LUST # 1716
COWMAN CAMPBELL PAINT C
KING CO / SEATTLE

BETTS
PATTERSON
& MINES, P.S.

800 Financial Center
1215 Fourth Avenue
Seattle, Washington 98161-1090
Fax: 206-343-7053
Phone: 206-292-9988

Ronald D. Allen

October 15, 1996

DEPARTMENT OF ECOLOGY
NWRO/TCP TANKS UNIT
INTERIM CLEANUP REPORT ☐
SITE CHARACTERIZATON ☐
FINAL CLEANUP REPORT ☐
OTHER _____ ☐
AFFECTED MEDIA: SOIL ☑
OTHER _____ GW ☑
INSPECTOR (INIT.) _____ DATE 1-8-97

ENTERED 1/4/97

Mr. Joseph Hickey
Washington Department of Ecology
Northwest Regional Office
Leaking Underground Storage Tank Division
3190 160th Street Southeast
Bellevue, WA 98008

Re: C&C Paint Company Property
5232 SAILSHOLE AVE NW AM 11/8/2011
~~5221 Ballard Avenue Northwest~~
Seattle, Washington

Dear Mr. Hickey:

Enclosed is a copy of Columbia Environmental, Inc.'s Quarterly Groundwater Monitoring Report for the above-referenced property, dated October 2, 1996 and reflecting the results of testing performed September 11, 1996. Copies of laboratory results are also attached. As reflected in the enclosed report, the owners of the property are proceeding in accordance with the approach described in our May 17, 1996 correspondence. Should you require any further information, please do not hesitate to contact the undersigned.

Very truly yours,

Ronald D. Allen

RDA:dmp

Enclosure

cc: Mr. Harold Cowman
Mr. Robert Campbell
Columbia Environmental

RECEIVED
OCT 16 1996
DEPT. OF ECOLOGY

960930144/101596/0951/21910005

Columbia Environmental Inc.
200 S. 333rd St. • Suite 120 • Federal Way, WA 98003 • Seattle 206/838-7261 Tacoma 206/927-1588 Fax 206/838-5744

October 2, 1996

Hal Cowman
CZS Enterprises Inc.
5221 Ballard Avenue Northwest
Seattle, Washington 98107

RE: Quarterly Groundwater Monitoring
C & C Paint Company Property
5221 Ballard Avenue Northwest
Seattle, Washington
Project Number 95603-2

References: 1) Bison Environmental Northwest, Inc., February 19, 1991: "Site Assessment, C & C Paint Company".

2) Columbia Environmental, Inc., February 12, 1996: "Phase 2 Environmental Site Assessment", same site.

Dear Hal:

Columbia Environmental, Inc., is pleased to provide this Quarterly Groundwater Monitoring report for the C & C Paints property in Seattle, Washington.

As discussed in the referenced reports, soil and groundwater contamination is known to be present in the loading dock area of the site due to the past presence of six underground storage tanks (USTs) in this area. Five of the six tanks had contained mineral spirits, and contamination of soil and groundwater by mineral spirits was discovered during removal of the USTs in 1990. Ten groundwater monitoring wells have been installed on the property and in the adjacent Shilshole Avenue right-of-way to delineate the plume of soil and groundwater contamination. A layer of free product has been observed to be present on the groundwater surface in one of these monitoring wells, designated MW1, since its installation during 1991.

Use of a free product recovery canister was recently initiated in this well. The canister did not function properly in separating the water and product, and liquid removed from the well during this process was a mixture of product and water. However, during attempts to correct this problem, the layer of free product disappeared.

SCOPE OF WORK

The scope of work for this project included:

- The collection and laboratory analysis of groundwater samples from six of the monitoring wells.
- Preparation of this report.

METHODOLOGY

The wells were sampled on September 11, 1996, by an environmental engineer from our firm. Groundwater sampling was conducted in accordance with WDOE and EPA guidelines as described below.

Prior to sampling, each well was checked for the presence of free product using a disposable bailer. The depth to groundwater was then measured relative to the north edge of the well casing using an electronic water level indicator. Measurements were accurate to the nearest 0.01 foot. The well was then purged by removing a minimum of 3 volumes of water, after which a sample was collected. A PVC bailer was used to purge and sample most of the wells. Wells in which high levels of contamination was suspected were purged and sampled using disposable teflon bailers.

Groundwater samples were transferred to sterilized, preserved glassware which had been provided by the project laboratory. A label indicating the sample number, project number, sampler, and date and time of sampling, was affixed to each sample, and the sample was recorded on a chain-of-custody form. Samples were stored in an iced chest on site and during transport to the laboratory.

To avoid cross-contamination, all non-disposable sampling and measurement equipment was cleaned and rinsed with laboratory-grade detergent and distilled water before and after each use. In addition, the wells were sampled in the order of increasing probability of contamination as judged based on past laboratory results.

Water produced by purging the wells and decontaminating equipment was sealed in clearly labelled 55-gallon drums which remained on the site.

Laboratory Analysis

Samples were taken to OnSite Environmental of Redmond, Washington for analysis. Mineral spirits are in the gasoline petroleum hydrocarbon range. Based on Washington Department of Ecology guidance documents, the mineral spirits were quantified as gasoline using the WTPH-G analysis. The sample from MW1 was also analyzed for the gasoline/mineral spirits constituents benzene, toluene, ethylbenzene, and xylenes (BTEX).

RESULTS

No free product was observed in any of the six wells sampled on June 20, 1996. A faint sheen and hydrocarbon odors were noted during sampling of MW1, and hydrocarbon odors were noted during sampling of MW7. Due to the silty nature of the surrounding soil, groundwater recharge within the wells was relatively slow. Each well was allowed at least 1 hour of recovery time between purging and sampling. The wells were capped during the recovery period to minimize contaminant volatilization from groundwater within the wells.

