical Data from Site Treatment System

V. Graphical Representation of Monitoring Well Concentrations Over Time

VI. Graphical Representation of Water Treatment Concentrations Over Time

VII. Graphical Representation of Vapor Treatment Concentrations Over Time

VIII. Summary of Quarterly Monitoring Results

PART I

Standard List of Abbreviations

AG	Ambient Air
BZ	Benzene
BZME	Toluene
BTEX	Benzene, Toluene, Ethylbenzene and Xylene
COC	Chain of Custody
DIESELCOMP	Total Hydrocarbons as Diesel
DQA	Data Quality Assessment
EBZ	Ethylbenzene
EPOTW 01	Water Effluent to POTW Sample
FD1	Field Duplicate Sample
HC	Hydrocarbons
J	Indicates an Estimated Value
LCS	Laboratory Control Samples
MG/L	Milligram Per Liter
MS/MSD	Matrix Spike/Matrix Spike Duplicate
MW	Monitoring Well Installed by IT Corp
NA	Not Applicable
NGMW	Monitoring Well Installed by EPA
N1	Normal Type Sample
NJ	Indicates Presumptive Evidence of the Presence of the Analyte
PHCG	Petroleum Hydrocarbons as Gasoline
PPBV	Parts Per Billion by Volume
PPMV	Parts Per Million by Volume
QA/QC	Quality Assessment/Quality Control
RC	Reason Code
RPD	Relative Percent Difference
RQL	Reporting Quantitation Limit
SOP	Standard Operating Procedure
TB1	Trip Blank Sample WG

PART I

Standard List of Abbreviations (continued)

THCHX	Total Hydrocarbon Hexane
UG/L	Micrograms Per Liter
U	Indicates the Analyte was not Detected and the Associated Value is the Laboratory Reporting Quantitation Limit
USACE	United States Army Corps of Engineers
VEATM 01	Vapor Effluent to Atmosphere Sample
VEBIO 01	Vapor Effluent Sample
VIBIO 01	Vapor Influent Sample
VMP01	Vapor Monitoring Well
WEBIO 01	Water Effluent Sample
WIBIO 01	Water Influent Sample
WG	Groundwater Sample
WQ	Water Quality Sample
WW	Waste Water Sample

PART II.

Data Quality Assessment

This data quality assessment (DQA) for the Naples Truck Stop System is applicable to the analytical results for the following groundwater and vapor samples (listed in Table 1) collected during the months of **May, June, and July 1997** (one monthly sample from each location). **The vapor stack sample (STACK01) was added to monitor the effluent emissions of the vapor treatment system, in accordance with Utah regulations.**

TABLE 1 - SAMPLE LOCATION SUMMARY		
Sample Location Name	***Sample Location ID***	***Number of Locations***
Groundwater Monitoring Wells	MW01 - 04, 06, 08 - 10, 14, 15, and NGMW01 & 06	twelve groundwater (GW) wells
Effluent to POTW01	EPOTW01	one GW port
Vapor Monitoring Point #1	VMP01	one GW port
Vapor Monitoring Point #2	VMP02	one GW port
Vapor Influent to Treatment	VIBIO01	one vapor port
Vapor Stack Sample	**STACK01**	**one vapor port**

The groundwater samples were analyzed for benzene, toluene, ethylbenzene, xylenes (BTEX) and total volatile petroleum hydrocarbons (TVPH) as gasoline (PHCG) using the analytical QA/QC requirements specified in SW-846 (EPA 3rd edition, November 1990) by methods SW8020 (modified for the analysis of BTEX only) and M8015V (modified for the analysis of gasoline), respectively. These samples were analyzed by EMAX Laboratories of Torrance, California.

The vapor samples were collected in SUMMA canisters and analyzed for BTEX and TVPH as PHCG using elements specified in the EPA Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air (April 1984) by method MTO-3S (modified for this analysis). These samples were analyzed by Air Toxics, LTD. of Folsom, California.

The data are of acceptable quality and are considered usable to support the U.S. Army Corps of Engineers (USACE), Naples Utah Truck Stop Project. The precision, accuracy, and completeness objectives for this sampling event were met. Table 4 (A & B) shows the sampling and analytical completeness of the number of samples planned and collected, and the number of analytical results accepted. Completeness is measured in two ways; 1) sampling completeness (samples collected vs. planned), and 2) analytical completeness (percent of analytical results with acceptable values vs. the number of requested analyses).

Data Evaluation Process

The samples were organized into work orders. A work order number is assigned by the laboratory and contains all environmental samples received by the laboratory for a given day. Data verification was performed in accordance with the general principles defined in the Jacobs Data Verification Standard Operating Procedure (SOP). Analytical results for the locations indicated in Table 1 were reported in the work orders listed in Table 2.

Blank Evaluation

If an analyte was found in a blank and the associated sample, the following rules were applied:
When the sample concentration was at or above the MDL and less than 5 times (10 times for common laboratory contaminants*) the highest concentration found in any associated blank, the sample result was reported as not detected (ND). The MDL for the affected analyte in all associated samples was changed to the concentration initially reported for the sample and the sample result was qualified as an estimated nondetect (UJ) with a reason code (2 and/or 7) due to method and/or field blank contamination. The sample's PQL was adjusted to 5 times (or 10 times for common laboratory contaminants*) the concentration detected in the blank, if the adjusted value was greater than the existing PQL value. In the event of a sample requiring dilution, the result concentration for an analyte was divided by the dilution factor before using the 5 times (10 times for the common laboratory contaminants*) comparison rule to the blank concentration.

When the sample concentration was greater than or equal to 5 times (10 times for the common laboratory contaminants*) the highest concentration found in any associated blank, the result was considered positive, and no qualifier was required.

***Common Organic Laboratory Contaminants**
acetone
2-butanone
methylene chloride
phthalate esters

Corrective Action for Blank Contamination

When the blank concentration was less than the PQL, there was no corrective action required by the QAPP. If the blank concentration was equal to or greater than the PQL and there was a detection of that analyte in an associated sample, the corrective action taken is discussed in the individual analytical test section.

