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Report  
Ground Water Compliance Monitoring  
First Quarter 1999  
Grady Way Complex Property  
Renton, Washington

May 6, 1999

*Re-issued  
6/7/99*

For  
Puget Sound Energy

May 6, 1999

Consulting Engineers  
and Geoscientists  
Offices in Washington,  
Oregon, and Alaska

Puget Sound Energy  
Environmental Services  
P.O. Box 90868, MER-04  
Bellevue, Washington 98009-0868

Attention: Barry Lombard

We are pleased to submit four copies of our report entitled "Ground Water Compliance Monitoring, First Quarter 1999" for Puget Sound Energy's (PSE) Grady Way Complex property located in Renton, Washington. Our study was completed in general accordance with the scope of services described in our fee estimate dated February 4, 1999 and the conditions of our general agreement with PSE (Contract No. 9600000888). Changes in the scope of services were verbally authorized by Barry Lombard of PSE.

We appreciate the opportunity to assist PSE on this project. Please contact us if you have questions regarding this report.

Yours very truly,

GeoEngineers, Inc.



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# CONTENTS

|   | <u>Page No.</u> |
|---|-----------------|
| 1.0 INTRODUCTION.....                         | 1               |
| 2.0 PROJECT BACKGROUND .....                  | 1               |
| 3.0 SCOPE OF SERVICES.....                    | 2               |
| 4.0 GROUND WATER MONITORING RESULTS .....     | 2               |
| 4.1 GENERAL                                   | 2               |
| 4.2 GROUND WATER ELEVATIONS                   | 2               |
| 4.3 COMBUSTIBLE VAPOR CONCENTRATIONS          | 3               |
| 4.4 CHEMICAL ANALYTICAL RESULTS               | 3               |
| 4.4.1 Diesel- and Lube Oil-range Hydrocarbons | 3               |
| 4.4.2 PCBs                                    | 3               |
| 4.4.3 SVOCs Including cPAHs                   | 4               |
| 4.4.4 Dissolved Arsenic                       | 4               |
| 4.4.5 pH                                      | 4               |
| 5.0 CONCLUSIONS AND RECOMMENDATIONS.....      | 4               |
| 6.0 LIMITATIONS.....                          | 6               |

| <b>Tables</b>  | <u>Table No.</u> |
|--|------------------|
| Ground Water Analytical Program for February 1999 Sampling Event | 1                |
| Summary of Ground Water Elevations                               | 2                |
| Summary of Ground Water Chemical Analytical Data                 | 3                |
| Summary of Soil Chemical Analytical Data Exploratory Borings     | 4                |

| <b>Figures</b>                           | <u>Figure No.</u> |
|--|-------------------|
| Vicinity Map                             | 1                 |
| 02/24/99 Ground Water Level Measurements | 2                 |

| <b>Appendix A – Field Procedures</b> | <u>Page No.</u> |
|--------------------------------------|-----------------|
| Ground Water Monitoring              | A-1             |
| Purge Water Sampling                 | A-1             |

| <b>Appendix B – Chemical Analytical Program</b> | <u>Page No.</u> |
|---|-----------------|
| Analytical Methods                              | B-1             |
| Analytical Data Review                          | B-1             |
| Analytical Data Review Summary                  | B-1             |

**GROUND WATER COMPLIANCE MONITORING  
FIRST QUARTER 1999  
GRADY WAY COMPLEX PROPERTY  
RENTON, WASHINGTON  
FOR  
PUGET SOUND ENERGY**

**1.0 INTRODUCTION**

This report presents the results of our quarterly ground water monitoring activities at Puget Sound Energy's (PSE) Grady Way Complex property located at 915 Grady Way South in Renton, Washington. The activities described in this report were completed primarily during February 1999. The location of the site relative to surrounding physical features is shown in Figure 1. The layout of the site is shown in Figure 2.

Three buildings currently are located on site at the locations shown in Figure 2. PSE vacated the facility in 1998 in preparation for the sale of the site.

**2.0 PROJECT BACKGROUND**

PSE has conducted business activities at the subject site since about 1903. Historical on-site business activities included the following: (1) the storage and/or repair of transformers and other electrical equipment, (2) the storage of power poles treated with chemical preservative, (3) the fueling and maintenance of vehicles. A total of 11 underground storage tanks (USTs) and several hydraulic hoists historically were located on site.

GeoEngineers has provided environmental consulting services related to the subject site since 1987. Several phases of site assessment and remedial activities were completed between 1987 and 1999. Remedial activities consisted primarily of the excavation and off-site disposal of soil containing petroleum hydrocarbons, carcinogenic polycyclic aromatic hydrocarbons (cPAHs) and polychlorinated biphenyls (PCBs) at concentrations exceeding applicable cleanup levels. Selected subsurface facilities also were removed from the site during this time. Facilities removed from the site include (1) all USTs and hydraulic hoists, (2) the storm water system in the southern portion of the site, and (3) selected subsurface vaults associated with the storm and sanitary sewer systems. The final phase of facilities removal and remedial activities were completed in November 1998. The results of the 1998 remedial and assessment activities are presented in our report entitled "1998 Site Cleanup Activities, Grady Way Complex Property, Renton, Washington," dated December 23, 1998. This report also summarizes previous studies completed at the site.

The remedial excavation activities successfully removed all known soil with contaminant (petroleum hydrocarbons, cPAHs and PCBs) concentrations exceeding applicable Model Toxics Control Act (MTCA) Method A or Method B residential cleanup levels in the developed portion of the site. Our previous studies indicate that soil contamination remaining in the developed portion of the site is protective of human health based on direct contact scenarios. The ground water monitoring activities described in this report are being completed to evaluate whether residual on-site soil contamination is protective of ground water. Ground water monitoring is

being completed at the site in accordance with our discussions with the Washington State Department of Ecology (Ecology).

### **3.0 SCOPE OF SERVICES**

Ground water samples were obtained from 17 monitoring wells during this sampling event. The ground water sampling and analysis plan was completed in accordance with our discussions with Ecology. Our specific scope of services for this ground water monitoring event is as follows:

1. Measure the depth to ground water in each monitoring well.
2. Calculate the ground water elevation in each monitoring well and evaluate the direction of shallow ground water flow beneath the site.
3. Measure the airspace in the monitoring well casings for combustible vapors using a Bacharach TLV Sniffer calibrated to hexane.
4. Purge at least three well volumes of water from each well prior to sampling and place the water in a labeled and secured 55-gallon drum.
5. Obtain ground water samples from the monitoring wells and submit the samples for chemical analysis of one or more of the following: (1) diesel- and lube oil-range hydrocarbons using Ecology Method NWTPH-D extended, (2) PCBs using EPA Method 8082, (3) cPAHs and other semivolatile organic compounds (SVOCs) using EPA Method 8270, (4) dissolved arsenic using EPA 6000-series Methodology, and (5) pH using EPA Method 150.1.
6. Evaluate the chemical analytical results relative to current environmental regulations.

### **4.0 GROUND WATER MONITORING RESULTS**

#### **4.1 GENERAL**

Ground water samples were obtained from 16 on-site monitoring wells and one off-site monitoring well during this sampling event. The locations of the monitoring wells are shown in Figure 2. All of the samples were obtained on February 24, 1999, except for GMW-4a, which was not accessible on this date. Sample GMW-4a was obtained on March 2, 1999.

The ground water samples were submitted for chemical analysis of only those contaminants previously detected in ground water and soil at concentrations exceeding MTCA cleanup levels. A summary of the sampling and analysis plan for this ground water monitoring event is presented in Table 1. A summary of our ground water monitoring field procedures is presented in Appendix A.

#### **4.2 GROUND WATER ELEVATIONS**

Ground water levels were measured in the monitoring wells on February 24, 1999. The depth to ground water ranged from about 0.58 to 7.18 feet below ground surface (bgs). The maximum depth to ground water (7.18 feet bgs) was measured in monitoring well GMW-12a, which is located on an elevated loading dock. The depth to ground water and ground water elevations for this and previous monitoring events are presented in Table 2.

Ground water elevations were calculated relative to an assumed site datum of 100.00 feet based on the February 1999 water level measurements. The ground water elevations in each monitoring well and interpolated elevation contours are shown in Figure 2. Shallow ground water beneath the site appears to generally flow in a westerly direction based on our February 24 measurements, with one exception; a localized easterly ground water flow direction appears to be present beneath the western-most corner of the site, near monitoring wells GMW-8, GMW-13 and GMW-14. This localized reversal in ground water flow direction may be related to ground water "mounding" associated with underground utility trenches beneath the adjacent roads (Grady Way South and Talbot Road). The interpolated shallow ground water flow direction based on our February 1999 measurements is similar to previous monitoring events.

### **4.3 COMBUSTIBLE VAPOR CONCENTRATIONS**

Combustible vapors were detected at concentrations greater than 10,000 parts per million (ppm) in the casings of monitoring wells GMW-1, GMW-3a, GMW-5, GMW-6, GMW-7, GMW-9, GMW-10, GMW-11 and MW-4. Combustible vapors either were not detected or were detected at concentrations less than 200 ppm in the other monitoring wells.

Based on the analytical results for ground water samples obtained from these wells, it is our opinion that elevated concentrations of combustible vapors in monitoring well casings at the site do not necessarily indicate the presence of ground water contamination. The elevated vapors measured in the casings likely are related to methane associated with the presence of coal debris in fill soil at the site.

### **4.4 CHEMICAL ANALYTICAL RESULTS**

Ground water samples obtained during the February 1999 sampling event were submitted for analysis of diesel- and lube oil-range hydrocarbons, PCBs, cPAHs and other SVOCs, dissolved arsenic and/or pH, as previously described. Chemical analytical results for the ground water samples are presented in Table 3. Laboratory reports for the chemical analyses are presented in Appendix B. A summary of the analytical results is presented below.

#### **4.4.1 Diesel- and Lube Oil-range Hydrocarbons**

Diesel- and lube oil-range hydrocarbons were detected at concentrations exceeding the MTCA Method A cleanup level [1.0 milligram per liter (mg/l) for total petroleum hydrocarbons] in the ground water samples obtained from monitoring wells GMW-7 and GMW-14. The combined concentrations of diesel- and lube oil-range hydrocarbons detected in these wells were 6.89 mg/l and 1.525 mg/l, respectively. Diesel- and lube oil-range hydrocarbons either were not detected or were detected at concentrations less than the MTCA Method A cleanup level in the other ground water samples. In general, petroleum hydrocarbons were detected at lower concentrations during this sampling event relative to the previous (November 1998) sampling event.

#### **4.4.2 PCBs**

PCBs were not detected in the ground water samples tested during this monitoring event. This is generally similar to the analytical results of our previous sampling event with one exception; PCBs were detected at a concentration exceeding the MTCA Method A cleanup level in GMW-4a during the previous sampling event (November 1998). In our opinion, PCBs likely were present in sample GMW-4a during November 1998 because this sample was obtained in an area where PCB-contaminated soil was excavated just prior to obtaining the ground water sample.

#### **4.4.3 SVOCs Including cPAHs**

One or more SVOCs (acenaphthene, fluorene and/or naphthalene) were detected at concentrations less than the respective MTCA Method B cleanup levels for these compounds in the ground water samples obtained from GMW-4a and GMW-7. Phenanthrene also was detected in GMW-4a and GMW-7 at concentrations of 0.113 micrograms per liter ( $\mu\text{g/l}$ ) and 0.906  $\mu\text{g/l}$ , respectively. A MTCA Method B cleanup level has not been established for Phenanthrene. Other SVOCs were not detected in samples GMW-4a and GMW-7. Carcinogenic PAHs were not detected in any of the ground water samples obtained from the site during this, or the previous (November 1998), monitoring event.

The holding time was exceeded for the analysis of SVOCs in the ground water sample obtained from GMW-4a. The EPA-established holding time for this analysis (EPA Method 8270) is seven days. The analytical laboratory inadvertently held the ground water sample for nine days prior to extraction. A representative of North Creek Analytical laboratory indicated that, in their opinion, the holding time exceeded for this analysis did not likely produce significant errors in the analytical results.

#### **4.4.4 Dissolved Arsenic**

Dissolved arsenic either was not detected or was detected at concentrations (1.38 to 3.19  $\mu\text{g/l}$ ) less than the MTCA Method A cleanup level in the ground water samples tested during this monitoring event. In general, dissolved arsenic was detected at lower concentrations during this sampling event relative to the previous (November 1998) sampling event.

#### **4.4.5 pH**

The pH of ground water samples obtained during this monitoring event ranged between 6.24 to 6.91. These pH values are generally similar to the results of the previous (November 1998) monitoring event.

### **5.0 CONCLUSIONS AND RECOMMENDATIONS**

In general, ground water contaminants were present beneath the site at lower concentrations during this sampling event than during the November 1998 sampling event. Contaminants (diesel- and lube oil-range hydrocarbons) were detected at concentrations exceeding MTCA Method A cleanup levels in only two ground water samples (GMW-7 and GMW-14) obtained during this monitoring event. One of these samples was obtained from a monitoring well

(GMW-14) located on the subject site; the other sample was obtained from a well (GMW-7) located south of the site, in Talbot Road. Other ground water contaminants were not detected at concentrations exceeding MTCA Method A cleanup levels.

The results of our February 1999 monitoring activities indicate that shallow ground water generally flows toward the west, except beneath the western-most corner of the site, where a localized easterly flow direction is present. These shallow ground water flow directions are similar to our observations during the previous monitoring event.

In our opinion, the source of the petroleum hydrocarbons detected in GMW-7 and GMW-14 appears to be located off-site based on the ground water flow direction and the analytical results from all monitoring wells. We suspect that the source may be residual petroleum hydrocarbons in utility trenches beneath Talbot Road, as discussed in our December 1998 report. Petroleum hydrocarbons were not detected at concentrations exceeding the MTCA Method A cleanup level in ground water samples obtained from on-site monitoring wells located upgradient of GMW-7.

In our opinion, the presence of dissolved arsenic in ground water beneath the property is not related to historical site activities, but is a background contaminant present in the local shallow ground water system, as discussed in our December 1998 report. Additionally, conditions that would be conducive to leaching arsenic (low pH), if an arsenic source existed, are not present beneath the site based on the analytical results from this, and the previous, monitoring event. Ecology has indicated agreement with this opinion based on our past discussions with Nnamdi Madakor, the Ecology manager for this site.

The ground water analytical data obtained during this reporting period provides four quarters of analytical results for several monitoring wells. Several contaminants either were not detected or were detected at concentrations less than MTCA Method A cleanup levels in some of the monitoring wells during each of the past four sampling events. A summary of these monitoring wells/contaminants is presented below:

- Diesel- and lube oil-range hydrocarbons in GMW-1, GMW-3a, GMW-5, GMW-6 and MW-10.
- PCBs in GMW-3a, GMW-5, GMW-6 and GMW-7.
- SVOCs, including cPAHs, in GMW-4a.

We recommend no further analysis for the contaminants/monitoring wells specified above because of the favorable results of the past four monitoring events. We also recommend other reductions in future ground water sampling tasks as described below.

- No further analysis for dissolved arsenic and pH. The dissolved arsenic in ground water appears to be a background condition.
- No further sampling/analysis for GMW-7. Four samples have already been obtained from this well, and our monitoring data indicates that the source for the contamination detected in GMW-7 is not located on the subject site.
- One more sampling event for only the analysis of diesel- and lube oil-range hydrocarbons in GMW-8, GMW-13 and GMW-14. The ground water contamination in these

monitoring wells appears to be originating off-site (beneath adjacent roads) based on ground water elevation and analytical information.

Based on the recommendations described above, the next monitoring event (May 1999) will include sampling and analysis for diesel- and lube oil-range hydrocarbons, PCBs and SVOCs/PAHs in selected on-site monitoring wells. The proposed sampling and analysis plan for the May 1999 monitoring event is presented in Table 4.

## 6.0 LIMITATIONS

We have prepared this report for use by Puget Sound Energy, their authorized agents and regulatory agencies. This report is not intended for use by others, and the information contained herein is not applicable to other sites. If a lending agency or other parties intend to place reliance on the product of our services, we require that those parties indicate in writing their acknowledgment that the scope of services provided, and the general conditions under which the services were rendered are understood and accepted by them. This is to provide our firm with reasonable protection against open-end litigation by third parties with whom there otherwise would be no contractual limits to their actions.

No ESA or remedial action can wholly eliminate the potential for contamination to remain at the property at concentrations exceeding applicable cleanup levels. Performance of this practice is intended to reduce, but not eliminate, uncertainty regarding the potential for remaining contamination in connection with a property. Our conclusions are based on chemical analytical results from soil and ground water samples obtained during our site studies. There always is a potential that areas of contamination may exist in portions of the site that were not sampled or tested during this or prior studies. Further evaluation of such potential would require additional research, subsurface exploration, sampling and testing.

Some substances may be present in the site vicinity in quantities or under conditions that may have led, or may lead, to contamination of the subject site, but are not included in current local, state, or federal regulatory definitions of hazardous substances or do not otherwise present current potential liability. GeoEngineers cannot be responsible if the standards of all appropriate inquiry or regulatory definitions of hazardous substances change, or if you are required to meet more stringent standards in the future.

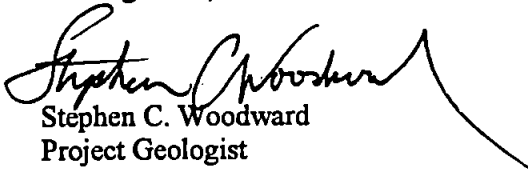
GeoEngineers has performed site characterization, facilities removal and remedial action monitoring at the Puget Sound Energy property at 915 Grady Way South in Renton, Washington within the limitations of scope, schedule and budget. Our services have been executed in accordance with our general agreement with Puget Sound Energy (Contract No. 9600000888) and generally accepted environmental science practices in this area at the time this report was prepared. No warranty or other conditions, express or implied, should be understood.

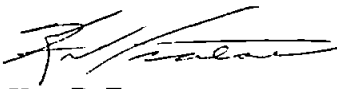


We appreciate the opportunity to assist Puget Sound Energy on this project. Please call if you have questions.

Yours very truly,

GeoEngineers, Inc.

  
Stephen C. Woodward  
Project Geologist

  
Kurt R. Fraese  
Principal

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Attachments

Four copies submitted

**TABLE 1**  
**GROUND WATER ANALYTICAL PROGRAM**  
**FOR FEBRUARY 1999 SAMPLING EVENT**  
**Puget Sound Energy Grady Way Site**  
**Renton, Washington**

| Monitoring Well | Proposed Analytes/Analyses |                   |                 |                 |                   |
|-----------------|----------------------------|-------------------|-----------------|-----------------|-------------------|
|                 | TPH <sup>1</sup>           | PCBs <sup>2</sup> | As <sup>3</sup> | pH <sup>4</sup> | PAHs <sup>5</sup> |
| GMW-1           | X                          | X                 |                 | X               |                   |
| GMW-2/2a        | X                          | X                 |                 | X               |                   |
| GMW-3/3a        | X                          | X                 | X               | X               |                   |
| GMW-4/4a        | X                          | X                 |                 | X               | X                 |
| GMW-5           | X                          | X                 |                 | X               | X                 |
| GMW-6           | X                          | X                 |                 | X               | X                 |
| GMW-7           | X                          | X                 |                 | X               | X                 |
| GMW-8           | X                          | X                 | X               | X               |                   |
| GMW-9           | X                          | X                 | X               | X               |                   |
| GMW-10          | X                          | X                 | X               | X               | X                 |
| GMW-11          | X                          | X                 | X               | X               | X                 |
| GMW-12/12a      | X                          | X                 | X               | X               |                   |
| GMW-13          | X                          |                   |                 | X               |                   |
| GMW-14          | X                          |                   |                 | X               |                   |
| MW-4            |                            |                   | X               | X               |                   |
| MW-10           | X                          |                   | X               | X               |                   |
| MW-20           | X                          |                   | X               | X               |                   |

**Notes:**

<sup>1</sup>TPH = Total petroleum hydrocarbons using Ecology Method NWTPH-D extended.

<sup>2</sup>PCBs = Polychlorinated biphenyls using EPA Method 8062

<sup>3</sup>Dissolved arsenic using EPA 5000-Series Methodology.

<sup>4</sup>pH using EPA Method 150.1.

<sup>5</sup>PAHs = Polycyclic aromatic hydrocarbons and other semivolatile organic organic compounds (SVOCs) using EPA Method 8270.

**TABLE 2 (Page 1 of 3)**  
**SUMMARY OF GROUND WATER ELEVATIONS**

Puget Sound Energy Grady Way Site  
 Renton, Washington

| Monitoring Well <sup>1</sup> | Date Measured | Depth to Ground Water <sup>2</sup><br>(feet) | Ground Water Elevation <sup>3</sup><br>(feet) |
|------------------------------|---------------|--|---|
| GMW-1                        | 08/27/98      | 5.27   | 94.39   |
|                              | 11/03/98      | 5.00   | 94.66   |
|                              | 11/24/98      | 4.34   | 95.32   |
|                              | 11/30/98      | 3.74   | 95.92   |
|                              | 02/24/99      | 3.21   | 96.45   |
| GMW-2/2a <sup>4</sup>        | 08/27/98      | 4.80   | 94.82   |
|                              | 11/03/98      | 4.05   | 94.59   |
|                              | 11/24/98      | 2.59   | 96.05   |
|                              | 11/30/98      | 2.46   | 96.18   |
|                              | 02/24/99      | 1.17   | 97.47   |
| GMW-3/3a <sup>4</sup>        | 08/27/98      | 3.11   | 94.12   |
|                              | 11/03/98      | 2.33   | 94.79   |
|                              | 11/24/98      | 1.65   | 95.47   |
|                              | 11/30/98      | 1.42   | 95.70   |
|                              | 02/24/99      | 0.83   | 96.29   |
| GMW-4/4a <sup>4</sup>        | 08/27/98      | 4.26   | 92.81   |
|                              | 11/03/98      | 2.64   | 93.94   |
|                              | 11/24/98      | -  | -   |
|                              | 11/30/98      | 1.45   | 95.13   |
|                              | 02/24/99      | 0.58   | 96.00   |
| GMW-5                        | 08/27/98      | 5.24   | 91.93   |
|                              | 11/03/98      | 4.33   | 92.84   |
|                              | 11/24/98      | 3.60   | 93.57   |
|                              | 11/30/98      | 2.93   | 94.24   |
|                              | 02/24/99      | 2.80   | 94.37   |
| GMW-6                        | 08/27/98      | 3.27   | 92.91   |
|                              | 11/03/98      | 3.37   | 92.81   |
|                              | 11/24/98      | 2.23   | 93.95   |
|                              | 11/30/98      | 1.60   | 94.58   |
|                              | 02/24/99      | 1.24   | 94.94   |
| GMW-7                        | 08/27/98      | 6.23   | 91.28   |
|                              | 11/03/98      | 5.58   | 91.93   |
|                              | 11/24/98      | -  | -   |
|                              | 11/30/98      | 4.29   | 93.22   |
|                              | 02/24/99      | 4.06   | 93.45   |
| GMW-8                        | 08/27/98      | 6.44   | 91.67   |
|                              | 11/03/98      | 6.00   | 92.11   |
|                              | 11/24/98      | 5.00   | 93.11   |
|                              | 11/30/98      | 4.80   | 93.51   |
|                              | 02/24/99      | 4.40   | 93.71   |

Notes appear on Page 3 of 3.

TABLE 2 (Page 2 of 3)

| Monitoring Well <sup>1</sup> | Date Measured | Depth to Ground Water <sup>2</sup> (feet) | Ground Water Elevation <sup>3</sup> (feet) |
|------------------------------|---------------|---|--|
| GMW-9                        | 08/27/98      | 7.64                                      | 91.07                                      |
|                              | 11/03/98      | 6.87                                      | 91.84                                      |
|                              | 11/24/98      | 6.29                                      | 92.42                                      |
|                              | 11/30/98      | 5.85                                      | 92.86                                      |
|                              | 02/24/99      | 5.74                                      | 92.97                                      |
| GMW-10                       | 08/27/98      | 4.73                                      | 91.11                                      |
|                              | 11/03/98      | 3.83                                      | 92.01                                      |
|                              | 11/24/98      | 3.23                                      | 92.61                                      |
|                              | 11/30/98      | 2.60                                      | 93.24                                      |
|                              | 02/24/99      | 2.40                                      | 93.44                                      |
| GMW-11                       | 08/27/98      | 6.05                                      | 92.70                                      |
|                              | 11/03/98      | 5.28                                      | 93.44                                      |
|                              | 11/24/98      | 5.00                                      | 93.75                                      |
|                              | 11/30/98      | 4.42                                      | 94.33                                      |
|                              | 02/24/99      | 4.09                                      | 94.66                                      |
| GMW-12/12a <sup>4,5</sup>    | 08/27/98      | --  | --   |
|                              | 11/03/98      | 9.49                                      | 93.09                                      |
|                              | 11/24/98      | --  | --   |
|                              | 11/30/98      | 8.02                                      | 94.56                                      |
|                              | 02/24/99      | 7.18                                      | 95.40                                      |
| GMW-13                       | 08/27/98      | --  | --   |
|                              | 11/03/98      | --  | --   |
|                              | 11/24/98      | 6.10                                      | 92.76                                      |
|                              | 11/30/98      | 5.86                                      | 93.00                                      |
|                              | 02/24/99      | 5.67                                      | 93.19                                      |
| GMW-14                       | 08/27/98      | --  | --   |
|                              | 11/03/98      | --  | --   |
|                              | 11/24/98      | 6.11                                      | 92.95                                      |
|                              | 11/30/98      | 5.66                                      | 93.40                                      |
|                              | 02/24/99      | 5.50                                      | 93.56                                      |
| MW-4                         | 08/27/98      | 5.76                                      | 92.45                                      |
|                              | 11/03/98      | 5.42                                      | 89.51                                      |
|                              | 11/24/98      | 4.86                                      | 90.07                                      |
|                              | 11/30/98      | 4.65                                      | 90.28                                      |
|                              | 02/24/99      | 4.45                                      | 90.48                                      |
| MW-10                        | 08/27/98      | 8.38                                      | 91.86                                      |
|                              | 11/03/98      | 8.12                                      | 92.12                                      |
|                              | 11/24/98      | 7.40                                      | 92.84                                      |
|                              | 11/30/98      | 7.17                                      | 93.07                                      |
|                              | 02/24/99      | 6.94                                      | 93.30                                      |
| MW-20                        | 08/27/98      | 7.23                                      | 92.31                                      |
|                              | 11/03/98      | 7.87                                      | 91.67                                      |
|                              | 11/24/98      | 7.15                                      | 92.39                                      |
|                              | 11/30/98      | 6.92                                      | 92.62                                      |
|                              | 02/24/99      | 6.75                                      | 92.79                                      |

Notes appear on Page 3 of 3.

