December 22, 2011

Mr. Kevin Pylka
PolyMet Mining, Inc.
P.O. Box 475
Hoyt Lakes, Minnesota 55790

RE: Test pit results and waste removal summary for the Cliffs Biwabik Ore Corporation Property located near Biwabik, Minnesota

Dear Mr. Pylka:

Per the authorization of PolyMet Mining, Inc. (PolyMet) we have completed our services for this project. This report summarizes our methodologies and the results of our field observations and laboratory data.

Background

The Property consists of approximately 5, 395 acres. A Phase I Environmental Site Assessment was conducted for this Property and one recognized environmental condition (REC) was observed. The REC was that unauthorized dumping had occurred at various locations across the site. Materials observed in the waste piles included general demolition debris, one old milk truck, metal debris, household garbage, furniture, and animal carcasses. A total of 24 unauthorized dump locations were observed. The Property location is shown on Figure 1 and the unauthorized dump location s are shown on Figure 2.

Procedures and Results

Between July 13 and July 15, 2011 Kangas Excavating (Kangas) was hired to remove the waste piles from the Property. Kangas employees have received Solid Waste Operator Certification from the Minnesota Pollution Control Agency and have a contract with the St. Louis County Environmental Services Department to manage the St. Louis County Mixed Municipal Waste (MSW) Landfill. As part of this Contract, Kangas is responsible for accepting and managing waste at the landfill.

Kangas was asked to segregate the various waste piles and determine what wastes could be accepted at the landfill, Northeast Technical Services, Inc. (NTS) was on-site to inspect the waste and determine if any regulated substances may have spilled that would require any follow-up sampling. The NTS representative on-site also was a Minnesota Department of Health (MDH) Certified Asbestos Inspector. As an asbestos inspector the NTS visually examined the waste and determined if any of the material had the potential to contain asbestos. There were no potential asbestos containing materials observed. Kangas collected all of the waste at the identified unauthorized dump locations and disposed of it in the St. Louis County landfill. Once the dumped materials had been removed Kangas constructed sand berms at the end of each of the access roads to restrict access to this areas.

Of the 24 unauthorized dump locations only two had the potential to release a regulated substance. One is identified as a 1950's Milk Truck and is listed as Reference Point Z on Figure 2, and the second was a mix of twelve 1-quart and 1-gallon containers of used oil located near Reference Point Y on Figure 2.

At the Milk Truck one petroleum stain less than 2-feet in diameter was observed. NTS hand excavated approximately 5-gallons of soil and collected a sample from the base of the excavation. The hand excavation was approximately 2-feet in diameter and extended to a depth of two feet. Excavation was discontinued when no visible staining was left. A sample was collected at the base of the excavation (MT-1) and was analyzed for diesel range organics (DRO) and benzene, toluene, ethylbenzene, and total xylenes (BTEX). There were no detections of the BTEX compounds above the laboratory reporting limits, and there was a DRO detection of 990 parts per million (ppm). A stockpile sample was also collected of the material that was excavated and hauled to the landfill for disposal (MTSP-1). The stockpile sample had no detections of the BTEX compounds above the laboratory reporting limit and a detection of DRO at 2,900 ppm.

Due to the detections at the base of the excavation, NTS returned to the site on September 10, 2011 and excavated another 5-gallons of soil. A sample was collected from the base of the excavation and was analyzed for DRO, gasoline range organics (GRO), BTEX, and DRO using a silica gel clean-up. The silica gel cleanup is intended to remove biogenic interferences to the DRO test. The results of the tests were 61 ppm of DRO and 36 ppm of DRO after the silica gel cleanup. There were no GRO or BTEX detections above the laboratory reporting limits. A copy of the laboratory reports is attached to this letter.

At the Oil container disposal area it was observed that only two of the containers had leaked and the containers were adjacent to each other. The stain from these two leaky containers was approximately 1 1/2-feet in diameter. NTS hand excavated approximately 5-gallons of soil and collected a sample from the base of the excavation. The hand excavation was approximately 1 1/2-feet in diameter and extended to a depth of two feet. Excavation was discontinued when no visible staining was left. A sample was collected at the base of the excavation (OS-1) and was analyzed for diesel range organics (DRO) and benzene, toluene, ethylbenzene, and total xylenes (BTEX). There were no detections of the BTEX compounds above the laboratory reporting limits, and there was a DRO detection of 420 parts per million (ppm). A stockpile sample was also collected of the material that was excavated and hauled to the landfill for disposal (OSSP-1). The stockpile sample had no detections of the BTEX compounds above the laboratory reporting limit and a detection of DRO at 4,000 ppm.

Due to the detections at the base of the excavation, NTS returned to the site on September 10, 2011 and excavated another 5-gallons of soil. A sample was collected from the base of the excavation and was analyzed for DRO. The DRO sample result was 14 ppm. A copy of the laboratory reports is attached to this letter.

Closure

Based on the field and laboratory results it is our opinion that:

1. There were no releases of regulated substances observed at 22 of the 24 identified unauthorized dump locations.
2. Material dumped at all 24 unauthorized dump areas has been removed and properly disposed in the St. Louis County landfill;
3. A release of less than 5-gallons of used oil occurred in the area of the former Milk Truck. The most significant portion of this release, including all of the stained soil, has been removed and disposed of in the St. Louis County Landfill. Due to the low volume of material and the low DRO concentrations the remaining material should degrade in-situ; and,
4. A release of less than 5-gallons of used oil occurred in the area of the oil container disposal area. The most significant portion of this release, including all of the stained soil, has been removed and disposed of in the St. Louis County Landfill. Due to the low volume of material and the low DRO concentrations this material should degrade in-situ

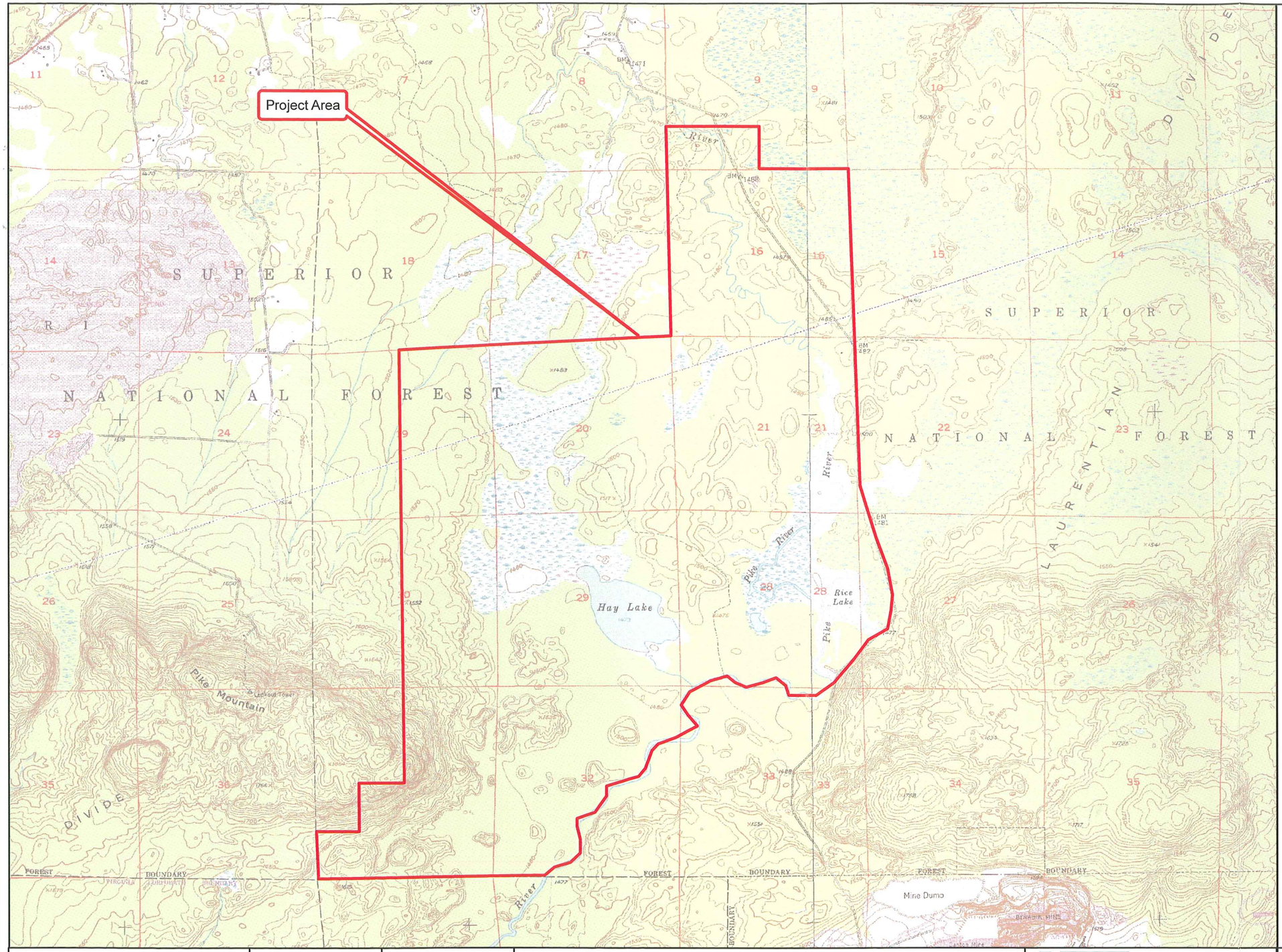
If you have any questions please feel free to contact me at (218) 742-1029.