Depth-to-groundwater measurements and groundwater elevations obtained during our previous survey and the current sampling event are summarized in the following table (all measurements are in feet):

Monitoring Well	Monitoring Well Elevation	Date	Depth to Groundwater	Groundwater Elevation
MW1	19.72	01/30/96	4.60	15.11
		09/11/96	5.04	14.68
MW2	19.74	01/30/96	4.54	15.20
		06/20/96	4.63	15.11
		09/11/96	5.34	14.40
MW3	19.80	01/30/96	4.71	15.09
		09/11/96	5.27	14.53
MW4	20.00	01/30/96	5.17	14.83
		09/11/96	5.72	14.28
MW5	19.57	01/30/96	5.19	14.38
		09/11/96	5.73	13.84
MW6	20.39	01/30/96	4.57	15.82
		09/11/96	3.48	16.91
MW7	20.65	01/30/96	2.97	17.68
		06/20/96	2.08	18.57
		09/11/96	3.11	17.54
MW8	21.29	01/30/96	3.90	17.39
		06/20/96	3.94	17.35
		09/11/96	4.14	17.15
MW9	23.98	01/30/96	4.32	19.66
		06/20/96	4.47	19.51
		09/11/96	4.65	19.33
MW10	19.89	01/30/96	6.06	13.83
		06/20/96	5.78	14.11
		09/11/96	6.43	13.46

As indicated by the above table, decreases in groundwater elevations from between June and September of 1996 ranged from a 0.03 feet in MW7 to 0.71 feet in MW2 (groundwater levels were not measured in all wells during June of 1996). These changes would be expected due to lower rainfall during the summer months. The groundwater gradient on the site appears to be similar to the previous gradients, sloping downward to the west-southwest.

Laboratory Results

The results of laboratory analysis of samples collected during this study are included in Appendix B of this report. Table A in Appendix B summarizes the results of groundwater analysis from the current and previous sampling events.

As indicated in Table A, concentrations of mineral spirits in excess of the regulatory cleanup level of 1.0 parts per million (ppm) were detected in MW1 and MW7 during this sampling event. The reported mineral spirits concentrations of 190 and 9 ppm in MW1 and MW7, respectively, are within the same general range of concentrations reported during the June 1996 sampling event. The reported mineral spirits concentrations in MW2 and MW10 were slightly below the cleanup level at 0.90 and 0.58 ppm, respectively.

CONCLUSIONS

The following conclusions are offered based on information obtained during this sampling event and previous work on the site:

Concentrations of mineral spirits in excess of the regulatory cleanup level of 1.0 parts per million (ppm) were detected in MW1 and MW7 during this sampling event. These wells have historically contained elevated mineral spirits concentrations, and a free product layer has been present in MW1.

As in the previous June sampling event, the free product layer which had been present on the groundwater surface in MW1 was not observed during this sampling event. Concentrations of mineral spirits in groundwater within this well appear to be similar to concentrations measured during the June sampling event.

Concentrations within MW7 show a slight decrease from the June sampling event (from 16 to 9 ppm). This may be a normal fluctuation or could indicate a trend.

The reported mineral spirits concentrations within MW2 and MW10 were slightly below the regulatory cleanup level during this sampling event. The reported concentrations in these wells slightly exceeded the cleanup level during the June sampling event. This suggests that these wells are located near the boundary of the contaminant plume, and does not indicate that significant contaminant migration has occurred over the past few months. It should be noted that as in past sampling events, concentrations of ethylbenzene and xylenes in these wells continue to slightly exceed regulatory cleanup levels.

The next round of sampling is tentatively scheduled for December of 1996.

We recommend that a copy of this report be provided to the Washington Department of Ecology's Northwest Regional Office for their records.

LIMITATIONS

This report has been prepared for the exclusive use of the client and their representatives for specific application to the C & C Paints Property in Seattle, Washington. The scope of work for this project is limited to known contamination in the vicinity of the shipping yard. Other areas of contamination may be present which are not addressed by this report. The work for this project was conducted in a manner consistent with generally accepted environmental science practices for consultants acting under similar conditions in the area, and in accordance with the terms of the client's request. No other warranty is expressed or implied.

If new information on the site is developed during future environmental studies, Columbia Environmental, Inc., should be allowed to review this information, to reevaluate the conclusions of this report, and to provide amendments as required.

* * *

We appreciate the opportunity to provide environmental consulting services on this project. Should you have any questions or if there is additional information that you require, please do not hesitate to contact us.

Sincerely,

Columbia Environmental, Inc.

Henry Perrin
Environmental Engineer
Washington State Registered UST Site Assessor