## TABLE 2 (Page 3 of 3)

### Notes:

- <sup>1</sup> Approximate locations of the monitoring wells are shown in Figure 2.
  - <sup>2</sup> The depths to ground water were measured relative to the tops of the monitoring well casings.
  - <sup>3</sup> Casing elevations were surveyed relative to a temporary benchmark. The benchmark was assigned an arbitrary elevation of 100.00 feet.
  - <sup>4</sup> Monitoring well was abandoned during remedial activities and subsequently replaced.
  - <sup>5</sup> This monitoring well is located on a storage dock that is elevated several feet above surrounding site grades.
- \* - not measured

**TABLE 3 (Page 1 of 3)**  
**SUMMARY OF GROUND WATER CHEMICAL ANALYTICAL DATA<sup>1</sup>**  
 Puget Sound Energy Grady Way Site  
 Renton, Washington

| Sample Number <sup>2</sup>  | Date Sampled           | Petroleum Hydrocarbons <sup>3</sup><br>(mg/l) |                | PCBs <sup>4</sup><br>(µg/l) | Dissolved Arsenic <sup>5</sup><br>(µg/l) | pH <sup>6</sup><br>(pH units) |
|-----------------------------|------------------------|---|----------------|-----------------------------|--|-------------------------------|
|                             |                        | Diesel-Range                                  | Lube Oil-Range |                             |  |                               |
| GMW-1                       | 02/20/98               | 0.320   | <0.500         | -                           | -  | -                             |
|                             | 08/29/98               | <0.250  | <0.500         | <0.100                      | -  | 7.08                          |
|                             | 11/03/98               | <0.250  | <0.500         | <0.100                      | -  | 6.46                          |
|                             | 02/24/99               | <0.250  | <0.500         | <0.100                      | -  | 6.37                          |
| GMW-2                       | 02/20/98               | 0.396   | 0.970          | -                           | -  | -                             |
|                             | 08/29/98               | <0.250  | <0.500         | <0.100                      | -  | 7.12                          |
| GMW-2a <sup>7</sup>         | 11/03/98               | <0.250  | <0.500         | <0.100                      | -  | 6.98                          |
|                             | 02/24/99               | <0.250  | <0.500         | <0.100                      | -  | 6.91                          |
| GMW-3                       | 02/20/98               | <0.250  | <0.500         | <0.100                      | -  | -                             |
|                             | 08/29/98 <sup>8</sup>  | <0.250  | <0.500         | <0.100                      | -  | 7.20                          |
| GMW-3a <sup>7</sup>         | 09/17/98               | -   | -              | -                           | 2.56                                     | -                             |
|                             | 11/03/98               | <0.250  | <0.500         | <0.100                      | 15.2                                     | 6.40                          |
|                             | 02/24/99               | <0.250  | <0.500         | <0.100                      | <1.00                                    | 6.47                          |
| GMW-4                       | 02/20/98 <sup>9</sup>  | 0.404   | <0.500         | 1.17 <sup>10</sup>          | -  | -                             |
|                             | 08/29/98 <sup>9</sup>  | <0.250  | <0.500         | <0.100                      | -  | 6.93                          |
| GMW-4a <sup>7</sup>         | 11/03/98 <sup>9</sup>  | 0.802   | 1.52           | 0.506 <sup>10</sup>         | -  | 6.30                          |
|                             | 03/02/99 <sup>11</sup> | 0.361   | <0.500         | <0.100                      | -  | 6.36                          |
| GMW-5                       | 02/20/98               | <0.250  | <0.500         | <0.100                      | -  | -                             |
|                             | 08/29/98 <sup>9</sup>  | <0.250  | <0.500         | <0.100                      | -  | 6.81                          |
|                             | 11/03/98 <sup>9</sup>  | <0.250  | <0.500         | <0.100                      | -  | 6.30                          |
|                             | 02/24/99 <sup>9</sup>  | 0.267   | <0.500         | <0.100                      | -  | 6.26                          |
| GMW-6                       | 02/20/98               | <0.250  | <0.500         | <0.100                      | -  | -                             |
|                             | 08/29/98               | <0.250  | <0.500         | <0.100                      | -  | 6.91                          |
|                             | 11/03/98 <sup>9</sup>  | <0.250  | <0.500         | <0.100                      | -  | 6.47                          |
|                             | 02/24/99 <sup>9</sup>  | <0.250  | <0.500         | <0.100                      | -  | 6.40                          |
| GMW-7                       | 02/20/98               | 4.55  | 7.72           | <0.100                      | -  | -                             |
|                             | 08/29/98               | 1.25  | 1.95           | <0.100                      | -  | 6.74                          |
|                             | 11/03/98               | 9.43  | 15.8           | <0.100                      | -  | 6.52                          |
|                             | 02/24/99 <sup>11</sup> | 3.44  | 3.45           | <0.100                      | -  | 6.38                          |
| MTCA Method A Cleanup Level |                        | 1.0 <sup>12</sup>                             |                | 0.1                         | 5.0                                      | NA                            |

Notes appear on Page 3 of 3

TABLE 3 (Page 2 of 3)

| Sample Number <sup>2</sup>     | Date Sampled           | Petroleum Hydrocarbons <sup>3</sup><br>(mg/l) |                | PCBs <sup>4</sup><br>(µg/l) | Dissolved Arsenic <sup>5</sup><br>(µg/l) | pH <sup>6</sup><br>(pH units) |
|--------------------------------|------------------------|---|----------------|-----------------------------|--|-------------------------------|
|                                |                        | Diesel-Range                                  | Lube Oil-Range |                             |  |                               |
| GMW-8                          | 08/29/98               | <0.250  | <0.500         | <0.100                      | 5.95                                     | 7.31                          |
|                                | 11/03/98               | 0.385   | 0.942          | <0.100                      | 2.28                                     | 6.44                          |
|                                | 11/24/98               | 1.84  | 5.13           | -                           | -  | -                             |
|                                | 02/24/99               | 0.372   | <0.500         | <0.100                      | 3.19                                     | 6.24                          |
| GMW-9                          | 08/29/98               | <0.250  | <0.500         | <0.100                      | 3.67                                     | 7.09                          |
|                                | 11/03/98               | <0.250  | <0.500         | <0.100                      | 2.87                                     | 6.75                          |
|                                | 02/24/99               | <0.250  | <0.500         | <0.100                      | 1.38                                     | 6.53                          |
| GMW-10                         | 08/29/98 <sup>9</sup>  | <0.250  | <0.500         | <0.100                      | 16.0                                     | 6.88                          |
|                                | 11/03/98 <sup>9</sup>  | <0.250  | <0.500         | <0.100                      | 5.15                                     | 6.41                          |
|                                | 02/24/99 <sup>9</sup>  | <0.250  | <0.500         | <0.100                      | 2.30                                     | 6.30                          |
| GMW-11                         | 08/29/98 <sup>9</sup>  | <0.250  | <0.500         | <0.100                      | 7.36                                     | 6.88                          |
|                                | 11/03/98 <sup>9</sup>  | <0.250  | <0.500         | <0.100                      | 1.22                                     | 6.42                          |
|                                | 02/24/99 <sup>9</sup>  | <0.250  | <0.500         | <0.100                      | <1.00                                    | 6.33                          |
| GMW-12<br>GMW-12a <sup>7</sup> | 09/08/98               | <0.250  | <0.500         | <0.100                      | <1.00                                    | 6.61                          |
|                                | 11/03/98               | <0.250  | <0.500         | <0.100                      | 8.46                                     | 6.56                          |
|                                | 02/24/99               | 0.325   | <0.500         | <0.100                      | 1.74                                     | 6.44                          |
| GMW-13                         | 11/24/98               | 0.472   | 1.21           | -                           | -  | -                             |
|                                | 02/24/99               | <0.250  | <0.500         | -                           | -  | 6.30                          |
| GMW-14                         | 11/24/98               | 1.05  | 2.98           | -                           | -  | -                             |
|                                | 02/24/99               | 0.555   | 0.959          | -                           | -  | 6.31                          |
| MW-4                           | 08/29/98 <sup>13</sup> | <0.250  | <0.500         | -                           | 55.5                                     | 6.99                          |
|                                | 09/17/98               | -   | -              | -                           | 19.9                                     | -                             |
|                                | 11/03/98 <sup>13</sup> | <0.250  | <0.500         | -                           | 12.1                                     | 6.56                          |
|                                | 02/24/99               | -   | -              | -                           | 2.15                                     | 6.55                          |
| MW-10                          | 12/22/97               | <0.250  | <0.500         | <0.100                      | -  | -                             |
|                                | 08/29/98 <sup>13</sup> | <0.250  | <0.500         | -                           | 1.06                                     | 7.16                          |
|                                | 11/03/98 <sup>13</sup> | <0.250  | <0.500         | <0.100                      | <1.00                                    | 6.54                          |
|                                | 02/24/99               | <0.250  | <0.500         | -                           | <1.00                                    | 6.57                          |
| MW-20 <sup>14</sup>            | 08/29/98 <sup>13</sup> | <0.250  | <0.500         | -                           | 4.26                                     | 8.08                          |
|                                | 11/03/98 <sup>13</sup> | <0.250  | <0.500         | -                           | 1.70                                     | 6.63                          |
|                                | 02/24/99               | <0.250  | <0.500         | -                           | <1.00                                    | 6.53                          |
| MTCA Method A Cleanup Level    |                        | 1.0 <sup>12</sup>                             |                | 0.1                         | 5.0                                      | NA                            |

Notes appear on Page 3 of 3

TABLE 3 (Page 3 of 3)

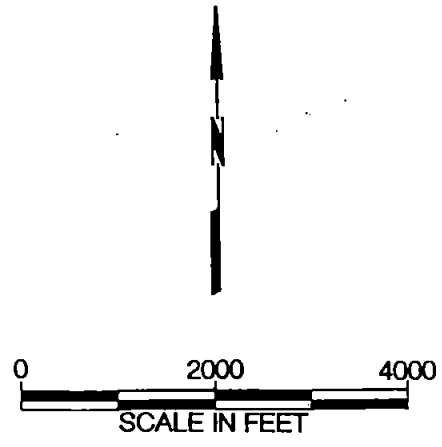
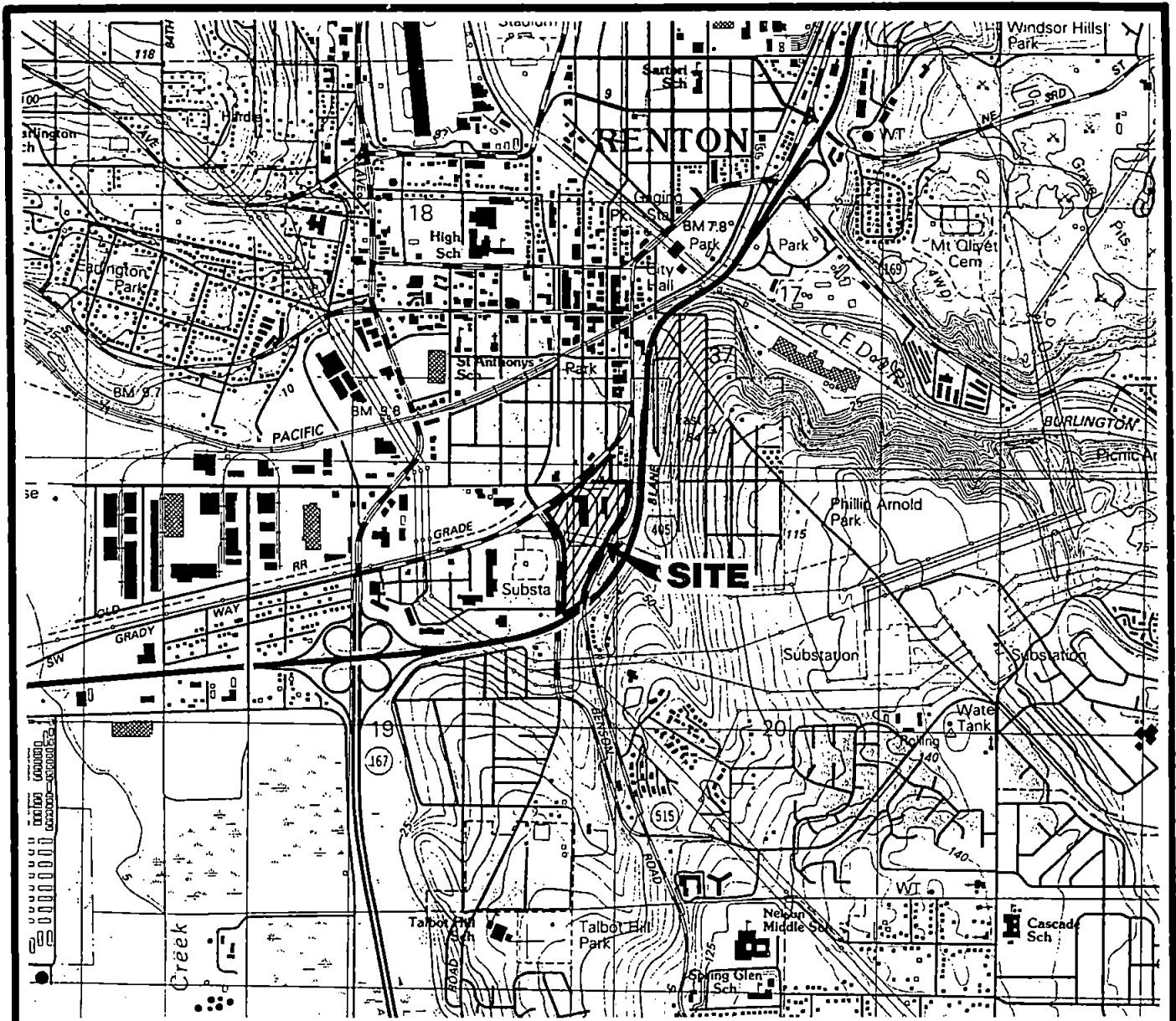
Notes:

- <sup>1</sup> Chemical analyses were performed by North Creek Analytical Laboratory of Bothell, Washington.
- <sup>2</sup> Ground water sampling locations are shown in Figure 2. Ground water sampling procedures are described in Appendix A.
- <sup>3</sup> Diesel- and lube oil-range hydrocarbons analyzed using Ecology Method NWTPH-D extended.
- <sup>4</sup> Polychlorinated biphenyls (PCBs) analyzed using EPA Method 8082.
- <sup>5</sup> Dissolved arsenic analyzed using EPA Method 6020.
- <sup>6</sup> pH analyzed using EPA Method 150.1.
- <sup>7</sup> Monitoring well was abandoned during remedial activities and subsequently replaced.
- <sup>8</sup> The ground water sample submitted for analysis of petroleum hydrocarbons was obtained on September 8, 1998.
- <sup>9</sup> This sample also was submitted for analysis of carcinogenic polycyclic aromatic hydrocarbons (cPAHs) and other semivolatile organic compounds (SVOCs) using EPA Method 8270. cPAHs and other SVOCs were not detected in the sample.
- <sup>10</sup> PCBs detected in this sample consisted of Aroclor 1242.
- <sup>11</sup> These samples also were submitted for analysis of cPAHs and other SVOCs using EPA Method 8270. One or more PAHs (acenaphthene, fluorene, naphthalene and phenanthrene) were detected in the samples at concentrations ranging from 0.113 to 4.15 µg/l, which are less than the respective MTCA Method B cleanup levels for these compounds. Carcinogenic PAHs were not detected in the samples.
- <sup>12</sup> The MTCA Method A cleanup level applies to the sum of all ranges of petroleum hydrocarbons.
- <sup>13</sup> This sample also was submitted for analysis of gasoline-range hydrocarbons using NWTPH-G, and benzene, ethylbenzene, toluene and xylenes (BETX) using EPA Method 8021B. Gasoline-range hydrocarbons and BETX were not detected in the sample.
- <sup>14</sup> A ground water sample also was obtained from MW-20 on 09/17/98 and 11/03/98 and submitted for analysis of halogenated volatile organic compounds (HVOCs) using EPA Method 8021B. HVOCs were not detected in these samples.

"-" = not tested  
 NA = not applicable  
 mg/l = milligrams per liter  
 µg/l = micrograms per liter  
 MTCA = Model Toxics Control Act  
 Shaded values exceed MTCA Method A cleanup levels.  
 Entries in bold text indicate samples were obtained during the most recent monitoring event.



10/13/95  
85  
0186-346-RBS LCM:BDH 9/1/95  
TNO:HLA 0186-407-85 10/29/97

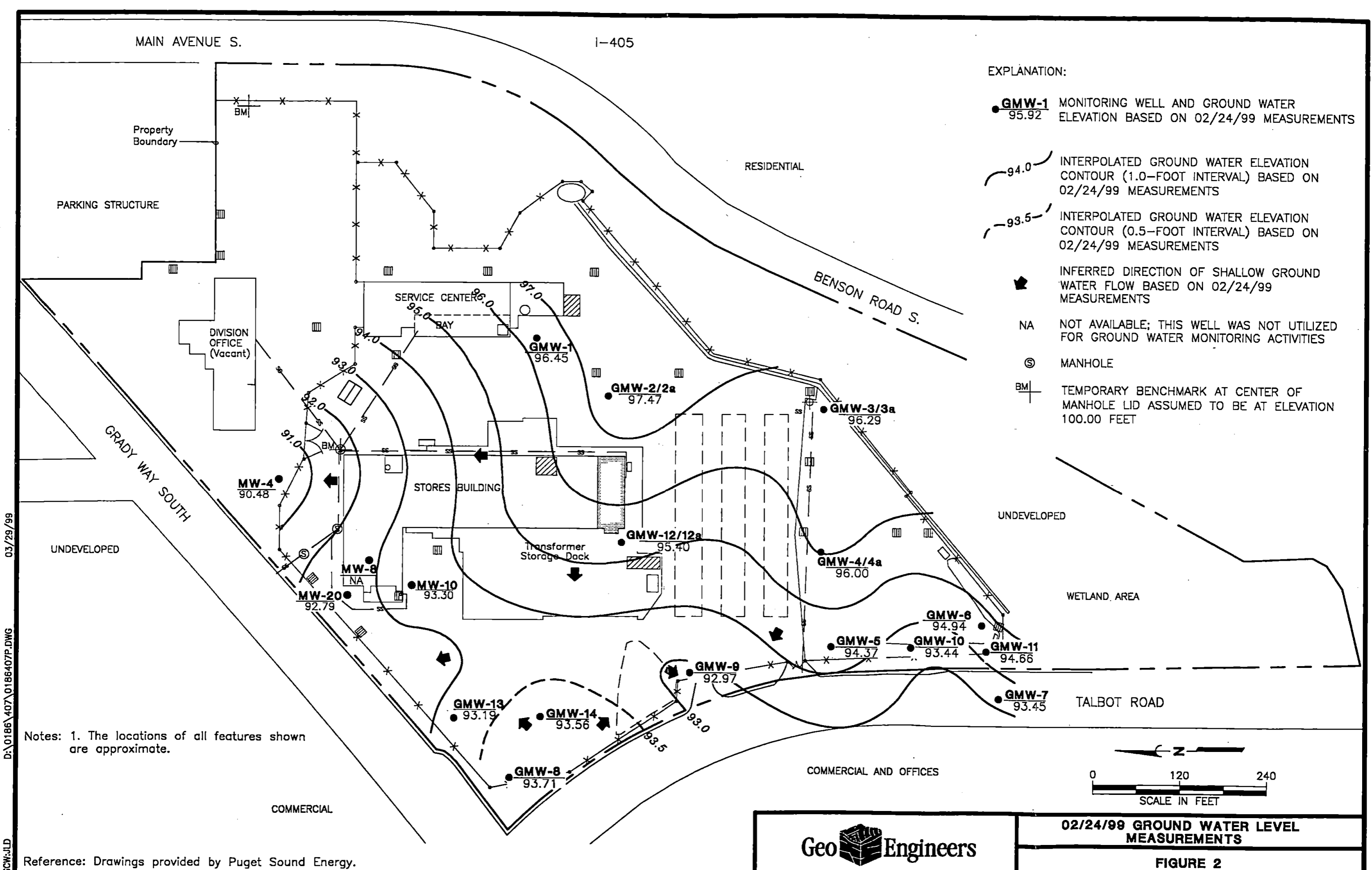


Reference: USGS 7.5' X 15' topographic-bathymetric quadrangle map "Renton, Wash.," dated 1983.



VICINITY MAP

FIGURE 1

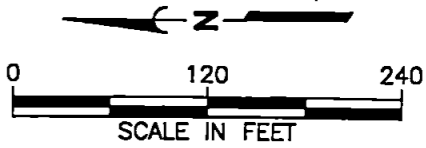


EXPLANATION:

- **GMW-1** MONITORING WELL AND GROUND WATER ELEVATION BASED ON 02/24/99 MEASUREMENTS  
95.92
- 94.0 — INTERPOLATED GROUND WATER ELEVATION CONTOUR (1.0-FOOT INTERVAL) BASED ON 02/24/99 MEASUREMENTS
- 93.5 — INTERPOLATED GROUND WATER ELEVATION CONTOUR (0.5-FOOT INTERVAL) BASED ON 02/24/99 MEASUREMENTS
- INFERRED DIRECTION OF SHALLOW GROUND WATER FLOW BASED ON 02/24/99 MEASUREMENTS
- NA NOT AVAILABLE; THIS WELL WAS NOT UTILIZED FOR GROUND WATER MONITORING ACTIVITIES
- ⊙ MANHOLE
- BM+ TEMPORARY BENCHMARK AT CENTER OF MANHOLE LID ASSUMED TO BE AT ELEVATION 100.00 FEET

Notes: 1. The locations of all features shown are approximate.

Reference: Drawings provided by Puget Sound Energy.



02/24/99 GROUND WATER LEVEL MEASUREMENTS

FIGURE 2

03/29/99  
D:\0186\407\0186407P.DWG  
SCW:JLD

**APPENDIX A**

**FIELD PROCEDURES**

## **APPENDIX A**

### **FIELD PROCEDURES**

#### **GROUND WATER MONITORING**

Prior to obtaining ground water samples, we measured combustible vapors and the depth to ground water in each monitoring well. Combustible vapors were measured using a Bacharach TLV Sniffer calibrated to hexane. The depths to ground water were measured using an electronic water level indicator. The water level indicator was cleaned with a Liquinox wash and distilled water rinse prior to use in each well.

Ground water samples were obtained from the monitoring wells after purging a minimum of three well volumes of water from the well casings. The ground water samples were obtained using disposable polyethylene bailers. The samples were transferred to laboratory-prepared bottles in the field and kept cool during transport to the testing laboratory. Chain-of-custody procedures were observed during transport of the samples to the laboratory.

Samples obtained for the analysis of dissolved metals were not field-filtered, and were placed in laboratory-prepared bottles that did not contain preservative. Laboratory personnel filtered these samples upon receipt and placed the samples in bottles with preservative.

#### **PURGE WATER SAMPLING**

A sample of the purge/decontamination water generated during ground water monitoring activities was obtained and submitted for analysis of benzene, ethylbenzene, toluene and xylenes (BETX) using EPA Method 8021B, PCBs using EPA Method 8082, and fats, oil and grease (FOG) using EPA Methods 418.1/413.2. These analyses were performed to evaluate whether purge water generated at the subject site is suitable for disposal at GeoEngineers' Redmond, Washington office in accordance with a Metro permit.

Purge water from the site is acceptable for disposal at GeoEngineers' Redmond office based on the analytical results of the purge water sample. The analytical results are on file at GeoEngineers, and will be provided for review upon request. Purge water from the site will be periodically transported to GeoEngineers' Redmond office for permitted disposal into the sanitary sewer.

**APPENDIX B**

**CHEMICAL ANALYTICAL PROGRAM**



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 503.906.9200 fax 503.906.9210  
 Bend 20354 Empire Avenue, Suite E-9, Bend, OR 97708-1883  
 541.383.9310 fax 541.382.7588

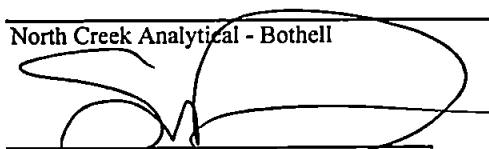
|  |  |  |
|--|--|--|
| Geo Engineers - Seattle<br>600 Stewart Street, Suite 1215<br>Seattle, WA 98101 | Project: PSE-Grady Way<br>Project Number: 0186-407-00<br>Project Manager: Steve Woodward | Sampled: 3/2/99<br>Received: 3/3/99<br>Reported: 3/15/99 14:22 |
|--|--|--|

**Polynuclear Aromatic Compounds by GC/MS with Selected Ion Monitoring  
 North Creek Analytical - Bothell**

| Analyte                    | Batch Number | Date Prepared | Date Analyzed | Surrogate Limits  | Reporting Limit | Result       | Units        | Notes* |
|----------------------------|--------------|---------------|---------------|-------------------|-----------------|--------------|--------------|--------|
| <b>GMW-4</b>               |              |               |               | <b>B903076-01</b> |                 |              | <b>Water</b> |        |
| Acenaphthene               | 0390299      | 3/11/99       | 3/12/99       |                   | 0.100           | ND           | ug/l         | 3      |
| Acenaphthylene             | "            | "             | "             |                   | 0.100           | ND           | "            | 3      |
| Anthracene                 | "            | "             | "             |                   | 0.100           | ND           | "            | 3      |
| Benzo (a) anthracene       | "            | "             | "             |                   | 0.100           | ND           | "            | 3      |
| Benzo (a) pyrene           | "            | "             | "             |                   | 0.100           | ND           | "            | 3      |
| Benzo (b) fluoranthene     | "            | "             | "             |                   | 0.100           | ND           | "            | 3      |
| Benzo (ghi) perylene       | "            | "             | "             |                   | 0.100           | ND           | "            | 3      |
| Benzo (k) fluoranthene     | "            | "             | "             |                   | 0.100           | ND           | "            | 3      |
| Chrysene                   | "            | "             | "             |                   | 0.100           | ND           | "            | 3      |
| Dibenz (a,h) anthracene    | "            | "             | "             |                   | 0.100           | ND           | "            | 3      |
| Fluoranthene               | "            | "             | "             |                   | 0.300           | ND           | "            | 3      |
| Fluorene                   | "            | "             | "             |                   | 0.100           | ND           | "            | 3      |
| Indeno (1,2,3-cd) pyrene   | "            | "             | "             |                   | 0.100           | ND           | "            | 3      |
| Naphthalene                | "            | "             | "             |                   | 0.300           | ND           | "            | 3      |
| <b>Phenanthrene</b>        | "            | "             | "             |                   | 0.100           | <b>0.113</b> | "            | 3      |
| Pyrene                     | "            | "             | "             |                   | 0.300           | ND           | "            | 3      |
| Surrogate: 2-FBP           | "            | "             | "             | 30.0-150          |                 | 36.2         | %            | 3      |
| Surrogate: Nitrobenzene-d5 | "            | "             | "             | 30.0-150          |                 | 64.0         | "            | 3      |
| Surrogate: p-Terphenyl-d14 | "            | "             | "             | 30.0-150          |                 | 36.9         | "            | 3      |

North Creek Analytical - Bothell

\*Refer to end of report for text of notes and definitions.

  
 Steve Davis, Project Manager



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|--|--|--|
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|--|--|--|

**Conventional Chemistry Parameters by APHA/EPA Methods  
 North Creek Analytical - Bothell**

| Analyte                        | Batch Number | Date Prepared | Date Analyzed | Specific Method   | Reporting Limit | Result | Units    | Notes* |
|--------------------------------|--------------|---------------|---------------|-------------------|-----------------|--------|----------|--------|
| <u>GMW-4</u>                   |              |               |               | <u>B903076-01</u> |                 |        |          |        |
| pH                             | 0390120      | 3/3/99        | 3/3/99        | EPA 150.1         |                 | 6.35   | pH Units |        |
| <u>P030299</u>                 |              |               |               | <u>B903076-02</u> |                 |        |          |        |
| Fats, Oil & Grease (total)     | 0390183      | 3/8/99        | 3/8/99        | EPA 418.1/413.2   | 1.00            | 1.53   | mg/l     |        |
| Fats, Oil & Grease (non-polar) | "            | "             | "             | EPA 418.1/413.2   | 1.00            | ND     | "        |        |
| Fats, Oil & Grease (polar)     | "            | "             | "             | EPA 418.1/413.2   |                 | 0.534  | "        |        |

North Creek Analytical - Bothell

\*Refer to end of report for text of notes and definitions.

