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Phase I Interim Remedial Measures Report

D.C. Rollforms/Ingersoll-Rand Site, Jamestown, New York, Site Code 907019

PREPARED FOR

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1. Introduction

On behalf of the Ingersoll-Rand Company, ARCADIS Geraghty & Miller, Inc. prepared this Interim Remedial Measures (IRM) Report for the D.C. Rollforms/Ingersoll-Rand Site (site) located in Jamestown, New York (Figures 1 and 2). The site is currently listed by the New York State Department of Environmental Conservation (NYSDEC) on the Registry of Inactive Hazardous Waste Sites (Site No. 907019) with a classification code of 2.

The remedial investigation (RI) conducted at the site (ARCADIS Geraghty & Miller 1998) defined the extent of impacts to soil and groundwater at the site, and identified three areas where concentrations of volatile organic compounds (VOCs) and separate-phase petroleum hydrocarbons were impacting groundwater quality. The IRMs implemented were designed to address these areas with the objective of expediting contaminant mass removal from the groundwater, mitigating future subsurface impacts, and achieving site closure and delisting from the registry of inactive hazardous waste sites. This IRM Report summarizes the implementation of IRMs at the site and the results of the system performance monitoring program to date. All work conducted relative to the implementation was performed in accordance with the NYSDEC approved IRM Work Plan (ARCADIS Geraghty & Miller 1998).

This IRM Report is organized into the following sections: Section 2 is a summary of the areas addressed by the IRMs; Section 3 describes the IRMs implemented at the site; Section 4 reviews the results from the in-situ reactive zone IRM and oil recovery IRM implemented at the site; Section 5 summarizes the conclusions reached based on the system performance monitoring program completed to date; and Section 6 provides recommendations for further activities at the site.

2. Areas Addressed by Interim Remedial Measures

The IRMs focus on the on-site areas in which the greatest levels of impacts are present. Based on an evaluation of the nature and extent of the impacts, IRMs were considered for the following areas on-site:

1) The area impacted by VOCs (predominantly TCE) around wells MW-8S and MW-8D.

2) The areas impacted by LNAPL and DNAPL around wells ESI-3 and ESI-4.

3) Oil seep on the bank of the Chadakoin River.

The locations of each area are shown on Figure 2. The primary constituents of concern and extent of impacts in each of these areas were previously described in IRM Work Plan (ARCADIS Geraghty & Miller 1998).

3. Implementation of Interim Remedial Measures

This section presents a description of the IRMs implemented in the areas identified in Section 2.0.

3.1 IRM for Well MW-8S/8D Area

ARCADIS Geraghty & Miller, Inc. selected enhanced reductive dechlorination (ERD) as the IRM technology for the Well MW-8S/8D area. The ERD IRM was designed to address the area around Well MW-8S/8D. This enhanced bioremediation technique utilizes an in-situ reactive zone that is established in the groundwater with the purpose of enhancing the natural biodegradation of chlorinated VOCs at the site. These VOCs include TCE and its associated degradation [daughter] products.

It has been well documented that natural biodegradation of chlorinated VOCs can occur via several mechanisms including reductive dechlorination (or dehalogenation) in which chlorine atoms are removed from the parent VOC molecule forming less-chlorinated daughter products (e.g., TCE to *cis*-1,2 dichloroethene [DCE]). The presence of these types of daughter products including DCE and vinyl chloride (VC) in the MW-8S/8D area, as well as in downgradient monitoring wells ESI-7 and MW-7D, indicate that reductive dechlorination is already occurring naturally. An anaerobic, reducing environment and the natural occurrence of this reductive dechlorination process is also evidenced by lower concentrations of TCE, DCE and VC in ESI-7 and MW-7D. ERD is accomplished by supplying the groundwater system with an easily degraded organic carbon source in the form of a mixture of molasses and water. This organic carbon allows for the creation of an anaerobic and reducing environment which favors the reductive dechlorination mechanisms.

The ERD IRM performed at the site to date was conducted on a test-scale basis in order to demonstrate the applicability of the technology, as well as to determine full-scale design parameters which would be required if the technology was to be applied on a larger scale. It was assumed that if the results of this testing were positive, this

IRM would be expanded in scope to address more of the VOC impacts, including expansion as the full-scale remedy for VOC impacted groundwater at the site.

3.1.1 System Installation

The ERD field test included the installation of two injection wells, existing wells MW-8S/8D and a new observation well designated as Well MW-12. The two injection wells (IW-1 and IW-2) were installed upgradient of well cluster MW-8S/8D in order to inject the molasses solution into the subsurface. The injection wells were installed at a distance upgradient of observation wells MW-8S/8D and the newly installed Well MW-12 based on the estimated groundwater flow velocity in this area of the site. The movement of groundwater from the injection wells to the observations wells MW-8S/8D and MW-12 was estimated to be approximately 3 to 4 months. Consequently, the effects of the molasses injection was anticipated to take between 3 to 4 months before being observed at the downgradient observation wells MW-8S/8D and MW-12.

Each injection well was constructed of 4-inch diameter, schedule 40 PVC casing and screen (0.020 slot). IW-1 was installed within the fill material and screened from 5 to 10 feet below land surface. IW-2 was installed within the till unit and screened from 14 to 24 below land surface. Figures 3 and 4 are schematics of the injection wells. Sample/Core Logs and Well Construction Logs for the injection wells are provided as Appendices A and B, respectively.

Well MW-12 was installed downgradient of IW-1 and Well MW-8S to monitor the size and geometry of the ERD in-situ reactive zone as it was created. MW-12 was installed within the fill material and screened from 5 to 10 feet below land surface. The sample/core log and well construction log for MW-12 are included in Appendices A and B, respectively.

Following injection well installation, an insulated, pre-fabricated eight-foot by eight-foot wooden shed was built around the IW-1 and IW-2 area to cover and protect the injection wells from freezing and damage/vandalism. Prior to construction, a layer of gravel was laid as a base for the shed. The shed was placed on concrete footings located beneath each corner.

3.1.2 Molasses Solution Injection

As described in IRM Work Plan, a dilute solution of molasses and water was injected into wells IW-1 and IW-2 on a weekly basis. Injections were initiated on December 3, 1998 and have continued on a weekly basis throughout the initial three months of operation designated as Phase I. The solution was made using food-grade molasses which contains sucrose, reducing sugars, ash, organic non sugars (all of which are soluble in water), and water. During each injection event, the molasses solution (at the desired molasses/water ratio) was prepared in a portable polyethylene mixing tank by stirring the prescribed volume of molasses with the appropriate volume of water. The solution was then transferred to a dedicated 5 gallon polyethylene injection storage vessel affixed with a flow control valve which allowed the solution to flow via gravity from the injection vessel, through dedicated flexible vinyl tubing placed into each well.

Initially the molasses solution was mixed with potable water to achieve a 20 to 1 dilution (20 parts water and 1 part molasses). Following review of initial groundwater analytical data, the mixture for both injection wells was altered to a 10 to 1 dilution to increase the organic carbon loading in the reactive zone. Molasses Injection Logs for the Phase I period are provided in Appendix C.

3.1.3 System Performance Monitoring

The system performance monitoring program developed to evaluate the IRM during Phase I consisted of a baseline sampling event and monthly groundwater sampling to evaluate both the effectiveness of the system in enhancing the VOC degradation as well as the development of the in-situ reactive zone downgradient of the injection wells.

To establish baseline groundwater conditions prior to the start of the ERD IRM, an initial round of groundwater samples was collected from monitoring wells MW-8S, MW-8D, ESI-7, MW-7D, ESI-6 and the new Well MW-12. Following the baseline groundwater sampling event, groundwater samples were collected on a monthly schedule.

Due to the sensitive nature of many of the parameters being measured in the groundwater, each well was sampled using low flow techniques. Water samples were collected and analyzed for VOCs using USEPA Method 8260A, total and dissolved iron and manganese using USEPA Method 6010, total and dissolved organic carbon (TOC and DOC) using USEPA Method 9060, biological oxygen demand (BOD) using

USEPA Method 405.1, chemical oxygen demand (COD) using USEPA Method 410.1, ethene and ethane using Method AM-18, carbon dioxide using AM-15.01, chloride using USEPA Method 9250, sulfate using USEPA Method 9036, sulfide using USEPA Method 9031, and nitrate/nitrite using USEPA Method 9200.

The following indicator field parameters are also measured in groundwater samples using field instrumentation:

- Dissolved oxygen (DO)
- Ferrous iron
- Sulfide
- Oxidation/reduction potential (ORP)
- pH
- temperature
- specific conductance

Water extracted from each well was directed into a flow-through chamber for DO, ORP, temperature, specific conductance and pH measurements. Following the stabilization of field parameters and the removal of three well volumes, the well was then sampled. Ferrous iron and sulfide were measured by field analysis at the time of groundwater sampling. Field analysis of ferrous iron and sulfide was conducted using a Hach Spectrophotometer (Model 2010).

3.2 IRMs for Well ESI-3 and ESI-4 Areas

As described in the IRM Work Plan, passive recovery of free product was performed using Petro Trap™ canisters, deployed in wells ESI-3 and ESI-4 as the IRM in these locations. PetroTrap™ canisters were installed in wells ESI-3 and ESI-4 during September 1998. Literature describing the PetroTrap™ is provided in Appendix D. Beginning in December 1998, the PetroTrap™ canisters were removed and emptied on a weekly basis. PetroTrap™ Oil Removal Logs are provided in Appendix E. Product within the canisters is transferred to a temporary storage container located on-site for later disposal.

The presence of weathered oil DNAPL in Well ESI-4 and a 0.1 foot thickness of DNAPL in MW-8D was also monitored during each site visit. Any DNAPL present was removed using a dedicated bailer and transferred to a temporary storage container located on-site for later disposal. Logs for the removal of DNAPL at ESI-4 and MW-8D are provided in Appendix E.

3.3 IRM for Chadakoin River Bank Oil Seep

The proposed IRM for the oil seep consists of a temporary containment structure covering the impacted area. Implementation of this IRM requires low flow stream conditions so that the surface of the water is below the elevation of the seep. As of this report, implementation of the oil seep IRM, consisting of a hydraulic cement barrier, could not be conducted due to the high streamflow conditions in the Chadakoin River.

4. Results

The initial results of the ERD IRM implemented in the Well MW-8S/8D area and passive recovery of free product at Wells ESI-3 and ESI-4 are discussed in the following sections.

4.1 In-situ Reactive Zone

Beginning in December 1998 (baseline sampling event), monitoring wells ESI-6, ESI-7, MW-7D, MW-8S, MW-8D and MW-12 were sampled on a monthly basis to monitor the effectiveness of the ERD IRM. Analytical data from monitoring wells MW-8S, MW-8D, and MW-12, located downgradient of injection wells IW-1 and IW-2, were reviewed to evaluate whether the injection of the molasses solution had been effective in enhancing reducing conditions within this area. The analytical data from the baseline sampling event were compared with the results at the end of the three month monitoring period, as well as the observed trends in parameter concentrations over the same period. The laboratory analytical results of the groundwater samples collected are provided in Appendix F. Laboratory analytical data and measured field parameters from the three month monitoring program are summarized in Tables 1 through 5. Time-concentration plots of selected parameters are presented on Figures 5 through 13 and are discussed below.

Key parameters such as ferrous iron, ORP, DO, DOC and TOC are good indicators of the creation of the reducing environment and addition of organic carbon required to increase the natural biodegradation of the chlorinated VOCs present. The following

observations, based on review of the natural attenuation parameters (Table 1) and wet chemistry analytical data (Table 2), indicate that the molasses injections have been effective in developing a more reducing environment within the groundwater in the fill material downgradient of the injection well IW-1.

- Review of the analytical results for ferrous iron at wells MW-8S and MW-12 indicates that ferrous iron has increased since the implementation of ERD IRM. This indicates that reduction of ferric iron (Fe^{+3}) to ferrous iron (Fe^{+2}) is ongoing in the reactive zone as a result of the stronger reducing conditions created by the molasses injections (see Table 1 and Figures 5 and 7). Total and dissolved iron concentrations have also increased at MW-8S and MW-12 (Table 5). Ferrous iron results observed for Well MW-8D are less definitive at this time. However, total and dissolved iron have increased in this well indicating some reducing affects may be occurring in the till zone as a result of the molasses injection.

- ORP readings at wells MW-8S and MW-12 have become more reducing (negative) as indicated on Table 1. ORP is a direct indicator of the oxidation/reduction environment in the groundwater with larger negative values indicating stronger reducing (anaerobic) conditions. ORP at wells MW-8S and MW-12 decreased from -123.8 milliVolts (mV) to -347.7 mV and -97.9 to -203.1 mV, respectively. MW-8D, which in December 1998 had an ORP reading of 97.8 (positive), reached a reading of -108.8 during the Phase I monitoring period.

- TOC data show an increase in concentration in wells MW-8S and MW-12, indicating that the source of carbon (molasses) has reached each of these wells. Total organic carbon increased in well MW-8S from 22.3 mg/l to 1500 mg/l and increased in well MW-12 from 24 mg/l to 407 mg/l.

- Dissolved oxygen at wells MW-8S and MW-12 has decreased compared to the concentration of DO in each well at the time of the baseline sampling event (see Table 1).

Review of the analytical data for Well MW-8D, located within the till downgradient of injection well IW-2, indicates that the effectiveness of the molasses injections within the till cannot be fully evaluated based on the Phase I data set. Data for the key indicator parameters DO, ORP and ferrous iron indicate a trend towards more reducing conditions, however, results for TOC do not exhibit a measurable increase during the monitoring period. This is not unexpected given the lower permeability of the till zone and the related lower groundwater velocity; longer periods of time will be

required in this geologic unit before effects from the injections are observed downgradient.

Comparison of groundwater monitoring results for VOCs in Well MW-8S from January, February and March 1999 with the baseline results in December 1998 indicate a reduction of total VOCs from 9600 ug/l to 1850 ug/l. The concentration of DCE decreased from 8500 ug/l during the initial baseline sampling event to 1400 ug/l in the March sampling event. TCE in Well MW-8S showed an increase from non-detect in the December 1998 and January 1999 samples to 3,000 ug/l in the February 1999 sample. TCE decreased to 120 ug/l in the March 1999 sample. Although additional data is needed to confirm the trends observed to date in Well MW-8S, such a "spike" in TCE or DCE concentrations after initial molasses injections has been observed at other ARCADIS Geraghty & Miller sites employing ERD technology and is believed to be the result of the desorption of contaminant mass adsorbed to soil organic matter in response to the development of enhanced reducing conditions. The ratio of source material (TCE) to daughter products (DCE and VC) has dropped significantly in MW-8S (from 1:4:1 to 1:11:3 , TCE:DCE:VC) indicating a more rapid degradation of the source material.

Total VOC concentrations in Well MW-12 increased over the monitoring period. TCE, DCE and VC each increased relative to the baseline sampling event, with TCE and DCE detected at 4400 ug/l and 9800 ug/l, respectively, in the February 1999 samples. Declines were then noted in the March 99 sampling event. The ratio of source to daughter products observed in MW-12 has also declined since the pilot program began.

At Well MW-8D (installed within the till downgradient of IW-2), VOC concentrations decreased by approximately 50 %. TCE and DCE declined to 380,000 ug/l and 15,000 ug/l in the last sampling round. VC was not detected in any of the samples collected during the three month period.

Analytical data for wells ESI-6 and ESI-7, and MW-7D, located upgradient and downgradient of the area of the IRM, showed no distinct trends (either increasing or decreasing) in VOC concentrations during the three month monitoring period.

4.2 Oil Recovery

Beginning in December 1998, the PetroTrap™ canisters installed in wells ESI-3 and ESI-4 emptied on a weekly basis. In addition, manual bailing was also conducted at each well.

At the time of this report, 0.70 gallons of oil at ESI-3 and 0.20 gallons of oil at ESI-4 have been recovered via the PetroTrap™ canisters. These relatively low volumes recovered since the implementation of the IRMs are attributed to the fact that there is a low volume of recoverable free product present at each well location as indicated by the product thickness measurements for each well (see Oil Removal Logs in Appendix D). Given the low volume of recoverable free product, combined with the relatively low permeability of the subsurface materials which inhibits the movement of oil, a significant volume of oil recovery is not expected.

The PetroTrap™ canisters were selected for passive recovery due to the limited amount of recoverable free product that was expected. The design of the PetroTrap™ canisters is such that at ideal performance, the canisters will hold approximately 0.2 gallons of product. Additionally, the nature of the oil in well ESI-4 may be such that due to its density and viscosity the rate of recovery of oil in this well is low. Periodic product thickness measurements have also indicated that the relative volume of oil present in both ESI-3 and ESI-4 has decreased since the implementation of the IRMs. Manual bailing of LNAPL in ESI-3 and ESI-4 has been added to the IRM program to further enhance oil recovery.

Manual bailing of weathered oil DNAPL at well ESI-4 has been conducted periodically. Approximately, 1.35 gallons of DNAPL have been recovered from ESI-4 to date. Product thickness measurements have indicated that the volume of DNAPL has decreased since the implementation of IRMs.

Manual bailing of DNAPL in Well MW-8D has also been conducted periodically. Only 0.10 gallons of DNAPL has been recovered since bailing was initiated due to the small amount of DNAPL in the well (less than 0.10 feet). Movement of DNAPL into MW-8D takes a considerable amount of time, due to the low permeability and density of the till in which the well is screened.

product

5. Conclusions

The following preliminary conclusions are based on the results of the initial three month monitoring program for the ERD and oil recovery IRMs implemented at the site.

5.1 In-Situ Reactive Zone

- Injection of the molasses solution has been effective at enhancing reducing conditions within the saturated fill material immediately downgradient of the injection well IW-1and has accomplished the remedial goals established for the field test. This is based on the ORP, TOC, and ferrous iron data in downgradient wells MW-8S and MW-12 which indicate more reduced conditions over the three month period relative to the baseline sampling event conducted prior to molasses injections. The effect of the molasses injections within the till formation is less conclusive at this time (due to the slower groundwater flow velocity within the lower permeability till), although VOC concentrations have decreased during the Phase 1 period.

- Concentrations of total VOCs (TCE, DCE and VC) have decreased by approximately 80% in Well MW-8S, located downgradient of injection well IW-1. The ratio of TCE to daughter products has declined in MW-8S and MW-12 indicating the degradation of source material within the reactive zone. The Phase 1 monitoring data indicate that the reduction in VOCs can be attributed to the development of an in-situ reactive zone with strongly reduced conditions as a result of the molasses injections.

5.2 Oil Recovery

Relatively minor amounts of oil have been recovered from Wells ESI-3, ESI-4 and MW-8D. This is attributed to the low volume of recoverable free product at each well location combined with the relatively low permeability of the subsurface materials which inhibit the movement of oil.

6. Recommendations

Based on the results of the three month, Phase I period of the IRM, ARCADIS Geraghty & Miller has prepared the following recommendations for continued operation of the IRM program:

6.1 ERD IRM

ERD IRM in Fill Zone - Based on the data collected to date, addition of the molasses solution has allowed for creation of strong reducing conditions in the fill zone, around the injection well - which in turn has allowed for degradation of the chlorinated VOCs

present. Given that this technology is accomplishing the remedial goals established, we propose to expand its implementation over a larger portion of the MW-8S area. It is proposed to install four new injections wells in the area of IW-1. These wells will be arrayed with two on either side of IW-1, at a ten foot spacing between wells. The new wells will be constructed identically to IW-1. In addition, one additional observation well will be installed downgradient of the injection wells, in the location of the former Geoprobe boring GP-5 location (installed during the remedial investigation). This well will be used to monitor the reactive zone created by the expanded system.

Once installed, molasses injections will be continued in IW-1 as well as the four new wells. However, it is proposed to reduce the injections to bi-weekly given the expected overlap of reagent delivered from all five wells.

ERD IRM in Till Zone - As outlined, the results of the IRM from the till zone are not yet conclusive. As expected response in this zone is taking longer to occur given the low permeability of the geologic matrix. Therefore, we propose to continue operation of the till zone IRM, as planned, for an additional 6 months.

6.2 Oil Recovery

Given the minimal recoverable free product in wells ESI-3 and ESI-4, the Petro Traps™ will continue to be used at this time. The use of the Petro Traps™ will continue to be evaluated for effectiveness. Oil recovery will be supplemented by monthly bailing in well ESI-3, ESI-4, and well MW-8D.

7. Certification

This is to certify that the IRMs for the D.C. Rollforms/Ingersoll-Rand Site were implemented to the extent practicable as of the date of this report, and associated construction activities were completed in accordance with the IRM Work Plan, as approved by the NYSDEC.

Frank C. Lenzo, P.E. #073296-1

8. References

ARCADIS Geraghty & Miller, Inc., 1998. Interim Remedial Measures Work Plan, D.C. Rollforms/Ingersoll-Rand Site, Jamestown, New York.

Table 1. Natural Attenuation Parameters measured at the DC Rollforms/Ingersoll Rand Site, Jamestown, New York.

	pH (Standard Units)	Temp (Degrees Celsius)	Dissolved Oxygen (mg/L)	Ferrous Iron (mg/L)	Sulfide (mg/L)	Specific Conductivity (umhos/cm)	Oxygen Reduction Potential (mV)
ESI-6							
12/1/98	7.27	12.45	0.89	0.71	0.076	998	-129.8
1/13/99	7.67	9.0	1.3	2.23	ND	370	-109.0
2/9/99	7.3	19.0	0.6	12.9	0.033	275	-1.0
3/31/99	7.6	9.0	1.0	1.29	0.216	650	-124.5
4/21/99	7.6	10.0	0.7	1.19	0.035	600	-165.5
ESI-7							
12/2/98	6.72	13.55	1.69	11.8	0.005	982	-28.3
1/12/99	7.14	9.0	2.1	28.9	0.457	380	-38.5
2/10/99	7.0	15.0	3.2	0.65	0.009	215	-0.5
3/31/99	7.1	8.0	2.8	0.72	0.010	395	15.0
4/21/99	7.1	11.0	1.1	1.21	0.006	420	-68.1
MW-7D							
12/3/98	7.51	13.14	7.49	0.21	0.029	1229	113.1
1/12/99	7.61	9.5	4.0	1.21	0.224	700	4.0
2/10/99	7.6	20.0	2.4	1.54	0.225	450	-1.5
3/31/99	7.6	15.0	3.2	0.08	0.015	900	75.3
4/21/99	7.6	12.0	2.3	0.6	0.075	825	-41.8
MW-8S							
12/1/98	6.70	13.79	1.53	19.1	0.134	852	-123.8
1/12/99	7.08	8.0	1.8	3.00	0.373	365	-197.7
2/9/99	6.2	14.5	0.7	33.25	0.325	555	-23.7
3/31/99	5.9	8.5	0.8	> 75	1.59	1400	-129.7
4/21/99	5.6	9.0	0.8	> 75	0.294	1900	-347.7
MW-8D							
12/2/98	9.07	17.12	5.06	0.35	0.062	1134	97.8
1/11/99	8.93	10.5	8.1	0.43	0.094	800	-4.1
2/9/99	8.5	21.0	2.0	0.37	0.048	440	-0.5
3/31/99	8.3	12.0	2.3	2.40	0.352	950	-108.8
4/22/99	7.8	11.0	3.6	0.55	0.074	1050	38.8

ND Not Detected

Table 1. Natural Attenuation Parameters measured at the DC Rollforms/Ingersoll Rand Site, Jamestown, New York.

	pH (Standard Units)	Temp (Degrees Celsius)	Dissolved Oxygen (mg/L)	Ferrous Iron (mg/L)	Sulfide (mg/L)	Specific Conductivity (umhos/cm)	Oxygen Reduction Potential (mV)
MW-12							
12/2/98	6.80	13.18	1.56	9.7	0.040	880	-97.9
1/13/99	7.15	4.0	1.0	14.6	ND	280	-126.7
2/10/99	6.6	13.5	0.6	17.3	0.089	290	-3.3
3/31/99	6.2	12.0	0.8	> 75	0.230	800	-126.3
4/21/99	6.1	10.0	0.9	44.0	0.109	1300	-203.1

ND Not Detected

Table 2. Wet Chemistry Analytical Data from the DC Rollforms/Ingersoll Rand Site, Jamestown, New York.

	Alkalinity	BOD5	Chloride	COD	Flouride	Nitrate/Nitrite	Sulfate	Sulfide	TOC (T)	TOC (D)
ESI-6										
12/1/98	528	5.88	27.2	67.5	0.280	<0.100	14.7	<1.00	13.1	13.2
1/13/99	549	6.60	15.0	47.5	0.230	<0.100	39.7	<1.00	14.2	11.1
2/9/99	530	12.3	16.7	25.0	0.230	<0.100	40.2	<1.00	13.0	13.0
3/31/99	505	13	18.5	36.2	0.270	<0.100	22.3	<1.000	15.4	14.1
ESI-7										
12/2/98	498	4.08	44.3	42.5	0.220	<0.100	<10.0	<1.00	15.3	14.8
1/12/99	521	10.1	31.0	44.6	0.170	0.180	<10.0	<1.00	13.6	14.8
2/10/99	291	<2.00	10.0	31.4	0.130	0.110	35.9	<1.00	11.6	7.04
3/31/99	306	4	8.0	15.4	<0.190	<0.100	27.9	<1.000	7.84	7.70
MW-7D										
12/3/98	373	<2.0	231	72.5	0.160	<0.100	<10.0	<1.00	3.47	9.75
1/12/99	392	<2.0	203	12.6	0.140	<0.100	<10.0	<1.00	4.38	3.33
2/10/99	387.0	3.2	198	<10.0	0.120	<0.100	<10.0	<1.00	18.3	3.3
3/31/99	381	6	176	17.7	0.120	<0.100	<10.000	<1.000	2.85	2.54
MW-8S										
12/1/98	414.00	12.5	15.7	47.5	0.140	<0.100	23.9	<1.00	22.3	21
1/12/99	500	278.0	33.7	64.9	<0.100	0.146	14.2	<1.00	175	104
2/9/99	563	>246	35.3	1590	<0.100	<0.100	64.7	<1.00	713	688
3/31/99	1030	2710	62.2	4690	<0.100	<0.100	51.7	3.70	1500	1490
MW-8D										
12/2/98	290	9.78	237	226	0.140	0.232	36.7	<1.00	42.1	27.5
1/11/99	362	9.00	250	24.3	0.110	<0.100	33.7	<1.00	27.8	24.0
2/9/99	419	6.45	241	145	<0.100	<0.100	31.8	<1.00	47.3	43.8
4/1/99	425	8	232	522	0.10	<0.100	28.2	<1.000	17.4	15.4
MW-12										
12/2/98	408.00	3.48	19.8	52.5	0.140	<0.100	48.7	<1.00	24.0	23.6
1/13/99	410	5.70	14.6	44.6	0.120	<0.100	41.4	<1.00	13.2	12.9
2/10/99	349	>236	20.1	579	<0.100	<0.100	25.1	<1.00	213	205
3/31/99	620	271	22.5	1010	0.11	<0.100	10.7	<1.000	407	398

All values in mg/L

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Table 3. Volatile Organic Compunds Analytical Data from the DC Rollforms Site, Cheektowaga, New York.

	ESI-6				ESI-7			
	12/2/98	1/13/99	2/9/99	3/31/99	12/2/98	1/12/99	2/10/99	3/31/99
Chloromethane	<10	<10	<10	<10	<10	<10	<10	<10
Bromomethane	<10	<10	<10	<10	<10	<10	<10	<10
Vinyl Chloride	13	34	<10	50	<10	<10	<10	2J
Chloroethane	<10	<10	<10	<10	<10	<10	<10	<10
Methylene Chloride	<5	<5	<5	9JB	<5	<5	<5	.7JB
Acetone	<10	<10	<10	59B	<10	<10	<10	2JB
Carbon Disulfide	<5	<5	<5	<5	<5	<5	<5	<5
Vinyl Acetate	<10	<10	<10	<10	<10	<10	<10	<10
1,1-Dichloroethene	<5	<5	<5	<5	<5	<5	<5	<5
1,1-Dichloroethane	<5	<5	<5	<5	<5	<5	<5	<5
1,2-Dichlorothene (total)	19	30	22J	82	8J	3J	19	40
Chloroform	<5	<5	<5	<5	<5	<5	<5	<5
1,2-Dichloroethane	<5	<5	<5	<5	<5	<5	<5	<5
2-Butanone	<10	<10	<10	8J	<10	<10	<10	<10
1,1,1-Trichloroethane	<5	<5	<5	<5	<5	<5	<5	<5
Carbon Tetrachloride	<5	<5	<5	<5	<5	<5	<5	<5
Bromodichloromethane	<5	<5	<5	<5	<5	<5	<5	<5
1,2-Dichloropropane	<5	<5	<5	<5	<5	<5	<5	<5
cis-1,3-Dichloropropene	<5	<5	<5	<5	<5	<5	<5	<5
Trichloroethene	2J	<5	360	390	320	<5	16	100
Dibromochloromethane	<5	<5	<5	<5	<5	<5	<5	<5
1,1,2-Trichloroethane	<5	<5	<5	<5	<5	<5	<5	<5
Benzene	<5	<5	<5	<5	<5	<5	<5	<5
trans-1,3-Dichloropropene	<5	<5	<5	<5	<5	<5	<5	<5
Bromoform	<5	<5	<5	<5	<5	<5	<5	<5
4-Methyl-2-Pentanone	<10	<10	<10	<10	<10	<10	<10	<10
2-Hexanone	<10	<10	<10	<10	<10	<10	<10	<10
Tertrachloroethene	<5	<5	3J	3J	3J	<5	<5	.6J
Toluene	<5	<5	<5	<5	<5	<5	<5	<5
1,1,2,2-Tetrachloroethane	<5	<5	<5	<5	<5	<5	<5	<5
Chlorobenzene	<5	<5	<5	<5	<5	<5	<5	<5
Ethylbenzene	<5	<5	<5	<5	<5	<5	<5	<5
Styrene	<5	<5	<5	<5	<5	<5	<5	<5
Xylene (total)	<5	<5	<5	<5	<5	<5	<5	<5

Table 3. Volatile Organic Compunds Analytical Data from the DC Rollforms Site, Cheektowaga, New York.

	MW-7D				MW-8S			
	12/3/98	1/12/99	2/10/99	3/31/99	12/2/98	1/12/99	2/9/99	3/31/99
Chloromethane	<10	<10	<10	<10	<10	<10	<10	<10
Bromomethane	<10	<10	<10	<10	<10	<10	<10	<10
Vinyl Chloride	<10	<10	<10	<10	1100	2100	<10	330
Chloroethane	<10	<10	<10	<10	<10	<10	<10	<10
Methylene Chloride	<5	<5	<5	6JB	<5	130J	<5	15JB
Acetone	<10	44	<10	<10	<10	850J	<10	<10
Carbon Disulfide	<5	<5	<5	<5	<5	<5	<5	5J
Vinyl Acetate	<10	<10	<10	<10	<10	<10	<10	<10
1,1-Dichloroethene	<5	<5	<5	<5	<5	<5	<5	<5
1,1-Dichloroethane	<5	<5	<5	<5	<5	<5	<5	<5
1,2-Dichlorothene (total)	14	2J	7	6J	8500	9300	2500	1400
Chloroform	<5	<5	<5	<5	<5	<5	<5	<5
1,2-Dichloroethane	<5	<5	<5	<5	<5	<5	<5	<5
2-Butanone	<10	<10	<10	<10	<10	<10	<10	<10
1,1,1-Trichloroethane	<5	<5	<5	<5	<5	<5	<5	<5
Carbon Tetrachloride	<5	<5	<5	<5	<5	<5	<5	<5
Bromodichloromethane	<5	<5	<5	<5	<5	<5	<5	<5
1,2-Dichloropropane	<5	<5	<5	<5	<5	<5	<5	<5
cis-1,3-Dichloropropene	<5	<5	<5	<5	<5	<5	<5	<5
Trichloroethene	<5	62	120B	440	<5	<5	3000	120
Dibromochloromethane	<5	<5	<5	<5	<5	<5	<5	<5
1,1,2-Trichloroethane	<5	<5	<5	<5	<5	<5	<5	<5
Benzene	<5	<5	<5	<5	<5	<5	<5	<5
trans-1,3-Dichloropropene	<5	<5	<5	<5	<5	<5	<5	<5
Bromoform	<5	<5	<5	<5	<5	<5	<5	<5
4-Methyl-2-Pentanone	<10	<10	<10	<10	<10	<10	<10	<10
2-Hexanone	<10	<10	<10	<10	<10	<10	<10	<10
Tertrachloroethene	<5	<5	<5	2J	<5	<5	<5	<5
Toluene	<5	<5	<5	1J	<5	<5	<5	<5
1,1,2,2-Tetrachloroethane	<5	<5	<5	<5	<5	<5	<5	<5
Chlorobenzene	<5	<5	<5	<5	<5	<5	<5	<5
Ethylbenzene	<5	<5	<5	<5	<5	<5	<5	<5
Styrene	<5	<5	<5	<5	<5	<5	<5	<5
Xylene (total)	<5	<5	<5	<5	<5	<5	<5	<5

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Table 3. Volatile Organic Compunds Analytical Data from the DC Rollforms Site, Cheektowaga, New York.

	MW-8D				MW-12			
	12/3/98	1/13/99	2/10/99	4/1/99	12/2/98	1/13/99	2/10/99	3/31/99
Chloromethane	<10	<10	<10	<10	<10	<10	<10	<10
Bromomethane	<10	<10	<10	<10	<10	<10	<10	<10
Vinyl Chloride	<10	<10	<10	<10	260	120	<10	380
Chloroethane	<10	<10	<10	<10	<10	<10	<10	<10
Methylene Chloride	<5	<5	<5	5600JB	<5	<5	<5	30J
Acetone	<10	<10	<10	<10	<10	<10	<10	140J
Carbon Disulfide	<5	<5	<5	<5	<5	<5	<5	<5
Vinyl Acetate	<10	<10	<10	<10	<10	<10	<10	<10
1,1-Dichloroethene	<5	<5	<5	<5	4J	<5	<5	<5
1,1-Dichloroethane	<5	<5	<5	<5	<5	<5	<5	<5
1,2-Dichlorothene (total)	44000	27000	24000J	15000	520	460	9800	4500
Chloroform	<5	<5	<5	<5	<5	<5	<5	<5
1,2-Dichloroethane	<5	<5	<5	<5	<5	<5	<5	<5
2-Butanone	<10	<10	<10	<10	<10	<10	<10	<10
1,1,1-Trichloroethane	<5	<5	<5	<5	<5	<5	<5	28J
Carbon Tetrachloride	<5	<5	<5	<5	<5	<5	<5	<5
Bromodichloromethane	<5	<5	<5	<5	<5	<5	<5	<5
1,2-Dichloropropane	<5	<5	<5	<5	<5	<5	<5	<5
cis-1,3-Dichloropropene	<5	<5	<5	<5	<5	<5	<5	<5
Trichloroethene	740000	690000	530000	380000	81	60	4400B	66J
Dibromochloromethane	<5	<5	<5	<5	<5	<5	<5	<5
1,1,2-Trichloroethane	<5	<5	<5	<5	<5	<5	<5	<5
Benzene	<5	<5	<5	<5	<5	<5	<5	<5
trans-1,3-Dichloropropene	<5	<5	<5	<5	<5	<5	<5	<5
Bromoform	<5	<5	<5	<5	<5	<5	<5	<5
4-Methyl-2-Pentanone	<10	<10	<10	<10	<10	<10	<10	<10
2-Hexanone	<10	<10	<10	<10	<10	<10	<10	<10
Tertrachloroethene	<5	<5	<5	1000J	<5	<5	<5	<5
Toluene	<5	<5	<5	<5	<5	<5	<5	<5
1,1,2,2-Tetrachloroethane	<5	<5	<5	<5	<5	<5	<5	<5
Chlorobenzene	<5	<5	<5	<5	<5	<5	<5	<5
Ethylbenzene	<5	<5	<5	<5	<5	<5	<5	<5
Styrene	<5	<5	<5	<5	<5	<5	<5	<5
Xylene (total)	<5	<5	<5	<5	<5	<5	<5	<5

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Table 4. Permanent Gases Analytical Data from the DC Rollforms/Ingersoll Rand Site, Jamestown, New York.

	Carbon Dioxide (mg/L)	Ethane (ng/L)	Ethylene (ng/L)
ESI-6			
12/1/98	69.57	105,422	7,245
1/13/99	76.64	83,025	16,749
2/9/99	55.53	81,462	18,603
3/31/99	31.34	95,312	21,069
ESI-7			
12/2/98	93.54	15,386	2,007
1/12/99	93.54	27,897	3,039
2/10/99	47.03	76	11
3/31/99	41.51	2,137	1,220
MW-7D			
12/3/98	14.07	1,052	702
1/12/99	16.70	232	16
2/10/99	19.40	718	111
3/31/99	13.19	147	49
MW-8S			
12/1/98	106.66	622,947	66,832
1/12/99	192.18	675,658	130,196
2/9/99	665.80	55,063	14,811
3/31/99	877.52	150,351	69,559
MW-8D			
12/2/98	1.10	19,751	269,760
1/11/99	3.75	21,103	300,440
2/9/99	8.34	19,482	295,852
3/31/99	10.35	15,027	280,212
MW-12			
12/2/98	122.93	306,682	11,302
1/13/99	121.26	221,830	11,912
2/10/99	204.63	155,737	23,348
3/31/99	304.06	212,629	39,699

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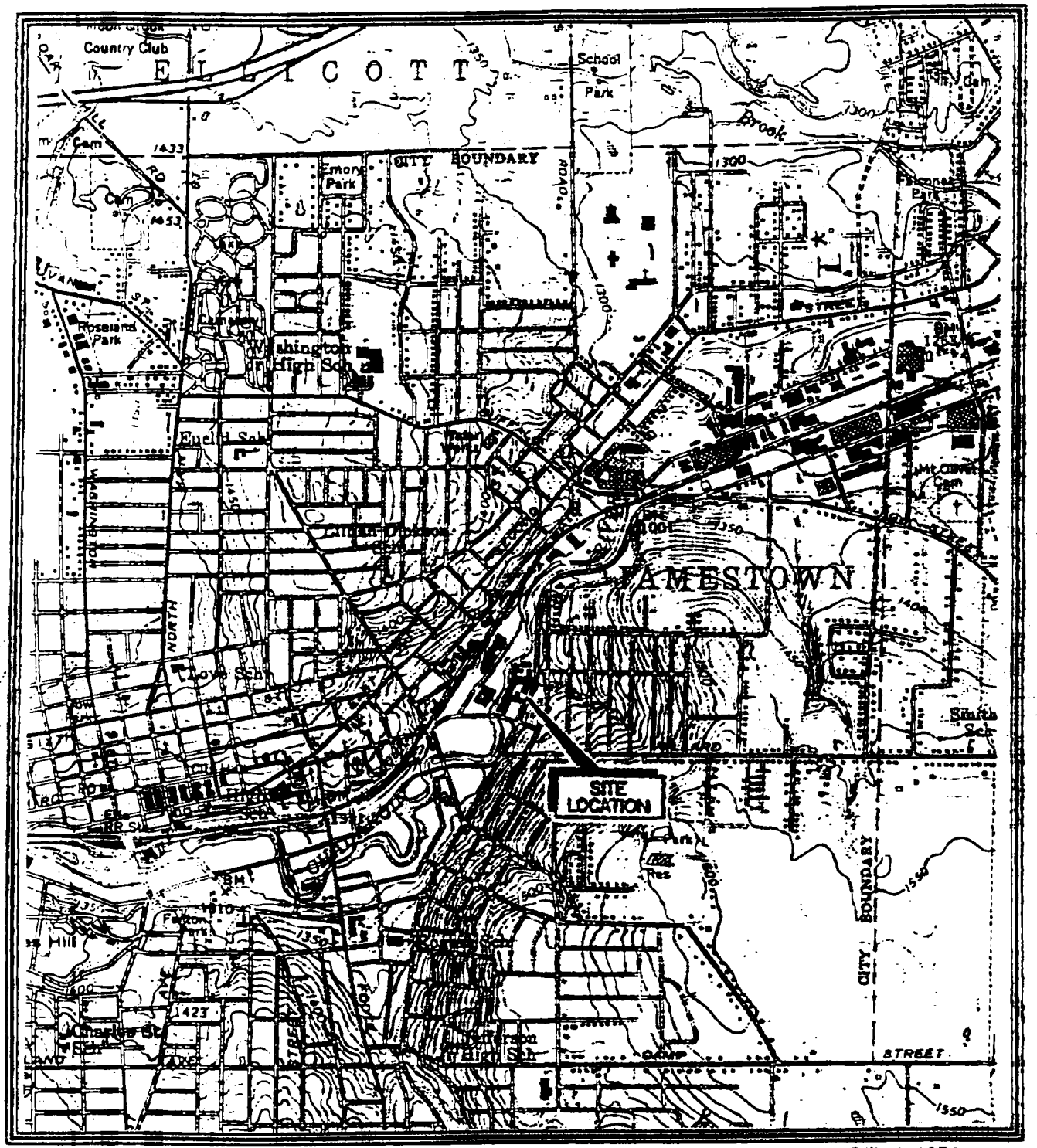
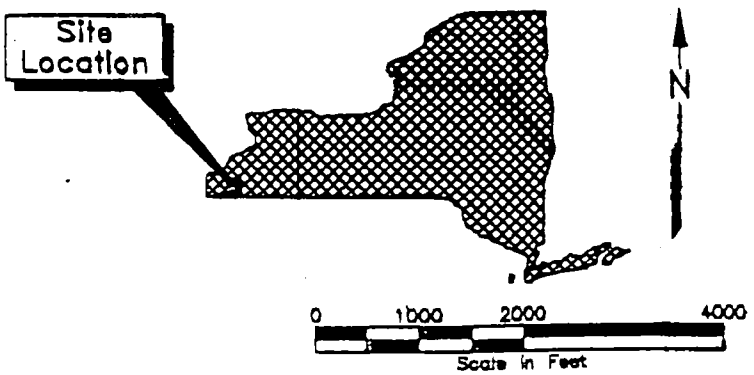
Table 5. Iron and Manganese Analytical Data from the DC Rollforms/Ingersoll Rand Site, Jamestown, New York.

	Iron (Total) (ug/L)	Iron (Dissolved) (ug/L)	Manganese (Total) (ug/L)	Manganese (Dissolved) (ug/L)
ESI-6				
12/1/98	13,200	12,700	1,930	1,930
1/13/99	12,900	10,800	2,020	1,880
2/9/99	13,700	12,400	1,970	2,010
3/31/99	14,700	10,200	1,690	1,710
ESI-7				
12/2/98	10,800	10,600	4,080	4,100
1/12/99	12,900	8,870	4,150	3,490
2/10/99	1,070	559	301	335
3/31/99	1,070	1,310	379	760
MW-7D				
12/3/98	24.1	<10.0	<2.0	309
1/12/99	930	10.6	387	350
2/10/99	2,400	<50.0	342	334
3/31/99	1,030	<50.0	314	274
MW-8S				
12/1/98	14,500	12,500	1,310	1,310
1/12/99	20,200	20,200	3,570	3,420
2/9/99	44,500	46,700	13,700	14,600
3/31/99	115,000	118,000	36,100	37,200
MW-8D				
12/2/98	5,620	<10.0	122	14.6
1/11/99	661	<10.0	64.5	39.2
2/9/99	1,810	<50.0	102	70.5
4/1/99	21,200	75.2	650	96.3
MW-12				
12/2/98	11,600	11,700	1,590	1,530
1/13/99	11,700	11,600	1,310	1,310
2/10/99	12,600	13,800	2,150	2,210
3/31/99	44,200	44,100	7,800	8,100



Reference: U.S. Geological Survey, 7.5 Minute Quadrangle, Jamestown, New York, Edited 1954.



SITE LOCATION

D.C. ROLLFORMS/INGERSOLL-RAND SITE
Jamestown, New York

DRAWN: TAD/G248A	DATE:	FIGURE 1
APP'D:		

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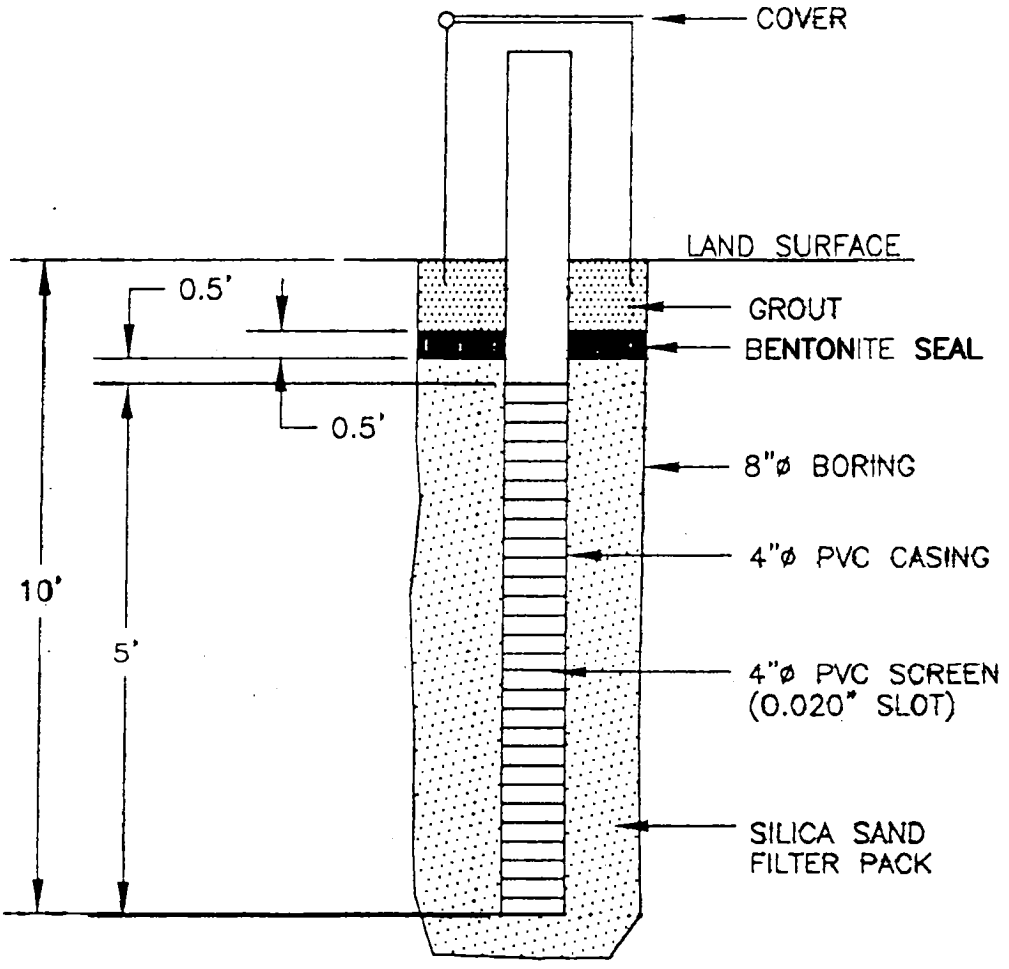


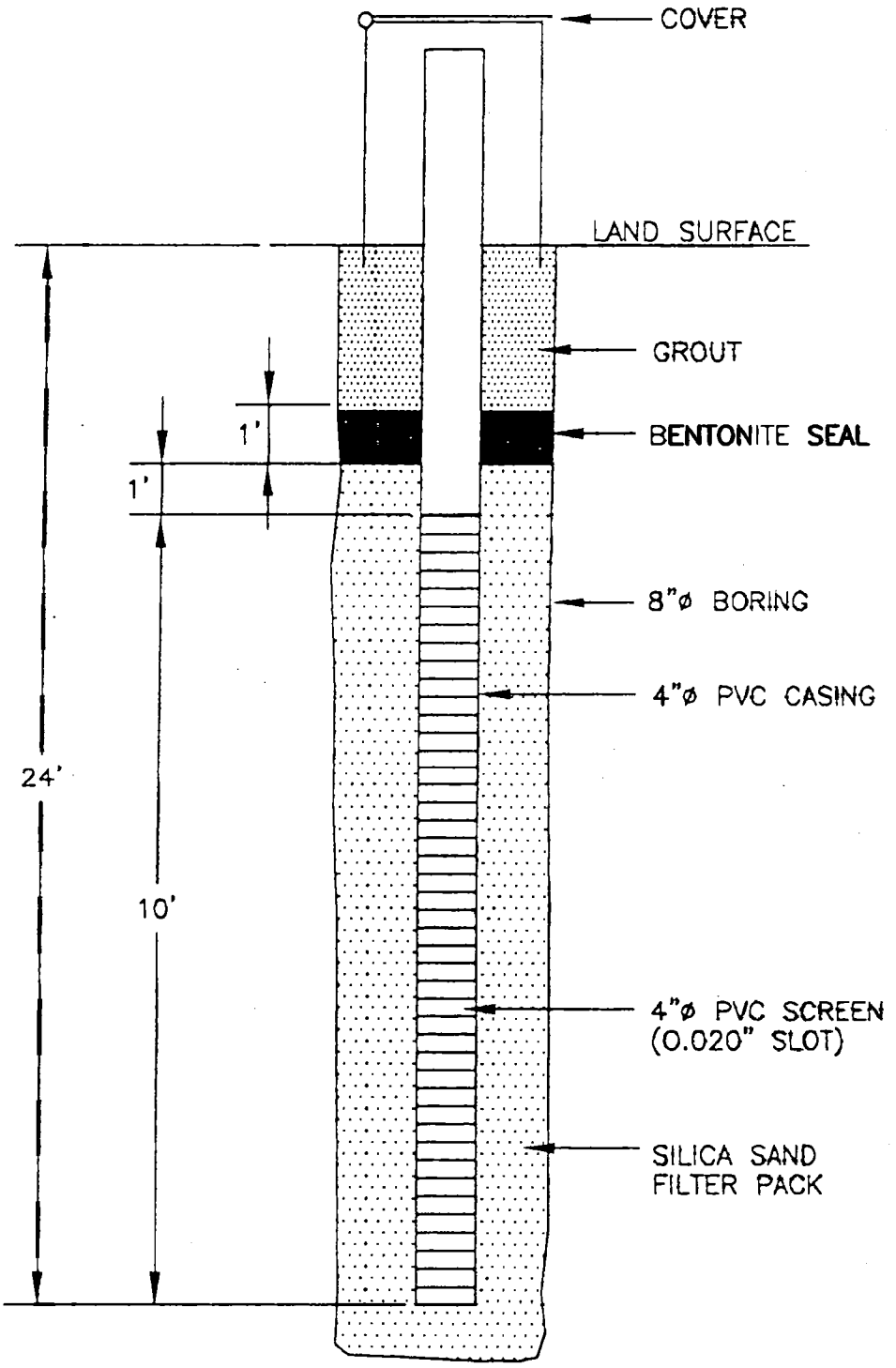
G254D.DWG 1=50

NOT TO SCALE

NO.	DATE	REVISION DESCRIPTION	BY / CKD

ARCADIS GERAGHTY&MILLER
215 WASHINGTON AVE. EXTENSION ALBANY, NY
TEL: 518/452-7826
FAX: 518/452-4398

DRAWN	DATE	PROJECT MANAGER	DEPARTMENT MANAGER
FJF/TAD	9/16/98	M. SANFORD	F. LENZO
CONSTRUCTION DETAILS FOR INJECTION WELL IW-1, FILL		LEAD DESIGN PROF. M. HANSEN	CHECKED M. SANFORD
D.C. ROULFORMS/INGERSOLL-RAND SITE JAMESTOWN, NEW YORK		PROJECT NUMBER AY00002190002	DRAWING NUMBER 3



G254C.DWG 1=50

NOT TO SCALE

NO.	DATE	REVISION DESCRIPTION	BY / CKD

ARCADIS
GERAGHTY & MILLER
215 WASHINGTON AVE. EXTENSION ALBANY, NY
TEL: 518/452-7826
FAX: 518/452-4396

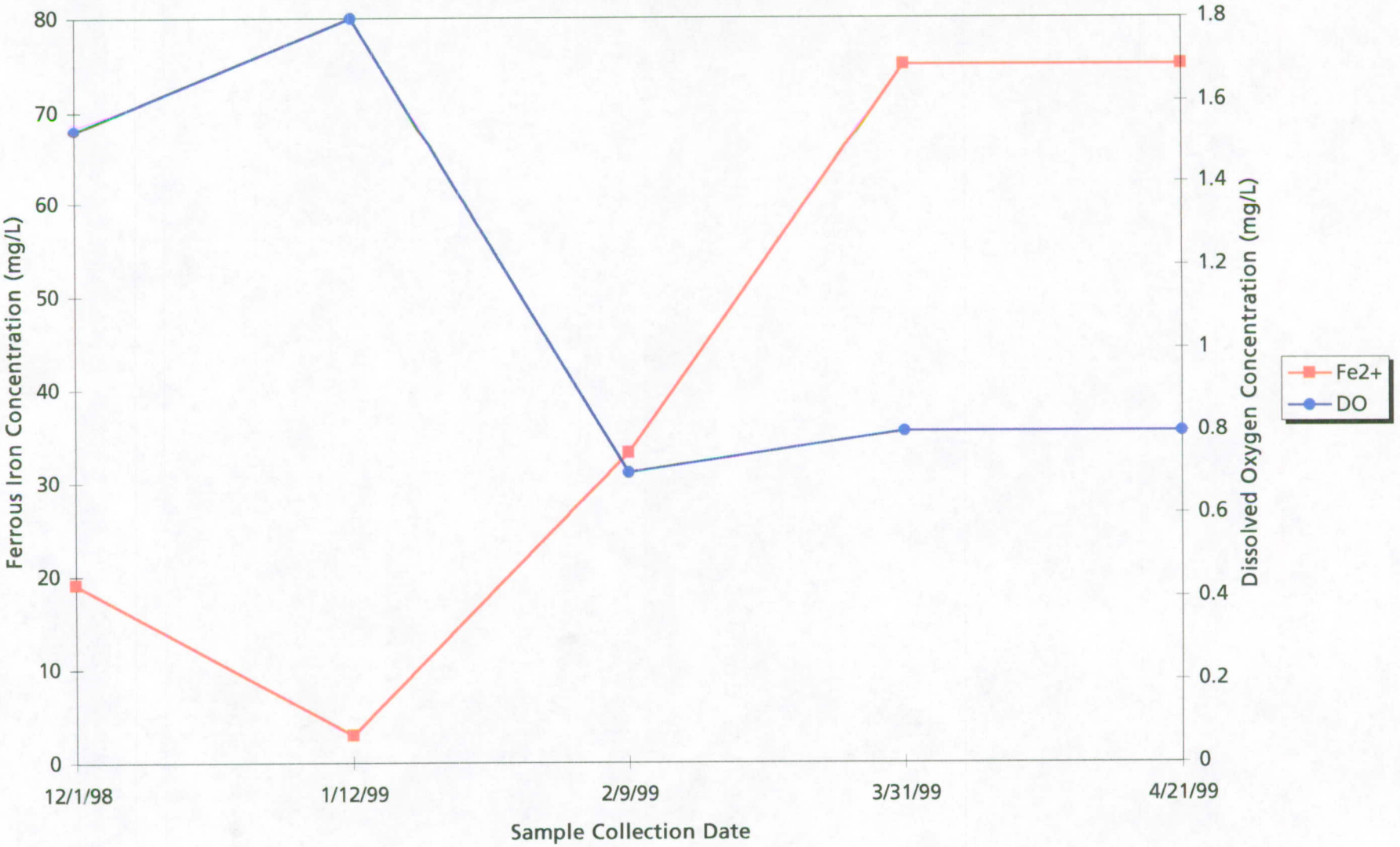
DRAWN	DATE	PROJECT MANAGER	DEPARTMENT MANAGER
FJF/TAD	9/16/98	M. SANFORD	F. LENZO
		LEAD DESIGN PROF.	CHECKED
		M. HANSEN	M. SANFORD

CONSTRUCTION DETAILS FOR INJECTION WELL IW-2, TILL

D.C. ROLLFORMS/INGERSOLL-RAND SITE
JAMESTOWN, NEW YORK

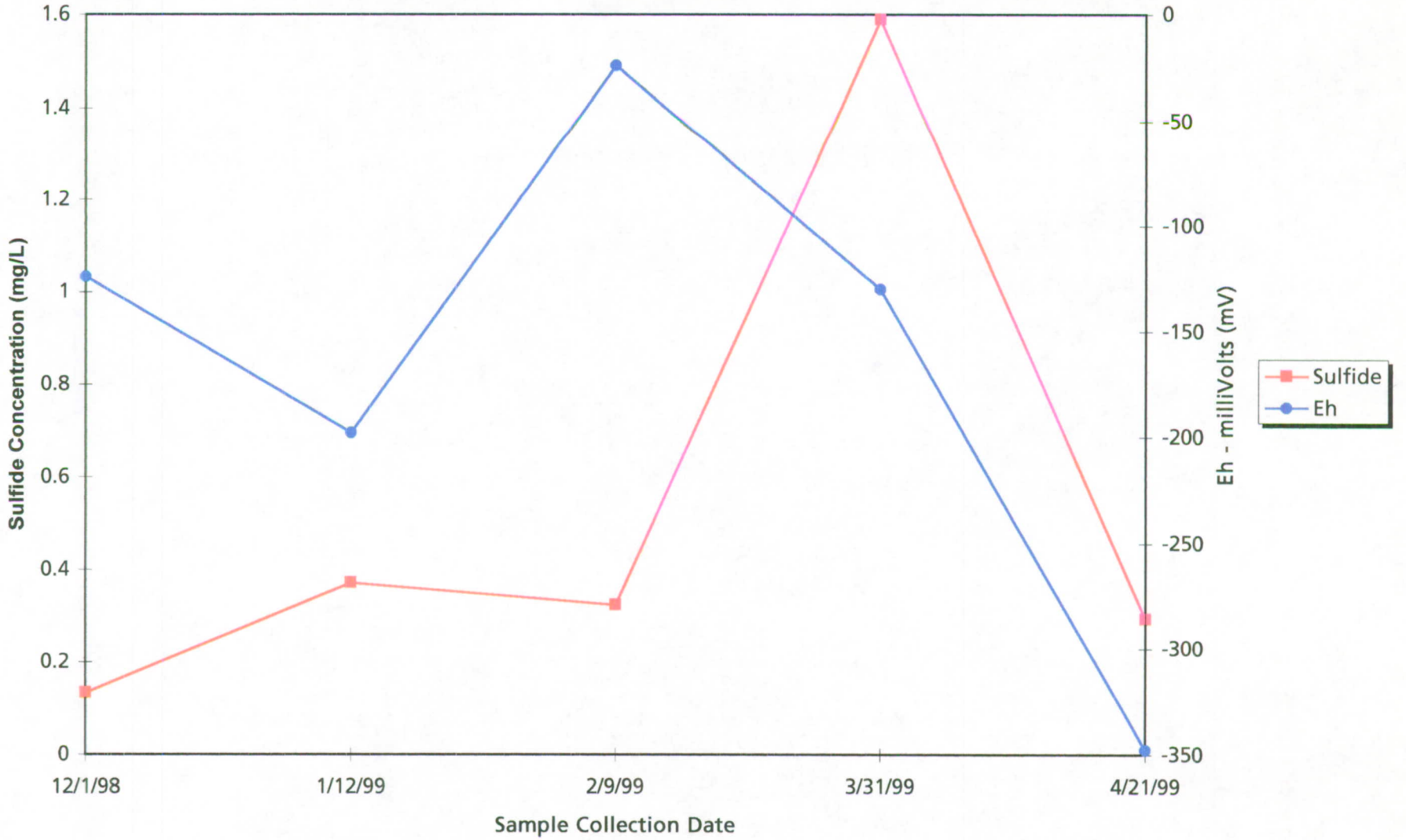
PROJECT NUMBER	DRAWING NUMBER
AY00002190002	4

Figure 5. Ferrous Iron and Dissolved Oxygen in Well MW-8S, D.C. Rollforms/Ingersoll-Rand Site, Jamestown, New York.



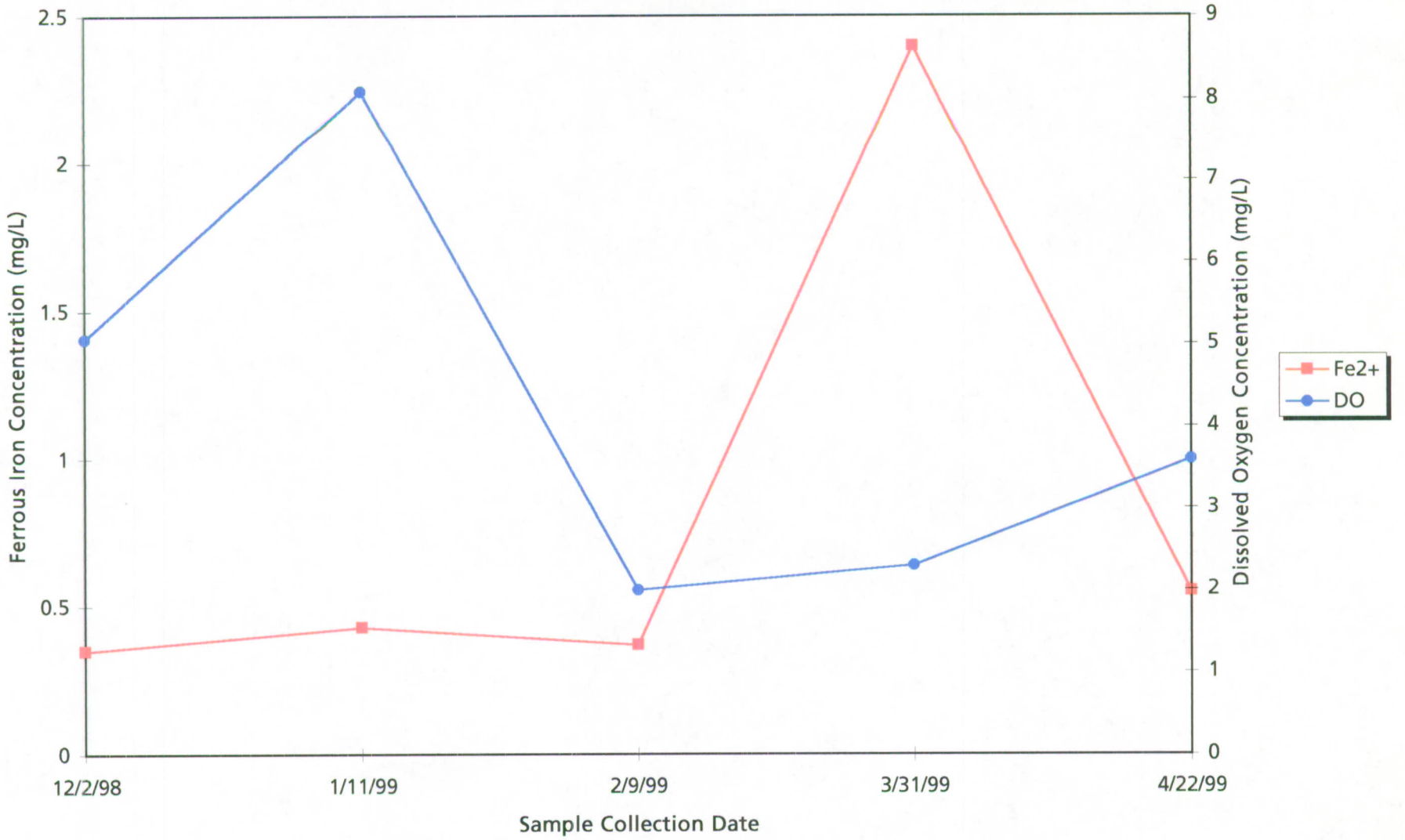
Dissolved Oxygen plotted on secondary axis.

Figure 6. Sulfide and Eh Readings in Well MW-8S, D.C. Rollforms/Ingersoll-Rand Site, Jamestown, New York.



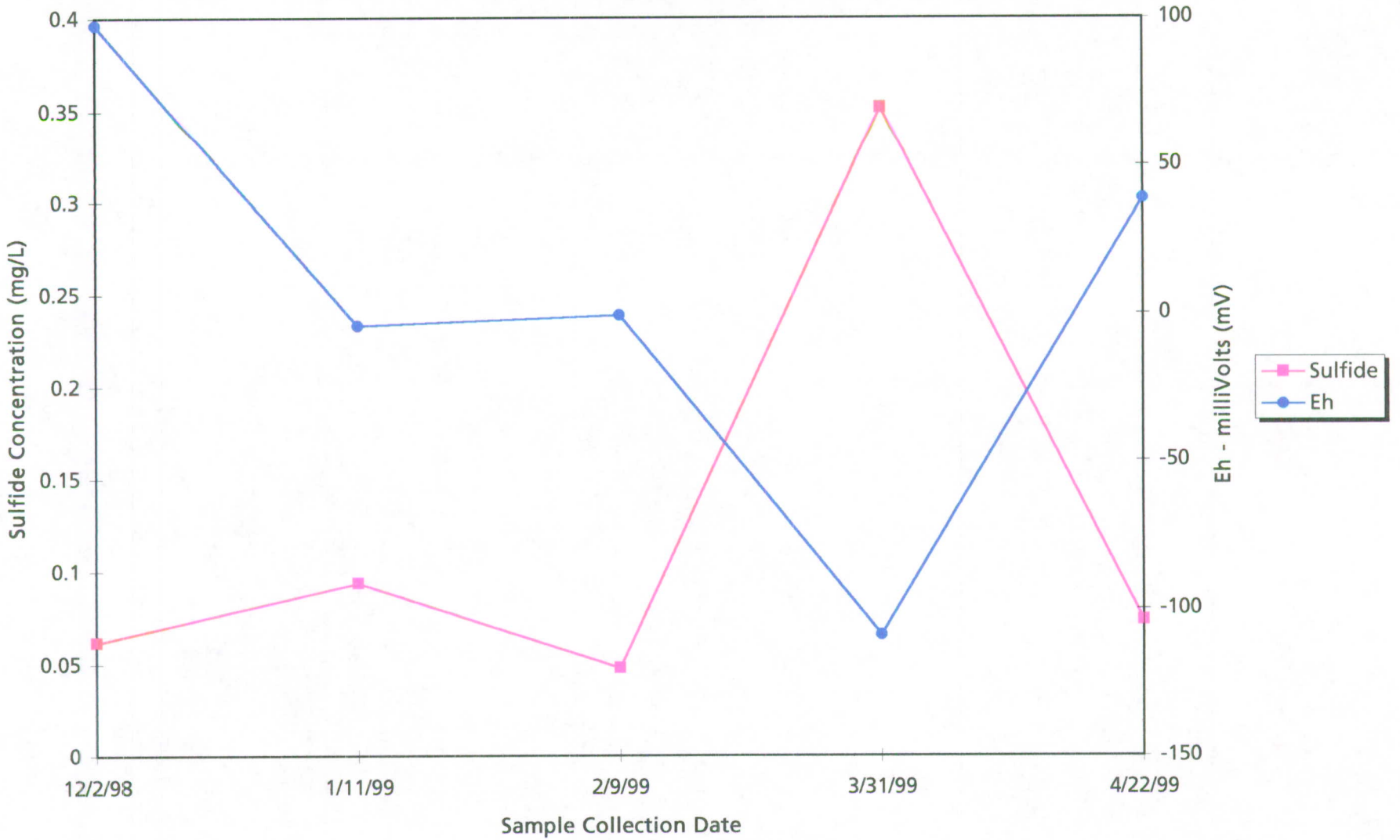
Eh plotted on secondary axis.

Figure 7. Ferrous Iron and Dissolved Oxygen in Well MW-8D, D.C. Rollforms/Ingersoll-Rand Site, Jamestown, New York.



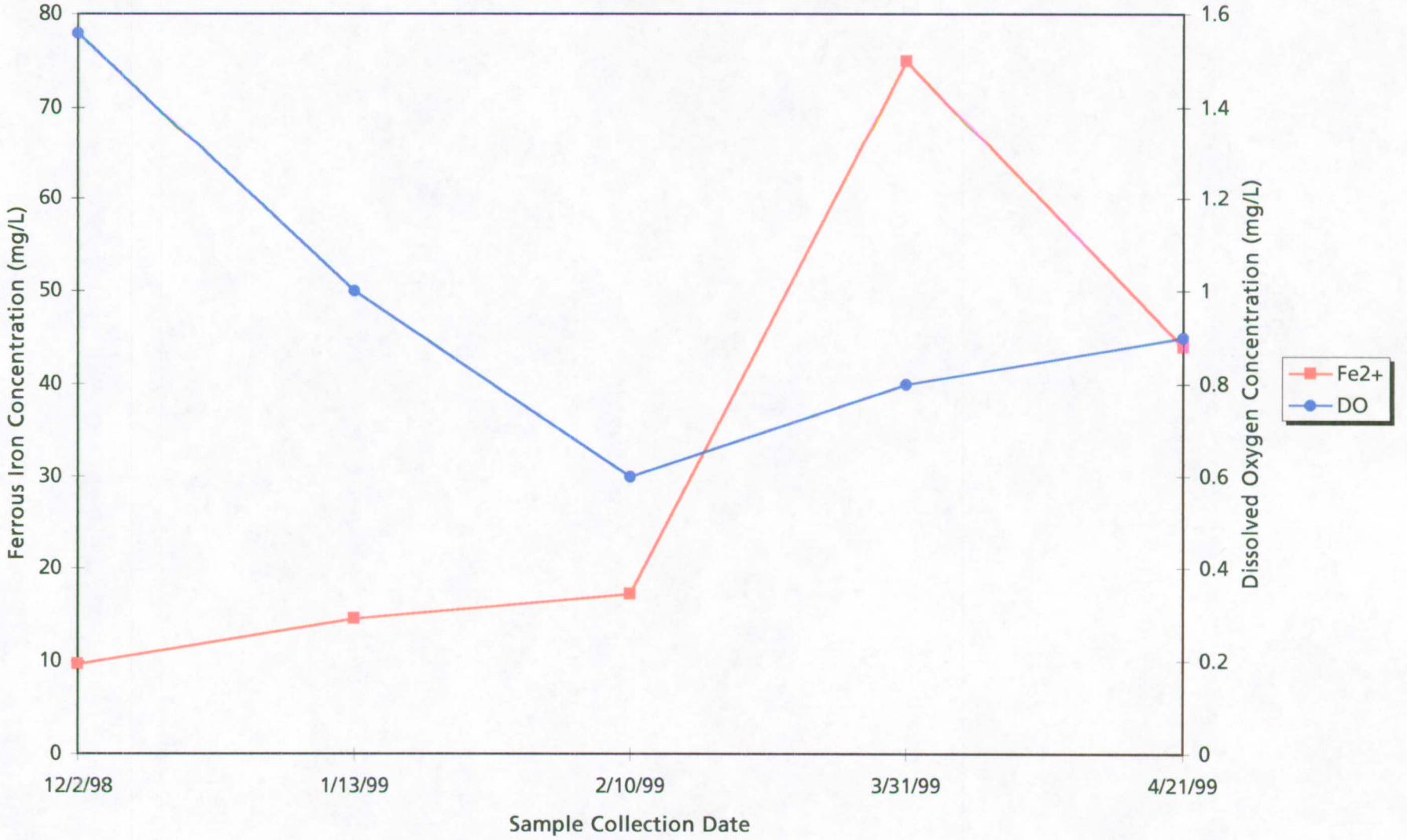
Dissolved Oxygen plotted on secondary axis.

Figure 8. Sulfide and Eh Readings in Well MW-8D, D.C. Rollforms/Ingersoll-Rand Site, Jamestown, New York.