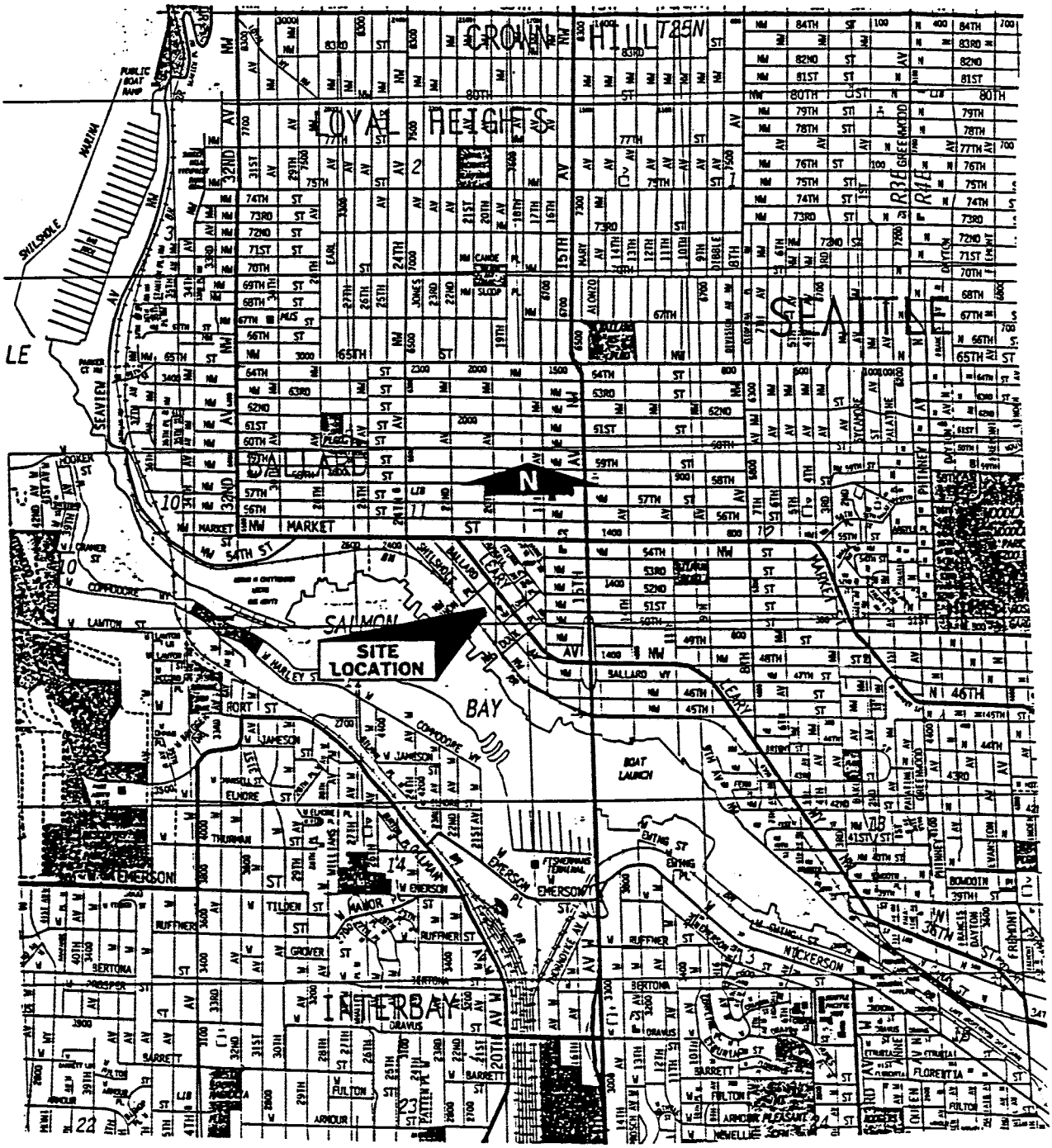
William R. Shuck
President

Attachments:
Appendix A: Site Location Map & Site Plan (3)
Appendix B: Laboratory Results (10)

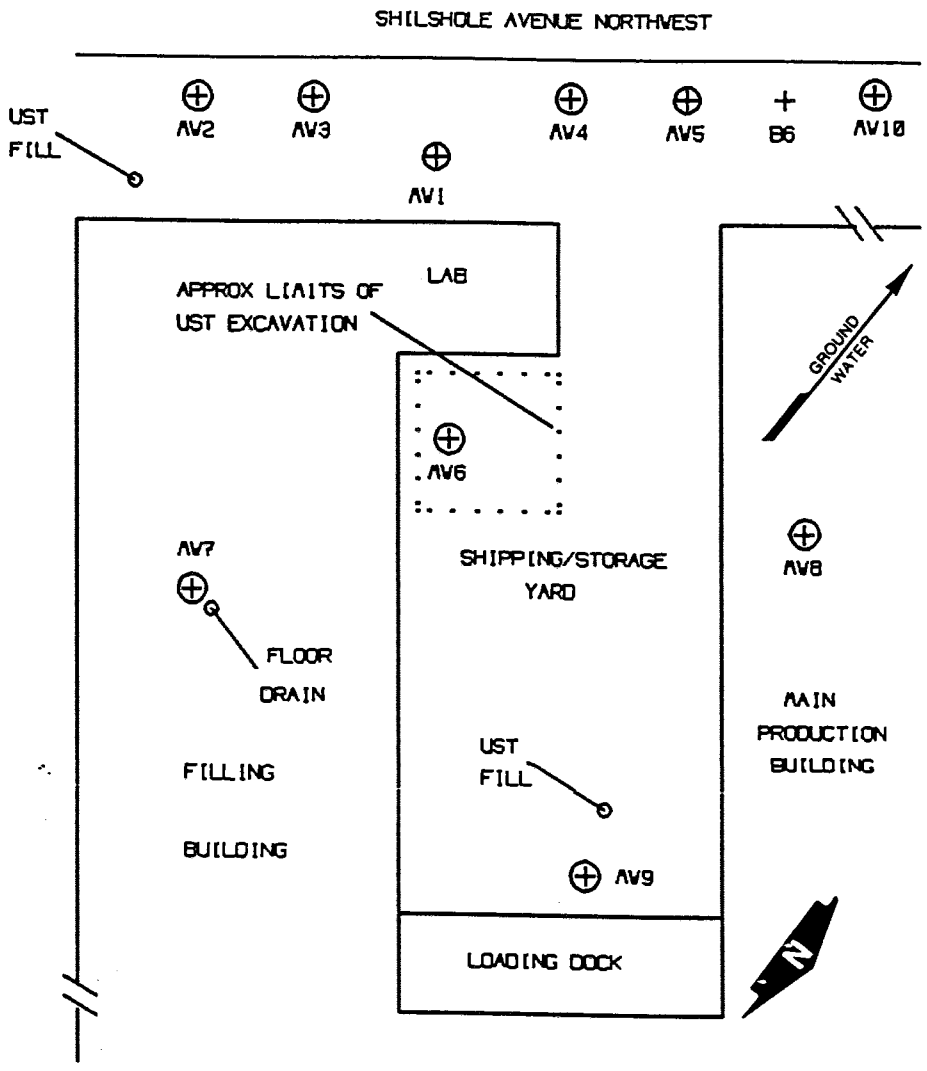
cc: Ronald Allen, Betts Patterson & Mines