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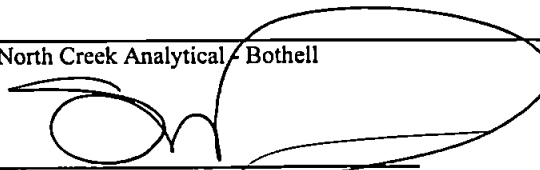
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|--|--|--|
| Geo Engineers - Seattle<br>600 Stewart Street, Suite 1215<br>Seattle, WA 98101 | Project: PSE-Grady Way<br>Project Number: 0186-407-00<br>Project Manager: Steve Woodward | Sampled: 3/2/99<br>Received: 3/3/99<br>Reported: 3/15/99 14:22 |
|--|--|--|

**Semivolatile Petroleum Products by NWTPH-Dx (w/o Acid/Silica Gel Clean-up)/Quality Control  
 North Creek Analytical - Bothell**

| Analyte                     | Date Analyzed | Spike Level                  | Sample Result | QC Result                                      | Reporting Limit Units | Recov. Recov. Limits | RPD % | RPD Limit | RPD % | Notes* |
|-----------------------------|---------------|------------------------------|---------------|--|-----------------------|----------------------|-------|-----------|-------|--------|
| <b>Batch: 0390124</b>       |               | <b>Date Prepared: 3/4/99</b> |               | <b>Extraction Method: EPA 3520C/600 Series</b> |                       |                      |       |           |       |        |
| <b>Blank</b>                |               | <b>0390124-BLK1</b>          |               |  |                       |                      |       |           |       |        |
| Diesel Range Hydrocarbons   | 3/5/99        |                              |               | ND   | mg/l                  | 0.250                |       |           |       |        |
| Lube Oil Range Hydrocarbons | "             |                              |               | ND   | "                     | 0.500                |       |           |       |        |
| Surrogate: 2-FBP            | "             | 0.326                        |               | 0.221  | "                     | 50.0-150             | 67.8  |           |       |        |
| <b>LCS</b>                  |               | <b>0390124-BS1</b>           |               |  |                       |                      |       |           |       |        |
| Diesel Range Hydrocarbons   | 3/5/99        | 2.00                         |               | 1.53   | mg/l                  | 60.0-140             | 76.5  |           |       |        |
| Surrogate: 2-FBP            | "             | 0.326                        |               | 0.201  | "                     | 50.0-150             | 61.7  |           |       |        |
| <b>LCS Dup</b>              |               | <b>0390124-BSD1</b>          |               |  |                       |                      |       |           |       |        |
| Diesel Range Hydrocarbons   | 3/5/99        | 2.00                         |               | 1.72   | mg/l                  | 60.0-140             | 86.0  | 40.0      | 11.7  |        |
| Surrogate: 2-FBP            | "             | 0.326                        |               | 0.248  | "                     | 50.0-150             | 76.1  |           |       |        |

North Creek Analytical - Bothell

\*Refer to end of report for text of notes and definitions.

  
 Steve Davis, Project Manager

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 Bend 20354 Empire Avenue, Suite E-9, Bend, OR 97708-1883  
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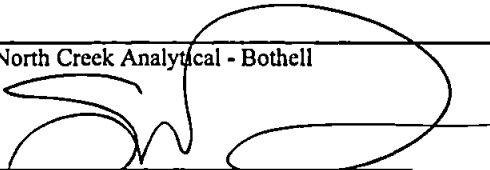
|  |  |  |
|--|--|--|
| Geo Engineers - Seattle<br>600 Stewart Street, Suite 1215<br>Seattle, WA 98101 | Project: PSE-Grady Way<br>Project Number: 0186-407-00<br>Project Manager: Steve Woodward | Sampled: 3/2/99<br>Received: 3/3/99<br>Reported: 3/15/99 14:22 |
|--|--|--|

**BTEX by EPA Method 8021B/Quality Control  
 North Creek Analytical - Bothell**

| Analyte                 | Date Analyzed | Spike Level | Sample Result                | QC Result | Units             | Reporting Limit<br>Recov. Limits          | Recov. % | RPD Limit | RPD % | Notes* |
|-------------------------|---------------|-------------|------------------------------|-----------|-------------------|---|----------|-----------|-------|--------|
| <b>Batch: 0390201</b>   |               |             | <b>Date Prepared: 3/8/99</b> |           |                   | <b>Extraction Method: EPA 5030B (P/T)</b> |          |           |       |        |
| <b>Blank</b>            |               |             | <b>0390201-BLK1</b>          |           |                   |   |          |           |       |        |
| Benzene                 | 3/8/99        |             |                              | ND        | ug/l              | 0.500                                     |          |           |       |        |
| Toluene                 | "             |             |                              | ND        | "                 | 0.500                                     |          |           |       |        |
| Ethylbenzene            | "             |             |                              | ND        | "                 | 0.500                                     |          |           |       |        |
| Xylenes (total)         | "             |             |                              | ND        | "                 | 1.00                                      |          |           |       |        |
| Surrogate: 4-BFB (PID)  | "             | 48.0        |                              | 47.1      | "                 | 50.0-150                                  | 98.1     |           |       |        |
| <b>LCS</b>              |               |             | <b>0390201-BS2</b>           |           |                   |   |          |           |       |        |
| Benzene                 | 3/8/99        | 10.0        |                              | 9.75      | ug/l              | 70.0-130                                  | 97.5     |           |       |        |
| Toluene                 | "             | 10.0        |                              | 9.34      | "                 | 70.0-130                                  | 93.4     |           |       |        |
| Ethylbenzene            | "             | 10.0        |                              | 9.54      | "                 | 70.0-130                                  | 95.4     |           |       |        |
| Xylenes (total)         | "             | 30.0        |                              | 29.8      | "                 | 70.0-130                                  | 99.3     |           |       |        |
| Surrogate: 4-BFB (PID)  | "             | 48.0        |                              | 47.3      | "                 | 50.0-150                                  | 98.5     |           |       |        |
| <b>Matrix Spike</b>     |               |             | <b>0390201-MS1</b>           |           | <b>B903114-02</b> |   |          |           |       |        |
| Benzene                 | 3/8/99        | 10.0        | ND                           | 9.69      | ug/l              | 70.0-130                                  | 96.9     |           |       |        |
| Toluene                 | "             | 10.0        | ND                           | 9.26      | "                 | 70.0-130                                  | 92.6     |           |       |        |
| Ethylbenzene            | "             | 10.0        | ND                           | 9.40      | "                 | 70.0-130                                  | 94.0     |           |       |        |
| Xylenes (total)         | "             | 30.0        | ND                           | 28.1      | "                 | 70.0-130                                  | 93.7     |           |       |        |
| Surrogate: 4-BFB (PID)  | "             | 48.0        |                              | 47.9      | "                 | 50.0-150                                  | 99.8     |           |       |        |
| <b>Matrix Spike Dup</b> |               |             | <b>0390201-MSD1</b>          |           | <b>B903114-02</b> |   |          |           |       |        |
| Benzene                 | 3/8/99        | 10.0        | ND                           | 9.76      | ug/l              | 70.0-130                                  | 97.6     | 15.0      | 0.720 |        |
| Toluene                 | "             | 10.0        | ND                           | 9.22      | "                 | 70.0-130                                  | 92.2     | 15.0      | 0.433 |        |
| Ethylbenzene            | "             | 10.0        | ND                           | 9.57      | "                 | 70.0-130                                  | 95.7     | 15.0      | 1.79  |        |
| Xylenes (total)         | "             | 30.0        | ND                           | 28.7      | "                 | 70.0-130                                  | 95.7     | 15.0      | 2.11  |        |
| Surrogate: 4-BFB (PID)  | "             | 48.0        |                              | 47.1      | "                 | 50.0-150                                  | 98.1     |           |       |        |

North Creek Analytical - Bothell

\*Refer to end of report for text of notes and definitions.

  
 Steve Davis, Project Manager

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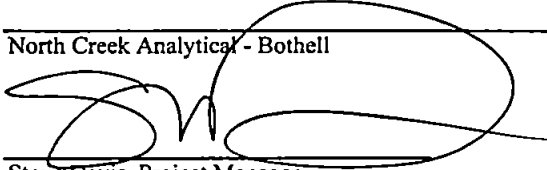
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|--|--|--|
| Geo Engineers - Seattle<br>600 Stewart Street, Suite 1215<br>Seattle, WA 98101 | Project: PSE-Grady Way<br>Project Number: 0186-407-00<br>Project Manager: Steve Woodward | Sampled: 3/2/99<br>Received: 3/3/99<br>Reported: 3/15/99 14:22 |
|--|--|--|

**Polychlorinated Biphenyls by EPA Method 8082/Quality Control  
 North Creek Analytical - Bothell**

| Analyte               | Date Analyzed | Spike Level | Sample Result                | QC Result | Units | Reporting Limit<br>Recov. Limits               | Recov. % | RPD Limit | RPD % | Notes* |
|-----------------------|---------------|-------------|------------------------------|-----------|-------|--|----------|-----------|-------|--------|
| <b>Batch: 0390158</b> |               |             | <b>Date Prepared: 3/5/99</b> |           |       | <b>Extraction Method: EPA 3520C/600 Series</b> |          |           |       |        |
| <b>Blank</b>          |               |             | <b>0390158-BLK1</b>          |           |       |  |          |           |       |        |
| Aroclor 1016          | 3/10/99       |             |                              | ND        | ug/l  | 0.100  |          |           |       |        |
| Aroclor 1221          | "             |             |                              | ND        | "     | 0.100  |          |           |       |        |
| Aroclor 1232          | "             |             |                              | ND        | "     | 0.100  |          |           |       |        |
| Aroclor 1242          | "             |             |                              | ND        | "     | 0.100  |          |           |       |        |
| Aroclor 1248          | "             |             |                              | ND        | "     | 0.100  |          |           |       |        |
| Aroclor 1254          | "             |             |                              | ND        | "     | 0.100  |          |           |       |        |
| Aroclor 1260          | "             |             |                              | ND        | "     | 0.100  |          |           |       |        |
| Aroclor 1262          | "             |             |                              | ND        | "     | 0.100  |          |           |       |        |
| Aroclor 1268          | "             |             |                              | ND        | "     | 0.100  |          |           |       |        |
| Surrogate: TCX        | "             | 0.200       |                              | 0.161     | "     | 40.0-130                                       | 80.5     |           |       |        |
| <b>LCS</b>            |               |             | <b>0390158-BS1</b>           |           |       |  |          |           |       |        |
| Aroclor 1260          | 3/10/99       | 10.0        |                              | 11.0      | ug/l  | 33.0-122                                       | 110      |           |       |        |
| Surrogate: TCX        | "             | 0.200       |                              | 0.172     | "     | 40.0-130                                       | 86.0     |           |       |        |
| <b>LCS Dup</b>        |               |             | <b>0390158-BSD1</b>          |           |       |  |          |           |       |        |
| Aroclor 1260          | 3/10/99       | 10.0        |                              | 11.3      | ug/l  | 33.0-122                                       | 113      | 21.0      | 2.69  |        |
| Surrogate: TCX        | "             | 0.200       |                              | 0.177     | "     | 40.0-130                                       | 88.5     |           |       |        |

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\*Refer to end of report for text of notes and definitions.

  
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|  |  |  |
|--|--|--|
| Geo Engineers - Seattle<br>600 Stewart Street, Suite 1215<br>Seattle, WA 98101 | Project: PSE-Grady Way<br>Project Number: 0186-407-00<br>Project Manager: Steve Woodward | Sampled: 3/2/99<br>Received: 3/3/99<br>Reported: 3/15/99 14:22 |
|--|--|--|

**Polynuclear Aromatic Compounds by GC/MS with Selected Ion Monitoring/Quality Control**  
**North Creek Analytical - Bothell**

| Analyte | Date Analyzed | Spike Level | Sample Result | QC Result | Units | Reporting Limit<br>Recov. Limits | Recov.<br>% | RPD<br>Limit | RPD<br>% | Notes* |
|---------|---------------|-------------|---------------|-----------|-------|----------------------------------|-------------|--------------|----------|--------|
|---------|---------------|-------------|---------------|-----------|-------|----------------------------------|-------------|--------------|----------|--------|

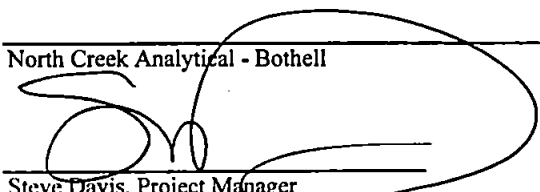
|                            |                               |  |  |      |      |          |      |  |  |  |
|----------------------------|-------------------------------|--|--|------|------|----------|------|--|--|--|
| <b>Batch: 0390299</b>      | <b>Date Prepared: 3/11/99</b> | <b>Extraction Method: EPA 3520C/600 Series</b> |  |      |      |          |      |  |  |  |
| <b>Blank</b>               | <b>0390299-BLK1</b>           |  |  |      |      |          |      |  |  |  |
| Acenaphthene               | 3/12/99                       |  |  | ND   | ug/l | 0.100    |      |  |  |  |
| Acenaphthylene             | "                             |  |  | ND   | "    | 0.100    |      |  |  |  |
| Anthracene                 | "                             |  |  | ND   | "    | 0.100    |      |  |  |  |
| Benzo (a) anthracene       | "                             |  |  | ND   | "    | 0.100    |      |  |  |  |
| Benzo (a) pyrene           | "                             |  |  | ND   | "    | 0.100    |      |  |  |  |
| Benzo (b) fluoranthene     | "                             |  |  | ND   | "    | 0.100    |      |  |  |  |
| Benzo (ghi) perylene       | "                             |  |  | ND   | "    | 0.100    |      |  |  |  |
| Benzo (k) fluoranthene     | "                             |  |  | ND   | "    | 0.100    |      |  |  |  |
| Chrysene                   | "                             |  |  | ND   | "    | 0.100    |      |  |  |  |
| Dibenz (a,h) anthracene    | "                             |  |  | ND   | "    | 0.100    |      |  |  |  |
| Fluoranthene               | "                             |  |  | ND   | "    | 0.300    |      |  |  |  |
| Fluorene                   | "                             |  |  | ND   | "    | 0.100    |      |  |  |  |
| Indeno (1,2,3-cd) pyrene   | "                             |  |  | ND   | "    | 0.100    |      |  |  |  |
| Naphthalene                | "                             |  |  | ND   | "    | 0.300    |      |  |  |  |
| Phenanthrene               | "                             |  |  | ND   | "    | 0.100    |      |  |  |  |
| Pyrene                     | "                             |  |  | ND   | "    | 0.300    |      |  |  |  |
| Surrogate: 2-FBP           | "                             | 50.0   |  | 30.7 | "    | 30.0-150 | 61.4 |  |  |  |
| Surrogate: Nitrobenzene-d5 | "                             | 50.0   |  | 39.6 | "    | 30.0-150 | 79.2 |  |  |  |
| Surrogate: p-Terphenyl-d14 | "                             | 50.0   |  | 31.0 | "    | 30.0-150 | 62.0 |  |  |  |

|                            |                    |      |  |      |      |          |      |  |  |  |
|----------------------------|--------------------|------|--|------|------|----------|------|--|--|--|
| <b>LCS</b>                 | <b>0390299-BS1</b> |      |  |      |      |          |      |  |  |  |
| Chrysene                   | 3/12/99            | 10.0 |  | 9.32 | ug/l | 50.0-150 | 93.2 |  |  |  |
| Fluorene                   | "                  | 10.0 |  | 8.26 | "    | 50.0-150 | 82.6 |  |  |  |
| Indeno (1,2,3-cd) pyrene   | "                  | 10.0 |  | 9.64 | "    | 50.0-150 | 96.4 |  |  |  |
| Surrogate: 2-FBP           | "                  | 50.0 |  | 25.8 | "    | 30.0-150 | 51.6 |  |  |  |
| Surrogate: Nitrobenzene-d5 | "                  | 50.0 |  | 44.2 | "    | 30.0-150 | 88.4 |  |  |  |
| Surrogate: p-Terphenyl-d14 | "                  | 50.0 |  | 28.5 | "    | 30.0-150 | 57.0 |  |  |  |

|                            |                     |      |  |      |      |          |      |      |      |  |
|----------------------------|---------------------|------|--|------|------|----------|------|------|------|--|
| <b>LCS Dup</b>             | <b>0390299-BSD1</b> |      |  |      |      |          |      |      |      |  |
| Chrysene                   | 3/12/99             | 10.0 |  | 10.1 | ug/l | 50.0-150 | 101  | 25.0 | 8.03 |  |
| Fluorene                   | "                   | 10.0 |  | 8.80 | "    | 50.0-150 | 88.0 | 25.0 | 6.33 |  |
| Indeno (1,2,3-cd) pyrene   | "                   | 10.0 |  | 10.6 | "    | 50.0-150 | 106  | 25.0 | 9.49 |  |
| Surrogate: 2-FBP           | "                   | 50.0 |  | 26.4 | "    | 30.0-150 | 52.8 |      |      |  |
| Surrogate: Nitrobenzene-d5 | "                   | 50.0 |  | 35.3 | "    | 30.0-150 | 70.6 |      |      |  |
| Surrogate: p-Terphenyl-d14 | "                   | 50.0 |  | 31.6 | "    | 30.0-150 | 63.2 |      |      |  |

North Creek Analytical - Bothell

\*Refer to end of report for text of notes and definitions.

  
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|--|--|--|

**Conventional Chemistry Parameters by APHA/EPA Methods/Quality Control  
 North Creek Analytical - Bothell**

| Analyte                        | Date Analyzed | Spike Level                  | Sample Result | QC Result                                     | Reporting Limit Units | Recov. Limits | Recov. % | RPD Limit | RPD % | Notes* |
|--------------------------------|---------------|------------------------------|---------------|---|-----------------------|---------------|----------|-----------|-------|--------|
| <b>Batch: 0390120</b>          |               | <b>Date Prepared: 3/3/99</b> |               | <b>Extraction Method: General Preparation</b> |                       |               |          |           |       |        |
| <b>Duplicate</b>               |               | <b>0390120-DUP1</b>          |               |   |                       |               |          |           |       |        |
| pH                             | 3/3/99        |                              |               | 7.89  | pH Units              |               |          | 10.0      |       |        |
| <b>Batch: 0390183</b>          |               | <b>Date Prepared: 3/8/99</b> |               | <b>Extraction Method: EPA 418.1</b>           |                       |               |          |           |       |        |
| <b>Blank</b>                   |               | <b>0390183-BLK1</b>          |               |   |                       |               |          |           |       |        |
| Fats, Oil & Grease (total)     | 3/8/99        |                              |               | ND  | mg/l                  | 1.00          |          |           |       |        |
| Fats, Oil & Grease (non-polar) | "             |                              |               | ND  | "                     | 1.00          |          |           |       |        |
| Fats, Oil & Grease (polar)     | "             |                              |               | ND  | "                     | 1.00          |          |           |       |        |
| <b>LCS</b>                     |               | <b>0390183-BS1</b>           |               |   |                       |               |          |           |       |        |
| Fats, Oil & Grease (total)     | 3/8/99        | 2.40                         |               | 2.91  | mg/l                  | 65.8-123      | 121      |           |       |        |
| Fats, Oil & Grease (non-polar) | "             | 2.40                         |               | 2.75  | "                     | 65.8-123      | 115      |           |       |        |
| <b>LCS Dup</b>                 |               | <b>0390183-BSD1</b>          |               |   |                       |               |          |           |       |        |
| Fats, Oil & Grease (total)     | 3/8/99        | 2.40                         |               | 2.91  | mg/l                  | 65.8-123      | 121      | 60.0      | 0     |        |
| Fats, Oil & Grease (non-polar) | "             | 2.40                         |               | 2.75  | "                     | 65.8-123      | 115      | 60.0      | 0     |        |

North Creek Analytical - Bothell

Steve Davis, Project Manager

\*Refer to end of report for text of notes and definitions.

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| Geo Engineers - Seattle<br>600 Stewart Street, Suite 1215<br>Seattle, WA 98101 | Project: PSE-Grady Way<br>Project Number: 0186-407-00<br>Project Manager: Steve Woodward | Sampled: 3/2/99<br>Received: 3/3/99<br>Reported: 3/15/99 14:22 |
|--|--|--|

### Notes and Definitions

| #      | Note   |
|--------|--|
| 1      | The sample chromatographic pattern does not resemble the fuel standard used for quantitation.  |
| 2      | The reporting limit for this analyte has been raised to account for interference from coeluting organic compounds present in the sample. |
| 3      | This sample was analyzed outside of the EPA recommended holding time.  |
| DET    | Analyte DETECTED   |
| ND     | Analyte NOT DETECTED at or above the reporting limit   |
| NR     | Not Reported   |
| dry    | Sample results reported on a dry weight basis  |
| Recov. | Recovery   |
| RPD    | Relative Percent Difference  |

North Creek Analytical - Bothell

  
Steve Davis, Project Manager

North Creek Analytical, Inc.  
Environmental Laboratory Network

Quantitation report

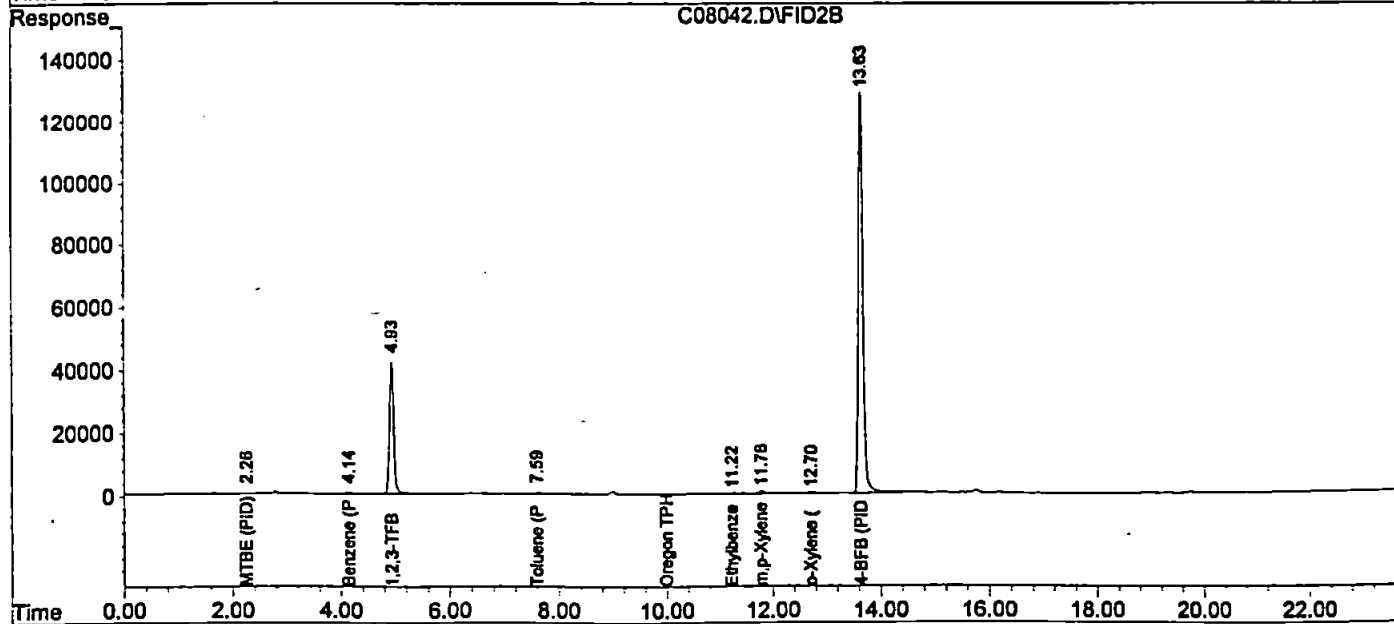
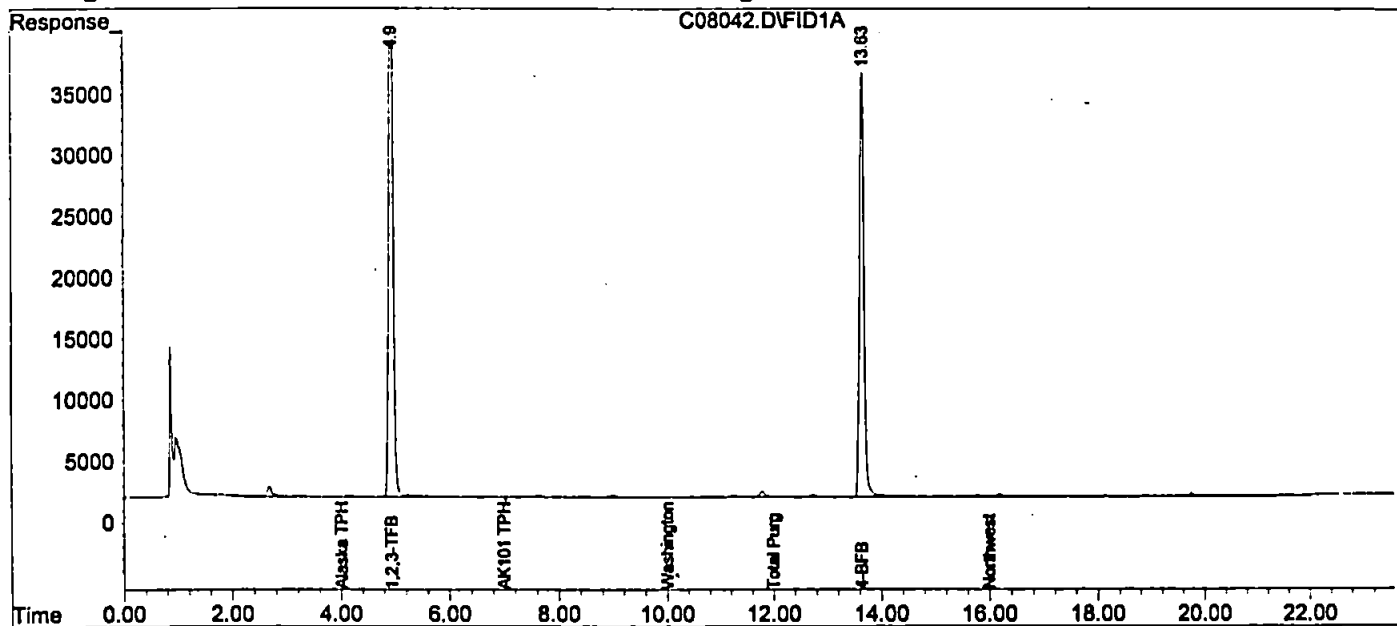
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Acq On : 9 Mar 1999 3:44 am Operator: ng  
Sample : B903076-02 Inst : GC #8  
Misc : 5 ml Multiplr: 1.00  
IntFile : SURR.E

Data File : C:\HPCHEM\4\DATA\030899\C08042.D\FID2B.CH Vial: 42  
Acq On : 9 Mar 99 3:44 am Operator: ng  
Sample : B903076-02 Inst : GC #8  
Misc : 5 ml Multiplr: 1.00  
IntFile : SURR2.E

Quant Time: Mar 9 7:06 1999 Quant Results File: TPHG1298.RES

Quant Method : C:\HPCHEM\4\METHODS\TPHG1298.M (Chemstation Integrator)  
Title : TPH-G Water Method  
Last Update : Mon Mar 08 16:09:42 1999  
Response via : Multiple Level Calibration  
DataAcq Meth : TPHG1298.M

Volume Inj. :  
Signal #1 Phase : Signal #2 Phase:  
Signal #1 Info : Signal #2 Info :