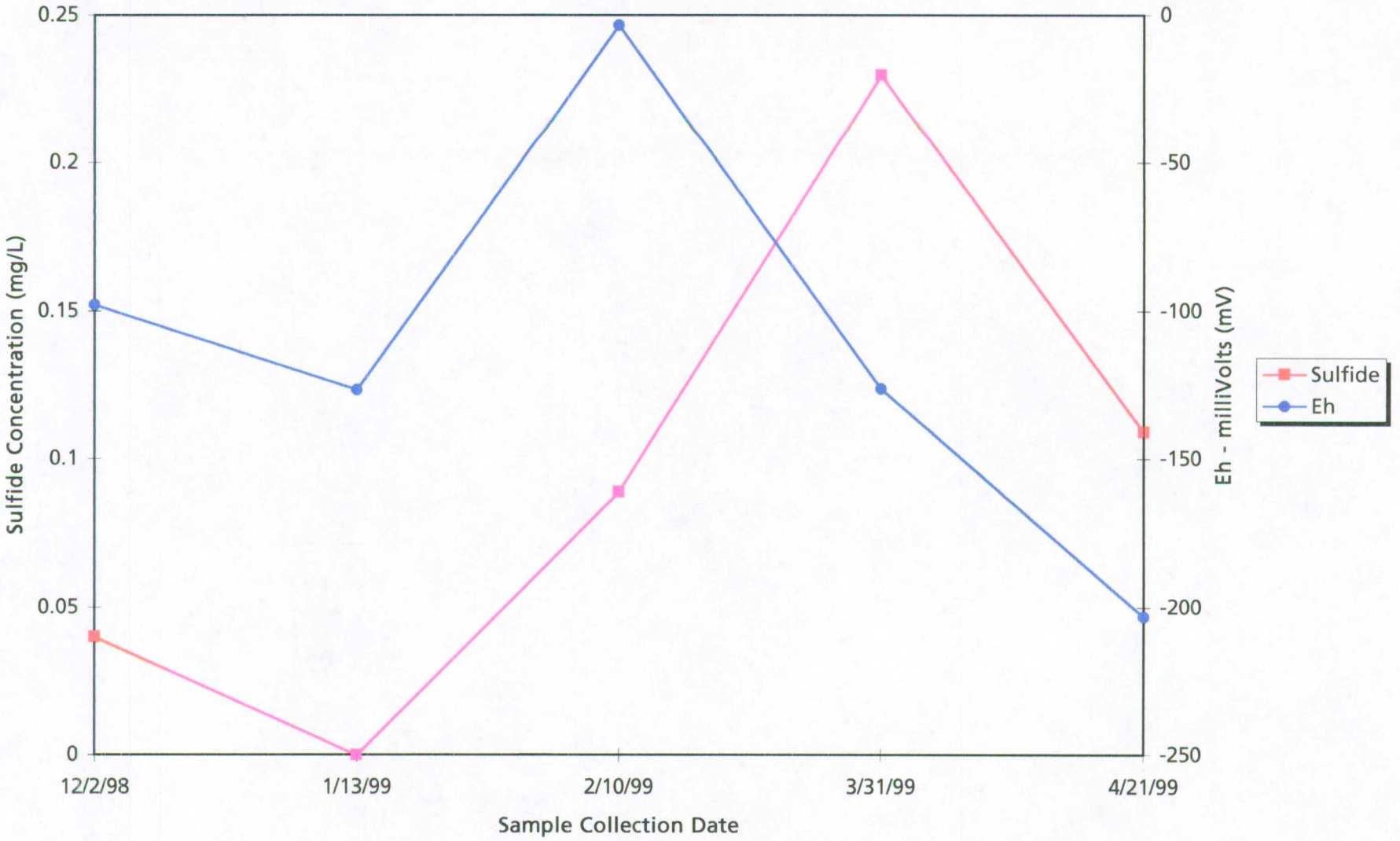
Eh plotted on secondary axis.

Figure 9. Ferrous Iron and Dissolved Oxygen in Well MW-12, D.C. Rollforms/Ingersoll-Rand Site, Jamestown, New York.



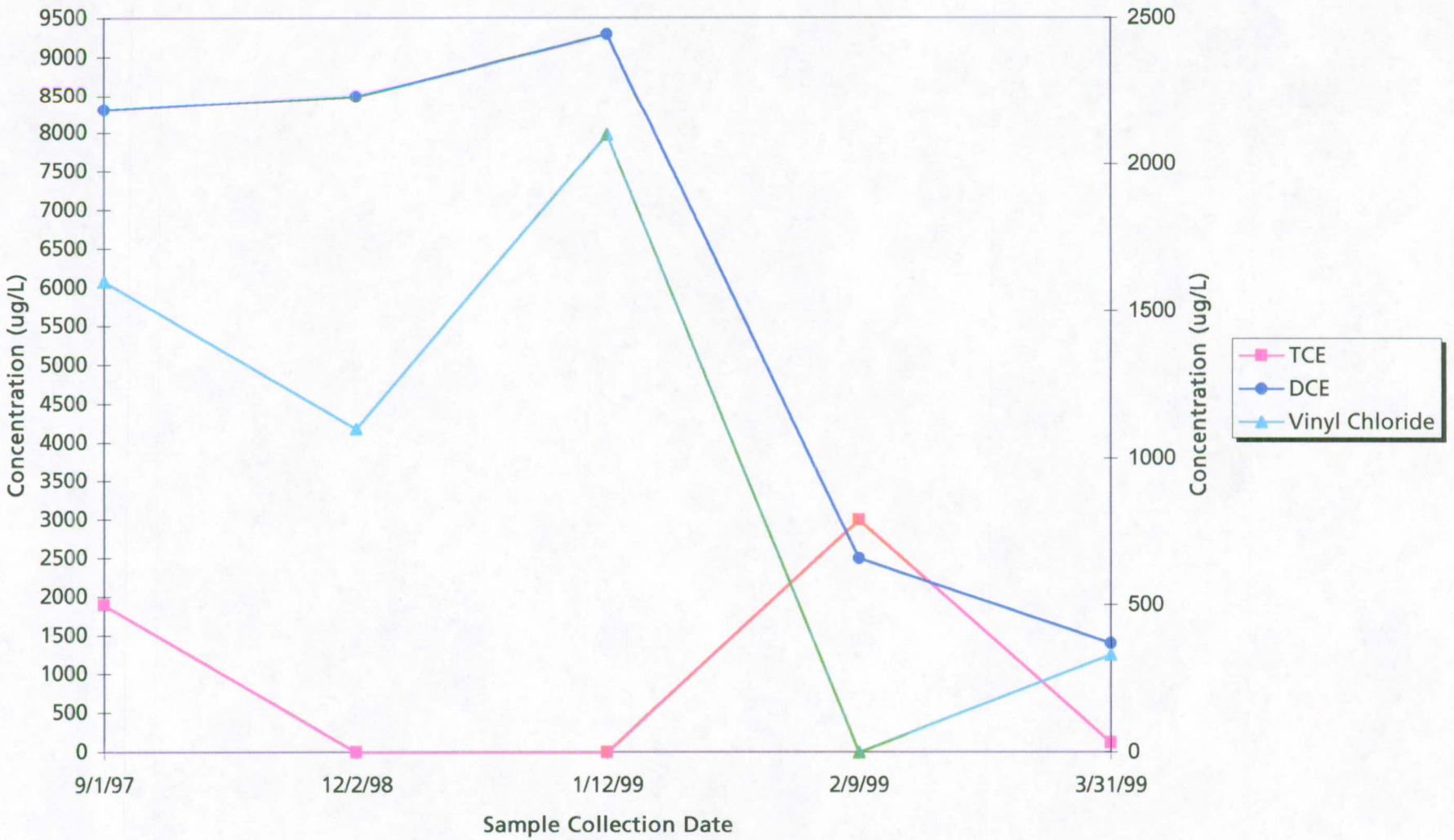
Dissolved Oxygen plotted on secondary axis.

Figure 10. Sulfide and Eh Readings in Well MW-12, D.C. Rollforms/Ingersoll-Rand Site, Jamestown, New York.



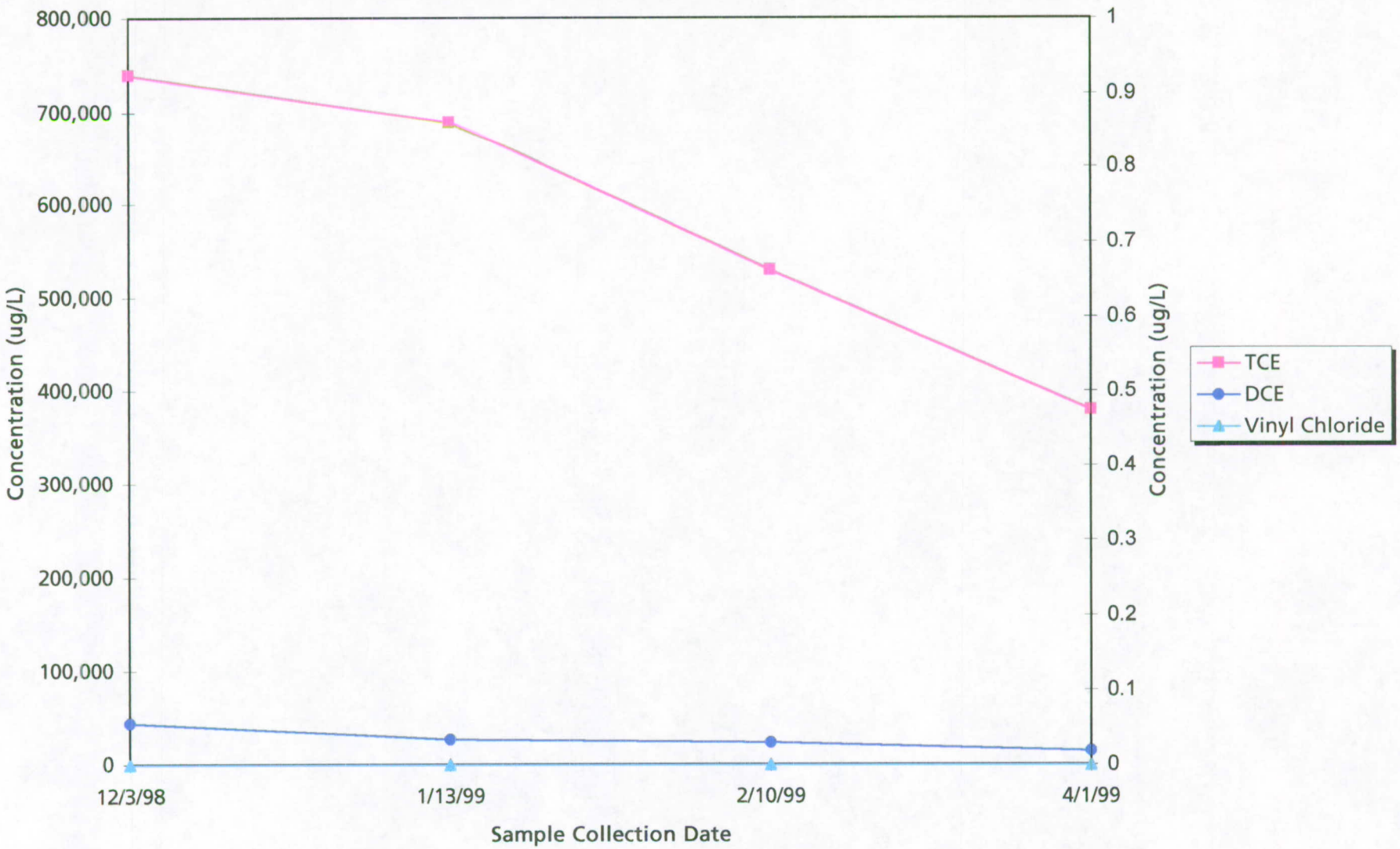
Eh plotted on secondary axis.

Figure 11. Trichlorothene (TCE), 1,2-Dichlorothene (DCE), and Vinyl Chloride in Well MW-8S, D.C.Rollforms/Ingersoll-Rand Site, Jamestown, New York.



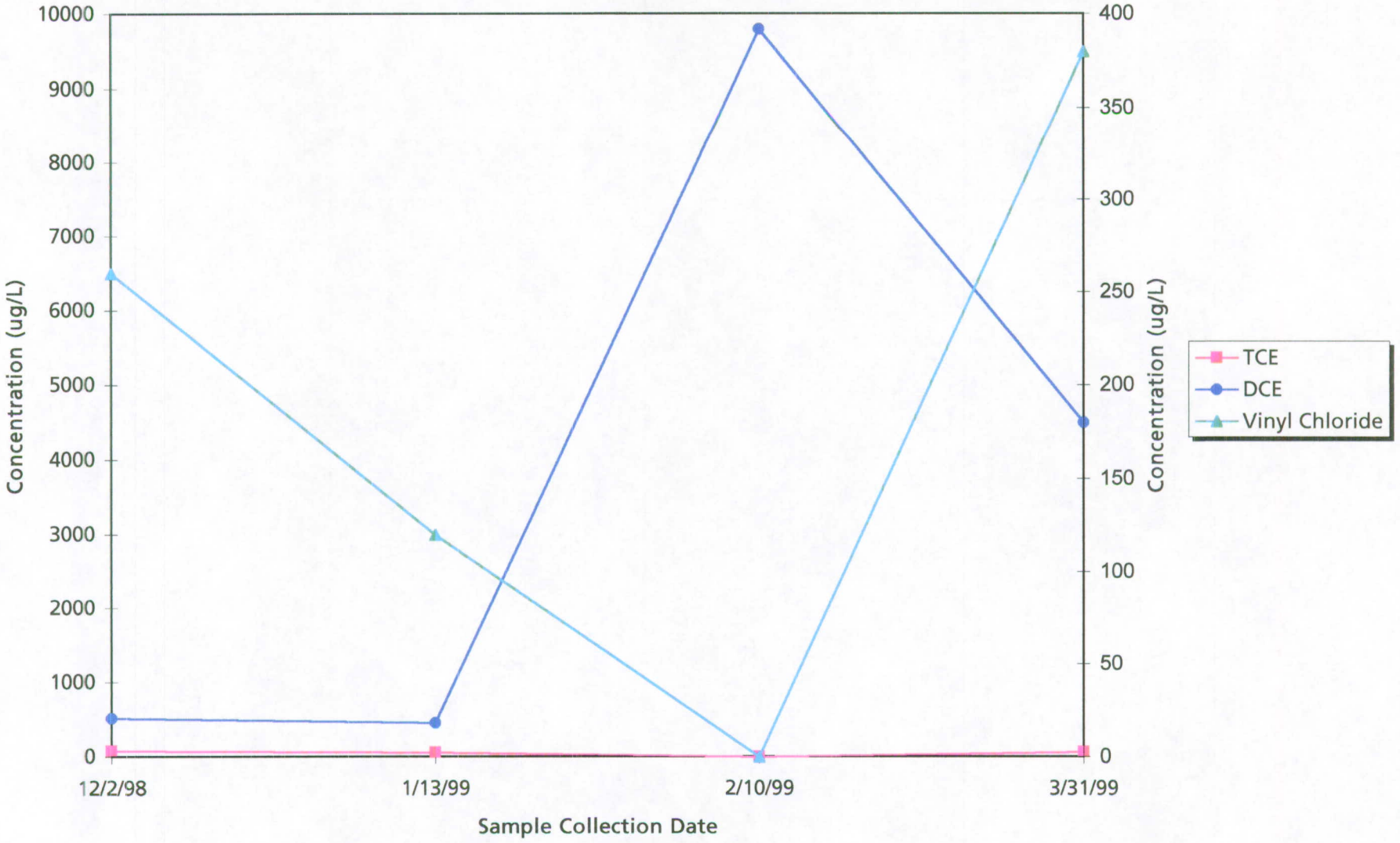
Vinyl Chloride plotted on secondary axis.

Figure 12. Trichloroethene (TCE), 1,2-Dichloroethene (DCE), and Vinyl Chloride in Well MW-8D, D.C. Rollforms/Ingersoll-Rand Site, Jamestown, New York.



Vinyl Chloride plotted on secondary axis.

Figure 13. Trichloroethene (TCE), 1,2-Dichloroethene (DCE), and Vinyl Chloride in Well MW-12, D.C. Rollforms/Ingersoll-Rand Site, Jamestown, New York.



Vinyl Chloride plotted on secondary axis.

Appendix A

Sample/Core Logs

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well IW-1 Project/No. IR-Jamestown/AY000219.0002.00017 Page 1 of 1

Site Location Jamestown, NY

Drilling Started 11/18/98 Drilling Completed 11/18/98

Total Depth Drilled 10 Feet Hole Diameter 8 inches Type of Sample/ Coring Device N/A

Length and Diameter of Coring Device

Sampling Interval N/A feet

Land-Surface Elev. feet ☐ Surveyed ☐ Estimated Datum

Drilling Fluid Used None Drilling Method H.S.A.

Drilling Contractor SJB Services, Inc. Driller Don Helper John

Prepared By J. Bonsteel Hammer Weight 140-Auto Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
				No Samples Taken (see MW-8D Logs)

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well IW-2 Project/No. IR-Jamestown/AY000219.0002.00017 Page 1 of 1

Site Location Jamestown, NY

Drilling Started 11/18/98 Drilling Completed 11/18/98

Total Depth Drilled 24 Feet Hole Diameter 8 inches Type of Sample/ Coring Device Split Spoon

Length and Diameter of Coring Device 2 feet by 2 inches Sampling Interval 2 feet

Land-Surface Elev. _____ feet ☐ Surveyed ☐ Estimated Datum _____

Drilling Fluid Used None Drilling Method H.S.A.

Drilling Contractor SJB Services, Inc. Driller Don Helper John

Prepared By J. Bonsteel Hammer Weight 140-Auto Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description	OVM
0	8			No Samples taken (drilled through concrete flooring from 0.5 to 1.5 feet)	
8	10	1	1,2,5,6	Brown/Black SILT and CLAY, trace sand, large wood fragments, trace gravel, moderately plastic, moist	2131
10	12	0.1	6,27,50,51	Large rounded GRAVEL, little recovery, wet, strong odor	7337
12	14	1.5	6,11,16,39	Gray dense CLAY and SILT (TILL), trace wood fragments, dry, very firm, strong odor	4046
14	20			No Samples taken	
20	22	1	7,15,19,27	Reddish-brown CLAY, some silt and angular gravel, moist, slight odor	767
22	24			No Sample taken	

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well MW-12 Project/No. IR-Jamestown/AY000219.0002.00017 Page 1 of 1

Site Location Jamestown, NY

Drilling Started 11/19/98 Drilling Completed 11/19/98

Total Depth Drilled 10 Feet Hole Diameter 8 inches Type of Sample/Coring Device Split Spoon

Length and Diameter of Coring Device 2 feet by 2 inches Sampling Interval 2 feet

Land-Surface Elev. ____ feet ☐ Surveyed ☐ Estimated Datum ____

Drilling Fluid Used None Drilling Method H.S.A.

Drilling Contractor SJB Services, Inc. Driller Don Helper John

Prepared By J. Bonsteel Hammer Weight 140-Auto Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description	OVM
0	2	1.0	2,9,10,50/0	Top 6" Brown CLAY, vegetation, top soil	3.6
				Bottom 6" Light gray SAND, some gravel, concrete, dry (concrete	
				pad at 1.5')	
2	3			Auger through concrete	
3	5	0.2	1,5,7,3	Brown CLAY, SAND and small rounded GRAVEL, moist	25.1
5	7	0.5	W.O.H.,1,1,2	Gray CLAY, some sand and gravel, trace silt, moist, very plastic	3.0
7	9	2.0	1,1,1,3	Gray CLAY, trace silt, moist, very plastic, some woody fragments	55.2
9	11	2.0	5,7,14,12	Gray dense CLAY and SILT, trace sand, dry, firm, slight odor	1642

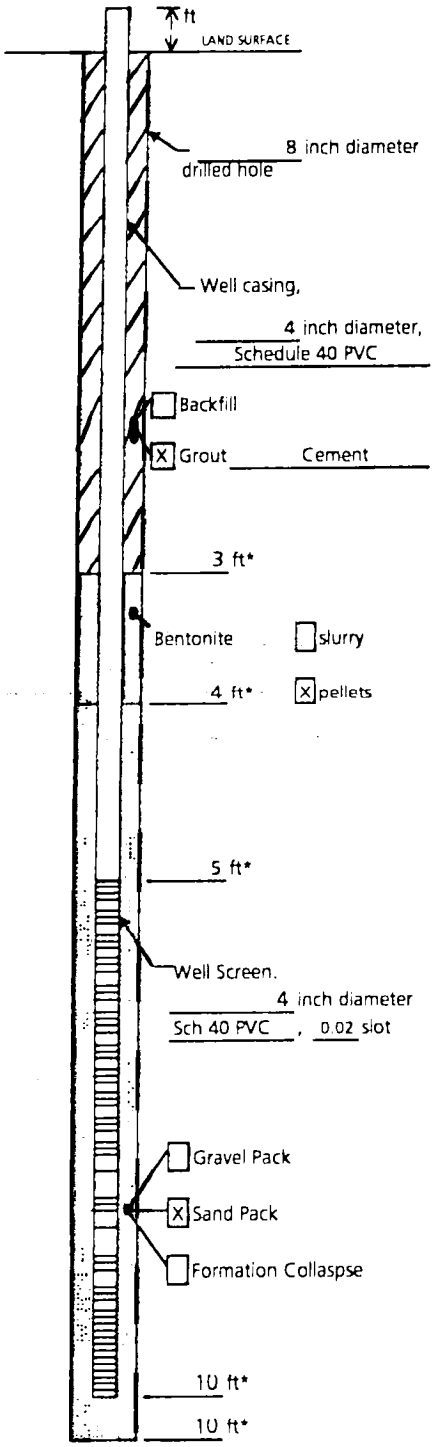
Appendix B

Well Construction Logs

ARCADIS GERAGHTY & MILLER

Well Construction Log

(Unconsolidated)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface

Project IR-Jamestown/AY000219.0002 Well IW-1

Town/City Jamestown

County Chataqua State NY

Permit No.

Land-Surface Elevation and Datum:

feet ☐ Surveyed ☐ Estimated

Installation Date(s) November 18, 1998

Drilling Method Hollow Stem Auger

Drilling Contractor SJB Services, Inc.

Drilling Fluid None

Development Technique(s) and Date(s)

Bailing (11/19/98 - 11/20/98)

Fluid Loss During Drilling N/A gallons

Water Removed During Development 27 gallons

Static Depth to Water 7.88 feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

Specific Capacity gpm/ft

Well Purpose Molasses Injection

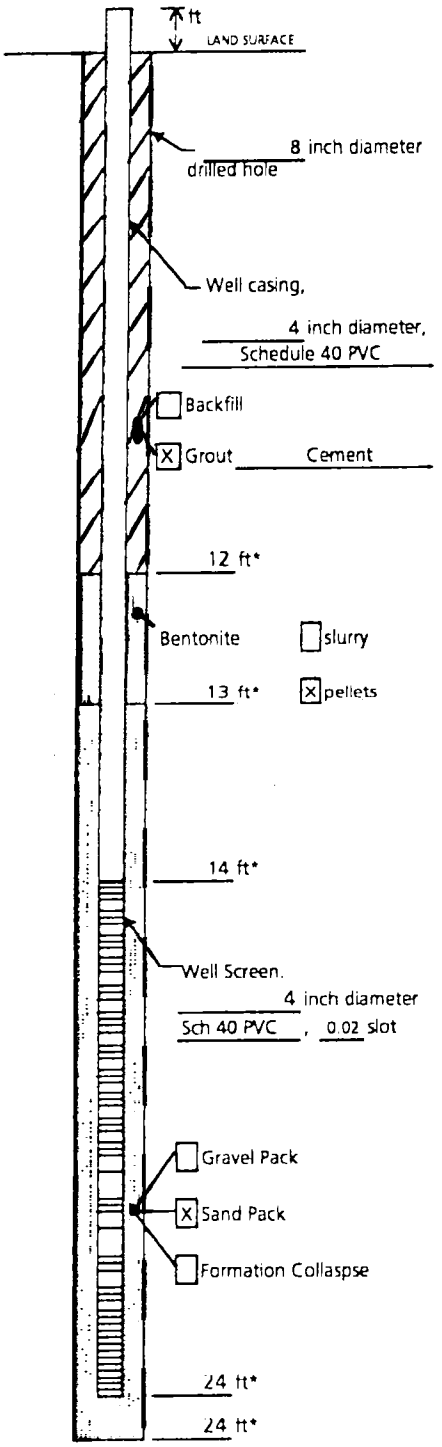
Remarks Sounded @ 12.55'

Prepared by J. Bonsteel

ARCADIS GERAGHTY & MILLER

Well Construction Log

(Unconsolidated)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface

Project IR-Jamestown/AY000219.0002 Well MW-2

Town/City Jamestown

County Chataqua State NY

Permit No.

Land-Surface Elevation and Datum:

_____ feet ☐ Surveyed ☐ Estimated

Installation Date(s) November 18, 1998

Drilling Method Hollow Stem Auger

Drilling Contractor SJB Services, Inc.

Drilling Fluid None

Development Technique(s) and Date(s)

Bailing (11/19/98 - 11/20/98)

Fluid Loss During Drilling N/A gallons

Water Removed During Development 32 gallons

Static Depth to Water 18.99 feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm Date _____

Specific Capacity _____ gpm/ft

Well Purpose Molasses Injection

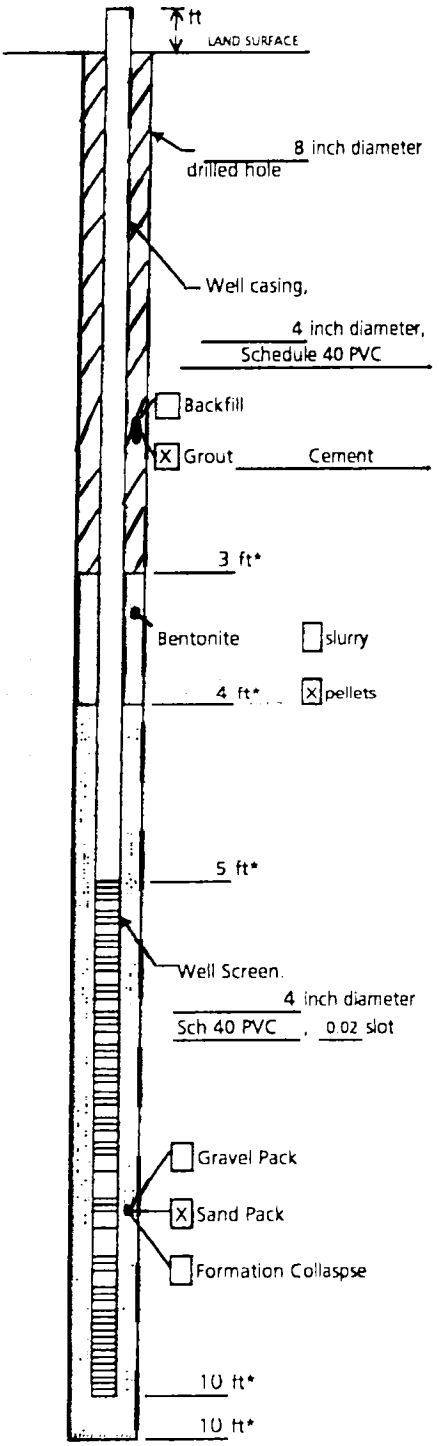
Remarks Sounded @ 27.00'

Prepared by J. Bonsteel

ARCADIS GERAGHTY & MILLER

Well Construction Log

(Unconsolidated)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface

Project IR-Jamestown/AY000219.0002 Well MW-12

Town/City Jamestown

County Chataqua State NY

Permit No.

Land-Surface Elevation and Datum:

feet ☐ Surveyed ☐ Estimated

Installation Date(s) November 19, 1998

Drilling Method Hollow Stem Auger

Drilling Contractor SJB Services, Inc.

Drilling Fluid None

Development Technique(s) and Date(s)

Bailing (11/20/98)

Fluid Loss During Drilling N/A gallons

Water Removed During Development 26 gallons

Static Depth to Water 6.55 feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

Specific Capacity gpm/ft

Well Purpose Molasses Injection

Remarks Sounded @ 12.40'

Prepared by J. Bonsteel

Wellcstr.xls
5/25/99

Appendix C

Molasses Injection Logs

MOLASSES INJECTION LOG

DC Rollforms-Ingersoll Rand Site
Jamestown, New York

Injection Well # IW-1

Date	Injection No.	Raw Molasses Volume (gallons)	Water Volume (gallons)	Solution Strength (Ratio)	Volume Injected (gallons)	Notes/ Observations
12/3/98	1	1	20	20:1	21	DTW @ start: 7.77; DTW @ end: 4.47
12/10/98	2	1	20	20:1	21	DTW @ end: 6.30
12/17/98	3	1	20	20:1	21	DTW @ end: 5.50; 1" of snow on ground
12/24/98	4	1	20	20:1	21	DTW @ end: 5.50
12/31/98	5	1	20	20:1	21	DTW @ end: 5.60
1/7/99	6	1	20	20:1	21	DTW @ start: 6.6; DTW @ end: 5.6
1/13/99	7	1	20	20:1	21	DTW @ start: 6.5; DTW @ end 4.7
1/21/99	8	1	20	20:1	21	DTW @ start: 6.0; DTW @ end: 4.5
1/28/99	9	1	20	20:1	21	DTW @ start: 4.7; DTW @ end: 2.4
2/4/99	10	2	20	10:1	22	DTW @ start: 4.8; DTW @ end: 2.1
2/11/99	11	2	20	10:1	22	DTW @ start: 5.72; DTW @ end: 2.62
2/18/99	12	2	20	10:1	22	DTW @ start: 5.4; DTW @ end; 3.2
2/25/99	13	2	20	10:1	22	DTW @ start: 5.7; DTW @ end: 3.8
3/3/99	14	2	20	10:1	22	DTW @ start: 5.10; DTW @ end: 3.20
3/11/99	15	2	20	10:1	22	DTW @ start: 5.80; DTW @ end: 4.10
3/18/99	16	2	20	10:1	22	DTW @ start: 4.60; DRW @ end: 2.60
3/25/99	17	2	20	10:1	22	DTW @ start: 4.50; DTW @ end: 4.00
4/1/99	18	2	20	10:1	22	DTW @ start :4.90; DTW @ ebd: 3.90
4/8/99	19	2	20	10:1	22	DTW @ start: 6.00; DTW @ end: 3.60
4/15/99	20	2	20	10:1	22	DTW @ start: 5.60; DTW @ end: 3.60
4/21/99	21	2	20	10:1	22	DTW @ start: 6.5; DTW @ end: 5.0
4/29/99	22	2	20	10:1	22	DTW @ start: 6.0; DTW @ end: 4.8
5/6/99	23	2	20	10:1	22	DTW @ start: 6.5; DTW @ end: 4.90

MOLASSES INJECTION LOG

DC Rollforms-Ingersoll Rand Site
Jamestown, New York

Injection Well # IW-1

Date	Injection No.	Raw Molasses Volume (gallons)	Water Volume (gallons)	Solution Strength (Ratio)	Volume Injected (gallons)	Notes/ Observations
5/14/99	24	2	20	10:1	22	DTW @ start: 6.30; DTW @ end 4.80
5/20/99	25	2	20	10:1	22	DTW @ start: 6.1; DTW @ end: 4.6

MOLASSES INJECTION LOG

DC Rollforms-Ingersoll Rand Site
Jamestown, New York

Injection Well # IW-2

Date	Injection No.	Raw Molasses Volume (gallons)	Water Volume (gallons)	Solution Strength (Ratio)	Volume Injected (gallons)	Notes/ Observations
12/3/98	1	0.25	5	20:1	5.25	DTW @ start: 20.00; DTW @ end: 16.00
12/10/98	2	0.25	5	20:1	5.25	DTW @ end: 2.15
12/17/98	3	0.25	5	20:1	5.25	DTW @ end: 1.90; 1" of snow on ground
12/24/98	4	0.25	5	20:1	5.25	DTW @ end: 0.60
12/31/98	5	0.25	5	20:1	5.25	DTW @ end: 1.10
1/7/99	6	0.25	5	20:1	5.25	DTW @ start: 6.6; DTW @ end: 1.1
1/13/99	7	0.25	5	20:1	5.25	DTW @ start: 6.7; DTW @ end: 1.2
1/21/99	8	0.25	5	20:1	5.25	DTW @ start: 6.0; DTW @ end: 0.7
1/28/99	9	0.25	5	20:1	5.25	DTW @ start: 4.3; DTW @ end: 0.7
						Returned on 1/29 to finish injection:
						DTW @ start: 1.8; DTW @ end 0.5'
2/4/99	10	0.25	5	20:1	5.25	DTW @ start: 2.8; DTW @ end: 0.5
						Returned on 2/5 to finish injection:
						DTW @ start: 1.6; DTW @ end: 0.5
2/11/99	11	0.25	5	20:1	5.25	DTW @ start: 3.12; (Added mixture slow until finish)
2/18/99	12	0.25	5	20:1	2.00	DTW @ start: 2.6; DTW @ end: 0.3
					1.00	Returned on 2/19 to finish injection; added 1g
2/25/99	12				2.25	injected final 2g of 2/18 mixture
						DTW @ start: 1.95; DTW @ end: 0.7
3/3/99		NO INJECTION				
3/11/99	13	0.25	2.5	10:1	2.75	DTW @ start: 3.9; DTW @ end: 1.7
3/18/99	14	0.25	2.5	10:1	2.75	DTW @ start: 3.3; DTW @ end: 0.4
3/25/99	15	0.25	2.5	10:1	2.75	DTW @ start: 2.9; DTW @ end: 0.5

MOLASSES INJECTION LOG

DC Rollforms-Ingersoll Rand Site
Jamestown, New York

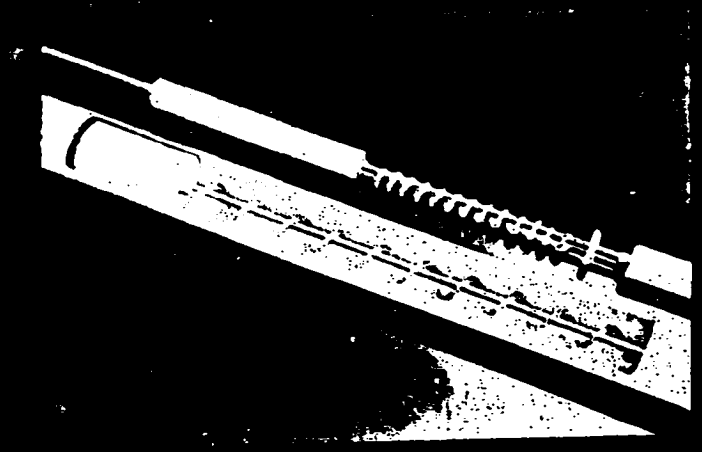
Injection Well # IW-2

Date	Injection No.	Raw Molasses Volume (gallons)	Water Volume (gallons)	Solution Strength (Ratio)	Volume Injected (gallons)	Notes/ Observations
4/1/99	16	0.25	2.5	10:1	2.75	DTW @ start: 2.90; DTW @ end: 0.5
4/8/99	17	0.25	2.5	10:1	2.75	DTW @ start: 2.7; DTW @ end: 0.2
4/15/99	18	0.25	2.5	10:1	2.75	DTW @ start: 2.3; DTW @ end: 0.1
4/21/99	19	0.25	2.5	10:1	2.75	DTW @ start: 1.5; only completed 1/2 injection
4/29/99	20	0.25	2.5	10:1	2.75	Injected remaining mixture from previous week
5/6/99	21	0.25	2.5	10:1	2.00	DTW @ start: 1.6; DTW @ end: 0.1
5/14/99	22	Injection Remaining from 5/6/99			2.00	DTW @ start: 2.20; DTW @ end: 0.70
5/20/99	23	0.25	2.5	10:1	2.25	DTW @ start: 2.0; DTW @ end: 0.1

Appendix D

Petro Trap™ Literature

Passive Skimmers to Meet the Needs of Every Site...



PetroTrap-E™

...and Every Budget

PetroTrap™

Call 1-800-ENVIRO 4

or your nearest PetroTrap™ distributor

PetroTrap-E™...

The PetroTrap-E™ un
have been designed us
the same quality manuf
turing as the Original Pet
Trap™. We have crea
these low cost alternati
for use on sites with m
mal water table fluctuatic
The 2" (0.7 Liter) and 4"
Liter) models feature a
buoy travel, a standard
day warranty and are c
petitively priced at $585
and $635.00 respectively.

PetroTrap™...

When water table fluct
tions are significant and
need your unit to accom
date, look to the origi
PetroTrap™ for recov
These units feature a
buoy travel and a lifet
warranty which inclu
replacement of parts for
lifetime of the system.

2" (0.7 Liter) and 4"
Liter) models are availa
for recovery of most refi
fuels. Please contact
with your site specificati
or with questions on
product recovery.

PRODUCTS

Description:

Our unique passive skimmer system which incorporates the use of an active buoy assembly. This buoy assembly removes free product to a sheen.

PetroTrap™ units can be installed in minutes and are ideal on sites where free product recovery must begin *immediately*. The system employs the use of a collection canister, eliminating the need to run electricity or air lines to the well.

Installation is quick and easy–lower the unit into the well much the same way as a bailer, and suspend it using the lanyard/vent tube (standard 25' length). The unit begins recovering product as soon as product is available. Periodically, the canister is emptied manually through the drain valve at the bottom of the canister.

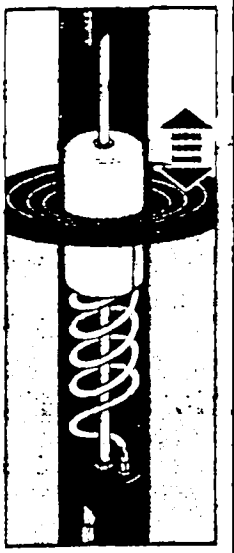
	4" PetroTrap™	2" PetroTrap™
Diameter	3.5"	1.75"
Length	61.0"	76.88"
Weight	18 Lbs.	6.25 Lbs.
Volume	2.0 Liters /.53 Gallons (Other Volumes Optional)	0.7 Liters /.20 Gallons (Other Volumes Optional)
Min. Depth of Water Required	29.0"	39.0"

	4" PetroTrap-E™	2" PetroTrap-E™
Diameter	3.5"	1.75"
Length	49.0"	64.88"
Weight	15 Lbs.	5.25 Lbs.
Volume	2.0 Liters /.53 Gallons (Other Volumes Optional)	0.7 Liters /.20 Gallons (Other Volumes Optional)
Min. Depth of Water Required	29.0"	39.0"

PetroTrap™ is manufactured by Enviro Products Inc. and is part of EPI's line of *"Pure & Simple"* remediation products.

Features:

- No power source required
- Installation takes only minutes
- Effective with petroleum fuels
- Ideal monitoring device to indicate migrating plumes
- Available for 2" and 4" wells



The PetroTrap™ filter recov
free product to a sheen

Materials of Construction:

- Stainless steel
- Brass
- Polyethylene
- PVC

Standard System Includes:

- PetroTrap™ skimmer assembly (2" or 4" Model)
- 25' suspension hose
- Choice of 2", 4", or 6" locking well cap

Options:

- Additional canister which will double the PetroTrap's™ capacity
- Varying lengths of suspension hose

Rentals Available!

For wells where a high yield of free product is expected, consider using a SkimRite™ EPI's active skimmer system.

Enviro Products Means Service!

MasterCard VISA

Call 1-800-ENVIRO 4

ENVIRO PRODUCTS INC.
1431 Rensen Street • Suite A • Lansing, Michigan 48910
(517) 887-1222 • 1-800-ENVIRO 4 • Fax: (517) 887-8374

Appendix E

Oil Removal Logs

PETROTRAP OIL REMOVAL LOG

DC Rollforms-Ingersoll Rand Site
Jamestown, New York

Monitoring Well # ESI-3

Date	Time	Total Volume Removed (gallons)	Water Volume (gallons)	Oil Volume (gallons)	Product Thickness (ft)	Notes/ Observations
12/3/98	11:00A	0.5	0.40	0.10	NM	
12/10/98	10:00A	0.25	0.23	0.02	NM	
12/17/98	9:30A	0.25	0.23	0.02	NM	1" of snow on ground
12/24/98	11:00A	0.25	0.23	0.02	NM	
12/31/98	9:30A	0.25	0.24	0.01	NM	
1/7/98	10:00A	0.25	0.15	0.10	NM	
1/11/99	4:00P	0.25	0.23	0.02	0.00	
1/21/99	9:30A	0.25	0.24	0.01	NM	
1/28/99	9:00A	0.25	0.24	0.01	NM	
2/4/99	9:00A	0.25	0.23	0.02	NM	
2/10/99	4:00P	0.25	0.23	0.02	1.0	
2/10/99	4:15P	NA	NA	0.16	1.0	Bailed 0.16 g out of well
2/18/99	10:00A	0.25	0.24	0.01	NM	
2/25/99	9:30A	0.13	0.12	0.01	NM	
3/3/99	3:00P	0.13	0.12	0.01	NM	
3/11/99	10:15A	0.13	0.12	0.01	NM	
3/18/99	9:45A	0.13	0.12	0.01	NM	
3/25/99	9:30A	0.13	0.12	0.01	NM	
3/30/99	9:00A	0.25	0.24	0.01	0.5	
4/8/99	9:15A	0.13	0.12	0.01	NM	
4/15/99	9:15A	0.25	0.24	0.01	NM	
4/21/99	3:00P	0.30	0.30	0.0	0.0	
			Total Oil:	0.60		

PETROTRAP OIL REMOVAL LOG

DC Rollforms-Ingersoll Rand Site
Jamestown, New York

Monitoring Well # ESI-3

Date	Time	Total Volume Removed (gallons)	Water Volume (gallons)	Oil Volume (gallons)	Product Thickness (ft)	Notes/ Observations
4/29/99	9:15A	0.13	0.09	0.04	NM	
5/6/99	9:15A	0.13	0.10	0.03	NM	
5/14/99	9:45A	0.13	0.12	0.01	NM	
5/20/99	9:15A	0.25	0.23	0.02	NM	
			Total Oil:	0.70		

PETROTRAP OIL REMOVAL LOG

DC Rollforms-Ingersoll Rand Site
Jamestown, New York

Monitoring Well # ESI-4

Date	Time	Total Volume Removed (gallons)	Water Volume (gallons)	Oil Volume (gallons)	Product Thickness (ft)	Notes/ Observations
12/3/98	11:00A	0.3	0.3	0.0	NM	
12/10/98	10:00A	0.25	0.25	0.0	NM	
12/17/98	9:30A	0.0	0.0	0.0	NM	1" of snow on ground
12/24/98	11:00A	0.0	0.0	0.0	NM	
12/31/98	9:30A	0.0	0.0	0.0	NM	
1/7/98	10:00A	0.13	0.127	0.003	NM	
1/11/99	4:00P	0.0	0.0	0.0	0.0	
1/21/99	9:30A	0.25	0.24	0.01	NM	
1/28/99	9:00A	0.06	0.059	0.001	NM	
2/4/99	9:00A	0.18	0.18	0.0	NM	
2/10/99	4:00P	0.02	0.02	0.0	NM	
2/18/99	10:00A	0.06	0.059	0.001	NM	
2/25/99	9:30A	0.13	0.12	0.01	NM	
3/3/99	3:00P	0.06	0.059	0.001	NM	
3/11/99	10:15A	0.13	0.12	0.01	NM	
3/18/99	9:45A	0.13	0.12	0.01	NM	
3/25/99	9:30A	0.02	0.02	0.00	NM	
3/31/99	9:00A	0.13	0.127	0.003	NM	
4/8/99	9:15A	0.06	0.059	0.001	NM	
4/15/99	9:15A	0.09	0.063	0.027	NM	
4/21/99	3:00P	0.0	0.0	0.0	0.0	
4/29/99	9:15A	0.03	0.025	0.005	NM	
			Total Oil:	0.082		

PETROTRAP OIL REMOVAL LOG

DC Rollforms-Ingersoll Rand Site
Jamestown, New York

Monitoring Well # ESI-4

Date	Time	Total Volume Removed (gallons)	Water Volume (gallons)	Oil Volume (gallons)	Product Thickness (ft)	Notes/ Observations
5/6/99	9:15A	0.01	0.01	0.0	NM	
5/14/99	9:45A	0.06	0.051	0.09	NM	
5/20/99	9:20A	0.03	0.00	0.03	NM	
			Total Oil:	0.202		

PRODUCT REMOVAL LOG (Manual Bailing)

DC Rollforms-Ingersoll Rand Site
Jamestown, New York

Monitoring Well # ESI-4 (DNAPL)

Date	Time	Total Volume Removed (gallons)	Water Volume (gallons)	Product Volume (gallons)	Product Thickness (ft)	Notes/ Observations
12/3/98	11:00A	0.15	0.0	0.15	NM	
1/11/99	4:00P	1.0	0.2	0.80	0.4	
2/10/99	4:00P	0.25	0.0	0.25	NM	
4/1/99	9:00A	0.50	0.35	0.15	NM	
4/21/99	3:00P	0.5	0.0	0.0	NM	
			Total Product:	1.35		

OIL REMOVAL LOG (Manual Bailing)

DC Rollforms-Ingersoll Rand Site
Jamestown, New York

Monitoring Well # MW-8D (DNAPL)

Date	Time	Total Volume Removed (gallons)	Water Volume (gallons)	Oil Volume (gallons)	Product Thickness (ft)	Notes/ Observations
4/21/99	9:00A	2.0	1.9	0.10	NM	
			Total Oil:	0.10		

Appendix F

Groundwater Laboratory Analytical Data Sheets

Baseline Groundwater Laboratory Analytical Data Sheets

December 28, 1998

Severn Trent Laboratories
200 Monroe Turnpike
Monroe CT 06468

Tel: (203) 261-4458
Fax: (203) 268-5346

Mr. Marc Sanford
INGERSOLL RAND
Geraghty & Miller
213 Madison Ave. Ext.
Albanycreek, NY 12203

Dear Mr. Sanford :

Please find enclosed the analytical results of 14 sample(s) received at our laboratory on December 3-4, 1998. This report contains sections addressing the following information at a minimum:

- sample summary
- analytical methodology
- state certifications
- definition of data qualifiers and terminology
- analytical results
- chain-of-custody

STL Report #7098-2558A	Purchase Order #907019
Project ID: JAMESTOWN, NY	

Copies of this analytical report and supporting data are maintained in our files for a minimum of five years unless special arrangements have been made. Unless specifically indicated, all analytical testing was performed at this laboratory location and no portion of the testing was subcontracted.

We appreciate your selection of our services and welcome any questions or suggestions you may have relative to this report. Please contact your customer service representative at (203) 261-4458 for any additional information. Thank you for utilizing our services; we hope you will consider us for your future analytical needs.

I have reviewed and approved the enclosed data for final release.

Very truly yours,

Jeffrey C. Curran
Laboratory Manager

JCC

cc: D. JONES
M. SANFORD

7098-2558A
INGERSOLL RAND

Case Narrative

Miscellaneous GC - Subcontracted to Microseeps.

Classical Chemistry - Listed below are the wet chemistry analyte methods and references for the samples analyzed in this SDG. The LCS recovery for fluoride and the RPD for BOD did not meet criteria. No other analytical problems were encountered and all holding times were met.

Analyte	Method	Reference
Alkalinity	310.1	1
BOD5	405.1	1
Chloride	325.2	1
COD	410.4	1
Fluoride	340.2	1
Nitrate/Nit	353.2	1
Sulfate	375.2	1
Sulfide	376.1	1
TOCD	415.1	1
TOCD-Dissolved	415.1	1

References:

1. Methods of Chemical Analysis of Water and Wastes, EPA 600, 1983.
2. Test Methods for the Evaluation of Solid Waste, SW846, 3rd ed., 1986.
3. Standard Methods for the Examination of Water and Wastewater. 18th edition, 1992.

Metals - ICAP metals were determined using a JA61E trace ICAP using guidance provided in SW846 according to the following Methods: ICAP-3010/6010.

No problems occurred during analysis. All appropriate protocols were employed. All data appears to be consistent.

IEC's are electronically employed by the JA61E trace ICAP. However, the ICSA is utilized as a monitoring device to detect any additional adjustments that may be required. These modifications are calculated and applied manually. They are so noted in the raw data.

Volatile Organics - Volatile organics were determined by purge and trap GC/MS using guidance provided in Method 8260B. The instrumentation used was a Tekmar Dynamic Headspace

Concentrator interfaced with a Hewlett-Packard Model 5971A GC/MS/DS.

The following samples were analyzed at dilutions due to high target compound concentrations:

MW-12	1:5
ESI-7	1:2
MW-2S	1:50
MW-8D	1:5000

No problems were encountered.

TABLE VO-1.0
7098-2558A
INGERSOLL RAND
TCL VOLATILE ORGANICS

Aquec

All values are ug/L.

Client Sample I.D.	Method Blank	MW-12 MS	MW-12 MSD	Quant. Limits with n Diluti
Lab Sample I.D.	VBLKL3	982558A-02MS	982558A-02 MSD	
Method Blank I.D.	VBLKL3	VBLKL3	VBLKL3	
Quant. Factor	1.00	5.00	5.00	
Chloromethane	U	U	U	10
Bromomethane	U	U	U	10
Vinyl Chloride	U	160	170	10
Chloroethane	U	U	U	10
Methylene Chloride	U	U	U	5.0
Acetone	U	U	U	10
Carbon Disulfide	U	U	U	5.0
Vinyl Acetate	U	U	U	10
1,1-Dichloroethene	U	290X	280X	5.0
1,1-Dichloroethane	U	U	U	5.0
1,2-Dichloroethene (total)	U	440	400	5.0
Chloroform	U	U	U	5.0
1,2-Dichloroethane	U	U	U	5.0
2-Butanone	U	U	U	10
1,1,1-Trichloroethane	U	U	U	5.0
Carbon Tetrachloride	U	U	U	5.0
Bromodichloromethane	U	U	U	5.0
1,2-Dichloropropane	U	U	U	5.0
cis-1,3-Dichloropropene	U	U	U	5.0
Trichloroethene	U	320X	280X	5.0
Dibromochloromethane	U	U	U	5.0
1,1,2-Trichloroethane	U	U	U	5.0
Benzene	U	260X	240X	5.0
trans-1,3-Dichloropropene	U	U	U	5.0
Bromoform	U	U	U	5.0
4-Methyl-2-Pentanone	U	U	U	10
2-Hexanone	U	U	U	10
Tetrachloroethene	U	U	U	5.0
Toluene	U	230X	230X	5.0
1,1,2,2-Tetrachloroethane	U	U	U	5.0
Chlorobenzene	U	230X	230X	5.0
Ethylbenzene	U	U	U	5.0
Styrene	U	U	U	5.0
Xylene (total)	U	U	U	5.0
Date Received		12/03/98	12/03/98	
Date Extracted	N/A	N/A	N/A	
Date Analyzed	12/05/98	12/05/98	12/05/98	

See Appendix for qualifier definitions
Note: Compound detection limit = quantitation limit x quantitation factor
Quant. Factor = a numerical value which takes into account any variation in sample weight/volume, % moisture and sample dilution.

TABLE VO-1.1
7098-2558A
INGERSOLL RAND
TCL VOLATILE ORGANICS

Aqueo

All values are ug/L.

Client Sample I.D.	DUP-1	TB 120298	TB 120398	Quant. Limits with no Dilutio
Lab Sample I.D.	982558A-05	982558A-06	982558A-09	
Method Blank I.D.	VBLKL3	VBLKL3	VBLKL3	
Quant. Factor	1.00	1.00	1.00	
Chloromethane	U	U	U	10
Bromomethane	U	U	U	10
Vinyl Chloride	12	U	U	10
Chloroethane	U	U	U	10
Methylene Chloride	U	U	U	5.0
Acetone	U	U	U	10
Carbon Disulfide	U	U	U	5.0
Vinyl Acetate	U	U	U	10
1,1-Dichloroethene	U	U	U	5.0
1,1-Dichloroethane	U	U	U	5.0
1,2-Dichloroethene (total)	17	U	U	5.0
Chloroform	U	U	U	5.0
1,2-Dichloroethane	U	U	U	5.0
2-Butanone	U	U	U	10
1,1,1-Trichloroethane	U	U	U	5.0
Carbon Tetrachloride	U	U	U	5.0
Bromodichloromethane	U	U	U	5.0
1,2-Dichloropropane	U	U	U	5.0
cis-1,3-Dichloropropene	U	U	U	5.0
Trichloroethene	1J	U	U	5.0
Dibromochloromethane	U	U	U	5.0
1,1,2-Trichloroethane	U	U	U	5.0
Benzene	U	U	U	5.0
trans-1,3-Dichloropropene	U	U	U	5.0
Bromoform	U	U	U	5.0
4-Methyl-2-Pentanone	U	U	U	10
2-Hexanone	U	U	U	10
Tetrachloroethene	.6J	2J	.9J	5.0
Toluene	U	U	U	5.0
1,1,2,2-Tetrachloroethane	U	U	U	5.0
Chlorobenzene	U	U	U	5.0
Ethylbenzene	U	U	U	5.0
Styrene	U	U	U	5.0
Xylene (total)	U	U	U	5.0
Date Received	12/03/98	12/03/98	12/04/98	
Date Extracted	N/A	N/A	N/A	
Date Analyzed	12/05/98	12/05/98	12/05/98	

See Appendix for qualifier definitions
Note: Compound detection limit = quantitation limit x quantitation factor
Quant. Factor = a numerical value which takes into account any variation in sample weight/volume, % moisture and sample dilution.

TABLE VO-1.2
7098-2558A
INGERSOLL RAND
TCL VOLATILE ORGANICS

Aqueou

All values are ug/L.

Client Sample I.D.	Method Blank	MW-12	ESI-7	Quant. Limits
Lab Sample I.D.	VBLKL4	982558A-02	982558A-03	with no
Method Blank I.D.	VBLKL4	VBLKL4	VBLKL4	Dilutio
Quant. Factor	1.00	5.00	2.00	
Chloromethane	U	U	U	10
Bromomethane	U	U	U	10
Vinyl Chloride	U	260	U	10
Chloroethane	U	U	U	10
Methylene Chloride	U	U	U	5.0
Acetone	12	U	U	10
Carbon Disulfide	U	U	U	5.0
Vinyl Acetate	U	U	U	10
1,1-Dichloroethene	U	4J	U	5.0
1,1-Dichloroethane	U	U	U	5.0
1,2-Dichloroethene (total)	U	520	8J	5.0
Chloroform	U	U	U	5.0
1,2-Dichloroethane	U	U	U	5.0
2-Butanone	U	U	U	10
1,1,1-Trichloroethane	U	U	U	5.0
Carbon Tetrachloride	U	U	U	5.0
Bromodichloromethane	U	U	U	5.0
1,2-Dichloropropane	U	U	U	5.0
cis-1,3-Dichloropropene	U	U	U	5.0
Trichloroethene	U	81	320	5.0
Dibromochloromethane	U	U	U	5.0
1,1,2-Trichloroethane	U	U	U	5.0
Benzene	U	U	U	5.0
trans-1,3-Dichloropropene	U	U	U	5.0
Bromoform	U	U	U	5.0
4-Methyl-2-Pentanone	U	U	U	10
2-Hexanone	U	U	U	10
Tetrachloroethene	U	U	3J	5.0
Toluene	U	U	U	5.0
1,1,2,2-Tetrachloroethane	U	U	U	5.0
Chlorobenzene	U	U	U	5.0
Ethylbenzene	U	U	U	5.0
Styrene	U	U	U	5.0
Xylene (total)	U	U	U	5.0
Date Received		12/03/98	12/03/98	
Date Extracted	N/A	N/A	N/A	
Date Analyzed	12/06/98	12/06/98	12/06/98	

See Appendix for qualifier definitions
Note: Compound detection limit = quantitation limit x quantitation factor
Quant. Factor = a numerical value which takes into account any variation in sample weight/volume, % moisture and sample dilution.

TABLE VO-1.3
7098-2558A
INGERSOLL RAND
TCL VOLATILE ORGANICS

Aqueo

All values are ug/L.

Client Sample I.D.	ESI-6			Quant. Limits with no Dilutio
Lab Sample I.D.	982558A-04			
Method Blank I.D.	VBLKL4			
Quant. Factor	1.00			
Chloromethane	U			10
Bromomethane	U			10
Vinyl Chloride	13			10
Chloroethane	U			10
Methylene Chloride	U			5.0
Acetone	U			10
Carbon Disulfide	U			5.0
Vinyl Acetate	U			10
1,1-Dichloroethene	U			5.0
1,1-Dichloroethane	U			5.0
1,2-Dichloroethene (total)	19			5.0
Chloroform	U			5.0
1,2-Dichloroethane	U			5.0
2-Butanone	U			10
1,1,1-Trichloroethane	U			5.0
Carbon Tetrachloride	U			5.0
Bromodichloromethane	U			5.0
1,2-Dichloropropane	U			5.0
cis-1,3-Dichloropropene	U			5.0
Trichloroethene	2J			5.0
Dibromochloromethane	U			5.0
1,1,2-Trichloroethane	U			5.0
Benzene	U			5.0
trans-1,3-Dichloropropene	U			5.0
Bromoform	U			10
4-Methyl-2-Pentanone	U			10
2-Hexanone	U			5.0
Tetrachloroethene	U			5.0
Toluene	U			5.0
1,1,2,2-Tetrachloroethane	U			5.0
Chlorobenzene	U			5.0
Ethylbenzene	U			5.0
Styrene	U			5.0
Xylene (total)	U			
Date Received	12/03/98			
Date Extracted	N/A			
Date Analyzed	12/06/98			

See Appendix for qualifier definitions
Note: Compound detection limit = quantitation limit x quantitation factor
Quant. Factor = a numerical value which takes into account any variation in sample weight/volume, % moisture and sample dilution.

TABLE VO-1.4
7098-2558A
INGERSOLL RAND
TCL VOLATILE ORGANICS

All values are ug/L.

Client Sample I.D.	Method Blank	MW-2S	MW-8D	Quant. Limits with n Dilut
Lab Sample I.D.	VBLKL5	982558A-01	982558A-07	
Method Blank I.D.	VBLKL5	VBLKL5	VBLKL5	
Quant. Factor	1.00	50.0	5000	
Chloromethane	U	U	U	10
Bromomethane	U	U	U	10
Vinyl Chloride	U	1100	U	10
Chloroethane	U	U	U	10
Methylene Chloride	U	U	U	5.0
Acetone	U	U	U	10
Carbon Disulfide	U	U	U	5.0
Vinyl Acetate	U	U	U	10
1,1-Dichloroethene	U	U	U	5.0
1,1-Dichloroethane	U	U	U	5.0
1,2-Dichloroethene (total)	U	8500	44000	5.0
Chloroform	U	U	U	5.0
1,2-Dichloroethane	U	U	U	5.0
2-Butanone	U	U	U	10
1,1,1-Trichloroethane	U	U	U	5.0
Carbon Tetrachloride	U	U	U	5.0
Bromodichloromethane	U	U	U	5.0
1,2-Dichloropropane	U	U	U	5.0
cis-1,3-Dichloropropene	U	U	U	5.0
Trichloroethene	U	U	740000	5.0
Dibromochloromethane	U	U	U	5.0
1,1,2-Trichloroethane	U	U	U	5.0
Benzene	U	U	U	5.0
trans-1,3-Dichloropropene	U	U	U	5.0
Bromoform	U	U	U	5.0
4-Methyl-2-Pentanone	U	U	U	10
2-Hexanone	U	U	U	10
Tetrachloroethene	U	U	U	5.0
Toluene	U	U	U	5.0
1,1,2,2-Tetrachloroethane	U	U	U	5.0
Chlorobenzene	U	U	U	5.0
Ethylbenzene	U	U	U	5.0
Styrene	U	U	U	5.0
Xylene (total)	U	U	U	5.0
Date Received		12/03/98	12/04/98	
Date Extracted	N/A	N/A	N/A	
Date Analyzed	12/07/98	12/07/98	12/07/98	

See Appendix for qualifier definitions
Note: Compound detection limit = quantitation limit x quantitation factor
Quant. Factor = a numerical value which takes into account any variation in sample weight/volume, % moisture and sample dilution.

TABLE VO-1.5
7098-2558A
INGERSOLL RAND
TCL VOLATILE ORGANICS

Aqueo

All values are ug/L.

Client Sample I.D.	MW-7D			Quant. Limits with n Diluti
Lab Sample I.D.	982558A-08			
Method Blank I.D.	VBLKL5			
Quant. Factor	1.00			
Chloromethane	U			10
Bromomethane	U			10
Vinyl Chloride	U			10
Chloroethane	U			10
Methylene Chloride	U			5.0
Acetone	U			10
Carbon Disulfide	U			5.0
Vinyl Acetate	U			10
1,1-Dichloroethene	U			5.0
1,1-Dichloroethane	U			5.0
1,2-Dichloroethene (total)	14			5.0
Chloroform	U			5.0
1,2-Dichloroethane	U			5.0
2-Butanone	U			10
1,1,1-Trichloroethane	U			5.0
Carbon Tetrachloride	U			5.0
Bromodichloromethane	U			5.0
,,2-Dichloropropane	U			5.0
cis-1,3-Dichloropropene	U			5.0
Trichloroethene	U			5.0
Dibromochloromethane	U			5.0
1,1,2-Trichloroethane	U			5.0
Benzene	U			5.0
trans-1,3-Dichloropropene	U			5.0
Bromoform	U			5.0
4-Methyl-2-Pentanone	U			10
2-Hexanone	U			10
Tetrachloroethene	U			5.0
Toluene	U			5.0
1,1,2,2-Tetrachloroethane	U			5.0
Chlorobenzene	U			5.0
Ethylbenzene	U			5.0
Styrene	U			5.0
Xylene (total)	U			5.0
Date Received	12/04/98			
Date Extracted	N/A			
Date Analyzed	12/07/98			

See Appendix for qualifier definitions
Note: Compound detection limit = quantitation limit x quantitation factor
Quant. Factor = a numerical value which takes into account any variation in sample weight/volume, % moisture and sample dilution.

Microseeps

ST21-983697

SEVERN TRENT LABORATORIES
PROJECT: 7098-2558A
LOCATION: STL - CT

Sample Names	Carbon Dioxide mg/l	Ethane ng/l	Ethylene ng/l	Lab ID	Date Sampled	Date Received	Date Analyzed	Analyst
MW-2S	106.66	622947	66832	T14 319	12/01/98	12/08/98	12/11/98	BC
MW-12	122.93	306682	11302	T14 320	12/02/98	12/08/98	12/11/98	BC
MW-12 DUP	121.22	299494	10679	T14 321	12/02/98	12/08/98	12/11/98	BC
ESI-7	93.54	15386	2007	T14 322	12/02/98	12/08/98	12/11/98	BC
ESI-6	69.57	105422	7245	T14 323	12/01/98	12/08/98	12/11/98	BC
DUP-1	67.31	91046	6145	T14 324	12/01/98	12/08/98	12/11/98	BC
MW-8D	1.10	19751	269760	T14 325	12/03/98	12/08/98	12/11/98	BC
MW-7D	14.07	1052	702	T14 326	12/03/98	12/08/98	12/11/98	BC
DETECTION LIMITS	0.60mg/l	5ng/l	5ng/l					

ANALYST INITIALS BC

REVIEW AS

TABLE AS-1.0
7098-2558A
INGERSOLL RAND
MISCELLANEOUS ATOMIC SPECTROSCOPY (Dissolved)

Aquec

All values are ug/L.

Client Sample I.D.	MW-2S	MW-12	MW-12 D	MW-12 S
Lab Sample I.D.	982558A-01	982558A-02	982558A-02D	982558A-0
Iron	12500	11700	12000	12700
Manganese	1310	1530	1560	2000

See Appendix for qualifier definitions

TABLE AS-1.1
7098-2558A
INGERSOLL RAND
MISCELLANEOUS ATOMIC SPECTROSCOPY (Dissolved)

All values are ug/L.

Client Sample I.D.	ESI-7	ESI-6	DUP-1	MW-8D
Lab Sample I.D.	982558A-03	982558A-04	982558A-05	982558A-0
Iron	10600	12700	12900	10.0U
Manganese	4100	1930	1950	14.6B

See Appendix for qualifier definitions

TABLE AS-1.2
7098-2558A
INGERSOLL RAND
MISCELLANEOUS ATOMIC SPECTROSCOPY (Dissolved)

All values are ug/L.

Client Sample I.D.	MW-7D			
Lab Sample I.D.	982558A-08			
Iron	10.0U			
Manganese	309.			

See Appendix for qualifier definitions

TABLE AS-1.3
7098-2558A
INGERSOLL RAND
MISCELLANEOUS ATOMIC SPECTROSCOPY (Total)

All values are ug/L.

Client Sample I.D.	MW-2S	MW-12	MW-12 D	MW-12 S
Lab Sample I.D.	982558A-01	982558A-02	982558A-02D	982558A-0
Iron	14500	11600	11800	12700
Manganese	1310	1590	1630	2080

See Appendix for qualifier definitions

TABLE AS-1.4
7098-2558A
INGERSOLL RAND
MISCELLANEOUS ATOMIC SPECTROSCOPY (Total)

Aqueo

All values are ug/L.

Client Sample I.D.	ESI-7	ESI-6	DUP-1	MW-8D
Lab Sample I.D.	982558A-03	982558A-04	982558A-05	982558A-0
Iron	10800	13200	13100	5620
Manganese	4080	1930	1930	122.

See Appendix for qualifier definitions

Aqueo

TABLE AS-1.5
7098-2558A
INGERSOLL RAND
MISCELLANEOUS ATOMIC SPECTROSCOPY (Total)

All values are ug/L.

Client Sample I.D.	MW-7D			
Lab Sample I.D.	982558A-08			
Iron	24.1B			
Manganese	2.0U			

See Appendix for qualifier definitions

WET CHEM ANALYSIS DATA SHEET

SAMPLE NO.

MW-2S

Lab Name: STL Contract: _____

Lab Code: STL Case No.: 2558A SAS No.: _____ SDG No.: A2558

Matrix (soil/water): WATER Lab Sample ID: 982558A-01

% Solids: 0 Date Received: 12/03/98

CAS No.	Analyte	Concentration	C	Units	Q	M
471-34-1	Alkalinity	414.		mg/l		T
	BOD5	12.5		mg/l		P
16887-00-6	Chloride	15.7		mg/l		L
	COD	47.5		mg/l		C
16984-48-8	Fluoride	0.140		mg/l		D
	Nitrate/Nitrite	0.100	U	mg/l		L
	Sulfate	23.9		mg/l		L
	Sulfide	1.00	U	mg/l		D
	TOC	22.3		mg/l		D
	TOC-D	21.0		mg/l		D

Comments:

WET CHEM ANALYSIS DATA SHEET

SAMPLE NO.

MW-12

Lab Name: STL Contract: _____

Lab Code: STL Case No.: 2558A SAS No.: _____ SDG No.: A2558

Matrix (soil/water): WATER Lab Sample ID: 982558A-02

% Solids: 0 Date Received: 12/03/98

CAS No.	Analyte	Concentration	C	Units	Q	M
471-34-1	Alkalinity	408.		mg/l		T
	BOD5	3.48		mg/l		P
16887-00-6	Chloride	19.8		mg/l		L
	COD	52.5		mg/l		C
16984-48-8	Fluoride	0.140		mg/l		D
	Nitrate/Nitrite	0.100	U	mg/l		L
	Sulfate	48.7		mg/l		L
	Sulfide	1.00	U	mg/l		D
	TOC	24.0		mg/l		D
	TOC-D	23.6		mg/l		D

Comments:

1

WET CHEM ANALYSIS DATA SHEET

SAMPLE NO.

ESI-7

Lab Name: STL Contract: _____

Lab Code: STL Case No.: 2558A SAS No.: _____ SDG No.: A2558

Matrix (soil/water): WATER Lab Sample ID: 982558A-03

% Solids: 0 Date Received: 12/03/98

CAS No.	Analyte	Concentration	C	Units	Q	M
471-34-1	Alkalinity	498.		mg/l		T
	BOD5	4.08		mg/l		P
16887-00-6	Chloride	44.3		mg/l		L
	COD	42.5		mg/l		C
16984-48-8	Fluoride	0.220		mg/l		D
	Nitrate/Nitrite	0.100	U	mg/l		L
	Sulfate	10.0	U	mg/l		L
	Sulfide	1.00	U	mg/l		D
	TOC	15.3		mg/l		D
	TOC-D	14.8		mg/l		D

Comments:

WET CHEM ANALYSIS DATA SHEET

SAMPLE NO.

ESI-6

Lab Name: STL Contract: _____

Lab Code: STL Case No.: 2558A SAS No.: _____ SDG No.: A2558

Matrix (soil/water): WATER Lab Sample ID: 982558A-04

% Solids: 0 Date Received: 12/03/98

CAS No.	Analyte	Concentration	C	Units	Q	M
471-34-1	Alkalinity	528.		mg/l		T
	BOD5	5.88		mg/l		P
16887-00-6	Chloride	27.2		mg/l		L
	COD	67.5		mg/l		C
16984-48-8	Fluoride	0.280		mg/l		D
	Nitrate/Nitrite	0.100	U	mg/l		L
	Sulfate	14.7		mg/l		L
	Sulfide	1.00	U	mg/l		D
	TOC	13.1		mg/l		D
	TOC-D	13.2		mg/l		D

Comments:

1

WET CHEM ANALYSIS DATA SHEET

SAMPLE NO.

DUP-1

Lab Name: STL Contract: _____

Lab Code: STL Case No.: 2558A SAS No.: _____ SDG No.: A2558

Matrix (soil/water): WATER Lab Sample ID: 982558A-05

% Solids: 0 Date Received: 12/03/98

CAS No.	Analyte	Concentration	C	Units	Q	M
471-34-1	Alkalinity	528.		mg/l		T
	BOD5	4.38		mg/l		P
16887-00-6	Chloride	17.6		mg/l		L
	COD	30.1		mg/l		C
16984-48-8	Fluoride	0.280		mg/l		D
	Nitrate/Nitrite	0.100	U	mg/l		L
	Sulfate	14.7		mg/l		L
	Sulfide	1.00	U	mg/l		D
	TOC	13.7		mg/l		D
	TOC -D	12.8		mg/l		D

Comments:

FORM I - WC

WET CHEM ANALYSIS DATA SHEET

SAMPLE NO.

MW-8D

Lab Name: STL Contract: _____

Lab Code: STL Case No.: 2558A SAS No.: _____ SDG No.: A2558

Matrix (soil/water): WATER Lab Sample ID: 982558A-07

% Solids: 0 Date Received: 12/04/98

CAS No.	Analyte	Concentration	C	Units	Q	M
471-34-1	Alkalinity	290.		mg/l		T
	BOD5	9.78		mg/l		P
16887-00-6	Chloride	237.		mg/l		L
	COD	226.		mg/l		C
16984-48-8	Fluoride	0.140		mg/l		D
	Nitrate/Nitrite	0.232		mg/l		L
	Sulfate	36.7		mg/l		L
	Sulfide	1.00	U	mg/l		D
	TOC	42.1		mg/l		D
	TOC-D	27.5		mg/l		D

Comments:

FORM I - WC

1

WET CHEM ANALYSIS DATA SHEET

SAMPLE NO.

MW-7D

Lab Name: STL Contract: _____

Lab Code: STL Case No.: 2558A SAS No.: _____ SDG No.: A2558

Matrix (soil/water): WATER Lab Sample ID: 982558A-08

% Solids: 0 Date Received: 12/04/98

CAS No.	Analyte	Concentration	C	Units	Q	M
471-34-1	Alkalinity	373.		mg/l		T
	BOD5	2.00	U	mg/l		P
16887-00-6	Chloride	231.		mg/l		L
	COD	72.5		mg/l		C
16984-48-8	Fluoride	0.160		mg/l		D
	Nitrate/Nitrite	0.100	U	mg/l		L
	Sulfate	10.0	U	mg/l		L
	Sulfide	1.00	U	mg/l		D
	TOC	3.47		mg/l		D
	TOC -D	9.75		mg/l		D

Comments:

FORM I - WC

ORGANICS APPENDIX

U - Indicates that the compound was analyzed for but not detected.

J - Indicates that the compound was analyzed for and determined to be present in the sample. The mass spectrum of the compound meets the identification criteria of the method. The concentration listed is an estimated value, which is less than the specified minimum detection limit but is greater than zero.

B - This flag is used when the analyte is found in the blanks as well as the sample. It indicates possible sample contamination and warns the data user to use caution when applying the results of this analyte.

N - Indicates that the compound was analyzed for but not requested as an analyte. Value will not be listed on tabular result sheet.

S - Estimated due to surrogate outliers.

X - Matrix spike compound.

(I) - Cannot be separated.

(2) - Decomposes to azobenzene. Measured and calibrated as azobenzene.

A - This flag indicates that a TIC is a suspected aldol condensation product.

E - Indicates that it exceeds calibration curve range.

D - This flag identifies all compounds identified in an analysis at a secondary dilution factor.

C - Confirmed by GC/MS.

T - Compound present in TCLP blank.

P - This flag is used for a pesticide/aroclor target analyte when there is a greater than 25 percent difference for detected concentrations between the two GC columns (see Form X).

INORGANICS APPENDIX

C - Concentration qualifiers

Indicates analyte was not detected at method reporting limit.

Indicates analyte result between IDL and contract required detection limit (CRDL)

Q - QC qualifiers

Reported value is estimated because of the presence of interference

Duplicate injection precision not met

Spiked sample recovery not within control limits

The reported value was determined by the method of standard additions (MSA)

Post-digest spike recovery furnace analysis was out of 85-115 percent control limit, while sample absorbance was less than 50 percent of spike absorbance

uplicate analysis not within control limit

Correlation coefficient for MSA is less than 0.995

M - Method codes

ICP

- Flame AA

Furnace AA

- Cold vapor AA (manual)

Cyanide

Not Required

- Not Calculated as per protocols

STATE CERTIFICATIONS

In some instances it may be necessary for environmental data to be reported to a regulatory authority with reference to a certified laboratory. For your convenience, the laboratory identification numbers for the STL-Connecticut laboratory are provided in the following table. Many states certify laboratories for specific parameters or tests within a category (i.e. method 325.2 for wastewater). The information in the following table indicates the lab is certified in a general category of testing such as drinking water or wastewater analysis. The laboratory should be contacted directly if parameter-specific certification information is required.

