Pinnacle Engineering

Pinnacle Engineering, Inc.
101 Broadway Street West-Suite 100
Minneapolis, Minnesota 55369

Tel: 763 315-4501
Fax: 763 315-4507
www.pineng.com

June 18, 2003

Ms. Sarah Henderson
Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, Minnesota 55155-4194

RE: Additional Investigation
MPCA Leak #14709
United Grain & Energy Bulk Site, 100 Highway Ave., Hector
Pinnacle Project No. MN02230.00

Dear Ms. Henderson:

As requested in your January 24, 2003 letter, Pinnacle has completed two additional soil borings at the above referenced site. The borings were placed north of the former AST bulk facility. Please refer to the attached figure for the locations of the borings.

Boring PP-6 was completed to 36 feet below ground surface, without encountering sufficient groundwater for sampling. Moist soil was encounter at 24 feet, so a soil sample was collected at this depth. A boring was also completed northeast of PP-6 in a second attempt to obtain a groundwater sample. Refusal was encountered at 25 feet in this boring, so a 2-inch diameter sampler was driven beyond refusal to a depth of 39 feet. Upon removing the sampler from the boring, groundwater rose up the boring to 14 feet below ground surface. A groundwater sample was collected after setting a PVC screen at roughly 13 to 17 feet below ground surface. Attached are soil logs for the borings.

The soil sample was analyzed for DRO, GRO and BTEX, with all analytes being below method detection limits. The groundwater was sampled for DRO, GRO and VOCs. DRO was detected at 250 ug/l, with all other analytes being below method detection limits. The laboratory analytical report is attached.

Based on these findings, Pinnacle recommends that the site be closed. The minor DRO impact detected in groundwater during this investigation and the Initial Site Assessment does not pose a threat to human health or the environment. No soil

contamination has been identified beyond the former diked area that contained the ASTs. No groundwater receptors are located within 500 feet of the source area.

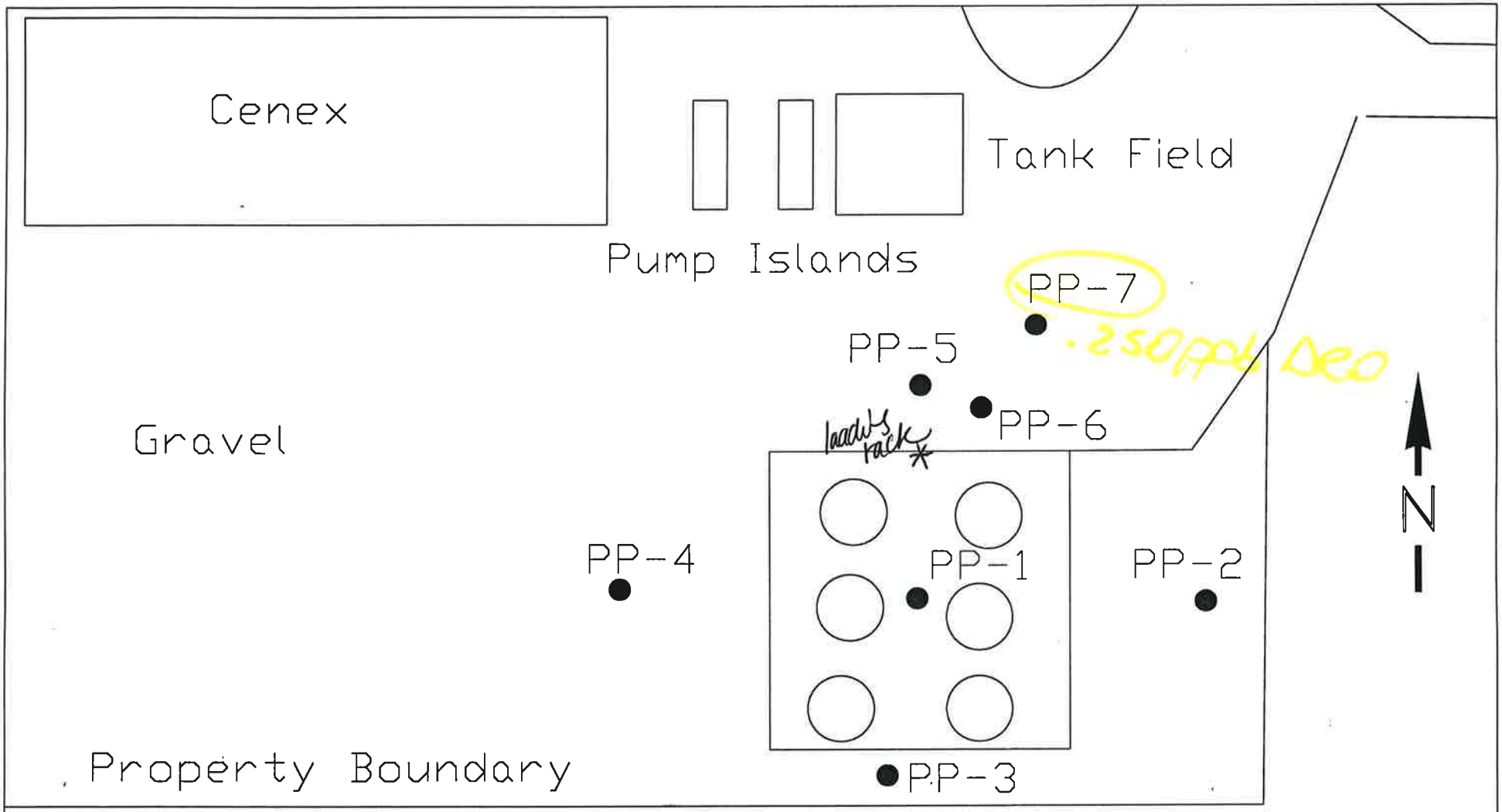
If you have any questions or require additional information, please contact me at 763-315-4501.

Sincerely,

PINNACLE ENGINEERING, INC.

Roy L. Hill
Project Manager

Enclosures



Hector Tile Co.

Pinnacle Engineering
101 Broadway Street, Suite 100
MAPLE GROVE, MN 55369
(763) 315-4501

FIGURE 2B
Site/Soil Boring Location Map
Hector AST
Hector, Minnesota

PREPARED BY: RH
DATE: 8/30/02
File Name: area map

Pinnacle Engineering

LOG OF TEST BORING

PROJECT :
Hector - AST
100 Highway Avenue
Pinnacle Project No. MN02230.00
LOGGED BY: Roy Hill
DRILLING METHOD: Push Probe
DRILLING DATE: May 22, 2003

BORING NAME/LOCATION:
PP-6
See attached site map

SCALE:
1 in. = 5ft.

SURFACE ELEV: not available
DRILLING CONTRACTOR: Bergerson-Caswell

PAGE 1 OF 1

Sample Depth / Int.	Graphic log	Description - ASTM D:2488	PID ppm	Water Level	Moist. Content	Comments
1'		Sand & gravel fill				
		Clay, little silt, trace sand & gravel, brown	ND			
			ND			
			ND			
16'			ND			
		Same but gray	ND			
			ND			
				24'		
28'			ND			
		Gray Silt, Little Clay, Trace Gravel, Dry	ND			
36'			ND			

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LOG OF TEST BORING

PROJECT :
Hector - AST
100 Highway Avenue
Pinnacle Project No. MN02230.00
LOGGED BY: Roy Hill
DRILLING METHOD: Push Probe
DRILLING DATE: May 22, 2003

BORING NAME/LOCATION:
PP-7
See attached site map

SURFACE ELEV: not available
DRILLING CONTRACTOR: Bergerson-Caswell

SCALE:
1 in. = 5ft.

Depth	Sample Int.	Graphic log	Description - ASTM D:2488	PID ppm	Water Level	Moist. Content	Comments
1'			Sand & gravel fill				
			Clay, little silt, trace sand & gravel, brown	ND			
				ND			
				ND			
15'				ND	▼ 14'		
			Same but gray	ND			
				ND			
25'							
			Refusal at 25', drove 2" sampler to 39 feet, water rose up boring to 14'				
37'							
39'			Clay, little silt, trace sand & gravel, brown				

EN CHEM INC.

Corporate Office & Laboratory
1241 Bellevue Street, Suite 9 • Green Bay, WI 54302
920-469-2436 • Fax: 920-469-8827 • 800-7-ENCHEM
www.enchem.com

Analytical Report Number: 834748

Client : PINNACLE ENGINEERING

Project Name : HECTOR AST

Project Number : MN02230.00

Lab Sample Number	Field ID	Matrix	Collection Date
834748-001	PP-6 (24')	SOIL	05/22/03
834748-002	PP-7	WATER	05/22/03
834748-003	TRIP BLANK	WATER	05/22/03

The "Q" flag is present when a parameter has been detected below the LOQ. This indicates the results are qualified due to the uncertainty of the parameter concentration between the LOD and the LOQ.

I certify that the data contained in this Final Report has been generated and reviewed in accordance with approved methods and Laboratory Standard Operating Procedure. Exceptions, if any, are discussed in the accompanying sample comments. Release of this final report is authorized by Laboratory management, as is verified by the following signature. Reported results shall not be reproduced, except in full, without the written approval of the lab. The sample results relate only to the analytes of interest tested.

Approval Signature

6/6/03
Date

En Chem Inc.