Appendix A

Site Location Map & Site Plans



SITE LOCATION C&C Paints Seattle, Washington	Columbia Environmental, Inc. Project Number 95603-2 October 1996



SCALE

0 30'

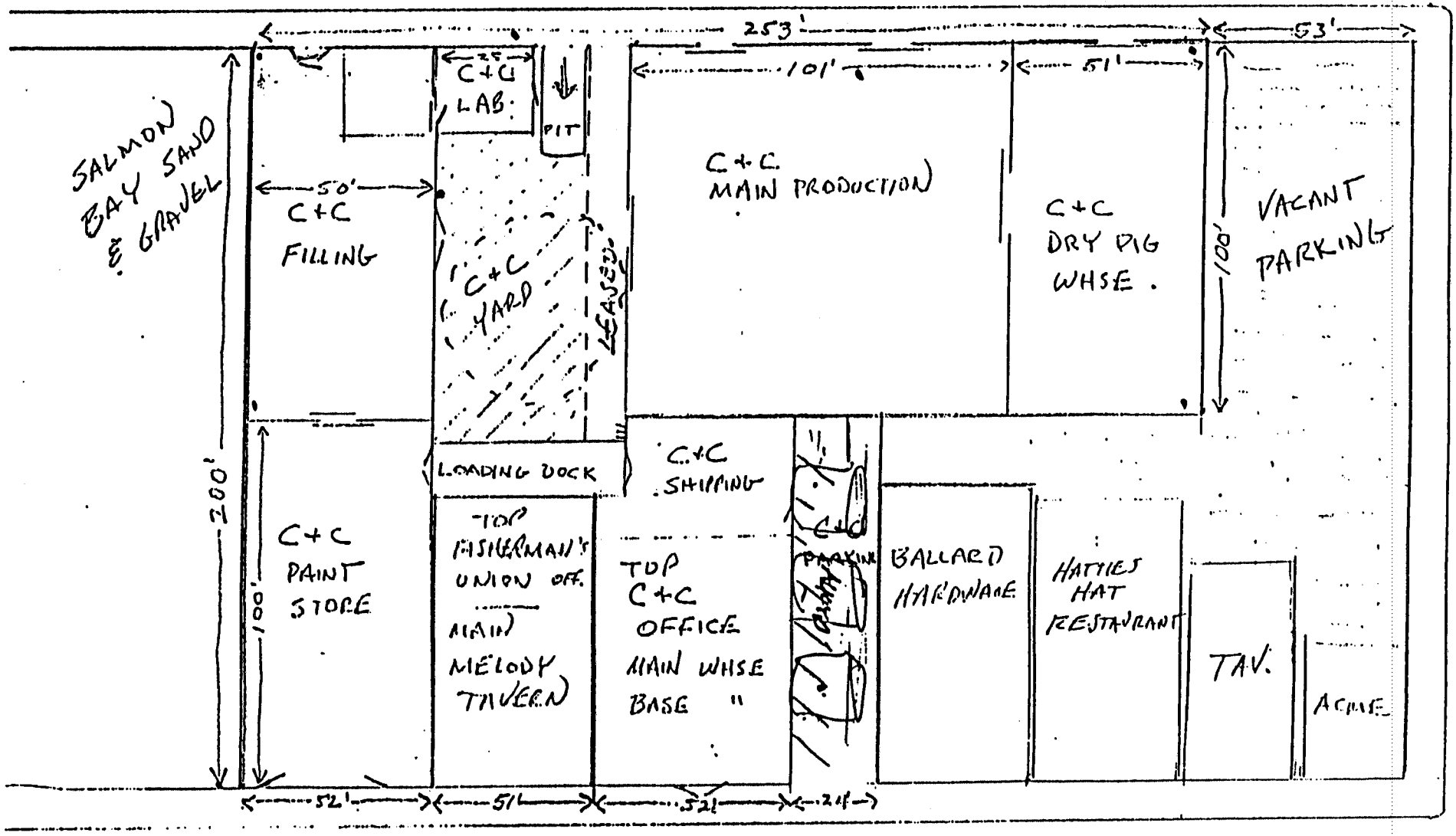
KEY

AV2 MONITORING WELL

B6 TEST BORING

SITE PLAN **C&C Paints** **Seattle, Washington**	**Columbia Environmental, Inc.** **Project Number 95603-2** **October 1996**

SHILSHOLE AVE. N.W.



BALLARD AVE. N.W.

SCALE: 1/10" = 4'

HAC 10-13-92

Appendix B

Laboratory Results

TABLE A:

Summary of Analytical Results
Project No. 95603-2

Monitoring Well	Date	Mineral Spirits (ppm)*	B (ppm)	T (ppm)	E (ppm)	X (ppm)
MW1	11/27/95	24,000	0.93	41	550	855
	06/20/96	210	.0085	0.30	14	226
	09/11/96	190	ND	ND	13	58
MW2	11/27/95	ND	ND	ND	.0066	0.027
	06/20/96	1.1	-	-	-	-
	09/11/96	0.90	ND	0.023	0.079	0.379
MW3	11/27/95	ND	ND	ND	ND	ND
MW4	11/27/95	78	0.004	0.04	4.6	20.8
MW5	11/27/95	28	0.004	0.011	1.5	7.4
MW6	01/29/96	0.68	.0035	ND	.0022	0.112
MW7	01/29/96	61	0.002	0.34	3.5	3.2
	06/20/96	16	-	-	-	-
	09/11/96	9.0	ND	0.003	0.87	0.203
MW8	01/29/96	ND	ND	ND	ND	0.001
	06/20/96	ND	-	-	-	-
	09/11/96	ND	ND	ND	ND	ND
MW9	01/29/96	ND	ND	ND	ND	ND
	06/20/96	ND	-	-	-	-
	09/11/96	ND	ND	ND	ND	ND
MW10	01/29/96	0.93	ND	ND	0.062	0.397
	06/20/96	1.1	-	-	-	-
	09/11/96	0.58	ND	ND	0.043	0.171
Groundwater Cleanup Level		1.0	0.005	0.04	0.03	0.02

← Not Sampled after 11/95 why?