TABLE 2 -SAMPLE WORK ORDERS		
Lab / Work Order Number	***Matrix***	***Analytical Method***
EMAX / **97E034**	water	M8015V & SW8020
ATL / **9705064**	vapor	MTO-3S (modified)
ATL / **9705122**	vapor	MTO-3S (modified)
EMAX / **97F079**	water	M8015V & SW8020
ATL / **9706175**	vapor	MTO-3S (modified)
EMAX / **97G082**	water	M8015V & SW8020
ATL / **9707143**	vapor	MTO-3S (modified)

The following quality control (QC) parameters were evaluated:

- holding times
- laboratory method blanks
- field blanks (trip blanks)
- surrogate recoveries

- matrix spike and matrix spike duplicate (MS/MSD) recoveries
- laboratory control sample (LCS) recoveries
- field duplicate (FD)precision

All results, including data qualifier flags, are presented in Part III **(Tables 1 and 2)**, Summary of Analytical Data from Site Monitoring Wells and in Part IV **(Tables 3, 4, and 5)**, Summary of Analytical Data from Site Treatment System, of this Attachment A. All analytical results that required the addition of a qualifier flag based on the evaluation process are discussed below, and listed in Table 3. When a result is qualified, a reason code (RC) is also added to the affected sample result and both the qualifier and reason code are entered into the database. The qualifier flags and reason codes used for the Naples project results are summarized below:

Qualifier Flags

J = indicates an estimated value

U = indicates the analyte was not detected at the laboratory Method Detection Limit (MDL)

Reason Codes

T = trace concentration detected

1 = holding time violation

2 = method blank contamination

7 = field blank contamination

Holding Times

All samples were analyzed within the technical holding time limits for all of the analytical methods, **with the exception of one sample (STACK01) collected on 08 May 1997 and analyzed by MTO-3S. The laboratory analyzed the sample two days outside the limit and therefore the sample results required qualification as estimated (J) with a reason code (1) due to the holding time violation (see Table 3).**

Laboratory Method Blanks

All laboratory method blanks were analyzed at the required frequency and all were free of contamination, **with the exception of one analyzed on 24 July 1997 for method SW8020. The blank had a trace level concentration (0.437 ug/L) of toluene, which required qualifying one 10X diluted sample result as an estimated non-detect (UJ) with a reason code (2) due to method blank contamination (see Table 3).**

Field Blanks

Trip blanks were collected and analyzed with the associated groundwater samples for each monthly monitoring event. Gasoline (0.073 mg/L) was detected in the May trip blank for method M8015V, but no sample results were qualified. All detected gasoline results were more than 5 times the blank concentration. Two of the trip blanks analyzed by SW8020 had trace level contamination, but only one required qualification of the associated samples. Xylene (1.58 ug/L) was detected in the June trip blank, but was less than 5 times the level found in any associated samples. The July trip blank

had detection of benzene, ethylbenzene, and xylenes (.912, .363, and 2.15 ug/L, respectively). Trace level concentrations detected in the associated samples were qualified as estimated non-detects (UJ) with a reason code (7) due to field blank contamination (see Table 3).

Following up on the trip blank contamination, the Jacobs Project Chemist called the laboratory and requested new trip blanks be sent out with the next shipment of vials and asked the field technician to dispose of the remaining trip blanks on site. Trip blank contamination will be monitored in future sampling events.

Surrogates

Surrogate compounds are used to measure method performance on a sample-specific basis. These compounds were added to all groundwater samples and recoveries were within control limits for all samples. Surrogates were not added to vapor samples analyzed by MTO-3S.

Laboratory Control Samples

The LCS is the primary measure of accuracy and monitors overall method performance by the laboratory, independent of matrix effects. An LCS (and LCS Duplicate, when MS/MSD pairs were not run) were analyzed at the appropriate frequency with each analytical batch, and all spike recoveries were within the project required control limits.

Matrix Spike/ Matrix Spike Duplicates

The MS/MSD pair is used to measure precision and assess matrix effects. The MS/MSD pairs were analyzed at a frequency of 7 percent for the groundwater samples. All spike recoveries and RPD's were within the project required control limits. MS/MSD pairs were not required for the vapor samples.

Field Duplicates

Field duplicates are collected to measure field sampling precision. Duplicate samples were sampled at a frequency of one per sampling event or 7 percent for methods M8015V and SW8020. Field duplicates were not collected for method MTO-3S due to the small number of samples (two per event). The field duplicate precision objective (RPD control limit) is 40% for groundwater samples, which was met for all the sample and field duplicate pairs collected.

Preliminary Result Corrections

During the internal review of the preliminary data by the laboratory (ATL), the following errors were identified and corrected in the final data package. The detection of benzene in a STACK01 sample (11 June 1997) was determined to be false-positive and changed to a non-detect result. The benzene result (5.4 ppmv) in the VIBIO01 sample (15 July 1997) was incorrectly quantitated and changed to 4.8 ppmv. Further review of the preliminary result for benzene in the VMP02 sample (6 May 1997) by the laboratory (EMAX) resulted in the sample being diluted 4 times more and reanalyzed to bring the analyte within linear calibration range, thus the final value was 11,000 ug/L, instead of the preliminary 10,000 ug/L result. Only the corrected final results for these samples appear in this report.

The SW8020 preliminary sample results for the May sampling event were reported by the laboratory (EMAX) in two significant figures, rounded from three significant figures. The final results are reported in three significant figures, thus the differences seen between the monthly report containing preliminary results and the final results shown in this DQA. For the remaining analytical methods that month and all of the final results (including all of the June and July preliminary and final results), three significant figures were reported by both laboratories. The software that generates the data summary tables following this DQA was unable to display the zeros to the right of the decimal to show this precision in reporting the results.

Trace Values

Seven samples analyzed by method SW8020 and three samples analyzed by method MTO-3S had analytes that were qualified because the detected concentrations were greater than the method detection limit, but less than the practical quantitation limit. These results were considered too low to be accurately quantitated so they were qualified as estimated concentrations (J) with a reason code of (T) for trace level concentration (see Table 3).