1241 Bellevue Street
Green Bay, WI 54302
920-469-2436
800-7-ENCHEM
Fax: 920-469-8827

Analytical Report Number: 834748

Client : PINNACLE ENGINEERING
Project Name : HECTOR AST
Project Number : MN02230.00
Field ID : PP-6 (24')

Matrix Type : SOIL
Collection Date : 05/22/03
Report Date : 06/04/03
Lab Sample Number : 834748-001

INORGANICS

Test	Result	EQL	Dilution	Units	Code	Analysis Date	Prep Method	Analysis Method
Percent Solids	87.7	---	1	%		05/24/03	SM 2540G M	SM 2540G M

DIESEL RANGE ORGANICS

Prep Date: 05/30/03 **Preservation Date:** 05/30/03

Analyte		Result	EQL	Dilution	Units	Code	Analysis Date	Prep Method	Analysis Method
Diesel Range Organics	<	3.9	3.9	1	mg/Kg		05/31/03	Wi MOD DRO	Wi MOD DRO
DRO Blank	<	5.0	5.0	1	mg/Kg		05/31/03	Wi MOD DRO	Wi MOD DRO
DRO Blank Spike		87	---	1	%Recov		05/31/03	Wi MOD DRO	Wi MOD DRO
DRO Blank Spike Duplicate		89	---	1	%Recov		05/31/03	Wi MOD DRO	Wi MOD DRO

BTEX

Prep Date: 05/28/03

Analyte		Result	EQL	Dilution	Units	Code	Analysis Date	Prep Method	Analysis Method
Benzene	<	29	29	50	ug/kg		05/29/03	5035/5030B	WI MOD GRO
Ethylbenzene	<	29	29	50	ug/kg		05/29/03	5035/5030B	WI MOD GRO
Toluene	<	29	29	50	ug/kg		05/29/03	5035/5030B	WI MOD GRO
Xylene, o	<	29	29	50	ug/kg		05/29/03	5035/5030B	WI MOD GRO
Xylenes, m + p	<	29	29	50	ug/kg		05/29/03	5035/5030B	WI MOD GRO
a,a,a-Trifluorotoluene		105	---	1	%Recov		05/29/03	5035/5030B	WI MOD GRO

BTEX BLANK

Prep Date: 05/28/03

Analyte	Result	EQL	Dilution	Units	Code	Analysis Date	Prep Method	Analysis Method
BTEX Blank ID	1228-96		1					

GASOLINE RANGE ORGANICS

Prep Date: 05/28/03

Analyte		Result	EQL	Dilution	Units	Code	Analysis Date	Prep Method	Analysis Method
Gasoline Range Organics	<	2.9	2.9	50	mg/kg		05/29/03	WI MOD GRO	WI MOD GRO
GRO Blank	<	2.5	2.5	50	mg/kg		05/29/03	WI MOD GRO	WI MOD GRO
GRO Blank Spike		99	---	1	%Recov		05/29/03	WI MOD GRO	WI MOD GRO
GRO Blank Spike Duplicate		103	---	1	%Recov		05/29/03	WI MOD GRO	WI MOD GRO

All soil results are reported on a dry weight basis unless otherwise noted.

En Chem Inc.

1241 Bellevue Street
Green Bay, WI 54302
920-469-2436
800-7-ENCHEM
Fax: 920-469-8827

Analytical Report Number: 834748

Client : PINNACLE ENGINEERING
Project Name : HECTOR AST
Project Number : MN02230.00
Field ID : PP-7

Matrix Type : WATER
Collection Date : 05/22/03
Report Date : 06/04/03
Lab Sample Number : 834748-002

DIESEL RANGE ORGANICS

Prep Date: 05/28/03

Analyte		Result	EQL	Dilution	Units	Code	Analysis Date	Prep Method	Analysis Method
Diesel Range Organics		250	110	1	ug/L		05/28/03	Wi MOD DRO	Wi MOD DRO
DRO Blank	<	50	50	1	ug/L		05/28/03	Wi MOD DRO	Wi MOD DRO
DRO Blank Spike		94	---	1	%Recov		05/28/03	Wi MOD DRO	Wi MOD DRO
DRO Blank Spike Duplicate		98	---	1	%Recov		05/28/03	Wi MOD DRO	Wi MOD DRO

GASOLINE RANGE ORGANICS

Prep Date: 05/28/03

Analyte		Result	EQL	Dilution	Units	Code	Analysis Date	Prep Method	Analysis Method
Gasoline Range Organics	<	50	50	1	ug/l		05/28/03	WI MOD GRO	WI MOD GRO
GRO Blank	<	50	50	1	ug/l		05/28/03	WI MOD GRO	WI MOD GRO
GRO Blank Spike		92	---	1	%Recov		05/28/03	WI MOD GRO	WI MOD GRO
GRO Blank Spike Duplicate		98	---	1	%Recov		05/28/03	WI MOD GRO	WI MOD GRO

VOLATILES - MDH 465F/468 LIST

Prep Date: 05/30/03

Analyte		Result	EQL	Dilution	Units	Code	Analysis Date	Prep Method	Analysis Method
1,1,1,2-Tetrachloroethane	<	1.0	1.0	1	ug/L		05/30/03	SW846 5030B	SW846 8260B
1,1,1-Trichloroethane	<	1.0	1.0	1	ug/L		05/30/03	SW846 5030B	SW846 8260B
1,1,2,2-Tetrachloroethane	<	1.0	1.0	1	ug/L		05/30/03	SW846 5030B	SW846 8260B
1,1,2-Trichloroethane	<	1.0	1.0	1	ug/L		05/30/03	SW846 5030B	SW846 8260B
1,1,2-Trichlorotrifluoroethane	<	1.0	1.0	1	ug/L		05/30/03	SW846 5030B	SW846 8260B
1,1-Dichloroethane	<	1.0	1.0	1	ug/L		05/30/03	SW846 5030B	SW846 8260B
1,1-Dichloroethene	<	1.0	1.0	1	ug/L		05/30/03	SW846 5030B	SW846 8260B
1,1-Dichloropropene	<	1.0	1.0	1	ug/L		05/30/03	SW846 5030B	SW846 8260B
1,2,3-Trichlorobenzene	<	1.0	1.0	1	ug/L		05/30/03	SW846 5030B	SW846 8260B
1,2,3-Trichloropropane	<	1.0	1.0	1	ug/L		05/30/03	SW846 5030B	SW846 8260B
1,2,4-Trichlorobenzene	<	1.0	1.0	1	ug/L		05/30/03	SW846 5030B	SW846 8260B
1,2,4-Trimethylbenzene	<	1.0	1.0	1	ug/L		05/30/03	SW846 5030B	SW846 8260B
1,2-Dibromo-3-chloropropane	<	1.0	1.0	1	ug/L		05/30/03	SW846 5030B	SW846 8260B
1,2-Dibromoethane	<	1.0	1.0	1	ug/L		05/30/03	SW846 5030B	SW846 8260B
1,2-Dichlorobenzene	<	1.0	1.0	1	ug/L		05/30/03	SW846 5030B	SW846 8260B
1,2-Dichloroethane	<	1.0	1.0	1	ug/L		05/30/03	SW846 5030B	SW846 8260B
1,2-Dichloropropane	<	1.0	1.0	1	ug/L		05/30/03	SW846 5030B	SW846 8260B
1,3,5-Trimethylbenzene	<	1.0	1.0	1	ug/L		05/30/03	SW846 5030B	SW846 8260B
1,3-Dichlorobenzene	<	1.0	1.0	1	ug/L		05/30/03	SW846 5030B	SW846 8260B
1,3-Dichloropropane	<	1.0	1.0	1	ug/L		05/30/03	SW846 5030B	SW846 8260B
1,4-Dichlorobenzene	<	1.0	1.0	1	ug/L		05/30/03	SW846 5030B	SW846 8260B
2,2-Dichloropropane	<	1.0	1.0	1	ug/L		05/30/03	SW846 5030B	SW846 8260B
2-Butanone	<	5.0	5.0	1	ug/L		05/30/03	SW846 5030B	SW846 8260B
2-Chlorotoluene	<	1.0	1.0	1	ug/L		05/30/03	SW846 5030B	SW846 8260B
4-Chlorotoluene	<	1.0	1.0	1	ug/L		05/30/03	SW846 5030B	SW846 8260B

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Green Bay, WI 54302
920-469-2436
800-7-ENCHEM
Fax: 920-469-8827

Analytical Report Number: 834748

Client : PINNACLE ENGINEERING
Project Name : HECTOR AST
Project Number : MN02230.00
Field ID : PP-7

Matrix Type : WATER
Collection Date : 05/22/03
Report Date : 06/04/03
Lab Sample Number : 834748-002