Sincerely,
Northeast Technical Services, Inc

Douglas A. Fossell
Senior Project Manager

Enclosures:

Figure 1: Site Location Map
Figure 2: Site Vicinity Map
Laboratory Report



N

W E

S

0 1,500 3,000 6,000

Feet

1" = 3000'

LEGEND

Approximate Project Area

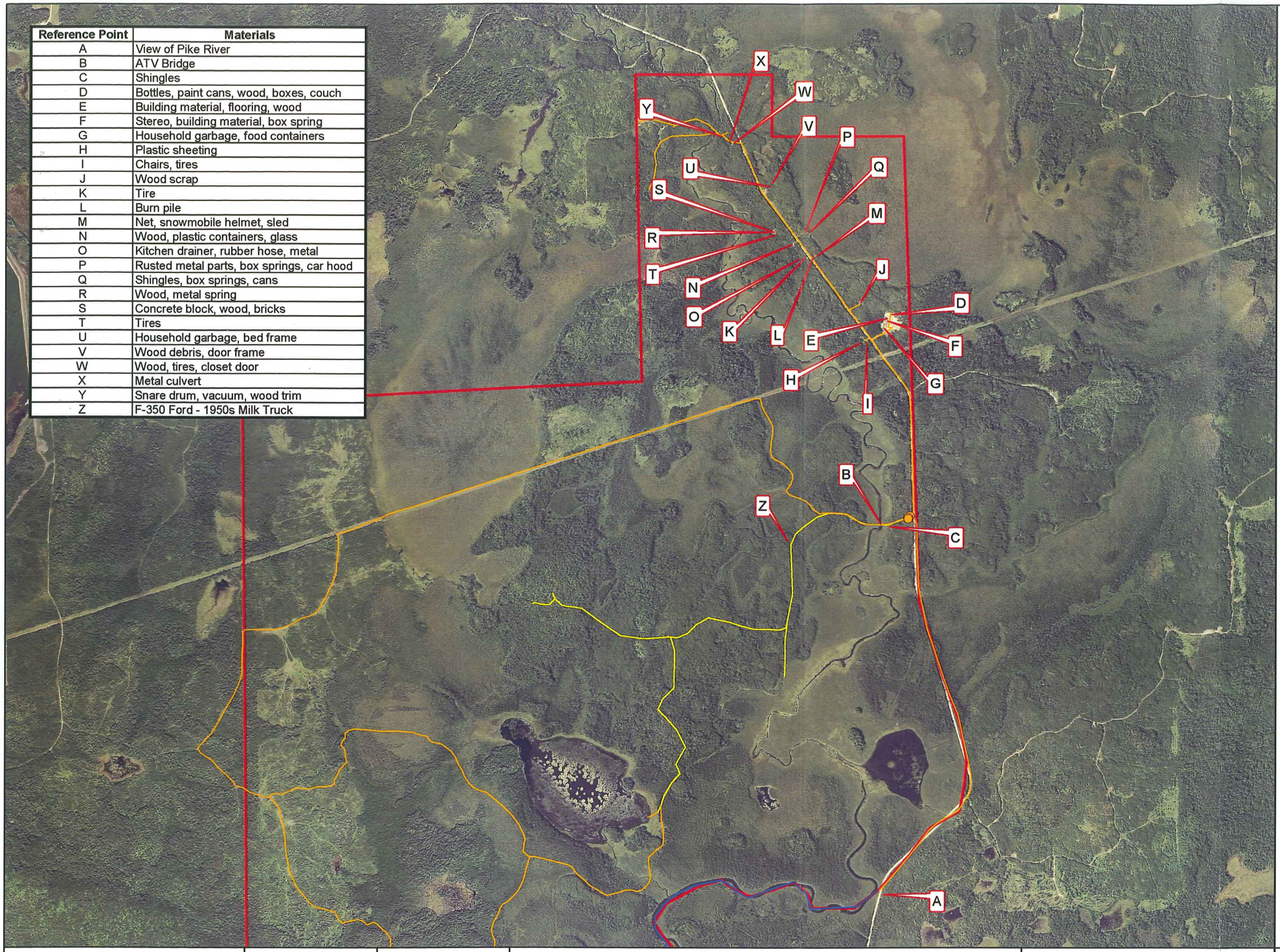
NOTES:

7.5 Minute United States Geological Service Topographic Map courtesy of MN DNR Data Deli

The property boundary depicted is approximate.

Drawing File Path: P:\08 Projects\Hoyt Lakes\ PolyMet\7158J\dwg\SiteVicinity.mxd	Drawn By: SMJ Date: NOV 2009	Reviewed By: DAF Date: NOV 2009	**Project #: 7158J.08 Phase I ESA Hay Lake- PolyMet Mining, Inc. Biwabik, St. Louis County, Minnesota**	NTS, Inc. 526 Chestnut Street P.O. Box 1142 Virginia, MN 55792	Figure 1 Site Vicinity Map # 1

Reference Point	Materials
A	View of Pike River
B	ATV Bridge
C	Shingles
D	Bottles, paint cans, wood, boxes, couch
E	Building material, flooring, wood
F	Stereo, building material, box spring
G	Household garbage, food containers
H	Plastic sheeting
I	Chairs, tires
J	Wood scrap
K	Tire
L	Burn pile
M	Net, snowmobile helmet, sled
N	Wood, plastic containers, glass
O	Kitchen drainer, rubber hose, metal
P	Rusted metal parts, box springs, car hood
Q	Shingles, box springs, cans
R	Wood, metal spring
S	Concrete block, wood, bricks
T	Tires
U	Household garbage, bed frame
V	Wood debris, door frame
W	Wood, tires, closet door
X	Metal culvert
Y	Snare drum, vacuum, wood trim
Z	F-350 Ford - 1950s Milk Truck



N
W E
S

0 1,000 2,000 4,000 Feet
1" = 2000'

LEGEND

- Reference Points
- Kayak Route
- Trails
- Approximate Project Area

NOTES:

2008 NAIP Digital Aerial Photograph
Courtesy of MN Geospatial Information Office

The property boundary depicted is approximate.