Table 3 - SUMMARY OF QUALIFIED DATA

Location Id	Lab Sample Number	Date Sampled	Matrix	Method	Analyte	Result Value, Qualifier & Reason Code
MW01	97G082-01	15-Jul-97	water	SW8020	benzene	1.99 UJ(7)
MW02	97E034-02	06-May-97	water	SW8020	toluene	6.56 J(T)
	97G082-02	15-Jul-97	water	SW8020	toluene	3.7 J(T)
MW03	97G082-03	15-Jul-97	water	SW8020	ethylbenzene	0.543 UJ(7)
MW04	97F079-04	11-Jun-97	water	SW8020	toluene	1.8 J(T)
MW06	97G082-05	15-Jul-97	water	SW8020	ethylbenzene	0.352 UJ(7)
MW08	97G082-06	15-Jul-97	water	SW8020	toluene	3.97 J(T)
MW09	97F079-07	11-Jun-97	water	SW8020	toluene	2.38 J(T)
	97G082-07	15-Jul-97	water	SW8020	toluene	5.71 UJ(2)
	97G082-07	15-Jul-97	water	SW8020	xylenes	29.9 J(T)
MW15	97G082-17	15-Jul-97	water	SW8020	benzene	0.245 UJ(7)
VMP01	97G082-12	15-Jul-97	water	SW8020	benzene	0.326 UJ(7)
	97G082-12	15-Jul-97	water	SW8020	toluene	0.414 J(T)
	97G082-12	15-Jul-97	water	SW8020	xylenes	1.67 UJ(7)

Table 3 - SUMMARY OF QUALIFIED DATA (con't)

Location Id	Lab Sample Number	Date Sampled	Matrix	Method	Analyte	Result Value, Qualifier & Reason Code
STACK01	9705122-01A	08-May-97	vapor	MTO-3S	benzene	0.055 J(T1)
	9705122-01A	08-May-97	vapor	MTO-3S	toluene	0.18 J(1)
	9705122-01A	08-May-97	vapor	MTO-3S	ethylbenzene	0.090 J(T1)
	9705122-01A	08-May-97	vapor	MTO-3S	xylenes	0.41 J(1)
	9705122-01A	08-May-97	vapor	MTO-3S	gasoline	22 J(1)
	9706175-01A	11-Jun-97	vapor	MTO-3S	toluene	0.063 J(T)
	9706175-01A	11-Jun-97	vapor	MTO-3S	ethylbenzene	0.021 J(T)
	9707143-01A	15-Jul-97	vapor	MTO-3S	benzene	0.006 J(T)
	9707143-01A	15-Jul-97	vapor	MTO-3S	ethylbenzene	0.007 J(T)

Completeness

Overall sampling and analytical completeness objectives (100 percent) were met (see Table 4(A) and 4(B)).

TABLE 4 (A) - SAMPLING COMPLETENESS	
Sample Event	Groundwater Pump & Treat System, Naples Truck Stop
Laboratory	EMAX Laboratories and Air Toxics, LTD.
Matrix	Groundwater & Soil Vapor
Analytical Methods	MTO-3S, M8015V, & SW8020 (BTEX)
Date of Event	May, June, and July 1997
Total Number of Samples Planned	51
Total Number of Samples Collected	51
Sampling Completeness (%)	100

TABLE 4 (B) - ANALYTICAL COMPLETENESS	
Sample Event	Groundwater Pump & Treat System, Naples Truck Stop
Laboratory	EMAX Laboratories and Air Toxics, LTD.
Analytical Methods	MTO-3S, M8015V, SW8020 (BTEX)
Date of Event	May, June, and July 1997
Total Number of Samples Analyzed	51
Total Number of Results Reported	255
Total Number of Results Accepted	255
Total Number of Results Rejected	0
Analytical Completeness (%)	100

* Table 4(A & B) does not include TBs and FDs.

Summary

The quality of the data is acceptable and all analyte results are usable with only minor qualifications. Some analyte results are qualified as estimated (J) due to the values detected being trace (T) level concentrations. These trace values were between the laboratory Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL). Other groundwater results are qualified as estimated non-detects (UJ) due to method blank (2) or trip blank (7) contamination. One vapor sample required qualification of all the results as estimated (J) due to a holding time violation (1). No method M8015V results were qualified, except non-detects (U). Precision, accuracy, and completeness objectives were met for all analytes.

PART III

Summary of Analytical Data from Site Monitoring Wells

Analytical Data Summary Table 1

Monitoring Well Sampling Results Between 1-MAY-97 and 31-JULY-97

Facility: Naples Truck Stop, Utah

Method: M8015V

Location	Sample Date	Matrix	Sample Type	Units	PHCG
MW01	06-May-97	WG	N1	MG/L	0.04 U
	11-Jun-97	WG	N1	MG/L	0.27
	15-Jul-97	WG	N1	MG/L	0.04 U
MW02	06-May-97	WG	N1	MG/L	3.48
	11-Jun-97	WG	N1	MG/L	3
	15-Jul-97	WG	N1	MG/L	1.5
MW03	06-May-97	WG	N1	MG/L	0.04 U
	11-Jun-97	WG	N1	MG/L	0.04 U
	15-Jul-97	WG	N1	MG/L	0.04 U
MW04	06-May-97	WG	N1	MG/L	4.97
	11-Jun-97	WG	N1	MG/L	2.1
	15-Jul-97	WG	N1	MG/L	2.3
MW06	06-May-97	WG	N1	MG/L	0.04 U
	11-Jun-97	WG	N1	MG/L	0.04 U
	15-Jul-97	WG	N1	MG/L	0.04 U
MW08	06-May-97	WG	N1	MG/L	6.88
	11-Jun-97	WG	N1	MG/L	4.3
	15-Jul-97	WG	N1	MG/L	2.1

Legend:

WG = Water **N1 = Environmental Sample** **FD1 = Field Duplicate Sample** **MG/L = Milligrams per Liter**
PHCG = Petroleum Hydrocarbons (Gasoline) **U = Non-detect**

Analytical Data Summary Table 1

Monitoring Well Sampling Results Between 1-MAY-97 and 31-JULY-97

Facility: Naples Truck Stop, Utah

Method: M8015V

Location	Sample Date	Matrix	Sample Type	Units	PHCG
MW09	06-May-97	WG	N1	MG/L	5.49
	11-Jun-97	WG	N1	MG/L	3.5
	15-Jul-97	WG	N1	MG/L	0.9
MW10	06-May-97	WG	N1	MG/L	17.6
	11-Jun-97	WG	N1	MG/L	22.4
	15-Jul-97	WG	N1	MG/L	15
MW14	06-May-97	WG	N1	MG/L	0.04 U
	11-Jun-97	WG	N1	MG/L	0.04 U
	15-Jul-97	WG	N1	MG/L	0.04 U
MW15	06-May-97	WG	N1	MG/L	0.04 U
	11-Jun-97	WG	N1	MG/L	0.04 U
	15-Jul-97	WG	N1	MG/L	0.04 U
NGMW01	06-May-97	WG	N1	MG/L	0.04 U
	11-Jun-97	WG	N1	MG/L	0.04 U
	15-Jul-97	WG	N1	MG/L	0.04 U
NGMW06	06-May-97	WG	N1	MG/L	0.04 U
	11-Jun-97	WG	N1	MG/L	0.04 U
	15-Jul-97	WG	N1	MG/L	0.04 U