VOLATILES - MDH 465F/468 LIST **Prep Date:** 05/30/03

Analyte		Result	EQL	Dilution	Units	Code	Analysis Date	Prep Method	Analysis Method
4-Methyl-2-pentanone	<	5.0	5.0	1	ug/L		05/30/03	SW846 5030B	SW846 8260B
Acetone	<	5.0	5.0	1	ug/L		05/30/03	SW846 5030B	SW846 8260B
Allyl Chloride	<	5.0	5.0	1	ug/L		05/30/03	SW846 5030B	SW846 8260B
Benzene	<	1.0	1.0	1	ug/L		05/30/03	SW846 5030B	SW846 8260B
Bromobenzene	<	1.0	1.0	1	ug/L		05/30/03	SW846 5030B	SW846 8260B
Bromochloromethane	<	1.0	1.0	1	ug/L		05/30/03	SW846 5030B	SW846 8260B
Bromodichloromethane	<	1.0	1.0	1	ug/L		05/30/03	SW846 5030B	SW846 8260B
Bromoform	<	1.0	1.0	1	ug/L		05/30/03	SW846 5030B	SW846 8260B
Bromomethane	<	1.0	1.0	1	ug/L		05/30/03	SW846 5030B	SW846 8260B
Carbon Tetrachloride	<	1.0	1.0	1	ug/L		05/30/03	SW846 5030B	SW846 8260B
Chlorobenzene	<	1.0	1.0	1	ug/L		05/30/03	SW846 5030B	SW846 8260B
Chlorodibromomethane	<	1.0	1.0	1	ug/L		05/30/03	SW846 5030B	SW846 8260B
Chloroethane	<	1.0	1.0	1	ug/L		05/30/03	SW846 5030B	SW846 8260B
Chloroform	<	1.0	1.0	1	ug/L		05/30/03	SW846 5030B	SW846 8260B
Chloromethane	<	1.0	1.0	1	ug/L		05/30/03	SW846 5030B	SW846 8260B
cis-1,2-Dichloroethene	<	1.0	1.0	1	ug/L		05/30/03	SW846 5030B	SW846 8260B
cis-1,3-Dichloropropene	<	1.0	1.0	1	ug/L		05/30/03	SW846 5030B	SW846 8260B
Dibromomethane	<	1.0	1.0	1	ug/L		05/30/03	SW846 5030B	SW846 8260B
Dichlorodifluoromethane	<	1.0	1.0	1	ug/L		05/30/03	SW846 5030B	SW846 8260B
Dichlorofluoromethane	<	1.0	1.0	1	ug/L		05/30/03	SW846 5030B	SW846 8260B
Diethyl Ether	<	1.0	1.0	1	ug/L		05/30/03	SW846 5030B	SW846 8260B
Ethylbenzene	<	1.0	1.0	1	ug/L		05/30/03	SW846 5030B	SW846 8260B
Fluorotrichloromethane	<	1.0	1.0	1	ug/L		05/30/03	SW846 5030B	SW846 8260B
Hexachlorobutadiene	<	1.0	1.0	1	ug/L		05/30/03	SW846 5030B	SW846 8260B
Isopropylbenzene	<	1.0	1.0	1	ug/L		05/30/03	SW846 5030B	SW846 8260B
Methylene Chloride	<	1.0	1.0	1	ug/L		05/30/03	SW846 5030B	SW846 8260B
Methyl-tert-butyl-ether	<	1.0	1.0	1	ug/L		05/30/03	SW846 5030B	SW846 8260B
Naphthalene	<	1.0	1.0	1	ug/L		05/30/03	SW846 5030B	SW846 8260B
n-Butylbenzene	<	1.0	1.0	1	ug/L		05/30/03	SW846 5030B	SW846 8260B
n-Propylbenzene	<	1.0	1.0	1	ug/L		05/30/03	SW846 5030B	SW846 8260B
p-Isopropyltoluene	<	1.0	1.0	1	ug/L		05/30/03	SW846 5030B	SW846 8260B
sec-Butylbenzene	<	1.0	1.0	1	ug/L		05/30/03	SW846 5030B	SW846 8260B
Styrene	<	1.0	1.0	1	ug/L		05/30/03	SW846 5030B	SW846 8260B
tert-Butylbenzene	<	1.0	1.0	1	ug/L		05/30/03	SW846 5030B	SW846 8260B
Tetrachloroethene	<	1.0	1.0	1	ug/L		05/30/03	SW846 5030B	SW846 8260B
Tetrahydrofuran	<	5.0	5.0	1	ug/L		05/30/03	SW846 5030B	SW846 8260B
Toluene	<	1.0	1.0	1	ug/L		05/30/03	SW846 5030B	SW846 8260B
trans-1,2-Dichloroethene	<	1.0	1.0	1	ug/L		05/30/03	SW846 5030B	SW846 8260B
trans-1,3-Dichloropropene	<	1.0	1.0	1	ug/L		05/30/03	SW846 5030B	SW846 8260B
Trichloroethene	<	1.0	1.0	1	ug/L		05/30/03	SW846 5030B	SW846 8260B
Vinyl Chloride	<	1.0	1.0	1	ug/L		05/30/03	SW846 5030B	SW846 8260B

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920-469-2436
800-7-ENCHEM
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Analytical Report Number: 834748

Client : PINNACLE ENGINEERING
Project Name : HECTOR AST
Project Number : MN02230.00
Field ID : PP-7

Matrix Type : WATER
Collection Date : 05/22/03
Report Date : 06/04/03
Lab Sample Number : 834748-002

VOLATILES - MDH 465F/468 LIST

Prep Date: 05/30/03

Analyte		Result	EQL	Dilution	Units	Code	Analysis Date	Prep Method	Analysis Method
Xylene, o	<	1.0	1.0	1	ug/L		05/30/03	SW846 5030B	SW846 8260B
Xylenes, m + p	<	2.0	2.0	1	ug/L		05/30/03	SW846 5030B	SW846 8260B
4-Bromofluorobenzene		125	---	1	%Recov		05/30/03	SW846 5030B	SW846 8260B
Toluene-d8		122	---	1	%Recov		05/30/03	SW846 5030B	SW846 8260B
Dibromofluoromethane		127	---	1	%Recov		05/30/03	SW846 5030B	SW846 8260B

VOLATILES BLANK

Prep Date:

Analyte	Result	EQL	Dilution	Units	Code	Analysis Date	Prep Method	Analysis Method
VOC Blank ID	1247-03		1					

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1241 Bellevue Street
Green Bay, WI 54302
920-469-2436
800-7-ENCHEM
Fax: 920-469-8827

Analytical Report Number: 834748

Client : PINNACLE ENGINEERING
Project Name : HECTOR AST
Project Number : MN02230.00
Field ID : TRIP BLANK

Matrix Type : WATER
Collection Date : 05/22/03
Report Date : 06/04/03
Lab Sample Number : 834748-003

VOLATILES - MDH 465F/468 LIST

Prep Date: 05/28/03

Analyte		Result	EQL	Dilution	Units	Code	Analysis Date	Prep Method	Analysis Method
1,1,1,2-Tetrachloroethane	<	1.0	1.0	1	ug/L		05/28/03	SW846 5030B	SW846 8260B
1,1,1-Trichloroethane	<	1.0	1.0	1	ug/L		05/28/03	SW846 5030B	SW846 8260B
1,1,2,2-Tetrachloroethane	<	1.0	1.0	1	ug/L		05/28/03	SW846 5030B	SW846 8260B
1,1,2-Trichloroethane	<	1.0	1.0	1	ug/L		05/28/03	SW846 5030B	SW846 8260B
1,1,2-Trichlorotrifluoroethane	<	1.0	1.0	1	ug/L		05/28/03	SW846 5030B	SW846 8260B
1,1-Dichloroethane	<	1.0	1.0	1	ug/L		05/28/03	SW846 5030B	SW846 8260B
1,1-Dichloroethene	<	1.0	1.0	1	ug/L		05/28/03	SW846 5030B	SW846 8260B
1,1-Dichloropropene	<	1.0	1.0	1	ug/L		05/28/03	SW846 5030B	SW846 8260B
1,2,3-Trichlorobenzene	<	1.0	1.0	1	ug/L		05/28/03	SW846 5030B	SW846 8260B
1,2,3-Trichloropropane	<	1.0	1.0	1	ug/L		05/28/03	SW846 5030B	SW846 8260B
1,2,4-Trichlorobenzene	<	1.0	1.0	1	ug/L		05/28/03	SW846 5030B	SW846 8260B
1,2,4-Trimethylbenzene	<	1.0	1.0	1	ug/L		05/28/03	SW846 5030B	SW846 8260B
1,2-Dibromo-3-chloropropane	<	1.0	1.0	1	ug/L		05/28/03	SW846 5030B	SW846 8260B
1,2-Dibromoethane	<	1.0	1.0	1	ug/L		05/28/03	SW846 5030B	SW846 8260B
1,2-Dichlorobenzene	<	1.0	1.0	1	ug/L		05/28/03	SW846 5030B	SW846 8260B
1,2-Dichloroethane	<	1.0	1.0	1	ug/L		05/28/03	SW846 5030B	SW846 8260B
1,2-Dichloropropane	<	1.0	1.0	1	ug/L		05/28/03	SW846 5030B	SW846 8260B
1,3,5-Trimethylbenzene	<	1.0	1.0	1	ug/L		05/28/03	SW846 5030B	SW846 8260B
1,3-Dichlorobenzene	<	1.0	1.0	1	ug/L		05/28/03	SW846 5030B	SW846 8260B
1,3-Dichloropropane	<	1.0	1.0	1	ug/L		05/28/03	SW846 5030B	SW846 8260B
1,4-Dichlorobenzene	<	1.0	1.0	1	ug/L		05/28/03	SW846 5030B	SW846 8260B
2,2-Dichloropropane	<	1.0	1.0	1	ug/L		05/28/03	SW846 5030B	SW846 8260B
2-Butanone	<	5.0	5.0	1	ug/L		05/28/03	SW846 5030B	SW846 8260B
2-Chlorotoluene	<	1.0	1.0	1	ug/L		05/28/03	SW846 5030B	SW846 8260B
4-Chlorotoluene	<	1.0	1.0	1	ug/L		05/28/03	SW846 5030B	SW846 8260B
4-Methyl-2-pentanone	<	5.0	5.0	1	ug/L		05/28/03	SW846 5030B	SW846 8260B
Acetone	<	5.0	5.0	1	ug/L		05/28/03	SW846 5030B	SW846 8260B
Allyl Chloride	<	5.0	5.0	1	ug/L		05/28/03	SW846 5030B	SW846 8260B
Benzene	<	1.0	1.0	1	ug/L		05/28/03	SW846 5030B	SW846 8260B
Bromobenzene	<	1.0	1.0	1	ug/L		05/28/03	SW846 5030B	SW846 8260B
Bromochloromethane	<	1.0	1.0	1	ug/L		05/28/03	SW846 5030B	SW846 8260B
Bromodichloromethane	<	1.0	1.0	1	ug/L		05/28/03	SW846 5030B	SW846 8260B
Bromoform	<	1.0	1.0	1	ug/L		05/28/03	SW846 5030B	SW846 8260B
Bromomethane	<	1.0	1.0	1	ug/L		05/28/03	SW846 5030B	SW846 8260B
Carbon Tetrachloride	<	1.0	1.0	1	ug/L		05/28/03	SW846 5030B	SW846 8260B
Chlorobenzene	<	1.0	1.0	1	ug/L		05/28/03	SW846 5030B	SW846 8260B
Chlorodibromomethane	<	1.0	1.0	1	ug/L		05/28/03	SW846 5030B	SW846 8260B
Chloroethane	<	1.0	1.0	1	ug/L		05/28/03	SW846 5030B	SW846 8260B
Chloroform	<	1.0	1.0	1	ug/L		05/28/03	SW846 5030B	SW846 8260B
Chloromethane	<	1.0	1.0	1	ug/L		05/28/03	SW846 5030B	SW846 8260B
cis-1,2-Dichloroethene	<	1.0	1.0	1	ug/L		05/28/03	SW846 5030B	SW846 8260B

En Chem Inc.