NOTES TO TABLE A

1) * Quantified as gasoline using the WTPH-G analysis.
2) ppm denotes parts per million.
3) Cleanup levels are "Method A" Cleanup Levels as specified in the Model Toxics Control Act, Chapter 173-340 WAC.
4) ND denotes none detected.
5) B, T, E, and X denote benzene, toluene, ethylbenzene and xylenes.
6) - indicates sample not analyzed for parameter.

September 26, 2002

RECEIVED
OCT 3 2002
DEPT OF ECOLOGY

NOWICKI & ASSOCIATES
ENERGY & ENVIRONMENTAL MANAGEMENT

Mr. Hal Cowman
3257 26th Avenue West
Seattle, WA 98199

release ~~55448~~ 1716
cowman campbell paint
Seattle

RE: September 2002 Annual Groundwater Monitoring
C & C Paint Site
~~5221 Ballard Avenue NW~~ 5232 SHILSHOLE AVE NW
Seattle, Washington
11/7/2011 AH

Dear Mr. Cowman:

Nowicki & Associates, Inc. (NAI) is pleased to submit this 2002 annual groundwater monitoring report for the C & C Paint property located at 5221 Ballard Avenue NW, Seattle, Washington.

NAI was at the above referenced site on September 25, 2002 to perform the sampling of the groundwater. The scope of work included water sample collection and report documentation. The addition of oxygen releasing compound (ORC) to treat the groundwater and oversight of groundwater product removal are also discussed in the report.

Site Background:

Six USTs were removed from the site in 1990 and mineral spirits impacted soil and groundwater were discovered. Ten monitoring wells were installed to monitor groundwater conditions. Free product was encountered after installation of MW1 in 1991. Attempts were made by Columbia Environmental Inc. (CEI) to remedy the site through free product recovery but they were unsuccessful. The work performed at the site prior to January of 1998 had been under the oversight of CEI. Nowicki & Associates assumes groundwater monitoring in January of 1998 and thereafter.

In October of 2000, a 300-gallon diesel UST located up-gradient of MW2 and MW3 along Shilshole Avenue was removed. Tank removal Site Assessment results are documented by NAI in the report dated November 28, 2000. In addition to diesel, gasoline range hydrocarbons were also detected in the contaminated soil surrounding the removed UST. Because of the presence of sewer and water lines immediately located on the tank excavation sidewalls, contaminated soils were left in-place. The presence of underground utilities is assumed to provide a migration pathway between the monitoring well locations and the diesel tank excavated area.

Interim Remedial Activities:

As an interim remedial activity, oxygen releasing compound (ORC) socks was placed on July 25, 2001 in all monitoring wells except for MW8 and MW10, which are at the contaminant plume perimeter and have been non-detect of contaminants. ORC addition was to oxygenate the groundwater to facilitate natural microbial degradation of gasoline TPHs and BTEX. The addition of ORC appears to have a positive effect of reducing the contaminant concentrations in the monitoring wells. However, the zone of influence of ORC has not been determined.

ENTERED 12/16/02

33516 9th Avenue South
Building #6
Federal Way, Washington 98003
Phone: (253) 927-5233
Fax: (253) 924-0323

Due to the presence of oil sheen (assuming diesel from the former diesel UST onsite) in MW1, product removal was attempted in June of 2002. Because of the thin layer of oil sheen, a floating skimmer pump was assumed ineffective for sheen removal. Thus, as a trial attempt, product removal was completed using a portable groundwater pump, which was continuously re-adjusted to accommodate the change in groundwater depth. Pumping was anticipated to draw any residual diesel oil sheen from the immediate vicinity of MW1. Groundwater along with oil sheen was pumped into 55-gallon polyethylene drum approximately weekly for one month, from June to July of 2002. Groundwater recharge rate was not actually determined but estimated to be approximately 0.5 gallon or less per minute. A total of about 30 gallons of groundwater were removed. No groundwater pumping occurred for approximately two months prior to groundwater sampling.

Groundwater Sampling:

Groundwater monitoring was conducted in accordance with Washington Sate Department of Ecology's guidelines. Each well was observed for the presence of free product. Groundwater depths below ground surface were measured prior to purging using a carbon steel measuring tape with water indicator paste, to the nearest 1/16 of an inch. The ORC socks were removed from the wells prior to well purging and sampling. At least three well casing volumes were purged from each well or until the well was purged dry. The purged water was stored in the 55-gallon drum at the site. The wells were then allowed to recharge sufficiently before water samples were collected. Well purging and sampling were completed sequentially, starting with the previously documented clean well(s) and finishing with the most contaminated well(s). The levels of groundwater contamination in the wells were based on data from the last annual sampling completed in October of 2000.

Well purging was accomplished using disposable plastic bailer and a purge pump. Pump and bailer were decontaminated with an Alconox detergent solution and rinsed with clean water before and after each use. Water samples for gas and BTEX were collected into laboratory-provided pre-cleaned 40-ml glass vials with septum caps and preserved with hydrochloric acid. Water sample for diesel was collected into 1-liter amber glass jar. All samples were appropriately labeled and logged onto a laboratory chain of custody. Samples were stored in a cooler filled with blue ice until delivery to Friedman & Bruya, Inc. Laboratory located at 3012 16th Avenue West, Seattle, Washington.

Field Findings:

No observable free product was noted in any of the sampled wells, even MW1, which was historically detected with heavy oil sheen. Product removal pumping is assumed to have a direct effect of removing the oil sheen.

Groundwater depth measurements are listed in Table 1. Water depths were found to be generally approximately 6" to 18" lower than data from October of 1998, assuming due to lack of precipitation during the summer season. The general groundwater flow direction remains consistently to the west and southwest.