Legend:

WG = Water N1 = Environmental Sample FD1 = Field Duplicate Sample MG/L = Milligrams per Liter

PHCG = Petroleum Hydrocarbons (Gasoline) U = Non-detect

Analytical Data Summary Table 1

Monitoring Well Sampling Results Between 1-MAY-97 and 31-JULY-97

Facility: Naples Truck Stop, Utah

Method: M8015V

Location	Sample Date	Matrix	Sample Type	Units	PHCG
VMP01	06-May-97	WG	N1	MG/L	0.04 U
	11-Jun-97	WG	N1	MG/L	0.04 U
	15-Jul-97	WG	N1	MG/L	0.04 U
VMP02	06-May-97	WG	N1	MG/L	13.9
	11-Jun-97	WG	N1	MG/L	12.6
	15-Jul-97	WG	N1	MG/L	10

Legend:

WG = Water N1 = Environmental Sample FD1 = Field Duplicate Sample MG/L = Milligrams per Liter

PHCG = Petroleum Hydrocarbons (Gasoline) U = Non-detect

Analytical Data Summary Table 2

Monitoring Well Sampling Results Between 1-MAY-97 and 31-JULY-97

Facility: Naples Truck Stop, Utah

Method: SW8020

Location	Sample Date	Matrix	Sample Type	Units	BZ	BZME	EBZ	XYLENES
MW01	06-May-97	WG	N1	UG/L	10.1	0.257 U	0.252 U	0.762 U
	11-Jun-97	WG	N1	UG/L	177	0.257 U	0.252 U	0.762 U
	15-Jul-97	WG	N1	UG/L	1.99 UJ :7	0.257 U	0.252 U	0.762 U
MW02	06-May-97	WG	N1	UG/L	157	6.56 J :T	290	329
	11-Jun-97	WG	N1	UG/L	118	5.15	283	318
	15-Jul-97	WG	N1	UG/L	96.6	3.7 J :T	157	177
MW03	06-May-97	WG	N1	UG/L	0.238 U	0.257 U	0.252 U	0.762 U
	11-Jun-97	WG	N1	UG/L	0.238 U	0.257 U	0.252 U	0.762 U
	15-Jul-97	WG	N1	UG/L	0.238 U	0.257 U	0.543 UJ :7	0.762 U
MW04	06-May-97	WG	N1	UG/L	456	5.78	304	769
	11-Jun-97	WG	N1	UG/L	131	1.8 J :T	159	313
	15-Jul-97	WG	N1	UG/L	258	2.57 U	171	253
MW06	06-May-97	WG	N1	UG/L	0.238 U	0.257 U	0.252 U	0.762 U
	11-Jun-97	WG	N1	UG/L	0.238 U	0.257 U	0.252 U	0.762 U
	15-Jul-97	WG	N1	UG/L	0.238 U	0.257 U	0.352 UJ :7	0.762 U
MW08	06-May-97	WG	N1	UG/L	845	52.1	355	377
	11-Jun-97	WG	N1	UG/L	314	15.6	215	431
	15-Jul-97	WG	N1	UG/L	97	3.97 J :T	82.3	174

Legend:

WG = Water **N1 = Environmental Sample** **FD1 = Field Duplicate Sample** **UG/L = Micrograms per Liter** **BZ = Benzene**
BZME = Toluene **EBZ = Ethylbenzene** **U = Non-detect** **J:T = Estimated due to Trace level detection**
UJ:2 = Estimated non-detect due to method blank contamination **UJ:7 = Estimated non-detect due to field blank contamination**

Analytical Data Summary Table 2

Monitoring Well Sampling Results Between 1-MAY-97 and 31-JULY-97

Facility: Naples Truck Stop, Utah

Method: SW8020

Location	Sample Date	Matrix	Sample Type	Units	BZ	BZME	EBZ	XYLENES
MW09	06-May-97	WG	N1	UG/L	1790	6.43 U	576	447
	11-Jun-97	WG	N1	UG/L	1560	2.38 J :T	159	49
	15-Jul-97	WG	N1	UG/L	277	5.71 UJ :2	25.5	29.9 J :T
MW10	06-May-97	WG	N1	UG/L	11800	1380	1850	9170
	11-Jun-97	WG	N1	UG/L	13500	893	1970	8940
	15-Jul-97	WG	N1	UG/L	1520	63.6	292	1330
MW14	06-May-97	WG	N1	UG/L	0.238 U	0.257 U	0.252 U	0.762 U
	11-Jun-97	WG	N1	UG/L	0.238 U	0.257 U	0.252 U	0.762 U
	15-Jul-97	WG	N1	UG/L	0.238 U	0.257 U	0.252 U	0.762 U
MW15	06-May-97	WG	N1	UG/L	0.238 U	0.257 U	0.252 U	0.762 U
	11-Jun-97	WG	N1	UG/L	0.238 U	0.257 U	0.252 U	0.762 U
	15-Jul-97	WG	N1	UG/L	0.245 UJ :7	0.257 U	0.252 U	0.762 U
NGMW01	06-May-97	WG	N1	UG/L	0.238 U	0.257 U	0.252 U	0.762 U
	11-Jun-97	WG	N1	UG/L	0.238 U	0.257 U	0.252 U	0.762 U
	15-Jul-97	WG	N1	UG/L	0.238 U	0.257 U	0.252 U	0.762 U
NGMW06	06-May-97	WG	N1	UG/L	0.238 U	0.257 U	0.252 U	0.762 U
	11-Jun-97	WG	N1	UG/L	0.238 U	0.257 U	0.252 U	0.762 U
	15-Jul-97	WG	N1	UG/L	0.238 U	0.257 U	0.252 U	0.762 U

Legend:

WG = Water
N1 = Environmental Sample
FD1 = Field Duplicate Sample
UG/L = Micrograms per Liter
BZ = Benzene
BZME = Toluene
EBZ = Ethylbenzene
U = Non-detect
J:T = Estimated due to Trace level detection
UJ:2 = Estimated non-detect due to method blank contamination
UJ:7 = Estimated non-detect due to field blank contamination