Quantitation Report

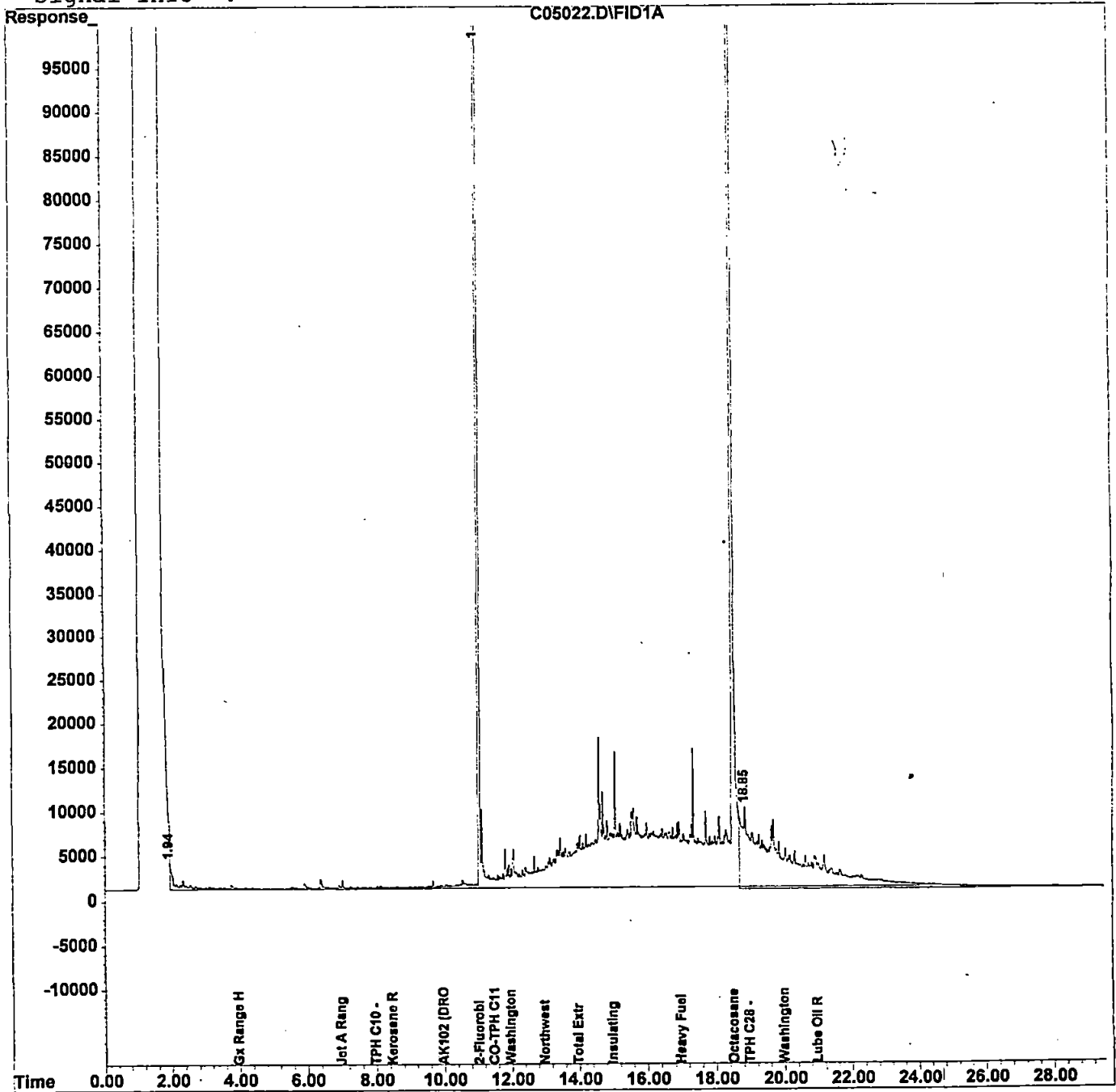
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Acq On : 5 Mar 1999 3:07 pm  
Sample : b903076-01  
Misc : w  
IntFile : SURR.E  
Quant Time: Mar 5 15:39 1999

Vial: 17  
Operator: krl  
Inst : GC#1  
Multiplr: 1.00

Quant Results File: TPHD.RES

Quant Method : D:\HPCHEM\1\METHODS\TPHD.M (Chemstation Integrator)  
Title : TPH-D Front Method  
Last Update : Fri Feb 12 09:30:11 1999  
Response via : Multiple Level Calibration  
DataAcq Meth : TPHD.M

Volume Inj. :  
Signal Phase :  
Signal Info :



## **APPENDIX B**

### **CHEMICAL ANALYTICAL PROGRAM**

#### **ANALYTICAL METHODS**

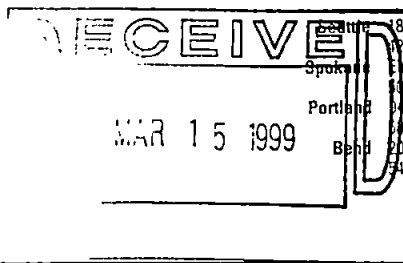
Chain-of-custody procedures were followed during the transport of the water and soil samples to North Creek Analytical in Bothell, Washington. The samples were held in cold storage pending extraction and/or analysis. The analytical results, analytical methods reference and laboratory QA/QC (quality assurance/quality control) records are included in this appendix. The analytical results are also summarized in the text and tables of this report.

#### **ANALYTICAL DATA REVIEW**

The laboratory maintains an internal quality assurance program as documented in its laboratory quality assurance manual. The laboratory uses a combination of blanks, surrogate recoveries, duplicates, matrix spike recoveries, matrix spike duplicate recoveries, blank spike recoveries and blank spike duplicate recoveries to evaluate the validity of the analytical results. The laboratory also uses data quality goals for individual chemicals or groups of chemicals based on the long-term performance of the test methods. The data quality goals are included in the laboratory reports. The laboratory compared each group of samples with the existing data quality goals and noted any exceptions in the laboratory report. Data quality exceptions documented by the laboratory in the laboratory reports are reviewed by GeoEngineers using the applicable data validation guidelines from the following documents: "National Functional Guidelines For Organic Data Review" draft dated 1991 and "Laboratory Data Validation Functional Guidelines for Evaluating Inorganic Analyses" dated 1988.

#### **ANALYTICAL DATA REVIEW SUMMARY**

The laboratory reports did identify some data quality exceptions. However, based on our review of the data quality exceptions, and our discussions with the laboratory personnel, it is our opinion that the analytical data are of acceptable quality for their intended use in this study.



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| Geo Engineers - Seattle<br>600 Stewart Street, Suite 1215<br>Seattle, WA 98101 | Project: PSE-Grady Way<br>Project Number: 0186-407-00<br>Project Manager: Steve Woodward | Sampled: 2/24/99<br>Received: 2/25/99<br>Reported: 3/11/99 15:09 |
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**ANALYTICAL REPORT FOR SAMPLES:**

| Sample Description | Laboratory Sample Number | Sample Matrix | Date Sampled |
|--------------------|--------------------------|---------------|--------------|
| MW-4               | B902447-01               | Water         | 2/24/99      |
| MW-10              | B902447-02               | Water         | 2/24/99      |
| MW-20              | B902447-03               | Water         | 2/24/99      |
| GMW-1              | B902447-04               | Water         | 2/24/99      |
| GMW-2A             | B902447-05               | Water         | 2/24/99      |
| GMW-3A             | B902447-06               | Water         | 2/24/99      |
| GMW-5              | B902447-07               | Water         | 2/24/99      |
| GMW-6              | B902447-08               | Water         | 2/24/99      |
| GMW-7              | B902447-09               | Water         | 2/24/99      |
| GMW-8              | B902447-10               | Water         | 2/24/99      |
| GMW-9              | B902447-11               | Water         | 2/24/99      |
| GMW-10             | B902447-12               | Water         | 2/24/99      |
| GMW-11             | B902447-13               | Water         | 2/24/99      |
| GMW-12A            | B902447-14               | Water         | 2/24/99      |
| GMW-13             | B902447-15               | Water         | 2/24/99      |
| GMW-14             | B902447-16               | Water         | 2/24/99      |

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Steve Davis, Project Manager

*The results in this report apply to the samples analyzed in accordance with the chain of custody document.  
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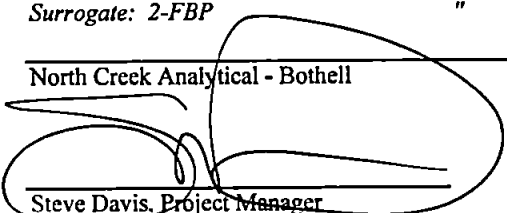
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**Semivolatile Petroleum Products by NWTPH-Dx (w/o Acid/Silica Gel Clean-up)  
 North Creek Analytical - Bothell**

| Analyte                                    | Batch Number | Date Prepared | Date Analyzed | Surrogate Limits  | Reporting Limit | Result | Units | Notes* |
|--|--------------|---------------|---------------|-------------------|-----------------|--------|-------|--------|
|  |              |               |               | <u>B902447-02</u> |                 |        |       |        |
| <u>MW-10</u><br>Diesel Range Hydrocarbons  | 0290751      | 2/26/99       | 3/1/99        |                   | 0.250           | ND     | mg/l  |        |
| Lube Oil Range Hydrocarbons                | "            | "             | "             |                   | 0.500           | ND     | "     |        |
| Surrogate: 2-FBP                           | "            | "             | "             | 50.0-150          |                 | 76.6   | %     |        |
|  |              |               |               | <u>B902447-03</u> |                 |        |       |        |
| <u>MW-20</u><br>Diesel Range Hydrocarbons  | 0290751      | 2/26/99       | 3/1/99        |                   | 0.250           | ND     | mg/l  |        |
| Lube Oil Range Hydrocarbons                | "            | "             | "             |                   | 0.500           | ND     | "     |        |
| Surrogate: 2-FBP                           | "            | "             | "             | 50.0-150          |                 | 76.9   | %     |        |
|  |              |               |               | <u>B902447-04</u> |                 |        |       |        |
| <u>GMW-1</u><br>Diesel Range Hydrocarbons  | 0290751      | 2/26/99       | 3/1/99        |                   | 0.250           | ND     | mg/l  |        |
| Lube Oil Range Hydrocarbons                | "            | "             | "             |                   | 0.500           | ND     | "     |        |
| Surrogate: 2-FBP                           | "            | "             | "             | 50.0-150          |                 | 75.0   | %     |        |
|  |              |               |               | <u>B902447-05</u> |                 |        |       |        |
| <u>GMW-2A</u><br>Diesel Range Hydrocarbons | 0290751      | 2/26/99       | 3/1/99        |                   | 0.250           | ND     | mg/l  |        |
| Lube Oil Range Hydrocarbons                | "            | "             | "             |                   | 0.500           | ND     | "     |        |
| Surrogate: 2-FBP                           | "            | "             | "             | 50.0-150          |                 | 66.9   | %     |        |
|  |              |               |               | <u>B902447-06</u> |                 |        |       |        |
| <u>GMW-3A</u><br>Diesel Range Hydrocarbons | 0290751      | 2/26/99       | 3/1/99        |                   | 0.250           | ND     | mg/l  |        |
| Lube Oil Range Hydrocarbons                | "            | "             | "             |                   | 0.500           | ND     | "     |        |
| Surrogate: 2-FBP                           | "            | "             | "             | 50.0-150          |                 | 76.6   | %     |        |
|  |              |               |               | <u>B902447-07</u> |                 |        |       |        |
| <u>GMW-5</u><br>Diesel Range Hydrocarbons  | 0290751      | 2/26/99       | 3/1/99        |                   | 0.250           | 0.267  | mg/l  | 1      |
| Lube Oil Range Hydrocarbons                | "            | "             | "             |                   | 0.500           | ND     | "     |        |
| Surrogate: 2-FBP                           | "            | "             | "             | 50.0-150          |                 | 82.1   | %     |        |
|  |              |               |               | <u>B902447-08</u> |                 |        |       |        |
| <u>GMW-6</u><br>Diesel Range Hydrocarbons  | 0290751      | 2/26/99       | 3/1/99        |                   | 0.250           | ND     | mg/l  |        |
| Lube Oil Range Hydrocarbons                | "            | "             | "             |                   | 0.500           | ND     | "     |        |
| Surrogate: 2-FBP                           | "            | "             | "             | 50.0-150          |                 | 85.7   | %     |        |
|  |              |               |               | <u>B902447-09</u> |                 |        |       |        |
| <u>GMW-7</u><br>Diesel Range Hydrocarbons  | 0290751      | 2/26/99       | 3/1/99        |                   | 0.250           | 3.44   | mg/l  | 1      |
| Lube Oil Range Hydrocarbons                | "            | "             | "             |                   | 0.500           | 3.45   | "     |        |
| Surrogate: 2-FBP                           | "            | "             | "             | 50.0-150          |                 | 68.2   | %     |        |

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\*Refer to end of report for text of notes and definitions

  
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**Semivolatile Petroleum Products by NWTPH-Dx (w/o Acid/Silica Gel Clean-up)  
 North Creek Analytical - Bothell**

| Analyte                     | Batch Number | Date Prepared | Date Analyzed | Surrogate Limits  | Reporting Limit | Result | Units        | Notes* |
|-----------------------------|--------------|---------------|---------------|-------------------|-----------------|--------|--------------|--------|
| <b>GMW-8</b>                |              |               |               | <b>B902447-10</b> |                 |        | <b>Water</b> |        |
| Diesel Range Hydrocarbons   | 0290751      | 2/26/99       | 3/1/99        |                   | 0.250           | 0.372  | mg/l         | 1      |
| Lube Oil Range Hydrocarbons | "            | "             | "             |                   | 0.500           | ND     | "            |        |
| Surrogate: 2-FBP            | "            | "             | "             | 50.0-150          |                 | 60.4   | %            |        |
| <b>GMW-9</b>                |              |               |               | <b>B902447-11</b> |                 |        | <b>Water</b> |        |
| Diesel Range Hydrocarbons   | 0290751      | 2/26/99       | 3/1/99        |                   | 0.250           | ND     | mg/l         |        |
| Lube Oil Range Hydrocarbons | "            | "             | "             |                   | 0.500           | ND     | "            |        |
| Surrogate: 2-FBP            | "            | "             | "             | 50.0-150          |                 | 76.0   | %            |        |
| <b>GMW-10</b>               |              |               |               | <b>B902447-12</b> |                 |        | <b>Water</b> |        |
| Diesel Range Hydrocarbons   | 0290751      | 2/26/99       | 3/1/99        |                   | 0.250           | ND     | mg/l         |        |
| Lube Oil Range Hydrocarbons | "            | "             | "             |                   | 0.500           | ND     | "            |        |
| Surrogate: 2-FBP            | "            | "             | "             | 50.0-150          |                 | 83.4   | %            |        |
| <b>GMW-11</b>               |              |               |               | <b>B902447-13</b> |                 |        | <b>Water</b> |        |
| Diesel Range Hydrocarbons   | 0290751      | 2/26/99       | 3/1/99        |                   | 0.250           | ND     | mg/l         |        |
| Lube Oil Range Hydrocarbons | "            | "             | "             |                   | 0.500           | ND     | "            |        |
| Surrogate: 2-FBP            | "            | "             | "             | 50.0-150          |                 | 80.2   | %            |        |
| <b>GMW-12A</b>              |              |               |               | <b>B902447-14</b> |                 |        | <b>Water</b> |        |
| Diesel Range Hydrocarbons   | 0290751      | 2/26/99       | 3/1/99        |                   | 0.250           | 0.325  | mg/l         | 1      |
| Lube Oil Range Hydrocarbons | "            | "             | "             |                   | 0.500           | ND     | "            |        |
| Surrogate: 2-FBP            | "            | "             | "             | 50.0-150          |                 | 82.8   | %            |        |
| <b>GMW-13</b>               |              |               |               | <b>B902447-15</b> |                 |        | <b>Water</b> |        |
| Diesel Range Hydrocarbons   | 0290751      | 2/26/99       | 3/1/99        |                   | 0.250           | ND     | mg/l         |        |
| Lube Oil Range Hydrocarbons | "            | "             | "             |                   | 0.500           | ND     | "            |        |
| Surrogate: 2-FBP            | "            | "             | "             | 50.0-150          |                 | 82.5   | %            |        |
| <b>GMW-14</b>               |              |               |               | <b>B902447-16</b> |                 |        | <b>Water</b> |        |
| Diesel Range Hydrocarbons   | 0290751      | 2/26/99       | 3/1/99        |                   | 0.250           | 0.556  | mg/l         | 1      |
| Lube Oil Range Hydrocarbons | "            | "             | "             |                   | 0.500           | 0.969  | "            |        |
| Surrogate: 2-FBP            | "            | "             | "             | 50.0-150          |                 | 73.4   | %            |        |

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**Dissolved Metals by EPA 6000/7000 Series Methods  
 North Creek Analytical - Bothell**

| Analyte                   | Batch Number | Date Prepared | Date Analyzed | Specific Method               | Reporting Limit | Result  | Units         | Notes* |
|---------------------------|--------------|---------------|---------------|-------------------------------|-----------------|---------|---------------|--------|
| <u>MW-4</u><br>Arsenic    | 0390031      | 3/1/99        | 3/5/99        | <u>B902447-01</u><br>EPA 6020 | 0.00100         | 0.00215 | Water<br>mg/l |        |
| <u>MW-10</u><br>Arsenic   | 0390031      | 3/1/99        | 3/5/99        | <u>B902447-02</u><br>EPA 6020 | 0.00100         | ND      | Water<br>mg/l |        |
| <u>MW-20</u><br>Arsenic   | 0390031      | 3/1/99        | 3/5/99        | <u>B902447-03</u><br>EPA 6020 | 0.00100         | ND      | Water<br>mg/l |        |
| <u>GMW-3A</u><br>Arsenic  | 0390031      | 3/1/99        | 3/5/99        | <u>B902447-06</u><br>EPA 6020 | 0.00100         | ND      | Water<br>mg/l |        |
| <u>GMW-8</u><br>Arsenic   | 0390031      | 3/1/99        | 3/5/99        | <u>B902447-10</u><br>EPA 6020 | 0.00100         | 0.00319 | Water<br>mg/l |        |
| <u>GMW-9</u><br>Arsenic   | 0390031      | 3/1/99        | 3/5/99        | <u>B902447-11</u><br>EPA 6020 | 0.00100         | 0.00138 | Water<br>mg/l |        |
| <u>GMW-10</u><br>Arsenic  | 0390031      | 3/1/99        | 3/5/99        | <u>B902447-12</u><br>EPA 6020 | 0.00100         | 0.00230 | Water<br>mg/l |        |
| <u>GMW-11</u><br>Arsenic  | 0390031      | 3/1/99        | 3/5/99        | <u>B902447-13</u><br>EPA 6020 | 0.00100         | ND      | Water<br>mg/l |        |
| <u>GMW-12A</u><br>Arsenic | 0390031      | 3/1/99        | 3/5/99        | <u>B902447-14</u><br>EPA 6020 | 0.00100         | 0.00174 | Water<br>mg/l |        |

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**Polychlorinated Biphenyls by EPA Method 8082  
 North Creek Analytical - Bothell**

| Analyte        | Batch Number | Date Prepared | Date Analyzed | Surrogate Limits         | Reporting Limit | Result              | Units | Notes* |
|----------------|--------------|---------------|---------------|--------------------------|-----------------|---------------------|-------|--------|
|                |              |               |               | <b><u>B902447-04</u></b> |                 | <b><u>Water</u></b> |       |        |
| GMW-1          |              |               |               |                          |                 |                     |       |        |
| Aroclor 1016   | 0390003      | 3/1/99        | 3/9/99        |                          | 0.100           | ND                  | ug/l  |        |
| Aroclor 1221   | "            | "             | "             |                          | 0.100           | ND                  | "     |        |
| Aroclor 1232   | "            | "             | "             |                          | 0.100           | ND                  | "     |        |
| Aroclor 1242   | "            | "             | "             |                          | 0.100           | ND                  | "     |        |
| Aroclor 1248   | "            | "             | "             |                          | 0.100           | ND                  | "     |        |
| Aroclor 1254   | "            | "             | "             |                          | 0.100           | ND                  | "     |        |
| Aroclor 1260   | "            | "             | "             |                          | 0.100           | ND                  | "     |        |
| Aroclor 1262   | "            | "             | "             |                          | 0.100           | ND                  | "     |        |
| Aroclor 1268   | "            | "             | "             |                          | 0.100           | ND                  | "     |        |
| Surrogate: TCX | "            | "             | "             | 40.0-130                 |                 | 54.5                | %     |        |
|                |              |               |               | <b><u>B902447-05</u></b> |                 | <b><u>Water</u></b> |       |        |
| GMW-2A         |              |               |               |                          |                 |                     |       |        |
| Aroclor 1016   | 0390003      | 3/1/99        | 3/9/99        |                          | 0.100           | ND                  | ug/l  |        |
| Aroclor 1221   | "            | "             | "             |                          | 0.100           | ND                  | "     |        |
| Aroclor 1232   | "            | "             | "             |                          | 0.100           | ND                  | "     |        |
| Aroclor 1242   | "            | "             | "             |                          | 0.100           | ND                  | "     |        |
| Aroclor 1248   | "            | "             | "             |                          | 0.100           | ND                  | "     |        |
| Aroclor 1254   | "            | "             | "             |                          | 0.100           | ND                  | "     |        |
| Aroclor 1260   | "            | "             | "             |                          | 0.100           | ND                  | "     |        |
| Aroclor 1262   | "            | "             | "             |                          | 0.100           | ND                  | "     |        |
| Aroclor 1268   | "            | "             | "             |                          | 0.100           | ND                  | "     |        |
| Surrogate: TCX | "            | "             | "             | 40.0-130                 |                 | 82.5                | %     |        |
|                |              |               |               | <b><u>B902447-06</u></b> |                 | <b><u>Water</u></b> |       |        |
| GMW-3A         |              |               |               |                          |                 |                     |       |        |
| Aroclor 1016   | 0390003      | 3/1/99        | 3/9/99        |                          | 0.100           | ND                  | ug/l  |        |
| Aroclor 1221   | "            | "             | "             |                          | 0.100           | ND                  | "     |        |
| Aroclor 1232   | "            | "             | "             |                          | 0.100           | ND                  | "     |        |
| Aroclor 1242   | "            | "             | "             |                          | 0.100           | ND                  | "     |        |
| Aroclor 1248   | "            | "             | "             |                          | 0.100           | ND                  | "     |        |
| Aroclor 1254   | "            | "             | "             |                          | 0.100           | ND                  | "     |        |
| Aroclor 1260   | "            | "             | "             |                          | 0.100           | ND                  | "     |        |
| Aroclor 1262   | "            | "             | "             |                          | 0.100           | ND                  | "     |        |
| Aroclor 1268   | "            | "             | "             |                          | 0.100           | ND                  | "     |        |
| Surrogate: TCX | "            | "             | "             | 40.0-130                 |                 | 51.2                | %     |        |
|                |              |               |               | <b><u>B902447-07</u></b> |                 | <b><u>Water</u></b> |       |        |
| GMW-5          |              |               |               |                          |                 |                     |       |        |
| Aroclor 1016   | 0390003      | 3/1/99        | 3/9/99        |                          | 0.100           | ND                  | ug/l  |        |
| Aroclor 1221   | "            | "             | "             |                          | 0.100           | ND                  | "     |        |

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**Polychlorinated Biphenyls by EPA Method 8082  
 North Creek Analytical - Bothell**

| Analyte                  | Batch Number | Date Prepared | Date Analyzed | Surrogate Limits  | Reporting Limit | Result | Units        | Notes* |
|--------------------------|--------------|---------------|---------------|-------------------|-----------------|--------|--------------|--------|
| <b>GMW-5 (continued)</b> |              |               |               | <b>B902447-07</b> |                 |        | <b>Water</b> |        |
| Aroclor 1232             | 0390003      | 3/1/99        | 3/9/99        |                   | 0.100           | ND     | ug/l         |        |
| Aroclor 1242             | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Aroclor 1248             | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Aroclor 1254             | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Aroclor 1260             | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Aroclor 1262             | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Aroclor 1268             | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Surrogate: TCX           | "            | "             | "             | 40.0-130          |                 | 44.2   | %            |        |
| <b>GMW-6</b>             |              |               |               | <b>B902447-08</b> |                 |        | <b>Water</b> |        |
| Aroclor 1016             | 0390003      | 3/1/99        | 3/9/99        |                   | 0.100           | ND     | ug/l         |        |
| Aroclor 1221             | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Aroclor 1232             | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Aroclor 1242             | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Aroclor 1248             | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Aroclor 1254             | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Aroclor 1260             | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Aroclor 1262             | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Aroclor 1268             | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Surrogate: TCX           | "            | "             | "             | 40.0-130          |                 | 73.5   | %            |        |
| <b>GMW-7</b>             |              |               |               | <b>B902447-09</b> |                 |        | <b>Water</b> |        |
| Aroclor 1016             | 0390003      | 3/1/99        | 3/9/99        |                   | 0.100           | ND     | ug/l         | 2      |
| Aroclor 1221             | "            | "             | "             |                   | 0.100           | ND     | "            | 2      |
| Aroclor 1232             | "            | "             | "             |                   | 0.100           | ND     | "            | 2      |
| Aroclor 1242             | "            | "             | "             |                   | 0.100           | ND     | "            | 2      |
| Aroclor 1248             | "            | "             | "             |                   | 0.100           | ND     | "            | 2      |
| Aroclor 1254             | "            | "             | "             |                   | 0.100           | ND     | "            | 2      |
| Aroclor 1260             | "            | "             | "             |                   | 0.100           | ND     | "            | 2      |
| Aroclor 1262             | "            | "             | "             |                   | 0.100           | ND     | "            | 2      |
| Aroclor 1268             | "            | "             | "             |                   | 0.100           | ND     | "            | 2      |
| Surrogate: TCX           | "            | "             | "             | 40.0-130          |                 | 27.1   | %            | 2      |
| <b>GMW-8</b>             |              |               |               | <b>B902447-10</b> |                 |        | <b>Water</b> |        |
| Aroclor 1016             | 0390003      | 3/1/99        | 3/9/99        |                   | 0.100           | ND     | ug/l         |        |
| Aroclor 1221             | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Aroclor 1232             | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Aroclor 1242             | "            | "             | "             |                   | 0.100           | ND     | "            |        |

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**Polychlorinated Biphenyls by EPA Method 8082  
 North Creek Analytical - Bothell**

| Analyte                  | Batch Number | Date Prepared | Date Analyzed | Surrogate Limits  | Reporting Limit | Result | Units        | Notes* |
|--------------------------|--------------|---------------|---------------|-------------------|-----------------|--------|--------------|--------|
| <b>GMW-8 (continued)</b> |              |               |               | <b>B902447-10</b> |                 |        | <b>Water</b> |        |
| Aroclor 1248             | 0390003      | 3/1/99        | 3/9/99        |                   | 0.100           | ND     | ug/l         |        |
| Aroclor 1254             | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Aroclor 1260             | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Aroclor 1262             | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Aroclor 1268             | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Surrogate: TCX           | "            | "             | "             | 40.0-130          |                 | 64.0   | %            |        |
| <b>GMW-9</b>             |              |               |               | <b>B902447-11</b> |                 |        | <b>Water</b> |        |
| Aroclor 1016             | 0390003      | 3/1/99        | 3/9/99        |                   | 0.100           | ND     | ug/l         |        |
| Aroclor 1221             | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Aroclor 1232             | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Aroclor 1242             | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Aroclor 1248             | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Aroclor 1254             | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Aroclor 1260             | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Aroclor 1262             | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Aroclor 1268             | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Surrogate: TCX           | "            | "             | "             | 40.0-130          |                 | 55.6   | %            |        |
| <b>GMW-10</b>            |              |               |               | <b>B902447-12</b> |                 |        | <b>Water</b> |        |
| Aroclor 1016             | 0390003      | 3/1/99        | 3/9/99        |                   | 0.100           | ND     | ug/l         |        |
| Aroclor 1221             | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Aroclor 1232             | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Aroclor 1242             | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Aroclor 1248             | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Aroclor 1254             | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Aroclor 1260             | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Aroclor 1262             | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Aroclor 1268             | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Surrogate: TCX           | "            | "             | "             | 40.0-130          |                 | 63.0   | %            |        |
| <b>GMW-11</b>            |              |               |               | <b>B902447-13</b> |                 |        | <b>Water</b> |        |
| Aroclor 1016             | 0390003      | 3/1/99        | 3/9/99        |                   | 0.100           | ND     | ug/l         |        |
| Aroclor 1221             | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Aroclor 1232             | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Aroclor 1242             | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Aroclor 1248             | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Aroclor 1254             | "            | "             | "             |                   | 0.100           | ND     | "            |        |

