BLYMYER
ENGINEERS, INC.
1829 Clement Avenue
Alameda, California 94501-1396
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LETTER OF TRANSMITTAL

DATE October 16, 2000	BEI Job No. 94015
ATTENTION: John Kawahara	
SUBJECT: Kawahara Nursery	
16550 Ashland Avenue	
San Lorenzo, California	
Site # 4403	

Kawahara Nursery
698 Burnett Avenue
Morgan Hill, CA 95037

STID 4403

10/16/2000

ENVIRONMENTAL PROTECTION
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			Quarter 2000

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REMARKS: For your files. The report has been forwarded as indicated below. Please call to discuss any comments.

COPY TO: File
Mr. Amir Gholami, Alameda County Health Care Services Agency

SIGNED: Mark Detterman

If enclosures are not as noted, kindly notify Blymyer Engineers, Inc. at once.

Quarterly Groundwater Monitoring Report
Third Quarter 2000

Kawahara Nursery
16550 Ashland Avenue
San Lorenzo, California
Site # 4403

September 27, 2000 BEI Job No. 94015

Prepared by:

Blymyer Engineers, Inc.
1829 Clement Avenue
Alameda, CA 94501

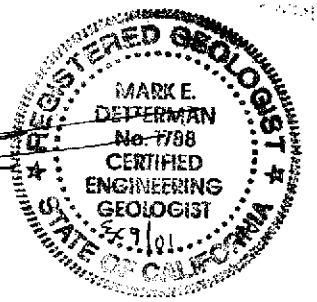
Client:

Kawahara Nursery, Inc.
16550 Ashland Avenue
San Lorenzo, CA 94508

Limitations

Services performed by Blymyer Engineers, Inc. have been provided in accordance with generally accepted professional practices for the nature and conditions of similar work completed in the same or similar localities, at the time the work was performed. The scope of work for the project was conducted within the limitations prescribed by the client. This report is not meant to represent a legal opinion. No other warranty, expressed or implied, is made. This report was prepared for the sole use of Kawahara Nursery, Inc.

Blymyer Engineers, Inc.



By: _____

Mark E. Detterman C.E.G.
Senior Geologist

And: _____

Michael S. Lewis
Vice President, Technical Services

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1.0 Introduction

1.1 Previous Work

1.1.1 Underground Storage Tank Removal

On December 1, 1992, one steel 5,000-gallon underground storage tank (UST) was removed from the property owned by Kawahara Nursery, located at 16550 Ashland Avenue, San Lorenzo, California, (Figure 1). The UST, used to store diesel, was reported to be in good condition at the time of removal with no visible evidence of holes. However, soil samples collected from the UST excavation contained Total Petroleum Hydrocarbons (TPH) as diesel, suggesting that a release had occurred. The results of the UST closure were described in the *Underground Storage Tank Closure Report*, prepared by Tank Protect Engineering.

According to information obtained from Kawahara Nursery, a 1,000-gallon gasoline UST was previously located in the vicinity of the lath house on the north side of the property (Figure 2). The UST was reportedly removed from the site shortly after Kawahara Nursery occupied the property in 1954.

1.1.2 Phase I Site Investigation

In a letter dated January 27, 1993, the Alameda County Health Care Services Agency (ACHCSA) requested that a preliminary subsurface investigation be completed to ascertain the extent of soil and groundwater contamination at the site. On June 10, 1993, Blymyer Engineers supervised the installation of three groundwater monitoring wells (MW-1, MW-2, and MW-3) and one soil bore (SB-1). Minor concentrations of petroleum hydrocarbons were detected in the soil samples collected from soil bores MW-1 and MW-2, and higher concentrations were detected in the samples collected near the water-bearing zone in soil bore MW-3. The groundwater sample collected from monitoring well MW-3, located adjacent to an on-site irrigation well, contained TPH as gasoline and benzene, toluene, ethylbenzene, and xylenes (BTEX).

1.1.3 Phase II Site Investigation

In response to Blymyer Engineers' *Preliminary Site Assessment, Phase I Subsurface Investigation* report and *Subsurface Investigation Status Report*, the ACHCSA requested full delineation of the extent of petroleum hydrocarbons in groundwater at the site and in the soil adjacent to the diesel UST excavation. In 1994, Blymyer Engineers conducted a second phase of investigation at the site consisting of:

- A review of records at the ACHCSA and the Regional Water Quality Control Board to determine if any toxic chemical or fuel leaks reported within a ¼-mile radius may have impacted the site

- A review of historical aerial photographs

- Field tests to assess whether pumping of the on-site irrigation well would influence the shallow water-bearing zone

- A 16-point soil gas survey

- Installation of two additional groundwater monitoring wells (MW-4 and MW-5)

- Collection of groundwater samples from all five monitoring wells during the first three quarters of 1995

Results of the second phase of investigation were presented in Blymyer Engineers' *Subsurface Investigation Letter Report*, dated December 16, 1994, and in quarterly groundwater monitoring reports submitted in 1995.

No potential upgradient sources of contamination were identified during the review of the local regulatory agency records and aerial photographs. On the basis of the limited field tests, pumping of the irrigation well did not have a significant influence on shallow groundwater beneath the site. Furthermore, petroleum hydrocarbons were not detected in the groundwater samples collected from the irrigation well, which is apparently screened from 45 to 60 feet below ground surface (bgs).

Slightly elevated concentrations of petroleum hydrocarbons were detected in the soil gas samples collected from the northeastern corner of the barn and near the northernmost lath house. Groundwater samples from MW-3, located between the lath house and the barn, contained up to 120,000 micrograms per liter (μg/L) TPH as gasoline, 4,800 μg/L of benzene, 8,400 μg/L of toluene, 3,000 μg/L of ethylbenzene, and 27,000 μg/L of total xylenes. The presence of TPH as gasoline in groundwater samples from MW-3 suggested that there was another source of petroleum hydrocarbons at the site, in addition to the diesel UST that was removed in 1992.

TPH as diesel was detected in the MW-5 groundwater sample only during the March 1995 sampling event. TPH as gasoline, TPH as diesel, and BTEX were not detected in groundwater samples collected from monitoring wells MW-1, MW-2, or MW-4. The direction of groundwater flow in September 1995 was estimated to be northwest with an average gradient of 0.004 feet/foot.

On the basis of the *Subsurface Investigation Letter Report* and quarterly groundwater monitoring reports, the ACHCSA requested (in a letter dated May 31, 1995) that Kawahara Nursery conduct additional work at the site. Specifically, they requested submittal of a workplan to identify the source and extent of contamination in soil and groundwater in the vicinity of monitoring well MW-3.

On June 3, 1997, Blymyer Engineers submitted the *Workplan for Additional Site Characterization and Site Risk Classification* (Workplan) to the ACHCSA. In a letter dated June 6, 1997, the ACHCSA requested that several additional tasks be included in the Workplan. On June 12, 1997, Blymyer Engineers submitted the *Revised Workplan for Additional Site Characterization* (Revised Workplan), which addressed the additional ACHCSA requirements.

The Revised Workplan included the following tasks:

- Resumption of quarterly groundwater monitoring and sampling of MW-3, MW-4, and MW-5
- Generation of a geophysical survey in an attempt to locate the gasoline UST or its former basin in the vicinity of the lath house on the north side of the site
- Perform an additional investigation in the vicinity of the former gasoline UST by advancing approximately 6 direct-push soil bores
- Decommission monitoring wells MW-1 and MW-2, as approved by the ACHCSA
- Analyze soil and groundwater samples to evaluate the potential for natural attenuation (aerobic and anaerobic biodegradation)
- Determine if the site can be classified in the "low risk groundwater" category as defined by the San Francisco Bay Regional Water Quality Control Board (SFRWQCB)
- If appropriate, evaluate the risk to human health and the environment

On March 4, 1999, Blymyer Engineers resumed quarterly groundwater monitoring and sampling of MW-3, MW-4, and MW-5, and submitted the *Quarterly Groundwater Monitoring Report, First Quarter 1999 (January through March)*, dated April 13, 1999.

In June 1999, prior to implementation of the Revised Workplan, Mr. Amir Gholami of the ACHCSA requested (June 2, 1999) the addition of the following tasks to the above scope of work (see Blymyer Engineers' *Proposed Soil Bore Locations*, dated June 21, 1999):

- Drill two additional soil bores on the west side and east side of monitoring well MW-3

- Drill additional soil bores around the perimeter of the former diesel UST and in the vicinity of geophysical anomalies

- Collect soil samples at five-foot intervals and collect one grab groundwater sample from each soil bore

1.1.4 Additional Subsurface Investigation

On September 2, 1999, Blymyer Engineers submitted the *Results of Additional Subsurface Investigation and Quarterly Groundwater Monitoring, Second Quarter 1999*. This report presented the results the geophysical survey, additional soil bore sampling, well decommissioning, and groundwater monitoring for the second quarter, 1999. In addition to decommissioning monitoring wells MW-1 and MW-2, as approved by the ACHCSA, the following conclusions were made:

- The direction of groundwater flow is toward the northwest

- On the basis of the geophysical survey, buried metal objects appear to be present in two locations near the west end of the lath house

- Soil and grab groundwater samples collected from SB-4 and SB-5, located downgradient of one magnetic anomaly, contained very high concentrations of petroleum hydrocarbons

- A petroleum sheen was observed on SB-4 and SB-5 water samples, and free product was observed in the soil samples

- Groundwater samples from MW-3, located between the barn and the northernmost lath house, contained significant concentrations of TPH as gasoline and benzene

- The soil samples and grab groundwater sample collected downgradient of the former diesel UST (removed in 1992) indicated that this area is not a significant source of groundwater contamination

On the basis of the investigation, it appears that there may be free product present in soil and groundwater in the vicinity of the lath house (downgradient of one magnetic anomaly). The site could not, therefore, be classified as "low risk groundwater".

Furthermore, the concentrations of benzene were compared to the Tier 1 table of Risk-Based Screening Levels (RBSLs) as described in the ASTM E 1739-95 *Standard Guide for Risk-Based Corrective Action Applied at Petroleum Release Sites* (RBCA). A California-modified toxicity and exposure table was used. Benzene concentrations in groundwater samples from SB-4, SB-5, and MW-3 exceed the target levels for an exposure pathway of groundwater volatilization to indoor residential air. Because there is a residence immediately downgradient of the apparent gasoline source, closure of this site could not be recommended on the basis of a low risk to human health.

Blymyer Engineers recommended that a Tier 2 RBCA evaluation be generated to evaluate site-specific target levels (SSTLs) for both soil and groundwater. When the SSTLs are generated, it was recommended that the remaining petroleum hydrocarbon sources be removed from the site, using the SSTLs as cleanup goals.

Blymyer Engineers has been retained to conduct a Tier 2 RBCA evaluation of the site and submitted the *Health Risk Assessment Workplan*, dated January 20, 2000, to the ACHCSA. The workplan has not yet been approved by the ACHCSA.

2.0 Data Collection

On August 16, 2000, Blaine Tech Services, Inc. (Blaine) conducted groundwater gauging and sampling at the Kawahara Nursery under contract to Blymyer Engineers. The Blaine *Standard Operating Procedures* for groundwater gauging and sampling are included in Appendix A.

2.1 Groundwater Gauging

Blaine personnel measured the depth to groundwater in wells MW-3, MW-4, and MW-5 (Figure 3). The groundwater was gauged with an accuracy of 0.01 feet from the top of casing using an oil-water interface probe. Groundwater measurements are presented in Table I and Figure 3, and are included on the Well Gauging and Well Monitoring Data Sheets presented in Appendix B.

2.2 Groundwater Sampling and Analysis

Blaine collected groundwater samples from wells MW-3, MW-4, and MW-5. Prior to purging the wells, the dissolved oxygen content was measured using a field instrument. Each well was then purged by removing a minimum of three well casing volumes of groundwater. The temperature, pH, turbidity, and conductivity of the purge water were measured after each well volume had been removed. The amount of groundwater purged from each well was considered sufficient when the parameters appeared to be stable.

Groundwater samples were collected from each monitoring well, then decanted into the appropriate containers. The samples were labeled and placed in a cooler with ice for transport to Curtis & Tompkins, Ltd., of Berkeley, California, under chain-of-custody documentation. All purged groundwater was placed in labeled, 55-gallon capacity, Department of Transportation-approved steel drums. The samples were analyzed for the following compounds:

- TPH as gasoline (EPA Method 8015M)
- TPH as diesel (EPA Method 8015M)
- BTEX (EPA Method 8021B)
- Methyl tert-butyl ether (MTBE; EPA Method 8021B)
- Fuel Oxygenates (EPA Method 8260)
- Carbon dioxide (EPA Method 310.1)
- Dissolved ferrous iron (SM 3500)
- Nitrate-Nitrogen (EPA Method 300)
- Alkalinity (EPA Method 310.1)
- Sulfate (EPA Method 300.0)

3.0 Results

3.1 Groundwater Elevations and Gradient

Table I and Figure 3 present groundwater gauging data collected on August 16, 2000. The depth to groundwater ranged from 8.27 feet below the top of casing (BTOC) in monitoring well MW-5 to 10.04 feet BTOC in MW-4. The average groundwater gradient was 0.003 feet/foot. The direction of groundwater flow could not be conclusively determined based on the linear configuration of the wells. However, the gradient is likely to be directed toward the northwest based on the consistent historic flow direction documented at the site.

3.2 Groundwater Sample Analytical Results

The results of groundwater analyses are found in Appendix C, and are summarized in Table II, Table III, and Table IV.

During the current sampling event, all wells were reported to contain MTBE using EPA Method 8021B; however, EPA Method 8021B can give false MTBE positives as MTBE will coelute with 3-methyl-pentane, another gasoline compound. Because of this potential, and recent trends in regulatory requests requiring additional laboratory testing for MTBE and four other fuel oxygenates, by EPA Method 8260, Blymyer Engineers requested the one-time addition of EPA Method 8260 to the laboratory analytical suite for the groundwater sample from well MW-3. This method is a GC/MS method and is capable of distinguishing between 3-methyl-pentane and MTBE, and will, if present at sufficient concentrations, detect the four other fuel oxygenates. The other four fuel oxygenates include *tert*-Butyl Alcohol (TBE), Isopropyl Ether (DIPE), Ethyl *tert*-Butyl Ether (ETBE), and Methyl *tert*-Amyl Ether (TAME). No fuel oxygenates were detected by EPA Method 8260, including MTBE, at appropriate detection limits in well MW-3.