Analytical Data Summary Table 2

Monitoring Well Sampling Results Between 1-MAY-97 and 31-JULY-97

Facility: Naples Truck Stop, Utah

Method: SW8020

Location	Sample Date	Matrix	Sample Type	Units	BZ	BZME	EBZ	XYLENES
VMP01	06-May-97	WG	N1	UG/L	0.238 U	0.257 U	0.252 U	0.762 U
	11-Jun-97	WG	N1	UG/L	0.238 U	0.257 U	0.252 U	0.762 U
	15-Jul-97	WG	N1	UG/L	0.326 UJ :7	0.414 J :T	0.252 U	1.67 UJ :7
VMP02	06-May-97	WG	N1	UG/L	11000	33.5	827	3270
	11-Jun-97	WG	N1	UG/L	7730	117	280	3450
	15-Jul-97	WG	N1	UG/L	2690	25.7 U	560	760

Legend:

WG = Water
N1 = Environmental Sample
FD1 = Field Duplicate Sample
UG/L = Micrograms per Liter
BZ = Benzene
BZME = Toluene
EBZ = Ethylbenzene
U = Non-detect
J:T = Estimated due to Trace level detection
UJ:2 = Estimated non-detect due to method blank contamination
UJ:7 = Estimated non-detect due to field blank contamination

PART IV

Summary of Analytical Data from Site Treatment System

Analytical Data Summary Table 3

Treatment System Sampling Results Between 1-MAY-97 and 31-JULY-97

Facility: Naples Truck Stop, Utah

Method: MTO-3S

Location	Sample Date	Matrix	Sample Type	Units	BZ	BZME	EBZ	PHCG	XYLENES
STACK01	08-May-97	GS	N1	PPMV	0.055 J :T1	0.18 J :1	0.09 J :T1	22 J :1	0.41 J :1
	11-Jun-97	GS	N1	PPMV	0.013 U	0.063 J :T	0.021 J :T	16	0.2
	15-Jul-97	GS	N1	PPMV	0.006 J :T	0.02	0.007 J :T	20	0.071
VIBIO01	06-May-97	GS	N1	PPMV	21	8.7	2.9	220	16
	11-Jun-97	GS	N1	PPMV	5.2	0.12 U	0.12 U	660	0.24 U
	15-Jul-97	GS	N1	PPMV	4.8	7.6	2.7	880	23

Legend:

GS = Soil Gas N1 = Environmental Sample PPMV = Parts per Million Volume U = Non-detect

BZ = Benzene BZME = Toluene EBZ = Ethylbenzene PHCG = Petroleum Hydrocarbons (Gasoline)

J:T = Estimated due to trace level vaues J:T1 or J:1 = Estimated due to holding time violation and/or trace level values

Analytical Data Summary Table 4

Treatment System Sampling Results Between 1-MAY-97 and 31-JULY-97

Facility: Naples Truck Stop, Utah

Method: M8015V

Location	Sample Date	Matrix	Sample Type	Units	PHCG
EPOTW01	06-May-97	WG	FD1	MG/L	5.25
	06-May-97	WG	N1	MG/L	5.62
	11-Jun-97	WG	FD1	MG/L	8.3
	11-Jun-97	WG	N1	MG/L	7.7
	15-Jul-97	WG	FD1	MG/L	3.2
	15-Jul-97	WG	N1	MG/L	2.6

Legend:

WG = Water **N1 = Environmental Sample** **FD1 = Field Duplicate Sample** **MG/L = Milligrams per Liter**