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**Polychlorinated Biphenyls by EPA Method 8082  
 North Creek Analytical - Bothell**

| Analyte                   | Batch Number | Date Prepared | Date Analyzed | Surrogate Limits  | Reporting Limit | Result | Units        | Notes* |
|---------------------------|--------------|---------------|---------------|-------------------|-----------------|--------|--------------|--------|
| <b>GMW-11 (continued)</b> |              |               |               | <b>B902447-13</b> |                 |        | <b>Water</b> |        |
| Aroclor 1260              | 0390003      | 3/1/99        | 3/9/99        |                   | 0.100           | ND     | ug/l         |        |
| Aroclor 1262              | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Aroclor 1268              | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Surrogate: TCX            | "            | "             | "             | 40.0-130          |                 | 64.6   | %            |        |
| <b>GMW-12A</b>            |              |               |               | <b>B902447-14</b> |                 |        | <b>Water</b> |        |
| Aroclor 1016              | 0390003      | 3/1/99        | 3/9/99        |                   | 0.100           | ND     | ug/l         |        |
| Aroclor 1221              | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Aroclor 1232              | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Aroclor 1242              | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Aroclor 1248              | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Aroclor 1254              | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Aroclor 1260              | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Aroclor 1262              | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Aroclor 1268              | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Surrogate: TCX            | "            | "             | "             | 40.0-130          |                 | 47.1   | %            |        |

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**Polynuclear Aromatic Compounds by GC/MS with Selected Ion Monitoring  
 North Creek Analytical - Bothell**

| Analyte                    | Batch Number | Date Prepared | Date Analyzed | Surrogate Limits  | Reporting Limit | Result | Units        | Notes* |
|----------------------------|--------------|---------------|---------------|-------------------|-----------------|--------|--------------|--------|
| <b>GMW-5</b>               |              |               |               | <b>B902447-07</b> |                 |        | <b>Water</b> |        |
| Acenaphthene               | 0390004      | 3/1/99        | 3/4/99        |                   | 0.100           | ND     | ug/l         |        |
| Acenaphthylene             | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Anthracene                 | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Benzo (a) anthracene       | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Benzo (a) pyrene           | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Benzo (b) fluoranthene     | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Benzo (ghi) perylene       | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Benzo (k) fluoranthene     | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Chrysene                   | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Dibenz (a,h) anthracene    | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Fluoranthene               | "            | "             | "             |                   | 0.300           | ND     | "            |        |
| Fluorene                   | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Indeno (1,2,3-cd) pyrene   | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Naphthalene                | "            | "             | "             |                   | 0.300           | ND     | "            |        |
| Phenanthrene               | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Pyrene                     | "            | "             | "             |                   | 0.300           | ND     | "            |        |
| Surrogate: 2-FBP           | "            | "             | "             | 30.0-150          |                 | 64.6   | %            |        |
| Surrogate: Nitrobenzene-d5 | "            | "             | "             | 30.0-150          |                 | 81.1   | "            |        |
| Surrogate: p-Terphenyl-d14 | "            | "             | "             | 30.0-150          |                 | 49.4   | "            |        |
| <b>GMW-6</b>               |              |               |               | <b>B902447-08</b> |                 |        | <b>Water</b> |        |
| Acenaphthene               | 0390004      | 3/1/99        | 3/4/99        |                   | 0.100           | ND     | ug/l         |        |
| Acenaphthylene             | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Anthracene                 | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Benzo (a) anthracene       | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Benzo (a) pyrene           | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Benzo (b) fluoranthene     | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Benzo (ghi) perylene       | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Benzo (k) fluoranthene     | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Chrysene                   | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Dibenz (a,h) anthracene    | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Fluoranthene               | "            | "             | "             |                   | 0.300           | ND     | "            |        |
| Fluorene                   | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Indeno (1,2,3-cd) pyrene   | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Naphthalene                | "            | "             | "             |                   | 0.300           | ND     | "            |        |
| Phenanthrene               | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Pyrene                     | "            | "             | "             |                   | 0.300           | ND     | "            |        |
| Surrogate: 2-FBP           | "            | "             | "             | 30.0-150          |                 | 69.9   | %            |        |

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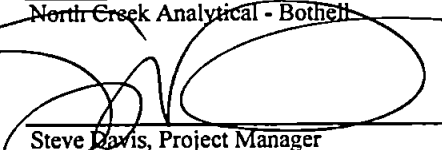
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**Polynuclear Aromatic Compounds by GC/MS with Selected Ion Monitoring  
 North Creek Analytical - Bothell**

| Analyte                    | Batch Number | Date Prepared | Date Analyzed | Surrogate Limits  | Reporting Limit | Result | Units        | Notes* |
|----------------------------|--------------|---------------|---------------|-------------------|-----------------|--------|--------------|--------|
| <b>GMW-6 (continued)</b>   |              |               |               | <b>B902447-08</b> |                 |        | <b>Water</b> |        |
| Surrogate: Nitrobenzene-d5 | 0390004      | 3/1/99        | 3/4/99        | 30.0-150          |                 | 85.4   | %            |        |
| Surrogate: p-Terphenyl-d14 | "            | "             | "             | 30.0-150          |                 | 58.9   | "            |        |
| <b>GMW-7</b>               |              |               |               | <b>B902447-09</b> |                 |        | <b>Water</b> |        |
| Acenaphthene               | 0390004      | 3/1/99        | 3/9/99        |                   | 0.200           | 0.415  | ug/l         |        |
| Acenaphthylene             | "            | "             | "             |                   | 0.200           | ND     | "            |        |
| Anthracene                 | "            | "             | "             |                   | 0.200           | ND     | "            |        |
| Benzo (a) anthracene       | "            | "             | "             |                   | 0.200           | ND     | "            |        |
| Benzo (a) pyrene           | "            | "             | "             |                   | 0.200           | ND     | "            |        |
| Benzo (b) fluoranthene     | "            | "             | "             |                   | 0.200           | ND     | "            |        |
| Benzo (ghi) perylene       | "            | "             | "             |                   | 0.200           | ND     | "            |        |
| Benzo (k) fluoranthene     | "            | "             | "             |                   | 0.200           | ND     | "            |        |
| Chrysene                   | "            | "             | "             |                   | 0.200           | ND     | "            |        |
| Dibenz (a,h) anthracene    | "            | "             | "             |                   | 0.200           | ND     | "            |        |
| Fluoranthene               | "            | "             | "             |                   | 0.600           | ND     | "            |        |
| Fluorene                   | "            | "             | "             |                   | 0.200           | 0.642  | "            |        |
| Indeno (1,2,3-cd) pyrene   | "            | "             | "             |                   | 0.200           | ND     | "            |        |
| Naphthalene                | "            | "             | "             |                   | 0.600           | 4.15   | "            |        |
| Phenanthrene               | "            | "             | "             |                   | 0.200           | 0.906  | "            |        |
| Pyrene                     | "            | "             | "             |                   | 0.600           | ND     | "            |        |
| Surrogate: 2-FBP           | "            | "             | "             | 30.0-150          |                 | 68.2   | %            |        |
| Surrogate: Nitrobenzene-d5 | "            | "             | "             | 30.0-150          |                 | 67.8   | "            |        |
| Surrogate: p-Terphenyl-d14 | "            | "             | "             | 30.0-150          |                 | 50.0   | "            |        |
| <b>GMW-10</b>              |              |               |               | <b>B902447-12</b> |                 |        | <b>Water</b> |        |
| Acenaphthene               | 0390004      | 3/1/99        | 3/4/99        |                   | 0.100           | ND     | ug/l         |        |
| Acenaphthylene             | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Anthracene                 | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Benzo (a) anthracene       | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Benzo (a) pyrene           | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Benzo (b) fluoranthene     | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Benzo (ghi) perylene       | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Benzo (k) fluoranthene     | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Chrysene                   | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Dibenz (a,h) anthracene    | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Fluoranthene               | "            | "             | "             |                   | 0.300           | ND     | "            |        |
| Fluorene                   | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Indeno (1,2,3-cd) pyrene   | "            | "             | "             |                   | 0.100           | ND     | "            |        |

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**Polynuclear Aromatic Compounds by GC/MS with Selected Ion Monitoring  
 North Creek Analytical - Bothell**

| Analyte                    | Batch Number | Date Prepared | Date Analyzed | Surrogate Limits  | Reporting Limit | Result       | Units | Notes* |
|----------------------------|--------------|---------------|---------------|-------------------|-----------------|--------------|-------|--------|
| <b>GMW-10 (continued)</b>  |              |               |               | <b>B902447-12</b> |                 | <b>Water</b> |       |        |
| Naphthalene                | 0390004      | 3/1/99        | 3/4/99        |                   | 0.300           | ND           | ug/l  |        |
| Phenanthrene               | "            | "             | "             |                   | 0.100           | ND           | "     |        |
| Pyrene                     | "            | "             | "             |                   | 0.300           | ND           | "     |        |
| Surrogate: 2-FBP           | "            | "             | "             | 30.0-150          |                 | 66.7         | %     |        |
| Surrogate: Nitrobenzene-d5 | "            | "             | "             | 30.0-150          |                 | 84.3         | "     |        |
| Surrogate: p-Terphenyl-d14 | "            | "             | "             | 30.0-150          |                 | 53.2         | "     |        |
| <b>GMW-11</b>              |              |               |               | <b>B902447-13</b> |                 | <b>Water</b> |       |        |
| Acenaphthene               | 0390004      | 3/1/99        | 3/4/99        |                   | 0.100           | ND           | ug/l  |        |
| Acenaphthylene             | "            | "             | "             |                   | 0.100           | ND           | "     |        |
| Anthracene                 | "            | "             | "             |                   | 0.100           | ND           | "     |        |
| Benzo (a) anthracene       | "            | "             | "             |                   | 0.100           | ND           | "     |        |
| Benzo (a) pyrene           | "            | "             | "             |                   | 0.100           | ND           | "     |        |
| Benzo (b) fluoranthene     | "            | "             | "             |                   | 0.100           | ND           | "     |        |
| Benzo (ghi) perylene       | "            | "             | "             |                   | 0.100           | ND           | "     |        |
| Benzo (k) fluoranthene     | "            | "             | "             |                   | 0.100           | ND           | "     |        |
| Chrysene                   | "            | "             | "             |                   | 0.100           | ND           | "     |        |
| Dibenz (a,h) anthracene    | "            | "             | "             |                   | 0.100           | ND           | "     |        |
| Fluoranthene               | "            | "             | "             |                   | 0.300           | ND           | "     |        |
| Fluorene                   | "            | "             | "             |                   | 0.100           | ND           | "     |        |
| Indeno (1,2,3-cd) pyrene   | "            | "             | "             |                   | 0.100           | ND           | "     |        |
| Naphthalene                | "            | "             | "             |                   | 0.300           | ND           | "     |        |
| Phenanthrene               | "            | "             | "             |                   | 0.100           | ND           | "     |        |
| Pyrene                     | "            | "             | "             |                   | 0.300           | ND           | "     |        |
| Surrogate: 2-FBP           | "            | "             | "             | 30.0-150          |                 | 66.9         | %     |        |
| Surrogate: Nitrobenzene-d5 | "            | "             | "             | 30.0-150          |                 | 85.2         | "     |        |
| Surrogate: p-Terphenyl-d14 | "            | "             | "             | 30.0-150          |                 | 50.4         | "     |        |

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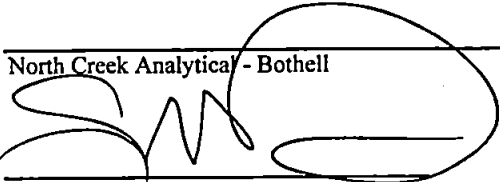
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| Geo Engineers - Seattle<br>600 Stewart Street, Suite 1215<br>Seattle, WA 98101 | Project: PSE-Grady Way<br>Project Number: 0186-407-00<br>Project Manager: Steve Woodward | Sampled: 2/24/99<br>Received: 2/25/99<br>Reported: 3/11/99 15:09 |
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**Conventional Chemistry Parameters by APHA/EPA Methods  
 North Creek Analytical - Bothell**

| Analyte             | Batch Number | Date Prepared | Date Analyzed | Specific Method                | Reporting Limit | Result | Units             | Notes* |
|---------------------|--------------|---------------|---------------|--------------------------------|-----------------|--------|-------------------|--------|
| <u>MW-4</u><br>pH   | 0290734      | 2/25/99       | 2/25/99       | <u>B902447-01</u><br>EPA 150.1 |                 | 6.55   | Water<br>pH Units |        |
| <u>MW-10</u><br>pH  | 0290734      | 2/25/99       | 2/25/99       | <u>B902447-02</u><br>EPA 150.1 |                 | 6.57   | Water<br>pH Units |        |
| <u>MW-20</u><br>pH  | 0290734      | 2/25/99       | 2/25/99       | <u>B902447-03</u><br>EPA 150.1 |                 | 6.53   | Water<br>pH Units |        |
| <u>GMW-1</u><br>pH  | 0290734      | 2/25/99       | 2/25/99       | <u>B902447-04</u><br>EPA 150.1 |                 | 6.37   | Water<br>pH Units |        |
| <u>GMW-2A</u><br>pH | 0290734      | 2/25/99       | 2/25/99       | <u>B902447-05</u><br>EPA 150.1 |                 | 6.91   | Water<br>pH Units |        |
| <u>GMW-3A</u><br>pH | 0290734      | 2/25/99       | 2/25/99       | <u>B902447-06</u><br>EPA 150.1 |                 | 6.47   | Water<br>pH Units |        |
| <u>GMW-5</u><br>pH  | 0290734      | 2/25/99       | 2/25/99       | <u>B902447-07</u><br>EPA 150.1 |                 | 6.26   | Water<br>pH Units |        |
| <u>GMW-6</u><br>pH  | 0290734      | 2/25/99       | 2/25/99       | <u>B902447-08</u><br>EPA 150.1 |                 | 6.40   | Water<br>pH Units |        |
| <u>GMW-7</u><br>pH  | 0290734      | 2/25/99       | 2/25/99       | <u>B902447-09</u><br>EPA 150.1 |                 | 6.38   | Water<br>pH Units |        |
| <u>GMW-8</u><br>pH  | 0290734      | 2/25/99       | 2/25/99       | <u>B902447-10</u><br>EPA 150.1 |                 | 6.24   | Water<br>pH Units |        |
| <u>GMW-9</u><br>pH  | 0290734      | 2/25/99       | 2/25/99       | <u>B902447-11</u><br>EPA 150.1 |                 | 6.53   | Water<br>pH Units |        |
| <u>GMW-10</u><br>pH | 0290734      | 2/25/99       | 2/25/99       | <u>B902447-12</u><br>EPA 150.1 |                 | 6.30   | Water<br>pH Units |        |
| <u>GMW-11</u><br>pH | 0290734      | 2/25/99       | 2/25/99       | <u>B902447-13</u><br>EPA 150.1 |                 | 6.33   | Water<br>pH Units |        |

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**Conventional Chemistry Parameters by APHA/EPA Methods  
 North Creek Analytical - Bothell**

| Analyte              | Batch Number | Date Prepared | Date Analyzed | Specific Method                | Reporting Limit | Result | Units             | Notes* |
|----------------------|--------------|---------------|---------------|--------------------------------|-----------------|--------|-------------------|--------|
| <u>GMW-12A</u><br>pH | 0290734      | 2/25/99       | 2/25/99       | <u>B902447-14</u><br>EPA 150.1 |                 | 6.44   | Water<br>pH Units |        |
| <u>GMW-13</u><br>pH  | 0290734      | 2/25/99       | 2/25/99       | <u>B902447-15</u><br>EPA 150.1 |                 | 6.30   | Water<br>pH Units |        |
| <u>GMW-14</u><br>pH  | 0290734      | 2/25/99       | 2/25/99       | <u>B902447-16</u><br>EPA 150.1 |                 | 6.31   | Water<br>pH Units |        |

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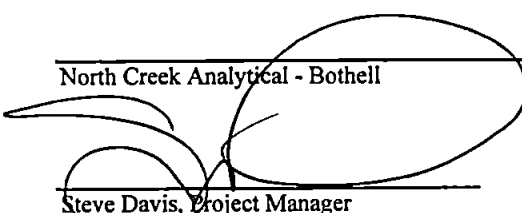
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**Semivolatile Petroleum Products by NWTPH-Dx (w/o Acid/Silica Gel Clean-up)/Quality Control  
 North Creek Analytical - Bothell**

| Analyte                     | Date Analyzed | Spike Level | Sample Result                 | QC Result | Units | Reporting Limit<br>Recov. Limits               | Recov. % | RPD Limit | RPD % | Notes* |
|-----------------------------|---------------|-------------|-------------------------------|-----------|-------|--|----------|-----------|-------|--------|
| <b>Batch: 0290751</b>       |               |             | <b>Date Prepared: 2/26/99</b> |           |       | <b>Extraction Method: EPA 3520C/600 Series</b> |          |           |       |        |
| <b>Blank</b>                |               |             | <b>0290751-BLK1</b>           |           |       |  |          |           |       |        |
| Diesel Range Hydrocarbons   | 3/1/99        |             |                               | ND        | mg/l  | 0.250  |          |           |       |        |
| Lube Oil Range Hydrocarbons | "             |             |                               | ND        | "     | 0.500  |          |           |       |        |
| Surrogate: 2-FBP            | "             | 0.326       |                               | 0.264     | "     | 50.0-150                                       | 81.0     |           |       |        |
| <b>LCS</b>                  |               |             | <b>0290751-BS1</b>            |           |       |  |          |           |       |        |
| Diesel Range Hydrocarbons   | 3/1/99        | 2.00        |                               | 1.66      | mg/l  | 60.0-140                                       | 83.0     |           |       |        |
| Surrogate: 2-FBP            | "             | 0.326       |                               | 0.259     | "     | 50.0-150                                       | 79.4     |           |       |        |
| <b>LCS Dup</b>              |               |             | <b>0290751-BSD1</b>           |           |       |  |          |           |       |        |
| Diesel Range Hydrocarbons   | 3/1/99        | 2.00        |                               | 1.68      | mg/l  | 60.0-140                                       | 84.0     | 40.0      | 1.20  |        |
| Surrogate: 2-FBP            | "             | 0.326       |                               | 0.258     | "     | 50.0-150                                       | 79.1     |           |       |        |

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| Geo Engineers - Seattle<br>600 Stewart Street, Suite 1215<br>Seattle, WA 98101 | Project: PSE-Grady Way<br>Project Number: 0186-407-00<br>Project Manager: Steve Woodward | Sampled: 2/24/99<br>Received: 2/25/99<br>Reported: 3/11/99 15:09 |
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**Dissolved Metals by EPA 6000/7000 Series Methods/Quality Control  
 North Creek Analytical - Bothell**

| Analyte                 | Date Analyzed                | Spike Level | Sample Result     | QC Result | Units | Reporting Limit<br>Recov. Limits    | Recov.<br>% | RPD<br>Limit | RPD<br>% | Notes* |
|-------------------------|------------------------------|-------------|-------------------|-----------|-------|-------------------------------------|-------------|--------------|----------|--------|
| <b>Batch: 0390031</b>   | <b>Date Prepared: 3/1/99</b> |             |                   |           |       | <b>Extraction Method: EPA 3005A</b> |             |              |          |        |
| <b>Blank</b>            | <b>0390031-BLK1</b>          |             |                   |           |       |                                     |             |              |          |        |
| Arsenic                 | 3/5/99                       |             |                   | ND        | mg/l  | 0.00100                             |             |              |          |        |
| <b>LCS</b>              | <b>0390031-BS1</b>           |             |                   |           |       |                                     |             |              |          |        |
| Arsenic                 | 3/5/99                       | 0.100       |                   | 0.102     | mg/l  | 80.0-120                            | 102         |              |          |        |
| <b>Matrix Spike</b>     | <b>0390031-MS1</b>           |             | <b>B903002-03</b> |           |       |                                     |             |              |          |        |
| Arsenic                 | 3/5/99                       | 0.200       | ND                | 0.208     | mg/l  | 75.0-125                            | 104         |              |          |        |
| <b>Matrix Spike Dup</b> | <b>0390031-MSD1</b>          |             | <b>B903002-03</b> |           |       |                                     |             |              |          |        |
| Arsenic                 | 3/5/99                       | 0.200       | ND                | 0.207     | mg/l  | 75.0-125                            | 103         | 20.0         | 0.966    |        |

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Page 15 of 19



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**Polychlorinated Biphenyls by EPA Method 8082/Quality Control  
 North Creek Analytical - Bothell**

| Analyte               | Date Analyzed | Spike Level | Sample Result                | QC Result | Units | Reporting Limit<br>Recov. Limits               | Recov.<br>% | RPD<br>Limit | RPD<br>% | Notes* |
|-----------------------|---------------|-------------|------------------------------|-----------|-------|--|-------------|--------------|----------|--------|
| <b>Batch: 0390003</b> |               |             | <b>Date Prepared: 3/1/99</b> |           |       | <b>Extraction Method: EPA 3520C/600 Series</b> |             |              |          |        |
| <b>Blank</b>          |               |             | <b>0390003-BLK1</b>          |           |       |  |             |              |          |        |
| Aroclor 1016          | 3/9/99        |             |                              | ND        | ug/l  | 0.100  |             |              |          |        |
| Aroclor 1221          | "             |             |                              | ND        | "     | 0.100  |             |              |          |        |
| Aroclor 1232          | "             |             |                              | ND        | "     | 0.100  |             |              |          |        |
| Aroclor 1242          | "             |             |                              | ND        | "     | 0.100  |             |              |          |        |
| Aroclor 1248          | "             |             |                              | ND        | "     | 0.100  |             |              |          |        |
| Aroclor 1254          | "             |             |                              | ND        | "     | 0.100  |             |              |          |        |
| Aroclor 1260          | "             |             |                              | ND        | "     | 0.100  |             |              |          |        |
| Aroclor 1262          | "             |             |                              | ND        | "     | 0.100  |             |              |          |        |
| Aroclor 1268          | "             |             |                              | ND        | "     | 0.100  |             |              |          |        |
| Surrogate: TCX        | "             | 0.200       |                              | 0.159     | "     | 40.0-130                                       | 79.5        |              |          |        |
| <b>LCS</b>            |               |             | <b>0390003-BS1</b>           |           |       |  |             |              |          |        |
| Aroclor 1260          | 3/9/99        | 10.0        |                              | 9.91      | ug/l  | 33.0-122                                       | 99.1        |              |          |        |
| Surrogate: TCX        | "             | 0.200       |                              | 0.159     | "     | 40.0-130                                       | 79.5        |              |          |        |
| <b>LCS Dup</b>        |               |             | <b>0390003-BSD1</b>          |           |       |  |             |              |          |        |
| Aroclor 1260          | 3/9/99        | 10.0        |                              | 10.4      | ug/l  | 33.0-122                                       | 104         | 21.0         | 4.83     |        |
| Surrogate: TCX        | "             | 0.200       |                              | 0.171     | "     | 40.0-130                                       | 85.5        |              |          |        |

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**Polynuclear Aromatic Compounds by GC/MS with Selected Ion Monitoring/Quality Control**  
**North Creek Analytical - Bothell**

| Analyte | Date Analyzed | Spike Level | Sample Result | QC Result | Units | Reporting Limit Recov. Limits | Recov. % | RPD Limit | RPD % | Notes* |
|---------|---------------|-------------|---------------|-----------|-------|-------------------------------|----------|-----------|-------|--------|
|---------|---------------|-------------|---------------|-----------|-------|-------------------------------|----------|-----------|-------|--------|

|                            |                              |      |  |      |      |          |      |      |       |  |
|----------------------------|------------------------------|------|--|------|------|----------|------|------|-------|--|
| <b>Batch: 0390004</b>      | <b>Date Prepared: 3/1/99</b> |      | <b>Extraction Method: EPA 3520C/600 Series</b> |      |      |          |      |      |       |  |
| <b>Blank</b>               | <b>0390004-BLK1</b>          |      |  |      |      |          |      |      |       |  |
| Acenaphthene               | 3/4/99                       |      |  | ND   | ug/l | 0.100    |      |      |       |  |
| Acenaphthylene             | "                            |      |  | ND   | "    | 0.100    |      |      |       |  |
| Anthracene                 | "                            |      |  | ND   | "    | 0.100    |      |      |       |  |
| Benzo (a) anthracene       | "                            |      |  | ND   | "    | 0.100    |      |      |       |  |
| Benzo (a) pyrene           | "                            |      |  | ND   | "    | 0.100    |      |      |       |  |
| Benzo (b) fluoranthene     | "                            |      |  | ND   | "    | 0.100    |      |      |       |  |
| Benzo (ghi) perylene       | "                            |      |  | ND   | "    | 0.100    |      |      |       |  |
| Benzo (k) fluoranthene     | "                            |      |  | ND   | "    | 0.100    |      |      |       |  |
| Chrysene                   | "                            |      |  | ND   | "    | 0.100    |      |      |       |  |
| Dibenz (a,h) anthracene    | "                            |      |  | ND   | "    | 0.100    |      |      |       |  |
| Fluoranthene               | "                            |      |  | ND   | "    | 0.300    |      |      |       |  |
| Fluorene                   | "                            |      |  | ND   | "    | 0.100    |      |      |       |  |
| Indeno (1,2,3-cd) pyrene   | "                            |      |  | ND   | "    | 0.100    |      |      |       |  |
| Naphthalene                | "                            |      |  | ND   | "    | 0.300    |      |      |       |  |
| Phenanthrene               | "                            |      |  | ND   | "    | 0.100    |      |      |       |  |
| Pyrene                     | "                            |      |  | ND   | "    | 0.300    |      |      |       |  |
| Surrogate: 2-FBP           | "                            | 50.0 |  | 31.6 | "    | 30.0-150 | 63.2 |      |       |  |
| Surrogate: Nitrobenzene-d5 | "                            | 50.0 |  | 38.8 | "    | 30.0-150 | 77.6 |      |       |  |
| Surrogate: p-Terphenyl-d14 | "                            | 50.0 |  | 32.5 | "    | 30.0-150 | 65.0 |      |       |  |
| <b>LCS</b>                 | <b>0390004-BS1</b>           |      |  |      |      |          |      |      |       |  |
| Chrysene                   | 3/4/99                       | 10.0 |  | 8.92 | ug/l | 50.0-150 | 89.2 |      |       |  |
| Fluorene                   | "                            | 10.0 |  | 9.22 | "    | 50.0-150 | 92.2 |      |       |  |
| Indeno (1,2,3-cd) pyrene   | "                            | 10.0 |  | 9.52 | "    | 50.0-150 | 95.2 |      |       |  |
| Surrogate: 2-FBP           | "                            | 50.0 |  | 35.6 | "    | 30.0-150 | 71.2 |      |       |  |
| Surrogate: Nitrobenzene-d5 | "                            | 50.0 |  | 45.0 | "    | 30.0-150 | 90.0 |      |       |  |
| Surrogate: p-Terphenyl-d14 | "                            | 50.0 |  | 34.4 | "    | 30.0-150 | 68.8 |      |       |  |
| <b>LCS Dup</b>             | <b>0390004-BSD1</b>          |      |  |      |      |          |      |      |       |  |
| Chrysene                   | 3/4/99                       | 10.0 |  | 9.12 | ug/l | 50.0-150 | 91.2 | 25.0 | 2.22  |  |
| Fluorene                   | "                            | 10.0 |  | 8.62 | "    | 50.0-150 | 86.2 | 25.0 | 6.73  |  |
| Indeno (1,2,3-cd) pyrene   | "                            | 10.0 |  | 9.54 | "    | 50.0-150 | 95.4 | 25.0 | 0.210 |  |
| Surrogate: 2-FBP           | "                            | 50.0 |  | 32.5 | "    | 30.0-150 | 65.0 |      |       |  |
| Surrogate: Nitrobenzene-d5 | "                            | 50.0 |  | 41.3 | "    | 30.0-150 | 82.6 |      |       |  |
| Surrogate: p-Terphenyl-d14 | "                            | 50.0 |  | 33.9 | "    | 30.0-150 | 67.8 |      |       |  |

North Creek Analytical - Bothell

\*Refer to end of report for text of notes and definitions.