Table 1. Field Parameters

WELL ID	SURVEYED ELEV. (FT)	DATE	TEMP. C	DISSOLVED O_2 (MG/L)	DEPTH TO WATER (FT)	GROUNDWATER ELEV. (FT)
MW1	19.72	9-25-02	20.4	3.90	5.46	14.26
MW2	19.74	"	20.8	0.60	6.43	13.31
MW3	19.80	"	20.6	6.30	6.23	13.75
MW4	20.00	"	20.6	0.88	6.18	13.82
MW5	19.57	"	20.8	1.25	6.53	13.04
MW6	20.39	"	17.3	1.92	4.86	15.53
MW7	20.65	"	18.1	2.71	4.04	16.61
MW8	21.29	"	19.4	1.47	3.94	17.35
MW9	23.98	"	20.5	3.00	4.83	19.15
MW10	19.89	"	20.2	0.47	7.02	12.87

Note:

Surveyed data are obtained from CEI's report.

Laboratory Analysis and Results:

All samples were lab-analyzed by for Gasoline-TPHs and BTEX (benzene, toluene, ethylbenzene, and xylenes) using Method NWTPH-Gx/BTEX. Sample from MW1 was also lab-analyzed for diesel TPHs and volatile organic compounds using Method EPA 8260B. MW1 was initially detected with an unknown peak around xylenes on the gas chromatogram for gas and BTEX. However, follow-up analysis by EPA 8260B confirmed the unknown peak as ethylbenzene. Diesel analysis on MW1 was run using the sample from one of the 40-ml vial because the 1-L bottle broke during storage at the laboratory. As a result, the detection level for diesel was raise due to sample dilution. However, the detection level is still under the MTCA Method A cleanup level. All laboratory control parameters were within control limits. Laboratory results are summarized in Table 2.

Summary of site data is presented in the attached Table 3. As can be seen from Table 3, gas-TPHs are significantly lower in MW1 and MW7, as compared to the last sampling event. Ethylbenzene and xylenes are also reduced in MW1. Reduction of contaminants in MW1 is assumed due to the combined effects of product recovery pumping and the addition of ORC. Gas and BTEX concentrations in the other contaminated wells are also lower than past data. The other previously non-detect wells, MW3, MW8, MW9 and MW10 remain non-detect in this sampling round.

Groundwater sampling data are believed to be representative of groundwater conditions in the vicinity of the monitoring wells. However, because of the unknown radius of influence, which may vary depending on soil matrix, groundwater conditions at locations that are not subjected to ORC addition are undetermined.

Table 2. Laboratory Results

WELL	TPH-GAS (PPM) MINERAL SPIRITS	BENZENE (PPM)	TOLUENE (PPM)	ETHYLBEN. (PPM)	XYLENES (PPM)
MW1*	34.0	0.003	0.020	4.5	16.0
MW2	<0.5	<0.005	<0.005	<0.005	<0.005
MW3	<0.050	<0.001	<0.001	<0.001	<0.001
MW4	0.110	<0.001	<0.001	0.003	0.016
MW5	<0.250	<0.005	<0.005	<0.005	0.007
MW6	<0.250	<0.005	<0.005	<0.005	0.008
MW7	0.890	<0.005	<0.005	0.140	0.130
MW8	<0.050	<0.001	<0.001	<0.001	0.003
MW9	<0.050	<0.001	<0.001	<0.001	0.002
MW10	<0.050	<0.001	<0.001	<0.001	0.002
MTCA A Level	0.800	0.005	1.0	0.7	1.0

nd=non-detect at detection limits

* = Sample was detected with diesel TPHs at 910 ug/L, above MTCA Method A level of 500 ug/L; Napthalene was detected at 60 ug/L, below cleanup level of 160 ug/L. Results by EPA Method 8260B indicate no other regulated volatile compounds in the sample.

Conclusions & Recommendations:

Laboratory data from this monitoring event indicate gas-TPHs in the upgradient well MW7 and the down gradient well MW1 above current MTCA Method A cleanup level. Ethylbenzene and xylenes are only present in MW1 above cleanup levels. In general, contaminant concentrations in impacted wells have greatly decreased as compared to previous data. The addition of ORC to groundwater is assumed to have a positive effect in the degradation of contaminants.

Except for MW1, the down-gradient perimeter wells along Shilshole Avenue remain non-detect or below MTCA Method A levels for gas and BTEX.

We recommend continuing with groundwater monitoring. Also, due to concentrations exceeding MTCA Method A cleanup levels in the impacted wells, continued groundwater treatment is recommended along with additional subsurface sampling to provide more complete site conditions.

Limitations:

This report was intended for the exclusive use of the original client, C & C Paint Company. The scope of work performed by NAI was in accordance with the signed proposal dated December 28, 2000 and limited to only the impacted groundwater at the site. The work completed was consistent with the generally accepted practices in environmental science and engineering under similar conditions and conformed to the client's request.

We appreciate the opportunity to be of service on this project. If you have any questions regarding the report, please call.

Sincerely,

Michael Lam
Project Manager

cc: Annett Adamasu – Toxics Clean-up Program Dept of Ecology NW Regional Office

Reference: Columbia Environmental, Inc., April 21, 1997: "Quarterly Groundwater Monitoring, C & C Paints Company Property".