Drawing File Path: P:\08 Projects\Hoyt Lakes\ PolyMet\7158J\dwg\ReferencePts.mxd	Drawn By: SMJ Date: NOV 2009	Reviewed By: DAF Date: NOV 2009	**Project #: 7158J.08 Phase I ESA Hay Lake- PolyMet Mining, Inc. Biwabik, St. Louis County, Minnesota**	NTS, Inc. 526 Chestnut Street P.O. Box 1142 Virginia, MN 55792	Figure 2 Site Detail Map Reference Points	# 2

7158JA

Wednesday, July 27, 2011

Pace Analytical®
Laboratory Results

NTS
Attn: Doug Fossell
526 Chestnut Street
Virginia, MN 55792

RE: Pace COC#117013

Dear Doug Fossell,

Enclosed are the analytical results for sample(s) received by the laboratory on July 13, 2011. The results relate only to the samples included in this report. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Dan Toms

Dan Toms
Project Manager

ACCREDITED IN ACCORDANCE WITH nelac

SAMPLE SUMMARY

Pace Analytical Services
315 Chestnut Street
PO Box 1212
Virginia, MN 55792
Phone: 218-742-1042
Fax: 218-742-1010

Laboratory Results

Virginia MDH Certification: 027-137-445
Duluth MDH Certification: 027-137-446

PACE COC: 117013

Client: - NTS
Project: VM7158JA - Hay Lake Dump Cleanup
Sampled By: M. Lucas
Report Date: 7/27/2011

Sample Description	Sample ID	Sample Type	Matrix	Sample Date	Received Date
MT-1	496361	Grab	Non-Aqueous	7/13/2011 10:55	7/13/2011 12:45
MTSP-1	496362	Grab	Non-Aqueous	7/13/2011 10:55	7/13/2011 12:45
OS-1	496363	Grab	Non-Aqueous	7/13/2011 11:56	7/13/2011 12:45
OSSP-1	496364	Grab	Non-Aqueous	7/13/2011 11:56	7/13/2011 12:45

SAMPLE RESULTS

PACE Sample: 496361
Description: MT-1
Sample Date: 7/13/2011 10:55:00 AM

Matrix: Non-Aqueous
Sample Type: Grab

PACE COC: 117013
Client: - NTS
Project: VM7158JA - Hay Lake Dump Cleanup
Sampled By: M. Lucas
Report Date: 7/27/2011
Rec'd Temperature: 3.4 °C

Analyte	Result	RL	Units	Method	Prepared Date	Analysis Date	
Benzene	<100	100	µg/Kg	EPA 8021	7/19/2011	7/19/2011 13:43	q
Ethyl Benzene	<71	71	µg/Kg	EPA 8021	7/19/2011	7/19/2011 13:43	q
Toluene	<100	100	µg/Kg	EPA 8021	7/19/2011	7/19/2011 13:43	q
Xylene, Total	<200	200	µg/Kg	EPA 8021	7/19/2011	7/19/2011 13:43	q
DRO	990	180	mg/Kg	WI(95) DRO	7/14/2011	7/14/2011 21:26	D,q

Qualifier	Description	Note
D	Heavy hydrocarbon compounds detected beyond the DRO window.	
q	Qualified Data.	Sample results are based on wet weight.

SAMPLE RESULTS

PACE Sample: 496362
Description: MTSP-1
Sample Date: 7/13/2011 10:55:00 AM

Matrix: Non-Aqueous
Sample Type: Grab

PACE COC: 117013
Client: - NTS
Project: VM7158JA - Hay Lake Dump Cleanup
Sampled By: M. Lucas
Report Date: 7/27/2011
Rec'd Temperature: 3.4 °C

Analyte	Result	RL	Units	Method	Prepared Date	Analysis Date	
Benzene	<100	100	µg/Kg	EPA 8021	7/19/2011	7/19/2011 15:48	q
Ethyl Benzene	<71	71	µg/Kg	EPA 8021	7/19/2011	7/19/2011 15:48	q
Toluene	<100	100	µg/Kg	EPA 8021	7/19/2011	7/19/2011 15:48	q
Xylene, Total	<200	200	µg/Kg	EPA 8021	7/19/2011	7/19/2011 15:48	q
DRO	2900	430	mg/Kg	WI(95) DRO	7/14/2011	7/14/2011 21:54	D,q

Qualifier	Description	Note
D	Heavy hydrocarbon compounds detected beyond the DRO window.	
q	Qualified Data.	Sample results are based on wet weight.

SAMPLE RESULTS

PACE Sample: 496363
Description: OS-1
Sample Date: 7/13/2011 11:56:00 AM

Matrix: Non-Aqueous
Sample Type: Grab

PACE COC: 117013
Client: - NTS
Project: VM7158JA - Hay Lake Dump Cleanup
Sampled By: M. Lucas
Report Date: 7/27/2011
Rec'd Temperature: 3.4 °C

Analyte	Result	RL	Units	Method	Prepared Date	Analysis Date	
Benzene	<100	100	µg/Kg	EPA 8021	7/19/2011	7/19/2011 16:19	q
Ethyl Benzene	<71	71	µg/Kg	EPA 8021	7/19/2011	7/19/2011 16:19	q
Toluene	<100	100	µg/Kg	EPA 8021	7/19/2011	7/19/2011 16:19	q
Xylene, Total	<200	200	µg/Kg	EPA 8021	7/19/2011	7/19/2011 16:19	q
DRO	420	76	mg/Kg	WI(95) DRO	7/14/2011	7/15/2011 12:10	D,q

Qualifier	Description	Note
D	Heavy hydrocarbon compounds detected beyond the DRO window.	
q	Qualified Data.	Sample results are based on wet weight.

SAMPLE RESULTS

PACE Sample: 496364
Description: OSSP-1
Sample Date: 7/13/2011 11:56:00 AM

Matrix: Non-Aqueous
Sample Type: Grab

PACE COC: 117013
Client: - NTS
Project: VM7158JA - Hay Lake Dump Cleanup
Sampled By: M. Lucas
Report Date: 7/27/2011
Rec'd Temperature: 3.4 °C

Analyte	Result	RL	Units	Method	Prepared Date	Analysis Date	
Benzene	<100	100	µg/Kg	EPA 8021	7/19/2011	7/19/2011 16:51	q
Ethyl Benzene	<71	71	µg/Kg	EPA 8021	7/19/2011	7/19/2011 16:51	q
Toluene	<100	100	µg/Kg	EPA 8021	7/19/2011	7/19/2011 16:51	q
Xylene, Total	<200	200	µg/Kg	EPA 8021	7/19/2011	7/19/2011 16:51	q
DRO	4000	400	mg/Kg	WI(95) DRO	7/14/2011	7/14/2011 22:49	D,q

Qualifier	Description	Note
D	Heavy hydrocarbon compounds detected beyond the DRO window.	
q	Qualified Data.	Sample results are based on wet weight.

Pace Analytical	Document Name: Sample Condition Upon Receipt Form	Document Revision: 20June2011 Page 1 of 1
	Document No: F-VM-C-001Rev.01	Issuing Authority: Pace Virginia Minnesota Quality Office

Client Name: NTS Project # 117013

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☒ Client ☐ Commercial ☐ Pace Other _____

Optional: Proj. Due Date: Proj. Name:

Tracking #: _____

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no N/A

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☒ None ☐ Other _____ Temp Blank: Yes ✓ No _____

Thermometer Used 101594812 Type of Ice: (Wet) Blue None ☐ Samples on ice, cooling process has begun

Cooler Temperature 3.84 7-13-11 CO Biological Tissue is Frozen: Yes No N/A

Temp should be above freezing to 6°C Comments:

Date and Initials of person examining contents: 7-13-11 CO

Chain of Custody Present:	☒Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☒Yes ☐No ☐N/A	2.
Chain of Custody Relinquished:	☒Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☒Yes ☐No ☐N/A	4.
Samples Arrived within Hold Time:	☒Yes ☐No ☐N/A	5.
Short Hold Time Analysis (<72hr):	☐Yes ☒No ☐N/A	6.
Rush Turn Around Time Requested:	☐Yes ☒No ☐N/A	7.
Sufficient Volume:	☒Yes ☐No ☐N/A	8.
Correct Containers Used:	☒Yes ☐No ☐N/A	9.
-Pace Containers Used:	☒Yes ☐No ☐N/A	
Containers Intact:	☒Yes ☐No ☐N/A	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☒N/A	11.
Sample Labels match COC:	☒Yes ☐No ☐N/A	12.
-Includes date/time/ID/Analysis Matrix: SL		
All containers needing acid/base preservation will be checked and documented in the pH logbook		13. See pH log for results and additional preservation documentation
Headspace in VOA Vials (>6mm):	☐Yes ☐No ☒N/A	14.
Trip Blank Present:	☐Yes ☐No ☒N/A	15.
Trip Blank Custody Seals Present	☐Yes ☐No ☒N/A	
Pace Trip Blank Lot # :		

Client Notification/ Resolution: Field Data Required? Y / N

Person Contacted: Doug F Date/Time: 7/14/11

Comments/ Resolution:

NO moisture samples taken with samples. Client would like to report on a Wet weight Basis

DJT

Project Manager Review: Dan [signature] **Date:** 7/14/11

Northeast Technical Services, Inc.

