





DATE: September 16, 2005

TO: Terrence Johnson, U.S. EPA/ERT Work Assignment Manager

THROUGH: Scott Grossman, REAC Task Leader 

FROM: Lawrence Kaelin, REAC Field Chemist 

SUBJECT: Technical Memorandum, Voyager FPGC Screening Results, Sabana Abaja Industrial Site Work Assignment # 0-111

Background. The Sabana Abajo Industrial Park site (Site) is located in Carolina, Puerto Rico (PR). The Site is bounded to the north by Ittunegul Avenue, to the east by Route 3, to west by drainage, and to the south by the Pueblo Warehouse. The Site is located within an industrial park that includes a number of active manufacturing, pharmaceutical, storage, and commercial facilities. Tetrachloroethene (PCE) contamination at levels over 300 parts per million (ppm) in the groundwater and over 400 ppm in shallow subsurface soil were detected at the Gillette Facility within the industrial park. The source(s) of the contamination is not known, but was suspected to be the Gillette facility itself or the adjacent Biovail Pharmaceutical Company.

On January 10, 2005, personnel from the Response Engineering and Analytical Contract (REAC) to the U.S. Environmental Protection Agency (EPA) Environmental Response Team (ERT) were mobilized to the Site to conduct a limited extent of contamination assessment. Field screening for the rapid on-site analysis of samples for the presence of PCE was accomplished using a Photovac Inc., Model Voyager™ field portable gas chromatograph (FPGC). Screening results were used to direct on-going and subsequent sampling and drilling efforts to define the PCE plume.

Voyager FPGC. The Voyager FPGC is a multi-column, dual detector, battery operated, portable analytical instrument. It consists of a syringe and loop injector port, a choice of up to three chromatographic columns and a photoionization detector (PID) and an electron capture detector (ECD), which are configured in series. The columns and detectors are independently temperature controlled. The Voyager FPGC is interfaced with a lap top computer where the analytical chromatographic runs (chromatograms) are stored and processed using a priority software package (Sitechart™). Multi-point calibrations are constructed using known concentrations of standards to identify and quantify the samples using analytical methods called "Assays" as part of the Sitechart software. The Assay method also contains the integration parameters, temperature settings, detectors settings, calibration retention times and coefficients necessary to properly identify and quantify the samples for trichloroethene (TCE) and PCE. Stored chromatograms can be reprocessed using the Sitechart software if needed. The TCE and PCE field screening results from the PID are summarized on Tables 1 and 2, unless otherwise noted.

The Voyager FPGC was set-up primarily for the analysis of PCE and TCE. A certified gas standard (cylinder number: SX-24541) was used for calibration during the analysis of soil gas samples. A series of three or more volumes of the gas standard was injected using a gas-tight syringe into the syringe injection port of the Voyager FPGC and multi-point calibration curves were constructed. To analyze soil gas samples, known volumes of soil gas, collected in Tedlar™ bags, were injected into the Voyager FPGC and analyzed for TCE and PCE. Benzene, although not a compound of concern on the Site, was present in the gas standard and was used in the Assay method. As such, benzene was also reported for the soil gas and well headspace samples on Table 1.

An aqueous static headspace standard technique was used to construct calibration curves for the Assay methods used to analyze the groundwater samples. Certified liquid standards containing known concentrations of TCE and PCE in a solvent were used. In brief, aqueous static headspace standards were made by injecting known amounts of standard solutions into 20-milliliters (mL) of distilled, de-ionized water in a septum sealed 40-mL VOA vial. An equilibrium between the aqueous phase and the vapor phase headspace in the sealed VOA vial was established, typically within 20-minutes, at room temperature. The headspace was sampled using a gas-tight syringe through the septum of the VOA vial and injected into the Voyager FPGC, using the syringe injection port. A series of three or more injection volumes were used to construct multi-point calibration curves. To analyze groundwater samples, 20-mL of sample were placed in 40-mL VOA vials and allowed to equilibrate for 20-minutes at room temperature. Known volumes of headspace were injected into the Voyager FPGC and analyzed for TCE and PCE.

Calibration curves of three or more points were constructed daily, except for January 17, 2005 due to a contaminated standard and January 22, 2005 when analysis was terminated because the Voyager FPGC prematurely shutdown due to excessive ambient temperatures. In these cases the most recent date of calibration was used for quantification, January 15, 2005 and January 21, 2005, respectively. Linear regression (LR) was performed daily on the calibration data to check the linearity of the PID and ECD responses. The LR was forced through the origin and a coefficient of determination (R^2) was determined for each daily calibration which indicated the correlation between concentration and detector response. An R^2 of 1.0 would mean that the regression equation is ideal, with values closer to unity indicating a better correlation, which in turn indicates a linear PID and ECD response to TCE and PCE concentrations. An R^2 of 0.6 is considered sufficient to determine a reliable linear regression model, however for health or risk assessment purposes a more stringent value of 0.8 may be more appropriate (OSWER 1991). The R^2 values were greater than 0.94 for benzene, TCE and PCE via PID on January 13, 2005 and January 14, 2005, during the analysis of the soil gas and well headspace samples. The R^2 values for TCE via PID were greater than 0.93, during the analysis of groundwater samples from January 15, 2005 through January 22, 2005. The R^2 for PCE via PID ranged from 0.61, on January 19, 2005 to 0.95, on January 21, 2005, during the analysis of groundwater samples from January 15, 2005 through January 22, 2005. The R^2 for TCE and PCE via ECD was 0.95 for both, during the analysis of groundwater samples on January 21, 2005. The R^2 values for all daily calibrations, with the exception of the PCE via PID on January 19, 2005 at 0.61, were above 0.84, and as such, show that the LR were valid and the Voyager FPGC detectors responses were linear and operating correctly during the field screening activities of January 13, 2005 through January 22, 2005.

Observations and Activities. A PE Photovac Model Voyager FPGC, was used by the REAC field chemist for the on-site screening starting on January 13, 2005, and was configured for the detection and quantization of TCE and PCE, initially in soil gas samples. The well headspace from four wells (EW-2, EW-3, EW-5 and EW-6) was screened for the presence of benzene, TCE and PCE, for informational purposes only. A soil gas survey was then initiated on January 14, 2005 but was abandoned due to the shallow water table found locally, in some cases less than 2-feet below ground surface (bgs). This prohibited the collection of soil gas samples at the prescribed 4-feet bgs, typical for most soil gas surveys. Eight soil gas samples were collected and analyzed via Voyager FPGC before terminating the soil gas survey.

On January 15, 2005, at the request of the ERT Work Assignment Manager (WAM), the Voyager FPGC was reconfigured for the analysis of TCE and PCE in groundwater samples using static headspace techniques. Temporary piezometers were installed to a depth of 4-feet bgs using a direct-push Geoprobe drilling unit and groundwater samples were collected. Fifty two (52) groundwater samples were collected and analyzed for TCE and PCE from January 15 through January 22, 2005.

Results. The soil gas and well headspace results for benzene, TCE and PCE are presented in Table 1. The groundwater results for TCE and PCE are presented in Table 2. Several groundwater samples (R48 and R50) had extremely high TCE and PCE results that were above the linear range of the detectors of the Voyager FPGC and are therefore estimates. Copies of the field log book entries are compiled in Appendix A. The Voyager FPGC, chromatograms and raw data are presented in Appendix B. The Voyager FPGC field results were manually recalculated using LR on selected standards with the intercept forced through the origin prior to constructing Tables 1 and 2. Recalculation was necessary to include dilution factors, poor integration in some cases, and the over/under estimation observed in the some of the daily Assay method calibrations. The plots of the LR and the regression coefficients (slopes and R^2 values) are also compiled in Appendix B.

The soil gas TCE results ranged from Not Detected (ND), with a quantitation limit estimated at 0.010 parts per million by volume (ppmv), to 0.78 ppmv for sample 111-0105-4A-1. Samples 111-0105-31A-3, 111-0105-4-1 and 111-0105-4A-2 have TCE values biased artificially high as a result of poor peak to baseline integrations, probably due to matrix interferences. The soil gas PCE results ranged from ND to 0.65 ppmv for sample 111-0105-31A-3. Benzene, although not a Site compound of concern, ranged from ND to 0.23 ppmv for sample 111-0105-31-3. A large peak was detected for sample 111-0105-25-5 on the PID between the retention time benzene and TCE which may possibly be cis-1,2-dichloroethene.

The well headspace TCE results ranged from 0.53 ppmv for EW-5 to 7.2 ppmv for EW-3. The well headspace PCE results ranged from 3.3 ppmv for EW-6 to 48 ppmv for EW-5. Benzene, although not a Site compound of concern, ranged from 0.68 for EW-2 to 3.2 ppmv for well headspace sample EW-3.

The groundwater TCE results ranged from ND, with a quantitation limit of 0.010 microgram per milliliter ($\mu\text{g/mL}$), to 93 $\mu\text{g/mL}$ for sample R50. The groundwater PCE results ranged from ND to greater than 67 $\mu\text{g/mL}$ for sample R50. The results from the ECD were used to identify and quantify PCE on sample R48 and to identify and quantify TCE and PCE on sample 50, because the TCE and/or PCE peaks were beyond the linearity of the PID (off scale) for these samples. In all other instances the results from the PID were used to identify and quantify TCE and PCE.

Locations W-3, W-5 and W-6 were resampled from the same monitor wells, within 24 hours of purging the well, because of turbidity in the initial sample. The results of the resampled locations were similar to the initial sample results for TCE but higher by a factor of 2-20 times for PCE. Resampled results are listed in Table 2, in parenthesis, and should be used for the extent of contamination modeling and other decision making needs because they were less turbid and were within the 24 hours sampling criteria between well purging and actual sampling.

An early eluting peak and a large peak between the retention times of benzene and TCE were detected on the PID in the chromatograms of several groundwater samples (R14, R15, R16, R36, R47, R48, R50). These peaks were not detected on the ECD. It is believed that these peaks possibly correspond to the compounds vinyl chloride and cis-1,2-dichloroethene, respectively.

Future Activities. No future activities are planned for the Site.

REFERENCES

OSWER 1991. *Removal Program Representative Sampling Guidance, Volume 1: Soil, Section 5.6, Correlation Between Field Screening Results and Confirmation Results*. OSWER Directive 9360.4-10. November 1991.

Table 1
Soil Gas Results
Sabana Abaja Industrial Site
Technical Memorandum
September 2005

Sample Name	Type	Benzene	TCE	PCE
111-0105-19-1	Soil Gas-1' bgs	ND	0.071	0.023
111-0105-19-3	Soil Gas-3' bgs	ND	0.074	0.010
111-0105-25-3	Soil Gas-3' bgs	0.037	ND	0.078
111-0105-25A-4	Soil Gas-4' bgs	ND	ND	ND
111-0105-31-3	Soil Gas-3' bgs	0.23	0.067	0.65
111-0105-31A-3	Soil Gas-3' bgs	ND	0.63**	0.23
111-0105-4-1	Soil Gas-1' bgs	ND	0.78**	0.21
111-0105-4A-2	Soil Gas-2' bgs	0.21	0.69**	0.12
EW-2	Well Headspace	0.68	2.1	5.3
EW-3	Well Headspace	3.2	7.2	14
EW-5	Well Headspace	2.8	0.53	48
EW-6	Well Headspace	1.5	2.3	3.3

Results in parts per million by volume (ppmv)

TCE = Trichloroethene

PCE = Tetrachloroethene

bgs = Below ground surface

ND = Not detected, less than 0.010 ppmv

** = Integration poor, result artificially high

Table 2
Groundwater Results
Sabana Abaja Industrial Site
Technical Memorandum
September 2005

Sample	Trichloroethene	Tetrachloroethene
W-2	4.4	44
W-3	2.3 (7.3)	3.8 (19)
W-5	1.1 (1.9)	5.3 (12)
W-6	1.4 (1.9)	1.7 (39)
W-16	2.5	14
W-17	6.9	15
W-21	ND	ND
W-29	ND	ND
W-30	0.037	0.068
W-30 (Dup)	0.054	0.045
W-33	ND	ND
R1	1.6	2.9
R2	ND	ND
R3	0.019	ND
R6	ND	ND
R7	ND	ND
R9	ND	ND
R10	ND	ND
R11	0.010	ND
R12	ND	ND
R13	ND	ND
R14	0.14	ND
R14 (Dup)	0.08	ND
R15	0.021	ND
R16	0.019	ND
R17	ND	ND

Table 2 (Cont'd)
Groundwater Results
Sabana Abaja Industrial Site
Technical Memorandum
September 2005

Sample	Trichloroethene	Tetrachloroethene
R18	ND	ND
R19	ND	ND
R21	ND	ND
R22	ND	ND
R30	ND	ND
R31	ND	ND
R33	ND	ND
R34	ND	ND
R35	ND	ND
R36	0.026	0.011
R37	ND	ND
R40	ND	ND
R41	ND	ND
R42	ND	ND
R43	ND	ND
R45	ND	ND
R46	ND	ND
R47	0.022	0.11
R48	5.8	> 36*
R49	ND	ND
R50	93*	>> 67*
R51	ND	ND
R52	ND	0.013
R53	ND	ND
R54	ND	ND
R55	ND	ND

Table 2 (Cont'd)
Groundwater Results
Sabana Abaja Industrial Site
Technical Memorandum
September 2005

Sample	Trichloroethene	Tetrachloroethene
R56	ND	ND
R57	ND	ND

All Results in micrograms per milliliter ($\mu\text{g/mL}$)

ND = Not detected, less than $0.010 \mu\text{g/ml}$

Results in parenthesis () are results for the same locations, re-sampled 2 days later

> = Greater than

>> = Much greater than

* = Results determined using electron capture detector (ECD)

Appendix A
Field Log Book Entries
Sabana Abaja Industrial Site
Technical Memorandum
September 2005

"Outdoor writing products for outdoor writing people."

If Found, Please Return To:

Name: _____

LOCKHEED-MARTIN/REAC

2890 Woodbridge Avenue

Edison, NJ 08837-3679

Phone: (732) 321-4200

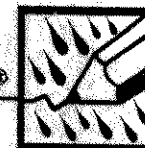
COC & Sample Shipping Procedures

Peer to view COC record	Call Sample Receiving Hotline at (732) 652-9345 or SRT's Cell Phone (609) 234-5318. Give
Remove pink copy for the Task Leader	- FedEx tracking # - Chain of Custody Record #s - # of Coolers - # of samples and matrices - Analyses requested - Subcontract lab info
Place original COC in a plastic bag, seal, and secure to the lid inside the cooler.	Fax COC record to (732) 494-4021 (REAC analyses) or (732) 494-4020 (subcontract analyses) Follow-up to confirm sample receipt.
Tape and seal the cooler.	

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FIELD

All-Weather Notebook

No. 351

REAC N-B-0076

<i>Sabana Abaya # 0-111</i>
<i>Voyager GC</i>

4 5/8" x 7" - 48 Numbered Pages

"Rite in the Rain"
ALL-WEATHER WRITING PAPER



Name L. Kaelin

Address REAC

Phone _____

Project Sab suq
WAT # 111

Clear Vinyl Protective Slipcovers (Item No. 30) are available for this style of notebook. Helps protect your notebook from wear & tear. Contact your dealer or the J. L. Darling Corporation.

REAC IV-B-0076

CONTENTS

PAGE	REFERENCE	DATE
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Voyager GC

Continued in
(log book #)

REAC IV-B-0077
sab-111a ; sab-hs-1 ; sab-hs-2
Brief method ASSAY
Column B: 60°C - 150

8 psi
ECD - hi-sensitivity
PID hi-sensitivity
80 sec delay - integration
800 sec analysis time
400 sec blank flush
slopes: up/down 0.1/0.1
injection mode: 100 µl
normalized injection vol.
filter = 3.0

Column B: 20m, 0.32mm ID,
1.5 µm Thickness → Supelco wax 10 (M)
(WAX phase capillary column)

1/12/05

EGG E 202 - Voyager GC
STDA → cyl # SX-24541

VCE → 20.50 ppm V

Ø → 19.98

MeCl → 18.51

C12 DC propane → 16.30

CT → 18.86

TCE → 19.89

PCE → 20.65

12 DB methane → 16.14

in N₂ balance

0930 @ 1300 psi

PID		
VCE	102	
MeCl	190	
CT	232	ECD
Ø	235	
TCE	278	
PCE	389	

ER - EAC 00120

1/12/05

SAB-111a, APP

3

1004L - STDA @ 20 ppm
PID B5011201

pk @ ~100

#2	14222	μVS	336 sec φ
#3	13820		418.4 TCE
#4	19832		616.5 PCE
#5	4402		850.0 DCP

ECD

#3	44990	274.7 sec CT
#4	15761	625.6 sec PCE

5041 STDA

B5011202

PID

#3	10918	335.7 TCE
#4	10400	417.6 TCE
#5	12308	610.7 PCE
#6	3826	844.9
→ #1	5280	110.1 (VCE?)
ECD		
#2	37780	294.4
#4	12040	612

1/12/05

10µl STD A → B 5011203 . PID/SCD

PID

#2	818	109.2
#3	1933	335.7
#4	2206	418.0
#5	2067	612.8
#6	391	847.1

ECD

#2	9653	273.9	CT
#3	1317	620.3	PCE

25µl STD A → B 5011204

PID

#1	3180	336.3	
#2	3306	419.6	TCE
#3	3132	619.7	PCE
#4	701	854.4	

ECD

#2	17758	274.4	CT
#4	2323	627.2	PCE

1/12/05

Blank (no inject) → B 5011205

PID #1	@ 406 sec	→ 23 mV
#2	@ 512.9 sec	→ 106 mV
SCD #1	@ 101.2 sec	→ 4.2 mV

HS - water blank → B 5011206
100µl

TCE / PCE → STD A

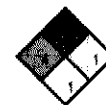
RESTEK

Cat# 30420
2000 µg/ml each in Purge and Trap Methanol
Trichloroethene Standard
Lot# A034749 Exp: 7/08 Store: Freezer
Restek Corporation - 110 Banner Circle - Bellefonte, PA 16823

10µl / 20ml
H₂O

RESTEK

Cat# 30413
2000 µg/ml each in Purge and Trap Methanol
Tetrachloroethene Standard
Lot# A039932 Exp: 11/07 Store: Freezer
Restek Corporation - 110 Banner Circle - Bellefonte, PA 16823

10µl / 20ml
H₂O

$$\frac{10 \mu\text{l} \times 1 \text{ ml}}{20 \text{ ml}} \times \frac{2000 \mu\text{g}}{1 \text{ ml}} = 1 \frac{\mu\text{g}}{\text{ml}}$$

mg/L = ppm

1/12/05

207.

HS-STD @ 10 μ l \rightarrow 100 μ l inject
TCE/PCE(TCE) PID # 3 @ 419.65 = 24270
(PCE) # 4 @ 619.2 = 41851

ECD

#3 @ 428.45 \rightarrow 2406 (TCE)
#4 @ 627.7 \rightarrow 44644 (PCE)HS-STD A @ 10 μ l injection
TCE/PCE B5011208TCE AT = 420 secs
PCE AT = 620 secsBTEX \rightarrow STD B**RESTEK**

Cat# 30213

2000 μ g/ml each in Purge and Trap Methanol

BTEX Standard

Lot# A030588

Exp: 3/08

Store:

Freezer

Restek Corporation - 110 Banner Circle - Bellefonte, PA 16823

10 μ l / 20 ml
H₂O

$$2000 \mu\text{g/ml} \times \frac{10 \mu\text{l}}{20 \times 10^3 \mu\text{l}} = 1 \mu\text{g/ml} = 1 \text{ ppm}$$

B5011 209

HS-BTEX-10 μ l @ 20 μ l inject
HS-STD BHS-STD B @ 100 μ l inject
B5011210Change VOA/PTV time 14:31 \rightarrow 16:31HS-STD B @ 100 μ l inject
Analyze time = 2000 sec
B5011-211

HS-STD C \rightarrow 10 μ l TCE
10 μ l PCE
10 μ l BTEX / 20 ml H₂O
all @ 2000 μ g/ml

$$2000 \mu\text{g/ml} \times \frac{10 \mu\text{l}}{20 \text{ ml}} \times \frac{1 \text{ ml}}{1000 \mu\text{l}} = 1 \mu\text{g/l} = 1 \text{ ppm}$$

01/12/05

1000 psi 17000

300 psi @ 1830 7ka
43.1HS STD C @ 10 μ l each \rightarrow 100 μ l
B5011212 injectHS STD C @ 20 μ l each / 20 μ l inject
B5011213HS STD C @ 10 μ l each / 150 μ l inject
B5011214

CT = 1.886	1.998	PGE 2.065
TCR 1.989	DCP 1.630	

01/13/05 Voyager GC

Set up in Gillette loading dock
BLANK - no inject
no target peaks - cleangas - STD A \approx 20 ppm v/v gas

B5011301

100 μ l - gas STD A (20 ppm)

B5011301

peak shifted, Δ RT• 50 μ l gas STD A

B5011302

noise peak, possible 2 sec
loop inject time is pulling in
crap in air• 20 μ l - gas STD A

B5011303

- set inject time
junk peaks to 0.1 sec10 μ l - gas STD A

B5011304

calibration

replaced syringe w/ HPLC

10 01/13/05

Voyager GC

100 μ l GAS STD A
B 5011305 - no junk pkgs
calibration

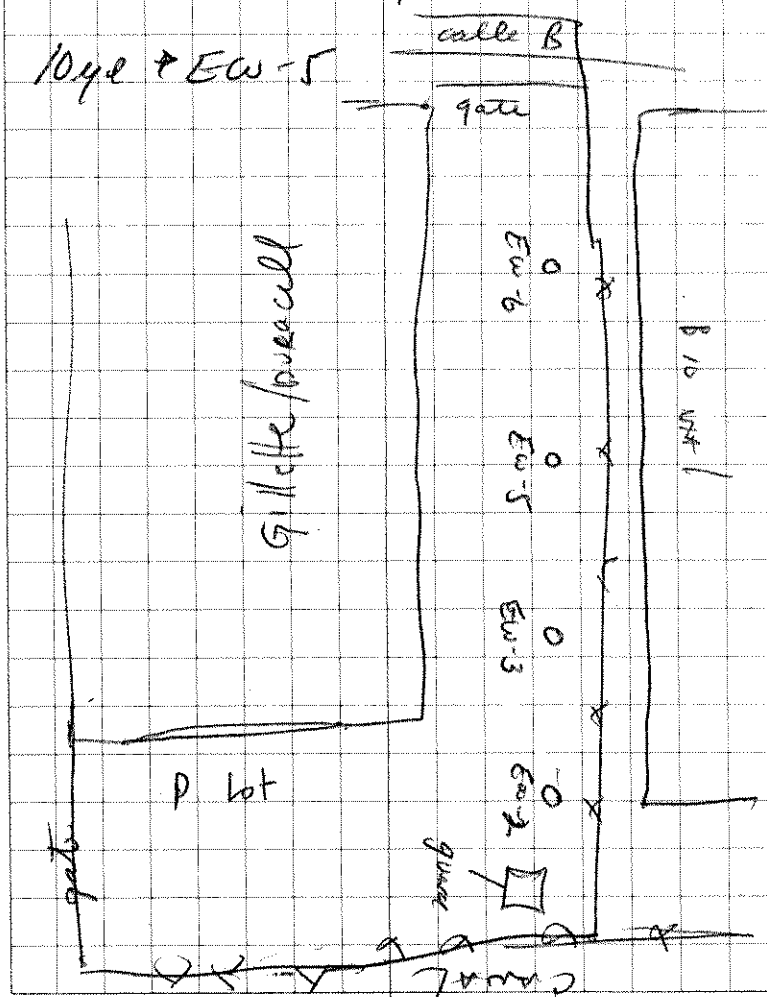
Some gas std B → NG
B5011306 repeat

50.41 gas STD B OK
B 5011307

2041	903 STD B	OK
M 5011308		

01/13/05 2354

well # → EW-5 - collected
Koodspace bag @ 1334
B 5011309



01/13/05

Voyager GC

B5011309 cont'd @ 10yr
 ECD / PID
 PCE 6.643 / BENZ 0.407
 TCE 0.107
 PCE 19.10

EW-5 → 100µl inject
 ECD PID
 PCE ~115ppm TCE 3.579ppm
 PCE ~143ppm

B5011310

EW-6 → 100µl, well headspace
 (resampled)
 ECD PID
 PCE 4.480 PCE 13.0
 B5011311 BENZ 2.082
 TCE 4.648

01/13/05

B5011312

EW-2 well headspace
 100µl B5011312
 ECD / PCE = 10.2 collected @ 1455
 $\phi = 0.982$, TCE = 4.243, PCE = 21.8 via PID

EW-3 → B50113

100µl

ECD

PCE = 39.4

PID

Benz = 0.002

TCE 14.2

PCE 58.6

Blank no injection
 OK

10µl STD A

B5011315

50µl STD A

B5011316

100µl STD A

B5011317

01/13/05

Voyager GC

BLANK

B5011368

no injection

OK

01/14/05

50 µl gas STDA
Abort

B5011400

B5011401 - BLANK

? 50 µl gas STDA
B501140210 µl gas STDA new bag A
B5011403 new syringe50 µl gas STDA
B5011404

01/14/05

50 µl gas STDA B
B5011405BLANK
B5011406
no injection100 µl → sample 111-0105-19-1
(VOCs = 1.1 ppm)
B5011407100 µl - 111-0105-19-1 (new syringe)
B5011408
no ~~target~~ peaks100 µl → sample 111-0105-19-3
(VOC = 1.5 ppm) ~~target~~
B5011409 no peaks500 µl → 111-0105-19-3
B5011410

01/14/05

Voyager GC

100 μ l 90% STD A (500 μ l)
 B 5011411 syringe

10 μ l \rightarrow 111-0105-25-3'
 (VOCs = 539 ppm)
 B 5011412

100 μ l \rightarrow 111-0105-25-3'
 413

large PID peak / not GC
 before \sim benzene

50 μ l \rightarrow 111-0105-25
 414

100 μ l STD A OK
 415

BLANK - no injection

01/14/05

100 μ l 111-0105-25-3' / STD A
 B 5011417
 unknown peak \neq benzene

100 μ l \rightarrow 111-0105-25A-4'
 (VOCs = 30 ppm)
 B 5011418

100 μ l 111-0105-31-3'
 (VOCs = 20 ppm)
 B

100 μ l - sampling assembly
 BLANK

100 μ l \rightarrow 111-0105-31A-3'

01/14/05 Voyager GC

30 μ l STD A

422

ghost pk present?

new syringe, new T bag of
STD A

100 μ l STD A

no ghost peak

100 μ l \rightarrow 111-0105-4-1'
B 5011424

100 μ l \rightarrow 111-0105-4A-2'
B 5011425

100 μ l STD A

500 μ l syringe
B 5011426

OK

01/14/05 Voyager GC

100 μ l B 5011427

111-0105-25-3'

1 cubic inch = 16.39

01/15/05 Headspace analysis

50 μ l \rightarrow STD C HS (old)
(@ 1 ppm [as μ g/ml])
B 5011500

1 ppm

10 μ l \rightarrow REACT HS (W-30)
B 5011501 HS

100 μ l \rightarrow REACT (GW-W30) (HS)
B 5011502
TCE (PCE \rightarrow W-60, 16)

100 μ l \rightarrow GW-W21
B 5011503

20
01/13/05

Voyager GC / Head Space

100 μ l \rightarrow GW-17 (HS)
B 5011504
>>> hot peak
~ BENZ / TCE / PCE

clean out block
no injection
B 5011505 \rightarrow OK

10 μ l GW-17 (HS)
B 5011506
PID ECD
10X { BENZ 2.857
TCE 3.214 * TCE 0.192
PCE 3.561 PCE 3.747

(*) for non-analytical info
~ 30 ppm BZ, TCE, PCE

100 μ l GW-W33 (HS)
~ clean
B 5011507

notes connected HS
Library

381 Tetra Cethylene \rightarrow PCE T Cethylene

10 μ l MW-2 (HS)
B 5011508
TCE > PCE

note:
B 5011508 recalculated

10X { PID ECD
BENZ = TCE = PCE =

5 μ l MW-2 (HS)
B 5011509
PID ECD
BZ = low ppb PCE = 187
TCE = 7.911
PCE = 175

100 μ l syringe block (100 μ l air / month injection)
B 5011510
OK

01/15/05

Voyager GC - HS
1042 - STD C - HS (old C)
B5011511

1042 STD C - HS (old C)
B5011512

method → sub-ha - 1

01/15/05

RESTEK

Cat# 30413
2000 ug/ml each in Purge and Trap Methanol
Tetrachloroethene Standard
Lot# A033932 Exp: 11/07 Store: Freezer
Restek Corporation - 110 Banner Circle - Bellefonte, PA 16823



STD - D (HS)
1042
TCE/PCE

RESTEK

Cat# 30420
2000 ug/ml each in Purge and Trap Methanol
Trichloroethene Standard
Lot# A033756 Exp: 4/08 Store: Freezer
Restek Corporation - 110 Banner Circle - Bellefonte, PA 16823



in 20ml
H₂O

1042 of each x 2000 ug/ml x 1 ml = 1
20 ug/ml
1 ug/ml → 1 ppm of TCE & PCE
(ppm)

01/15/05

1042 → MW-6 (HS)
B5011513

PID ECD

10X / TCE 4.17 PCE
PCE 2.387

PID → unknown peaks > BZ LTCE CRT

542 STD D (HS)
TCE / TCE @ 1 ppm
B5011514

1042 STD D (HS)
B5011515

1042 MW-3 (HS)
B5011516

PID / BZ

10X / TCE
PCE

01/15/04 Voyager GC → HS

• 50µl STD D (AS)
B 5011517

• 10µl MW-5
B 5011518
TCE / PCE

• 100µl REACT-DUP (HS)
(GLW-W30)
B 5011519

PID → B2 0.455 PCE / ECD
PCE 0.775
PCE 0.835

• 100µl STD D - (HS)
B 5011520

note: Summa results
on soil gas (25-3')

VCE ≈ 27 ppmV
C12 DCE ≈ 27 ppmV

01/16/05 DATA

B 5011514 5 µl 0.05 ppm
B 5011515 10 µl 0.1 ppm
B 5011517 50 µl 0.5 ppm
B 5011520 100 µl 1.0 ppm

µl	ppm	PID	ECD	TCE	PCE
* 5	0.05	2593	92	3152	1937
10	0.10	3685	141	4575	3109
50	0.50	13512	448	9758	7889
100	1.00	24159	790	15907	14318

$$y = mx + b, \quad b \rightarrow 0$$

$$\text{TCE / PID} \rightarrow y = 24882x; R^2 = 0.9838$$

$$\text{PCE / PID} \rightarrow y = 16957x; R^2 = 0.8372$$

$$\text{TCE / ECD} \rightarrow y = 817.98x; R^2 = 0.973$$

$$\text{PCE / ECD} \rightarrow y = 14788x; R^2 = 0.952$$

280910100

←PID→

←ECD→

Row	TCE	PCE		TCE	PCE
504	154940	210417	*/*	17964	167836*
505	923	115		ND	ND
506	17139	24864		1005	25354
7	121	61.5		ND	14.5
8	10964	68361	*/*	428	52888
9	5424	37208		243	36459
13	3520	2889		124	1671
16	5672	6405		158	4692
18	2699	9068		54.0	7592
19	1333	759		36.8	380

	sample	TCE/PID	PCE/PID	TCE/ECD	PCE/ECD
10x	gw-w30	0.031	0.24	ND	0.081
1x	gw-w30	0.037	0.068	0.039	0.030
1x	gw-w24	0.001	0.001	0.021	ND
1x	gw-w17	6.23*	12.41*	21.96*	11.35
10x	gw-w17	6.89	14.66	12.29	17.15
1x	gw-w33	0.005	0.004	ND	0.001
10x	MW-2	4.41	40.31	5.23	35.76 ✓
20x	MW-2	4.36	43.89	5.94	49.31
10x	MW-6	1.42	3.78	1.93	3.17
10x	MW-5	1.09	5.35	0.66	5.13
1x	gw-w30	0.054	0.045	0.045	1.026
10x	MW-3	2.279	3.777	1.932	3.173

Headspace

TCE

PCE

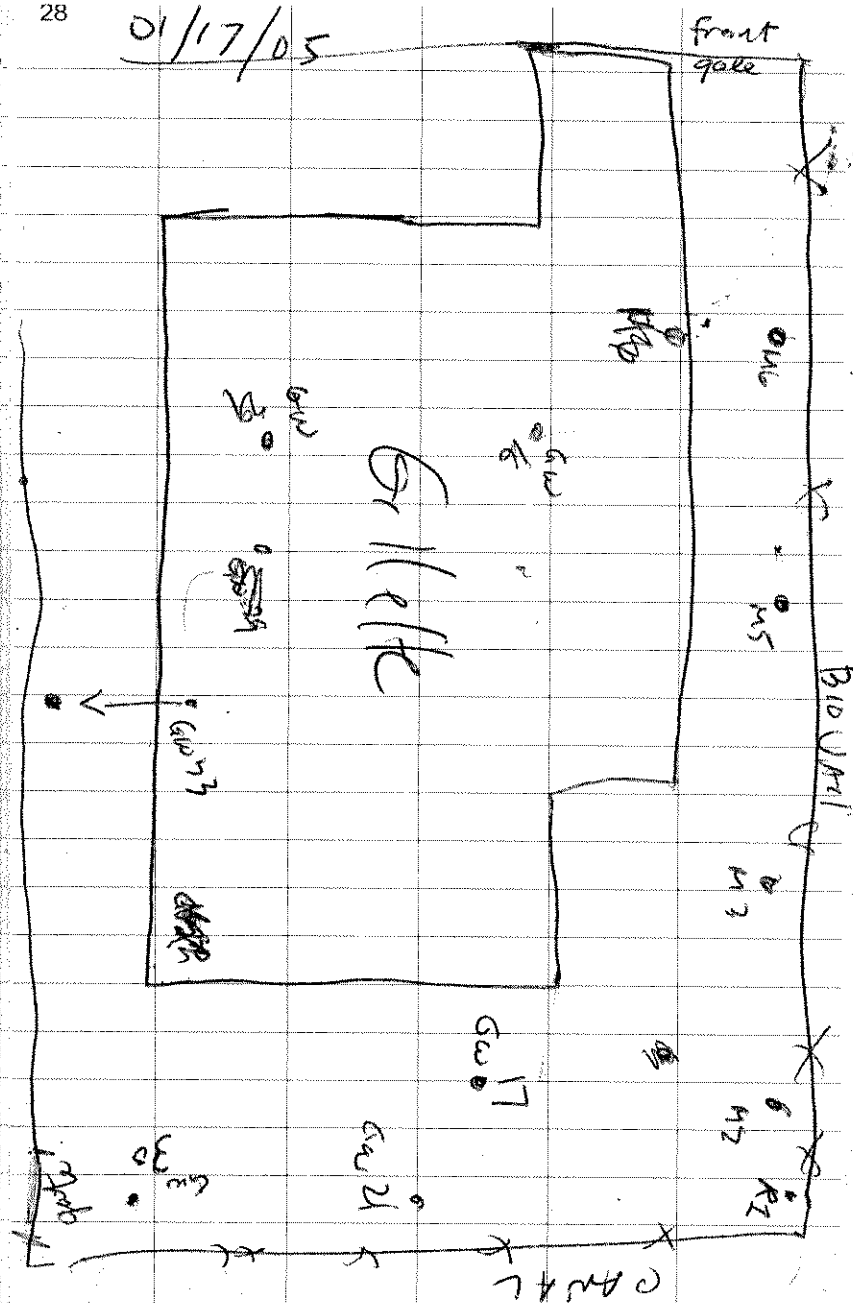
gw-30	0.054	0.045	0.026
gw-21	0.001	0.001	ND
gw-17	6.9	14.7	17.2
gw-33	0.005	0.004	0.001
MW-2	4.4	40.3	35.8
MW-6	1.42	3.9	3.2
MW-5	1.1	5.4	5.1
gw-31(dup)	0.1		
MW-3	2.3	3.8	3.2

04/17/05

Headspace (GWL)

	TCE	PCE	NOL
MW2	4.4	40.3	1.5 ga
↓ 3	2.3	3.8	2.0 ga
↓ 5	1.1	5.4	1.5 ga
↓ 6	1.4	3.9	1.5 ga
GW 17	6.9	17	1.5 ga
↓ 21	ND	ND	1.5 ga
↓ 30	ND	ND	1.5 ga
↓ 33	ND	ND	1.5 ga

01/17/05



01/17/05 Voyage GC

Method SAB-hs-2
 100 µl water blank (HS)
 B5011700

100 µl STD D B5011701
 TCE/PCE too low
 syringe?

10 µl STD D → B5011702
 TCE/PCE too low?

~~100 µl~~ 50 µl STD D
 B5011703

STD E 100 µl → B5011704
 10 µl of 2000 ppm TCE / 20 µl
 2000 ppm PCE / H₂O

1 ppm TCE/PCE
 TCE/PCE from 01/15/05/iced

01/17/05

Voyager GC

• 50 μ l STD E
B 5011705
10 μ l STD E
B 5011706

• 25 μ l STD E
B 5011707

• 5 μ l STD E
B 5011708

• 100 μ l MW 29
B 5011709
~ clean

• 100 μ l MW 16 \rightarrow B 5011710
B (syringe?)

recal \rightarrow ~ 100-200 TCE / ACE

• 100 μ l MW 16 \rightarrow 8 ppm TCE
offscale (unknown \rightarrow off) VV hot? \rightarrow 18.5 ppm
B 5011711

01/17/05

Voyager GC

• 100 μ l syringe blank
B 5011712
OK

• 10 μ l MW-16 (new vial)
B 5011713
V. hot
10X { BC 12 0.209 \rightarrow 2.1
TCE 0.599 \rightarrow 6.0
PCR 17.38 \rightarrow 17.4

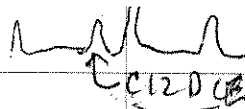
• 100 μ l MW-29 (new vial)
B 5011714
clean \checkmark

• 20 μ l STD E
B 5011715

• blank - no injection
B 5011716
OK

10/17/05

Voyager GC



11/17/05

104e → R1

B5011717

~ 3.8 TCE
3.6 PCR

benz 0.46

254e → R1

B5011718

R1 → S. turbid

resampled MW-2

3 x VOL → 1.5 ga purged

• 1/2 VOA (clean) @ 01/17/05
- 1537

started turbid but cleared up

104e → MW-2 (resample repeat)

TCE 7.85

benz 1.1

PCR > 46.41

B5011719

54e MW-2 resample
(syringe?)

PCR 11.3
PCR 60

B5011720

01/17/05

Voyager GC

resampled MW-3

clear - dry @ 1.0 ga

(3 x VOL → 2.0 ga)

sampled after recharged 2x

01/17/05 - 1626

1004e → R2

B5011721

M. turbid

~ Clean

TCE = 0.053 but

bed integration → ND

slope 0.1 → 0.004

104e MW-3 (resampled)

B5011722

resampled MW-5

clear purged dry @ 1.0 ga

(3 x VOL → 1.5 ga)

sampled after recharged 2x

01/17/05 @ 1654

04/18/05

Voyager GC

RESTEK

Cat# 30420

2000 ug/ml each in Purge and Trap Methanol

Trichloroethene Standard

Lot# A034749

Exp: 7/08

Store: Freezer

Restek Corporation - 110 Benner Circle - Bellefonte, PA 16823



STDF

10 µl of
each in
20 ml
H₂O →
1 ppm**RESTEK**

Cat# 30413

2000 ug/ml each in Purge and Trap Methanol

Tetrachloroethene Standard

Lot# A033932

Exp: 11/07

Store: Freezer

Restek Corporation - 110 Benner Circle - Bellefonte, PA 16823



- 100 µl syringe injection
B 5011800 OK

- 100 µl STDF
B 5011801

- 50 µl STDF
B 5011802

- 25 µl STDF
B 5011803

- 10 µl - 10 µl STDF
804

- 10 µl - 10 µl STDF → 805

01/18/05

← PID
TCI→ ECD →³⁷

Peak#	Inject	TCE	PCE	TCE	PCE
801	100	26265	35241	1800	45053
802	50	17460	25617	1212	34700
803	25	13379	22088	1081	30679
804	10	7457	7609	268	6735
805	10	4927	4507	134	3034
806	20 µl	6580	4507	171	2996
810	20	15384	15332	537	17476

10 µl syringe ?? on off

$$y = mx + b$$

set $b \rightarrow 0$

$$y = (m)x$$

LR

PID

TCE $m = 28311$
 $R^2 = 0.9321$

PCE
38001
0.9144

TCE $m = 188704$
 $R^2 = 0.9375$

PCE
48697
0.8801

01/18/05

Voyager GC (HS)

20 μ l STD F
B 5011806

100 μ l syringe blank
B 5011807

100 μ l \rightarrow R6 (HS)
B 5011808 turbid
~ clear 5-11 ppb
TCE = 0.005 PCB = 0.011

100 μ l R7 (HS)
B 5011809 turbid
~ clear
TCE = 0.002 PCB = ND

20 μ l STD F
B 5011810

01/18/05

Voyager GC (HS) 39

100 μ l R6 (re run)
B 5011811 s. turbid
TCE = 0.004 PCB = 0.001

100 μ l R9 (HS)
B 5011812
TCE, PCB \rightarrow ND
s. turbid

100 μ l STD F
B 5011813
TCE/PID = 52863
PCB/PID = 37205
TCE/ECN = 1811
PCB/ECN = 40443
ds

50 μ l STD F
B 5011814
TCE/PID = 45078
PCB/PID = 40694
TCE/ECN = 1811
PCB/ECN = 40443
43878

10 μ l STD F
B 5011815
TCE/PID = 3532
PCB/PID = 3322
TCE/ECN = 89.8
PCB/ECN = 1985

100 μ l R11 (HS) B 5011816
s. turbid ND / ND

stop lock
50 μ l STD F
B 5011817
TCE/PID = 7078
PCB/PID = 7848
TCE/ECN = 357
PCB/ECN = 6580

40
01/18/05

Voyager GC (HS)

• 100 μ l \rightarrow R13 B 5011818
(s. turbid) clean NDS

250 μ l
54 μ l
• 50 μ l STD F TCE/PID = 14003
B 5011819 PCE/PID = 22399
TCE/ECD = 974
PCE/ECD = 26570

• 25 μ l STD F TCE/PID = 5837
B 5011820 PCE/PID = 7527
TCE/ECD = 291
PCE/ECD = 6203

• 100 μ l \rightarrow R10 TCE/PCE
B 5011821 V. turbid NDS

• 100 μ l STD F TCE/PID = 28846
B 5011822 PCE/PID = 53229
TCE/ECD = 2583
PCE/ECD = 54749

• 50 μ l STD F TCE/PID =
B 5011823 PCE/PID =
TCE/ECD =
PCE/ECD =

01/18/05

Voyager GC (HS) 41

10 μ l STD F TCE/PID = 2987
B 5011824 PCE/PID = 3872
TCE/ECD = 126
PCE/ECD = 2451

01/19/05

• 100 μ l \rightarrow water blank/inject
B 5011900

• 100 μ l ~~STD F~~ ^{fake} R40 (s. turbid)
B 5011901 \rightarrow NDS

★ STD G 10 μ l of TCE/PCE @
2000 ppm in 20ml STD
vials \rightarrow 1 ppm TCE/PCE

★ note: 25 μ l injection on the
280 μ l syringe may have
been 30 μ l

250 μ l
54 μ l
• 25 μ l STD G TCE/PID =
B 5011902 PCE/PID = NG
TCE/ECD =
PCE/ECD =
(poor injection ??)

01/19/05

Voyager GC (HS)

• 100 μ l STD G
 250 B 5011903
 54m bad syringe?

(NGA)

stop
 100k
 54m
 • 10 μ l STD G - OK
 B 5011904
 $TCE/PID = 12954$ | $TCE/ECG = 335$
 $PCE/PID = 9714$ | $PCE/ECG = 9516$

250
 4e
 54m
 • 100 μ l R17 (M. turbid)
 B 5011905
 clean \rightarrow TCE/PCE NDs

stop
 100k
 54m
 • 50 μ l STD G B 5011906
 $TCE/PID = 10415$ | $TCE/ECG = 384$
 $PCE/PID = 10782$ | $PCE/ECG = 11595$

• 100 μ l R16 (S. turbid)
 B 5011907
 $TCE @ 0.381$ ppm?? \leftarrow integrate
 may be carry over from
 50 μ l STDG, reshoot
 new sample

01/19/05

Voyager GC (HS)

• 100 μ l R16 (new sample)
 B 5011908 repeat
 repeat to confirm TCE
 hit \rightarrow TCE = 0.100

(+) early elution OK

• 100 μ l STD G
 $TCE/PID = 55921$ | $TCE/ECG = 2081$
 $PCE/PID = 40768$ | $PCE/ECG = 46948$
 B 5011909

• 100 μ l water blank
 B 5011910 \rightarrow OK

• 100 μ l R15 (M. turbid)
 B 5011911
 $TCE = 0.107$ ✓

84
 142
 • 100 R15 (new sample)
 to confirm TCE hit
 $TCE = 0.176$ ✓
 B 5011912
 (+) early eluting PID peak
 maybe TCE

01/19/05 Zolt Grossman
- Larry

504e - STD G B5011913

TCE/PID = TCE/ECD =
PCB/PID = PCB/ECD =

250
54r

6209.7 885 8133#
FedEx Gazelle

• 204e STD G TCE/PID =
B5011914 PCB/PID =
TCE/ECD = /PCB/ECD =

504e
syn

(not stop)

• 104e STD G
B5011915

• 504e STD G
B5011916

• 1004e R19 (s. turbid)
P B5011918
TCE/PCB → NDs

• 1004e under blank
B5011917

- OK

01/19/05 Voyager G S (ITS) 45

• 1004e R18 (s. turbid)
B5011919
TCE/PCB → NDs ← (2-3, 11)

• 1004e R19-RR (re-sampled)
B5011920 @ perometh
(01/19/05 → 1455) (M. turbid)
TCE/PCB → NDs

• 1004e R21 (s. turbid) (HS)
B5011921 TCE = 0.044
TCE not → interm. → poor on it

• 1004e R21 (s. turbid) (HS)
B5011922 (re-inject 1004e
TCE = 0.005 (new sample)
TCE reported → ND (vial)

Samples { R1, 2, 3, 6, 7, 9, 11, 13
so far { R10, R40, 17, 16;
R15, 19, 18, 21

• 1004e STD G B5011923
TCE/PID = TCE/ECD =
PCB/PID = PCB/ECD =

01/19/05 Voyager GC (HS)
 100 μ l - water blank inject
 B5011924 \rightarrow OK

• 100 μ l \rightarrow STD \rightarrow B5011925
 G

• 100 μ l water blank
 B5011926

• 100 μ l STD G
 B5011927

TCE/PID =
 PCE/PID =

TCE/ECD =
 PCE/ECD =

received 1/20/06
 R22 stored on
 R30 ice over night

01/20/05 Voyager GC

RESTEK

Cat# 30413
 2000 μ g/ml each in Purge and Trap Methanol
 Tetrachloroethene Standard
 Lot# A033932 Exp: 11/07 Store: Freezer
 Restek Corporation - 110 Banner Circle - Bellefonte, PA 16823



10 μ l of each / 20 ml H₂O \rightarrow

RESTEK

Cat# 30420
 2000 μ g/ml each in Purge and Trap Methanol
 Trichloroethene Standard
 Lot# A033756 Exp: 4/08 Store: Freezer
 Restek Corporation - 110 Banner Circle - Bellefonte, PA 16823



1 ppm of
 TCE + PCE

STD H

• 100 μ l water blank
 B5012000 OK

• 10 μ l STD H TCE/PID = 5915
 / B5012001 PCE/PID = 7518
 TCE/ECD = 326 PCE/ECD = 6640

500
 needles
 14R

Continued in REACIN-B-0077

Run#	benz	TCE	PCE	CT	PCE
100/201	14222	13819	19233	44989	15760
50/202	10918	10400	12310	37780	12040
10/203	1933	2207	2067	9653	1317
25/204	3180	3306	3132	17758	2323
100/207 (HS)	—	24271	44683	41871	44683
100/208 (HS)	—	2396	3759	—	2989
100/209 (HS)	3514	TOL →	3512	—	—
100/210 (HS)	32877	TOL →	18497	—	—
100/211 (HS)	21542	TOL →	15544	—	—
100/212 (HS)	11209	TOL 104/2	13498	TOL 104/2	14780
100/213 (HS)	2647	TOL	4640	TOL 104/2	4088
100/214 (HS)	7185	6899	13057	TOL 104/2	15938

STD GASES STD A

	BZ	TCE	PCE	CT	PCE
10	1.998	1.989	2.065	1.886	2.065
20	3.996	3.918	4.13	3.772	4.13
50	9.99	9.945	10.325	9.43	10.325
100	19.98	19.89	20.65	18.86	20.65

DCP

10

20

50

100

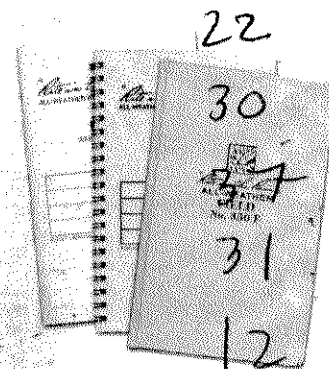
8.63

16.3

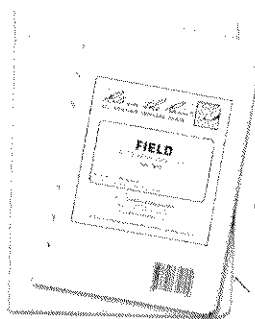
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ALL-WEATHER WRITING PAPER



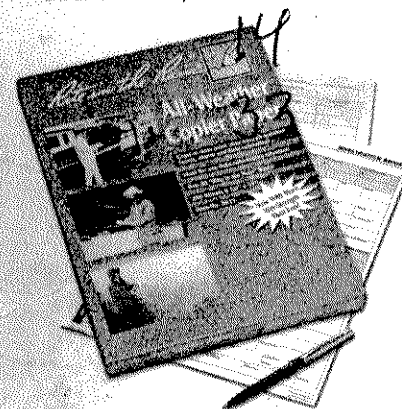
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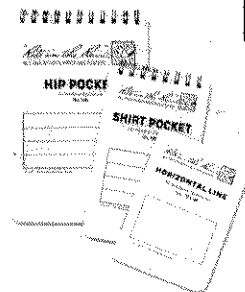
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Loose Leaf / Binders



Copier Paper / All-Weather Pens



Memo Books

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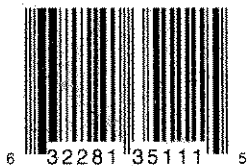
Name: _____

LOCKHEED-MARTIN/REAC
2890 Woodbridge Avenue
Edison, NJ 08837-3679
Phone: (732) 321-4200

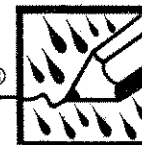
COC & Sample Shipping Procedures

Peer review COC record	Call Sample Receiving Hotline at (732) 632-9345 or SRT's Cell Phone (609) 234-5318. Give
Remove pink copy for the Task Leader	-FedEx tracking # -Chain of Custody Record #s -# of Coolers -# of samples and matrices -Analyses requested -Subcontract lab info
Place original COC in a plastic bag, seal and secure to the lid inside the cooler.	Fax COC record to (732) 494-4021 (REAC analyses) or (732) 494-4026 (subcontract analyses) Follow-up to confirm sample receipt.
Tape and seal the cooler.	

(253) 922-5000 • FAX (253) 922-5300
www.RiteintheRain.com



"*Rite in the Rain*"
ALL-WEATHER WRITING PAPER



FIELD

All-Weather Notebook
No. 351

REAC IV-B-0077

<i>Sabana Abaya</i> # <i>0-111</i>

4 5/8" x 7" - 48 Numbered Pages



Name L. Kaelin

Address REAC

Phone _____

Project SABANA WALL

REAC IV - B - 0077

CONTENTS

PAGE	REFERENCE	DATE
	Continued from logbook REAC-IV-B-0076	
	PE Photovac Voyager FPGC	
	SN FGGE 202	
	ANALY: SAB-hs-2	
	Col B: 20m x 0.32mm	
	Supelcowax 10 (TM), 1/8" Thick	
	60°C 150, 8 psi	
	ECD PID = hi sensitivity	
	Slope: up/down = 0.1/0.1	
	filter = 3	
	80 sec integration delay	
	800 sec analysis time	
	400 sec backflush time	
	syringe injector mode @	
	100 µl normalized injection volume	

01/20/05

Voyager GC (HS)

some
needle
stuck

• 40 μ l STD H \rightarrow B 5012002

TCE/PID = 17346 TCE/ECO = 326171

PCE/PID = 33847 PCE/ECO = 43713

• 100 μ l STD H \rightarrow B 5012003

250 μ l
stuck

TCE/PID = 24511 TCE/ECO = 2783

PCE/PID = 53223 PCE/ECO = 58068

• 100 μ l water blank

B 5012004

OK

• 100 μ l \rightarrow R-22 B 5012005

TCE ND \approx 0.018 \leftarrow overintegrated

PCE ND (s. turbid)

\rightarrow reintegrated = 0.008 \rightarrow ND

• 100 μ l \rightarrow R-30 B 5012006

(s. turbid)

\sim 5ppb TCE L10/ND

(s. turbid)

• 100 μ l R-37 \rightarrow B 5012007

(s. turbid) TCE = 0.014

PCE = ND

• 100 μ l R-31 \rightarrow B 5012008

(s. turbid)

TCE @ 0.005

(ND)

01/20/05

Voyager GC (HS) ³

500
needle
stuck

100 μ l STD H \rightarrow B 5012009

TCE/PID = 26609

TCE/ECO = 2839

PCE/PID = 53990

PCE/ECO = 63684

• 100 μ l water blank

B 5012010

• 100 μ l \rightarrow R-12 (s. turbid)

B 5012011

TCE ND

PCE \rightarrow ND

500
sp
stuck

• 100 μ l \rightarrow R-14 (n. turbid)

~~B 5012012~~

B 5012011

early eluters \sim VCE possible

TCE = 0.191

C12DCE/benzene \rightarrow 0.112

• 100 μ l R-14 (new vial)

confirm TCE hit

TCE 0.198

benz 0.198

over
integrated \rightarrow 0.422

B 5012012

notes: run # out of sync

after B 5012010 - to be

corrected

01/20/05 re-estab. in helran 10g

• 100 μ l R12
B 5012013 ND_r

500 μ l
542

• 100 μ l R14 \rightarrow VCE??
B 5012014 \rightarrow Benz 0.224
early elutes TCE = 0.567

• 100 μ l R33 (m. turbid)
B 5012015 - ND_s

• 100 μ l R14 (confirm TCE)
B 5012016
early elutes - possible VCE
Benz = 0.088 TCE = 0.128
better \rightarrow

• 100 μ l R37 (repeat)
B 5012017
TCE < 10 \rightarrow ND

• 25 μ l STD H
B 5012018
TCE/PID = 17880 TCE/ECN = 107/
PCE/PID = 23933 PCE/ECN = 32900

01/20/05

voyageur (US)

• 100 μ l water blank B 5012019
B 5012019 (aborted)
B 5012020 \rightarrow OK

• 100 μ l STD H
B 5012021

TCE/PID = 41580 TCE/ECN = 2500
PCE/PID = 54062 PCE/ECN = 22790
60665

500 μ l
42

• 100 μ l water blank
B 5012022 OK

• 100 μ l R14-DUP (resampled)
B 5012023 rd 01/20/05 @ 14:30

• early eluting peaks
PID/RT ~ 150

Benzene 0.126
TCE = 0.303
PCE \rightarrow ND

• 100 μ l \rightarrow R36 (m. turbid)
B 5012024

500 μ l
41

early elutes TCE 0.094 \leftarrow over
Benz 0.027 PCE 0.043 \leftarrow integrated

8/22/05

Voyager GC (HS)

500 ul
54R
100 ul R-36 (new vial)
early cluster VCE
berg 0.004 TCE = 0.105 ^{0.046} _{0.012} ^{over} _{inter}
B PCE = 0.049

100 ul R-35 (m. turbid) ND₅
B 5012026

250 ul → 100 ul R-35 (new vial)
54R B 5012027 - aborted

500 ul
54R 100 ul R-35 (new vial)
B 5012028

★ NO end of day STANDARDS
needed GC runs
carrier gas too low

8/24/05 Voyager GC (HS)

STD I 10 ul of 2000 ppm
TCE / PCE individual solns.
in 20 ml H₂O → 1 ppm

100 ul water blank injection
B 5012100 OK

500
ul
54R

100 ul STD I

⊕ B 5012101
TCE / PID = 60393 P/S TCE / ECD = 2076
PCE / PID = 44101 PCE / ECD = 40336

500
ul
54R
non-
stop

250 ul STD I TCE / PID = 13333
B 5012102 PCE / PID = 13333
TCE / ECD = 791 PCE / ECD = 16156 15897

10 ul STD I TCE / PID = 5554
B 5012103 PCE / PID = 7467
TCE / ECD = 322 PCE / ECD = 5549

100 ul R-45 (m. turbid)
B 5012104 ND < 10

500
ul
54R

PID < TCE 2000
PCE 6000

100 μ l R-46 - (m. turbid)
B 5012105 \rightarrow NDs

\star LR @ 0.1, 0.25 & 1 ppm
y intercept $\rightarrow \emptyset$

TCE/PID $\rightarrow m = 59936; R^2 = 0.9982$

PCE/PID $\rightarrow m = 45582; R^2 = 0.9545$

TCE/ECD $\rightarrow m = 2150.1; R^2 = 0.9508$

PCE/ECD $\rightarrow m = 41830; R^2 = 0.9474$

100 μ l R-49 (m. turbid)
B 5012106 \rightarrow NDs

100 μ l R-47 (s. turbid)
B 5012107
TCE/PID $\rightarrow 0.024$ / PCE/PID $= 0.093$

100 μ l R-48 (s. turbid)
B 5012108
V.V. hot \rightarrow PID $\langle \frac{TCE}{PCE} \rangle$ d/s

100 μ l water blank injection
 \star still a PCE any-over
peak \rightarrow B 5012109

100 μ l water blank injection
repeat \rightarrow OK B 5012110

10 μ l R-48 \rightarrow B 5012111

10X \rightarrow PID \rightarrow benz = 1.24
TCE = 3.7
PCE = 25.2 %
ECD TCE = 8.2
PCE = 33.9 %

5 μ l R-48 \rightarrow B 5012112

20X TCE/PID = 6.5 TCE/ECD
PCE/PID = 38 PCE/ECD = 50.68
Benz 24.0 \rightarrow 51 ppm

376	18.86	TCE = 6.5 ppmV
652	$\times 29$	PCE = 51 ppmV
	37.72	Benz(DCE) = 3.9 ppmV
	1.97	
	$\frac{1.97}{3.94}$	

10 01/21/05 Voyager GC (HS)

500 μ l
5 μ l
• 100 μ l water blank injection
TCE = 0.010 B5012113

• 100 μ l water blank - OK
B5012114

• 100 μ l water blank - OK
B5012115

• 10 μ l R-50 (s. turbid)
B5012116
VV. hot

PID { Benz (DCE) \rightarrow O/S > 87
TCE O/S 89, ~VCE \rightarrow O/S
PCE O/S > 56
ECD \rightarrow { TCE - OK \rightarrow 145
PCE - O/S > 83
10X

• 5 μ l R-50 \rightarrow B5012117
PID { Benz/DCE = 0/s
20X { TCE = 0/s > 32
PCE = 0/s > 65
ECD TCE = 89
PCE = 0/s \rightarrow > 95 ppmv
reported \rightarrow TCE = 145 ppmv PCE > 95 ppmv

01/21/05 Voyager GC

11

• 500 μ l water blank injection
injected 500 μ l HS

B5012118 \rightarrow minor TCE/PCE
carry-over peaks

• 100 μ l water blank injection
B5012119

• 100 μ l water blank injection
B5012120 \rightarrow OK

• 100 μ l R52 \rightarrow B5012121
(m. turbid) TCE 3 ppb
PCE ~21 ppb **NDs**

• 100 μ l R53 \rightarrow B5012122
(m. turbid) **NDs**

• 10 μ l R51 \rightarrow B5012123
(m. turbid) low ppb TCE, PCE

• 100 μ l R51 \rightarrow B5012124
NDs(?)