Downgradient monitoring well MW-5 contained no detectable concentrations of the petroleum hydrocarbon analytes (with the exception of MTBE as detected by EPA Method 8021B). Upgradient monitoring well MW-4 was reported to contain trace detectable concentrations of TPH as diesel and total xylenes (and MTBE as noted above). These chemicals were detected in well MW-4 at very close to their respective reporting limits (56 μg/L and 0.51 μg/L of TPH as diesel and total xylenes, respectively). The laboratory noted that the chromatogram for TPH as diesel in groundwater collected from well MW-4 did not match the standard for diesel and consisted of a single peak or set of isolated peaks.

The groundwater sample from MW-3 contained 2,400 μg/L TPH as gasoline, 530 μg/L TPH as diesel, 18 μg/L benzene, 5.8 μg/L toluene, 18 μg/L ethylbenzene, and 182 μg/L xylenes (and MTBE as noted above). The concentrations are elevated, but have continued to decrease since the November 1999 groundwater sampling event.

Previously, the laboratory has noted that the chromatographic pattern for TPH as diesel was not typical for diesel fuel in well MW-3. At that time, Blymyer Engineers requested the laboratory to review the TPH as diesel chromatogram. The laboratory verbally confirmed that the TPH as diesel detected was overlap from the TPH as gasoline chromatogram, that the chromatogram suggested that a single hydrocarbon pattern was present, and that the set of data likely indicated aged gasoline was present, and that a second source of diesel was not present. During the current quarter the laboratory has again noted that "lighter hydrocarbons have contributed" to the analytical result for TPH as diesel. Because TPH as diesel is not present as a separate release in the northern portion of the site, Blymyer Engineers has previously recommended that TPH as diesel be dropped from the analytical suite for future monitoring events. However, the ACHCSA has requested continued analysis for TPH as diesel.

Table III presents the analytical results of the remediation by natural attenuation (RNA) indicator parameters. Microbial use of petroleum hydrocarbons as a food source is affected by the concentration of a number of chemical compounds dissolved in groundwater at a site. RNA

monitoring parameters were established by research conducted by the Air Force Center for Environmental Excellence. The research results were used to develop a technical protocol for documenting RNA in groundwater at petroleum hydrocarbon release sites (Wiedemeier, Patrick Haas, 1995, *Technical Protocol for Implementing the Intrinsic Remediation with Long Term Monitoring for Natural Attenuation of Fuel Contamination Dissolved in Groundwater, Volumes I and II*, U.S. Air Force Center for Environmental Excellence, Brooks Air Force Base, Texas). The protocol focuses on documenting both aerobic and anaerobic degradation processes whereby indigenous subsurface bacteria use various dissolved electron acceptors to degrade dissolved petroleum hydrocarbons.

In the order of preference, the following electron acceptors and metabolic by-products are used and generated, respectively, by the subsurface microbes to degrade petroleum hydrocarbons: oxygen to carbon dioxide, nitrate to nitrogen and carbon dioxide, manganese (Mn^{4+} to Mn^{2+}), ferric iron (Fe^{3+}) to ferrous iron (Fe^{2+}), sulfate to hydrogen sulfide, and carbon dioxide to methane. With the exception of oxygen, use of all other electron acceptor pathways indicate anaerobic degradation. Investigation of each of these electron acceptor pathways, with the exception of the manganese and carbon dioxide to methane pathways, was conducted at the site as part of the evaluation of RNA chemical parameters.

Microbial use of petroleum hydrocarbons as a food source is principally affected by the concentration of dissolved oxygen (DO) in the groundwater present at a site; it is the preferable electron acceptor for the biodegradation of hydrocarbons. DO was present in pre-purge groundwater in concentrations ranging from 0.8 milligrams per liter (mg/L) in monitoring well MW-5 to 2.9 mg/L in the groundwater sample from MW-4. DO at the site remains highest upgradient of the presumed metallic objects, decreases in the vicinity of well MW-3, and remains at the approximate same lower concentration in well MW-5. During previous quarters DO had generally undergone a partly recovery in downgradient well MW-5. The depleted oxygen concentrations in groundwater from MW-3, and this quarter MW-5, indicate that natural attenuation is likely proceeding under slightly anaerobic conditions. The previous rise of DO concentrations in well MW-5 downgradient from well

MW-3 suggests that aerobic conditions are seasonally reestablished downgradient of well MW-3. It should be noted that RNA appears to be degrading contaminant concentrations to below the appropriate laboratory reporting limits before the impacted groundwater reaches the position of well MW-5.

Should oxygen be in insufficient supply in groundwater, the next preferred electron acceptor is nitrate which creates a denitrifying condition. In denitrifying conditions, nitrate concentrations decrease in the contaminant plume over background nitrate concentrations. This trend appears modified at the site, in that nitrate concentrations continue to decrease from background levels in downgradient well MW-5. This may indicate a seasonally expanded plume of depressed RNA parameters in the downgradient direction, also seen during the last quarter, but one which does not appear to be allowing contaminant concentrations to reach downgradient well MW-5.

Because nitrate was utilized in well MW-3 at the site, as discussed above, ferrous iron concentrations were also evaluated at the site. Detectable concentrations of ferrous iron were present in groundwater samples from all wells this quarter. This is the first quarter ferrous iron has been detected in any well since monitoring for this parameter began in March 1999. These results further indicate that a seasonally anaerobic environment exists at the site, but one capable of precluding significant migration of the contaminants of concern.

Sulfate concentrations were also evaluated at the site as part of the evaluation of natural attenuation chemical parameters. If utilized by the microbes, sulfate concentrations, like nitrate concentrations, decrease in the contaminant plume over background sulfate concentrations. Prior to the previous sampling event, this trend has not previously been observed at the site. During the present groundwater sampling event, sulfate reduction may be present and, like nitrate, background concentrations are depressed further downgradient of well MW-3 than previously observed. This may indicate periodic marginally sulfate-reducing conditions may be present at the site. To date, the data suggest that this may occur periodically in the year as DO decreases from higher DO levels typically associated with rainfall recharge of groundwater.

At the site, higher concentrations of CO_2 relative to DO indicate that microbial respiration is occurring as DO is being depleted. On average, the concentration of CO_2 is highest relative to DO in well MW-3, lowest in upgradient well MW-4, and intermediate in downgradient well MW-5. This is the same trend generally seen for other chemical parameters at the site. It suggests significant microbial activity in the vicinity of well MW-3 and decreased activity in groundwater obtained from well MW-5 due to the significantly lower hydrocarbon concentrations, thus allowing a recovery to background CO_2 concentrations in the aquifer.

Trends over time, and between wells, for alkalinity (higher levels with aerobic biodegradation) suggest similar trends for alkalinity as for the other monitored parameters at the site.

RNA indicators will continue to be monitored to assess the average concentrations of the indicators.

4.0 Conclusions and Recommendations

The following conclusions can be made from the on-going groundwater monitoring events:

- Of the three monitoring wells sampled, only the sample from MW-3 contained significant detectable concentrations of petroleum hydrocarbons; the contaminant appears to be predominantly gasoline rather than diesel.

- For the first time upgradient monitoring well MW-4 contained trace concentrations of petroleum hydrocarbons at the limit of reporting, suggestive of a possible upgradient diesel source.

- A one-time analysis for fuel oxygenates by EPA Method 8260 found that there are no fuel oxygenates in the groundwater sample collected from well MW-3. Specifically MTBE was not detected by this method. All previous reported concentrations of MTBE are therefore considered inaccurate. Because of the difference in test capabilities, this is not atypical.

- All contaminant concentrations detected in MW-3 were lower than those detected during the May 2000 sampling event. Generally decreasing contaminant concentrations have been observed at this site since the June 1999 sampling event.

- The direction of groundwater flow is likely to the northwest based on previously generated data.

- An evaluation of RNA chemical parameters present at the site appears to indicate that anaerobic conditions are seasonally present over a larger area at the site. Previously, aerobic degradation of the hydrocarbons appeared to be largely undergoing reestablishment prior to flow of the groundwater beneath the onsite residential dwelling. During the present sampling event, reestablishment of aerobic conditions appears to be further downgradient.

- Aerobic or anaerobic degradation of the hydrocarbons appears to be occurring onsite upgradient of monitoring well MW-5 and the onsite residential dwelling.

- The *Health Risk Assessment Workplan* should be reviewed and approved or modified in order that remedial goals for soil and groundwater can be established and appropriate remedial actions can be taken, if required.

- Per your request, a copy of this report has been forwarded to:

  Mr. Amir Gholami
  Alameda County Health Care Services Agency
  Environmental Protection Division
  1131 Harbor Bay Parkway, Suite 250
  Alameda, CA 94502-6577

Table I, Summary of Groundwater Elevation Measurements
BEI Job No. 94015, Kawahara Nursery, Inc.
16550 Ashland Avenue, San Lorenzo, California

Well ID	Date	TOC Elevation (feet)	Depth to Water (feet)	Water Surface Elevation (feet)
MW-1	6/16/93	100	10.7	89.3
	3/24/94		11.11	88.89
	3/28/94		11.26	88.74
	11/22/94		12.04	87.96
	3/29/95		7.26	92.74
	6/7/95		8.67	91.33
	9/7/95		10.56	89.44
	3/4/99		Not Measured	Not Measured
	6/29/99		8.81	91.19
	11/15/99		Destroyed	Destroyed
	5/22/00		Destroyed	Destroyed
	8/16/00		Destroyed	Destroyed
MW-2	6/16/93	99.27	10.24	89.03
	3/24/94		10.65	88.62
	3/28/94		10.79	88.48
	11/22/94		11.58	87.69
	3/29/95		6.93	92.34
	6/7/95		8.36	90.91
	9/7/95		10.18	89.09
	3/4/99		6.95	92.32
	6/29/99		8.52	90.75
	11/15/99		Destroyed	Destroyed
	5/22/00		Destroyed	Destroyed
	8/16/00		Destroyed	Destroyed

Table 1, Summary of Groundwater Elevation Measurements
BEI Job No. 94015, Kawahara Nursery, Inc.
16550 Ashland Avenue, San Lorenzo, California

Well ID	Date	TOC Elevation (feet)	Depth to Water (feet)	Water Surface Elevation (feet)
MW-3	6/16/93	99.52	10.46	89.06
	3/24/94		10.81	88.71
	3/28/94		10.96	88.56
	11/22/94		11.68	87.84
	3/29/95		6.95	92.57
	6/7/95		8.48	91.04
	9/7/95		10.30	89.22
	3/4/99		7.98	91.54
	6/29/99		8.49	91.03
	11/15/99		10.35	89.17
	5/22/00		7.65	91.87
	8/16/00		9.44	90.08
MW-4	11/22/94	100.46	12.34	88.12
	3/29/95		7.49	92.97
	6/7/95		8.95	91.51
	9/7/95		10.88	89.58
	3/4/99		8.03	92.43
	6/29/99		9.04	91.42
	11/15/99		11.00	89.46
	5/22/00		8.28	92.18
	8/16/00		10.04	90.42

Table I, Summary of Groundwater Elevation Measurements BEI Job No. 94015, Kawahara Nursery, Inc. 16550 Ashland Avenue, San Lorenzo, California				
Well ID	Date	TOC Elevation (feet)	Depth to Water (feet)	Water Surface Elevation (feet)
MW-5	3/29/95	98.14	5.76	92.38
	6/7/95		7.33	90.81
	9/7/95		9.11	89.03
	3/4/99		6.63	91.51
	6/29/99		7.41	90.73
	11/15/99		9.18	88.96
	5/22/00		6.68	91.46
	8/16/00		8.27	89.87

Notes: TOC = Top of casing
Elevations in feet above mean sea level

Table II. Summary of Groundwater Sample Hydrocarbon Analytical Results
BEI Job No. 94015, Kawahara Nursery
16550 Ashland Avenue, San Lorenzo, California

Sample ID	Date	Modified EPA Method 8015 (μg/L)		EPA Method 8020 or 8021B (μg/L)				
		TPH as Gasoline	TPH as Diesel	B	T	E	X	MTBE
MW-1	6/16/93	<50	<50	<0.5	<0.5	<0.5	<0.5	NS
	3/28/94	<50	<50	<0.5	<0.5	<0.5	<0.5	NS
	11/8/94	NS	NS	NS	NS	NS	NS	NS
	3/29/95	<50	<50	<0.5	<0.5	<0.5	<0.5	NS
	6/7/95	<50	<50	<0.5	<0.5	<0.5	<0.5	NS
	9/7/95	<50	<50	<0.5	<0.5	<0.5	<0.5	NS
	3/4/99	NS	NS	NS	NS	NS	NS	NS
	6/29/99	NS	NS	NS	NS	NS	NS	NS
	11/15/99	NS	NS	NS	NS	NS	NS	NS
	5/22/00	NS	NS	NS	NS	NS	NS	NS
	8/16/00	NS	NS	NS	NS	NS	NS	NS
MW-2	6/16/93	<50	<50	<0.5	<0.5	<0.5	<0.5	NS
	3/28/94	<50	<50	<0.5	<0.5	<0.5	<0.5	NS
	11/8/94	NS	NS	NS	NS	NS	NS	NS
	3/29/95	<50	<50	<0.5	<0.5	<0.5	<0.5	NS
	5/7/95	<50	<50	<0.5	<0.5	<0.5	<0.5	NS
	9/7/95	<50	<50	<0.5	<0.5	<0.5	<0.5	NS
	3/4/99	NS	NS	NS	NS	NS	NS	NS
	6/29/99	NS	NS	NS	NS	NS	NS	NS
	11/15/99	NS	NS	NS	NS	NS	NS	NS
	5/22/00	NS	NS	NS	NS	NS	NS	NS
	8/16/00	NS	NS	NS	NS	NS	NS	NS