1241 Bellevue Street
Green Bay, WI 54302
920-469-2436
800-7-ENCHEM
Fax: 920-469-8827

Analytical Report Number: 834748

Client : PINNACLE ENGINEERING
Project Name : HECTOR AST
Project Number : MN02230.00
Field ID : TRIP BLANK

Matrix Type : WATER
Collection Date : 05/22/03
Report Date : 06/04/03
Lab Sample Number : 834748-003

VOLATILES - MDH 465F/468 LIST

Prep Date: 05/28/03

Analyte		Result	EQL	Dilution	Units	Code	Analysis Date	Prep Method	Analysis Method
cis-1,3-Dichloropropene	<	1.0	1.0	1	ug/L		05/28/03	SW846 5030B	SW846 8260B
Dibromomethane	<	1.0	1.0	1	ug/L		05/28/03	SW846 5030B	SW846 8260B
Dichlorodifluoromethane	<	1.0	1.0	1	ug/L		05/28/03	SW846 5030B	SW846 8260B
Dichlorofluoromethane	<	1.0	1.0	1	ug/L		05/28/03	SW846 5030B	SW846 8260B
Diethyl Ether	<	1.0	1.0	1	ug/L		05/28/03	SW846 5030B	SW846 8260B
Ethylbenzene	<	1.0	1.0	1	ug/L		05/28/03	SW846 5030B	SW846 8260B
Fluorotrichloromethane	<	1.0	1.0	1	ug/L		05/28/03	SW846 5030B	SW846 8260B
Hexachlorobutadiene	<	1.0	1.0	1	ug/L		05/28/03	SW846 5030B	SW846 8260B
Isopropylbenzene	<	1.0	1.0	1	ug/L		05/28/03	SW846 5030B	SW846 8260B
Methylene Chloride	<	1.0	1.0	1	ug/L		05/28/03	SW846 5030B	SW846 8260B
Methyl-tert-butyl-ether	<	1.0	1.0	1	ug/L		05/28/03	SW846 5030B	SW846 8260B
Naphthalene	<	1.0	1.0	1	ug/L		05/28/03	SW846 5030B	SW846 8260B
n-Butylbenzene	<	1.0	1.0	1	ug/L		05/28/03	SW846 5030B	SW846 8260B
n-Propylbenzene	<	1.0	1.0	1	ug/L		05/28/03	SW846 5030B	SW846 8260B
p-Isopropyltoluene	<	1.0	1.0	1	ug/L		05/28/03	SW846 5030B	SW846 8260B
sec-Butylbenzene	<	1.0	1.0	1	ug/L		05/28/03	SW846 5030B	SW846 8260B
Styrene	<	1.0	1.0	1	ug/L		05/28/03	SW846 5030B	SW846 8260B
tert-Butylbenzene	<	1.0	1.0	1	ug/L		05/28/03	SW846 5030B	SW846 8260B
Tetrachloroethene	<	1.0	1.0	1	ug/L		05/28/03	SW846 5030B	SW846 8260B
Tetrahydrofuran	<	5.0	5.0	1	ug/L		05/28/03	SW846 5030B	SW846 8260B
Toluene	<	1.0	1.0	1	ug/L		05/28/03	SW846 5030B	SW846 8260B
trans-1,2-Dichloroethene	<	1.0	1.0	1	ug/L		05/28/03	SW846 5030B	SW846 8260B
trans-1,3-Dichloropropene	<	1.0	1.0	1	ug/L		05/28/03	SW846 5030B	SW846 8260B
Trichloroethene	<	1.0	1.0	1	ug/L		05/28/03	SW846 5030B	SW846 8260B
Vinyl Chloride	<	1.0	1.0	1	ug/L		05/28/03	SW846 5030B	SW846 8260B
Xylene, o	<	1.0	1.0	1	ug/L		05/28/03	SW846 5030B	SW846 8260B
Xylenes, m + p	<	2.0	2.0	1	ug/L		05/28/03	SW846 5030B	SW846 8260B
4-Bromofluorobenzene		119	---	1	%Recov		05/28/03	SW846 5030B	SW846 8260B
Toluene-d8		123	---	1	%Recov		05/28/03	SW846 5030B	SW846 8260B
Dibromofluoromethane		124	---	1	%Recov		05/28/03	SW846 5030B	SW846 8260B

VOLATILES BLANK

Prep Date:

Analyte	Result	EQL	Dilution	Units	Code	Analysis Date	Prep Method	Analysis Method
VOC Blank ID	1247-03		1					

En Chem Inc.

1241 Bellevue Street
Green Bay, WI 54302
920-469-2436
800-7-ENCHEM
Fax: 920-469-8827

Lab#:	TestGroupID:	Comment:
834748-002	DRO-W	Hump was present late in chromatogram.
PP-7		

En Chem, Inc. Cooler Receipt Log

Batch No. 834748

Project Name or ID Hector AST No. of Coolers: 1 Temps: 4.0°C

A. Receipt Phase: Date cooler was opened: 5/24/03 **By:** KP

1: Were samples received on ice? (Must be ≤ 6 C)	(YES)	NO[2]	
2. Was there a Temperature Blank?	(YES)	NO	
3: Were custody seals present and intact? (Record on COC)	YES	(NO)	
4: Are COC documents present?	(YES)	NO[2]	
5: Does this Project require quick turn around analysis?	YES	(NO)	
6: Is there any sub-work?	YES	(NO)	
7: Are there any short hold time tests?	(YES)	NO	
8: Are any samples nearing expiration of hold-time? (Within 2 days)	YES[1]	(NO)	Contacted by/Who_____
9: Do any samples need to be Filtered or Preserved in the lab?	YES[1]	(NO)	Contacted by/Who_____

B. Check-in Phase: Date samples were Checked-in: 5/24/03 **By:** KP

1: Were all sample containers listed on the COC received and intact?	(YES)	NO[2]	NA
2: Sign the COC as received by En Chem. Completed	(YES)	NO	
3: Do sample labels match the COC?	(YES)	NO[2]	
4: Completed pH check on preserved samples.. *(This statement does not apply to water: VOC, O&G, TOC, DRO, Total Rec. Phenolics)*	YES	NO	(NA)
5: Do samples have correct chemical preservation? *(This statement does not apply to water: VOC, O&G, TOC, DRO, Total Rec. Phenolics)*	YES	NO[2]	(NA)
6: Are dissolved parameters field filtered?	YES	NO[2]	(NA)
7: Are sample volumes adequate for tests requested?	(YES)	NO[2]	
8: Are VOC samples free of bubbles >6mm	YES	(NO[2])	NA
9: Enter samples into logbook. Completed	(YES)	NO	
10: Place laboratory sample number on all containers and COC. Completed	(YES)	NO	
11: Complete Laboratory Tracking Sheet (LTS). Completed	YES	NO	(NA)
12: Start Nonconformance form.	(YES)	NO	NA
13: Initiate Subcontracting procedure. Completed	YES	NO	(NA)
14: Check laboratory sample number on all containers and COC. KB 1248	(YES)	NO	NA

Short Hold-time tests:

48 Hours or less	7 days	Footnotes
Coliform (6 hrs)	Flashpoint	1 Notify proper lab group immediately.
Hexavalent Chromium (24 Hrs)	TSS	
BOD	Total Solids	2 Complete nonconformance memo.
Nitrite or Nitrate	TDS	
Low Level Mercury	Sulfide	
Ortho Phosphorus	Free Liquids	
Turbidity	Total Volatile Solids	
Surfactants	(Aqueous Extractable Organics- ALL)	
Sulfite	Unpreserved VOC's	
En Core Preservation	Ash	
Color		

Rev. 4/11/03, Attachment to 1-REC-5.
Subject to QA Audit.

Reviewed by/date TJT 5/28/03

p:/everyone/forms/samplereceiving/crl.doc

En Chem Inc.

Analysis Summary by Laboratory

1241 Bellevue Street
Green Bay, WI 54302
920-469-2436
800-7-ENCHEM
Fax: 920-469-8827

Test Group Name	834748-001	834748-002	834748-003
BTEX	G		
BTEX BLANK	G		
DIESEL RANGE ORGANICS	G	G	
GASOLINE RANGE ORGANICS	G	G	
PERCENT SOLIDS	G		
VOLATILES - MDH 465F/468 LIST		G	G
VOLATILES BLANK		G	G

MINNESOTA Certification	
G = En Chem Green Bay	055-999-334
K = En Chem Kimberly	055-999-107
S = Subcontracted Analysis	

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

BLKW 1228-96

Lab Name: ENCHEM INC. - GREEN BAY Contract:

Lab Code: ENCHEMGB Case No.: SAS No.: SDG No.: GRO2-052803

Matrix: (soil/water) SOIL Lab Sample ID: BLKW 1228-96

Sample wt/vol: _____ (g/mL) G Lab File ID: 041F0201

Level: (low/med) MED Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 05/29/03

GC Column: DB-624 ID: 0.32 (mm) Dilution Factor: 50.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-38-3	m/p-Xylene	10.341	J
71-43-2	Benzene	25.000	U
95-47-6	o-Xylene	25.000	U
108-88-3	Toluene	8.286	J
100-41-4	Ethylbenzene	25.000	U
1634-04-4	Methyl tert-butyl ether	25.000	U
----------	Total Xylenes	10.341	J
108-67-8	1,3,5-Trimethylbenzene	25.000	U
95-63-6	1,2,4-Trimethylbenzene	25.000	U
91-20-3	Naphthalene	25.000	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

VBLK1247-03

Lab Name: EN CHEM GREEN BAY Contract:

Lab Code: ENCHEMGB Case No.: SAS No.: SDG No.: MS105282003A

Matrix: (soil/water) WATER Lab Sample ID: VBLK1247-03

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 05280304

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 05/28/03

GC Column: DB-624 ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-83-9	DICHLORODIFLUOROMETHANE	1.00	U
74-87-3	CHLOROMETHANE	1.00	U
75-01-4	VINYL CHLORIDE	1.00	U
74-83-9	BROMOMETHANE	1.00	U
75-00-3	CHLOROETHANE	1.00	U
75-43-4	DICHLOROFLUOROMETHANE	1.00	U
75-69-4	TRICHLOROFLUOROMETHANE	1.00	U
60-29-7	DIETHYL ETHER	1.00	U
107-62-8	ACROLEIN	5.00	U
75-35-4	1 1-DICHLOROETHENE	1.00	U
76-13-1	1 1 2-TRICHLOROTRIFLUOROETHA	1.00	U
67-64-1	ACETONE	5.00	U
74-88-4	IODOMETHANE	1.00	U
75-15-0	CARBON DISULFIDE	1.00	U
107-05-1	ALLYL CHLORIDE	1.00	U
75-09-2	METHYLENE CHLORIDE	1.00	U
107-13-1	ACRYLONITRILE	5.00	U
156-60-5	TRANS-1 2-DICHLOROETHENE	1.00	U
1634-04-4	METHYL T-BUTYL ETHER	1.00	U
110-545-3	N-HEXANE	5.00	U
75-34-3	1 1-DICHLOROETHANE	1.00	U
108-05-4	VINYL ACETATE	5.00	U
108-20-3	DIISOPROPYL ETHER	1.00	U
590-20-7	2 2-DICHLOROPROPANE	1.00	U
156-59-2	CIS-1 2-DICHLOROETHENE	1.00	U
78-93-3	2-BUTANONE	5.00	U
74-97-5	BROMOCHLOROMETHANE	1.00	U
109-99-9	TETRAHYDROFURAN	5.00	U
67-66-3	CHLOROFORM	1.00	U
71-55-6	1 1 1-TRICHLOROETHANE	1.00	U
56-23-5	CARBON TETRACHLORIDE	1.00	U
563-58-6	1 1-DICHLOROPROPENE	1.00	U
71-43-2	BENZENE	1.00	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