STL-Connecticut
Certification Summary (as of September 1998)

State	Responsible Agency	Certification	Lab Number
Connecticut	Department of Health Services	Drinking Water, Wastewater	PH-0497
Kansas	Department of Health & Environment	Drinking Water, Wastewater/Solid, Hazardous Waste	E-10210
Maine	Department of Health and Environmental Services	Drinking Water, Wastewater/Solid, Hazardous Waste	CT023
Massachusetts	Department of Environmental Protection	Potable/Non-Potable Water	CT023
New Hampshire	Department of Environmental Services	Drinking Water, Wastewater	252891
New Jersey	Department of Environmental Protection	Drinking Water, Wastewater	46410
New York	Department of Health	CLP, Drinking Water, Wastewater, Solid/ Hazardous Waste	10602
North Carolina	Division of Environmental Management	Wastewater	388
Rhode Island	Department of Health	Chemistry...Non-Potable Water and Wastewater	A43
Washington	Department of Ecology	Wastewater/Hazardous Waste	C231
Wisconsin	Department of Natural Resources	Wastewater	998355710

7098-2558A
INGERSOLL RAND
SAMPLE SUMMARY

ENT ID	LAB ID	MATRIX	DATE COLLECTED	DATE RECEIVED
-2S	982558A-01	WATER	12/01/98	12/03/98
-12	982558A-02	WATER	12/02/98	12/03/98
-12	982558A-02D	WATER	12/02/98	12/03/98
-12	982558A-02MS	WATER	12/02/98	12/03/98
W-12	982558A-02MSB	WATER	12/02/98	12/03/98
-12	982558A-02MSD	WATER	12/02/98	12/03/98
W-12	982558A-02S	WATER	12/02/98	12/03/98
I-7	982558A-03	WATER	12/02/98	12/03/98
SI-6	982558A-04	WATER	12/01/98	12/03/98
P-1	982558A-05	WATER	12/01/98	12/03/98
B 120298	982558A-06	WATER	12/02/98	12/03/98
-8D	982558A-07	WATER	12/03/98	12/04/98
W-7D	982558A-08	WATER	12/03/98	12/04/98
120398	982558A-09	WATER	12/03/98	12/04/98

IEA-CT ANALYTICAL SUMMARY

Client ID: DUP-1, ESI-6, ESI-7, MW-12, MW-2S, MW-7D, MW-8D, TB 120298, TB 120398
Job Number: 7098-2558A

Date: 12/28/98

ty	Matrix	Analysis	Description
2	None	DISK	Diskette Prep.
8	WATER	ALK-N310.1	Alkalinity
9	WATER	BOD5-N405.1	Biochemical Oxygen D
9	WATER	CHLORIDE-N325.2	Chloride
1	WATER	COD-N410.4	Chemical Oxygen Dema
9	WATER	FE-NSW846	Iron
9	WATER	FE-NSW846-D	Iron (Dissolved)
9	WATER	FLUORIDE-N340.2	Fluoride
8	WATER	GC-MISC	Miscellaneous GC
9	WATER	MET-PREP-ICAP	Metals ICAP Prep
9	WATER	MET-PREP-ICAP-D	Metals ICAP Prep (Di
9	WATER	MN-NSW846	Manganese
9	WATER	MN-NSW846-D	Manganese (Dissolved
9	WATER	NITRATE/NIT-N353.2	Nitrate/Nitrite-Nitr
9	WATER	SULFATE-N375.3	Sulfate
8	WATER	SULFIDE-N376.1	Sulfide
9	WATER	TOC-N415.1-DUP	Total Organic Carbon
9	WATER	TOC-N415.1-DUP-D	Total Organic Carbon
1	WATER	VOA-N8260A-TCL	TCL Volatile Organic
11	WATER	VOA-N8260A-TCL	TCL Volatile Organic

GERAGHTY & MILLER

Laboratory Task Order No./P.O. No. 2095-2 88

CHAIN-OF-CUSTODY RECORD

Page ___ of 2

Project Number/Name AY000219.0002.00018/IR

Project Location Jamestown, NY

Laboratory Seven Trent

Project Manager Marc Sanford

Sampler(s)/Affiliation OB/ARCADIS

Sample ID/Location	Matrix	Date/Time Sampled	Time Lab ID	ANALYSIS / METHOD / SIZE: Sulfide	(Alkalinity TC-SM2320B)	(Mercury SW-7470A)				Remarks	Total
ESI-6	L	12/1/98	9:30	1	2	2				04	5
DUP-1			9:30	1	2	2				05	5
MW-8S			12:30	1	2	2				01	5
MW-12		12/2/98	10:00	1	2	2				02	5
MW-12MS			10:00	1	2	2				03	5
MW-12MSD			10:00	1	2	2				02	5
~~MW-7S~~											
ESI-7			3:30	1	2	2				03	5

Sample Matrix: L = Liquid; S = Solid; A = Air

Total No. of Bottles/Containers 35

Relinquished by:		Organization: ARCADIS Geraghty+Miller	Date 12/2/98	Time 6:00P	Seal Intact?	
Received by:		Organization: STL-CT	Date 12/3/98	Time 10:00	(Yes) No N/A	
Relinquished by:		Organization:	Date / /	Time	Seal Intact?	
Received by:		Organization:	Date / /	Time	Yes No N/A	

Special Instructions/Remarks:

ARCADIS GERAGHTY & MILLER

Laboratory Task Order No./P.O. No. 3075-C

CHAIN-OF-CUSTODY RECORD

Page ___ of 2

Project Number/Name M0002.0002.0002 / FR

Project Location Jamestown, NY

Laboratory Severn Trent

Project Manager Marc Sanford

Sampler(s)/Affiliation DB/ARCADIS

Sample ID/Location	Matrix	Date/~~Time~~ Sampled	Time ~~Lab ID~~	ANALYSIS / METHOD / SIZE: VOA	(HNO3) CC-MISC	(HNO3) MTL-T	(HNO3) MTL-D	(HNO3) BOD3, NH3 (Fluoride, Chloride)	(H2SO4) NO3/NO2 (COD, Ammonia)	(H2SO4) TKN	Remarks	Total
BT-6	L	12/1/98	9:30	2	3	1	1	2	1		04	10
DUP-1			9:30	2	3	1	1	2	1		05	10
MW-05			12:30	2	3	1	1	2	1		01	10
MW-12		12/2/98	10:00	2	3	1	1	2	1		02	10
MW-12MS			10:00	2	3	1	1	2	1		02	10
MW-12 MSD			10:00	2	3	1	1	2	1		02	10
~~MW-05D~~												
BT-7			3:30	2	3	1	1	2	1		03	10
Trip Blank	L	12/2/98	—	2							06	2

Sample Matrix: L = Liquid; S = Solid; A = Air

Total No. of Bottles/ Containers: 72

					Seal Intact?
Relinquished by:	Organization: ARCADIS Geraghty & Miller	Date 12/2/98	Time 6:00P		
Received by:	Organization: STL-CT	Date 12/3/98	Time 10:00		(Yes) No N/A
Relinquished by:	Organization:	Date / /	Time		Seal Intact?
Received by:	Organization:	Date / /	Time		Yes No N/A

Special Instructions/Remarks:

ARCADIS GERAGHTY & MILLER

Laboratory Task Order No./P.O. No. 1088-2 A

CHAIN-OF-CUSTODY RECORD

Page — of —

Project Number/Name [illegible]

Project Location Jamestown, NY

Laboratory Severn Trent

Project Manager Marc Sanford

Sampler(s)/Affiliation OB/ARCADIS

Sample ID/Location	Matrix	Date Sampled	Time Lab ID	VOA	(SW8) 8-MISC	(SW8) MTC-T	(SW8) MTC-D	(HW03) BOD, Alkal, Hardn, Sulfide, chloride	(SW8) MB3-WB1 COD Ammonia (H2SO4)	Remarks	Total
MW-8D	L	12/3/98	8:00	2	3	1	1	2	1	07	10
MW-7D	↓	↓	10:00	2	3	1	1	2	1	08	10
Trip Blank	↓	↓	—	2						09	2

Sample Matrix: L = Liquid; S = Solid; A = Air

Total No. of Bottles/ Containers: 22

						Seal Intact?
Relinquished by: [signature]	Organization: ARCADIS Geraghty & Miller	Date 12/3/98	Time 1600			
Received by: [signature]	Organization: SEC-CT	Date 12/4/98	Time 10:00			Yes No N/A
Relinquished by:	Organization:	Date / /	Time			Seal Intact?
Received by:	Organization:	Date / /	Time			Yes No N/A

Special Instructions/Remarks:

ARCADIS GERAGHTY & MILLER Laboratory Task Order No./P.O. No. _____ **CHAIN-OF-CUSTODY RECORD** Page 1 of 2

Project Number/Name AY000819.0000.00018

Project Location Jamestown, NY

Laboratory Severn Trent

Project Manager Marc Sanford

Sampler(s)/Affiliation JJB/ARCADIS

Sample ID/Location	Matrix	Date/Time Sampled	Time Lab ID	ANALYSIS / METHOD / SIZE: Sulfide	(Nat'l ZnAc) TOC-0237	(MSD) TOC-0237	(MSD)			Remarks	Total
MW-8D	L	12/3/98	8:00	1	2	2				07	5
MW-7D	L	↓	10:00	1	2	2				08	5

Sample Matrix: L = Liquid; S = Solid; A = Air

Total No. of Bottles/ Containers 10

Relinquished by:	Organization: ARCADIS Geraghty & Miller	Date 12/3/98	Time 1:00 P	Seal Intact?	
Received by:	Organization: STL-CT	Date 12/4/98	Time 10:00	(Yes) No N/A	
Relinquished by:	Organization:	Date / /	Time	Seal Intact?	
Received by:	Organization:	Date / /	Time	Yes No N/A	

Special Instructions/Remarks: _____

FedEx USA Airbill

FedEx Tracking Number 809315688071

Form I.D. No. 0200

Recipient's Copy

From

12/3/98

Chris Carr

Phone (518) 452-78

Company Albany Braughby & Mull

215 Washington Avenue Ext.

Dept./Floor/Suite/Room

Albany State NY ZIP 12205

Your Internal Billing Reference Information

To

Sample receipt

Phone (303) 761-4454

Company Severn Trent Labs

Check here if residence

Extra charge applies for FedEx Express Saver

Dept./Floor/Suite/Room

Denver State CO ZIP 80403

For HOLD at FedEx Location check here

Hold Weekday (Not available with FedEx First Overnight)

Hold Saturday (Not available at all locations. Available for FedEx Priority Overnight and FedEx 2Day only)

For WEEKEND Delivery check here

Saturday Delivery (Not available for FedEx Standard Overnight, FedEx 2Day, FedEx Express Saver or FedEx First Overnight)

Extra Charges. Not available at all locations.

NEW Sunday Delivery (Available for FedEx Priority Overnight only)

8 0 9 3 1 5 6 8 8 0 7 1

4a Express Package Service Packages under 150 lbs.

Delivery commitment may be later in some areas

- [X] FedEx Priority Overnight (Next business morning)
- [ ] FedEx Standard Overnight (Next business afternoon)
- [ ] FedEx First Overnight (Earliest next business morning delivery to select locations) (Higher rates apply)
- [ ] FedEx 2Day (Second business day)
- [ ] FedEx Express Saver (Third business day)

FedEx Letter Rate not available. Minimum charge: One-pound rate

4b Express Freight Service Packages over 150 lbs.

Delivery commitment may be later in some areas

- [ ] FedEx Overnight Freight (Next business day)
- [ ] FedEx 2Day Freight (Second business day)
- [ ] FedEx Express Saver Freight (Up to 3 business days)

(Call for delivery schedule. See back for detailed descriptions of freight services.)

5 Packaging

- [ ] FedEx Letter
- [ ] FedEx Pak
- [ ] FedEx Box
- [ ] FedEx Tube
- [X] Other Pkg

Declared value limit $500

6 Special Handling

Does this shipment contain dangerous goods?*

- [X] No
- [ ] Yes (Give box count to the check-in agent)
- [ ] Yes (Shipper's Declaration not required)

- [ ] Dry Ice (Dry Ice, 9, UN 1845) ____ x ____ kg
- [ ] Cargo Aircraft Only

*Dangerous Goods cannot be shipped in FedEx packaging

7 Payment

Obtain Recipient FedEx Account No.

Bill to:

- [ ] Sender (Account No. in Section 1 will be billed)
- [X] Recipient
- [ ] Third Party
- [ ] Credit Card
- [ ] Cash/Check

(Enter FedEx Account No. or Credit Card No. below)

Total Packages	Total Weight	Total Declared Value*	Total Charges
1	4	$ .00	$

* Where declaring a value higher than $500 per shipment, you pay an additional charge. See SERVICE CONDITIONS, DECLARED VALUE, AND LIMIT OF LIABILITY section for further information.

Credit Card Auth

8 Release Signature

12/4/98

Your signature authorizes Federal Express to deliver this shipment without obtaining a signature and agrees to indemnify and hold harmless Federal Express from any resulting claims.

322

Questions?

Call 1-800-Go-FedEx® (800)463-3339

Rev. Date 3/97 Part #153931 ©1994 FedEx PRINTED IN U.S.A.

Severn [redacted]nit - Connecticut
Internal Chain-of-Custody

Client: ~~7098-2558A~~ Gem

Custody Seal: ~~present~~ / absent
intact / not intact

Field C-O-C: present / absent

STL Job #: 7098-2558A

Airbill #: FE

Sample #s: 01-06

Locations: 98+99+TocBox #35

Laboratory Sample #	Relinquished by	Accepted by	Date	Time	Reason	Relinquished by	Accepted by	Date	Time
6			12/05	10:50	VOA	Used			
1-4		D. Humbert	12/6/98	14:20	VOA	Used			
1-5		DM	12/7	710	alk	DPM		12/7	104
1-5		B. Alves	12/8	1040	Sulfide	B. Alves		12/8	1845
1-5			12/17	1200	MTL ICAP			12/17	1553
1-5		JFD	12/21	7:30	F	JFD		12/21	11:0
1-5		JFD	12/22	5:30	F	JFD		12/22	9:1

STL Form# SMF00502.CT

Severn ...nt - Connecticut
Internal Chain-of-Custody

Client: G&M

STL Job #: 7098-2556M

Custody Seal: present / absent
intact / not intact

Airbill #: PC

Sample #s: 07-09

Field C-O-C: present / absent

Locations: 93a99a Tackbox #35

Laboratory Sample #	Relinquished by	Accepted by	Date	Time	Reason	Relinquished by	Accepted by	Date	Time
7-9			12/05/98	10:50	VOA	Used			
7-8		D. Humbert	12/6/98	14:30	VOA	Used			
7-8			12/7	710	all				
7,8		B. Alves	12/8	1040	Sulfide	B. Alves		12/8	1845
7&8			12/17	1200	MTL ICAP			12/17	1535
7,8		JFD	12/21	7:30	F⁻	JFD		12/21	11:0
7,8		JFD	12/22	5:30	F⁻	JFD		12/22	9:15

STL Form# SMF00502.CT

an environmental testing company
200 Monroe Turnpike
Monroe, Connecticut 06468
(203) 261-4458
FAX (203) 268-5345

CHAIN OF CUSTODY
ATOMIC SPECTROSCOPY DEPARTMENT

Job Number 7098-2558A Sample Numbers 01-05, 07 & 08
Total & Filtered

(WATER) SOIL - SLUDGE - EPTOX/TCLP

I confirm that I have performed the preparation below following SOP guidelines and authorize the release of this preparation:

Sample Prep			
		12-17-98	(ICP)
			FURN
			HERC
	Chemist	Date(s)	

I confirm that I have performed the analysis below following SOP guidelines and authorize the release of all associated data:

Analysis		12/19/98	ICP
			FLAM
			FURN
			HERC
	Chemist	Date(s)	

I have reviewed and authorize the release of this job:

Complete _____ 12/20/98
Supervisor Date

Batch Assignment _____

IEA
An Aquarion Company

IEA SUBCONTRACTING REQUISITION FO

980697-ST21

PROJECT INFORMATION

1. NUMBER	2. VERBAL DUE DATE	3. FAX DUE DATE	4. HARDCOPY DUE DATE
CT7612	—	—	12/28/98
...ERNAL PROJECT NUMBER	**6. SDG COMPLETE?**	**7. PENALTY JOB?**	**8. SDG #**
7098-2558A	☒ YES ☐ NO	☐ YES ☒ NO	A2558
REGULATORY METHOD	**10. QC BILLABLE?**	**11. VTSR DATE**	**12. REQUIRED CERTIFICATIONS? IF YES, LIST**
AM-18 & AM-15	☒ YES ☐ NO	12/3/98 + 12/4/98	

IEA PROJECT MANAGER	16. TELEPHONE NO.	17. REPORTING LEVEL REQUIRED	18. REPORTING FORMAT?	13. CERT. AGENCY	14. CATEGORY
BLINKETT	ext 25	1 (2) 3 4		NY	GW
19. PERCENT DISCOUNT	**20. RUSH MULTIPLIER**	**21. DISKETTE REQUIRED?**	**22. DISKETTE FORMAT?**		
—	—	☒ YES ☐ NO			

CLIENT SAMPLE ID	24. LAB ID	25. DATE AND TIME	26. MATRIX	27. PARAMETER/METHOD/PRES.	28. BOTTLE TYP	29.
MW-25	9806558A-01	12/1/98	WA	AM-15 + AM-18	3x40	
MW-12*	-02	12/2/98				
~~MW-20D~~		—	—	—		
SI-7	-03	12/2/98	WA			
ESI-6	-04	12/1/98				
MP-1	-05	12/1/98				
MW-8D	-07	12/3/98				
J-7D	-08	12/3/98				

SAMPLES RELINQUISHED BY (SIGNATURE)	31. DATE AND TIME	32. SAMPLES RECEIVED BY (SIGNATURE)	33. DATE AND TIME	34. RE...
	12/3/98 16:00			☐ Bottle Intact ☐ Custody Se ☐ Preserved ☐ Seals Intact ☐ Chilled ☐ See Remarl
PLES RELINQUISHED BY (SIGNATURE)	**DATE AND TIME**	**SAMPLES RECEIVED BY (SIGNATURE)**	**DATE AND TIME**	**REMARKS ON SAMPLE RECEIPT** ☐ Bottle Intact ☐ Custody Se ☐ Preserved ☐ Seals Intact ☐ Chilled ☐ See Remarl

35. SPECIAL INSTRUCTIONS/REMARKS (ATTACH SEPARATE SHEET IF NECESSARY)

* please perform lab QC (duplicate) on sample MW-12 (billable) please report only ~~the~~ ethane & ethene & CO2 on all samples!

SHIPPING INSTRUCTIONS

36. SHIP TO
Microseeps
220 William Pitt Way
Pittsburgh, PA 15238 412 826 5255

37. SHIP DATE 12/7/98

(Circle One)
Economy Standard (Priority 1) Saturday Delivery

REPORTING INSTRUCTIONS

BILL TO
ST2-CT

39. REPORT TO

40. TOTAL NUMBER OF COPIES 1

41. USE FOR REPORTING? (USE) OR LAB ID'S

APPROVALS

INITIATOR APPROVAL — DATE

42. SENDING LABORATORY

43. RECEIVING LAB APPROVAL — DATE

45. RECEIVING LABORATORY
Microseeps 12-8-98

IEA / CT
LABORATORY CHRONICLE

SAMPLE PREPARATION AND ANALYSIS SUMMARY
INORGANIC ANALYSIS

JOB #: 7098-2558

SAMPLE ID	MATRIX	LIST REQUESTED	DATE RECEIVED	DATE DIGESTED	DATE ANALYZED
MW-28	WATER	FE-MSW846	12/03/98	12/17/98	12/18/98
MW-28	WATER	FE-MSW846-D	12/03/98		
MW-28	WATER	MN-MSW846	12/03/98		
MW-28	WATER	MN-MSW846-D	12/03/98		
MW-12	WATER	FE-MSW846	12/03/98		
MW-12	WATER	FE-MSW846-D	12/03/98		
MW-12	WATER	MN-MSW846	12/03/98		
MW-12	WATER	MN-MSW846-D	12/03/98		
ESI-7	WATER	FE-MSW846	12/03/98		
ESI-7	WATER	FE-MSW846-D	12/03/98		
ESI-7	WATER	MN-MSW846	12/03/98		
ESI-7	WATER	MN-MSW846-D	12/03/98		
ESI-6	WATER	FE-MSW846	12/03/98		
ESI-6	WATER	FE-MSW846-D	12/03/98		
ESI-6	WATER	MN-MSW846	12/03/98		
ESI-6	WATER	MN-MSW846-D	12/03/98		
DUP-1	WATER	FE-MSW846	12/03/98		
DUP-1	WATER	FE-MSW846-D	12/03/98		
DUP-1	WATER	MN-MSW846	12/03/98		
DUP-1	WATER	MN-MSW846-D	12/03/98		
MW-8D	WATER	FE-MSW846	12/04/98		
MW-8D	WATER	FE-MSW846-D	12/04/98		

ction Supervisor (signature) D. Hall

- iew & Approval (printed name) D. Hall

(Date) 12/21/98

QC Supervisor (signature) _____

Review & Approval (printed name) _____

(Date) __/__/__

IEA / CT
LABORATORY CHRONICLE

SAMPLE PREPARATION AND ANALYSIS SUMMARY
INORGANIC ANALYSIS

JOB #: 7098-255

SAMPLE ID	MATRIX	LIST REQUESTED	DATE RECEIVED	DATE DIGESTED	DATE ANALYZED
MW-8D	WATER	MN-MSW846	12/04/98	12/17/98	12/19/9
MW-8D	WATER	MN-MSW846-D	12/04/98		
MW-7D	WATER	FE-MSW846	12/04/98		
MW-7D	WATER	FE-MSW846-D	12/04/98		
MW-7D	WATER	MN-MSW846	12/04/98		
MW-7D	WATER	MN-MSW846-D	12/04/98	"	"

Section Supervisor (signature) [signature]

Review & Approval (printed name) D. Heick

(Date) 12/21/98

QC Supervisor (signature) _____

Review & Approval (printed name) _____

(Date) __/__/__

HOLD TIME REPORT

ɔ Name: STL Contract: _____

ab Code: STL Case No.: 2558A SAS No.: _____ SDG No.: A2558

Analyte : ALK-N310.1

Client Sample ID	Date Received	Date Prepped	Date Analyzed
MW-7D	12/04/98	12/07/98	12/07/98
MW-8D	12/04/98	12/07/98	12/07/98
DUP-1	12/03/98	12/07/98	12/07/98
ESI-6	12/03/98	12/07/98	12/07/98
ESI-7	12/03/98	12/07/98	12/07/98
MW-12	12/03/98	12/07/98	12/07/98
MW-12	12/03/98	12/07/98	12/07/98
MW-2S	12/03/98	12/07/98	12/07/98

HOLD TIME REPORT

Lab Name: STL Contract: _____

Lab Code: STL Case No.: 2558A SAS No.: _____ SDG No.: A2558

Analyte : BOD5-N405.1

Client Sample ID	Date Received	Date Prepped	Date Analyzed
MW-7D	12/04/98	12/04/98	12/04/98
MW-8D	12/04/98	12/04/98	12/04/98
DUP-1	12/03/98	12/04/98	12/04/98
ESI-6	12/03/98	12/04/98	12/04/98
ESI-7	12/03/98	12/04/98	12/04/98
MW-12	12/03/98	12/04/98	12/04/98
MW-12	12/03/98	12/04/98	12/04/98
MW-12	12/03/98	12/04/98	12/04/98
MW-2S	12/03/98	12/04/98	12/04/98

HOLD TIME REPORT

Lab Name: STL Contract: _____

Lab Code: STL Case No.: 2558A SAS No.: _____ SDG No.: A2558

Analyte : CHLORIDE-N325.2

Client Sample ID	Date Received	Date Prepped	Date Analyzed
MW-7D	12/04/98	12/07/98	12/07/98
MW-8D	12/04/98	12/07/98	12/07/98
DUP-1	12/03/98	12/07/98	12/07/98
ESI-6	12/03/98	12/07/98	12/07/98
ESI-7	12/03/98	12/07/98	12/07/98
MW-12	12/03/98	12/07/98	12/07/98
MW-12	12/03/98	12/07/98	12/07/98
MW-12	12/03/98	12/07/98	12/07/98
MW-2S	12/03/98	12/07/98	12/07/98

HOLD TIME REPORT

Lab Name: STL Contract: _____

Lab Code: STL Case No.: 2558A SAS No.: _____ SDG No.: A2558

Analyte : COD-N410.4

Client Sample ID	Date Received	Date Prepped	Date Analyzed
MW-7D	12/04/98	12/08/98	12/08/98
MW-8D	12/04/98	12/08/98	12/08/98
DUP-1	12/03/98	12/08/98	12/08/98
ESI-6	12/03/98	12/08/98	12/08/98
ESI-7	12/03/98	12/08/98	12/08/98
MW-12	12/03/98	12/08/98	12/08/98
MW-12	12/03/98	12/08/98	12/08/98
MW-12	12/03/98	12/08/98	12/08/98
MW-2S	12/03/98	12/08/98	12/08/98

HOLD TIME REPORT

Lab Name: STL Contract: _____

Lab Code: STL Case No.: 2558A SAS No.: _____ SDG No.: A2558

Analyte : FLUORIDE-N340.2

Client Sample ID	Date Received	Date Prepped	Date Analyzed
MW-7D	12/04/98	12/22/98	12/22/98
MW-8D	12/04/98	12/22/98	12/22/98
DUP-1	12/03/98	12/22/98	12/22/98
ESI-6	12/03/98	12/22/98	12/22/98
ESI-7	12/03/98	12/22/98	12/22/98
MW-12	12/03/98	12/22/98	12/22/98
MW-12	12/03/98	12/22/98	12/22/98
MW-12	12/03/98	12/22/98	12/22/98
MW-2S	12/03/98	12/22/98	12/22/98

HOLD TIME REPORT

Lab Name: STL Contract: _____

Lab Code: STL Case No.: 2558A SAS No.: _____ SDG No.: A2558

Analyte : NITRATE/NIT-N353.2

Client Sample ID	Date Received	Date Prepped	Date Analyzed
MW-7D	12/04/98	12/04/98	12/04/98
MW-8D	12/04/98	12/04/98	12/04/98
DUP-1	12/03/98	12/04/98	12/04/98
ESI-6	12/03/98	12/04/98	12/04/98
ESI-7	12/03/98	12/04/98	12/04/98
MW-12	12/03/98	12/04/98	12/04/98
MW-12	12/03/98	12/04/98	12/04/98
MW-12	12/03/98	12/04/98	12/04/98
MW-2S	12/03/98	12/04/98	12/04/98

HOLD TIME REPORT

Lab Name: STL Contract: _____

Lab Code: STL Case No.: 2558A SAS No.: _____ SDG No.: A2558

Analyte : SULFATE-N375.3

Client Sample ID	Date Received	Date Prepped	Date Analyzed
MW-7D	12/04/98	12/07/98	12/07/98
MW-8D	12/04/98	12/07/98	12/07/98
DUP-1	12/03/98	12/07/98	12/07/98
ESI-6	12/03/98	12/07/98	12/07/98
ESI-7	12/03/98	12/07/98	12/07/98
MW-12	12/03/98	12/07/98	12/07/98
MW-12	12/03/98	12/07/98	12/07/98
MW-12	12/03/98	12/07/98	12/07/98
MW-2S	12/03/98	12/07/98	12/07/98

HOLD TIME REPORT

› Name: STL Contract: _____

ab Code: STL Case No.: 2558A SAS No.: _____ SDG No.: A2558

Analyte : SULFIDE-N376.1

Client Sample ID	Date Received	Date Prepped	Date Analyzed
MW-7D	12/04/98	12/09/98	12/09/98
MW-8D	12/04/98	12/09/98	12/09/98
DUP-1	12/03/98	12/08/98	12/08/98
ESI-6	12/03/98	12/08/98	12/08/98
ESI-7	12/03/98	12/08/98	12/08/98
MW-12	12/03/98	12/08/98	12/08/98
MW-12	12/03/98	12/08/98	12/08/98
MW-2S	12/03/98	12/08/98	12/08/98

FORM VII - WC

HOLD TIME REPORT

Lab Name: STL Contract: _____

Lab Code: STL Case No.: 2558A SAS No.: _____ SDG No.: A2558

Analyte : TOC-N415.1-DUP

Client Sample ID	Date Received	Date Prepped	Date Analyzed
MW-7D	12/04/98	12/19/98	12/19/98
MW-8D	12/04/98	12/19/98	12/19/98
DUP-1	12/03/98	12/19/98	12/19/98
ESI-6	12/03/98	12/19/98	12/19/98
ESI-7	12/03/98	12/19/98	12/19/98
MW-12	12/03/98	12/19/98	12/19/98
MW-12	12/03/98	12/19/98	12/19/98
MW-12	12/03/98	12/19/98	12/19/98
MW-2S	12/03/98	12/19/98	12/19/98

HOLD TIME REPORT

Lab Name: STL Contract: _____

Lab Code: STL Case No.: 2558A SAS No.: _____ SDG No.: A2558

Analyte : TOC-N415.1-DUP-D

Client Sample ID	Date Received	Date Prepped	Date Analyzed
MW-7D	12/04/98	12/19/98	12/19/98
MW-8D	12/04/98	12/19/98	12/19/98
DUP-1	12/03/98	12/19/98	12/19/98
ESI-6	12/03/98	12/19/98	12/19/98
ESI-7	12/03/98	12/19/98	12/19/98
MW-12	12/03/98	12/19/98	12/19/98
MW-12	12/03/98	12/19/98	12/19/98
MW-12	12/03/98	12/19/98	12/19/98
MW-2S	12/03/98	12/19/98	12/19/98

2A

WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: STL/CT Contract: _____

Lab Code: IEACT Case No.: 2558A SAS No.: _____ SDG No.: A2558

	EPA SAMPLE NO.	SMC1 (TOL) #	SMC2 (BFB) #	SMC3 (DCE) #	OTHER	TOT OUT
01	VBLKL3	94	94	98		0
02	TB 120298	93	93	98		0
03	TB 120398	90	96	101		0
04	DUP-1	94	92	101		0
05	MW-12MS	92	90	96		0
06	MW-12MSD	94	96	94		0
07	MW-12MSB	96	96	98		0
08	VBLKL4	92	94	102		0
09	ESI-6	93	91	107		0
10	ESI-7	96	92	106		0
11	MW-12	91	92	104		0
12	VBLKL5	91	92	103		0
13	MW-7D	92	98	102		0
14	MW-2S	91	98	104		0
15	MW-8D	92	91	107		0
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

QC LIMITS

SMC1 (TOL) = Toluene-d8 (88-110)
SMC2 (BFB) = Bromofluorobenzene (86-115)
SMC3 (DCE) = 1,2-Dichloroethane-d4 (76-114)

Column to be used to flag recovery values

* Values outside of contract required QC limits

WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: STL/CT Contract: _____

Lab Code: IEACT Case No.: 2558A SAS No.: _____ SDG No.: A2558

Matrix Spike - EPA Sample No.: MW-12

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC. LIMI REC.
1,1-Dichloroethene	250	4	290	114	61-14
Trichloroethene	250	81	320	96	71-12
Benzene	250	0	260	104	76-12
Toluene	250	0	230	92	76-12
Chlorobenzene	250	0	230	92	75-13

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	REC.
1,1-Dichloroethene	250	280	110	4	14	61-14
Trichloroethene	250	280	80	18*	14	71-12
Benzene	250	240	96	8	11	76-12
Toluene	250	230	92	0	13	76-12
Chlorobenzene	250	230	92	0	13	75-13

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

* Values outside of QC limits.

RPD: 1 out of 5 outside limits
Spike Recovery: 0 out of 10 outside limits

COMMENTS: _____

3-ASP

VOLATILE MATRIX SPIKE BLANK RECOVERY SUMMARY

Lab Name: STL/CT Contract: _____

Lab Code: IEACT Case No.: 2558A SAS No.: _____ SDG No.: A2558

Matrix Spike - EPA Sample No.: MW-12

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	SPIKE CONCENTRATION (ug/L)	SPIKE % REC #	QC. LIMIT REC.
1,1-Dichloroethene	50	0	57	114	61-14
Trichloroethene	50	0	47	94	71-12
Benzene	50	0	48	96	76-12
Toluene	50	0	46	92	76-12
Chlorobenzene	50	0	46	92	75-13

Column to be used to flag recovery with an asterisk

* Values outside of QC limits.

Spike Recovery: 0 out of 5 outside limits

COMMENTS: _____

Micro[illegible]ps

— QUALITY CONTROL —

ST21-983697

— SEVERN TRENT LABORATORIES —
— PROJECT: 7098-2558A —
— LOCATION: STL - CT —

CONTINUING CALIBRATION STANDARDS 12/11/98

COMPOUND	FILE ID	TRUE CONC.	MEASURED	% DIFF.
ETHANE	T14 300	476	478	0.42
ETHYLENE	T14 300	533	546	2.44
CARBON DIOXIDE	T14 302	319.25	316.96	0.72

HE IN LOOP 12/11/98

COMPOUND	FILE ID	DET. LIMIT	MEASURED
ETHANE	T14 303	5ng/l	ND
ETHYLENE	T14 303	5ng/l	ND
CARBON DIOXIDE	T14 303	0.60mg/l	ND

ANALYST INITIALS BK

REVIEW AS

U.S. EPA - CLP

3
BLANKS

Lab Name: STL Contract: _____

Lab Code: STL Case No.: _____ SAS No.: _____ SDG No.: A255

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calibration Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Preparation Blank	C	M
Aluminum											NR
Antimony											NR
Arsenic											NR
Barium											NR
Beryllium											NR
Cadmium											NR
Calcium											NR
Chromium											NR
Cobalt											NR
Copper									10.000	U	P
Iron											NR
Lead											NR
Magnesium									2.000	U	P
Manganese											NR
Mercury											NR
Nickel											NR
Potassium											NR
Selenium											NR
Silver											NR
Sodium											NR
Thallium											NR
Vanadium											NR
Zinc											NR
Cyanide											

U.S. EPA - CLP

5A
SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

MW-12S

Lab Name: STL Contract: _____

Lab Code: STL Case No.: 2558A SAS No.: _____ SDG No.: A2558

Matrix: WATER Level (low/med): LOW

% Solids for Sample: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

Analyte	Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Aluminum									NR
Antimony									NR
Arsenic									NR
Barium									NR
Beryllium									NR
Cadmium									NR
Calcium									NR
Chromium									NR
Cobalt									NR
Copper									NR
Iron		12727.8500		11672.8000		1000.00	105.5		NR
Lead									NR
Magnesium									NR
Manganese	75-125	1998.2800		1529.4670		500.00	93.8		NR
Mercury									NR
Nickel									NR
Potassium									NR
Selenium									NR
Silver									NR
Sodium									NR
Thallium									NR
Vanadium									NR
Zinc									NR
Cyanide									NR

Comments:

Filtered Metals

U.S. EPA - CLP

5A
SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

MW-12S

Lab Name: STL Contract: _____

Lab Code: STL Case No.: 2558A SAS No.: _____ SDG No.: A2558

Matrix: WATER Level (low/med): LOW

% Solids for Sample: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

Analyte	Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Aluminum									NR
Antimony									NR
Arsenic									NR
Barium									NR
Beryllium									NR
Cadmium									NR
Calcium									NR
Chromium									NR
Cobalt									NR
Copper									NR
Iron		12710.4600		11551.7900		1000.00	115.9		N
Lead									NR
Magnesium									NR
Manganese	75-125	2083.4700		1594.2970		500.00	97.8		N
Mercury									NR
Nickel									NR
Potassium									NR
Selenium									NR
Silver									NR
Sodium									NR
Thallium									NR
Vanadium									NR
Zinc									NR
Cyanide									NR

Comments:

Total Metals

U.S. EPA - CLP

6
DUPLICATES

EPA SAMPLE NO.

MW-12D

Lab Name: STL Contract: _____

Lab Code: STL Case No.: 2558A SAS No.: _____ SDG No.: A2558

Matrix: WATER Level (low/med): LOW

% Solids for Sample: 0.0 % Solids for Duplicate: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Aluminum								NR
Antimony								NR
Arsenic								NR
Barium								NR
Beryllium								NR
Cadmium								NR
Calcium								NR
Chromium								NR
Cobalt								NR
Copper								NR
Iron		11672.8000		11950.4200		2.4		P
Lead								NR
Magnesium								NR
Manganese		1529.4670		1561.0540		2.0		P
Mercury								NR
Nickel								NR
Potassium								NR
Selenium								NR
Silver								NR
Sodium								NR
Thallium								NR
Vanadium								NR
Zinc								NR
Cyanide								NR

Filtered Metals

U.S. EPA - CLP

6
DUPLICATES

EPA SAMPLE NO.

MW-12D

Lab Name: STL Contract: _____

Lab Code: STL Case No.: 2558A SAS No.: _____ SDG No.: A2558

Matrix: WATER Level (low/med): LOW

% Solids for Sample: 0.0 % Solids for Duplicate: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Aluminum								NR
Antimony								NR
Arsenic								NR
Barium								NR
Beryllium								NR
Cadmium								NR
Calcium								NR
Chromium								NR
Cobalt								NR
Copper								NR
Iron		11551.7900		11813.9700		2.2		P
Lead								NR
Magnesium								NR
Manganese		1594.2970		1628.8560		2.1		P
Mercury								NR
Nickel								NR
Potassium								NR
Selenium								NR
Silver								NR
Sodium								NR
Thallium								NR
Vanadium								NR
Zinc								NR
Cyanide								NR

Total Metals

U.S. EPA - CLP

7

LABORATORY CONTROL SAMPLE

Lab Name: STL Contract: _____

Lab Code: STL Case No.: _____ SAS No.: _____ SDG No.: A2558

Solid LCS Source: _____

Aqueous LCS Source: INORG. VENT.

Analyte	Aqueous (ug/L) True	Found	%R	Solid (mg/kg) True	Found	C	Limits		%R
Aluminum									
Antimony									
Arsenic									
Barium									
Beryllium									
Cadmium									
Calcium									
Chromium									
Cobalt									
Copper									
Iron	500.0	550.70	110.1						
Lead									
Magnesium									
Manganese	500.0	509.07	101.8						
Mercury									
Nickel									
Potassium									
Selenium									
Silver									
Sodium									
Thallium									
Vanadium									
Zinc									
Cyanide									

WET CHEM ANALYSIS

3
BLANKS

Lab Name: STL Contract: _____

Lab Code: STL Case No.: 2558A SAS No.: _____ SDG No.: A2558

Analyte	Initial Calib. Blank	C	Continuing Calibration Blank 1	C	2	C	3	C	Prepa-ration Blank	C	units	M
Alkalinity									2.000		mg/l	T
BOD5									2.000		mg/l	P
Chloride									1.000		mg/l	L
COD									10.00		mg/l	C
Fluoride									0.1000		mg/l	D
Nitrate/Nitrite									0.1000		mg/l	L
Sulfate									10.00		mg/l	L
Sulfide									1.000		mg/l	D
Sulfide									1.000		mg/l	D
TOC									1.000		mg/l	D
TOC - D									1.000		mg/l	D

4A

SPIKE SAMPLE RECOVERY

SAMPLE NO.

MW-12

ɔ Name: STL Contract: _____

Lab Code: STL Case No.: 2558A SAS No.: _____ SDG No.: A2558

Matrix: WATER

% Solids for Sample: 0

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	Units
ɔD5	75-125	85.8		3.48		96	85.8		mg/l
..lloride	75-125	77.5		19.8		60	96.2		mg/l
ɔD	75-125	150		52.5		100	97.3		mg/l
luoride	75-125	.36		.14		.2	110		mg/l
itrate/Nitrite	75-125	.402		.1	U	.4	100.5		mg/l
ulfate	75-125	109		48.7		60	100		mg/l
OC	75-125	43.9		24		20	99.8		mg/l
OC -D	75-125	43.6		23.6		20	99.9		mg/l

Comments:

FORM IV (PART 1) - WC

5
DUPLICATES

SAMPLE NO.

MW-12

Lab Name: STL Contract:

Lab Code: STL Case No.: 2558A SAS No.: SDG No.: A2558

% Solids for Sample: 0 % Solids for Duplicate: 0

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	Units	M
ALK-N310.1	20	408		409		.2		mg/l	T
BOD5-N405.1	20	3.48		7.68		75.3		mg/l	P
CHLORIDE-N325.2	20	19.8		17.2		13.9		mg/l	L
COD-N410.4	20	52.5		57.5		9.1		mg/l	C
FLUORIDE-N340.2	20	.14		.15		6.9		mg/l	D
NITRATE/NIT-N353.2	20	.1	U	.1	U			mg/l	
SULFATE-N375.3	20	48.7		46.4		4.9		mg/l	L
SULFIDE-N376.1	20	1	U	1	U			mg/l	D
TOC-N415.1-DUP	20	24		23.7		.8		mg/l	D
TOC-N415.1-DUP-D	20	23.6		23.6		.1		mg/l	D

LABORATORY CONTROL SAMPLE

Lab Name: STL Contract:

Lab Code: STL Case No.: 2558A SAS No.: SDG No.: A2558

Analyte	True	LCS Found	%R	units	LCS Source
NITRATE/NIT-N353	.2	13 12.9	98.9	mg/l	

FORM VI - WC

LABORATORY CONTROL SAMPLE

Lab Name: STL Contract:

Lab Code: STL Case No.: 2558A SAS No.: SDG No.: A2558

Analyte	True	LCS Found	%R	units	LCS Source
COD-N410.4	332.99	350	105	mg/l	
TOC-N415.1-DUP	12.54	12.5	99.6	mg/l	
TOC-N415.1-DUP-D	12.54	12.5	99.6	mg/l	

LABORATORY CONTROL SAMPLE

Lab Name: STL Contract:

Lab Code: STL Case No.: 2558A SAS No.: SDG No.: A2558

Analyte	True	LCS Found	%R	units	LCS Source
FLUORIDE-N340.2	1.34	1.7	126.9	mg/l	

LABORATORY CONTROL SAMPLE

Lab Name: STL Contract:

Lab Code: STL Case No.: 2558A SAS No.: SDG No.: A2558

Analyte	True	LCS Found	%R	units	LCS Source
ALK-N310.1	164.87	163	98.9	mg/L	

FORM VI - WC

LABORATORY CONTROL SAMPLE

Lab Name: STL Contract:

Lab Code: STL Case No.: 2558A SAS No.: SDG No.: A2558

Analyte	True	LCS Found	%R	units	LCS Source
CHLORIDE-N325.2	66.3	72.2	108.9	mg/l	
SULFATE-N375.3	77.5	84.8	109.4	mg/l	

January 1999 Groundwater Laboratory Analytical Data Sheets

STL
Committed To *Your* Success

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Monroe CT 06468
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Fax: (203) 268-5346

February 04, 1999

Mr. Marc Sanford
INGERSOLL RAND
Geraghty & Miller
215 Washington Ave Ext.
Albany, NY 12205

Dear Mr. Sanford :

Please find enclosed the analytical results of 14 sample(s) received at our laboratory on January 13-14, 1999. This report contains sections addressing the following information at a minimum:

- sample summary
- analytical methodology
- state certifications
- definition of data qualifiers and terminology
- analytical results
- chain-of-custody

STL Report #7099-0072A	Purchase Order #907019
Project ID: JAMESTOWN, NY	

Copies of this analytical report and supporting data are maintained in our files for a minimum of five years unless special arrangements have been made. Unless specifically indicated, all analytical testing was performed at this laboratory location and no portion of the testing was subcontracted.

We appreciate your selection of our services and welcome any questions or suggestions you may have relative to this report. Please contact your customer service representative at (203) 261-4458 for any additional information. Thank you for utilizing our services; we hope you will consider us for your future analytical needs.

I have reviewed and approved the enclosed data for final release.

Very truly yours,

Jeffrey C. Curran
Laboratory Manager

JCC

cc: D. JONES
J. HARRY

7099-0072A

INGERSOLL RAND

Case Narrative

Classical Chemistry - Listed below are the wet chemistry analyte methods and references for the samples analyzed in this SDG. Sample ESI-6 was analyzed for sulfide on 1/19/99. The results for the sample and duplicate were <1.00 mg/L. The spike result did not meet criteria; therefore, the sample was rerun on 1/25/99. The spike failed again due to matrix interference. No other analytical problems were encountered and all holding times were met.

Analyte	Method	Reference
Alkalinity	310.1	1
BOD5	405.1	1
Chloride	325.2	1
COD	410.4	1
Fluoride	340.2	1
Nitrate/Nitrite	353.2	1
Sulfate	375.2	1
Sulfide	376.1	1
TOCD	415.1	1
TOCD-Dissolved	415.1	1

References:

1. Methods of Chemical Analysis of Water and Wastes, EPA 600, 1983.

Metals - ICAP metals were determined using a JA61E trace ICAP using guidance provided in SW846 according to the following Methods: ICAP-3010/6010.

One "N" flag resulted from spike analysis of sample ESI-6 for manganese. Since the post-digestion spike recovery was within the control limits, a matrix interference was not suspected.

No other problems occurred during analysis. All appropriate protocols were employed. All data appears to be consistent.

IEC's are electronically employed by the JA61E trace ICAP. However, the ICSA is utilized as a monitoring device to detect any additional adjustments that may be required. These modifications are calculated and applied manually. They are so noted in the raw data.

Volatile Organics - Volatile organics were determined by purge and trap GC/MS using guidance provided in Method 8260B. The instrumentation used was a Tekmar Dynamic Headspace Concentrator interfaced with a Hewlett-Packard Model 5971A GC/MS/DS.

Sample Calculation:

Sample ID - MW-7D
Compound - Acetone

$$\frac{(72057)(250)(1)}{(22708)(.360)(5)} = 44 \text{ UG/L.}$$

The following samples were analyzed at dilutions due to high target compound concentrations:

MW-8D	1:5000
MW-12	1:5
MW-8S	1:100
DUP-1	1:100

No problems were encountered.

Carbon Dioxide, Ethane, and Ethylene - Subcontracted to Microseeps.

TABLE VO-1.0
7099-0072A
INGERSOLL RAND
TCL VOLATILE ORGANICS

Aqueous

All values are ug/L.

Client Sample I.D.	Method Blank	MW-7D	TB 011299	Quant. Limits with no Dilution
Lab Sample I.D.	VBLKLI	990072A-01	990072A-05	
Method Blank I.D.	VBLKLI	VBLKLI	VBLKLI	
Quant. Factor	1.00	1.00	1.00	
Chloromethane	U	U	U	10
Bromomethane	U	U	U	10
Vinyl Chloride	U	U	U	10
Chloroethane	U	U	U	10
Methylene Chloride	U	U	U	5.0
Acetone	U	44	U	10
Carbon Disulfide	U	U	U	5.0
Vinyl Acetate	U	U	U	10
1,1-Dichloroethene	U	U	U	5.0
1,1-Dichloroethane	U	U	U	5.0
1,2-Dichloroethene (total)	U	2J	U	5.0
Chloroform	U	U	U	5.0
1,2-Dichloroethane	U	U	U	5.0
2-Butanone	U	U	U	10
1,1,1-Trichloroethane	U	U	U	5.0
Carbon Tetrachloride	U	U	U	5.0
Bromodichloromethane	U	U	U	5.0
1,2-Dichloropropane	U	U	U	5.0
cis-1,3-Dichloropropene	U	U	U	5.0
Trichloroethene	U	62	U	5.0
Dibromochloromethane	U	U	U	5.0
1,1,2-Trichloroethane	U	U	U	5.0
Benzene	U	U	U	5.0
trans-1,3-Dichloropropene	U	U	U	5.0
Bromoform	U	U	U	5.0
4-Methyl-2-Pentanone	U	U	U	10
2-Hexanone	U	U	U	10
Tetrachloroethene	U	U	U	5.0
Toluene	U	U	U	5.0
1,1,2,2-Tetrachloroethane	U	U	U	5.0
Chlorobenzene	U	U	U	5.0
Ethylbenzene	U	U	U	5.0
Styrene	U	U	U	5.0
Xylene (total)	U	U	U	5.0
Date Received		01/13/99	01/13/99	
Date Extracted	N/A	N/A	N/A	
Date Analyzed	01/14/99	01/14/99	01/14/99	

See Appendix for qualifier definitions
Note: Compound detection limit = quantitation limit x quantitation factor
Quant. Factor = a numerical value which takes into account any variation in sample weight/volume, % moisture and sample dilution.

TABLE VO-1.1
7099-0072A
INGERSOLL RAND
TCL VOLATILE ORGANICS

Aqueous

All values are ug/L.

Client Sample I.D.	ESI-6	MW-12	MW-8D	Quant. Limits with no Dilution
Lab Sample I.D.	990072A-06	990072A-07	990072A-08	
Method Blank I.D.	VBLKLI	VBLKLI	VBLKLI	
Quant. Factor	1.00	5.00	5000	
Chloromethane	U	U	U	10
Bromomethane	U	U	U	10
Vinyl Chloride	34	120	U	10
Chloroethane	U	U	U	10
Methylene Chloride	U	U	U	5.0
Acetone	U	U	U	10
Carbon Disulfide	U	U	U	5.0
Vinyl Acetate	U	U	U	10
1,1-Dichloroethene	U	U	U	5.0
1,1-Dichloroethane	U	U	U	5.0
1,2-Dichloroethene (total)	30	460	27000	5.0
Chloroform	U	U	U	5.0
1,2-Dichloroethane	U	U	U	5.0
2-Butanone	U	U	U	10
1,1,1-Trichloroethane	U	U	U	5.0
Carbon Tetrachloride	U	U	U	5.0
Bromodichloromethane	U	U	U	5.0
1,2-Dichloropropane	U	U	U	5.0
cis-1,3-Dichloropropene	U	U	U	5.0
Trichloroethene	U	60	690000	5.0
Dibromochloromethane	U	U	U	5.0
1,1,2-Trichloroethane	U	U	U	5.0
Benzene	U	U	U	5.0
trans-1,3-Dichloropropene	U	U	U	5.0
Bromoform	U	U	U	5.0
4-Methyl-2-Pentanone	U	U	U	10
2-Hexanone	U	U	U	10
Tetrachloroethene	U	U	U	5.0
Toluene	U	U	U	5.0
1,1,2,2-Tetrachloroethane	U	U	U	5.0
Chlorobenzene	U	U	U	5.0
Ethylbenzene	U	U	U	5.0
Styrene	U	U	U	5.0
Xylene (total)	U	U	U	5.0
Date Received	01/14/99	01/14/99	01/14/99	
Date Extracted	N/A	N/A	N/A	
Date Analyzed	01/14/99	01/14/99	01/14/99	

See Appendix for qualifier definitions
Note: Compound detection limit = quantitation limit x quantitation factor
Quant. Factor = a numerical value which takes into account any variation in sample weight/volume, % moisture and sample dilution.

TABLE VO-1.2
7099-0072A
INGERSOLL RAND
TCL VOLATILE ORGANICS

Aqueous

All values are ug/L.

Client Sample I.D.	TB 011398			Quant. Limits with no Dilution
Lab Sample I.D.	990072A-09			
Method Blank I.D.	VBLKLI			
Quant. Factor	1.00			
Chloromethane	U			10
Bromomethane	U			10
Vinyl Chloride	U			10
Chloroethane	U			10
Methylene Chloride	U			5.0
Acetone	U			10
Carbon Disulfide	U			5.0
Vinyl Acetate	U			10
1,1-Dichloroethene	U			5.0
1,1-Dichloroethane	U			5.0
1,2-Dichloroethene (total)	U			5.0
Chloroform	U			5.0
1,2-Dichloroethane	U			5.0
2-Butanone	U			10
1,1,1-Trichloroethane	U			5.0
Carbon Tetrachloride	U			5.0
Bromodichloromethane	U			5.0
1,2-Dichloropropane	U			5.0
cis-1,3-Dichloropropene	U			5.0
Trichloroethene	U			5.0
Dibromochloromethane	U			5.0
1,1,2-Trichloroethane	U			5.0
Benzene	U			5.0
trans-1,3-Dichloropropene	U			5.0
Bromoform	U			5.0
4-Methyl-2-Pentanone	U			10
2-Hexanone	U			10
Tetrachloroethene	U			5.0
Toluene	U			5.0
1,1,2,2-Tetrachloroethane	U			5.0
Chlorobenzene	U			5.0
Ethylbenzene	U			5.0
Styrene	U			5.0
Xylene (total)	U			5.0
Date Received	01/14/99			
Date Extracted	N/A			
Date Analyzed	01/14/99			

See Appendix for qualifier definitions
Note: Compound detection limit = quantitation limit x quantitation factor
Quant. Factor = a numerical value which takes into account any variation in sample weight/volume, % moisture and sample dilution.

TABLE VO-1.3
7099-0072A
INGERSOLL RAND
TCL VOLATILE ORGANICS

Aqueous

All values are ug/L.

Client Sample I.D.	Method Blank	MW-8S	DUP-1	Quant. Limits with no Dilution
Lab Sample I.D.	VBLKM5	990072A-03	990072A-04	
Method Blank I.D.	VBLKM5	VBLKM5	VBLKM5	
Quant. Factor	1.00	100.	100.	
Chloromethane	U	U	U	10
Bromomethane	U	U	U	10
Vinyl Chloride	U	2100	1600	10
Chloroethane	U	U	U	10
Methylene Chloride	U	130J	140J	5.0
Acetone	U	850J	480J	10
Carbon Disulfide	U	U	U	5.0
Vinyl Acetate	U	U	U	10
1,1-Dichloroethene	U	U	U	5.0
1,1-Dichloroethane	U	U	U	5.0
1,2-Dichloroethene (total)	U	9300	8900	5.0
Chloroform	U	U	U	5.0
1,2-Dichloroethane	U	U	U	5.0
2-Butanone	U	U	U	10
1,1,1-Trichloroethane	U	U	U	5.0
Carbon Tetrachloride	U	U	U	5.0
Bromodichloromethane	U	U	U	5.0
1,2-Dichloropropane	U	U	U	5.0
cis-1,3-Dichloropropene	U	U	U	5.0
Trichloroethene	U	U	U	5.0
Dibromochloromethane	U	U	U	5.0
1,1,2-Trichloroethane	U	U	U	5.0
Benzene	U	U	U	5.0
trans-1,3-Dichloropropene	U	U	U	5.0
Bromoform	U	U	U	5.0
4-Methyl-2-Pentanone	U	U	U	10
2-Hexanone	U	U	U	10
Tetrachloroethene	U	U	U	5.0
Toluene	U	U	U	5.0
1,1,2,2-Tetrachloroethane	U	U	U	5.0
Chlorobenzene	U	U	U	5.0
Ethylbenzene	U	U	U	5.0
Styrene	U	U	U	5.0
Xylene (total)	U	U	U	5.0
Date Received		01/13/99	01/13/99	
Date Extracted	N/A	N/A	N/A	
Date Analyzed	01/18/99	01/18/99	01/18/99	

See Appendix for qualifier definitions
Note: Compound detection limit = quantitation limit x quantitation factor
Quant. Factor = a numerical value which takes into account any variation in sample weight/volume, % moisture and sample dilution.

TABLE VO-1.4 Aqueous
7099-0072A
INGERSOLL RAND
TCL VOLATILE ORGANICS

All values are ug/L.

Client Sample I.D.	Method Blank	ESI-7	ESI-6 MS	Quant. Limits with no Dilution
Lab Sample I.D.	VBLKLJ	990072A-02	990072A-06MS	
Method Blank I.D.	VBLKLJ	VBLKLJ	VBLKLJ	
Quant. Factor	1.00	1.00	1.00	
Chloromethane	U	U	U	10
Bromomethane	U	U	U	10
Vinyl Chloride	U	U	20	10
Chloroethane	U	U	U	10
Methylene Chloride	U	U	U	5.0
Acetone	U	U	U	10
Carbon Disulfide	U	U	U	5.0
Vinyl Acetate	U	U	U	10
1,1-Dichloroethene	U	U	48X	5.0
1,1-Dichloroethane	U	U	U	5.0
1,2-Dichloroethene (total)	U	3J	21	5.0
Chloroform	U	U	U	5.0
1,2-Dichloroethane	U	U	U	5.0
2-Butanone	U	U	U	10
1,1,1-Trichloroethane	U	U	U	5.0
Carbon Tetrachloride	U	U	U	5.0
Bromodichloromethane	U	U	U	5.0
1,2-Dichloropropane	U	U	U	5.0
cis-1,3-Dichloropropene	U	U	U	5.0
Trichloroethene	U	U	46X	5.0
Dibromochloromethane	U	U	U	5.0
1,1,2-Trichloroethane	U	U	U	5.0
Benzene	U	U	49X	5.0
trans-1,3-Dichloropropene	U	U	U	5.0
Bromoform	U	U	U	5.0
4-Methyl-2-Pentanone	U	U	U	10
2-Hexanone	U	U	U	10
Tetrachloroethene	U	U	U	5.0
Toluene	U	U	49X	5.0
1,1,2,2-Tetrachloroethane	U	U	U	5.0
Chlorobenzene	U	U	48X	5.0
Ethylbenzene	U	U	U	5.0
Styrene	U	U	U	5.0
Xylene (total)	U	U	U	5.0
Date Received		01/13/99	01/14/99	
Date Extracted	N/A	N/A	N/A	
Date Analyzed	01/15/99	01/15/99	01/15/99	

See Appendix for qualifier definitions
Note: Compound detection limit = quantitation limit x quantitation factor
Quant. Factor = a numerical value which takes into account any variation in sample weight/volume, % moisture and sample dilution.

TABLE VO-1.5 Aqueous
7099-0072A
INGERSOLL RAND
TCL VOLATILE ORGANICS

All values are ug/L.

Client Sample I.D.	ESI-6 MSD			Quant. Limits with no Dilution
Lab Sample I.D.	990072A-06 MSD			
Method Blank I.D.	VBLKLJ			
Quant. Factor	1.00			
Chloromethane	U			10
Bromomethane	U			10
Vinyl Chloride	17			10
Chloroethane	U			10
Methylene Chloride	U			5.0
Acetone	U			10
Carbon Disulfide	U			5.0
Vinyl Acetate	U			10
1,1-Dichloroethene	43X			5.0
1,1-Dichloroethane	U			5.0
1,2-Dichloroethene (total)	21			5.0
Chloroform	U			5.0
1,2-Dichloroethane	U			5.0
2-Butanone	U			10
1,1,1-Trichloroethane	U			5.0
Carbon Tetrachloride	U			5.0
Bromodichloromethane	U			5.0
1,2-Dichloropropane	U			5.0
cis-1,3-Dichloropropene	U			5.0
Trichloroethene	42X			5.0
Dibromochloromethane	U			5.0
1,1,2-Trichloroethane	U			5.0
Benzene	45X			5.0
trans-1,3-Dichloropropene	U			5.0
Bromoform	U			5.0
4-Methyl-2-Pentanone	U			10
2-Hexanone	U			10
Tetrachloroethene	U			5.0
Toluene	44X			5.0
1,1,2,2-Tetrachloroethane	U			5.0
Chlorobenzene	44X			5.0
Ethylbenzene	U			5.0
Styrene	U			5.0
Xylene (total)	U			5.0
Date Received	01/14/99			
Date Extracted	N/A			
Date Analyzed	01/15/99			

See Appendix for qualifier definitions
Note: Compound detection limit = quantitation limit x quantitation factor
Quant. Factor = a numerical value which takes into account any variation in sample weight/volume, % moisture and sample dilution.

TABLE VO-2.0 Aqueous
7099-0072A
INGERSOLL RAND
VOLATILE TENTATIVELY IDENTIFIED COMPOUNDS

Related Method Blank: VBLKLI

Lab Sample Id: VBLKLI Client Sample Id: Method Blank

CAS#	Compound	RT	Estimated Conc., ug/L
NONE DETECTED			

Lab Sample Id: 990072A-01 Client Sample Id: MW-7D

CAS#	Compound	RT	Estimated Conc., ug/L
NONE DETECTED			

Lab Sample Id: 990072A-05 Client Sample Id: TB 011299

CAS#	Compound	RT	Estimated Conc., ug/L
NONE DETECTED			

Lab Sample Id: 990072A-06 Client Sample Id: ESI-6

CAS#	Compound	RT	Estimated Conc., ug/L
NONE DETECTED			

Lab Sample Id: 990072A-07 Client Sample Id: MW-12

CAS#	Compound	RT	Estimated Conc., ug/L
NONE DETECTED			

See Appendix for qualifier definitions

TABLE VO-2.1
7099-0072A
INGERSOLL RAND
VOLATILE TENTATIVELY IDENTIFIED COMPOUNDS

Aqueous

Related Method Blank: VBLKLI

Lab Sample Id: 990072A-08 Client Sample Id: MW-8D

CAS#	Compound	RT	Estimated Conc., ug/L
NONE DETECTED			

Lab Sample Id: 990072A-09 Client Sample Id: TB 011398

CAS#	Compound	RT	Estimated Conc., ug/L
NONE DETECTED			

See Appendix for qualifier definitions

Aqueous

TABLE VO-2.2
7099-0072A
INGERSOLL RAND
VOLATILE TENTATIVELY IDENTIFIED COMPOUNDS

Related Method Blank: VBLKM5

Lab Sample Id: VBLKM5 Client Sample Id: Method Blank

CAS#	Compound	RT	Estimated Conc., ug/L
NONE DETECTED			

Lab Sample Id: 990072A-03 Client Sample Id: MW-8S

CAS#	Compound	RT	Estimated Conc., ug/L
NONE DETECTED			

Lab Sample Id: 990072A-04 Client Sample Id: DUP-1

CAS#	Compound	RT	Estimated Conc., ug/L
NONE DETECTED			

See Appendix for qualifier definitions

TABLE VO-2.3
7099-0072A
INGERSOLL RAND
VOLATILE TENTATIVELY IDENTIFIED COMPOUNDS

Aqueous

Related Method Blank: VBLKLJ

Lab Sample Id: VBLKLJ Client Sample Id: Method Blank

CAS#	Compound	RT	Estimated Conc., ug/L
	NONE DETECTED		

Lab Sample Id: 990072A-02 Client Sample Id: ESI-7

CAS#	Compound	RT	Estimated Conc., ug/L
	NONE DETECTED		

See Appendix for qualifier definitions

TABLE AS-1.0 Aqueous
7099-0072A
INGERSOLL RAND
MISCELLANEOUS ATOMIC SPECTROSCOPY (Dissolved)

All values are ug/L.

Client Sample I.D.	MW-7D	ESI-7	MW-8S	DUP-1
Lab Sample I.D.	990072A-01	990072A-02	990072A-03	990072A-04
Iron	10.6B	8870	20200	20100
Manganese	350.N	3490N	3420N	3460N

See Appendix for qualifier definitions

TABLE AS-1.1
7099-0072A
INGERSOLL RAND
MISCELLANEOUS ATOMIC SPECTROSCOPY (Dissolved)

Aqueous

All values are ug/L.

Client Sample I.D.	ESI-6	ESI-6 D	ESI-6 S	MW-12
Lab Sample I.D.	990072A-06	990072A-06D	990072A-06S	990072A-07
Iron	10800	10700	11400	11600
Manganese	1880N	1880	2250N	1310N

See Appendix for qualifier definitions

TABLE AS-1.2 Aqueous
7099-0072A
INGERSOLL RAND
MISCELLANEOUS ATOMIC SPECTROSCOPY (Dissolved)

All values are ug/L.

Client Sample I.D.	MW-8D			
Lab Sample I.D.	990072A-08			
Iron	10.0U			
Manganese	39.2N			

See Appendix for qualifier definitions

TABLE AS-1.3 Aqueous
7099-0072A
INGERSOLL RAND
MISCELLANEOUS ATOMIC SPECTROSCOPY (Total)

All values are ug/L.

Client Sample I.D.	MW-7D	ESI-7	MW-8S	DUP-1
Lab Sample I.D.	990072A-01	990072A-02	990072A-03	990072A-04
Iron	930.	12900	20200	18100
Manganese	387.N	4150N	3570N	3060N

See Appendix for qualifier definitions

TABLE AS-1.4
7099-0072A
INGERSOLL RAND
MISCELLANEOUS ATOMIC SPECTROSCOPY (Total)

Aqueous

All values are ug/L.

Client Sample I.D.	ESI-6	ESI-6 D	ESI-6 S	MW-12
Lab Sample I.D.	990072A-06	990072A-06D	990072A-06S	990072A-07
Iron	12900	12300	12600	11700
Manganese	2020N	2000	2280	1310N

See Appendix for qualifier definitions

TABLE AS-1.5 Aqueous
7099-0072A
INGERSOLL RAND
MISCELLANEOUS ATOMIC SPECTROSCOPY (Total)

All values are ug/L.

Client Sample I.D.	MW-8D			
Lab Sample I.D.	990072A-08			
Iron	661.			
Manganese	64.5N			

See Appendix for qualifier definitions

1

WET CHEM ANALYSIS DATA SHEET

SAMPLE NO.

MW-7D

Lab Name: STL Contract: _____

Lab Code: STL Case No.: 0072A SAS No.: _____ SDG No.: A0072

Matrix (soil/water): WATER Lab Sample ID: 990072A-01

% Solids: 0 Date Received: 01/13/99

CAS No.	Analyte	Concentration	C	Units	Q	M
471-34-1	Alkalinity	392.		mg/L		T
	BOD5	2.00	U	mg/L		P
16887-00-6	Chloride	203.		mg/L		L
	COD	12.6		mg/L		C
16984-48-8	Fluoride	0.140		mg/L		D
	Nitrate/Nitrite	0.100	U	mg/L		L
	Sulfate	10.0	U	mg/L		L
	Sulfide	1.00	U	mg/L		D
	TOC	4.38		mg/L		D
	TOC	3.33		mg/L		D

Comments:

1

WET CHEM ANALYSIS DATA SHEET

SAMPLE NO.

ESI-7

Lab Name: STL Contract: _____

Lab Code: STL Case No.: 0072A SAS No.: _____ SDG No.: A0072

Matrix (soil/water): WATER Lab Sample ID: 990072A-02

% Solids: 0 Date Received: 01/13/99

CAS No.	Analyte	Concentration	C	Units	Q	M
471-34-1	Alkalinity	521.		mg/L		T
	BOD5	10.1		mg/L		P
16887-00-6	Chloride	31.0		mg/L		L
	COD	44.6		mg/L		C
16984-48-8	Fluoride	0.170		mg/L		D
	Nitrate/Nitrite	0.180		mg/L		L
	Sulfate	10.0	U	mg/L		L
	Sulfide	1.00	U	mg/L		D
	TOC	13.6		mg/L		D
	TOC	14.8		mg/L		D

Comments:

FORM I - WC

1

WET CHEM ANALYSIS DATA SHEET

SAMPLE NO.

MW-8S

Lab Name: STL Contract: _____

Lab Code: STL Case No.: Q072A SAS No.: _____ SDG No.: A0072

Matrix (soil/water): WATER Lab Sample ID: 990072A-03

% Solids: 0 Date Received: 01/13/99

CAS No.	Analyte	Concentration	C	Units	Q	M
471-34-1	Alkalinity	500.		mg/L		T
	BOD5	278.		mg/L		P
16887-00-6	Chloride	33.7		mg/L		L
	COD	64.9		mg/L		C
16984-48-8	Fluoride	0.100	U	mg/L		D
	Nitrate/Nitrite	0.146		mg/L		L
	Sulfate	14.2		mg/L		L
	Sulfide	1.00	U	mg/L		D
	TOC	175.		mg/L		D
	TOC	104.		mg/L		D

Comments:

FORM I - WC

1

WET CHEM ANALYSIS DATA SHEET

SAMPLE NO.

DUP-1

Lab Name: STL Contract: _____

Lab Code: STL Case No.: 0072A SAS No.: _____ SDG No.: A0072

Matrix (soil/water): WATER Lab Sample ID: 990072A-04

% Solids: 0 Date Received: 01/13/99

CAS No.	Analyte	Concentration	C	Units	Q	M
471-34-1	Alkalinity	479.		mg/L		T
	BOD5	272.		mg/L		P
16887-00-6	Chloride	26.1		mg/L		L
	COD	73.6		mg/L		C
16984-48-8	Fluoride	0.110		mg/L		D
	Nitrate/Nitrite	0.100	U	mg/L		L
	Sulfate	12.7		mg/L		L
	Sulfide	1.00	U	mg/L		D
	TOC	191.		mg/L		D
	TOC	130.		mg/L		D

Comments:

FORM I - WC

1

WET CHEM ANALYSIS DATA SHEET

SAMPLE NO.

MW-12

Lab Name: STL Contract: _____

Lab Code: STL Case No.: 0072A SAS No.: _____ SDG No.: A0072

Matrix (soil/water): WATER Lab Sample ID: 990072A-07

% Solids: 0 Date Received: 01/14/99

CAS No.	Analyte	Concentration	C	Units	Q	M
471-34-1	Alkalinity	410.		mg/L		T
	BOD5	5.70		mg/L		P
16887-00-6	Chloride	14.6		mg/L		L
	COD	44.6		mg/L		C
16984-48-8	Fluoride	0.120		mg/L		D
	Nitrate/Nitrite	0.100	U	mg/L		L
	Sulfate	41.4		mg/L		L
	Sulfide	1.00	U	mg/L		D
	TOC	13.2		mg/L		D
	TOC	12.9		mg/L		D

Comments:

FORM I - WC

1

WET CHEM ANALYSIS DATA SHEET

SAMPLE NO.

ESI-6

Lab Name: STL Contract: _____

Lab Code: STL Case No.: 0072A SAS No.: _____ SDG No.: A0072

Matrix (soil/water): WATER Lab Sample ID: 990072A-06

% Solids: 0 Date Received: 01/14/99

CAS No.	Analyte	Concentration	C	Units	Q	M
471-34-1	Alkalinity	549.		mg/L		T
	BOD5	6.60		mg/L		P
16887-00-6	Chloride	15.0		mg/L		L
	COD	47.5		mg/L		C
16984-48-8	Fluoride	0.230		mg/L		D
	Nitrate/Nitrite	0.100	U	mg/L		L
	Sulfate	39.7		mg/L		L
	Sulfide	1.00	U	mg/L		D
	TOC	14.2		mg/L		D
	TOC	11.1		mg/L		D

Comments:

FORM I - WC

1

SAMPLE NO.

MW-8D

WET CHEM ANALYSIS DATA SHEET

Lab Name: STL Contract: _____

Lab Code: STL Case No.: 0072A SAS No.: _____ SDG No.: A0072

Matrix (soil/water): WATER Lab Sample ID: 990072A-08

% Solids: 0 Date Received: 01/14/99

CAS No.	Analyte	Concentration	C	Units	Q	M
471-34-1	Alkalinity	362.		mg/L		T
	BOD5	9.00		mg/L		P
16887-00-6	Chloride	250.		mg/L		L
	COD	24.3		mg/L		C
16984-48-8	Fluoride	0.110		mg/L		D
	Nitrate/Nitrite	0.100	U	mg/L		L
	Sulfate	33.7		mg/L		L
	Sulfide	1.00	U	mg/L		D
	TOC	27.8		mg/L		D
	TOC	24.0		mg/L		D

Comments:

FORM I - WC

MICROSEEPS

University of Pittsburgh Applied Research Center
220 William Pitt Way, Pittsburgh, PA 15238
(412) 826-5245
FAX (412) 826-3433

January 29, 1999

Ms. Stephanie Plunkett
Severn Trent Laboratories
200 Monroe Turnpike
Monroe, CT 06468

Dear Ms. Plunkett:

Attached are the final data listings and chromatograms for the samples we received on January 14, 1999, your project #7099-0072A.

Please give me a call if you have questions or I can be of further assistance. Thank you for using MICROSEEPS.