Table II, Summary of Groundwater Sample Hydrocarbon Analytical Results
BEI Job No. 94015, Kawahara Nursery
16550 Ashland Avenue, San Lorenzo, California

Sample ID	Date	Modified EPA Method 8015 (µg/L)		EPA Method 8020 or 8021B (µg/L)				
		TPH as Gasoline	TPH as Diesel	B	T	E	X	MTBE
MW-3	6/16/93	**120,000**	**170,000**	**4,600**	**8,400**	**2,100**	**27,000**	NS
	3/28/94	**23,000**	**94,000**	**4,800**	**6,500**	**3,000**	**15,000**	NS
	11/8/94	**35,000**	**27,000**	**3,600**	**4,100**	**2,700**	**18,000**	NS
	3/29/95	**18,000**	<50*	**1,600**	**1,400**	**780**	**6,200**	NS
	6/7/95	**20,000**	<50	**1,700**	**1,400**	**750**	**6,800**	NS
	9/7/95	**17,000**	<50	**1,100**	**800**	**570**	**4,800**	NS
	3/4/99	**1,300**	<50	**33**	<0.5	**1.2**	**17**	**5.3** [e]
	6/29/99	**8,000**	<1,000	**98**	**34**	**3.7**	**1,200**	**37** [e]
	11/15/99	**4,200**	**2,000** [a]	**63**	**25**	**65**	**590**	**33** [e]
	5/22/00	**5,800**	**1,480**	**53**	**29**	**58**	**490**	**4.9** [e]
	8/16/00	**2,400**	**530** [c,*]	**18**	**5.8** [b]	**18**	**182**	**12** [b,e]
MW-4	6/16/93	NS	NS	NS	NS	NS	NS	NS
	3/28/94	NS	NS	NS	NS	NS	NS	NS
	11/8/94	<50	<50	<0.5	<0.5	<0.5	<0.5	NS
	3/29/95	<50	<50	<0.5	<0.5	<0.5	<0.5	NS
	6/7/95	<50	<50	<0.5	<0.5	<0.5	<0.5	NS
	9/7/95	<50	<50	<0.5	<0.5	<0.5	<0.5	NS
	3/4/99	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0 [e]
	6/29/99	**130**	<50	<0.5	<0.5	<0.5	<0.5	<5.0 [e]
	11/15/99	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0 [e]
	5/22/00	<50	<50	<0.5	<0.5	<0.5	<0.5	<2.0 [e]
	8/16/00	<50	**56** [*,d]	<0.5	<0.5	<0.5	**0.51**	**2.3** [e]

Table II, Summary of Groundwater Sample Hydrocarbon Analytical Results
BEI Job No. 94015, Kawahara Nursery
16550 Ashland Avenue, San Lorenzo, California

Sample ID	Date	Modified EPA Method 8015 (μg/L)		EPA Method 8020 or 8021B (μg/L)				
		TPH as Gasoline	TPH as Diesel	B	T	E	X	MTBE
MW-5	6/16/93	NS	NS	NS	NS	NS	NS	NS
	3/28/94	NS	NS	NS	NS	NS	NS	NS
	11/8/94	<50	<50	<0.5	<0.5	<0.5	<0.5	NS
	3/29/95	<50	**64**	<0.5	<0.5	<0.5	<0.5	NS
	6/7/95	<50	<50	<0.5	<0.5	<0.5	<0.5	NS
	9/7/95	<50	<50	<0.5	<0.5	<0.5	<0.5	NS
	3/4/99	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0 [e]
	6/29/99	**160**	<50	<0.5	<0.5	<0.5	<0.5	<5.0 [e]
	11/15/99	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0 [e]
	5/22/00	<50	<50	<0.5	<0.5	<0.5	<0.5	<2.0 [e]
	8/16/00	<50	<50	<0.5	<0.5	<0.5	<0.5	**3.5** [e]

Notes:
- μg/L = Micrograms per liter
- TPH = Total Petroleum Hydrocarbons
- B = Benzene
- T = Toluene
- E = Ethylbenzene
- X = Total Xylenes
- MTBE = Methyl *tert*-butyl ether
- NS = Not Sampled
- <x = Less than the analytical detection limit (x)
- EPA = Environmental Protection Agency
- * = Laboratory reported the presence of petroleum hydrocarbons with a chromatograph pattern uncharacteristic of diesel fuel
- [a] = Laboratory note indicates the result is within the quantitation range, but that the chromatographic pattern is not typical of fuel
- [b] = Laboratory note indicates that confirmation of the result differed by more than a factor of two
- [c] = Laboratory note indicates lighter hydrocarbons contributed to the quantification
- [d] = Laboratory note indicates the sample has an unknown single peak or peaks
- [e] = See Table IV

Table III, Summary of Groundwater Sample Natural Attenuation Analytical Results
BEI Job No. 94015, Kawahara Nursery
16550 Ashland Avenue, San Lorenzo, California

Sample ID	Date	Field	EPA Method 310.1	EPA Method 353.3	Standard Method 3500	EPA Method 310.1	EPA Method 375.4
		Dissolved Oxygen (mg/L)	Carbon Dioxide (mg/L)	Nitrate/ Nitrogen (mg/L)	Ferrous Iron (mg/L)	Alkalinity (mg/L)	Sulfate (mg/L)
MW-1	3/4/99	NS	NS	NS	NS	NS	NS
	6/29/99	NS	NS	NS	NS	NS	NS
	11/15/99	NS	NS	NS	NS	NS	NS
	5/22/00	NS	NS	NS	NS	NS	NS
	8/16/00	NS	NS	NS	NS	NS	NS
MW-2	3/4/99	NS	NS	NS	NS	NS	NS
	6/29/99	NS	NS	NS	NS	NS	NS
	11/15/99	NS	NS	NS	NS	NS	NS
	5/22/00	NS	NS	NS	NS	NS	NS
	8/16/00	NS	NS	NS	NS	NS	NS
MW-3	3/4/99 3/8/99	1.2	4.4	26	<0.01	520	1,000
	6/29/99	0.4	3.5	10	<0.10	500	73
	11/15/99	0.5	48	5.7	<0.01	530	110
	5/22/00	0.04	63.3	18	<0.10	460	63
	8/16/00	1.0	59.8	13	0.54	450	62
MW-4	3/4/99 3/8/99	2.1	2.3	13	<0.01	320	390
	6/29/99	1.2	21	12	<0.10	360	46
	11/15/99	1.4	22	8.9	<0.01	370	140
	5/22/00	1.6	35.6	19	<0.10	340	49
	8/16/00	2.9	42.2	14	0.10	350	51

Table III, Summary of Groundwater Sample Natural Attenuation Analytical Results
BEI Job No. 94015, Kawahara Nursery
16550 Ashland Avenue, San Lorenzo, California

Sample ID	Date	Field	EPA Method 310.1	EPA Method 353.3	Standard Method 3500	EPA Method 310.1	EPA Method 375.4
		Dissolved Oxygen (mg/L)	Carbon Dioxide (mg/L)	Nitrate/ Nitrogen (mg/L)	Ferrous Iron (mg/L)	Alkalinity (mg/L)	Sulfate (mg/L)
MW-5	3/4/99 3/8/99	1.8	2.1	140	<0.01	370	500
	6/29/99	0.9	7.0	14	<0.10	360	46
	11/15/99	0.9	6.0	11	<0.01	370	150
	5/22/00	0.4	35.1*	11	<0.10	360	50
	8/16/00	0.8	38,250*	12	0.13	360	47

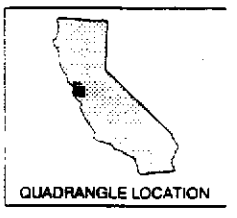
Notes: NS = Not sampled
Field = Field instruments used for measurement of parameter
mg/L = Milligrams per liter
* = Average value

Table IV, Summary of Fuel Oxygenate Analytical Results
BEI Job No. 94015, Kawahara Nursery
16550 Ashland Avenue, San Lorenzo, California

Sample ID	Date	EPA Method 8260				
		TBE (μg/L)	MTBE (μg/L)	DIPE (μg/L)	ETBE (μg/L)	TAME (μg/L)
MW-3	8/16/00	<20	<0.50	<0.50	<0.50	<0.50

Notes: TBE = *tert*-Butyl Alcohol
MTBE = Methyl *tert*-butyl ether
DIPE = Isopropyl Ether
ETBE = Ethyl *tert*-Butyl Ether
TAME = Methyl *tert*-Amyl Ether
(μg/L) = Milligrams per liter

UNITED STATES GEOLOGICAL SURVEY 7.5' QUADS. "SAN LEANDRO, CA" AND "HAYWARD, CA" BOTH ED. 1959 . PHOTOREVISED 1980.



BLYMYER ENGINEERS, INC.