315 Chestnut Street
P.O. Box 1142
Virginia, Minnesota 55792
Phone: 218-741-4290
Fax: 218-742-1010

Duluth Laboratory
1510 W. Superior Street
Duluth, MN 55802
Phone: 218-348-3998
Fax: 218-336-2995

COC# 117013

Page _____ of _____
Date Due: _____

CHAIN OF CUSTODY RECORD

Client Information	Report to:
Client: NTS	Address: Doug Fossell
Contact Person: Doug F.	
Address:	Invoice to:
Phone:	Address: Doug Fossell
Fax:	
Project Information: Hay Lake Dump Clean up	

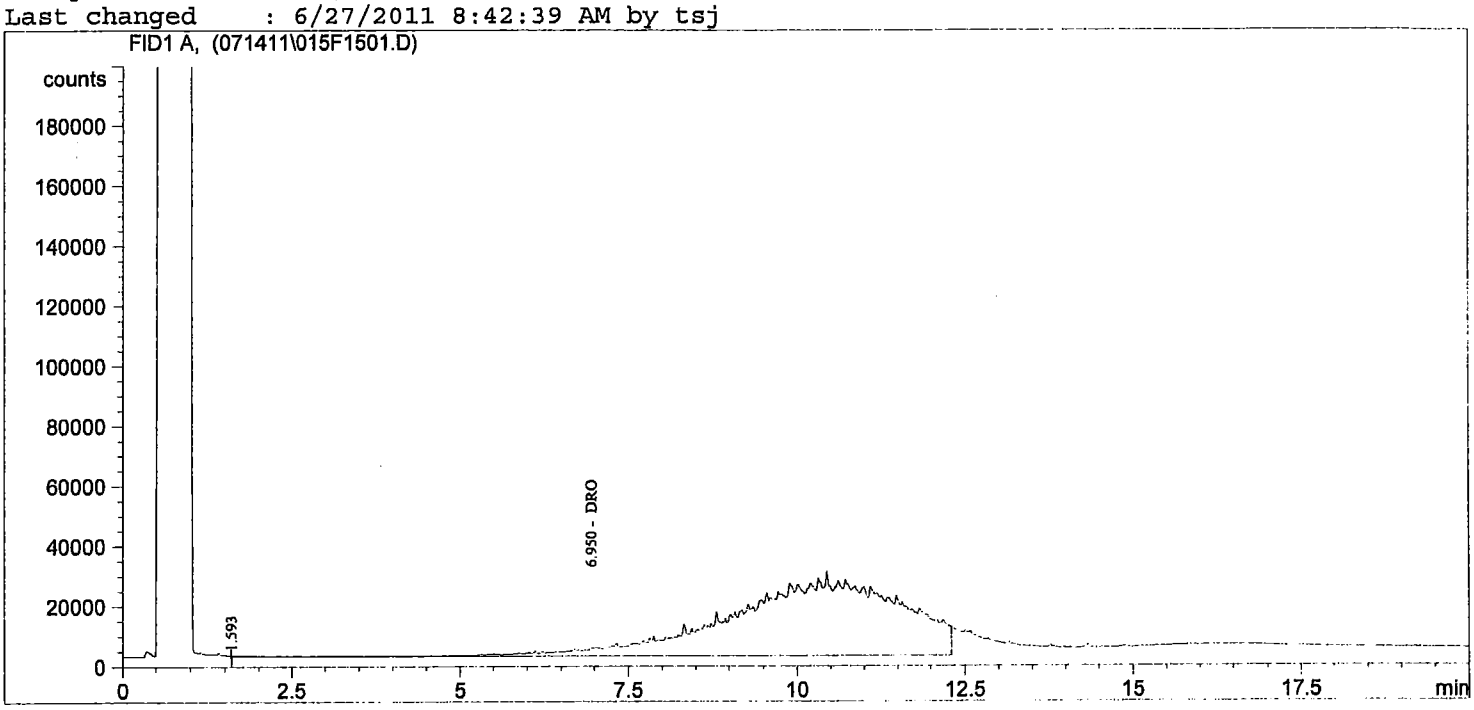
Retex DRO

Lab Use Only Laboratory ID	Sample Description	Collection Date	Collection Time	Matrix Liquid	Matrix Solid	Matrix Other	Type Grab	Type Comp	Filtered	Analysis Required									Comments
4963601	MT-1	7-13	1055		X		X			1	1								
	MT-1	7-13	1055		X		X			1	1								
4963602	MTSP-1	7-13	1055		X		X			1	1								
	MTSP-1	7-13	1055		X		X			1	1								
4963603	OS-1	7-13	1156		X		X			1	1								
	OS-1	7-13	1156		X		X			1	1								
4963604	OSSP-1	7-13	1156		X		X			1	1								
	OSSP-1	7-13	1156		X		X			1	1								

Sampled By:	Date / Time	Received By:	Date / Time	Received By:	Date / Time	Received By:	Date / Time
[illegible] (UCA)	Date 7-13 Time 1055						
Relinquished By:	Date 7-13 Time 1245	Relinquished By:		Relinquished By:		Relinquished By:	

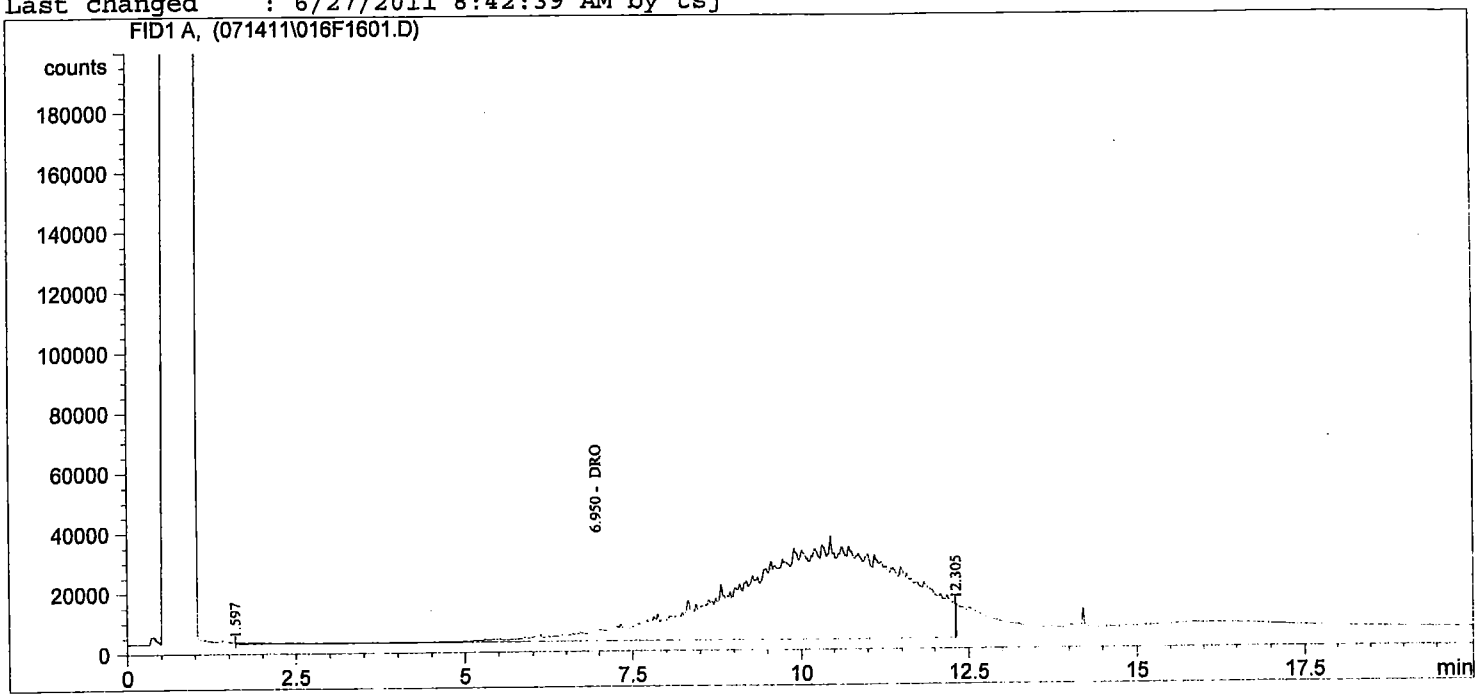
NTS Project #:	Misc. Lab Information:	Received for Laboratory By:	Date / Time	Temperature on Arrival:
7158 JA		[signature]	Date 7-13-11 Time 1245	On Ice X 3.4 Degrees Celsius

```
==========================================================================
Injection Date   : 7/14/2011 9:26:40 PM          Seq. Line :  15
Sample Name      : 496361                        Location : Vial 15
Acq. Operator    : tsj                               Inj :   1
Acq. Instrument  : GC-5                       Inj Volume : 1 µl
Acq. Method      : C:\HPCHEM\5\METHODS\!TEST3.M
Last changed     : 7/9/2010 4:04:34 PM by csd
Analysis Method  : C:\HPCHEM\5\METHODS\E060711H.M
Last changed     : 6/27/2011 8:42:39 AM by tsj
```