01/21/05 Voyager GC (H5)

100 μ l R51 \rightarrow B5012125
NDs500 μ l
5 μ l

• 100 μ l R-43 (v. turbid)
~~B50126~~
 B5012126

100 μ l R-43 \rightarrow B5012127
 (s. turbid) - NDs

100 μ l R-42 \rightarrow B5012128
 NDs

100 μ l R-41 B5012129
 NDs

01/22/05

outside

SAT

500 μ l
5 μ l

• 100 μ l water blank
 injection

B5012200 OK

2-4 ppb TCE/PCE

• 100 μ l water blank in
 B5012201 - low TCE/PCE
 \sim 10 ppb

01/22/05

RESTEK

Cat# 30420

2000 ug/ml each in Purge and Trap Methanol

Trichloroethene Standard

Lot# A034749

Exp: 7/08

Store:

Freezer

Restek Corporation - 110 Banner Circle - Bellefonte, PA 16823



100 μ l of
 each
 into
 20 ml methanol

RESTEK

Cat# 30413

2000 ug/ml each in Purge and Trap Methanol

Tetrachloroethene Standard

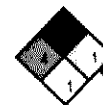
Lot# A038932

Exp: 11/07

Store:

Freezer

Restek Corporation - 110 Banner Circle - Bellefonte, PA 16823



1 ppm of
 TCE/PCE

STD J

• 100 μ l water blank injection
 B5012202 \rightarrow OK

• 100 μ l \rightarrow R-34 (v. turbid)
 B5012203 NDs

100 μ l STD J \rightarrow B5012204

TCE/PID = 1232

TCE/ECD =

PCE/PID = 1204

PCE/ECD = 485

?

poor injection

01/22/05 Voyager GC (HS)

100 μ l \rightarrow R-56 (v. turbid)
 B 5012205 $\angle 10$ ppb TCE/PCB
 NDs

100 μ l \rightarrow R57 (s. turbid)
 B 5012206 ND

100 μ l \rightarrow R57 repeat
 B 5012207 ND

100 μ l STD J
 B 5012208

500 μ l
 SW

TCE/PID = 36458 TCE/PCD = 1269
 PCB/PID = 24683 PCB/PCD = 31922

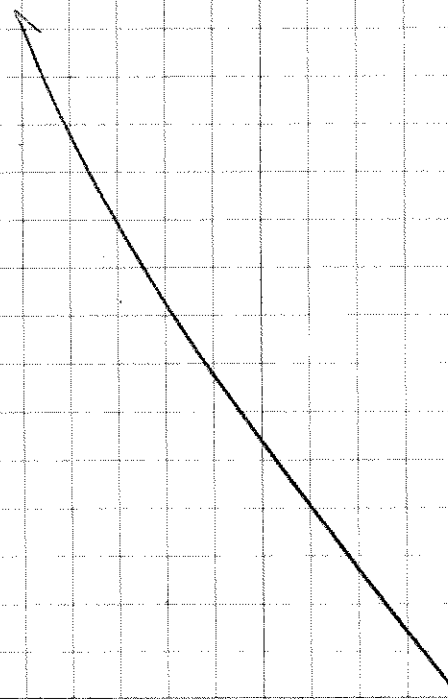
100 μ l water blank
 B 5012209 OK

100 μ l R-54 - s. turbid
 B 5012210 NDs

01/22/05 Voyager GC

• 100 μ l R-55 s. turbid)
 B 5012211
 NDs

Aborted \rightarrow ambient
 temperature too high
 for instrument



Appendix B
Voyager FPGC Daily Calibrations, Chromatograms and Raw Data
Sabana Abaja Industrial Site
Technical Memorandum
September 2005

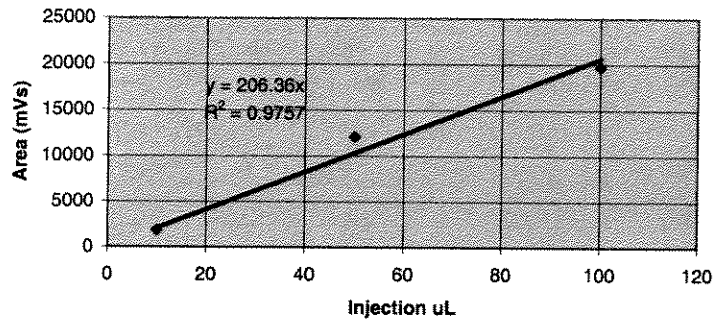
Voyager FPGC Daily Calibrations and Chromatograms
Sabana Abaja Industrial Site
January 13, 2005

Voyager FPGC

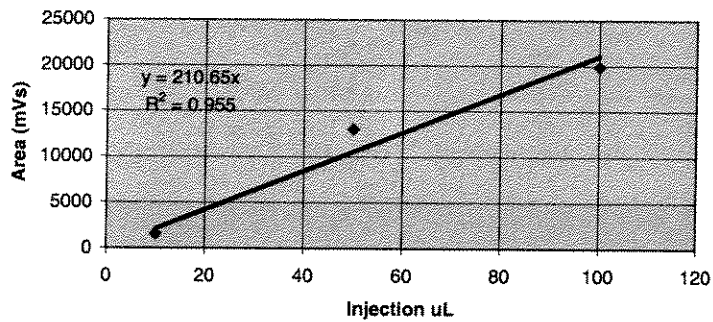
20 ppm v/v gas std

inject uL	pid benz	pid tce	pid pce	ecd ct	ecd pce
10	1886	1551		1052	
50	12085	12989		6266	
100	19770	19892	16962		

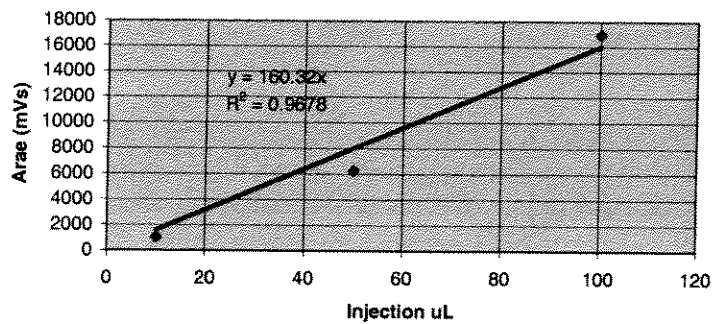
Benzene via PID - 01/13/05



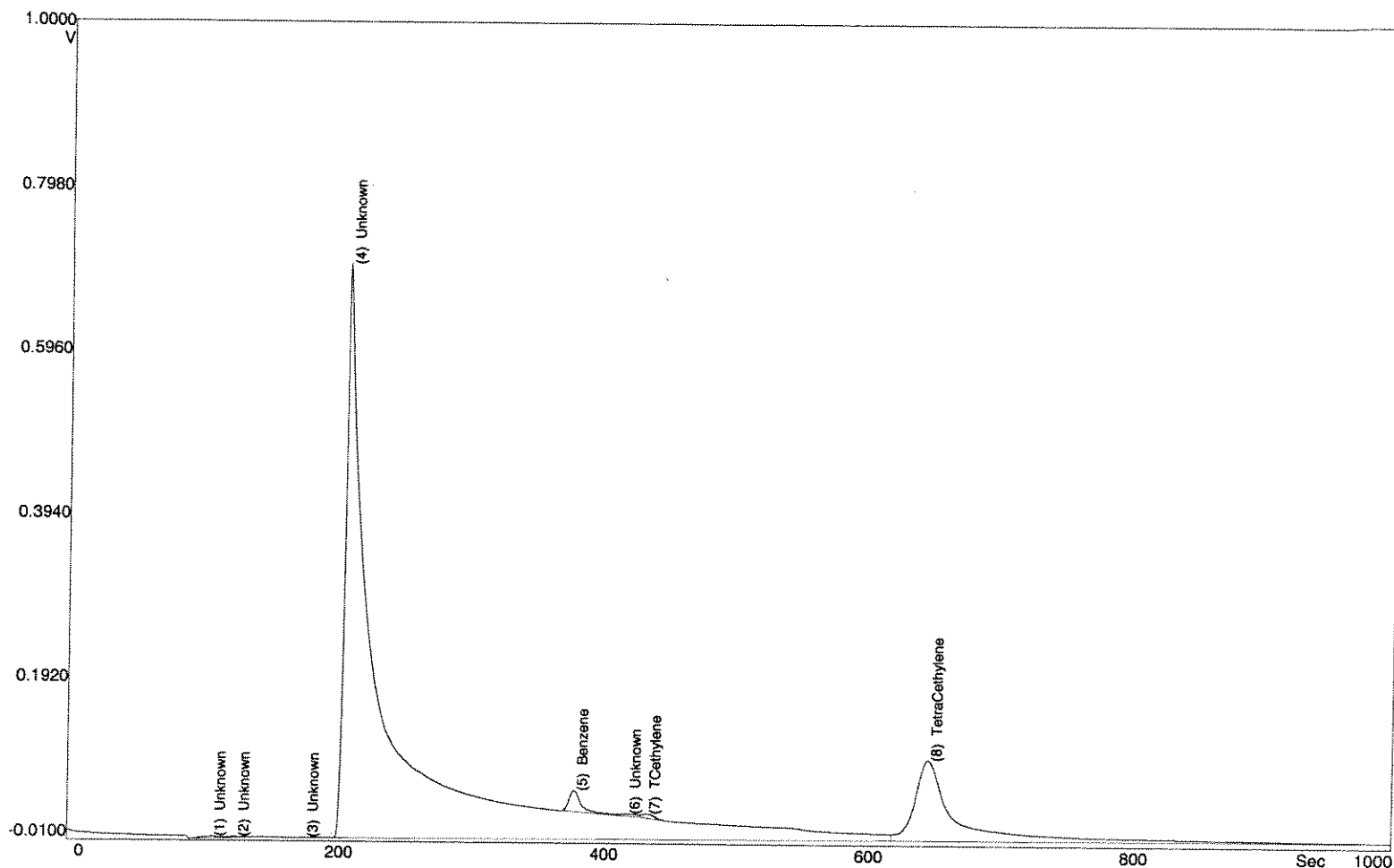
TCE via PID - 01/13/05



PCE via PID - 01/13/05



SiteChart Analysis Report - B5011309.PID



RESULTS:

Date Jan 13, 2005
 Time 13:44:13
 Instrument FGGE202
 Detector PID
 Column B
 Analysis# 19
 Tag sab
 Column Temp 60.0 C
 Det Temp 60.0 C
 Ambient Temp 32.0 C

EW-5

METHOD:

Analysis Time 1000.0 S
 PumpTime 5.0 S
 Back Flush 400.0 S
 Temperature 60.0 C
 Pressure 8.0 psi
 Inject Syringe, 100.0 uL
 PID State High Sense

10ME 10x

well headspace

INTEGRATION METHOD:

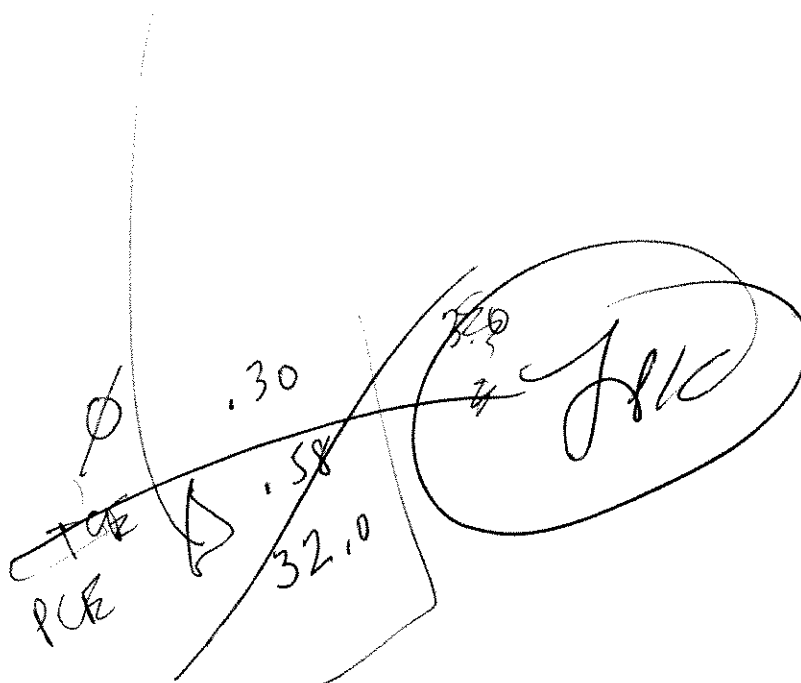
Manual Integration
 SlopeUp 0.0 mV/S
 SlopeDown 0.0 mV/S
 Min Height 0.0 mV
 Min Area 0.0 mVS
 FilterLevel 3
 Delay 80 Sec

PEAK REPORT:

#	Name	Conc (PPM)	Area (mVS)	Height (mV)	R.T. (S)	Status
1	Unknown		38.5	3.397	109.5	
2	Unknown		17.3	0.080	127.3	
3	Unknown		3.823	0.426	179.4	
4	Unknown		24147	707	210.2	

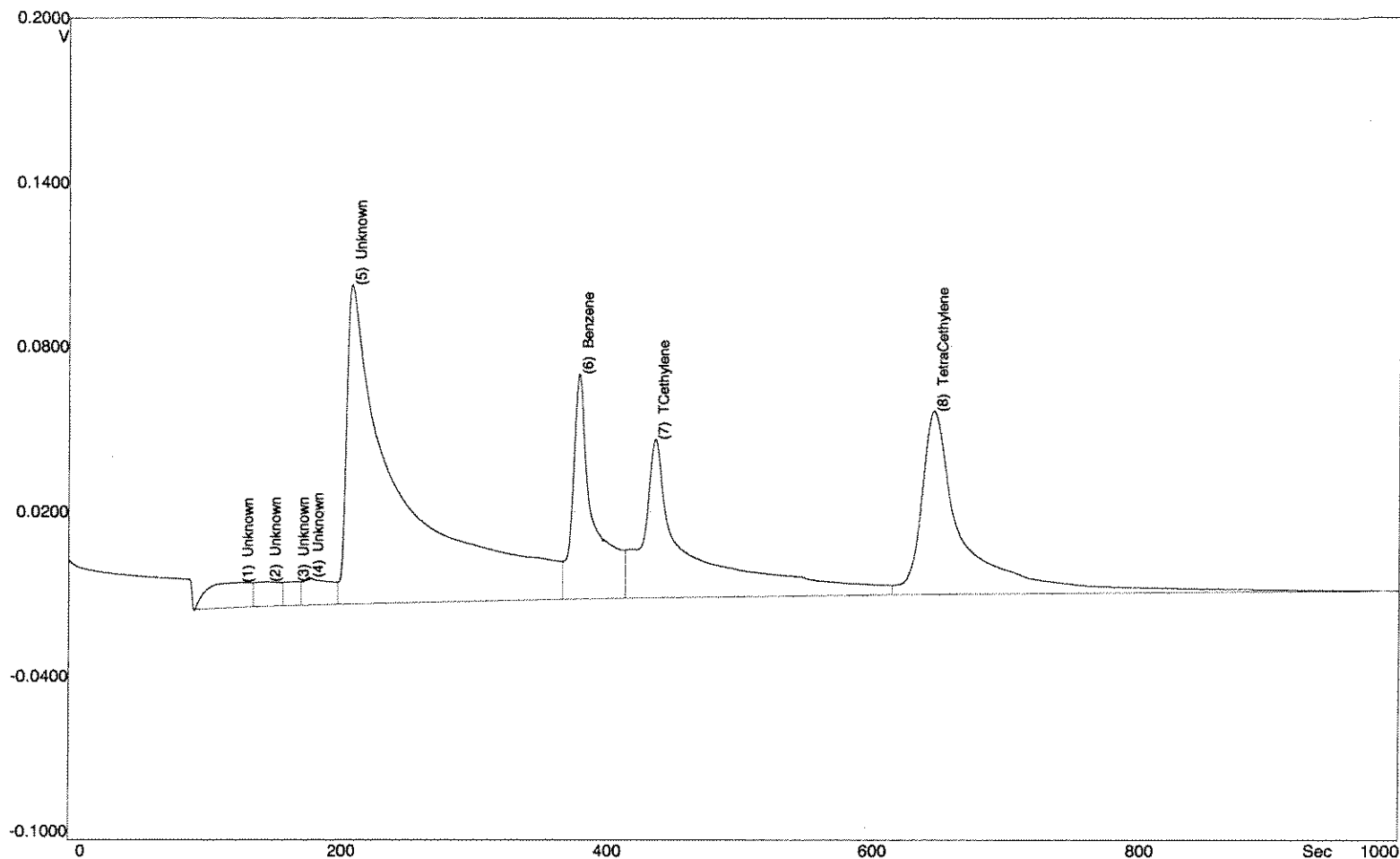
SiteChart Analysis Report - B5011309.PID

5 Benzene	0.030	289	24.8	382.0
6 Unknown		43.6	0.471	422.4
7 TCethylene	0.058	55.9	1.057	437.2
8 TetraCethylene	3.151	3763	91.0	649.4



recalc'd
 BZ 2.8
 TCE 0.53
 PCE 4.8
 ppmv
 ↓

SiteChart Analysis Report - B5011311.PID



RESULTS:

Date Jan 13, 2005
 Time 14:30:42
 Instrument FGGE202
 Detector PID
 Column B
 Analysis# 23
 Tag sab
 Column Temp 60.0 C
 Det Temp 60.0 C
 Ambient Temp 32.0 C

1x

6w-6

100MR

METHOD:

Analysis Time 1000.0 S
 PumpTime 5.0 S
 Back Flush 400.0 S
 Temperature 60.0 C
 Pressure 8.0 psi
 Inject Syringe, 100.0 uL
 PID State High Sense

INTEGRATION METHOD:

Manual Integration
 SlopeUp 0.0 mV/S
 SlopeDown 0.0 mV/S
 Min Height 0.0 mV
 Min Area 0.0 mVS
 FilterLevel 3
 Delay 80 Sec

PEAK REPORT:

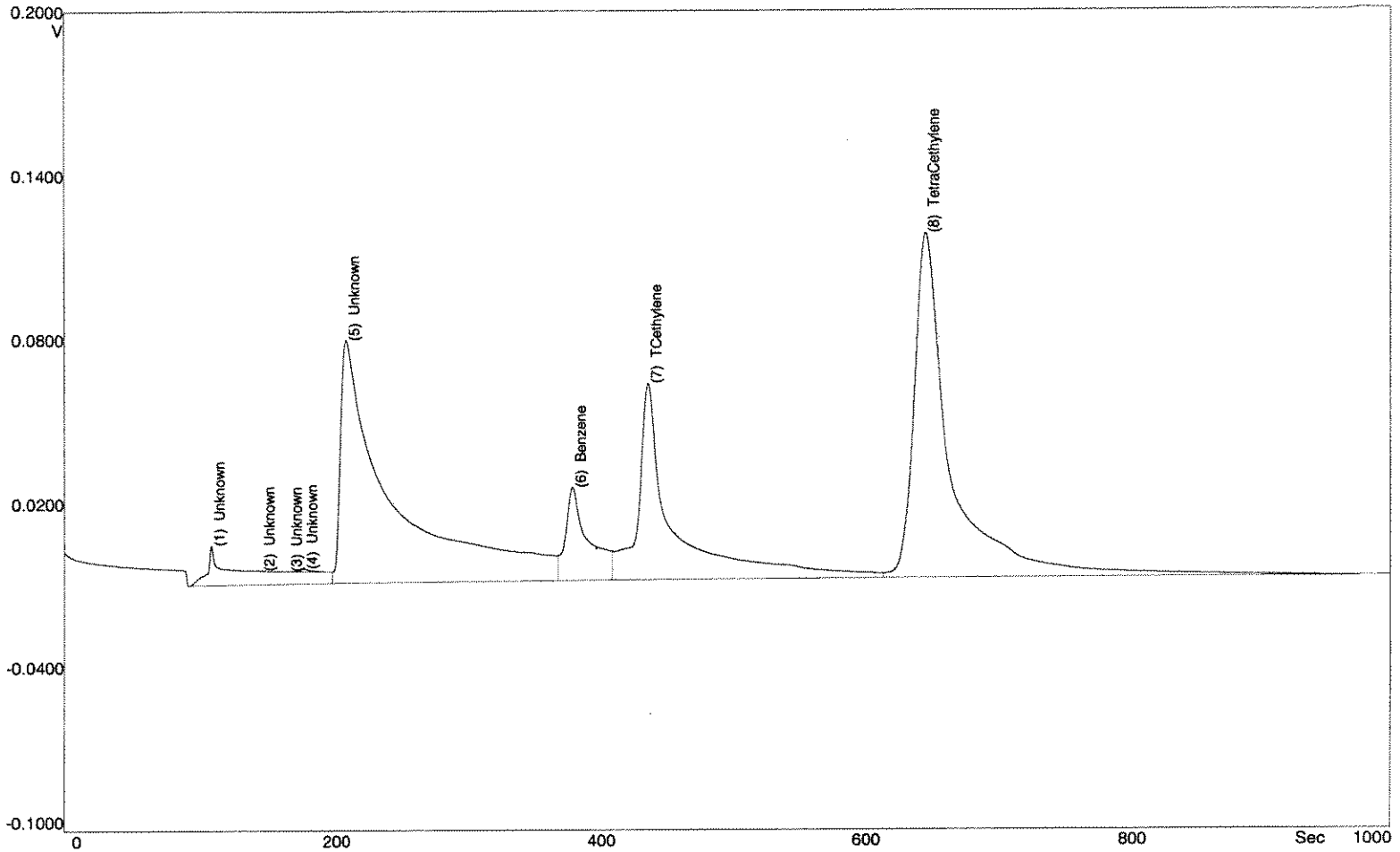
#	Name	Conc (PPM)	Area (mVS)	Height (mV)	R.T. (S)	Status
1	Unknown		345	9.928	128.1	
2	Unknown		194	0.346	148.8	
3	Unknown		120	0.280	169.8	
4	Unknown		246	1.879	180.8	

SiteChart Analysis Report - B5011311.PID

5 Unknown		5675	108	212.8
6 Benzene	2.082	1508	68.3	383.3
7 TCethylene	4.648	2478	40.5	440.4
8 TetraCethylene	13.0	2577	63.5	650.0

recalc'd
BZ = 1.5
TC = 2.3
TE = 3.3
- UNK = BZ

SiteChart Analysis Report - B5011312.PID



RESULTS:

Date Jan 13, 2005
 Time 14:54:56
 Instrument FGGE202
 Detector PID
 Column B
 Analysis# 25
 Tag sab
 Column Temp 60.0 C
 Det Temp 60.0 C
 Ambient Temp 32.0 C

*EW-2
1X*

METHOD:

Analysis Time 1000.0 S
 PumpTime 5.0 S
 Back Flush 400.0 S
 Temperature 60.0 C
 Pressure 8.0 psi
 Inject Syringe, 100.0 uL
 PID State High Sense

100M²

INTEGRATION METHOD:

Manual Integration
 SlopeUp 0.0 mV/S
 SlopeDown 0.0 mV/S
 Min Height 0.0 mV
 Min Area 0.0 mVS
 FilterLevel 3
 Delay 80 Sec

PEAK REPORT:

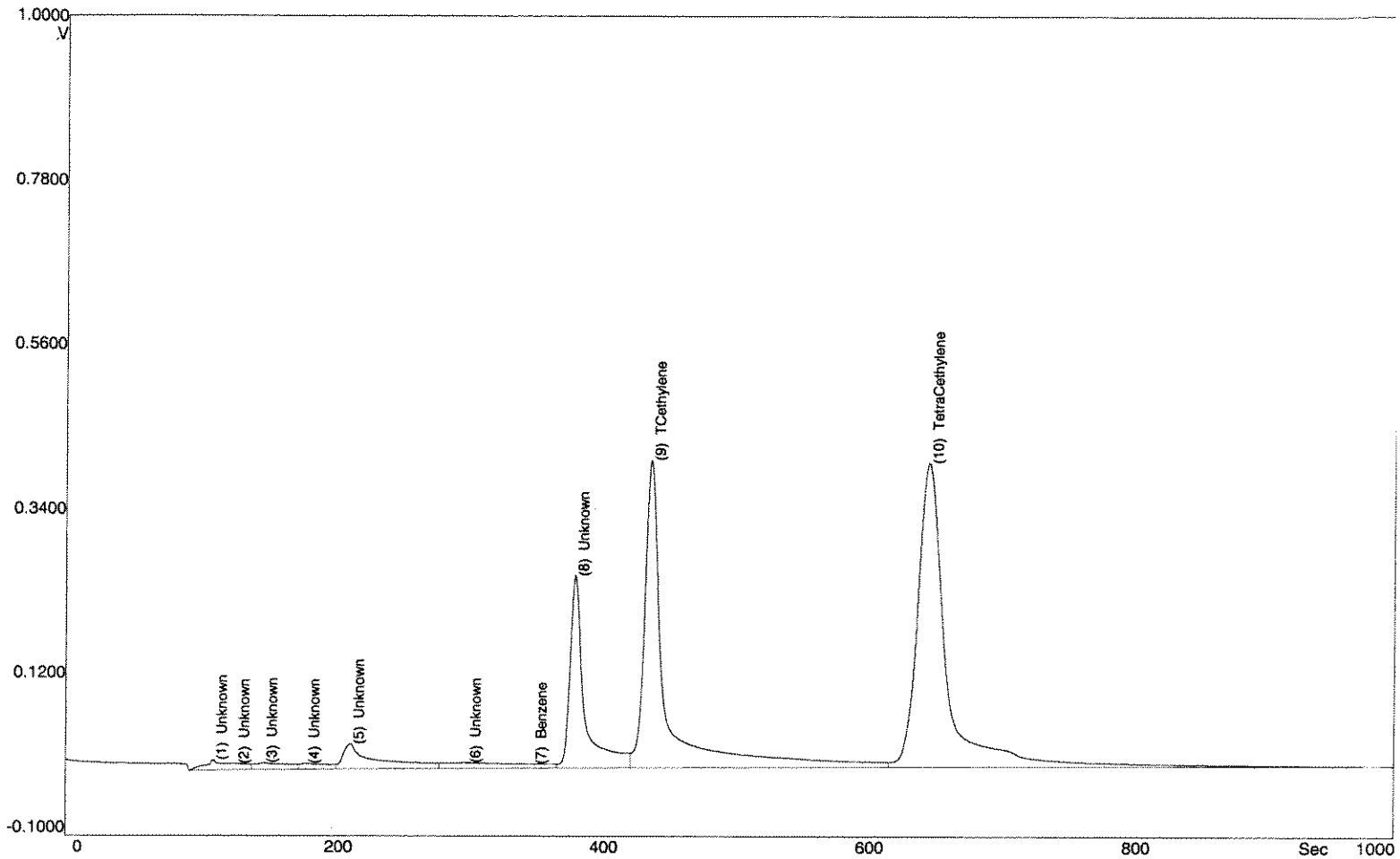
#	Name	Conc (PPM)	Area (mVS)	Height (mV)	R.T. (S)	Status
1	Unknown		523	14.9		110.4
2	Unknown		1.263	0.217		148.2
3	Unknown		1.599	0.148		168.6
4	Unknown		9.709	1.007		180.2

SiteChart Analysis Report - B5011312.PID

5 Unknown		4084	84.8	212.6
6 Benzene	0.982	698	25.2	383.0
7 TCethylene	4.243	2259	61.6	440.4
8 TetraCethylene	21.8	4109	125	649.4

recalc'd
BE = 0.68 — UNK
TCE = 2.1
PUE = 5.3
PMEV

SiteChart Analysis Report - B5011313.PID



RESULTS:

Date Jan 13, 2005
 Time 15:15:12
 Instrument FGGE202
 Detector PID
 Column B
 Analysis# 27
 Tag sab
 Column Temp 59.0 C
 Det Temp 59.0 C
 Ambient Temp 32.0 C

METHOD:

Analysis Time 1000.0 S
 PumpTime 5.0 S
 Back Flush 400.0 S
 Temperature 60.0 C
 Pressure 8.0 psi
 Inject Syringe, 100.0 uL
 PID State High Sense

INTEGRATION METHOD:

Manual Integration
 SlopeUp 0.0 mV/S
 SlopeDown 0.0 mV/S
 Min Height 0.0 mV
 Min Area 0.0 mVS
 FilterLevel 3
 Delay 80 Sec

PEAK REPORT:

#	Name	Conc (PPM)	Area (mVS)	Height (mV)	R.T. (S)	Status
1	Unknown		343	14.8		110.7
2	Unknown		0.442	0.068		127.6
3	Unknown		264	2.171		148.8
4	Unknown		190	1.179		180.2

IX
 ECW-3 100 uL

SiteChart Analysis Report - B5011313.PID

5 Unknown		975	27.9	214.0
6 Unknown		550	0.528	301.9
7 Benzene	0.002	1.371	0.045	351.3
8 Unknown		3307	253	382.7
9 TCethylene	14.2	7643	393	440.0
10 TetraCethylene	58.6	10483	402	648.8

recalc'd

BZ \approx 3.2 ppm

TCE \approx 7.2

PCE \approx 14

Voyager FPGC Daily Calibrations and Chromatograms
Sabana Abaja Industrial Site
January 14, 2005

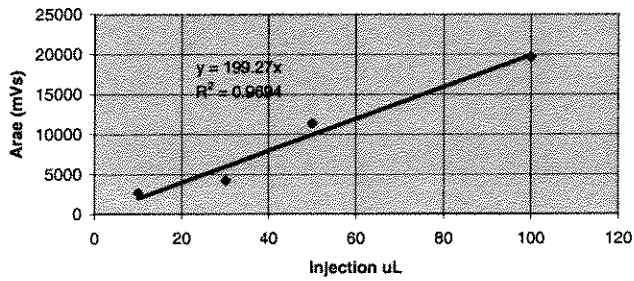
14-Jan-05

Voyager FPGC

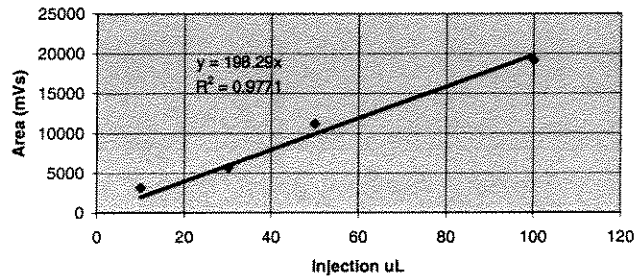
20 ppm v/v gas std

inject uL	pid benz	pid tce	pid pce
10	2670	3154	3157
30	4230	5661	4645
50	11372	11167	6214
100	19680	19172	17407

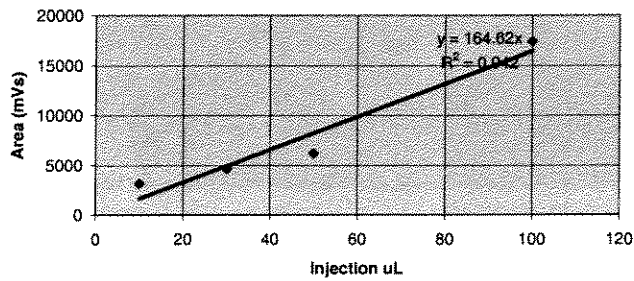
Benzene via PID - 01/14/05



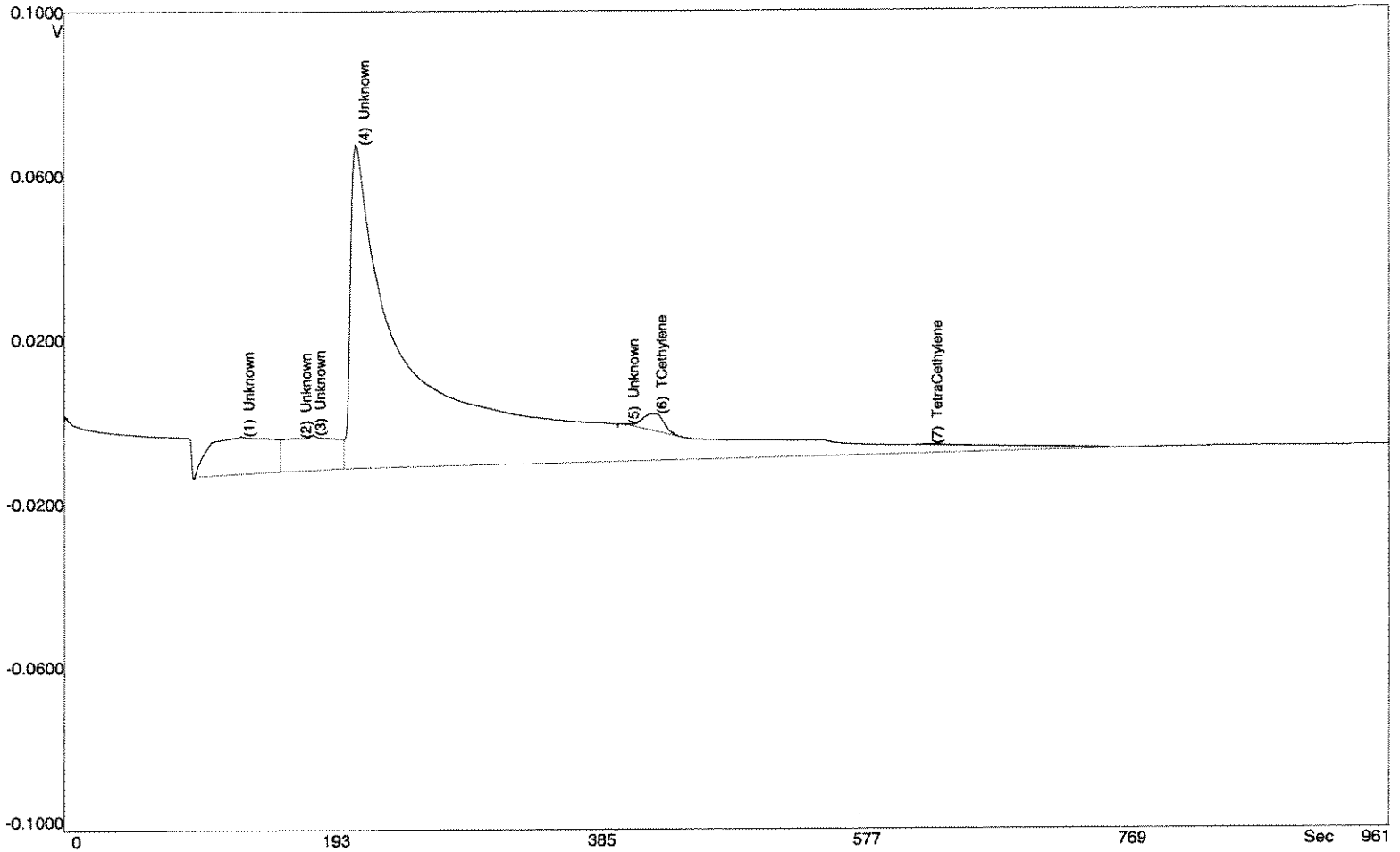
TCE via PID - 01/14/05



PCE via PID - 01/14/05



SiteChart Analysis Report - B5011408.PID



RESULTS:

Date Jan 14, 2005
 Time 09:10:49
 Instrument FGGE202
 Detector PID
 Column B
 Analysis# 17
 Tag sab
 Column Temp 60.0 C
 Det Temp 60.0 C
 Ambient Temp 31.0 C

IX
19.-1 new syringe
10042

METHOD:

Analysis Time 1000.0 S
 PumpTime 5.0 S
 Back Flush 400.0 S
 Temperature 60.0 C
 Pressure 8.0 psi
 Inject Syringe, 100.0 uL
 PID State High Sense

INTEGRATION METHOD:

Manual Integration
 SlopeUp 0.0 mV/S
 SlopeDown 0.0 mV/S
 Min Height 0.0 mV
 Min Area 0.0 mVS
 FilterLevel 3
 Delay 80 Sec

PEAK REPORT:

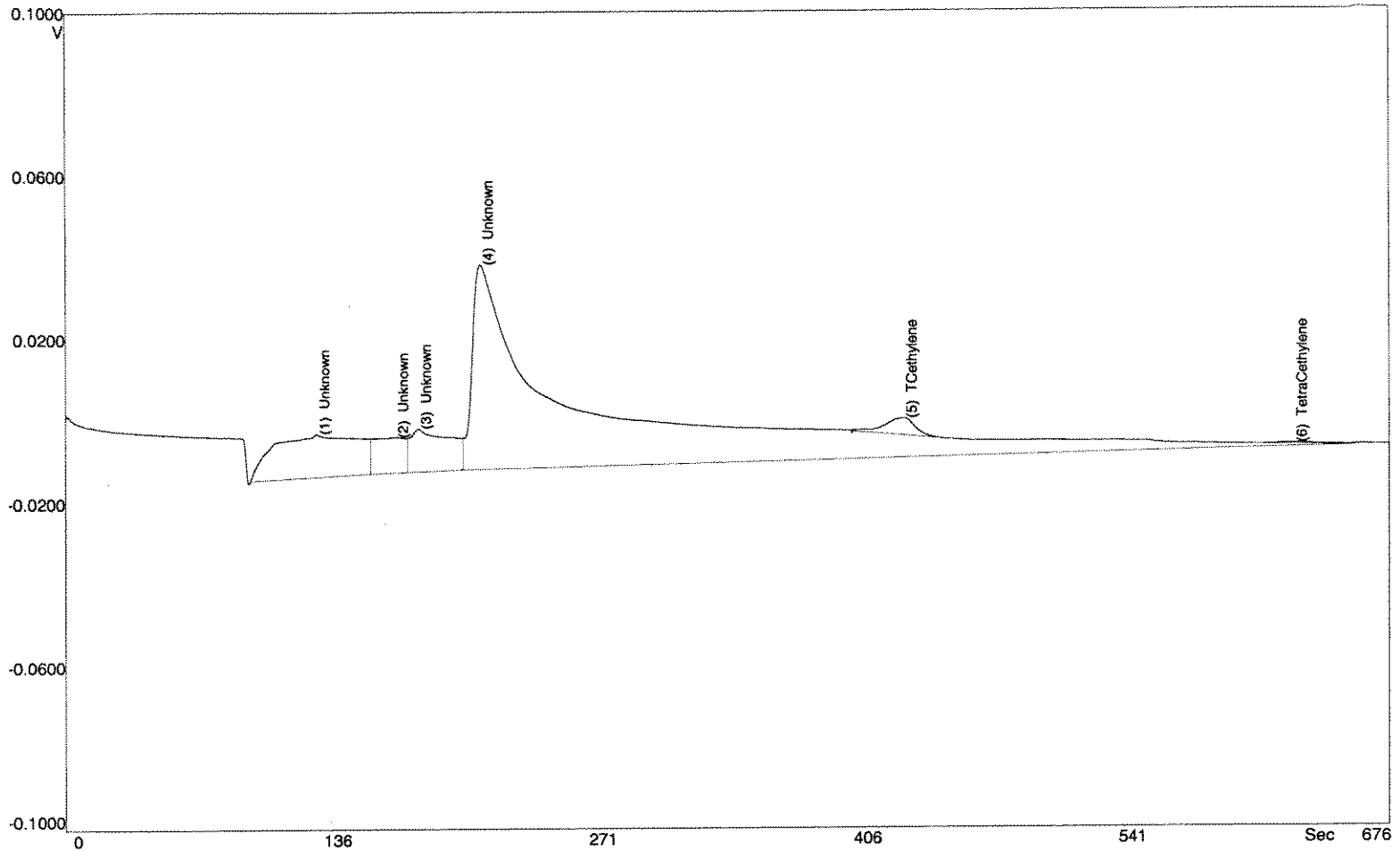
#	Name	Conc (PPM)	Area (mVS)	Height (mV)	R.T. (S)	Status
1	Unknown		486	9.919	127.9	
2	Unknown		146	0.212	169.0	
3	Unknown		213	0.863	179.6	
4	Unknown		5163	71.8	211.8	

SiteChart Analysis Report - B5011408.PID

5 Unknown	1.769	0.104	406.3
6 TCethylene	70.7	2.460	426.8
7 TetraCethylene	17.6	0.225	626.1

recalc'd
Bz = ND's
Tub = 0.071 ppm
PHE's = 0.023 ppm

SiteChart Analysis Report - B5011409.PID



RESULTS:

Date Jan 14, 2005
 Time 09:28:01
 Instrument FGGE202
 Detector PID
 Column B
 Analysis# 19
 Tag sab
 Column Temp 60.0 C
 Det Temp 60.0 C
 Ambient Temp 31.0 C

19-3 10048

METHOD:

Analysis Time 1000.0 S
 PumpTime 5.0 S
 Back Flush 400.0 S
 Temperature 60.0 C
 Pressure 8.0 psi
 Inject Syringe, 100.0 uL
 PID State High Sense

INTEGRATION METHOD:

Manual Integration
 SlopeUp 0.0 mV/S
 SlopeDown 0.0 mV/S
 Min Height 0.0 mV
 Min Area 0.0 mVS
 FilterLevel 3
 Delay 80 Sec

PEAK REPORT:

#	Name	Conc (PPM)	Area (mVS)	Height (mV)	R.T. (S)	Status
1	Unknown		523	11.5	128.0	
2	Unknown		156	0.284	168.0	
3	Unknown		244	2.266	179.8	
4	Unknown		3446	42.3	211.4	

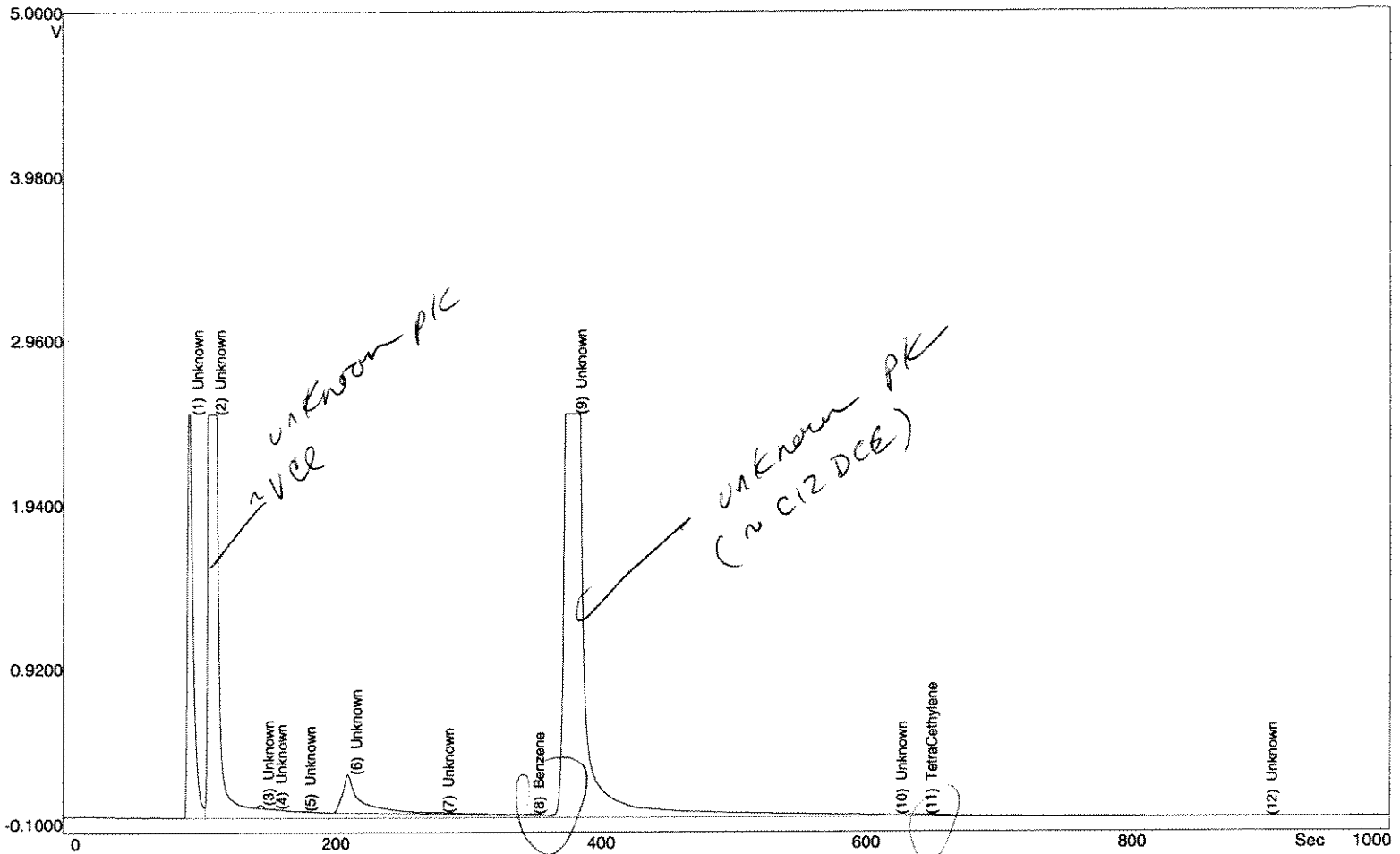
SiteChart Analysis Report - B5011409.PID

5 TCethylene
6 TetraCethylene

74.4	2.907	427.2
7.614	0.280	627.2

recalc'd
BE = ND
TCR = 0.074 ppm v
PCR = 0.010 ppm v

SiteChart Analysis Report - B5011427.PID



RESULTS:

Date Jan 14, 2005
 Time 15:36:19
 Instrument FGGE202
 Detector PID
 Column B
 Analysis# 55
 Tag sab
 Column Temp 59.0 C
 Det Temp 59.0 C
 Ambient Temp 33.0 C

METHOD:

Analysis Time 1000.0 S
 PumpTime 5.0 S
 Back Flush 400.0 S
 Temperature 60.0 C
 Pressure 8.0 psi
 Inject Syringe, 100.0 uL
 PID State High Sense

INTEGRATION METHOD:

Manual Integration
 SlopeUp 0.0 mV/S
 SlopeDown 0.0 mV/S
 Min Height 0.0 mV
 Min Area 0.0 mVS
 FilterLevel 3
 Delay 80 Sec

PEAK REPORT:

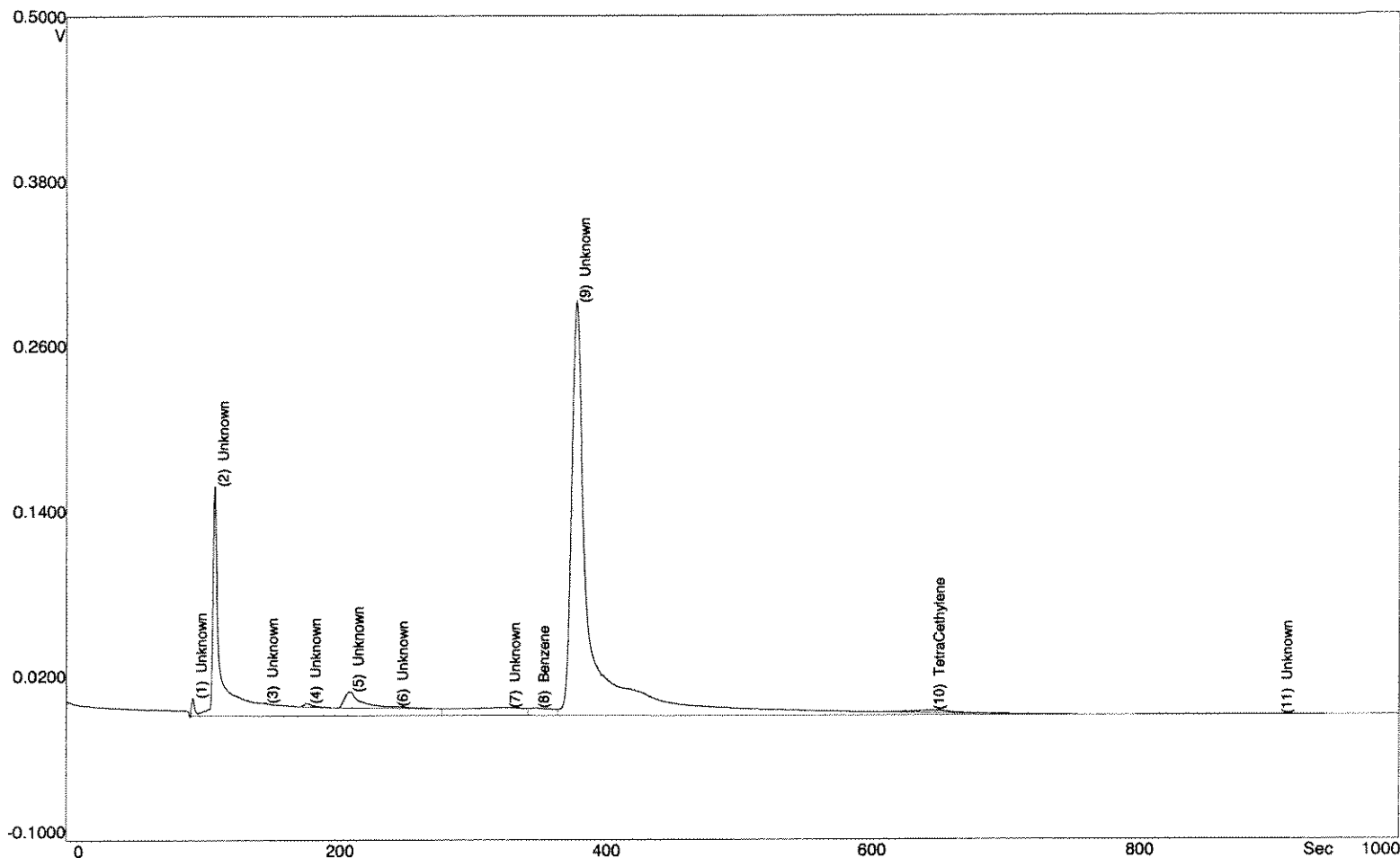
#	Name	Conc (PPM)	Area (mVS)	Height (mV)	R.T. (S)	Status
1	Unknown		13796	2507		94.9
2	Unknown		81614	2438		112.3
3	Unknown		103	19.5		148.8
4	Unknown		10.9	1.328		158.4

SiteChart Analysis Report - B5011427.PID

5 Unknown	19.5	2.235	180.0
6 Unknown	3949	239	214.6
7 Unknown	210	0.214	284.0
8 Benzene	36.9	2.275	352.3
9 Unknown	81241	2492	383.7
10 Unknown	11.1	0.216	625.6
11 TetraCethylene	62.3	0.338	648.2
12 Unknown	2.223	0.083	905.6

recalc'd
 BZ ~~TCE~~ s 0.037 ppmv
 PCE s 0.078 ppmv
 TCE = ND

SiteChart Analysis Report - B5011418.PID



RESULTS:

Date Jan 14, 2005
Time 12:17:27
Instrument FGGE202
Detector PID
Column B
Analysis# 37
Tag sab
Column Temp 59.0 C
Det Temp 59.0 C
Ambient Temp 33.0 C

METHOD:

Analysis Time 1000.0 S
PumpTime 5.0 S
Back Flush 400.0 S
Temperature 60.0 C
Pressure 8.0 psi
Inject Syringe, 100.0 uL
PID State High Sense

INTEGRATION METHOD:

Manual Integration
SlopeUp 0.0 mV/S
SlopeDown 0.0 mV/S
Min Height 0.0 mV
Min Area 0.0 mVS
FilterLevel 3
Delay 80 Sec

PEAK REPORT:

#	Name	Conc (PPM)	Area (mVS)	Height (mV)	R.T. (S)	Status
1	Unknown		37.6	11.8		94.5
2	Unknown		1882	165		110.9
3	Unknown		1.467	0.138		148.4
4	Unknown		19.6	2.450		180.4

1x
25A-4'

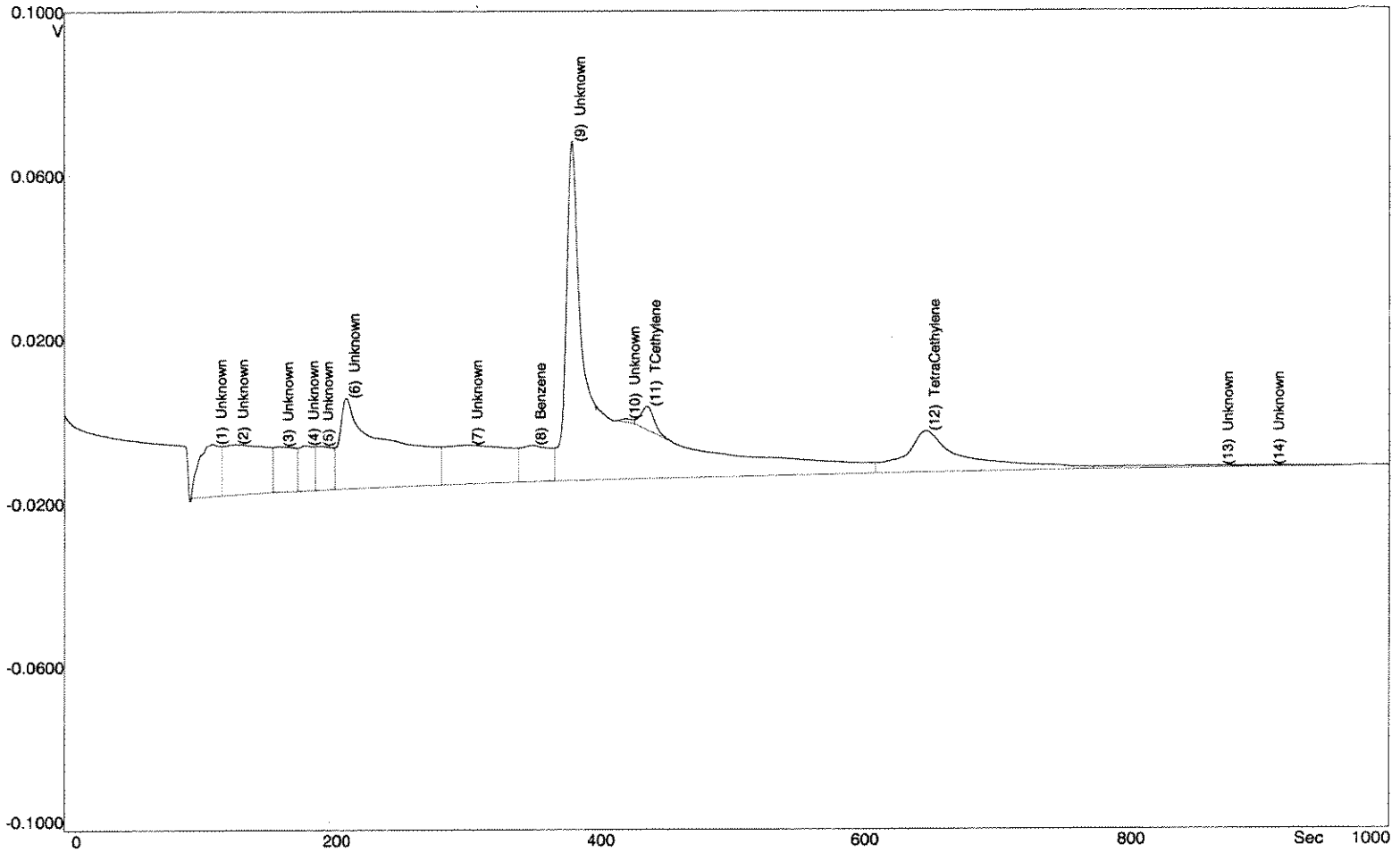
1004R

SiteChart Analysis Report - B5011418.PID

5 Unknown	174	11.6	212.8
6 Unknown	19.0	0.054	246.1
7 Unknown	343	0.665	329.9
8 Benzene	112	0.223	351.7
9 Unknown	5047	297	382.3
10 TetraCethylene	61.2	1.233	648.8
11 Unknown	14.0	0.314	910.4

NDs⁵ Bz
TCE
PCE

SiteChart Analysis Report - B5011419.PID



RESULTS:

Date Jan 14, 2005
 Time 12:54:21
 Instrument FGGE202
 Detector PID
 Column B
 Analysis# 39
 Tag sab
 Column Temp 60.0 C
 Det Temp 60.0 C
 Ambient Temp 33.0 C

METHOD:

Analysis Time 1000.0 S
 PumpTime 5.0 S
 Back Flush 400.0 S
 Temperature 60.0 C
 Pressure 8.0 psi
 Inject Syringe, 100.0 uL
 PID State High Sense

INTEGRATION METHOD:

Manual Integration
 SlopeUp 0.0 mV/S
 SlopeDown 0.0 mV/S
 Min Height 0.0 mV
 Min Area 0.0 mVS
 FilterLevel 3
 Delay 80 Sec

PEAK REPORT:

#	Name	Conc (PPM)	Area (mVS)	Height (mV)	R.T. (S)	Status
1	Unknown		239	13.5	111.5	
2	Unknown		450	0.527	128.1	
3	Unknown		204	0.156	162.0	
4	Unknown		138	0.575	181.0	

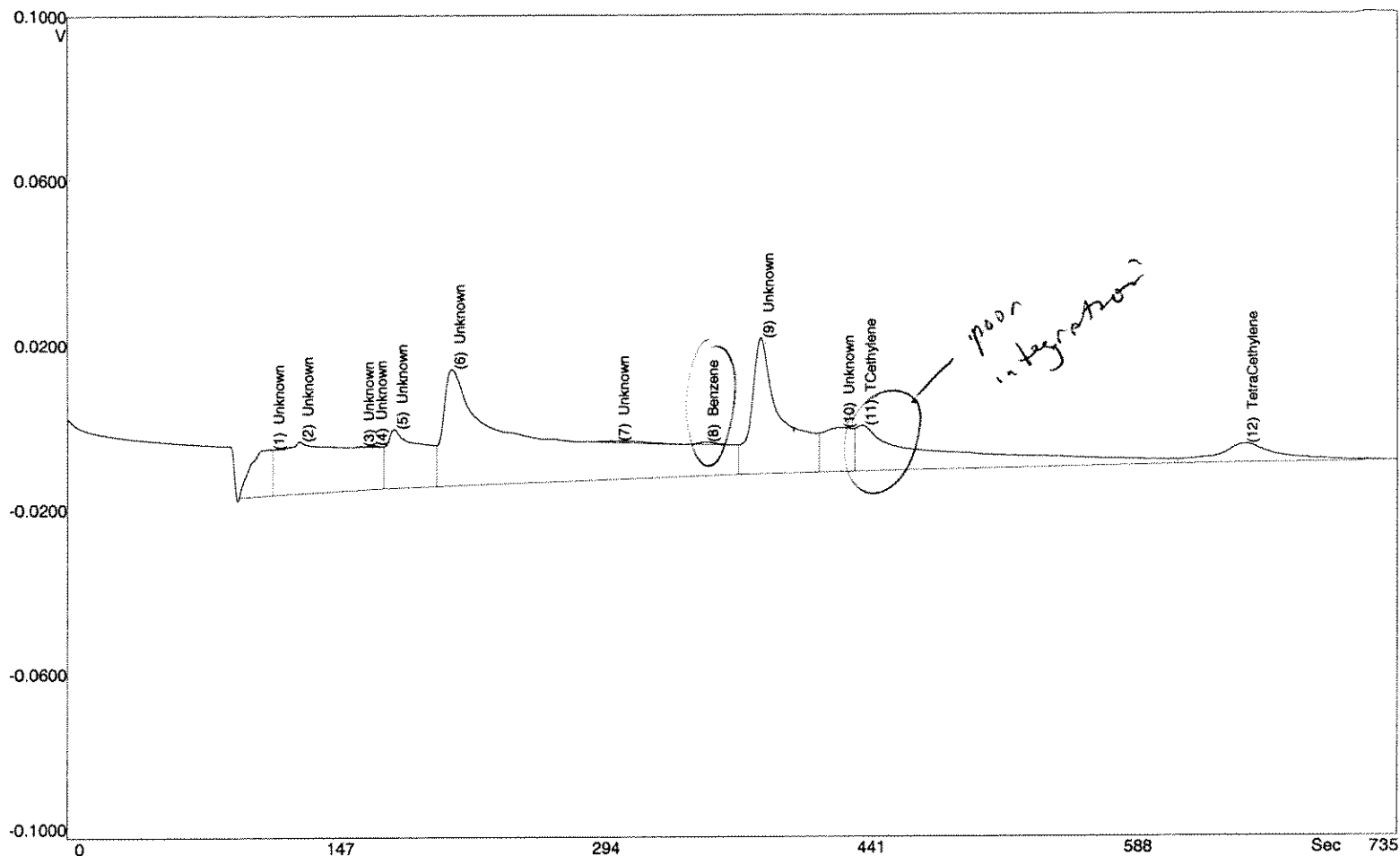
17
 100mR
 31'-3'

SiteChart Analysis Report - B5011419.PID

5 Unknown		164	0.120	192.4
6 Unknown		996	12.0	212.4
7 Unknown		521	0.452	305.1
8 Benzene		229	0.667	353.0
9 Unknown		2544	74.9	383.0
10 Unknown		8.263	0.473	424.0
11 TCethylene		67.3	3.338	439.6
12 TetraCethylene	0.567	517	7.745	650.6
13 Unknown		57.0	0.184	872.0
14 Unknown		17.9	0.238	911.2

recalc'd
 Bz = 0.23 ppmV
 TCE = 0.067 ppmV
 PCB = 0.65 ppmV

SiteChart Analysis Report - B5011421.PID



RESULTS:

Date Jan 14, 2005
 Time 13:39:28
 Instrument FGGE202
 Detector PID
 Column B
 Analysis# 43
 Tag sab
 Column Temp 59.0 C
 Det Temp 59.0 C
 Ambient Temp 34.0 C

METHOD:

Analysis Time 1000.0 S
 PumpTime 5.0 S
 Back Flush 400.0 S
 Temperature 60.0 C
 Pressure 8.0 psi
 Inject Syringe, 100.0 uL
 PID State High Sense

INTEGRATION METHOD:

Manual Integration
 SlopeUp 0.0 mV/S
 SlopeDown 0.0 mV/S
 Min Height 0.0 mV
 Min Area 0.0 mVS
 FilterLevel 3
 Delay 80 Sec

PEAK REPORT:

#	Name	Conc (PPM)	Area (mVS)	Height (mV)	R.T. (S)	Status
1	Unknown		158	12.1	112.1	
2	Unknown		669	13.1	128.0	
3	Unknown		0.960	0.239	161.8	
4	Unknown		1.867	0.479	168.8	