PHCG = Petroleum Hydrocarbons (Gasoline) **U = Non-detect**

Analytical Data Summary Table 5

Treatment System Sampling Results Between 1-MAY-97 and 31-JULY-97

Facility: Naples Truck Stop, Utah

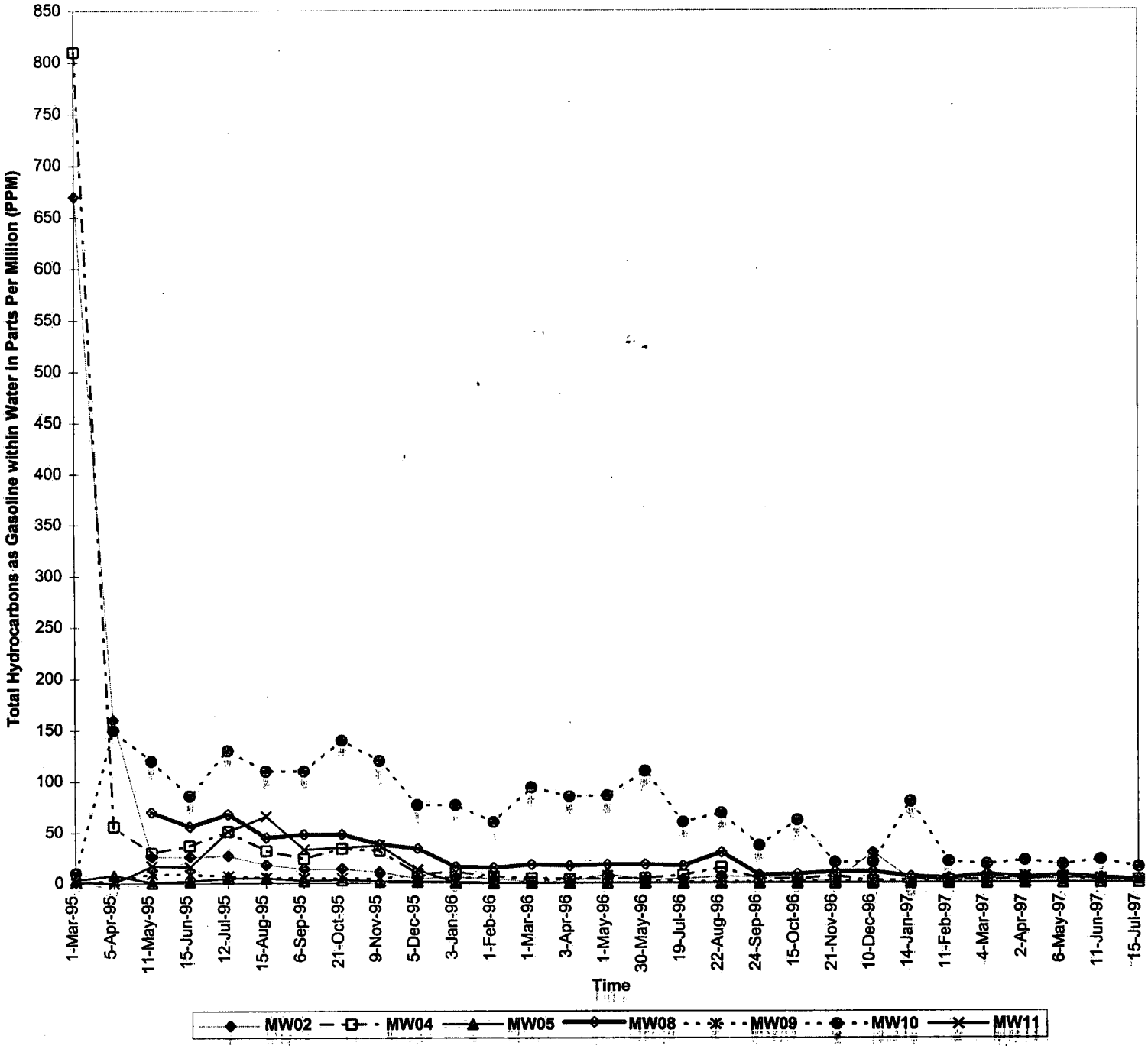
Method: SW8020

Location	Sample Date	Matrix	Sample Type	Units	BZ	BZME	EBZ	XYLENES
EPOTW01	06-May-97	WG	FD1	UG/L	1130	397	162	918
	06-May-97	WG	N1	UG/L	1050	369	150	855
	11-Jun-97	WG	FD1	UG/L	439	750	136	2790
	11-Jun-97	WG	N1	UG/L	436	748	135	2790
	15-Jul-97	WG	FD1	UG/L	322	128	49	639
	15-Jul-97	WG	N1	UG/L	279	110	43.8	570

Legend:

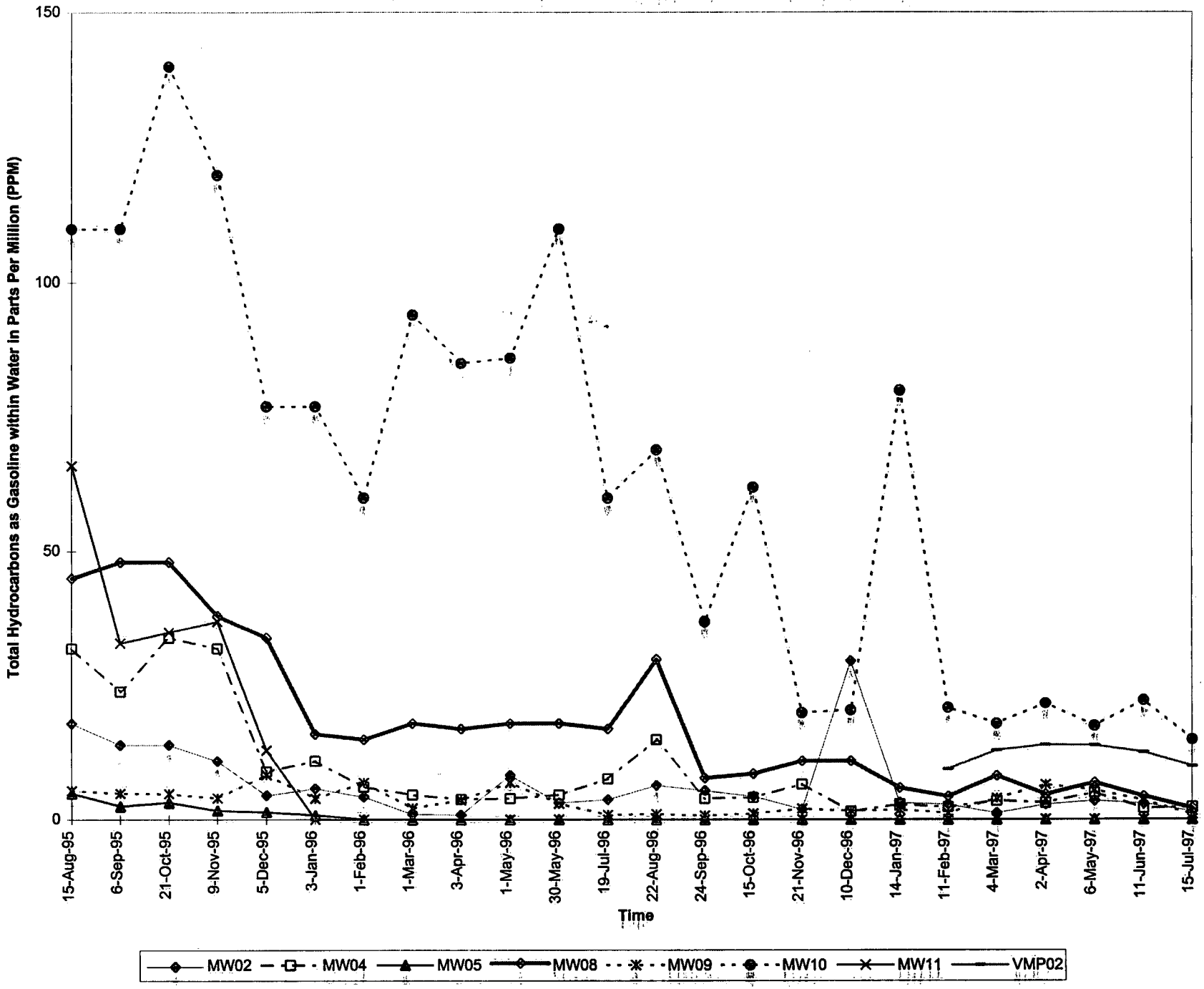
WG = Water
N1 = Environmental Sample
FD1 = Field Duplicate Sample
UG/L = Micrograms per Liter
BZ = Benzene
BZME = Toluene
EBZ = Ethylbenzene
U = Non-detect
J:T = Estimated due to Trace-level detection
UJ:2 = Estimated non-detect due to method blank contamination
UJ:7 = Estimated non-detect due to field blank contamination