Steve Davis, Project Manager

North Creek Analytical, Inc.  
 Environmental Laboratory Network



**Seattle** 18939 120th Avenue NE, Suite 101, Bothell, WA 98011-9508  
 425.420.9200 fax 425.420.9210  
**Spokane** East 11115 Montgomery, Suite B, Spokane, WA 99206-4776  
 509.924.9200 fax 509.924.9290  
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**Bend** 20354 Empire Avenue, Suite E-9, Bend, OR 97708-1883  
 541.383.9310 fax 541.382.7588

|  |  |  |
|--|--|--|
| Geo Engineers - Seattle<br>600 Stewart Street, Suite 1215<br>Seattle, WA 98101 | Project: PSE-Grady Way<br>Project Number: 0186-407-00<br>Project Manager: Steve Woodward | Sampled: 2/24/99<br>Received: 2/25/99<br>Reported: 3/11/99 15:09 |
|--|--|--|

**Conventional Chemistry Parameters by APHA/EPA Methods/Quality Control**  
**North Creek Analytical - Bothell**

| Analyte               | Date Analyzed                 | Spike Level       | Sample Result | QC Result                                     | Units    | Reporting Limit<br>Recov. Limits | Recov. % | RPD Limit | RPD % | Notes* |
|-----------------------|-------------------------------|-------------------|---------------|---|----------|----------------------------------|----------|-----------|-------|--------|
| <b>Batch: 0290734</b> | <b>Date Prepared: 2/25/99</b> |                   |               | <b>Extraction Method: General Preparation</b> |          |                                  |          |           |       |        |
| <b>Duplicate</b>      | <b>0290734-DUP1</b>           | <b>B902447-01</b> |               |   |          |                                  |          |           |       |        |
| pH                    | 2/25/99                       |                   | 6.55          | 6.57  | pH Units |                                  |          | 10.0      | 0.305 |        |

North Creek Analytical - Bothell

\*Refer to end of report for text of notes and definitions

Steve Davis, Project Manager

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|  |  |  |
|--|--|--|
| Geo Engineers - Seattle<br>600 Stewart Street, Suite 1215<br>Seattle, WA 98101 | Project: PSE-Grady Way<br>Project Number: 0186-407-00<br>Project Manager: Steve Woodward | Sampled: 2/24/99<br>Received: 2/25/99<br>Reported: 3/11/99 15:09 |
|--|--|--|

**Notes and Definitions**

| # | Note |
|---|------|
|---|------|

- 1 The sample chromatographic pattern does not resemble the fuel standard used for quantitation.
- 2 Due to an extraction anomaly the results for this sample should be considered estimate only.
- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis
- Recov. Recovery
- RPD Relative Percent Difference

North Creek Analytical - Bothell

Steve Davis, Project Manager

**North Creek Analytical, Inc.**  
**Environmental Laboratory Network**

Quantitation Report

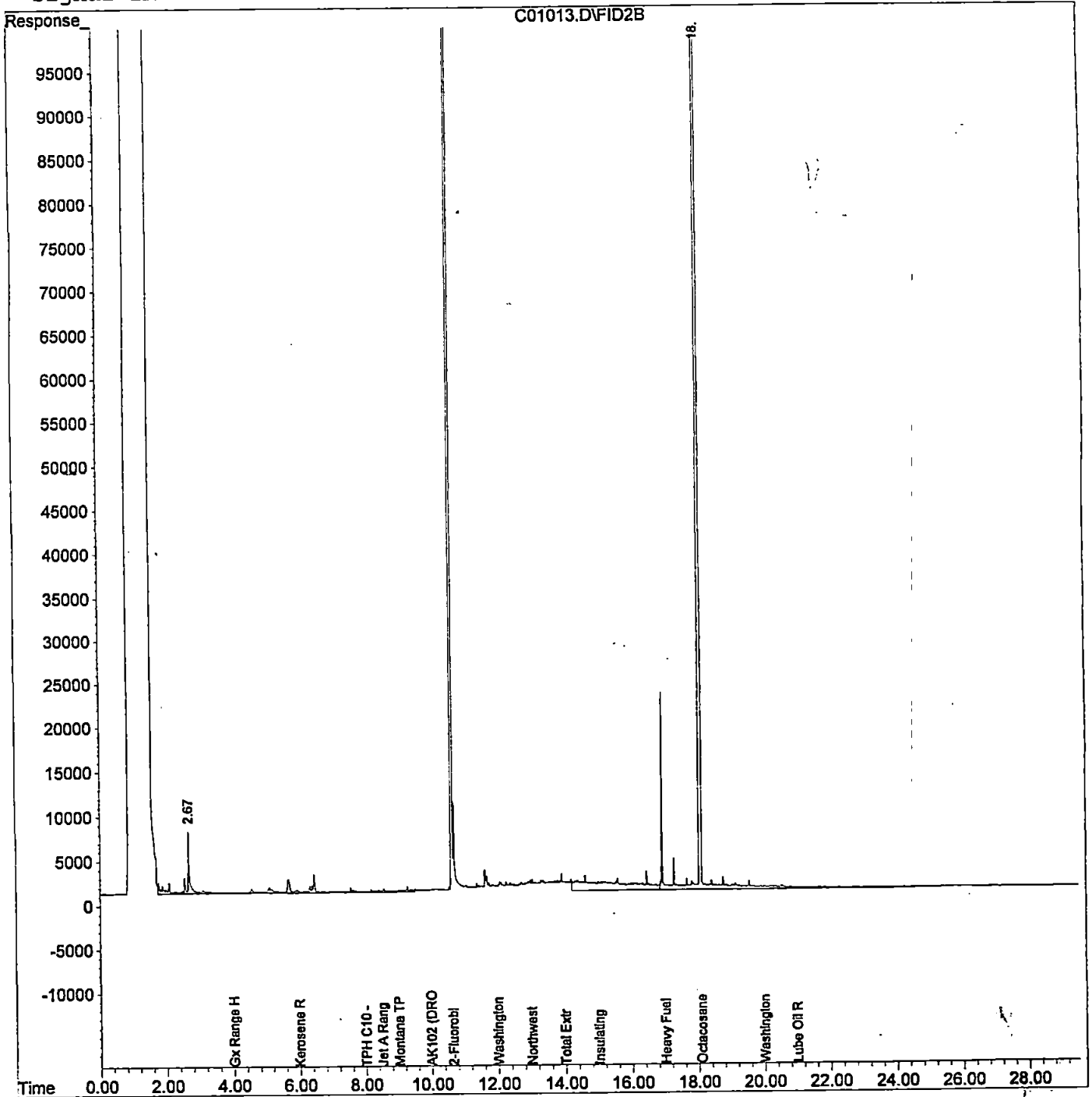
Data File : C:\HPCHEM\3\DATA.SEC\C01013.D  
Acq On : 1 Mar 1999 12:42 pm  
Sample : B902447-03  
Misc : w  
IntFile : SURR.E  
Quant Time: Mar 2 8:12 1999

Vial: 8  
Operator: gap  
Inst : GC #5  
Multiplr: 1.00

Quant Results File: TPHD2.RES

Quant Method : C:\HPCHEM\3\METHODS\TPHD2.M (Chemstation Integrator)  
Title : TPH-D Rear Method  
Last Update : Tue Feb 23 18:06:15 1999  
Response via : Multiple Level Calibration  
DataAcq Meth : TPHD.M

Volume Inj. :  
Signal Phase :  
Signal Info :



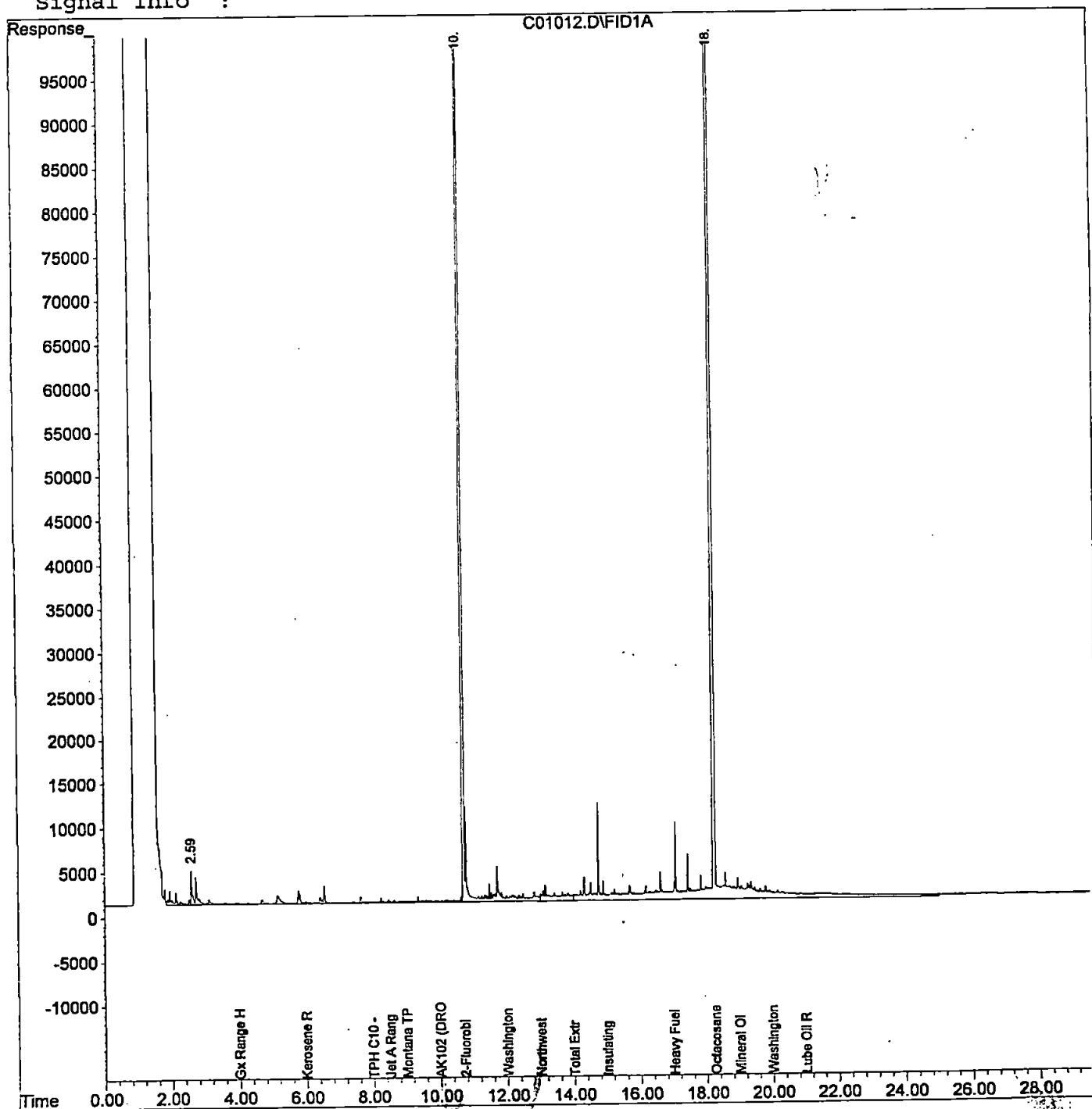
Quantitation Report

Data File : C:\HPCHEM\3\DATA\C01012.D  
Acq On : 1 Mar 1999 12:03 pm  
Sample : B902447-02  
Misc : w  
IntFile : SURR.E  
Quant Time: Mar 2 7:53 1999

Vial: 7  
Operator: gap  
Inst : GC #5  
Multiplr: 1.00

Quant Method : C:\HPCHEM\3\METHODS\TPHD.M (Chemstation Integrator)  
Title : TPH-D Front Method  
Last Update : Fri Feb 26 12:18:09 1999  
Response via : Multiple Level Calibration  
DataAcq Meth : TPHD.M

Volume Inj. :  
Signal Phase :  
Signal Info :



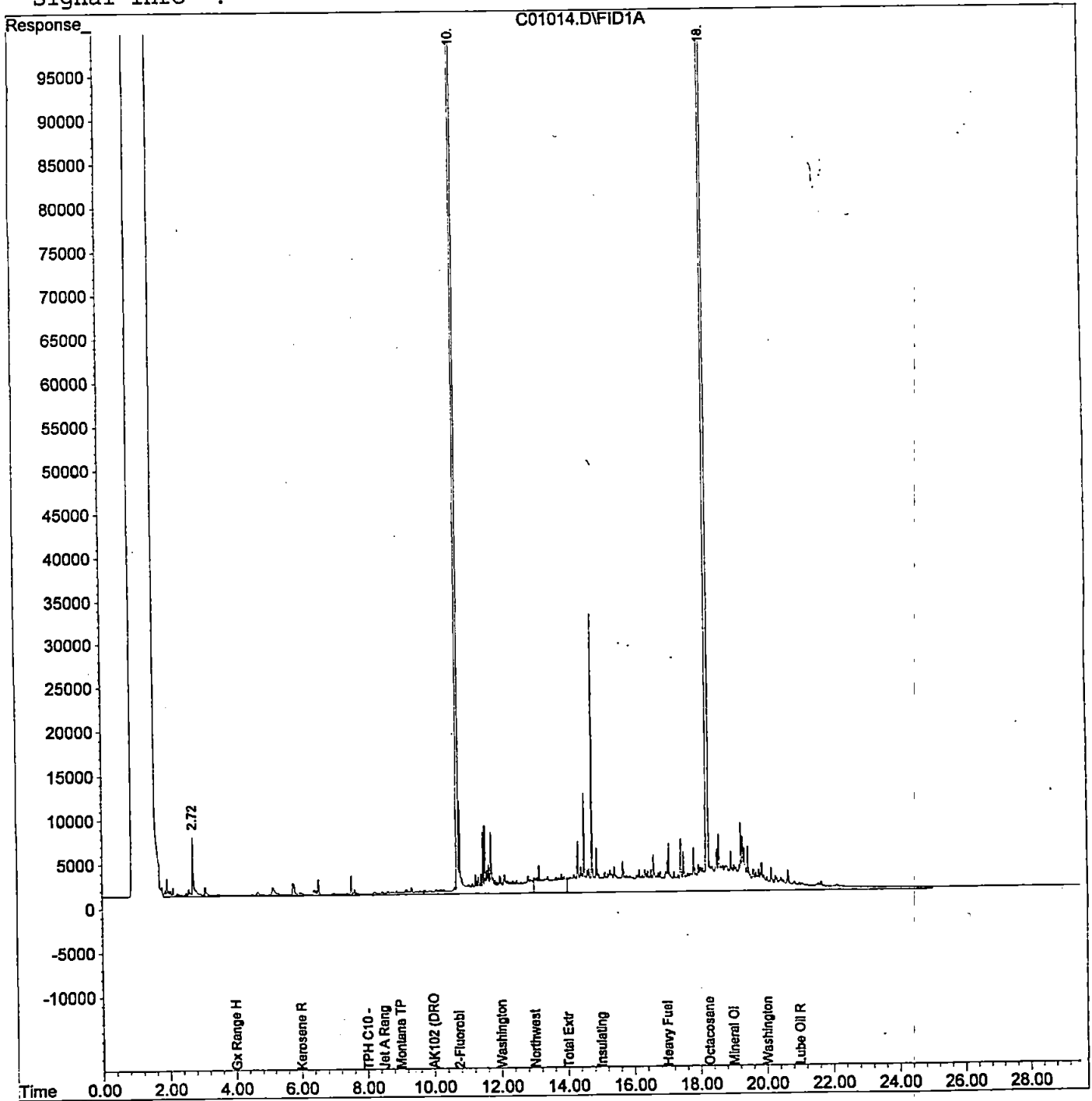
Quantitation Report

Data File : C:\HPCHEM\3\DATA\C01014.D  
Acq On : 1 Mar 1999 12:42 pm  
Sample : B902447-04  
Misc : w  
IntFile : SURR.E  
Quant Time: Mar 2 7:53 1999

Vial: 9  
Operator: gap  
Inst : GC #5  
Multiplr: 1.00

Quant Method : C:\HPCHEM\3\METHODS\TPHD.M (Chemstation Integrator)  
Title : TPH-D Front Method  
Last Update : Fri Feb 26 12:18:09 1999  
Response via : Multiple Level Calibration  
DataAcq Meth : TPHD.M

Volume Inj. :  
Signal Phase :  
Signal Info :



Quantitation Report

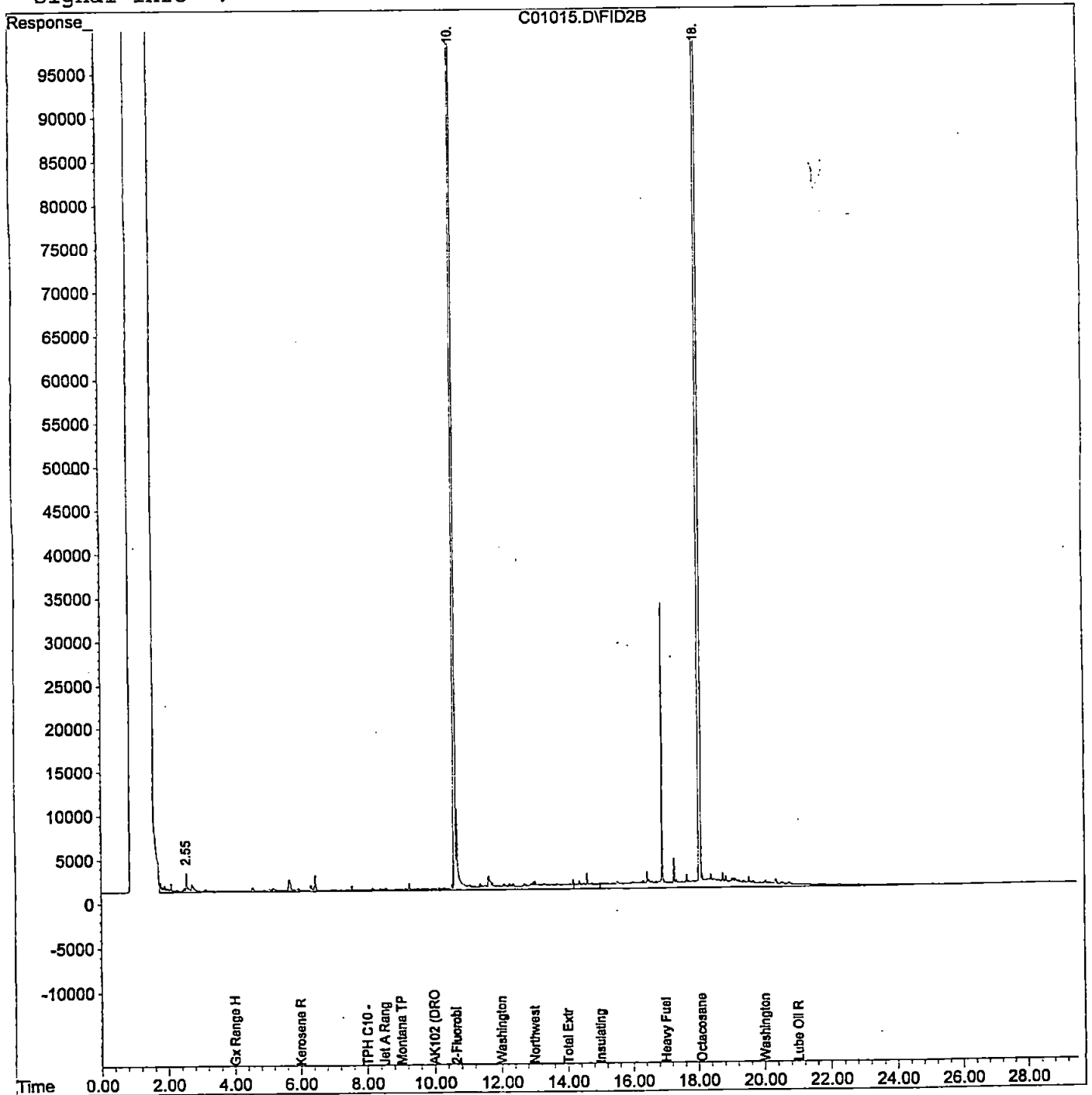
Data File : C:\HPCHEM\3\DATA.SEC\C01015.D  
Acq On : 1 Mar 1999 1:21 pm  
Sample : B902447-05  
Misc : w  
IntFile : SURR.E  
Quant Time: Mar 2 8:12 1999

Vial: 10  
Operator: gap  
Inst : GC #5  
Multiplr: 1.00

Quant Results File: TPHD2.RES

Quant Method : C:\HPCHEM\3\METHODS\TPHD2.M (Chemstation Integrator)  
Title : TPH-D Rear Method  
Last Update : Tue Feb 23 18:06:15 1999  
Response via : Multiple Level Calibration  
DataAcq Meth : TPHD.M

Volume Inj. :  
Signal Phase :  
Signal Info :



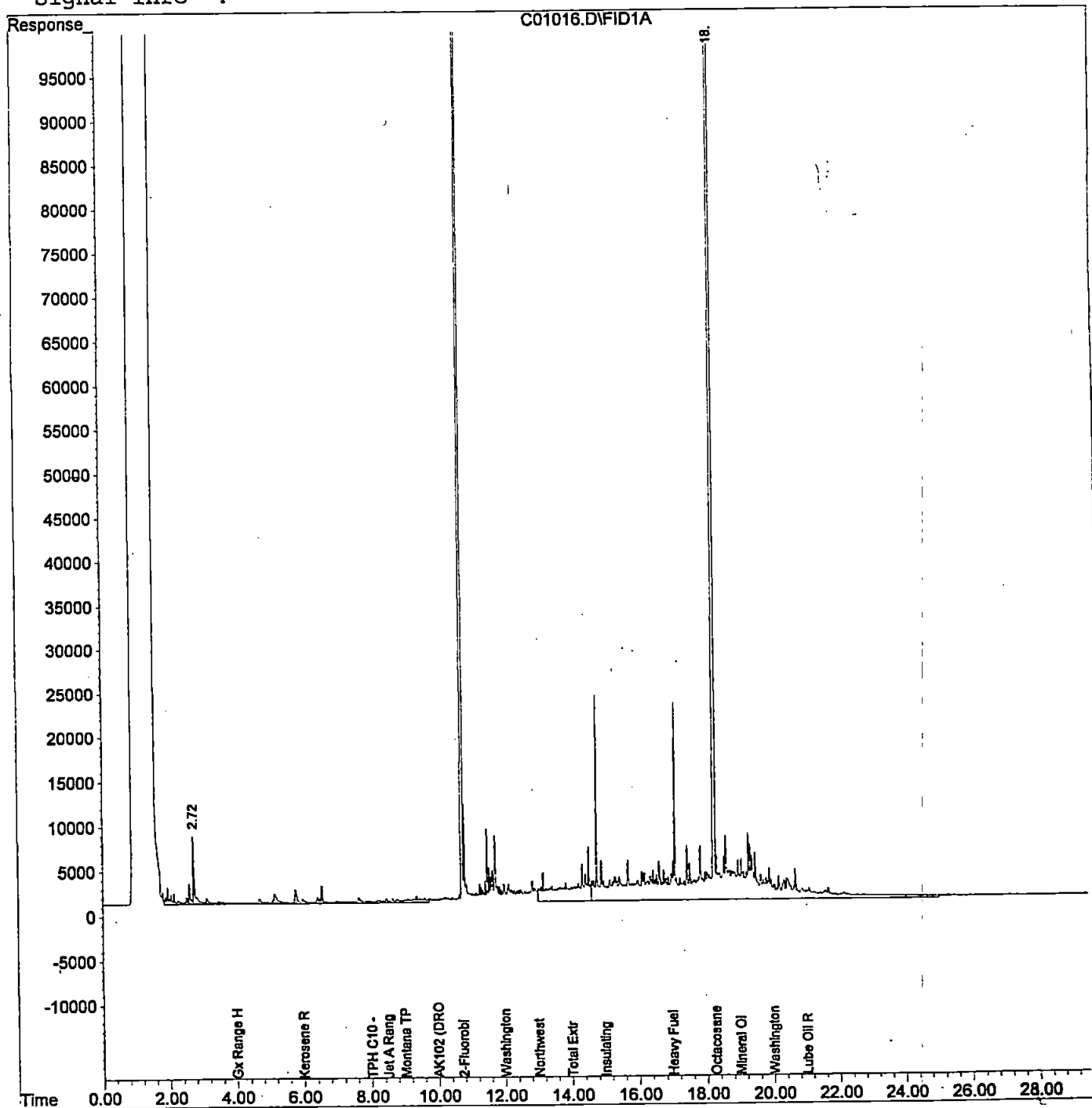
Quantitation Report

Data File : C:\HPCHEM\3\DATA\C01016.D  
Acq On : 1 Mar 1999 1:21 pm  
Sample : B902447-06  
Misc : w  
IntFile : SURR.E  
Quant Time: Mar 2 7:54 1999

Vial: 11  
Operator: gap  
Inst : GC #5  
Multiplr: 1.00

Quant Method : C:\HPCHEM\3\METHODS\TPHD.M (Chemstation Integrator)  
Title : TPH-D Front Method  
Last Update : Fri Feb 26 12:18:09 1999  
Response via : Multiple Level Calibration  
DataAcq Meth : TPHD.M

Volume Inj. :  
Signal Phase :  
Signal Info :