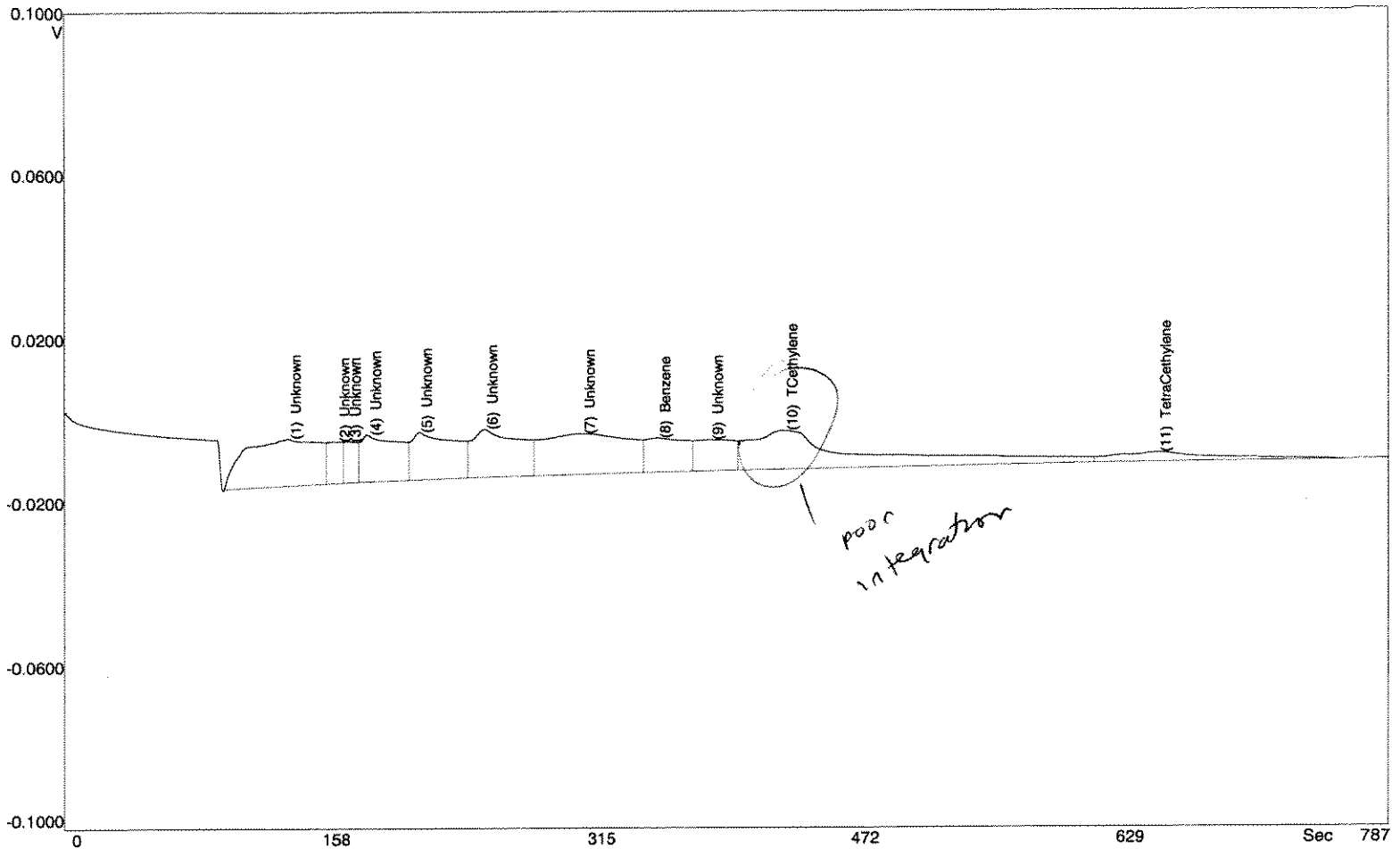
31A - 3'
 100 ml

SiteChart Analysis Report - B5011421.PID

5 Unknown		330	4.372	180.2
6 Unknown		1850	18.5	211.8
7 Unknown		11.7	0.191	302.7
8 Benzene		6.670	0.544	352.0
9 Unknown		669	26.1	382.7
10 Unknown		204	1.369	427.2
11 TCethylene	0.056	631	1.807	439.2
12 TetraCethylene	0.150	183	3.689	650.0

Results of
 B2 = 1.5 ppmv
 TCE = 0.63 ppmv
 PCB = 0.23 ppmv
 (7) over estimated

SiteChart Analysis Report - B5011424.PID



RESULTS:

Date Jan 14, 2005
 Time 14:46:25
 Instrument FGGE202
 Detector PID
 Column B
 Analysis# 49
 Tag sab
 Column Temp 60.0 C
 Det Temp 60.0 C
 Ambient Temp 33.0 C

METHOD:

Analysis Time 1000.0 S
 PumpTime 5.0 S
 Back Flush 400.0 S
 Temperature 60.0 C
 Pressure 8.0 psi
 Inject Syringe, 100.0 uL
 PID State High Sense

INTEGRATION METHOD:

Manual Integration
 SlopeUp 0.0 mV/S
 SlopeDown 0.0 mV/S
 Min Height 0.0 mV
 Min Area 0.0 mVS
 FilterLevel 3
 Delay 80 Sec

PEAK REPORT:

#	Name	Conc (PPM)	Area (mVS)	Height (mV)	R.T. (S)	Status
1	Unknown		588	12.3		132.4
2	Unknown		102	0.138		161.6
3	Unknown		91.8	0.142		168.0
4	Unknown		300	1.808		180.0

SiteChart Analysis Report - B5011424.PID

5 Unknown		347	2.389	210.2
6 Unknown		385	2.825	248.8
7 Unknown		598	1.449	306.7
8 Benzene		232	0.445	352.0
9 Unknown		198	0.275	383.3
10 TCethylene	0.184	773	2.634	427.6
11 TetraCethylene	0.124	164	1.280	649.4

revised

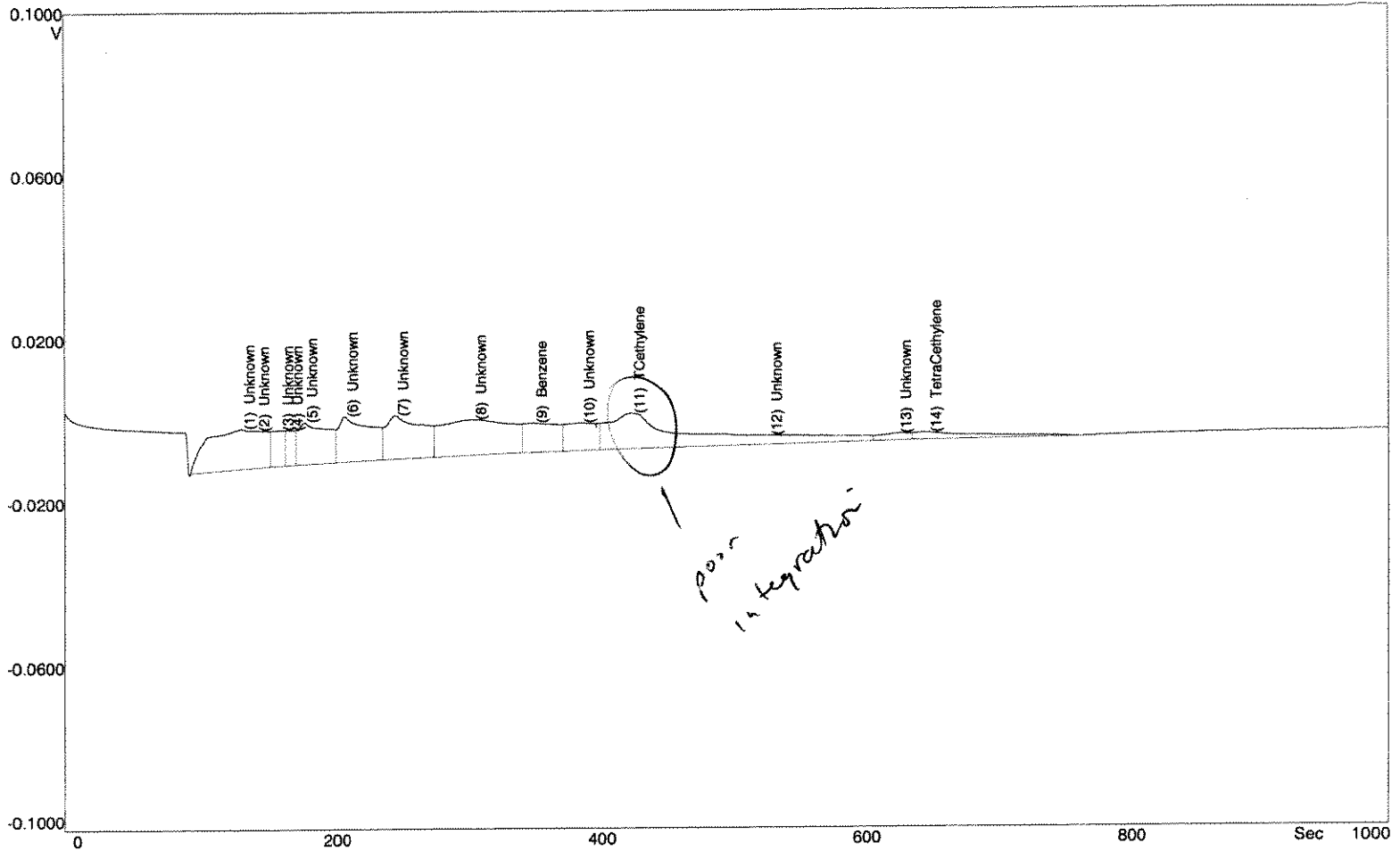
BZ = ND ppmv

TCE = 0.78 ppmv

PCE =

see estimated
ppmv

SiteChart Analysis Report - B5011425.PID



RESULTS:

Date Jan 14, 2005
 Time 15:00:34
 Instrument FGGE202
 Detector PID
 Column B
 Analysis# 51
 Tag sab
 Column Temp 59.0 C
 Det Temp 59.0 C
 Ambient Temp 33.0 C

HA-21
 100mL

METHOD:

Analysis Time 1000.0 S
 PumpTime 5.0 S
 Back Flush 400.0 S
 Temperature 60.0 C
 Pressure 8.0 psi
 Inject Syringe, 100.0 uL
 PID State High Sense

INTEGRATION METHOD:

Manual Integration
 SlopeUp 0.0 mV/S
 SlopeDown 0.0 mV/S
 Min Height 0.0 mV
 Min Area 0.0 mVS
 FilterLevel 3
 Delay 80 Sec

PEAK REPORT:

#	Name	Conc (PPM)	Area (mVS)	Height (mV)	R.T. (S)	Status
1	Unknown		496	11.2		133.1
2	Unknown		0.134	0.034		144.2
3	Unknown		97.6	0.214		162.2
4	Unknown		68.7	0.061		169.4

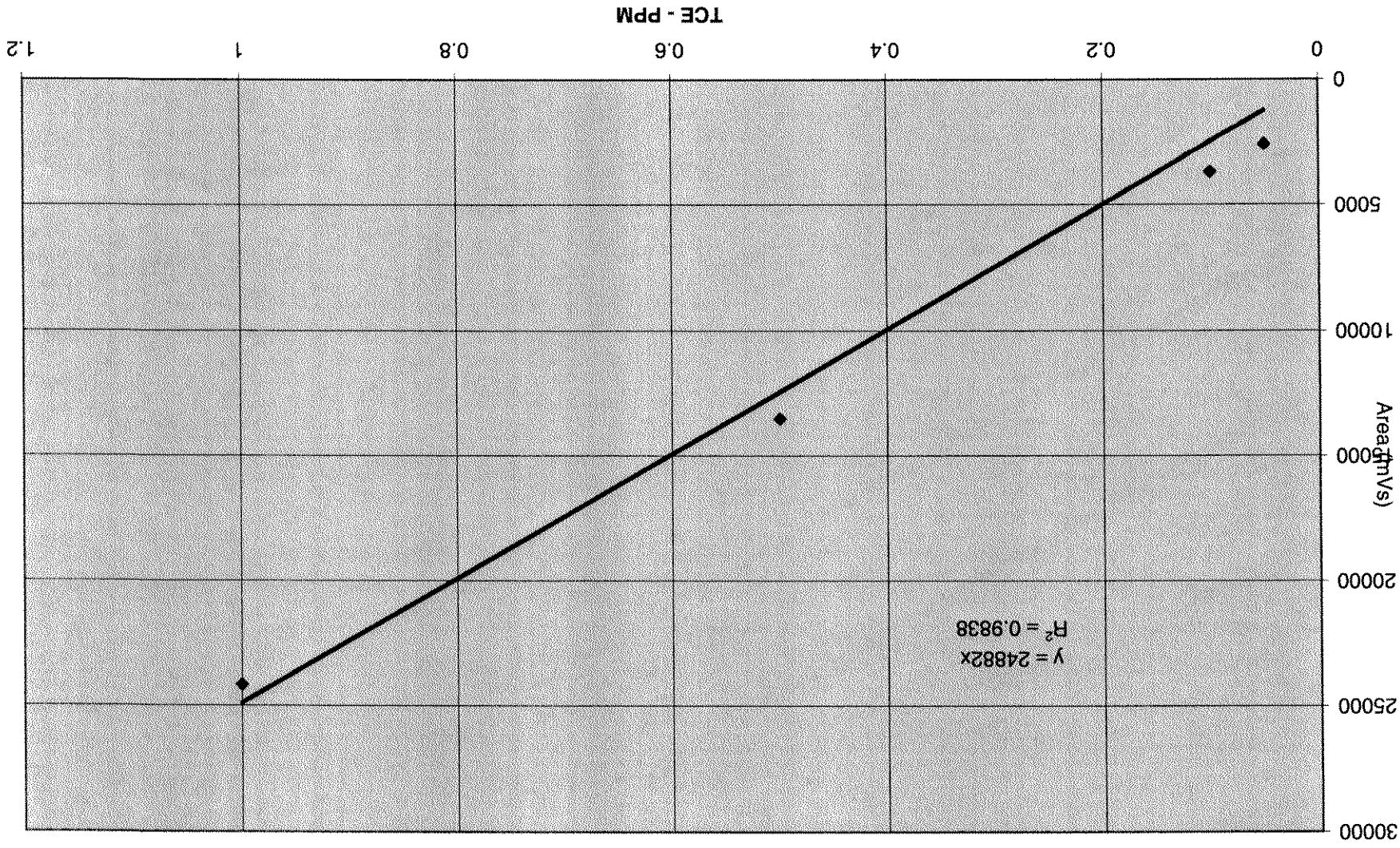
SiteChart Analysis Report - B5011425.PID

5 Unknown		270	2.083	180.4
6 Unknown		313	2.994	211.0
7 Unknown		338	2.742	249.1
8 Unknown		533	1.401	307.7
9 Benzene		211	0.266	353.7
10 Unknown		184	0.345	389.7
11 TCethylene	0.104	686	2.595	427.6
12 Unknown		1.247	0.026	531.6
13 Unknown		43.3	0.618	629.3
14 TetraCethylene	0.033	97.4	0.781	651.8

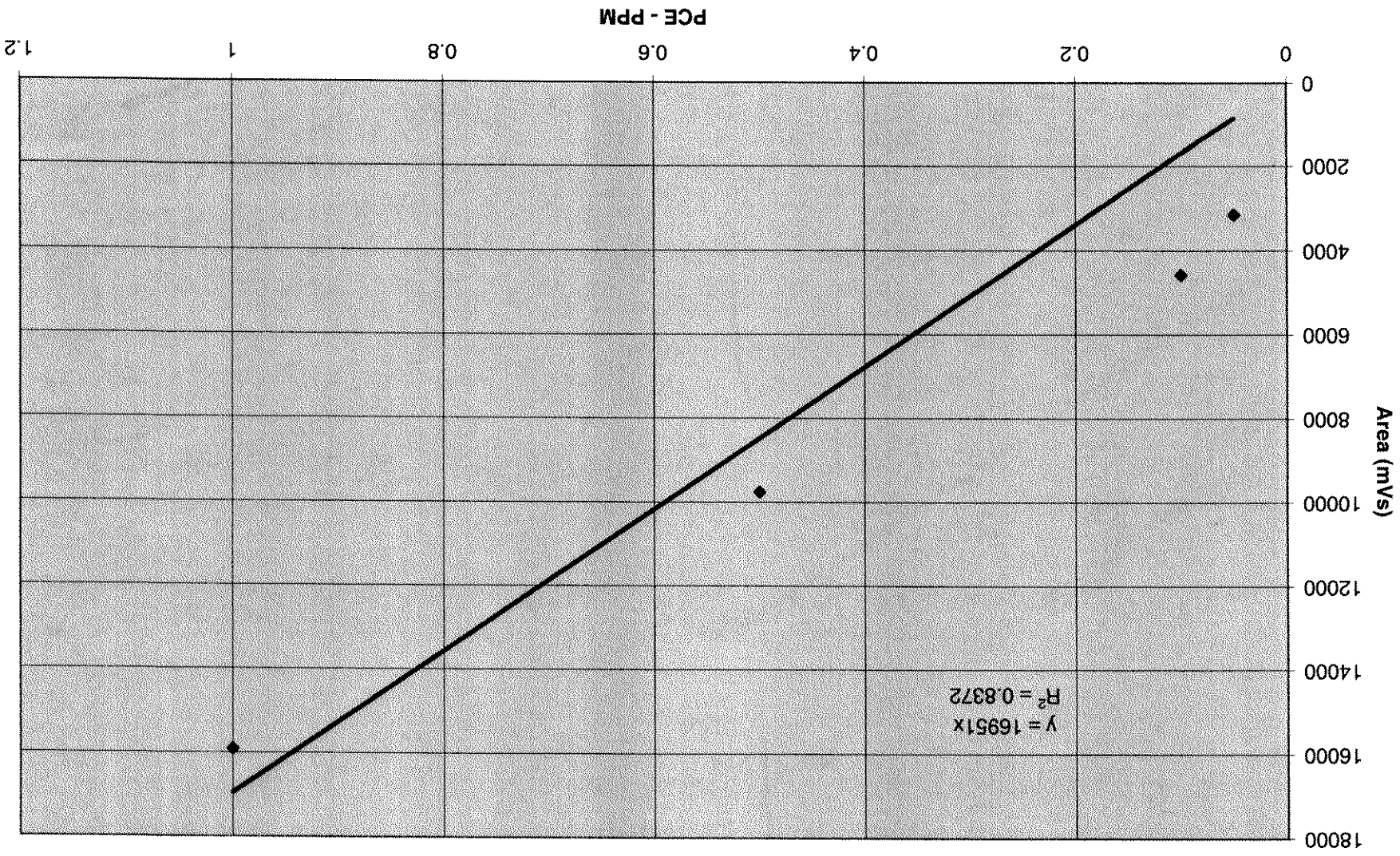
recalculated
 Bz = 0.21 ppmv
 TCE = 0.69 ppmv (over estimated)
 PCB = 0.12 ppmv

Voyager FPGC Daily Calibrations and Chromatograms
Sabana Abaja Industrial Site
January 15 and 17, 2005

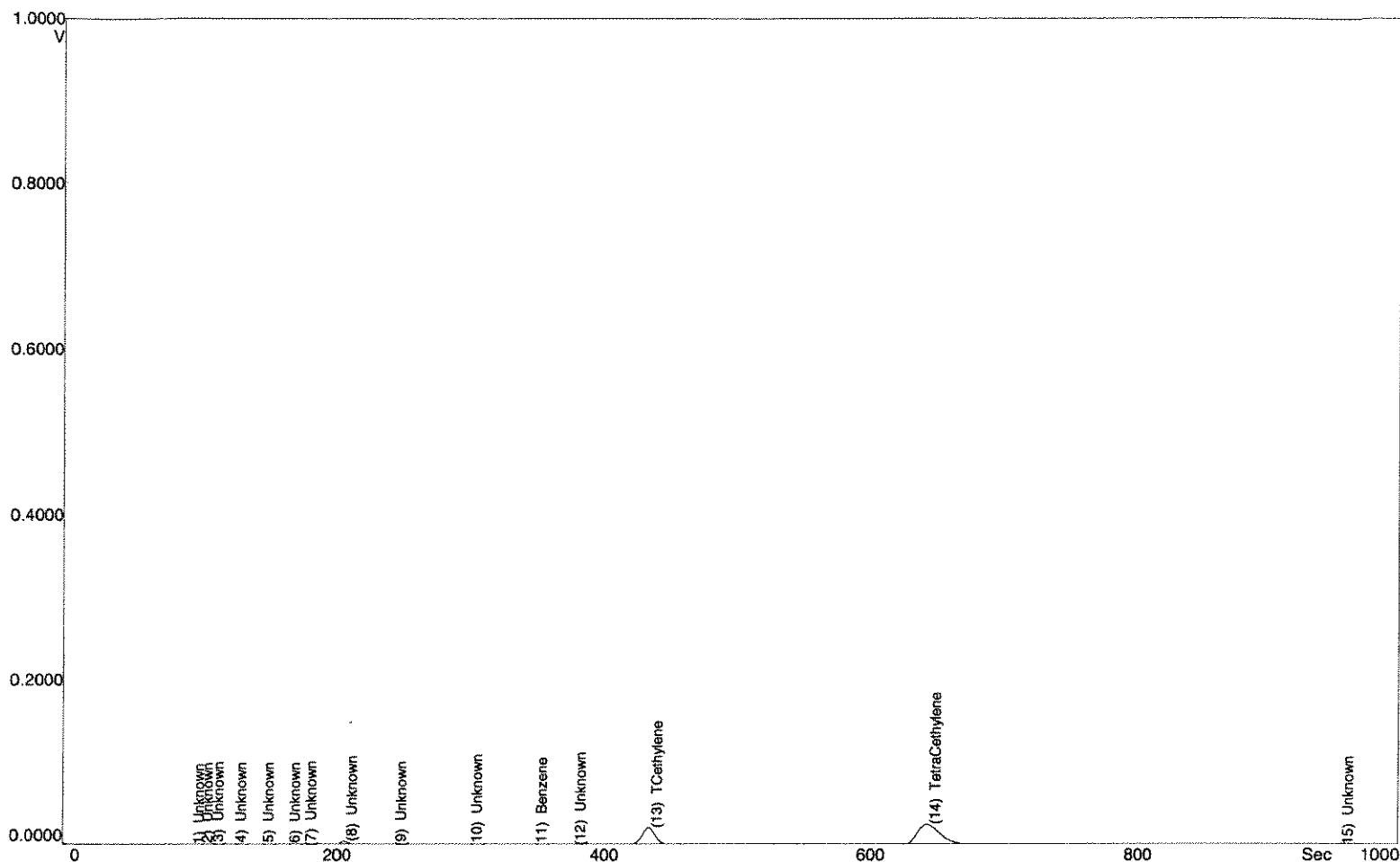
TCE via PID - 01/15/05



PCE via PID - 01/15/05



SiteChart Analysis Report - B5011502.PID



RESULTS:

Date Jan 15, 2005
 Time 08:36:58
 Instrument FGGE202
 Detector PID
 Column B
 Analysis# 5
 Tag sab HS
 Column Temp 60.0 C
 Det Temp 60.0 C
 Ambient Temp 32.0 C

METHOD:

Analysis Time 1200.0 S
 PumpTime 5.0 S
 Back Flush 400.0 S
 Temperature 60.0 C
 Pressure 8.0 psi
 Inject Syringe, 100.0 uL
 PID State High Sense

INTEGRATION METHOD:

Manual Integration
 SlopeUp 0.0 mV/S
 SlopeDown 0.0 mV/S
 Min Height 0.0 mV
 Min Area 0.0 mVS
 FilterLevel 3
 Delay 80 Sec

PEAK REPORT:

#	Name	Conc (PPM)	Area (mVS)	Height (mV)	R.T. (S)	Status
1	Unknown		26.6	8.415		95.3
2	Unknown		44.1	4.321		101.9
3	Unknown		108	8.886		110.1
4	Unknown		189	0.578		127.3

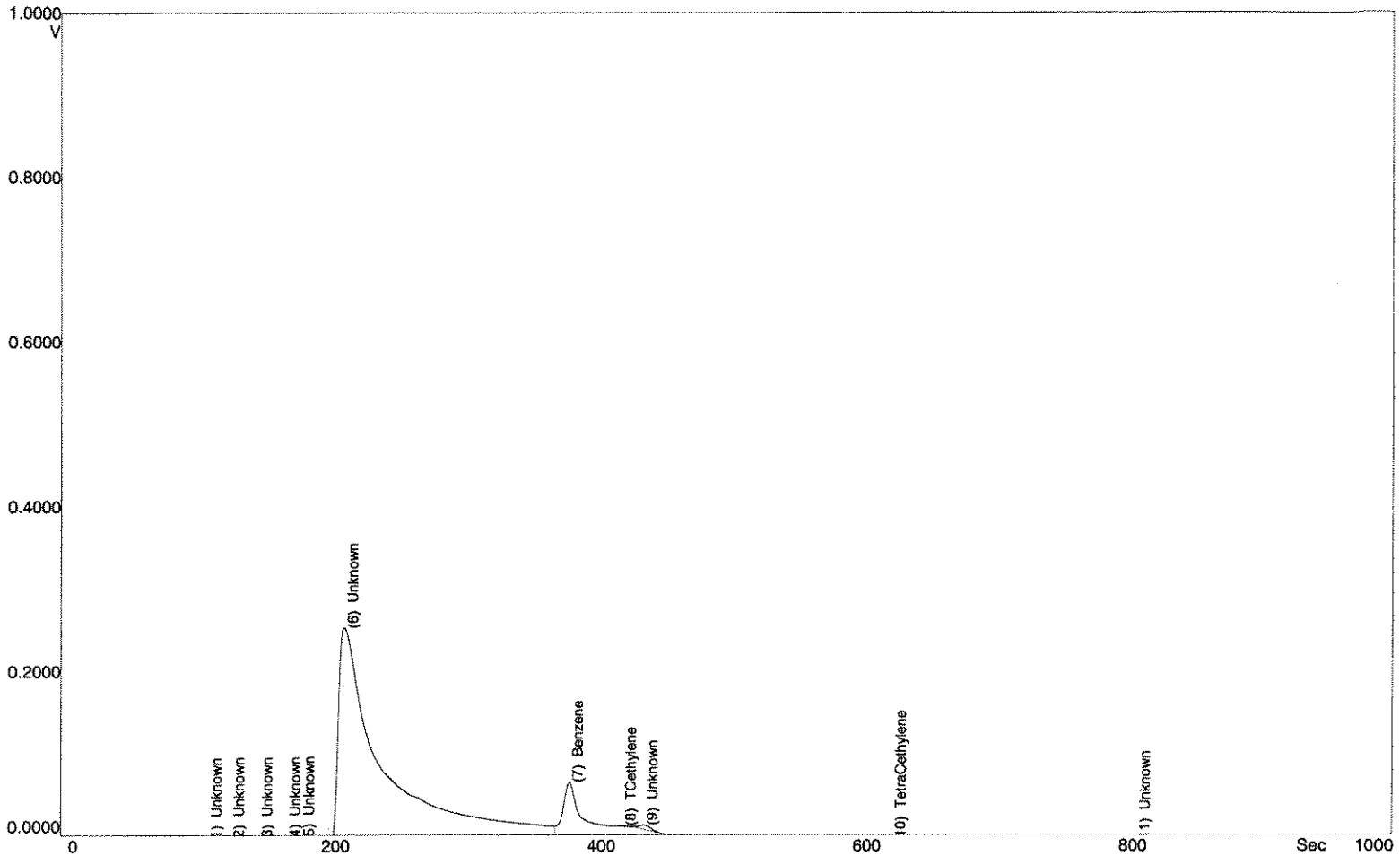
1X
 100M² REACT (w-30)

SiteChart Analysis Report - B5011502.PID

5 Unknown		144	0.553	148.0
6 Unknown		137	0.153	167.6
7 Unknown		236	1.724	179.6
8 Unknown		683	7.674	210.2
9 Unknown		0.493	0.124	246.9
10 Unknown		419	0.381	303.5
11 Benzene	0.006	134	0.216	352.0
12 Unknown		247	2.611	381.0
13 TCethylene	0.044	929	23.7	438.4
14 TetraCethylene	0.043	1157	31.7	647.6
15 Unknown		144	0.341	957.2
16 Unknown		0.137	0.027	1014.4
17 Unknown		10.6	0.360	1062.0

recalc'd
TCE = .037 ug/ml
PCE = .068 ug/ml

SiteChart Analysis Report - B5011503.PID



RESULTS:

Date Jan 15, 2005
 Time 09:01:02
 Instrument FGGE202
 Detector PID
 Column B
 Analysis# 7
 Tag sab HS
 Column Temp 60.0 C
 Det Temp 60.0 C
 Ambient Temp 33.0 C

IX
 100ml
 W-21

METHOD:

Analysis Time 1200.0 S
 PumpTime 5.0 S
 Back Flush 400.0 S
 Temperature 60.0 C
 Pressure 8.0 psi
 Inject Syringe, 100.0 uL
 PID State High Sense

INTEGRATION METHOD:

Manual Integration
 SlopeUp 0.0 mV/S
 SlopeDown 0.0 mV/S
 Min Height 0.0 mV
 Min Area 0.0 mVS
 FilterLevel 3
 Delay 80 Sec

PEAK REPORT:

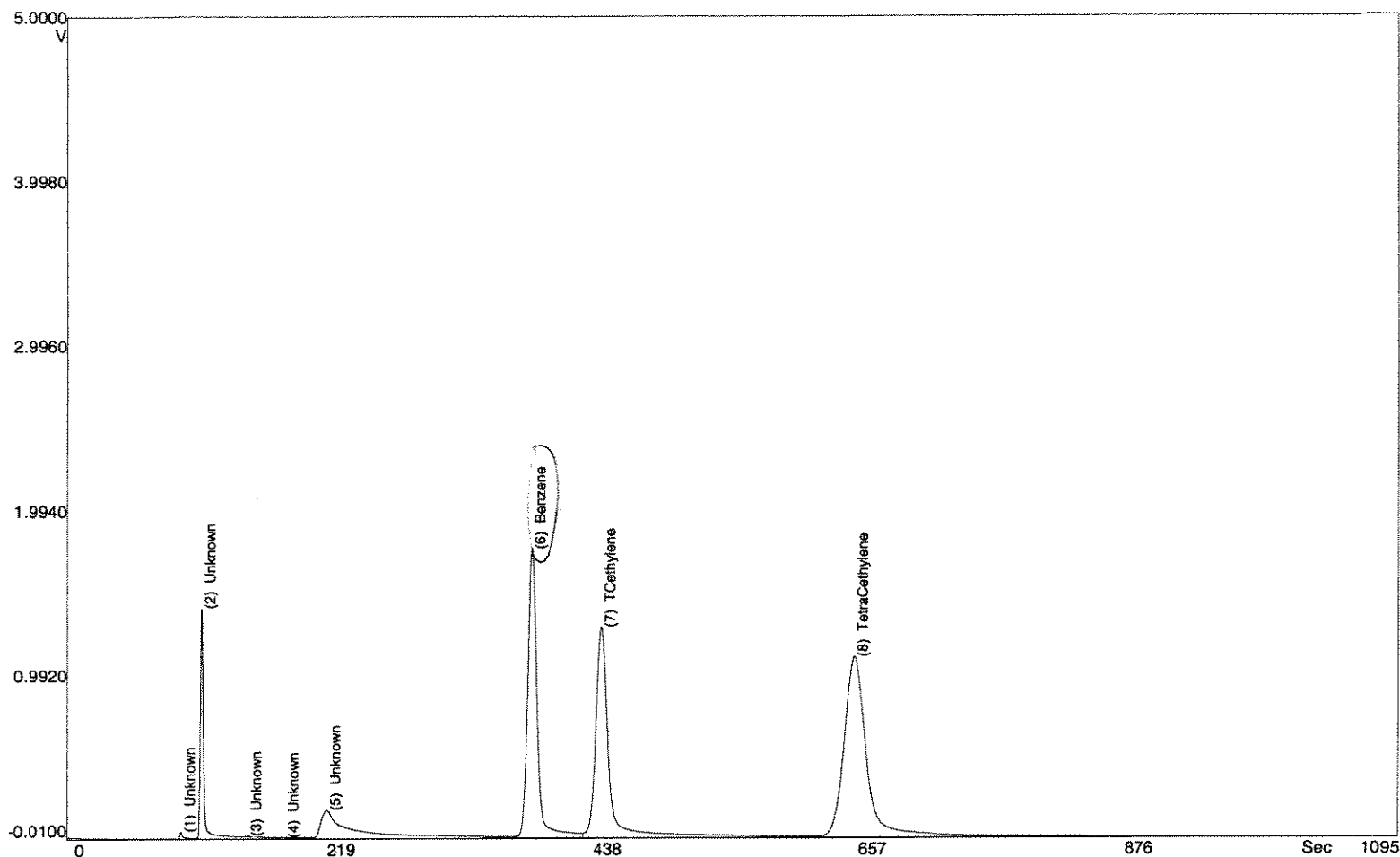
#	Name	Conc (PPM)	Area (mVS)	Height (mV)	R.T. (S)	Status
1	Unknown		83.5	6.561		110.4
2	Unknown		175	6.687		127.2
3	Unknown		119	0.318		148.4
4	Unknown		108	1.298		169.0

SiteChart Analysis Report - B5011503.PID

5 Unknown		174	1.706	179.4
6 Unknown		11774	261	212.0
7 Benzene	0.206	4612	53.3	381.3
8 TCethylene		16.6	0.545	421.2
9 Unknown		49.5	1.642	437.2
10 TetraCethylene		12.8	0.168	624.5
11 Unknown		1.388	0.071	808.2

recalc'd
 PCR
 PCR
 ND
 ND

SiteChart Analysis Report - B5011506.PID



RESULTS:

Date Jan 15, 2005
 Time 09:55:03
 Instrument FGGE202
 Detector PID
 Column B
 Analysis# 13
 Tag sab HS
 Column Temp 60.0 C
 Det Temp 60.0 C
 Ambient Temp 35.0 C

10x

104R

W-17

METHOD:

Analysis Time 1200.0 S
 PumpTime 5.0 S
 Back Flush 400.0 S
 Temperature 60.0 C
 Pressure 8.0 psi
 Inject Syringe, 100.0 uL
 PID State High Sense

INTEGRATION METHOD:

Manual Integration
 SlopeUp 0.0 mV/S
 SlopeDown 0.0 mV/S
 Min Height 0.0 mV
 Min Area 0.0 mVS
 FilterLevel 3
 Delay 80 Sec

PEAK REPORT:

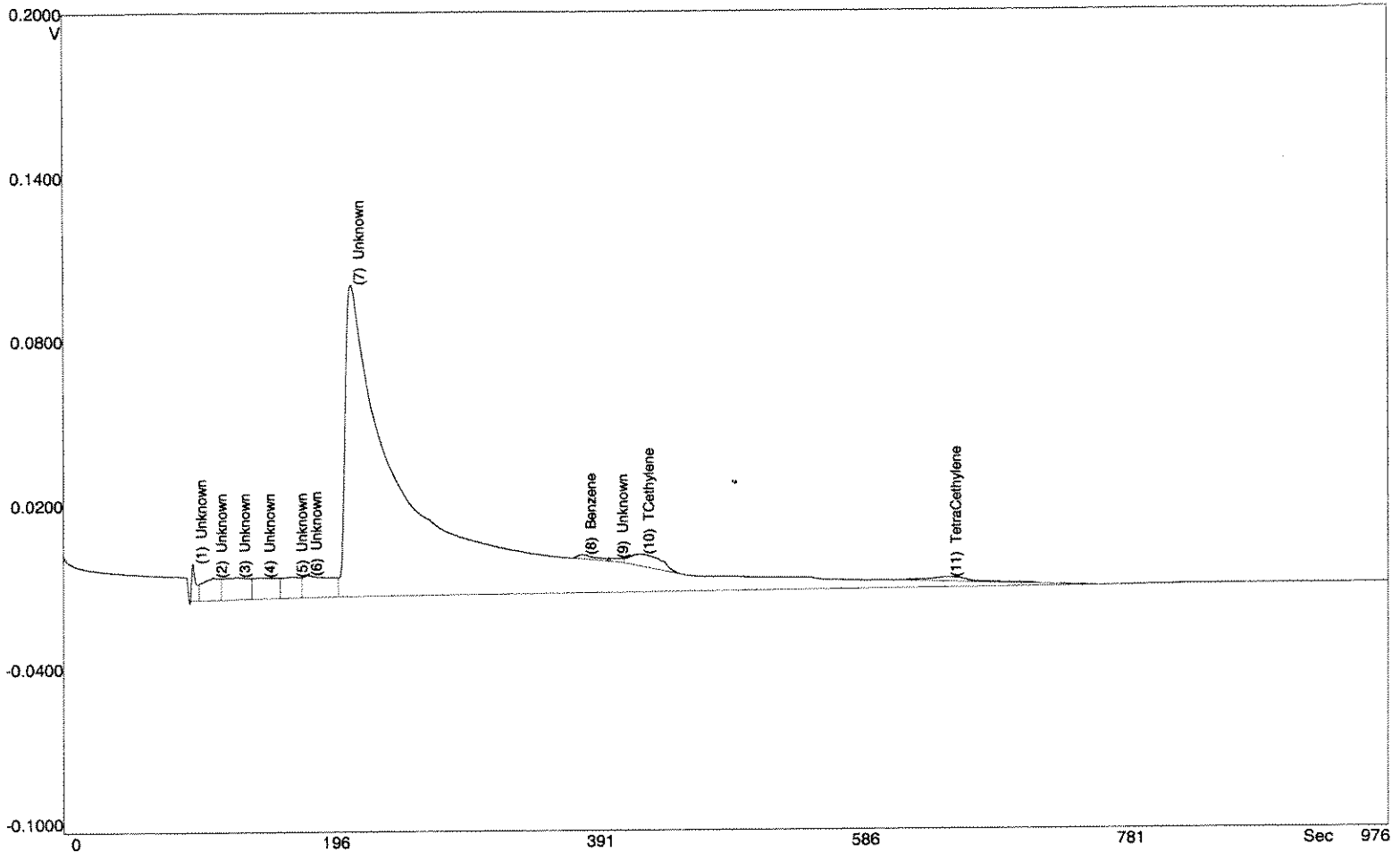
#	Name	Conc (PPM)	Area (mVS)	Height (mV)	R.T. (S)	Status
1	Unknown		130	40.0	93.5	
2	Unknown		4854	1399	110.1	
3	Unknown		20.0	4.048	148.0	
4	Unknown		1.031	0.101	178.6	

SiteChart Analysis Report - B5011506.PID

5 Unknown		5610	168	213.2
6 Benzene		0.718 16093	1755	381.7
7 TCethylene	8.2	-0.819 17139	1256	438.8
8 TetraCethylene	9.2	-0.921 24864	1094	647.6

TCE = 6.888 → 6.9 ug/l
 PCE = 14.668 → 14.7 ug/l

SiteChart Analysis Report - B5011507.PID



RESULTS:

Date Jan 15, 2005
 Time 10:13:52
 Instrument FGGE202
 Detector PID
 Column B
 Analysis# 15
 Tag sab HS
 Column Temp 60.0 C
 Det Temp 60.0 C
 Ambient Temp 35.0 C

IX
 10042 W-33

METHOD:

Analysis Time 1200.0 S
 PumpTime 5.0 S
 Back Flush 400.0 S
 Temperature 60.0 C
 Pressure 8.0 psi
 Inject Syringe, 100.0 uL
 PID State High Sense

INTEGRATION METHOD:

Manual Integration
 SlopeUp 0.0 mV/S
 SlopeDown 0.0 mV/S
 Min Height 0.0 mV
 Min Area 0.0 mVS
 FilterLevel 3
 Delay 80 Sec

PEAK REPORT:

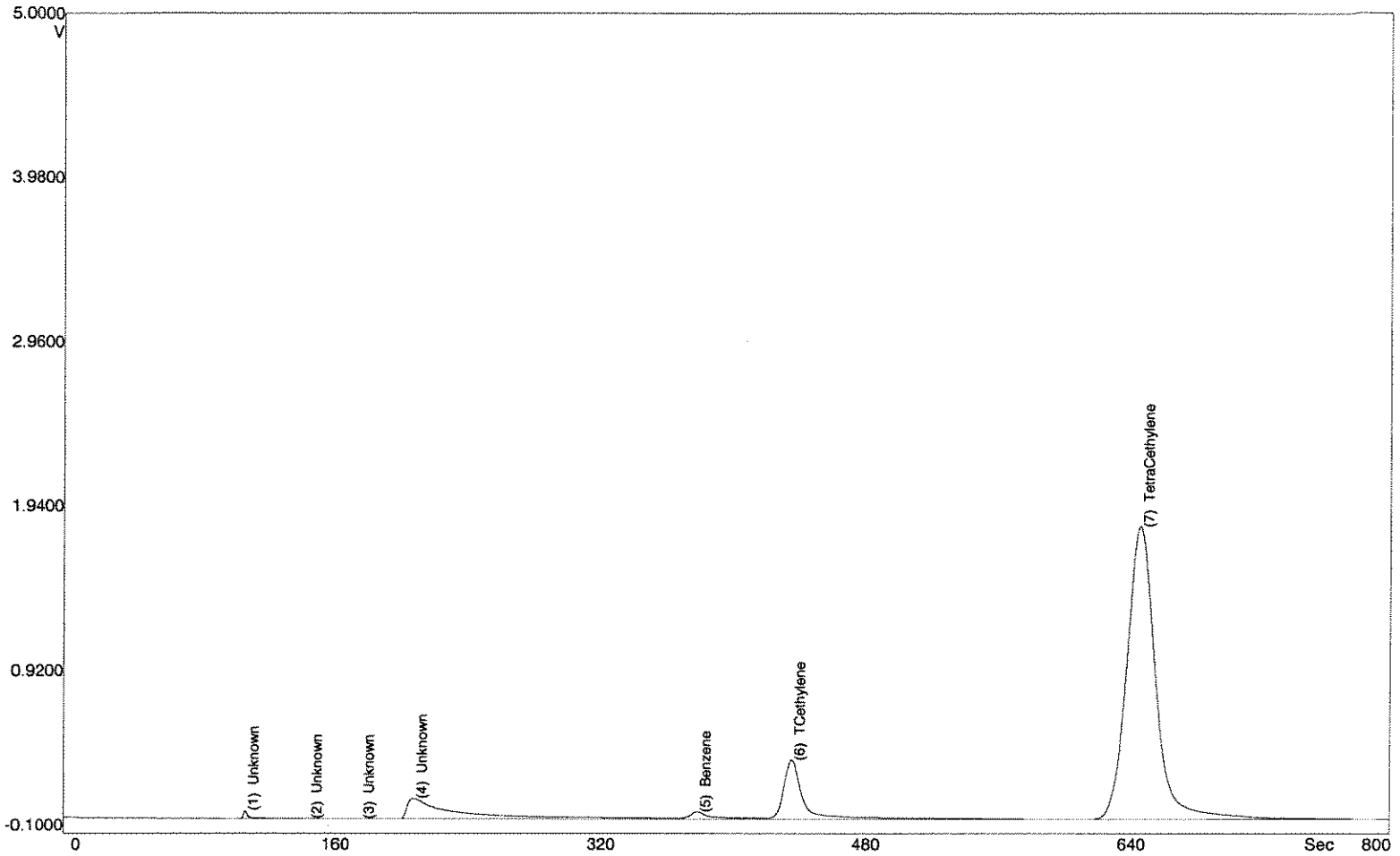
#	Name	Conc (PPM)	Area (mVS)	Height (mV)	R.T. (S)	Status
1	Unknown		50.6	12.9		95.2
2	Unknown		123	2.591		110.3
3	Unknown		176	0.460		127.5
4	Unknown		158	0.155		145.8

SiteChart Analysis Report - B5011507.PID

5 Unknown		118	0.397	169.2
6 Unknown		198	0.889	179.6
7 Unknown		7280	107	211.8
8 Benzene	0.001	26.5	1.247	382.3
9 Unknown		12.5	0.157	405.7
10 TCethylene	0.006	121	1.587	424.8
11 TetraCethylene	0.002	61.5	1.045	651.2

rechecked
TCE = ND
PCE = ND

SiteChart Analysis Report - B5011509.PID



RESULTS:

Date Jan 15, 2005
 Time 10:46:01
 Instrument FGGE202
 Detector PID
 Column B
 Analysis# 19
 Tag sab HS
 Column Temp 60.0 C
 Det Temp 60.0 C
 Ambient Temp 36.0 C

20X

542

MW-2

METHOD:

Analysis Time 800.0 S
 PumpTime 5.0 S
 Back Flush 400.0 S
 Temperature 60.0 C
 Pressure 8.0 psi
 Inject Syringe, 100.0 uL
 PID State High Sense

INTEGRATION METHOD:

Manual Integration
 SlopeUp 0.0 mV/S
 SlopeDown 0.0 mV/S
 Min Height 0.0 mV
 Min Area 0.0 mVS
 FilterLevel 3
 Delay 80 Sec

PEAK REPORT:

#	Name	Conc (PPM)	Area (mVS)	Height (mV)	R.T. (S)	Status
1	Unknown		250	50.8		109.9
2	Unknown		1.288	0.445		147.8
3	Unknown		0.405	0.045		179.2
4	Unknown		4502	128		211.0

SiteChart Analysis Report - B5011509.PID

5 Benzene		786	39.4	382.3	
6 TCethylene	158 → 7.911	5424	365	439.2	
7 TetraCethylene	→ 175	37208	1823	648.8	ALARM

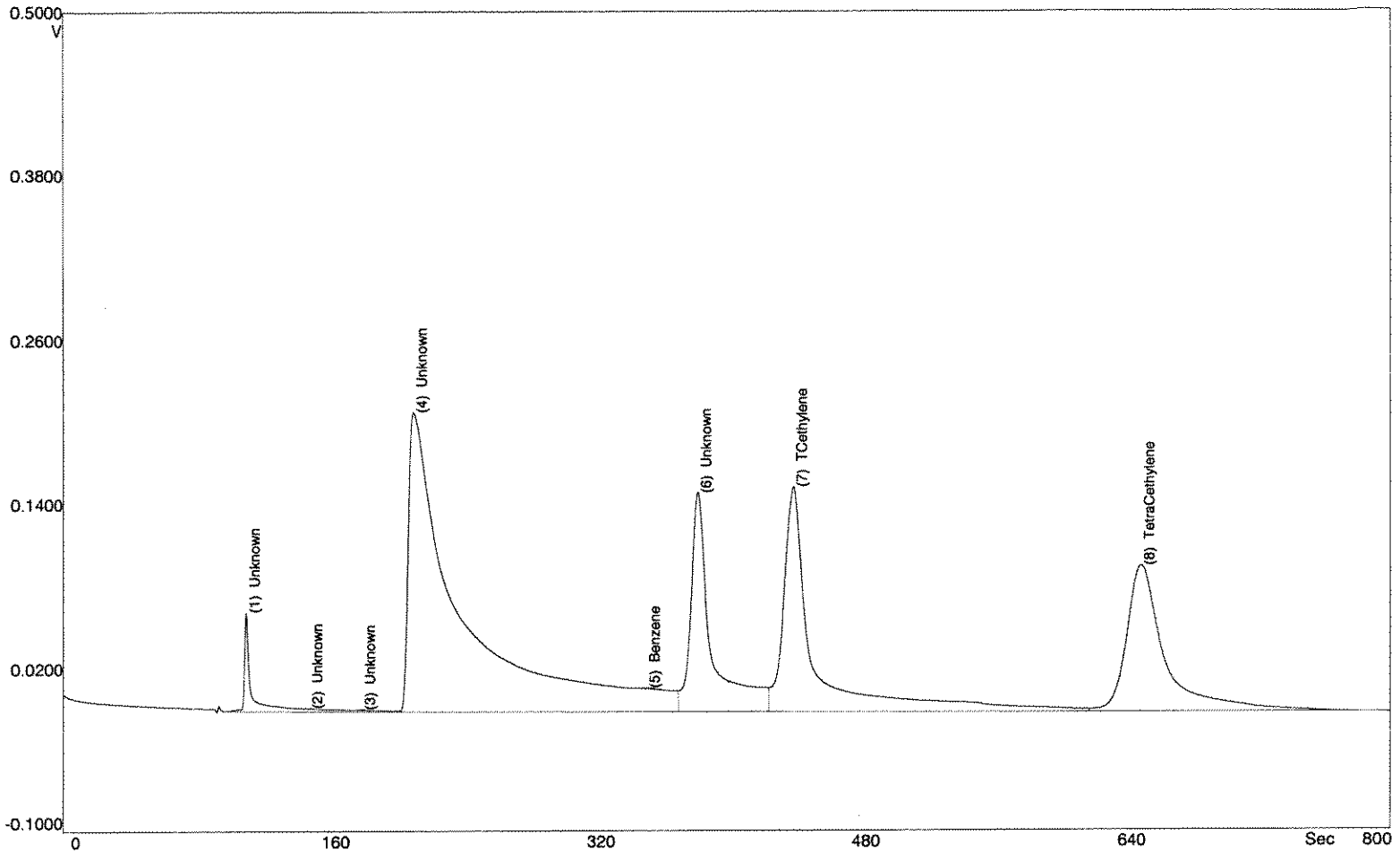
158
3500

17.911
20
158.22

175
20
3500

TCB = 4.36 → 4.4 ug/l
PCB = 43.9 → 44 ug/l

SiteChart Analysis Report - B5011513.PID



RESULTS:

Date Jan 15, 2005
 Time 11:47:07
 Instrument FGGE202
 Detector PID
 Column B
 Analysis# 27
 Tag sab HS
 Column Temp 60.0 C
 Det Temp 60.0 C
 Ambient Temp 37.0 C

10X

10x2

MW-6

METHOD:

Analysis Time 800.0 S
 PumpTime 5.0 S
 Back Flush 400.0 S
 Temperature 60.0 C
 Pressure 8.0 psi
 Inject Syringe, 100.0 uL
 PID State High Sense

INTEGRATION METHOD:

Manual Integration
 SlopeUp 0.0 mV/S
 SlopeDown 0.0 mV/S
 Min Height 0.0 mV
 Min Area 0.0 mVS
 FilterLevel 3
 Delay 80 Sec

PEAK REPORT:

#	Name	Conc (PPM)	Area (mVS)	Height (mV)	R.T. (S)	Status
1	Unknown		403	72.7	110.0	
2	Unknown		1.143	0.162	147.8	
3	Unknown		3.031	0.405	179.8	
4	Unknown		8108	218	210.8	

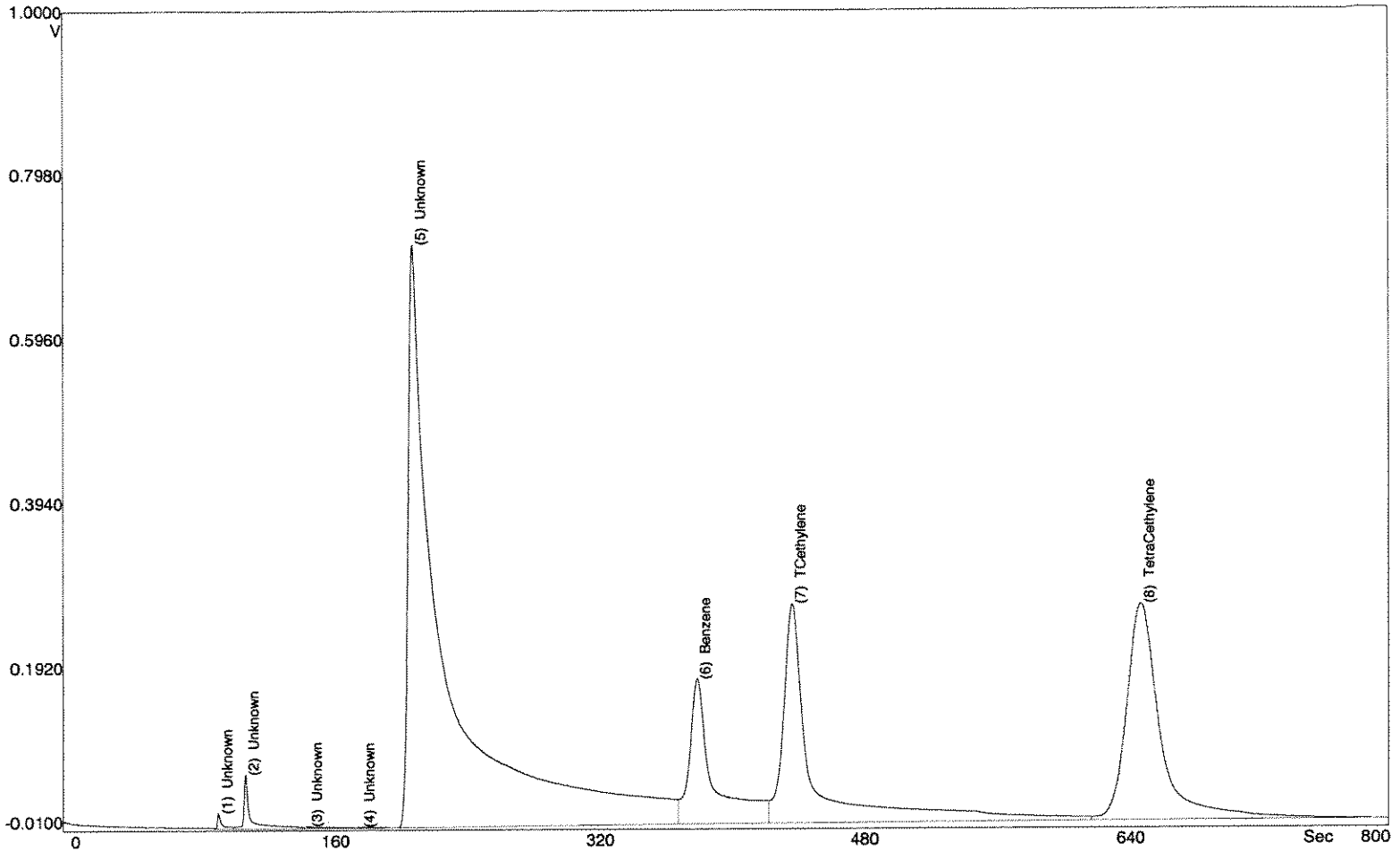
SiteChart Analysis Report - B5011513.PID

5 Benzene		8.339	0.405	351.3
6 Unknown		2339	145	382.3
7 TCethylene	91 - 4.117	3520	147	440.4
8 TetraCethylene	2.389	2889	105	649.4

24

recalc'd
TCE = 1.42 µg/L
PCE = 1.70 µg/L

SiteChart Analysis Report - B5011516.PID



RESULTS:

Date Jan 15, 2005
 Time 12:32:09
 Instrument FGGE202
 Detector PID
 Column B
 Analysis# 33
 Tag sab HS
 Column Temp 59.0 C
 Det Temp 59.0 C
 Ambient Temp 39.0 C

10x

104e

MW-3

METHOD:

Analysis Time 800.0 S
 PumpTime 5.0 S
 Back Flush 400.0 S
 Temperature 60.0 C
 Pressure 8.0 psi
 Inject Syringe, 100.0 uL
 PID State High Sense

INTEGRATION METHOD:

Manual Integration
 SlopeUp 0.0 mV/S
 SlopeDown 0.0 mV/S
 Min Height 0.0 mV
 Min Area 0.0 mVS
 FilterLevel 3
 Delay 80 Sec

PEAK REPORT:

#	Name	Conc (PPM)	Area (mVS)	Height (mV)	R.T. (S)	Status
1	Unknown		60.3	18.3	93.6	
2	Unknown		349	64.0	109.9	
3	Unknown		1.128	0.207	147.8	
4	Unknown		3.948	0.529	179.8	

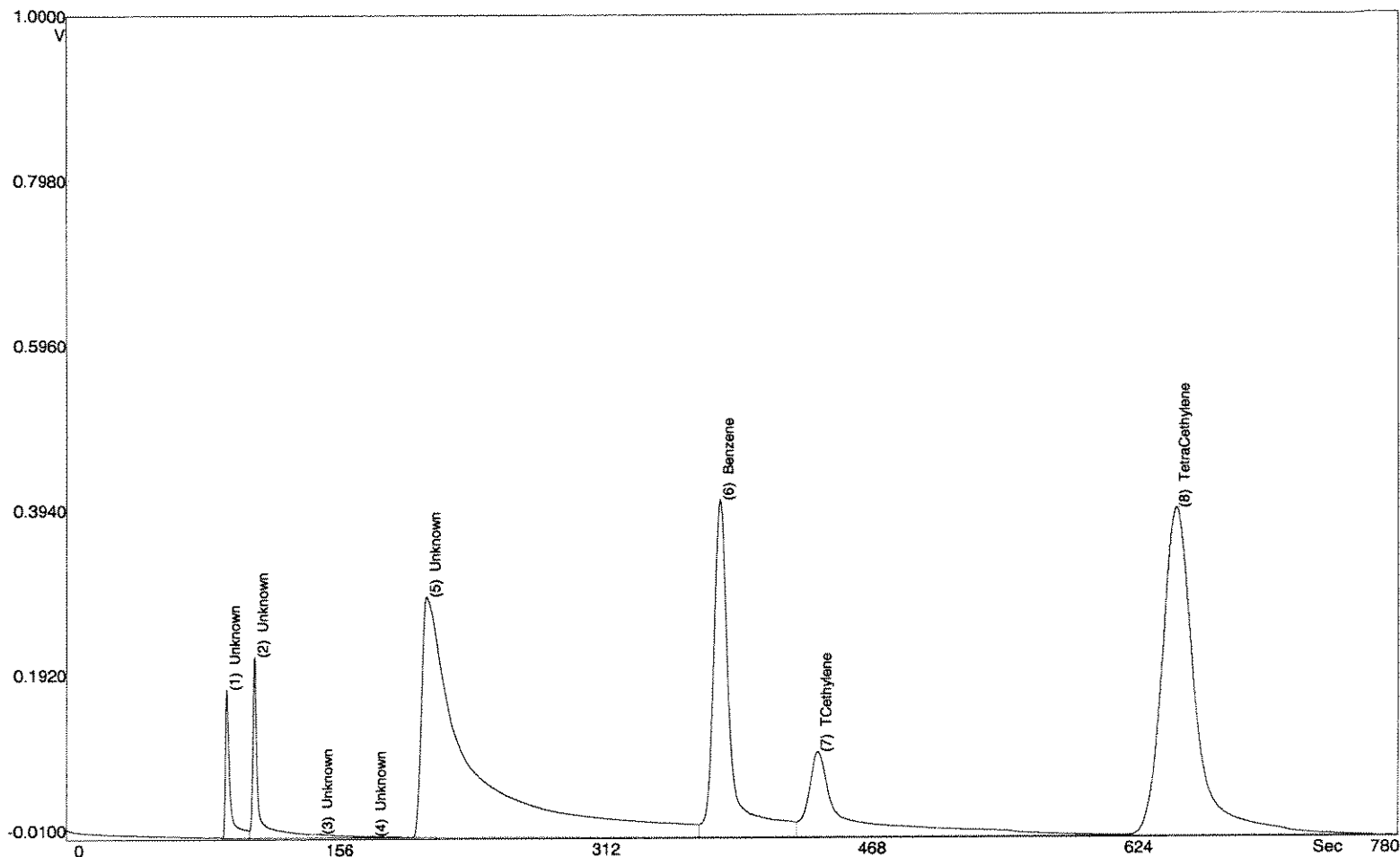
SiteChart Analysis Report - B5011516.PID

5 Unknown		18244	719	210.8
6 Benzene		1.876	3006	149
7 TCethylene	84	8.437	5672	244
8 TetraCethylene		5.177	6405	264

52

TCE = 2.3 ug/l
PCE = 3.8 ug/l

SiteChart Analysis Report - B5011518.PID



RESULTS:

Date Jan 15, 2005
 Time 13:01:35
 Instrument FGGE202
 Detector PID
 Column B
 Analysis# 37
 Tag sab HS
 Column Temp 60.0 C
 Det Temp 60.0 C
 Ambient Temp 39.0 C

10x
 MW-5
 1042

METHOD:

Analysis Time 800.0 S
 PumpTime 5.0 S
 Back Flush 400.0 S
 Temperature 60.0 C
 Pressure 8.0 psi
 Inject Syringe, 100.0 uL
 PID State High Sense

INTEGRATION METHOD:

Manual Integration
 SlopeUp 0.0 mV/S
 SlopeDown 0.0 mV/S
 Min Height 0.0 mV
 Min Area 0.0 mVS
 FilterLevel 3
 Delay 80 Sec

PEAK REPORT:

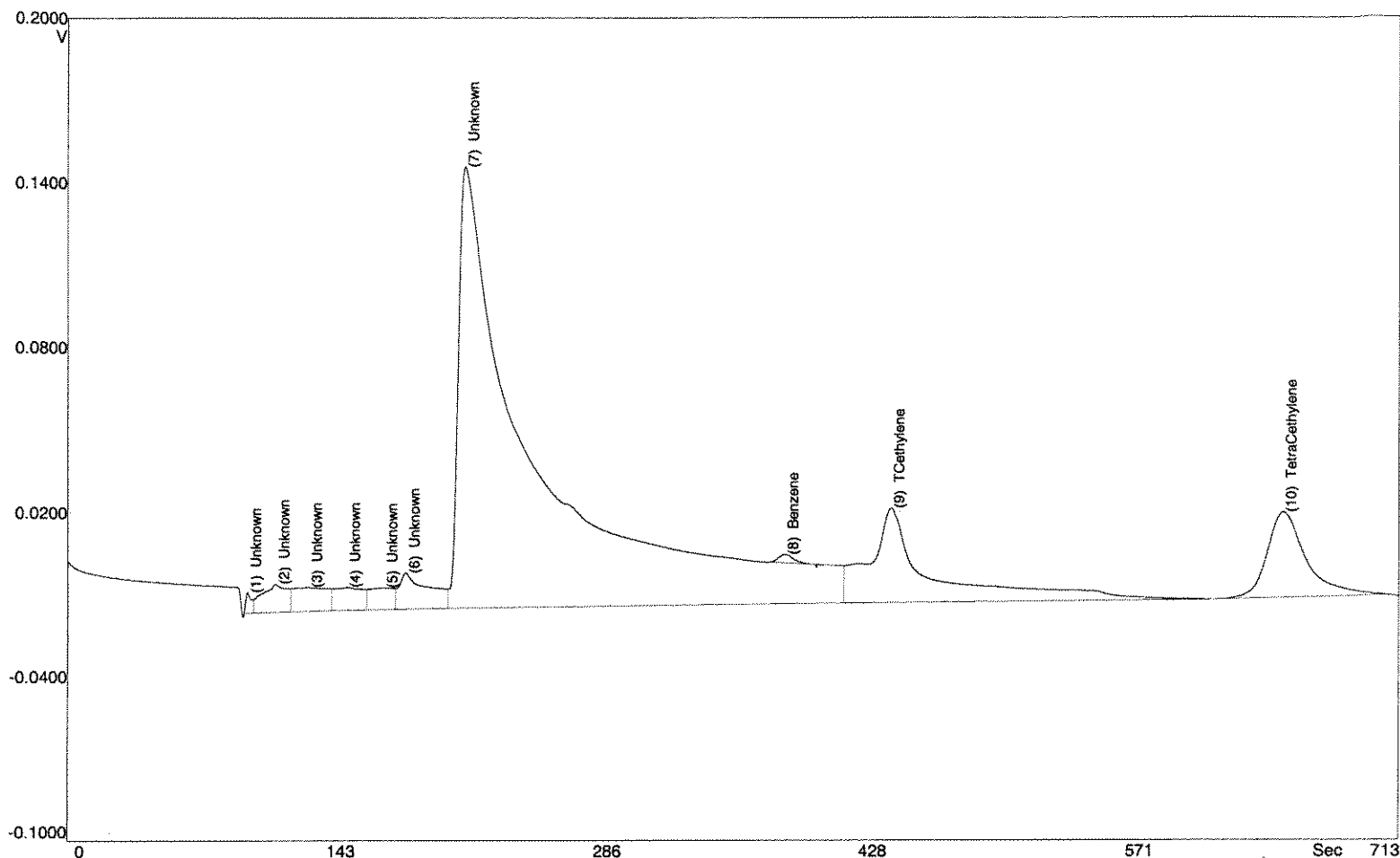
#	Name	Conc (PPM)	Area (mVS)	Height (mV)	R.T. (S)	Status
1	Unknown		600	182		93.5
2	Unknown		971	213		110.0
3	Unknown		4.616	0.790		148.0
4	Unknown		1.074	0.114		179.2

SiteChart Analysis Report - B5011518.PID

5 Unknown		9720	295	210.8
6 Benzene	4.310	4698	399	383.0
7 TCethylene	2.696	2699	85.5	440.0
8 TetraCethylene	11.5	9068	402	649.4

TCE = 1.1 ug/l
PCE = 5.3 ug/l

SiteChart Analysis Report - B5011519.PID



RESULTS:

Date Jan 15, 2005
 Time 13:16:12
 Instrument FGGE202
 Detector PID
 Column B
 Analysis# 39
 Tag sab HS
 Column Temp 60.0 C
 Det Temp 60.0 C
 Ambient Temp 39.0 C

METHOD:

Analysis Time 800.0 S
 PumpTime 5.0 S
 Back Flush 400.0 S
 Temperature 60.0 C
 Pressure 8.0 psi
 Inject Syringe, 100.0 uL
 PID State High Sense

INTEGRATION METHOD:

Manual Integration
 SlopeUp 0.0 mV/S
 SlopeDown 0.0 mV/S
 Min Height 0.0 mV
 Min Area 0.0 mVS
 FilterLevel 3
 Delay 80 Sec

PEAK REPORT:

#	Name	Conc (PPM)	Area (mVS)	Height (mV)	R.T. (S)	Status
1	Unknown		26.2	8.044		96.4
2	Unknown		159	9.439		111.3
3	Unknown		186	0.443		128.8
4	Unknown		146	0.520		149.4

IX
100uL

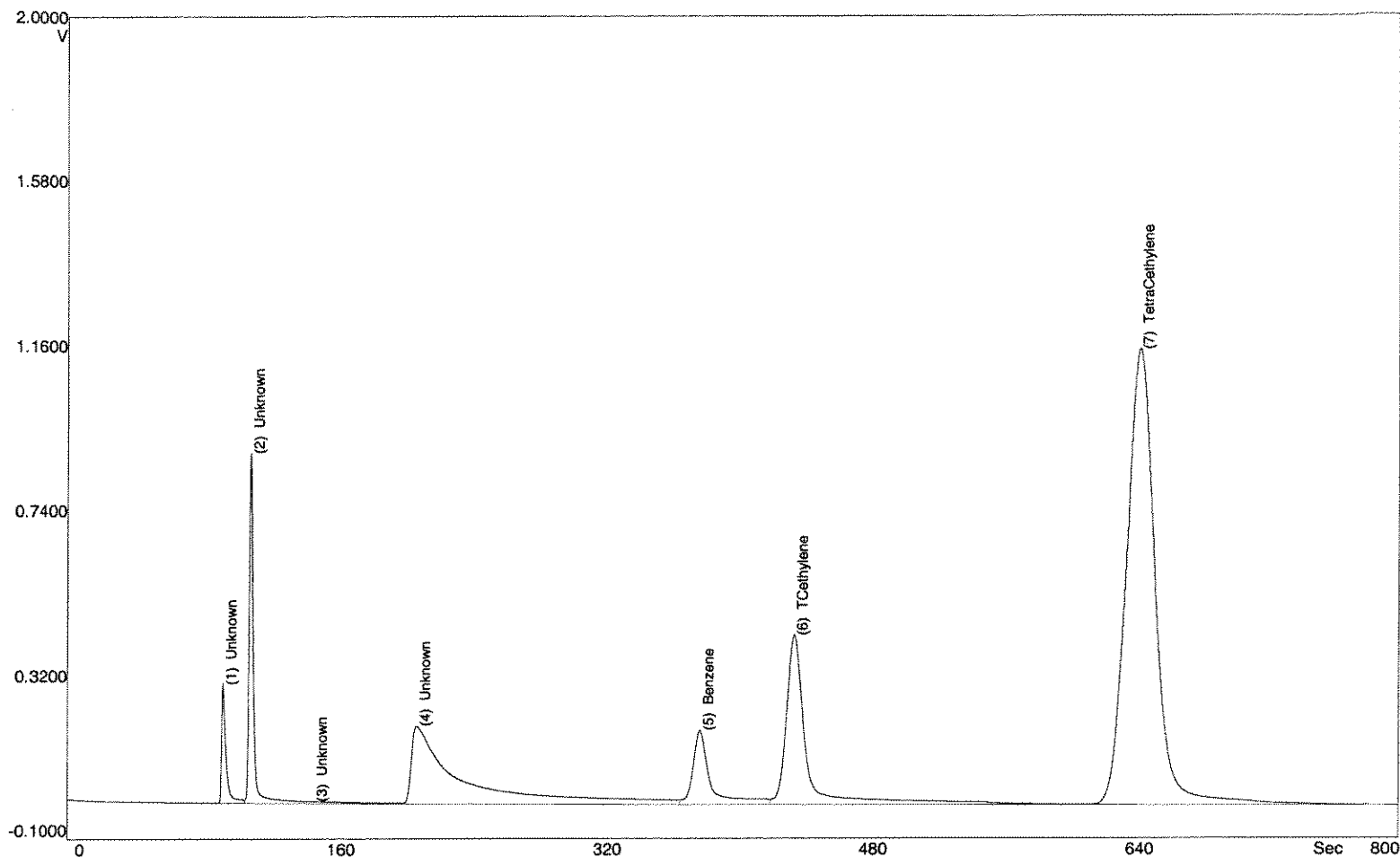
REAC I (w-30)
dup

SiteChart Analysis Report - B5011519.PID

5 Unknown		121	0.507	169.2
6 Unknown		248	5.889	181.0
7 Unknown		7832	154	212.6
8 Benzene		28.3	2.866	384.0
9 TCethylene	0.775	1333	21.1	440.8
10 TetraCethylene	0.835	759	32.1	651.2

TCE = 0.54 mg/l
 PCB = 0.45 mg/l

SiteChart Analysis Report - B5011713.PID



RESULTS:

Date Jan 17, 2005
 Time 11:39:10
 Instrument FGGE202
 Detector PID
 Column B
 Analysis# 27
 Tag sab HS
 Column Temp 60.0 C
 Det Temp 60.0 C
 Ambient Temp 33.0 C

10x

1042

MW - 16

new vial

METHOD:

Analysis Time 800.0 S
 PumpTime 5.0 S
 Back Flush 400.0 S
 Temperature 60.0 C
 Pressure 8.0 psi
 Inject Syringe, 100.0 uL
 PID State High Sense

INTEGRATION METHOD:

Manual Integration
 SlopeUp 0.0 mV/S
 SlopeDown 0.0 mV/S
 Min Height 0.0 mV
 Min Area 0.0 mVS
 FilterLevel 3
 Delay 80 Sec

PEAK REPORT:

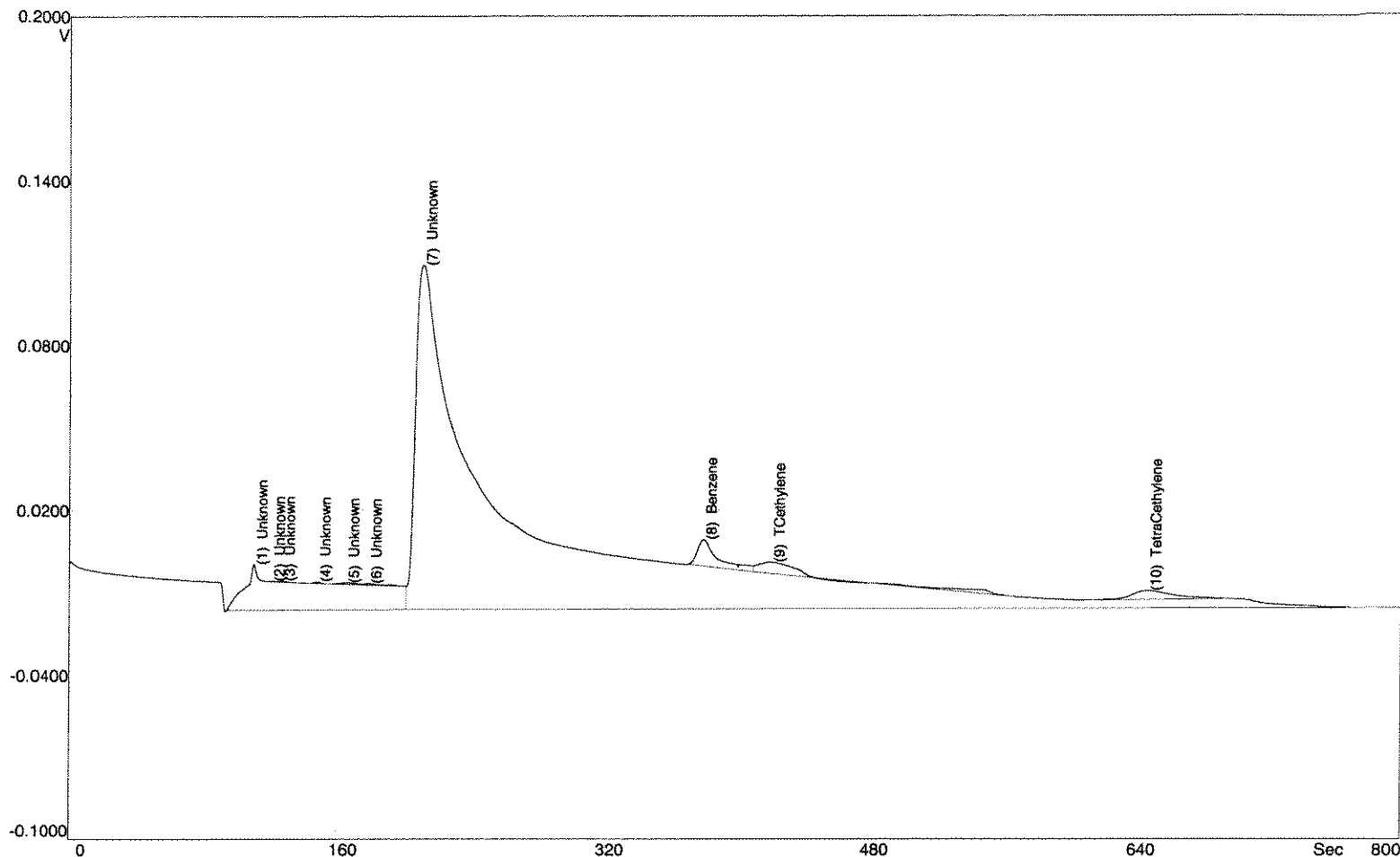
#	Name	Conc (PPM)	Area (mVS)	Height (mV)	R.T. (S)	Status
1	Unknown		947	308	93.3	
2	Unknown		2900	888	109.9	
3	Unknown		2.714	0.437	147.4	
4	Unknown		6771	198	209.2	

SiteChart Analysis Report - B5011713.PID

5 Benzene	0.209	2341	179	379.7
6 TCethylene	0.599	6269	422	436.4
7 TetraCethylene	1.738	23462	1164	643.4

needle'd
TCE = 2.5 ug/l
PCE = 13.84 ug/l

SiteChart Analysis Report - B5011714.PID



RESULTS:

Date Jan 17, 2005
 Time 11:53:45
 Instrument FGGE202
 Detector PID
 Column B
 Analysis# 29
 Tag sab HS
 Column Temp 60.0 C
 Det Temp 60.0 C
 Ambient Temp 33.0 C

1X

10042

MW - 29
 new vial

METHOD:

Analysis Time 800.0 S
 PumpTime 5.0 S
 Back Flush 400.0 S
 Temperature 60.0 C
 Pressure 8.0 psi
 Inject Syringe, 100.0 uL
 PID State High Sense

INTEGRATION METHOD:

Manual Integration
 SlopeUp 0.0 mV/S
 SlopeDown 0.0 mV/S
 Min Height 0.0 mV
 Min Area 0.0 mVS
 FilterLevel 3
 Delay 80 Sec

PEAK REPORT:

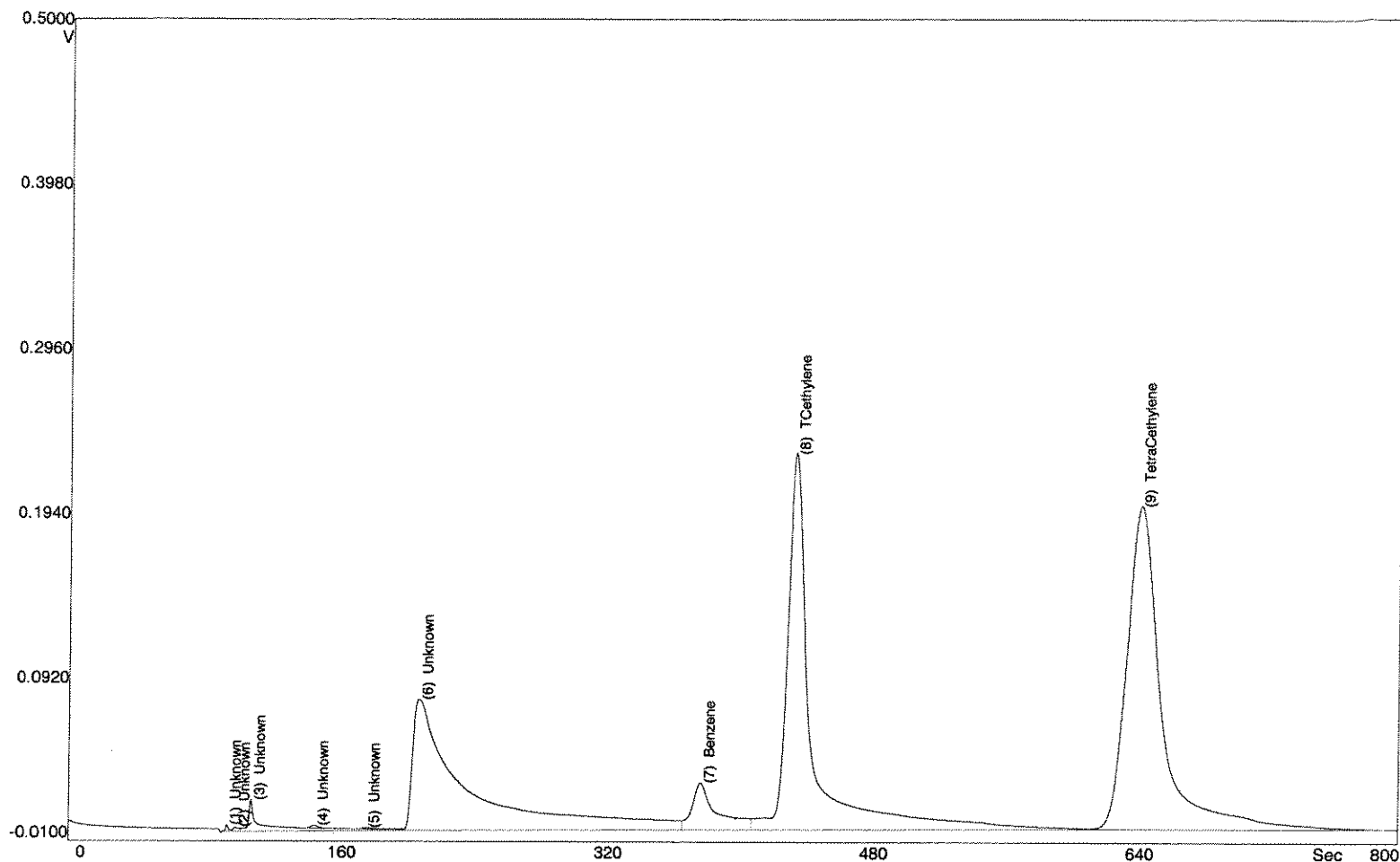
#	Name	Conc (PPM)	Area (mVS)	Height (mV)	R.T. (S)	Status
1	Unknown		987	16.7	110.1	
2	Unknown		0.545	0.084	120.4	
3	Unknown		1.002	0.110	126.7	
4	Unknown		2.571	0.451	148.0	

SiteChart Analysis Report - B5011714.PID

5	Unknown		6.835	0.416	165.4
6	Unknown		6.190	0.282	178.6
7	Unknown		8614	117	211.4
8	Benzene	0.013	143	9.128	380.0
9	TCethylene	0.013	131	1.259	421.2
10	TetraCethylene	0.007	95.6	3.535	647.0

TC₂ = ND
PC₂ = ND

SiteChart Analysis Report - B5011717.PID



RESULTS:

Date Jan 17, 2005
 Time 13:01:28
 Instrument FGGE202
 Detector PID
 Column B
 Analysis# 35
 Tag sab HS
 Column Temp 60.0 C
 Det Temp 60.0 C
 Ambient Temp 34.0 C

METHOD:

Analysis Time 800.0 S
 PumpTime 5.0 S
 Back Flush 400.0 S
 Temperature 60.0 C
 Pressure 8.0 psi
 Inject Syringe, 100.0 uL
 PID State High Sense

INTEGRATION METHOD:

Manual Integration
 SlopeUp 0.0 mV/S
 SlopeDown 0.0 mV/S
 Min Height 0.0 mV
 Min Area 0.0 mVS
 FilterLevel 3
 Delay 80 Sec

PEAK REPORT:

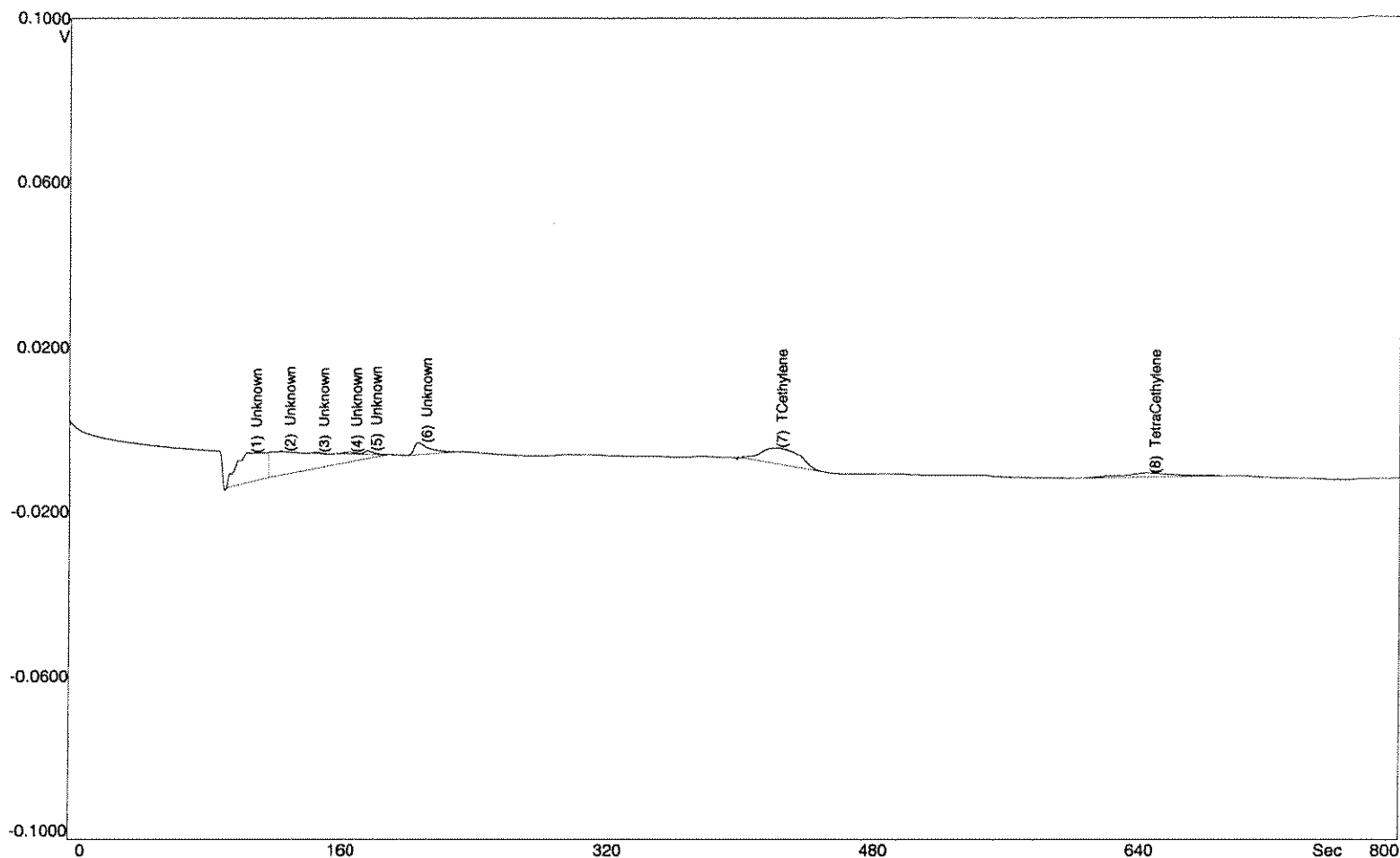
#	Name	Conc (PPM)	Area (mVS)	Height (mV)	R.T. (S)	Status
1	Unknown		9.130	4.398		95.1
2	Unknown		9.990	1.776		100.4
3	Unknown		223	18.9		109.5
4	Unknown		8.276	1.581		147.6

SiteChart Analysis Report - B5011717.PID

5 Unknown		5.994	0.768	178.4
6 Unknown		3085	80.7	209.8
7 Benzene	0.046	519	23.6	379.7
8 TCethylene	0.385	4029	227	436.0
9 TetraCethylene	0.365	4933	200	643.4

recalc'd
TCB = 1.6 ug/l
PCB = 2.9 ug/l

SiteChart Analysis Report - B5011721.PID



RESULTS:

Date Jan 17, 2005
 Time 14:29:02
 Instrument FGGE202
 Detector PID
 Column B
 Analysis# 43
 Tag sab HS
 Column Temp 60.0 C
 Det Temp 60.0 C
 Ambient Temp 34.0 C

1x
 100µl - R2

METHOD:

Analysis Time 800.0 S
 PumpTime 5.0 S
 Back Flush 400.0 S
 Temperature 60.0 C
 Pressure 8.0 psi
 Inject Syringe, 100.0 µL
 PID State High Sense

INTEGRATION METHOD:

Manual Integration
 SlopeUp 0.1 mV/S
 SlopeDown 0.1 mV/S
 Min Height 0.0 mV
 Min Area 0.0 mVS
 FilterLevel 3
 Delay 80 Sec

PEAK REPORT:

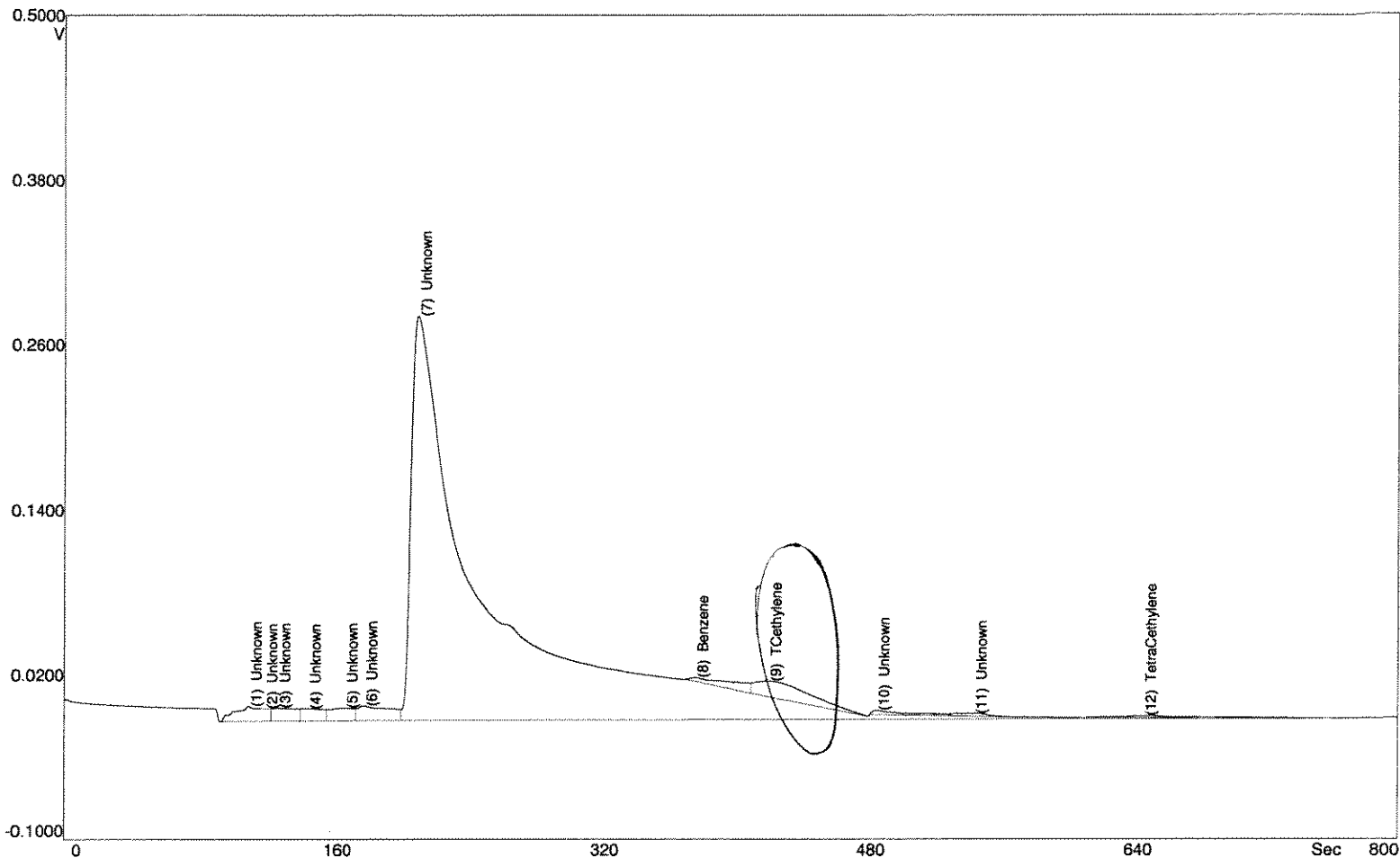
#	Name	Conc (PPM)	Area (mVS)	Height (mV)	R.T. (S)	Status
1	Unknown		142	8.870	107.1	
2	Unknown		222	8.315	127.3	
3	Unknown		1.116	0.256	147.6	
4	Unknown		4.054	0.419	167.6	

SiteChart Analysis Report - B5011721.PID

5 Unknown		5.380	0.642	179.2
6 Unknown		29.8	3.105	209.4
7 TCethylene	0.004	1.05	2.418	423.2
8 TetraCethylene		34.5	1.206	647.0

needle'd
TCF = ND
PUE = ND

SiteChart Analysis Report - B5011724.PID



RESULTS:

Date Jan 17, 2005
 Time 15:20:38
 Instrument FGGE202
 Detector PID
 Column B
 Analysis# 49
 Tag sab HS
 Column Temp 59.0 C
 Det Temp 59.0 C
 Ambient Temp 34.0 C

METHOD:

Analysis Time 800.0 S
 PumpTime 5.0 S
 Back Flush 400.0 S
 Temperature 60.0 C
 Pressure 8.0 psi
 Inject Syringe, 100.0 uL
 PID State High Sense

INTEGRATION METHOD:

Manual Integration
 SlopeUp 0.0 mV/S
 SlopeDown 0.0 mV/S
 Min Height 0.0 mV
 Min Area 0.0 mVS
 FilterLevel 3
 Delay 80 Sec

PEAK REPORT:

#	Name	Conc (PPM)	Area (mVS)	Height (mV)	R.T. (S)	Status
1	Unknown		229	11.1	110.4	
2	Unknown		0.120	0.061	119.7	
3	Unknown		158	0.408	127.6	
4	Unknown		138	0.085	145.6	

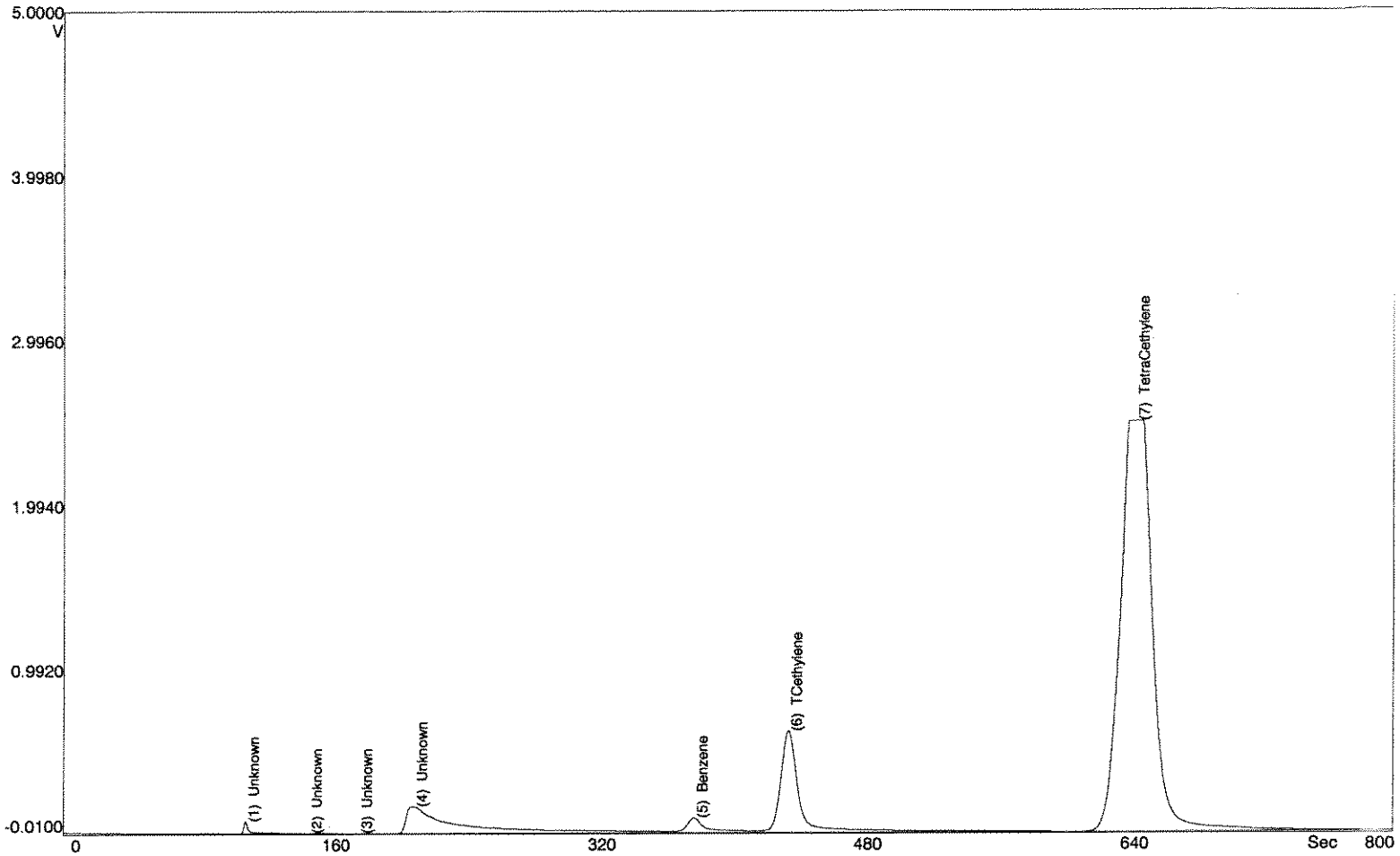
1x
 100µl - R3

SiteChart Analysis Report - B5011724.PID

5 Unknown		155	0.953	168.0
6 Unknown		246	2.481	179.8
7 Unknown		15382	286	211.8
8 Benzene	0.014	158	1.171	378.0
9 TCethylene	0.045	470	1.283	422.0
10 Unknown		76.5	3.512	486.8
11 Unknown		43.6	0.091	544.7
12 TetraCethylene	0.003	43.3	1.421	646.4

recalc'd
TCB₃ .019 ug/l
PCB₃ ND ug/l

SiteChart Analysis Report - B5011719.PID



RESULTS:

Date Jan 17, 2005
 Time 13:46:05
 Instrument FGGE202
 Detector PID
 Column B
 Analysis# 39
 Tag sab HS
 Column Temp 60.0 C
 Det Temp 60.0 C
 Ambient Temp 34.0 C

10x
104e - MW - 2
resampled / repeat

METHOD:

Analysis Time 800.0 S
 PumpTime 5.0 S
 Back Flush 400.0 S
 Temperature 60.0 C
 Pressure 8.0 psi
 Inject Syringe, 100.0 uL
 PID State High Sense

INTEGRATION METHOD:

Manual Integration
 SlopeUp 0.0 mV/S
 SlopeDown 0.0 mV/S
 Min Height 0.0 mV
 Min Area 0.0 mVS
 FilterLevel 3
 Delay 80 Sec

PEAK REPORT:

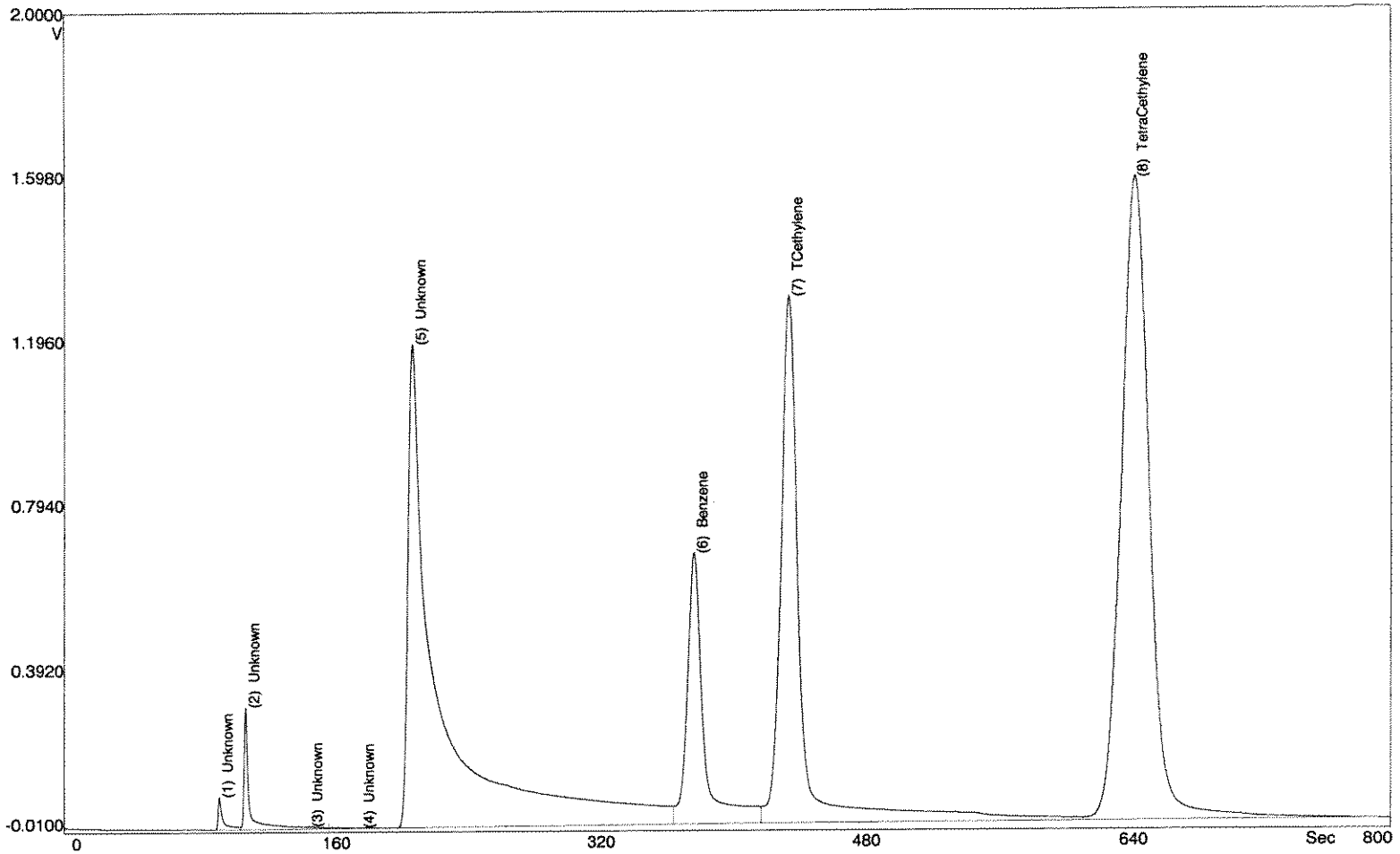
#	Name	Conc (PPM)	Area (mVS)	Height (mV)	R.T. (S)	Status
1	Unknown		367	74.4		109.6
2	Unknown		4.665	1.041		147.4
3	Unknown		0.780	0.109		177.8
4	Unknown		5790	162		210.8

SiteChart Analysis Report - B5011719.PID

5 Benzene	0.109	1226	81.5	379.7
6 TCethylene	0.785	8209	609	436.4
7 TetraCethylene	4.641	62637	2503	644.0

recalc'd
TCB = 3.3 ug/l
PCE = 37. ug/l

SiteChart Analysis Report - B5011722.PID



RESULTS:

Date Jan 17, 2005
 Time 14:43:47
 Instrument FGGE202
 Detector PID
 Column B
 Analysis# 45
 Tag sab HS
 Column Temp 59.0 C
 Det Temp 59.0 C
 Ambient Temp 34.0 C

METHOD:

Analysis Time 800.0 S
 PumpTime 5.0 S
 Back Flush 400.0 S
 Temperature 60.0 C
 Pressure 8.0 psi
 Inject Syringe, 100.0 uL
 PID State High Sense

INTEGRATION METHOD:

Manual Integration
 SlopeUp 0.0 mV/S
 SlopeDown 0.0 mV/S
 Min Height 0.0 mV
 Min Area 0.0 mVS
 FilterLevel 3
 Delay 80 Sec

PEAK REPORT:

#	Name	Conc (PPM)	Area (mVS)	Height (mV)	R.T. (S)	Status
1	Unknown		293	80.1	93.5	
2	Unknown		1191	295	109.6	
3	Unknown		5.947	1.077	147.4	
4	Unknown		1.930	0.313	178.8	

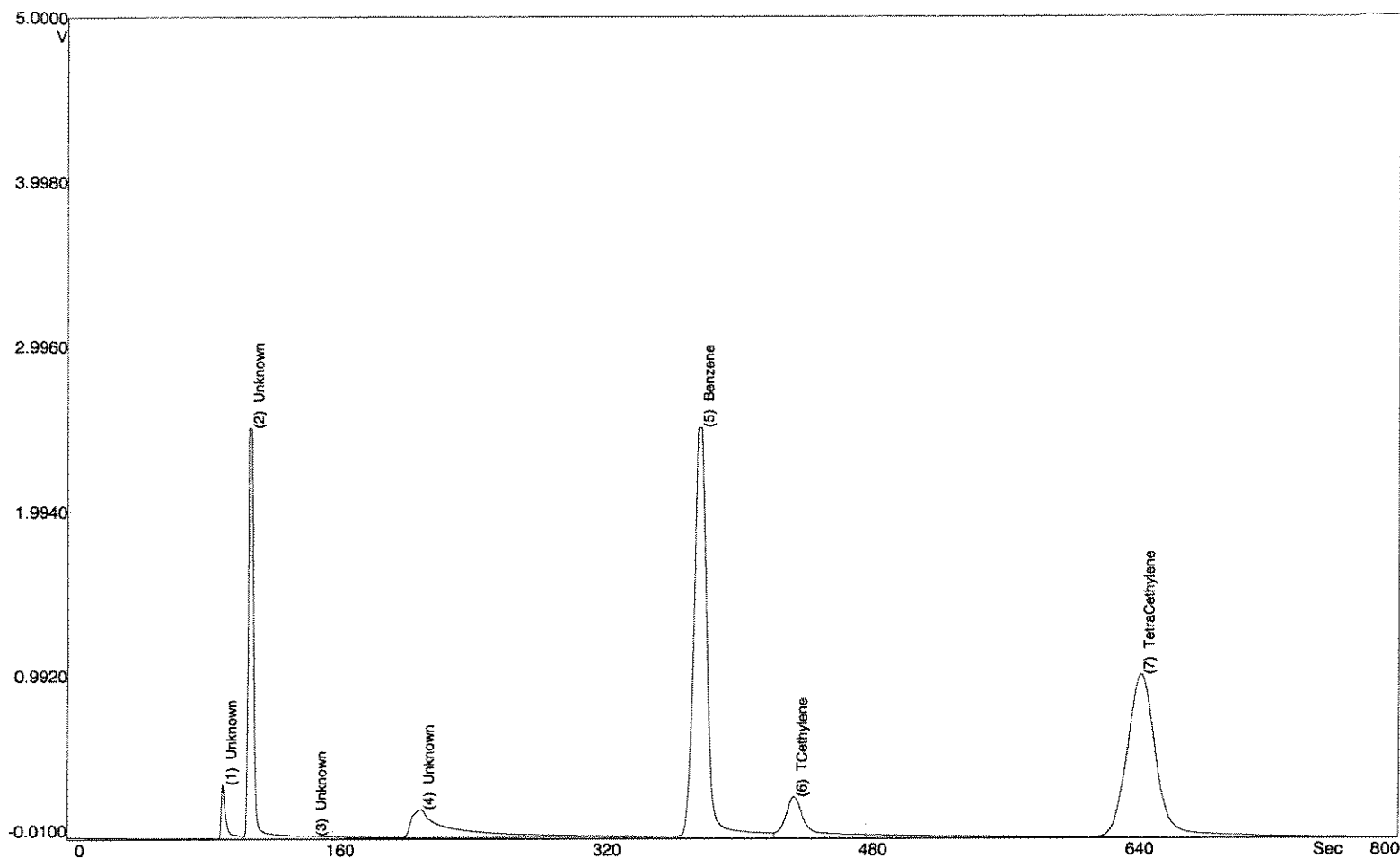
10X
 10uL
 MW-3
 (resampled)

SiteChart Analysis Report - B5011722.PID

5 Unknown		25910	1186	210.0
6 Benzene	0.692	7761	621	380.0
7 TCethylene	1.742	18226	1252	437.2
8 TetraCethylene	2.321	31328	1570	644.0

realc'd
Tck = 7.3 ug/l
Pck = 18.5 ug/l

SiteChart Analysis Report - B5011723.PID



RESULTS:

Date Jan 17, 2005
 Time 15:05:23
 Instrument FGGE202
 Detector PID
 Column B
 Analysis# 47
 Tag sab HS
 Column Temp 60.0 C
 Det Temp 60.0 C
 Ambient Temp 34.0 C

10X

10ml MW-5
 resampled

METHOD:

Analysis Time 800.0 S
 PumpTime 5.0 S
 Back Flush 400.0 S
 Temperature 60.0 C
 Pressure 8.0 psi
 Inject Syringe, 100.0 uL
 PID State High Sense

INTEGRATION METHOD:

Manual Integration
 SlopeUp 0.0 mV/S
 SlopeDown 0.0 mV/S
 Min Height 0.0 mV
 Min Area 0.0 mVS
 FilterLevel 3
 Delay 80 Sec

PEAK REPORT:

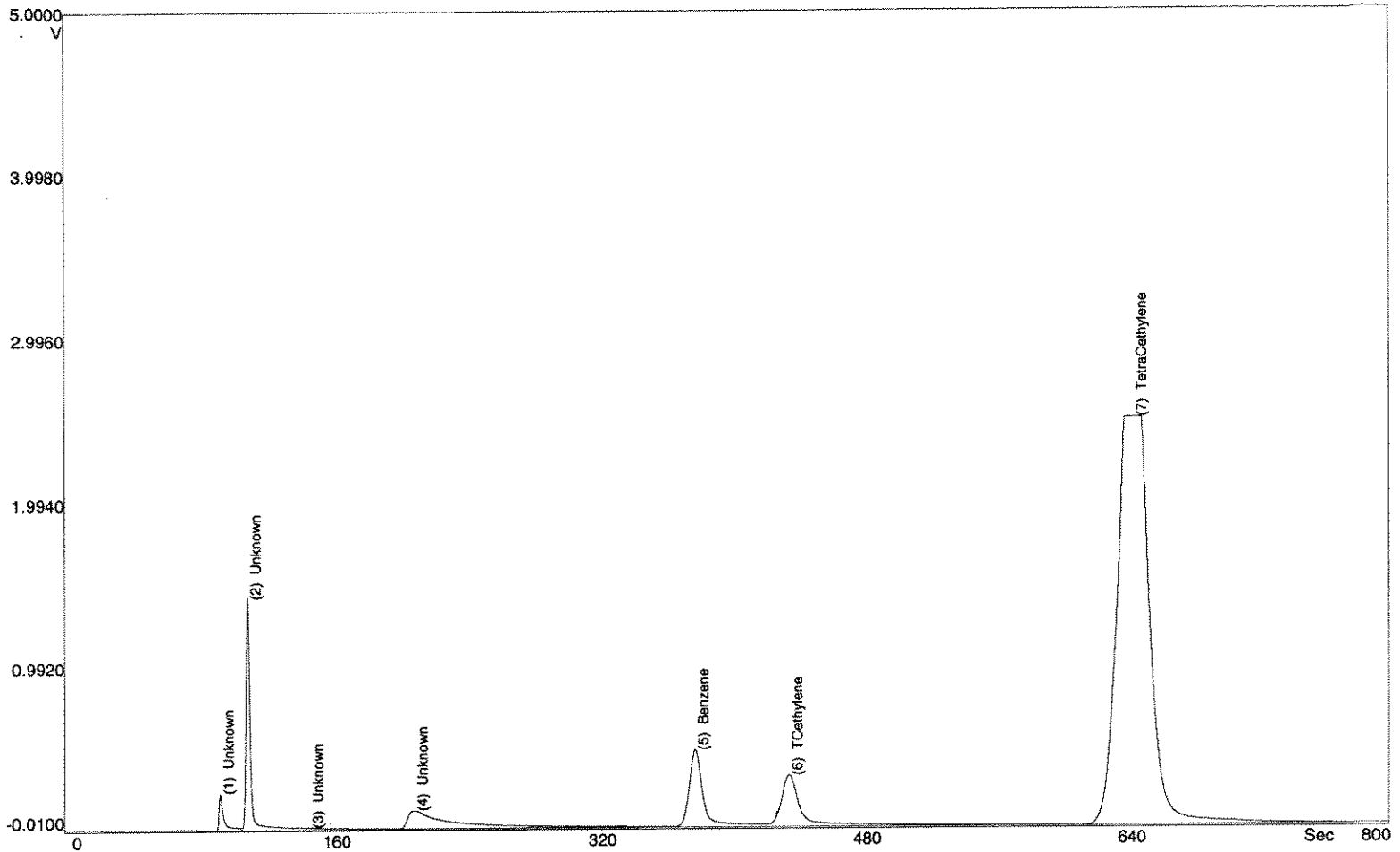
#	Name	Conc (PPM)	Area (mVS)	Height (mV)	R.T. (S)	Status
1	Unknown		1094	329		93.1
2	Unknown		14070	2490		109.7
3	Unknown		14.0	3.119		147.4
4	Unknown		4623	171		212.2

SiteChart Analysis Report - B5011723.PID

5 Benzene	2.164	24259	2496	380.0
6 TCethylene	0.451	4719	222	436.4
7 TetraCethylene	1.507	20346	993	644.0

Recalc'd
TCs 1.9 ug/l
PCs 12.0 ug/l

SiteChart Analysis Report - B5011725.PID



RESULTS:

Date Jan 17, 2005
 Time 15:39:18
 Instrument FGGE202
 Detector PID
 Column B
 Analysis# 51
 Tag sab HS
 Column Temp 59.0 C
 Det Temp 59.0 C
 Ambient Temp 33.0 C

10x

104e

rw-6

resampled

METHOD:

Analysis Time 800.0 S
 PumpTime 5.0 S
 Back Flush 400.0 S
 Temperature 60.0 C
 Pressure 8.0 psi
 Inject Syringe, 100.0 uL
 PID State High Sense

INTEGRATION METHOD:

Manual Integration
 SlopeUp 0.0 mV/S
 SlopeDown 0.0 mV/S
 Min Height 0.0 mV
 Min Area 0.0 mVS
 FilterLevel 3
 Delay 80 Sec

PEAK REPORT:

#	Name	Conc (PPM)	Area (mVS)	Height (mV)	R.T. (S)	Status
1	Unknown		746	222		93.6
2	Unknown		5632	1415		110.1
3	Unknown		9.497	1.734		147.6
4	Unknown		3260	108		210.6

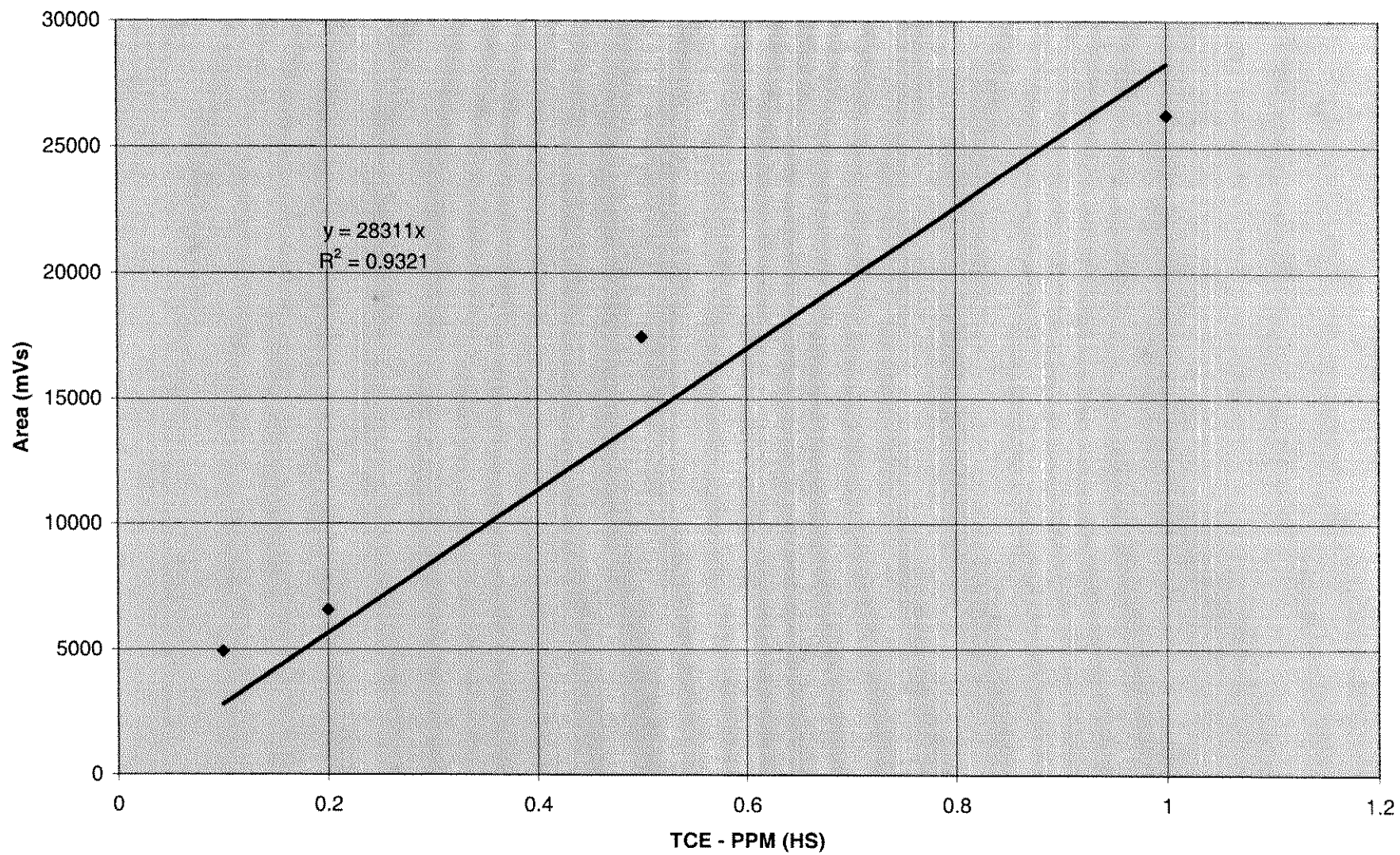
SiteChart Analysis Report - B5011725.PID

5 Benzene	0.433	4850	468	380.0
6 TCethylene	0.463	4840	302	436.8
7 TetraCethylene	4.847	65421	2501	644.6

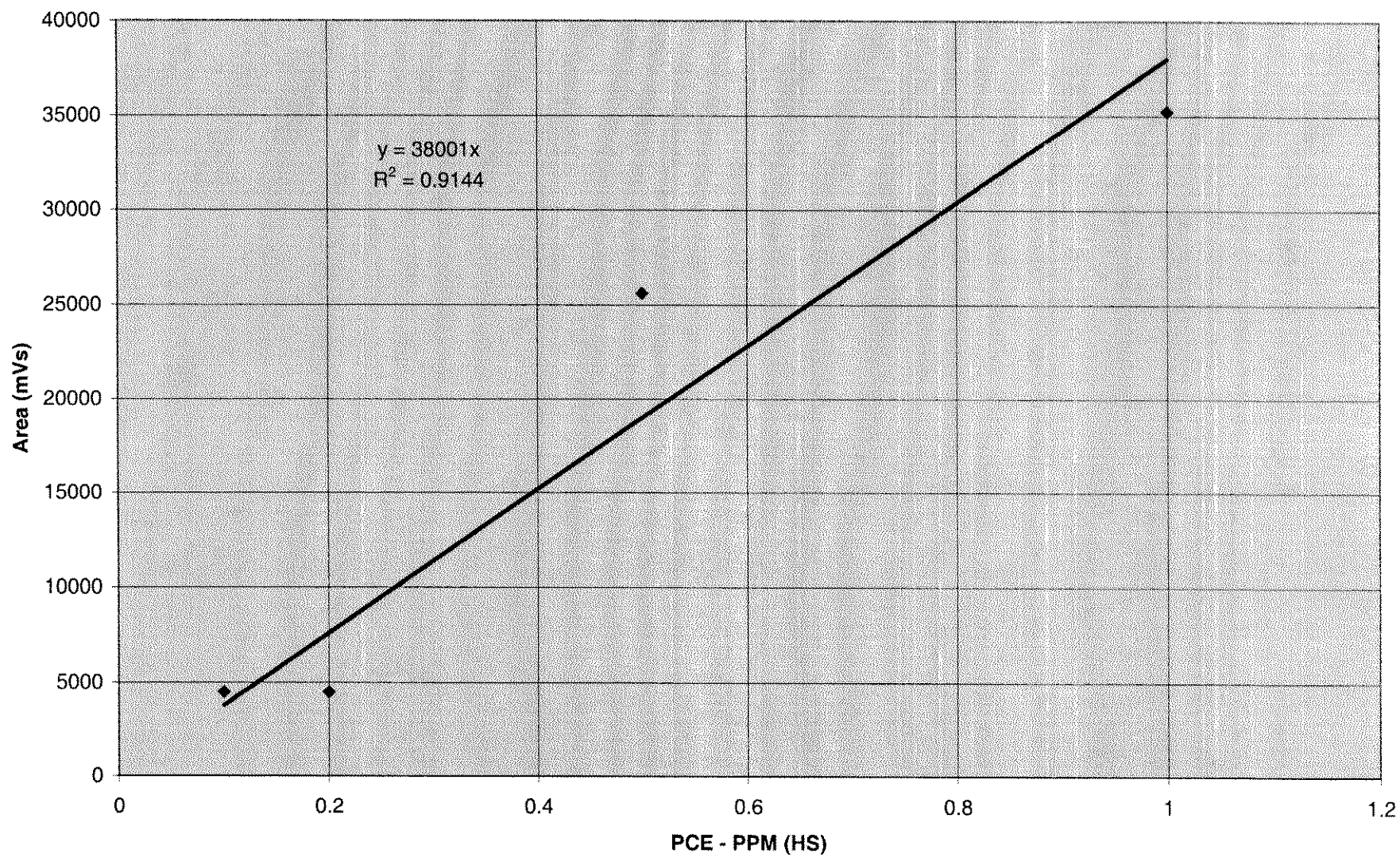
recalc'd
TCE = 1.9 µg/l
PCE = 38.6 µg/l

Voyager FPGC Daily Calibrations and Chromatograms
Sabana Abaja Industrial Site
January 18, 2005

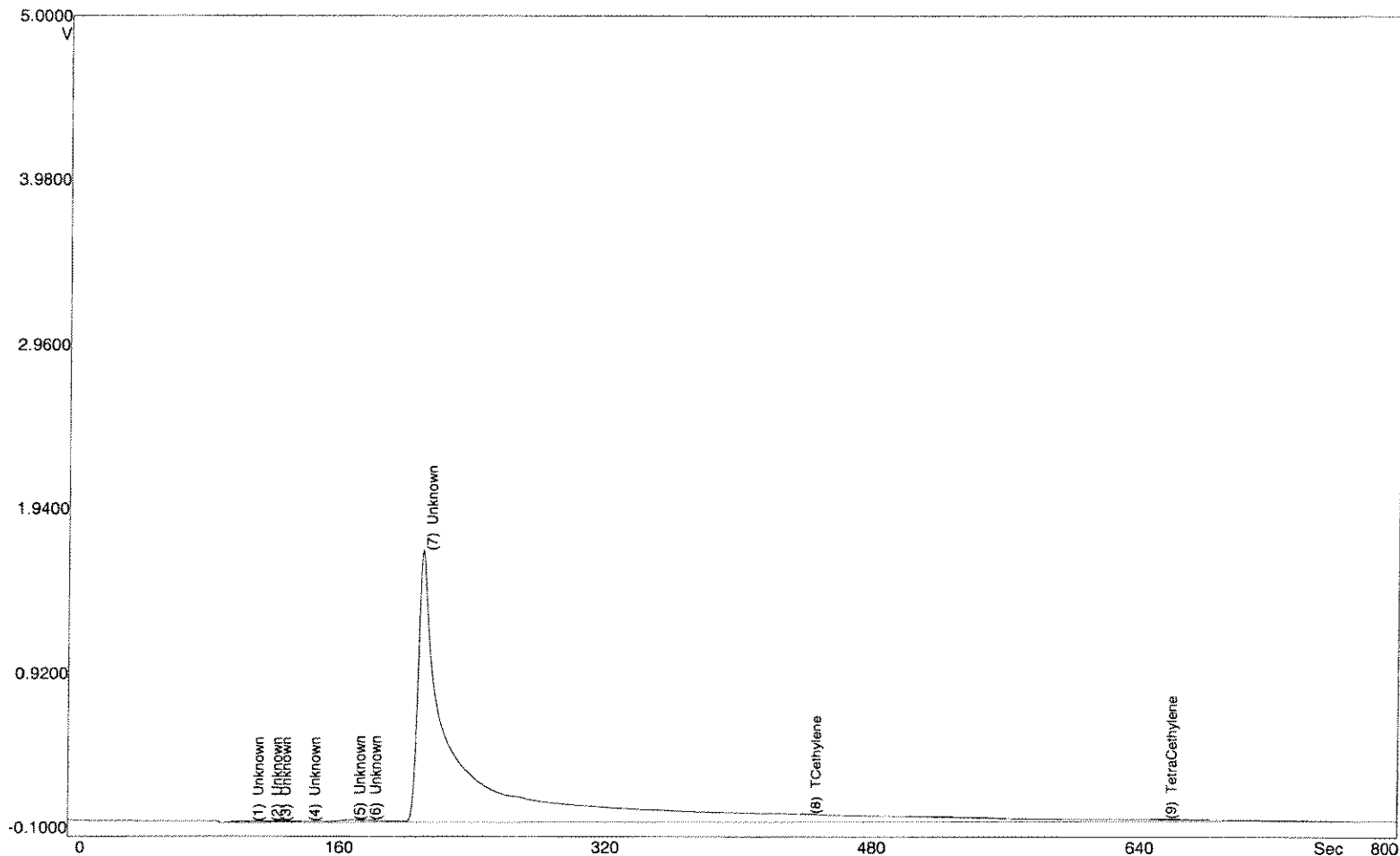
TCE via PID @ 01-18-05



PCE via PID @ 01-18-05



SiteChart Analysis Report - B5011808.PID



RESULTS:

Date Jan 18, 2005
 Time 10:59:27
 Instrument FGGE202
 Detector PID
 Column B
 Analysis# 17
 Tag sab HS
 Column Temp 60.0 C
 Det Temp 60.0 C
 Ambient Temp 31.0 C

IX
 100MR R-6

METHOD:

Analysis Time 800.0 S
 PumpTime 5.0 S
 Back Flush 400.0 S
 Temperature 60.0 C
 Pressure 8.0 psi
 Inject Syringe, 100.0 uL
 PID State High Sense

INTEGRATION METHOD:

Manual Integration
 SlopeUp 0.0 mV/S
 SlopeDown 0.0 mV/S
 Min Height 0.0 mV
 Min Area 0.0 mVS
 FilterLevel 3
 Delay 80 Sec

PEAK REPORT:

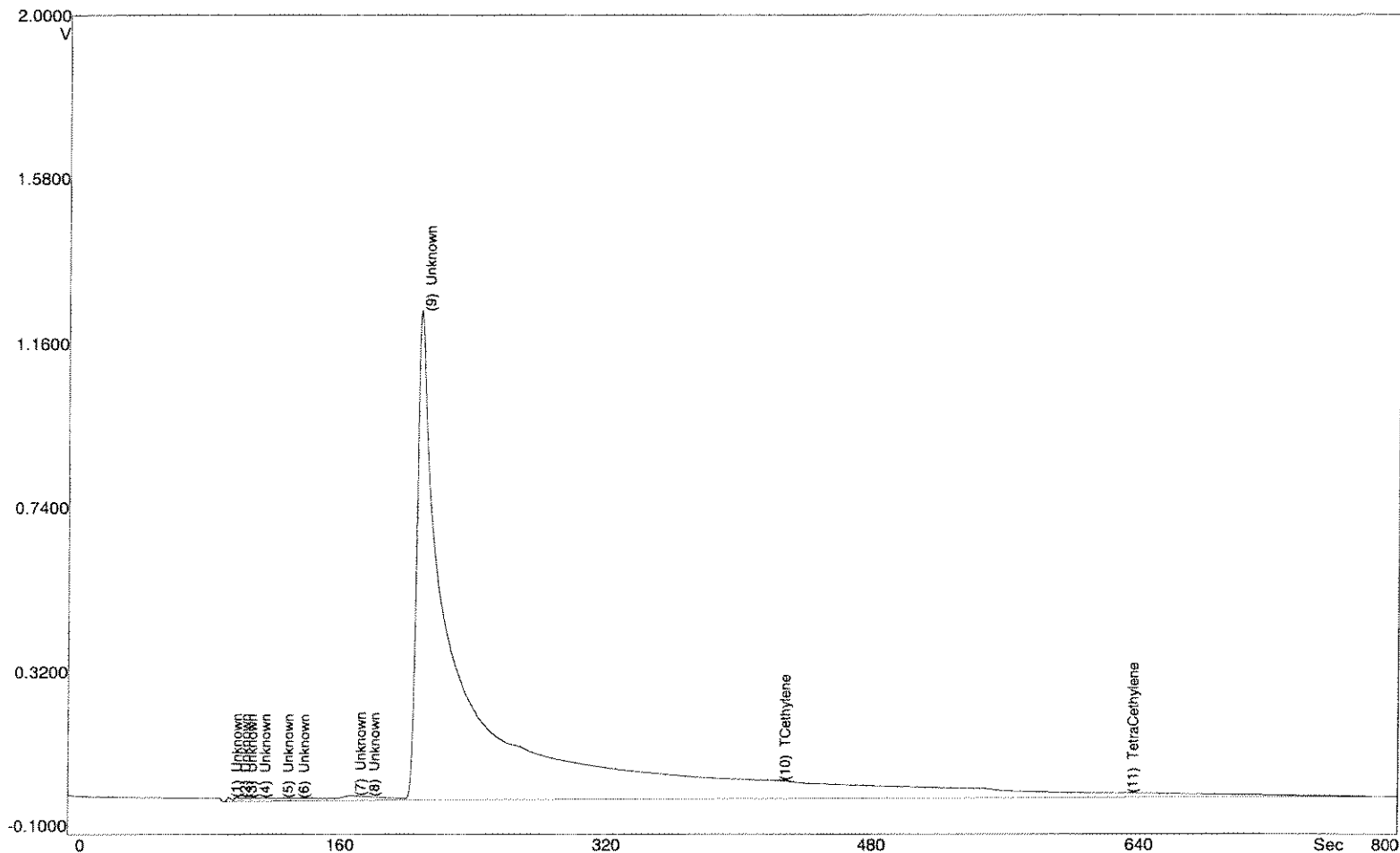
#	Name	Conc (PPM)	Area (mVS)	Height (mV)	R.T. (S)	Status
1	Unknown		139	10.0	111.1	
2	Unknown		90.0	8.818	122.1	
3	Unknown		238	7.822	127.6	
4	Unknown		1.157	0.080	144.6	

SiteChart Analysis Report - B5011808.PID

5 Unknown		246	9.470	171.4
6 Unknown		244	1.494	181.0
7 Unknown		50047	1687	213.8
8 TCethylene	0.005	53.3	2.949	445.2
9 TetraCethylene	0.011	149	4.786	657.8

recalc'd
TCE = ND
PCE = ND

SiteChart Analysis Report - B5011809.PID



RESULTS:

Date Jan 18, 2005
 Time 11:40:04
 Instrument FGGE202
 Detector PID
 Column B
 Analysis# 19
 Tag sab HS
 Column Temp 60.0 C
 Det Temp 60.0 C
 Ambient Temp 32.0 C

14

100 µL

R-7

METHOD:

Analysis Time 800.0 S
 PumpTime 5.0 S
 Back Flush 400.0 S
 Temperature 60.0 C
 Pressure 8.0 psi
 Inject Syringe, 100.0 µL
 PID State High Sense

INTEGRATION METHOD:

Manual Integration
 SlopeUp 0.0 mV/S
 SlopeDown 0.0 mV/S
 Min Height 0.0 mV
 Min Area 0.0 mVS
 FilterLevel 3
 Delay 80 Sec

PEAK REPORT:

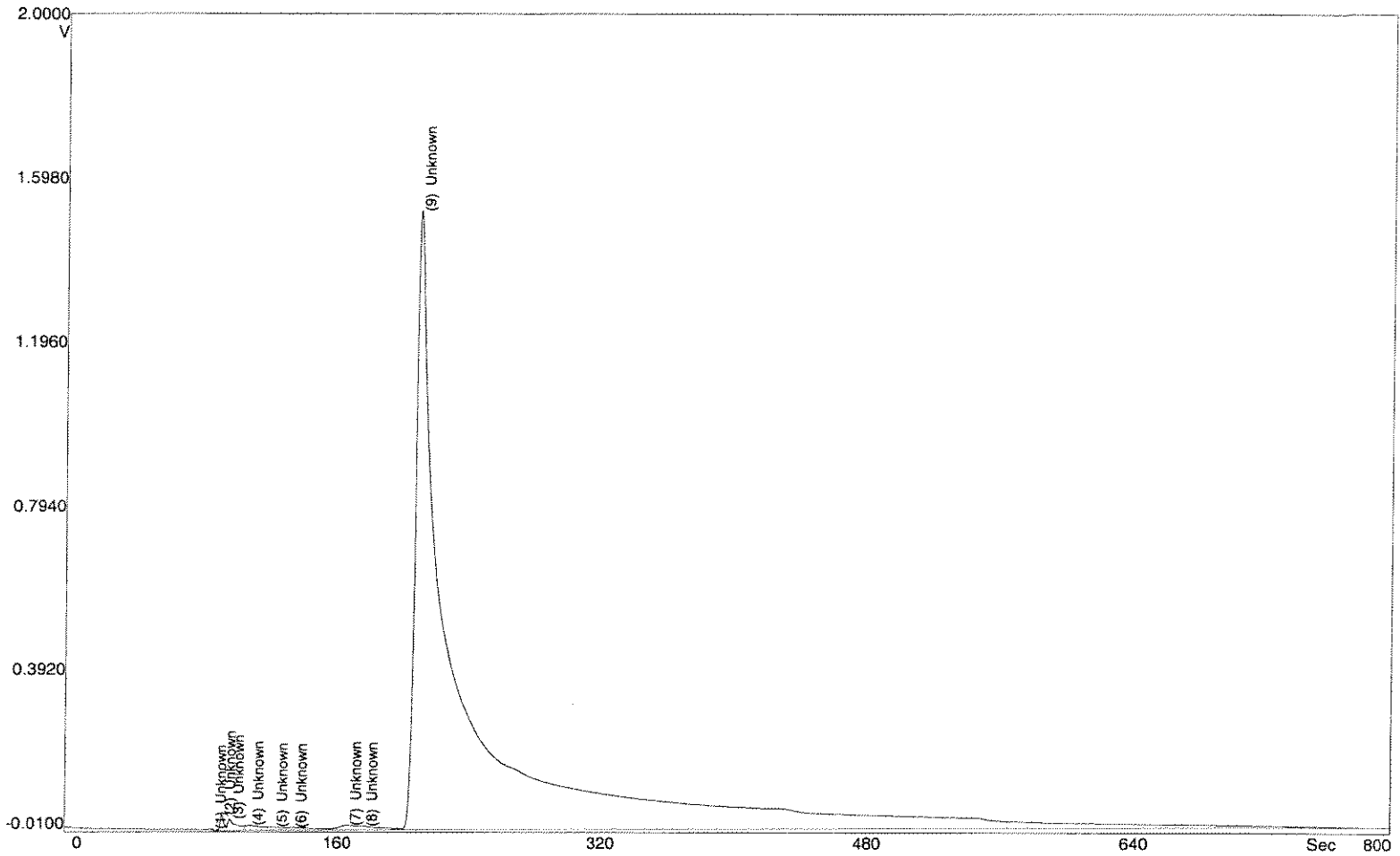
#	Name	Conc (PPM)	Area (mVS)	Height (mV)	R.T. (S)	Status
1	Unknown		35.6	11.3	96.4	
2	Unknown		44.3	5.032	101.5	
3	Unknown		50.2	0.355	105.5	
4	Unknown		135	0.758	113.5	

SiteChart Analysis Report - B5011809.PID

5	Unknown		64.6	0.191	127.6
6	Unknown		145	0.350	137.1
7	Unknown		372	6.868	171.6
8	Unknown		3.278	0.197	180.2
9	Unknown		42414	1251	213.2
10	TCethylene	0.002	25.8	0.284	427.2
11	TetraCethylene		4.213	0.105	635.0

recalc'd
TCE = ND
PCE = ND

SiteChart Analysis Report - B5011812.PID



RESULTS:

Date Jan 18, 2005
 Time 13:15:44
 Instrument FGGE202
 Detector PID
 Column B
 Analysis# 25
 Tag sab HS
 Column Temp 60.0 C
 Det Temp 60.0 C
 Ambient Temp 33.0 C

1x
 100µl R-9

METHOD:

Analysis Time 800.0 S
 PumpTime 5.0 S
 Back Flush 400.0 S
 Temperature 60.0 C
 Pressure 8.0 psi
 Inject Syringe, 100.0 µL
 PID State High Sense

INTEGRATION METHOD:

Manual Integration
 SlopeUp 0.0 mV/S
 SlopeDown 0.0 mV/S
 Min Height 0.0 mV
 Min Area 0.0 mVS
 FilterLevel 3
 Delay 80 Sec

PEAK REPORT:

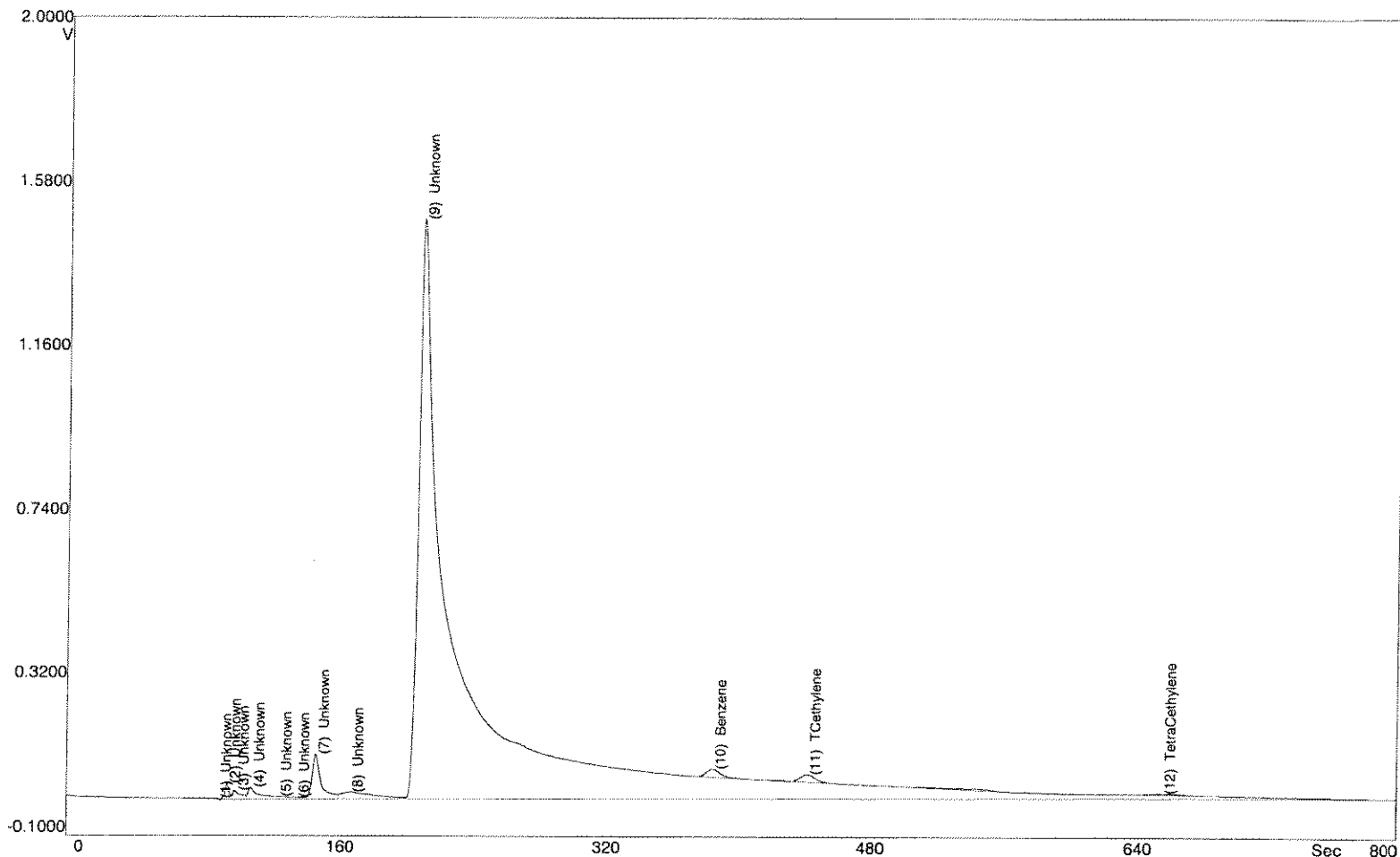
#	Name	Conc (PPM)	Area (mVS)	Height (mV)	R.T. (S)	Status
1	Unknown		2.902	1.001	90.3	
2	Unknown		109	39.3	95.9	
3	Unknown		161	16.1	100.9	
4	Unknown		205	2.872	112.5	

SiteChart Analysis Report - B5011812.PID

5 Unknown	1.350	0.107	126.8
6 Unknown	111	0.888	138.0
7 Unknown	253	8.282	170.4
8 Unknown	3.083	0.279	180.2
9 Unknown	46891	1518	213.2

recalc'd
TCE = ND
PCE = ND

SiteChart Analysis Report - B5011816.PID



RESULTS:

Date Jan 18, 2005
 Time 15:17:50
 Instrument FGGE202
 Detector PID
 Column B
 Analysis# 33
 Tag sab HS
 Column Temp 60.0 C
 Det Temp 60.0 C
 Ambient Temp 34.0 C

1x

1004e

R-11

METHOD:

Analysis Time 800.0 S
 PumpTime 5.0 S
 Back Flush 400.0 S
 Temperature 60.0 C
 Pressure 8.0 psi
 Inject Syringe, 100.0 uL
 PID State High Sense

INTEGRATION METHOD:

Manual Integration
 SlopeUp 0.0 mV/S
 SlopeDown 0.0 mV/S
 Min Height 0.0 mV
 Min Area 0.0 mVS
 FilterLevel 3
 Delay 80 Sec

PEAK REPORT:

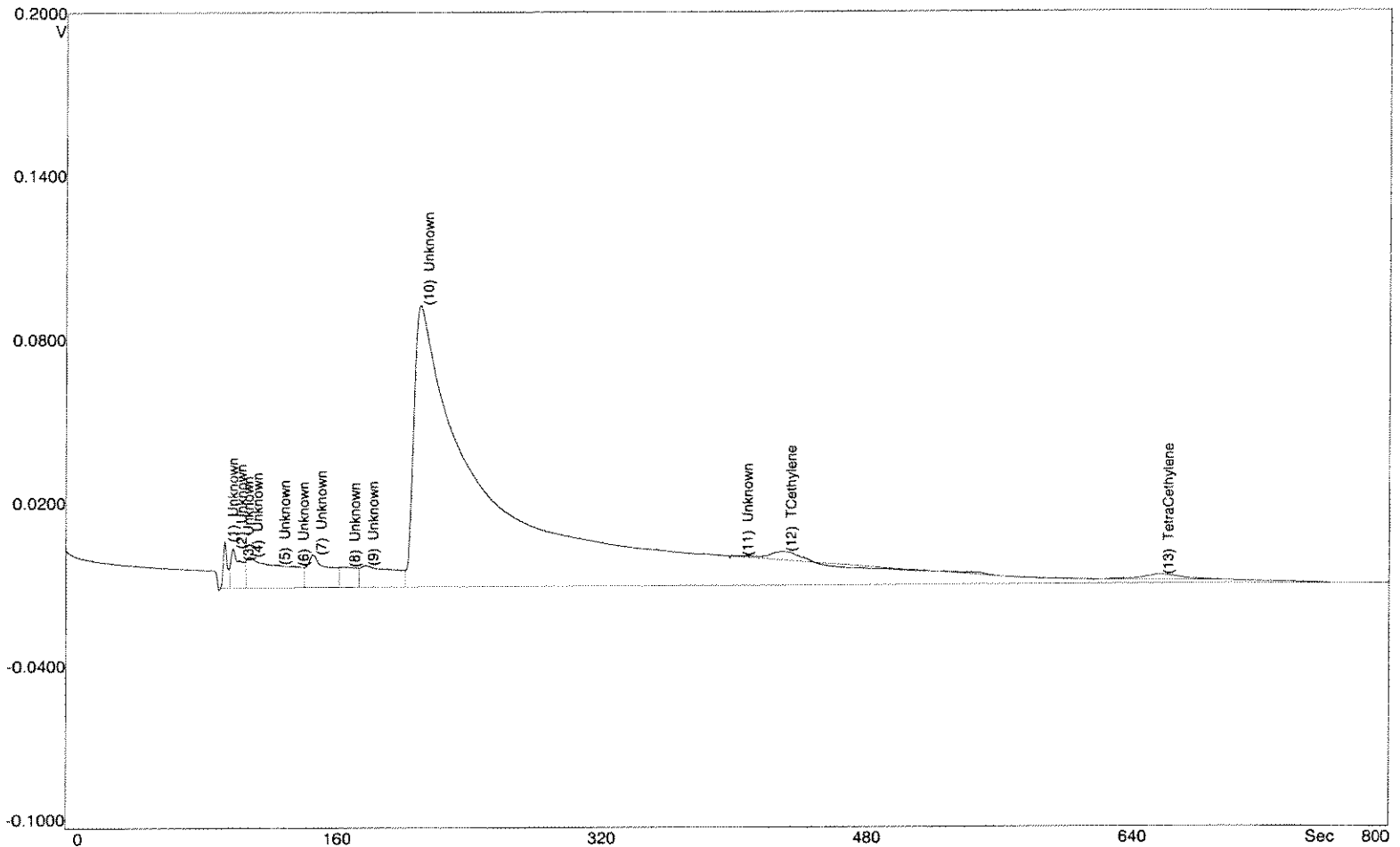
#	Name	Conc (PPM)	Area (mVS)	Height (mV)	R.T. (S)	Status
1	Unknown		5.317	1.055		90.4
2	Unknown		126	41.7		96.0
3	Unknown		120	12.0		100.9
4	Unknown		328	20.7		110.3

SiteChart Analysis Report - B5011816.PID

5 Unknown		1.931	0.198	126.5
6 Unknown		2.154	0.330	137.2
7 Unknown		741	112	149.2
8 Unknown		421	6.122	169.8
9 Unknown		45489	1486	213.2
10 Benzene	0.018	207	19.2	388.0
11 TCethylene	0.026	274	16.9	446.0
12 TetraCethylene	0.006	84.7	2.980	658.4

recalc'd
 $TCR = 0.010 \text{ mg/l}$
 $PCR = 0.002 \rightarrow ND$

SiteChart Analysis Report - B5011818.PID



RESULTS:

Date Jan 18, 2005
 Time 16:14:33
 Instrument FGGE202
 Detector PID
 Column B
 Analysis# 37
 Tag sab HS
 Column Temp 59.0 C
 Det Temp 59.0 C
 Ambient Temp 34.0 C

IX
 100µl
 R 13

METHOD:

Analysis Time 800.0 S
 PumpTime 5.0 S
 Back Flush 400.0 S
 Temperature 60.0 C
 Pressure 8.0 psi
 Inject Syringe, 100.0 µL
 PID State High Sense

INTEGRATION METHOD:

Manual Integration
 SlopeUp 0.0 mV/S
 SlopeDown 0.0 mV/S
 Min Height 0.0 mV
 Min Area 0.0 mVS
 FilterLevel 3
 Delay 80 Sec

PEAK REPORT:

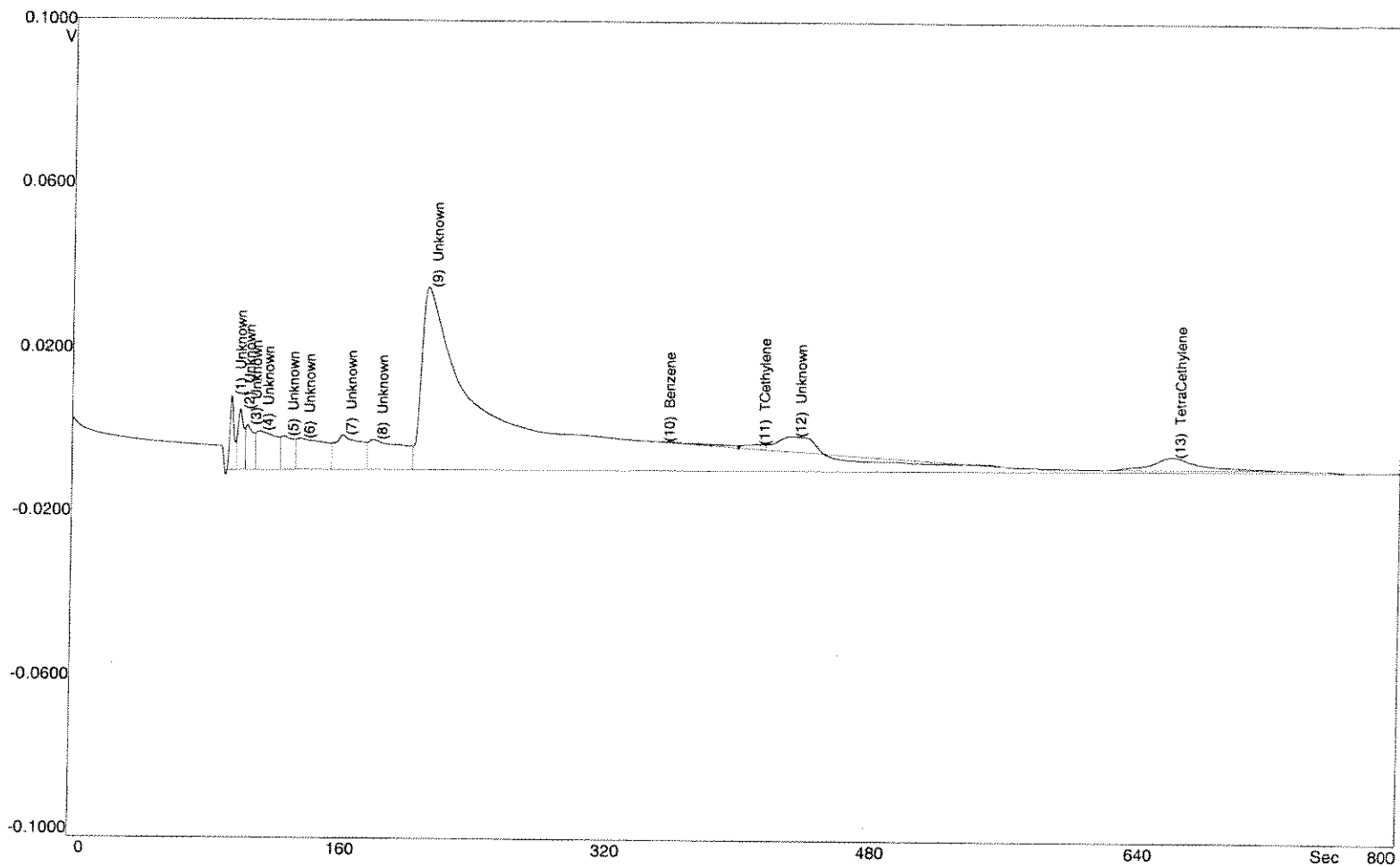
#	Name	Conc (PPM)	Area (mVS)	Height (mV)	R.T. (S)	Status
1	Unknown		51.7	17.2		96.3
2	Unknown		102	7.120		101.3
3	Unknown		0.402	0.194		105.6
4	Unknown		304	1.951		111.1

SiteChart Analysis Report - B5011818.PID

5 Unknown		0.964	0.119	127.6
6 Unknown		1.096	0.180	138.8
7 Unknown		177	4.556	149.6
8 Unknown		87.5	0.168	169.6
9 Unknown		187	0.899	180.8
10 Unknown		6816	97.5	214.0
11 Unknown		7.832	0.129	406.7
12 TCethylene	0.003	30.8	1.686	432.8
13 TetraCethylene	0.004	53.6	1.702	660.2

recalcd
TCE = 0.011 → ND
PCE = 0.014 → ND

SiteChart Analysis Report - B5011821.PID



RESULTS:

Date Jan 18, 2005
 Time 17:01:08
 Instrument FGGE202
 Detector PID
 Column B
 Analysis# 43
 Tag sab HS
 Column Temp 60.0 C
 Det Temp 60.0 C
 Ambient Temp 34.0 C

IX

100µl

R-10

METHOD:

Analysis Time 800.0 S
 PumpTime 5.0 S
 Back Flush 400.0 S
 Temperature 60.0 C
 Pressure 8.0 psi
 Inject Syringe, 100.0 µL
 PID State High Sense

INTEGRATION METHOD:

Manual Integration
 SlopeUp 0.0 mV/S
 SlopeDown 0.0 mV/S
 Min Height 0.0 mV
 Min Area 0.0 mVS
 FilterLevel 3
 Delay 80 Sec

PEAK REPORT:

#	Name	Conc (PPM)	Area (mVS)	Height (mV)	R.T. (S)	Status
1	Unknown		54.8	19.0	96.3	
2	Unknown		59.5	7.728	101.5	
3	Unknown		60.7	0.676	105.6	
4	Unknown		128	0.563	112.9	

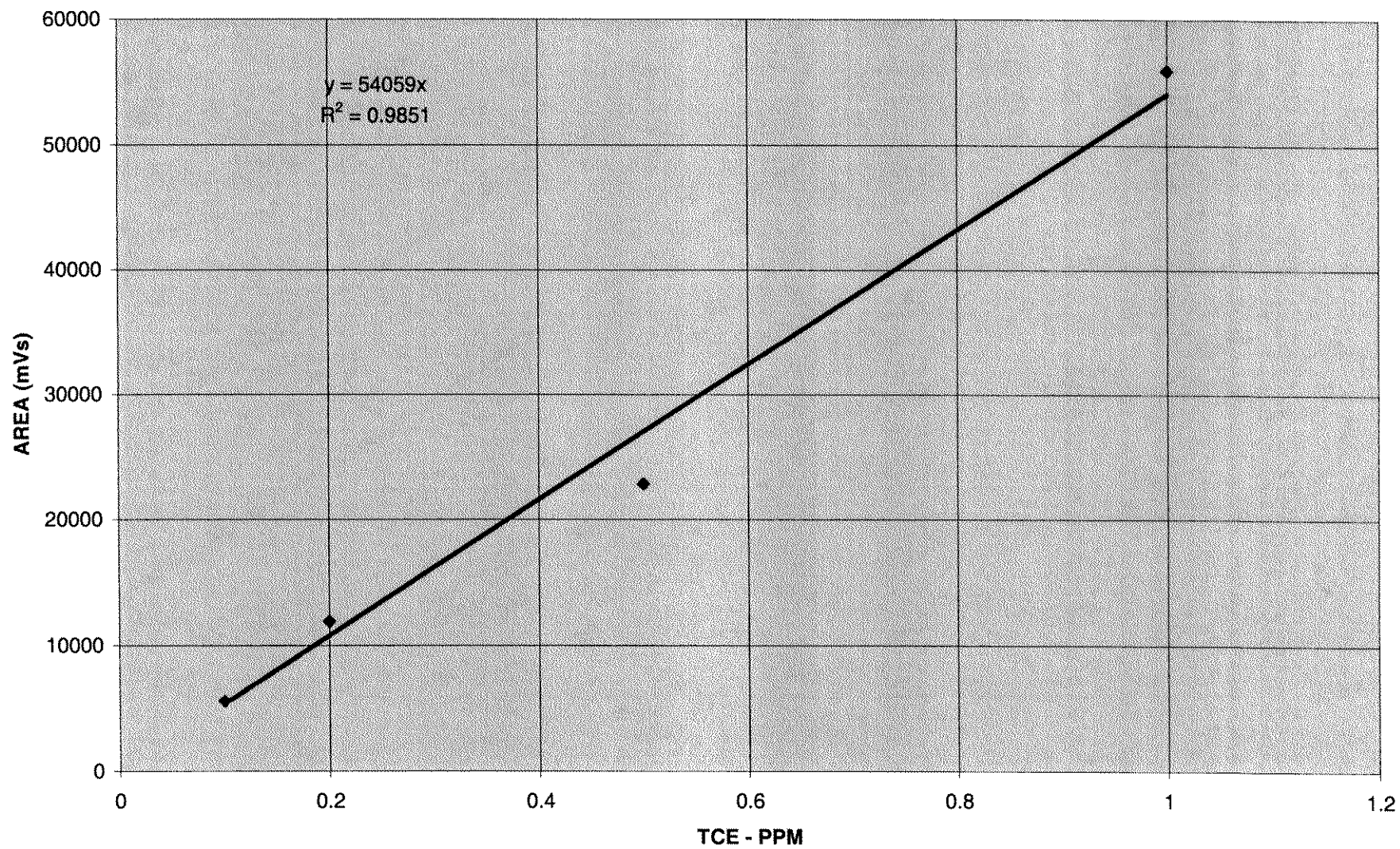
SiteChart Analysis Report - B5011821.PID

5	Unknown		70.6	0.303	127.7
6	Unknown		152	0.292	137.5
7	Unknown		155	2.012	162.6
8	Unknown		175	0.715	181.6
9	Unknown		3025	38.8	214.0
10	Benzene	0.001	13.6	0.032	354.3
11	TCethylene	0.002	16.3	0.335	411.7
12	Unknown		40.1	2.292	433.6
13	TetraCethylene	0.008	114	3.117	661.4

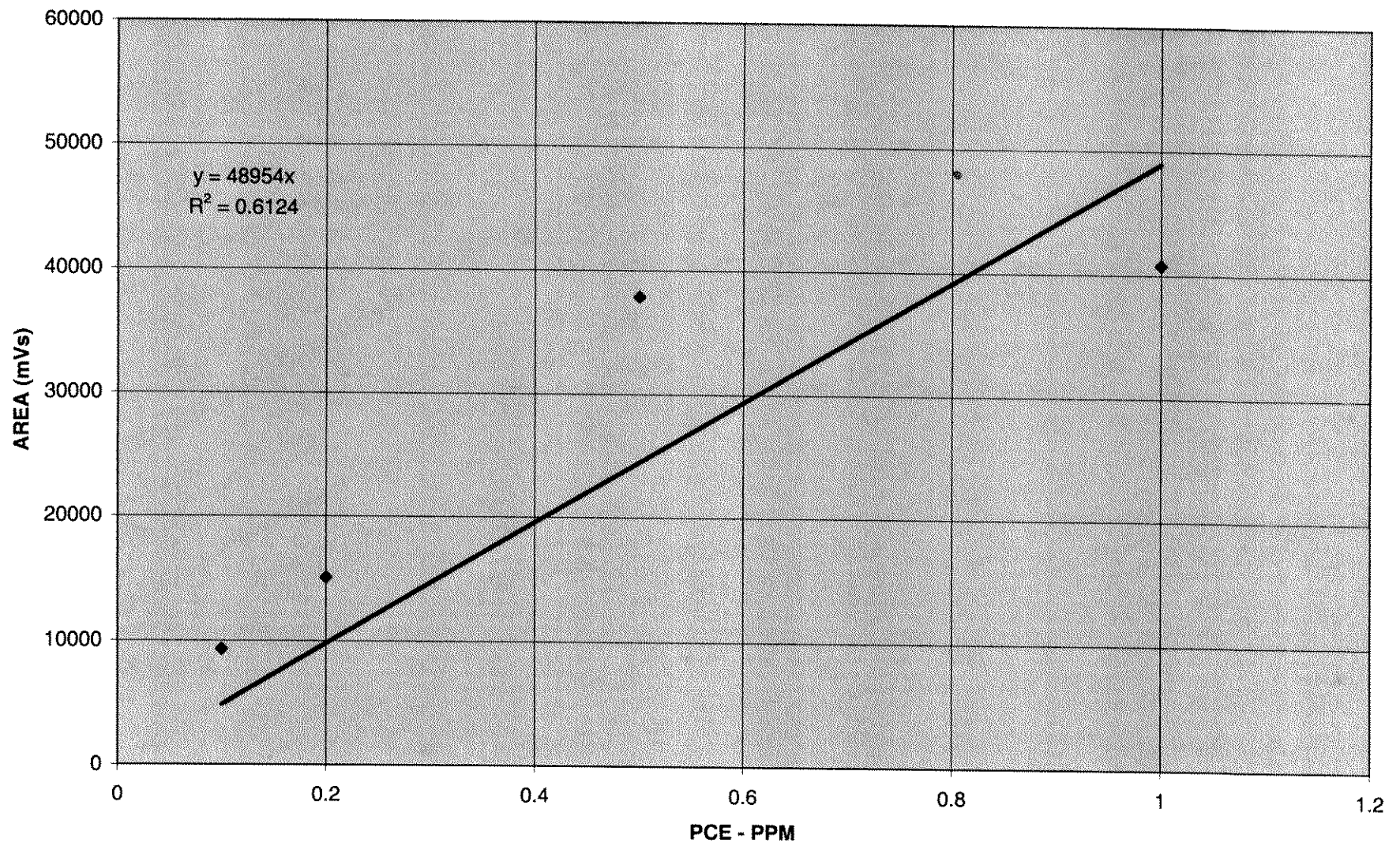
$\Delta CR_2 = .0014 \rightarrow ND$
 $PCE = .003 \rightarrow ND$

Voyager FPGC Daily Calibrations and Chromatograms
Sabana Abaja Industrial Site
January 19, 2005

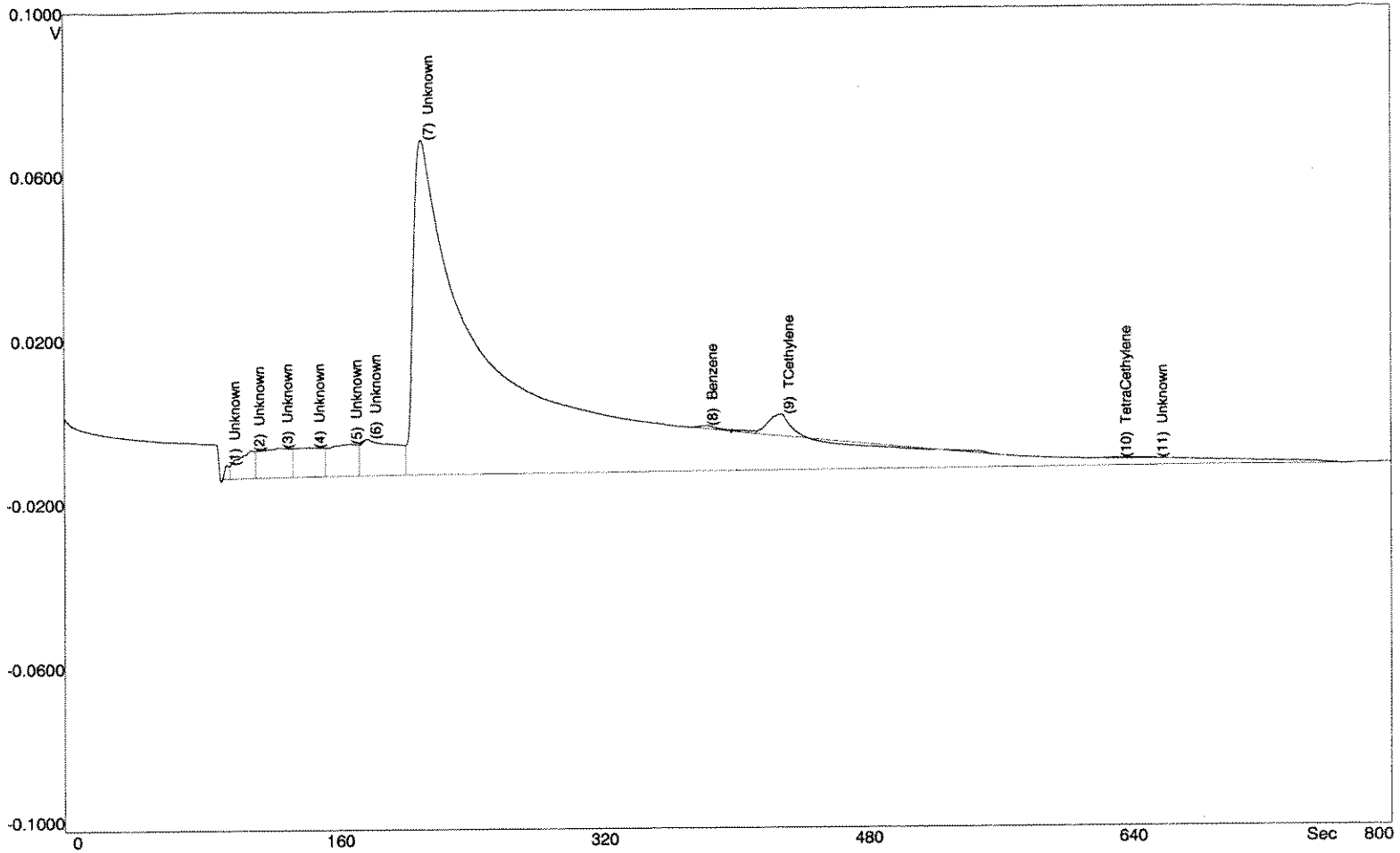
TCE via PID - 01/19/05



PCE via PID - 01/19/05



SiteChart Analysis Report - B5011901.PID



RESULTS:

Date Jan 19, 2005
 Time 09:16:24
 Instrument FGGE202
 Detector PID
 Column B
 Analysis# 3
 Tag sab HS
 Column Temp 60.0 C
 Det Temp 60.0 C
 Ambient Temp 29.0 C

1x
 100µl
 R-40

METHOD:

Analysis Time 800.0 S
 PumpTime 5.0 S
 Back Flush 400.0 S
 Temperature 60.0 C
 Pressure 8.0 psi
 Inject Syringe, 100.0 µL
 PID State High Sense

INTEGRATION METHOD:

Manual Integration
 SlopeUp 0.0 mV/S
 SlopeDown 0.0 mV/S
 Min Height 0.0 mV
 Min Area 0.0 mVS
 FilterLevel 3
 Delay 80 Sec

PEAK REPORT:

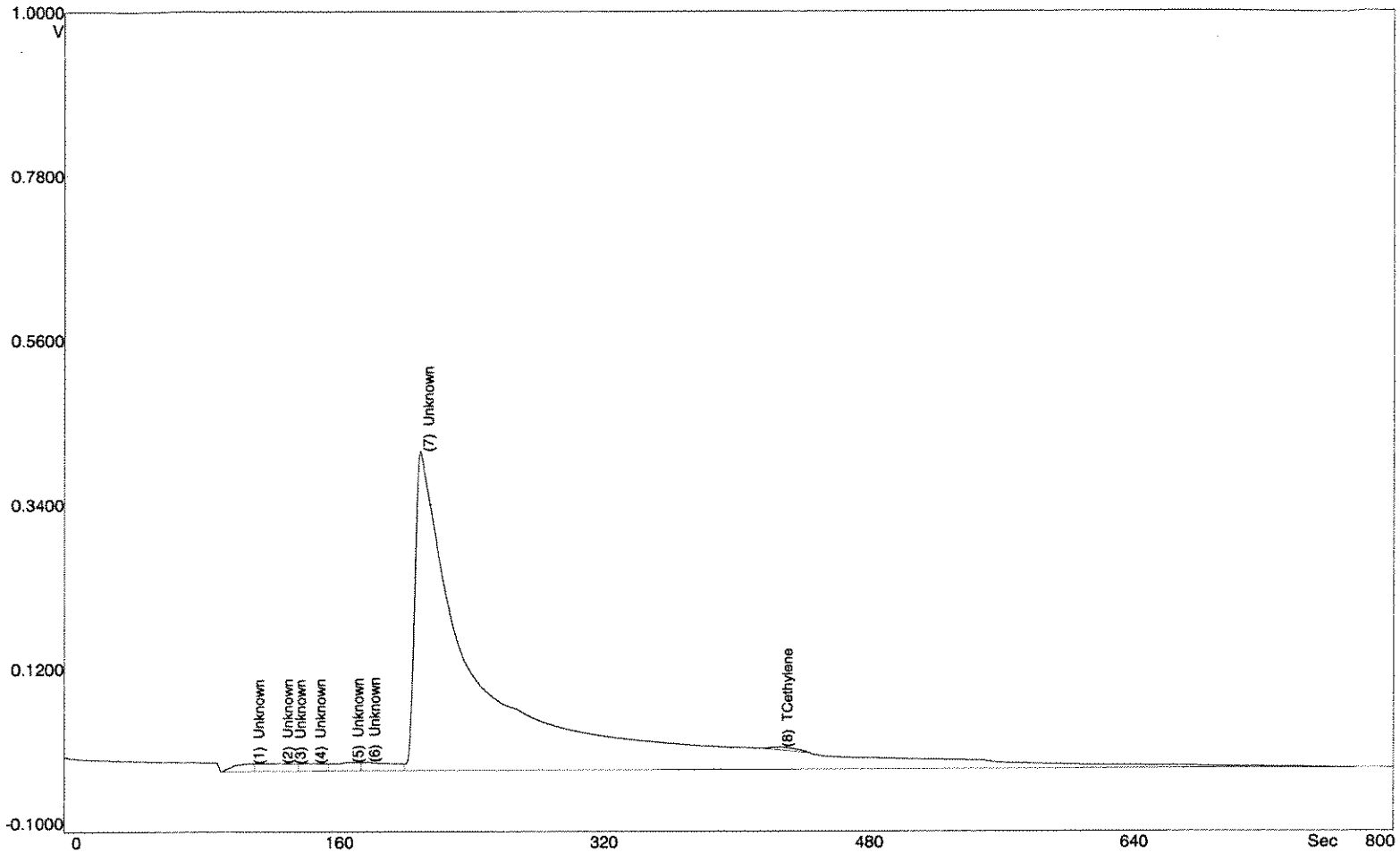
#	Name	Conc (PPM)	Area (mVS)	Height (mV)	R.T. (S)	Status
1	Unknown		11.4	3.587		96.0
2	Unknown		84.1	3.753		110.8
3	Unknown		157	6.463		127.7
4	Unknown		139	0.173		146.8

SiteChart Analysis Report - B5011901.PID

5 Unknown		150	0.863	169.2
6 Unknown		221	2.151	180.8
7 Unknown		5862	74.2	213.2
8 Benzene	0.001	14.2	0.464	385.0
9 TCethylene	0.004	44.3	4.077	431.2
10 TetraCethylene		3.166	0.136	635.0
11 Unknown		1.897	0.093	657.2

rec'd
TCB = 0.008 → ND
PCB = ND

SiteChart Analysis Report - B5011905.PID



RESULTS:

Date Jan 19, 2005
 Time 10:19:31
 Instrument FGGE202
 Detector PID
 Column B
 Analysis# 11
 Tag sab HS
 Column Temp 59.0 C
 Det Temp 59.0 C
 Ambient Temp 30.0 C

1x
 10042 R17

METHOD:

Analysis Time 800.0 S
 PumpTime 5.0 S
 Back Flush 400.0 S
 Temperature 60.0 C
 Pressure 8.0 psi
 Inject Syringe, 100.0 uL
 PID State High Sense

INTEGRATION METHOD:

Manual Integration
 SlopeUp 0.0 mV/S
 SlopeDown 0.0 mV/S
 Min Height 0.0 mV
 Min Area 0.0 mVS
 FilterLevel 3
 Delay 80 Sec

PEAK REPORT:

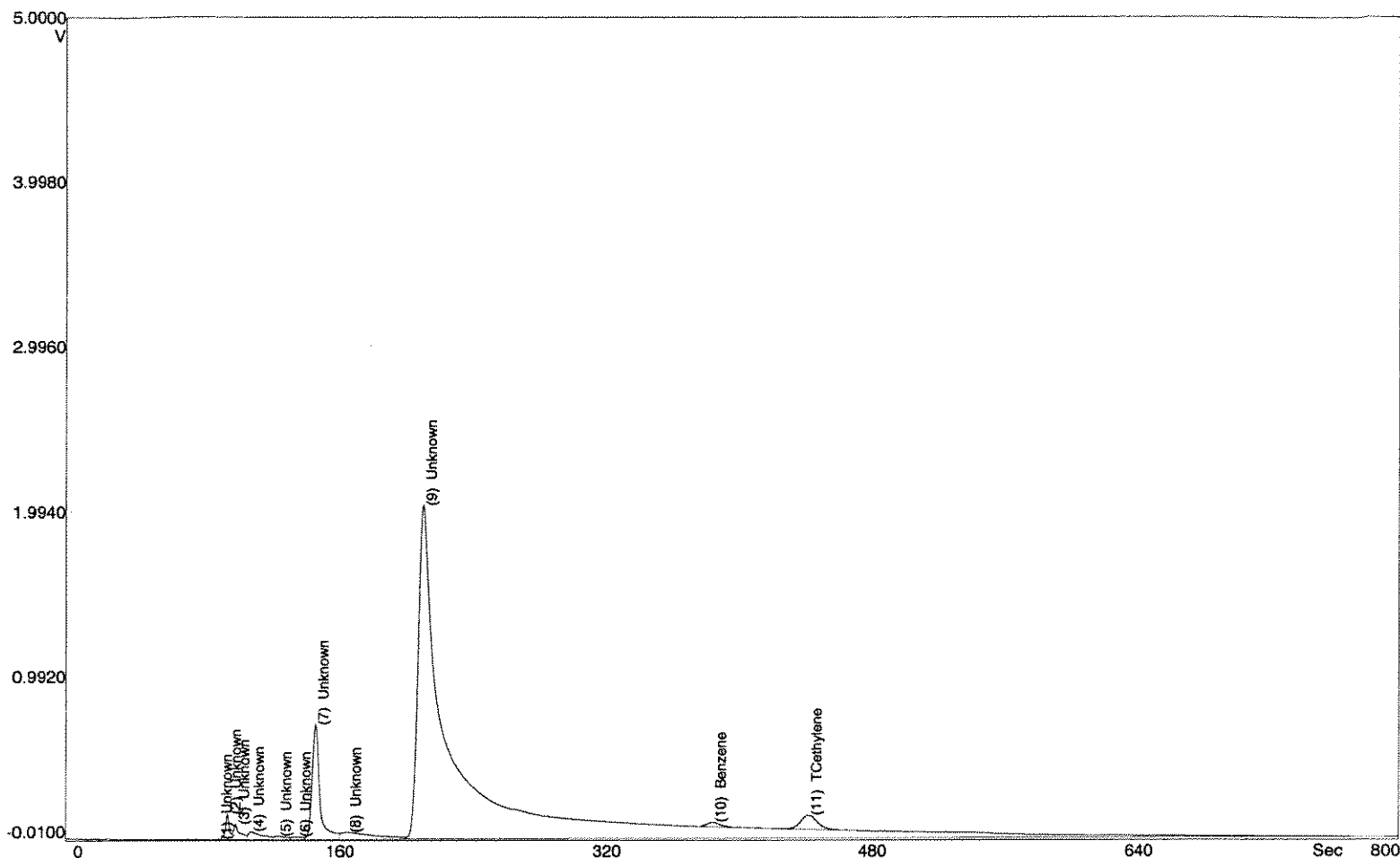
#	Name	Conc (PPM)	Area (mVS)	Height (mV)	R.T. (S)	Status
1	Unknown		140	10.5		110.7
2	Unknown		266	9.491		128.0
3	Unknown		0.081	0.045		135.7
4	Unknown		178	0.311		147.6

SiteChart Analysis Report - B5011905.PID

5 Unknown	199	2.051	170.2
6 Unknown	261	2.238	180.4
7 Unknown	21634	420	212.8
8 TCethylene	0.007 75.1	1.463	429.6

recalculated
TCR = ND
PRR = ND

SiteChart Analysis Report - B5011908.PID



RESULTS:

Date Jan 19, 2005
Time 11:08:52
Instrument FGGE202
Detector PID
Column B
Analysis# 17
Tag sab HS
Column Temp 60.0 C
Det Temp 60.0 C
Ambient Temp 31.0 C

1x

100µl

R-16

new sample / repeat

METHOD:

Analysis Time 800.0 S
PumpTime 5.0 S
Back Flush 400.0 S
Temperature 60.0 C
Pressure 8.0 psi
Inject Syringe, 100.0 µL
PID State High Sense

INTEGRATION METHOD:

Manual Integration
SlopeUp 0.0 mV/S
SlopeDown 0.0 mV/S
Min Height 0.0 mV
Min Area 0.0 mVS
FilterLevel 3
Delay 80 Sec

PEAK REPORT:

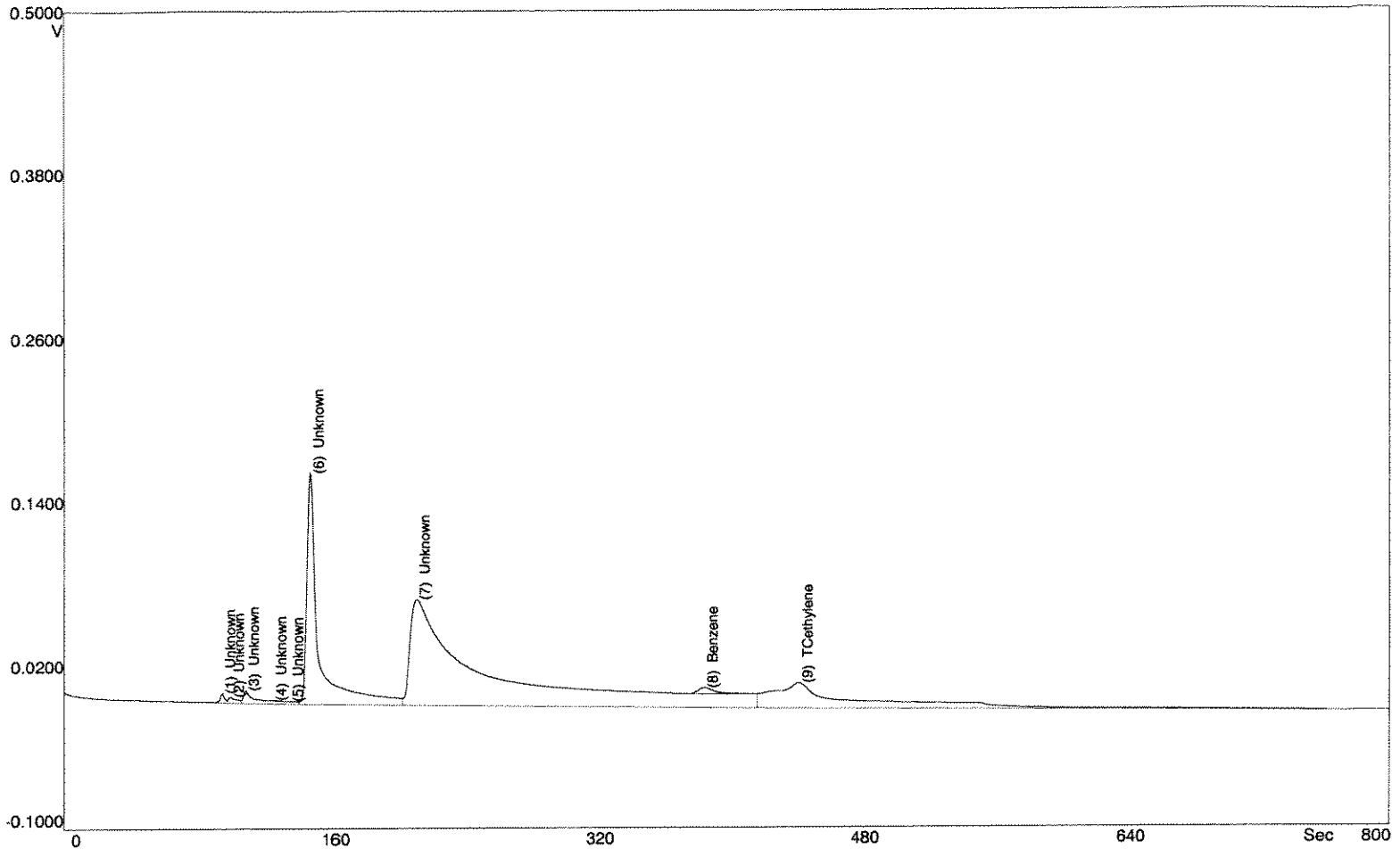
#	Name	Conc (PPM)	Area (mVS)	Height (mV)	R.T. (S)	Status
1	Unknown		5.056	1.497	90.7	
2	Unknown		440	155	96.3	
3	Unknown		424	51.8	101.2	
4	Unknown		442	21.0	110.4	

SiteChart Analysis Report - B5011908.PID

5 Unknown		161	3.227	126.7
6 Unknown		112	2.914	138.4
7 Unknown		3836	688	149.2
8 Unknown		975	5.226	168.6
9 Unknown		56926	2026	213.8
10 Benzene	0.025	279	24.4	387.7
11 TCethylene	0.100	<u>2050</u>	81.3	445.6

$\frac{\text{reval'd}}{\text{TCB} = .019 \text{ ug/l}}$
 PCB = ND

SiteChart Analysis Report - B5011911.PID



RESULTS:

Date Jan 19, 2005
 Time 12:05:40
 Instrument FGGE202
 Detector PID
 Column B
 Analysis# 23
 Tag sab HS
 Column Temp 60.0 C
 Det Temp 60.0 C
 Ambient Temp 32.0 C

METHOD:

Analysis Time 800.0 S
 PumpTime 5.0 S
 Back Flush 400.0 S
 Temperature 60.0 C
 Pressure 8.0 psi
 Inject Syringe, 100.0 uL
 PID State High Sense

INTEGRATION METHOD:

Manual Integration
 SlopeUp 0.0 mV/S
 SlopeDown 0.0 mV/S
 Min Height 0.0 mV
 Min Area 0.0 mVS
 FilterLevel 3
 Delay 80 Sec

PEAK REPORT:

#	Name	Conc (PPM)	Area (mVS)	Height (mV)	R.T. (S)	Status
1	Unknown		21.4	6.797		95.3
2	Unknown		23.8	2.042		100.5
3	Unknown		104	7.013		109.9
4	Unknown		1.395	0.213		126.3

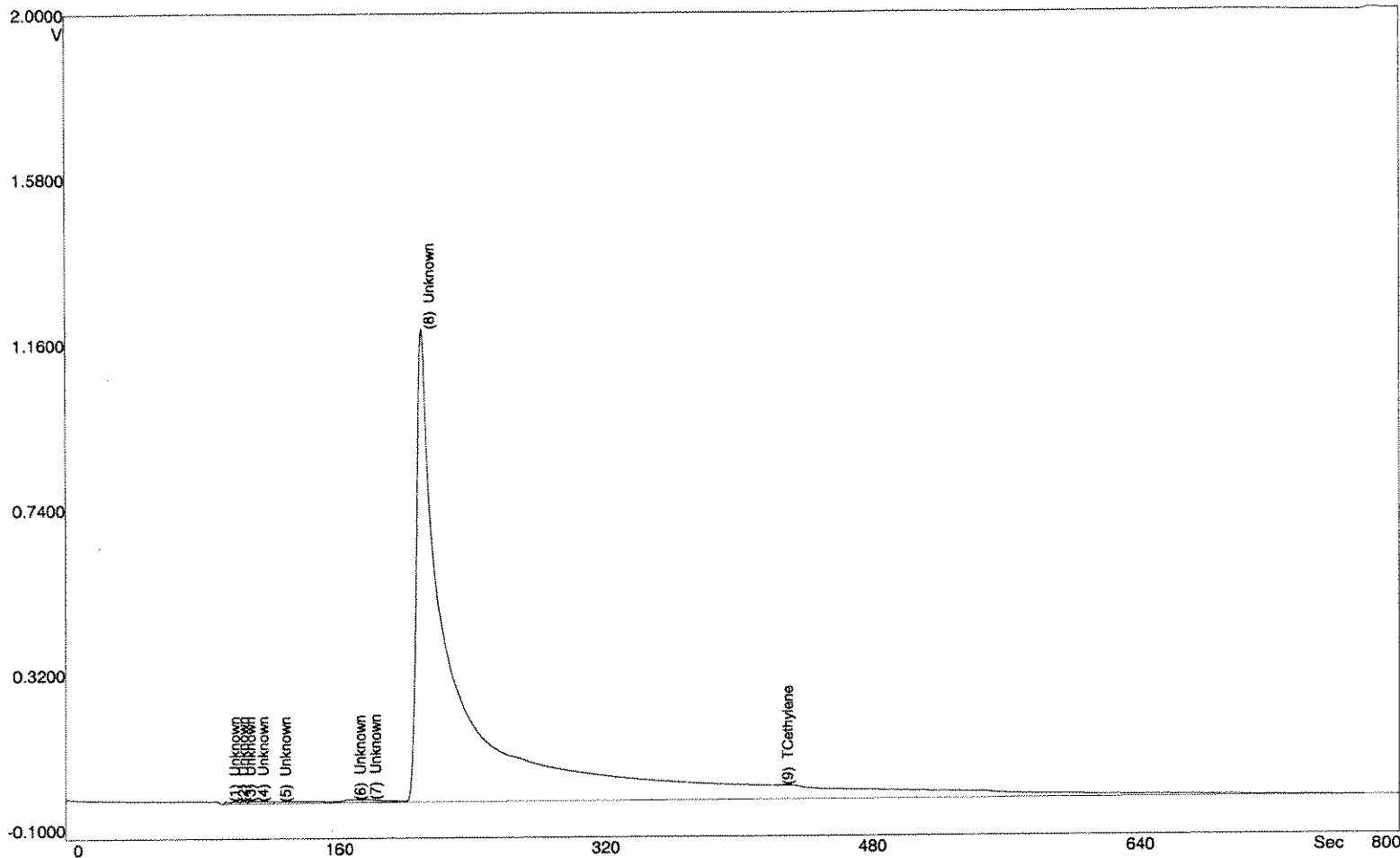
1x
 100MR
 R15

SiteChart Analysis Report - B5011911.PID

5 Unknown	0.583	0.086	136.3
6 Unknown	1392	168	148.6
7 Unknown	4222	72.5	212.8
8 Benzene	0.004	49.0	4.286
9 TCethylene	0.107	1124	7.854
			444.4

rec'd
 TCE = 0.0208 → 0.021 mg/l
 PCE = ND

SiteChart Analysis Report - B5011918.PID



RESULTS:

Date Jan 19, 2005
 Time 14:38:52
 Instrument FGGE202
 Detector PID
 Column B
 Analysis# 37
 Tag sab HS
 Column Temp 59.0 C
 Det Temp 59.0 C
 Ambient Temp 33.0 C

1x

100mL

~~R 18 JAC~~
 R19

METHOD:

Analysis Time 800.0 S
 PumpTime 5.0 S
 Back Flush 400.0 S
 Temperature 60.0 C
 Pressure 8.0 psi
 Inject Syringe, 100.0 uL
 PID State High Sense