Part V.a Monitoring Well Concentrations Over Time



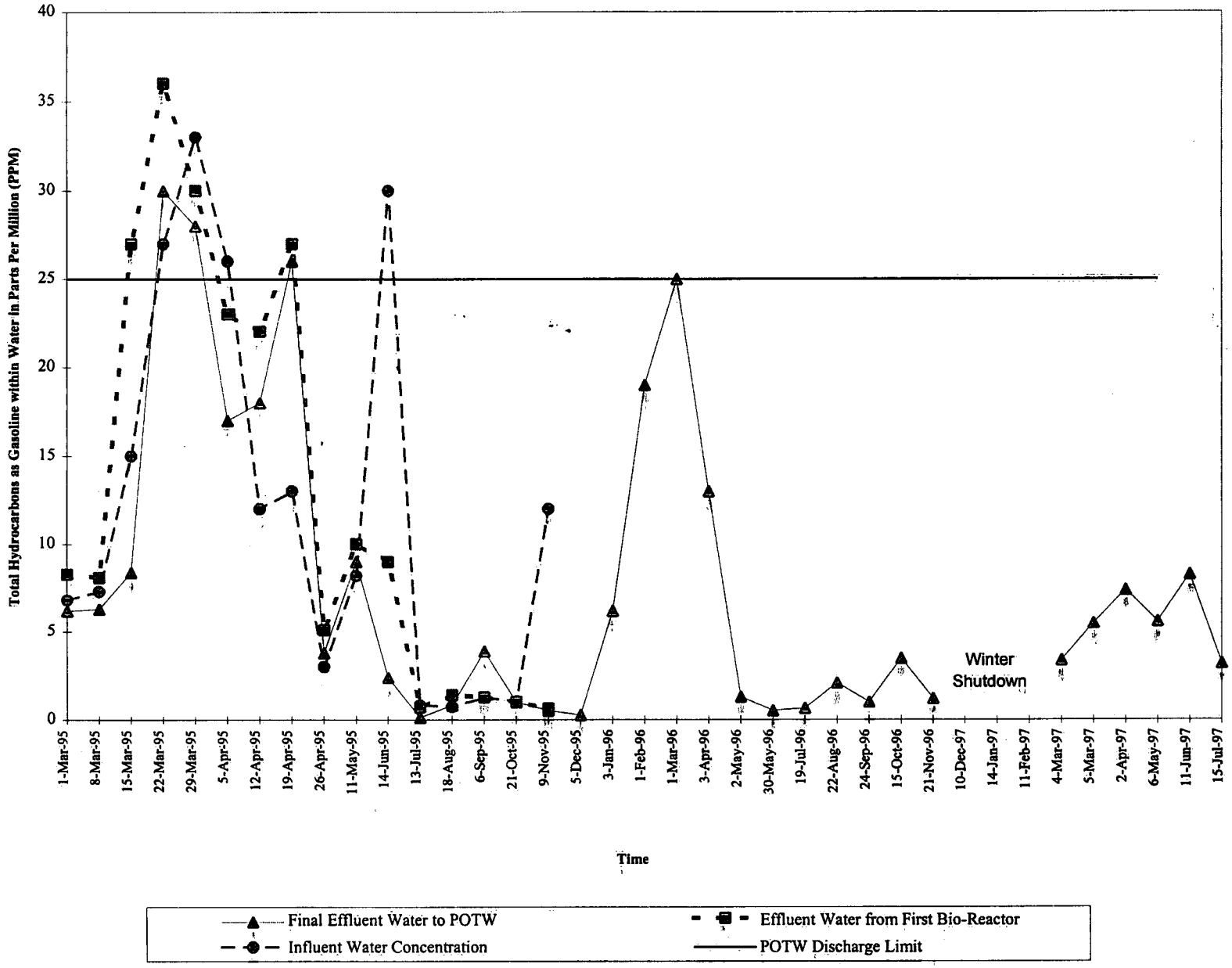
Monitoring Wells showing Detects

Part V.b Monitoring Well Concentrations Over Time (Last 24 months)