Sincerely,

Linda S. Tibensky

LST/lsp

Attachment: ST26-992046

Microseeps

ST26-992046

SEVERN TRENT LABORATORIES
PROJECT: 7099-0072A
LOCATION: STL - CT

Sample Names	Carbon Dioxide mg/l	Ethane ng/l	Ethylene ng/l	Lab ID	Date Sampled	Date Received	Date Analyzed	Analyst
MW-7D	16.70	232	16	T16 73	01/12/99	01/14/99	01/22/99	BC
ESI-7	93.54	27897	3039	T16 74	01/12/99	01/14/99	01/22/99	BC
MW-8S	192.18	675658	130196	T16 75	01/12/99	01/14/99	01/22/99	BC
DUP-1	202.93	685242	143901	T16 86	01/12/99	01/14/99	01/22/99	BC
DETECTION LIMITS	0.60mg/l	5ng/l	5ng/l					

ANALYST INITIALS BC

REVIEW

Microseeps

— QUALITY CONTROL —

ST26-992046

— SEVERN TRENT LABORATORIES —
— PROJECT: 7099-0072A —
— LOCATION: STL - CT —

CONTINUING CALIBRATION STANDARDS 01/22/99

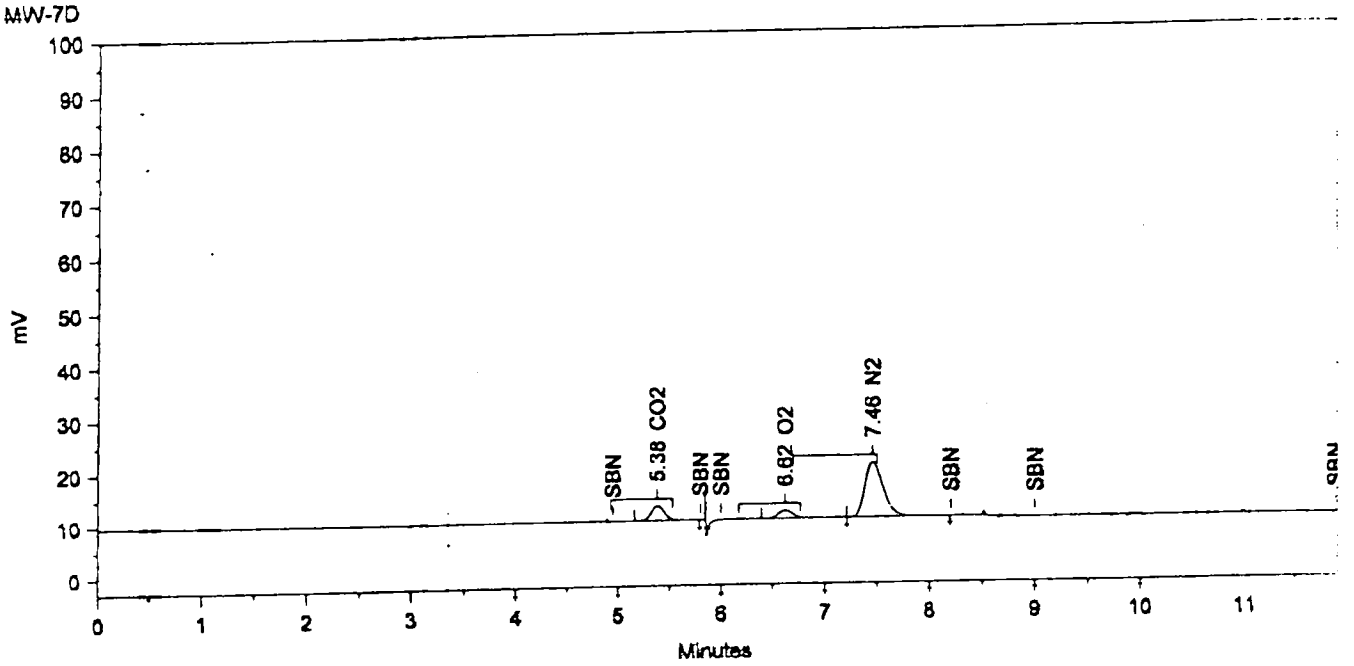
COMPOUND	FILE ID	TRUE CONC.	MEASURED	% DIFF.
ETHANE	T16 58	476	480	0.84
ETHYLENE	T16 58	533	545	2.25
CARBON DIOXIDE	T16 60	319.25	303.10	5.06

HE IN LOOP 01/22/99

COMPOUND	FILE ID	DET. LIMIT	MEASURED
ETHANE	T16 61	5ng/l	ND
ETHYLENE	T16 61	5ng/l	ND
CARBON DIOXIDE	T16 61	0.60mg/l	ND

ANALYST INITIALS AL

REVIEW



Sample Name: **MW-7D**
Acquired from Chrom1--Det1B via port 2 on 1/22/99 03:20:06pm by BC
TCD

Data File: **C:\CPWIN\T16\T16B.73R**
Date Stamp: 1/22/99 03:20:06pm
Sequence File: T16A.SEQ #73
Method File: C:\CPWIN\T16\T16BPGW1.MET
Version 1. Date Stamp: 1/20/99 09:54:24am
Calibration File: C:\CPWIN\T16\T16BPGW1.CAL
Version 1. Date Stamp: 1/20/99 09:53:44am

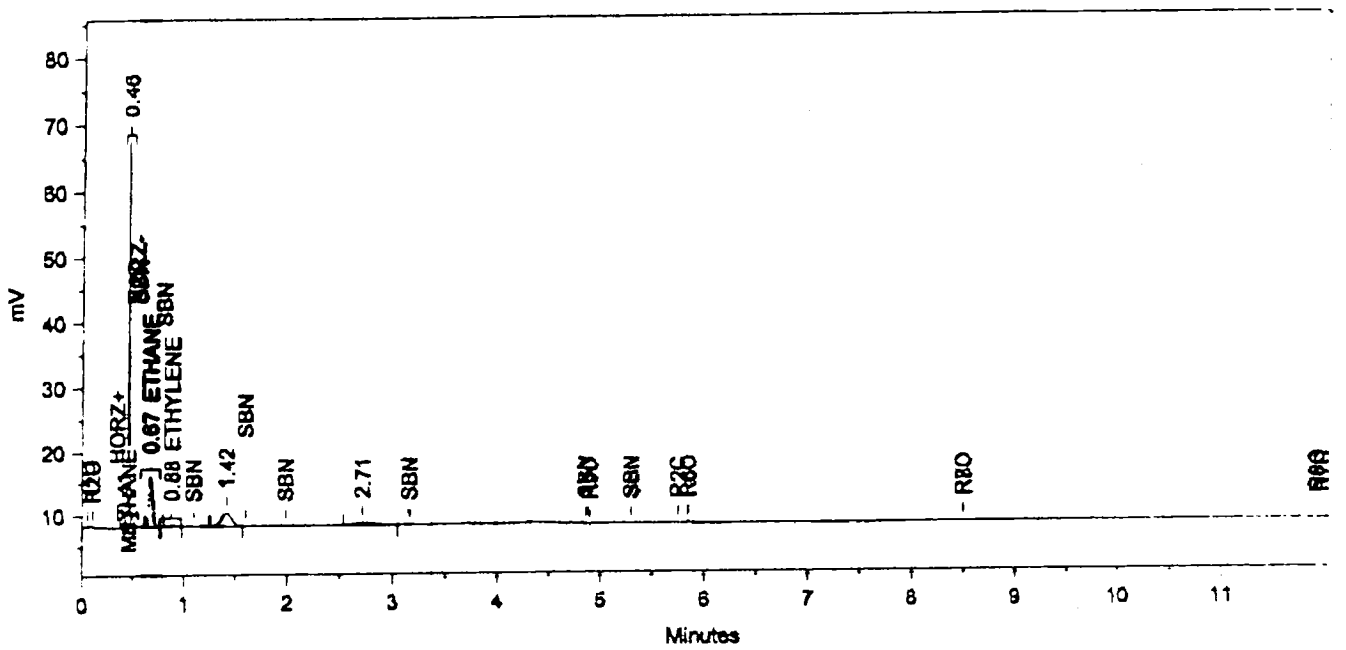
Run Time = 12.0 min Sample Rate = 3.33 per sec.
Amount Inj. = 0.000 Dilution Factor = 0.000
Sample Weight = 0.000 Int Std Amount = 0.000

Starting Peak Width = 0.1 min. Peak Threshold = 3 Area Reject = 0

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	5.382	CO2	16.7001	44.170	25875.6	15.400	BB	0.149	2897.04	19.368
2	6.619	O2	2.8263	7.475	15895.6	9.460	BV	0.168	1575.32	10.532
3	7.455	N2	18.2826	48.355	126257.3	75.140	VB	0.201	10485.59	70.100

Total Area = 168028.5, Total Amount = 37.809, Total Height = 14957.96, Sample Units = mg/L

MW-7D



Sample Name: MW-7D
Acquired from Chrom1--Det1A via port 1 on 1/22/99 03:20:06pm by BC
FID

Data File: C:\CPWIN\T16\T16A.73R
Date Stamp: 1/22/99 03:20:06pm
Sequence File: T16A.SEQ #73
Method File: C:\CPWIN\T16\T16AL1W.MET
Version 1. Date Stamp: 1/20/99 09:49:12am
Calibration File: C:\CPWIN\T16\T16AL1W.CAL
Version 1. Date Stamp: 1/20/99 09:48:32am

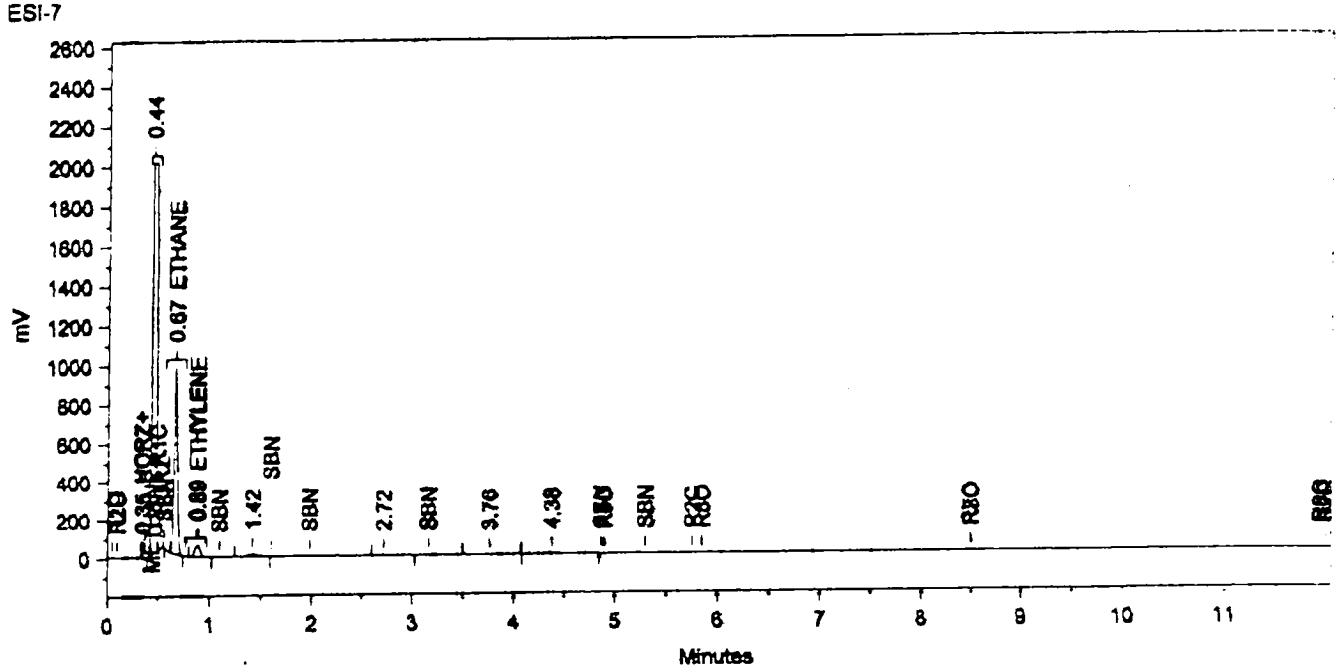
Run Time = 12.0 min Sample Rate = 3.33 per sec.
Amount Inj. = 0.000 Dilution Factor = 0.000
Sample Weight = 0.000 Int Std Amount = 0.000

Starting Peak Width = 0.07 min. Peak Threshold = 3 Area Reject = 100

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	0.410		-0.0235	-0.009	488.1	0.443	N	-0.005	-1527.65	2.175
2	0.457	METHANE	0.9367	0.375	70028.4	63.509	BB	0.019	60957.64	86.805
3	0.674	ETHANE	232.1030	93.026	18777.4	17.029	BB	0.039	7941.46	11.309
4	0.881	ETHYLENE	16.4486	6.593	1161.9	1.054	BB	0.068	285.56	0.407
5	1.416		0.0326	0.013	13965.7	12.666	BB	0.110	2124.26	3.025
6	2.711		0.0068	0.003	5843.5	5.300	BB	0.220	442.42	0.630

Total Area = 110264.9, Total Amount = 249.504, Total Height = 70223.69, Sample Units = (ug/bag /L)

ESI-7



Sample Name: ESI-7
Acquired from Chrom1--Det1A via port 1 on 1/22/99 03:32:28pm by BC
FID

Data File: C:\CPWIN\T16\T16A.74R
Date Stamp: 1/22/99 03:32:28pm
Sequence File: T16A.SEQ #74
Method File: C:\CPWIN\T16\T16AL1W.MET
Version 1. Date Stamp: 1/20/99 09:49:12am
Calibration File: C:\CPWIN\T16\T16AL1W.CAL
Version 1. Date Stamp: 1/20/99 09:48:32am

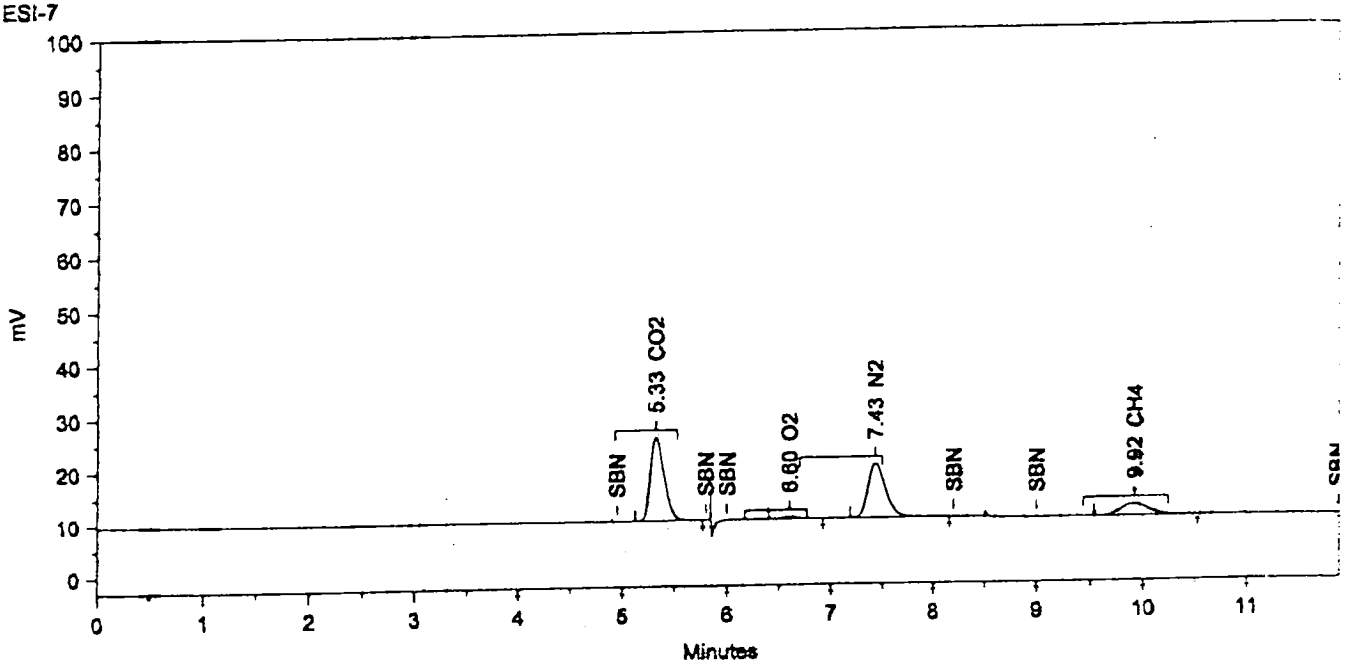
Run Time = 12.0 min Sample Rate = 3.33 per sec.
Amount Inj. = 0.000 Dilution Factor 1.000
Sample Weight = 0.000 Int Std Amount 1.000

Starting Peak Width = 0.07 min. Peak Threshold = 3 Area Reject = 100

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	0.350		-0.0015	0.000	571.8	0.006	N	0.101	-94.51	0.003
2	0.442	METHANE	31.5734	0.102	7480906.0	74.309	BB	0.061	2054691.00	66.133
3	0.674	ETHANE	27896.9700	90.084	2256893.0	22.418	BB	0.039	974470.10	31.365
4	0.887	ETHYLENE	3034.8930	9.853	214661.0	2.132	BB	0.056	63907.37	2.057
5	1.418		0.1830	0.001	76590.0	0.761	BB	0.107	11905.82	0.383
6	2.716		0.0063	0.000	4814.8	0.048	BB	0.195	411.34	0.013
7	3.756		0.0089	0.000	10842.8	0.108	BV	0.313	577.99	0.019
8	4.381		0.0156	0.000	21978.4	0.218	VB	0.360	1016.13	0.033

Total Area = 10067260.0, Total Amount = 30967.65, Total Height = 3106825.0, Sample Units = (ug/dmg/L)

ESI-7



Sample Name: **ESI-7**
Acquired from Chrom1--Det1B via port 2 on 1/22/99 03:32:28pm by BC
TCD

Data File: C:\CPWIN\T16\T16B.74R
Date Stamp: 1/22/99 03:32:28pm
Sequence File: T16A.SEQ #74
Method File: C:\CPWIN\T16\T16BPGW1.MET
Version 1. Date Stamp: 1/20/99 09:54:24am
Calibration File: C:\CPWIN\T16\T16BPGW1.CAL
Version 1. Date Stamp: 1/20/99 09:53:44am

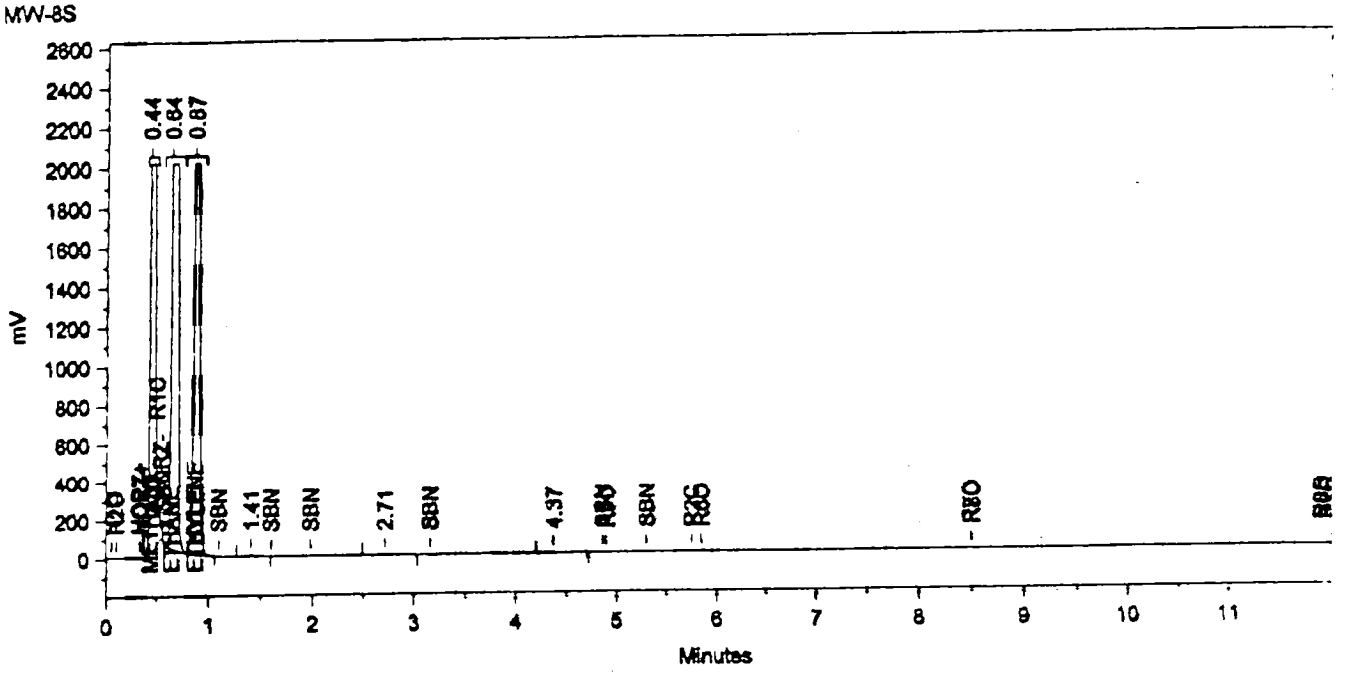
Run Time = 12.0 min Sample Rate = 3.33 per sec.
Amount Inj. = 0.000 Dilution Factor = 0.000
Sample Weight = 0.000 Int Std Amount = 0.000

Starting Peak Width = 0.1 min. Peak Threshold = 3 Area Reject = 0

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	5.330	CO2	93.5455	80.726	144942.0	46.403	BB	0.153	15822.69	55.230
2	6.602	O2	0.7807	0.674	4390.6	1.406	BV	0.164	445.15	1.554
3	7.431	N2	17.6529	15.234	121908.7	39.029	VB	0.199	10186.48	35.557
4	9.918	CH4	3.9013	3.367	41114.9	13.163	BB	0.312	2194.22	7.659

Total Area = 312356.3, Total Amount = 115.84, Total Height = 28648.54, Sample Units = ug/L

MW-8S



Sample Name: MW-8S
Acquired from Chrom1--Det1A via port 1 on 1/22/99 03:44:48pm by BC
FID

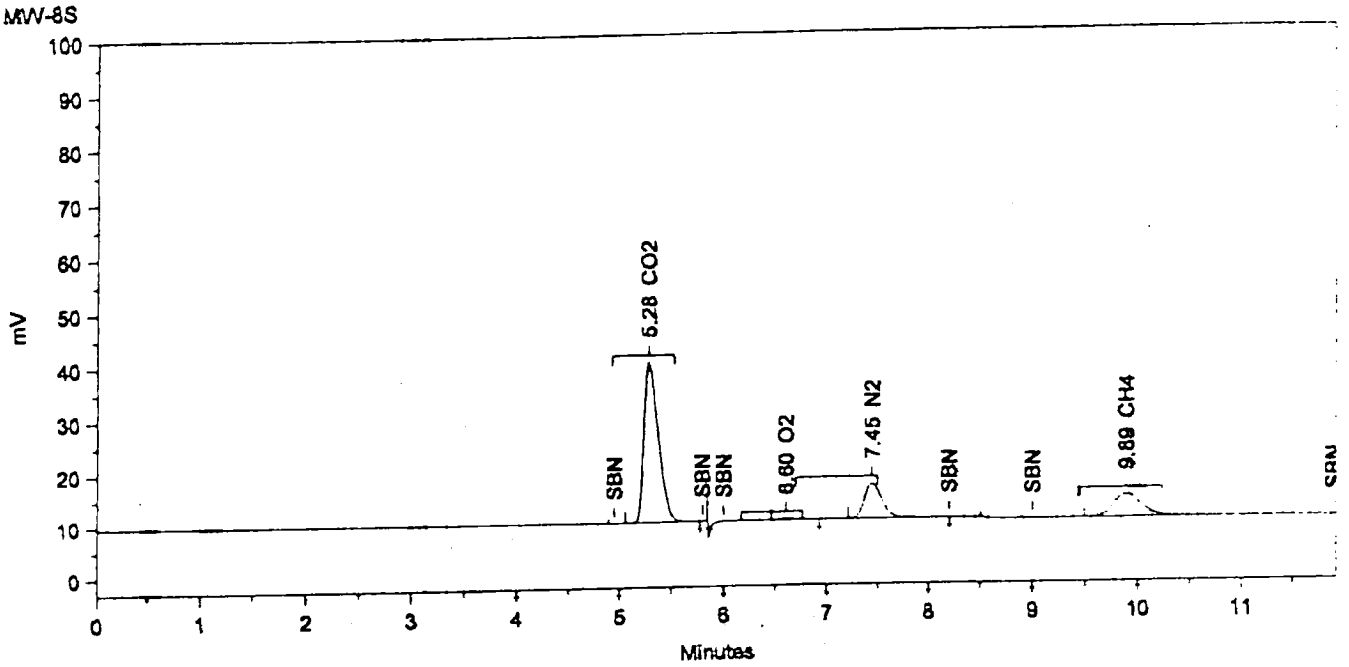
Data File: C:\CPWIN\T16\T16A.75R
Date Stamp: 1/22/99 03:44:48pm
Sequence File: T16A.SEQ #75
Method File: C:\CPWIN\T16\T16AL1W.MET
Version 1. Date Stamp: 1/20/99 09:49:12am
Calibration File: C:\CPWIN\T16\T16AL1W.CAL
Version 1. Date Stamp: 1/20/99 09:48:32am

Run Time = 12.0 min Sample Rate = 3.33 per sec.
Amount Inj. = 0.000 Dilution Factor = 0.000
Sample Weight = 0.000 Int Std Amount = 0.000

Starting Peak Width = 0.07 min. Peak Threshold = 3 Area Reject = 100

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	0.438	METHANE	32.1460	0.013	8682317.0	32.144	BB	0.069	2091954.00	33.844
2	0.642	ETHANE	119177.5000	49.415	9641580.0	35.695	BB	0.078	2059687.00	33.322
3	0.868	ETHYLENE	121965.8000	50.571	8615411.0	31.896	BB	0.071	2020660.00	32.690
4	1.411		0.1083	0.000	45182.6	0.167	BB	0.107	7049.09	0.114
5	2.711		0.0208	0.000	18170.0	0.067	BB	0.224	1353.59	0.022
6	4.371		0.0076	0.000	8176.8	0.030	BB	0.276	494.13	0.008

Total Area = 27010840.0, Total Amount = 241175.6, Total Height = 6181199.0, Sample Units = (ug/dry/L)



Sample Name: MW-8S
Acquired from Chrom1--Det1B via port 2 on 1/22/99 03:44:48pm by BC
TCD

Data File: C:\CPWIN\T16\T16B.75R
Date Stamp: 1/22/99 03:44:48pm
Sequence File: T16A.SEQ #75
Method File: C:\CPWIN\T16\T16BPGW1.MET
Version 1. Date Stamp: 1/20/99 09:54:24am
Calibration File: C:\CPWIN\T16\T16BPGW1.CAL
Version 1. Date Stamp: 1/20/99 09:53:44am

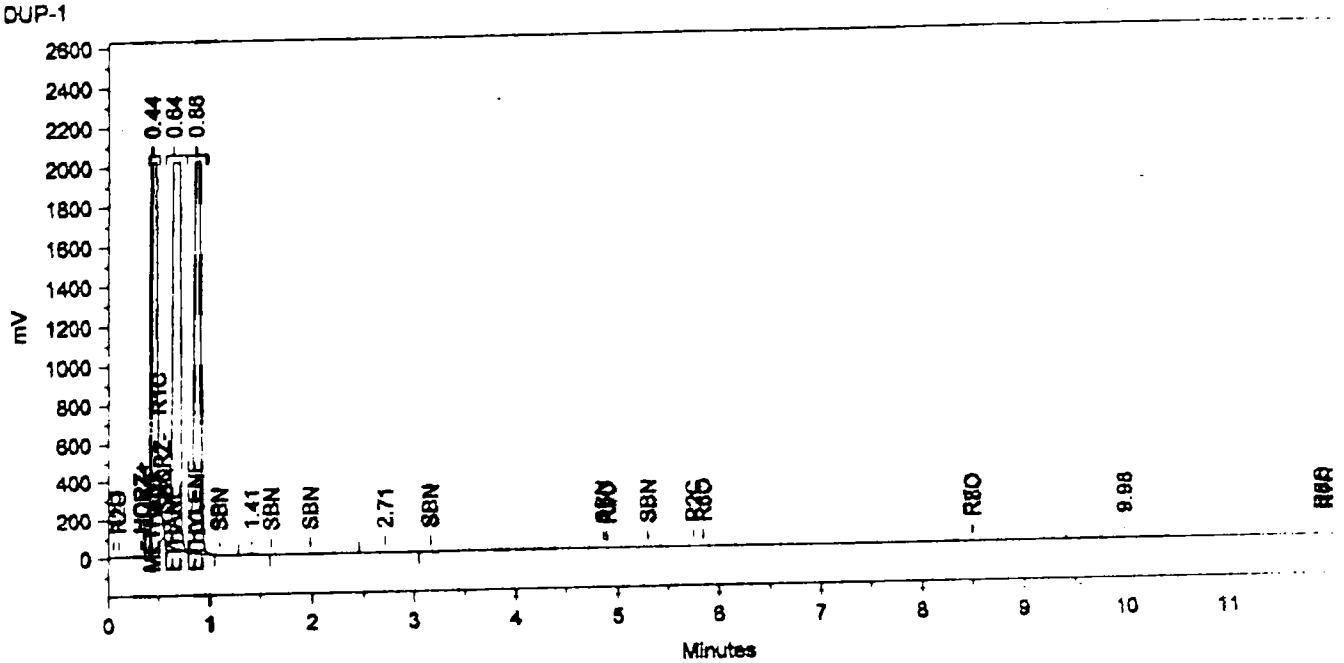
Run Time = 12.0 min Sample Rate = 3.33 per sec.
Amount Inj. = 0.000 Dilution Factor = 0.000
Sample Weight = 0.000 Int Std Amount = 0.000

Starting Peak Width = 0.1 min. Peak Threshold = 3 Area Reject = 0

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	5.284	CO2	192.1747	90.604	297760.8	64.308	BB	0.164	30281.49	72.702
2	6.605	O2	0.5579	0.263	3137.6	0.678	BV	0.163	320.83	0.770
3	7.448	N2	11.5714	5.455	79910.4	17.259	VB	0.198	6723.97	16.143
4	9.890	CH4	7.8009	3.678	82210.8	17.755	BB	0.317	4325.21	10.384

Total Area = 463019.6, Total Amount = 212.105, Total Height = 41651.5, Sample Units = mg/L

DUP-1



Sample Name: **DUP-1**
Acquired from Chrom1--Det1A via port 1 on 1/22/99 06:16:48pm by BC
FID

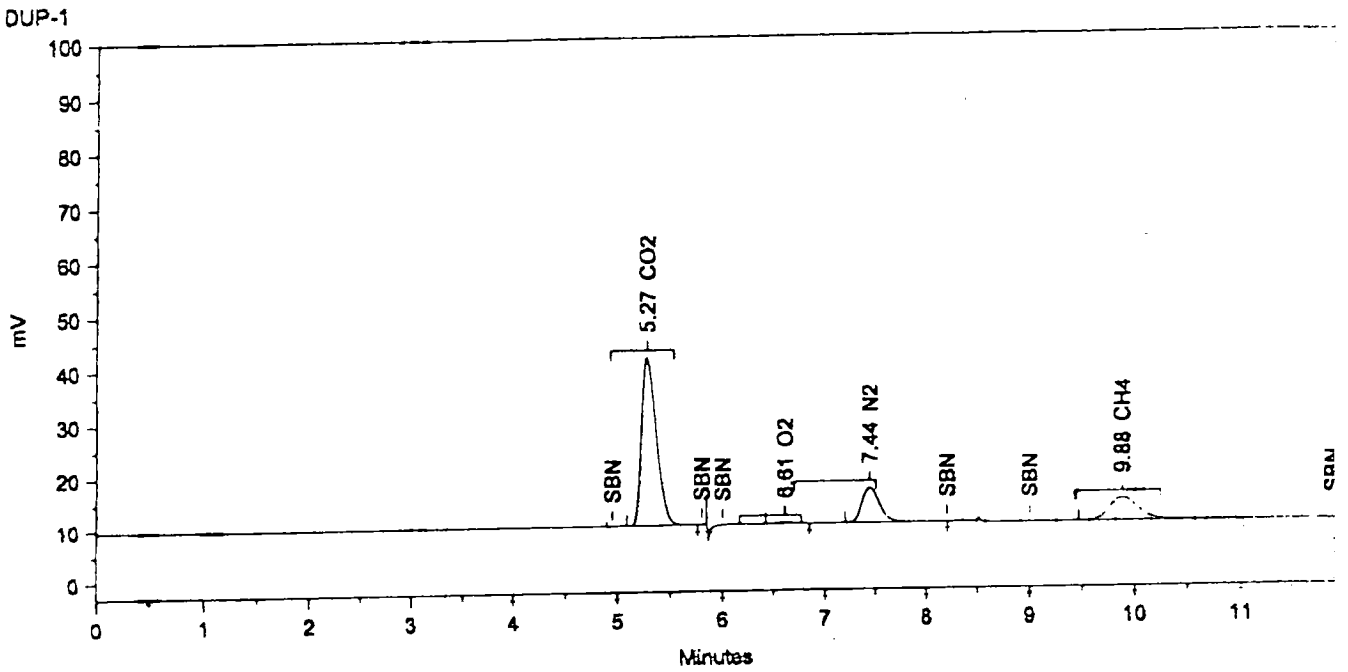
Data File: **C:\CPWIN\T16\T16A_86R**
Date Stamp: 1/22/99 06:16:48pm
Sequence File: T16A.SEQ #86
Method File: C:\CPWIN\T16\T16AL1W.MET
Version 1. Date Stamp: 1/20/99 09:49:12am
Calibration File: C:\CPWIN\T16\T16AL1W.CAL
Version 1. Date Stamp: 1/20/99 09:48:32am

Run Time = 12.0 min Sample Rate = 3.33 per sec.
Amount Inj. = 0.000 Dilution Factor = 0.000
Sample Weight = 0.000 Int Std Amount = 0.000

Starting Peak Width = 0.07 min. Peak Threshold = 3 Area Reject = 100

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	0.438	METHANE	32.4706	0.013	8687624.0	31.660	BB	0.069	2113078.00	34.054
2	0.642	ETHANE	119618.4000	48.595	9677250.0	35.266	BB	0.078	2055796.00	33.131
3	0.863	ETHYLENE	126501.6000	51.392	8935806.0	32.564	BB	0.074	2026093.00	32.652
4	1.407		0.1069	0.000	44444.6	0.162	BB	0.106	6959.57	0.112
5	2.710		0.0213	0.000	19643.5	0.072	BB	0.237	1384.31	0.022
6	9.975		0.0275	0.000	75871.0	0.276	BB	0.706	1792.34	0.029

Total Area = 27440640.0, Total Amount = 246152.6, Total Height = 6205103.0, Sample Units = (ug/kg /L)



Sample Name: **DUP-1**
Acquired from Chrom1--Det1B via port 2 on 1/22/99 06:16:48pm by BC
TCD

Data File: C:\CPWIN\T16\T16B.86R
Date Stamp: 1/22/99 06:16:48pm
Sequence File: T16A.SEQ #86
Method File: C:\CPWIN\T16\T16BPGW1.MET
Version 1. Date Stamp: 1/20/99 09:54:24am
Calibration File: C:\CPWIN\T16\T16BPGW1.CAL
Version 1. Date Stamp: 1/20/99 09:53:44am

Run Time = 12.0 min Sample Rate = 3.33 per sec.
Amount Inj. = 0.000 Dilution Factor = 0.000
Sample Weight = 0.000 Int Std Amount = 0.000

Starting Peak Width = 0.1 min. Peak Threshold = 3 Area Reject = 0

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	5.271	CO2	202.9313	91.030	4427.5	65.433	BB	0.165	31745.76	73.701
2	6.610	O2	0.6247	0.280	3513.6	0.731	BB	0.166	351.96	0.817
3	7.440	N2	11.4386	5.131	78993.8	16.439	BB	0.198	6646.74	15.431
4	9.879	CH4	7.9325	3.558	83598.5	17.397	BB	0.322	4329.23	10.051

Total Area = 480533.3, Total Amount = 222.927, Total Height = 43073.71, Sample Units = mg/L

MICROSEEPS

University of Pittsburgh Applied Research Center
220 William Pitt Way, Pittsburgh, PA 15238
(412) 826-5245
FAX (412) 826-3433

February 3, 1999

Ms. Stephanie Plunkett
Severn Trent Laboratories
200 Monroe Turnpike
Monroe, CT 06468

Dear Ms. Plunkett:

Attached are the final data listings and chromatograms for the samples we received on January 18, 1999, your project #7099-0072A.

Please give me a call if you have questions or I can be of further assistance. Thank you for using MICROSEEPS.

Sincerely,

Linda S. Tibensky

LST/lsp

Attachment: ST27-992075

Hardcopy

Microseeps

ST27-992075

—— SEVERN TRENT LABORATORIES ——

—— PROJECT: 7099-0072A ——

—— STL, CT ——

Sample Names	Carbon Dioxide mg/l	Ethane ng/l	Ethylene ng/l	Lab ID	Date Sampled	Date Received	Date Analyzed	Analyst
ESI-6	76.64	83025	16749	X5 218	1/13/99	1/18/99	1/27/99	RCW
ESI-6 DUPLICATE	82.38	87216	17681	X5 219	1/13/99	1/18/99	1/27/99	RCW
MW-12	121.26	221830	11912	X5 220	1/13/99	1/18/99	1/27/99	RCW
MW-8D	3.75	21103	300440	X5 221	1/13/99	1/18/99	1/27/99	RCW
DETECTION LIMITS	0.60mg/l	5ng/l	5ng/l					

ANALYST INITIALS RCW

REVIEW

Microseeps

---- QUALITY CONTROL ----

ST27-992075

---- SEVERN TRENT LABORATORIES ----
---- PROJECT: 7099-0072A ----
---- STL, CT ----

CONTINUING CALIBRATION STANDARDS 01/27/99

COMPOUND	FILE ID	TRUE CONC.	MEASURED	% DIFF.
ETHANE	X5A 215	476	483	1.47
ETHYLENE	X5A 215	533	507	4.88
CARBON DIOXIDE	X5B 214	160	167	4.38

HE IN LOOP 01/27/99

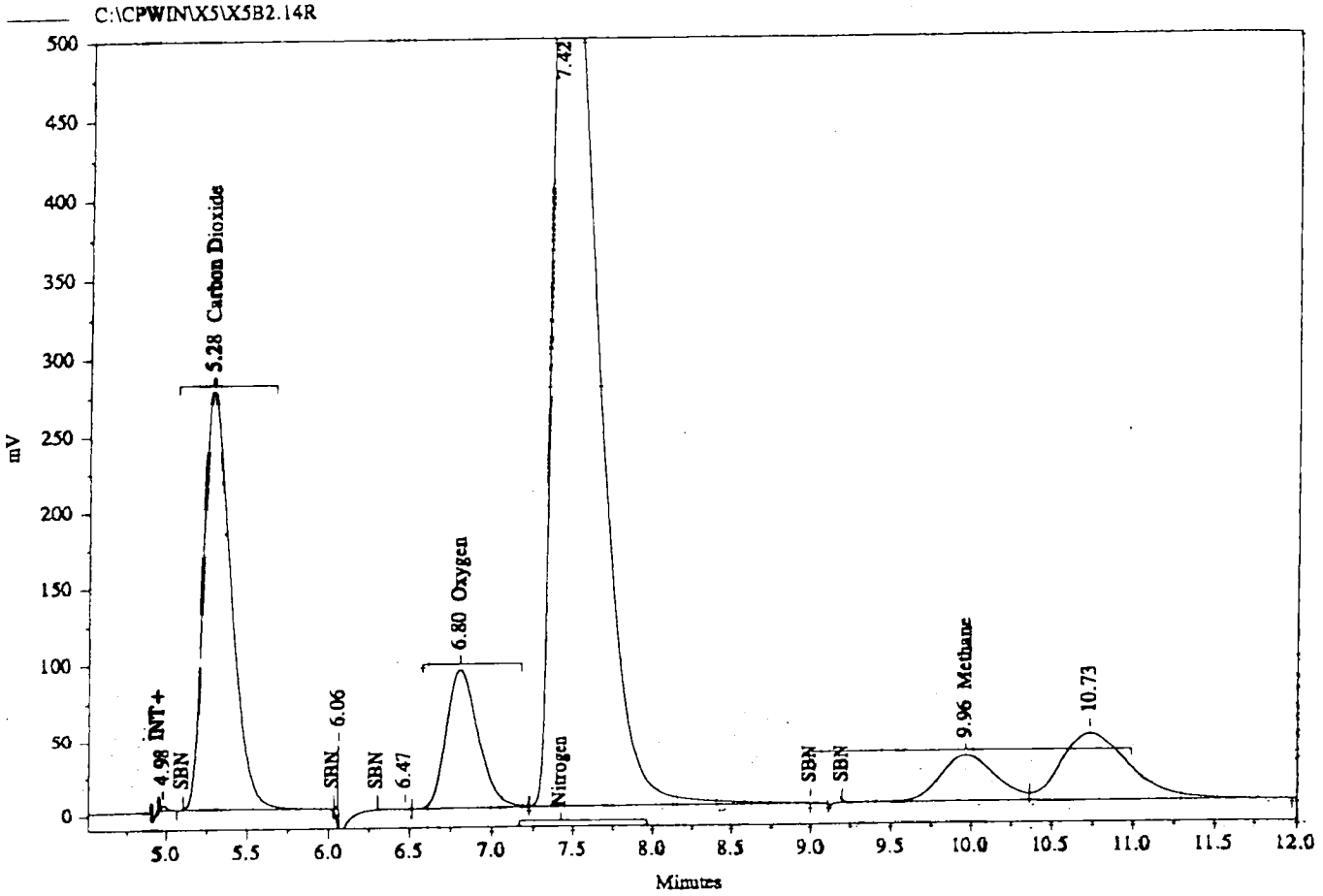
COMPOUND	FILE ID	DET. LIMIT	MEASURED
ETHANE	X5A 217	5ng/l	ND
ETHYLENE	X5A 217	5ng/l	ND
CARBON DIOXIDE	X5B 217	0.60mg/l	ND

ANALYST INITIALS RW

REVIEW

PG012799A

C:\CPWIN\X5\X5B2.14R



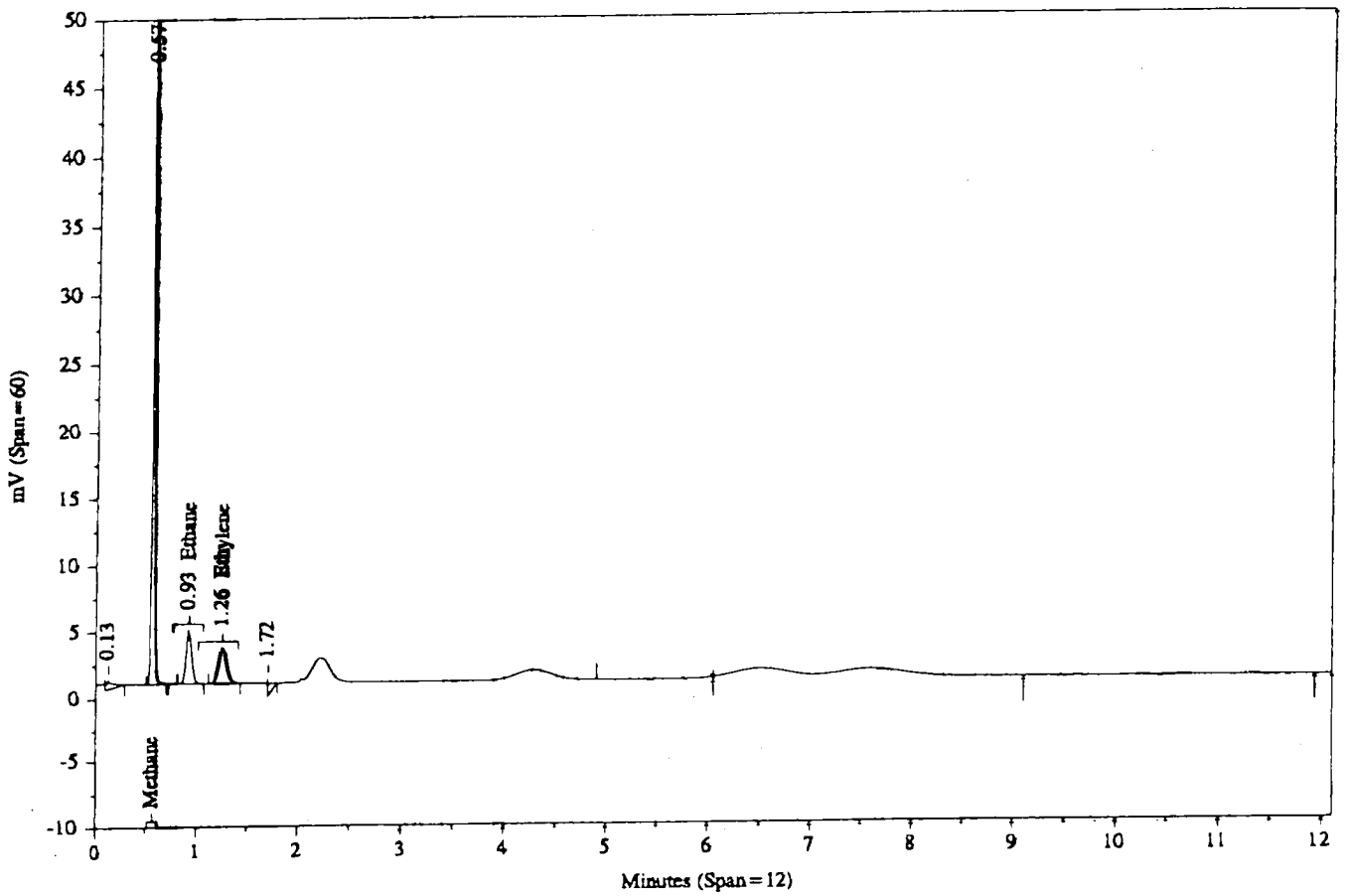
Sample Name: **PG012799A**
Acquired from Biorem-2--TCD via port 2 on 1/27/99 11:40:25 by RCW
Permenant Gases by TCD
Data File: **C:\CPWIN\X5\X5B2.14R**
Method File: C:\CPWIN\X5\X5BPGW1.MET
Calibration File: C:\CPWIN\X5\X5BPGW1.CAL

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	4.980		0.3816	0.096	7436.6	0.040	BB	0.037	3338.06	0.285
2	5.282	Carbon Dioxide	167.4710	41.957	3263974.0	17.594	BB	0.198	275217.50	23.477
3	6.060		1.3396	0.336	26108.7	0.141	BB	0.008	56007.33	4.778
4	6.471		0.1227	0.031	2390.5	0.013	BV	0.181	219.80	0.019
5	6.805	Oxygen	17.1965	4.308	1233111.0	6.647	VV	0.223	92065.88	7.854
6	7.425	Nitrogen	141.0691	35.343	12016580.0	64.775	VB	0.299	670051.90	57.158
7	9.964	Methane	5.3278	1.335	710761.8	3.831	BV	0.396	29890.71	2.550
8	10.732		66.2375	16.595	1290955.0	6.959	VB	0.473	45483.18	3.880

Total Area = 18551310.0, Total Amount = 399.146, Total Height = 1172274.0, Sample Units = %

LH120898

C:\CPWIN\X5\X5A2.15R



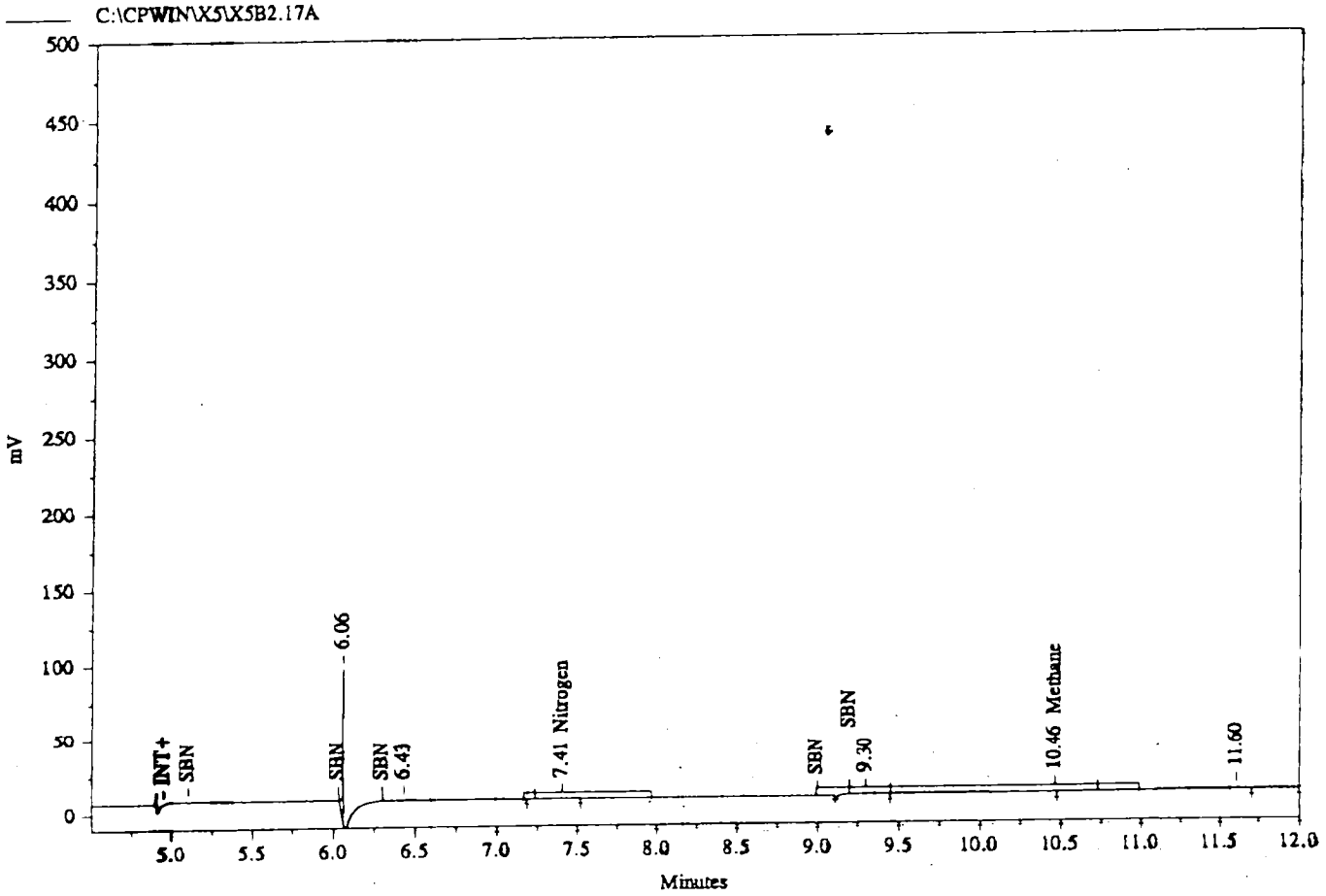
Sample Name: **LH120898**
Acquired from Biorem-2--FID via port 1 on 1/27/99 12:01:35 by RCW
Light Hydrocarbons by FID
Data File: **C:\CPWIN\X5\X5A2.15R**
Method File: C:\CPWIN\X5\X5ALHW1.MET
Calibration File: C:\CPWIN\X5\X5ALHW1.CAL

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	0.125		95.7368	8.146	3062.6	2.303	BB	0.078	650.47	1.009
2	0.570	Methane	2.6515	0.226	96332.1	72.449	BB	0.029	55799.64	86.518
3	0.928	Ethane	482.9605	41.092	15449.9	11.619	BB	0.063	4063.29	6.300
4	1.258	Ethylene	506.7213	43.114	15329.7	11.529	BB	0.094	2704.46	4.193
5	1.716		87.2475	7.423	2791.0	2.099	BB	0.036	1277.27	1.980

Total Area = 132965.4, Total Amount = 1175.318, Total Height = 64495.07, Sample Units = PPMV

HE IN LOOP

C:\CPWIN\X5\X5B2.17A



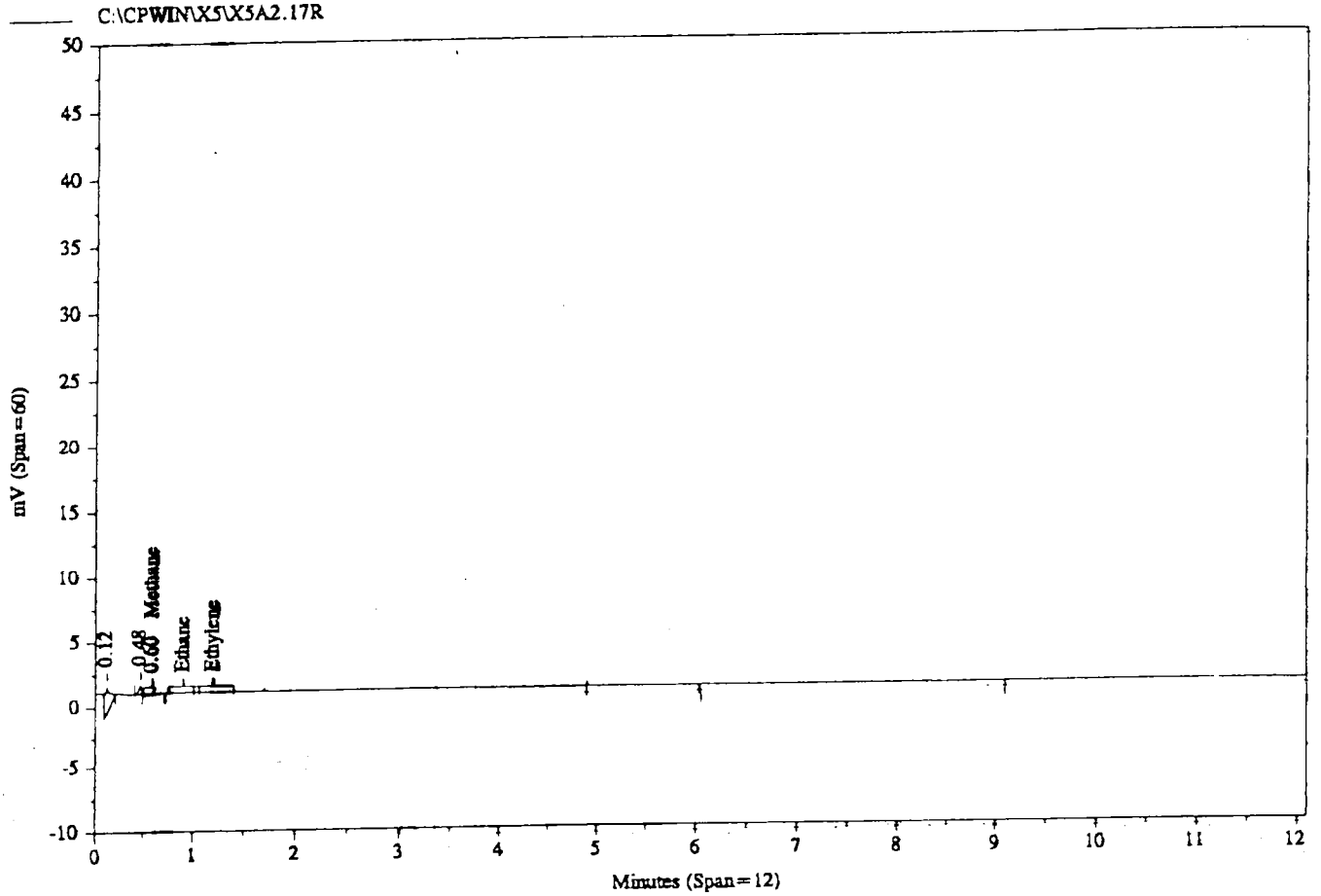
Sample Name: **HE IN LOOP**
Acquired from Biorem-2--TCD via port 2 on 1/27/99 12:51:20 by RCW
Permenant Gases by TCD
Data File: **C:\CPWIN\X5\X5B2.17A**
Method File: C:\CPWIN\X5\X5BPGW1.MET
Calibration File: C:\CPWIN\X5\X5BPGW1.CAL

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	6.060		1.9847	69.103	38681.8	63.425	BB	0.006	103771.90	99.295
2	6.431		0.4883	17.001	9516.6	15.604	BB	0.455	348.38	0.333
3	7.405	Nitrogen	0.0089	0.311	761.3	1.248	BB	0.129	98.31	0.094
4	9.298		0.0656	2.284	1278.3	2.096	BV	0.171	124.60	0.119
5	10.465	Methane	0.0388	1.352	5180.5	8.494	VB	1.694	50.97	0.049
6	11.604		0.2858	9.949	5569.3	9.132	BB	0.812	114.32	0.109

Total Area = 60987.9, Total Amount = 2.872, Total Height = 104508.5, Sample Units = %

HE IN LOOP

C:\CPWIN\X5\X5A2.17R



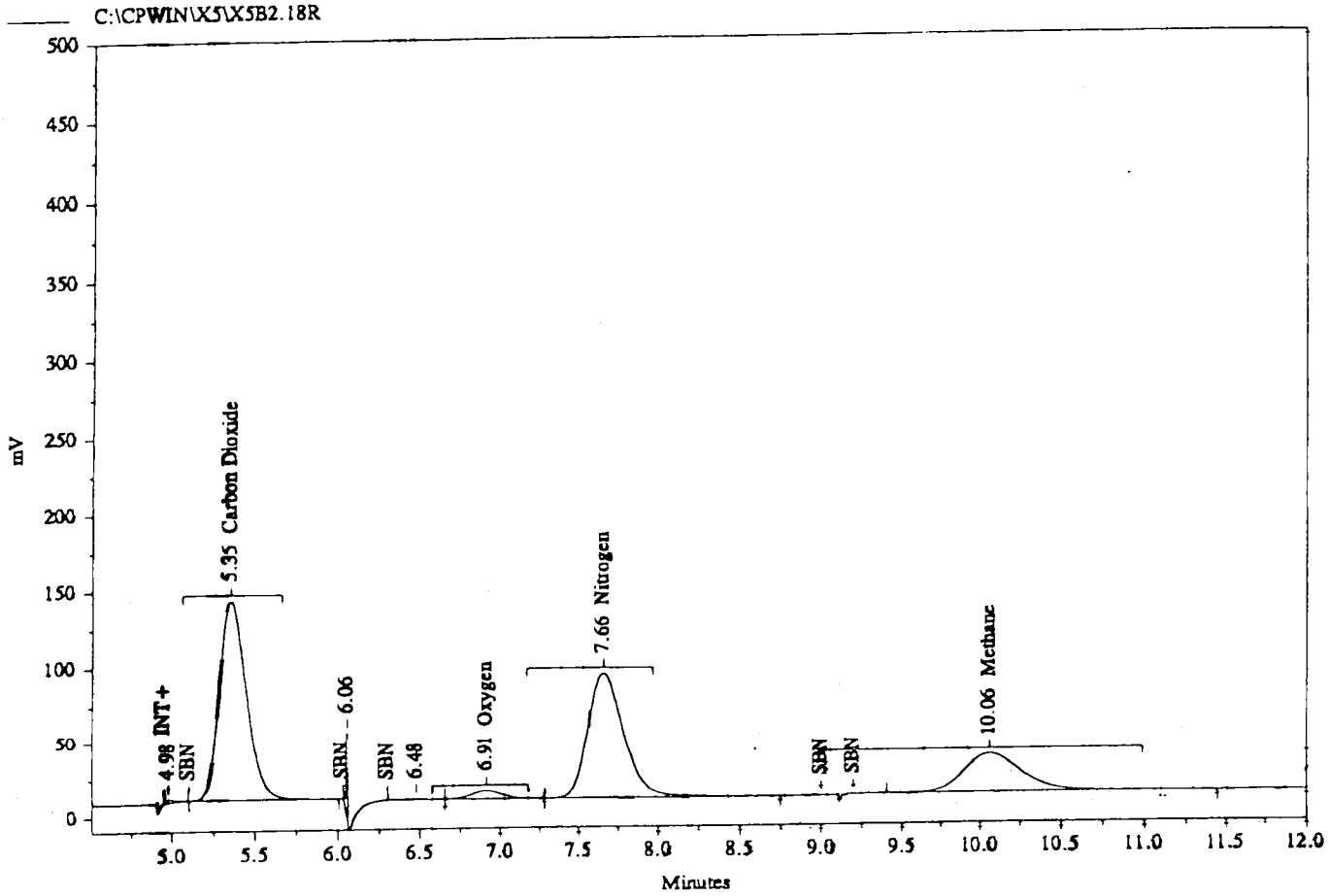
Sample Name: **HE IN LOOP**
Acquired from Biorem-2--FID via port 1 on 1/27/99 12:51:27 by RCW
Light Hydrocarbons by FID
Data File: **C:\CPWIN\X5\X5A2.17R**
Method File: C:\CPWIN\X5\X5ALH3.MET
Calibration File: C:\CPWIN\X5\X5AR9LH3.CAL

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	0.120		0.5195	83.777	7838.3	74.479	BB	0.065	2016.47	71.846
2	0.479		0.0704	11.354	1062.3	10.094	BB	0.028	635.46	22.641
3	0.600	Methane	0.0302	4.869	1623.6	15.427	BB	0.175	154.73	5.513

Total Area = 10524.2, Total Amount = 0.62, Total Height = 2806.67, Sample Units = PPMV

ESI-6

C:\CPWIN\X5\X5B2.18R



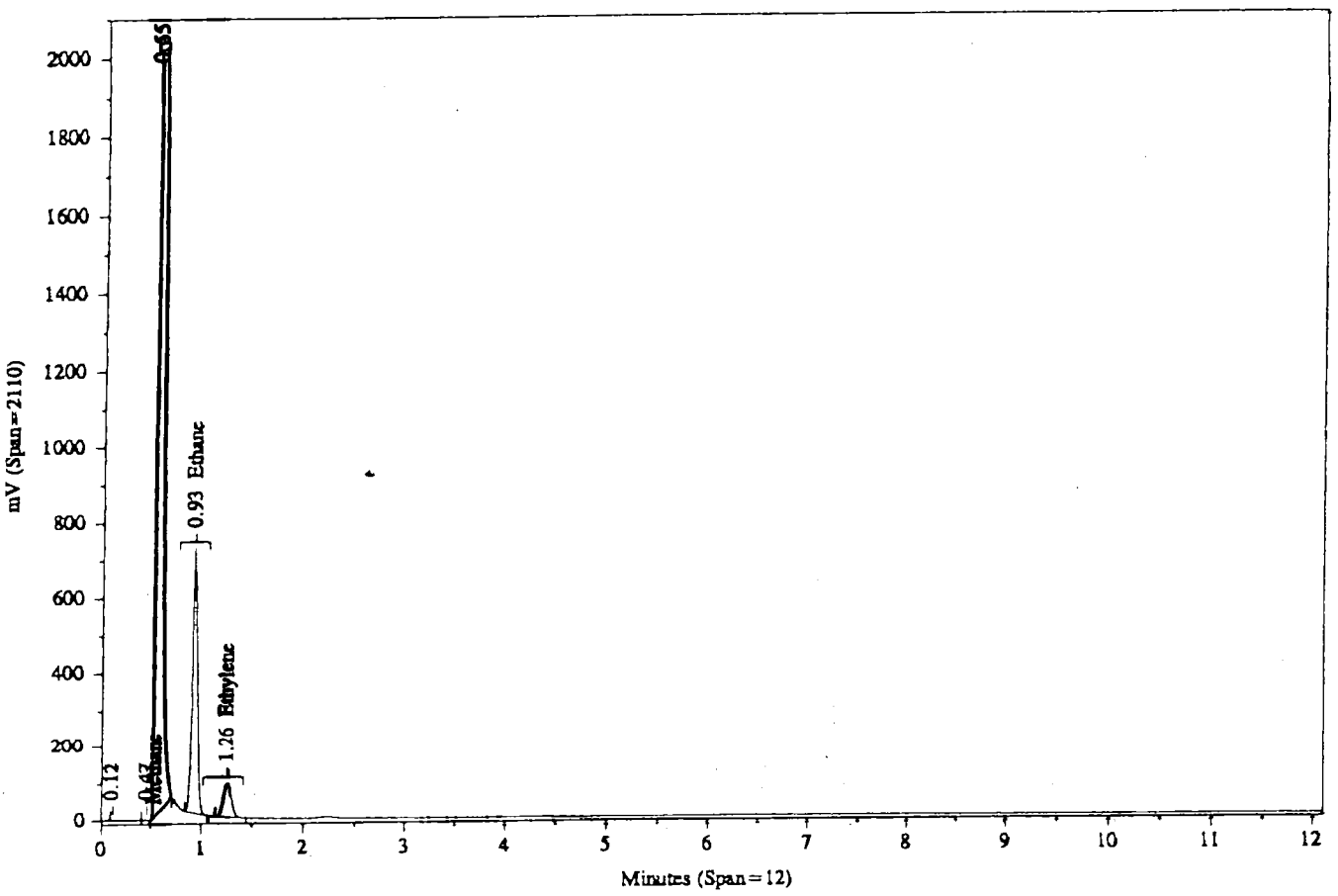
Sample Name: **ESI-6**
Acquired from Biorem-2--TCD via port 2 on 1/27/99 13:23:35 by RCW
Permenant Gases by TCD
Data File: **C:\CPWIN\X5\X5B2.18R**
Method File: C:\CPWIN\X5\X5BPGW1.MET
Calibration File: C:\CPWIN\X5\X5BPGW1.CAL

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	4.980		0.4393	0.439	8561.2	0.241	BB	0.066	2149.50	0.703
2	5.351	Carbon Dioxide	76.6365	76.639	1493629.0	42.076	BB	0.189	132053.80	43.159
3	6.056		1.5321	1.532	29.8	0.841	BB	0.009	57937.29	18.935
4	6.478		0.3379	0.338	6586.3	0.186	BV	0.280	391.72	0.128
5	6.913	Oxygen	0.9468	0.947	67894.7	1.913	VB	0.222	5096.95	1.666
6	7.658	Nitrogen	15.3177	15.318	1304793.0	36.756	BB	0.261	83335.20	27.236
7	10.059	Methane	4.7864	4.787	638538.6	17.988	BB	0.426	25037.86	8.173

Total Area = 3549863.0, Total Amount = 99.997, Total Height = 305972.3, Sample Units = %

ESI-6

C:\CPWIN\X5\X5A2.18R

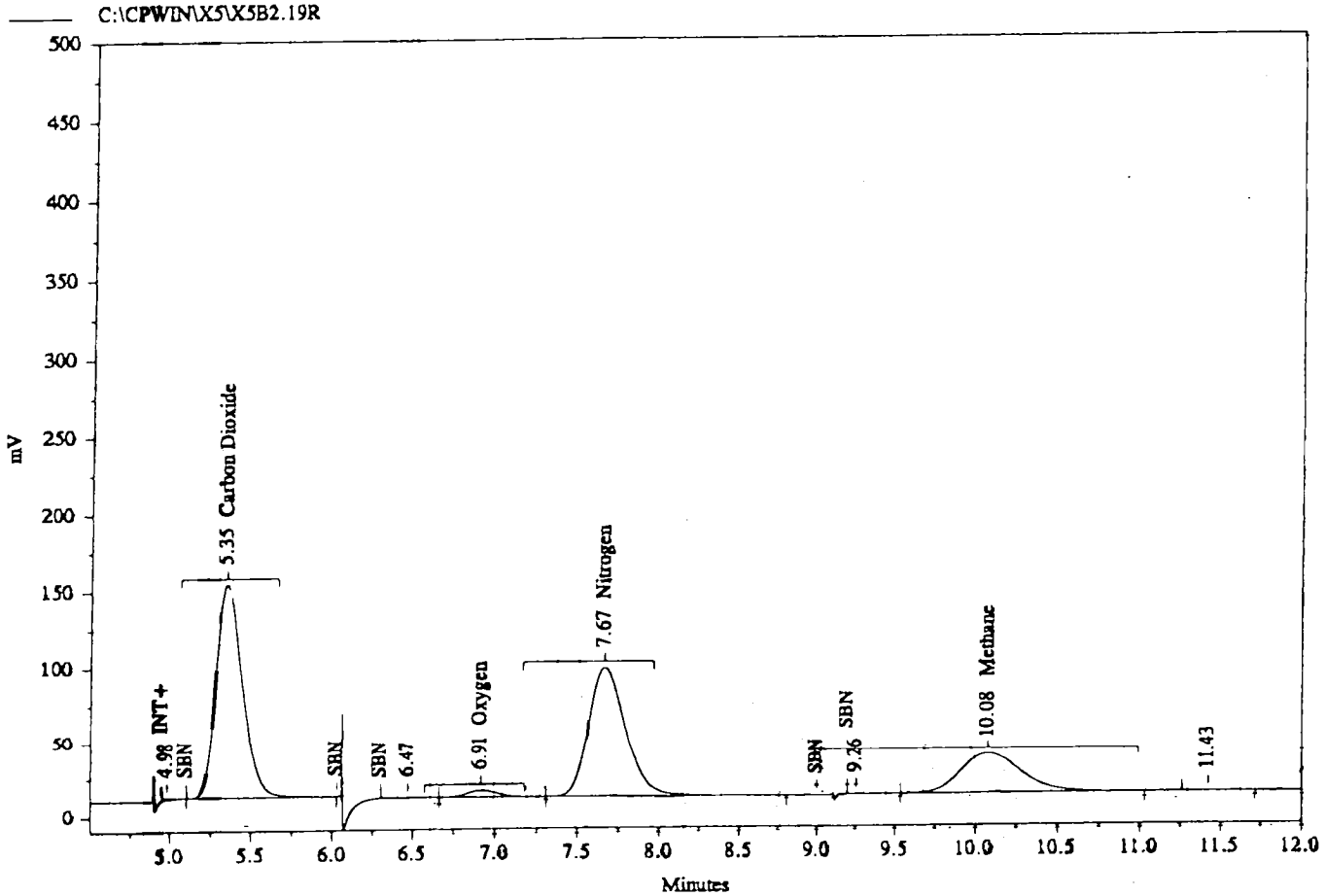


Sample Name: **ESI-6**
Acquired from Biorem-2--FID via port 1 on 1/27/99 13:23:41 by RCW
Light Hydrocarbons by FID
Data File: **C:\CPWIN\X5\X5A2.18R**
Method File: !C:\CPWIN\X5\X5ALHW1.MET
Calibration File: !C:\CPWIN\X5\X5ALHW1.CAL

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	0.116		396.2447	0.395	12675.8	0.099	BV	0.151	1400.19	0.049
2	0.474		42.6498	0.043	1364.4	0.011	VB	0.032	703.12	0.025
3	0.553	Methane	97.6847	0.097	9626114.0	75.188	BB	0.078	2055770.00	71.785
4	0.929	Ethane	83024.5500	82.768	2655947.0	20.745	BB	0.062	713871.10	24.927
5	1.258	Ethylene	16748.5800	16.697	506690.6	3.958	BB	0.092	92061.62	3.215

Total Area = 12802790.0, Total Amount = 100309.7, Total Height = 2863806.0, Sample Units = PPMV

ESI-6 DUPLICATE
C:\CPWIN\X5\X5B2.19R



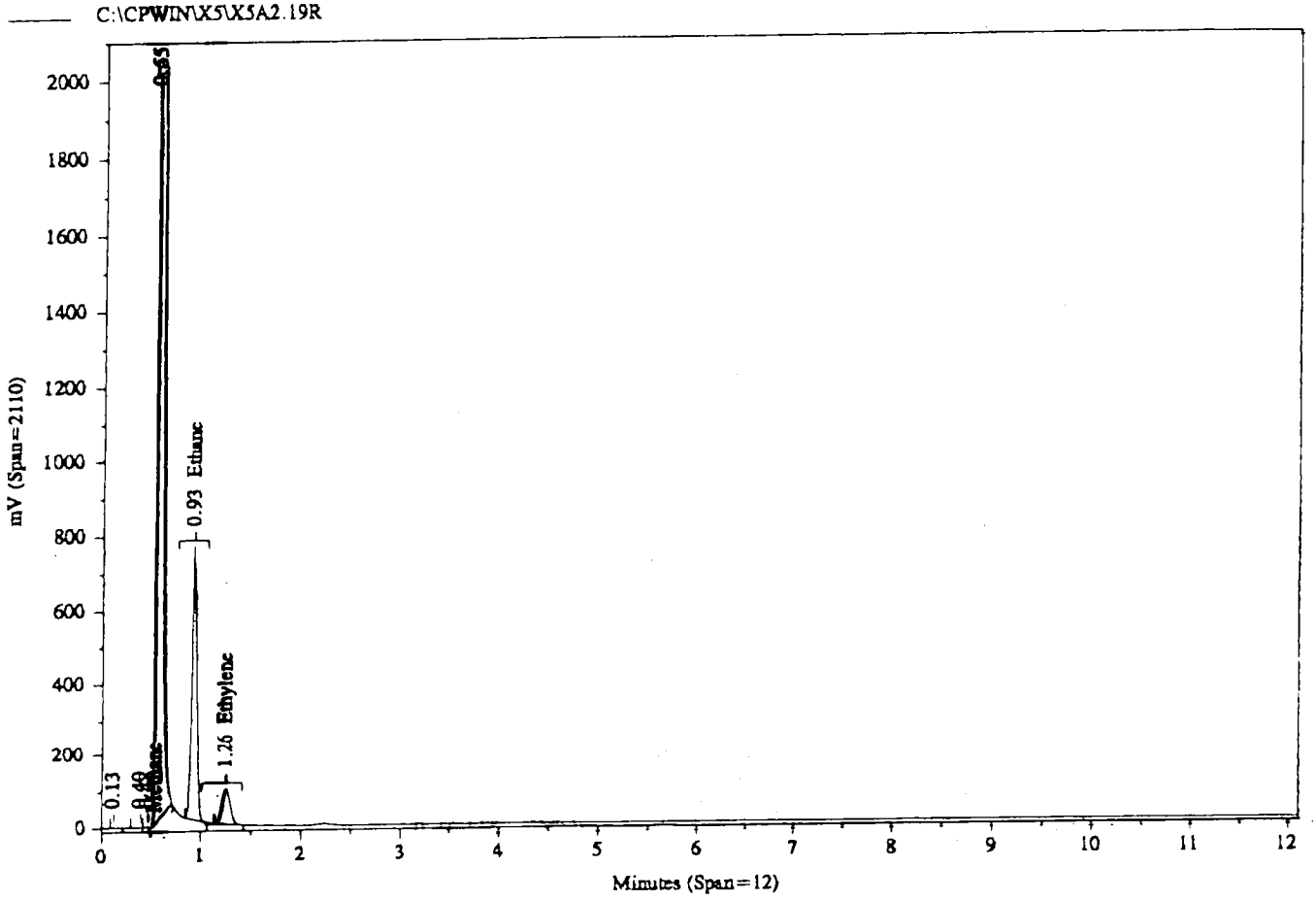
Sample Name: **ESI-6 DUPLICATE**
Acquired from Biorem-2--TCD via port 2 on 1/27/99 13:39:41 by RCW
Permenant Gases by TCD
Data File: **C:\CPWIN\X5\X5B2.19R**
Method File: C:\CPWIN\X5\X5BPGW1.MET
Calibration File: C:\CPWIN\X5\X5BPGW1.CAL