INTEGRATION METHOD:

Manual Integration
 SlopeUp 0.0 mV/S
 SlopeDown 0.0 mV/S
 Min Height 0.0 mV
 Min Area 0.0 mVS
 FilterLevel 3
 Delay 80 Sec

PEAK REPORT:

#	Name	Conc (PPM)	Area (mVS)	Height (mV)	R.T. (S)	Status
1	Unknown		20.8	6.117		96.5
2	Unknown		28.1	5.797		101.7
3	Unknown		27.4	0.160		106.0
4	Unknown		82.6	0.498		113.7

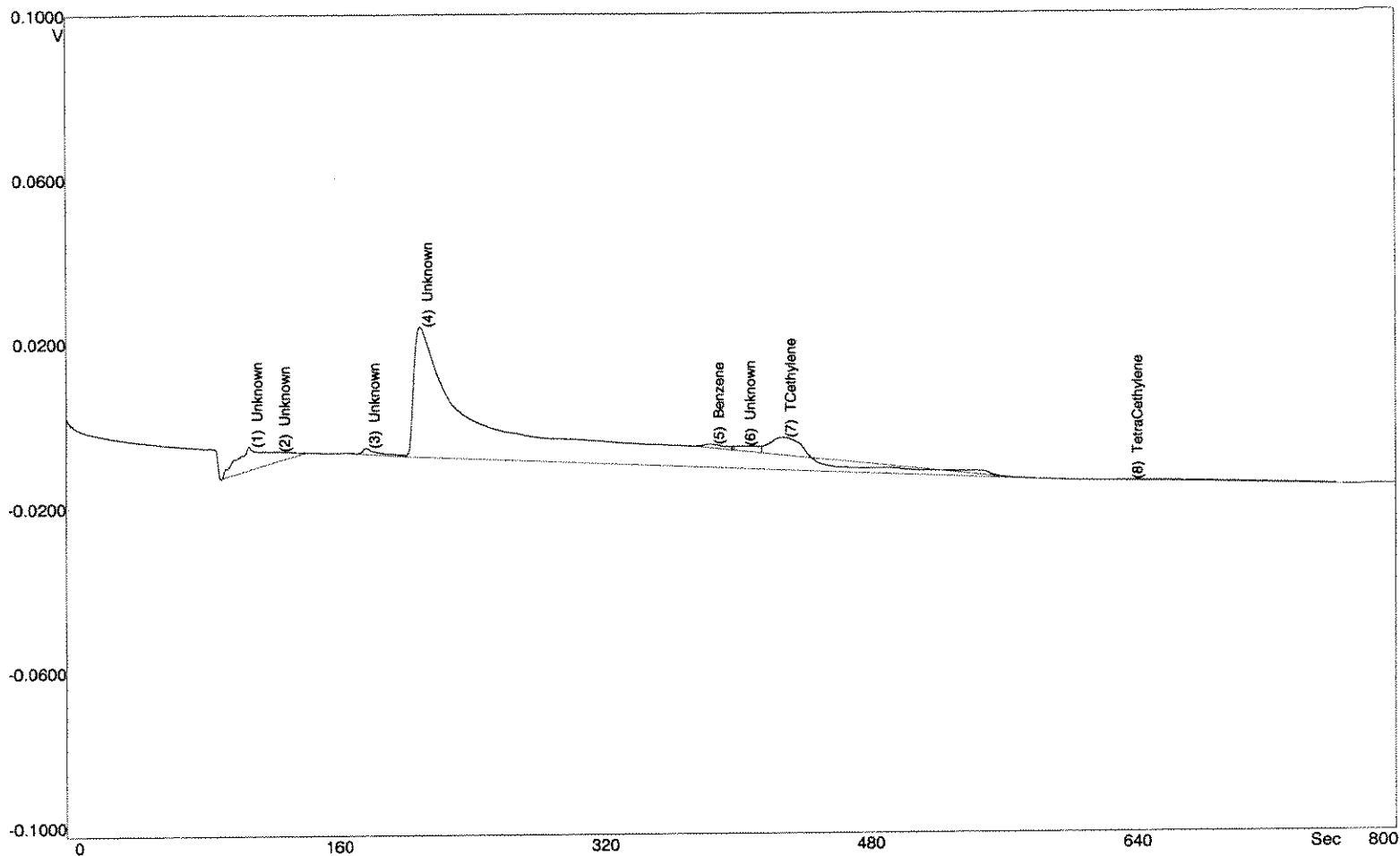
SiteChart Analysis Report - B5011918.PID

5 Unknown	145	0.077	127.1
6 Unknown	94.0	4.715	171.8
7 Unknown	124	5.102	181.0
8 Unknown	35366	1203	213.6
9 TCethylene	0.001 11.5	0.556	428.4

recalc'd

TCR⁻ .00022 → ND
PCR = ND

SiteChart Analysis Report - B5011919.PID



RESULTS:

Date Jan 19, 2005
 Time 14:53:26
 Instrument FGGE202
 Detector PID
 Column B
 Analysis# 39
 Tag sab HS
 Column Temp 59.0 C
 Det Temp 59.0 C
 Ambient Temp 33.0 C

IX
 -100MP
 R18
~~R-19 (RR)~~ (RR)

METHOD:

Analysis Time 800.0 S
 PumpTime 5.0 S
 Back Flush 400.0 S
 Temperature 60.0 C
 Pressure 8.0 psi
 Inject Syringe, 100.0 uL
 PID State High Sense

INTEGRATION METHOD:

Manual Integration
 SlopeUp 0.0 mV/S
 SlopeDown 0.0 mV/S
 Min Height 0.0 mV
 Min Area 0.0 mVS
 FilterLevel 3
 Delay 80 Sec

PEAK REPORT:

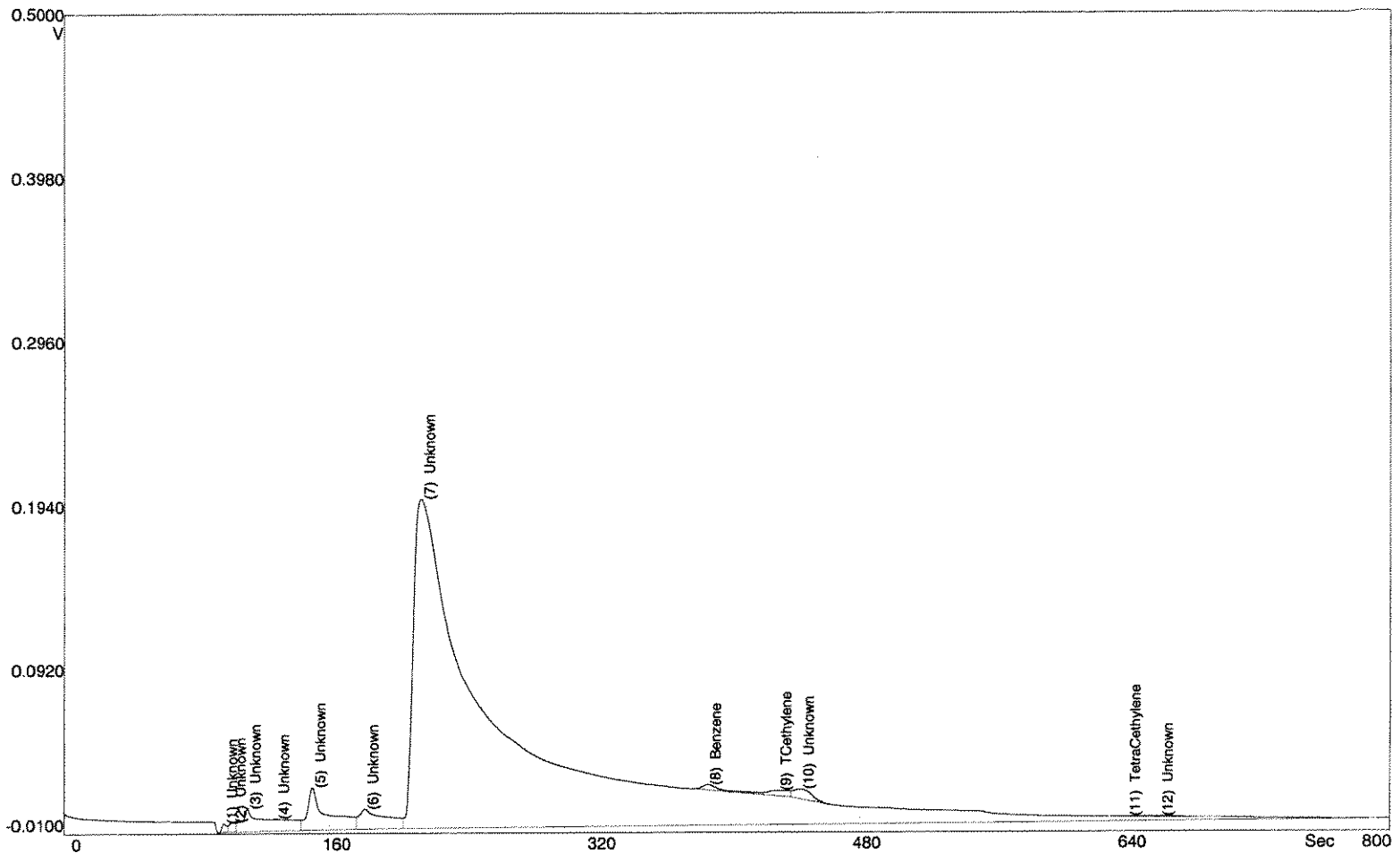
#	Name	Conc (PPM)	Area (mVS)	Height (mV)	R.T. (S)	Status
1	Unknown		134	7.563		110.4
2	Unknown		0.695	0.104		126.9
3	Unknown		17.5	1.366		181.0
4	Unknown		1952	31.1		213.2

SiteChart Analysis Report - B5011919.PID

5 Benzene	0.001	13.2	0.429	388.3
6 Unknown		20.9	0.224	407.3
7 TCethylene	0.003	34.6	2.202	431.6
8 TetraCethylene	0.002	24.8	0.086	639.2

recalc'd
TCB = .00065 → ND
PCB = .00051 → ND

SiteChart Analysis Report - B5011922.PID



RESULTS:

Date Jan 19, 2005
 Time 15:36:23
 Instrument FGGE202
 Detector PID
 Column B
 Analysis# 45
 Tag sab HS
 Column Temp 60.0 C
 Det Temp 60.0 C
 Ambient Temp 33.0 C

1x

100ml

R-21

(repeat)

METHOD:

Analysis Time 800.0 S
 PumpTime 5.0 S
 Back Flush 400.0 S
 Temperature 60.0 C
 Pressure 8.0 psi
 Inject Syringe, 100.0 uL
 PID State High Sense

INTEGRATION METHOD:

Manual Integration
 SlopeUp 0.0 mV/S
 SlopeDown 0.0 mV/S
 Min Height 0.0 mV
 Min Area 0.0 mVS
 FilterLevel 3
 Delay 80 Sec

PEAK REPORT:

#	Name	Conc (PPM)	Area (mVS)	Height (mV)	R.T. (S)	Status
1	Unknown		18.1	5.630		96.3
2	Unknown		25.9	2.000		101.3
3	Unknown		294	13.2		110.5
4	Unknown		0.959	0.259		127.6

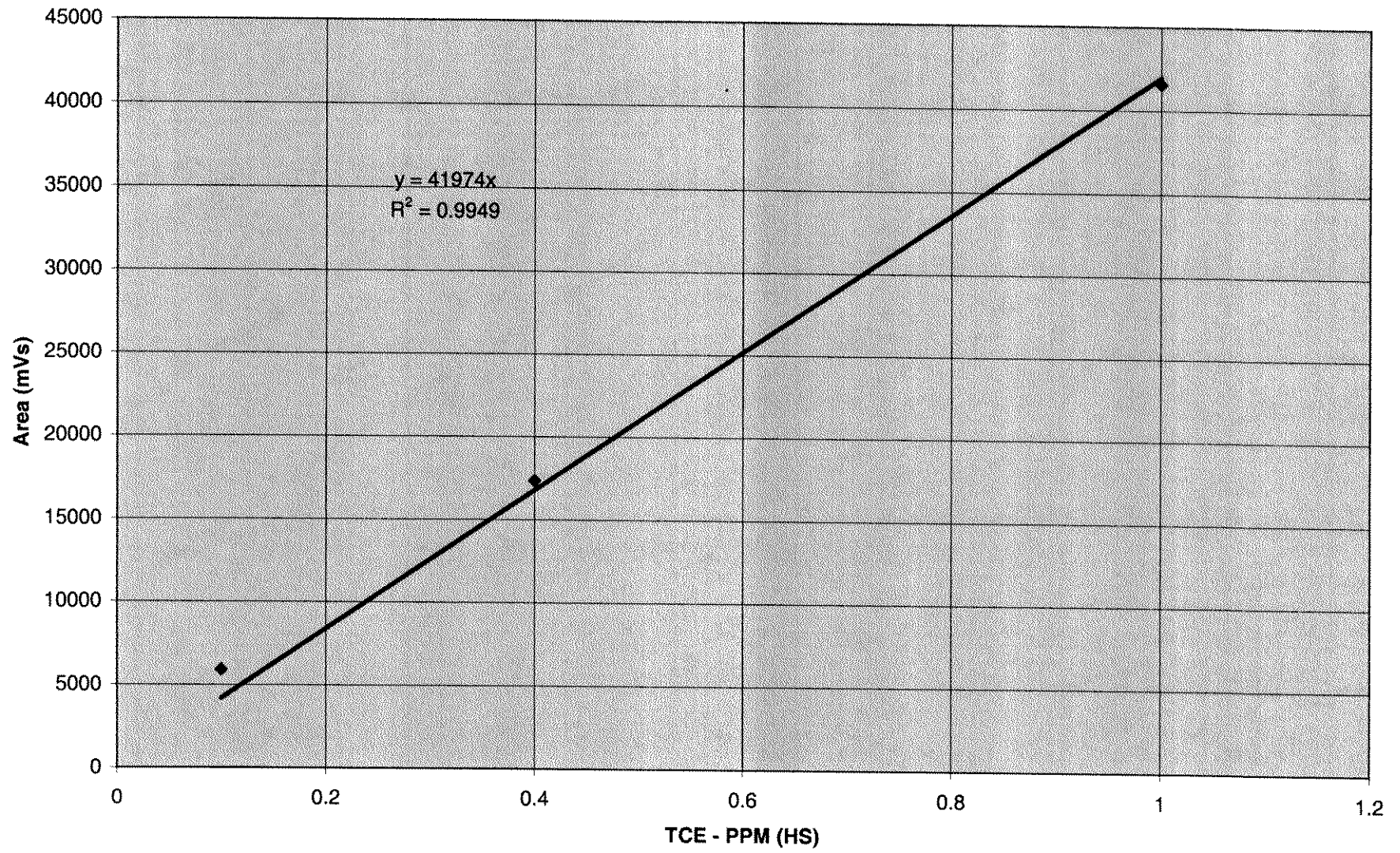
SiteChart Analysis Report - B5011922.PID

5 Unknown		364	20.2	149.4
6 Unknown		233	4.765	181.2
7 Unknown		13305	199	214.8
8 Benzene	0.005	50.8	2.681	387.7
9 TCethylene	0.005	47.7	1.287	430.4
10 Unknown		76.9	2.032	444.0
11 TetraCethylene		2.868	0.085	640.4
12 Unknown		11.9	0.231	660.2

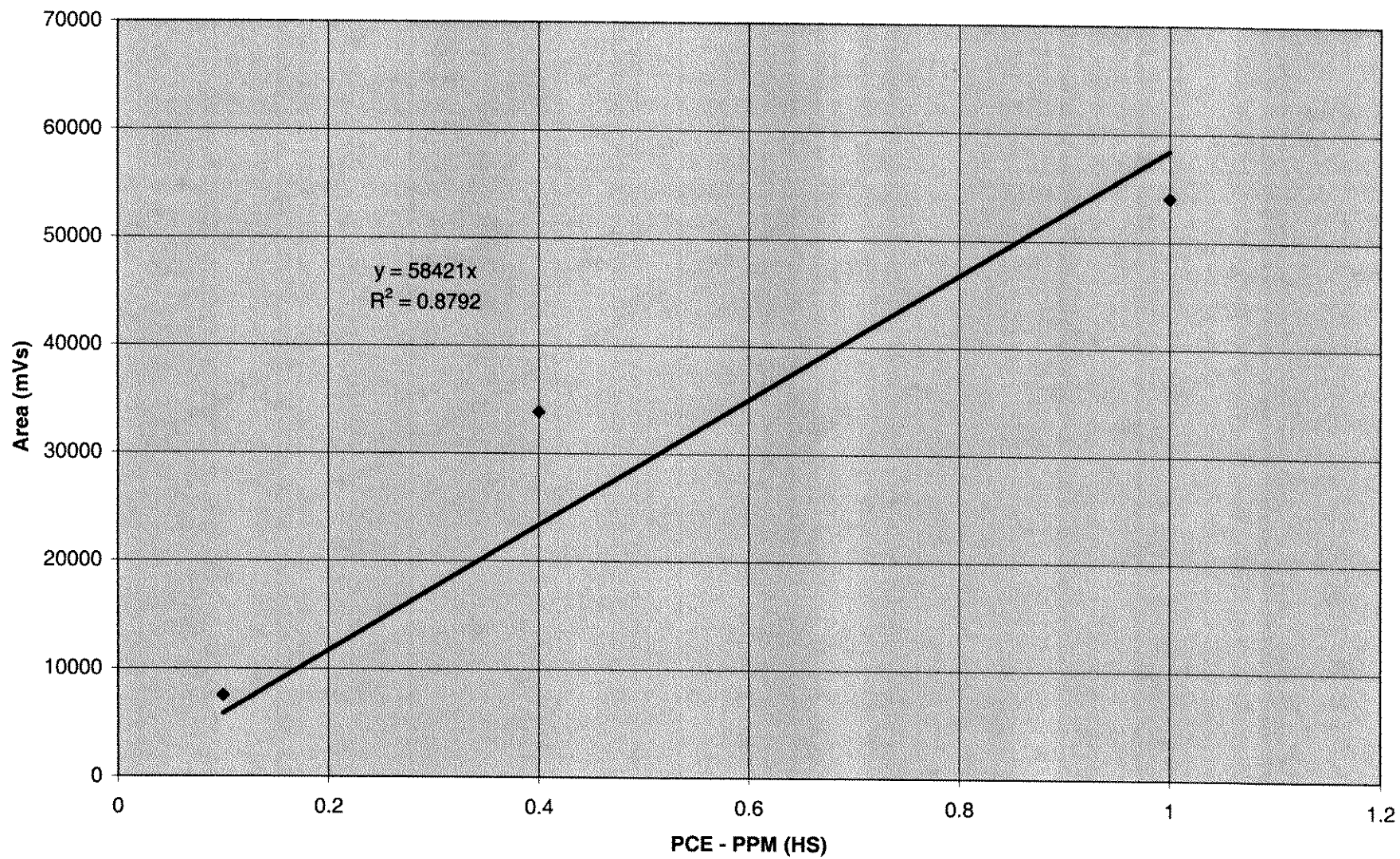
recalc'd
TCF = ,00089 → ND
PCF = ND

Voyager FPGC Daily Calibrations and Chromatograms
Sabana Abaja Industrial Site
January 20, 2005

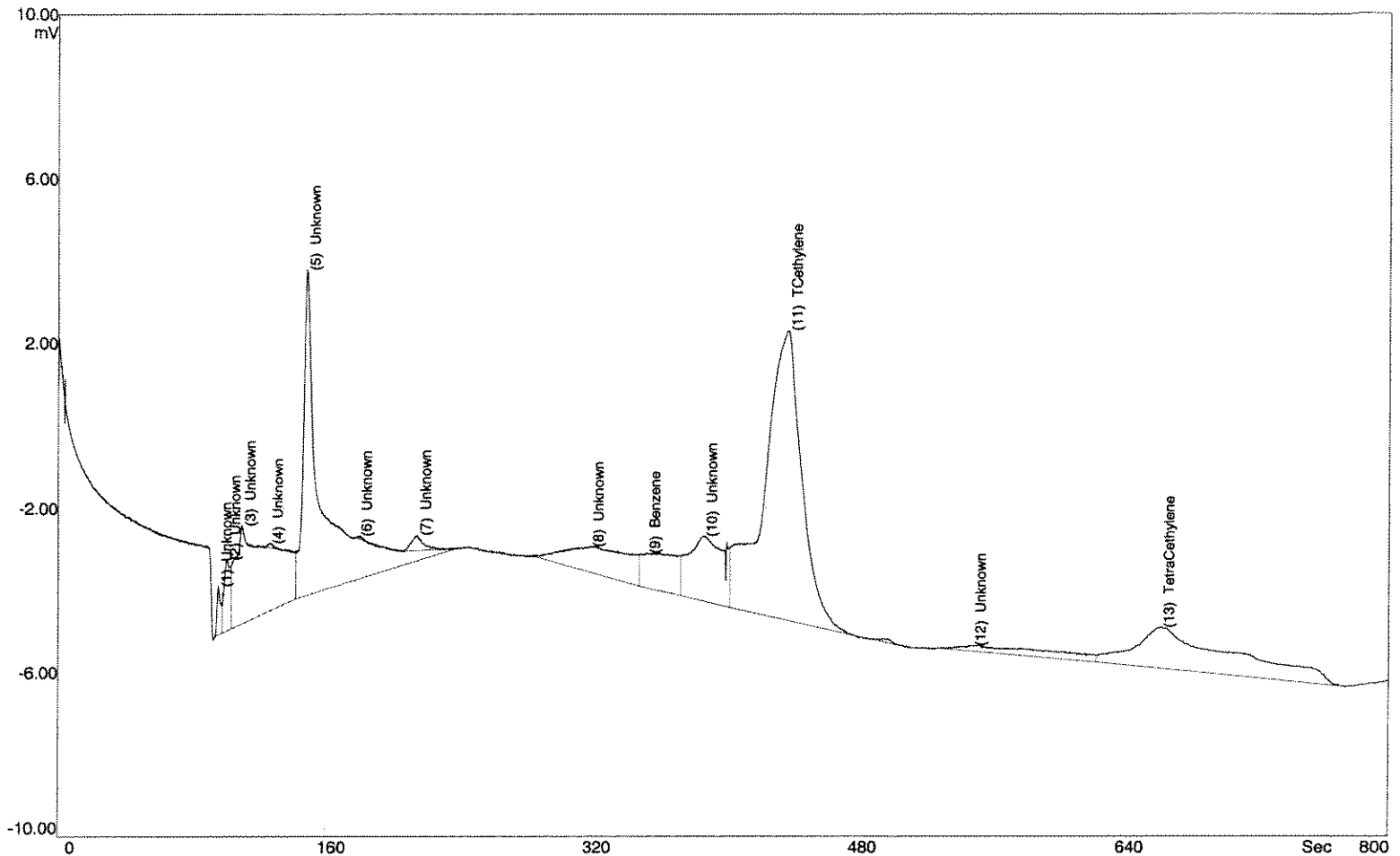
TCE via PID @ 01-20-05



PCE via PID @ 01-20-05



SiteChart Analysis Report - B5012005.PID



RESULTS:

Date Jan 20, 2005
Time 09:55:32
Instrument FGGE202
Detector PID
Column B
Analysis# 11
Tag sab HS
Column Temp 60.0 C
Det Temp 60.0 C
Ambient Temp 28.0 C

1x
1004Q R 22

METHOD:

Analysis Time 800.0 S
PumpTime 5.0 S
Back Flush 400.0 S
Temperature 60.0 C
Pressure 8.0 psi
Inject Syringe, 100.0 uL
PID State High Sense

INTEGRATION METHOD:

Manual Integration
SlopeUp 0.0 mV/S
SlopeDown 0.0 mV/S
Min Height 0.0 mV
Min Area 0.0 mVS
FilterLevel 3
Delay 80 Sec

PEAK REPORT:

#	Name	Conc (PPM)	Area (mVS)	Height (mV)	R.T. (S)	Status
1	Unknown		3.180	1.238	95.9	
2	Unknown		7.531	1.055	101.1	
3	Unknown		62.2	2.334	110.3	
4	Unknown		0.478	0.095	126.7	

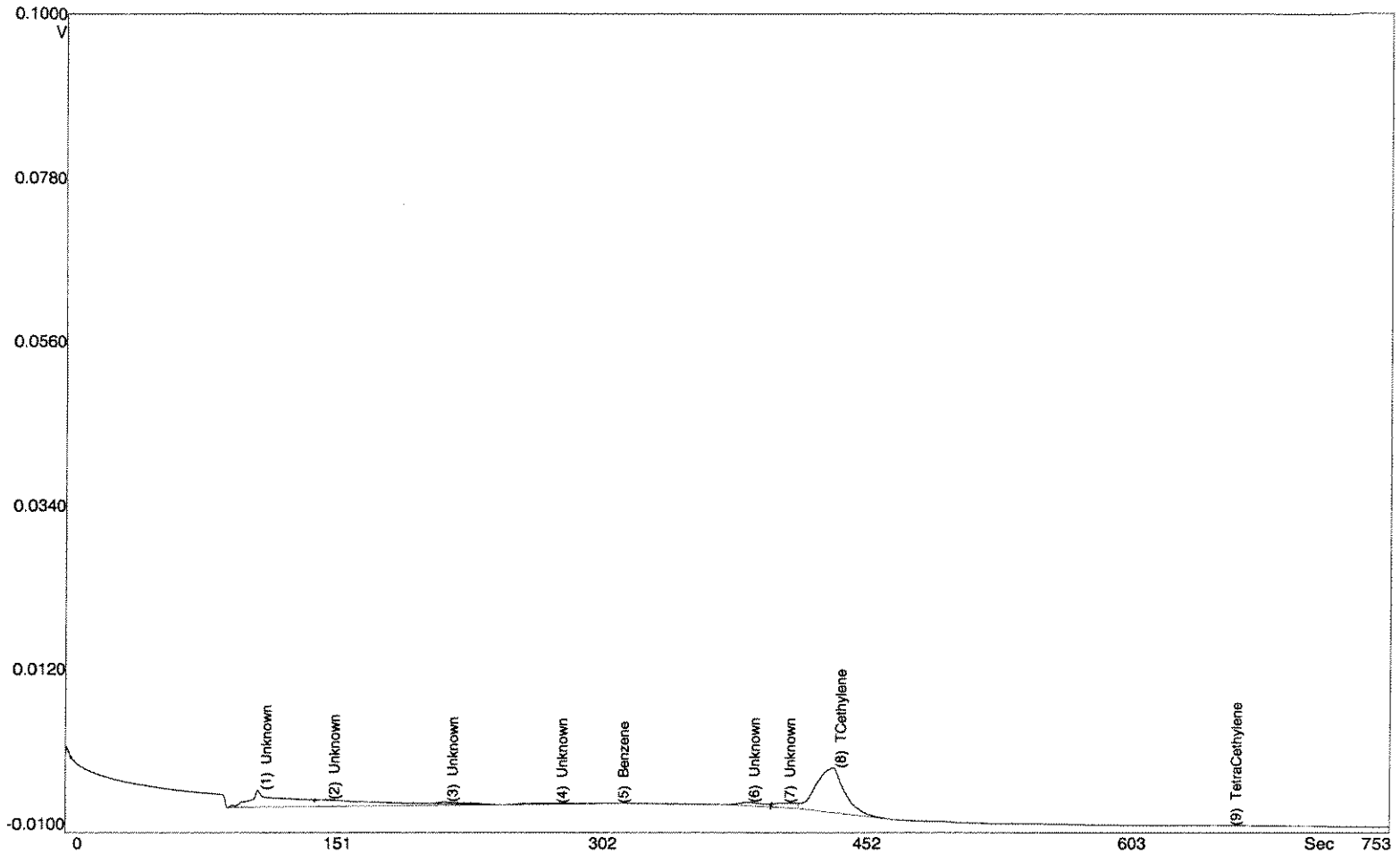
SiteChart Analysis Report - B5012005.PID

5 Unknown		109	6.830	149.0
6 Unknown		0.012	0.049	180.2
7 Unknown		3.025	0.369	215.6
8 Unknown		30.7	0.232	319.5
9 Benzene	0.002	21.8	0.037	353.7
10 Unknown		39.7	0.478	387.7
11 TCethylene	0.008	185	5.430	438.8
12 Unknown		12.3	0.067	549.3
13 TetraCethylene	0.001	71.1	0.666	662.0

recalc'd

TCB = .0004 → ND
 PUE = .0012 → ND

SiteChart Analysis Report - B5012006.PID



RESULTS:

Date Jan 20, 2005
 Time 10:12:29
 Instrument FGGE202
 Detector PID
 Column B
 Analysis# 13
 Tag sab HS
 Column Temp 59.0 C
 Det Temp 59.0 C
 Ambient Temp 28.0 C

1x
 100dr R-30

METHOD:

Analysis Time 800.0 S
 PumpTime 5.0 S
 Back Flush 400.0 S
 Temperature 60.0 C
 Pressure 8.0 psi
 Inject Syringe, 100.0 uL
 PID State High Sense

INTEGRATION METHOD:

Manual Integration
 SlopeUp 0.0 mV/S
 SlopeDown 0.0 mV/S
 Min Height 0.0 mV
 Min Area 0.0 mVS
 FilterLevel 3
 Delay 80 Sec

PEAK REPORT:

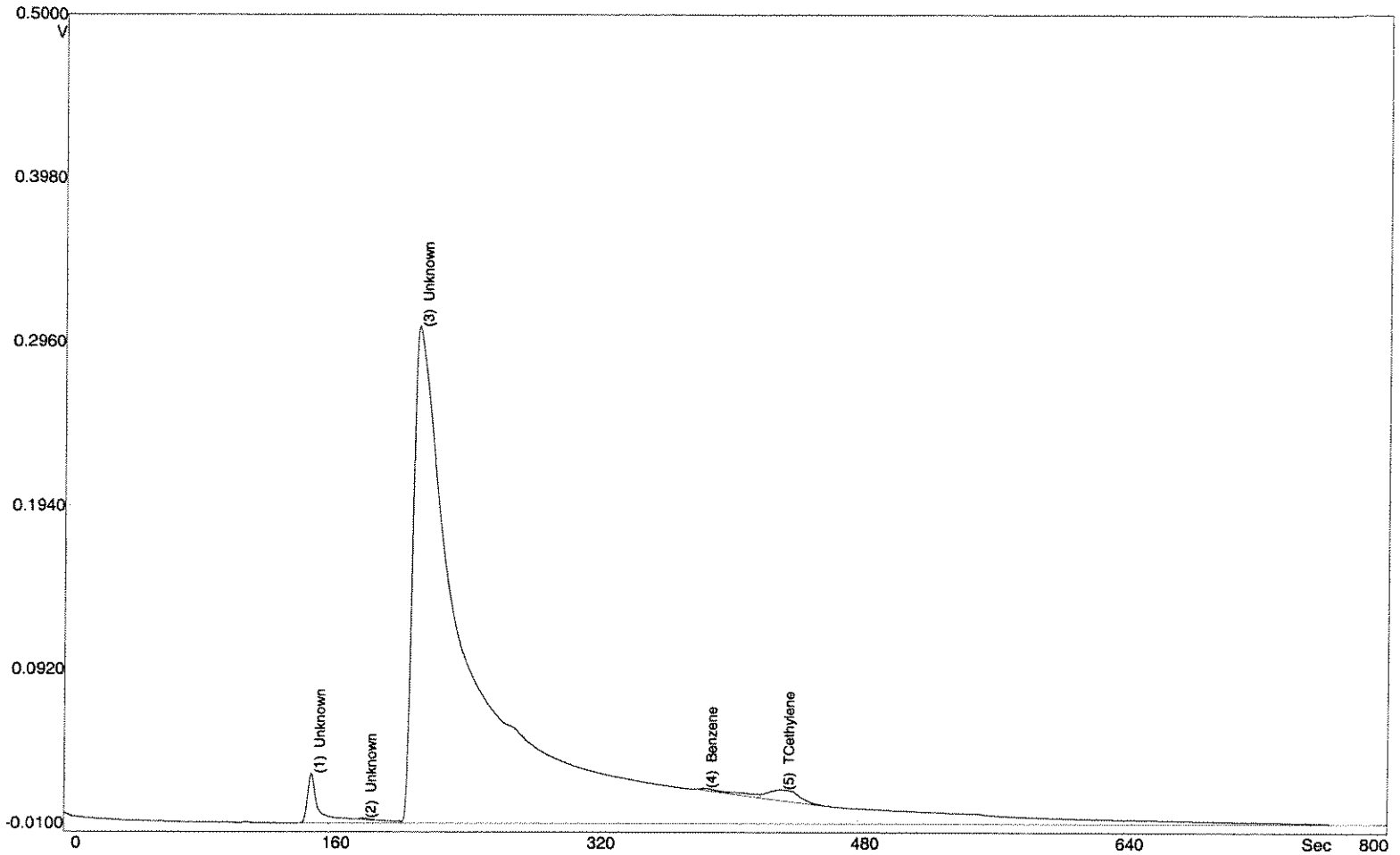
#	Name	Conc (PPM)	Area (mVS)	Height (mV)	R.T. (S)	Status
1	Unknown		89.0	2.375	109.6	
2	Unknown		0.602	0.114	148.2	
3	Unknown		4.430	0.237	215.2	
4	Unknown		4.486	0.184	277.3	

SiteChart Analysis Report - B5012006.PID

5 Benzene		0.255	0.036	312.3
6 Unknown		7.830	0.309	387.0
7 Unknown		8.843	0.183	407.3
8 TCethylene	0.005	113	4.888	436.0
9 TetraCethylene		0.555	0.041	661.4

recalc'd
TCB = 0.0027 → ND
PCB ND

SiteChart Analysis Report - B5012007.PID



RESULTS:

Date Jan 20, 2005
 Time 10:27:17
 Instrument FGGE202
 Detector PID
 Column B
 Analysis# 15
 Tag sab HS
 Column Temp 60.0 C
 Det Temp 60.0 C
 Ambient Temp 29.0 C

METHOD:

Analysis Time 800.0 S
 PumpTime 5.0 S
 Back Flush 400.0 S
 Temperature 60.0 C
 Pressure 8.0 psi
 Inject Syringe, 100.0 uL
 PID State High Sense

18
 1004e R 37

INTEGRATION METHOD:

Manual Integration
 SlopeUp 0.0 mV/S
 SlopeDown 0.0 mV/S
 Min Height 0.0 mV
 Min Area 0.0 mVS
 FilterLevel 3
 Delay 80 Sec

PEAK REPORT:

#	Name	Conc (PPM)	Area (mVS)	Height (mV)	R.T. (S)	Status
1	Unknown		295	31.0	149.2	
2	Unknown		4.552	0.626	180.4	
3	Unknown		15151	309	213.2	
4	Benzene	0.005	52.3	1.018	386.0	

SiteChart Analysis Report - B5012007.PID

5 TCethylene

0.014

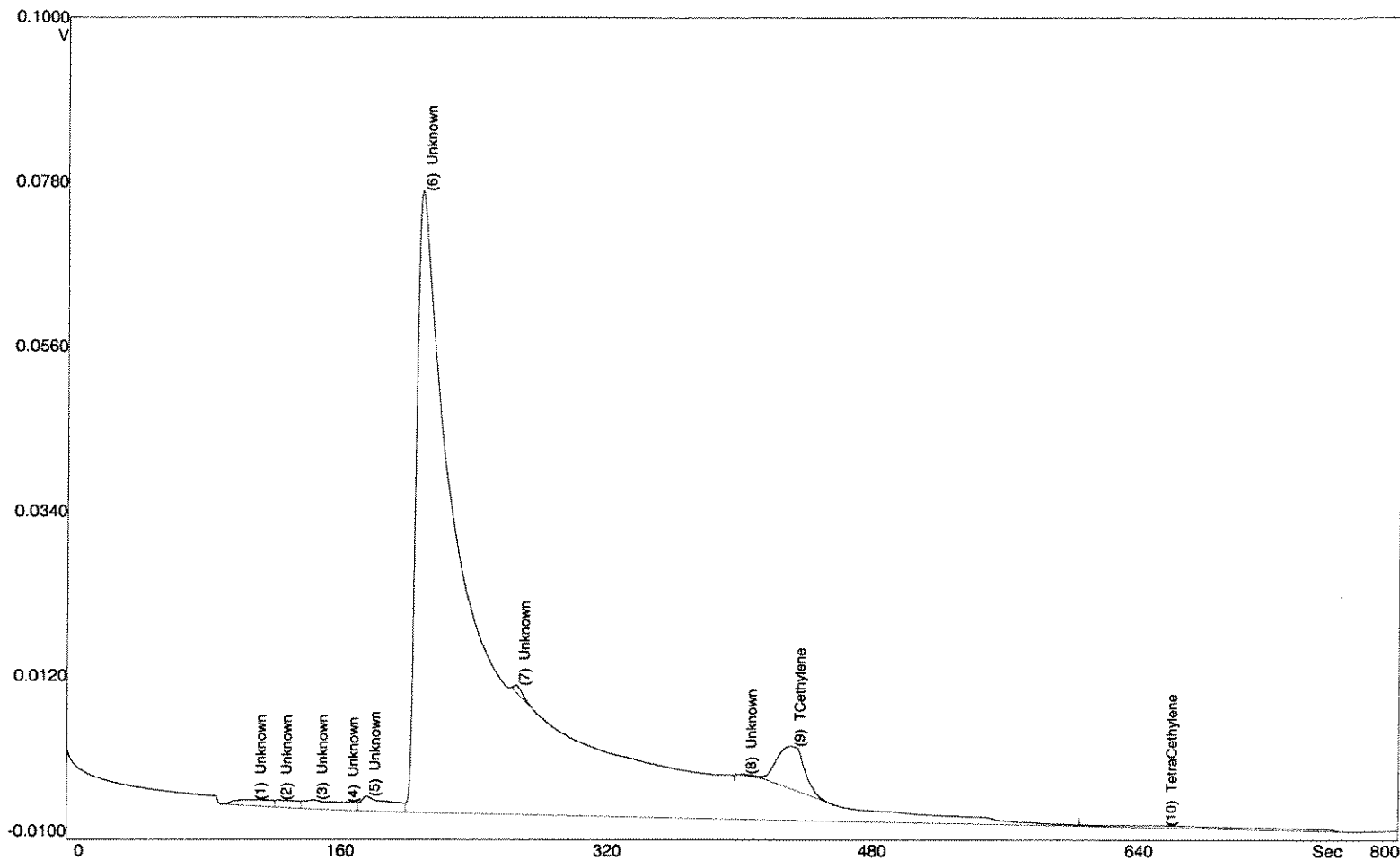
149

2.808

432.8

recalculated
TOE = ND
PCB = ND

SiteChart Analysis Report - B5012008.PID



RESULTS:

Date Jan 20, 2005
 Time 10:42:10
 Instrument FGGE202
 Detector PID
 Column B
 Analysis# 17
 Tag sab HS
 Column Temp 60.0 C
 Det Temp 60.0 C
 Ambient Temp 29.0 C

METHOD:

Analysis Time 800.0 S
 PumpTime 5.0 S
 Back Flush 400.0 S
 Temperature 60.0 C
 Pressure 8.0 psi
 Inject Syringe, 100.0 uL
 PID State High Sense

INTEGRATION METHOD:

Manual Integration
 SlopeUp 0.0 mV/S
 SlopeDown 0.0 mV/S
 Min Height 0.0 mV
 Min Area 0.0 mVS
 FilterLevel 3
 Delay 80 Sec

PEAK REPORT:

#	Name	Conc (PPM)	Area (mVS)	Height (mV)	R.T. (S)	Status
1	Unknown		20.7	0.590	111.2	
2	Unknown		14.8	0.075	126.5	
3	Unknown		34.9	0.197	148.0	
4	Unknown		0.101	0.014	166.8	

1x

100MP

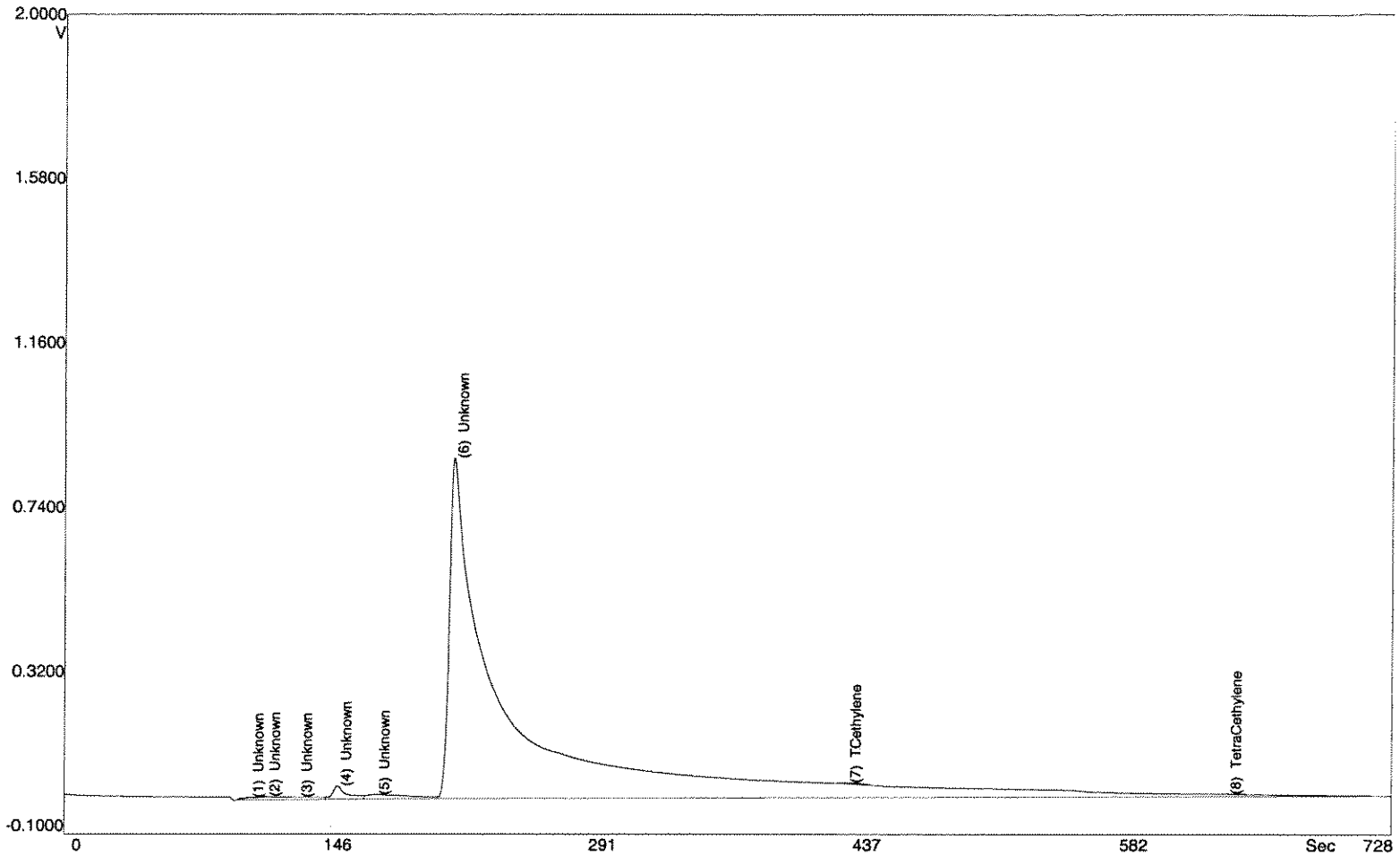
R-31

SiteChart Analysis Report - B5012008.PID

5 Unknown		40.0	0.876	179.6
6 Unknown		3969	81.9	212.2
7 Unknown		7.012	0.264	268.8
8 Unknown		2.190	0.156	406.0
9 TCethylene	0.005	109	4.025	435.2
10 TetraCethylene		1.706	0.022	658.4

recalc'd
 TCE = 0.026 → NO
 PCE = NO

SiteChart Analysis Report - B5012013.PID



RESULTS:

Date Jan 20, 2005
 Time 12:11:36
 Instrument FGGE202
 Detector PID
 Column B
 Analysis# 27
 Tag sab HS
 Column Temp 60.0 C
 Det Temp 60.0 C
 Ambient Temp 30.0 C

1x
1004e

R-12 ✓

METHOD:

Analysis Time 800.0 S
 PumpTime 5.0 S
 Back Flush 400.0 S
 Temperature 60.0 C
 Pressure 8.0 psi
 Inject Syringe, 100.0 uL
 PID State High Sense

INTEGRATION METHOD:

Manual Integration
 SlopeUp 0.0 mV/S
 SlopeDown 0.0 mV/S
 Min Height 0.0 mV
 Min Area 0.0 mVS
 FilterLevel 3
 Delay 80 Sec

PEAK REPORT:

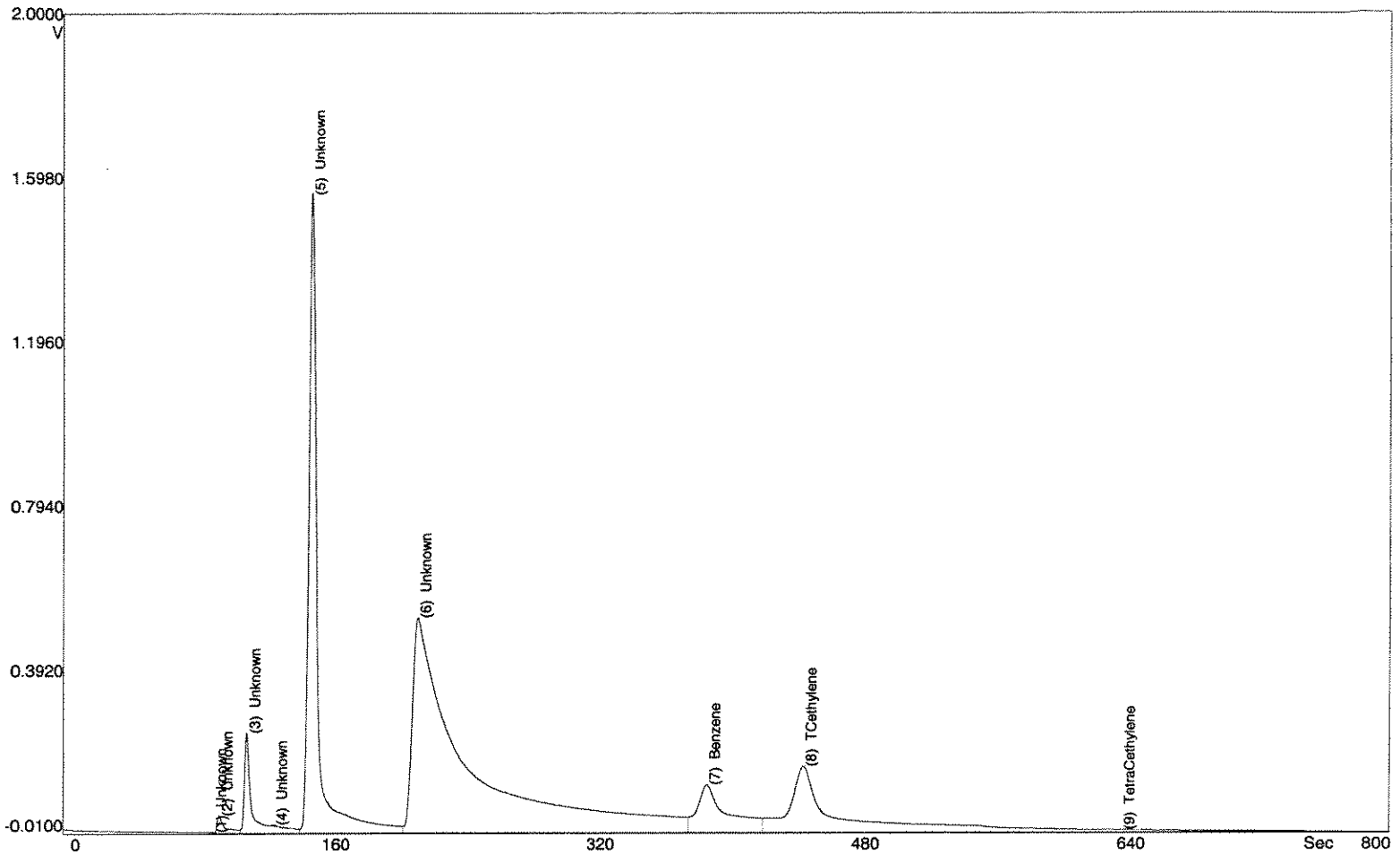
#	Name	Conc (PPM)	Area (mVS)	Height (mV)	R.T. (S)	Status
1	Unknown		48.7	7.335	101.3	
2	Unknown		252	8.230	110.3	
3	Unknown		1.345	0.244	127.6	
4	Unknown		305	29.4	149.2	

SiteChart Analysis Report - B5012013.PID

5 Unknown		310	2.530	170.2
6 Unknown		33111	870	213.0
7 TCethylene	0.004	40.7	0.768	429.6
8 TetraCethylene	0.001	19.8	0.645	638.0

recalc'd
TCR = .00098 → ND
PHE = .00034 → ND

SiteChart Analysis Report - B5012014.PID



RESULTS:

Date Jan 20, 2005
 Time 12:24:26
 Instrument FGGE202
 Detector PID
 Column B
 Analysis# 29
 Tag sab HS
 Column Temp 59.0 C
 Det Temp 59.0 C
 Ambient Temp 30.0 C

1 x
 100 yr R14

METHOD:

Analysis Time 800.0 S
 PumpTime 5.0 S
 Back Flush 400.0 S
 Temperature 60.0 C
 Pressure 8.0 psi
 Inject Syringe, 100.0 uL
 PID State High Sense

INTEGRATION METHOD:

Manual Integration
 SlopeUp 0.0 mV/S
 SlopeDown 0.0 mV/S
 Min Height 0.0 mV
 Min Area 0.0 mVS
 FilterLevel 3
 Delay 80 Sec

PEAK REPORT:

#	Name	Conc (PPM)	Area (mVS)	Height (mV)	R.T. (S)	Status
1	Unknown		2.796	0.341		90.3
2	Unknown		231	42.1		93.9
3	Unknown		1325	239		110.5
4	Unknown		5.599	2.221		126.7

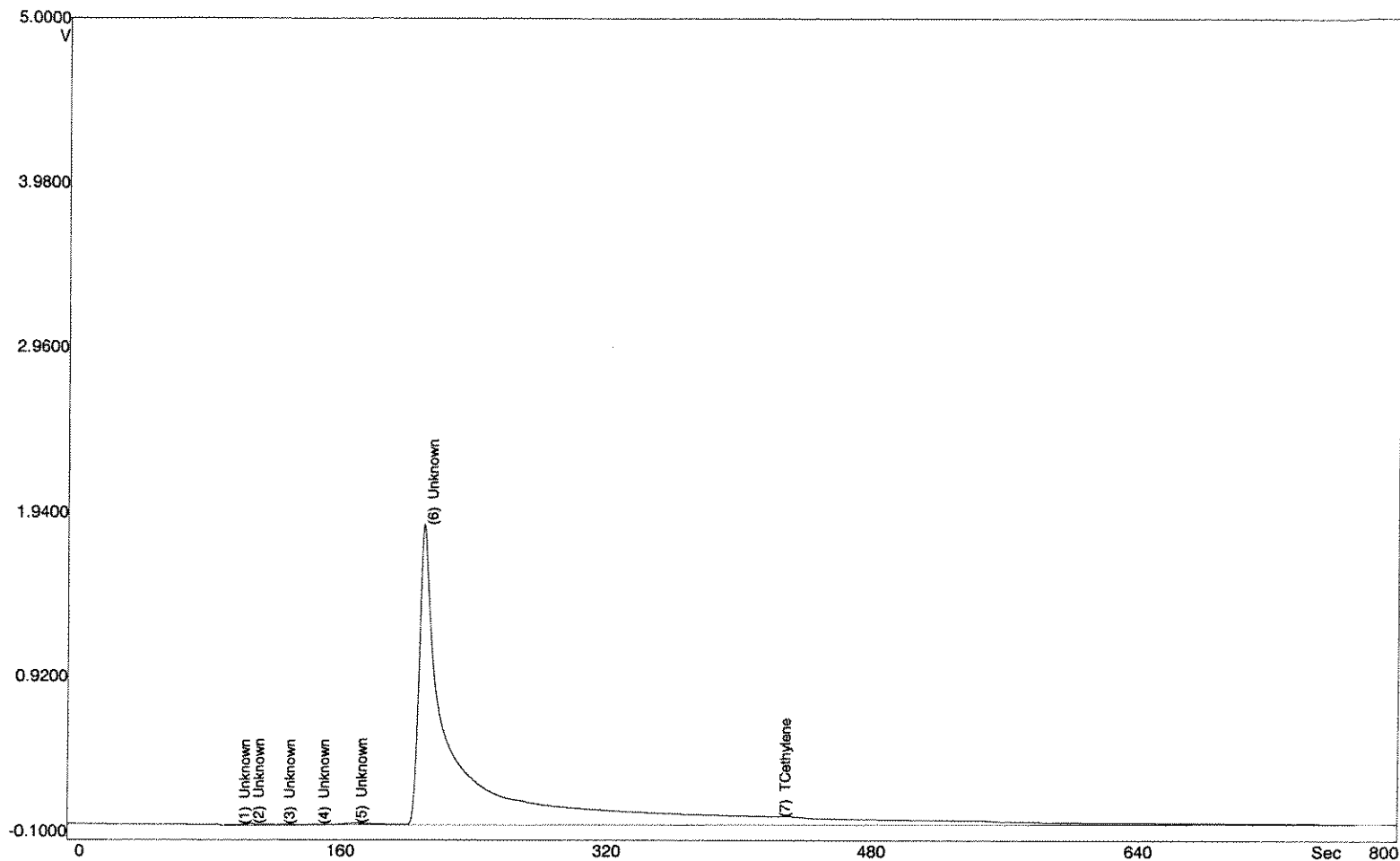
SiteChart Analysis Report - B5012014.PID

5 Unknown		9510	1559	149.4
6 Unknown		20264	512	213.2
7 Benzene	0.221	2482	80.6	388.3
8 TCethylene	0.567	5931	128	446.4
9 TetraCethylene		5.184	0.143	638.0

recalc'd

TCE = 0.141
PCE = ND

SiteChart Analysis Report - B5012015.PID



RESULTS:

Date Jan 20, 2005
 Time 12:39:18
 Instrument FGGE202
 Detector PID
 Column B
 Analysis# 31
 Tag sab HS
 Column Temp 60.0 C
 Det Temp 60.0 C
 Ambient Temp 30.0 C

14

100 mL

R 33

METHOD:

Analysis Time 800.0 S
 PumpTime 5.0 S
 Back Flush 400.0 S
 Temperature 60.0 C
 Pressure 8.0 psi
 Inject Syringe, 100.0 uL
 PID State High Sense

INTEGRATION METHOD:

Manual Integration
 SlopeUp 0.0 mV/S
 SlopeDown 0.0 mV/S
 Min Height 0.0 mV
 Min Area 0.0 mVS
 FilterLevel 3
 Delay 80 Sec

PEAK REPORT:

#	Name	Conc (PPM)	Area (mVS)	Height (mV)	R.T. (S)	Status
1	Unknown		45.2	7.310		101.3
2	Unknown		329	13.0		110.1
3	Unknown		1.982	0.297		128.5
4	Unknown		4.937	0.904		149.2

SiteChart Analysis Report - B5012015.PID

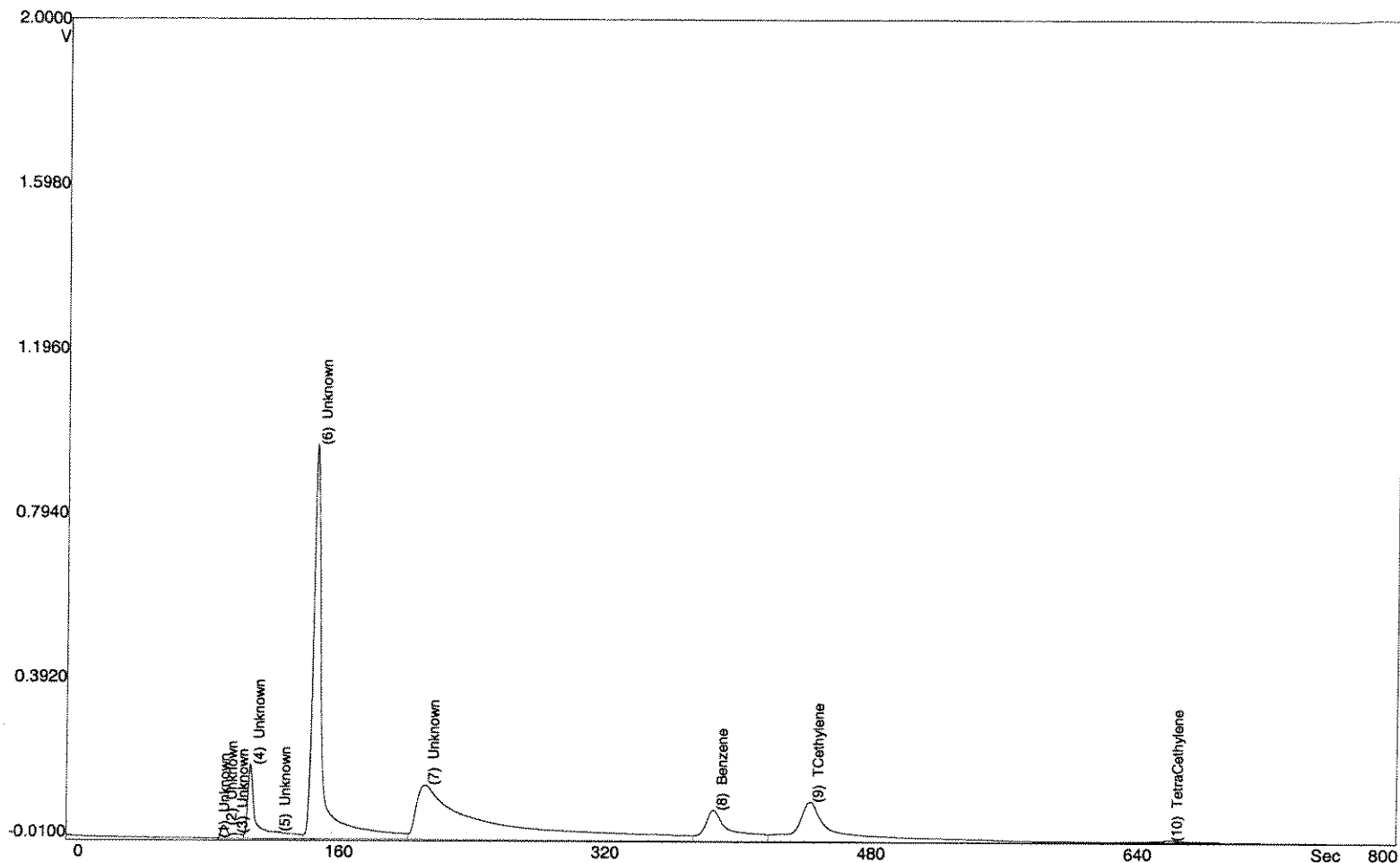
5 Unknown	314	8.757	171.6
6 Unknown	50255	1868	213.8
7 TCethylene	5.963	0.076	426.8

results of

TCE = ND

PCE = ND

SiteChart Analysis Report - B5012023.PID



RESULTS:

Date Jan 20, 2005
 Time 14:40:30
 Instrument FGGE202
 Detector PID
 Column B
 Analysis# 47
 Tag sab HS
 Column Temp 60.0 C
 Det Temp 60.0 C
 Ambient Temp 31.0 C

1x
 1004e

METHOD:

Analysis Time 800.0 S
 PumpTime 5.0 S
 Back Flush 400.0 S
 Temperature 60.0 C
 Pressure 8.0 psi
 Inject Syringe, 100.0 uL
 PID State High Sense

R-14 DOP
 (resampled)

INTEGRATION METHOD:

Manual Integration
 SlopeUp 0.0 mV/S
 SlopeDown 0.0 mV/S
 Min Height 0.0 mV
 Min Area 0.0 mVS
 FilterLevel 3
 Delay 80 Sec

PEAK REPORT:

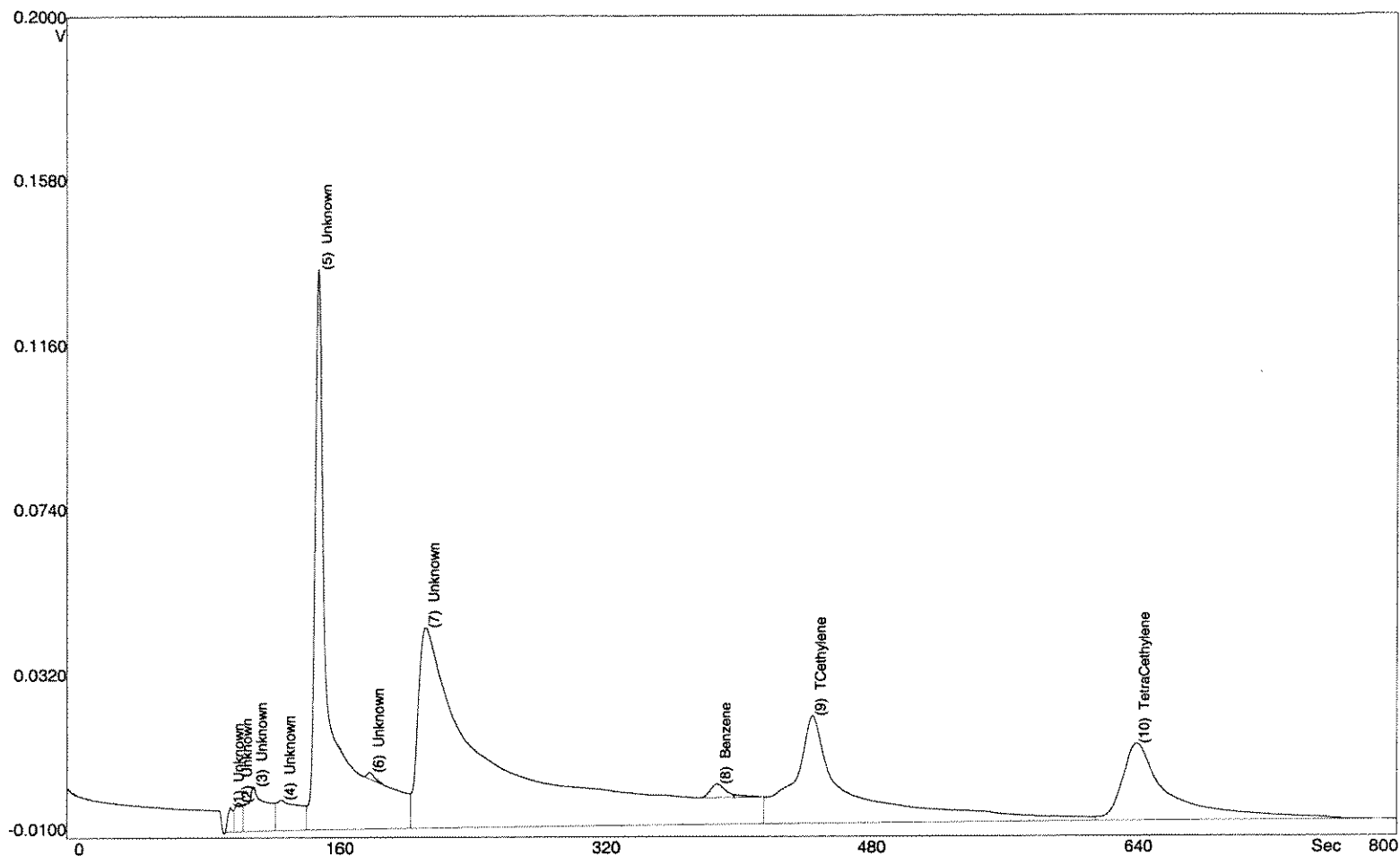
#	Name	Conc (PPM)	Area (mVS)	Height (mV)	R.T. (S)	Status
1	Unknown		1.427	0.136	90.1	
2	Unknown		227	32.3	94.7	
3	Unknown		5.422	2.568	101.2	
4	Unknown		1148	175	110.8	

SiteChart Analysis Report - B5012023.PID

5 Unknown		0.585	1.112	126.7
6 Unknown		6276	958	149.8
7 Unknown		6415	120	215.4
8 Benzene	0.126	1412	62.8	389.3
9 TCethylene	0.303	3167	80.2	447.2
10 TetraCethylene	0.008	112	3.449	662.6

rec'd
 TCE = 1.0075 → .08
 PCE = ND

SiteChart Analysis Report - B5012025.PID



RESULTS:

Date Jan 20, 2005
 Time 15:53:39
 Instrument FGGE202
 Detector PID
 Column B
 Analysis# 51
 Tag sab HS
 Column Temp 59.0 C
 Det Temp 59.0 C
 Ambient Temp 31.0 C

1x
 100µe

R-36

PCPUN/
 new
 vial

METHOD:

Analysis Time 800.0 S
 PumpTime 5.0 S
 Back Flush 400.0 S
 Temperature 60.0 C
 Pressure 8.0 psi
 Inject Syringe, 100.0 µL
 PID State High Sense

INTEGRATION METHOD:

Manual Integration
 SlopeUp 0.0 mV/S
 SlopeDown 0.0 mV/S
 Min Height 0.0 mV
 Min Area 0.0 mVS
 FilterLevel 3
 Delay 80 Sec

PEAK REPORT:

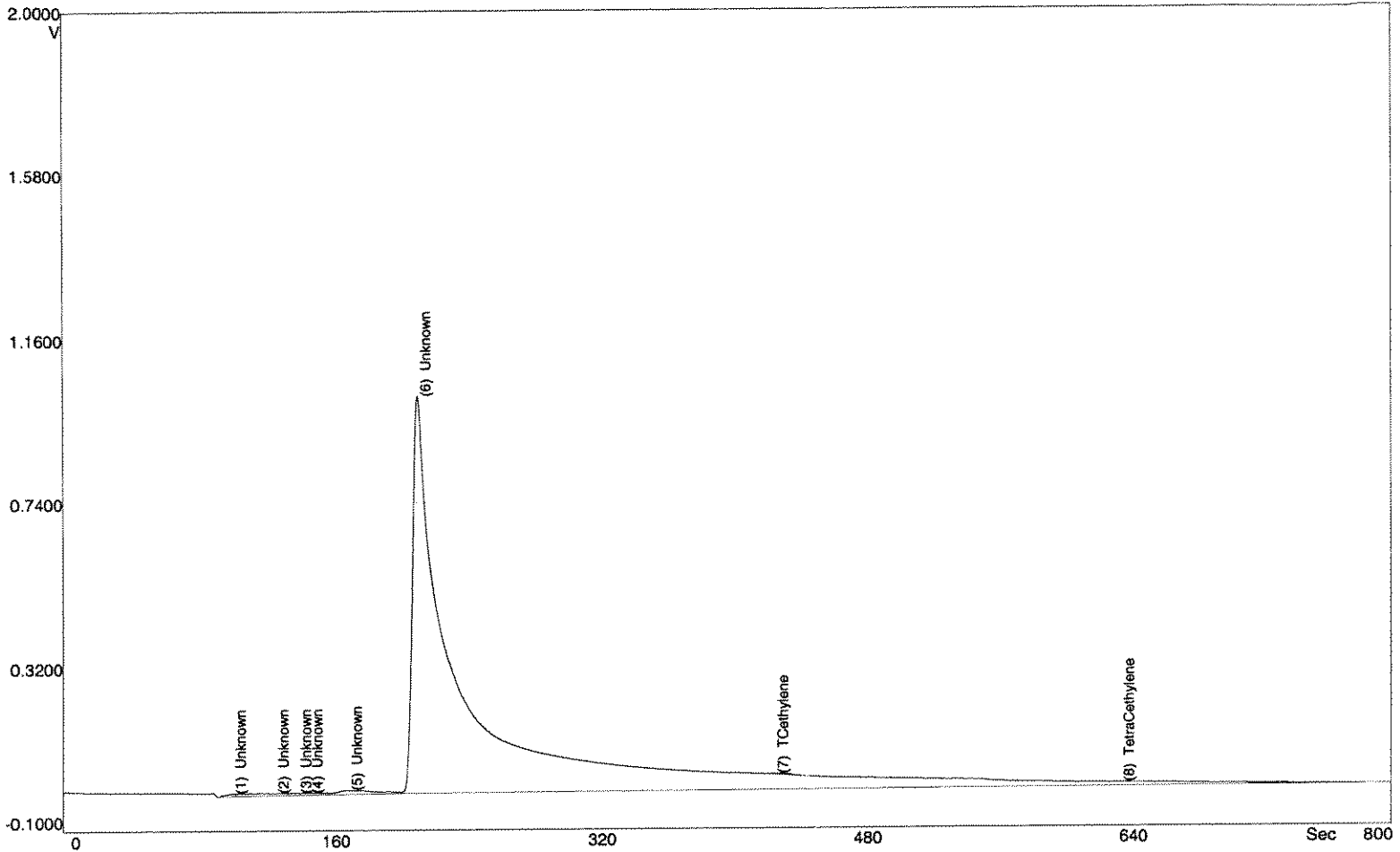
#	Name	Conc (PPM)	Area (mVS)	Height (mV)	R.T. (S)	Status
1	Unknown		24.0	6.491		98.0
2	Unknown		38.4	1.887		103.1
3	Unknown		157	10.7		112.0
4	Unknown		127	0.814		128.8

SiteChart Analysis Report - B5012025.PID

5 Unknown		1534	137	151.0
6 Unknown		9.057	0.969	182.4
7 Unknown		2913	42.6	215.6
8 Benzene	0.004	41.2	3.494	390.7
9 TCethylene	0.105	1103	20.9	448.4
10 TetraCethylene	0.049	665	19.0	642.2

Revised
 TCEs .026 ug/l
 PCE 0.011 ug/l

SiteChart Analysis Report - B5012026.PID



RESULTS:

Date Jan 20, 2005
 Time 16:17:03
 Instrument FGGE202
 Detector PID
 Column B
 Analysis# 53
 Tag sab HS
 Column Temp 59.0 C
 Det Temp 59.0 C
 Ambient Temp 30.0 C

1x
 100uL
 R-35

METHOD:

Analysis Time 800.0 S
 PumpTime 5.0 S
 Back Flush 400.0 S
 Temperature 60.0 C
 Pressure 8.0 psi
 Inject Syringe, 100.0 uL
 PID State High Sense

INTEGRATION METHOD:

Manual Integration
 SlopeUp 0.0 mV/S
 SlopeDown 0.0 mV/S
 Min Height 0.0 mV
 Min Area 0.0 mVS
 FilterLevel 3
 Delay 80 Sec

PEAK REPORT:

#	Name	Conc (PPM)	Area (mVS)	Height (mV)	R.T. (S)	Status
1	Unknown		47.0	7.220		101.6
2	Unknown		210	7.007		127.6
3	Unknown		41.6	0.064		141.1
4	Unknown		75.5	0.107		147.8

SiteChart Analysis Report - B5012026.PID

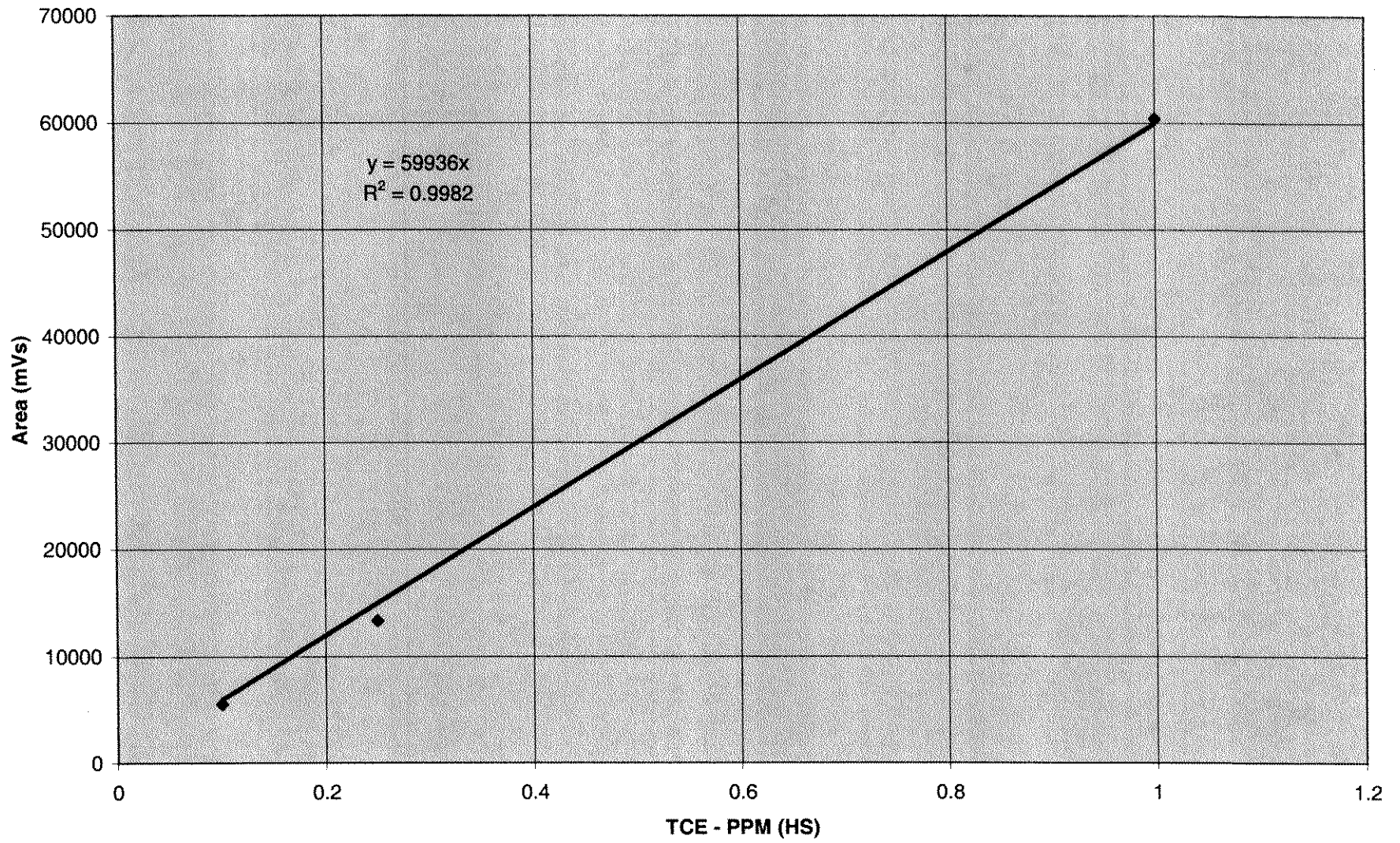
5 Unknown		319	6.308	171.8
6 Unknown		37386	1016	213.4
7 TCethylene	0.003	32.5	0.417	428.0
8 TetraCethylene		4.302	0.111	636.2

reval'd

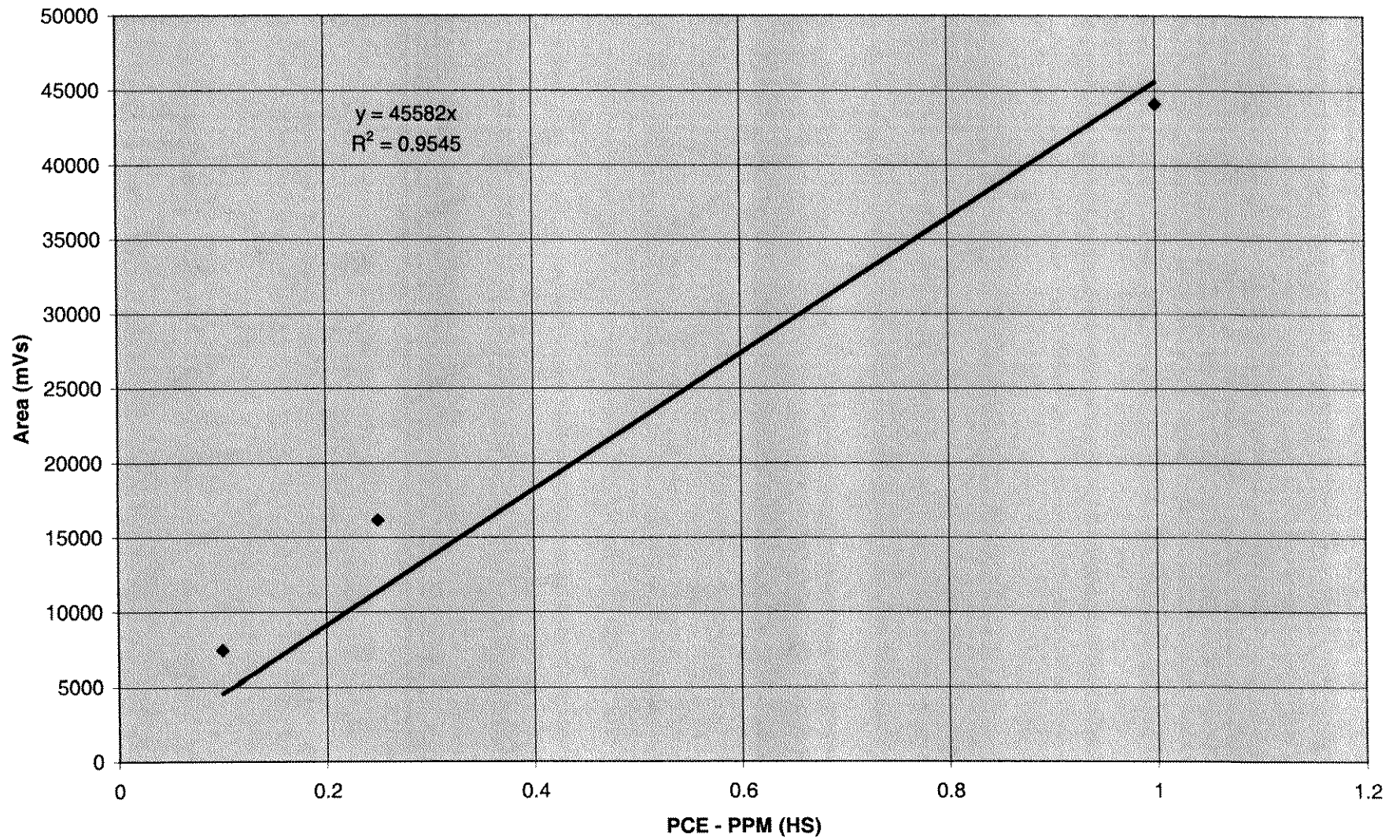
TCB's
PCR's

Voyager FPGC Daily Calibrations and Chromatograms
Sabana Abaja Industrial Site
January 21-22, 2005

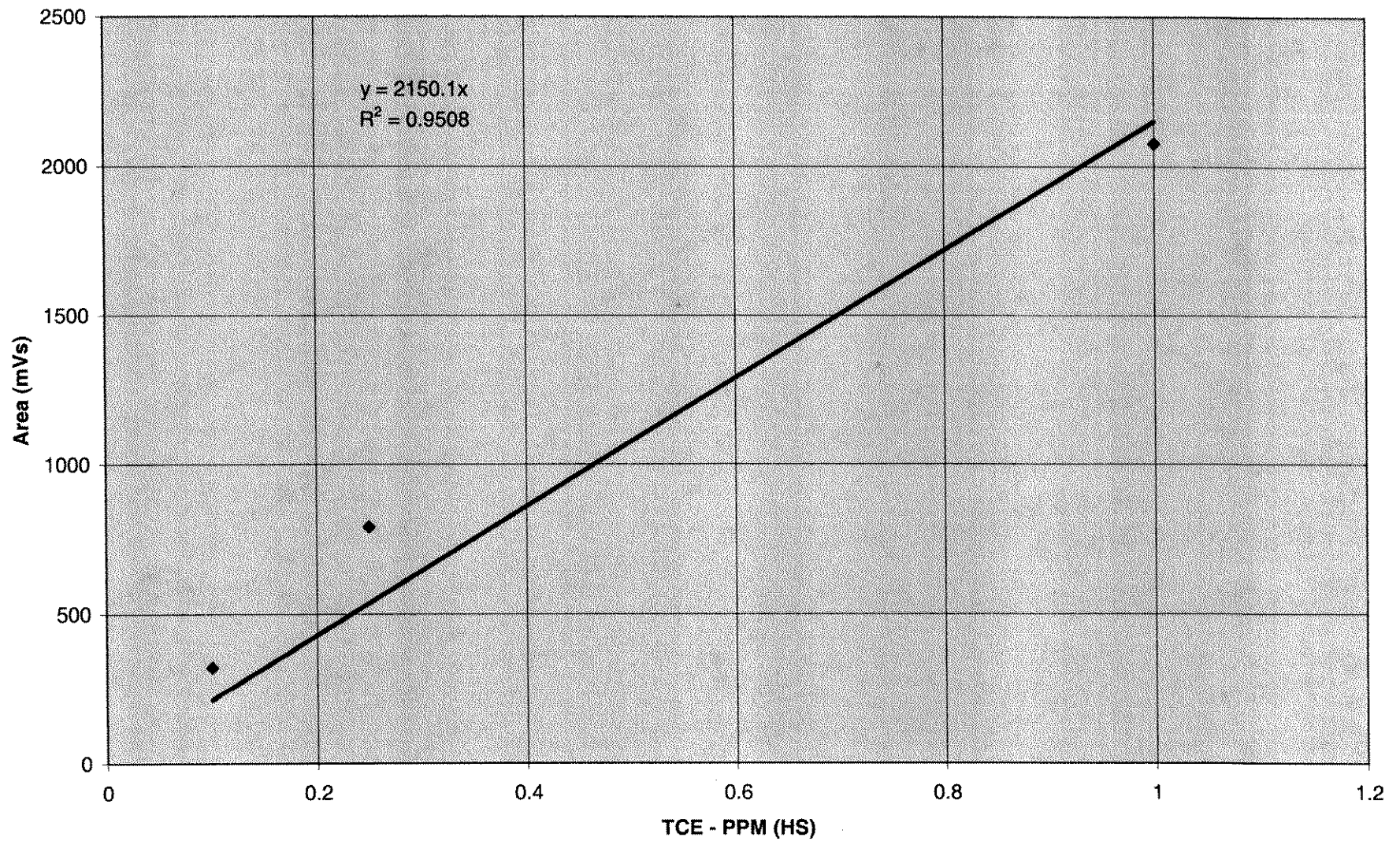
TCE via PID @ 01-21-05



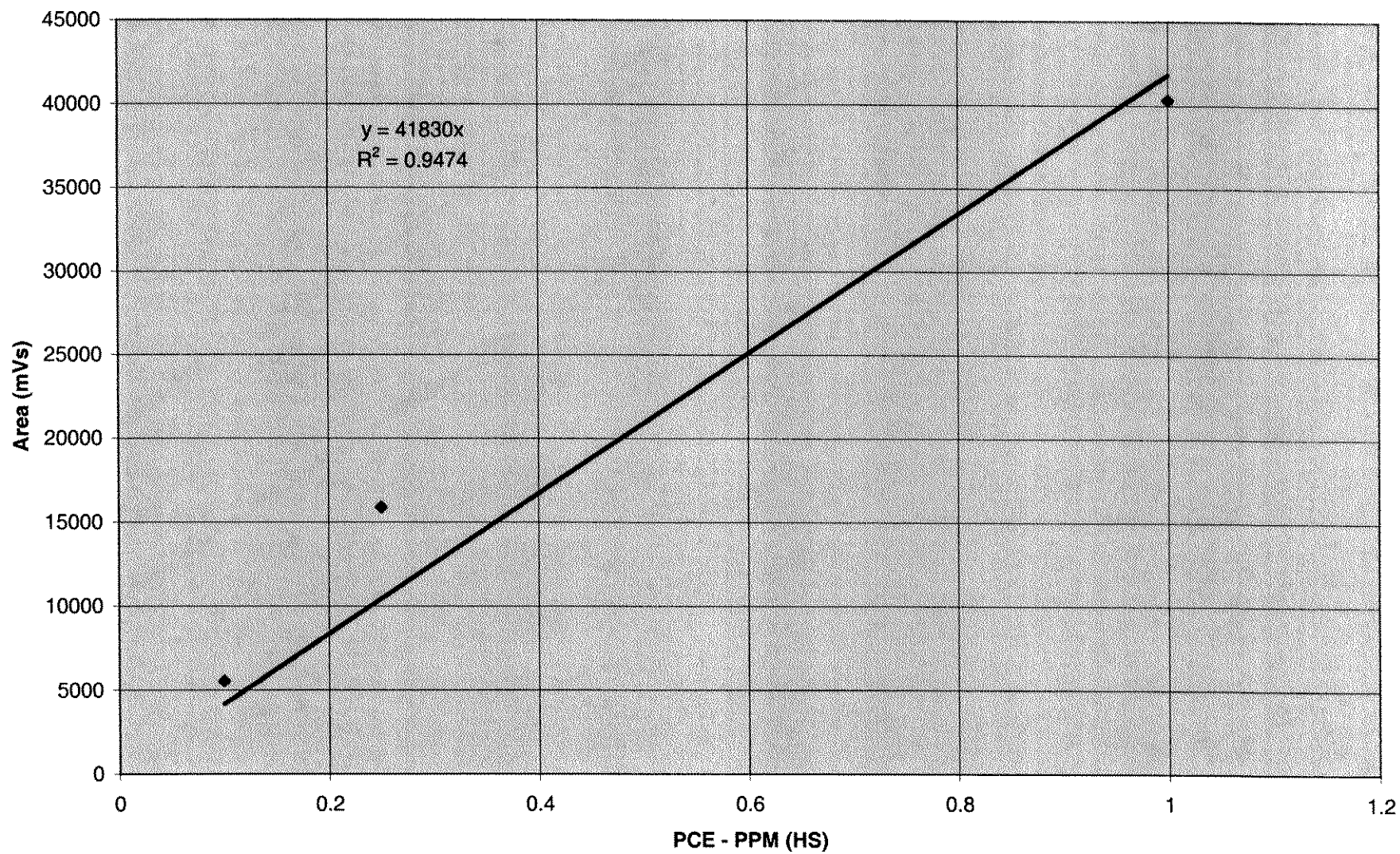
PCE via PID @ 01-21-05



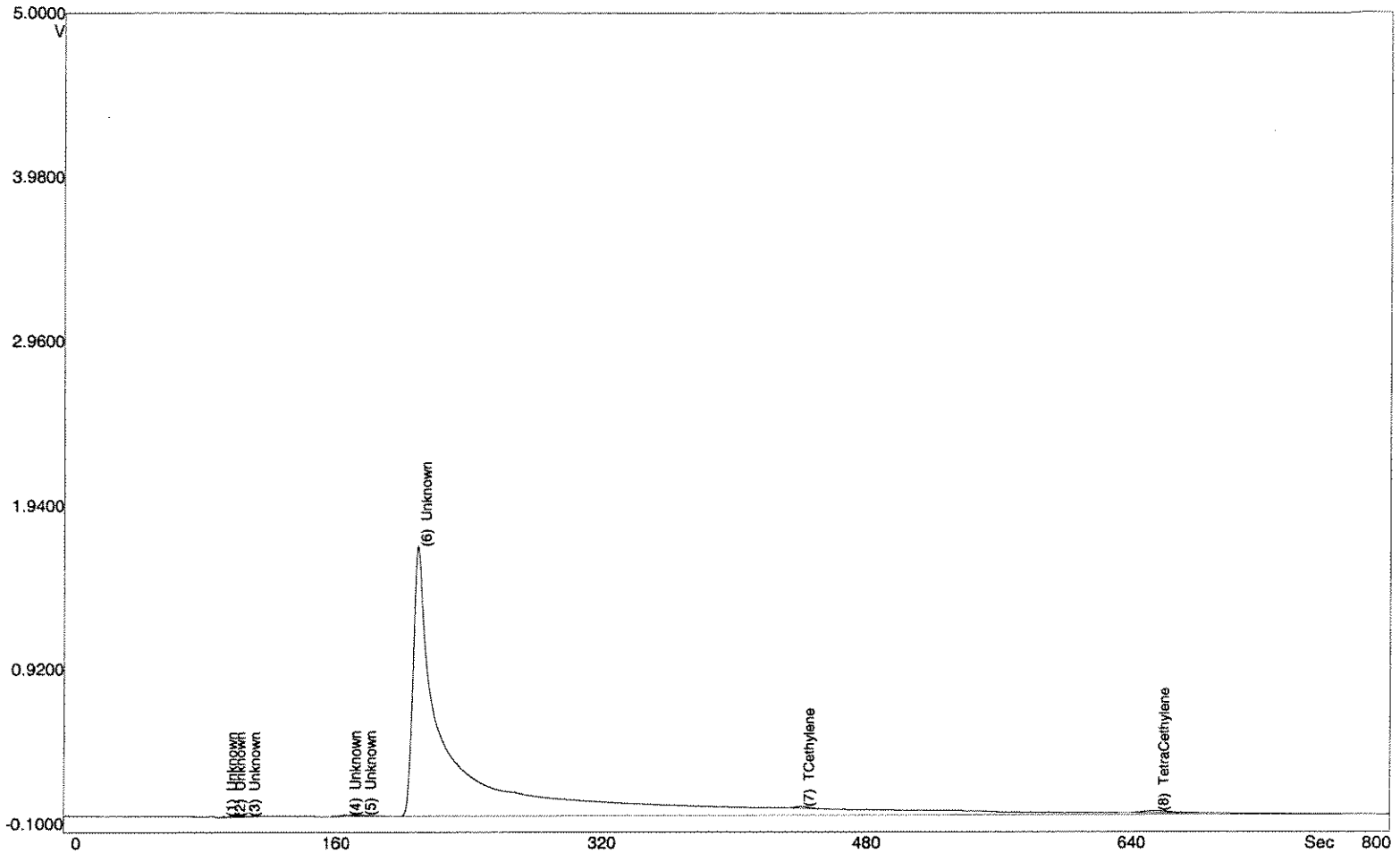
TCE via ECD @ 01-21-05



PCE via ECD @ 01-21-05



SiteChart Analysis Report - B5012104.PID



RESULTS:

Date Jan 21, 2005
 Time 10:39:37
 Instrument FGGE202
 Detector PID
 Column B
 Analysis# 9
 Tag sab HS
 Column Temp 60.0 C
 Det Temp 60.0 C
 Ambient Temp 30.0 C

*1x
 10042 R-45*

METHOD:

Analysis Time 800.0 S
 PumpTime 5.0 S
 Back Flush 400.0 S
 Temperature 60.0 C
 Pressure 8.0 psi
 Inject Syringe, 100.0 uL
 PID State High Sense

INTEGRATION METHOD:

Manual Integration
 SlopeUp 0.1 mV/S
 SlopeDown 0.1 mV/S
 Min Height 0.0 mV
 Min Area 0.0 mVS
 FilterLevel 3
 Delay 80 Sec

PEAK REPORT:

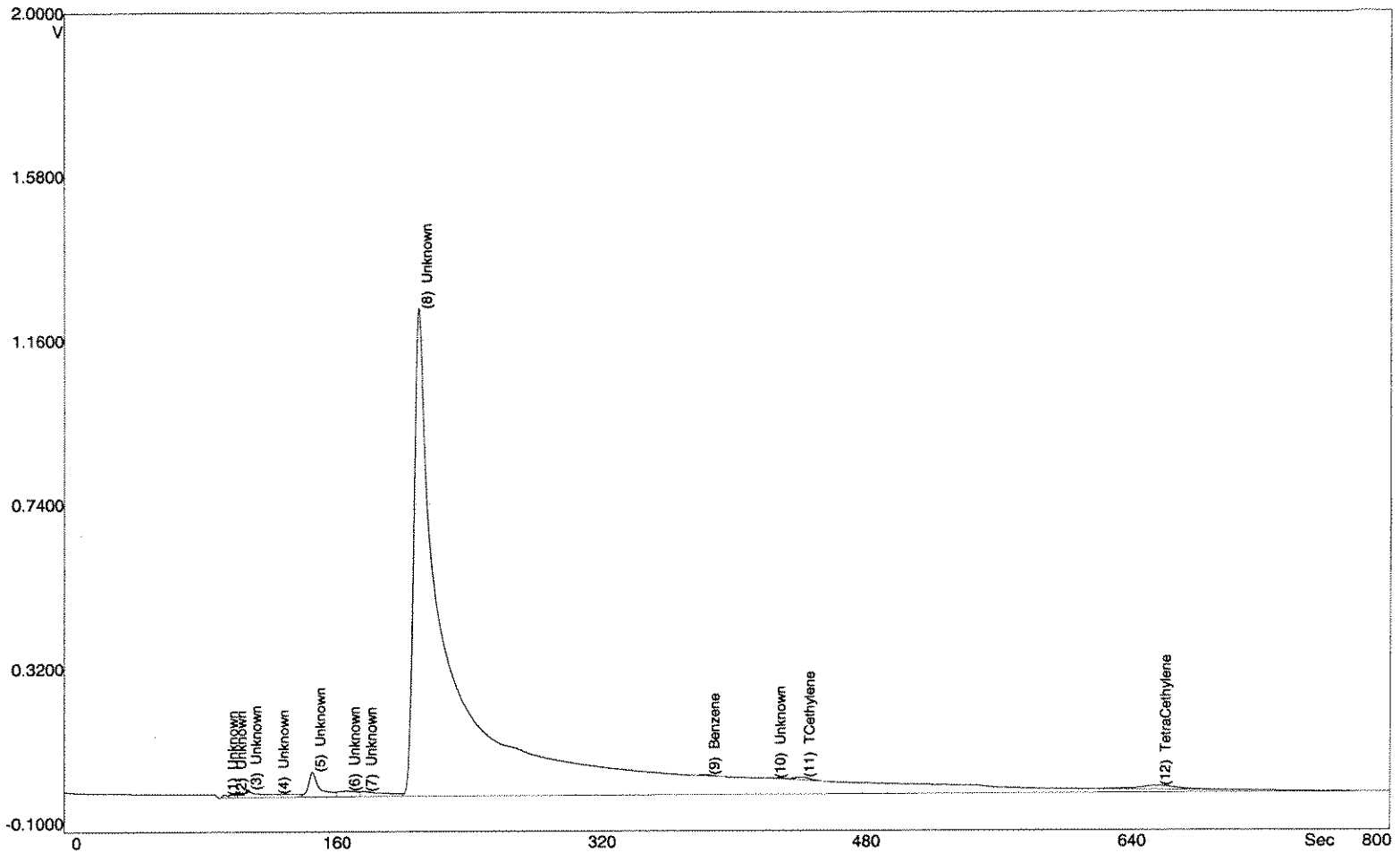
#	Name	Conc (PPM)	Area (mVS)	Height (mV)	R.T. (S)	Status
1	Unknown		23.9	7.715		96.3
2	Unknown		25.0	1.717		101.2
3	Unknown		43.0	6.972		110.1
4	Unknown		85.8	8.109		171.0

SiteChart Analysis Report - B5012104.PID

5 Unknown		65.7	0.592	180.2
6 Unknown		47470	1689	213.0
7 TCethylene	0.002	99.0	7.577	444.4
8 TetraCethylene	0.006	303	12.0	658.4

results
TCB = ND
PCB = ND

SiteChart Analysis Report - B5012105.PID



RESULTS:

Date Jan 21, 2005
 Time 10:59:27
 Instrument FGGE202
 Detector PID
 Column B
 Analysis# 11
 Tag sab HS
 Column Temp 60.0 C
 Det Temp 60.0 C
 Ambient Temp 30.0 C

METHOD:

Analysis Time 800.0 S
 PumpTime 5.0 S
 Back Flush 400.0 S
 Temperature 60.0 C
 Pressure 8.0 psi
 Inject Syringe, 100.0 uL
 PID State High Sense

INTEGRATION METHOD:

Manual Integration
 SlopeUp 0.1 mV/S
 SlopeDown 0.1 mV/S
 Min Height 0.0 mV
 Min Area 0.0 mVS
 FilterLevel 3
 Delay 80 Sec

PEAK REPORT:

#	Name	Conc (PPM)	Area (mVS)	Height (mV)	R.T. (S)	Status
1	Unknown		26.5	7.715	96.3	
2	Unknown		35.5	1.835	101.2	
3	Unknown		342	19.1	110.3	
4	Unknown		1.153	0.427	126.8	

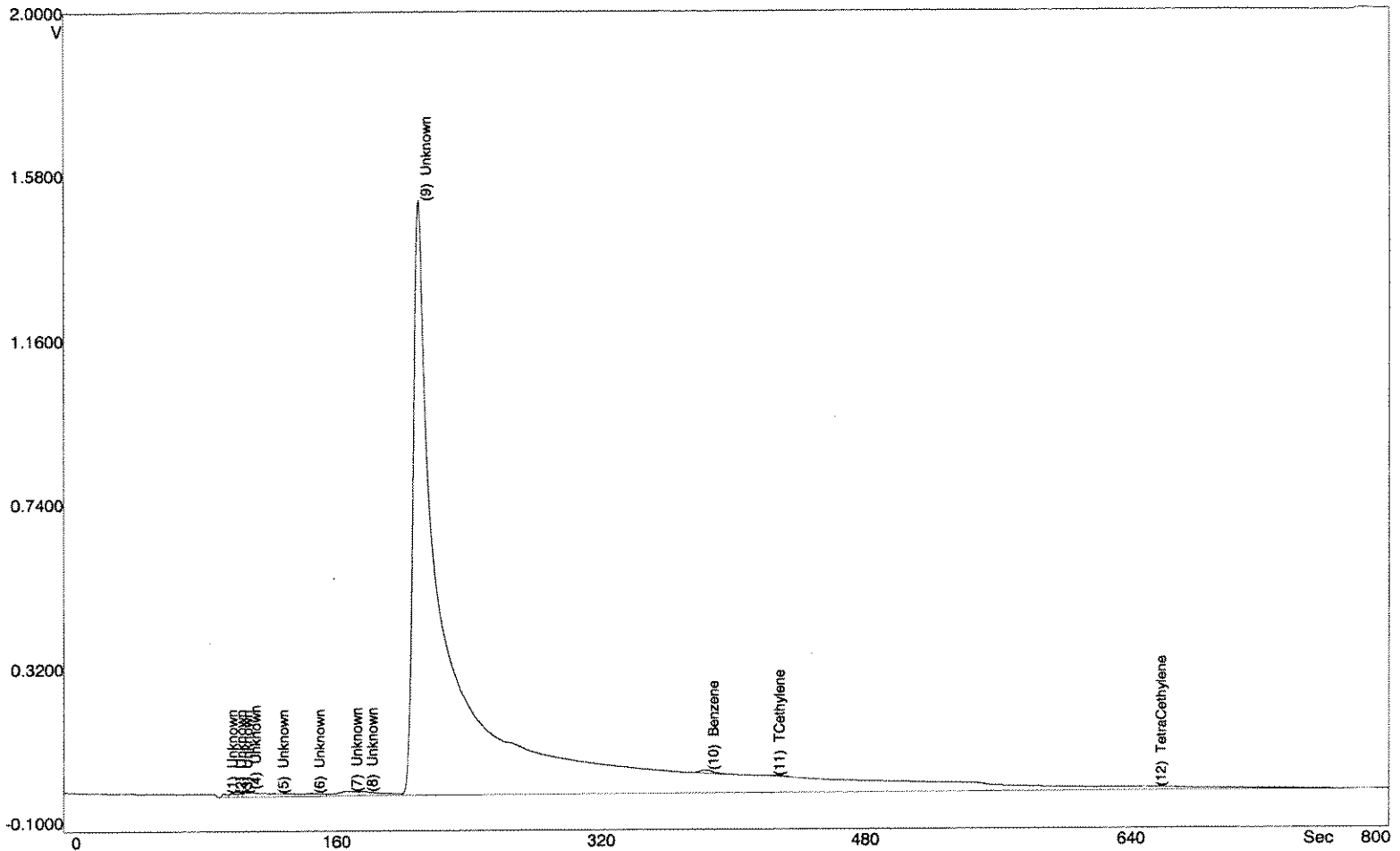
1X
 100uL
 R 46

SiteChart Analysis Report - B5012105.PID

5 Unknown		499	58.0	149.0
6 Unknown		182	3.134	169.8
7 Unknown		218	0.651	179.8
8 Unknown		38392	1246	212.8
9 Benzene	0.002	26.6	1.931	387.0
10 Unknown		17.3	0.405	427.2
11 TCethylene	0.001	70.6	2.969	444.8
12 TetraCethylene	0.005	286	8.546	659.0

received
TEB's NO
PCB's NO

SiteChart Analysis Report - B5012106.PID



RESULTS:

Date Jan 21, 2005
 Time 11:14:04
 Instrument FGGE202
 Detector PID
 Column B
 Analysis# 13
 Tag sab HS
 Column Temp 59.0 C
 Det Temp 59.0 C
 Ambient Temp 31.0 C

1X
 1004e

R-49

METHOD:

Analysis Time 800.0 S
 PumpTime 5.0 S
 Back Flush 400.0 S
 Temperature 60.0 C
 Pressure 8.0 psi
 Inject Syringe, 100.0 uL
 PID State High Sense

INTEGRATION METHOD:

Manual Integration
 SlopeUp 0.1 mV/S
 SlopeDown 0.1 mV/S
 Min Height 0.0 mV
 Min Area 0.0 mVS
 FilterLevel 3
 Delay 80 Sec

PEAK REPORT:

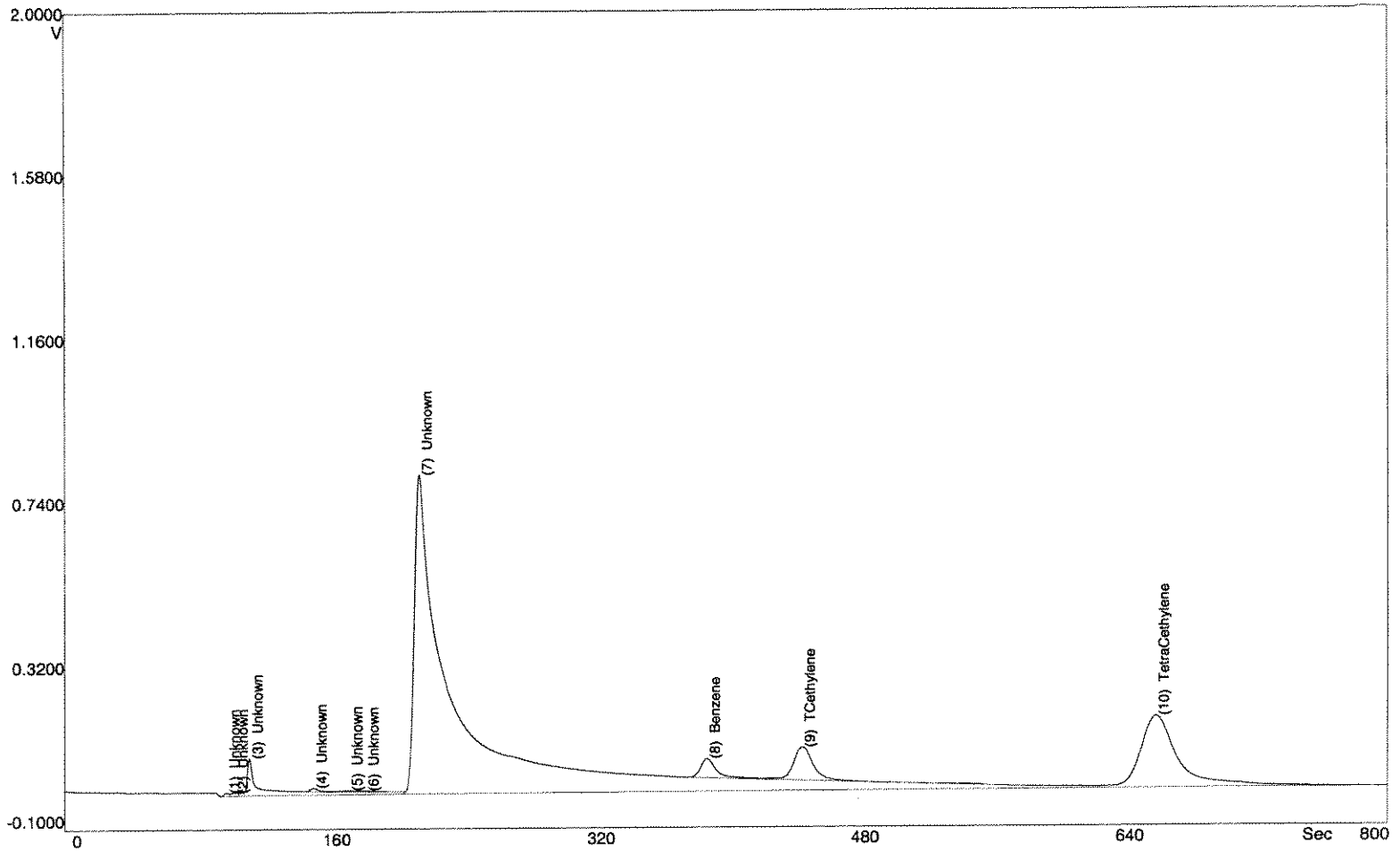
#	Name	Conc (PPM)	Area (mVS)	Height (mV)	R.T. (S)	Status
1	Unknown		33.8	10.0		96.3
2	Unknown		43.2	2.989		101.3
3	Unknown		22.9	0.243		105.5
4	Unknown		401	16.3		110.3

SiteChart Analysis Report - B5012106.PID

5 Unknown		0.737	0.174	127.1
6 Unknown		5.901	1.172	149.0
7 Unknown		162	5.986	171.2
8 Unknown		168	0.832	180.8
9 Unknown		42528	1519	213.2
10 Benzene	0.007	76.6	6.280	387.0
11 TCethylene		22.0	0.173	427.2
12 TetraCethylene		6.849	0.254	657.2

Re Calc'd
TCB = ND
PCE = ND

SiteChart Analysis Report - B5012107.PID



RESULTS:

Date Jan 21, 2005
 Time 11:43:48
 Instrument FGGE202
 Detector PID
 Column B
 Analysis# 15
 Tag sab HS
 Column Temp 60.0 C
 Det Temp 60.0 C
 Ambient Temp 31.0 C

METHOD:

Analysis Time 800.0 S
 PumpTime 5.0 S
 Back Flush 400.0 S
 Temperature 60.0 C
 Pressure 8.0 psi
 Inject Syringe, 100.0 uL
 PID State High Sense

INTEGRATION METHOD:

Manual Integration
 SlopeUp 0.1 mV/S
 SlopeDown 0.1 mV/S
 Min Height 0.0 mV
 Min Area 0.0 mVS
 FilterLevel 3
 Delay 80 Sec

PEAK REPORT:

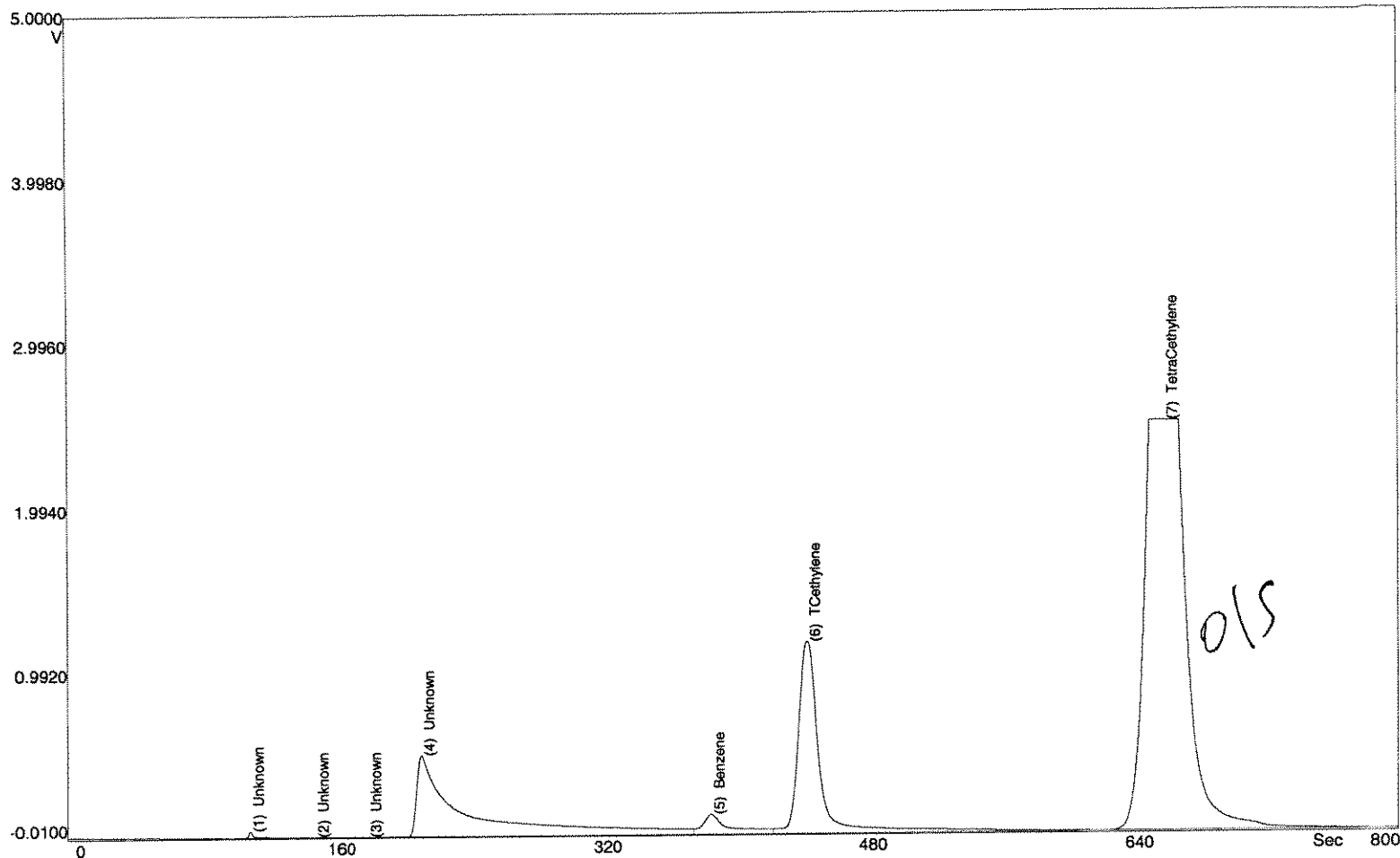
#	Name	Conc (PPM)	Area (mVS)	Height (mV)	R.T. (S)	Status
1	Unknown		29.9	8.188		97.6
2	Unknown		36.0	2.085		102.5
3	Unknown		1213	95.6		111.5
4	Unknown		48.8	8.567		150.2

SiteChart Analysis Report - B5012107.PID

5 Unknown	26.6	1.949	171.6
6 Unknown	20.6	0.391	181.6
7 Unknown	26854	816	213.8
8 Benzene	0.051 568	48.1	388.3
9 TCethylene	0.024 1290	80.0	446.0
10 TetraCethylene	0.093 4969	181	659.6

reading
 TCE 0.022 µg/l
 PCR 0.011 → 0.11 µg/l

SiteChart Analysis Report - B5012112.PID



RESULTS:

Date Jan 21, 2005
 Time 12:57:52
 Instrument FGGE202
 Detector PID
 Column B
 Analysis# 25
 Tag sab HS
 Column Temp 60.0 C
 Det Temp 60.0 C
 Ambient Temp 31.0 C

20X

SMP

R-48

METHOD:

Analysis Time 800.0 S
 PumpTime 5.0 S
 Back Flush 400.0 S
 Temperature 60.0 C
 Pressure 8.0 psi
 Inject Syringe, 100.0 uL
 PID State High Sense

INTEGRATION METHOD:

Manual Integration
 SlopeUp 0.1 mV/S
 SlopeDown 0.1 mV/S
 Min Height 0.0 mV
 Min Area 0.0 mVS
 FilterLevel 3
 Delay 80 Sec

PEAK REPORT:

#	Name	Conc (PPM)	Area (mVS)	Height (mV)	R.T. (S)	Status
1	Unknown		186	40.0	109.3	
2	Unknown		6.987	1.458	148.2	
3	Unknown		0.832	0.201	179.8	
4	Unknown		16524	495	212.0	

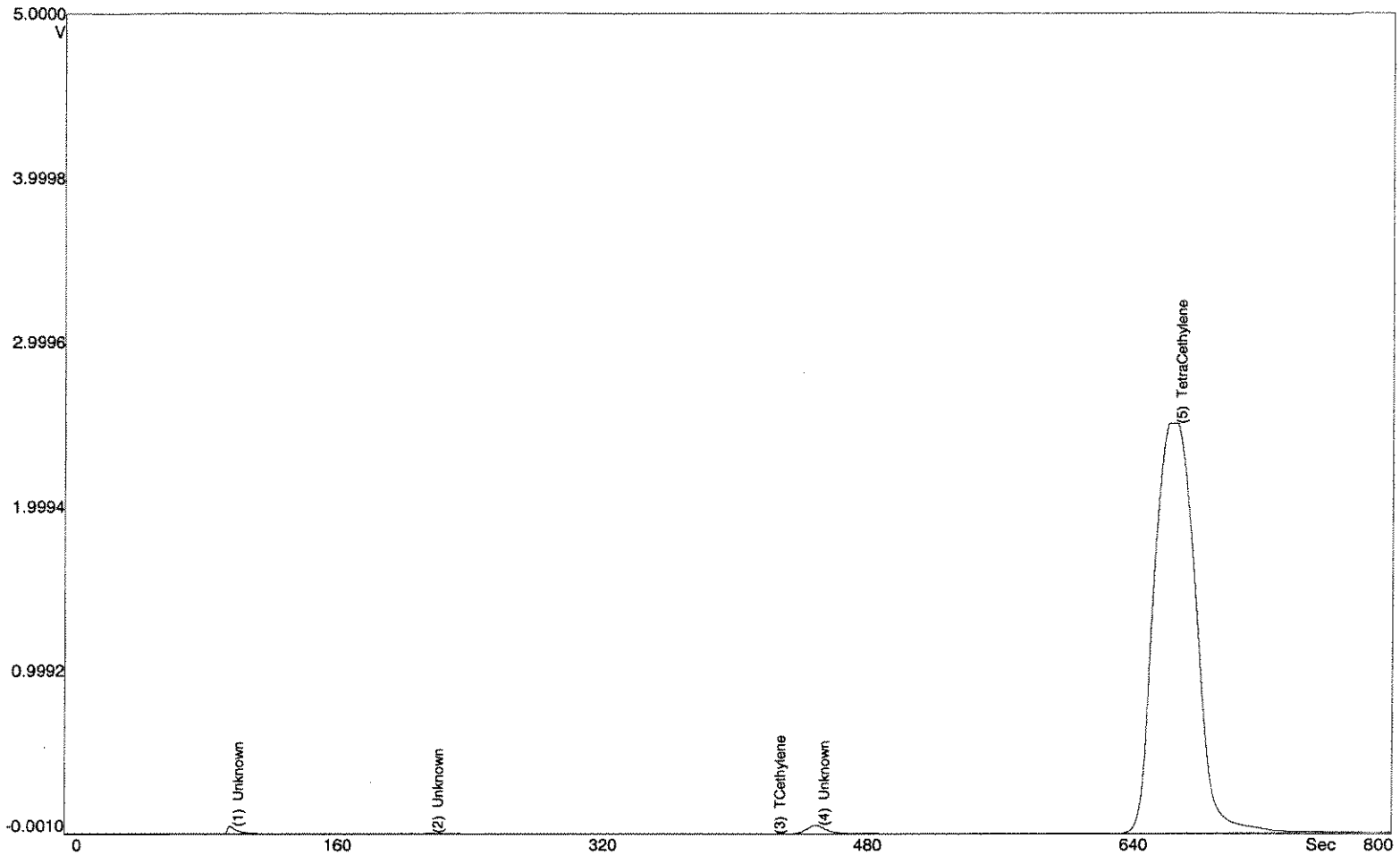
SiteChart Analysis Report - B5012112.PID

5 Benzene	0.197	2208	89.6	386.3
6 TCethylene	0.326	17371	1142	444.4
7 TetraCethylene	1.886	100386	2501	659.0

- 6.52
- 37.77

06.82
TCE = 5.0 ug/l
PCE = 44/05 ug/l (not used)

SiteChart Analysis Report - B5012112.ECD



RESULTS:

Date Jan 21, 2005
 Time 12:57:52
 Instrument FGGE202
 Detector ECD
 Column B
 Analysis# 26
 Tag sab HS
 Column Temp 60.0 C
 Det Temp 60.0 C
 Ambient Temp 31.0 C

METHOD:

Analysis Time 800.0 S
 PumpTime 5.0 S
 Back Flush 400.0 S
 Temperature 60.0 C
 Pressure 8.0 psi
 Inject Syringe, 100.0 uL

INTEGRATION METHOD:

Manual Integration
 SlopeUp 0.1 mV/S
 SlopeDown 0.1 mV/S
 Min Height 0.0 mV
 Min Area 0.0 mVS
 FilterLevel 3
 Delay 80 Sec

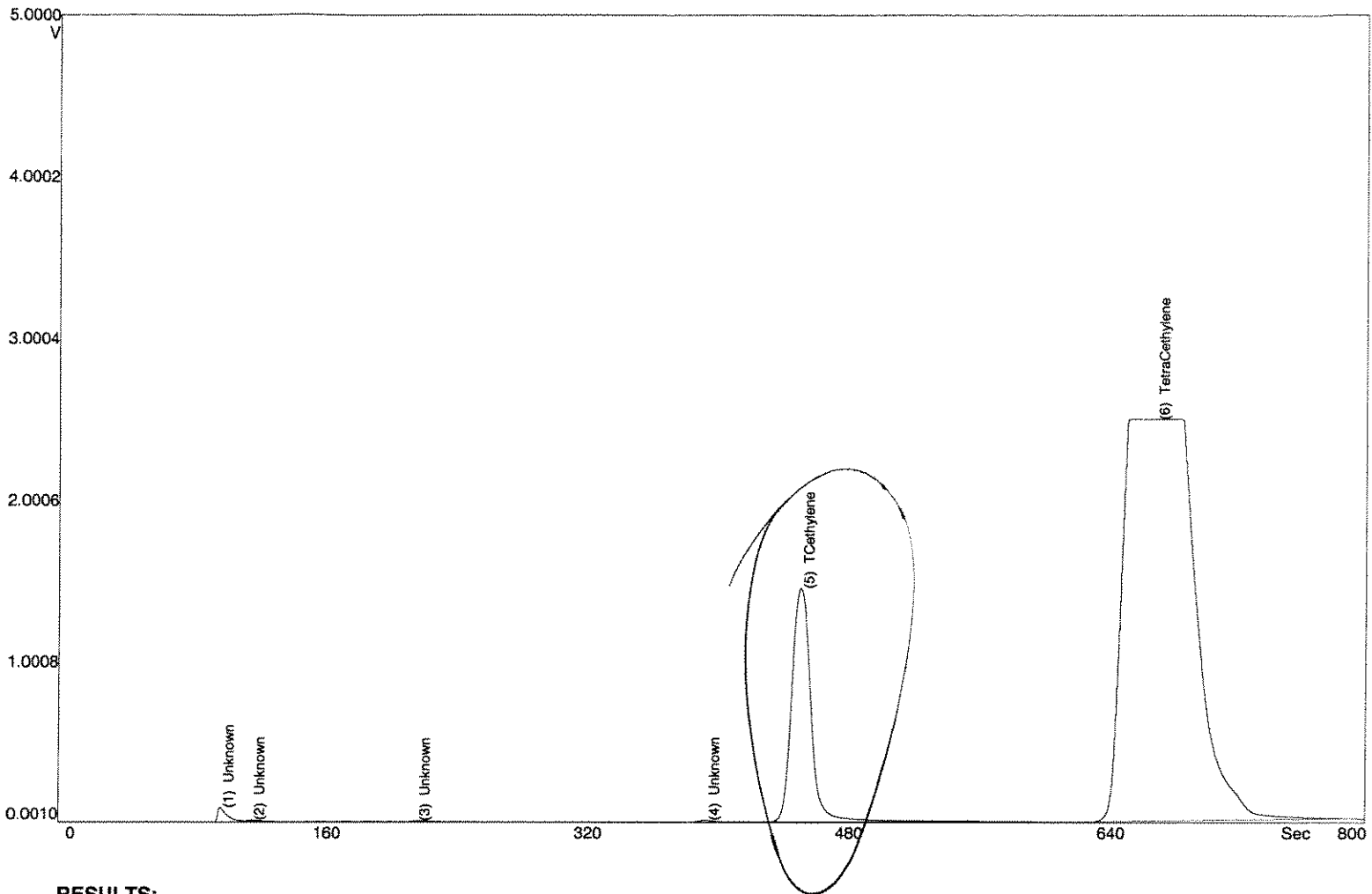
PEAK REPORT:

#	Name	Conc (PPM)	Area (mVS)	Height (mV)	R.T. (S)	Status
1	Unknown		305	45.2		99.1
2	Unknown		32.6	2.589		219.6
3	TCethylene		0.409	0.150		426.4
4	Unknown		745	50.6		452.8
5	TetraCethylene	2.534	74904	2500		667.4

20x
 Syringe
 R4B
 6.9
 > 35.8 %

recalc'd
TCh = 6.9 ug/l
pCh = 736 o/s ug/l

SiteChart Analysis Report - B5012116.ECD



RESULTS:

Date Jan 21, 2005
 Time 14:32:25
 Instrument FGGE202
 Detector ECD
 Column B
 Analysis# 34
 Tag sab HS
 Column Temp 59.0 C
 Det Temp 59.0 C
 Ambient Temp 32.0 C

METHOD:

Analysis Time 800.0 S
 PumpTime 5.0 S
 Back Flush 400.0 S
 Temperature 60.0 C
 Pressure 8.0 psi
 Inject Syringe, 100.0 uL

INTEGRATION METHOD:

Manual Integration
 SlopeUp 0.1 mV/S
 SlopeDown 0.1 mV/S
 Min Height 0.0 mV
 Min Area 0.0 mVS
 FilterLevel 3
 Delay 80 Sec

PEAK REPORT:

#	Name	Conc (PPM)	Area (mVS)	Height (mV)	R.T. (S)	Status
1	Unknown		651	89.2		99.1
2	Unknown		27.5	4.973		118.1
3	Unknown		69.9	5.475		219.4
4	Unknown		127	10.7		396.7
5	TCethylene	14.5	20052	1448		454.0