VBLK1247-03

Lab Name: EN CHEM GREEN BAY Contract:

Lab Code: ENCHEMGB Case No.: SAS No.: SDG No.: MS105282003A

Matrix: (soil/water) WATER Lab Sample ID: VBLK1247-03

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 05280304

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 05/28/03

GC Column: DB-624 ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
107-06-2	1 2-DICHLOROETHANE	1.00	U
462-95-3	DIETHOXYMETHANE	1.00	U
79-01-6	TRICHLOROETHENE	1.00	U
78-87-5	1 2-DICHLOROPROPANE	1.00	U
74-95-3	DIBROMOMETHANE	1.00	U
75-27-4	BROMODICHLOROMETHANE	1.00	U
110-75-8	2-CHLOROETHYL VINYL ETHER	1.00	U
10061-01-5	CIS-1 3-DICHLOROPROPENE	1.00	U
108-10-1	4-METHYL-2-PENTANONE	5.00	U
108-88-3	TOLUENE	1.00	U
10061-02-6	TRANS-1 3-DICHLOROPROPENE	1.00	U
79-00-5	1 1 2-TRICHLOROETHANE	1.00	U
127-18-4	TETRACHLOROETHENE	1.00	U
142-28-9	1 3-DICHLOROPROPANE	1.00	U
591-78-6	2-HEXANONE	5.00	U
124-48-1	DIBROMOCHLOROMETHANE	1.00	U
106-93-4	1 2-DIBROMOETHANE	1.00	U
108-90-7	CHLOROBENZENE	1.00	U
630-26-6	1 1 1 2-TETRACHLOROETHANE	1.00	U
100-41-4	ETHYL BENZENE	1.00	U
108-38-3	M- P-XYLENE	2.00	U
95-47-6	O-XYLENE	1.00	U
100-42-5	STYRENE	1.00	U
75-25-2	BROMOFORM	1.00	U
98-82-8	ISOPROPYLBENZENE	1.00	U
110-57-6	TRANS-1 4-DICHLORO-2-BUTENE	1.00	U
108-86-1	BROMOBENZENE	1.00	U
79-34-5	1 1 2 2-TETRACHLOROETHANE	1.00	U
96-18-4	1 2 3-TRICHLOROPROPANE	1.00	U
1476-11-5	CIS-1 4-DICHLORO-2-BUTENE	1.00	U
103-65-1	N-PROPYLBENZENE	1.00	U
95-49-8	2-CHLOROTOLUENE	1.00	U
106-43-4	4-CHLOROTOLUENE	1.00	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

VBLK1247-03

Lab Name: EN CHEM GREEN BAY Contract:

Lab Code: ENCHEMGB Case No.: SAS No.: SDG No.: MS105282003A

Matrix: (soil/water) WATER Lab Sample ID: VBLK1247-03

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 05280304

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 05/28/03

GC Column: DB-624 ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-67-8	1 3 5-TRIMETHYLBENZENE	1.00	U
98-06-6	TERT-BUTYLBENZENE	1.00	U
95-63-6	1 2 4-TRIMETHYLBENZENE	1.00	U
135-98-8	SEC-BUTYLBENZENE	1.00	U
541-73-1	1 3-DICHLOROBENZENE	1.00	U
106-46-7	1 4-DICHLOROBENZENE	1.00	U
99-878-6	P-ISOPROPYLTOLUENE (CYMENE)	1.00	U
95-50-1	1 2-DICHLOROBENZENE	1.00	U
104-51-8	N-BUTYLBENZENE	1.00	U
67-72-1	HEXACHLOROETHANE	1.00	U
96-12-8	1 2-DIBROMO-3-CHLOROPROPANE	1.00	U
95-63-6	1 2 4-TRICHLOROBENZENE	1.00	U
87-68-3	HEXACHLOROBUTADIENE	1.00	U
91-20-3	NAPHTHALENE	1.00	U
96-18-4	1 2 3-TRICHLOROBENZENE	1.00	U
91-57-6	2-METHYLNAPHTHALENE	5.00	U
----------	TOTAL 1 2-DICHLOROETHENE	2.00	U
80-62-6	METHYL METHACRYLATE	5.00	U
----------	TOTAL XYLENES	3.00	U
97-63-2	ETHYL METHACRYLATE	5.00	U
79-20-9	METHYL ACETATE	1.00	U
110-82-7	CYCLOHEXANE	1.00	U
108-87-2	METHYLCYCLOHEXANE	1.00	U
78-88-6	2 3-DICHLOROPROPENE	1.00	U
526-73-8	1 2 3-TRIMETHYLBENZENE	1.00	U
75-05-8	ACETONITRILE	1.00	U
126-99-8	CHLOROPRENE	1.00	U
107-12-0	PROPIONITRILE	1.00	U
126-98-7	METHACRYLONITRILE	1.00	U
78-83-1	ISOBUTANOL	4.00	U

FORM 3
WATER VOLATILE BLANK SPIKE RECOVERY

Lab Name: EN CHEM GREEN BAY Contract:

Lab Code: ENCHEMGB Case No.: SAS No.: SDG No.: MS105282003A

Matrix Spike - Sample No.: VBLK1247-03

COMPOUND	SPIKE ADDED (ug/L)	BLANK AMOUNT (ug/L)	BS AMOUNT (ug/L)	BS % REC #	QC. LIMITS REC.
CHLOROMETHANE	50.00	0.00	43.08	86	48-134
VINYL CHLORIDE	50.00	0.00	45.52	91	61-134
BROMOMETHANE	50.00	0.00	45.66	91	53-137
CHLOROETHANE	50.00	0.00	42.25	84	73-127
1 1-DICHLOROETHENE	50.00	0.00	42.93	86	82-127
ACETONE	50.00	0.00	26.05	52	42-120
CARBON DISULFIDE	50.00	0.00	44.54	89	78-130
METHYLENE CHLORIDE	50.00	0.00	40.10	80	77-117
TRANS-1 2-DICHLOROETHEN	50.00	0.00	48.31	97	70-130
1 1-DICHLOROETHANE	50.00	0.00	53.11	106	80-120
CIS-1 2-DICHLOROETHENE	50.00	0.00	47.06	94	70-130
2-BUTANONE	50.00	0.00	43.96	88	59-122
CHLOROFORM	50.00	0.00	53.24	106	80-120
1 1 1-TRICHLOROETHANE	50.00	0.00	57.39	115	80-120
CARBON TETRACHLORIDE	50.00	0.00	59.59	119	85-128
BENZENE	50.00	0.00	48.47	97	80-120
1 2-DICHLOROETHANE	50.00	0.00	52.95	106	80-120
TRICHLOROETHENE	50.00	0.00	54.04	108	80-120
1 2-DICHLOROPROPANE	50.00	0.00	50.69	101	80-120
BROMODICHLOROMETHANE	50.00	0.00	55.61	111	80-120
CIS-1 3-DICHLOROPROPENE	50.00	0.00	49.99	100	78-120
4-METHYL-2-PENTANONE	50.00	0.00	49.33	99	69-119
TOLUENE	50.00	0.00	51.53	103	80-120
TRANS-1 3-DICHLOROPROPE	50.00	0.00	48.00	96	80-120
1 1 2-TRICHLOROETHANE	50.00	0.00	46.10	92	80-120
TETRACHLOROETHENE	50.00	0.00	54.66	109	80-120
2-HEXANONE	50.00	0.00	37.31	75	60-123
DIBROMOCHLOROMETHANE	50.00	0.00	53.90	108	80-120

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS: _____

_____

FORM 3
WATER VOLATILE BLANK SPIKE RECOVERY

Lab Name: EN CHEM GREEN BAY Contract:

Lab Code: ENCHEMGB Case No.: SAS No.: SDG No.: MS105282003A

Matrix Spike - Sample No.: VBLK1247-03

COMPOUND	SPIKE ADDED (ug/L)	BLANK AMOUNT (ug/L)	BS AMOUNT (ug/L)	BS % REC #	QC. LIMITS REC.
CHLOROBENZENE	50.00	0.00	49.12	98	80-120
ETHYL BENZENE	50.00	0.00	51.72	103	80-120
M- P-XYLENE	100.00	0.00	100.78	101	70-130
O-XYLENE	50.00	0.00	49.01	98	70-130
STYRENE	50.00	0.00	44.89	90	80-120
BROMOFORM	50.00	0.00	51.22	102	66-123
1 1 2 2-TETRACHLOROETHA	50.00	0.00	43.24	86	74-115
TOTAL 1 2-DICHLOROETHEN	100.00	0.00	95.38	95	80-120
TOTAL XYLENES	150.00	0.00	149.79	100	80-120

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS: _____

FORM 3
WATER VOLATILE BLANK SPIKE RECOVERY

Lab Name: EN CHEM GREEN BAY Contract:

Lab Code: ENCHEMGB Case No.: SAS No.: SDG No.: MS105282003A

Matrix Spike - Sample No.: VBLK1247-03

COMPOUND	SPIKE ADDED (ug/L)	BSD AMOUNT (ug/L)	BSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
CHLOROMETHANE	50.00	43.26	86	0	20	48-134
VINYL CHLORIDE	50.00	45.09	90	1	20	61-134
BROMOMETHANE	50.00	46.79	94	3	20	53-137
CHLOROETHANE	50.00	43.73	87	4	20	73-127
1 1-DICHLOROETHENE	50.00	42.33	85	1	20	82-127
ACETONE	50.00	29.88	60	14	33	42-120
CARBON DISULFIDE	50.00	44.96	90	1	20	78-130
METHYLENE CHLORIDE	50.00	40.12	80	0	20	77-117
TRANS-1 2-DICHLOROETHEN	50.00	49.06	98	1	20	70-130
1 1-DICHLOROETHANE	50.00	53.61	107	1	20	80-120
CIS-1 2-DICHLOROETHENE	50.00	48.42	97	3	20	70-130
2-BUTANONE	50.00	42.09	84	5	27	59-122
CHLOROFORM	50.00	52.10	104	2	20	80-120
1 1 1-TRICHLOROETHANE	50.00	57.45	115	0	20	80-120
CARBON TETRACHLORIDE	50.00	58.92	118	1	20	85-128
BENZENE	50.00	49.36	99	2	20	80-120
1 2-DICHLOROETHANE	50.00	53.46	107	1	20	80-120
TRICHLOROETHENE	50.00	53.02	106	2	20	80-120
1 2-DICHLOROPROPANE	50.00	52.44	105	4	20	80-120
BROMODICHLOROMETHANE	50.00	55.68	111	0	20	80-120
CIS-1 3-DICHLOROPROPENE	50.00	49.26	98	2	20	78-120
4-METHYL-2-PENTANONE	50.00	48.61	97	2	20	69-119
TOLUENE	50.00	51.59	103	0	20	80-120
TRANS-1 3-DICHLOROPROPE	50.00	49.02	98	2	20	80-120
1 1 2-TRICHLOROETHANE	50.00	45.50	91	1	20	80-120
TETRACHLOROETHENE	50.00	53.64	107	2	20	80-120
2-HEXANONE	50.00	37.42	75	0	20	60-123
DIBROMOCHLOROMETHANE	50.00	53.17	106	2	20	80-120

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS: _____

FORM 3
WATER VOLATILE BLANK SPIKE RECOVERY

Lab Name: EN CHEM GREEN BAY Contract:

Lab Code: ENCHEMGB Case No.: SAS No.: SDG No.: MS105282003A

Matrix Spike - Sample No.: VBLK1247-03

COMPOUND	SPIKE ADDED (ug/L)	BSD AMOUNT (ug/L)	BSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
CHLOROBENZENE	50.00	48.32	97	1	20	80-120
ETHYL BENZENE	50.00	50.49	101	2	20	80-120
M- P-XYLENE	100.00	101.18	101	0	20	70-130
O-XYLENE	50.00	47.55	95	3	20	70-130
STYRENE	50.00	44.18	88	2	20	80-120
BROMOFORM	50.00	49.04	98	4	20	66-123
1 1 2 2-TETRACHLOROETHA	50.00	44.12	88	2	20	74-115
TOTAL 1 2-DICHLOROETHEN	100.00	97.48	97	2	20	80-120
TOTAL XYLENES	150.00	148.73	99	1	20	80-120

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 37 outside limits
Spike Recovery: 0 out of 74 outside limits

COMMENTS: _____

FORM 3
WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: EN CHEM GREEN BAY Contract:

Lab Code: ENCHEMGB Case No.: SAS No.: SDG No.: MS105282003A

Matrix Spike - Sample No.: 834736-010

Batch QC

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE AMOUNT (ug/L)	MS AMOUNT (ug/L)	MS % REC #	QC. LIMITS REC.
CHLOROMETHANE	50.00	0.00	43.57	87	39-138
VINYL CHLORIDE	50.00	0.00	44.68	89	62-137
BROMOMETHANE	50.00	0.00	46.28	92	57-135
CHLOROETHANE	50.00	0.00	44.77	90	71-127
1 1-DICHLOROETHENE	50.00	0.00	43.42	87	83-125
ACETONE	50.00	0.00	29.05	58	38-139
CARBON DISULFIDE	50.00	0.00	44.38	89	77-128
METHYLENE CHLORIDE	50.00	0.00	40.21	80	70-130
TRANS-1 2-DICHLOROETHEN	50.00	0.00	48.36	97	70-130
1 1-DICHLOROETHANE	50.00	0.00	55.62	111	82-121
CIS-1 2-DICHLOROETHENE	50.00	0.00	48.66	97	70-130
2-BUTANONE	50.00	0.00	49.17	98	42-156
CHLOROFORM	50.00	0.00	53.57	107	70-130
1 1 1-TRICHLOROETHANE	50.00	0.00	59.00	118	87-127
CARBON TETRACHLORIDE	50.00	0.00	60.60	121	84-132
BENZENE	50.00	0.00	49.83	100	70-130
1 2-DICHLOROETHANE	50.00	0.00	55.29	110	70-130
TRICHLOROETHENE	50.00	0.00	52.12	104	70-130
1 2-DICHLOROPROPANE	50.00	0.00	50.46	101	70-130
BROMODICHLOROMETHANE	50.00	0.00	56.10	112	70-130
CIS-1 3-DICHLOROPROPENE	50.00	0.00	49.45	99	70-119
4-METHYL-2-PENTANONE	50.00	0.00	52.96	106	66-122
TOLUENE	50.00	0.00	51.75	104	70-130
TRANS-1 3-DICHLOROPROPE	50.00	0.00	49.62	99	70-130
1 1 2-TRICHLOROETHANE	50.00	0.00	47.59	95	70-130
TETRACHLOROETHENE	50.00	0.00	54.41	109	88-121
2-HEXANONE	50.00	0.00	45.35	91	32-174
DIBROMOCHLOROMETHANE	50.00	0.00	56.03	112	79-119

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS: _____

_____

FORM 3
WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: EN CHEM GREEN BAY Contract:

Lab Code: ENCHEMGB Case No.: SAS No.: SDG No.: MS105282003A

Matrix Spike - Sample No.: 834736-010

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE AMOUNT (ug/L)	MS AMOUNT (ug/L)	MS % REC #	QC. LIMITS REC.
CHLOROBENZENE	50.00	0.00	49.10	98	70-130
ETHYL BENZENE	50.00	0.00	52.14	104	70-130
M- P-XYLENE	100.00	0.00	101.91	102	70-130
O-XYLENE	50.00	0.00	48.70	97	70-130
STYRENE	50.00	0.00	44.64	89	70-130
BROMOFORM	50.00	0.00	51.85	104	66-124
1 1 2 2-TETRACHLOROETHA	50.00	0.00	45.46	91	70-130
TOTAL 1 2-DICHLOROETHEN	100.00	0.00	97.03	97	70-130
TOTAL XYLENES	150.00	0.00	150.62	100	70-130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS: _____

FORM 3
WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: EN CHEM GREEN BAY Contract:

Lab Code: ENCHEMGB Case No.: SAS No.: SDG No.: MS105282003A

Matrix Spike - Sample No.: 834736-010

COMPOUND	SPIKE ADDED (ug/L)	MSD AMOUNT (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
CHLOROMETHANE	50.00	44.23	88	1	21	39-138
VINYL CHLORIDE	50.00	45.32	91	2	30	62-137
BROMOMETHANE	50.00	46.55	93	1	23	57-135
CHLOROETHANE	50.00	43.95	88	2	30	71-127
1 1-DICHLOROETHENE	50.00	43.59	87	0	20	83-125
ACETONE	50.00	33.35	67	14	30	38-139
CARBON DISULFIDE	50.00	45.58	91	2	38	77-128
METHYLENE CHLORIDE	50.00	40.85	82	2	30	70-130
TRANS-1 2-DICHLOROETHEN	50.00	50.21	100	3	30	70-130
1 1-DICHLOROETHANE	50.00	54.33	109	2	20	82-121
CIS-1 2-DICHLOROETHENE	50.00	50.08	100	3	30	70-130
2-BUTANONE	50.00	42.16	84	15	30	42-156
CHLOROFORM	50.00	53.70	107	0	30	70-130
1 1 1-TRICHLOROETHANE	50.00	61.73	123	4	20	87-127
CARBON TETRACHLORIDE	50.00	60.55	121	0	30	84-132
BENZENE	50.00	52.18	104	4	30	70-130
1 2-DICHLOROETHANE	50.00	56.97	114	4	30	70-130
TRICHLOROETHENE	50.00	53.32	107	3	30	70-130
1 2-DICHLOROPROPANE	50.00	50.02	100	1	30	70-130
BROMODICHLOROMETHANE	50.00	54.97	110	2	30	70-130
CIS-1 3-DICHLOROPROPENE	50.00	49.18	98	1	20	70-119
4-METHYL-2-PENTANONE	50.00	48.72	97	9	25	66-122
TOLUENE	50.00	51.76	104	0	30	70-130
TRANS-1 3-DICHLOROPROPE	50.00	49.18	98	1	30	70-130
1 1 2-TRICHLOROETHANE	50.00	45.53	91	4	30	70-130
TETRACHLOROETHENE	50.00	55.02	110	1	13	88-121
2-HEXANONE	50.00	38.87	78	15	43	32-174
DIBROMOCHLOROMETHANE	50.00	53.52	107	4	20	79-119

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS: _____

FORM 3
WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: EN CHEM GREEN BAY Contract:

Lab Code: ENCHEMGB Case No.: SAS No.: SDG No.: MS105282003A

Matrix Spike - Sample No.: 834736-010

COMPOUND	SPIKE ADDED (ug/L)	MSD AMOUNT (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
CHLOROBENZENE	50.00	50.09	100	2	30	70-130
ETHYL BENZENE	50.00	51.30	103	1	30	70-130
M- P-XYLENE	100.00	101.39	101	1	30	70-130
O-XYLENE	50.00	49.15	98	1	30	70-130
STYRENE	50.00	44.56	89	0	30	70-130
BROMOFORM	50.00	49.89	100	4	30	66-124
1 1 2 2-TETRACHLOROETHA	50.00	46.14	92	1	30	70-130
TOTAL 1 2-DICHLOROETHEN	100.00	100.30	100	3	30	70-130
TOTAL XYLENES	150.00	150.55	100	0	30	70-130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 37 outside limits
Spike Recovery: 0 out of 74 outside limits