Attachments:

Appendix A: Site Location Map (1) and CEI's Site Plans (2)
Appendix B: Laboratory Report
Appendix C: Summary of Groundwater Data Table 3

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Charlene Morrow, M.S.
Yelena Aravkina, M.S.
Bradley T. Benson, B.S.
Kurt Johnson, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
TEL: (206) 285-8282
FAX: (206) 283-5044
e-mail: fbi@isomedia.com

September 25, 2002

Michael Lam, Project Manager
Nowicki and Associates
33516 9th Ave., #6
Federal Way, WA 98003

Dear Mr. Lam:

Included are the results from the testing of material submitted on September 23, 2002 from your C&C Paint project. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
NAI0925R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 09/25/02
Date Received: 09/23/02
Project: C&C Paint
Date Extracted: 09/23/02
Date Analyzed: 09/23/02 and 09/24/02

RESULTS FROM THE ANALYSIS OF THE WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE XYLENES AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Results Reported as µg/L (ppb)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 81-124)
MW1 x d 209174-01	3	20	4,500	16,000	34,000	98
MW2 d2 209174-02	<5	<5	<5	<5	<250	93
MW3 209174-03	<1	<1	<1	<1	<50	97
MW4 209174-04	<1	<1	3	16	110	99
MW5 d2 209174-05	<5	<5	<5	7	<250	101
MW6 d2 209174-06	<5	<5	<5	8	<250	98
MW7 d2 209174-07	<5	<5	140	130	890	98
MW8 209174-08	<1	<1	<1	3	<50	98
MW9 209174-09	<1	<1	<1	2	<50	101
MW10 209174-10	<1	<1	<1	2	<50	100
Method Blank	<1	<1	<1	<1	<50	96

d - The sample was diluted for ethylbenzene, xylenes, and gasoline. Detection limits are raised due to dilution.
d2 - The sample was diluted due to matrix effect (foamy). Detection limits are raised due to dilution.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260B

Client Sample ID:	MW1	Client:	Nowicki and Associates
Date Received:	09/23/02	Project:	C&C Paint
Date Extracted:	09/24/02	Lab ID:	209174-01 1/10
Date Analyzed:	09/24/02	Data File:	092410.D
Matrix:	Water	Instrument:	5972 -Ins
Units:	ug/L (ppb)	Operator:	YA

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Dibromofluoromethane	98	89	111
1,2-Dichloroethane-d4	99	82	116
Toluene-d8	99	84	114
4-Bromofluorobenzene	87	85	127

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<10	Tetrachloroethene	<10
Chloromethane	<10	Dibromochloromethane	<10
Vinyl chloride	<10	1,2-Dibromoethane (EDB)	<10
Bromomethane	<10	Chlorobenzene	<10
Chloroethane	<10	Ethylbenzene	11,000 ve
Trichlorofluoromethane	<10	1,1,1,2-Tetrachloroethane	<10
Acetone	<100	m,p-Xylene	19,000 ve
1,1-Dichloroethene	<10	o-Xylene	3,900
Methylene chloride	<50	Styrene	<10
trans-1,2-Dichloroethene	<10	Isopropylbenzene	270
1,1-Dichloroethane	<10	Bromoform	<10
2,2-Dichloropropane	<10	n-Propylbenzene	300
cis-1,2-Dichloroethene	<10	Bromobenzene	<10
Chloroform	<10	1,3,5-Trimethylbenzene	240
2-Butanone (MEK)	<100	1,1,2,2-Tetrachloroethane	<10
1,2-Dichloroethane (EDC)	<10	1,2,3-Trichloropropane	<10
1,1,1-Trichloroethane	<10	2-Chlorotoluene	<10
1,1-Dichloropropene	<10	4-Chlorotoluene	<10
Carbon Tetrachloride	<10	tert-Butylbenzene	<10
Benzene	<10	1,2,4-Trimethylbenzene	970
Trichloroethene	<10	sec-Butylbenzene	16
1,2-Dichloropropane	<10	p-Isopropyltoluene	13
Bromodichloromethane	<10	1,3-Dichlorobenzene	<10
Dibromomethane	<10	1,4-Dichlorobenzene	<10
4-Methyl-2-pentanone	<100	1,2-Dichlorobenzene	<10
cis-1,3-Dichloropropene	<10	1,2-Dibromo-3-chloropropane	<10
Toluene	26	1,2,4-Trichlorobenzene	<10
trans-1,3-Dichloropropene	<10	Hexachlorobutadiene	<10
1,1,2-Trichloroethane	<10	Naphthalene	60
2-Hexanone	<100	1,2,3-Trichlorobenzene	<10
1,3-Dichloropropane	<10		

ve - The value reported exceeded the calibration range established for the analyte. The reported concentration is an estimate.

Note: The sample was diluted due to the presence of high levels of material. Detection limits are raised due to dilution.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260B

Client Sample ID:	Method Blank	Client:	Nowicki and Associates
Date Received:	Not Applicable	Project:	C&C Paint
Date Extracted:	09/24/02	Lab ID:	02-739 mb2
Date Analyzed:	09/24/02	Data File:	092408.D
Matrix:	Water	Instrument:	5972 -Ins
Units:	ug/L (ppb)	Operator:	YA

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Dibromofluoromethane	97	89	111
1,2-Dichloroethane-d4	98	82	116
Toluene-d8	98	84	114
4-Bromofluorobenzene	94	85	127

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<1	Tetrachloroethene	<1
Chloromethane	<1	Dibromochloromethane	<1
Vinyl chloride	<1	1,2-Dibromoethane (EDB)	<1
Bromomethane	<1	Chlorobenzene	<1
Chloroethane	<1	Ethylbenzene	<1
Trichlorofluoromethane	<1	1,1,1,2-Tetrachloroethane	<1
Acetone	<10	m,p-Xylene	<1
1,1-Dichloroethene	<1	o-Xylene	<1
Methylene chloride	<5	Styrene	<1
trans-1,2-Dichloroethene	<1	Isopropylbenzene	<1
1,1-Dichloroethane	<1	Bromoform	<1
2,2-Dichloropropane	<1	n-Propylbenzene	<1
cis-1,2-Dichloroethene	<1	Bromobenzene	<1
Chloroform	<1	1,3,5-Trimethylbenzene	<1
2-Butanone (MEK)	<10	1,1,2,2-Tetrachloroethane	<1
1,2-Dichloroethane (EDC)	<1	1,2,3-Trichloropropane	<1
1,1,1-Trichloroethane	<1	2-Chlorotoluene	<1
1,1-Dichloropropene	<1	4-Chlorotoluene	<1
Carbon Tetrachloride	<1	tert-Butylbenzene	<1
Benzene	<1	1,2,4-Trimethylbenzene	<1
Trichloroethene	<1	sec-Butylbenzene	<1
1,2-Dichloropropane	<1	p-Isopropyltoluene	<1
Bromodichloromethane	<1	1,3-Dichlorobenzene	<1
Dibromomethane	<1	1,4-Dichlorobenzene	<1
4-Methyl-2-pentanone	<10	1,2-Dichlorobenzene	<1
cis-1,3-Dichloropropene	<1	1,2-Dibromo-3-chloropropane	<1
Toluene	<1	1,2,4-Trichlorobenzene	<1
trans-1,3-Dichloropropene	<1	Hexachlorobutadiene	<1
1,1,2-Trichloroethane	<1	Naphthalene	<1
2-Hexanone	<10	1,2,3-Trichlorobenzene	<1
1,3-Dichloropropane	<1		