BE JOB NO. 94015

DATE 4-9-99

0 1000 2000

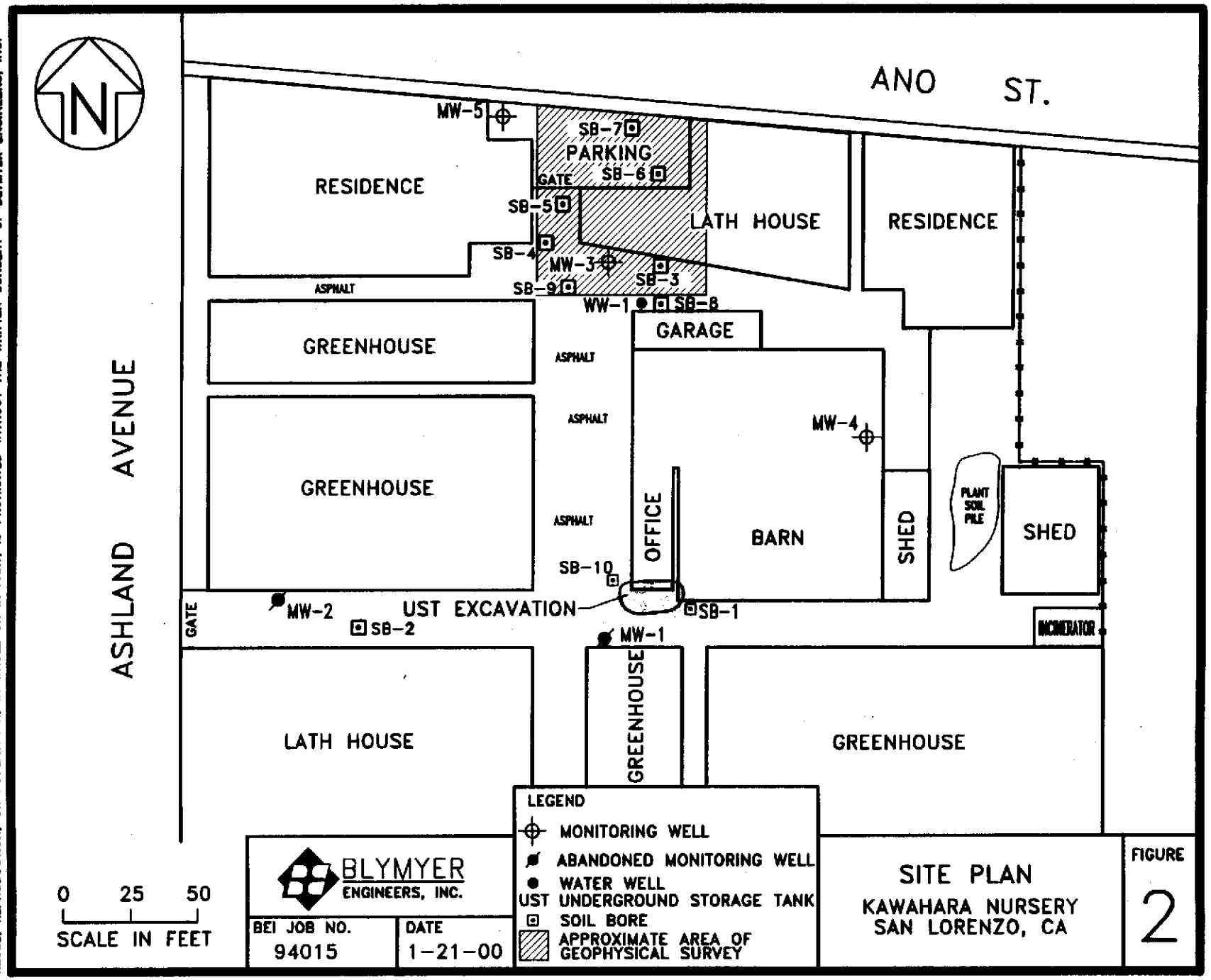
SCALE IN FEET

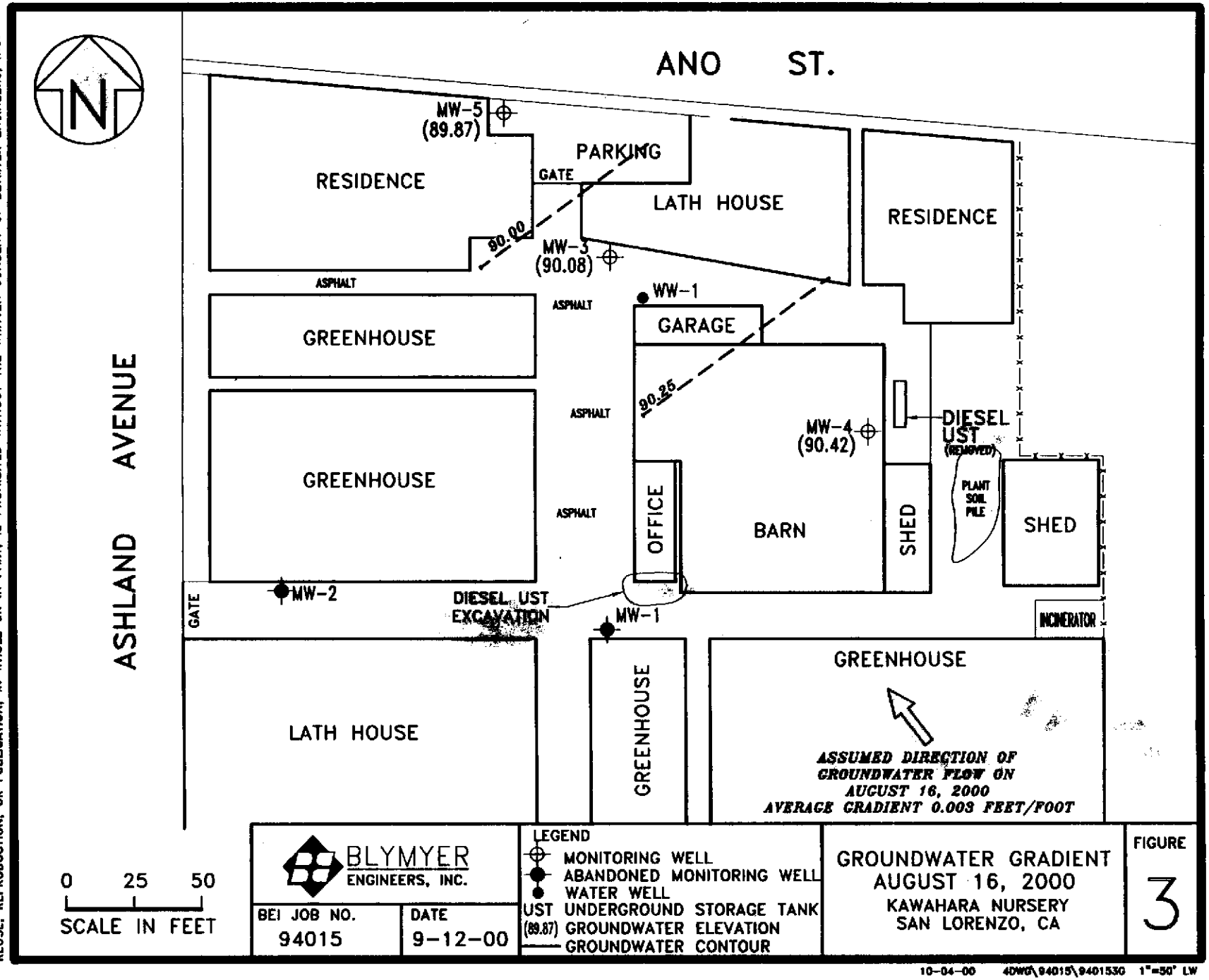
N

SITE LOCATION MAP

KAWAHARA NURSERY
16550 ASHLAND AVE.
SAN LORENZO, CA

FIGURE 1





Appendix A:

Standard Operating Procedures

Blaine Tech Services, Inc.

SUMMARY OVERVIEW OF

STANDARD OPERATING PROCEDURES

FOR THE ROUTINE MONITORING OF GROUNDWATER WELLS

APPLIES TO WELLS WHICH ARE SAMPLED AND ANALYZED
FOR COMPOUNDS ASSOCIATED WITH
PETROLEUM FUELS,
HEAVY METALS,
CHLORINATED SOLVENTS AND
PRIORITY POLLUTANTS
AND OTHER COMMON CONTAMINANTS
RELATED TO INDUSTRY, AGRICULTURE, COMMERCE AND LANDFILL OPERATIONS

REVISED AND REISSUED SEPTEMBER 10, 1995

1. OBJECTIVE INFORMATION

Blaine Tech Services, Inc. performs specialized environmental sampling and documentation as an independent third party. We intentionally limit the scope of our activities and are primarily engaged in the execution of technical assignments which generate objective information. To avoid conflicts of interest which might compromise our impartiality, Blaine Tech Services, Inc. makes no recommendations, does not participate in the interpretation of analytical results and performs no consulting of any kind.

2. SPECIFIC ASSIGNMENTS

All work is performed in accordance with the specific request, authorization and informed consent of the client who may be the property owner, the responsible party or the professional consultant overseeing work at the particular site. The scope of services is defined in individual one-time work orders or in contracts which reference compliance with regulatory requirements, particular client specifications and conformance with our own Standard Operating Procedures. Decisions about what work will be done, how the work will be done and the sequence of events are established in advance of sending personnel to the site. Except where particular procedures and equipment are specified in advance, the determination of how to best complete the individual tasks which comprise the assignment is left to the discretion of our field personnel.

3. INSPECTION AND GAUGING

Wells are inspected prior to evacuation and sampling. The condition of the wellhead will be checked and noted in the degree of detail requested by the client. Measurements include the depth to water

and the total well depth obtained with industry standard electronic sounders which are graduated in increments of tenths of a foot and hundredths of a foot. The surface of the water in each well is further inspected for the presence of immiscibles and any separate phase hydrocarbon layer is measured in situ with an electronic interface probe and confirmed by visual inspection of the separate phase material in a clear acrylic bailer.

Notations are entered in blank areas on forms provided for the collection of instrument readings and included in the specially prepared field notebook. Data collected in the course of our work may be presented in a TABLE OF WELL MONITORING DATA prepared by our personnel or passed to the client or consultant in their original form on the field data sheets.

4. ADEQUATE PURGE STANDARD

Minimum purge volumes and purge completion standards are established by the interested regulatory agency controlling groundwater monitoring in each particular jurisdiction and by the consultant reviewing technical work performed on the project for submission to the interested regulatory agency. Depth to water measurements are collected by our personnel prior to purging and minimum purge volumes are calculated anew for each well based on the height of the water column and the diameter of the well. Expected purge volumes are never less than three case volumes and are set at no less than four case volumes in several jurisdictions.

5. STABILIZED PARAMETERS

Completion standards include minimum purge volumes, but additionally require stabilization of normal groundwater parameters. Normal groundwater parameter readings include electrical conductivity (EC), pH, and temperature which are obtained at regular intervals during the evacuation process (no less than once per case volume) and at the time of sample collection.

Temperature is considered to have stabilized when successive readings do not fluctuate more than +/- 1 degree Celsius. Electrical conductivity is considered stable when successive readings are within 10%. pH is thought to be stable when successive readings remain constant or vary no more than 0.2 of a pH unit.

Additional completion standards are used in some jurisdictions. Turbidity of <50 NTU is such a completion standard.

6. DEWATERED WELLS

Normal evacuation removes no less than three case volumes of water from the well. However, less water may be removed in cases where the well dewaters and does not recharge.

In a typical accommodation procedure worked out between the consultants and the regulatory agency, a well which does not recharge to 80% of its original volume within two hours (and any additional time our personnel have reason to remain at the site) will require our personnel to return to the site within twenty four hours to sample the well. In such cases, our personnel return to the site within the prescribed time limit and collect sample material from the water which has flowed back into the well case

without regard to what percentage of the original volume this recharge represents.

There are also instances in which the client, consultant and regulators agree that it is better to collect certain types of water samples (for volatile constituents) from the available water remaining in a dewatered well rather than let the water stand for prolonged periods of times and risk the loss of volatile constituents. These arrangements are client specific and are contained in client directives to our personnel. These are carried as printed directives in reference binders in the sampling vehicle and are on file at our office for use by our project coordination personnel.

7. PURGEWATER CONTAINMENT

All purgewater evacuated from each groundwater monitoring well is captured and contained as are all fluids form the on-site decontamination of reusable apparatus (sounders, electric pumps and hoses etc.). Hazardous materials are placed in appropriately labeled DOT drums and left at the site for handling by a licensed hazardous waste hauler who will move the material to a TSDF. Non-hazardous purgewater will be drummed or discharged into an on-site treatment system. Non-hazardous effluent from petroleum industry sites is typically collected in vehicle mounted tanks and transported to the nearest refinery operated by the client.

8. EVACUATION

Wells are purged prior to sampling with a variety of evacuation devices. Small diameter wells which contain a relatively small volume of water are often hand bailed. Larger volumes of water found in deeper wells and larger diameter wells are removed with down hole electric submersible pumps or pneumatic purge pumps.

In a typical evacuation, the well is pumped with a Grundfos brand electrical pump deployed into the well on a long section of hose which is paid out form a reel assembly mounted on the sampling vehicle.

Specialized evacuation devices such as USGS Middleburg bladder pumps can be used in response to special circumstances, but unless specifically dictated by the client, consultant or regulator, the type of device used to evacuate the well will be selected based on its appropriateness and efficiency.

9. SAMPLE COLLECTION DEVICES

Irrespective of the type of device used to evacuate the well, samples are always collected with a specialized sampling bailer. Standard sampling bailers are constructed of either stainless steel or PTFE (Teflon®). Some clients request that their samples be obtained with disposable bailers which are made from a variety of materials (PTFE, polyethylene, PVC etc.) which are represented by the manufacturer to be adequate and appropriate for one time use applications after which the disposable bailer is discarded.

Regardless of the type of bailer used to collect sample material, the number of check valves the bailer contains or the presence or absence of a bottom emptying device, the water which is the sample material is promptly decanted into new sample containers in a manner which reduces the loss of volatile constituents and follows the applicable EPA standard for handling volatile organic and semi-volatile compounds.

The exceptions to this rule are samples which must be field filtered (i.e. for metals) prior to preservation or those that must be fixed or manipulated in the field (e.g. Winkler titration). Such samples are handled according to procedures described in STANDARD METHODS, the SW-846 and other texts.

10. SAMPLE CONTAINERS

Sample material is decanted directly from the sampling bailer into sample containers provided by the laboratory which will analyze the samples. The transfer of sample material from the bailer to the sample container conforms to specifications contained in the USEPA T.E.G.D. The type of sample container, material of construction, method of closure and filling requirements are specific to intended analysis. Chemicals needed to preserve the sample material are commonly already placed inside the sample containers by the laboratory or glassware vendor. The number of replicates is set by the laboratory.

11. QC BLANKS

QC blanks are collected in accordance with the regimen agreed upon by the interested parties and typically include trip blanks, duplicates and equipment blanks.

12. CHAIN OF CUSTODY RECORDS

All samples are labeled and logged on a standardized Chain of Custody form. The Blaine Tech Services, Inc., preprinted Chain of Custody form is a multi-page carbonless form, whereas client and laboratory forms are usually single pages which are replicated by making photocopies. All Chain of Custody forms follow standard EPA conventions set forth in USEPA SW-846 for recording the time, date and signature of the person collecting the samples, and go further to require paired time, date and responsible party entries each time the samples change hands.

According to this convention, each time the samples move from the custody of one person to another person, the Chain of Custody form must record the time, date and signature of the person relinquishing custody of the samples and the time data and signature of the person accepting custody of the samples.

In practice, all samples are continuously maintained in an appropriate cooled container while in our custody and until delivered to the laboratory under a standard Chain of Custody form. If the samples are taken charge of by a different party (such as another person from our office, or a courier who will transport the samples to the laboratory) prior to being delivered to the laboratory, appropriate release and acceptance entries must be made on the Chain of Custody form (time, date, and signature of the person releasing the samples followed by the time, date and signature of the person taking possession of the samples).

13. SAMPLE STORAGE

All sample containers are promptly placed in food grade ice chests for storage in the field and transport (direct or via our facility) to the analytical laboratory which will perform the intended analytical procedures. These ice chests contain quantities of ice as a refrigerant material. The samples are maintained in either an ice chest or a refrigerator until relinquished into the

custody of the laboratory or laboratory courier.

14. ICE

Temperature in the ice chest is lowered and maintained with ice. Our firm produces ice in a restaurant grade commercial ice maker which is supplied with deionized water which has been filtered and polished and is the same grade of water tanked on our sampling vehicles for use in decontamination procedures.

15. DOCUMENTATION CONVENTIONS

All sample containers are identified with a site designation and a discrete sample identification number specific to that particular groundwater well. Additional standard notations (e.g. time, date, sampler) are also made on the label.

Each and every sample container has a label affixed to it. In most cases these labels are generated by our office personnel and are partially preprinted. Labels can also be hand written by our field personnel. The site is identified (usually with a code specified by the client), as is the particular groundwater well from which the sample is drawn (e.g. MW-1, MW-2, S-1, etc.). The time at which the sample was collected and the initials of the person collecting the sample are handwritten onto the label.

Our representative adds the Blaine Tech Services, Inc. Sampling Event Number. This Sampling Event Number also appears on the Chain of Custody form and all other notebook pages and papers associated with the work done at the site on the particular day by this particular technician. The Sampling Event Number also becomes the number of the Blaine Tech Services, Inc. Sampling Report.

The Sampling Event Number is derived form the date on which the work was done, the specific employee who did the work and what the relationship of this particular assignment was to any other assignments performed on that day by this specific employee.

An example Sampling Event Number is 950910-B-2.

The first six digits indicate the date (yymmdd) which is 950910 for September 10, 1995. The alpha character indicates the letter assigned to the specific employee doing the work (e.g. the letter B is assigned to Mr. Richard Blaine). The final digit indicates that this was the second sampling assignment performed by Mr. Blaine on that particular date.

16. DECONTAMINATION

All equipment is brought to the site in clean and serviceable condition and is cleaned after use is each well and before subsequent use in any other well. Equipment is decontaminated before leaving the site.

The primary decontamination device is a commercial steam cleaner. Because high temperature water retains heat better than does a jet of steam and poses fewer hazards to the operator, we have our steam cleaners detuned by the manufacturer to produce hot water several degrees below the transition to live steam.

The steam cleaner / hot pressure washer is operated with high quality deionized water which is produced at our facility and tanked

on our sampling vehicle for use at remote sites.

Decontamination effluent is collected in the same onboard effluent tanks as are used to contain the effluent from purging the groundwater wells at the site. The decon effluent is handled in the same manner as groundwater from the well.

17. FREE PRODUCT SKIMMERS

A skimmer is a free product recovery device sometimes installed in wells with a free product zone on the surface of the water. The presence of the skimmer in the well often prevents normal well gauging and free product zone measurements. The Petro Trap brand 2.0" and 3.0" diameter skimmers which are used on some petroleum industry sites fall into the category of devices that obstruct the well to the extent of preventing normal gauging. Gauging at such sites is performed in accordance with specific directions from the professional consulting firm overseeing work at the site on behalf of the property owner or responsible party.