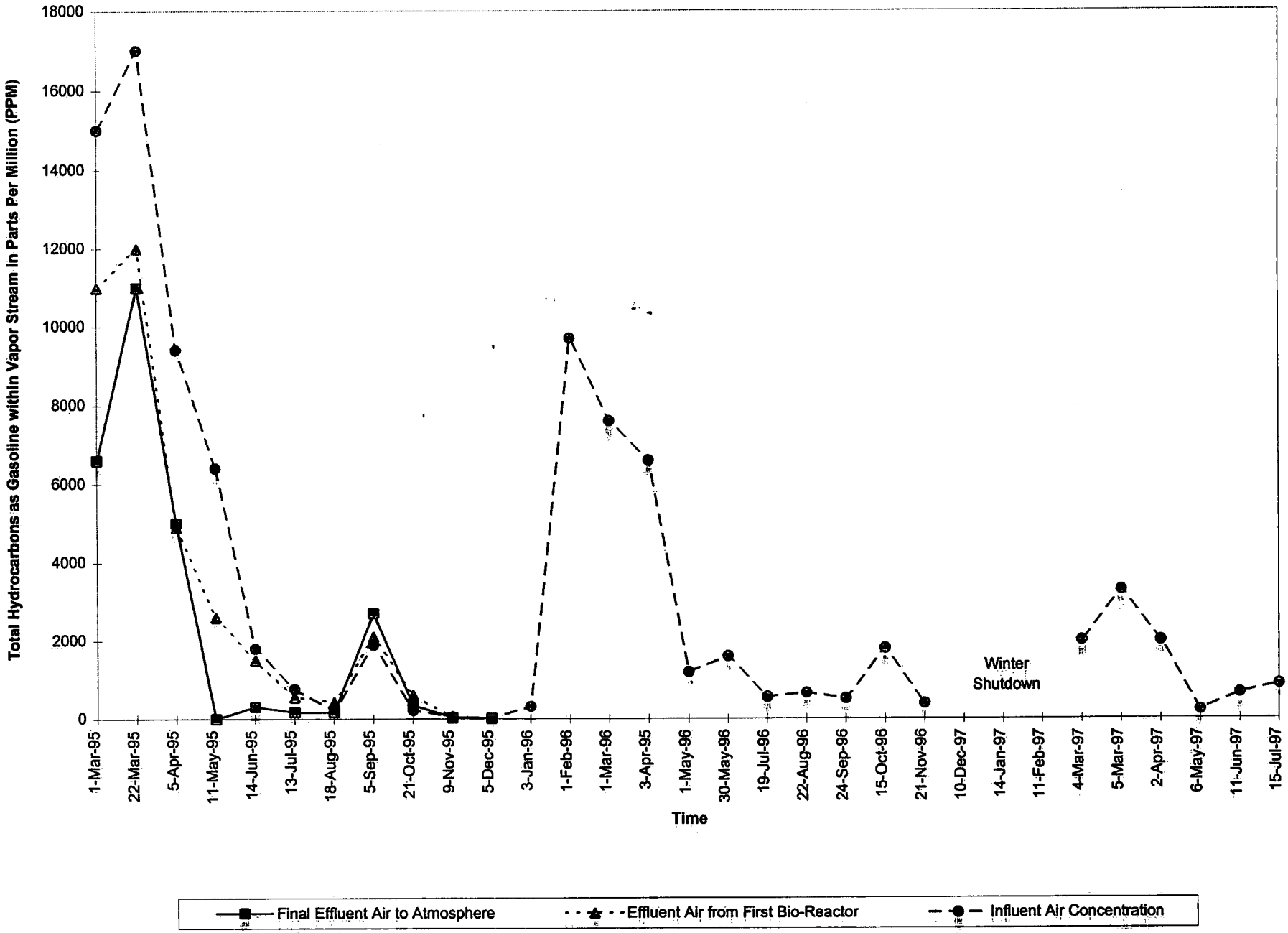
Monitoring Wells showing Detects

Part VI.a Water Treatment Concentrations Over Time



Effective January 1, 1996 Influent Water and Effluent Water from First Bio-Reactor samples were not collected due to Bio-System bypass

Part VII.a Vapor Concentrations Over Time



Effective January 1, 1996 Influent Air and Effluent Air from First Bio-Reactor samples were not collected due to Bio-System bypass

Part VIII

Summary of Quarterly Monitoring Results

PART VIII

Summary of Quarterly Monitoring Results

This quarterly reports covers the period of operation for May, June, and July 1997. Monthly sampling of groundwater monitoring wells was performed and vapor samples from the treatment system were sampled throughout the quarter. During this quarter, a vapor treatment system was added to the groundwater system.

Results of the data quality assessment included as Part II of this Attachment A indicate the quality of data collected during the quarter is acceptable and all results are usable with only minor qualifications.

Groundwater Monitoring/Treatment System Results For Water

Part V presents the graphical results of sampling from 14 groundwater monitoring wells during the quarter and Part III the summary of analytical data collected. Detectable concentrations of gasoline and BTEX were measured in **6** of the wells in **May, 7 in June, and 5 in July**. Concentrations of gasoline were measured by method M8015V and levels of BTEX were measured by method SW8020. All monitoring wells with levels of gasoline contamination greater than the reporting limit as measured by method M8015 were selected for graphical presentation in Part V. Concentrations of gasoline and BTEX were highest from MW10, located near the original center of the groundwater contamination plume. Gasoline concentrations measured in monitoring wells were as follows:

Table 2- Hydrocarbon Concentrations

Well No	TPH Concentration in May (mg/l)	TPH Concentration in June (mg/l)	TPH Concentration in July (mg/l)
MW-1	ND	0.27	ND
MW-2	3.48	3	1.5
MW-3	ND	ND	ND
MW-4	4.97	2.1	2.3
MW-6	ND	ND	ND
MW-8	6.88	4.3	2.1
MW-9	5.49	3.5	0.9
MW-10	17.6	22.4	15
MW-14	ND	ND	ND
MW-15	ND	ND	ND
VMP01	ND	ND	ND
VMP02	13.9	12.6	10
NGMW01	ND	ND	ND
NGMW06	ND	ND	ND

PART VIII

Summary of Quarterly Monitoring Results (Continued)

Overall, concentrations of gasoline measured from the 14 wells **decreased** from an average of **3.74 mg/l** as gasoline in **May** to **2.27 mg/l** in **July**. BTEX concentrations generally coincided with measured concentrations of gasoline since BTEX compounds are components of gasoline. (Refer to Part III for complete details).

Part VI presents the graphical results of water treatment concentrations collected during the quarter and Part IV presents the summary of analytical data collected. The effluent to POTW water sample result collected in **May, June, and July** indicates hydrocarbons measured as gasoline well below the 25 ppm POTW discharge limit (**5.62 mg/l, 8.3 mg/l, and 3.2 mg/l, respectively**). Effluent concentrations to the system were collected immediately following the air-water separator and have been consistently below the discharge limit for the past **eight** quarters of monitoring.

As can be seen in the Part VI graph, the effluent to POTW water sample collected in **May through July** appears rather unchanged. During **May, June, and July**, extraction wells RW-1, RW-2, RW-3, RW-4, RW-9, and RW-10, RW-11, RW-12 were online. Recovery wells RW-11 and RW-12 lie within the area of highest concentration within the site.

Approximately **24** gallons per minute were processed during **May, 14** gallons per minute during **June,** and **16** gallons per minute during **July.** The estimated total flow processed during the quarter was some **2,490,000** gallons over **89** days of operation.

The **average** effluent water concentration measured as gasoline **over the period** was **5.7 ppm** based on samples collected in **May, June, and July**. The total effluent load of gasoline extracted from the groundwater over **89** days is some **112** pounds calculated using effluent concentration.

Treatment System Results for Vapor

Part VII presents the graphical results of vapor treatment concentrations over time and Part IV the summary of analytical data collected from the treatment system. Concentrations of influent soil gas vapor as gasoline during **May, June, and July** were measured at **220 ppmv, 660 ppmv, and 880 ppmv, respectively.** This change in concentration is due to continuous operation in this period. As the number and location of active extraction wells are changed, the concentration of gasoline in the vapor will change accordingly. An estimated average flow of **80** cubic feet per minute (cfm) is processed through the system based on system air flow measurements. The total air flow processed during the quarter was some **10,253,000** cubic feet or **115,000** cubic feet per day (cfd).

The total vapor phase TPH treated over the quarter is some **1,400** pounds based on the vapor concentration. To date, approximately **66,400** pounds of volatile hydrocarbons have been removed from the recovery wells.

JACOBS ENGINEERING
September 10, 1997

Transmittal
Tr# 97U008

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FROM: Mike Sajadi MS
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ON: Contract No. DACA05-92-D-0040, Delivery Order 15
JEG Project No. 27-H103-15 Vernal,Utah - Vernal Naples Truck Stop

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1.		0	POLREP #49/JE #30 Quarterly Report	10 Sep 97

REMARKS:

Jacobs

D. Christensen *
S. Hill *
K. Poquette
Dan Sneed
Project Files
Contract Files

Kleinfelder

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