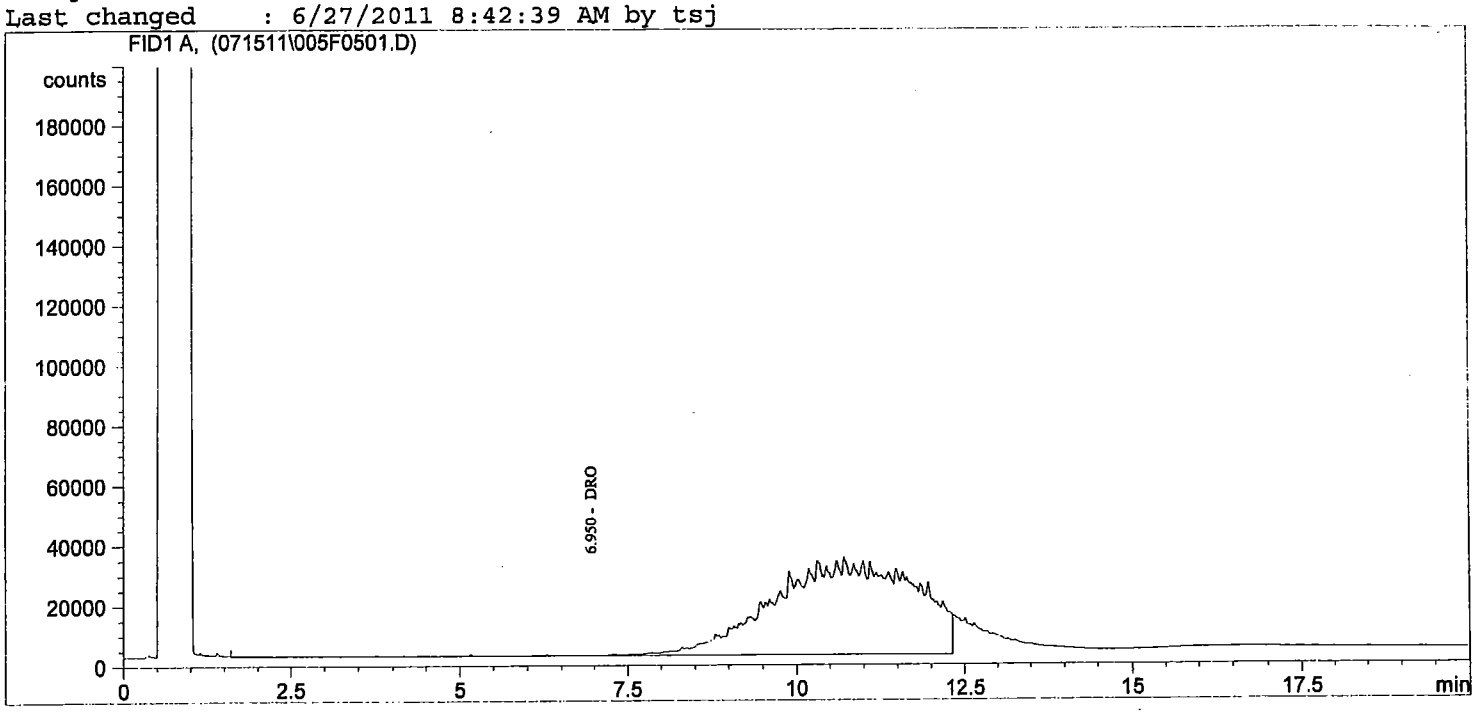

```
==========================================================================
                        External Standard Report
==========================================================================

Sorted By             :      Signal
Calib. Data Modified  :      6/27/2011 8:42:24 AM
Multiplier            :      1.0000
Dilution              :     20.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: FID1 A,

RetTime  Type     Area      Amt/Area     Amount    Grp   Name
 [min]          counts*s                 [ppm]
-------|------|----------|----------|----------|--|------------------
  6.950 HHA+    4.60735e6  2.96400e-7   27.31241     DRO

Totals :                                 27.31241

 Results obtained with enhanced integrator!
==========================================================================
                          *** End of Report ***
```

```
==================================================================
Injection Date  : 7/14/2011 9:54:09 PM          Seq. Line :  16
Sample Name     : 496362                         Location : Vial 16
Acq. Operator   : tsj                                Inj :   1
Acq. Instrument : GC-5                       Inj Volume : 1 µl
Acq. Method     : C:\HPCHEM\5\METHODS\!TEST3.M
Last changed    : 7/9/2010 4:04:34 PM by csd
Analysis Method : C:\HPCHEM\5\METHODS\E060711H.M
Last changed    : 6/27/2011 8:42:39 AM by tsj
```




```
==================================================================
                    External Standard Report
==================================================================

Sorted By             :      Signal
Calib. Data Modified  :      6/27/2011 8:42:24 AM
Multiplier            :      1.0000
Dilution              :     50.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: FID1 A,

RetTime  Type     Area      Amt/Area     Amount    Grp   Name
 [min]          counts*s                 [ppm]
-------|------|----------|----------|----------|--|------------------
  6.950 HHA+   5.79260e6  2.93326e-7   84.95583     DRO

Totals :                                84.95583

 Results obtained with enhanced integrator!
==================================================================
                        *** End of Report ***
```