SiteChart Analysis Report - B5012116.ECD

6 TetraCethylene

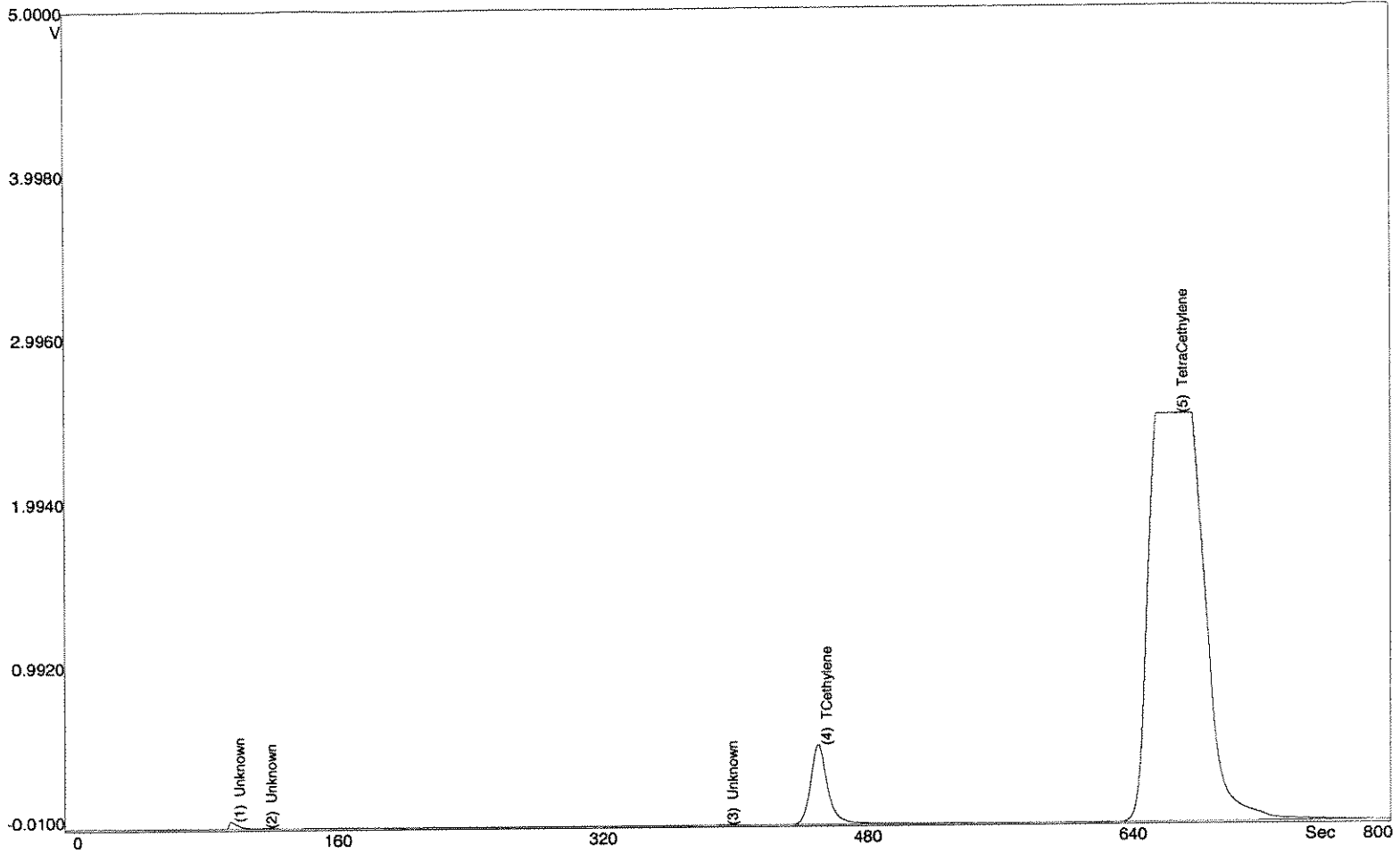
8.340 246521

2494

670.4

PCR = revised
93.3 ug/l
PCR = 58.9 ug/l (not used)
ots

SiteChart Analysis Report - B5012117.ECD



RESULTS:

Date Jan 21, 2005
 Time 14:47:22
 Instrument FGGE202
 Detector ECD
 Column B
 Analysis# 36
 Tag sab HS
 Column Temp 60.0 C
 Det Temp 59.0 C
 Ambient Temp 33.0 C

METHOD:

Analysis Time 800.0 S
 PumpTime 5.0 S
 Back Flush 400.0 S
 Temperature 60.0 C
 Pressure 8.0 psi
 Inject Syringe, 100.0 uL

INTEGRATION METHOD:

Manual Integration
 SlopeUp 0.1 mV/S
 SlopeDown 0.1 mV/S
 Min Height 0.0 mV
 Min Area 0.0 mVS
 FilterLevel 3
 Delay 80 Sec

PEAK REPORT:

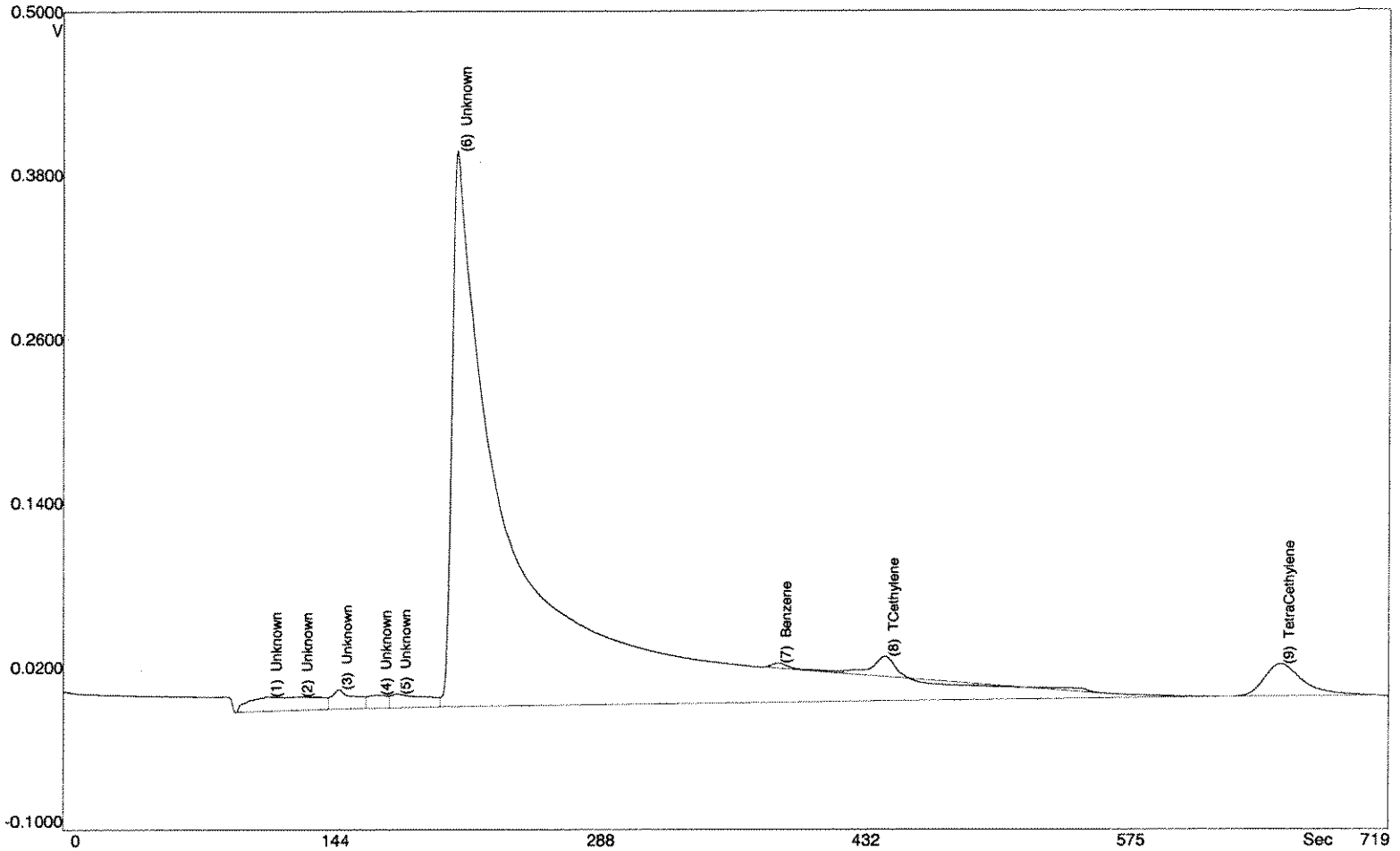
#	Name	Conc (PPM)	Area (mVS)	Height (mV)	R.T. (S)	Status
1	Unknown		288	44.7		99.5
2	Unknown		52.7	3.293		118.9
3	Unknown		49.7	4.088		397.3
4	TCethylene	4.472	6202	491		454.4
5	TetraCethylene	4.746	140304	2502		669.8

204
 54e
 R 50

57.7
 67.1 o/s

revised
PE = 58 (not used)
PCE = 670/s (used)

SiteChart Analysis Report - B5012121.PID



RESULTS:

Date Jan 21, 2005
 Time 15:50:50
 Instrument FGGE202
 Detector PID
 Column B
 Analysis# 43
 Tag sab HS
 Column Temp 60.0 C
 Det Temp 60.0 C
 Ambient Temp 32.0 C

1x

1004P

R52

METHOD:

Analysis Time 800.0 S
 PumpTime 5.0 S
 Back Flush 400.0 S
 Temperature 60.0 C
 Pressure 8.0 psi
 Inject Syringe, 100.0 uL
 PID State High Sense

INTEGRATION METHOD:

Manual Integration
 SlopeUp 0.1 mV/S
 SlopeDown 0.1 mV/S
 Min Height 0.0 mV
 Min Area 0.0 mVS
 FilterLevel 3
 Delay 80 Sec

PEAK REPORT:

#	Name	Conc (PPM)	Area (mVS)	Height (mV)	R.T. (S)	Status
1	Unknown		434	11.2	110.8	
2	Unknown		0.927	0.265	127.7	
3	Unknown		204	5.476	149.2	
4	Unknown		116	0.995	170.4	

SiteChart Analysis Report - B5012121.PID

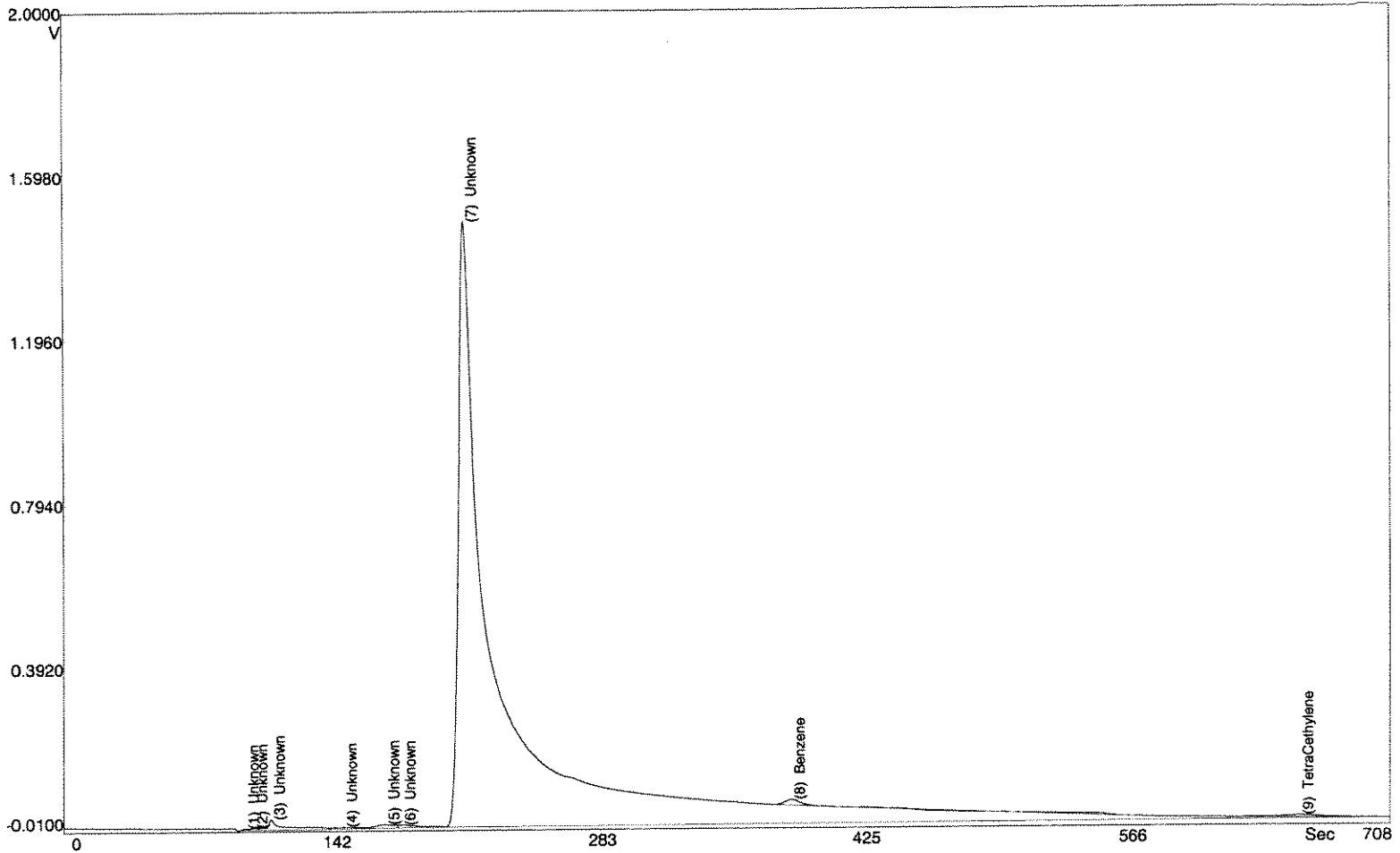
5 Unknown		224	1.839	180.8
6 Unknown		17583	400	213.0
7 Benzene	0.005	53.9	2.926	387.3
8 TCethylene	0.003	162	10.5	445.2
9 TetraCethylene	0.011	582	23.9	660.8

revised

TCE \rightarrow .0027 \rightarrow N.Y.

PCE \rightarrow .0127 \rightarrow 0.013 ug/l

SiteChart Analysis Report - B5012122.PID



RESULTS:

Date Jan 21, 2005
 Time 16:04:16
 Instrument FGGE202
 Detector PID
 Column B
 Analysis# 45
 Tag sab HS
 Column Temp 59.0 C
 Det Temp 59.0 C
 Ambient Temp 32.0 C

1x
 1004e
 R 5 3

METHOD:

Analysis Time 800.0 S
 PumpTime 5.0 S
 Back Flush 400.0 S
 Temperature 60.0 C
 Pressure 8.0 psi
 Inject Syringe, 100.0 uL
 PID State High Sense

INTEGRATION METHOD:

Manual Integration
 SlopeUp 0.1 mV/S
 SlopeDown 0.1 mV/S
 Min Height 0.0 mV
 Min Area 0.0 mVS
 FilterLevel 3
 Delay 80 Sec

PEAK REPORT:

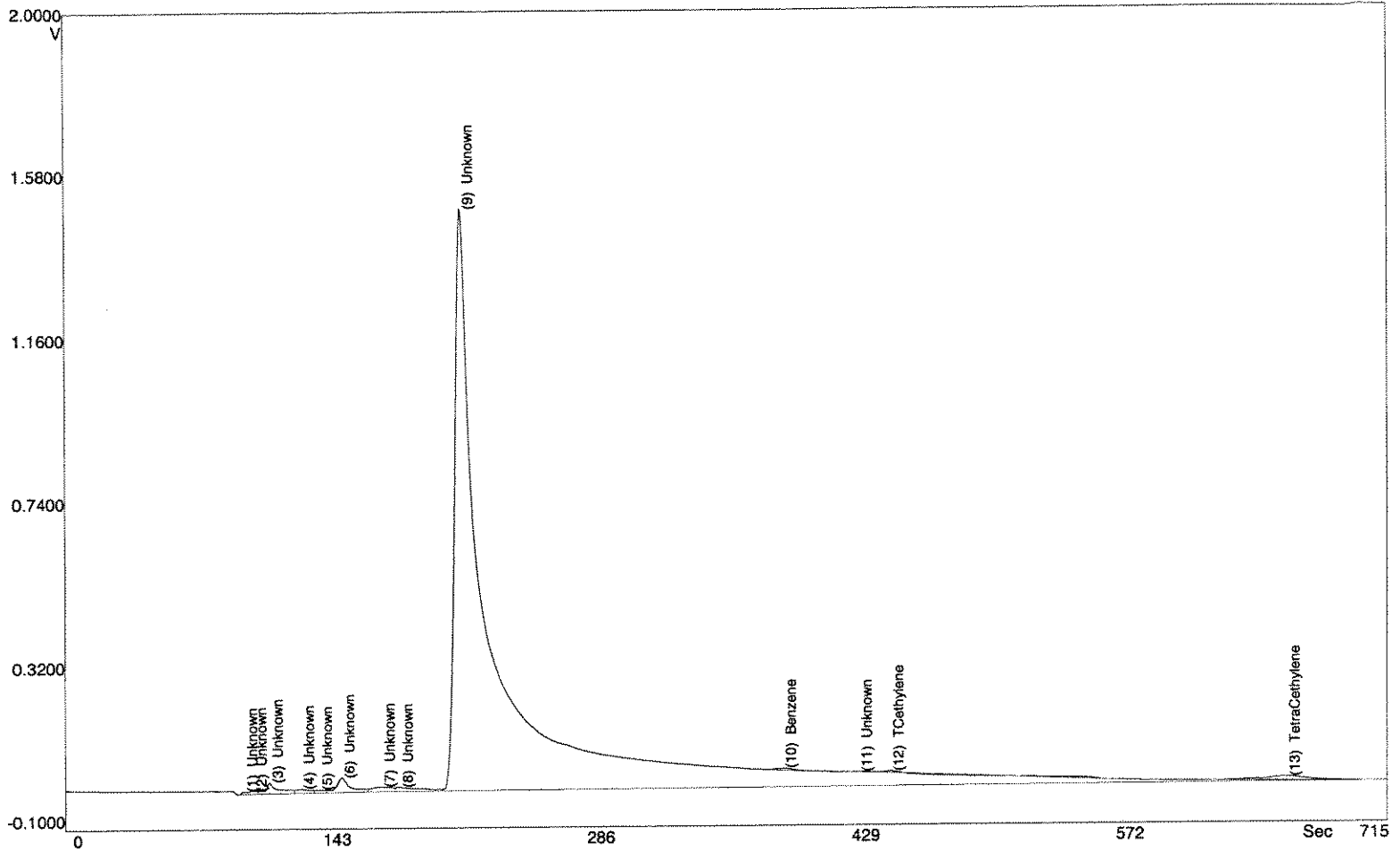
#	Name	Conc (PPM)	Area (mVS)	Height (mV)	R.T. (S)	Status
1	Unknown		14.3	4.708		96.3
2	Unknown		22.5	1.707		100.9
3	Unknown		315	25.7		110.0
4	Unknown		1.428	0.269		149.0

SiteChart Analysis Report - B5012122.PID

5 Unknown		112	6.384	171.4
6 Unknown		101	0.761	180.2
7 Unknown		38557	1486	213.4
8 Benzene	0.014	153	12.0	388.3
9 TetraCethylene	0.002	125	3.803	660.2

rechecked
TCE = ND
PCE = ND

SiteChart Analysis Report - B5012124.PID



RESULTS:

Date Jan 21, 2005
 Time 16:29:57
 Instrument FGGE202
 Detector PID
 Column B
 Analysis# 49
 Tag sab HS
 Column Temp 60.0 C
 Det Temp 60.0 C
 Ambient Temp 32.0 C

METHOD:

Analysis Time 800.0 S
 PumpTime 5.0 S
 Back Flush 400.0 S
 Temperature 60.0 C
 Pressure 8.0 psi
 Inject Syringe, 100.0 uL
 PID State High Sense

INTEGRATION METHOD:

Manual Integration
 SlopeUp 0.1 mV/S
 SlopeDown 0.1 mV/S
 Min Height 0.0 mV
 Min Area 0.0 mVS
 FilterLevel 3
 Delay 80 Sec

PEAK REPORT:

#	Name	Conc (PPM)	Area (mVS)	Height (mV)	R.T. (S)	Status
1	Unknown		20.6	6.825		96.5
2	Unknown		40.5	2.678		101.5
3	Unknown		231	27.0		110.3
4	Unknown		90.5	1.921		127.1

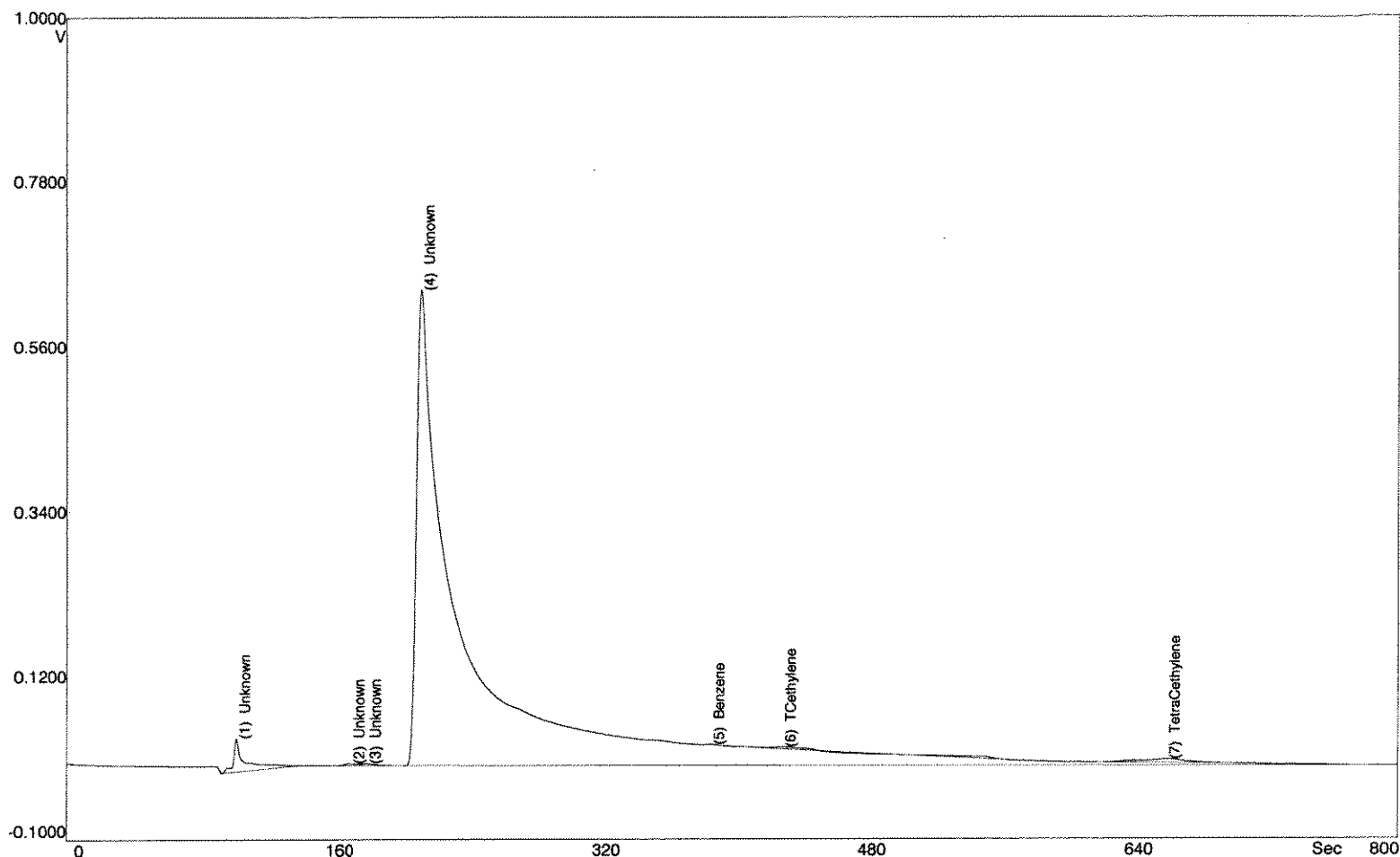
ix
 1004p R51

SiteChart Analysis Report - B5012124.PID

5	Unknown		45.8	0.498	136.9
6	Unknown		330	31.7	149.2
7	Unknown		161	4.979	170.8
8	Unknown		174	0.451	180.4
9	Unknown		38043	1491	213.6
10	Benzene	0.004	47.7	3.323	388.0
11	Unknown		20.0	0.430	428.8
12	TCethylene	0.001	54.1	2.353	446.0
13	TetraCethylene	0.006	299	9.047	660.8

recalc'd
TCh = ND
PCh = ND

SiteChart Analysis Report - B5012127.PID



RESULTS:

Date Jan 21, 2005
 Time 17:17:47
 Instrument FGGE202
 Detector PID
 Column B
 Analysis# 55
 Tag sab HS
 Column Temp 59.0 C
 Det Temp 59.0 C
 Ambient Temp 32.0 C

IX
10044 *R43*

METHOD:

Analysis Time 800.0 S
 PumpTime 5.0 S
 Back Flush 400.0 S
 Temperature 60.0 C
 Pressure 8.0 psi
 Inject Syringe, 100.0 uL
 PID State High Sense

INTEGRATION METHOD:

Manual Integration
 SlopeUp 0.1 mV/S
 SlopeDown 0.1 mV/S
 Min Height 0.0 mV
 Min Area 0.0 mVS
 FilterLevel 3
 Delay 80 Sec

PEAK REPORT:

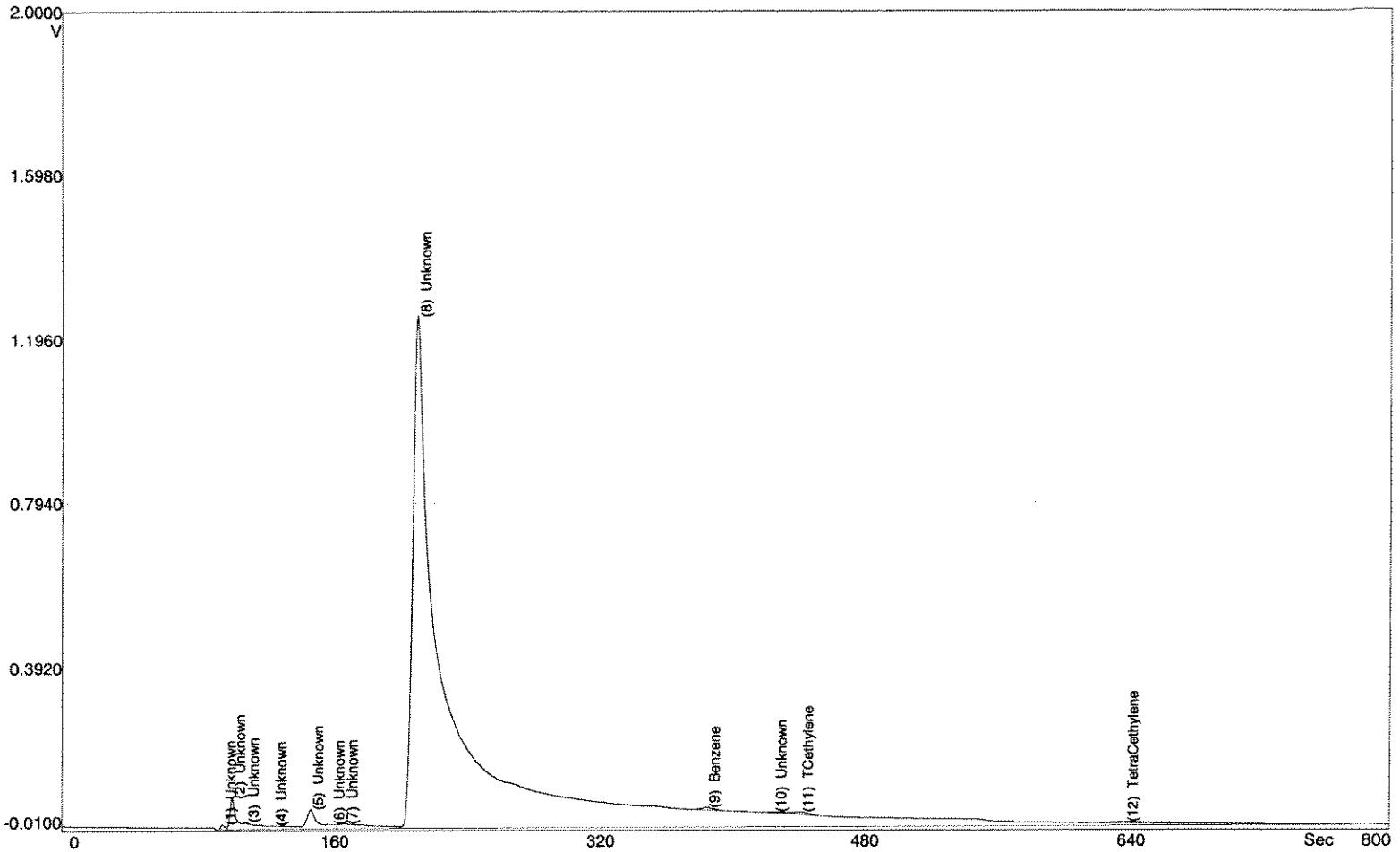
#	Name	Conc (PPM)	Area (mVS)	Height (mV)	R.T. (S)	Status
1	Unknown		360	45.8	101.9	
2	Unknown		33.7	3.163	170.8	
3	Unknown		31.3	0.781	180.6	
4	Unknown		22674	637	212.8	

SiteChart Analysis Report - B5012127.PID

5 Benzene		9.931	0.548	387.0
6 TCethylene	0.002	98.6	0.721	430.0
7 TetraCethylene	0.003	161	4.031	660.2

reading
TC - NB
pH - ND

SiteChart Analysis Report - B5012128.PID



RESULTS:

Date Jan 21, 2005
 Time 17:32:04
 Instrument FGGE202
 Detector PID
 Column B
 Analysis# 57
 Tag sab HS
 Column Temp 59.0 C
 Det Temp 59.0 C
 Ambient Temp 32.0 C

METHOD:

Analysis Time 800.0 S
 PumpTime 5.0 S
 Back Flush 400.0 S
 Temperature 60.0 C
 Pressure 8.0 psi
 Inject Syringe, 100.0 uL
 PID State High Sense

INTEGRATION METHOD:

Manual Integration
 SlopeUp 0.1 mV/S
 SlopeDown 0.1 mV/S
 Min Height 0.0 mV
 Min Area 0.0 mVS
 FilterLevel 3
 Delay 80 Sec

PEAK REPORT:

#	Name	Conc (PPM)	Area (mVS)	Height (mV)	R.T. (S)	Status
1	Unknown		37.8	12.5		96.4
2	Unknown		600	75.4		102.1
3	Unknown		11.3	3.373		110.3
4	Unknown		1.670	0.268		126.8

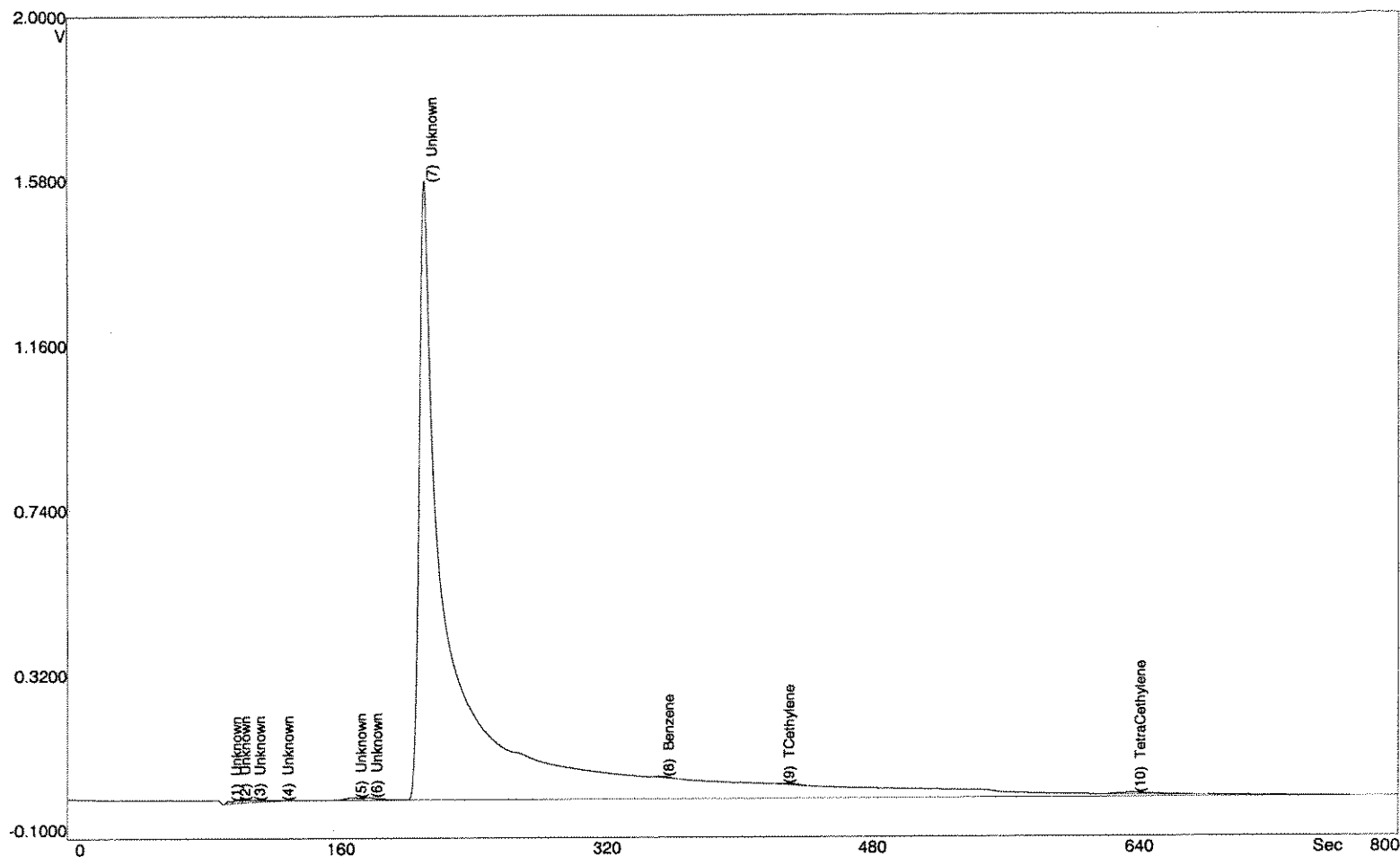
1x
 1004e R42

SiteChart Analysis Report - B5012128.PID

5 Unknown		387	41.1	149.4
6 Unknown		1.124	0.724	162.0
7 Unknown		296	1.784	170.0
8 Unknown		34967	1253	213.6
9 Benzene	0.005	58.3	5.105	388.3
10 Unknown		31.9	0.364	428.8
11 TCethylene	0.001	60.4	1.298	444.8
12 TetraCethylene	0.002	95.2	2.579	639.8

Recalc'd
TCR = ND
PCR = ND

SiteChart Analysis Report - B5012129.PID



RESULTS:

Date Jan 21, 2005
 Time 17:46:24
 Instrument FGGE202
 Detector PID
 Column B
 Analysis# 59
 Tag sab HS
 Column Temp 59.0 C
 Det Temp 59.0 C
 Ambient Temp 32.0 C

METHOD:

Analysis Time 800.0 S
 PumpTime 5.0 S
 Back Flush 400.0 S
 Temperature 60.0 C
 Pressure 8.0 psi
 Inject Syringe, 100.0 uL
 PID State High Sense

INTEGRATION METHOD:

Manual Integration
 SlopeUp 0.1 mV/S
 SlopeDown 0.1 mV/S
 Min Height 0.0 mV
 Min Area 0.0 mVS
 FilterLevel 3
 Delay 80 Sec

PEAK REPORT:

#	Name	Conc (PPM)	Area (mVS)	Height (mV)	R.T. (S)	Status
1	Unknown		21.3	7.327		96.4
2	Unknown		38.6	8.840		101.5
3	Unknown		82.7	0.684		110.7
4	Unknown		3.239	0.164		127.6

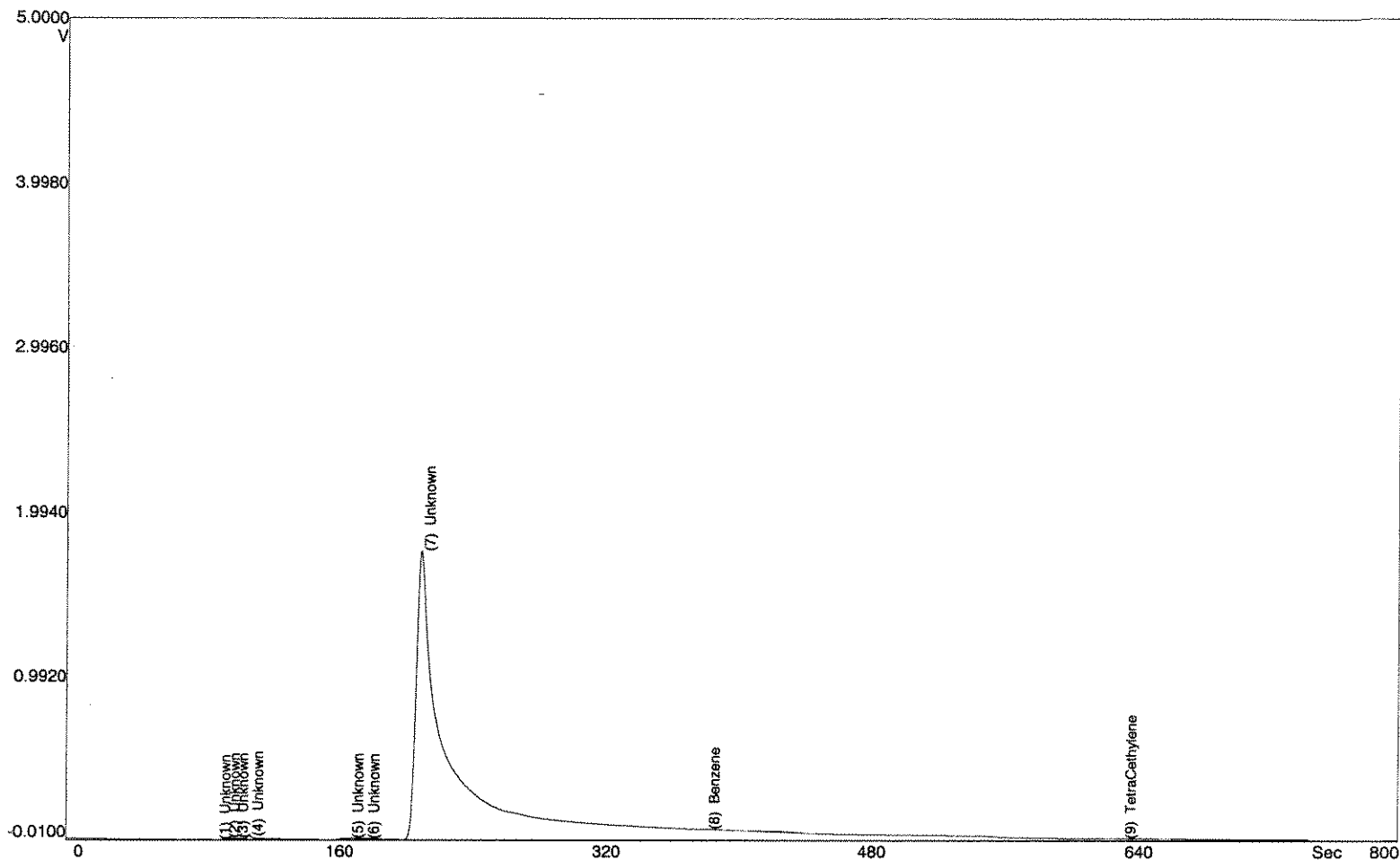
14
 LOOMER R41

SiteChart Analysis Report - B5012129.PID

5 Unknown		72.6	6.820	171.2
6 Unknown		80.8	7.743	180.8
7 Unknown		39685	1578	213.8
8 Benzene	0.003	33.2	1.438	356.3
9 TCethylene		30.5	0.269	428.8
10 TetraCethylene	0.002	107	3.502	639.2

Revised
TCE = ND
PCE = ND

SiteChart Analysis Report - B5012203.PID



RESULTS:

Date Jan 22, 2005
 Time 09:49:08
 Instrument FGGE202
 Detector PID
 Column B
 Analysis# 7
 Tag sab HS
 Column Temp 60.0 C
 Det Temp 60.0 C
 Ambient Temp 29.0 C

1x
 10042 R-34

METHOD:

Analysis Time 800.0 S
 PumpTime 5.0 S
 Back Flush 400.0 S
 Temperature 60.0 C
 Pressure 8.0 psi
 Inject Syringe, 100.0 uL
 PID State High Sense

INTEGRATION METHOD:

Manual Integration
 SlopeUp 0.1 mV/S
 SlopeDown 0.1 mV/S
 Min Height 0.0 mV
 Min Area 0.0 mVS
 FilterLevel 3
 Delay 80 Sec

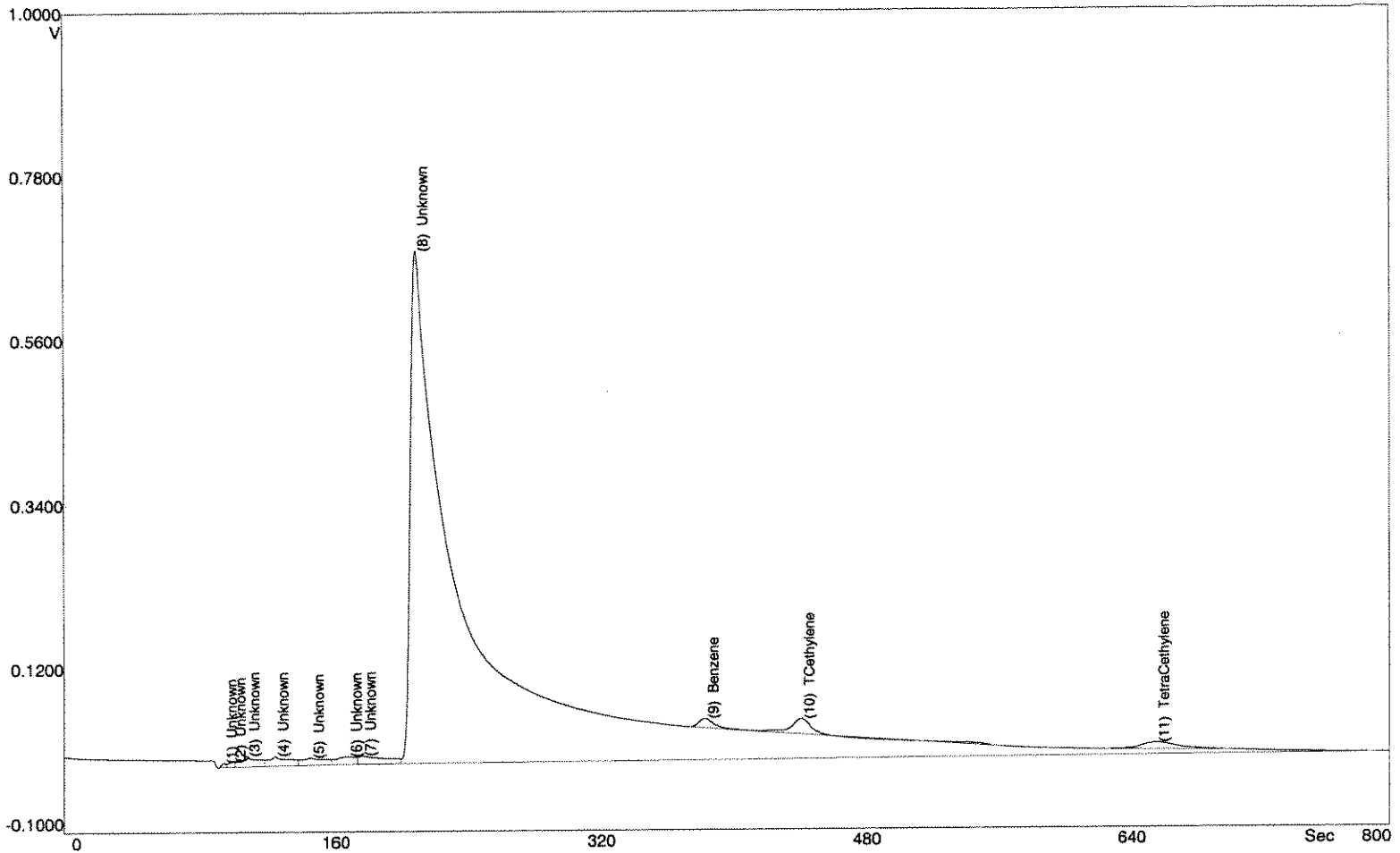
PEAK REPORT:

#	Name	Conc (PPM)	Area (mVS)	Height (mV)	R.T. (S)	Status
1	Unknown		0.957	0.757	90.3	
2	Unknown		42.2	12.2	95.9	
3	Unknown		50.2	3.917	100.8	
4	Unknown		240	18.8	110.0	

SiteChart Analysis Report - B5012203.PID

5 Unknown		112	8.044	170.2
6 Unknown		97.3	0.788	179.8
7 Unknown		51064	1762	212.6
8 Benzene	0.011	127	0.511	384.3
9 TetraCethylene		29.1	1.199	633.8

SiteChart Analysis Report - B5012205.PID



RESULTS:

Date Jan 22, 2005
 Time 10:21:13
 Instrument FGGE202
 Detector PID
 Column B
 Analysis# 11
 Tag sab HS
 Column Temp 59.0 C
 Det Temp 59.0 C
 Ambient Temp 29.0 C

1x

1004e

R-56

METHOD:

Analysis Time 800.0 S
 PumpTime 5.0 S
 Back Flush 400.0 S
 Temperature 60.0 C
 Pressure 8.0 psi
 Inject Syringe, 100.0 uL
 PID State High Sense

INTEGRATION METHOD:

Manual Integration
 SlopeUp 0.1 mV/S
 SlopeDown 0.1 mV/S
 Min Height 0.0 mV
 Min Area 0.0 mVS
 FilterLevel 3
 Delay 80 Sec

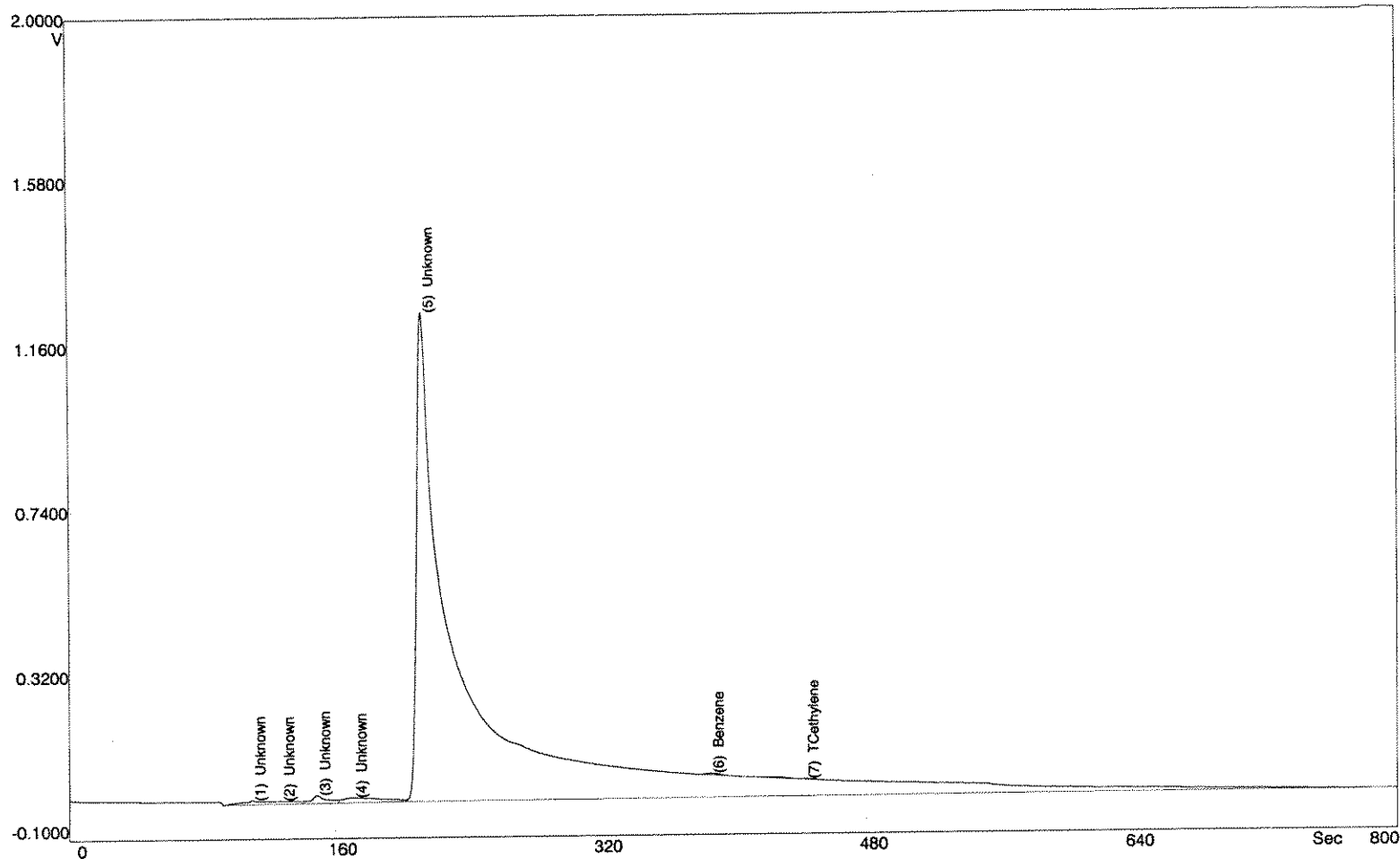
PEAK REPORT:

#	Name	Conc (PPM)	Area (mVS)	Height (mV)	R.T. (S)	Status
1	Unknown		16.6	5.638		96.3
2	Unknown		30.0	2.344		101.5
3	Unknown		163	13.4		110.3
4	Unknown		180	4.522		127.6

SiteChart Analysis Report - B5012205.PID

5	Unknown		158	1.957	149.0
6	Unknown		137	3.693	171.6
7	Unknown		210	4.180	180.0
8	Unknown		31408	682	212.2
9	Benzene	0.012	136	10.8	386.7
10	TCethylene	0.006	315	16.1	444.4
11	TetraCethylene	0.004	235	8.299	658.4

SiteChart Analysis Report - B5012206.PID



RESULTS:

Date Jan 22, 2005
 Time 10:36:14
 Instrument FGGE202
 Detector PID
 Column B
 Analysis# 13
 Tag sab HS
 Column Temp 60.0 C
 Det Temp 60.0 C
 Ambient Temp 29.0 C

1x
 1004C R57

METHOD:

Analysis Time 800.0 S
 PumpTime 5.0 S
 Back Flush 400.0 S
 Temperature 60.0 C
 Pressure 8.0 psi
 Inject Syringe, 100.0 uL
 PID State High Sense

INTEGRATION METHOD:

Manual Integration
 SlopeUp 0.1 mV/S
 SlopeDown 0.1 mV/S
 Min Height 0.0 mV
 Min Area 0.0 mVS
 FilterLevel 3
 Delay 80 Sec

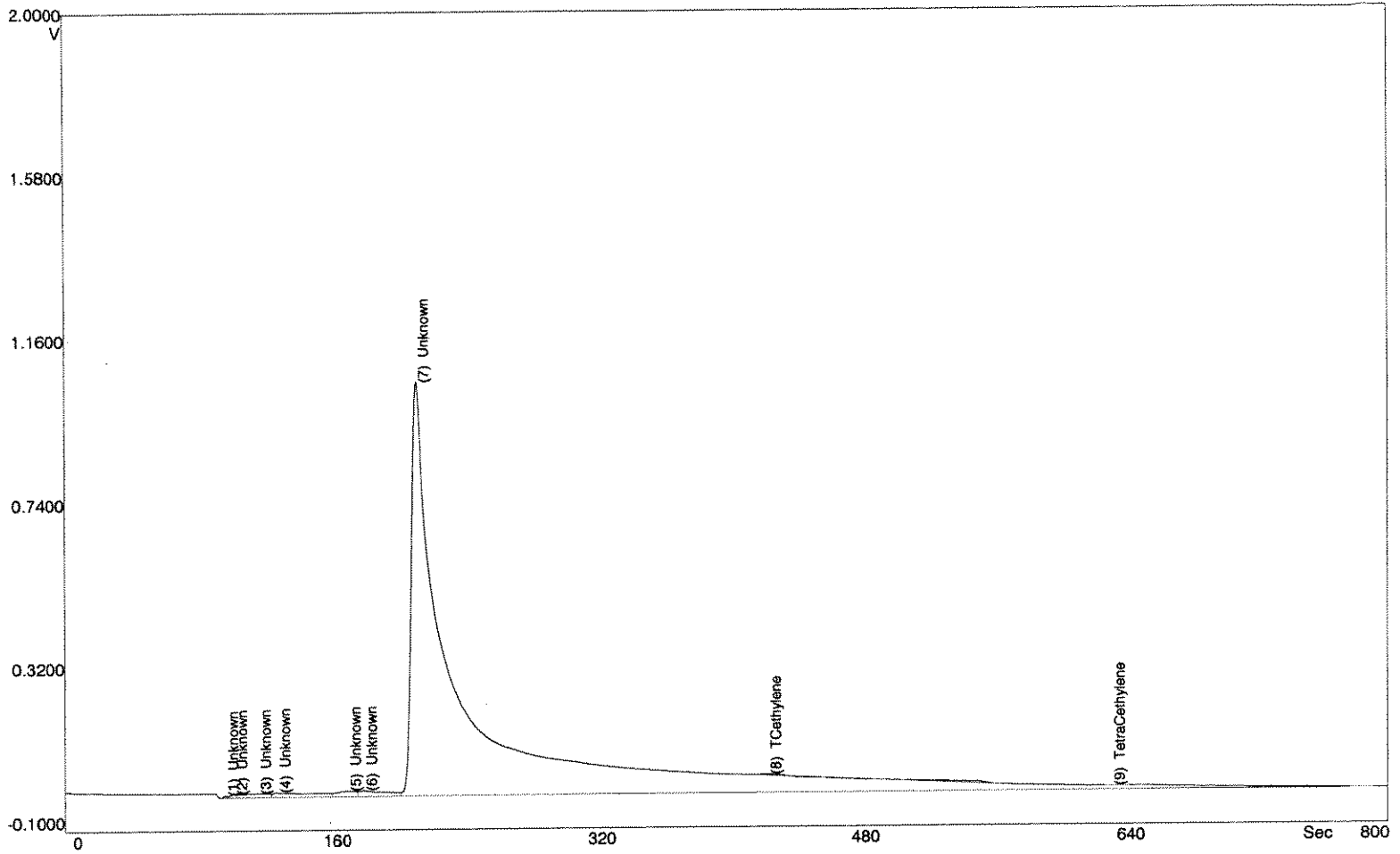
PEAK REPORT:

#	Name	Conc (PPM)	Area (mVS)	Height (mV)	R.T. (S)	Status
1	Unknown		292	11.4		110.0
2	Unknown		3.225	0.808		127.3
3	Unknown		216	14.7		148.8
4	Unknown		354	5.806		170.6

SiteChart Analysis Report - B5012206.PID

5 Unknown		43820	1248	212.4
6 Benzene	0.004	46.2	2.396	385.7
7 TCethylene		9.829	0.427	442.8

SiteChart Analysis Report - B5012210.PID



RESULTS:

Date Jan 22, 2005
 Time 11:36:52
 Instrument FGGE202
 Detector PID
 Column B
 Analysis# 21
 Tag sab HS
 Column Temp 60.0 C
 Det Temp 60.0 C
 Ambient Temp 36.0 C

METHOD:

Analysis Time 800.0 S
 PumpTime 5.0 S
 Back Flush 400.0 S
 Temperature 60.0 C
 Pressure 8.0 psi
 Inject Syringe, 100.0 uL
 PID State High Sense

INTEGRATION METHOD:

Manual Integration
 SlopeUp 0.1 mV/S
 SlopeDown 0.1 mV/S
 Min Height 0.0 mV
 Min Area 0.0 mVS
 FilterLevel 3
 Delay 80 Sec

PEAK REPORT:

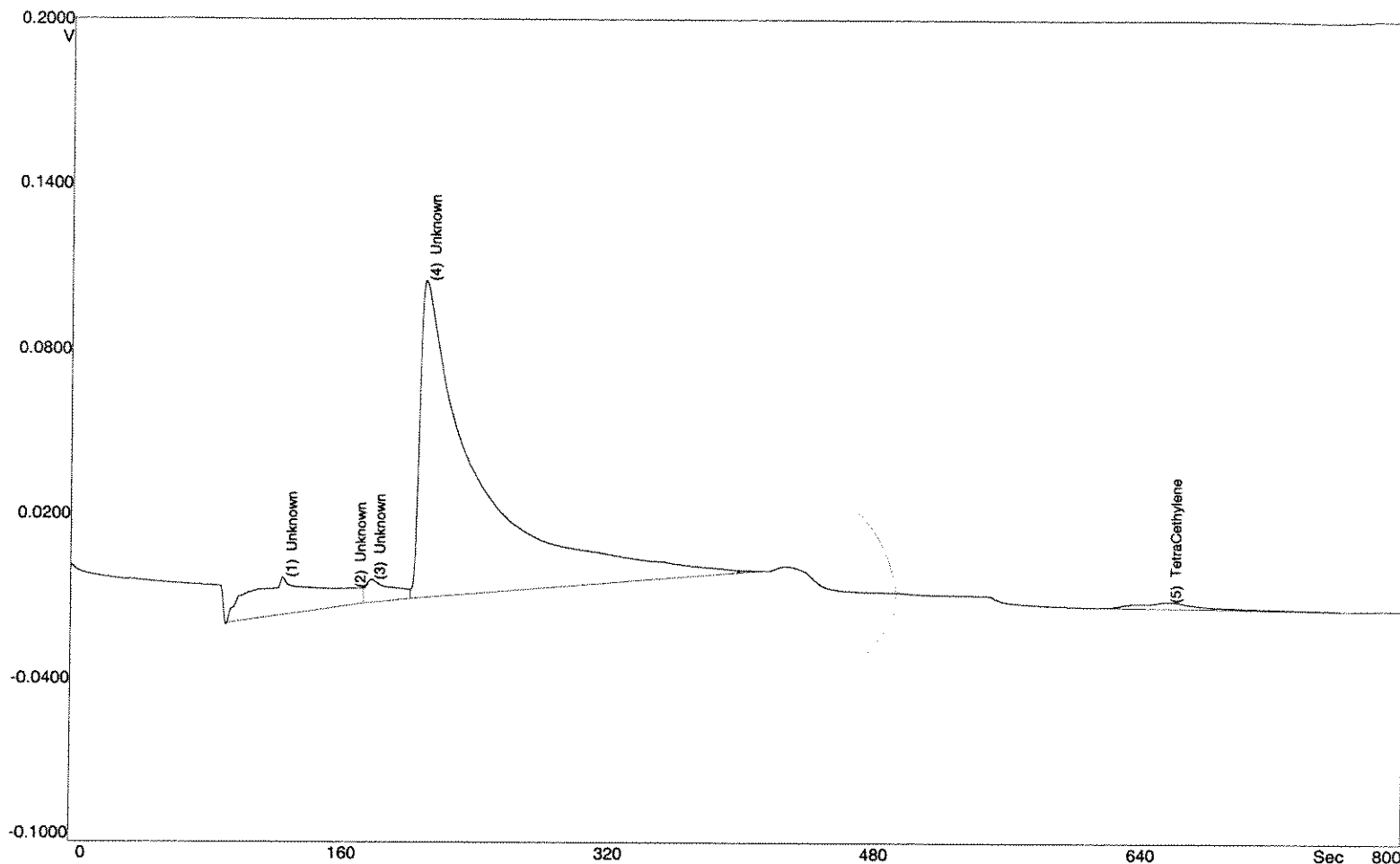
#	Name	Conc (PPM)	Area (mVS)	Height (mV)	R.T. (S)	Status
1	Unknown		18.7	5.699		96.1
2	Unknown		36.2	3.305		101.5
3	Unknown		185	1.636		115.9
4	Unknown		339	10.2		127.7

1x
 100 uL
 R54

SiteChart Analysis Report - B5012210.PID

5 Unknown		181	5.439	170.4
6 Unknown		283	6.119	180.2
7 Unknown		37652	1054	212.2
8 TCethylene	0.002	93.1	0.772	424.8
9 TetraCethylene		2.256	0.142	632.0

SiteChart Analysis Report - B5012211.PID



RESULTS:

Date Jan 22, 2005
 Time 11:52:11
 Instrument FGGE202
 Detector PID
 Column B
 Analysis# 23
 Tag sab HS
 Column Temp 60.0 C
 Det Temp 60.0 C
 Ambient Temp 40.0 C

METHOD:

Analysis Time 800.0 S
 PumpTime 5.0 S
 Back Flush 400.0 S
 Temperature 60.0 C
 Pressure 8.0 psi
 Inject Syringe, 100.0 uL
 PID State High Sense

1x
1004e R55

INTEGRATION METHOD:

Manual Integration
 SlopeUp 0.1 mV/S
 SlopeDown 0.1 mV/S
 Min Height 0.0 mV
 Min Area 0.0 mVS
 FilterLevel 3
 Delay 80 Sec

PEAK REPORT:

#	Name	Conc (PPM)	Area (mVS)	Height (mV)	R.T. (S)	Status
1	Unknown		683	16.4	128.1	
2	Unknown		0.697	0.203	169.2	
3	Unknown		150	3.386	180.8	
4	Unknown		4706	112	213.0	

SiteChart Analysis Report - B5012211.PID

5 TetraCethylene

0.002

115

2.116

659.0