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	4.981		0.3425	0.326	6674.3	0.180	BB	0.072	1538.52	0.589
2	5.349	Carbon Dioxide	82.3818	78.455	1605603.0	43.405	BB	0.169	141678.00	54.251
3	6.474		0.4174	0.398	8135.4	0.220	BV	0.311	436.46	0.167
4	6.915	Oxygen	0.8719	0.830	62523.8	1.690	VV	0.232	4499.27	1.723
5	7.666	Nitrogen	15.9552	15.195	1359103.0	36.741	VB	0.261	86655.76	33.182
6	9.256		0.0450	0.043	876.3	0.024	BV	0.152	95.83	0.037
7	10.078	Methane	4.9066	4.673	654567.1	17.695	VB	0.417	26149.15	10.013
8	11.425		0.0846	0.081	1649.0	0.045	BB	0.275	99.95	0.038

Total Area = 3699131.0, Total Amount = 105.005, Total Height = 261152.9, Sample Units = %

ESI-6 DUPLICATE

C:\CPWIN\X5\X5A2.19R



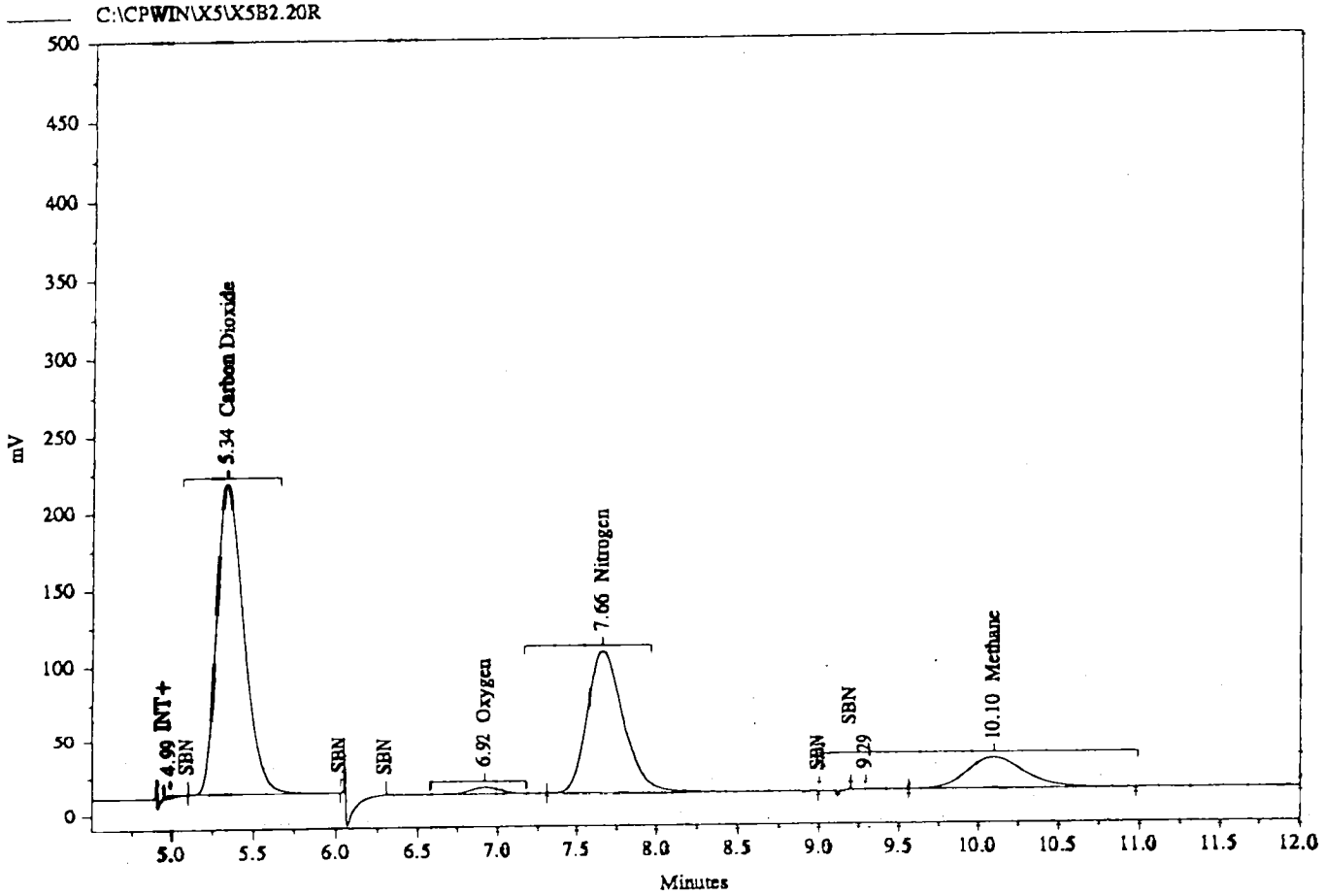
Sample Name: **ESI-6 DUPLICATE**
Acquired from Biorem-2--FID via port 1 on 1/27/99 13:39:47 by RCW
Light Hydrocarbons by FID
Data File: **C:\CPWIN\X5\X5A2.19R**
Method File: !C:\CPWIN\X5\X5ALHW1.MET
Calibration File: !C:\CPWIN\X5\X5ALHW1 .\L

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	0.127		44.8313	0.043	1434.1	0.011	BV	0.037	644.73	0.022
2	0.401		12.6296	0.012	404.0	0.003	VB	0.137	49.09	0.002
3	0.475		27.3959	0.026	876.4	0.007	BB	0.027	544.02	0.018
4	0.553	Methane	99.8188	0.095	9721799.0	74.500	BB	0.077	2100683.00	71.199
5	0.930	Ethane	87216.0300	82.998	2790032.0	21.380	BB	0.062	751139.30	25.458
6	1.258	Ethylene	17681.8500	16.827	534924.6	4.099	BB	0.092	97391.36	3.301

Total Area = 13049470.0, Total Amount = 105082.5, Total Height = 2950451.0, Sample Units = PPMV

MW-12

C:\CPWIN\X5\X5B2.20R



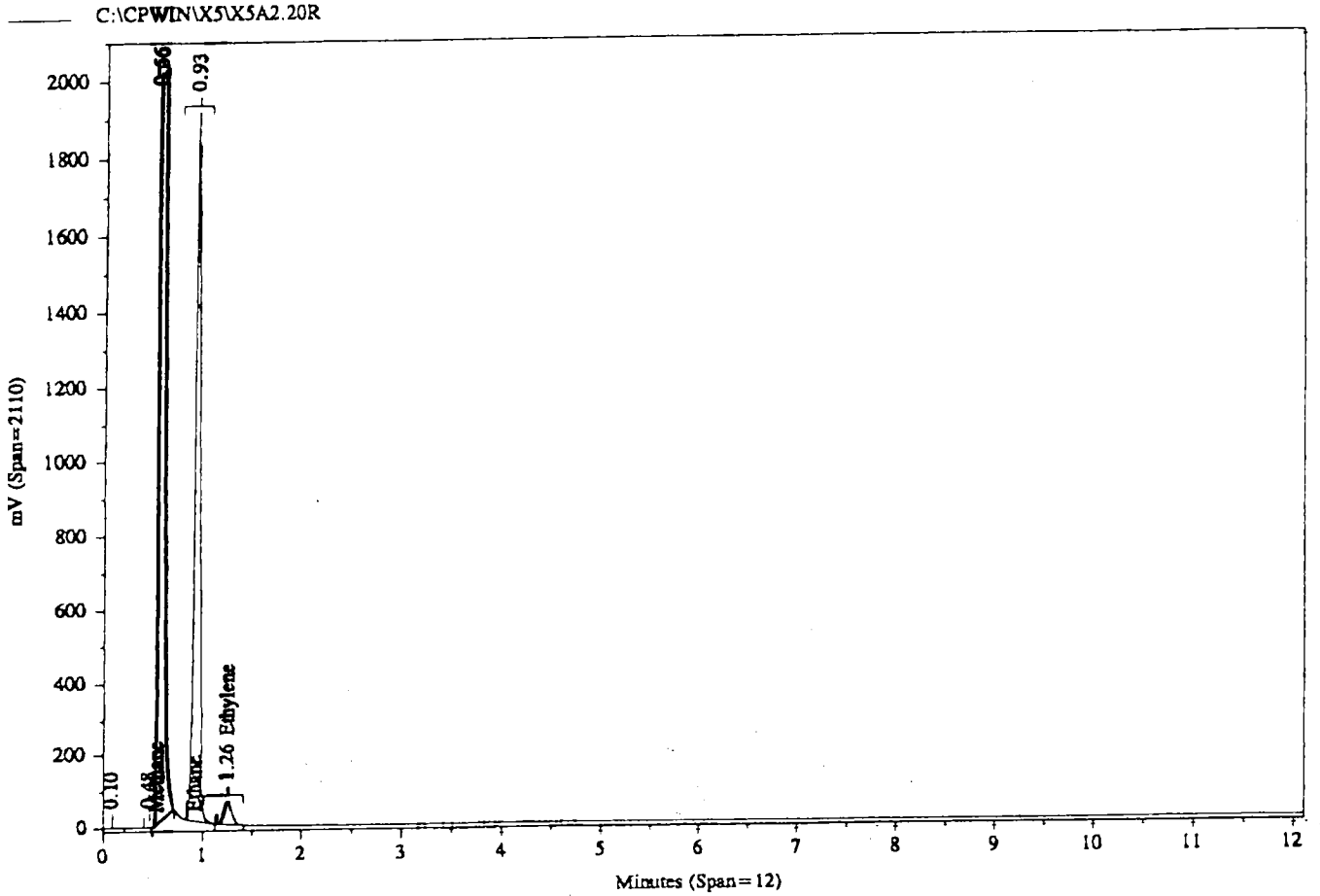
Sample Name: **MW-12**
Acquired from Biorem-2--TCD via port 2 on 1/27/99 13:52:48 by RCW
Permenant Gases by TCD
Data File: **C:\CPWIN\X5\X5B2.20R**
Method File: C:\CPWIN\X5\X5BPGW1.MET
Calibration File: C:\CPWIN\X5\X5BPGW1.CAL

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	4.988		0.4037	0.280	7867.6	0.177	BB	0.083	1578.56	0.484
2	5.337	Carbon Dioxide	121.2586	84.109	2363304.0	53.120	BB	0.192	205002.40	62.804
3	6.918	Oxygen	0.9614	0.667	68941.8	1.550	BV	0.257	4477.11	1.372
4	7.665	Nitrogen	17.6991	12.277	1507651.0	33.888	VB	0.264	95345.22	29.210
5	9.294		0.1047	0.073	2040.6	0.046	BV	0.225	151.07	0.046
6	10.098	Methane	3.7417	2.595	499164.5	11.220	VB	0.419	19860.17	6.084

Total Area = 4448970.0, Total Amount = 144.169, Total Height = 326414.5, Sample Units = %

MW-12

C:\CPWIN\X5\X5A2.20R



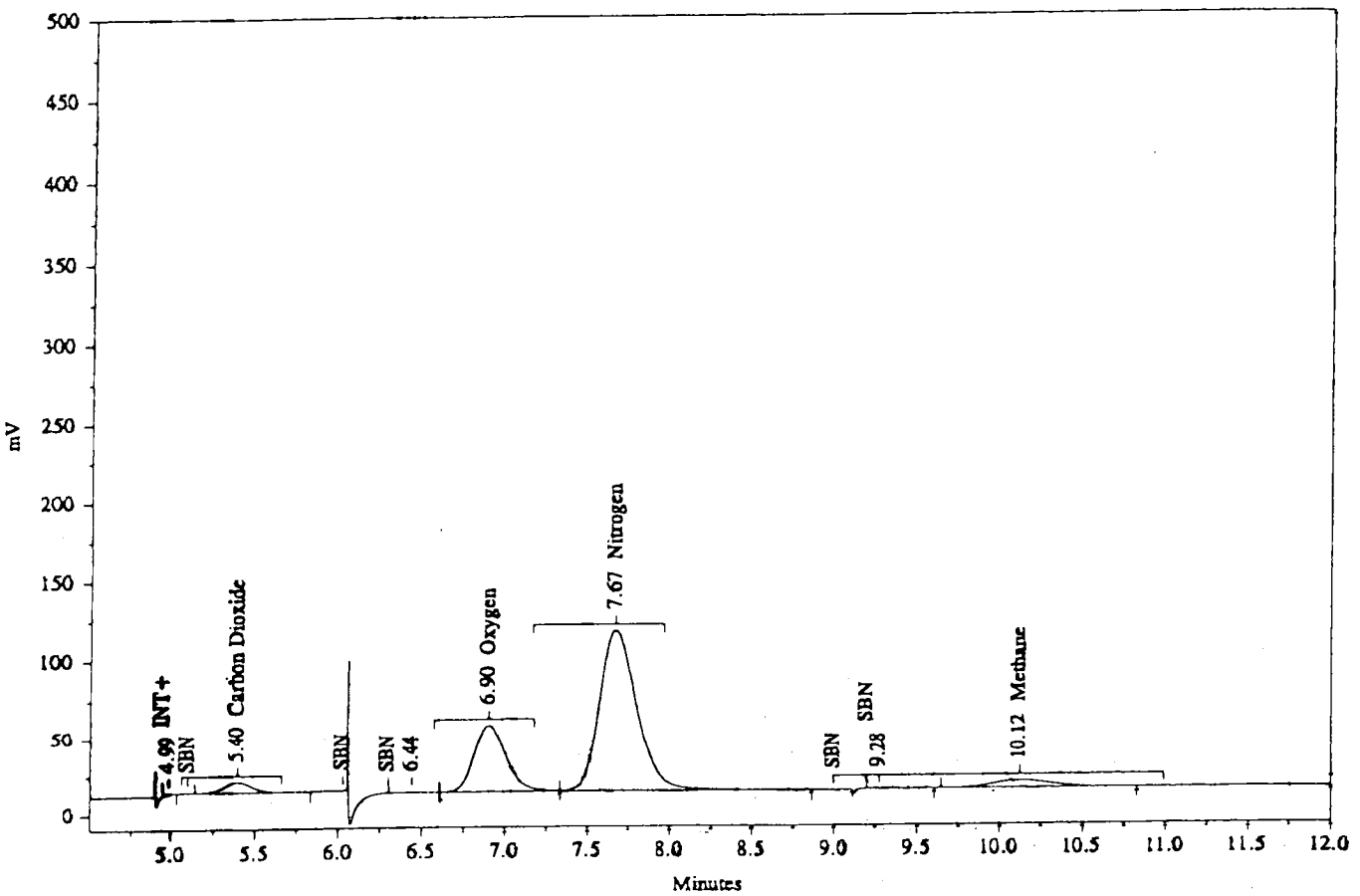
Sample Name: MW-12
Acquired from Biorem-2--FID via port 1 on 1/27/99 13:52:54 by RCW
Light Hydrocarbons by FID
Data File: C:\CPWIN\X5\X5A2.20R
Method File: !C:\CPWIN\X5\X5ALHW1.MET
Calibration File: !C:\CPWIN\X5\X5ALHW1.CAL

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	0.096		85.9924	0.037	2750.9	0.017	BB	0.046	988.37	0.025
2	0.478		28.2648	0.012	904.2	0.005	BB	0.025	601.10	0.015
3	0.558	Methane	96.5347	0.041	9091307.0	54.927	BB	0.075	2031567.00	50.635
4	0.932	Ethane	221830.7000	94.818	7096341.0	42.874	BB	0.062	1912927.00	47.678
5	1.260	Ethylene	11912.5400	5.092	360387.1	2.177	BB	0.091	66069.35	1.647

Total Area = 16551690.0, Total Amount = 233954.0, Total Height = 4012153.0, Sample Units = PPMV

MW-8D

C:\CPWIN\X5\X5B2.21R



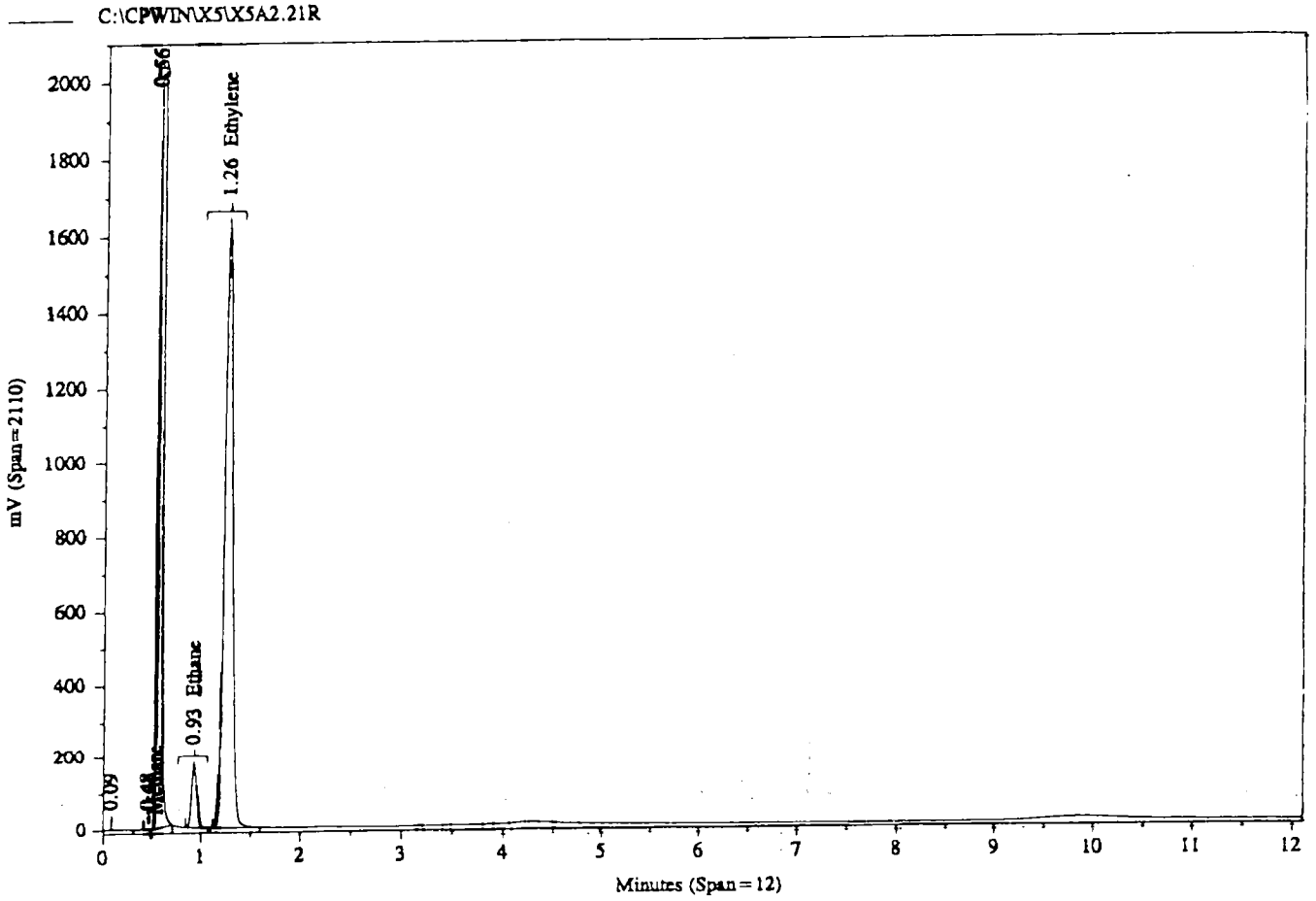
Sample Name: MW-8D
Acquired from Biorem-2--TCD via port 2 on 1/27/99 14:05:53 by RCW
Permenant Gases by TCD
Data File: **C:\CPWIN\X5\X5B2.21R**
Method File: C:\CPWIN\X5\X5BPGW1.MET
Calibration File: C:\CPWIN\X5\X5BPGW1.CAL

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	4.986		0.2181	0.671	4251.6	0.175	BB	0.052	1373.75	0.852
2	5.397	Carbon Dioxide	3.7485	11.528	73057.6	3.012	BB	0.184	6619.27	4.106
3	6.444		0.1856	0.571	3616.4	0.149	BV	0.234	258.01	0.160
4	6.905	Oxygen	8.0800	24.849	579392.6	23.886	VV	0.218	44384.29	27.530
5	7.670	Nitrogen	19.3322	59.453	1646759.0	67.889	VB	0.265	103761.00	64.360
6	9.275		0.0741	0.228	1443.2	0.059	BB	0.240	100.07	0.062
7	10.121	Methane	0.8782	2.701	117160.2	4.830	BB	0.413	4722.32	2.929

Total Area = 2425681.0, Total Amount = 32.517, Total Height = 161218.7, Sample Units = %

MW-8D

C:\CPWIN\X5\X5A2.21R



Sample Name: MW-8D
Acquired from Biorem-2--FID via port 1 on 1/27/99 14:05:59 by RCW
Light Hydrocarbons by FID
Data File: C:\CPWIN\X5\X5A2.21R
Method File: !C:\CPWIN\X5\X5ALHW1.MET
Calibration File: !C:\CPWIN\X5\X5ALHW1.CAL

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	0.095		49.2619	0.015	1575.9	0.010	BB	0.021	1257.72	0.032
2	0.479		27.9657	0.009	894.6	0.005	BB	0.024	631.88	0.016
3	0.563	Methane	98.2251	0.031	6717151.0	40.750	BB	0.054	2067143.00	53.058
4	0.934	Ethane	21102.7000	6.559	675073.1	4.095	BB	0.062	180502.70	4.633
5	1.261	Ethylene	300440.3000	93.386	9089147.0	55.140	BB	0.092	1646443.00	42.260

Total Area = 16483840.0, Total Amount = 321718.5, Total Height = 3895979.0, Sample Units = PPMV

ORGANICS APPENDIX

U - Indicates that the compound was analyzed for but not detected.

J - Indicates that the compound was analyzed for and determined to be present in the sample. The mass spectrum of the compound meets the identification criteria of the method. The concentration listed is an estimated value, which is less than the specified minimum detection limit but is greater than zero.

B - This flag is used when the analyte is found in the blanks as well as the sample. It indicates possible sample contamination and warns the data user to use caution when applying the results of this analyte.

N - Indicates that the compound was analyzed for but not requested as an analyte. Value will not be listed on tabular result sheet.

S - Estimated due to surrogate outliers.

X - Matrix spike compound.

(1) - Cannot be separated.

(2) - Decomposes to azobenzene. Measured and calibrated as azobenzene.

A - This flag indicates that a TIC is a suspected aldol condensation product.

E - Indicates that it exceeds calibration curve range.

D - This flag identifies all compounds identified in an analysis at a secondary dilution factor.

C - Confirmed by GC/MS.

T - Compound present in TCLP blank.

P - This flag is used for a pesticide/aroclor target analyte when there is a greater than 25 percent difference for detected concentrations between the two GC columns (see Form X).

INORGANICS APPENDIX

C - Concentration qualifiers

U - Indicates analyte was not detected at method reporting limit.

B - Indicates analyte result between IDL and contract required detection limit (CRDL)

Q - QC qualifiers

E - Reported value is estimated because of the presence of interference

M - Duplicate injection precision not met

N - Spiked sample recovery not within control limits

S - The reported value was determined by the method of standard additions (MSA)

W - Post-digest spike recovery furnace analysis was out of 85-115 percent control limit, while sample absorbance was less than 50 percent of spike absorbance

* - Duplicate analysis not within control limit

+ - Correlation coefficient for MSA is less than 0.995

M - Method codes

P - ICP

A - Flame AA

F - Furnace AA

CV - Cold vapor AA (manual)

C - Cyanide

NR - Not Required

NC - Not Calculated as per protocols

STATE CERTIFICATIONS

In some instances it may be necessary for environmental data to be reported to a regulatory authority with reference to a certified laboratory. For your convenience, the laboratory identification numbers for the STL-Connecticut laboratory are provided in the following table. Many states certify laboratories for specific parameters or tests within a category (i.e. method 325.2 for wastewater). The information in the following table indicates the lab is certified in a general category of testing such as drinking water or wastewater analysis. The laboratory should be contacted directly if parameter-specific certification information is required.

STL-Connecticut
Certification Summary (as of September 1998)

State	Responsible Agency	Certification	Lab Number
Connecticut	Department of Health Services	Drinking Water, Wastewater	PH-0497
Kansas	Department of Health & Environment	Drinking Water, Wastewater/Solid, Hazardous Waste	E-10210
Maine	Department of Health and Environmental Services	Drinking Water, Wastewater/Solid, Hazardous Waste	CT023
Massachusetts	Department of Environmental Protection	Potable/Non-Potable Water	CT023
New Hampshire	Department of Environmental Services	Drinking Water, Wastewater	252891
New Jersey	Department of Environmental Protection	Drinking Water, Wastewater	46410
New York	Department of Health	CLP, Drinking Water, Wastewater, Solid/ Hazardous Waste	10602
North Carolina	Division of Environmental Management	Wastewater	388
Rhode Island	Department of Health	Chemistry...Non-Potable Water and Wastewater	A43
Washington	Department of Ecology	Wastewater/Hazardous Waste	C231
Wisconsin	Department of Natural Resources	Wastewater	998355710

7099-0072A
INGERSOLL RAND
SAMPLE SUMMARY

C IENT ID	LAB ID	MATRIX	DATE COLLECTED	DATE RECEIVED
MW-7D	990072A-01	WATER	01/12/99	01/13/99
E I-7	990072A-02	WATER	01/12/99	01/13/99
MW-8S	990072A-03	WATER	01/12/99	01/13/99
D P-1	990072A-04	WATER	01/12/99	01/13/99
TR 011299	990072A-05	WATER	01/12/99	01/13/99
E_I-6	990072A-06	WATER	01/13/99	01/14/99
E I-6	990072A-06D	WATER	01/13/99	01/14/99
E I-6	990072A-06MS	WATER	01/13/99	01/14/99
E I-6	990072A-06MSB	WATER	01/13/99	01/14/99
ESI-6	990072A-06MSD	WATER	01/13/99	01/14/99
E I-6	990072A-06S	WATER	01/13/99	01/14/99
MW-12	990072A-07	WATER	01/13/99	01/14/99
M -8D	990072A-08	WATER	01/13/99	01/14/99
TB 011398	990072A-09	WATER	01/13/99	01/14/99

IEA-CT ANALYTICAL SUMMARY

Client ID: DUP-1, ESI-6, ESI-7, MW-12, MW-7D, MW-8D, MW-8S, TB 011299, TB 011398

Job Number: 7099-0072A

Date: 2/4/99

Qty	Matrix	Analysis	Description
1	None	DISK	Diskette Prep.
8	WATER	ALK-N310.1	Alkalinity
8	WATER	BOD5-N405.1	Biochemical Oxygen D
9	WATER	CHLORIDE-N325.2	Chloride
9	WATER	COD-N410.4	Chemical Oxygen Dema
9	WATER	FE-NSW846	Iron
9	WATER	FE-NSW846-D	Iron (Dissolved)
9	WATER	FLUORIDE-N340.2	Fluoride
8	WATER	GC-MISC	Miscellaneous GC
9	WATER	MET-PREP-ICAP	Metals ICAP Prep
9	WATER	MET-PREP-ICAP-D	Metals ICAP Prep (Di
9	WATER	MN-NSW846	Manganese
9	WATER	MN-NSW846-D	Manganese (Dissolved
9	WATER	NITRATE/NIT-N353.2	Nitrate/Nitrite-Nitr
9	WATER	SULFATE-N375.3	Sulfate
8	WATER	SULFIDE-N376.1	Sulfide
9	WATER	TOC-N415.1-DUP	Total Organic Carbon
9	WATER	TOC-N415.1-DUP-D	Total Organic Carbon
1	WATER	VOA-N8260A-TCL	TCL Volatile Organic
11	WATER	VOA-N8260A-TCL	TCL Volatile Organic

February 1999 Groundwater Laboratory Analytical Data Sheets

Committed To *Your* Success

March 05, 1999

Severn Trent Laboratories
200 Monroe Turnpike
Monroe CT 06468

Tel: (203) 261-4458
Fax: (203) 268-5346

Mr. Marc Sanford
INGERSOLL RAND
Geraghty & Miller
215 Washington Ave Ext.
Albany, NY 12205

Dear Mr. Sanford :

Please find enclosed the analytical results of 14 sample(s) received at our laboratory on February 10-11, 1999. This report contains sections addressing the following information at a minimum:

- sample summary
- analytical methodology
- state certifications
- definition of data qualifiers and terminology
- analytical results
- chain-of-custody

STL Report #7099-0272A	Purchase Order #907019
Project ID: JAMESTOWN, NY	

Copies of this analytical report and supporting data are maintained in our files for a minimum of five years unless special arrangements have been made. Unless specifically indicated, all analytical testing was performed at this laboratory location and no portion of the testing was subcontracted.

We appreciate your selection of our services and welcome any questions or suggestions you may have relative to this report. Please contact your customer service representative at (203) 261-4458 for any additional information. Thank you for utilizing our services; we hope you will consider us for your future analytical needs.

I have reviewed and approved the enclosed data for final release.

Very truly yours,

Jeffrey C. Curran
Laboratory Manager

JCC

cc: D. JONES
J. HARRY

7099-0272A
INGERSOLL RAND

Case Narrative

Metals - ICAP metals were determined using a JA61E trace ICAP using guidance provided in SW846 according to the following Methods: ICAP-3010/6010.

No problems occurred during analysis. All appropriate protocols were employed. All data appears to be consistent.

Classical Chemistry - Listed below are the wet chemistry analyte methods and references for the samples analyzed in this SDG. The BOD results for samples DUP-1, MW-8S, and MW-12 are expressed as "greater than" values due to final dissolved oxygen readings of zero. No other analytical problems were encountered and all holding times were met.

Analyte	Method	Reference
Alkalinity	310.1	1
BOD5	405.1	1
Chloride	325.2	1
COD	410.4	1
Fluoride	340.2	1
Nitrate/Nitrite	353.2	1
Sulfate	375.2	1
Sulfide	376.1	1
TOCD	415.1	1
TOCD-Dissolved	415.1	1

References:

1. Methods of Chemical Analysis of Water and Wastes, EPA 600, 1983.

Volatile Organics - Volatile organics were determined by purge and trap GC/MS using guidance provided in Method 8260B. The instrumentation used was a Tekmar Dynamic Headspace Concentrator interfaced with a Hewlett-Packard Model 5971A GC/MS/DS.

Sample Calculation:

Sample ID - ESI-6
Compound - Trichloroethene

$\frac{(564280)(250)(5)}{(1089504)(.363)(5)} = 356 = 360$ UG/L.

The following samples were analyzed at dilutions due to high target compound concentrations:

ESI-6	1:5
DUP-1	1:20
MW-8S	1:20
MW-12	1:50
MW-8D	1:5000

No problems were encountered.

Aqueous

TABLE VO-1.0
7099-0272A
INGERSOLL RAND
TCL VOLATILE ORGANICS

All values are ug/L.

Client Sample I.D.	Method Blank	TB 020999		Quant. Limits with no Dilution
Lab Sample I.D.	VBLKLV	990272A-04		
Method Blank I.D.	VBLKLV	VBLKLV		
Quant. Factor	1.00	1.00		
Chloromethane	U	U		10
Bromomethane	U	U		10
Vinyl Chloride	U	U		10
Chloroethane	U	U		10
Methylene Chloride	U	U		5.0
Acetone	U	U		10
Carbon Disulfide	U	U		5.0
Vinyl Acetate	U	U		10
1,1-Dichloroethene	U	U		5.0
1,1-Dichloroethane	U	U		5.0
1,2-Dichloroethene (total)	U	U		5.0
Chloroform	U	U		5.0
1,2-Dichloroethane	U	U		5.0
2-Butanone	U	U		10
1,1,1-Trichloroethane	U	U		5.0
Carbon Tetrachloride	U	U		5.0
Bromodichloromethane	U	U		5.0
1,2-Dichloropropane	U	U		5.0
cis-1,3-Dichloropropene	U	U		5.0
Trichloroethene	U	U		5.0
Dibromochloromethane	U	U		5.0
1,1,2-Trichloroethane	U	U		5.0
Benzene	U	U		5.0
trans-1,3-Dichloropropene	U	U		5.0
Bromoform	U	U		5.0
4-Methyl-2-Pentanone	U	U		10
2-Hexanone	U	U		10
Tetrachloroethene	U	U		5.0
Toluene	U	U		5.0
1,1,2,2-Tetrachloroethane	U	U		5.0
Chlorobenzene	U	U		5.0
Ethylbenzene	U	U		5.0
Styrene	U	U		5.0
Xylene (total)	U	U		5.0
Date Received		02/10/99		
Date Extracted	N/A	N/A		
Date Analyzed	02/10/99	02/10/99		

See Appendix for qualifier definitions
Note: Compound detection limit = quantitation limit x quantitation factor
Quant. Factor = a numerical value which takes into account any variation in sample weight/volume, % moisture and sample dilution.

TABLE VO-1.1
7099-0272A
INGERSOLL RAND
TCL VOLATILE ORGANICS

Aqueous

All values are ug/L.

Client Sample I.D.	Method Blank	ESI-6	ESI-6 MS	Quant. Limits with no Dilution
Lab Sample I.D.	VBLKLW	990272A-01	990272A-01MS	
Method Blank I.D.	VBLKLW	VBLKLW	VBLKLW	
Quant. Factor	1.00	5.00	5.00	
Chloromethane	U	U	U	10
Bromomethane	U	U	U	10
Vinyl Chloride	U	U	U	10
Chloroethane	U	U	U	10
Methylene Chloride	U	U	U	5.0
Acetone	U	U	U	10
Carbon Disulfide	U	U	U	5.0
Vinyl Acetate	U	U	U	10
1,1-Dichloroethene	U	U	52X	5.0
1,1-Dichloroethane	U	U	U	5.0
1,2-Dichloroethene (total)	U	22J	U	5.0
Chloroform	U	U	U	5.0
1,2-Dichloroethane	U	U	U	5.0
2-Butanone	U	U	U	10
1,1,1-Trichloroethane	U	U	U	5.0
Carbon Tetrachloride	U	U	U	5.0
Bromodichloromethane	U	U	U	5.0
1,2-Dichloropropane	U	U	U	5.0
cis-1,3-Dichloropropene	U	U	U	5.0
Trichloroethene	U	360	480X	5.0
Dibromochloromethane	U	U	U	5.0
1,1,2-Trichloroethane	U	U	U	5.0
Benzene	U	U	49X	5.0
trans-1,3-Dichloropropene	U	U	U	5.0
Bromoform	U	U	U	5.0
4-Methyl-2-Pentanone	U	U	U	10
2-Hexanone	U	U	U	10
Tetrachloroethene	U	3J	U	5.0
Toluene	U	U	49X	5.0
1,1,2,2-Tetrachloroethane	U	U	U	5.0
Chlorobenzene	U	U	45X	5.0
Ethylbenzene	U	U	U	5.0
Styrene	U	U	U	5.0
Xylene (total)	U	U	U	5.0
Date Received		02/10/99	02/10/99	
Date Extracted	N/A	N/A	N/A	
Date Analyzed	02/11/99	02/11/99	02/11/99	

See Appendix for qualifier definitions
Note: Compound detection limit = quantitation limit x quantitation factor
Quant. Factor = a numerical value which takes into account any variation in sample weight/volume, % moisture and sample dilution.

Aqueous

TABLE VO-1.2
7099-0272A
INGERSOLL RAND
TCL VOLATILE ORGANICS

All values are ug/L.

Client Sample I.D.	ESI-6 MSD	DUP-1	MW-8S	Quant. Limits with no Dilution
Lab Sample I.D.	990272A-01 MSD	990272A-02	990272A-03	
Method Blank I.D.	VBLKLW	VBLKLW	VBLKLW	
Quant. Factor	5.00	20.0	20.0	
Chloromethane	U	U	U	10
Bromomethane	U	U	U	10
Vinyl Chloride	U	U	U	10
Chloroethane	U	U	U	10
Methylene Chloride	U	U	U	5.0
Acetone	U	U	U	10
Carbon Disulfide	U	U	U	5.0
Vinyl Acetate	U	U	U	10
1,1-Dichloroethene	47X	U	U	5.0
1,1-Dichloroethane	U	U	U	5.0
1,2-Dichloroethene (total)	U	2600	2500	5.0
Chloroform	U	U	U	5.0
1,2-Dichloroethane	U	U	U	5.0
2-Butanone	U	U	U	10
1,1,1-Trichloroethane	U	U	U	5.0
Carbon Tetrachloride	U	U	U	5.0
Bromodichloromethane	U	U	U	5.0
1,2-Dichloropropane	U	U	U	5.0
cis-1,3-Dichloropropene	U	U	U	5.0
Trichloroethene	460X	3200	3000	5.0
Dibromochloromethane	U	U	U	5.0
1,1,2-Trichloroethane	U	U	U	5.0
Benzene	47X	U	U	5.0
trans-1,3-Dichloropropene	U	U	U	5.0
Bromoform	U	U	U	5.0
4-Methyl-2-Pentanone	U	U	U	10
2-Hexanone	U	U	U	10
Tetrachloroethene	U	U	U	5.0
Toluene	46X	U	U	5.0
1,1,2,2-Tetrachloroethane	U	U	U	5.0
Chlorobenzene	43X	U	U	5.0
Ethylbenzene	U	U	U	5.0
Styrene	U	U	U	5.0
Xylene (total)	U	U	U	5.0
Date Received	02/10/99	02/10/99	02/10/99	
Date Extracted	N/A	N/A	N/A	
Date Analyzed	02/11/99	02/11/99	02/11/99	

See Appendix for qualifier definitions
Note: Compound detection limit = quantitation limit x quantitation factor
Quant. Factor = a numerical value which takes into account any variation in sample weight/volume, % moisture and sample dilution.

Aqueous

TABLE VO-1.3
7099-0272A
INGERSOLL RAND
TCL VOLATILE ORGANICS

All values are ug/L.

Client Sample I.D.	Method Blank	TB 021099	ESI-7	Quant. Limits with no Dilution
Lab Sample I.D.	VBLKLX	990272A-06	990272A-08	
Method Blank I.D.	VBLKLX	VBLKLX	VBLKLX	
Quant. Factor	1.00	1.00	1.00	
Chloromethane	U	U	U	10
Bromomethane	U	U	U	10
Vinyl Chloride	U	U	U	10
Chloroethane	U	U	U	10
Methylene Chloride	U	U	U	5.0
Acetone	U	U	U	10
Carbon Disulfide	U	U	U	5.0
Vinyl Acetate	U	U	U	10
1,1-Dichloroethene	U	U	U	5.0
1,1-Dichloroethane	U	U	U	5.0
1,2-Dichloroethene (total)	U	U	19	5.0
Chloroform	U	U	U	5.0
1,2-Dichloroethane	U	U	U	5.0
2-Butanone	U	U	U	10
1,1,1-Trichloroethane	U	U	U	5.0
Carbon Tetrachloride	U	U	U	5.0
Bromodichloromethane	U	U	U	5.0
1,2-Dichloropropane	U	U	U	5.0
cis-1,3-Dichloropropene	U	U	U	5.0
Trichloroethene	U	U	16	5.0
Dibromochloromethane	U	U	U	5.0
1,1,2-Trichloroethane	U	U	U	5.0
Benzene	U	U	U	5.0
trans-1,3-Dichloropropene	U	U	U	5.0
Bromoform	U	U	U	5.0
4-Methyl-2-Pentanone	U	U	U	10
2-Hexanone	U	U	U	10
Tetrachloroethene	U	U	U	5.0
Toluene	U	U	U	5.0
1,1,2,2-Tetrachloroethane	U	U	U	5.0
Chlorobenzene	U	U	U	5.0
Ethylbenzene	U	U	U	5.0
Styrene	U	U	U	5.0
Xylene (total)	U	U	U	5.0
Date Received		02/11/99	02/11/99	
Date Extracted	N/A	N/A	N/A	
Date Analyzed	02/12/99	02/12/99	02/12/99	

See Appendix for qualifier definitions
Note: Compound detection limit = quantitation limit x quantitation factor
Quant. Factor = a numerical value which takes into account any variation in sample weight/volume, % moisture and sample dilution.

TABLE VO-1.4
7099-0272A
INGERSOLL RAND
TCL VOLATILE ORGANICS

Aqueous

All values are ug/L.

Client Sample I.D.	Method Blank	MW-12	MW-7D	Quant. Limits with no Dilution
Lab Sample I.D.	VBLKLZ	990272A-05	990272A-07	
Method Blank I.D.	VBLKLZ	VBLKLZ	VBLKLZ	
Quant. Factor	1.00	50.0	1.00	
Chloromethane	U	U	U	10
Bromomethane	U	U	U	10
Vinyl Chloride	U	U	U	10
Chloroethane	U	U	U	10
Methylene Chloride	U	U	U	5.0
Acetone	U	U	U	10
Carbon Disulfide	U	U	U	5.0
Vinyl Acetate	U	U	U	10
1,1-Dichloroethene	U	U	U	5.0
1,1-Dichloroethane	U	U	U	5.0
1,2-Dichloroethene (total)	U	9800	7	5.0
Chloroform	U	U	U	5.0
1,2-Dichloroethane	U	U	U	5.0
2-Butanone	U	U	U	10
1,1,1-Trichloroethane	U	U	U	5.0
Carbon Tetrachloride	U	U	U	5.0
Bromodichloromethane	U	U	U	5.0
1,2-Dichloropropane	U	U	U	5.0
cis-1,3-Dichloropropene	U	U	U	5.0
Trichloroethene	4J	4400B	120B	5.0
Dibromochloromethane	U	U	U	5.0
1,1,2-Trichloroethane	U	U	U	5.0
Benzene	U	U	U	5.0
trans-1,3-Dichloropropene	U	U	U	5.0
Bromoform	U	U	U	5.0
4-Methyl-2-Pentanone	U	U	U	10
2-Hexanone	U	U	U	10
Tetrachloroethene	U	U	U	5.0
Toluene	U	U	U	5.0
1,1,2,2-Tetrachloroethane	U	U	U	5.0
Chlorobenzene	U	U	U	5.0
Ethylbenzene	U	U	U	5.0
Styrene	U	U	U	5.0
Xylene (total)	U	U	U	5.0
Date Received		02/11/99	02/11/99	
Date Extracted	N/A	N/A	N/A	
Date Analyzed	02/13/99	02/13/99	02/13/99	

See Appendix for qualifier definitions
Note: Compound detection limit = quantitation limit x quantitation factor
Quant. Factor = a numerical value which takes into account any variation in sample weight/volume, % moisture and sample dilution.

Aqueous

TABLE VO-1.5
7099-0272A
INGERSOLL RAND
TCL VOLATILE ORGANICS

All values are ug/L.

Client Sample I.D.	Method Blank	MW-8D		Quant. Limits with no Dilution
Lab Sample I.D.	VBLKLJ	990272A-09		
Method Blank I.D.	VBLKLJ	VBLKLJ		
Quant. Factor	1.00	5000		
Chloromethane	U	U		10
Bromomethane	U	U		10
Vinyl Chloride	U	U		10
Chloroethane	U	U		10
Methylene Chloride	U	U		5.0
Acetone	U	U		10
Carbon Disulfide	U	U		5.0
Vinyl Acetate	U	U		10
1,1-Dichloroethene	U	U		5.0
1,1-Dichloroethane	U	U		5.0
1,2-Dichloroethene (total)	U	24000J		5.0
Chloroform	U	U		5.0
1,2-Dichloroethane	U	U		5.0
2-Butanone	U	U		10
1,1,1-Trichloroethane	U	U		5.0
Carbon Tetrachloride	U	U		5.0
Bromodichloromethane	U	U		5.0
1,2-Dichloropropane	U	U		5.0
cis-1,3-Dichloropropene	U	U		5.0
Trichloroethene	U	530000		5.0
Dibromochloromethane	U	U		5.0
1,1,2-Trichloroethane	U	U		5.0
Benzene	U	U		5.0
trans-1,3-Dichloropropene	U	U		5.0
Bromoform	U	U		5.0
4-Methyl-2-Pentanone	U	U		10
2-Hexanone	U	U		10
Tetrachloroethene	U	U		5.0
Toluene	U	U		5.0
1,1,2,2-Tetrachloroethane	U	U		5.0
Chlorobenzene	U	U		5.0
Ethylbenzene	U	U		5.0
Styrene	U	U		5.0
Xylene (total)	U	U		5.0
Date Received		02/11/99		
Date Extracted	N/A	N/A		
Date Analyzed	02/16/99	02/17/99		

See Appendix for qualifier definitions
Note: Compound detection limit = quantitation limit x quantitation factor
Quant. Factor = a numerical value which takes into account any variation in sample weight/volume, % moisture and sample dilution.

TABLE AS-1.0 Aqueous
7099-0272A
INGERSOLL RAND
MISCELLANEOUS ATOMIC SPECTROSCOPY (Dissolved)

All values are ug/L.

Client Sample I.D.	ESI-6	ESI-6 D	ESI-6 S	DUP-1
Lab Sample I.D.	990272A-01	990272A-01D	990272A-01S	990272A-02
Iron	12400	12500	13400	47600
Manganese	2010	2020	2480	14900

See Appendix for qualifier definitions

Aqueous

TABLE AS-1.1
7099-0272A
INGERSOLL RAND
MISCELLANEOUS ATOMIC SPECTROSCOPY (Dissolved)

All values are ug/L.

Client Sample I.D.	MW-8S	MW-12	MW-7D	ESI-7
Lab Sample I.D.	990272A-03	990272A-05	990272A-07	990272A-08
Iron	46700	13800	50.0U	559.
Manganese	14600	2210	334.	335.

See Appendix for qualifier definitions

TABLE AS-1.2 Aqueous
7099-0272A
INGERSOLL RAND
MISCELLANEOUS ATOMIC SPECTROSCOPY (Dissolved)

All values are ug/L.

Client Sample I.D.	MW-8D			
Lab Sample I.D.	990272A-09			
Iron	50.0U			
Manganese	70.5			

See Appendix for qualifier definitions

Aqueous

TABLE AS-1.3
7099-0272A
INGERSOLL RAND
MISCELLANEOUS ATOMIC SPECTROSCOPY (Total)

All values are ug/L.

Client Sample I.D.	ESI-6	ESI-6 D	ESI-6 S	DUP-1
Lab Sample I.D.	990272A-01	990272A-01D	990272A-01S	990272A-02
Iron	13700	13700	15000	42600
Manganese	1970	1970	2480	13000

See Appendix for qualifier definitions

Aqueous

TABLE AS-1.4
7099-0272A
INGERSOLL RAND
MISCELLANEOUS ATOMIC SPECTROSCOPY (Total)

All values are ug/L.

Client Sample I.D.	MW-8S	MW-12	MW-7D	ESI-7
Lab Sample I.D.	990272A-03	990272A-05	990272A-07	990272A-08
Iron	44500	12600	2400	1070
Manganese	13700	2150	342.	301.

See Appendix for qualifier definitions

Aqueous

TABLE AS-1.5
7099-0272A
INGERSOLL RAND
MISCELLANEOUS ATOMIC SPECTROSCOPY (Total)

All values are ug/L.

Client Sample I.D.	MW-8D			
Lab Sample I.D.	990272A-09			
Iron	1810			
Manganese	102.			

See Appendix for qualifier definitions

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WET CHEM ANALYSIS DATA SHEET

SAMPLE NO.

ESI-6

Lab Name: STL Contract: _____

Lab Code: STL Case No.: 0272A SAS No.: _____ SDG No.: A0272

Matrix (soil/water): WATER Lab Sample ID: 990272A-01

% Solids: 0 Date Received: 02/10/99

CAS No.	Analyte	Concentration	C	Units	Q	M
471-34-1	Alkalinity	530.		mg/L		T
	BOD5	12.3		mg/L		P
16887-00-6	Chloride	16.7		mg/L		L
	COD	25.0		mg/L		C
16984-48-8	Fluoride	0.230		mg/L		D
	Nitrate/Nitrite	0.100	U	mg/L		L
	Sulfate	40.2		mg/L		L
	Sulfide	1.00	U	mg/L		D
	TOC	13.0		mg/L		D
	TOC-dissolved	13.0		mg/L		D

Comments:

FORM I - WC

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WET CHEM ANALYSIS DATA SHEET

SAMPLE NO.

DUP-1

Lab Name: STL Contract: _____

Lab Code: STL Case No.: 0272A SAS No.: _____ SDG No.: A0272

Matrix (soil/water): WATER Lab Sample ID: 990272A-02

% Solids: 0 Date Received: 02/10/99

CAS No.	Analyte	Concentration	C	Units	Q	M
471-34-1	Alkalinity	530.		mg/L		T
	BOD5	> 249.		mg/L		P
16887-00-6	Chloride	36.2		mg/L		L
	COD	1520		mg/L		C
16984-48-8	Fluoride	0.100	U	mg/L		D
	Nitrate/Nitrite	0.100	U	mg/L		L
	Sulfate	64.3		mg/L		L
	Sulfide	1.00	U	mg/L		D
	TOC	674.		mg/L		D
	TOC-dissolved	646.		mg/L		D

Comments:

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WET CHEM ANALYSIS DATA SHEET

SAMPLE NO.

MW-8S

Lab Name: STL Contract: _____

Lab Code: STL Case No.: 0272A SAS No.: _____ SDG No.: A0272

Matrix (soil/water): WATER Lab Sample ID: 990272A-03

% Solids: 0 Date Received: 02/10/99

CAS No.	Analyte	Concentration	C	Units	Q	M
471-34-1	Alkalinity	563.		mg/L		T
	BOD5	> 246.		mg/L		P
16887-00-6	Chloride	35.3		mg/L		L
	COD	1590		mg/L		C
16984-48-8	Fluoride	0.100	U	mg/L		D
	Nitrate/Nitrite	0.100	U	mg/L		L
	Sulfate	64.7		mg/L		L
	Sulfide	1.00	U	mg/L		D
	TOC	713.		mg/L		D
	TOC-dissolved	688.		mg/L		D

Comments:

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WET CHEM ANALYSIS DATA SHEET

SAMPLE NO.

MW-12

Lab Name: STL Contract: _____

Lab Code: STL Case No.: 0272A SAS No.: _____ SDG No.: A0272

Matrix (soil/water): WATER Lab Sample ID: 990272A-05

% Solids: 0 Date Received: 02/11/99

CAS No.	Analyte	Concentration	C	Units	Q	M
471-34-1	Alkalinity	349.		mg/L		T
	BOD5	> 236.		mg/L		P
16887-00-6	Chloride	20.1		mg/L		L
	COD	579.		mg/L		C
16984-48-8	Fluoride	0.100	U	mg/L		D
	Nitrate/Nitrite	0.100	U	mg/L		L
	Sulfate	25.1		mg/L		L
	Sulfide	1.00	U	mg/L		D
	TOC	213.		mg/L		D
	TOC-dissolved	205.		mg/L		D

Comments:

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WET CHEM ANALYSIS DATA SHEET

SAMPLE NO.

MW-7D

Lab Name: STL Contract: _____

Lab Code: STL Case No.: 0272A SAS No.: _____ SDG No.: A0272

Matrix (soil/water): WATER Lab Sample ID: 990272A-07

% Solids: 0 Date Received: 02/11/99

CAS No.	Analyte	Concentration	C	Units	Q	M
471-34-1	Alkalinity	387.		mg/L		T
	BOD5	3.15		mg/L		P
16887-00-6	Chloride	198.		mg/L		L
	COD	10.0	U	mg/L		C
16984-48-8	Fluoride	0.120		mg/L		D
	Nitrate/Nitrite	0.100	U	mg/L		L
	Sulfate	10.0	U	mg/L		L
	Sulfide	1.00	U	mg/L		D
	TOC	18.3		mg/L		D
	TOC-dissolved	3.30		mg/L		D

Comments:

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WET CHEM ANALYSIS DATA SHEET

SAMPLE NO.

ESI-7

Lab Name: STL Contract: _____

Lab Code: STL Case No.: 0272A SAS No.: _____ SDG No.: A0272

Matrix (soil/water): WATER Lab Sample ID: 990272A-08

% Solids: 0 Date Received: 02/11/99

CAS No.	Analyte	Concentration	C	Units	Q	M
471-34-1	Alkalinity	291.		mg/L		T
	BOD5	2.00	U	mg/L		P
16887-00-6	Chloride	10		mg/L		L
	COD	31.4		mg/L		C
16984-48-8	Fluoride	0.130		mg/L		D
	Nitrate/Nitrite	0.110		mg/L		L
	Sulfate	35.9		mg/L		L
	Sulfide	1.00	U	mg/L		D
	TOC	11.6		mg/L		D
	TOC-dissolved	7.04		mg/L		D

Comments:

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WET CHEM ANALYSIS DATA SHEET

SAMPLE NO.

MW-8D

Lab Name: STL Contract: _____

Lab Code: STL Case No.: 0272A SAS No.: _____ SDG No.: A0272

Matrix (soil/water): WATER Lab Sample ID: 990272A-09

% Solids: 0 Date Received: 02/11/99

CAS No.	Analyte	Concentration	C	Units	Q	M
471-34-1	Alkalinity	419.		mg/L		T
	BOD5	6.45		mg/L		P
16887-00-6	Chloride	241.		mg/L		L
	COD	145.		mg/L		C
16984-48-8	Fluoride	0.100	U	mg/L		D
	Nitrate/Nitrite	0.100	U	mg/L		L
	Sulfate	31.8		mg/L		L
	Sulfide	1.00	U	mg/L		D
	TOC	47.3		mg/L		D
	TOC-dissolved	43.8		mg/L		D

Comments:

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MICROSEEPS

University of Pittsburgh Applied Research Center
220 William Pitt Way, Pittsburgh, PA 15238
(412) 826-5245
FAX (412) 826-3433

February 25, 1999

Ms. Stephanie Plunkett
Severn Trent Laboratories
200 Monroe Turnpike
Monroe, CT 06468

Dear Ms. Plunkett:

Attached are the final data listings and chromatograms for the samples we received on February 11 and 12, 1999, your project #7099-0272A.

Please give me a call if you have questions or I can be of further assistance. Thank you for using MICROSEEPS.

Sincerely,

Linda S. Tibensky

LST/lsp

Attachment: ST29-992196

Microseeps

ST29-992196

---- SEVERN TRENT LABORATORIES ----
----- PROJECT: 7099-0272A -----
---- LOCATION: STL - CT ----

Sample Names	Carbon Dioxide mg/l	Ethane ng/l	Ethylene ng/l	Lab ID	Date Sampled	Date Received	Date Analyzed	Analyst
ESI-6	55.53	81462	18603	T17 33	02/09/99	02/11/99	02/17/99	BC
DUP-1	631.68	54437	14129	T17 34	02/09/99	02/11/99	02/17/99	BC
MW-8S	665.80	55063	14811	T17 47	02/09/99	02/11/99	02/17/99	BC
MW-12	204.63	155737	23348	T17 36	02/10/99	02/12/99	02/17/99	BC
MW-7D	19.40	718	111	T17 37	02/10/99	02/12/99	02/17/99	BC
ESI-7	47.03	76	11	T17 38	02/10/99	02/12/99	02/17/99	BC
MW-8D	8.34	19482	295852	T17 39	02/10/99	02/12/99	02/17/99	BC
DETECTION LIMITS	0.60mg/l	5ng/l	5ng/l					

ANALYST INITIALS _____

REVIEW _____

Microseeps

— QUALITY CONTROL —

ST29-992196

— SEVERN TRENT LABORATORIES —
— PROJECT: 7099-0272A —
— LOCATION: STL - CT —

CONTINUING CALIBRATION STANDARDS 02/17/99

COMPOUND	FILE ID	TRUE CONC.	MEASURED	% DIFF.
ETHANE	T17 29	476	460	3.36
ETHYLENE	T17 29	533	525	1.50
CARBON DIOXIDE	T17 31	319.25	324.68	1.70

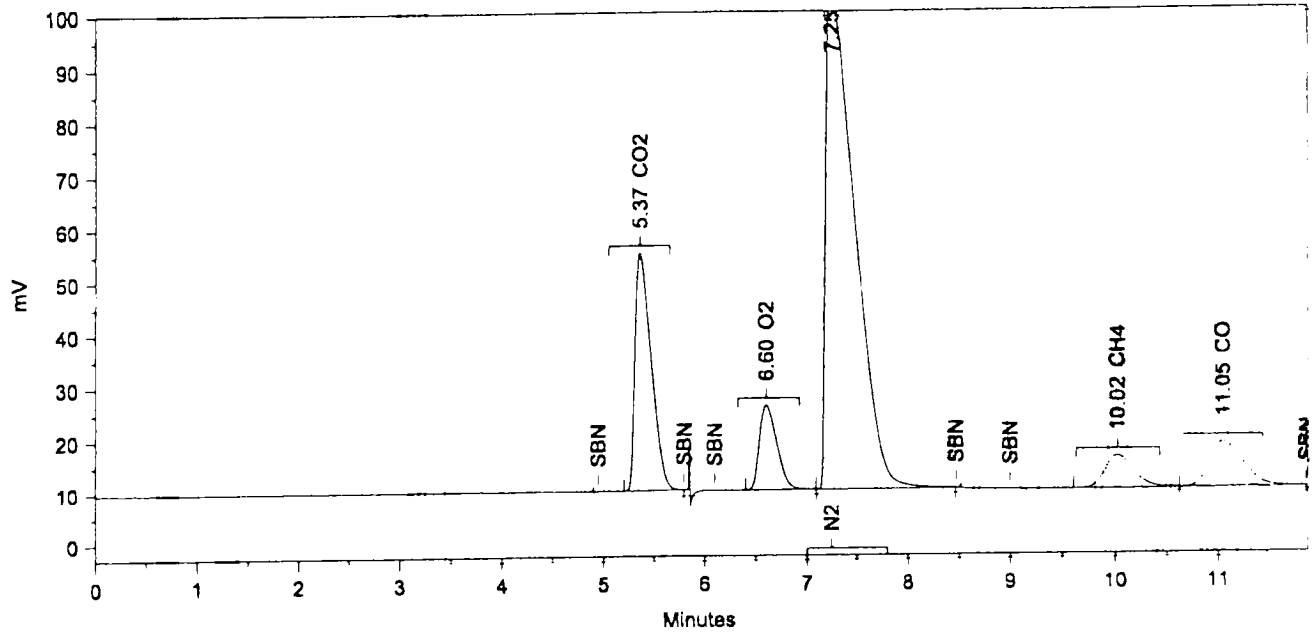
HE IN LOOP 02/17/99

COMPOUND	FILE ID	DET. LIMIT	MEASURED
ETHANE	T17 32	5ng/l	ND
ETHYLENE	T17 32	5ng/l	ND
CARBON DIOXIDE	T17 32	0.60mg/l	ND

ANALYST INITIALS _____

REVIEW _____

STD 237



Sample Name: **STD 237**
Acquired from Chrom1--Det1B via port 2 on 2/17/99 12:32:57pm by BC
TCD

Data File: **C:\CPWIN\T17\T17B.31R**
Date Stamp: 2/17/99 12:32:56pm
Sequence File: T17A.SEQ #31
Method File: C:\CPWIN\T17\T17BPGW1.MET
Version 1. Date Stamp: 2/15/99 11:11:10am
Calibration File: C:\CPWIN\T17\T17BPGW1.CAL
Version 2. Date Stamp: 2/15/99 11:08:28am

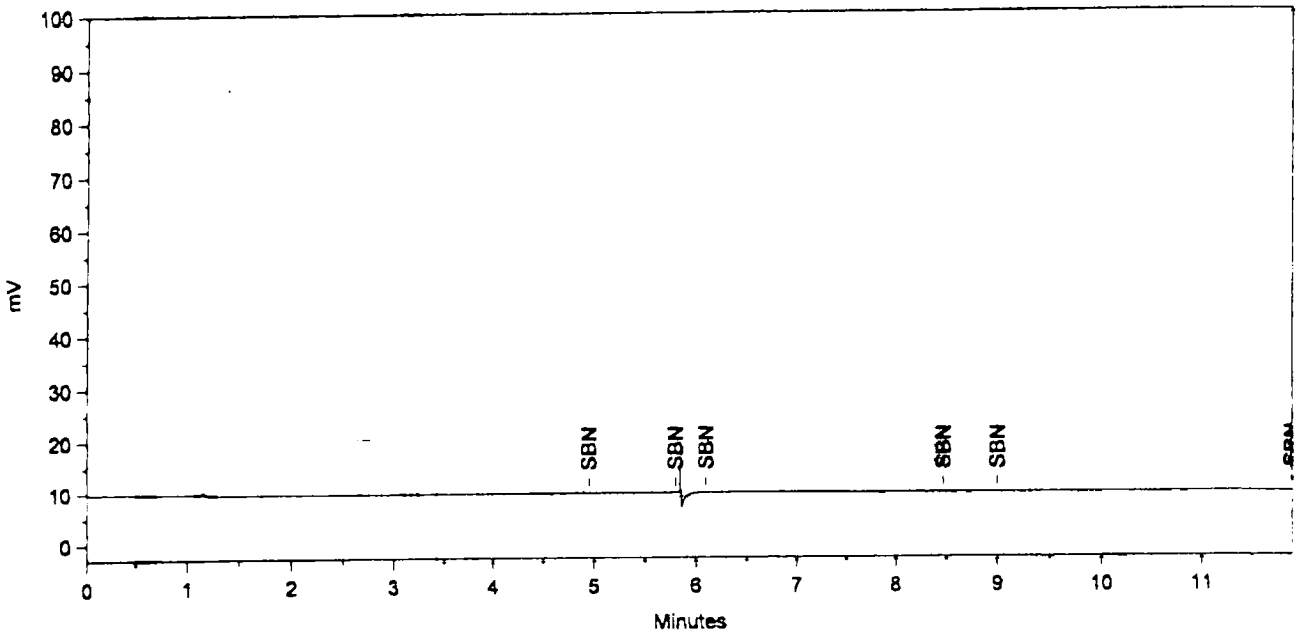
Run Time = 12.0 min Sample Rate = 3.33 per sec.
Amount Inj. = 0.000 Dilution Factor = 0.000
Sample Weight = 0.000 Int Std Amount = 0.000

Starting Peak Width = 0.1 min. Peak Threshold = 3 Area Reject = 0

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	5.366	CO2	324.6842	48.714	494559.3	17.171	BB	0.183	45118.30	26.149
2	6.604	O2	33.1439	4.973	188946.6	6.560	BV	0.196	16078.95	9.319
3	7.245	N2	268.9191	40.347	1880527.0	65.290	VB	0.324	96586.85	55.978
4	10.021	CH4	11.0062	1.651	117562.3	4.082	BV	0.317	6184.90	3.585
5	11.048	CO	28.7623	4.315	198688.9	6.898	VB	0.386	8576.57	4.971

Total Area = 2880284.0, Total Amount = 666.516, Total Height = 172545.6, Sample Units = mg/L

HE IN LOOP



Sample Name: **HE IN LOOP**
Acquired from Chrom1--Det1B via port 2 on 2/17/99 12:46:20pm by BC
TCD

Data File: **C:\CPWIN\T17\T17B.32R**
Date Stamp: 2/17/99 12:46:20pm
Sequence File: T17A.SEQ #32
Method File: C:\CPWIN\T17\T17BPGW1.MET
Version 1. Date Stamp: 2/15/99 11:11:10am
Calibration File: C:\CPWIN\T17\T17BPGW1.CAL
Version 2. Date Stamp: 2/15/99 11:08:28am

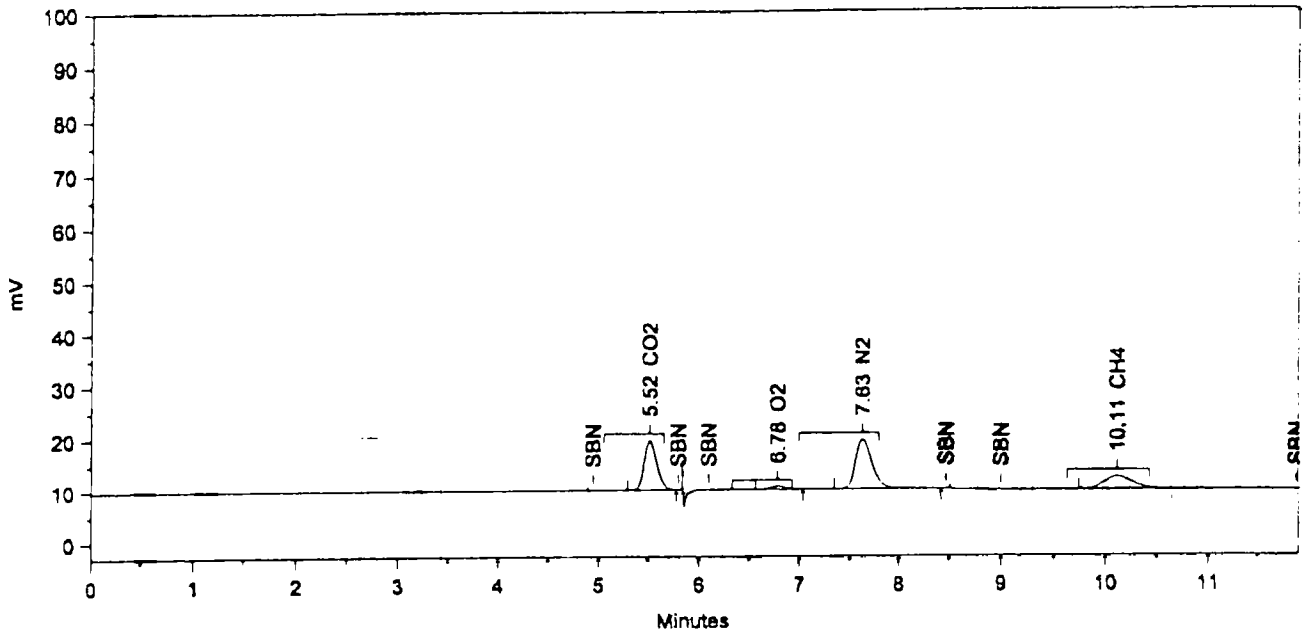
Run Time = 12.0 min Sample Rate = 3.33 per sec.
Amount Inj. = 0.000 Dilution Factor = 0.000
Sample Weight = 0.000 Int Std Amount = 0.000

Starting Peak Width = 0.1 min. Peak Threshold = 3 Area Reject = 0

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%

Total Area = 0.0, Total Amount = 0.0, Total Height = 0.0, Sample Units = mg/L

ESI-6



Sample Name: **ESI-6**
Acquired from Chrom1--Det1B via port 2 on 2/17/99 01:24:37pm by BC
TCD

Data File: C:\CPWIN\T17\T17B.33R
Date Stamp: 2/17/99 01:24:36pm
Sequence File: T17A.SEQ #33
Method File: C:\CPWIN\T17\T17BPGW1.MET
Version 1. Date Stamp: 2/15/99 11:11:10am
Calibration File: C:\CPWIN\T17\T17BPGW1.CAL
Version 2. Date Stamp: 2/15/99 11:08:28am

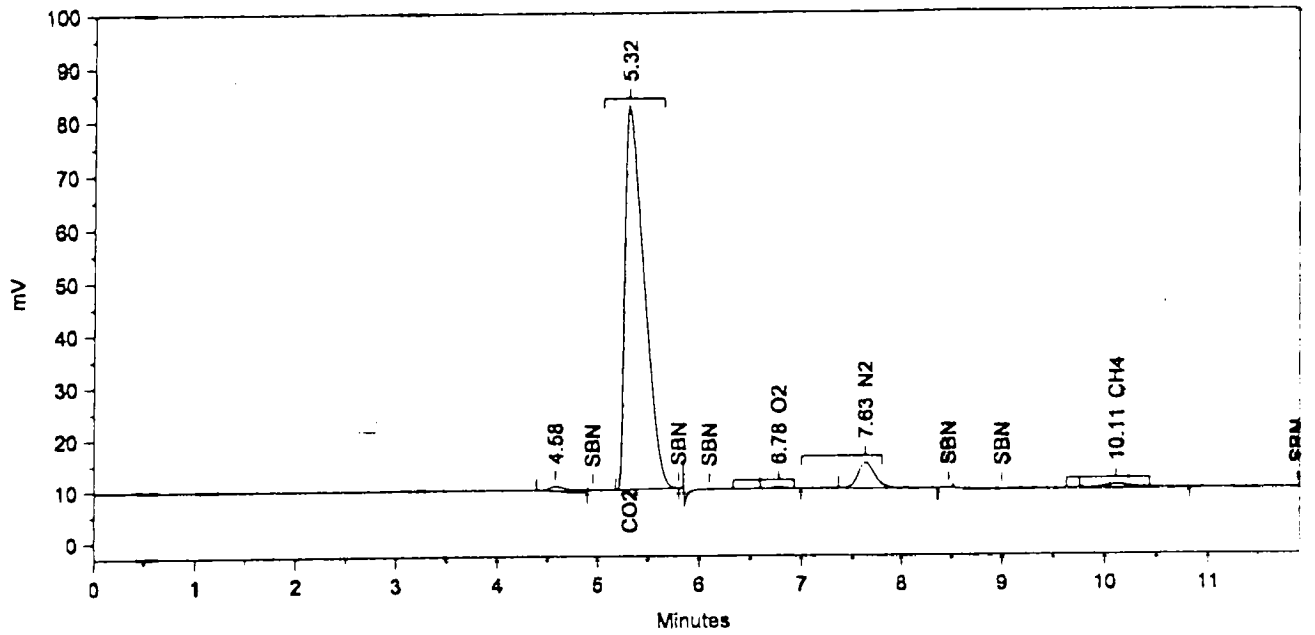
Run Time = 12.0 min Sample Rate = 3.33 per sec.
Amount Inj. = 0.000 Dilution Factor = 0.000
Sample Weight = 0.000 Int Std Amount = 0.000

Starting Peak Width = 0.1 min. Peak Thre: = 3 Area Reject = 0

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	5.520	CO2	55.5340	71.650	84589.5	33.401	BB	0.148	9547.54	42.771
2	6.785	O2	1.1054	1.426	6301.5	2.488	BB	0.165	638.38	2.860
3	7.633	N2	16.4132	21.176	114776.1	45.320	BB	0.200	9576.15	42.900
4	10.113	CH4	4.4552	5.748	47587.7	18.790	BB	0.310	2560.17	11.469

Total Area = 253254.8, Total Amount = 77.508, Total Height = 22322.24, Sample Units = mg/L

DUP-1



Sample Name: DUP-1
Acquired from Chrom1--Det1B via port 2 on 2/17/99 01:47:15pm by BC
TCD

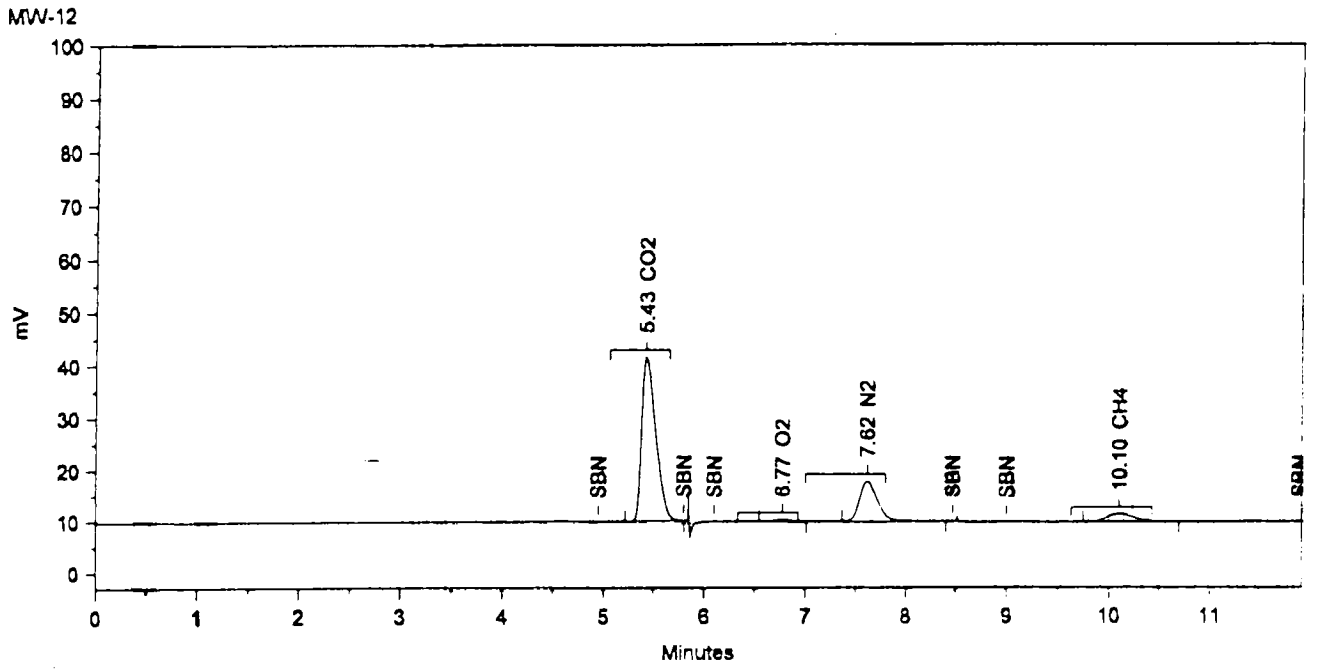
Data File: C:\CPWIN\T17\T17B.34R
Date Stamp: 2/17/99 01:47:14pm
Sequence File: T17A.SEQ #34
Method File: C:\CPWIN\T17\T17BPGW1.MET
Version 1. Date Stamp: 2/15/99 11:11:10am
Calibration File: C:\CPWIN\T17\T17BPGW1.CAL
Version 2. Date Stamp: 2/15/99 11:08:28am