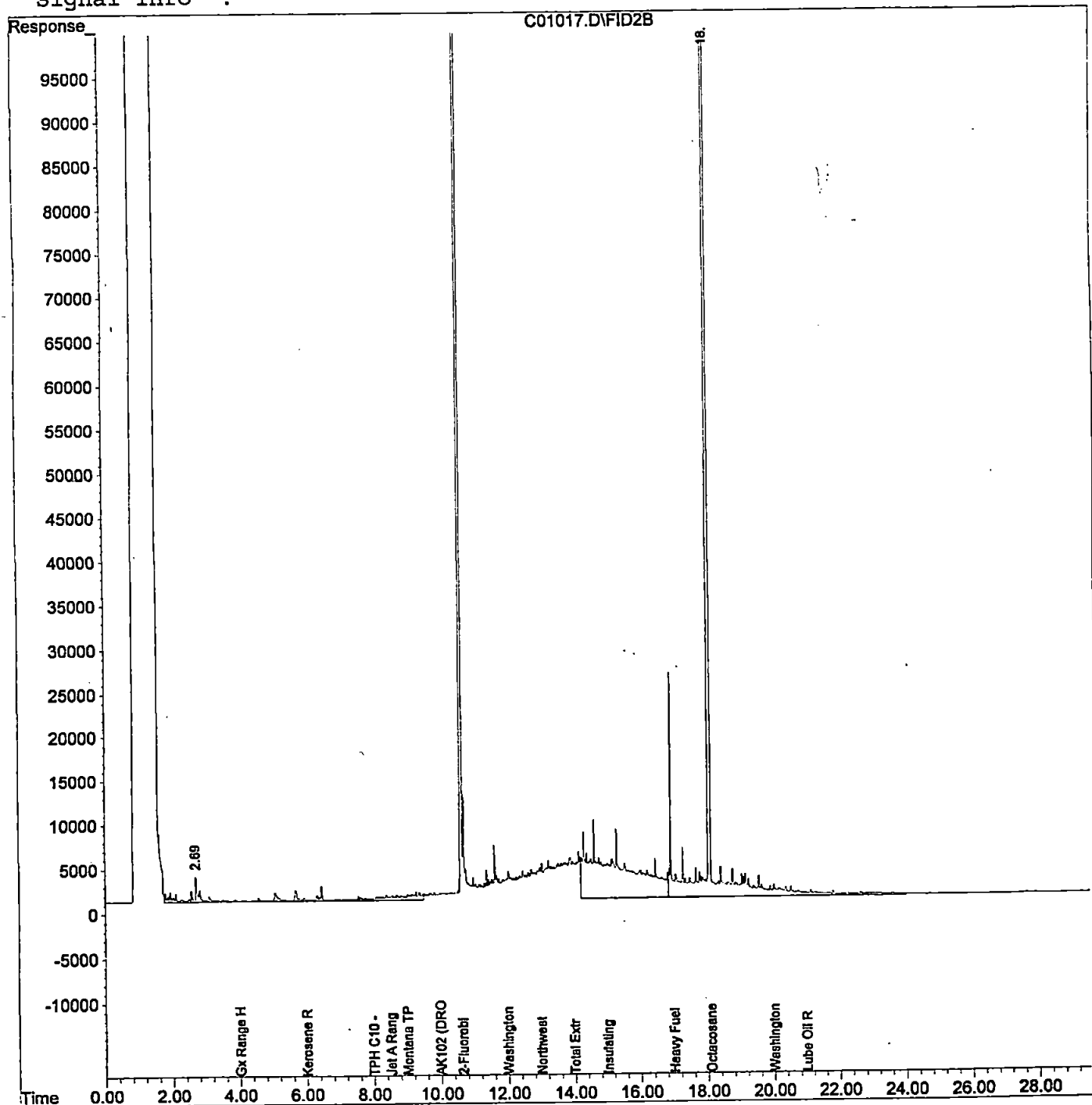
Quantitation Report

Data File : C:\HPCHEM\3\DATA.SEC\C01017.D  
Acq On : 1 Mar 1999 2:00 pm  
Sample : B902447-07  
Misc : w  
IntFile : SURR.E  
Quant Time: Mar 2 8:13 1999

Vial: 12  
Operator: gap  
Inst : GC #5  
Multiplr: 1.00

Quant Method : C:\HPCHEM\3\METHODS\TPHD2.M (Chemstation Integrator)  
Title : TPH-D Rear Method  
Last Update : Tue Feb 23 18:06:15 1999  
Response via : Multiple Level Calibration  
DataAcq Meth : TPHD.M

Volume Inj. :  
Signal Phase :  
Signal Info :



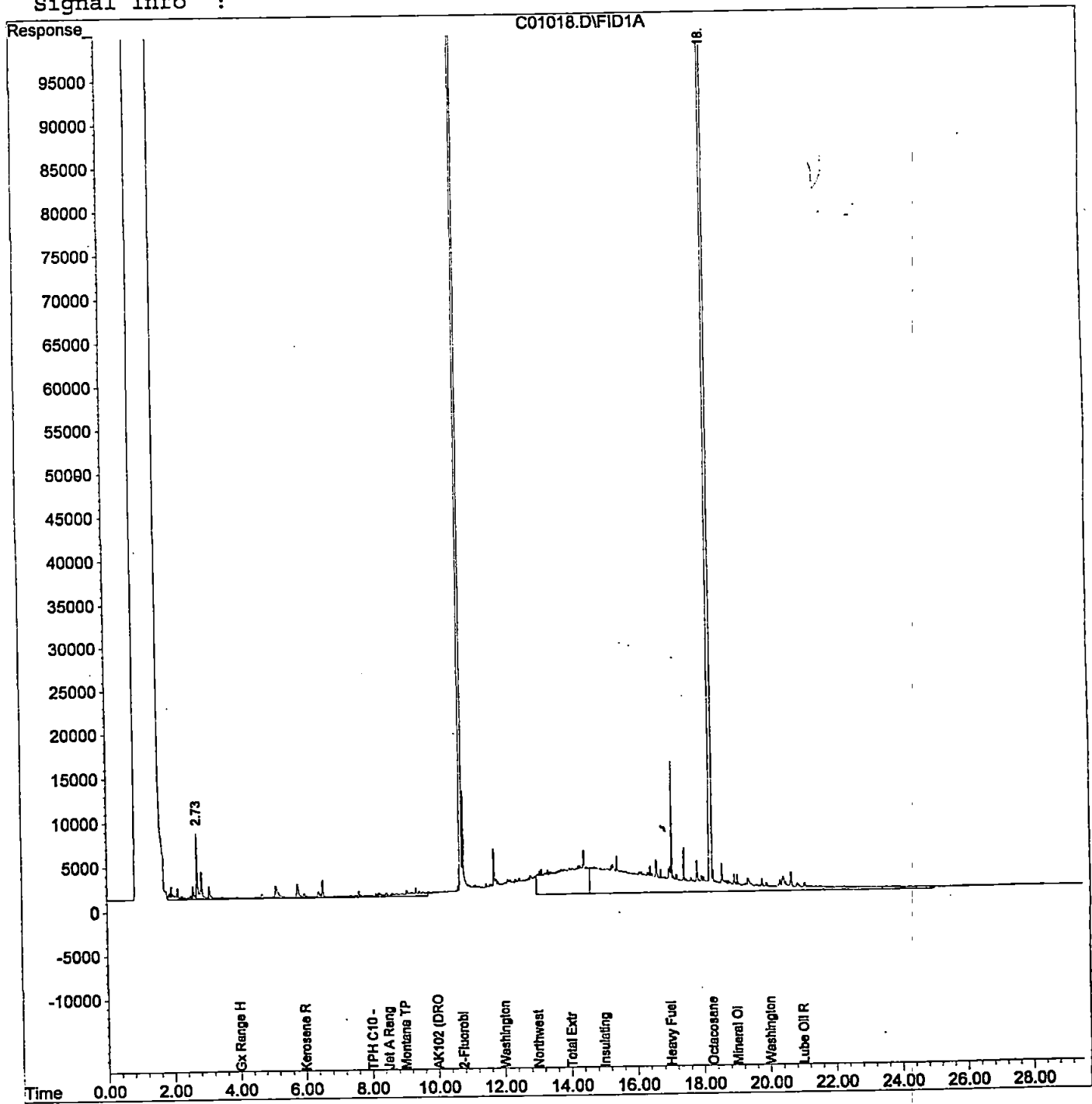
Quantitation Report

Data File : C:\HPCHEM\3\DATA\C01018.D  
Acq On : 1 Mar 1999 2:00 pm  
Sample : B902447-08  
Misc : w  
IntFile : SURR.E  
Quant Time: Mar 2 7:54 1999

Vial: 13  
Operator: gap  
Inst : GC #5  
Multiplr: 1.00

Quant Results File: TPHD.RES  
Quant Method : C:\HPCHEM\3\METHODS\TPHD.M (Chemstation Integrator)  
Title : TPH-D Front Method  
Last Update : Fri Feb 26 12:18:09 1999  
Response via : Multiple Level Calibration  
DataAcq Meth : TPHD.M

Volume Inj. :  
Signal Phase :  
Signal Info :



Quantitation Report

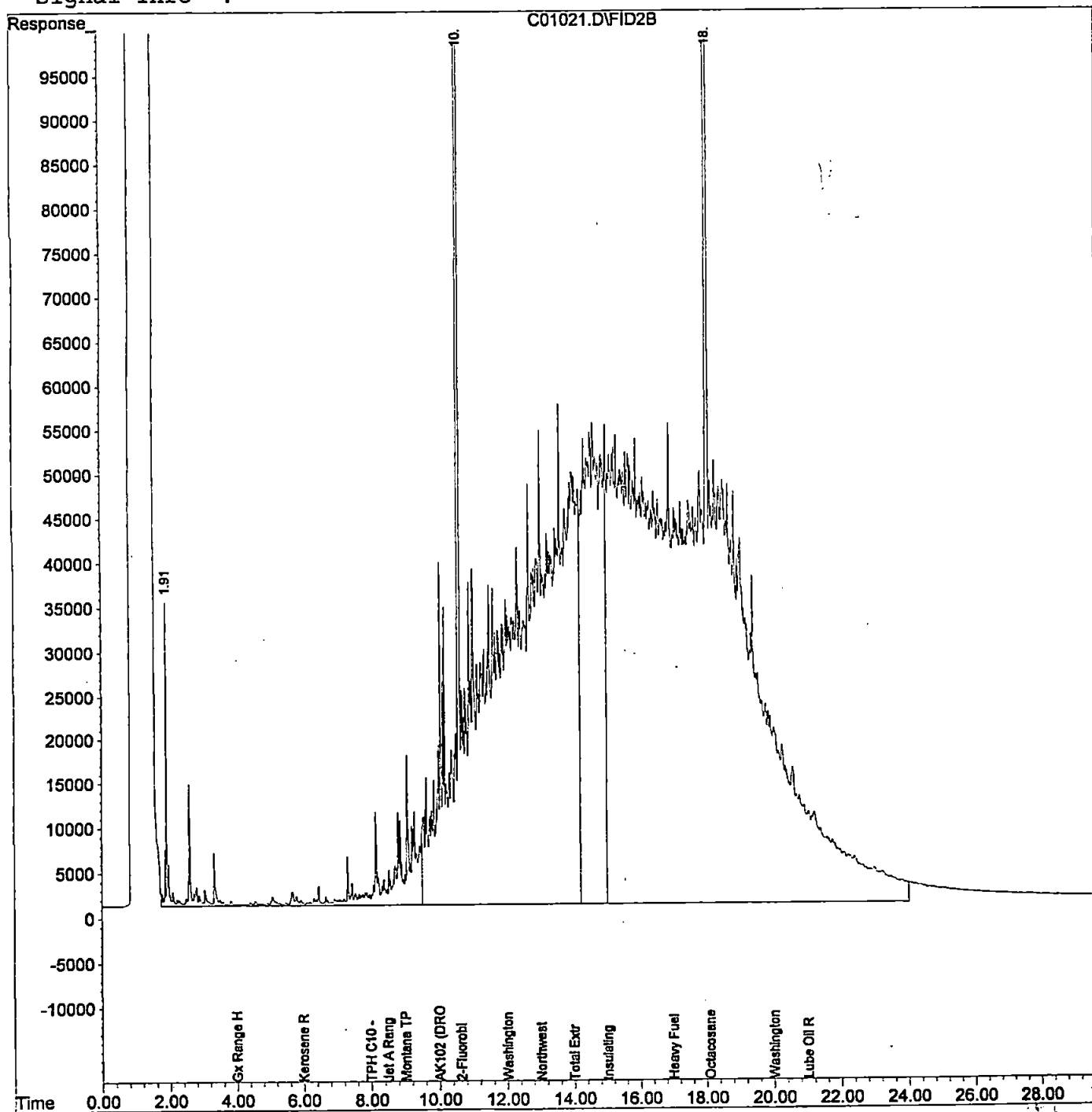
Data File : C:\HPCHEM\3\DATA.SEC\C01021.D  
Acq On : 1 Mar 1999 3:19 pm  
Sample : B902447-09  
Misc : w  
IntFile : SURR.E  
Quant Time: Mar 2 8:14 1999

Vial: 14  
Operator: gap  
Inst : GC #5  
Multiplr: 1.00

Quant Results File: TPHD2.RES

Quant Method : C:\HPCHEM\3\METHODS\TPHD2.M (Chemstation Integrator)  
Title : TPH-D Rear Method  
Last Update : Tue Feb 23 18:06:15 1999  
Response via : Multiple Level Calibration  
DataAcq Meth : TPHD.M

Volume Inj. :  
Signal Phase :  
Signal Info :



Quantitation Report

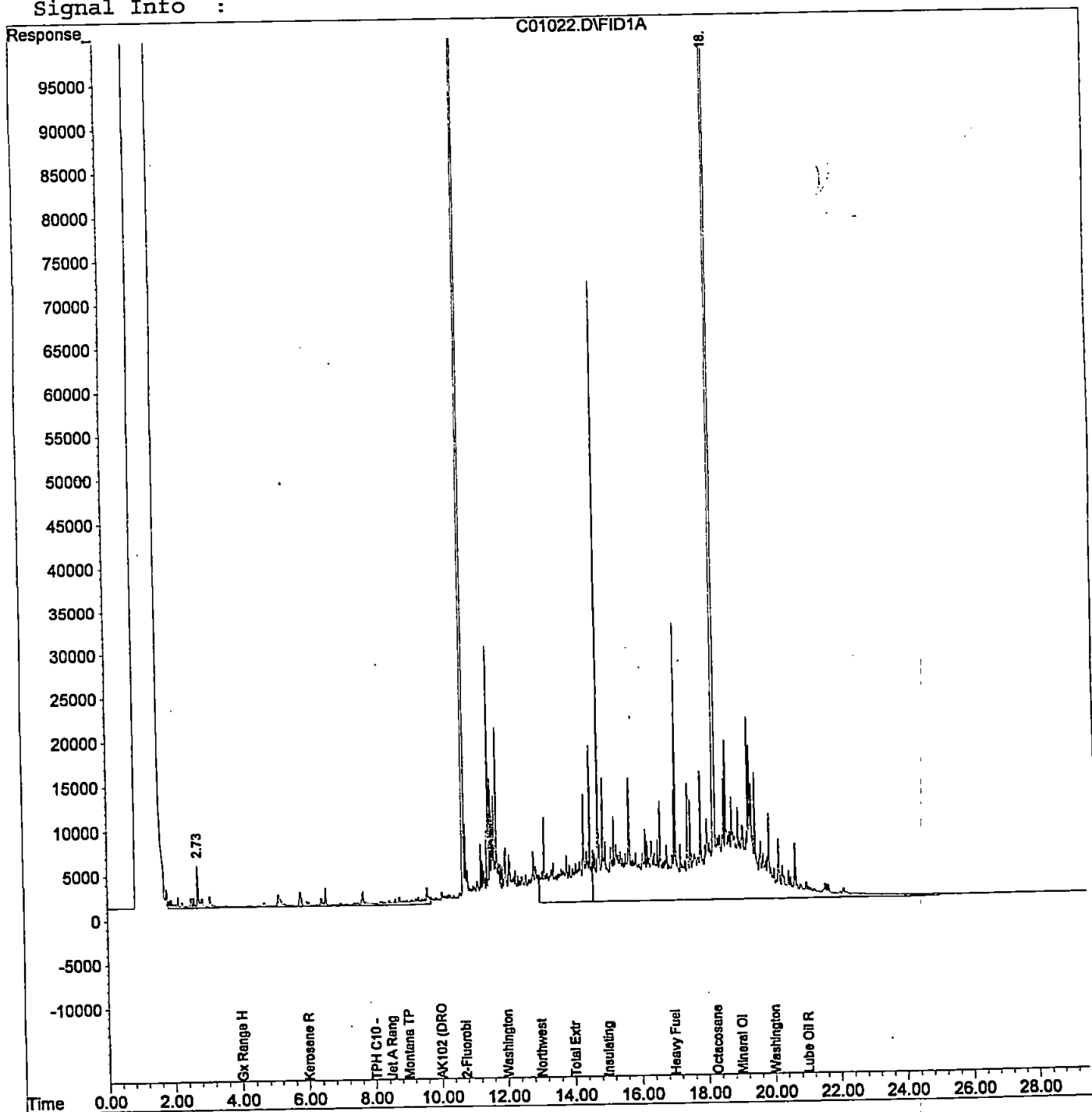
Data File : C:\HPCHEM\3\DATA\C01022.D  
Acq On : 1 Mar 1999 3:19 pm  
Sample : B902447-10  
Misc : w  
IntFile : SURR.E  
Quant Time: Mar 2 7:55 1999

Vial: 15  
Operator: gap  
Inst : GC #5  
Multiplr: 1.00

Quant Results File: TPHD.RES

Quant Method : C:\HPCHEM\3\METHODS\TPHD.M (Chemstation Integrator)  
Title : TPH-D Front Method  
Last Update : Fri Feb 26 12:18:09 1999  
Response via : Multiple Level Calibration  
DataAcq Meth : TPHD.M

Volume Inj. :  
Signal Phase :  
Signal Info :



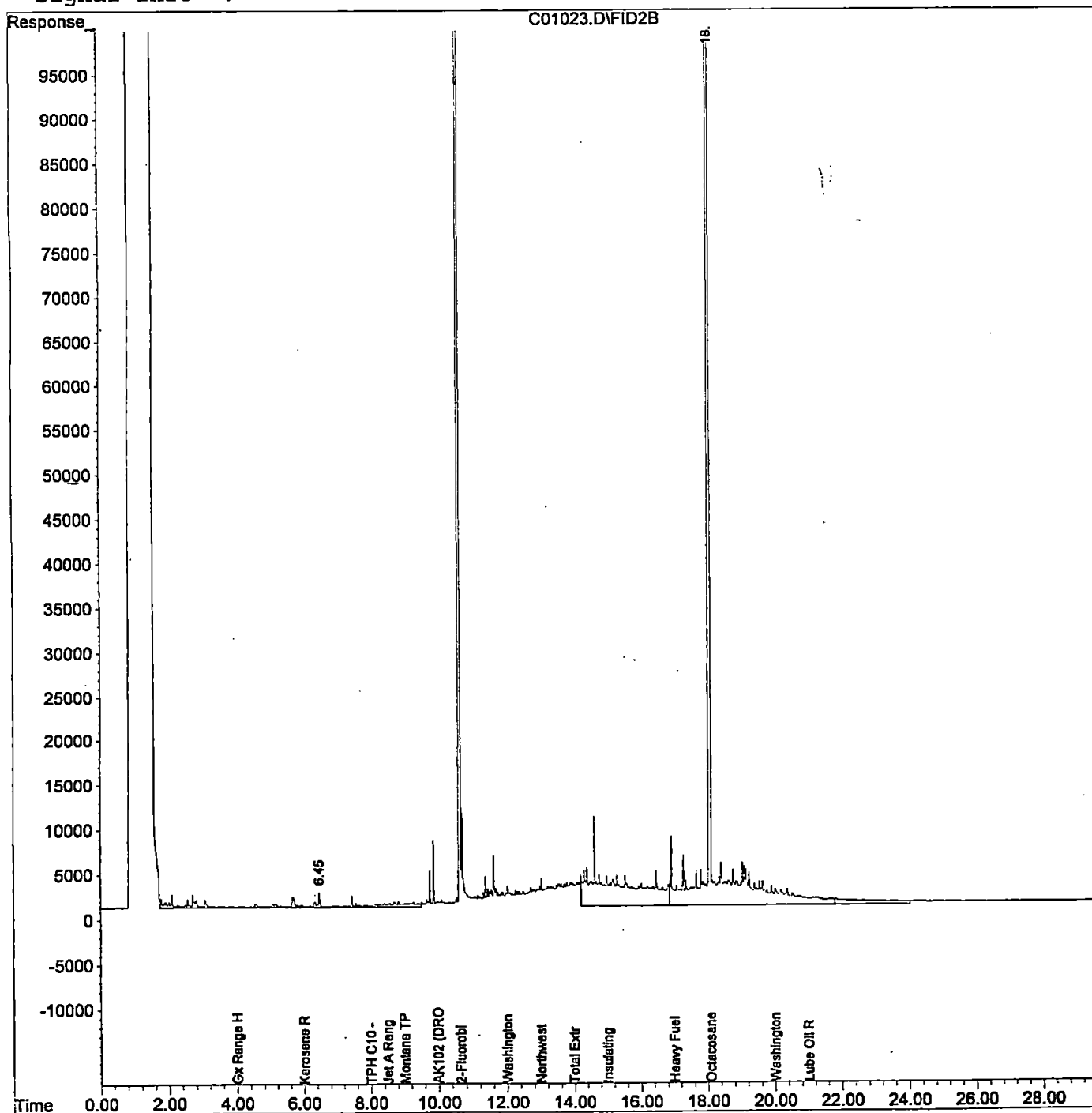
Quantitation Report

Data File : C:\HPCHEM\3\DATA.SEC\C01023.D  
Acq On : 1 Mar 1999 3:58 pm  
Sample : B902447-11  
Misc : w  
IntFile : SURR.E  
Quant Time: Mar 2 8:14 1999

Vial: 16  
Operator: gap  
Inst : GC #5  
Multiplr: 1.00

Quant Method : C:\HPCHEM\3\METHODS\TPHD2.M (Chemstation Integrator)  
Title : TPH-D Rear Method  
Last Update : Tue Feb 23 18:06:15 1999  
Response via : Multiple Level Calibration  
DataAcq Meth : TPHD.M

Volume Inj. :  
Signal Phase :  
Signal Info :



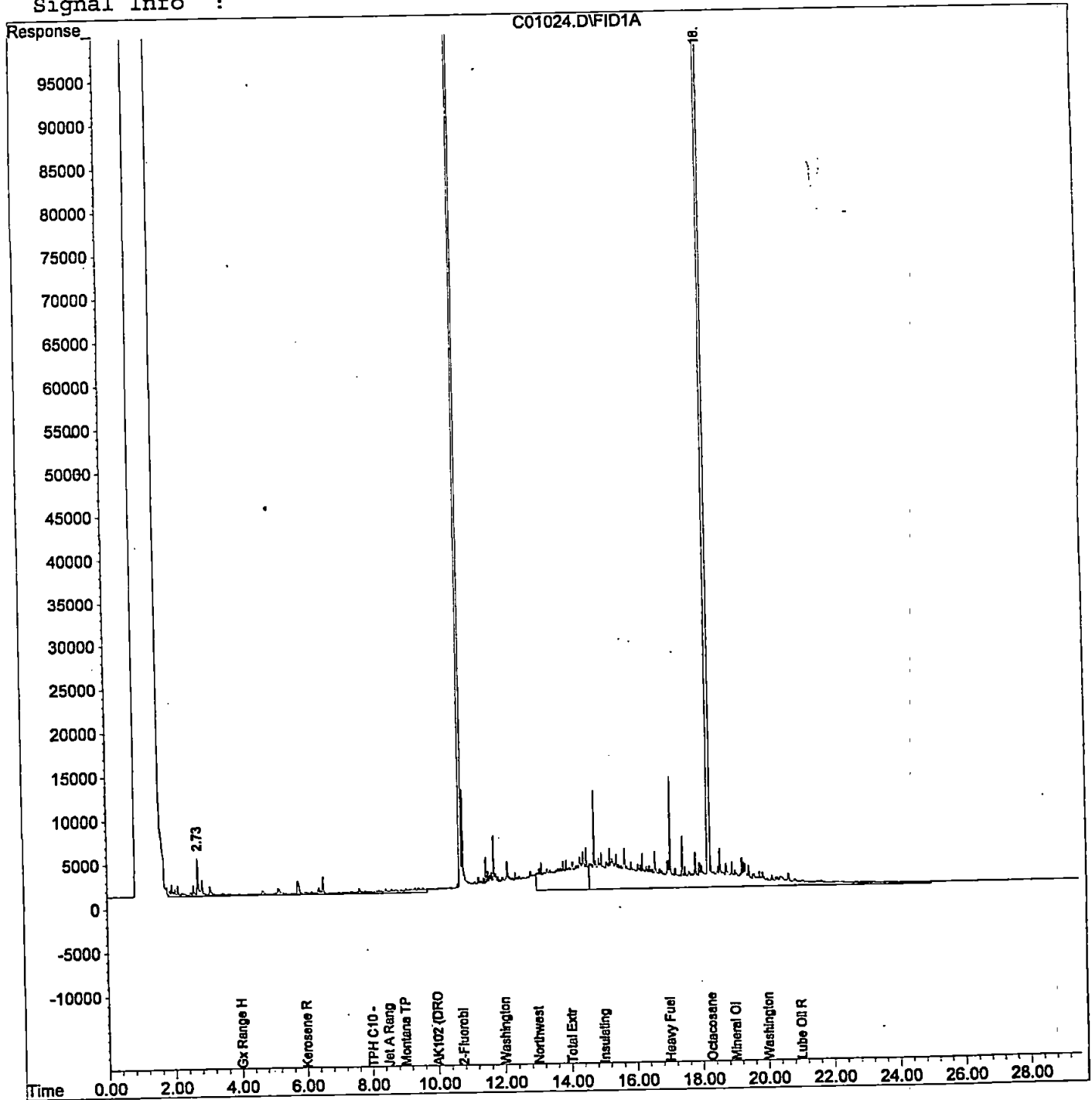
Quantitation Report

Data File : C:\HPCHEM\3\DATA\C01024.D  
Acq On : 1 Mar 1999 3:58 pm  
Sample : B902447-12  
Misc : w  
IntFile : SURR.E  
Quant Time: Mar 2 7:56 1999

Vial: 17  
Operator: gap  
Inst : GC #5  
Multiplr: 1.00

Quant Method : C:\HPCHEM\3\METHODS\TPHD.M (Chemstation Integrator)  
Title : TPH-D Front Method  
Last Update : Fri Feb 26 12:18:09 1999  
Response via : Multiple Level Calibration  
DataAcq Meth : TPHD.M

Volume Inj. :  
Signal Phase :  
Signal Info :