In cases where the consultant elects to have our personnel pull the skimmers out of the well and gauge the well, our personnel perform the additional task of draining the accumulated free product out of the Petro Trap before putting it back into the well. The recovered free product is measured and recorded. The notation on the amount of free product with subsequently be entered in the VOLUME OF IMMISCIBLES REMOVED column on the TABLE OF WELL GAUGING DATA in the next Blaine Tech Services, Inc. Sampling Report.

18. CERTIFIED LABORATORY

Samples are directed to analytical laboratories which have been certified by the California Department of Health Services as an authorized Hazardous Materials Testing Laboratory and that laboratory's name and DOHS HMTL number should be noted on the Chain of Custody form.

18. REPORTAGE

A typical groundwater monitoring assignment involves the work of several different firms and a series of reports are generated, beginning with a Blaine Tech Services, Inc. Sampling Report. The Sampling Report (whether in extended or abbreviated form) details the particulars of the work that was performed and either presents directly or references descriptions of the methodologies which were used.

An attachment to the Sampling Report is the Chain of Custody form which is a legal document which records that transfer of the samples from Blaine Tech Services, Inc. to the analytical laboratory which will analyze the samples. The laboratory completes its work and issues its own Certified Analytical Report presenting the results of the analyses they conducted. Both our Sampling Report and the laboratory's Analytical Report deal with the objective information. Neither the Sampling Report nor the Analytical Report interprets the data being reported.

Interpretations are provided by professional geologists and engineers who are working as environmental consultants. The consultant reviews the measurements made by our field personnel and plots an updated groundwater gradient map. The most recent analytical results are compared to earlier results to establish trends and information about the presence of various compounds in the groundwater. Anomalous data are examined

with reference to our field data sheets to see if our notes indicate changed site conditions.

In general, the consultant is charged with making sense of the objective information and deciding what it may mean to the property owner and to the people to the State of California. The consultant signs off on is or her review of the objective information, makes whatever recommendations are appropriate and submits the assembled package of related documents to the regulatory agency on behalf of the property owner or responsible party.

The individual reports from Blaine Tech Services, Inc. and the analytical laboratory are distinct objective information documents, linked together by the Chain of Custody. In contrast, groundwater gradient maps require professional judgements and adjustments and are, therefore, within the domain of the professional consultant. Any professional evaluations or recommendation are always made by the consultant under separate cover.

20. FIELD PERSONNEL

All Blaine Tech Services, Inc. field personnel are required to have 40 hours of initial training in Hazardous Waste Operations and Emergency Response per 29 CFR 1910. 120 with 8-hour annual refresher courses. They are also given an 8-hour BATT course in refinery safety orientation. They receive several days of on-the-job-training and are given additional in-house training which included study of all the applicable Codes of Safe Practices form our Injury and Illness Prevention Program, review of the written Hazard Communication Program, familiarization with our written Drug Alcohol Free Work Place Policy and orientation on the Blaine Tech Services, Inc. Comprehensive Quality Assurance Program.

Field personnel also receive 29 CFR 1910 Supervisor Training to better prepare them to establish safe work sites at remote locations and supervise their own work, including compliance with site specific Site Safety Plans (SSP). Client requirement binders and Standard Operating Procedures are also provided. Blaine Tech Services, Inc. Policies and extensive in house training materials covering Basics and Diverse Sampling Assignments are included in advance employee training.

Blaine Tech Services, Inc. field personnel routinely commence work at OSHA level D and can upgrade to appropriate levels of additional protection as needed. They maintain their personal protective equipment in accordance with OSHA requirements and the specific mandates of our Respiratory Protection Program. All field personnel are trained and expected to comply with the requirements of any site specific Safety Plan which is in effect at any given site. Our personnel are prepared and able to follow the directions of any Site Safety Officer (SSO) administering the Site Safety Plan and, in the absence of an SSO, can apply the pertinent provisions of the SSP to themselves and to other Blaine Tech Services, Inc. personnel.

21. WORK ORIENTATION

Blaine Tech Services, Inc. field personnel are chosen from applicants who usually have bachelors' degrees in the sciences, environmental studies or related fields. People from the observational sciences (like botanists) often do better field sampling than young engineers who want to learn consulting (and are encouraged to find work

with a good consulting firm). We notice that we employ a disproportionate number of people with degrees in fire science.

The academic concentration, however, has proven less important than the broader aptitude, durability and willingness of the applicant to deal with the range of problems which attend executing exacting procedures in a noisy workplace largely unprotected from sun, wind and rain.

Put simply, there is a lot of physical work that surrounds the science. Those who succeed at field sampling are those who can manage the physical work, handle emergencies and make field repairs without losing track of the particular requirements of the procedure they are performing.

22. PLAIN BUT IMPORTANT

Blaine Tech Services, Inc. has concentrated on providing high quality environmental sampling and documentation for well over a decade. During that time we have contributed mechanical and procedural innovations, helped establish higher quality and performance standards and have assisted in the replacement of inefficient sole-source-vendor monopolies with the new practice of separating projects into identifiable modules in which professional, technical and contractor functions are evaluated, bid and awarded individually – on the basis of price and actual performance.

Real as these advances are, sampling remains unglamorous and even misunderstood. Some engineers have expressed the view that field sampling is such a menial activity that it may as well be performed by their newest employees who are paying their dues before being allowed to do *real* work such as data interpretation, computer modeling, and the design of remediation systems.

We assert the contrary view, that sample collection is at least as important as sample analysis in the laboratory. This is based on the fact that no amount of care in the laboratory can – retroactively – put back into a sample, the integrity and quality that has been lost by indifferent sample collection. It can even be argued that objective scientific information is *more credible* when it is produced by people who are wholly impartial and really have no interest in any particular outcome.

Blaine Tech Services, Inc. exists because there is technical work which needs to be done that is neither glamorous nor highly remunerative, but is still important enough that it needs to be done correctly.

Any questions can be directed to our senior project coordinator, Mr. Kent Brown who can be reached at: **(408) 573-0555.**

Select voice mail extension number **203.**

Appendix B:

Well Monitoring Data Sheet and *Well Gauging Data*

Blaine Tech Services, Inc.

dated August 16, 2000

WELL GAUGING DATA

Project # 000816-G1 Date 8/16/00 Client Blymer Eng.

Site Kawahara Nursery, 16550 Ashland Ave., San Lorenzo, C

Well ID	Well Size (in.)	Sheen / Odor	Depth to Immiscible Liquid (ft.)	Thickness of Immiscible Liquid (ft.)	Volume of Immiscibles Removed (ml)	Depth to water (ft.)	Depth to well bottom (ft.)	Survey Point: TOB or TOC	
MW-3	2					9.44	19.15		
MW-4	2					10.04	19.63		
MW-5	2					8.27	19.81		

Drums on site

5 full soil drums 3 2½ gal. soil buckets

6 full water drums, 4 ½ full water drums

+ our 2 Purgewater drums (1 full, 1-½ full)

WELL MONITORING DATA SHEET

Project #: 000816-G1	Client: Blymer Eng.
Sampler: MG	Start Date: 8/16/00
Well I.D.: MW-3	Well Diameter: (2) 3 4 6 8 ___
Total Well Depth: 19.15	Depth to Water: 9.44
Before: After:	Before: After:
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	D.O. Meter (if req'd): (YSI) HACH

Purge Method:

- Bailer
- ~~Disposable Bailer~~
- Middleburg
- Electric Submersible
- Waterra
- Peristaltic
- Extraction Pump
- Other ___

Sampling Method: Bailer

- ~~Disposable Bailer~~
- Extraction Port
- Dedicated Tubing
- Other: ___

1.6 (Gals.) X 3 = 4.8 Gals.
1 Case Volume | Specified Volumes | Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius² * 0.163

Time	Temp (°F)	pH	Cond.	Turbidity	Gals. Removed	Observations
912	67.8	7.0	1080	>200	1.75	Lt. Brown, Odor
916	67.0	7.0	1060	>200	3.5	
925	66.8	7.0	1060	>200	5.0	

Did well dewater? Yes (No) Gallons actually evacuated: 5.0

Sampling Time: 950 Sampling Date: 8/16/00

Sample I.D.: MW-3 Laboratory: C+T

Analyzed for: (TPH-G) BTEX MTBE TPH-D Other: Alkalinity, Nitrate, Nitrite, Sulfate, CO2, Ferrous Iron, 8260

Equipment Blank I.D.: @ Time Duplicate I.D.:

Analyzed for: TPH-G BTEX MTBE TPH-D Other:

D.O. (if req'd):	Pre-purge:	1.0 mg/L	Post-purge:	mg/L
ORP (if req'd):	Pre-purge:	mV	Post-purge:	mV

WELL MONITORING DATA SHEET

Project #: 000816-G1	Client: Blymer Eng.
Sampler: MC	Start Date: 8/16/00
Well I.D.: MW-4	Well Diameter: (2) 3 4 6 8 ____
Total Well Depth: 19.63	Depth to Water: 10.04
Before: After:	Before: After:
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	D.O. Meter (if req'd): (YSI) HACH

Purge Method:

- Bailer
- (X) Disposable Bailer
- Middleburg
- Electric Submersible
- Waterra
- Peristaltic
- Extraction Pump
- Other ____

Sampling Method: Bailer

- (X) Disposable Bailer
- Extraction Port
- Dedicated Tubing
- Other: ____

1.5 (Gals.) X 3 = 4.5 Gals.
1 Case Volume | Specified Volumes | Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius² * 0.163

Time	Temp (°F)	pH	Cond.	Turbidity	Gals. Removed	Observations
1000	63.9	7.1	930	102	1.75	Cloudy
1004	64.0	7.1	940	120	3.5	
1007	63.3	7.2	930	138	5.0	

Did well dewater? Yes (No)
Gallons actually evacuated: 5.0

Sampling Time: 1011
Sampling Date: 8/16/00

Sample I.D.: MW-4
Laboratory: C+T

Analyzed for: (TPH-G) (BTEX) (MTBE) (TPH-D) Other: Alkalinity, Nitrate, Nitrite, Sulfate, CO_2, Ferrous Iron

Equipment Blank I.D.: @ Time
Duplicate I.D.:

Analyzed for: TPH-G BTEX MTBE TPH-D Other:

D.O. (if req'd):	Pre-purge:	2.9 mg/L	Post-purge:	mg/L
ORP (if req'd):	Pre-purge:	mV	Post-purge:	mV

WELL MONITORING DATA SHEET

Project #: 000516 - G1	Client: Bivner Eng.
Sampler: MG	Start Date: 8/16/00
Well I.D.: MW-5	Well Diameter: (2) 3 4 6 8 ___
Total Well Depth: 19.81	Depth to Water: 8.27
Before: After:	Before: After:
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	D.O. Meter (if req'd): (YSI) HACH

Purge Method:

- Bailer
- ~~Disposable Bailer~~
- Middleburg
- Electric Submersible
- Waterra
- Peristaltic
- Extraction Pump
- Other_____

Sampling Method: Bailer

- ~~Disposable Bailer~~
- Extraction Port
- Dedicated Tubing
- Other: _____

1.8 (Gals.) X 3 = 5.4 Gals.
1 Case Volume | Specified Volumes | Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius^2 * 0.163

Time	Temp (°F)	pH	Cond.	Turbidity	Gals. Removed	Observations
1025	66.1	7.3	880	>200	2.0	Cloudy
1029	66.3	7.3	870	>200	4.0	
1033	66.0	7.3	870	>200	5.5	

Did well dewater? Yes (No)	Gallons actually evacuated: 5.5
Sampling Time: 1040	Sampling Date: 8/16/00
Sample I.D.: MW-5	Laboratory: C-T
Analyzed for: ~~TPH-G~~ BTEX MTBE ~~TPH-D~~	Other: Alkalinity, Nitrate, Nitrite, Sulfate, CO_2, Ferrous Iron
Equipment Blank I.D.: @ Time	Duplicate I.D.:
Analyzed for: TPH-G BTEX MTBE TPH-D	Other:

D.O. (if req'd):	Pre-purge:	0.8 mg/L	Post-purge:	mg/L
ORP (if req'd):	Pre-purge:	mV	Post-purge:	mV

BLAINE
TECH SERVICES INC.

1680 ROGERS AVENUE
SAN JOSE, CALIFORNIA 95112
(408) 573-7771 FAX
(408) 573-0555 PHONE

WELLHEAD INSPECTION CHECKLIST

Client Blymer Eng.

Site Address 16550 Ashland Ave.

Technician MG

Date 8/16/00

1. Lid on box?	6. Casing secure?	12. Water standing in wellbox?	15. Well cap functional?
2. Lid broken?	7. Casing cut level?	12a. Standing above the top of casing?	16. Can cap be pulled loose?
3. Lid bolts missing?	8. Debris in wellbox?	12b. Standing below the top of casing?	17. Can cap seal out water?
4. Lid bolts stripped?	9. Wellbox is too far above grade?	12c. Water even with the top of casing?	18. Padlock present?
5. Lid seal intact?	10. Wellbox is too far below grade?	13. Well cap present?	19. Padlock functional?
	11. Wellbox is crushed/damaged?	14. Well cap found secure?	

☐ Check box if no deficiencies were found. Note below deficiencies you were able to correct.

Well I.D.	Deficiency	Corrective Action Taken
MW-5	Broken cap.	Added new 2" cap.

Note below all defiencies that could not be corrected and still need to be corrected.

Well I.D.	Persisting Deficiency	BTS Office assigns or defers Correction to:	Date assigned	Date corrected
MW-4	Cap locking mechanism broken	BTS ABLE to		
~~MW-5~~	~~" " " "~~	REPLACE NON-FUNCT		
	~~+ rusted stinker~~	MATERIALS IF		
MW-3	Dolphin lock	AUTHORIZED		
		Please Notify		

need new cap

Appendix C:

Analytical Laboratory Report

Curtis & Tompkins

dated September 12, 2000

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710. Phone (510) 486-0900

ANALYTICAL REPORT

Prepared for:

Blymyer Engineers, Inc.
1829 Clement Avenue
Alameda, CA 94501

Date: 12-SEP-00
Lab Job Number: 147094
Project ID: N/A
Location: Kawahara Nursery

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signatures. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis.