Run Time = 12.0 min Sample Rate = 3.33 per sec.
Amount Inj. = 0.000 Dilution Factor = 0.000
Sample Weight = 0.000 Int Std Amount = 0.000

Starting Peak Width = 0.1 min. Peak Threshold = 3 Area Reject = 0

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	4.582		8.2370	1.266	12546.6	1.193	BB	0.237	884.16	1.109
2	5.316	CO2	631.6813	97.117	962177.8	91.465	BB	0.220	72750.61	91.237
3	6.776	O2	0.5627	0.087	3207.9	0.305	BV	0.165	324.24	0.407
4	7.630	N2	8.7551	1.346	61223.4	5.820	VB	0.199	5115.52	6.415
5	10.108	CH4	1.1995	0.184	12812.3	1.218	BB	0.322	663.56	0.832

Total Area = 1051968.0, Total Amount = 650.435, Total Height = 79738.09, Sample Units = mg/L



Sample Name: MW-12
Acquired from Chrom1–Det1B via port 2 on 2/17/99 02:24:08pm by BC
TCD

Data File: C:\CPWIN\T17\T17B.36R
Date Stamp: 2/17/99 02:24:08pm
Sequence File: T17A.SEQ #36
Method File: C:\CPWIN\T17\T17BPGW1.MET
Version 1. Date Stamp: 2/15/99 11:11:10am
Calibration File: C:\CPWIN\T17\T17BPGW1.CAL
Version 2. Date Stamp: 2/15/99 11:08:28am

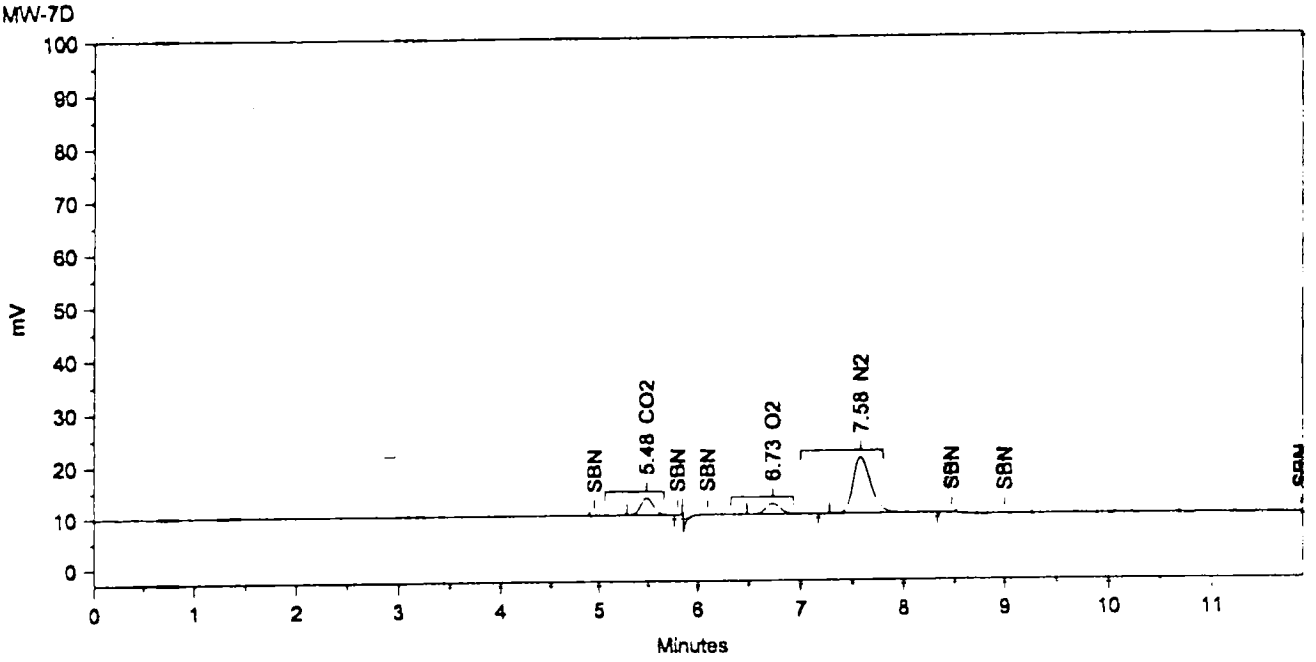
Run Time = 12.0 min Sample Rate = 3.33 per sec.
Amount Inj. = 0.000 Dilution Factor = 0.000
Sample Weight = 0.000 Int Std Amount = 0.000

Starting Peak Width = 0.1 min. Peak Threshold = 3 Area Reject = 0

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	5.428	CO2	204.6340	92.495	311698.8	71.403	BB	0.164	31673.44	76.563
2	6.773	O2	0.5781	0.261	3295.3	0.755	BB	0.161	341.14	0.825
3	7.618	N2	13.4550	6.082	94089.5	21.553	BB	0.198	7911.37	19.124
4	10.100	CH4	2.5712	1.162	27464.0	6.291	BB	0.317	1443.44	3.489

Total Area = 436547.7, Total Amount = 221.238, Total Height = 41369.39, Sample Units = mg/L

MW-7D



Sample Name: MW-7D
Acquired from Chrom1--Det1B via port 2 on 2/17/99 02:39:48pm by BC
TCD

Data File: C:\CPWIN\T17\T17B.37R
Date Stamp: 2/17/99 02:39:48pm
Sequence File: T17A.SEQ #37
Method File: C:\CPWIN\T17\T17BPGW1.MET
Version 1. Date Stamp: 2/15/99 11:11:10am
Calibration File: C:\CPWIN\T17\T17BPGW1.CAL
Version 2. Date Stamp: 2/15/99 11:08:28am

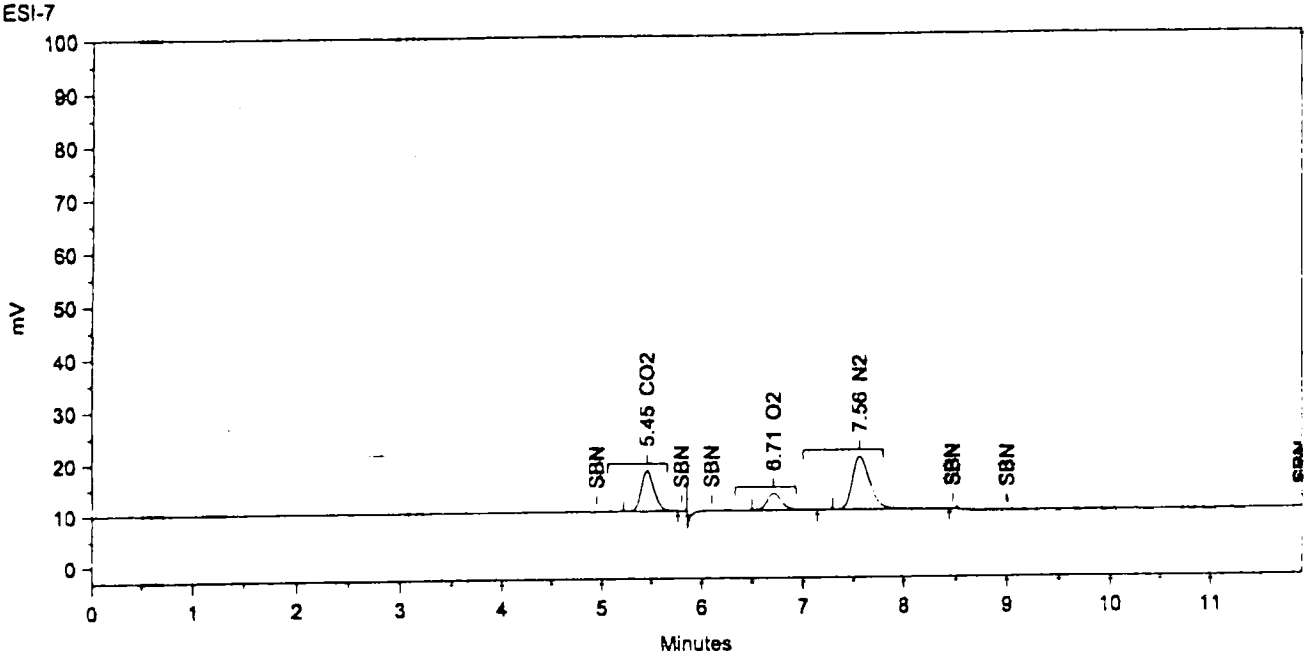
Run Time = 12.0 min Sample Rate = 3.33 per sec.
Amount Inj. = 0.000 Dilution Factor = 0.000
Sample Weight = 0.000 Int Std Amount = 0.000

Starting Peak Width = 0.1 min. Peak Threshold = 3 Area Reject = 0

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	5.483	CO2	19.4035	46.378	29555.4	16.258	BB	0.147	3355.70	20.458
2	6.731	O2	3.5967	8.597	20504.1	11.279	BV	0.163	2102.96	12.821
3	7.579	N2	18.8377	45.025	131730.0	72.463	VB	0.201	10944.44	66.722

Total Area = 181789.5, Total Amount = 41.838, Total Height = 16403.1, Sample Units = mg/L

ESI-7



Sample Name: ESI-7
Acquired from Chrom1--Det1B via port 2 on 2/17/99 02:52:26pm by BC
TCD

Data File: C:\CPWIN\T17\T17B.38R
Date Stamp: 2/17/99 02:52:26pm
Sequence File: T17A.SEQ #38
Method File: C:\CPWIN\T17\T17BPGW1.MET
Version 1. Date Stamp: 2/15/99 11:11:10am
Calibration File: C:\CPWIN\T17\T17BPGW1.CAL
Version 2. Date Stamp: 2/15/99 11:08:28am

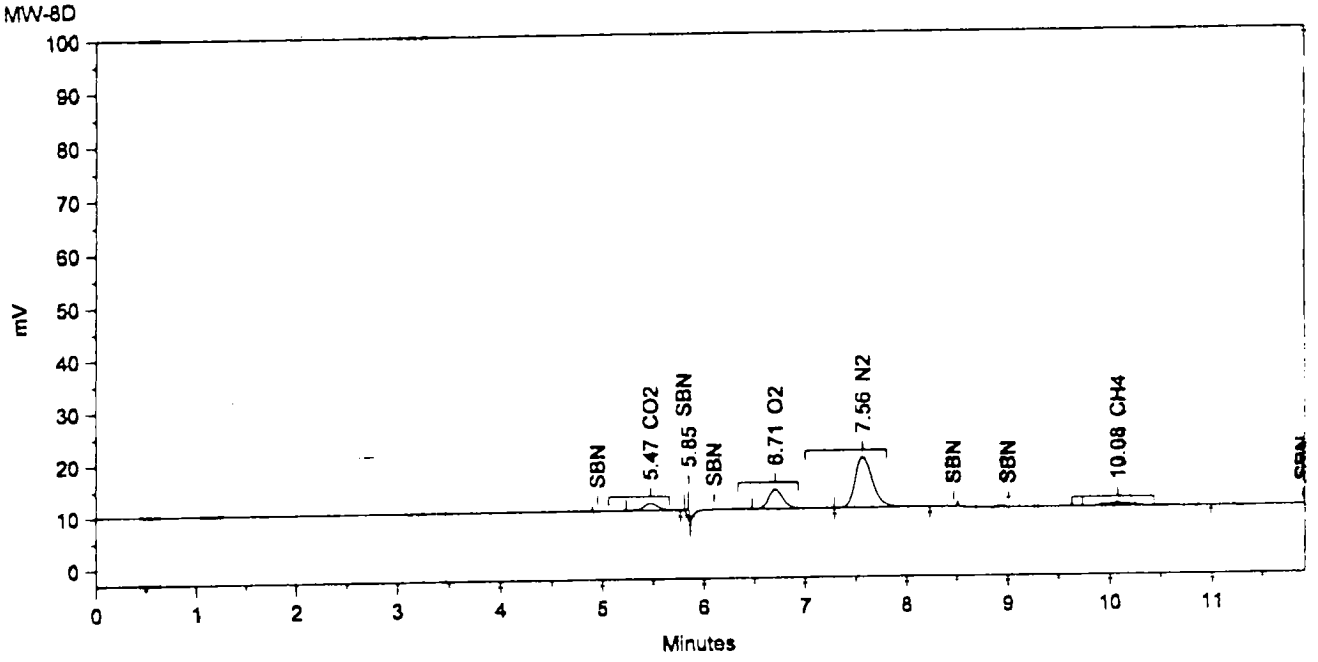
Run Time = 12.0 min Sample Rate = 3.33 per sec.
Amount Inj. = 0.000 Dilution Factor = 0.000
Sample Weight = 0.000 Int Std Amount = 0.000

Starting Peak Width = 0.1 min. Peak Threshold = 3 Area Reject = 0

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	5.455	CO2	47.0334	66.430	71641.4	31.082	BB	0.148	8046.25	36.843
2	6.709	O2	5.6953	8.044	32467.6	14.086	BV	0.163	3314.08	15.175
3	7.561	N2	18.0732	25.526	126384.2	54.832	VB	0.201	10478.88	47.982

Total Area = 230493.1, Total Amount = 70.802, Total Height = 21839.21, Sample Units = mg/L

MW-8D



Sample Name: MW-8D
Acquired from Chrom1--Det1B via port 2 on 2/17/99 03:07:07pm by BC
TCD

Data File: C:\CPWIN\T17\T17B.39R
Date Stamp: 2/17/99 03:07:06pm
Sequence File: T17A.SEQ #39
Method File: C:\CPWIN\T17\T17BPGW1.MET
Version 1. Date Stamp: 2/15/99 11:11:10am
Calibration File: C:\CPWIN\T17\T17BPGW1.CAL
Version 2. Date Stamp: 2/15/99 11:08:28am

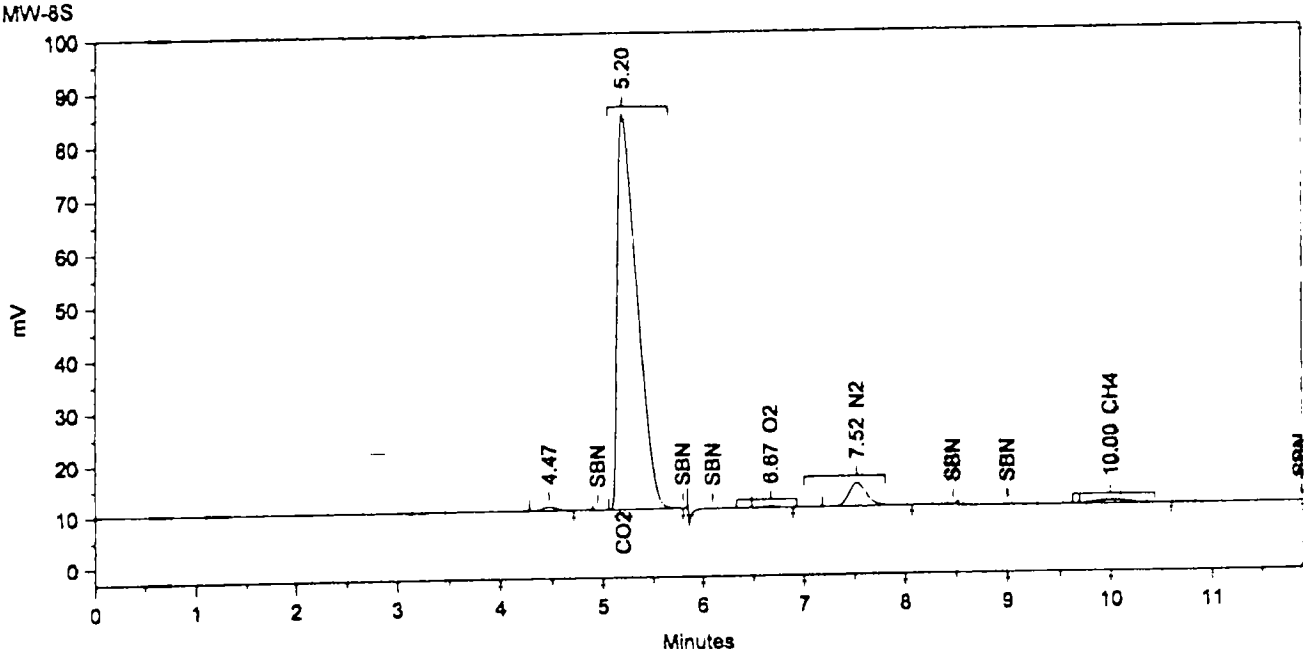
Run Time = 12.0 min Sample Rate = 3.33 per sec.
Amount Inj. = 0.000 Dilution Factor = 0.000
Sample Weight = 0.000 Int Std Amount = 0.000

Starting Peak Width = 0.1 min. Peak Threshold = 3 Area Reject = 0

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	5.474	CO2	8.3408	23.036	12704.6	6.848	BB	0.152	1388.53	6.375
2	5.851		3.1898	8.810	4858.7	2.619	BB	0.013	6027.11	27.672
3	6.705	O2	6.7237	18.570	38330.5	20.662	BV	0.162	3938.96	18.085
4	7.564	N2	16.8495	46.536	117826.8	63.514	VB	0.199	9850.04	45.224
5	10.079	CH4	1.1039	3.049	11791.0	6.356	BB	0.341	576.04	2.645

Total Area = 185511.6, Total Amount = 36.208, Total Height = 21780.68, Sample Units = mg/L

MW-8S



Sample Name: MW-8S
Acquired from Chrom1--Det1B via port 2 on 2/17/99 05:09:02pm by BC
TCD

Data File: C:\CPWIN\T17\T17B.47R
Date Stamp: 2/17/99 05:09:02pm
Sequence File: T17A.SEQ #47
Method File: C:\CPWIN\T17\T17BPGW1.MET
Version 1. Date Stamp: 2/15/99 11:11:10am
Calibration File: C:\CPWIN\T17\T17BPGW1.CAL
Version 2. Date Stamp: 2/15/99 11:08:28am

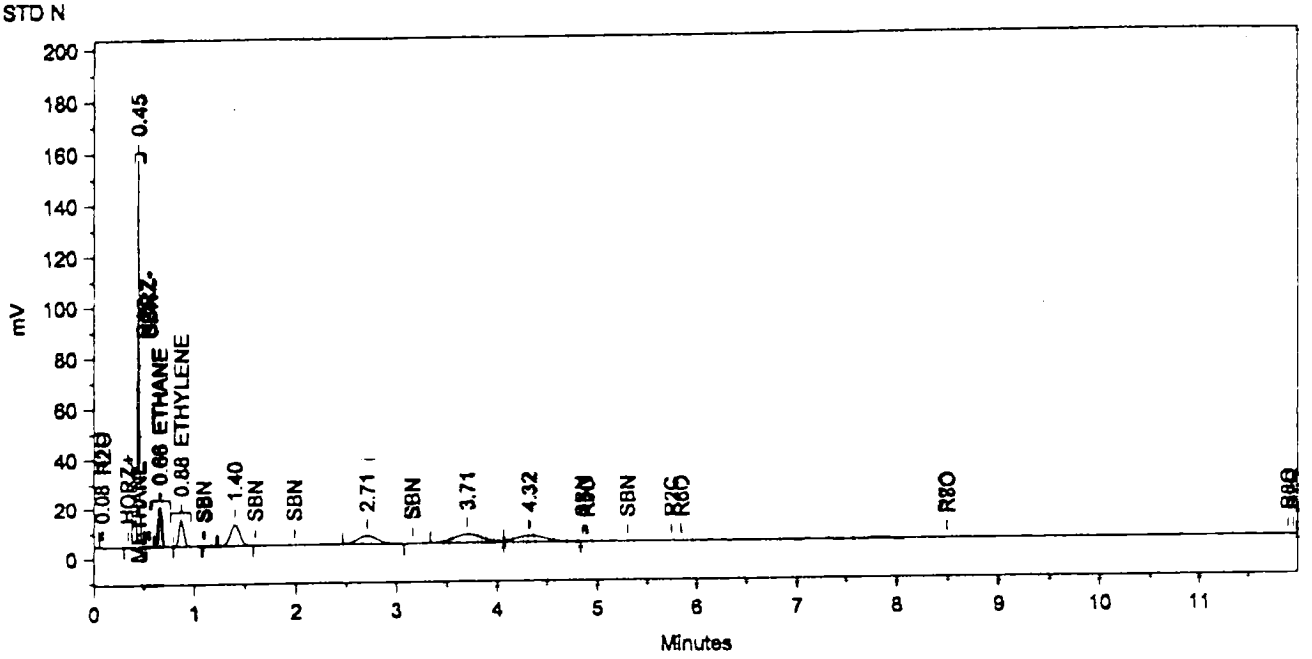
Run Time = 12.0 min Sample Rate = 3.33 per sec.
Amount Inj. = 0.000 Dilution Factor = 0.000
Sample Weight = 0.000 Int Std Amount = 0.000

Starting Peak Width = 0.1 min. Peak Threshold = 3 Area Reject = 0

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	4.471		4.6095	0.678	7021.3	0.644	BB	0.155	755.48	0.929
2	5.201 CO2		665.7954	97.927	1014140.0	92.947	BB	0.226	74891.03	92.123
3	6.669 O2		0.4498	0.066	2564.4	0.235	BB	0.159	268.13	0.330
4	7.521 N2		7.8903	1.161	55176.1	5.057	BB	0.195	4720.43	5.807
5	10.001 CH4		1.1411	0.168	12189.0	1.117	BB	0.308	659.95	0.812

Total Area = 1091091.0, Total Amount = 679.886, Total Height = 81295.03, Sample Units = mg/L

STD N



Sample Name: STD N
Acquired from Chrom1--Det1A via port 1 on 2/17/99 12:04:08pm by BC
FID

Data File: C:\CPWIN\T17\T17A.29R
Date Stamp: 2/17/99 12:04:08pm
Sequence File: T17A.SEQ #29
Method File: C:\CPWIN\T17\T17ALW1.MET
Version 1. Date Stamp: 2/15/99 11:12:24am
Calibration File: C:\CPWIN\T17\T17AL1W.CAL
Version 1. Date Stamp: 2/15/99 11:09:46am

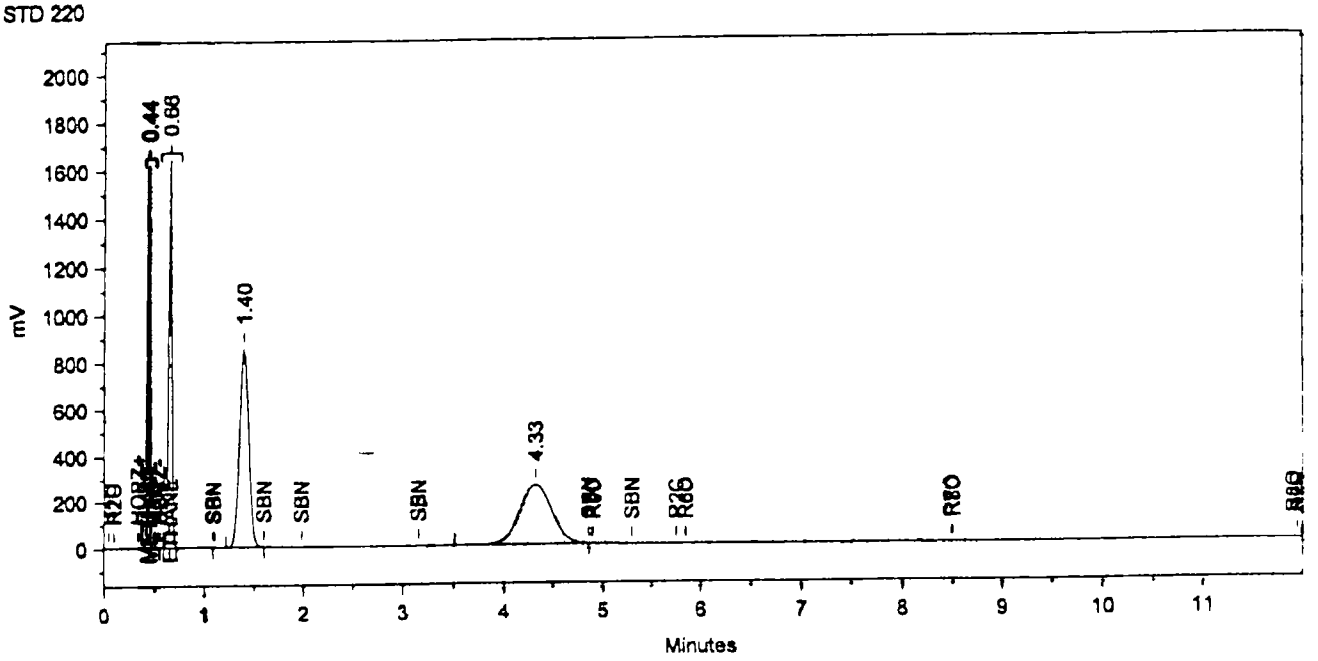
Run Time = 12.0 min Sample Rate = 3.33 per sec.
Amount Inj. = 0.000 Dilution Factor = 0.000
Sample Weight = 0.000 Int Std Amount = 0.000

Starting Peak Width = 0.07 min. Peak Threshold = 3 Area Reject = 100

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	0.083		0.0059	0.001	1695.8	0.335	BB	0.072	392.06	0.193
2	0.447	METHANE	2.3832	0.241	205030.6	40.469	BB	0.022	158407.89	77.927
3	0.664	ETHANE	459.9530	46.577	38142.9	7.529	BB	0.040	15915.00	7.829
4	0.877	ETHYLENE	524.9059	53.154	37848.4	7.470	BB	0.058	10822.74	5.324
5	1.401		0.1261	0.013	54519.6	10.761	BB	0.108	8378.90	4.122
6	2.708		0.0507	0.005	46468.8	9.172	BB	0.230	3369.75	1.658
7	3.706		0.0519	0.005	68569.2	13.534	BV	0.331	3452.34	1.698
8	4.319		0.0382	0.004	54364.9	10.730	VB	0.357	2538.21	1.249

Total Area = 506640.2, Total Amount = 987.515, Total Height = 203276.7, Sample Units = (ug/dcm/L)

STD 220



Sample Name: STD 220
Acquired from Chrom1--Det1A via port 1 on 2/17/99 12:19:31pm by BC
FID

Data File: C:\CPWIN\T17\T17A_30R
Date Stamp: 2/17/99 12:19:30pm
Sequence File: T17A.SEQ #30
Method File: C:\CPWIN\T17\T17ALW1.MET
Version 1. Date Stamp: 2/15/99 11:12:24am
Calibration File: C:\CPWIN\T17\T17AL1W.CAL
Version 1. Date Stamp: 2/15/99 11:09:46am

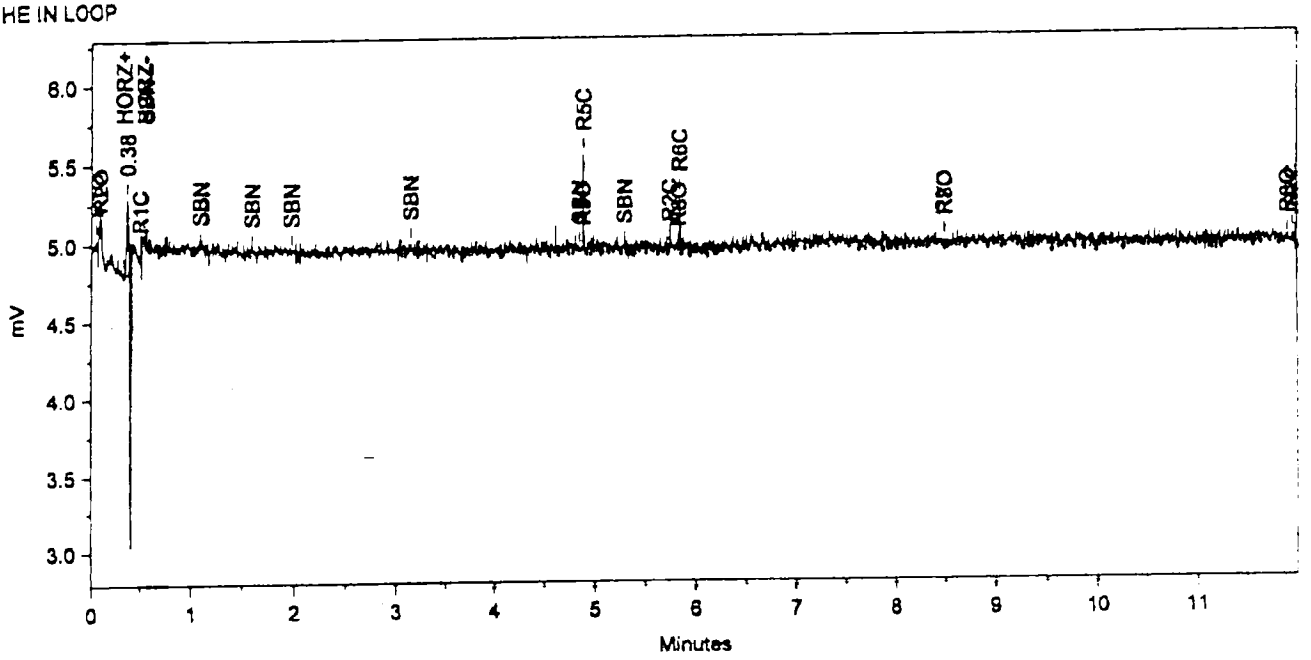
Run Time = 12.0 min Sample Rate = 3.33 per sec.
Amount Inj. = 0.000 Dilution Factor = 0.000
Sample Weight = 0.000 Int Std Amount = 0.000

Starting Peak Width = 0.07 min. Peak Threshold = 3 Area Reject = 100

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%	
1	0.445	METHANE	24.3887	0.051	2096313.0	12.177	BB	0.022	1621101.00	37.065	TV = 24.4 ug/L
2	0.661	ETHANE	47367.7900	99.913	3928112.0	22.818	BB	0.040	1643865.00	37.586	TV = 47919 ug/L
3	1.398		12.8282	0.027	5508116.0	31.996	BB	0.108	852679.40	19.496	
4	4.328		3.8515	0.008	5682619.0	33.009	BB	0.370	256003.50	5.853	

Total Area = 17215160.0, Total Amount = 47408.86, Total Height = 4373649.0, Sample Units = (ug/kg /L)

HE IN LOOP



Sample Name: **HE IN LOOP**
Acquired from Chrom1--Det1A via port 1 on 2/17/99 12:46:20pm by BC
FID

Data File: **C:\CPWIN\T17\T17A_32R**
Date Stamp: 2/17/99 12:46:20pm
Sequence File: T17A_SEQ #32
Method File: C:\CPWIN\T17\T17ALW1.MET
Version 1. Date Stamp: 2/15/99 11:12:24am
Calibration File: C:\CPWIN\T17\T17AL1W.CAL
Version 1. Date Stamp: 2/15/99 11:09:46am

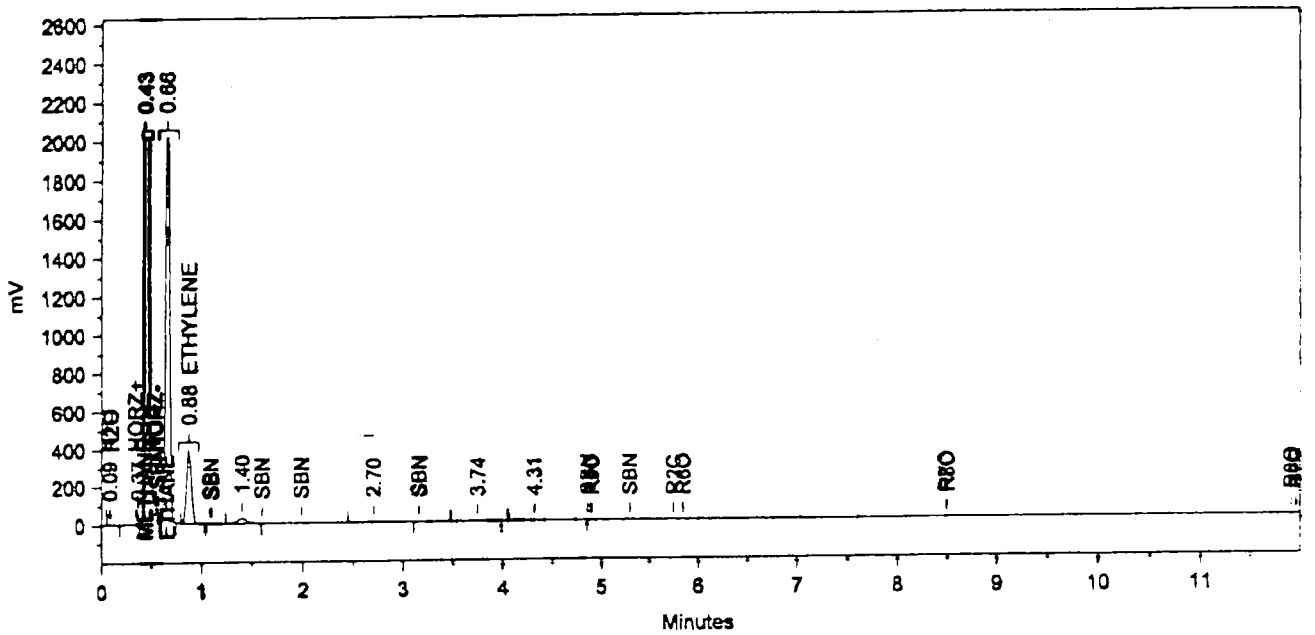
Run Time = 12.0 min Sample Rate = 3.33 per sec.
Amount Inj. = 0.000 Dilution Factor = 0.000
Sample Weight = 0.000 Int Std Amount = 0.000

Starting Peak Width = 0.07 min. Peak Threshold = 3 Area Reject = 100

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	0.377		0.0073	100.000	702.0	100.000	BB	0.024	485.18	100.000

Total Area = 702.0, Total Amount = 0.007, Total Height = 485.18, Sample Units = (ug/mg /L)

ESI-6



Sample Name: ESI-6
Acquired from Chrom1--Det1A via port 1 on 2/17/99 01:24:36pm by BC
FID

Data File: C:\CPWIN\T17\T17A.33R
Date Stamp: 2/17/99 01:24:36pm
Sequence File: T17A.SEQ #33
Method File: C:\CPWIN\T17\T17ALW1.MET
Version 1. Date Stamp: 2/15/99 11:12:24am
Calibration File: C:\CPWIN\T17\T17AL1W.CAL
Version 1. Date Stamp: 2/15/99 11:09:46am

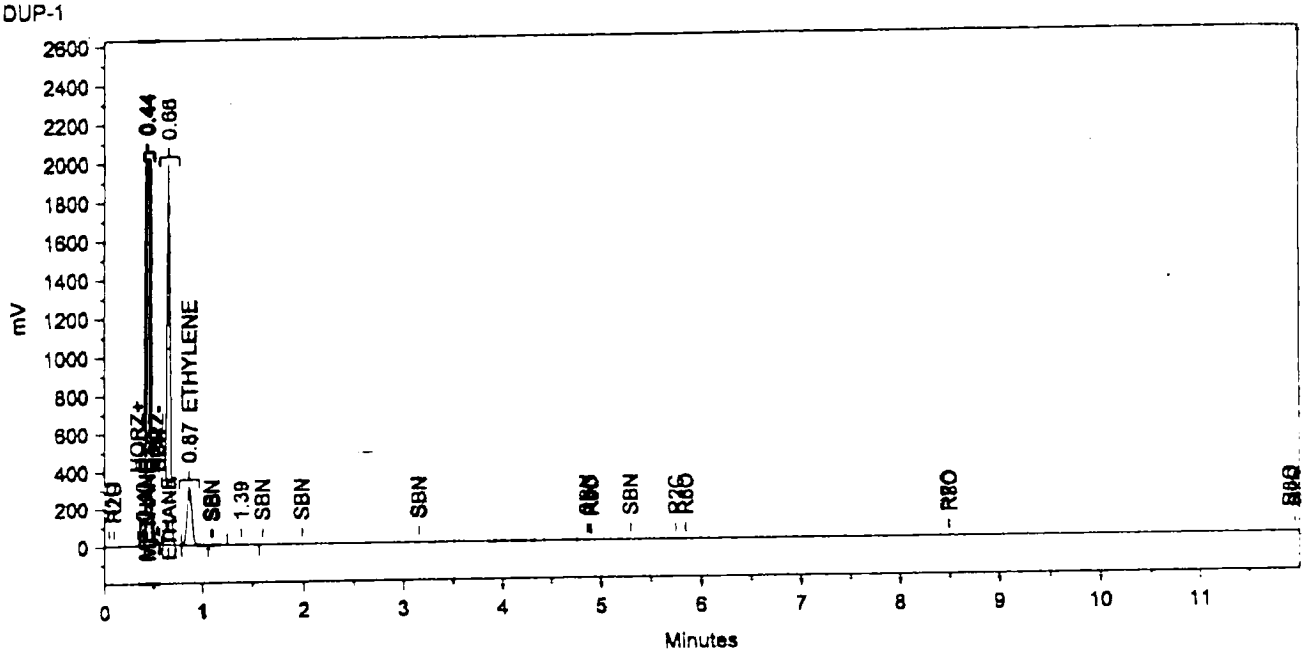
Run Time = 12.0 min Sample Rate = 3.33 per sec.
Amount Inj. = 0.000 Dilution Factor = 0.000
Sample Weight = 0.000 Int Std Amount = 0.000

Starting Peak Width = 0.07 min. Peak Threshold = 3 Area Reject = 100

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	0.089		0.0098	0.000	2248.4	0.015	BB	0.058	648.29	0.014
2	0.366		0.0096	0.000	702.0	0.005	BV	0.018	635.27	0.014
3	0.433	METHANE	32.6983	0.038	7738922.0	51.670	VB	0.059	2173430.00	46.838
4	0.658	ETHANE	67758.2200	78.429	5619048.0	37.516	BB	0.046	2034635.00	43.847
5	0.876	ETHYLENE	18603.0200	21.533	1341372.0	8.956	BB	0.056	398721.50	8.593
6	1.402		0.3827	0.000	163569.6	1.092	BB	0.107	25440.04	0.548
7	2.700		0.0596	0.000	54858.3	0.366	BB	0.231	3964.28	0.085
8	3.745		0.0107	0.000	12114.3	0.081	BV	0.285	709.57	0.015
9	4.315		0.0318	0.000	44832.8	0.299	VB	0.354	2111.06	0.045

Total Area = 14977670.0, Total Amount = 86394.45, Total Height = 4640295.0, Sample Units = (ug/mg /L)

DUP-1



Sample Name: **DUP-1**
Acquired from Chrom1--Det1A via port 1 on 2/17/99 01:47:15pm by BC
FID

Data File: C:\CPWIN\T17\T17A.34R
Date Stamp: 2/17/99 01:47:14pm
Sequence File: T17A.SEQ #34
Method File: C:\CPWIN\T17\T17ALW1.MET
Version 1. Date Stamp: 2/15/99 11:12:24am
Calibration File: C:\CPWIN\T17\T17AL1W.CAL
Version 1. Date Stamp: 2/15/99 11:09:46am

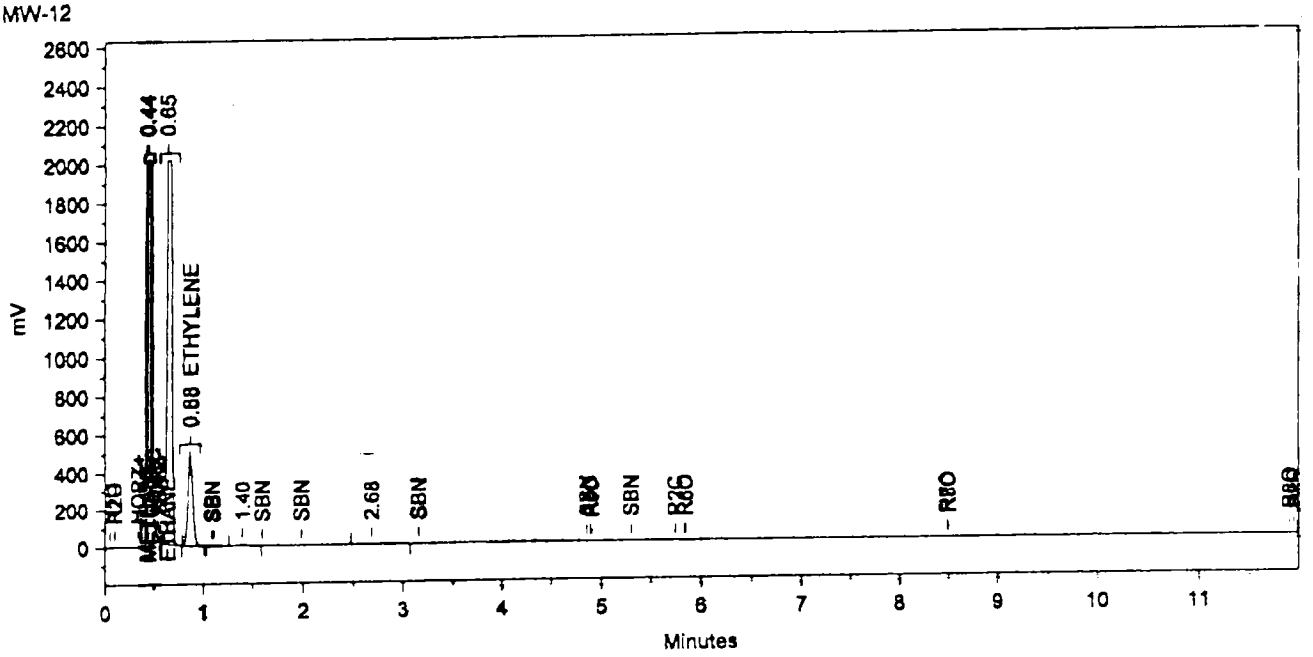
Run Time = 12.0 min Sample Rate = 3.33 per sec.
Amount Inj. = 0.000 Dilution Factor = 0.000
Sample Weight = 0.000 Int Std Amount = 0.000

Starting Peak Width = 0.07 min. Peak Threshold = 3 Area Reject = 100

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	0.408		0.1111	0.000	5575.8	0.049	BB	0.013	7383.29	0.167
2	0.438	METHANE	31.4246	0.046	5908541.0	51.579	BB	0.047	2088771.00	47.287
3	0.663	ETHANE	54436.9300	79.357	4514341.0	39.408	BB	0.038	2004688.00	45.383
4	0.869	ETHYLENE	14129.4400	20.597	1018804.0	8.894	BB	0.054	315230.20	7.136
5	1.389		0.0175	0.000	8065.2	0.070	BB	0.116	1163.39	0.026

Total Area = 11455330.0, Total Amount = 68597.92, Total Height = 4417236.0, Sample Units = (ug/dry g/L)

MW-12



Sample Name: MW-12
Acquired from Chrom1--Det1A via port 1 on 2/17/99 02:24:08pm by BC
FID

Data File: C:\CPWIN\T17\T17A.36R
Date Stamp: 2/17/99 02:24:08pm
Sequence File: T17A.SEQ #36
Method File: C:\CPWIN\T17\T17ALW1.MET
Version 1. Date Stamp: 2/15/99 11:12:24am
Calibration File: C:\CPWIN\T17\T17AL1W.CAL
Version 1. Date Stamp: 2/15/99 11:09:46am

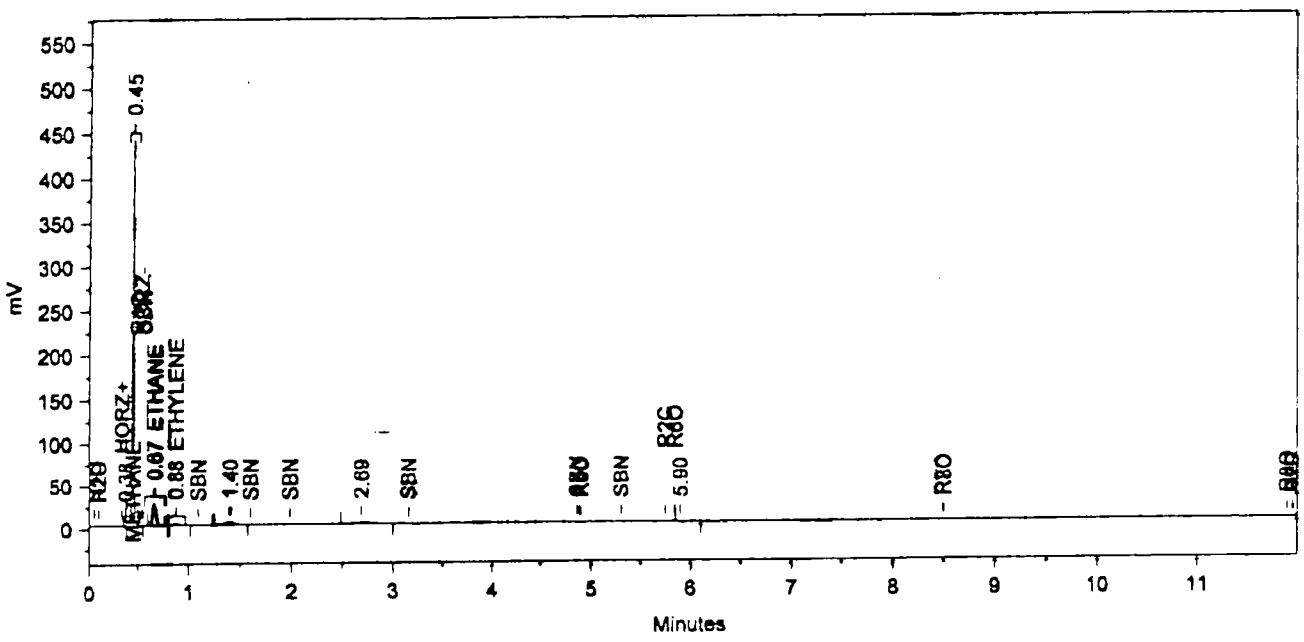
Run Time = 12.0 min Sample Rate = 3.33 per sec.
Amount Inj. = 0.000 Dilution Factor = 0.000
Sample Weight = 0.000 Int Std Amount = 0.000

Starting Peak Width = 0.07 min. Peak Threshold = 3 Area Reject = 100

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
2	0.438	METHANE	32.3557	0.030	6826385.0	43.634	BB	0.053	2150662.00	45.697
3	0.653	ETHANE	85417.6800	78.511	7083510.0	45.277	BB	0.058	2041447.00	43.377
4	0.876	ETHYLENE	23347.5600	21.460	1683477.0	10.761	BB	0.055	507184.70	10.777
5	1.399		0.0920	0.000	39127.4	0.250	BB	0.107	6117.18	0.130
6	2.685		0.0135	0.000	12275.7	0.078	BB	0.228	895.54	0.019

Total Area = 15644770.0, Total Amount = 108797.7, Total Height = 4706306.0, Sample Units = (ug/kg/L)

MW-7D



Sample Name: **MW-7D**
Acquired from Chrom1--Det1A via port 1 on 2/17/99 02:39:48pm by BC
FID

Data File: **C:\CPWIN\T17\T17A.37R**
Date Stamp: 2/17/99 02:39:48pm
Sequence File: T17A.SEQ #37
Method File: C:\CPWIN\T17\T17ALW1.MET
Version 1. Date Stamp: 2/15/99 11:12:24am
Calibration File: **C:\CPWIN\T17\T17AL1W.CAL**
Version 1. Date Stamp: 2/15/99 11:09:46am

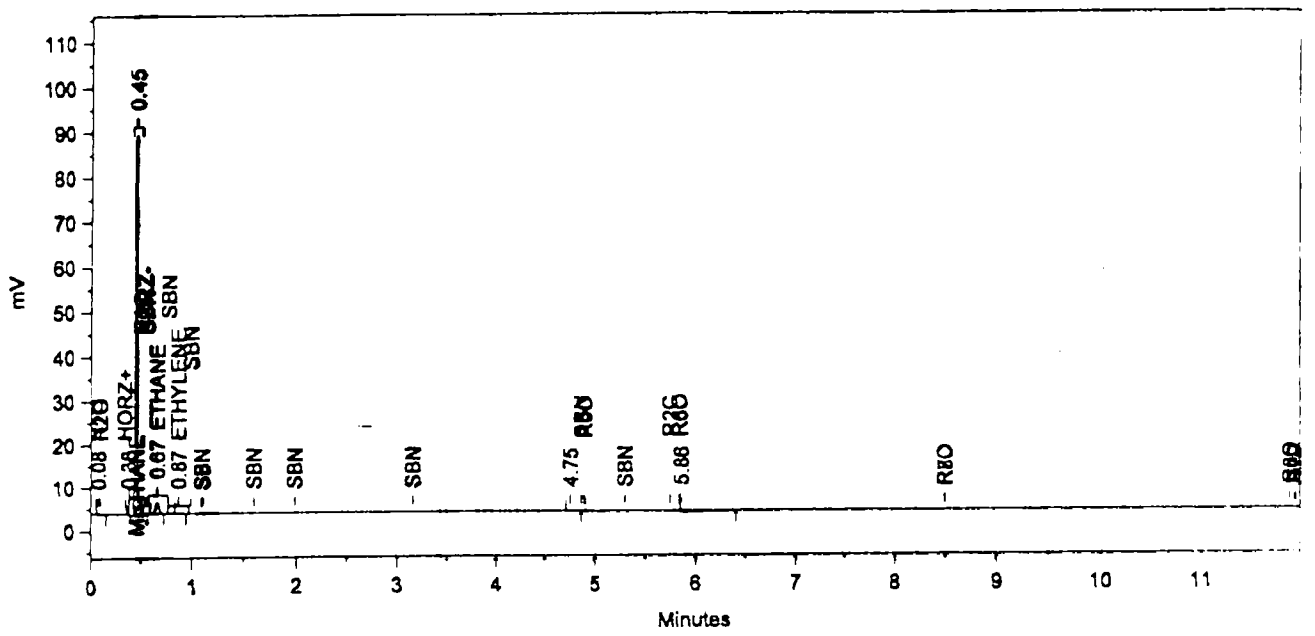
Run Time = 12.0 min Sample Rate = 3.33 per sec.
Amount Inj. = 0.000 Dilution Factor = 0.000
Sample Weight = 0.000 Int Std Amount = 0.000

Starting Peak Width = 0.07 min. Peak Threshold = 3 Area Reject = 100

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	0.380		0.0064	0.001	581.1	0.093	BB	0.023	427.40	0.088
2	0.453	METHANE	6.8154	0.816	516739.3	82.575	BB	0.019	453012.50	93.229
3	0.667	ETHANE	717.5567	85.892	59505.5	9.509	BB	0.039	25559.05	5.260
4	0.879	ETHYLENE	110.9677	13.283	8001.3	1.279	BB	0.058	2307.55	0.475
5	1.404		0.0398	0.005	17293.6	2.764	BB	0.109	2647.23	0.545
6	2.687		0.0227	0.003	19925.0	3.184	BB	0.220	1506.96	0.310
7	5.899		0.0068	0.001	3737.5	0.597	BB	0.138	452.24	0.093

Total Area = 625783.3, Total Amount = 835.415, Total Height = 485913.0, Sample Units = (ug/dmg/L)

ESI-7



Sample Name: ESI-7
Acquired from Chrom1--Det1A via port 1 on 2/17/99 02:52:26pm by BC
FID

Data File: C:\CPWIN\T17\T17A_38R
Date Stamp: 2/17/99 02:52:26pm
Sequence File: T17A_SEQ #38
Method File: C:\CPWIN\T17\T17ALW1.MET
Version 1. Date Stamp: 2/15/99 11:12:24am
Calibration File: C:\CPWIN\T17\T17AL1W.CAL
Version 1. Date Stamp: 2/15/99 11:09:46am

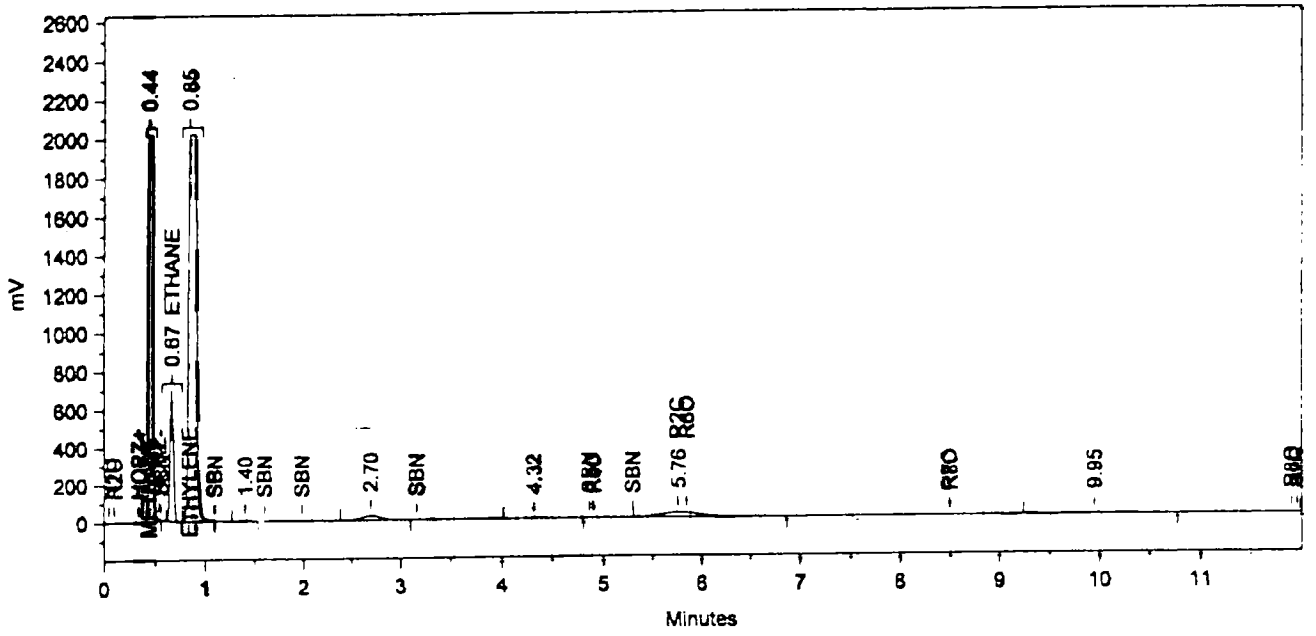
Run Time = 12.0 min Sample Rate = 3.33 per sec.
Amount Inj. = 0.000 Dilution Factor = 0.000
Sample Weight = 0.000 Int Std Amount = 0.000

Starting Peak Width = 0.07 min. Peak Threshold = 2 Area Reject = 100

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	0.082		0.0048	0.005	672.0	0.569	BB	0.035	315.99	0.339
2	0.380		0.0071	0.008	623.7	0.528	BV	0.022	469.50	0.504
3	0.453	METHANE	1.3331	1.500	102031.7	86.366	VB	0.019	88611.98	95.124
4	0.666	ETHANE	76.2443	85.805	6322.8	5.352	BB	0.039	2678.15	2.875
5	0.871	ETHYLENE	11.2556	12.667	811.6	0.687	BB	0.058	234.18	0.251
6	4.754		0.0018	0.002	524.5	0.444	BB	0.072	121.30	0.130
7	5.861		0.0109	0.012	7152.5	6.054	BB	0.165	723.00	0.776

Total Area = 118138.8, Total Amount = 88.858, Total Height = 93154.1, Sample Units = (ug/kg/L)

MW-8D



Sample Name: MW-8D
Acquired from Chrom1--Det1A via port 1 on 2/17/99 03:07:07pm by BC
FID

Data File: C:\CPWIN\T17\T17A_39R
Date Stamp: 2/17/99 03:07:06pm
Sequence File: T17A.SEQ #39
Method File: C:\CPWIN\T17\T17ALW1.MET
Version 1. Date Stamp: 2/15/99 11:12:24am
Calibration File: C:\CPWIN\T17\T17AL1W.CAL
Version 1. Date Stamp: 2/15/99 11:09:46am

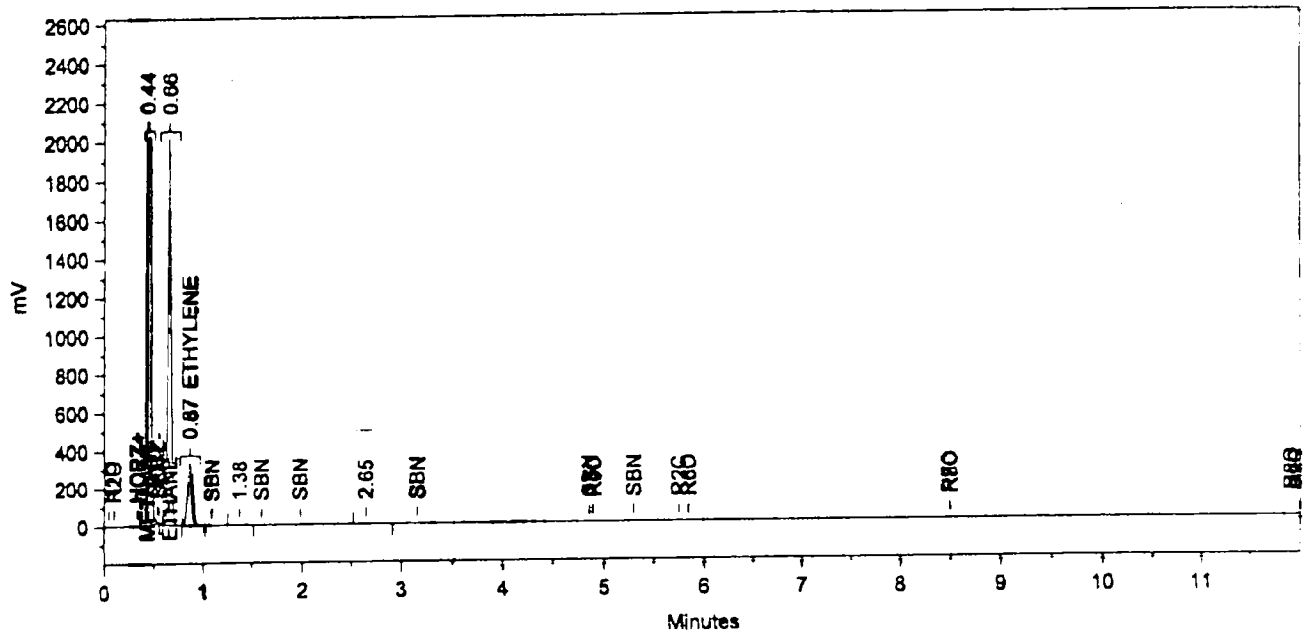
Run Time = 12.0 min Sample Rate = 3.33 per sec.
Amount Inj. = 0.000 Dilution Factor = 0.000
Sample Weight = 0.000 Int Std Amount = 0.000

Starting Peak Width = 0.07 min. Peak Threshold = 3 Area Reject = 100

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	0.442	METHANE	30.5040	0.018	5827546.0	29.484	BB	0.048	2027581.00	41.965
2	0.666	ETHANE	19482.1500	11.183	1615614.0	8.174	BB	0.039	698479.90	14.457
3	0.848	ETHYLENE	154691.0000	88.798	11154010.0	56.432	BB	0.091	2046646.00	42.360
4	1.400		0.1015	0.000	42347.4	0.214	BB	0.105	6744.01	0.140
5	2.696		0.3603	0.000	323933.4	1.639	BB	0.225	23946.36	0.496
6	4.319		0.0187	0.000	25926.7	0.131	BB	0.347	1245.72	0.026
7	5.764		0.3719	0.000	676171.5	3.421	BB	0.456	24723.24	0.512
8	9.950		0.0333	0.000	99724.3	0.505	BB	0.350	2216.35	0.046

Total Area = 19765270.0, Total Amount = 174204.5, Total Height = 4831583.0, Sample Units = (ug/kg /L)

MW-8S



Sample Name: MW-8S
Acquired from Chrom1--Det1A via port 1 on 2/17/99 05:09:02pm by BC
FID

Data File: C:\CPWIN\T17\T17A.47R
Date Stamp: 2/17/99 05:09:02pm
Sequence File: T17A.SEQ #47
Method File: C:\CPWIN\T17\T17ALW1.MET
Version 1. Date Stamp: 2/15/99 11:12:24am
Calibration File: C:\CPWIN\T17\T17AL1W.CAL
Version 1. Date Stamp: 2/15/99 11:09:46am

Run Time = 12.0 min Sample Rate = 3.33 per sec.
Amount Inj. = 0.000 Dilution Factor = 0.000
Sample Weight = 0.000 Int Std Amount = 0.000

Starting Peak Width = 0.07 min. Peak Threshold = 3 Area Reject = 100

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	0.438	METHANE	31.9431	0.046	5916207.0	51.168	BB	0.046	2123232.00	47.406
2	0.663	ETHANE	55062.7600	78.767	4566240.0	39.492	BB	0.038	2020690.00	45.117
3	0.866	ETHYLENE	14810.7800	21.187	1067933.0	9.236	BB	0.053	333366.30	7.443
4	1.380		0.0168	0.000	7217.4	0.062	BB	0.108	1118.79	0.025
5	2.647		0.0057	0.000	4793.2	0.041	BB	0.210	379.65	0.008

Total Area = 11562390.0, Total Amount = 69905.51, Total Height = 4478787.0, Sample Units = (ug/dry/L)

ORGANICS APPENDIX

U - Indicates that the compound was analyzed for but not detected.

J - Indicates that the compound was analyzed for and determined to be present in the sample. The mass spectrum of the compound meets the identification criteria of the method. The concentration listed is an estimated value, which is less than the specified minimum detection limit but is greater than zero.

B - This flag is used when the analyte is found in the blanks as well as the sample. It indicates possible sample contamination and warns the data user to use caution when applying the results of this analyte.

N - Indicates that the compound was analyzed for but not requested as an analyte. Value will not be listed on tabular result sheet.

S - Estimated due to surrogate outliers.

X - Matrix spike compound.

(1) - Cannot be separated.

(2) - Decomposes to azobenzene. Measured and calibrated as azobenzene.

A - This flag indicates that a TIC is a suspected aldol condensation product.

E - Indicates that it exceeds calibration curve range.

D - This flag identifies all compounds identified in an analysis at a secondary dilution factor.

C - Confirmed by GC/MS.

T - Compound present in TCLP blank.

P - This flag is used for a pesticide/aroclor target analyte when there is a greater than 25 percent difference for detected concentrations between the two GC columns (see Form X).

INORGANICS APPENDIX

C - Concentration qualifiers

U - Indicates analyte was not detected at method reporting limit.

B - Indicates analyte result between IDL and contract required detection limit (CRDL)

Q - QC qualifiers

E - Reported value is estimated because of the presence of interference

M - Duplicate injection precision not met

N - Spiked sample recovery not within control limits

S - The reported value was determined by the method of standard additions (MSA)

W - Post-digest spike recovery furnace analysis was out of 85-115 percent control limit, while sample absorbance was less than 50 percent of spike absorbance

* - Duplicate analysis not within control limit

+ - Correlation coefficient for MSA is less than 0.995

M - Method codes

P - ICP

A - Flame AA

F - Furnace AA

CV - Cold vapor AA (manual)

C - Cyanide

NR - Not Required

NC - Not Calculated as per protocols

STATE CERTIFICATIONS

In some instances it may be necessary for environmental data to be reported to a regulatory authority with reference to a certified laboratory. For your convenience, the laboratory identification numbers for the STL-Connecticut laboratory are provided in the following table. Many states certify laboratories for specific parameters or tests within a category (i.e. method 325.2 for wastewater). The information in the following table indicates the lab is certified in a general category of testing such as drinking water or wastewater analysis. The laboratory should be contacted directly if parameter-specific certification information is required.

STL-Connecticut
Certification Summary (as of September 1998)

State	Responsible Agency	Certification	Lab Number
Connecticut	Department of Health Services	Drinking Water, Wastewater	PH-0497
Kansas	Department of Health & Environment	Drinking Water, Wastewater/Solid, Hazardous Waste	E-10210
Maine	Department of Health and Environmental Services	Drinking Water, Wastewater/Solid, Hazardous Waste	CT023
Massachusetts	Department of Environmental Protection	Potable/Non-Potable Water	CT023
New Hampshire	Department of Environmental Services	Drinking Water, Wastewater	252891
New Jersey	Department of ...onmental Protection	Drinking Water, Wastewater	46410
New York	Department of Health	CLP, Drinking Water, Wastewater, Solid/ Hazardous Waste	10602
North Carolina	Division of Environmental Management	Wastewater	388
Rhode Island	Department of Health	Chemistry...Non-Potable Water and Wastewater	A43
Washington	Department of Ecology	Wastewater/Hazardous Waste	C231
Wisconsin	Department of Natural Resources	Wastewater	998355710

7099-0272A
INGERSOLL RAND
SAMPLE SUMMARY

CLIENT ID	LAB ID	MATRIX	DATE COLLECTED	DATE RECEIVED
ESI-6	990272A-01	WATER	02/09/99	02/10/99
ESI-6	990272A-01D	WATER	02/09/99	02/10/99
ESI-6	990272A-01MS	WATER	02/09/99	02/10/99
ESI-6	990272A-01MSB	WATER	02/09/99	02/10/99
ESI-6	990272A-01MSD	WATER	02/09/99	02/10/99
ESI-6	990272A-01S	WATER	02/09/99	02/10/99
DUP-1	990272A-02	WATER	02/09/99	02/10/99
MW-8S	990272A-03	WATER	02/09/99	02/10/99
TB 020999	990272A-04	WATER	02/09/99	02/10/99
MW-12	990272A-05	WATER	02/10/99	02/11/99
TB 021099	990272A-06	WATER	02/10/99	02/11/99
MW-7D	990272A-07	WATER	02/10/99	02/11/99
ESI-7	990272A-08	WATER	02/10/99	02/11/99
MW-8D	990272A-09	WATER	02/10/99	02/11/99

IEA-CT ANALYTICAL SUMMARY

Client ID: DUP-1, ESI-6, ESI-7, MW-12, MW-7D, MW-8D, MW-8S, TB 020999, TB 021099
Job Number: 7099-0272A

Date: 3/5/99

Qty	Matrix	Analysis	Description
7	None	DISK	Diskette Prep.
2	None	SHIP	Shipping Cost
8	WATER	ALK-N310.1	Alkalinity
9	WATER	BOD5-N405.1	Biochemical Oxygen D
9	WATER	CHLORIDE-N325.2	Chloride
9	WATER	COD-N410.4	Chemical Oxygen Dema
9	WATER	FE-NSW846	Iron
9	WATER	FE-NSW846-D	Iron (Dissolved)
9	WATER	FLUORIDE-N340.2	Fluoride
7	WATER	GC-MISC	Miscellaneous GC
9	WATER	MET-PREP-ICAP	Metals ICAP Prep
9	WATER	MET-PREP-ICAP-D	Metals ICAP Prep (Di
9	WATER	MN-NSW846	Manganese
9	WATER	MN-NSW846-D	Manganese (Dissolved
9	WATER	NITRATE/NIT-N353.2	Nitrate/Nitrite-Nitr
9	WATER	SULFATE-N375.3	Sulfate
8	WATER	SULFIDE-N376.1	Sulfide
9	WATER	TOC-N415.1-DUP	Total Organic Carbon
9	WATER	TOC-N415.1-DUP-F	Total Organic Carbon
1	WATER	VOA-N8260A-TCL	TCL Volatile Organic
11	WATER	VOA-N8260A-TCL	TCL Volatile Organic

March 1999 Groundwater Laboratory Analytical Data Sheets

Committed To *Your* Success

April 30, 1999

Severn Trent Laboratories
200 Monroe Turnpike
Monroe CT 06468

Tel: (203) 261-4458
Fax: (203) 268-5346

Mr. Marc Sanford
INGERSOLL RAND
Geraghty & Miller
215 Washington Ave Ext.
Albany, NY 12205

Dear Mr. Sanford :

Please find enclosed the analytical results of 14 sample(s) received at our laboratory on April 1-2, 1999. This report contains sections addressing the following information at a minimum:

- sample summary
- analytical methodology
- state certifications
- definition of data qualifiers and terminology
- analytical results
- chain-of-custody

STL Report #7099-0693A	Purchase Order #907019
Project ID: JAMESTOWN, NY	

Copies of this analytical report and supporting data are maintained in our files for a minimum of five years unless special arrangements have been made. Unless specifically indicated, all analytical testing was performed at this laboratory location and no portion of the testing was subcontracted.

We appreciate your selection of our services and welcome any questions or suggestions you may have relative to this report. Please contact your customer service representative at (203) 261-4458 for any additional information. Thank you for utilizing our services; we hope you will consider us for your future analytical needs.

I have reviewed and approved the enclosed data for final release.

Very truly yours,

Jeffrey C. Curran
Laboratory Manager

JCC

cc: D. JONES
J. HARRY

7099-0693A
INGERSOLL RAND

Case Narrative

Classical Chemistry - Listed below are the wet chemistry analyte methods and references for the samples analyzed in this SDG. TOCD is reported as Rep 1 and TOCD-dissolved is reported as Rep 2. During BOD analysis, the final oxygen readings of samples MW-12 and MW-8S were zero; therefore, the results are expressed as "greater than" values. The spike for nitrate/nitrite analysis did not meet criteria due to sample matrix interference. No other analytical problems were encountered and all holding times were met.

Analyte	Method	Reference
Alkalinity	310.1	1
BOD5	405.1	1
Chloride	325.2	1
COD	410.4	1
Fluoride	340.2	1
Nitrate/Nitrite	353.2	1
Sulfate	375.2	1
Sulfide	376.1	1
TOCD	415.1	1
TOCD-dissolved	415.1	1

References:

1. Methods of Chemical Analysis of Water and Wastes, EPA 600, 1983.

Metals - ICAP metals were determined using a JA61E trace ICAP using guidance provided in SW846 according to the following Methods: ICAP-3010/6010.

No problems occurred during analysis. All appropriate protocols were employed. All data appears to be consistent.

Volatile Organics - Volatile organics were determined by purge and trap GC/MS using guidance provided in Method 8260B. The instrumentation used was a Tekmar Model 2000/2016 Concentrator interfaced with a Hewlett-Packard Model 5970A GC/MS/DS.

Sample Calculation:

Sample ID - ESI-6
Compound - Trichloroethene

$\frac{(8158151)(250)(1)}{(11176204)(.470)(5)} = 388.3 = 390$ UG/L.

The following samples were analyzed at dilutions due to high target compound concentrations:

ESI-6	1:5
MW-12	1:25
MW-7D	1:4
MW-8S	1:10
MW-8D	1:2500

The spike compound recoveries for methylene chloride and 1,1-dichloroethane were outside QC criteria limits for the 020PPB_QCS.

No problems were encountered.

TABLE VO-1.0
7099-0693A
INGERSOLL RAND
TCL VOLATILE ORGANICS

Aqueous

All values are ug/L.

Client Sample I.D.	Method Blank	ESI-6	ESI-6 FMS 990693A-01 FMS	Quant. Limits with no Dilution
Lab Sample I.D.	VBLKMB	990693A-01	VBLKMB	
Method Blank I.D.	VBLKMB	VBLKMB	VBLKMB	
Quant. Factor	1.00	5.00	5.00	
Chloromethane	U	U	250X	10
Bromomethane	U	U	240X	10
Vinyl Chloride	U	50	290X	10
Chloroethane	U	U	240X	10
Methylene Chloride	1J	9JB	250BX	5.0
Acetone	4J	59B	200BX	10
Carbon Disulfide	U	U	260X	5.0
Vinyl Acetate	U	U	230X	10
1,1-Dichloroethene	U	U	240X	5.0
1,1-Dichloroethane	U	U	270X	5.0
1,2-Dichloroethene (total)	U	82	570X	5.0
Chloroform	.3J	U	270BX	5.0
1,2-Dichloroethane	U	U	260X	5.0
2-Butanone	U	8J	210X	10
1,1,1-Trichloroethane	U	U	260X	5.0
Carbon Tetrachloride	U	U	260X	5.0
Bromodichloromethane	U	U	260X	5.0
1,2-Dichloropropane	U	U	270X	5.0
cis-1,3-Dichloropropene	U	U	260X	5.0
Trichloroethene	U	390	650X	5.0
Dibromochloromethane	U	U	250X	5.0
1,1,2-Trichloroethane	U	U	250X	5.0
Benzene	U	U	260X	5.0
trans-1,3-Dichloropropene	U	U	250X	5.0
Bromoform	U	U	220X	5.0
4-Methyl-2-Pentanone	U	U	260X	10
2-Hexanone	U	U	230X	10
Tetrachloroethene	U	3J	250X	5.0
Toluene	U	U	270X	5.0
1,1,2,2-Tetrachloroethane	U	U	230X	5.0
Chlorobenzene	U	U	260X	5.0
Ethylbenzene	U	U	250X	5.0
Styrene	U	U	250X	5.0
Xylene (total)	.3J	U	770BX	5.0
Date Received		04/01/99	04/01/99	
Date Extracted	N/A	N/A	N/A	
Date Analyzed	04/02/99	04/02/99	04/02/99	

See Appendix for qualifier definitions
Note: Compound detection limit = quantitation limit x quantitation factor
Quant. Factor = a numerical value which takes into account any variation in sample weight/volume, % moisture and sample dilution.