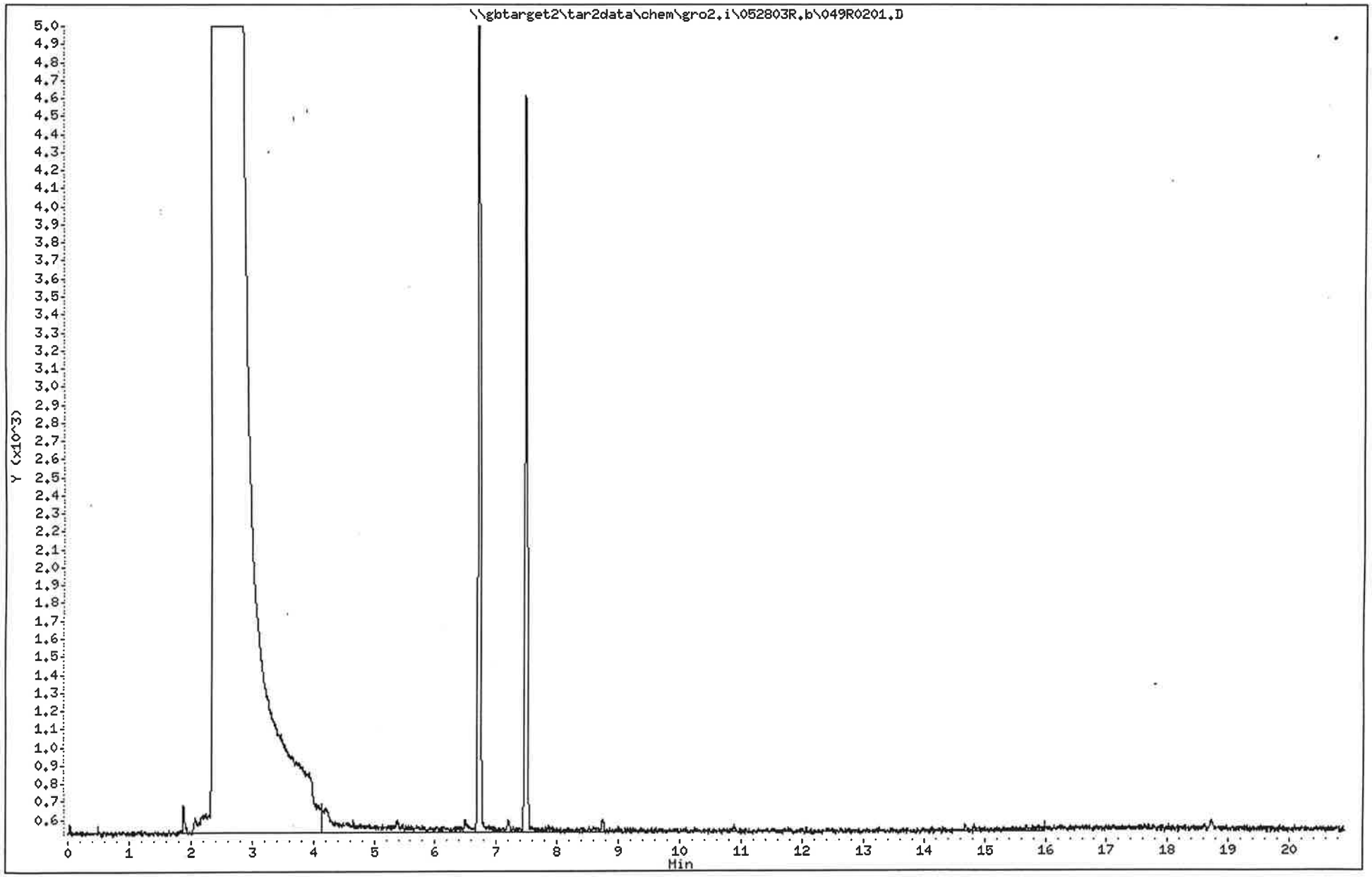
COMMENTS: _____

Data File: \\gbtarget2\tar2data\chem\gro2.i\052803R.b\049R0201.D
Date : 29-MAY-2003 04:31
Client ID: 834748-001
Sample Info: 34748F001SDW50