Reviewed by: _____
Project Manager

Reviewed by: _____
Operations Manager

Curtis & Tompkins, Ltd.

Laboratory Number: **147094**
Client: **Blymyer Engineers, Inc.**
Project Name: **Kawahara Nursery**

Order Date: **08/16/00**

CASE NARRATIVE

This hardcopy data package contains sample results and batch QC results for three water samples received from the above referenced project. The samples were received cold and intact.

Total Extractable Hydrocarbons: No analytical problems were encountered.

Total Volatile Hydrocarbons/BTXE: High surrogate recovery was observed for the matrix spike of CT# 147050-001 due to hydrocarbons coeluting with the surrogate peak. No other analytical problems were encountered.

Gasoline Oxygenates: No analytical problems were encountered.

General Chemistry: No analytical problems were encountered.

RSK-175: Performance Analytical Inc. performed the analysis in Simi Valley, California. Please see the Performance case narrative.

197099

Curtis & Tompkins

BLAINE
TECH SERVICES, INC.

1680 ROGERS AVENUE
SAN JOSE, CALIFORNIA 95112-1105
FAX (408) 573-7771
PHONE (408) 573-0555

CHAIN OF CUSTODY BTS # CC816-G1

CLIENT: Blymyer Engineers, Inc.

SITE: Kawahara Nursery
16550 Ashland Ave
San Lorenzo, CA

LAB: ~~Entech~~ DHS #

ALL ANALYSES MUST MEET SPECIFICATIONS AND DETECTION LIMITS SET BY CALIFORNIA DHS AND
☐ EPA ☐ LIA ☐ OTHER ☐ RWQCB REGION

SPECIAL INSTRUCTIONS

Invoice and Report to : Blymyer Engineers, Inc.
Attn: Mark Detterman
(5) Oxygenates for MW-3 only

* Samples have Short Hold Times. Lab to filter Metals Sample

SAMPLE I.D.	DATE	TIME	MATRIX S=SOIL W=H_2O	CONTAINERS TOTAL		C = COMPOSITE ALL CONTAINERS	TPH-G/BTEX/MTBE	TPH-D	Alkalinity, Nitrate */Nitrite, Sulfate	Carbon Dioxide	Dissolved Ferrous Iron * SM3500	(5) Oxygenates by 8260 (DIPE, TAME, TBA, ETBE, EDB)	ADD'L INFORMATION	STATUS	CONDITION	LAB SAMPLE #
MW-3	8/16/00	930	W	12	Mixed		X	X	X	X	X	X				
MW-4	↓	1011	↓	9	↓		X	X	X	X	X					
MW-5	↓	1040	↓	9	↓		X	X	X	X	X					

SAMPLING COMPLETED: DATE 8/16/00 TIME 1100
SAMPLING PERFORMED BY:

RESULTS NEEDED NO LATER THAN: Per Client

RELEASED BY	DATE	TIME	RECEIVED BY	DATE	TIME
			Yuxi Kunde	8/16/00	1135
RELEASED BY	DATE	TIME	RECEIVED BY	DATE	TIME
RELEASED BY	DATE	TIME	RECEIVED BY	DATE	TIME

SHIPPED VIA	DATE SENT	TIME SENT	COOLER #	

Received in cooler

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	147094	Prep:	EPA 3520
Client:	Blymyer Engineers, Inc.	Analysis:	EPA 8015M
Project#:	STANDARD		
Matrix:	Water	Sampled:	08/16/00
Units:	ug/L	Received:	08/16/00
Diln Fac:	1.000		

Field ID:	MW-3	Prepared:	08/17/00
Type:	SAMPLE	Analyzed:	08/22/00
Lab ID:	147094-001	Cleanup Method:	EPA 3630C
Batch#:	57772		

Analyte	Result	RL
Diesel C10-C24	530 L Y	50

Surrogate	%REC	Limits
Hexacosane	91	44-121

Field ID:	MW-4	Prepared:	08/17/00
Type:	SAMPLE	Analyzed:	08/22/00
Lab ID:	147094-002	Cleanup Method:	EPA 3630C
Batch#:	57772		

Analyte	Result	RL
Diesel C10-C24	56 Y Z	50

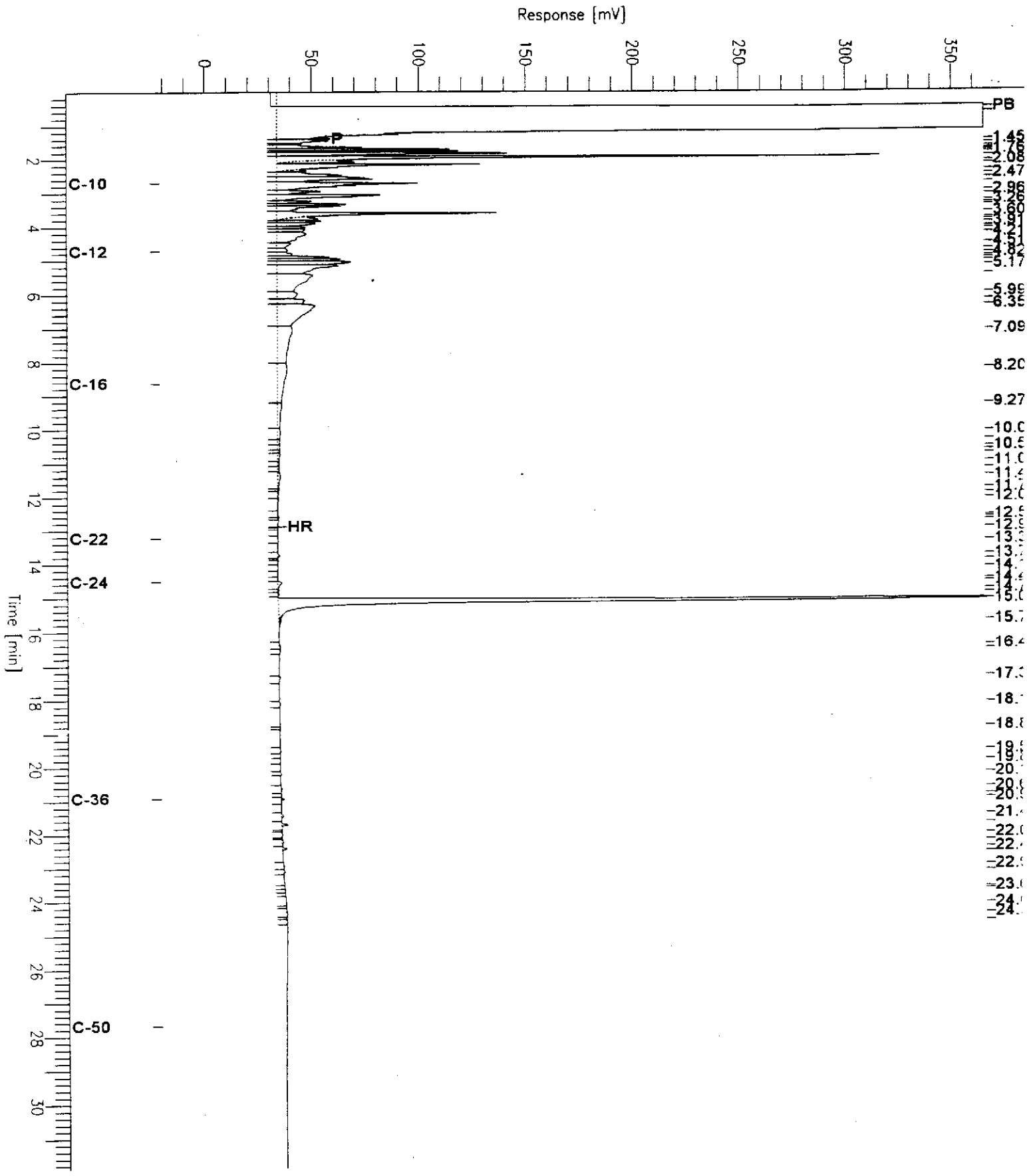
Surrogate	%REC	Limits
Hexacosane	101	44-121

L = Lighter hydrocarbons contributed to the quantitation
Y = Sample exhibits fuel pattern which does not resemble standard
Z = Sample exhibits unknown single peak or peaks
ND = Not Detected
RL = Reporting Limit

Chromatogram

Sample Name : 147094-001,57772
FileName : G:\GC15\CHB\233B050.RAW
Method : BTEH216.MTH
Start Time : 0.01 min End Time : 31.91 min
Scale Factor: 0.0 Plot Offset: -21 mV

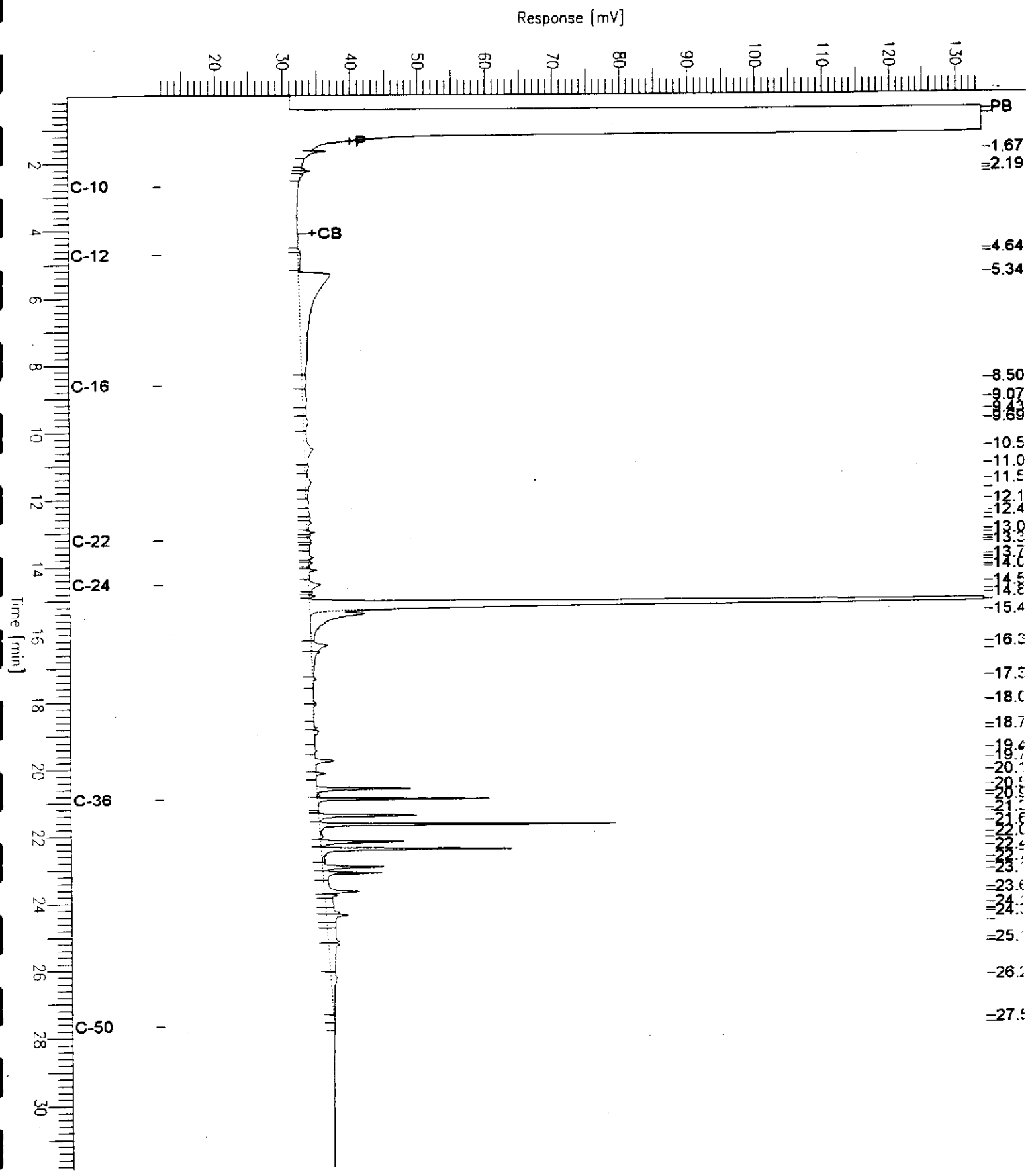
Sample #: 57772 Page 1 of 1
Date : 08/22/2000 11:00 AM
Time of Injection: 08/22/2000 09:09 AM
Low Point : -21.26 mV High Point : 365.47 mV
Plot Scale: 386.7 mV



Chromatogram

Sample Name : 147094-002,57772
FileName : G:\GC15\CHB\233B051.RAW
Method : BTEH216.MTH
Start Time : 0.01 min End Time : 31.87 min
Scale Factor: 0.0 Plot Offset: 12 mV