TABLE VO-1.1
7099-0693A
INGERSOLL RAND
TCL VOLATILE ORGANICS

Aqueous

All values are ug/L.

Client Sample I.D.	ESI-6 FMSD	ESI-7	DUP-1	Quant. Limits with no Dilution
Lab Sample I.D.	990693A-01 FMSD	990693A-02	990693A-03	
Method Blank I.D.	VBLKMB	VBLKMB	VBLKMB	
Quant. Factor	5.00	1.00	1.00	
Chloromethane	220X	U	U	10
Bromomethane	220X	U	U	10
Vinyl Chloride	270X	2J	2J	10
Chloroethane	210X	U	U	10
Methylene Chloride	250BX	.7JB	.6JB	5.0
Acetone	180BX	2JB	3JB	10
Carbon Disulfide	260X	U	U	5.0
Vinyl Acetate	240X	U	U	10
1,1-Dichloroethene	230X	U	U	5.0
1,1-Dichloroethane	260X	U	U	5.0
1,2-Dichloroethene (total)	560X	40	38	5.0
Chloroform	280BX	U	U	5.0
1,2-Dichloroethane	270X	U	U	5.0
2-Butanone	240X	U	U	10
1,1,1-Trichloroethane	270X	U	U	5.0
Carbon Tetrachloride	260X	U	U	5.0
Bromodichloromethane	260X	U	U	5.0
1,2-Dichloropropane	270X	U	U	5.0
cis-1,3-Dichloropropene	250X	U	U	5.0
Trichloroethene	630X	100	86	5.0
Dibromochloromethane	240X	U	U	5.0
1,1,2-Trichloroethane	230X	U	U	5.0
Benzene	260X	U	U	5.0
trans-1,3-Dichloropropene	240X	U	U	5.0
Bromoform	220X	U	U	5.0
4-Methyl-2-Pentanone	260X	U	U	10
2-Hexanone	240X	U	U	10
Tetrachloroethene	250X	.6J	.6J	5.0
Toluene	270X	U	U	5.0
1,1,2,2-Tetrachloroethane	250X	U	U	5.0
Chlorobenzene	250X	U	U	5.0
Ethylbenzene	250X	U	U	5.0
Styrene	260X	U	U	5.0
Xylene (total)	770BX	U	U	5.0
Date Received	04/01/99	04/01/99	04/01/99	
Date Extracted	N/A	N/A	N/A	
Date Analyzed	04/02/99	04/02/99	04/02/99	

See Appendix for qualifier definitions
Note: Compound detection limit = quantitation limit x quantitation factor
Quant. Factor = a numerical value which takes into account any variation in sample weight/volume, % moisture and sample dilution.

TABLE VO-1.2
7099-0693A
INGERSOLL RAND
TCL VOLATILE ORGANICS

Aqueous

All values are ug/L.

Client Sample I.D.	TB 033199			Quant. Limits with no Dilution
Lab Sample I.D.	990693A-07			
Method Blank I.D.	VBLKMB			
Quant. Factor	1.00			
Chloromethane	U			10
Bromomethane	U			10
Vinyl Chloride	U			10
Chloroethane	U			10
Methylene Chloride	.8JB			5.0
Acetone	2JB			10
Carbon Disulfide	U			5.0
Vinyl Acetate	U			10
1,1-Dichloroethene	U			5.0
1,1-Dichloroethane	U			5.0
1,2-Dichloroethene (total)	U			5.0
Chloroform	U			5.0
1,2-Dichloroethane	U			5.0
2-Butanone	U			10
1,1,1-Trichloroethane	U			5.0
Carbon Tetrachloride	U			5.0
Bromodichloromethane	U			5.0
1,2-Dichloropropane	U			5.0
cis-1,3-Dichloropropene	U			5.0
Trichloroethene	U			5.0
Dibromochloromethane	U			5.0
1,1,2-Trichloroethane	U			5.0
Benzene	U			5.0
trans-1,3-Dichloropropene	U			5.0
Bromoform	U			5.0
4-Methyl-2-Pentanone	U			10
2-Hexanone	U			10
Tetrachloroethene	U			5.0
Toluene	U			5.0
1,1,2,2-Tetrachloroethane	U			5.0
Chlorobenzene	U			5.0
Ethylbenzene	U			5.0
Styrene	U			5.0
Xylene (total)	U			5.0
Date Received	04/01/99			
Date Extracted	N/A			
Date Analyzed	04/02/99			

See Appendix for qualifier definitions
Note: Compound detection limit = quantitation limit x quantitation factor
Quant. Factor = a numerical value which takes into account any variation in sample weight/volume, % moisture and sample dilution.

TABLE VO-1.3
7099-0693A
INGERSOLL RAND
TCL VOLATILE ORGANICS

Aqueous

All values are ug/L.

Client Sample I.D.	Method Blank	MW-12	TB 040199	Quant. Limits with no Dilution
Lab Sample I.D.	VBLKMF	990693A-05	990693A-09	
Method Blank I.D.	VBLKMF	VBLKMF	VBLKMF	
Quant. Factor	1.00	25.0	1.00	
Chloromethane	U	U	U	10
Bromomethane	U	U	U	10
Vinyl Chloride	U	380	U	10
Chloroethane	U	U	U	10
Methylene Chloride	U	30J	.6J	5.0
Acetone	U	140J	U	10
Carbon Disulfide	U	U	U	5.0
Vinyl Acetate	U	U	U	10
1,1-Dichloroethene	U	U	U	5.0
1,1-Dichloroethane	U	U	U	5.0
1,2-Dichloroethene (total)	U	4500	U	5.0
Chloroform	U	U	U	5.0
1,2-Dichloroethane	U	U	U	5.0
2-Butanone	U	U	U	10
1,1,1-Trichloroethane	U	28J	U	5.0
Carbon Tetrachloride	U	U	U	5.0
Bromodichloromethane	U	U	U	5.0
1,2-Dichloropropane	U	U	U	5.0
cis-1,3-Dichloropropene	U	U	U	5.0
Trichloroethene	U	66J	U	5.0
Dibromochloromethane	U	U	U	5.0
1,1,2-Trichloroethane	U	U	U	5.0
Benzene	U	U	U	5.0
trans-1,3-Dichloropropene	U	U	U	5.0
Bromoform	U	U	U	5.0
4-Methyl-2-Pentanone	U	U	U	10
2-Hexanone	U	U	U	10
Tetrachloroethene	U	U	U	5.0
Toluene	U	U	U	5.0
1,1,2,2-Tetrachloroethane	U	U	U	5.0
Chlorobenzene	U	U	U	5.0
Ethylbenzene	U	U	U	5.0
Styrene	U	U	U	5.0
Xylene (total)	U	U	U	5.0
Date Received		04/01/99	04/02/99	
Date Extracted	N/A	N/A	N/A	
Date Analyzed	04/06/99	04/07/99	04/07/99	

See Appendix for qualifier definitions
Note: Compound detection limit = quantitation limit x quantitation factor
Quant. Factor = a numerical value which takes into account any variation in sample weight/volume, % moisture and sample dilution.

TABLE VO-1.4
7099-0693A
INGERSOLL RAND
TCL VOLATILE ORGANICS

Aqueous

All values are ug/L.

Client Sample I.D.	Method Blank	MW-7D	MW-8S	Quant. Limits with no Dilution
Lab Sample I.D.	VBLKMG	990693A-04	990693A-06	
Method Blank I.D.	VBLKMG	VBLKMG	VBLKMG	
Quant. Factor	1.00	4.00	10.0	
Chloromethane	U	U	U	10
Bromomethane	U	U	U	10
Vinyl Chloride	U	U	330	10
Chloroethane	U	U	U	10
Methylene Chloride	.6J	6JB	15JB	5.0
Acetone	2J	U	U	10
Carbon Disulfide	U	U	5J	5.0
Vinyl Acetate	U	U	U	10
1,1-Dichloroethene	U	U	U	5.0
1,1-Dichloroethane	U	U	U	5.0
1,2-Dichloroethene (total)	U	6J	1400	5.0
Chloroform	U	U	U	5.0
1,2-Dichloroethane	U	U	U	5.0
2-Butanone	U	U	U	10
1,1,1-Trichloroethane	U	U	U	5.0
Carbon Tetrachloride	U	U	U	5.0
Bromodichloromethane	U	U	U	5.0
1,2-Dichloropropane	U	U	U	5.0
cis-1,3-Dichloropropene	U	U	U	5.0
Trichloroethene	U	440	120	5.0
Dibromochloromethane	U	U	U	5.0
1,1,2-Trichloroethane	U	U	U	5.0
Benzene	U	U	U	5.0
trans-1,3-Dichloropropene	U	U	U	5.0
Bromoform	U	U	U	5.0
4-Methyl-2-Pentanone	U	U	U	10
2-Hexanone	U	U	U	10
Tetrachloroethene	U	2J	U	5.0
Toluene	U	1J	U	5.0
1,1,2,2-Tetrachloroethane	U	U	U	5.0
Chlorobenzene	U	U	U	5.0
Ethylbenzene	U	U	U	5.0
Styrene	U	U	U	5.0
Xylene (total)	U	U	U	5.0
Date Received		04/01/99	04/01/99	
Date Extracted	N/A	N/A	N/A	
Date Analyzed	04/07/99	04/07/99	04/07/99	

See Appendix for qualifier definitions
Note: Compound detection limit = quantitation limit x quantitation factor
Quant. Factor = a numerical value which takes into account any variation in sample weight/volume, % moisture and sample dilution.

TABLE VO-1.5
7099-0693A
INGERSOLL RAND
TCL VOLATILE ORGANICS

Aqueous

All values are ug/L.

Client Sample I.D.	MW-8D			
Lab Sample I.D.	990693A-08			Quant. Limits with no Dilution
Method Blank I.D.	VBLKMG			
Quant. Factor	2500			
Chloromethane	U			10
Bromomethane	U			10
Vinyl Chloride	U			10
Chloroethane	U			10
Methylene Chloride	5600JB			5.0
Acetone	U			10
Carbon Disulfide	U			5.0
Vinyl Acetate	U			10
1,1-Dichloroethene	U			5.0
1,1-Dichloroethane	U			5.0
1,2-Dichloroethene (total)	15000			5.0
Chloroform	U			5.0
1,2-Dichloroethane	U			5.0
2-Butanone	U			10
1,1,1-Trichloroethane	U			5.0
Carbon Tetrachloride	U			5.0
Bromodichloromethane	U			5.0
1,2-Dichloropropane	U			5.0
cis-1,3-Dichloropropene	U			5.0
Trichloroethene	380000			5.0
Dibromochloromethane	U			5.0
1,1,2-Trichloroethane	U			5.0
Benzene	U			5.0
trans-1,3-Dichloropropene	U			5.0
Bromoform	U			5.0
4-Methyl-2-Pentanone	U			10
2-Hexanone	U			10
Tetrachloroethene	1000J			5.0
Toluene	U			5.0
1,1,2,2-Tetrachloroethane	U			5.0
Chlorobenzene	U			5.0
Ethylbenzene	U			5.0
Styrene	U			5.0
Xylene (total)	U			5.0
Date Received	04/02/99			
Date Extracted	N/A			
Date Analyzed	04/07/99			

See Appendix for qualifier definitions
Note: Compound detection limit = quantitation limit x quantitation factor
Quant. Factor = a numerical value which takes into account any variation in sample weight/volume, % moisture and sample dilution.

Aqueous

TABLE AS-1.0
7099-0693A
INGERSOLL RAND
MISCELLANEOUS ATOMIC SPECTROSCOPY (Dissolved)

All values are ug/L.

Client Sample I.D.	ESI-6	ESI-6 D	ESI-6 S	ESI-7
Lab Sample I.D.	990693A-01	990693A-01D	990693A-01S	990693A-02
Iron	10200	10100	11000	1310
Manganese	1710	1700	2160	760.

See Appendix for qualifier definitions

Aqueous

TABLE AS-1.1
7099-0693A
INGERSOLL RAND
MISCELLANEOUS ATOMIC SPECTROSCOPY (Dissolved)

All values are ug/L.

Client Sample I.D.	DUP-1	MW-7D	MW-12	MW-8S
Lab Sample I.D.	990693A-03	990693A-04	990693A-05	990693A-06
Iron	1070	50.0U	44100	118000
Manganese	724.	274.	8100	37200

See Appendix for qualifier definitions

Aqueous

TABLE AS-1.2
7099-0693A
INGERSOLL RAND
MISCELLANEOUS ATOMIC SPECTROSCOPY (Dissolved)

All values are ug/L.

Client Sample I.D.	MW-8D			
Lab Sample I.D.	990693A-08			
Iron	75.2B			
Manganese	96.3			

See Appendix for qualifier definitions

Aqueous

TABLE AS-1.3
7099-0693A
INGERSOLL RAND
MISCELLANEOUS ATOMIC SPECTROSCOPY (Total)

All values are ug/L.

Client Sample I.D.	ESI-6	ESI-6 D	ESI-6 S	ESI-7
Lab Sample I.D.	990693A-01	990693A-01D	990693A-01S	990693A-02
Iron	14700	14800	15400	1070
Manganese	1690	1710	2120	379.

See Appendix for qualifier definitions

Aqueous

TABLE AS-1.4
7099-0693A
INGERSOLL RAND
MISCELLANEOUS ATOMIC SPECTROSCOPY (Total)

All values are ug/L.

Client Sample I.D.	DUP-1	MW-7D	MW-12	MW-8S
Lab Sample I.D.	990693A-03	990693A-04	990693A-05	990693A-06
Iron	1440	1030	44200	115000
Manganese	506.	314.	7800	36100

See Appendix for qualifier definitions

Aqueous

TABLE AS-1.5
7099-0693A
INGERSOLL RAND
MISCELLANEOUS ATOMIC SPECTROSCOPY (Total)

All values are ug/L.

Client Sample I.D.	MW-8D			
Lab Sample I.D.	990693A-08			
Iron	21200			
Manganese	650.			

See Appendix for qualifier definitions

WET CHEM ANALYSIS DATA SHEET

SAMPLE NO.

ESI-6

Lab Name: IEA Contract: _____

Lab Code: IEA Case No.: 0693A SAS No. : _____ SDG No.: A0693

Matrix: (soil/water) WATER Lab Sample ID: 0693001

% Solids: _____ Date Received: 04/01/99

Concentration Units (mg/L or mg/kg dry weight) : mg/L

Analyte	Concentration	C	Q	M
ALKALIN	505.			
BOD5	13.			
CHLORIDE	18.5			
COD	36.2			
FLUORIDE	0.27			
NO3-NO2	0.100	U		
SULFATE	22.3			
SULFIDE	1.000	U		
TOCD	15.4			
	14.1			

Comments: _____

WET CHEM ANALYSIS DATA SHEET

SAMPLE NO.

ESI-6

Lab Name: IEA Contract: _____

Lab Code: IEA Case No.: 0693A SAS No. : _____ SDG No.: A0693

Matrix: (soil/water) WATER Lab Sample ID: 0693001D

% Solids: _____ Date Received: 04/01/99

Concentration Units (mg/L or mg/kg dry weight) : mg/L

Analyte	Concentration	C	Q	M
ALKALIN	505.			
BOD5	12.			
CHLORIDE	19.0			
COD	38.5			
FLUORIDE	0.28			
NO3-NO2	0.100	U		
SULFATE	22.1			
SULFIDE	1.000	U		
TOCD	15.4			
	13.9			

Comments: _____

WET CHEM ANALYSIS DATA SHEET

SAMPLE NO.

ESI-6

Lab Name: IEA Contract: _____

Lab Code: IEA Case No.: 0693A SAS No. : _____ SDG No.: A0693

Matrix: (soil/water) WATER Lab Sample ID: 06930018

% Solids: _____ Date Received: 04/01/99

Concentration Units (mg/L or mg/kg dry weight) : mg/L

Analyte	Concentration	C	Q	M
ALKALIN	0.0			
BOD5	58.			
CHLORIDE	83.7			
COD	140.			
FLUORIDE	0.88			
NO3-NO2	0.100	U		
SULFATE	82.6			
SULFIDE	24.8			
TOCD	35.5			
	33.9			

Comments: _____

WET CHEM ANALYSIS DATA SHEET

SAMPLE NO.

ESI-7

Lab Name: IEA Contract: _____

Lab Code: IEA Case No.: 0693A SAS No. : _____ SDG No.: A0693

Matrix: (soil/water) WATER Lab Sample ID: 0693002

% Solids: _____ Date Received: 04/01/99

Concentration Units (mg/L or mg/kg dry weight) : mg/L

Analyte	Concentration	C	Q	M
ALKALIN	306.			
BOD5	4.			
CHLORIDE	8.0			
COD	15.4			
FLUORIDE	0.190	U		
NO3-NO2	0.100	U		
SULFATE	27.9			
SULFIDE	1.000	U		
TOCD	7.84			
	7.70			

Comments: _____

WET CHEM ANALYSIS DATA SHEET

SAMPLE NO.

DUP-1

Lab Name: IEA Contract: _____

Lab Code: IEA Case No.: 0693A SAS No. : _____ SDG No.: A0693

Matrix: (soil/water) WATER Lab Sample ID: 0693003

% Solids: _____ Date Received: 04/01/99

Concentration Units (mg/L or mg/kg dry weight) : mg/L

Analyte	Concentration	C	Q	M
ALKALIN	305.			
BOD5	5.			
CHLORIDE	7.0			
COD	15.4			
FLUORIDE	0.18			
NO3-NO2	0.100	U		
SULFATE	27.6			
SULFIDE	1.000	U		
TOCD	6.99			
	7.05			

Comments: _____

WET CHEM ANALYSIS DATA SHEET

SAMPLE NO.

MW-7D

Lab Name: IEA Contract: _____

Lab Code: IEA Case No.: 0693A SAS No. : _____ SDG No.: A0693

Matrix: (soil/water) WATER Lab Sample ID: 0693004

% Solids: _____ Date Received: 04/01/99

Concentration Units (mg/L or mg/kg dry weight) : mg/L

Analyte	Concentration	C	Q	M
ALKALIN	381.			
BOD5	6.			
CHLORIDE	176.			
COD	17.7			
FLUORIDE	0.12			
NO3-NO2	0.100	U		
SULFATE	10.000	U		
SULFIDE	1.000	U		
TOCD	2.54			
	2.85			

Comments: _____

WET CHEM ANALYSIS DATA SHEET

SAMPLE NO.

MW-12

Lab Name: IEA Contract: _____

Lab Code: IEA Case No.: 0693A SAS No. : _____ SDG No.: A0693

Matrix: (soil/water) WATER Lab Sample ID: 0693005

% Solids: _____ Date Received: 04/01/99

Concentration Units (mg/L or mg/kg dry weight) : mg/L

Analyte	Concentration	C	Q	M
ALKALIN	620.			
BOD5	271.			
CHLORIDE	22.5			
COD	1010.			
FLUORIDE	0.11			
NO3-NO2	0.100	U		
SULFATE	10.7			
SULFIDE	1.000	U		
TOCD	407.			
	398.			

Comments: _____

WET CHEM ANALYSIS DATA SHEET

SAMPLE NO.

MW-8S

Lab Name: IEA Contract: _____

Lab Code: IEA Case No.: 0693A SAS No. : _____ SDG No.: A0693

Matrix: (soil/water) WATER Lab Sample ID: 0693006

% Solids: _____ Date Received: 04/01/99

Concentration Units (mg/L or mg/kg dry weight) : mg/L

Analyte	Concentration	C	Q	M
ALKALIN	1030.			
BOD5	2710.			
CHLORIDE	62.2			
COD	4690.			
FLUORIDE	0.100	U		
NO3-NO2	0.100	U		
SULFATE	51.7			
SULFIDE	3.70			
TOCD	1490.			
	1500.			

Comments: _____

WET CHEM ANALYSIS DATA SHEET

SAMPLE NO.

MW-8D

Lab Name: IEA Contract: _____

Lab Code: IEA Case No.: 0693A SAS No. : _____ SDG No.: A0693

Matrix: (soil/water) WATER Lab Sample ID: 0693008

% Solids: _____ Date Received: 04/02/99

Concentration Units (mg/L or mg/kg dry weight) : mg/L

Analyte	Concentration	C	Q	M
ALKALIN	425.			
BOD5	8.			
CHLORIDE	232.			
COD	522.			
FLUORIDE	0.10			
NO3-NO2	0.100	U		
SULFATE	28.2			
SULFIDE	1.000	U		
TOCD	17.4			
	15.4			

Comments: _____

MICROSEEPS

University of Pittsburgh Applied Research Center
220 William Pitt Way, Pittsburgh, PA 15238
(412) 826-5245
FAX (412) 826-3433

April 13, 1999

Ms. Stephanie Plunkett
Severn Trent Laboratories
200 Monroe Turnpike
Monroe, CT 06468

Dear Ms. Plunkett:

Attached are the final data listings and chromatograms for the samples we received on April 3, 1999, your project #7099-0695A. 3 4/24/99

Please give me a call if you have questions or I can be of further assistance. Thank you for using MICROSEEPS.

Sincerely,

Linda S. Tibensky

LST/lsp

Attachment: ST35-992470

Microseeps

ST35-992470

---- Severn Trent Laboratories ----
---- PROJECT: 7099-0695A ----

Sample Names	Carbon Dioxide mg/l	Ethane ng/l	Ethylene ng/l	Lab ID	Date Sampled	Date Received	Date Analyzed	Analyst
ESI-6	31.34	95312	21069	X7 107	3/31/99	4/3/99	4/7/99	BJM
ESI-7	41.51	2137	1220	X7 108	3/31/99	4/3/99	4/7/99	BJM
DUP-1	38.68	1310	782	X7 109	3/31/99	4/3/99	4/7/99	BJM
MW-7D	13.19	147	49	X7 110	3/31/99	4/3/99	4/7/99	BJM
MW-12	304.06	212629	39699	X7 111	3/31/99	4/3/99	4/7/99	BJM
MW-8S	877.52	150351	69559	X7 112	3/31/99	4/3/99	4/7/99	BJM
MW-8D	10.35	15027	280212	X7 113	4/1/99	4/6/99	4/7/99	BJM
Detection Limits	0.60mg/l	5 ng/l	5 ng/l					

* Methane result taken from alternate detector.

Analyst Initials BJM

Reviewed By

Microseeps

----- QUALITY CONTROL -----

ST35-992470

----- Severn Trent Laboratories ----
----- PROJECT: 7099-0695A -----

CONTINUING CALIBRATION STANDARDS 04/07/99

COMPOUND	FILE ID	TRUE CONC.	MEASURED	% DIFF.
ETHANE	X7A 104	476	446	6.31
ETHYLENE	X7A 104	533	517	3.06
CARBON DIOXIDE	X7B 103	159.62	138.90	12.98

METHOD BLANK 04/07/99

COMPOUND	FILE ID	DET. LIMIT	MEASURED
ETHANE	X7A 106	5ng/l	ND
ETHYLENE	X7A 106	5ng/l	ND
CARBON DIOXIDE	X7B 106	0.60mg/l	ND

Analyst Initials BJM

Reviewed By BL

STL
Committed To Your Success

SEVERN TRENT LABORATORIES
SUBCONTRACTING REQUISITION FORM

992470-ST35

PAGE 1 OF 1

PROJECT INFORMATION

1. P.O. NUMBER	2. VERBAL DUE DATE	3. FAX DUE DATE	4. HARDCOPY DUE DATE
ST7758	—	—	4/22/99
INTERNAL PROJECT NUMBER	**6. SDG COMPLETE?**	**7. PENALTY JOB?**	**8. SDG #**
7099-0695A	☐ YES ☒ NO	☐ YES ☒ NO	A0695
9. REGULATORY METHODS	**10. QC BILLABLE?**	**11. VTSR DATE**	**12. REQUIRED CERTIFICATIONS? IF YES, LIST**
AM15 + AM18	☐ YES ☒ NO	4/1/99	
15. TEA PROJECT MANAGER	**16. TELEPHONE NO.**	**17. REPORTING LEVEL REQUIRED**	**18. REPORTING FORMAT?**	**13. CERT. AGENCY**	**14. CATEGORY**
S Plumstead	203 453 3255	1 (2) 3 4	Hard Copy + Spreadsheet	NY	GW
PERCENT DISCOUNT	**20. RUSH MULTIPLIER**	**21. DISKETTE REQUIRED?**	**22. DISKETTE FORMAT?**		
—	—	☐ YES ☒ NO			

23. CLIENT SAMPLE ID	24. LAB ID	25. DATE AND TIME	26. MATRIX	27. PARAMETER/METHOD/PRES.	28. BOTTLE TYPE & NO.	29. NET PRICE
EST-6	990693A-01	3/31/99 0930	WA	permanent gases + CO_2	3x40 amber	[illegible]
EST-7	-02	1015				
DUP-1	-03	1015				
MW-7D	-04	1130				
MW-12	-05	215				
MW-8S	-06	345				

30. SAMPLES RELINQUISHED BY (SIGNATURE)	31. DATE AND TIME	32. SAMPLES RECEIVED BY (SIGNATURE)	33. DATE AND TIME	34. REMARKS ON SAMPLE RECEIPT
	4/1/99 16:20			☐ Bottle Intact ☐ Custody Seals ☐ Preserved ☐ Seals Intact ☐ Chilled ☐ See Remarks
SAMPLES RELINQUISHED BY (SIGNATURE)	DATE AND TIME	SAMPLES RECEIVED BY (SIGNATURE)	DATE AND TIME	REMARKS ON SAMPLE RECEIPT
			4-3-99 1200	☐ Bottle Intact ☐ Custody Seals ☐ Preserved ☐ Seals Intact ☐ Chilled ☐ See Remarks

35. SPECIAL INSTRUCTIONS?/REMARKS (ATTACH SEPARATE SHEET IF NECESSARY)

1 additional sample to arrive 4/6/99

analyze all samples for ethane, ethene + CO_2

SHIPPING INSTRUCTIONS

36. SHIP TO
Mercadep
220 William Pitt Way
Pittsburgh, PA 15238

37. SHIP DATE 4/1/99

(Circle One)
Economy Standard Priority 1 Saturday Delivery

REPORTING INSTRUCTIONS

BILL TO
STL-CT

39. REPORT TO

40. TOTAL NUMBER OF COPIES 1

41. USE FOR REPORTING? CLIENT OR LAB ID'S

APPROVALS

INITIATOR APPROVAL — DATE
Stephanie N Plumstead 4/1/99

42. RECEIVING LAB APPROVAL — DATE

44. SENDING LABORATORY

45. RECEIVING LABORATORY

STL
Committed To Your Success

7764 10-

SEVERN TRENT LABORATORIES
SUBCONTRACTING REQUISITION FORM

PAGE 1 OF 1

. PROJECT INFORMATION

1. P.O. NUMBER	2. VERBAL DUE DATE	3. FAX DUE DATE	4. HARDCOPY DUE DATE
CT 7758	—	—	4/22/99
INTERNAL PROJECT NUMBER	6. SDG COMPLETE?	7. PENALTY JOB?	8. SDG #
7099-0693A	X YES ☐ NO	☐ YES X NO	A0693
9. REGULATORY METHODS	10. QC BILLABLE?	11. VTSR DATE	12. REQUIRED CERTIFICATIONS? IF YES, LIST
AM15+AM10	☐ YES X NO	4/2/99	
15. EA PROJECT MANAGER	16. TELEPHONE NO.	17. REPORTING LEVEL REQUIRED	18. REPORTING FORMAT?
S. Plunkett	412 788	1 2 3 4	Chromatograms
19. PERCENT DISCOUNT	20. RUSH MULTIPLIER	21. DISKETTE REQUIRED?	22. DISKETTE FORMAT?
—	—	☐ YES X NO	

13. CERT. AGENCY	14. CATEGORY
NY	GW

23. CLIENT SAMPLE ID	24. LAB ID	25. DATE AND TIME	26. MATRIX	27. PARAMETER/METHOD/PRES.	28. BOTTLE TYPE & NO.	29. NET PRICE
MW-8D	[redacted]	4/1/99 0822	WA	AM15+AM-10*	3x amber opt	[redacted]
~~EBSE~~						

31. SAMPLES RELINQUISHED BY (SIGNATURE)	31. DATE AND TIME	32. SAMPLES RECEIVED BY (SIGNATURE)	33. DATE AND TIME	34. REMARKS ON SAMPLE RECEIPT
[signature]	4/5/99 1700	Brian Gaillot	4-6-99 1035	☐ Bottle Intact ☐ Custody Seals ☐ Preserved ☐ Seals Intact ☐ Chilled ☐ See Remarks
SAMPLES RELINQUISHED BY (SIGNATURE)	DATE AND TIME	SAMPLES RECEIVED BY (SIGNATURE)	DATE AND TIME	REMARKS ON SAMPLE RECEIPT ☐ Bottle Intact ☐ Custody Seals ☐ Preserved ☐ Seals Intact ☐ Chilled ☐ See Remarks

35. SPECIAL INSTRUCTIONS?/REMARKS (ATTACH SEPARATE SHEET IF NECESSARY)

*please analyze for ethane, ethene & CO_2

. SHIPPING INSTRUCTIONS

36. SHIP TO
Microseeps
220 William Pitt Way
Pittsburgh, PA 15238

37. SHIP DATE 4/5/99

(Circle One)
Economy Standard (Priority 1) Saturday Delivery

. REPORTING INSTRUCTIONS

38. BILL TO
STL-CT

39. REPORT TO

40. TOTAL NUMBER OF COPIES

41. USE FOR REPORTING? CLIENT OR LAB ID'S

D. APPROVALS

42. INITIATOR APPROVAL DATE

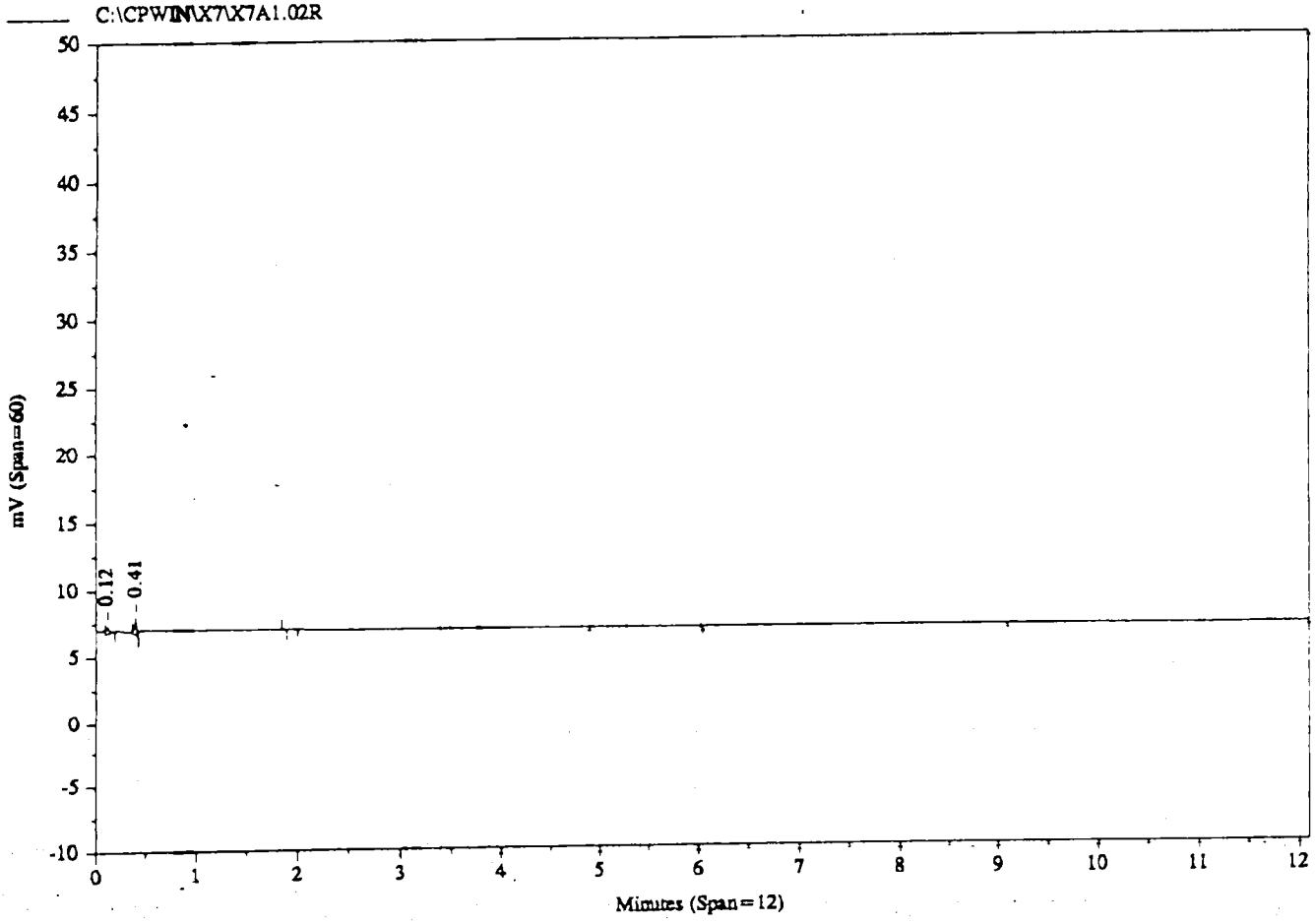
44. SENDING LABORATORY

43. RECEIVING LAB APPROVAL DATE

45. RECEIVING LABORATORY

HE IN LOOP

C:\CPWIN\X7\X7A1.02R



Sample Name: **HE IN LOOP**
Acquired from Biorem-2--FID via port 1 on 4/7/99 09:08:22 by RCW
Light Hydrocarbons by FID

Data File: C:\CPWIN\X7\X7A1.02R
Date Stamp: 4/7/99 09:08:22
Sequence File: X7A.SEQ #102
Method File: C:\CPWIN\X7\X7AWLH1.MET
Version 2. Date Stamp: 3/31/99 13:18:24
Calibration File: C:\CPWIN\X7\X7AWLH2.CAL
Version 7. Date Stamp: 3/31/99 13:09:10

Run Time = 13.1 min Sample Rate = 3.0 per sec.
Amount Inj. = 0.000 Dilution Factor = 0.000
Sample Weight = 0.000 Int Std Amount = 0.000

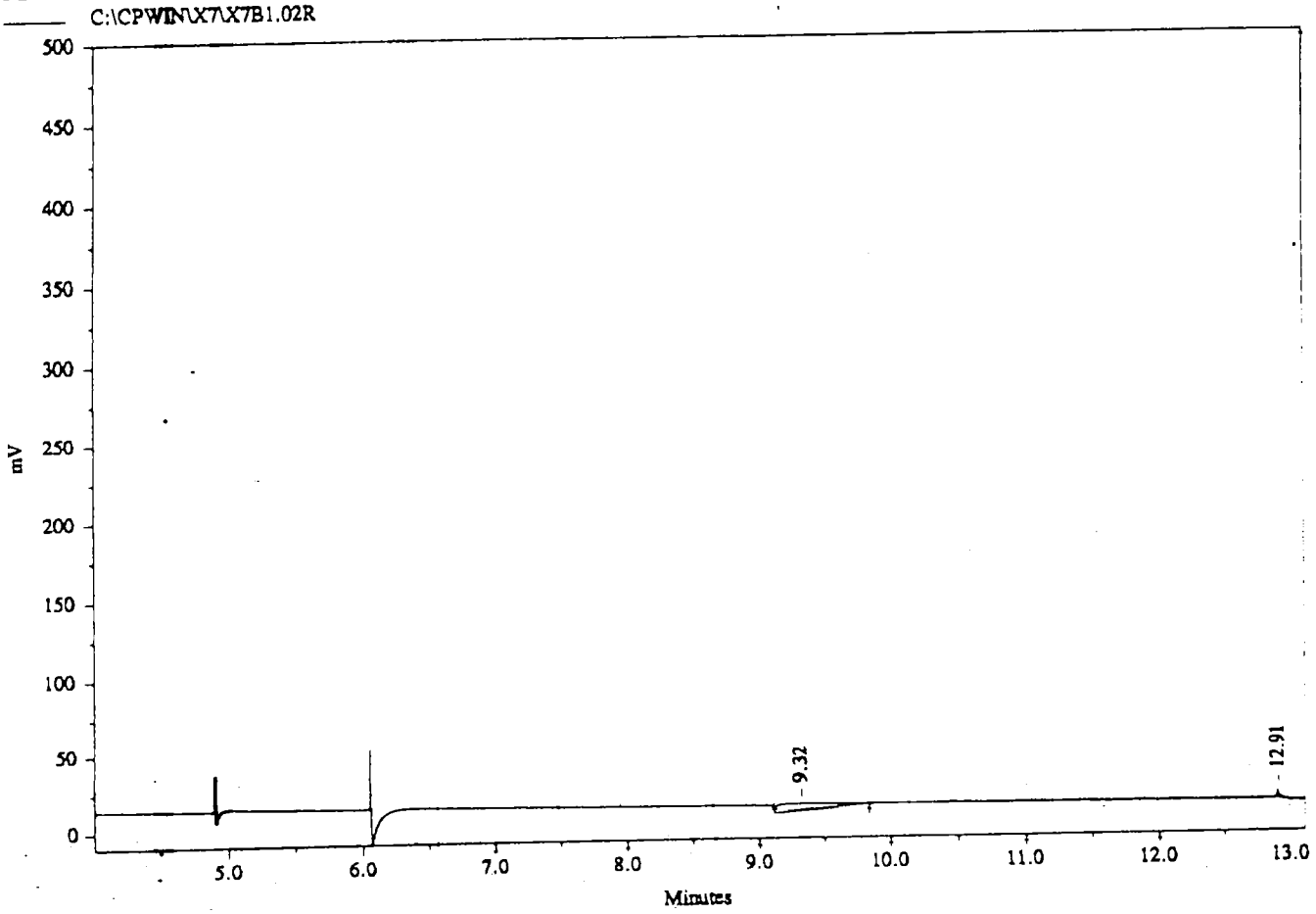
Starting Peak Width = 0.04 min. Peak Threshold = 1 Area Reject = 100

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	0.117		41.8784	38.243	1158.7	38.243	BB	0.034	562.87	30.010
2	0.405		67.6290	61.757	1871.1	61.757	BB	0.024	1312.73	69.990

Total Area = 3029.8, Total Amount = 109.507, Total Height = 1875.6, Sample Units = ug,ng,ng/l

HE IN LOOP

C:\CPWIN\X7\X7B1.02R



Sample Name: **HE IN LOOP**
Acquired from Biorem-2--TCD via port 2 on 4/7/99 09:08:23 by BJM
Permenant Gases by TCD

Data File: C:\CPWIN\X7\X7B1.02R
Date Stamp: 4/7/99 09:08:22
Sequence File: X7B.SEQ #102
Method File: C:\CPWIN\X7\X7BWPG1.MET
Version 2. Date Stamp: 3/30/99 11:52:46
Calibration File: C:\CPWIN\X7\X7BWPG1.CAL
Version 2. Date Stamp: 3/30/99 11:55:10

Run Time = 13.1 min Sample Rate = 3.0 per sec.
Amount Inj. = 0.000 Dilution Factor = 0.000
Sample Weight = 0.000 Int Std Amount = 0.000

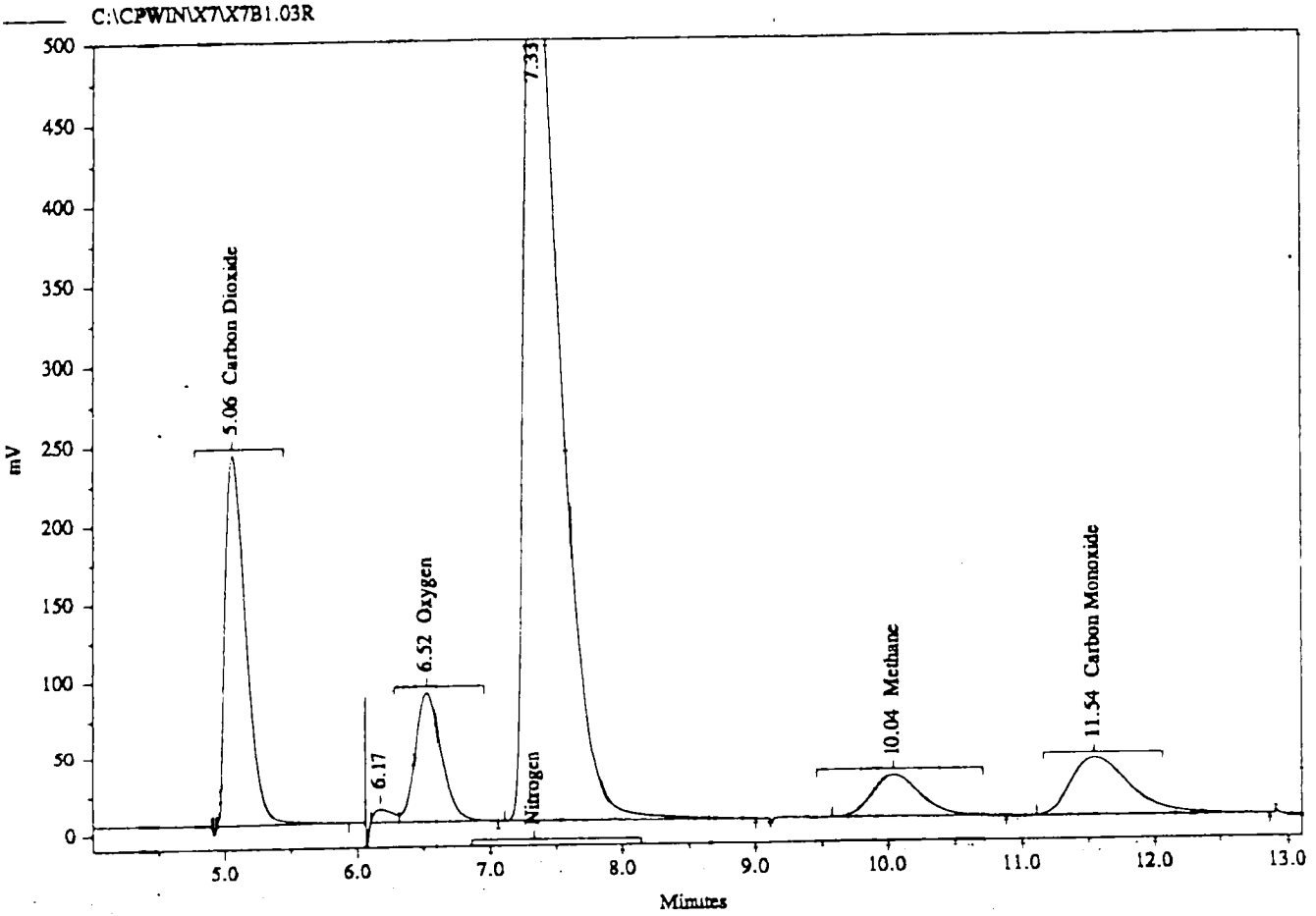
Starting Peak Width = 0.1 min. Peak Threshold = 1 Area Reject = 100

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	9.321		6.8579	96.837	130002.2	96.837	BB	0.487	4447.81	45.825
2	12.906		0.2240	3.163	4246.0	3.163	BB	0.013	5258.37	54.175

Total Area = 134248.2, Total Amount = 7.082, Total Height = 9706.18, Sample Units = mg/l

PG040799A

C:\CPWIN\X7\X7B1.03R



Sample Name: **PG040799A**
Acquired from Biorem-2--TCD via port 2 on 4/7/99 09:23:06 by BJM
Permenant Gases by TCD

Data File: C:\CPWIN\X7\X7B1.03R
Date Stamp: 4/7/99 09:23:06
Sequence File: X7B.SEQ #103
Method File: C:\CPWIN\X7\X7BWPG1.MET
Version 2. Date Stamp: 3/30/99 11:52:46
Calibration File: C:\CPWIN\X7\X7BWPG1.CAL
Version 2. Date Stamp: 3/30/99 11:55:10

Run Time = 13.1 min Sample Rate = 3.0 per sec.
Amount Inj. = 0.000 Dilution Factor = 0.000
Sample Weight = 0.000 Int Std Amount = 0.000

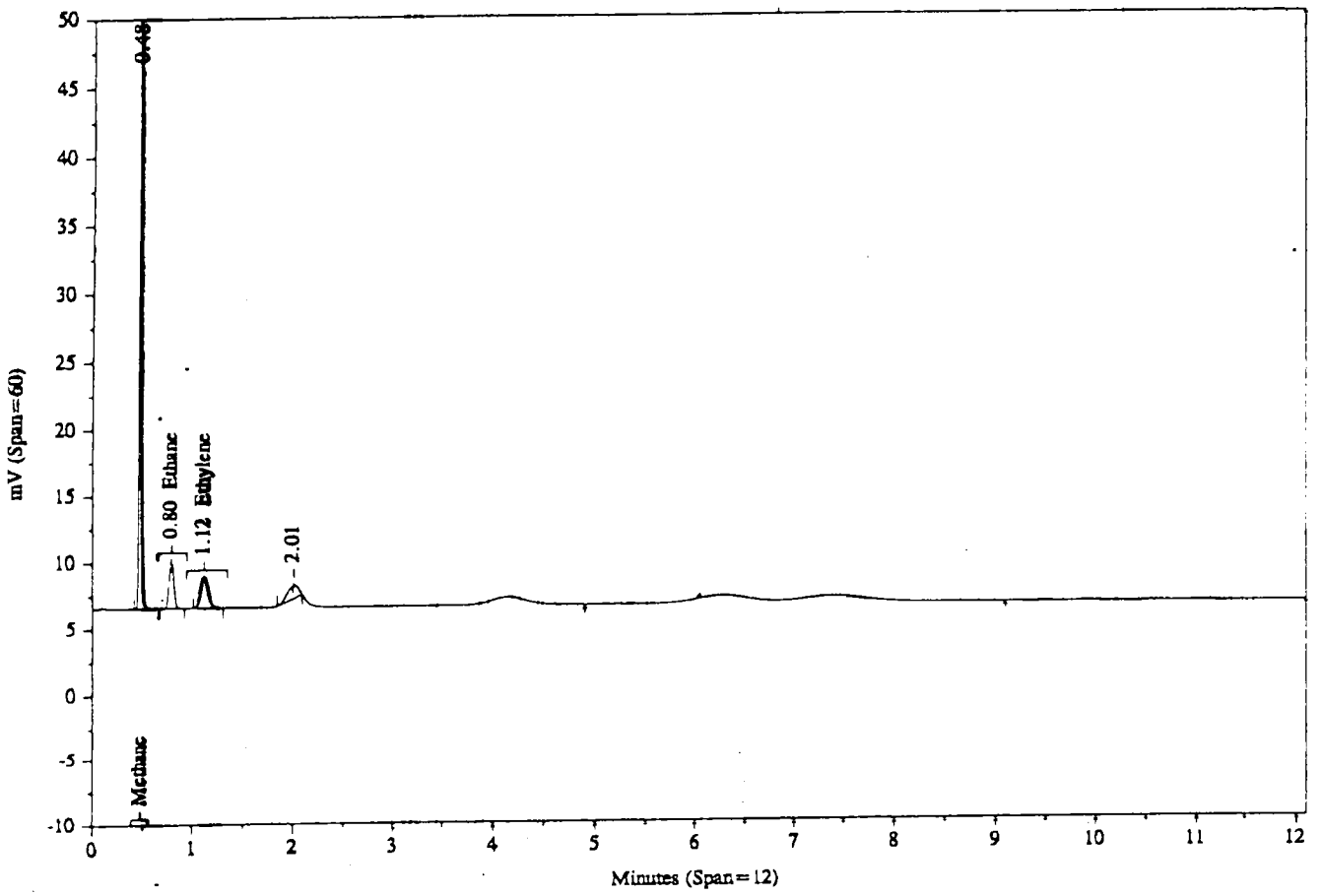
Starting Peak Width = 0.1 min. Peak Threshold = 1 Area Reject = 100
* Some peaks have been manually integrated.

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	5.058	Carbon Dioxide	138.8966	46.202	2633000.0	15.835	BB	0.184	238763.30	24.010
2	6.174		4.3259	1.439	82004.1	0.493	BV	0.165	8298.43	0.834
3	6.524	Oxygen	15.1682	5.046	1134309.0	6.822	VB	0.225	84169.91	8.464
4	7.333	Nitrogen	122.1587	40.635	10979550.0	66.033	BB	0.305	599955.20	60.332
5	10.044	Methane	5.2341	1.741	656552.1	3.949	BB	0.417	26243.40	2.639
6	11.543	Carbon Monoxide	14.8432	4.937	1141952.0	6.868	BB	0.514	36996.91	3.720

Total Area = 16627360.0, Total Amount = 300.627, Total Height = 994427.1, Sample Units = mg/l
* Some peaks have been manually integrated.

LH022299

C:\CPWIN\X7\X7A1.04R



Sample Name: LH022299
Acquired from Biorem-2--FID via port 1 on 4/7/99 09:37:17 by RCW
Light Hydrocarbons by FID

Data File: C:\CPWIN\X7\X7A1.04R
Date Stamp: 4/7/99 09:37:16
Sequence File: X7A.SEQ #104
Method File: C:\CPWIN\X7\X7AWLH1.MET
Version 2. Date Stamp: 3/31/99 13:18:24
Calibration File: C:\CPWIN\X7\X7AWLH2.CAL
Version 7. Date Stamp: 3/31/99 13:09:10

Run Time = 13.1 min Sample Rate = 3.0 per sec.
Amount Inj. = 0.000 Dilution Factor = 0.000
Sample Weight = 0.000 Int Std Amount = 0.000

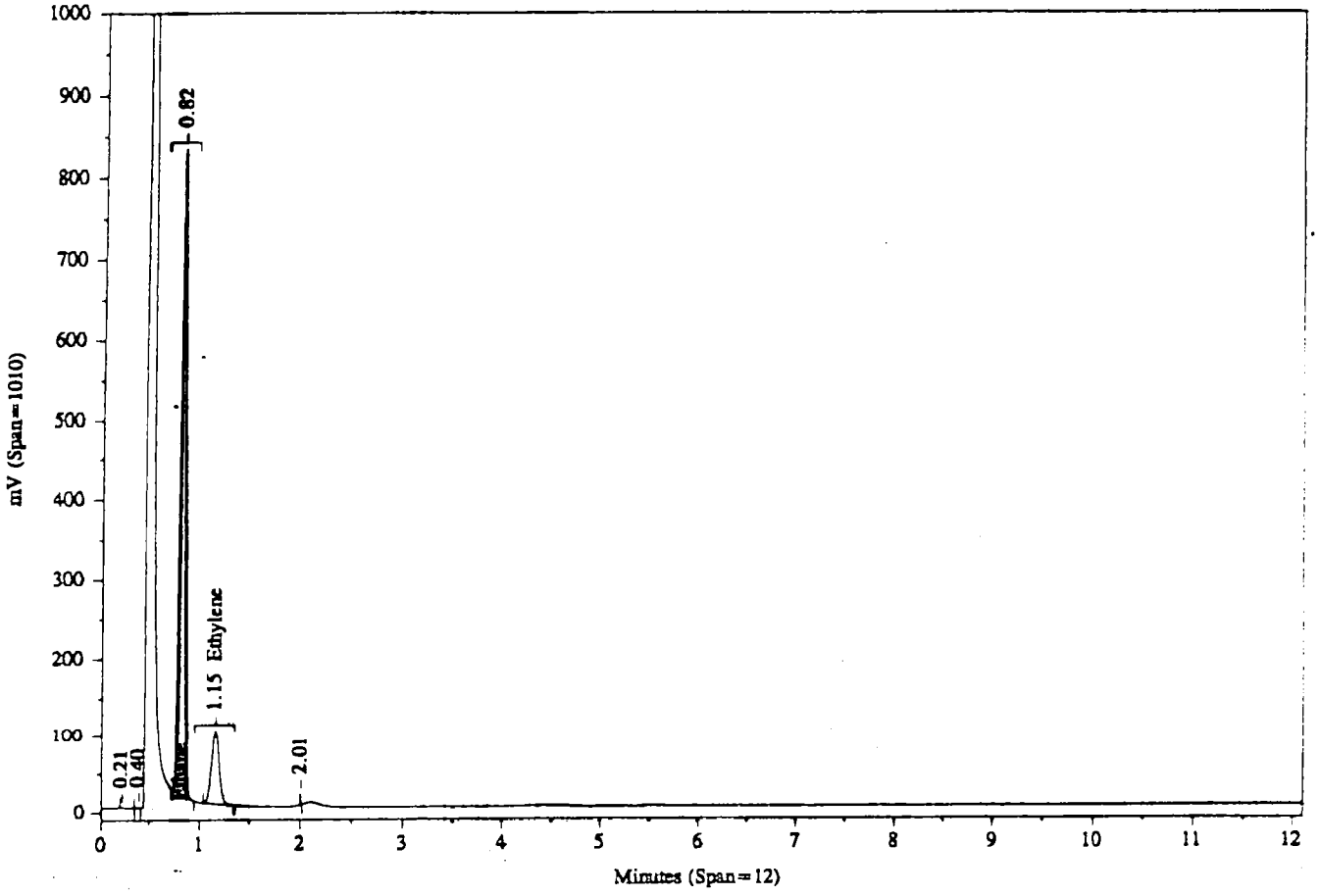
Starting Peak Width = 0.04 min. Peak Threshold = 1 Area Reject = 100
* Some peaks have been manually integrated.

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	0.478	Methane	2.4004	0.195	72243.5	69.273	BB	0.024	49600.58	87.227
2	0.798	Ethane	445.9564	36.296	12338.5	11.831	BB	0.055	3710.94	6.526
3	1.119	Ethylene	516.7096	42.054	12412.7	11.902	BB	0.087	2387.11	4.198
4	2.013		263.6110	21.455	7293.4	6.994	BB	0.104	1164.92	2.049

Total Area = 104288.1, Total Amount = 1228.677, Total Height = 56863.55, Sample Units = ug,ng,ng/l
* Some peaks have been manually integrated.

ST35 ESI-6

C:\CPWIN\X7\X7A1.07R



Sample Name: **ST35 ESI-6**
Acquired from Biorem-2--FID via port 1 on 4/7/99 10:20:54 by RCW
Light Hydrocarbons by FID

Data File: **C:\CPWIN\X7\X7A1.07R**
Date Stamp: 4/7/99 10:20:54
Sequence File: X7A.SEQ #107
Method File: C:\CPWIN\X7\X7AWLH1.MET
Version 2. Date Stamp: 3/31/99 13:18:24
Calibration File: C:\CPWIN\X7\X7AWLH2.CAL
Version 7. Date Stamp: 3/31/99 13:09:10

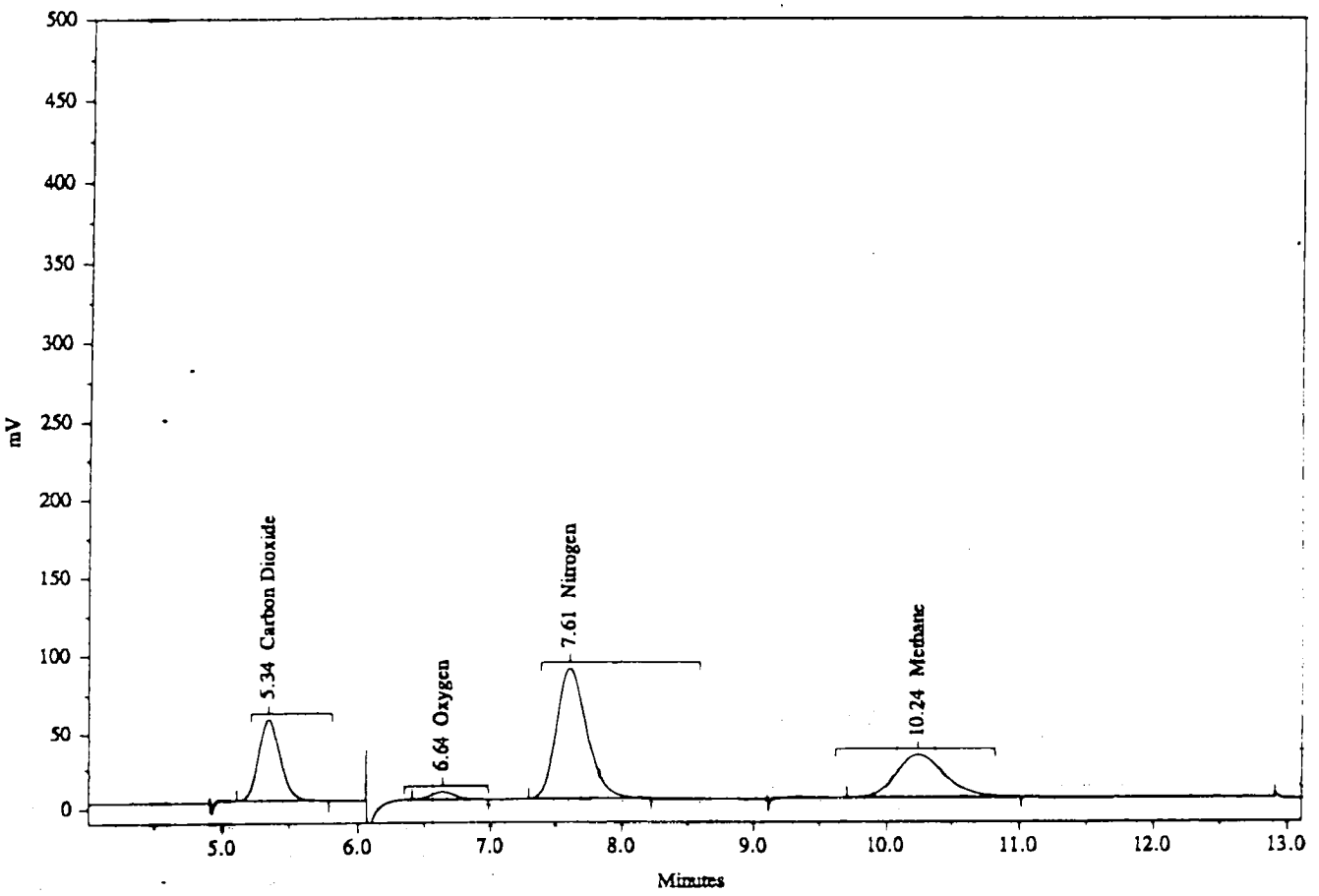
Run Time = 13.1 min Sample Rate = 3.0 per sec.
Amount Inj. = 0.000 Dilution Factor = 0.000
Sample Weight = 0.000 Int Std Amount = 0.000

Starting Peak Width = 0.04 min. Peak Threshold = 1 Area Reject = 100

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	0.215		15.0103	0.013	415.3	0.013	BB	0.085	81.45	0.009
2	0.400		51.0035	0.044	1411.1	0.045	BB	0.022	1082.88	0.117
3	0.816	Ethane	95311.8900	81.734	2637037.0	83.727	BB	0.054	813544.90	88.041
4	1.155	Ethylene	21068.5400	18.067	506119.3	16.069	BB	0.087	96682.80	10.463
5	2.006		166.0860	0.142	4595.2	0.146	BB	0.006	12657.36	1.370

Total Area = 3149578.0, Total Amount = 116612.5, Total Height = 924049.4, Sample Units = ug,ng,ng/l

ST35 ESI-6
C:\CPWIN\X7\X7B1.07R



Sample Name: **ST35 ESI-6**
Acquired from Biorem-2--TCD via port 2 on 4/7/99 10:20:54 by BJM
Permenant Gases by TCD

Data File: **C:\CPWIN\X7\X7B1.07R**
Date Stamp: 4/7/99 10:20:54
Sequence File: X7B.SEQ #107
Method File: **C:\CPWIN\X7\X7BWPG1.MET**
Version 2. Date Stamp: 3/30/99 11:52:46
Calibration File: C:\CPWIN\X7\X7BWPG1.CAL
Version 2. Date Stamp: 3/30/99 11:55:10

Run Time = 13.1 min Sample Rate = 3.0 per sec.
Amount Inj. = 0.000 Dilution Factor = 0.000
Sample Weight = 0.000 Int Std Amount = 0.000

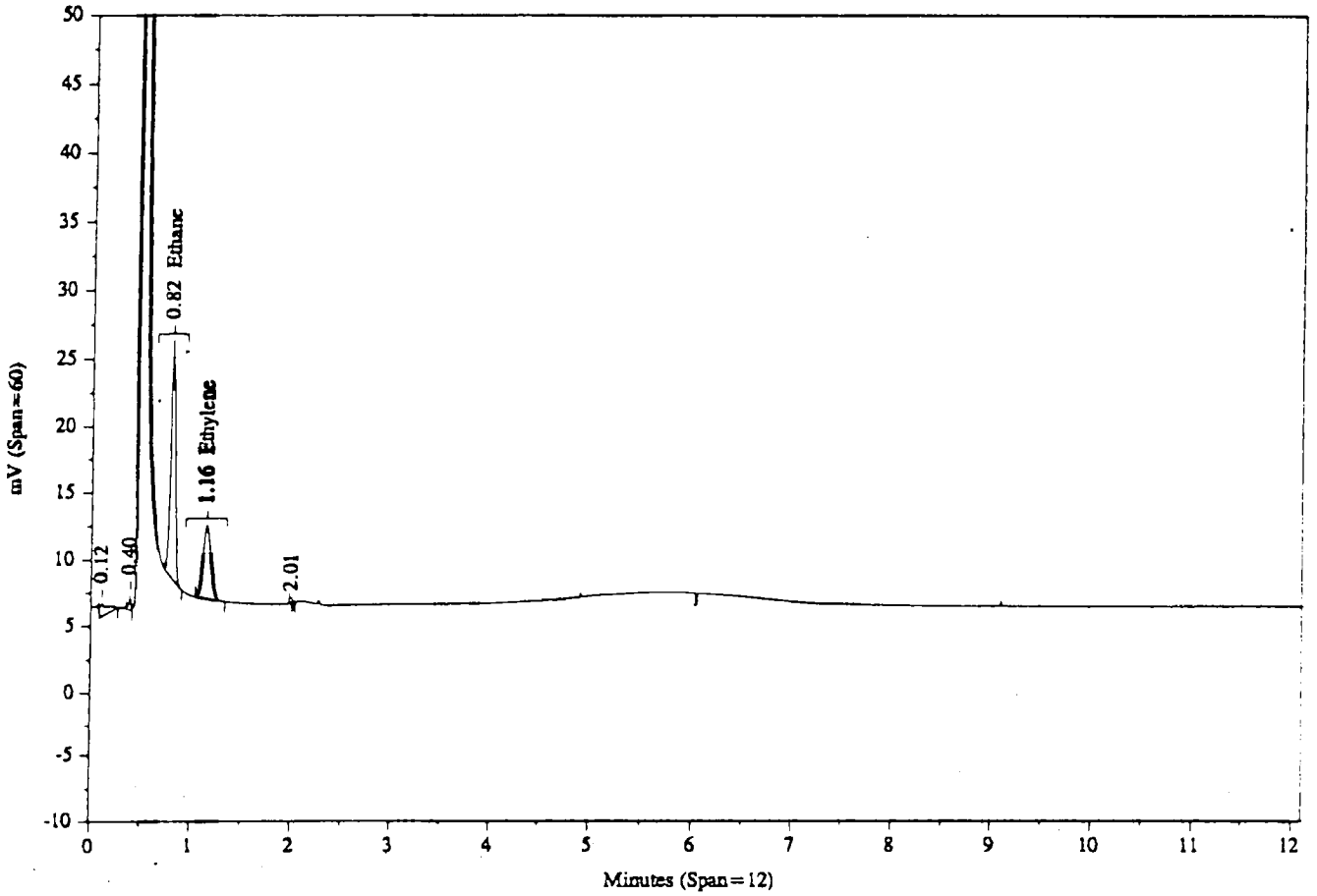
Starting Peak Width = 0.1 min. Peak Threshold = 1 Area Reject = 100
* Some peaks have been manually integrated.

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	5.343	Carbon Dioxide	31.3443	59.477	594180.2	22.031	BB	0.183	54081.91	31.595
2	6.638	Oxygen	0.7545	1.432	56422.8	2.092	BB	0.204	4606.01	2.691
3	7.606	Nitrogen	15.1217	28.694	1359128.0	50.393	BB	0.265	85479.09	49.938
4	10.240	Methane	5.4794	10.397	687321.0	25.484	BB	0.424	27003.66	15.776

Total Area = 2697052.0, Total Amount = 52.7, Total Height = 171170.7, Sample Units = mg/l
* Some peaks have been manually integrated,

ST35 ESI-7

C:\CPWIN\X7\X7A1.08R



Sample Name: **ST35 ESI-7**
Acquired from Biorem-2--FID via port 1 on 4/7/99 10:34:57 by RCW
Light Hydrocarbons by FID

Data File: **C:\CPWIN\X7\X7A1.08R**
Date Stamp: 4/7/99 10:34:56
Sequence File: X7A.SEQ #108
Method File: C:\CPWIN\X7\X7AWLH1.MET
Version 2. Date Stamp: 3/31/99 13:18:24
Calibration File: C:\CPWIN\X7\X7AWLH2.CAL
Version 7. Date Stamp: 3/31/99 13:09:10

Run Time = 13.1 min Sample Rate = 3.0 per sec.
Amount Inj. = 0.000 Dilution Factor = 0.000
Sample Weight = 0.000 Int Std Amount = 0.000

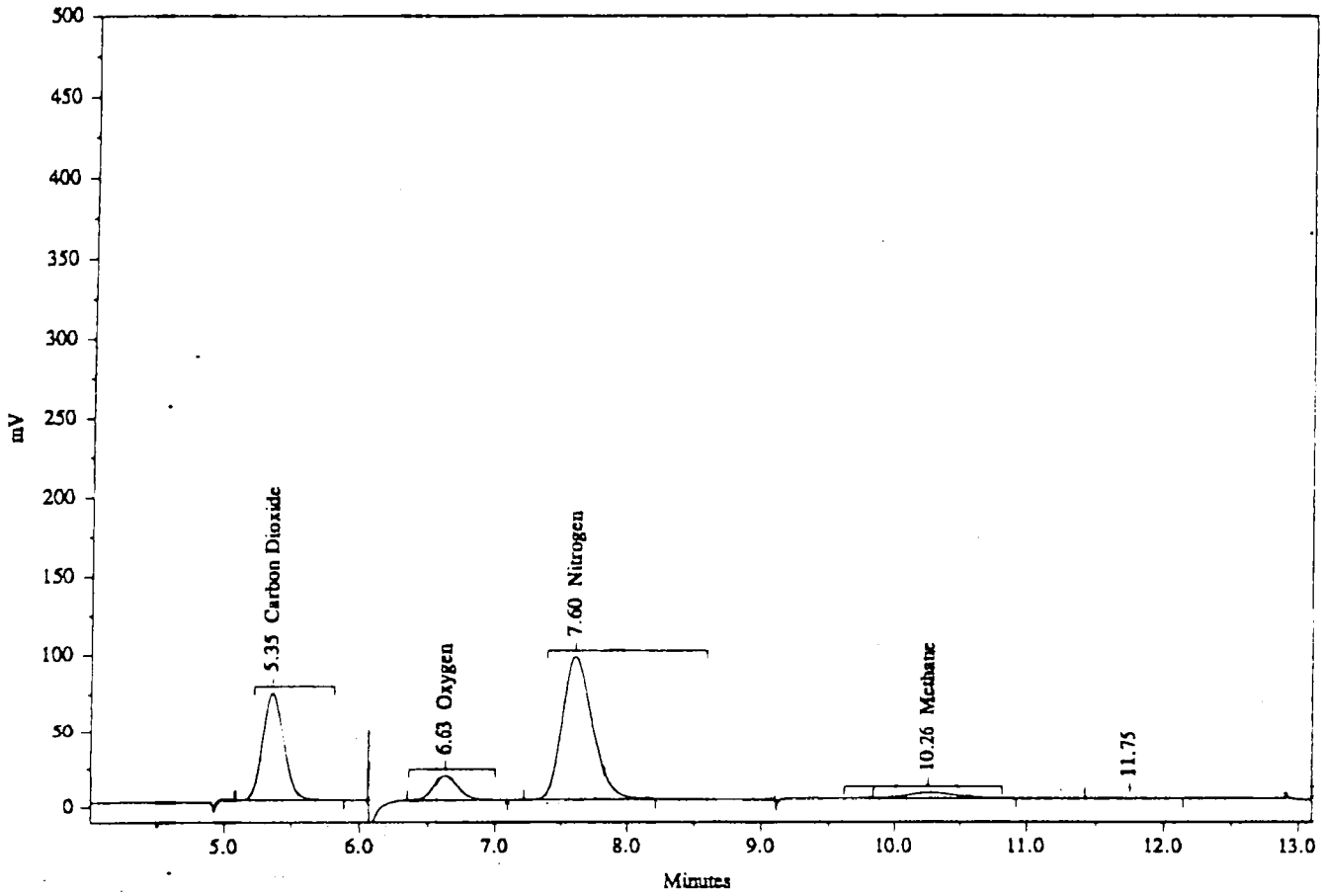
Starting Peak Width = 0.04 min. Peak Threshold = 1 Area Reject = 100

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	0.123		194.5034	5.388	5381.4	5.639	BB	0.093	961.12	3.890
2	0.399		51.8916	1.438	1435.7	1.505	BB	0.022	1084.13	4.388
3	0.815	Ethane	2137.4690	59.214	59138.3	61.973	BB	0.055	17806.91	72.074
4	1.156	Ethylene	1219.8800	33.794	29304.6	30.709	BB	0.088	5548.54	22.458
5	2.011		6.0070	0.166	166.2	0.174	N	-0.004	-694.43	2.811

Total Area = 95426.2, Total Amount = 3609.751, Total Height = 24706.26, Sample Units = ug,ng,ng/l

ST35 ESI-7

C:\CPWIN\X7\X7B1.08R



Sample Name: **ST35 ESI-7**
Acquired from Biorem-2--TCD via port 2 on 4/7/99 10:34:57 by BJM
Permenant Gases by TCD

Data File: **C:\CPWIN\X7\X7B1.08R**
Date Stamp: 4/7/99 10:34:56
Sequence File: **X7B.SEQ #108**
Method File: **C:\CPWIN\X7\X7BWPG1.MET**
Version 2. Date Stamp: 3/30/99 11:52:46
Calibration File: C:\CPWIN\X7\X7BWPG1.CAL
Version 2. Date Stamp: 3/30/99 11:55:10

Run Time = 13.1 min Sample Rate = 3.0 per sec.
Amount Inj. = 0.000 Dilution Factor = 0.000
Sample Weight = 0.000 Int Std Amount = 0.000

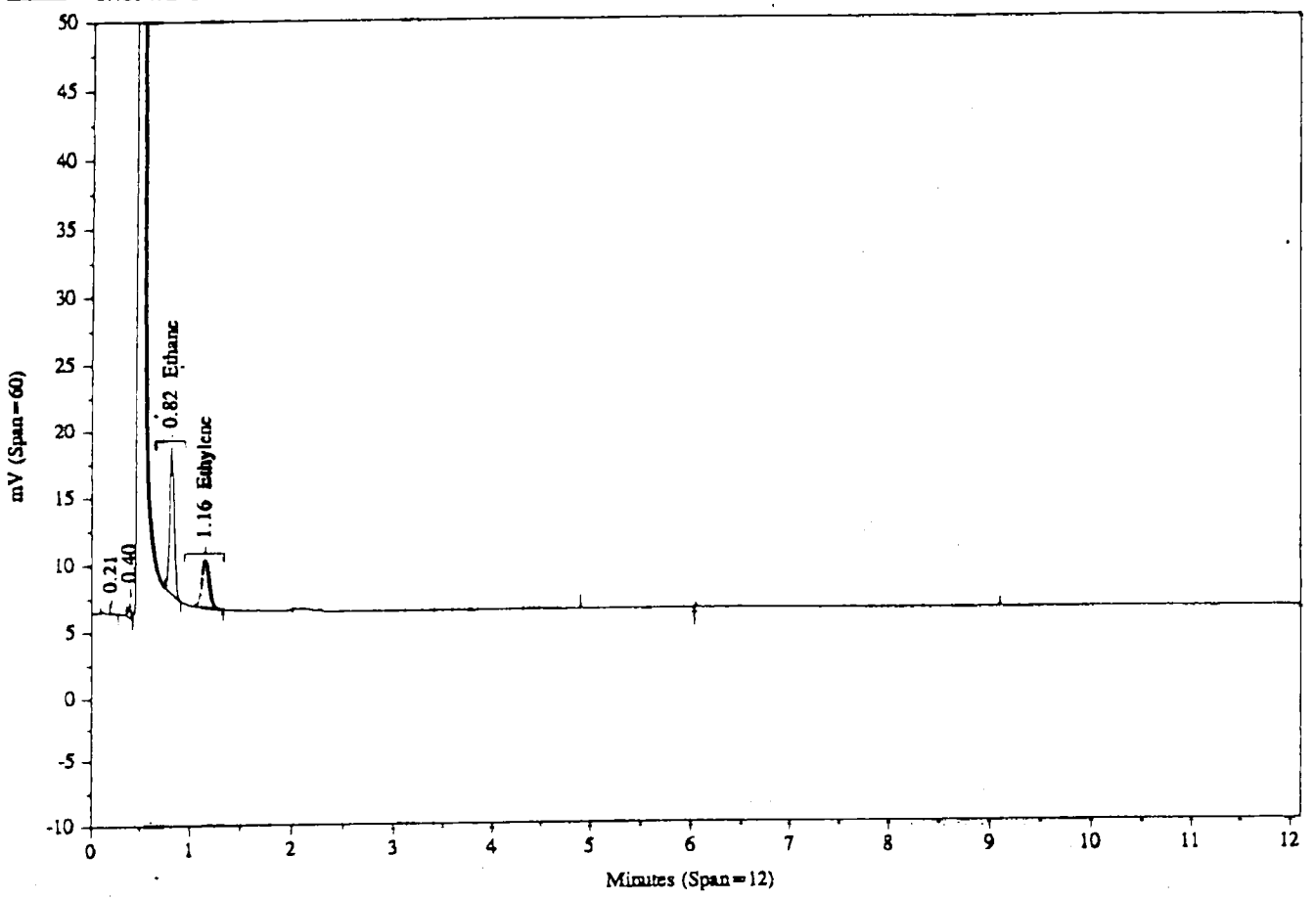
Starting Peak Width = 0.1 min. Peak Threshold = 1 Area Reject = 100
* Some peaks have been manually integrated.