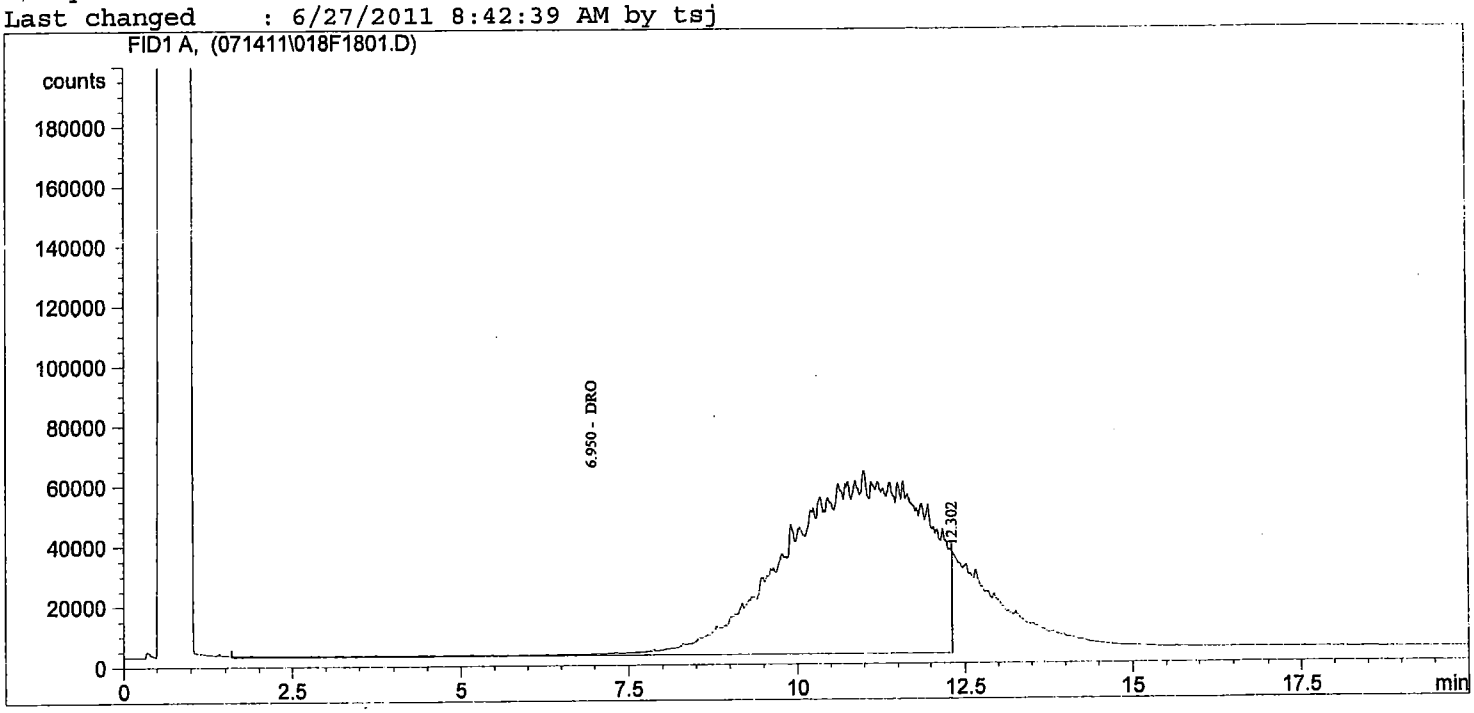
```
==========================================================================
Injection Date  : 7/15/2011 12:10:14 PM          Seq. Line :   5
Sample Name     : 496363                          Location : Vial 5
Acq. Operator   : tsj                                Inj :   1
Acq. Instrument : GC-5                         Inj Volume : 1 µl
Acq. Method     : C:\HPCHEM\5\METHODS\!TEST3.M
Last changed    : 7/9/2010 4:04:34 PM by csd
Analysis Method : C:\HPCHEM\5\METHODS\E060711H.M
Last changed    : 6/27/2011 8:42:39 AM by tsj
```




```
==========================================================================
                        External Standard Report
==========================================================================

Sorted By             :      Signal
Calib. Data Modified  :      6/27/2011 8:42:24 AM
Multiplier            :      1.0000
Dilution              :     10.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: FID1 A,

RetTime  Type     Area      Amt/Area    Amount    Grp   Name
 [min]          counts*s                 [ppm]
-------|------|----------|----------|----------|--|------------------
  6.950 HHA+   4.67821e6  2.96173e-7   13.85560     DRO

Totals :                                13.85560

 Results obtained with enhanced integrator!
==========================================================================
                          *** End of Report ***
```

Data File C:\HPCHEM\5\DATA\071411\018F1801.D Sample Name: 496364

```
==========================================================================
Injection Date  : 7/14/2011 10:49:18 PM          Seq. Line :  18
Sample Name     : 496364                          Location : Vial 18
Acq. Operator   : tsj                                Inj :   1
Acq. Instrument : GC-5                          Inj Volume : 1 µl
Acq. Method     : C:\HPCHEM\5\METHODS\!TEST3.M
Last changed    : 7/9/2010 4:04:34 PM by csd
Analysis Method : C:\HPCHEM\5\METHODS\E060711H.M
Last changed    : 6/27/2011 8:42:39 AM by tsj
```




```
==========================================================================
                        External Standard Report
==========================================================================

Sorted By             :      Signal
Calib. Data Modified  :      6/27/2011 8:42:24 AM
Multiplier            :      1.0000
Dilution              :     50.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: FID1 A,

RetTime  Type     Area      Amt/Area    Amount    Grp   Name
 [min]          counts*s                [ppm]
-------|------|----------|----------|----------|--|------------------
  6.950 HHA+   8.78286e6  2.89256e-7  127.02475     DRO

Totals :                                127.02475

 Results obtained with enhanced integrator!
==========================================================================
                          *** End of Report ***
```

Monday, October 24, 2011

Pace Analytical®
Laboratory Results

NTS
Attn: Doug Fossell
526 Chestnut Street
Virginia, MN 55792

RE: Pace COC 119115
Revised Report - Additional parameter requested

Dear Doug Fossell,

Enclosed are the analytical results for sample(s) received by the laboratory on September 12, 2011. On September 28, 2011, silica gel cleanup was requested for Pase Sample ID 510018 labeled Oil Can.

The results relate only to the samples included in this report. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Dan Toms

Dan Toms
Project Manager

SAMPLE SUMMARY

Pace Analytical Services
315 Chestnut Street
PO Box 1212
Virginia, MN 55792
Phone: 218-742-1042
Fax: 218-742-1010

Laboratory Results

Virginia MDH Certification: 027-137-445
Duluth MDH Certification: 027-137-446

PACE COC: 119115

Client: - NTS
Project: VM7158JA - Hay Lake Dump Cleanup
Sampled By: D. Fossell
Report Date: 10/24/2011

Sample Description	Sample ID	Sample Type	Matrix	Sample Date	Received Date
Oil Can-1	510018	Grab	Non-Aqueous	9/10/2011 13:30	9/12/2011 15:06
Milk Truck	510019	Grab	Non-Aqueous	9/10/2011 14:30	9/12/2011 15:06

SAMPLE RESULTS

PACE Sample: 510018
Description: Oil Can-1
Sample Date: 9/10/2011 1:30:00 PM

Matrix: Non-Aqueous
Sample Type: Grab

PACE COC: 119115
Client: - NTS
Project: VM7158JA - Hay Lake Dump Cleanup
Sampled By: D. Fossell
Report Date: 10/24/2011
Rec'd Temperature: 2.7 °C

Analyte	Result	RL	Units	Method	Prepared Date	Analysis Date	
DRO	14	8.1	mg/Kg	WI(95) DRO	9/13/2011	9/13/2011 16:32	D,r,q

Qualifier	Description	Note
D	Heavy hydrocarbon compounds detected beyond the DRO window.	
q	Qualified Data.	Sample results are based on wet weight.
r	Duplicate analysis not within control limits.	Relative percent difference = 25.5%.

SAMPLE RESULTS

PACE Sample: 510019
Description: Milk Truck
Sample Date: 9/10/2011 2:30:00 PM

Matrix: Non-Aqueous
Sample Type: Grab

PACE COC: 119115
Client: - NTS
Project: VM7158JA - Hay Lake Dump Cleanup
Sampled By: D. Fossell
Report Date: 10/24/2011
Rec'd Temperature: 2.7 °C

Analyte	Result	RL	Units	Method	Prepared Date	Analysis Date	
DRO	61	8.2	mg/Kg	WI(95) DRO		9/13/2011 17:27	D,r,q
DRO w/Silica Gel Cleanup	36	8.6	mg/Kg	WI(95) DRO/3630C	10/3/2011	10/10/2011 11:32	a,D
Benzene	<95	95	µg/Kg	EPA 8021		9/13/2011 22:42	q
Ethyl Benzene	<95	95	µg/Kg	EPA 8021		9/13/2011 22:42	q
GRO	<4.7	4.7	mg/Kg	WI(95) GRO		9/13/2011 22:42	q
Toluene	<95	95	µg/Kg	EPA 8021		9/13/2011 22:42	q
Xylene, Total	<190	190	µg/Kg	EPA 8021		9/13/2011 22:42	q
Solids, Total (TS)	95.5	1	%	SM 2540G, Mod		9/15/2011 16:16	

Qualifier	Description	Note
a	Laboratory Control Spike not within control limits.	Laboratory Control Spike Duplicate recovery = 67%, acceptable range is 70-120%.
D	Heavy hydrocarbon compounds detected beyond the DRO window.	
q	Qualified Data.	Sample results are based on wet weight.
r	Duplicate analysis not within control limits.	Relative percent difference = 25.5%.