Instrument: gro2.i

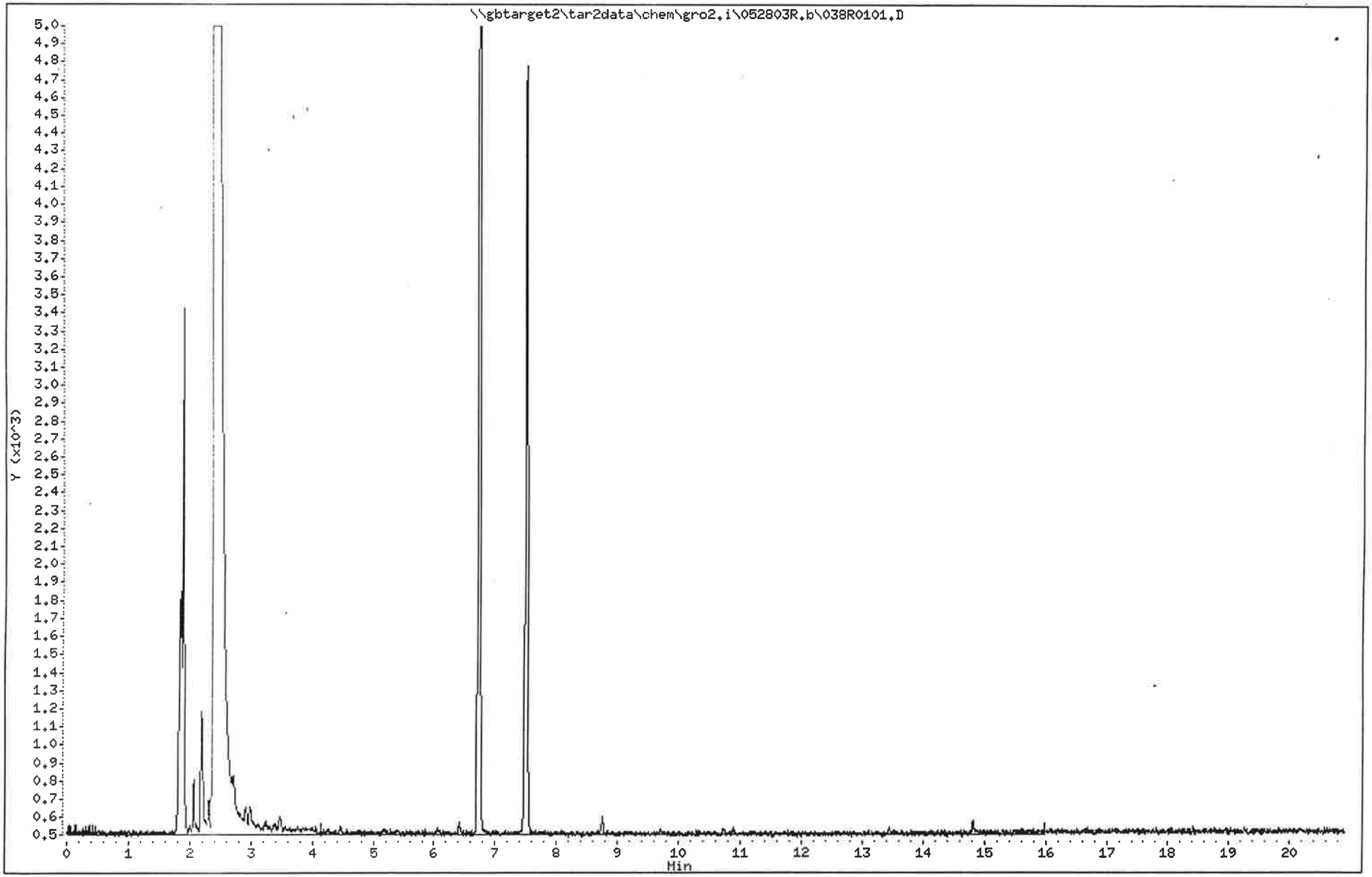
Operator: PMS
Column diameter: 0.32

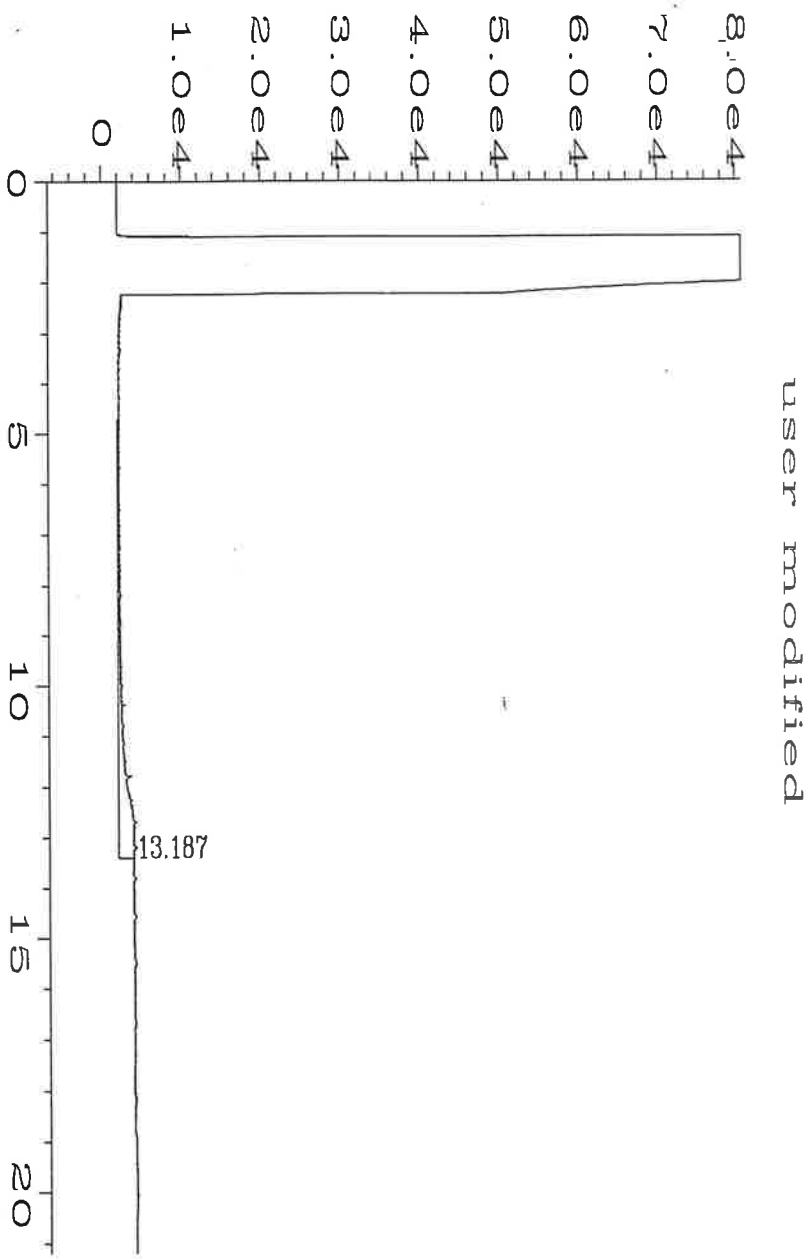
Column phase: DB-624



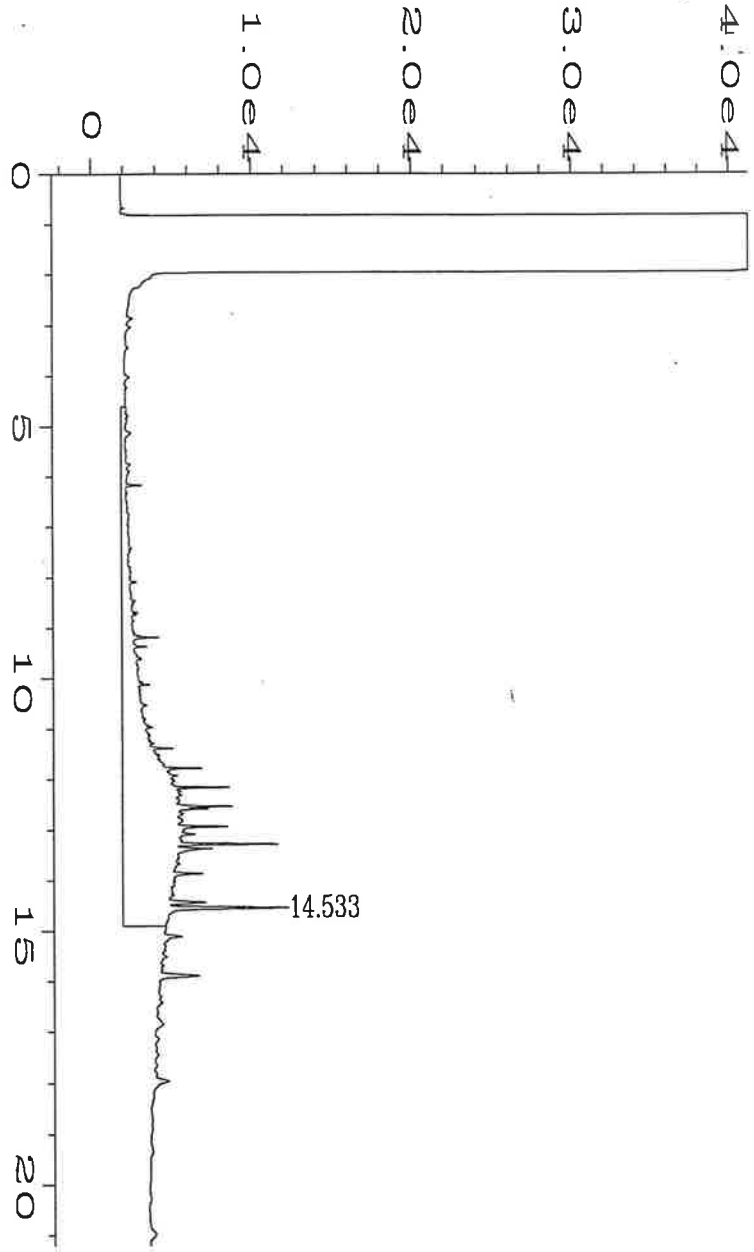
Data File: \\gbtarget2\tar2data\chem\gro2.i\052803R.b\038R0101.D
Date : 28-MAY-2003 23:49
Client ID: 834748-002
Sample Info: 34748B002WAV1
Purge Volume: 5.0
Column phase: DB-624

Instrument: gro2.i
Operator: PMS
Column diameter: 0.32





Data File Name	: G:\HPCHEM\3\DATA\053003\044R0701.D		
Operator	: KEG	Page Number	: 1
Instrument	: DRO	Vial Number	: 44
Sample Name	: 34748D001SXX1	Injection Number	: 1
Run Time Bar Code:		Sequence Line	: 7
Acquired on	: 31 May 03 07:26 AM	Instrument Method	: 3DS05253.MTH
Report Created on	: 31 May 03 07:52 AM	Analysis Method	: 3DS05253.MTH
Last Recalib on	: 27 MAY 03 11:22 AM	Sample Amount	: 0
Multiplier	: 1	ISTD Amount	:



user modified

Data File Name	: G:\HPCHEM\7\DATA\052803\027R0101.D		
Operator	: KEG	Page Number	: 1
Instrument	: DRO3	Vial Number	: 27
Sample Name	: 34748D002WZX1	Injection Number	: 1
Run Time Bar Code:		Sequence Line	: 1
Acquired on	: 28 May 03 07:33 PM	Instrument Method	: 3QUICK.MTH
Report Created on	: 28 May 03 08:00 PM	Analysis Method	: 3QUICK.MTH
Last Recalib on	: 23 MAY 03 12:13 PM	Sample Amount	: 0
Multiplier	: 1	ISTD Amount	:

Effective Date: 07/01/2002

Surrogates - 2002
En Chem - Green Bay

	Aqueous		Low Level Solids		Methanol Solids	
Surrogate - GC VOA	LCL	UCL	LCL	UCL	LCL	UCL
α,α,α–Trifluorotoluene	61	149	54	144	62	154

	Aqueous		Low Level Solids		Methanol Solids	
Surrogate - GCMS VOA	LCL	UCL	LCL	UCL	LCL	UCL
Dibromofluoromethane	61	136	51	127	57	118
Toluene-d_8	63	140	62	126	72	115
4-Bromoflurobenzene	55	136	60	109	67	112

	Aqueous		Solids	
Surrogate - GCMS PAH	LCL	UCL	LCL	UCL
Nitrobenzene-$_{d5}$	30	170	35	126
2-Fluorobiphenyl	30	126	44	110
Terphenyl-d_{14}	56	148	38	145

	Aqueous		Solids	
Surrogate - GCMS BNA	LCL	UCL	LCL	UCL
2-Fluorophenol	13	70	35	114
Phenol-$_{d5}$	8	44	29	114
2-Chlorophenol-$_{d4}$	29	104	34	107
1,2-Dichlorobenzene-$_{d4}$	34	112	27	116
Nitrobenezene-$_{d5}$	34	126	26	126
2-Fluorobiphenyl	36	126	26	126
2,4,6-Tribromophenol	39	133	17	129
Terphenyl-$_{d14}$	56	139	23	141

	Aqueous		Solids	
Surrogate - GC PCB	LCL	UCL	LCL	UCL
Decachlorobiphenyl	22	133	11	142

(Please Print Legibly)
Company Name: Pinnacle
Branch or Location: Osseo
Project Contact: Roy Hill
Telephone: 763-315-4501
Project Number: MN02230.00
Project Name: Hector AST
Project State: MN
Sampled By (Print): Roy Hill
PO #:

EN CHEM INC.

1241 Bellevue St., Suite 9
Green Bay, WI 54302
920-469-2436
FAX 920-469-8827

CHAIN OF CUSTODY

103222

Page ____ of ____

Quote #:
Mail Report To: Roy Hill
Company: Pinnacle Eng
Address: 101 Broadway St. W. Suite 100, Osseo MN 55369
Invoice To: Same
Company:
Address:
Mail Invoice To:

*Preservation Codes
A=None B=HCL C=H2SO4 D=HNO3 E=EnCore F=Methanol G=NaOH
H = Sodium Bisulfate Solution I = Sodium Thiosulfate J = Other

Data Package Options - (please circle if requested)
Sample Results Only (no QC)
EPA Level II (Subject to Surcharge)
EPA Level III (Subject to Surcharge)
EPA Level IV (Subject to Surcharge)

Regulatory Program: UST, RCRA, SDWA, NPDES, CERCLA

Matrix Codes: W=Water, S=Soil, A=Air, C=Charcoal, B=Biota, Sl=Sludge

LABORATORY ID (Lab Use Only)	FIELD ID	COLLECTION DATE	COLLECTION TIME	MATRIX	FILTERED? (YES/NO)	PRESERVATION (CODE)*	ANALYSES REQUESTED: GRO/BTEX	DRO	GRO	VOC (MN 465)	% Solids	TOTAL # OF BOTTLES SENT	CLIENT COMMENTS	LAB COMMENTS (Lab Use Only)
					F	A/B	B	B	A					
001	PP-6 (24')	5/22/03	11:00	S	X	X			X			3		1-4oz Amb, 1-2oz F, 1-2oz A
002	PP-7	5/22	2:30	W		X	X	X				7		1-1L Amber B, 6-40ml B
003	Trip Blank											2		2-40ml B
														180

Rush Turnaround Time Requested (TAT) - Prelim
(Rush TAT subject to approval/surcharge)
Date Needed:
Transmit Prelim Rush Results by (circle):
Phone Fax E-Mail
Phone #:
Fax #:
E-Mail Address:

Samples on HOLD are subject to special pricing and release of liability

Relinquished By:	Date/Time:	Received By:	Date/Time:
Roy Hill	5/23/03 9:00		
	5-23		5-23
Fed Ex	5/24/03 0930	Fed Ex	
		Karly Pankowski	5/24/03 0930

En Chem Project No. 834748
Sample Receipt Temp. 4.0°C
Sample Receipt pH (Wet/Metals) N/A
Cooler Custody Seal
Present / Not Present
Intact / Not Intact

Version 3.0: 03/03