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	5.349	Carbon Dioxide	41.5080	67.203	786847.9	30.487	BB	0.184	71327.86	38.531
2	6.627	Oxygen	2.6812	4.341	200505.0	7.769	BB	0.209	16004.69	8.646
3	7.604	Nitrogen	16.6494	26.956	1496436.0	57.981	BB	0.266	93926.44	50.739
4	10.256	Methane	0.7470	1.209	93705.3	3.631	BB	0.422	3699.31	1.998
5	11.749		0.1796	0.291	3404.8	0.132	BB	0.360	157.81	0.085

Total Area = 2580899.0, Total Amount = 61.765, Total Height = 185116.1, Sample Units = mg/l
* Some peaks have been manually integrated.

ST35 DUP-1

C:\CPWIN\X7\X7A1.09R



Sample Name: **ST35 DUP-1**
Acquired from Biorem-2--FID via port 1 on 4/7/99 10:48:36 by RCW
Light Hydrocarbons by FID

Data File: **C:\CPWIN\X7\X7A1.09R**
Date Stamp: 4/7/99 10:48:36
Sequence File: X7A.SEQ #109
Method File: C:\CPWIN\X7\X7AWLH1.MET
Version 2. Date Stamp: 3/31/99 13:18:24
Calibration File: C:\CPWIN\X7\X7AWLH2.CAL
Version 7. Date Stamp: 3/31/99 13:09:10

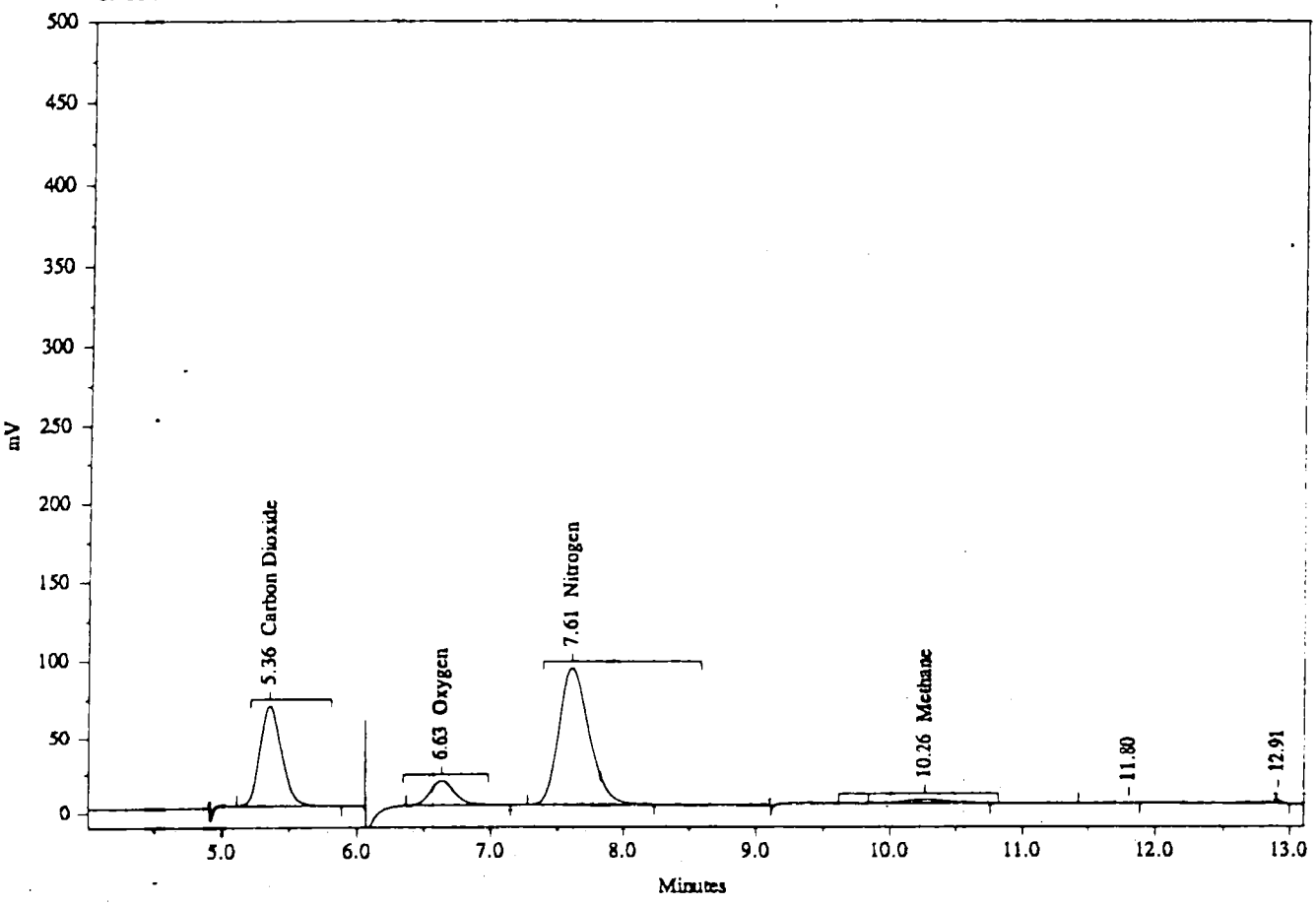
Run Time = 13.1 min Sample Rate = 3.0 per sec.
Amount Inj. = 0.000 Dilution Factor = 0.000
Sample Weight = 0.000 Int Std Amount = 0.000

Starting Peak Width = 0.04 min. Peak Threshold = 1 Area Reject = 100

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	0.213		8.0492	0.373	222.7	0.392	BB	0.053	70.06	0.448
2	0.402		57.5132	2.665	1591.2	2.799	BB	0.024	1092.79	6.990
3	0.816	Ethane	1310.1160	60.714	36247.5	63.759	BB	0.055	10916.22	69.826
4	1.156	Ethylene	782.1624	36.247	18789.5	33.050	BB	0.088	3554.37	22.736

Total Area = 56851.0, Total Amount = 2157.84, Total Height = 15633.43, Sample Units = ug,ng,ug/l

ST35 DUP-1
C:\CPWIN\X7\X7B1.09R



Sample Name: ST35 DUP-1
Acquired from Biorem-2--TCD via port 2 on 4/7/99 10:48:37 by BJM
Permenant Gases by TCD

Data File: C:\CPWIN\X7\X7B1.09R
Date Stamp: 4/7/99 10:48:36
Sequence File: X7B.SEQ #109
Method File: C:\CPWIN\X7\X7BWPG1.MET
Version 2. Date Stamp: 3/30/99 11:52:46
Calibration File: C:\CPWIN\X7\X7BWPG1.CAL
Version 2. Date Stamp: 3/30/99 11:55:10

Run Time = 13.1 min Sample Rate = 3.0 per sec.
Amount Inj. = 0.000 Dilution Factor = 0.000
Sample Weight = 0.000 Int Std Amount = 0.000

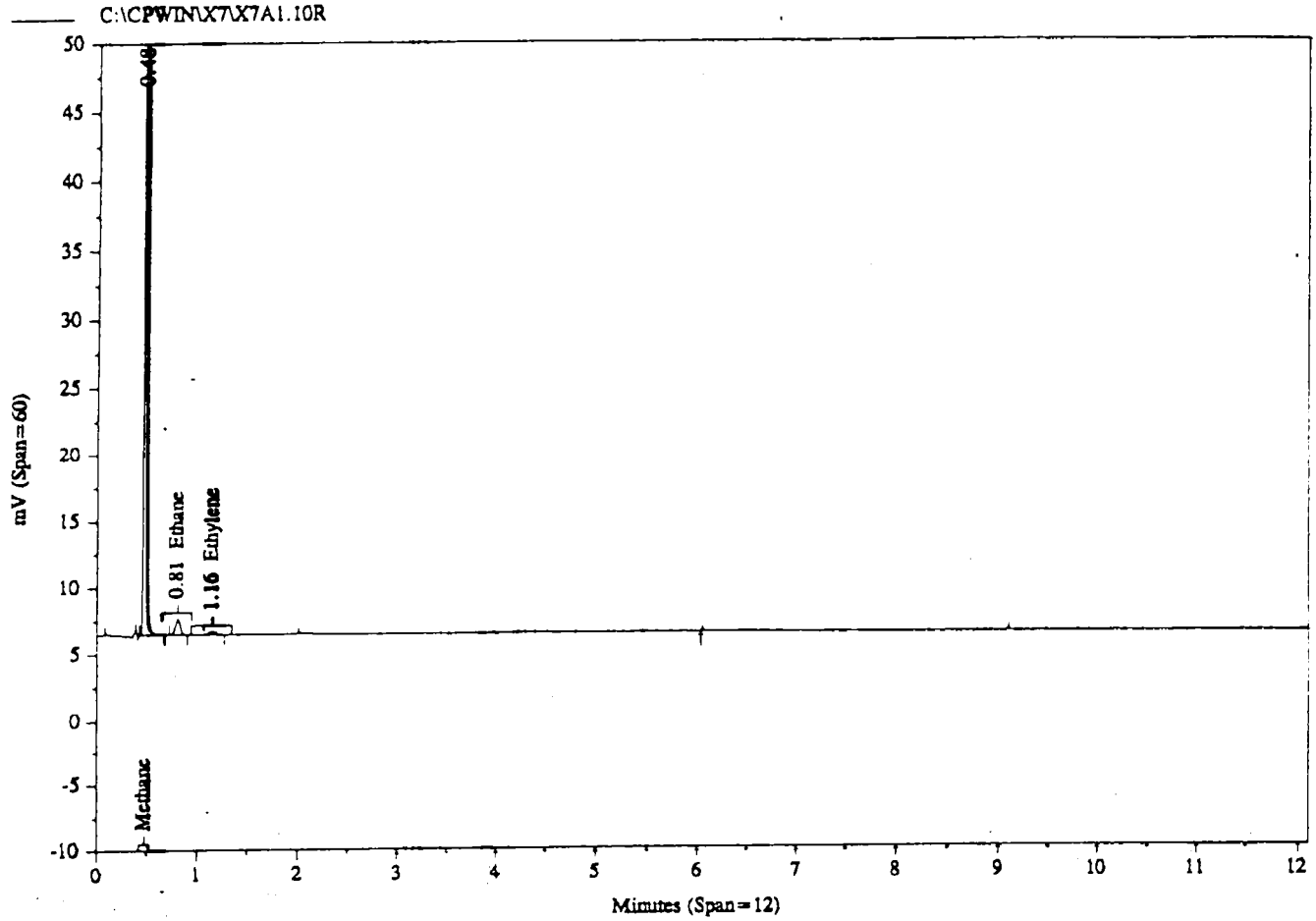
Starting Peak Width = 0.1 min. Peak Threshold = 1 Area Reject = 100
* Some peaks have been manually integrated.

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	5.356	Carbon Dioxide	38.6818	66.669	733273.5	30.268	BB	0.164	66491.18	36.774
2	6.633	Oxygen	2.6768	4.613	200174.1	8.263	BB	0.210	15922.05	8.806
3	7.609	Nitrogen	15.9130	27.426	1430247.0	59.037	BB	0.265	89964.92	49.756
4	10.262	Methane	0.4201	0.724	52697.9	2.175	BB	0.385	2279.28	1.261
5	11.804		0.0861	0.148	1631.3	0.067	BB	0.302	89.91	0.050
6	12.906		0.2431	0.419	4608.8	0.190	BB	0.013	6063.09	3.353

Total Area = 2422632.0, Total Amount = 58.021, Total Height = 180810.4, Sample Units = mg/l
* Some peaks have been manually integrated.

ST35 MW-7D

C:\CPWIN\X7\X7A1.10R



Sample Name: ST35 MW-7D
Acquired from Biorem-2--FID via port 1 on 4/7/99 11:02:15 by RCW
Light Hydrocarbons by FID

Data File: C:\CPWIN\X7\X7A1.10R
Date Stamp: 4/7/99 11:02:14
Sequence File: X7A.SEQ #110
Method File: C:\CPWIN\X7\X7AWLH1.MET
Version 2. Date Stamp: 3/31/99 13:18:24
Calibration File: C:\CPWIN\X7\X7AWLH2.CAL
Version 7. Date Stamp: 3/31/99 13:09:10

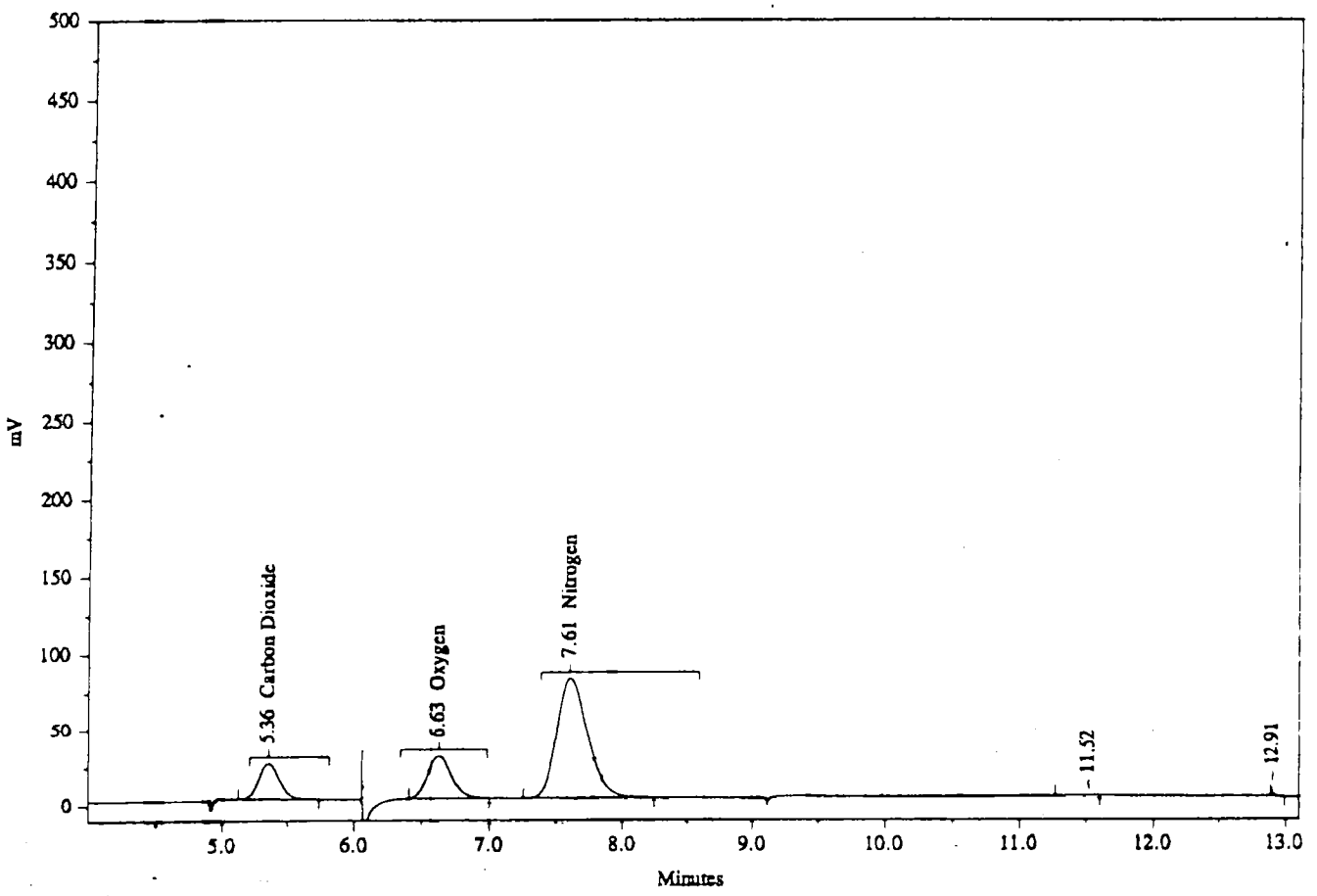
Run Time = 13.1 min Sample Rate = 3.0 per sec.
Amount Inj. = 0.000 Dilution Factor = 0.000
Sample Weight = 0.000 Int Std Amount = 0.000

Starting Peak Width = 0.04 min. Peak Threshold = 1 Area Reject = 100
* Some peaks have been manually integrated.

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	0.484	Methane	5.6810	2.824	170977.0	97.032	BB	0.022	129418.60	98.914
2	0.813	Ethane	146.5035	72.878	4056.1	2.302	BB	0.057	1186.26	0.907
3	1.156	Ethylene	48.8790	24.298	1174.2	0.666	BB	0.084	234.37	0.179

Total Area = 176207.3, Total Amount = 201.164, Total Height = 130839.3, Sample Units = ug,ng,ng/l
* Some peaks have been manually integrated.

ST35 MW-7D
C:\CPWIN\X7\X7B1.10R



Sample Name: **ST35 MW-7D**
Acquired from Biorem-2--TCD via port 2 on 4/7/99 11:02:15 by BJM
Permenant Gases by TCD

Data File: **C:\CPWIN\X7\X7B1.10R**
Date Stamp: 4/7/99 11:02:14
Sequence File: X7B.SEQ #110
Method File: C:\CPWIN\X7\X7BWPG1.MET
Version 2. Date Stamp: 3/30/99 11:52:46
Calibration File: C:\CPWIN\X7\X7BWPG1.CAL
Version 2. Date Stamp: 3/30/99 11:55:10

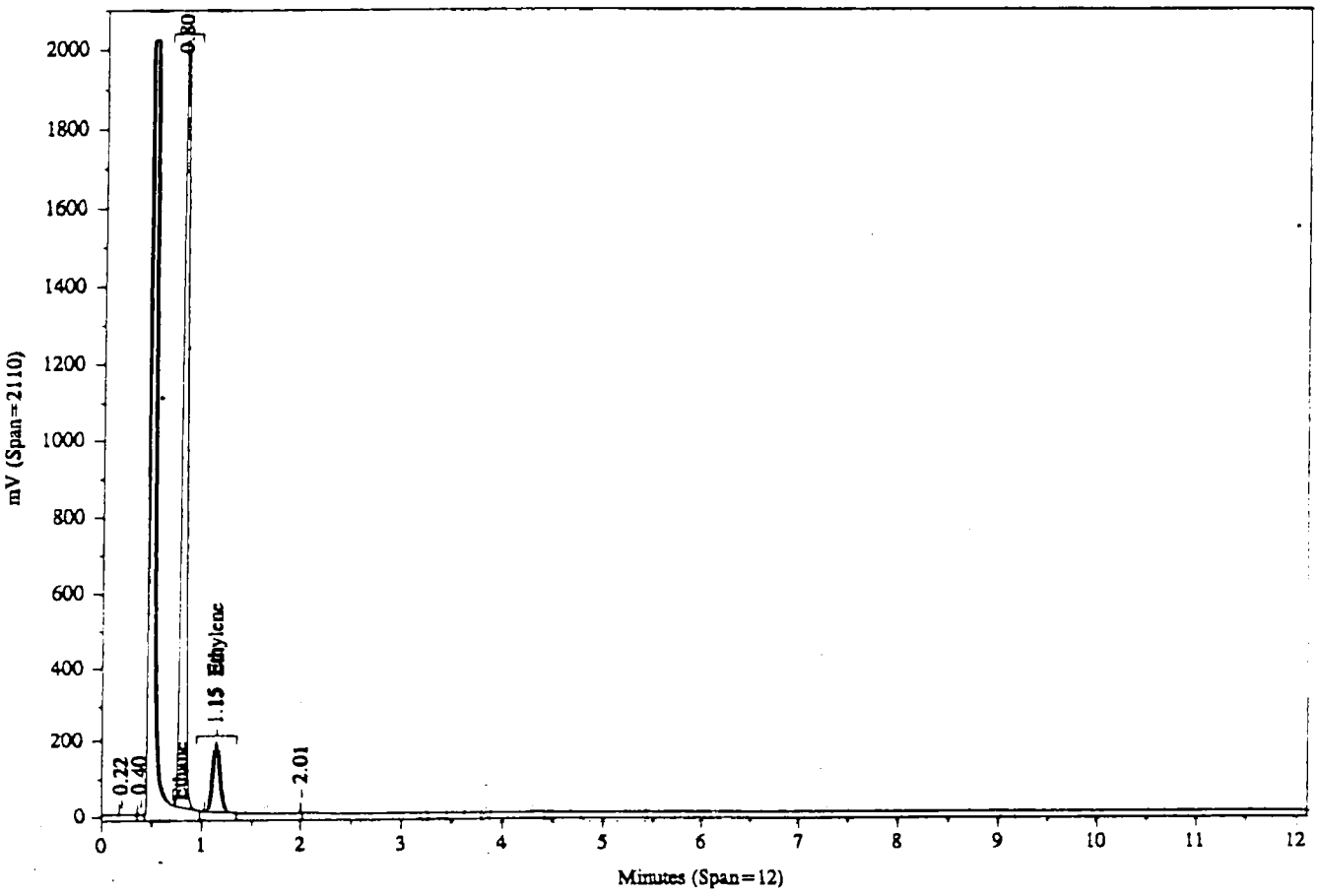
Run Time = 13.1 min Sample Rate = 3.0 per sec.
Amount Inj. = 0.000 Dilution Factor = 0.000
Sample Weight = 0.000 Int Std Amount = 0.000

Starting Peak Width = 0.1 min. Peak Threshold = 1 Area Reject = 100
* Some peaks have been manually integrated.

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	5.357	Carbon Dioxide	13.1908	41.278	250051.7	13.523	BB	0.181	23046.22	17.059
2	6.628	Oxygen	4.4949	14.066	336140.8	18.178	BB	0.205	27313.50	20.218
3	7.608	Nitrogen	13.9932	43.789	1257700.0	68.015	BB	0.265	79178.39	58.610
4	11.521		0.0514	0.161	974.8	0.053	BB	0.236	68.87	0.051
5	12.906		0.2253	0.705	4270.4	0.231	BB	0.013	5486.51	4.061

Total Area = 1849137.0, Total Amount = 31.956, Total Height = 135093.5, Sample Units = mg/l
* Some peaks have been manually integrated.

ST35 MW-12
C:\CPWIN\X7\X7A1.11R



Sample Name: **ST35 MW-12**
Acquired from Biorem-2--FID via port 1 on 4/7/99 11:15:58 by RCW
Light Hydrocarbons by FID

Data File: **C:\CPWIN\X7\X7A1.11R**
Date Stamp: 4/7/99 11:15:58
Sequence File: X7A.SEQ #111
Method File: C:\CPWIN\X7\X7AWLH1.MET
Version 2. Date Stamp: 3/31/99 13:18:24
Calibration File: C:\CPWIN\X7\X7AWLH2.CAL
Version 7. Date Stamp: 3/31/99 13:09:10

Run Time = 13.1 min Sample Rate = 3.0 per sec.
Amount Inj. = 0.000 Dilution Factor = 0.000
Sample Weight = 0.000 Int Std Amount = 0.000

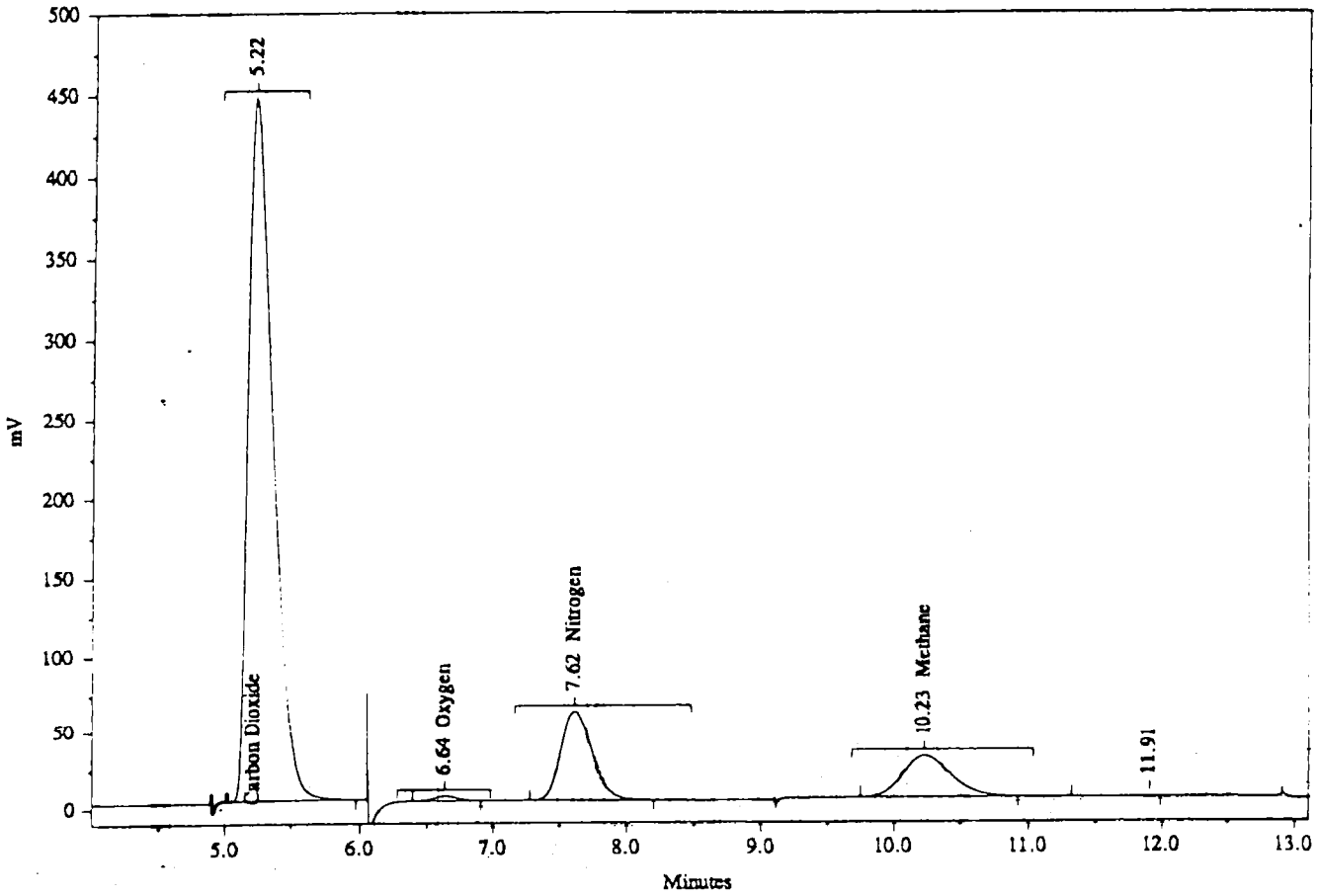
Starting Peak Width = 0.04 min. Peak Threshold = 1 Area Reject = 100

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	0.215		13.2681	0.004	367.1	0.004	BB	0.086	70.73	0.003
2	0.397		28.5224	0.009	789.1	0.009	BB	0.016	821.85	0.037
3	0.803	Ethane	267809.3000	86.994	7409598.0	88.497	BB	0.061	2030059.00	90.628
4	1.147	Ethylene	39698.8000	12.896	953664.9	11.390	BB	0.086	184315.90	8.228
5	2.011		299.3652	0.097	8282.7	0.099	BB	0.006	24724.55	1.104

Total Area = 8372702.0, Total Amount = 307849.3, Total Height = 2239992.0, Sample Units = ug,ug,ug/l

ST35 MW-12

C:\CPWIN\X7\X7B1.11R



Sample Name: **ST35 MW-12**
Acquired from Biorem-2--TCD via port 2 on 4/7/99 11:15:58 by BJM
Permenant Gases by TCD

Data File: C:\CPWIN\X7\X7B1.11R
Date Stamp: 4/7/99 11:15:58
Sequence File: X7B.SEQ #111
Method File: C:\CPWIN\X7\X7BWPG1.MET
Version 2. Date Stamp: 3/30/99 11:52:46
Calibration File: C:\CPWIN\X7\X7BWPG1.CAL
Version 2. Date Stamp: 3/30/99 11:55:10

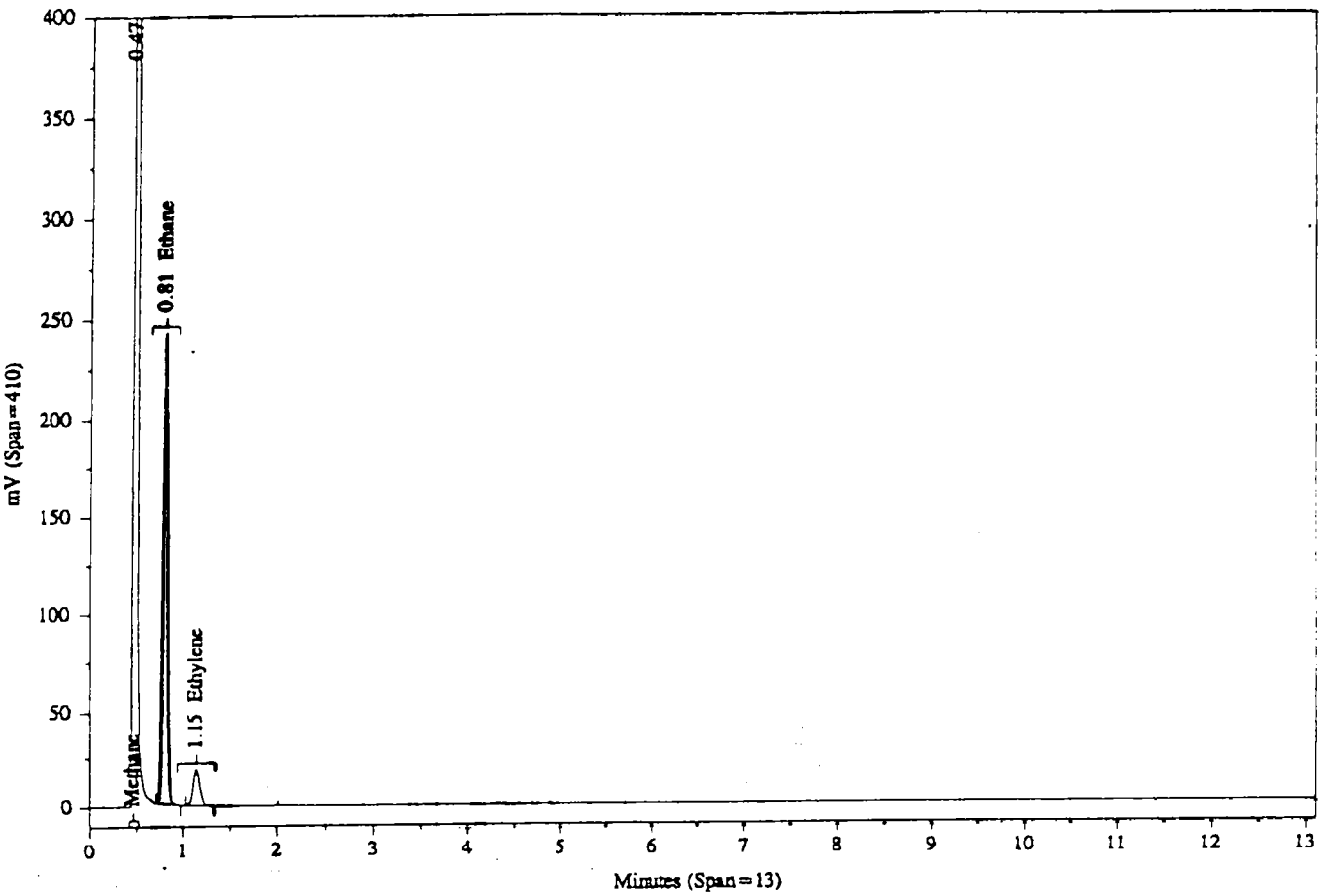
Run Time = 13.1 min Sample Rate = 3.0 per sec.
Amount Inj. = 0.000 Dilution Factor = 0.000
Sample Weight = 0.000 Int Std Amount = 0.000

Starting Peak Width = 0.1 min. Peak Threshold = 1 Area Reject = 100
* Some peaks have been manually integrated.

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	5.219	Carbon Dioxide	304.0632	94.983	5763988.0	78.122	BB	0.216	443829.10	83.452
2	6.639	Oxygen	0.5164	0.161	38620.6	0.523	BB	0.199	3238.60	0.609
3	7.617	Nitrogen	10.2627	3.206	922401.8	12.502	BB	0.262	58607.94	11.020
4	10.231	Methane	5.1943	1.623	651566.0	8.831	BB	0.416	26117.56	4.911
5	11.906		0.0857	0.027	1624.3	0.022	BB	0.582	46.53	0.009

Total Area = 7378201.0, Total Amount = 320.122, Total Height = 531839.7, Sample Units = mg/l
* Some peaks have been manually integrated.

ST35 MW-12
C:\CPWIN\X7\X7D1.11R



Sample Name: **ST35 MW-12**
Acquired from Biorem-2--FID2 via port 4 on 4/7/99 11:16:01 by BJM
Fid Attn. = 10

Data File: C:\CPWIN\X7\X7D1.11R
Date Stamp: 4/7/99 11:16:00
Sequence File: X7D.SEQ #111
Method File: C:\CPWIN\X7\X7DWLH1.MET
Version 3. Date Stamp: 3/31/99 13:16:10
Calibration File: C:\CPWIN\X7\X7DWLH2.CAL
Version 1. Date Stamp: 3/31/99 13:15:54

Run Time = 13.14 min Sample Rate = 3.0 per sec.
Amount Inj. = 0.000 Dilution Factor = 0.000
Sample Weight = 0.000 Int Std Amount = 0.000

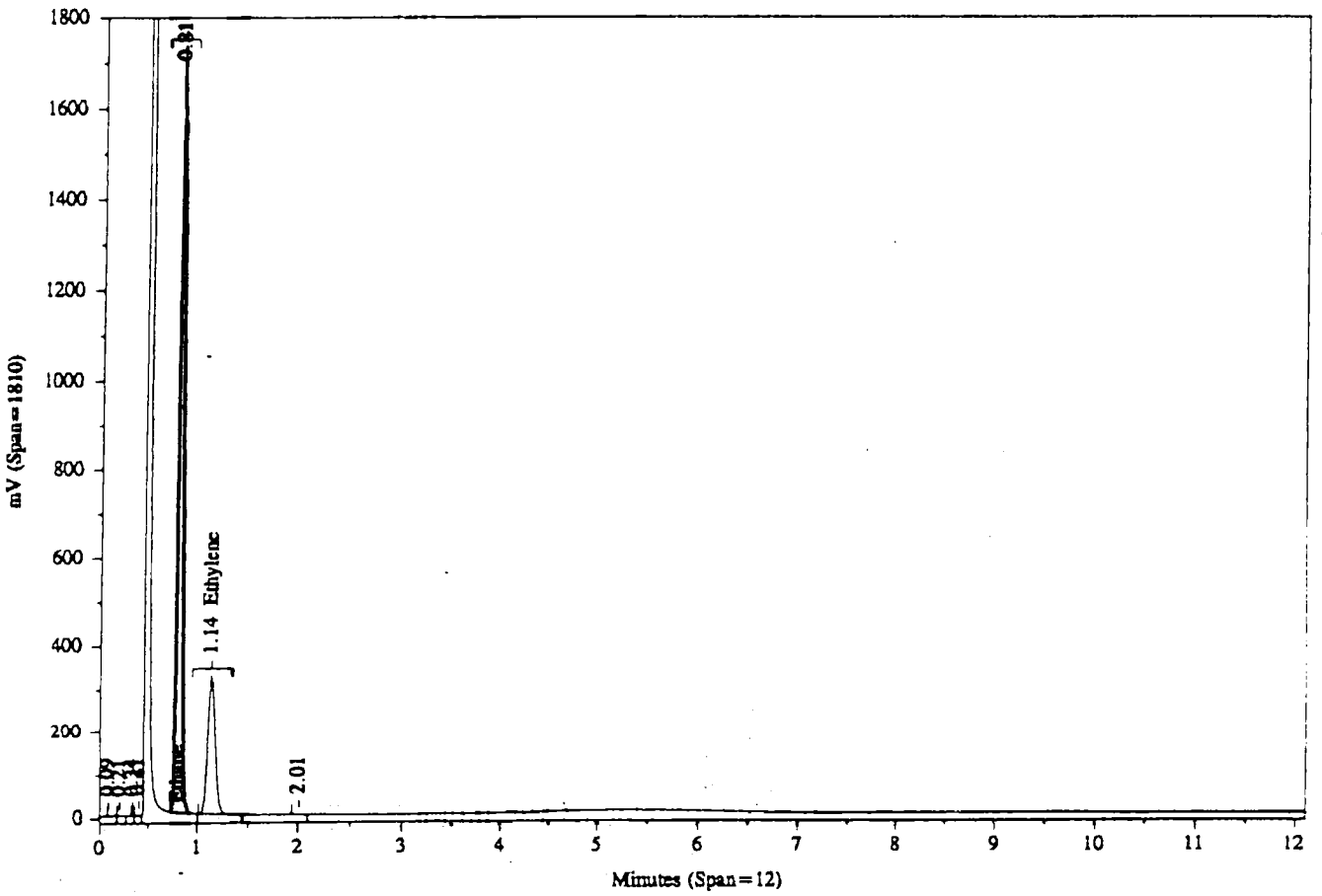
Starting Peak Width = 0.04 min. Peak Threshold = 1 Area Reject = 100

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	0.469	Methane	27.8073	0.113	1129583.0	56.170	BB	0.021	915677.50	77.868
2	0.811	Ethane	21262.9400	86.591	785742.4	39.072	BB	0.054	241830.10	20.565
3	1.146	Ethylene	3264.9110	13.296	95669.1	4.757	BB	0.086	18435.02	1.568

Total Area = 2010995.0, Total Amount = 24555.66, Total Height = 1175943.0, Sample Units = ug,ng,ng/l

ST35 MW-8S

C:\CPWIN\X7\X7A1.12R



Sample Name: ST35 MW-8S
Acquired from Biorem-2--FID via port 1 on 4/7/99 11:30:08 by RCW
Light Hydrocarbons by FID

Data File: C:\CPWIN\X7\X7A1.12R
Date Stamp: 4/7/99 11:30:08
Sequence File: X7A.SEQ #112
Method File: C:\CPWIN\X7\X7AWLH1.MET
Version 2. Date Stamp: 3/31/99 13:18:24
Calibration File: C:\CPWIN\X7\X7AWLH2.CAL
Version 7. Date Stamp: 3/31/99 13:09:10

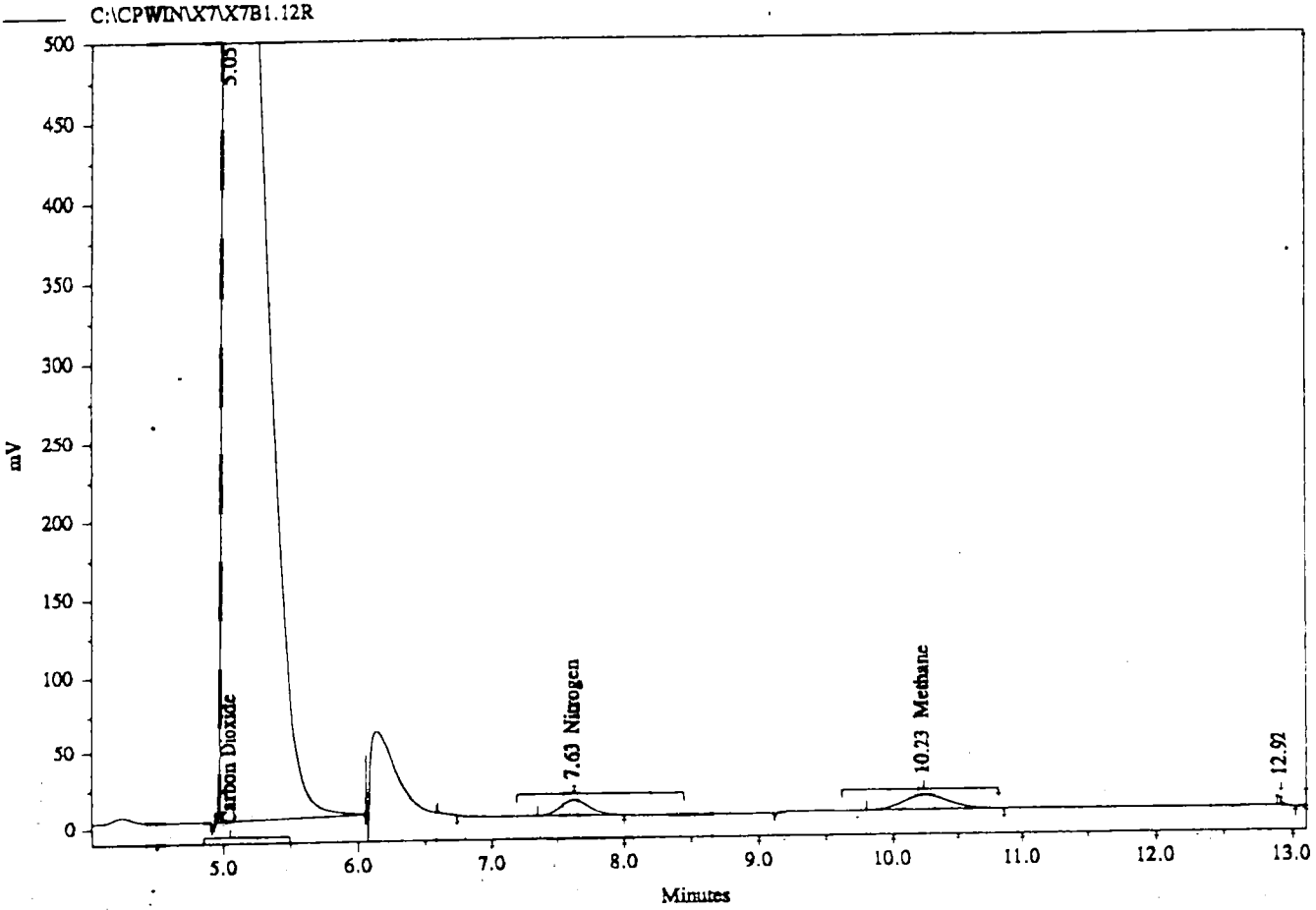
Run Time = 13.1 min Sample Rate = 3.0 per sec.
Amount Inj. = 0.000 Dilution Factor = 0.000
Sample Weight = 0.000 Int Std Amount = 0.000

Starting Peak Width = 0.04 min. Peak Threshold = 1 Area Reject = 100

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	0.095		9.5814	0.004	265.1	0.004	BV	0.007	652.39	0.032
2	0.205		7.9858	0.003	220.9	0.003	VB	0.048	77.32	0.004
3	0.343		12.0667	0.004	333.9	0.005	BV	0.028	198.99	0.010
4	0.412		71.5436	0.026	1979.4	0.027	VB	0.016	2041.86	0.099
5	0.810	Ethane	200770.9000	74.233	5554818.0	76.836	BB	0.054	1728652.00	83.992
6	1.142	Ethylene	69559.3200	25.719	1670990.0	23.114	BB	0.086	325303.20	15.806
7	2.011		29.7179	0.011	822.2	0.011	BB	0.012	1182.93	0.057

Total Area = 7229429.0, Total Amount = 270461.1, Total Height = 2058108.0, Sample Units = ug,ng,ng/l

ST35 MW-8S
C:\CPWIN\X7\X7B1.12R



Sample Name: ST35 MW-8S
Acquired from Biorem-2--TCD via port 2 on 4/7/99 11:30:08 by BJM
Permenant Gases by TCD

Data File: C:\CPWIN\X7\X7B1.12R
Date Stamp: 4/7/99 11:30:08
Sequence File: X7B.SEQ #112
Method File: C:\CPWIN\X7\X7BWPG1.MET
Version 2. Date Stamp: 3/30/99 11:52:46
Calibration File: C:\CPWIN\X7\X7BWPG1.CAL
Version 2. Date Stamp: 3/30/99 11:55:10

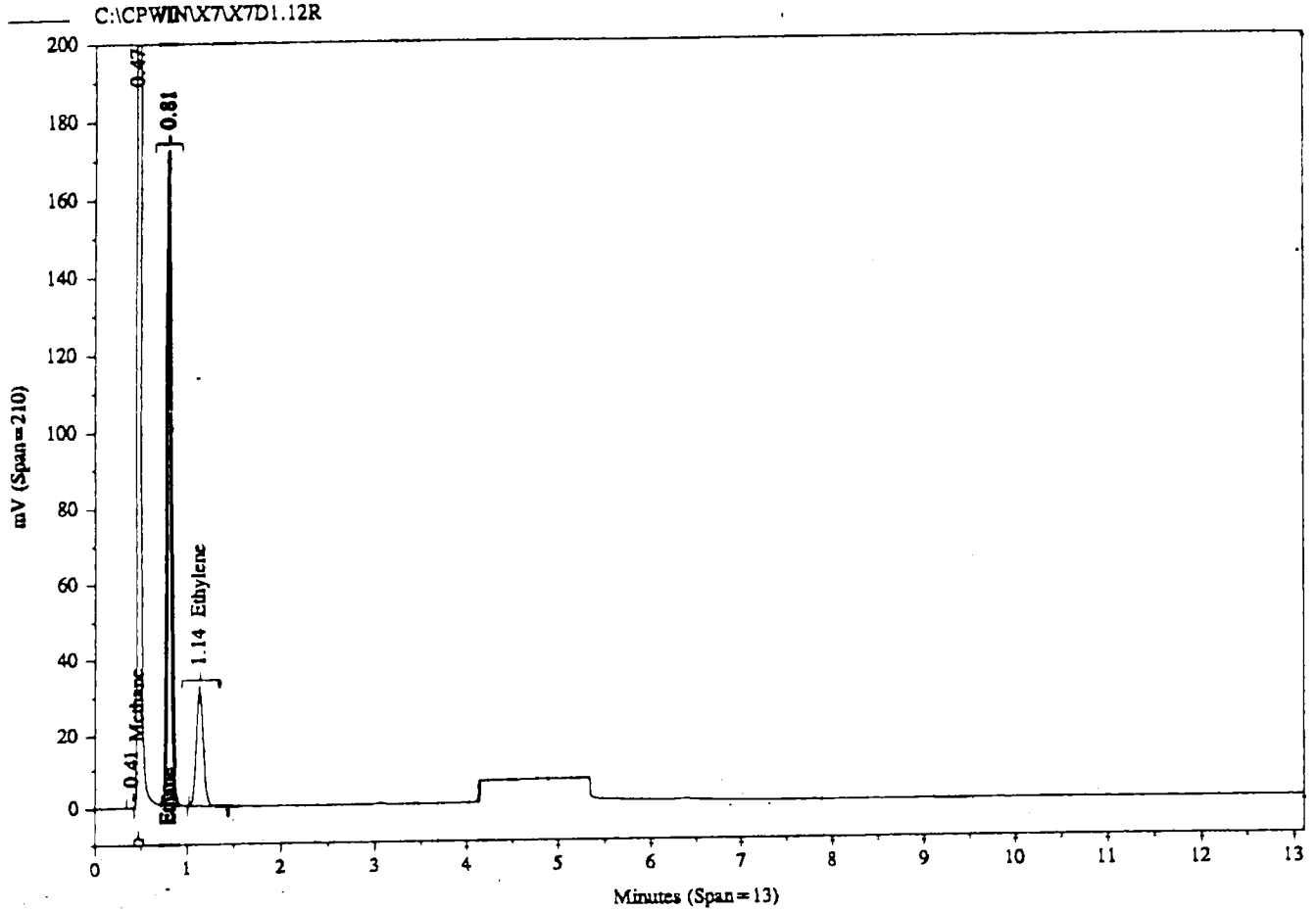
Run Time = 13.1 min Sample Rate = 3.0 per sec.
Amount Inj. = 0.000 Dilution Factor = 0.000
Sample Weight = 0.000 Int Std Amount = 0.000

Starting Peak Width = 0.1 min. Peak Threshold = 1 Area Reject = 100
* Some peaks have been manually integrated.

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	5.053	Carbon Dioxide	877.5170	99.579	16634690.0	97.768	BB	0.298	930887.60	97.437
3	7.631	Nitrogen	1.6709	0.190	150176.6	0.883	BB	0.250	10007.67	1.048
4	10.234	Methane	1.7926	0.203	224865.8	1.322	BB	0.407	9215.69	0.965
5	12.918		0.2480	0.028	4702.1	0.028	BB	0.015	5258.85	0.550

Total Area = 17014440.0, Total Amount = 881.229, Total Height = 955369.8, Sample Units = mg/l
* Some peaks have been manually integrated.

ST35 MW-8S
C:\CPWIN\X7\X7D1.12R



Sample Name: ST35 MW-8S
Acquired from Biorem-2--FID2 via port 4 on 4/7/99 11:30:10 by BJM
Fid Attn. = 10

Data File: C:\CPWIN\X7\X7D1.12R
Date Stamp: 4/7/99 11:30:10
Sequence File: X7D.SEQ #112
Method File: C:\CPWIN\X7\X7DWLH1.MET
Version 3. Date Stamp: 3/31/99 13:16:10
Calibration File: C:\CPWIN\X7\X7DWLH2.CAL
Version 1. Date Stamp: 3/31/99 13:15:54

Run Time = 13.14 min Sample Rate = 3.0 per sec.
Amount Inj. = 0.000 Dilution Factor = 0.000
Sample Weight = 0.000 Int Std Amount = 0.000

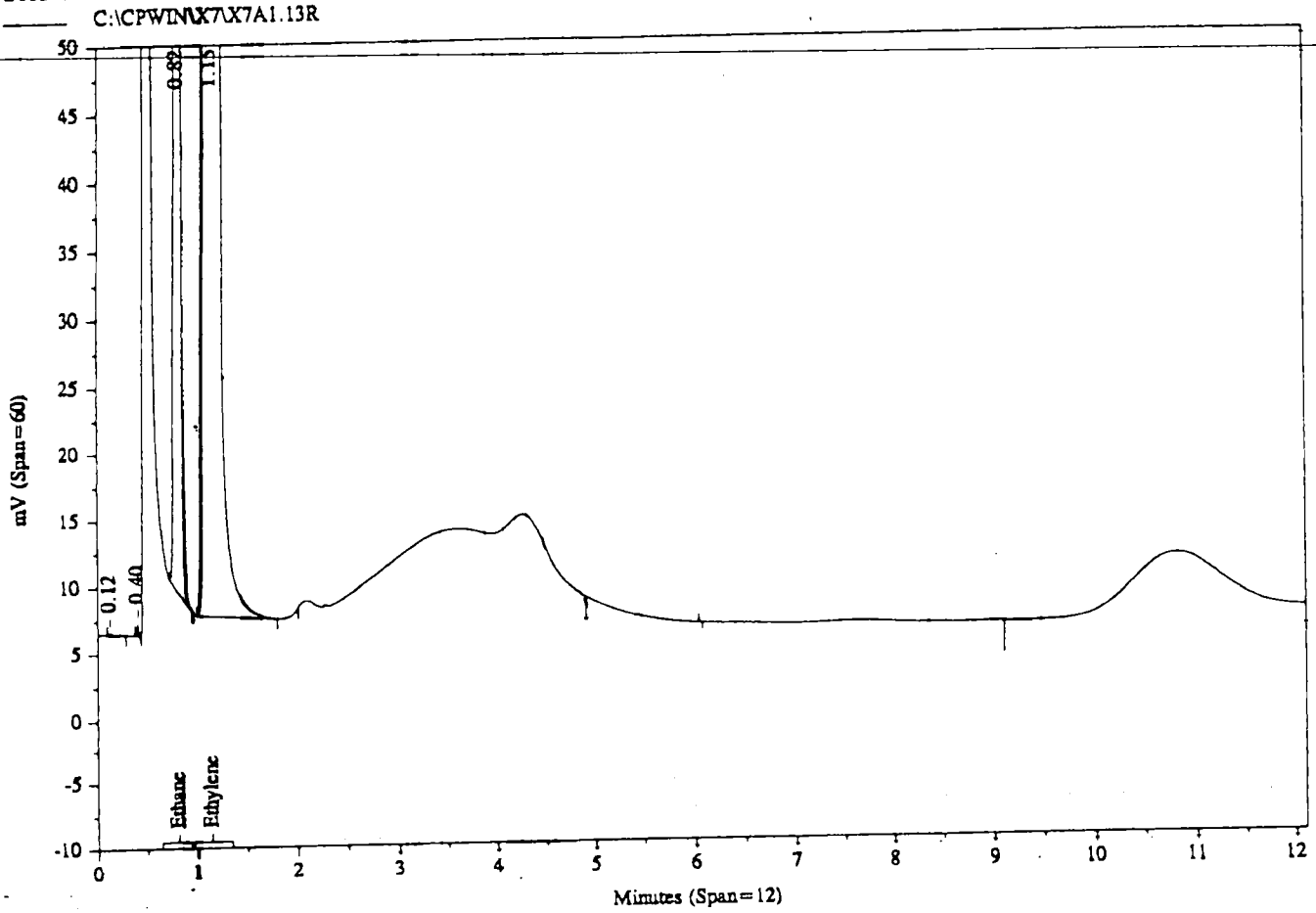
Starting Peak Width = 0.04 min. Peak Threshold = 1 Area Reject = 100

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	0.411		7.2650	0.035	268.5	0.014	BB	0.020	226.80	0.023
2	0.475	Methane	28.0326	0.135	1138736.0	61.156	BB	0.024	802244.10	79.599
3	0.809	Ethane	15035.1300	72.339	555602.6	29.839	BB	0.054	172851.60	17.150
4	1.142	Ethylene	5713.7640	27.491	167425.9	8.992	BB	0.086	32537.80	3.228

Total Area = 1862032.0, Total Amount = 20784.2, Total Height = 1007860.0, Sample Units = ug,ug,ug/l

ST35 MW-8D

C:\CPWIN\X7\X7A1.13R



Sample Name: ST35 MW-8D
Acquired from Biorem-2--FID via port 1 on 4/7/99 11:45:44 by RCW
Light Hydrocarbons by FID

Data File: C:\CPWIN\X7\X7A1.13R
Date Stamp: 4/7/99 11:45:44

Sequence File: X7A.SEQ #113

Method File: C:\CPWIN\X7\X7AWLH1.MET
Version 2. Date Stamp: 3/31/99 13:18:24

Calibration File: C:\CPWIN\X7\X7AWLH2.CAL
Version 7. Date Stamp: 3/31/99 13:09:10

Run Time = 13.1 min Sample Rate = 3.0 per sec.
Amount Inj. = 0.000 Dilution Factor = 0.000
Sample Weight = 0.000 Int Std Amount = 0.000

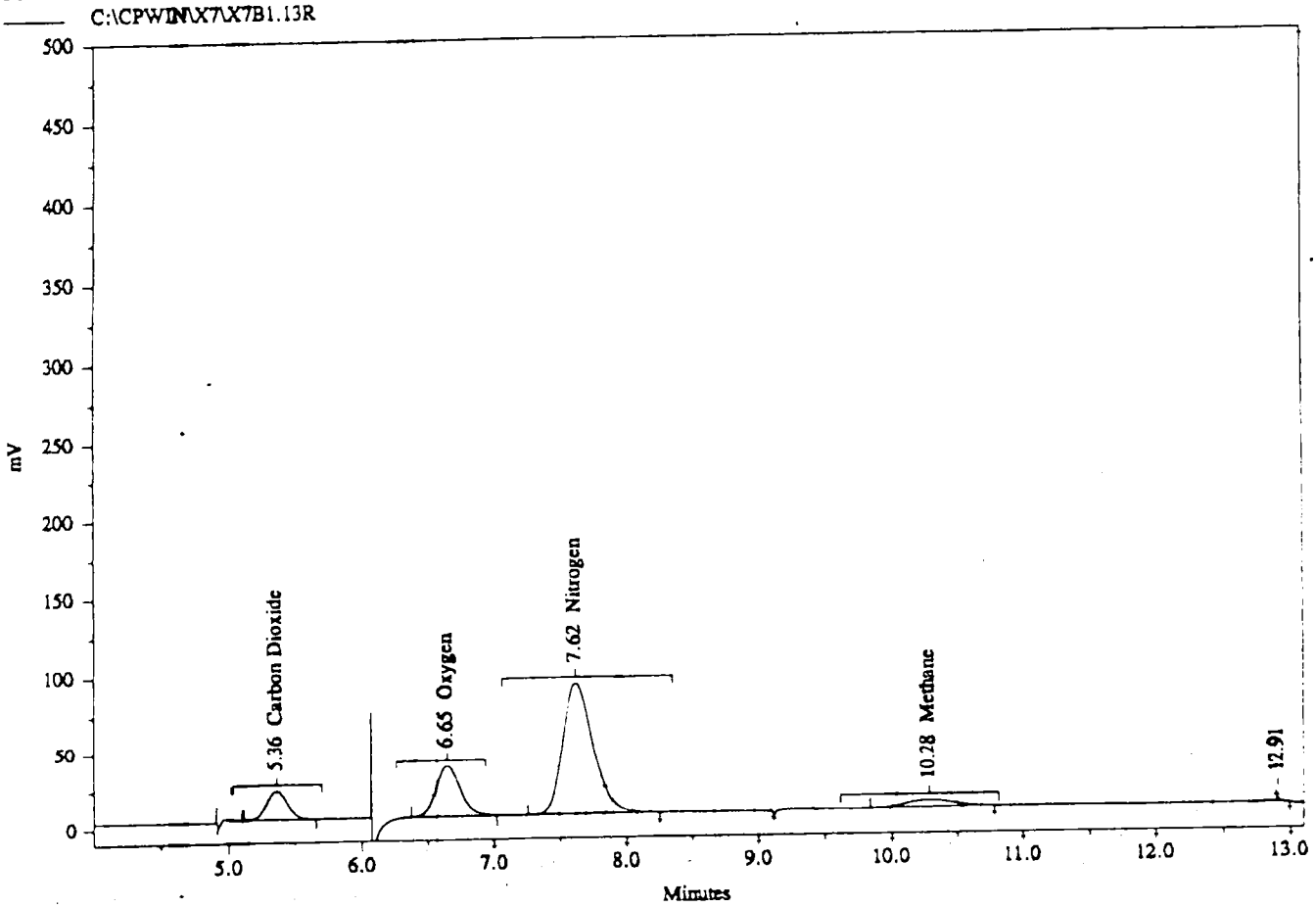
Starting Peak Width = 0.04 min. Peak Threshold = 1 Area Reject = 100
* Some peaks have been manually integrated.

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	0.122		43.2129	0.012	1195.6	0.014	BB	0.068	293.74	0.017
2	0.403		32.2578	0.009	892.5	0.010	BB	0.016	950.81	0.053
3	0.815	Ethane	19979.4100	5.527	552779.2	6.313	BB	0.055	166597.60	9.372
4	1.147	Ethylene	341430.6000	94.452	8202021.0	93.664	BB	0.085	1609824.00	90.558

Total Area = 8756888.0, Total Amount = 361485.5, Total Height = 1777666.0, Sample Units = ug,ng,ng/l
* Some peaks have been manually integrated.

ST35 MW-8D

C:\CPWIN\X7\X7B1.13R



Sample Name: **ST35 MW-8D**
Acquired from Biorem-2--TCD via port 2 on 4/7/99 11:45:44 by BJM
Permenant Gases by TCD

Data File: **C:\CPWIN\X7\X7B1.13R**
Date Stamp: 4/7/99 11:45:44
Sequence File: X7B.SEQ #113
Method File: C:\CPWIN\X7\X7BWPG1.MET
Version 2. Date Stamp: 3/30/99 11:52:46
Calibration File: C:\CPWIN\X7\X7BWPG1.CAL
Version 2. Date Stamp: 3/30/99 11:55:10

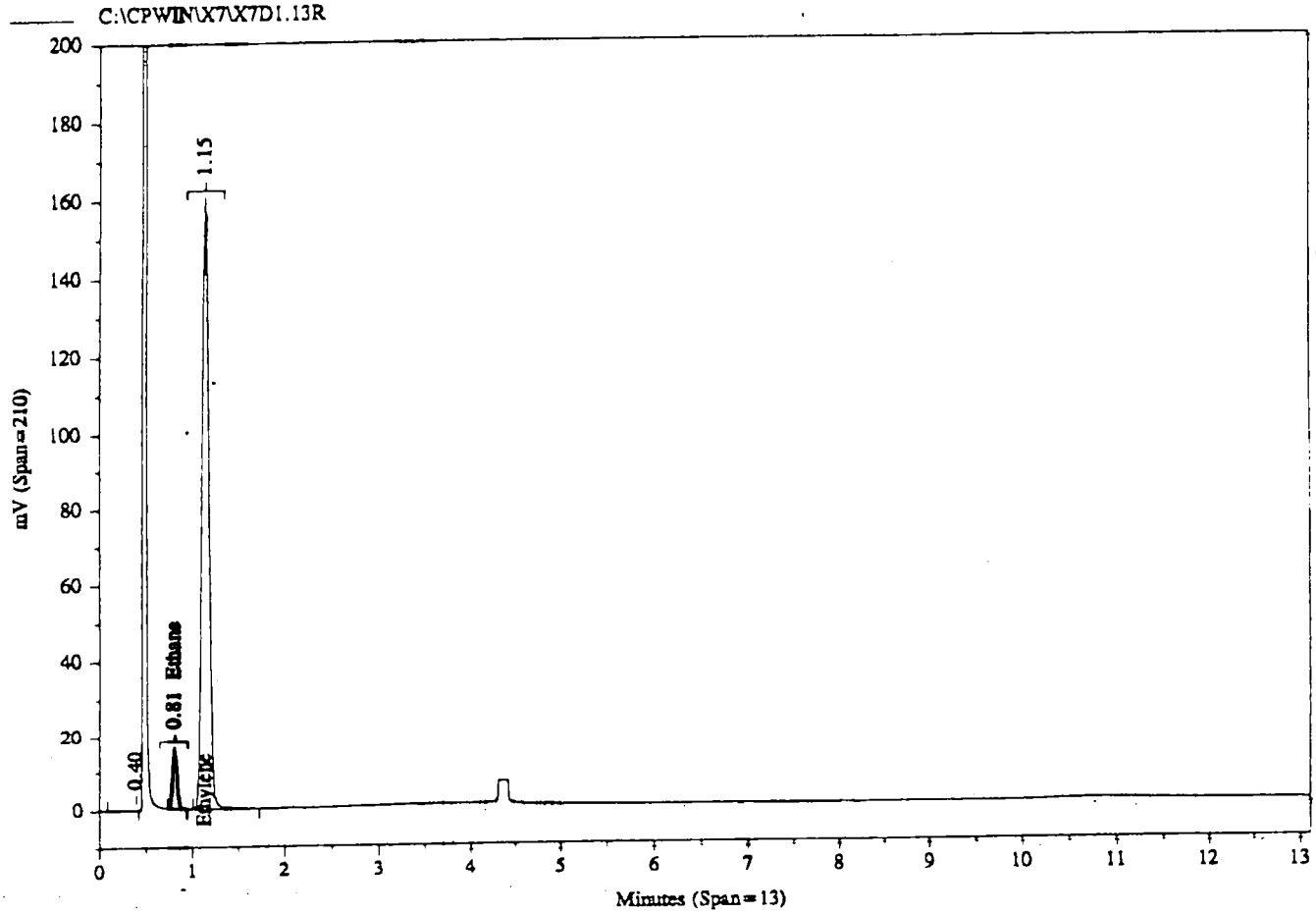
Run Time = 13.1 min Sample Rate = 3.0 per sec.
Amount Inj. = 0.000 Dilution Factor = 0.000
Sample Weight = 0.000 Int Std Amount = 0.000

Starting Peak Width = 0.1 min. Peak Threshold = 1 Area Reject = 100
* Some peaks have been manually integrated.

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	5.357	Carbon Dioxide	10.3492	32.193	196184.5	9.390	BB	0.179	18278.89	12.373
2	6.645	Oxygen	5.3993	16.796	403773.8	19.326	BB	0.207	32553.62	22.035
3	7.624	Nitrogen	15.2619	47.475	1371730.0	65.657	BB	0.265	86161.89	58.322
4	10.283	Methane	0.9016	2.805	113100.7	5.413	BB	0.405	4651.38	3.148
5	12.912		0.2354	0.732	4462.9	0.214	BB	0.042	6090.10	4.122

Total Area = 2089252.0, Total Amount = 32.147, Total Height = 147735.9, Sample Units = mg/l
* Some peaks have been manually integrated.

ST35 MW-8D
C:\CPWIN\X7\X7D1.13R



Sample Name: ST35 MW-8D
Acquired from Biorem-2--FID2 via port 4 on 4/7/99 11:45:46 by BJM
Fid Attn. = 10

Data File: C:\CPWIN\X7\X7D1.13R
Date Stamp: 4/7/99 11:45:46
Sequence File: X7D.SEQ #113
Method File: C:\CPWIN\X7\X7DWLH1.MET
Version 3. Date Stamp: 3/31/99 13:16:10
Calibration File: C:\CPWIN\X7\X7DWLH2.CAL
Version 1. Date Stamp: 3/31/99 13:15:54

Run Time = 13.14 min Sample Rate = 3.0 per sec.
Amount Inj. = 0.000 Dilution Factor = 0.000
Sample Weight = 0.000 Int Std Amount = 0.000

Starting Peak Width = 0.04 min. Peak Threshold = 1 Area Reject = 100

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	0.399		61.9274	0.209	2288.4	0.260	BB	0.257	148.23	0.083
2	0.814	Ethane	1502.6980	5.079	55530.1	6.318	BB	0.055	16697.29	9.386
3	1.147	Ethylene	28021.2200	94.712	821083.5	93.422	BB	0.085	161046.80	90.530

Total Area = 878902.1, Total Amount = 29585.84, Total Height = 177892.3, Sample Units = ug,ug,ug/l

ORGANICS APPENDIX

U - Indicates that the compound was analyzed for but not detected.

J - Indicates that the compound was analyzed for and determined to be present in the sample. The mass spectrum of the compound meets the identification criteria of the method. The concentration listed is an estimated value, which is less than the specified minimum detection limit but is greater than zero.

B - This flag is used when the analyte is found in the blanks as well as the sample. It indicates possible sample contamination and warns the data user to use caution when applying the results of this analyte.

N - Indicates that the compound was analyzed for but not requested as an analyte. Value will not be listed on tabular result sheet.

S - Estimated due to surrogate outliers.

X - Matrix spike compound.

(1) - Cannot be separated.

(2) - Decomposes to azobenzene. Measured and calibrated as azobenzene.

A - This flag indicates that a TIC is a suspected aldol condensation product.

E - Indicates that it exceeds calibration curve range.

D - This flag identifies all compounds identified in an analysis at a secondary dilution factor.

C - Confirmed by GC/MS.

T - Compound present in TCLP blank.

P - This flag is used for a pesticide/aroclor target analyte when there is a greater than 25 percent difference for detected concentrations between the two GC columns (see Form X).

INORGANICS APPENDIX

C - Concentration qualifiers

U - Indicates analyte was not detected at method reporting limit.

B - Indicates analyte result between IDL and contract required detection limit (CRDL)

Q - QC qualifiers

E - Reported value is estimated because of the presence of interference

M - Duplicate injection precision not met

N - Spiked sample recovery not within control limits

S - The reported value was determined by the method of standard additions (MSA)

W - Post-digest spike recovery furnace analysis was out of 85-115 percent control limit, while sample absorbance was less than 50 percent of spike absorbance

* - Duplicate analysis not within control limit

+ - Correlation coefficient for MSA is less than 0.995

M - Method codes

P - ICP

A - Flame AA

F - Furnace AA

CV - Cold vapor AA (manual)

C - Cyanide

NR - Not Required

NC - Not Calculated as per protocols

STATE CERTIFICATIONS

In some instances it may be necessary for environmental data to be reported to a regulatory authority with reference to a certified laboratory. For your convenience, the laboratory identification numbers for Severn Trent Laboratories-Connecticut are provided in the following table. Many states certify laboratories for specific parameters or tests within a category (i.e. method 325.2 for wastewater). The information in the following table indicates the lab is certified in a general category of testing such as drinking water or wastewater analysis. The laboratory should be contacted directly if parameter-specific certification information is required.

Severn Trent-Connecticut
Certification Summary (as of March 1999)

State	Responsible Agency	Certification	Lab Number
Connecticut	Department of Health Services	Drinking Water, Wastewater	PH-0497
Kansas	Department of Health and Environment	Drinking Water, Wastewater/Solid, Hazardous Waste	E-10210
Maine	Department of Human Services	Wastewater	CT023
Massachusetts	Department of Environmental Protection	Potable/Non-Potable Water	CT023
New Hampshire	Department of Environmental Services	Drinking Water, Wastewater	2528
New Jersey	Department of Environmental Protection	Drinking Water, Wastewater	46410
New York	Department of Health	CLP, Drinking Water, Wastewater, Solid/ Hazardous Waste	10602
North Carolina	Division of Environmental Management	Wastewater Hazardous Waste	388
Oklahoma	Department of Environmental Quality	General Water Quality/ Sludge Testing	9614
Rhode Island	Department of Health	Chemistry...Non-Potable Water and Wastewater	A43
Washington	Department of Ecology	Wastewater/ Hazardous Waste	C231
Wisconsin	Department of Natural Resources	Wastewater/ Hazarous Waste	998355710

7099-0693A
INGERSOLL RAND
SAMPLE SUMMARY

LIENT ID	LAB ID	MATRIX	DATE COLLECTED	DATE RECEIVED
ESI-6	990693A-01	WATER	03/31/99	04/01/99
SI-6	990693A-01D	WATER	03/31/99	04/01/99
ESI-6	990693A-01MS	WATER	03/31/99	04/01/99
SI-6	990693A-01MSB	WATER	03/31/99	04/01/99
ESI-6	990693A-01MSD	WATER	03/31/99	04/01/99
SI-6	990693A-01S	WATER	03/31/99	04/01/99
ESI-7	990693A-02	WATER	03/31/99	04/01/99
JP-1	990693A-03	WATER	03/31/99	04/01/99
MW-7D	990693A-04	WATER	03/31/99	04/01/99
N-12	990693A-05	WATER	03/31/99	04/01/99
MW-8S	990693A-06	WATER	03/31/99	04/01/99
B 033199	990693A-07	WATER	03/31/99	04/01/99
MW-8D	990693A-08	WATER	04/01/99	04/02/99
B 040199	990693A-09	WATER	04/01/99	04/02/99

IEA-CT ANALYTICAL SUMMARY

Client ID: DUP-1, ESI-6, ESI-7, MW-12, MW-7D, MW-8D, MW-8S, TB 033199, TB 040199
Job Number: 7099-0693A

Date: 4/30/99

Qty	Matrix	Analysis	Description
1	None	DISK	Diskette Prep.
1	None	SHIP	Shipping Cost
1	None	SHIP	Shipping Cost
8	WATER	ALK-N310.1	Alkalinity
9	WATER	BOD5-N405.1	Biochemical Oxygen D
9	WATER	CHLORIDE-N325.2	Chloride
9	WATER	COD-N410.4	Chemical Oxygen Dema
9	WATER	FE-NSW846	Iron
9	WATER	FE-NSW846-D	Iron (Dissolved)
9	WATER	FLUORIDE-N340.2	Fluoride
7	WATER	GC-MISC	Miscellaneous GC
9	WATER	MET-PREP-ICAP	Metals ICAP Prep
9	WATER	MET-PREP-ICAP-D	Metals ICAP Prep (Di
9	WATER	MN-NSW846	Manganese
9	WATER	MN-NSW846-D	Manganese (Dissolved
9	WATER	NITRATE/NIT-N353.2	Nitrate/Nitrite-Nitr
9	WATER	SULFATE-N375.3	Sulfate
8	WATER	SULFIDE-N376.1	Sulfide
9	WATER	TOC-N415.1-DUP	Total Organic Carbon
9	WATER	TOC-N415.1-DUP-D	Total Organic Carbon
1	WATER	VOA-N8260A-TCL	TCL Volatile Organic
11	WATER	VOA-N8260A-TCL	TCL Volatile Organic