Pace Analytical	Document Name: Sample Condition Upon Receipt Form	Document Revision: 20June2011 Page 1 of 1
	Document No: F-VM-C-001Rev.01	Issuing Authority: Pace Virginia Minnesota Quality Office

Client Name: NTS Project # 119115

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☒ Client ☐ Commercial ☐ Pace Other _____

Optional: Proj. Due Date: Proj. Name:

Tracking #: _____

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no N/A

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☒ None ☐ Other _____ Temp Blank: Yes ____ No X

Thermometer Used 101594812 Type of Ice: Wet Blue None ☒ Samples on ice, cooling process has begun

Cooler Temperature 2-7 Biological Tissue is Frozen: Yes No N/A

Date and Initials of person examining contents: 9-12-11 CB

Temp should be above freezing to 6°C Comments:

Chain of Custody Present:	☒Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☒Yes ☐No ☐N/A	2.
Chain of Custody Relinquished:	☒Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☒Yes ☐No ☐N/A	4.
Samples Arrived within Hold Time:	☒Yes ☐No ☐N/A	5.
Short Hold Time Analysis (<72hr):	☐Yes ☒No ☐N/A	6.
Rush Turn Around Time Requested:	☒Yes ☐No ☐N/A	7. 9-26-11
Sufficient Volume:	☒Yes ☐No ☐N/A	8.
Correct Containers Used:	☒Yes ☐No ☐N/A	9.
-Pace Containers Used:	☒Yes ☐No ☐N/A	
Containers Intact:	☒Yes ☐No ☐N/A	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☒N/A	11.
Sample Labels match COC:	☒Yes ☐No ☐N/A	12.
-Includes date/time/ID/Analysis Matrix: SL		
All containers needing acid/base preservation will be checked and documented in the pH logbook		13. See pH log for results and additional preservation documentation
Headspace in VOA Vials (>6mm):	☐Yes ☐No ☒N/A	14.
Trip Blank Present:	☐Yes ☐No ☒N/A	15.
~~Trip Blank Custody Seals Present~~	☐Yes ☐No ☒N/A	
Pace Trip Blank Lot # : _____		

Client Notification/ Resolution: Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____ **Date:** 9/13/11

Pace Analytical®
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

119115

Page: 1 of 1

1504223

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: NTS	Report To: Doug Fossell / NTS	Attention: Doug Fossell
Address: PO Box 1142	Copy To:	Company Name: NTS
Virginia, MN 55792		Address: PO Box 1142, Virginia MN
Email To: dfossell@nctechnical.com	Purchase Order No.:	Pace Quote Reference:
Phone: 742-1024 Fax: 741-4291	Project Name: Hay Lake Dump Clean-up	Pace Project Manager:
Requested Due Date/TAT: 9-26-11 / 2 week	Project Number: 7158JA	Pace Profile #:

REGULATORY AGENCY: ☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER ☐ UST ☐ RCRA ☒ OTHER VIC

Site Location STATE: MN

Requested Analysis Filtered (Y/N)

ITEM #	Section D Required Client Information: SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE	Matrix Codes MATRIX / CODE: Drinking Water DW, Water WT, Waste Water WW, Product P, Soil/Solid SL, Oil OL, Wipe WP, Air AR, Tissue TS, Other OT	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	GRO/BTEX	DRO	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	Oil Can-1	SL	G	9-10-11	1330				33	3	2						1			X	X			510018
2	Milk Truck	SL	G	↓	1430				33	3	2						1			X	X			510019
3																								
4																								
5																								
6																								
7																								
8																								
9																								
10																								
11																								
12																								

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
	[signature] /NTS	9-12-11	1506	[signature]	9-12-11	150627	4	Y	N	Y

ORIGINAL

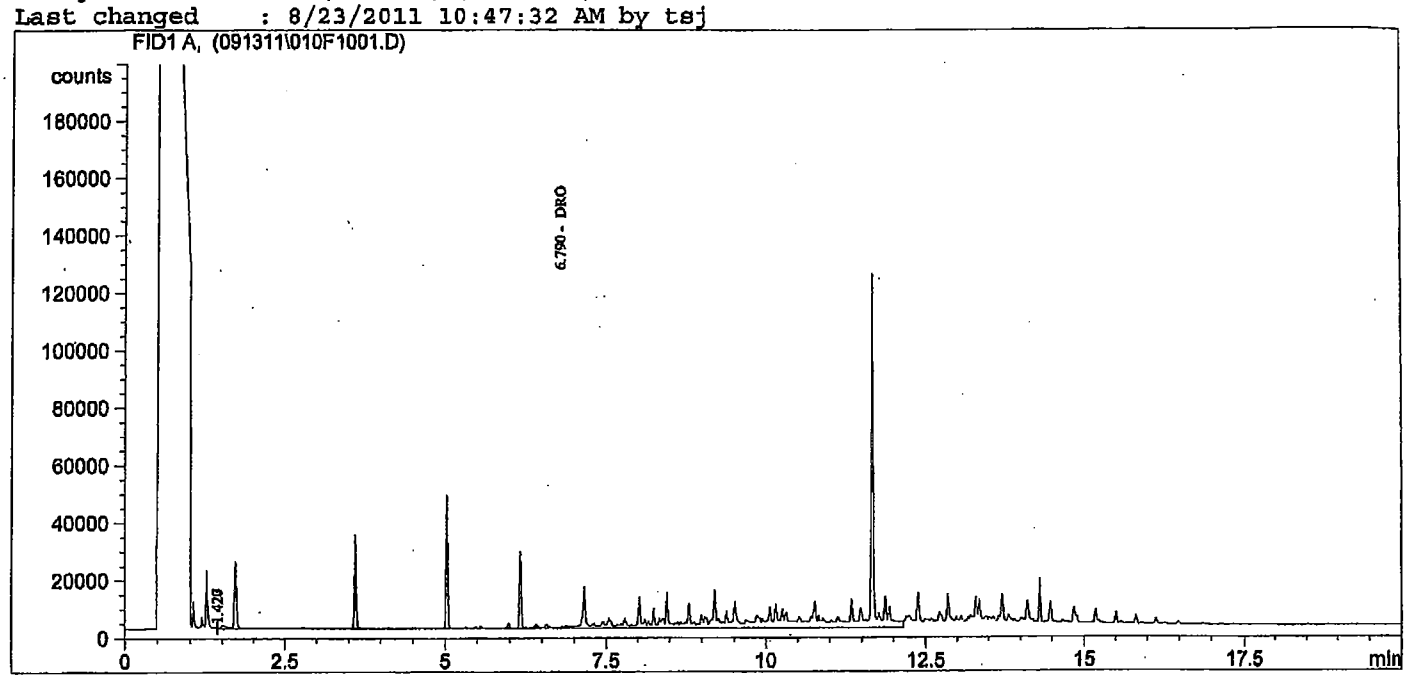
SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Douglas A. Fossell