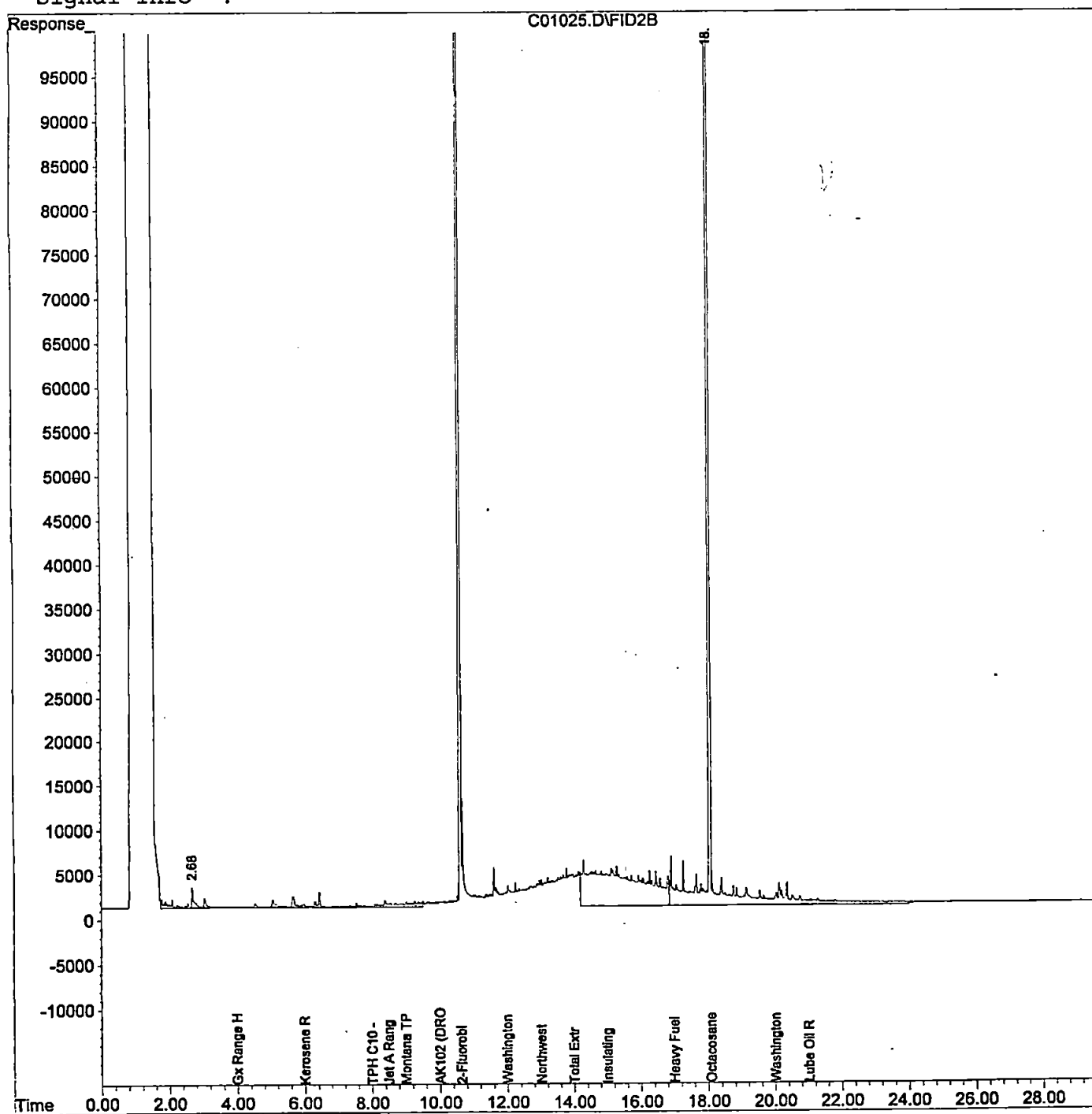
Quantitation Report

Data File : C:\HPCHEM\3\DATA.SEC\C01025.D  
Acq On : 1 Mar 1999 4:37 pm  
Sample : B902447-13  
Misc : w  
IntFile : SURR.E  
Quant Time: Mar 2 8:15 1999

Vial: 18  
Operator: gap  
Inst : GC #5  
Multiplr: 1.00

Quant Method : C:\HPCHEM\3\METHODS\TPHD2.M (Chemstation Integrator)  
Title : TPH-D Rear Method  
Last Update : Tue Feb 23 18:06:15 1999  
Response via : Multiple Level Calibration  
DataAcq Meth : TPHD.M

Volume Inj. :  
Signal Phase :  
Signal Info :



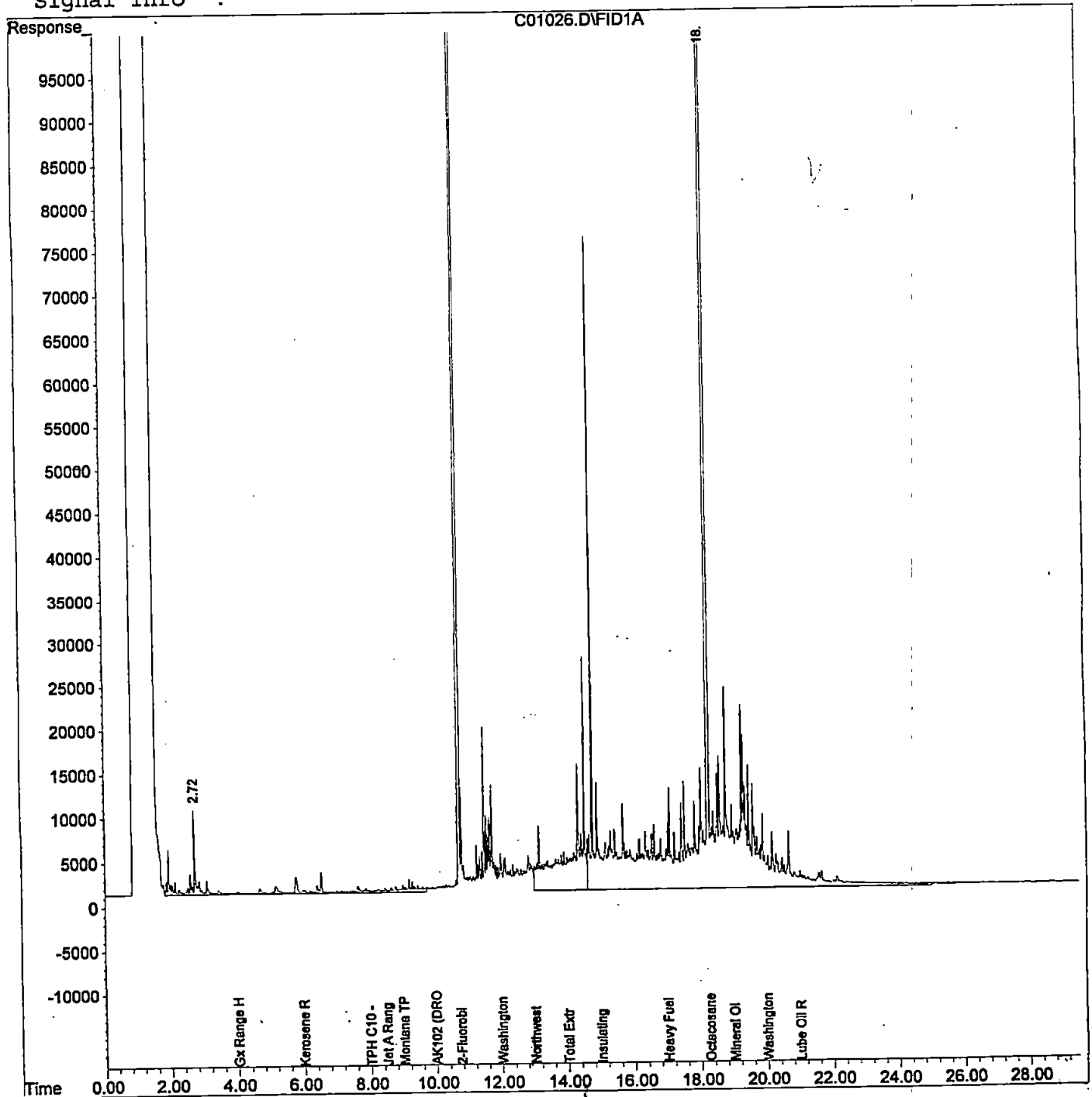
Quantitation Report

Data File : C:\HPCHEM\3\DATA\C01026.D  
Acq On : 1 Mar 1999 4:37 pm  
Sample : B902447-14  
Misc : w  
IntFile : SURR.E  
Quant Time: Mar 2 7:56 1999

Vial: 19  
Operator: gap  
Inst : GC #5  
Multiplr: 1.00

Quant Method : C:\HPCHEM\3\METHODS\TPHD.M (Chemstation Integrator)  
Title : TPH-D Front Method  
Last Update : Fri Feb 26 12:18:09 1999  
Response via : Multiple Level Calibration  
DataAcq Meth : TPHD.M

Volume Inj. :  
Signal Phase :  
Signal Info :



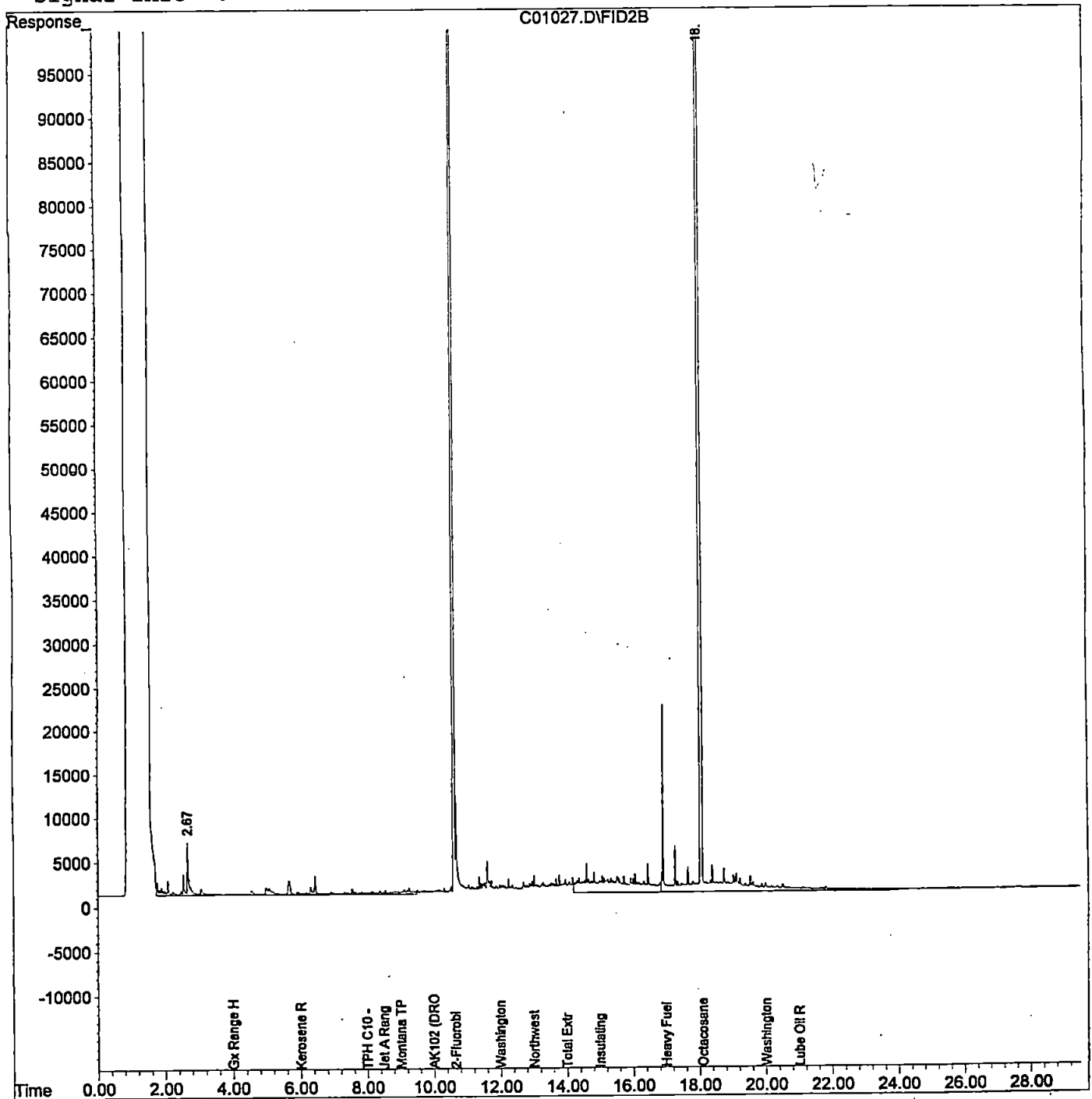
Quantitation Report

Data File : C:\HPCHEM\3\DATA.SEC\C01027.D  
Acq On : 1 Mar 1999 5:17 pm  
Sample : B902447-15  
Misc : w  
IntFile : SURR.E  
Quant Time: Mar 2 8:16 1999

Vial: 20  
Operator: gap  
Inst : GC #5  
Multiplr: 1.00

Quant Method : C:\HPCHEM\3\METHODS\TPHD2.M (Chemstation Integrator)  
Title : TPH-D Rear Method  
Last Update : Tue Feb 23 18:06:15 1999  
Response via : Multiple Level Calibration  
DataAcq Meth : TPHD.M

Volume Inj. :  
Signal Phase :  
Signal Info :



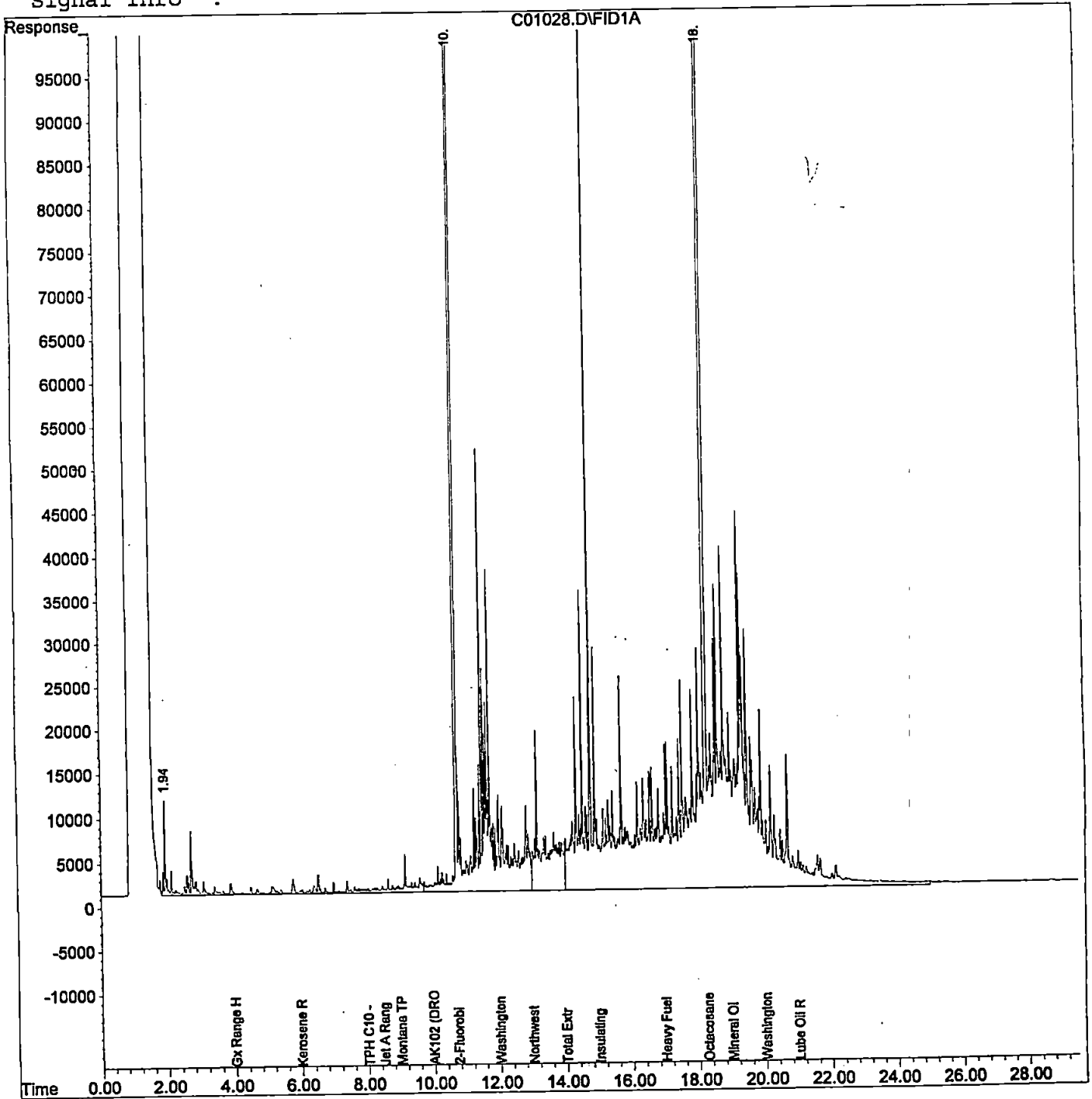
Quantitation Report

Data File : C:\HPCHEM\3\DATA\C01028.D  
Acq On : 1 Mar 1999 5:17 pm  
Sample : B902447-16  
Misc : w  
IntFile : SURR.E  
Quant Time: Mar 2 7:57 1999

Vial: 21  
Operator: gap  
Inst : GC #5  
Multiplr: 1.00

Quant Method : C:\HPCHEM\3\METHODS\TPHD.M (Chemstation Integrator)  
Title : TPH-D Front Method  
Last Update : Fri Feb 26 12:18:09 1999  
Response via : Multiple Level Calibration  
DataAcq Meth : TPHD.M

Volume Inj. :  
Signal Phase :  
Signal Info :





# CHAIN OF CUSTODY RECORD

B902447

**GEOENGINEERS, INC.**  
**8410 154TH AVENUE N.E.**  
**REDMOND, WASHINGTON 98052**  
**(206) 861-6000**



DATE 2-25-99  
 PAGE 2 OF 2  
 LAB NCA  
 LAB NO. \_\_\_\_\_

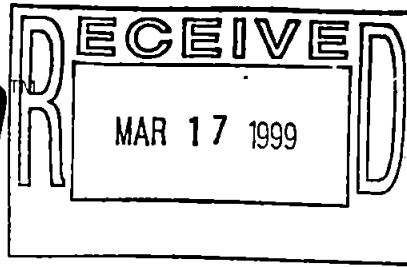
| PROJECT NAME/LOCATION <u>PSE GRADY WAY</u> |              |                   |      |        |      | ANALYSIS REQUIRED   |   |   |   |   |  |  |  |  |  | NOTES/COMMENTS |  |  |  |  |  |
|--|--------------|-------------------|------|--------|------|---|---|---|---|---|--|--|--|--|--|----------------|--|--|--|--|--|
| PROJECT NUMBER <u>0186-407-00</u>          |              |                   |      |        |      | NWTPH-DEBIT.<br>METHOD<br>PCBs 5082<br>DISSOLVED<br>ARSENIC<br>PH METHOD<br>150.1<br>BY<br>PAHs GC/MS |   |   |   |   |  |  |  |  |  |                |  |  |  |  |  |
| PROJECT MANAGER <u>STEVE WOODWARD</u>      |              |                   |      |        |      |   |   |   |   |   |  |  |  |  |  |                |  |  |  |  |  |
| SAMPLED BY <u>SCOT OUERDICK</u>            |              |                   |      |        |      |   |   |   |   |   |  |  |  |  |  |                |  |  |  |  |  |
| SAMPLE IDENTIFICATION                      |              | SAMPLE COLLECTION |      |        | # OF |   |   |   |   |   |  |  |  |  |  |                |  |  |  |  |  |
| LAB  | GEOENGINEERS | DATE              | TIME | MATRIX | JARS |   |   |   |   |   |  |  |  |  |  |                |  |  |  |  |  |
|  | Gmw-10       | 2-24-99           | 1300 | W      | 4    | X   | X | X | X | X |  |  |  |  |  |                |  |  |  |  |  |
|  | Gmw-11       | }                 | 1325 | W      | 4    | X   | X | X | X | X |  |  |  |  |  |                |  |  |  |  |  |
|  | Gmw-12A      |                   | 1510 | W      | 4    | X   | X | X | X | X |  |  |  |  |  |                |  |  |  |  |  |
|  | Gmw-13       |                   | 1525 | W      | 4    | X   |   |   | X | X |  |  |  |  |  |                |  |  |  |  |  |
|  | Gmw-14       |                   | 1600 | W      | 4    | X   |   |   | X | X |  |  |  |  |  |                |  |  |  |  |  |

B902447 - - 12  
 - 13  
 - 14  
 - 15  
 - 16

|  |   |   |
|--|---|---|
| RELINQUISHED BY<br>SIGNATURE <u>[Signature]</u><br>PRINTED NAME <u>SCOT OUERDICK</u><br>DATE <u>2-25-99</u> TIME <u>8:40</u> | RELINQUISHED BY<br>SIGNATURE _____<br>PRINTED NAME _____<br>DATE _____ TIME _____ | RELINQUISHED BY<br>SIGNATURE _____<br>PRINTED NAME _____<br>DATE _____ TIME _____ |
| RECEIVED BY<br>SIGNATURE <u>[Signature]</u><br>PRINTED NAME <u>C. Nichols</u><br>DATE <u>2/25/99</u> TIME <u>8:40</u>        | RECEIVED BY<br>SIGNATURE _____<br>PRINTED NAME _____<br>DATE _____ TIME _____     | RECEIVED BY<br>SIGNATURE _____<br>PRINTED NAME _____<br>DATE _____ TIME _____     |

ADDITIONAL COMMENTS: DISSOLVED ARSENIC NOT FIELD FILTERED

F.4 W/0



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 503.906.9200 fax 503.906.9210  
 Bend 20354 Empire Avenue, Suite E-9, Bend, OR 97708-1883  
 541.383.9310 fax 541.382.7588

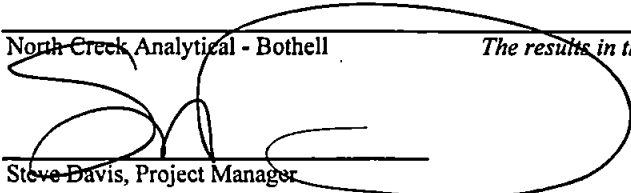
|  |  |  |
|--|--|--|
| Geo Engineers - Seattle<br>600 Stewart Street, Suite 1215<br>Seattle, WA 98101 | Project: PSE-Grady Way<br>Project Number: 0186-407-00<br>Project Manager: Steve Woodward | Sampled: 3/2/99<br>Received: 3/3/99<br>Reported: 3/15/99 14:22 |
|--|--|--|

**ANALYTICAL REPORT FOR SAMPLES:**

| Sample Description | Laboratory Sample Number | Sample Matrix | Date Sampled |
|--------------------|--------------------------|---------------|--------------|
| GMW-4              | B903076-01               | Water         | 3/2/99       |
| P030299            | B903076-02               | Water         | 3/2/99       |

North Creek Analytical - Bothell

*The results in this report apply to the samples analyzed in accordance with the chain of custody document.  
 This analytical report must be reproduced in its entirety.*

  
 Steve Davis, Project Manager

**North Creek Analytical, Inc.  
 Environmental Laboratory Network**



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|  |  |  |
|--|--|--|
| Geo Engineers - Seattle<br>600 Stewart Street, Suite 1215<br>Seattle, WA 98101 | Project: PSE-Grady Way<br>Project Number: 0186-407-00<br>Project Manager: Steve Woodward | Sampled: 3/2/99<br>Received: 3/3/99<br>Reported: 3/15/99 14:22 |
|--|--|--|

**Semivolatile Petroleum Products by NWTPH-Dx (w/o Acid/Silica Gel Clean-up)  
 North Creek Analytical - Bothell**

| Analyte                     | Batch Number | Date Prepared | Date Analyzed | Surrogate Limits  | Reporting Limit | Result | Units        | Notes* |
|-----------------------------|--------------|---------------|---------------|-------------------|-----------------|--------|--------------|--------|
| <b>GMW-4</b>                |              |               |               | <b>B903076-01</b> |                 |        | <b>Water</b> |        |
| Diesel Range Hydrocarbons   | 0390124      | 3/4/99        | 3/5/99        |                   | 0.250           | 0.361  | mg/l         | 1      |
| Lube Oil Range Hydrocarbons | "            | "             | "             |                   | 0.500           | ND     | "            |        |
| Surrogate: 2-FBP            | "            | "             | "             | 50.0-150          |                 | 73.1   | %            |        |

North Creek Analytical - Bothell

\*Refer to end of report for text of notes and definitions.

Steve-Davis, Project Manager

**North Creek Analytical, Inc.**  
**Environmental Laboratory Network**



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 509.924.9200 fax 509.924.9290  
 Portland 9405 SW Nimbus Avenue, Beaverton, OR 97008-7132  
 503.906.9200 fax 503.906.9210  
 Bend 20354 Empire Avenue, Suite E-9, Bend, OR 97708-1883  
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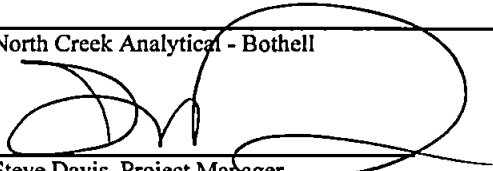
|  |  |  |
|--|--|--|
| Geo Engineers - Seattle<br>600 Stewart Street, Suite 1215<br>Seattle, WA 98101 | Project: PSE-Grady Way<br>Project Number: 0186-407-00<br>Project Manager: Steve Woodward | Sampled: 3/2/99<br>Received: 3/3/99<br>Reported: 3/15/99 14:22 |
|--|--|--|

**BTEX by EPA Method 8021B  
 North Creek Analytical - Bothell**

| Analyte                | Batch Number | Date Prepared | Date Analyzed | Surrogate Limits  | Reporting Limit | Result | Units        | Notes* |
|------------------------|--------------|---------------|---------------|-------------------|-----------------|--------|--------------|--------|
| <u>P030299</u>         |              |               |               | <u>B903076-02</u> |                 |        | <u>Water</u> |        |
| Benzene                | 0390201      | 3/8/99        | 3/9/99        |                   | 0.500           | ND     | ug/l         |        |
| Toluene                | "            | "             | "             |                   | 0.500           | ND     | "            |        |
| Ethylbenzene           | "            | "             | "             |                   | 0.500           | ND     | "            |        |
| Xylenes (total)        | "            | "             | "             |                   | 1.00            | ND     | "            |        |
| Surrogate: 4-BFB (PID) | "            | "             | "             | 50.0-150          |                 | 97.9   | %            |        |

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\*Refer to end of report for text of notes and definitions.

  
 Steve Davis, Project Manager

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|  |  |  |
|--|--|--|
| Geo Engineers - Seattle<br>600 Stewart Street, Suite 1215<br>Seattle, WA 98101 | Project: PSE-Grady Way<br>Project Number: 0186-407-00<br>Project Manager: Steve Woodward | Sampled: 3/2/99<br>Received: 3/3/99<br>Reported: 3/15/99 14:22 |
|--|--|--|

**Polychlorinated Biphenyls by EPA Method 8082  
 North Creek Analytical - Bothell**

| Analyte               | Batch Number | Date Prepared | Date Analyzed | Surrogate Limits  | Reporting Limit | Result | Units        | Notes* |
|-----------------------|--------------|---------------|---------------|-------------------|-----------------|--------|--------------|--------|
| <b>GMW-4</b>          |              |               |               | <b>B903076-01</b> |                 |        | <b>Water</b> |        |
| Aroclor 1016          | 0390158      | 3/5/99        | 3/10/99       |                   | 5.00            | ND     | ug/l         | 2      |
| Aroclor 1221          | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Aroclor 1232          | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Aroclor 1242          | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Aroclor 1248          | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Aroclor 1254          | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Aroclor 1260          | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Aroclor 1262          | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Aroclor 1268          | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| <i>Surrogate: TCX</i> | "            | "             | "             | 40.0-130          |                 | 66.1   | %            |        |
| <b>P030299</b>        |              |               |               | <b>B903076-02</b> |                 |        | <b>Water</b> |        |
| Aroclor 1016          | 0390158      | 3/5/99        | 3/10/99       |                   | 0.100           | ND     | ug/l         |        |
| Aroclor 1221          | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Aroclor 1232          | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Aroclor 1242          | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Aroclor 1248          | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Aroclor 1254          | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Aroclor 1260          | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Aroclor 1262          | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| Aroclor 1268          | "            | "             | "             |                   | 0.100           | ND     | "            |        |
| <i>Surrogate: TCX</i> | "            | "             | "             | 40.0-130          |                 | 52.5   | %            |        |

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\*Refer to end of report for text of notes and definitions.

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