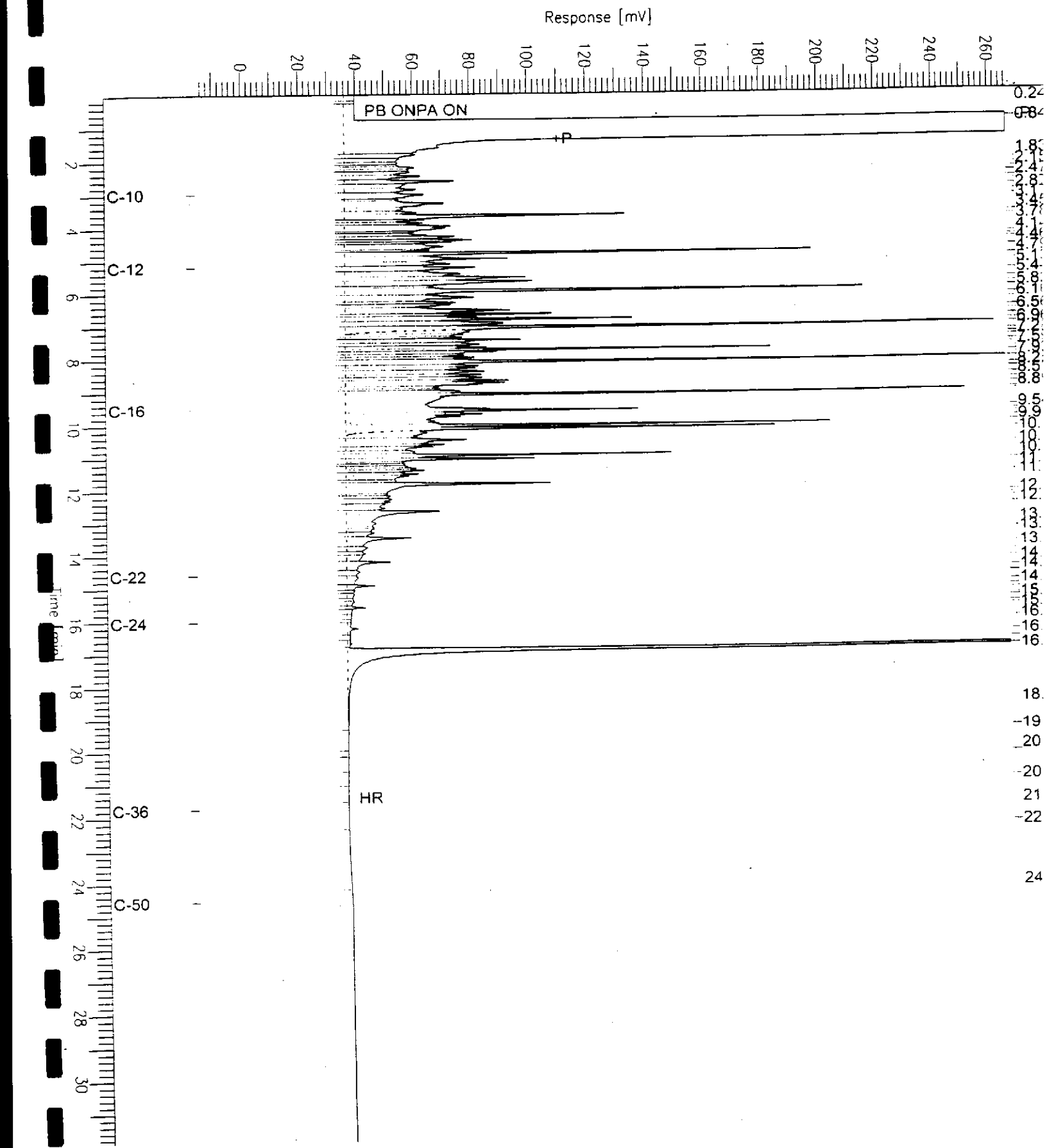
Sample #: 57772
Date : 08/22/2000 11:00 AM
Time of Injection: 08/22/2000 09:52 AM
Low Point : 11.93 mV High Point : 133.79 mV
Plot Scale: 121.9 mV



Chromatogram

Sample Name : x,ccv,00ws9606,dsl
FileName : G:\GC11\CHA\231A046.RAW
Method : ATEH230.MTH
Start Time : 0.01 min End Time : 31.91 min
Scale Factor: 0.0 Plot Offset: -16 mV

Sample #: 500
Date : 8/20/00 03:51 PM
Time of Injection: 8/19/00 11:49 PM
Low Point : -15.85 mV High Point : 266.39 mV
Plot Scale: 282.2 mV



Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	147094	Prep:	EPA 3520
Client:	Blymyer Engineers, Inc.	Analysis:	EPA 8015M
Project#:	STANDARD		
Matrix:	Water	Sampled:	08/16/00
Units:	ug/L	Received:	08/16/00
Diln Fac:	1.000		

Field ID:	MW-5	Prepared:	08/25/00
Type:	SAMPLE	Analyzed:	08/28/00
Lab ID:	147094-003	Cleanup Method:	
Batch#:	57942		

Analyte	Result	RL
Diesel C10-C24	ND	50

Surrogate	%REC	Limits
Hexacosane	79	44-121

Type:	BLANK	Prepared:	08/17/00
Lab ID:	QC123158	Analyzed:	08/20/00
Batch#:	57772	Cleanup Method:	EPA 3630C

Analyte	Result	RL
Diesel C10-C24	ND	50

Surrogate	%REC	Limits
Hexacosane	78	44-121

Type:	BLANK	Prepared:	08/25/00
Lab ID:	QC123805	Analyzed:	09/01/00
Batch#:	57942	Cleanup Method:	

Analyte	Result	RL
Diesel C10-C24	ND	50

Surrogate	%REC	Limits
Hexacosane	78	44-121

= Lighter hydrocarbons contributed to the quantitation
Y = Sample exhibits fuel pattern which does not resemble standard
Z = Sample exhibits unknown single peak or peaks
ND = Not Detected
RL = Reporting Limit

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	147094	Prep:	EPA 3520
Client:	Blymyer Engineers, Inc.	Analysis:	EPA 8015M
Project#:	STANDARD		
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC123806	Batch#:	57942
Matrix:	Water	Prepared:	08/25/00
Units:	ug/L	Analyzed:	09/03/00

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24	2,339	1,461	62	45-110

Surrogate	%REC	Limits
Hexacosane	75	44-121

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	147094	Prep:	EPA 3520
Client:	Blymyer Engineers, Inc.	Cleanup Method:	EPA 3630C
Project#:	STANDARD	Analysis:	EPA 8015M
Matrix:	Water	Batch#:	57772
Units:	ug/L	Prepared:	08/17/00
Diln Fac:	1.000	Analyzed:	08/20/00

Type: BS Lab ID: QC123159

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24	2,339	1,623	69	45-110

Surrogate	%REC	Limits
Hexacosane	92	44-121

Type: BSD Lab ID: QC123160

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24	2,339	1,492	64	45-110	8	22

Surrogate	%REC	Limits
Hexacosane	84	44-121

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	147094	Prep:	EPA 3520
Client:	Blymyer Engineers, Inc.	Analysis:	EPA 8015M
Project#:	STANDARD		
Field ID:	ZZZZZZZZZZ	Batch#:	57942
MSS Lab ID:	147230-010	Sampled:	08/23/00
Matrix:	Water	Received:	08/24/00
Units:	ug/L	Prepared:	08/25/00
Diln Fac:	1.000	Analyzed:	09/04/00

Type: MS Lab ID: QC123807

Analyte	MSS Result	Spiked	Result	%REC	Limits
Diesel C10-C24	196.0	2,339	1,641	62	38-122

Surrogate	%REC	Limits
Hexacosane	95	44-121

Type: MSD Lab ID: QC123808

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24	2,339	1,637	62	38-122	0	28

Surrogate	%REC	Limits
Hexacosane	89	44-121

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Gasoline by GC/FID CA LUFT

Lab #:	147094	Prep:	EPA 5030
Client:	Blymyer Engineers, Inc.	Analysis:	EPA 8015M
Project#:	STANDARD		
Matrix:	Water	Sampled:	08/16/00
Units:	ug/L	Received:	08/16/00
Diln Fac:	1.000	Analyzed:	08/19/00
Batch#:	57803		

Field ID: MW-3 Lab ID: 147094-001
Type: SAMPLE

Analyte	Result	RL
Gasoline C7-C12	2,400	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	114	59-135
Bromofluorobenzene (FID)	175 *	60-140

Field ID: MW-4 Lab ID: 147094-002
Type: SAMPLE

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	113	59-135
Bromofluorobenzene (FID)	114	60-140

Field ID: MW-5 Lab ID: 147094-003
Type: SAMPLE

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	112	59-135
Bromofluorobenzene (FID)	114	60-140

Type: BLANK Lab ID: QC123290

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	90	59-135
Bromofluorobenzene (FID)	90	60-140

* = Value outside of QC limits; see narrative
ND = Not Detected
RL = Reporting Limit

Curtis & Tompkins, Ltd.

Benzene, Toluene, Ethylbenzene, Xylenes

Lab #:	147094	Prep:	EPA 5030
Client:	Blymyer Engineers, Inc.	Analysis:	EPA 8021B
Project#:	STANDARD		
Matrix:	Water	Sampled:	08/16/00
Units:	ug/L	Received:	08/16/00
Diln Fac:	1.000	Analyzed:	08/19/00
Batch#:	57803		

Field ID: MW-3 Lab ID: 147094-001
Type: SAMPLE

Analyte	Result	RL
MTBE	12 C	2.0
Benzene	18	0.50
Toluene	5.8 C	0.50
Ethylbenzene	18	0.50
m,p-Xylenes	160	0.50
o-Xylene	22	0.50

Surrogate	%REC	Limits
Trifluorotoluene (PID)	109	56-142
Bromofluorobenzene (PID)	138	55-149

Field ID: MW-4 Lab ID: 147094-002
Type: SAMPLE

Analyte	Result	RL
MTBE	2.3	2.0
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	0.51	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Trifluorotoluene (PID)	106	56-142
Bromofluorobenzene (PID)	111	55-149

C = Presence confirmed, but confirmation concentration differed by more than a factor of two
ND = Not Detected
RL = Reporting Limit

Curtis & Tompkins, Ltd.

Benzene, Toluene, Ethylbenzene, Xylenes

Lab #:	147094	Prep:	EPA 5030
Client:	Blymyer Engineers, Inc.	Analysis:	EPA 8021B
Project#:	STANDARD		
Matrix:	Water	Sampled:	08/16/00
Units:	ug/L	Received:	08/16/00
Diln Fac:	1.000	Analyzed:	08/19/00
Batch#:	57803		

Field ID: MW-5 Lab ID: 147094-003
Type: SAMPLE

Analyte	Result	RL
MTBE	3.5	2.0
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Trifluorotoluene (PID)	106	56-142
Bromofluorobenzene (PID)	112	55-149

Type: BLANK Lab ID: QC123290

Analyte	Result	RL
MTBE	ND	2.0
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Trifluorotoluene (PID)	86	56-142
Bromofluorobenzene (PID)	87	55-149

C = Presence confirmed, but confirmation concentration differed by more than a factor of two
ND = Not Detected
RL = Reporting Limit

Curtis & Tompkins, Ltd.

Gasoline by GC/FID CA LUFT

Lab #:	147094	Prep:	EPA 5030
Client:	Blymyer Engineers, Inc.	Analysis:	EPA 8015M
Project#:	STANDARD		
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC123291	Batch#:	57803
Matrix:	Water	Analyzed:	08/19/00
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	2,000	2,006	100	73-121

Surrogate	%REC	Limits
Trifluorotoluene (FID)	117	59-135
Bromofluorobenzene (FID)	126	60-140

Curtis & Tompkins, Ltd.

Benzene, Toluene, Ethylbenzene, Xylenes

Lab #:	147094	Prep:	EPA 5030
Client:	Blymyer Engineers, Inc.	Analysis:	EPA 8021B
Project#:	STANDARD		
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC123292	Batch#:	57803
Matrix:	Water	Analyzed:	08/19/00
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
MTBE	20.00	20.44	102	51-125
Benzene	20.00	17.73	89	67-117
Toluene	20.00	17.24	86	69-117
Ethylbenzene	20.00	17.64	88	68-124
m,p-Xylenes	40.00	37.09	93	70-125
o-Xylene	20.00	17.42	87	65-129

Surrogate	%REC	Limits
Trifluorotoluene (PID)	97	56-142
Bromofluorobenzene (PID)	101	55-149

Curtis & Tompkins, Ltd.

Gasoline by GC/FID CA LUFT

Lab #:	147094	Prep:	EPA 5030
Client:	Blymyer Engineers, Inc.	Analysis:	EPA 8015M
Project#:	STANDARD		
Field ID:	ZZZZZZZZZZ	Batch#:	57803
MSS Lab ID:	147050-001	Sampled:	08/10/00
Matrix:	Water	Received:	08/11/00
Units:	ug/L	Analyzed:	08/19/00
Diln Fac:	1.000		

Type: MS Lab ID: QC123293

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	44.78	2,000	2,311	113	65-131

Surrogate	%REC	Limits
Trifluorotoluene (FID)	130	59-135
Bromofluorobenzene (FID)	145 *	60-140

Type: MSD Lab ID: QC123294

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	2,292	112	65-131	1	20

Surrogate	%REC	Limits
Trifluorotoluene (FID)	127	59-135
Bromofluorobenzene (FID)	139	60-140

* = Value outside of QC limits; see narrative
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Gasoline Oxygenates by GC/MS

Lab #:	147094	Prep:	EPA 5030
Client:	Blymyer Engineers, Inc.	Analysis:	EPA 8260A
Project#:	STANDARD		
Field ID:	MW-3	Batch#:	57926
Matrix:	Water	Sampled:	08/16/00
Units:	ug/L	Received:	08/16/00
Diln Fac:	1.000	Analyzed:	08/25/00

Type: SAMPLE Lab ID: 147094-001

Analyte	Result	RL
tert-Butyl Alcohol (TBA)	ND	20
MTBE	ND	0.50
Isopropyl Ether (DIPE)	ND	0.50
Ethyl tert-Butyl Ether (ETBE)	ND	0.50
Methyl tert-Amyl Ether (TAME)	ND	0.50

Surrogate	%REC	Limits
Dibromofluoromethane	115	80-122
1,2-Dichloroethane-d4	110	78-123
Toluene-d8	100	80-110
Bromofluorobenzene	90	80-115

Type: BLANK Lab ID: QC123747

Analyte	Result	RL
tert-Butyl Alcohol (TBA)	ND	20
MTBE	ND	0.50
Isopropyl Ether (DIPE)	ND	0.50
Ethyl tert-Butyl Ether (ETBE)	ND	0.50
Methyl tert-Amyl Ether (TAME)	ND	0.50

Surrogate	%REC	Limits
Dibromofluoromethane	106	80-122
1,2-Dichloroethane-d4	108	78-123
Toluene-d8	100	80-110
Bromofluorobenzene	112	80-115

Type: BLANK Lab ID: QC123775

Analyte	Result
tert-Butyl Alcohol (TBA)	NA
MTBE	NA
Isopropyl Ether (DIPE)	NA
Ethyl tert-Butyl Ether (ETBE)	NA
Methyl tert-Amyl Ether (TAME)	NA

Surrogate	Result
Dibromofluoromethane	NA
1,2-Dichloroethane-d4	NA
Toluene-d8	NA
Bromofluorobenzene	NA

ND = Not Detected
RL = Reporting Limit
NA= Not Analyzed

Curtis & Tompkins, Ltd.