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 09/10/11

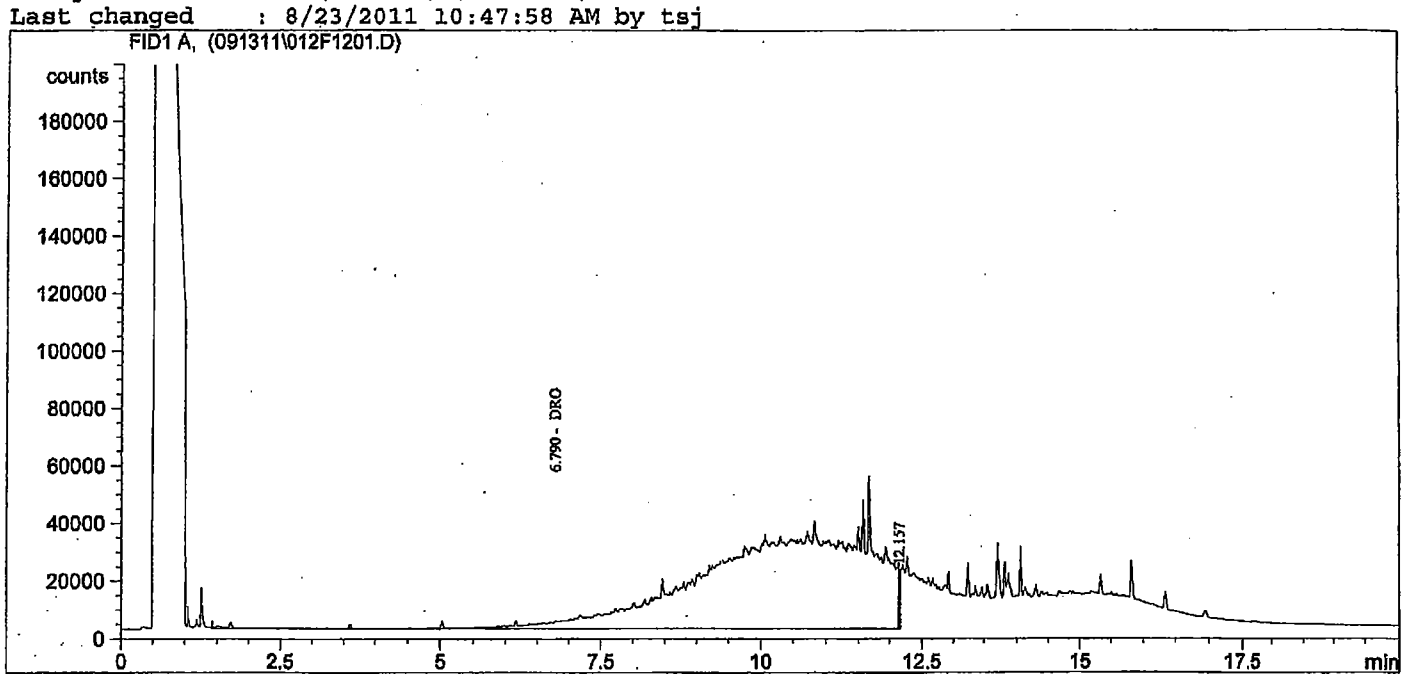
*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

```
==========================================================================
Injection Date  : 9/13/2011 4:32:12 PM          Seq. Line :  10
Sample Name     : 510018                        Location : Vial 10
Acq. Operator   : mes                              Inj :   1
Acq. Instrument : GC-5                      Inj Volume : 1 µl
Acq. Method     : C:\HPCHEM\5\METHODS\!TEST3.M
Last changed    : 7/9/2010 4:04:34 PM by csd
Analysis Method : C:\HPCHEM\5\METHODS\E060711L.M
Last changed    : 8/23/2011 10:47:32 AM by tsj
```




```
==========================================================================
                        External Standard Report
==========================================================================

Sorted By             :      Signal
Calib. Data Modified  :      8/4/2011 3:10:31 PM
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: FID1 A,

RetTime  Type     Area      Amt/Area     Amount    Grp   Name
 [min]          counts*s                 [ppm]
-------|------|----------|----------|----------|--|------------------
  6.790 HHA+   1.41013e6  2.96203e-7 4.17685e-1     DRO

Totals :                                4.17685e-1

 Results obtained with enhanced integrator!
==========================================================================
                          *** End of Report ***
```

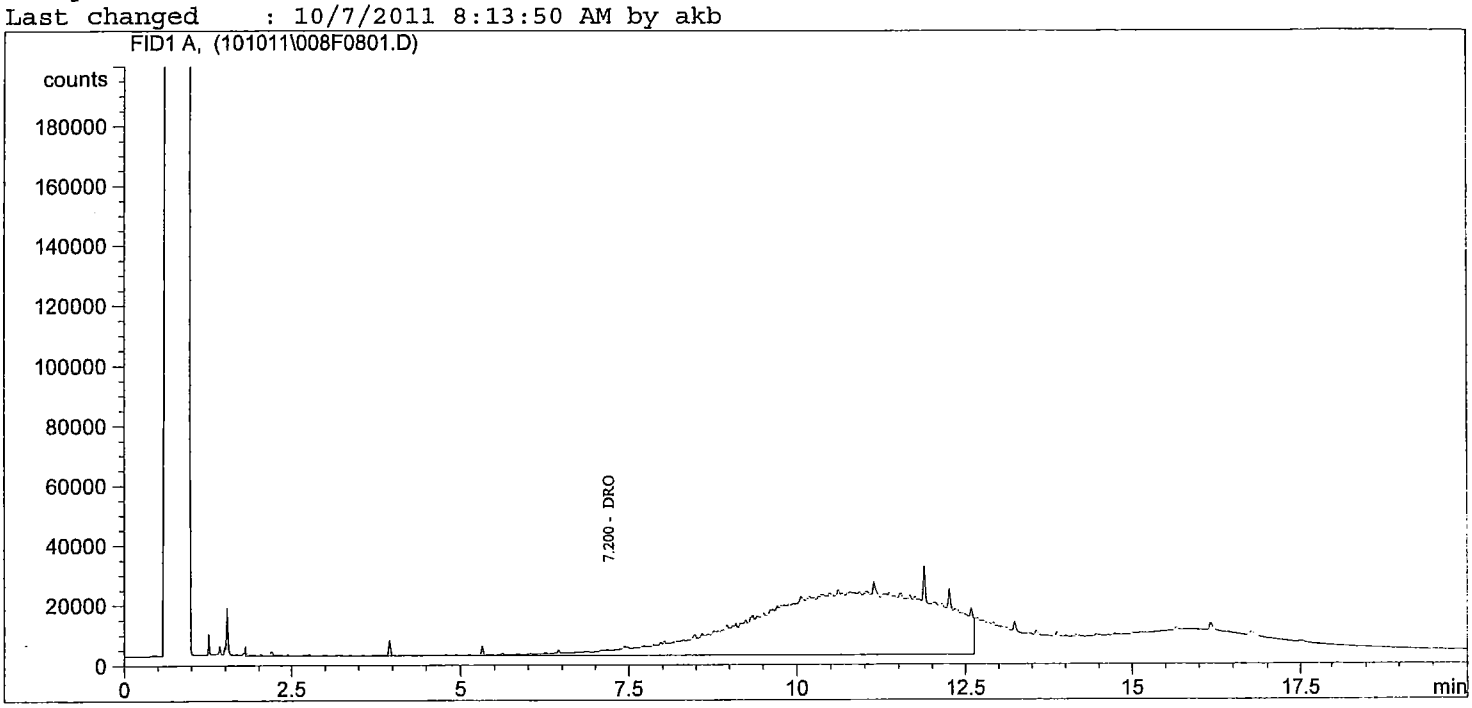
```
==========================================================================
Injection Date  : 9/13/2011 5:27:44 PM          Seq. Line :  12
Sample Name     : 510019                         Location : Vial 12
Acq. Operator   : mes                               Inj :   1
Acq. Instrument : GC-5                       Inj Volume : 1 µl
Acq. Method     : C:\HPCHEM\5\METHODS\!TEST3.M
Last changed    : 7/9/2010 4:04:34 PM by csd
Analysis Method : C:\HPCHEM\5\METHODS\E060711H.M
Last changed    : 8/23/2011 10:47:58 AM by tsj
```




```
==========================================================================
                        External Standard Report
==========================================================================

Sorted By             :      Signal
Calib. Data Modified  :      8/4/2011 3:11:21 PM
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: FID1 A,

RetTime  Type     Area      Amt/Area    Amount    Grp   Name
 [min]          counts*s                 [ppm]
-------|------|----------|----------|----------|--|------------------
  6.790 HHA+   6.38471e6  2.92217e-7    1.86572     DRO

Totals :                                1.86572

 Results obtained with enhanced integrator!
==========================================================================
                          *** End of Report ***
```

```
Injection Date   : 10/10/2011 11:32:04 AM        Seq. Line :   8
Sample Name      : 510019                        Location : Vial 8
Acq. Operator    : csd                               Inj :   1
Acq. Instrument  : GC-5                      Inj Volume : 1 µl
Sequence File    : C:\HPCHEM\5\SEQUENCE\101011.S
Acq. Method      : C:\HPCHEM\5\METHODS\!TEST3.M
Last changed     : 7/9/2010 4:04:34 PM by csd
Analysis Method  : C:\HPCHEM\5\METHODS\E100611.M
Last changed     : 10/7/2011 8:13:50 AM by akb
```

SG
Cleanup




```
                        External Standard Report

Sorted By             :      Signal
Calib. Data Modified  :      10/7/2011 8:13:47 AM
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: FID1 A,

RetTime  Type     Area      Amt/Area    Amount   Grp   Name
 [min]          counts*s                 [ppm]
-------|------|----------|----------|----------|--|------------------
  7.200 HHA+   4.43714e6  2.33481e-7    1.03599     DRO

Totals :                                 1.03599

 Results obtained with enhanced integrator!

                          *** End of Report ***
```