Gasoline Oxygenates by GC/MS

Lab #:	147094	Prep:	EPA 5030
Client:	Blymyer Engineers, Inc.	Analysis:	EPA 8260A
Project#:	STANDARD		
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC123746	Batch#:	57926
Matrix:	Water	Analyzed:	08/25/00
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
MTBE	50.00	46.87	94	49-144

Surrogate	%REC	Limits
Dibromofluoromethane	104	80-122
1,2-Dichloroethane-d4	98	78-123
Toluene-d8	100	80-110
Bromofluorobenzene	92	80-115

Curtis & Tompkins, Ltd.

Gasoline Oxygenates by GC/MS

Lab #:	147094	Prep:	EPA 5030
Client:	Blymyer Engineers, Inc.	Analysis:	EPA 8260A
Project#:	STANDARD		
Field ID:	ZZZZZZZZZZ	Batch#:	57926
MSS Lab ID:	147230-010	Sampled:	08/23/00
Matrix:	Water	Received:	08/24/00
Units:	ug/L	Analyzed:	08/25/00
Diln Fac:	1.000		

Type: MS Lab ID: QC123748

Analyte	MSS Result	Spiked	Result	%REC	Limits
MTBE	<0.5000	50.00	44.21	88	49-144

Surrogate	%REC	Limits
Dibromofluoromethane	99	80-122
1,2-Dichloroethane-d4	95	78-123
Toluene-d8	96	80-110
Bromofluorobenzene	91	80-115

Type: MSD Lab ID: QC123749

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
MTBE	50.00	45.63	91	49-144	3	21

Surrogate	%REC	Limits
Dibromofluoromethane	100	80-122
1,2-Dichloroethane-d4	95	78-123
Toluene-d8	97	80-110
Bromofluorobenzene	90	80-115

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Ferrous Iron (Fe+2)

Lab #:	147094	Project#:	STANDARD
Client:	Blymyer Engineers, Inc.	Analysis:	FE+2
Analyte:	Ferrous Iron (Fe+2)	Batch#:	57754
Matrix:	Water	Sampled:	08/16/00
Units:	mg/L	Received:	08/16/00
Diln Fac:	1.000	Analyzed:	08/17/00

Field ID	Type	Lab ID	Result	RL
MW-3	SAMPLE	147094-001	0.54	0.10
MW-4	SAMPLE	147094-002	0.10	0.10
MW-5	SAMPLE	147094-003	0.13	0.10
	BLANK	QC123051	ND	0.10

ND = Not Detected
RL = Reporting Limit

Ferrous Iron (Fe+2)

Lab #:	147094	Project#:	STANDARD
Client:	Blymyer Engineers, Inc.	Analysis:	FE+2
Analyte:	Ferrous Iron (Fe+2)	Diln Fac:	1.000
Field ID:	MW-5	Batch#:	57754
MSS Lab ID:	147094-003	Sampled:	08/16/00
Matrix:	Water	Received:	08/16/00
Units:	mg/L	Analyzed:	08/17/00

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
MS	QC123052	0.1300	0.8000	0.8760	93	65-134		
MSD	QC123053		0.8000	0.9120	98	65-134	4	20
LCS	QC123054		0.8000	0.8060	101	80-110		

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Curtis & Tompkins, Ltd.

Alkalinity

Lab #:	147094	Prep:	METHOD
Client:	Blymyer Engineers, Inc.	Analysis:	EPA 310.1
Project#:	STANDARD		
Matrix:	Water	Sampled:	08/16/00
Units:	mg/L	Received:	08/16/00
Diln Fac:	1.000	Analyzed:	08/25/00
Batch#:	57966		

Field ID: MW-3 Lab ID: 147094-001
Type: SAMPLE

Analyte	Result	RL
Alkalinity, Bicarbonate	450	1.0
Alkalinity, Carbonate	ND	1.0
Alkalinity, Hydroxide	ND	1.0
Alkalinity, Total as CaCO3	450	1.0

Field ID: MW-4 Lab ID: 147094-002
Type: SAMPLE

Analyte	Result	RL
Alkalinity, Bicarbonate	350	1.0
Alkalinity, Carbonate	ND	1.0
Alkalinity, Hydroxide	ND	1.0
Alkalinity, Total as CaCO3	350	1.0

Field ID: MW-5 Lab ID: 147094-003
Type: SAMPLE

Analyte	Result	RL
Alkalinity, Bicarbonate	360	1.0
Alkalinity, Carbonate	ND	1.0
Alkalinity, Hydroxide	ND	1.0
Alkalinity, Total as CaCO3	360	1.0

Type: BLANK Lab ID: QC123885

Analyte	Result	RL
Alkalinity, Bicarbonate	ND	1.0
Alkalinity, Carbonate	ND	1.0
Alkalinity, Hydroxide	ND	1.0
Alkalinity, Total as CaCO3	ND	1.0

ND = Not Detected
RL = Reporting Limit

Curtis & Tompkins, Ltd.

Alkalinity

Lab #:	147094	Prep:	METHOD
Client:	Blymyer Engineers, Inc.	Analysis:	EPA 310.1
Project#:	STANDARD		
Analyte:	Alkalinity, Total as CaCO3	Units:	mg/L
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC123886	Batch#:	57966
Matrix:	Water	Analyzed:	08/25/00

Spiked	Result	%REC	Limits
200.0	186.2	93	80-110

Alkalinity

Lab #:	147094	Prep:	METHOD
Client:	Blymyer Engineers, Inc.	Analysis:	EPA 310.1
Project#:	STANDARD		
Analyte:	Alkalinity, Total as CaCO3	Diln Fac:	1.000
Field ID:	ZZZZZZZZZZ	Batch#:	57966
MSS Lab ID:	147213-003	Sampled:	08/23/00
Matrix:	Water	Received:	08/23/00
Units:	mg/L	Analyzed:	08/25/00

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
MS	QC123887	95.00	200.0	286.9	96	69-112		
MSD	QC123888		200.0	285.0	95	69-112	1	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Curtis & Tompkins, Ltd.

Nitrate Nitrogen

Lab #:	147094	Prep:	METHOD
Client:	Blymyer Engineers, Inc.	Analysis:	EPA 300.0
Project#:	STANDARD		
Analyte:	Nitrogen, Nitrate	Sampled:	08/16/00
Matrix:	Water	Received:	08/16/00
Units:	mg/L	Analyzed:	08/17/00
Batch#:	57757		

Field ID	Type	Lab ID	Result	RL	Dil Fac
MW-3	SAMPLE	147094-001	13	0.50	10.00
MW-4	SAMPLE	147094-002	14	0.25	5.000
MW-5	SAMPLE	147094-003	12	0.25	5.000
	BLANK	QC123062	ND	0.05	1.000

ND = Not Detected
RL = Reporting Limit

Curtis & Tompkins, Ltd.

Nitrite Nitrogen

Lab #:	147094	Prep:	METHOD
Client:	Blymyer Engineers, Inc.	Analysis:	EPA 300.0
Project#:	STANDARD		
Analyte:	Nitrogen, Nitrite	Batch#:	57757
Matrix:	Water	Sampled:	08/16/00
Units:	mg/L	Received:	08/16/00
Diln Fac:	1.000	Analyzed:	08/17/00

Field ID	Type	Lab ID	Result	RL
MW-3	SAMPLE	147094-001	0.20	0.05
MW-4	SAMPLE	147094-002	ND	0.05
MW-5	SAMPLE	147094-003	ND	0.05
	BLANK	QC123062	ND	0.05

ND = Not Detected
RL = Reporting Limit

Curtis & Tompkins, Ltd.

Sulfate

Lab #:	147094	Prep:	METHOD
Client:	Blymyer Engineers, Inc.	Analysis:	EPA 300.0
Project#:	STANDARD		
Analyte:	Sulfate	Sampled:	08/16/00
Matrix:	Water	Received:	08/16/00
Units:	mg/L	Analyzed:	08/17/00
Batch#:	57757		

Field ID	Type	Lab ID	Result	RL	Dil'n Fac
MW-3	SAMPLE	147094-001	62	5.0	10.00
MW-4	SAMPLE	147094-002	51	2.5	5.000
MW-5	SAMPLE	147094-003	47	2.5	5.000
	BLANK	QC123062	ND	0.50	1.000

ND = Not Detected
RL = Reporting Limit

Curtis & Tompkins, Ltd.

Nitrate Nitrogen

Lab #:	147094	Prep:	METHOD
Client:	Blymyer Engineers, Inc.	Analysis:	EPA 300.0
Project#:	STANDARD		
Analyte:	Nitrogen, Nitrate	Batch#:	57757
Field ID:	MW-3	Sampled:	08/16/00
MSS Lab ID:	147094-001	Received:	08/16/00
Matrix:	Water	Analyzed:	08/17/00
Units:	mg/L		

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim	Dil'n Fac
BS	QC123063		2.000	1.940	97	90-110			1.000
BSD	QC123064		2.000	1.940	97	90-110	0	20	1.000
MS	QC123065	12.92	10.00	22.96	100	80-120			10.00
MSD	QC123066		10.00	22.49	96	80-120	2	20	10.00

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Nitrite Nitrogen

Lab #:	147094	Prep:	METHOD
Client:	Blymyer Engineers, Inc.	Analysis:	EPA 300.0
Project#:	STANDARD		
Analyte:	Nitrogen, Nitrite	Batch#:	57757
Field ID:	MW-3	Sampled:	08/16/00
MSS Lab ID:	147094-001	Received:	08/16/00
Matrix:	Water	Analyzed:	08/17/00
Units:	mg/L		

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim	Dil Fac
BS	QC123063		2.000	1.990	99	90-110			1.000
BSD	QC123064		2.000	1.920	96	90-110	3	20	1.000
MS	QC123065	0.1987	10.00	10.03	98	80-120			10.00
MSD	QC123066		10.00	9.920	97	80-120	1	20	10.00

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Sulfate

Lab #:	147094	Prep:	METHOD
Client:	Blymyer Engineers, Inc.	Analysis:	EPA 300.0
Project#:	STANDARD		
Analyte:	Sulfate	Batch#:	57757
Field ID:	MW-3	Sampled:	08/16/00
MSS Lab ID:	147094-001	Received:	08/16/00
Matrix:	Water	Analyzed:	08/17/00
Units:	mg/L		

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim	Dil'n Fac
BS	QC123063		20.00	19.59	98	90-110			1.000
BSD	QC123064		20.00	19.49	97	90-110	0	20	1.000
MS	QC123065	62.35	100.0	159.8	97	80-120			10.00
MSD	QC123066		100.0	161.9	100	80-120	1	20	10.00

RPD= Relative Percent Difference

Performance Analytical Inc.
Air Quality Laboratory
A Division of Columbia Analytical Services, Inc.
An Employee Owned Company

LABORATORY REPORT

Client:	CURTIS & TOMPKINS, LTD.	Date of Report:	08/28/00
Address:	2323 Fifth Street	Date Received:	08/18/00
	Berkeley, CA 94710	PAI Project No:	P2002093
Contact:	Ms. Tracy Babjar	Purchase Order:	Verbal

Client Project ID: #147094

Three (3) Liquid Samples labeled: "MW-3" "MW-4" "MW-5"

The samples were received at the laboratory under chain of custody on August 18, 2000. The samples were received intact. The client requested and received 6 day rush results. The dates of analyses are indicated on the attached data sheets.

Carbon Dioxide Analysis

The samples were analyzed for Carbon dioxide according to modified RSK Method 175 using a gas chromatograph equipped with a thermal conductivity detector (TCD).

The results of analyses are given in the attached data summary sheets.

Reviewed and Approved:

Ku-Jih Chen
Principal Chemist

Reviewed and Approved:

John Yokoyama
Senior Chemist

Performance Analytical Inc.
Air Quality Laboratory
A Division of Columbia Analytical Services, Inc.
An Employee Owned Company

RESULTS OF CARBON DIOXIDE ANALYSIS

Client: Curtis & Tompkins, Ltd.

Client Project ID: 147094
PAI Project ID: P2002093

Test Code: GC/TCD
Instrument ID: HP5890A/TCD #10
Analyst: Joana Ciurash
Matrix: Liquid

Date Sampled: 8/16/00
Date Received: 8/18/00
Date Analyzed: 8/21/00
Volume(s) Analyzed: 0.10 ml

Client Sample ID	PAI Sample ID	D.F.	Carbon Dioxide µg/L	
			Result	Reporting Limit
MW-3	P2002093-001	1.00	59,800	100
MW-4	P2002093-002	1.00	42,200	100
MW-5	P2002093-003	1.00	39,400	100
MW-5	P2002093-003B	1.00	37,100	100
Method Blank	P000821-MB	1.00	ND	100

TR = Detected Below Indicated Reporting Limit
ND = Not Detected

Verified By: RC Date: 8/28/00

2665 Park Center Drive, Suite D, Simi Valley, California 93065 • Phone (805) 526-7161 • Fax (805) 526-7270

P2002093

Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878
2323 Fifth Street
Berkeley, CA 94710
(510)486-0900 ph
(510)486-0532 fx

18.1 °C

Project Number: 147094

Subcontract Lab:

Performance Analytical
2665 Park Center Drive Suite D
Simi Valley, CA 93065
(805) 526-7161

Please send report to: Tracy Babjar

Turnaround Time: 8/28

Report Level: II

Sample ID	Date Sampled	Matrix	Analysis	C&T Lab #	
MW-3	16-AUG-00	Water	RSK-175	147094-001	-001
MW-4	16-AUG-00	Water	RSK-175	147094-002	-002
MW-5	16-AUG-00	Water	RSK-175	147094-003	-003

Please Test for CO_2

***Please report using Sample ID instead of C&T Lab #.

Notes:

RELINQUISHED BY:		RECEIVED BY:	
Tracy Babjar	8/17/00 Date/Time	Robert D.	Date/Time 8/18/00 0815
	Date/Time		Date/Time