Date of Report: 09/25/02
Date Received: 09/23/02
Project: C&C Paint

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 209174-09 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	Relative Percent Difference (Limit 20)
Benzene	µg/L (ppb)	<1	<1	nm
Toluene	µg/L (ppb)	<1	<1	nm
Ethylbenzene	µg/L (ppb)	<1	<1	nm
Xylenes	µg/L (ppb)	2	<1	nm
Gasoline	µg/L (ppb)	<50	<50	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Benzene	µg/L (ppb)	25	95	90	66-119	5
Toluene	µg/L (ppb)	25	98	88	65-119	11
Ethylbenzene	µg/L (ppb)	25	99	84	62-125	16
Xylenes	µg/L (ppb)	75	104	89	65-123	16
Gasoline	µg/L (ppb)	1,000	95	110	58-132	15

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

Date of Report: 09/25/02
Date Received: 09/23/02
Project: C&C Paint

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 208215-04 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	Relative Percent Difference (Limit 20)
Diesel Extended	µg/L (ppb)	3,100	2,900	7

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	µg/L (ppb)	2,500	87	90	58-142	3

Date of Report: 09/25/02
Date Received: 09/23/02
Project: C&C Paint

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR VOLATILES BY EPA METHOD 8260B

Laboratory Code: 209081-05 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	Relative Percent Difference (Limit 20)
1,1-Dichloroethene	µg/L (ppb)	<1	<1	nm
Benzene	µg/L (ppb)	<1	<1	nm
Trichloroethene	µg/L (ppb)	<1	<1	nm
Toluene	µg/L (ppb)	<1	<1	nm
Chlorobenzene	µg/L (ppb)	<1	<1	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
1,1-Dichloroethene	µg/L (ppb)	50	98	94	75-145	4
Benzene	µg/L (ppb)	50	99	100	81-123	1
Trichloroethene	µg/L (ppb)	50	96	96	63-130	0
Toluene	µg/L (ppb)	50	94	96	81-116	2
Chlorobenzene	µg/L (ppb)	50	95	95	85-116	0

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

209174

SAMPLE CHAIN OF CUSTODY

1. V/BO, ME 9/23/02

Send Report To Michael Lam
Company Network of Assoc
Address 33516 9th Ave #6
City, State, ZIP Federal Way WA 98003
Phone # 253 927-5233 Fax # 924-0325

SAMPLERS (signature)
PROJECT NAME/NO. C & C PAINT
PO #
REMARKS

Page # 1 of 1

TURNAROUND TIME
- ☐ Standard (2 Weeks)
- ☐ RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- ☑ Dispose after 30 days
- ☐ Return samples
- ☐ Will call with instructions

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of containers	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260	SVOCs by 8270	HFS	NWTPH-Gx/BTEX	NWTPH-Dx					Notes
MW1	01	9/23/02	2:30 pm	GW	2							✓						
MW2	02	↓	12:58	↓	2							✓						
MW3	03	↓	1:15	↓	2							✓						
MW4	04	↓	12:46	↓	2							✓						
MW5	05	↓	12:35	↓	2							✓						
MW6	06	↓	2:10	↓	2							✓						
MW7	07	↓	2:20	↓	2							✓						
MW8	08	↓	12:15	↓	2							✓						
MW9	09	↓	11:50	↓	2							✓						
MW10	10	↓	12:23	↓	3							✓	✓					

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	[signature]	Michael Lam	NAD	9/23/02	3:05 pm
Received by:	[signature]	Laura Hooper	F&B, Inc.	↓	↓
Relinquished by:					
Received by:					

Appendix C

Summary of Groundwater Data Table 3

Table 3 Continued.

Well ID	Well El. (ft)	Date	Depth to GW (ft)	GW El (ft)	TPH-Gas (mg/L)	Benzene (mg/L)	Toluene (mg/L)	Ethyl Benz (mg/L)	Xylenes (mg/L)
MW6	20.39	1/30/96	4.57	15.82	0.68	0.0035	nd	0.00252	0.112
		6/20/96	-	-	-	-	-	-	-
		9/11/96	3.48	16.91	-	-	-	-	-
		12/10/96	-	-	-	-	-	-	-
		4/3/97	-	-	-	-	-	-	-
		1/31/98	3.86	16.53	0.7	0.0037	nd	nd	0.0017
		10/10/00	3.31	17.08	0.84	0.0019	nd	nd	0.0017
		9/23/02	4.86	15.53	<0.25	nd<0.005	nd<0.005	nd<0.005	0.008
MW7	20.65	1/30/96	2.97	17.68	61	0.002	0.34	3.5	3.2
		6/20/96	2.08	18.57	-	-	-	-	-
		9/11/96	3.11	17.54	-	-	-	-	-
		12/10/96	2.98	17.67	-	-	-	-	-
		4/3/97	2.77	17.88	-	-	-	-	-
		1/31/98	2.38	18.27	31	0.0012	0.0016	1.6	6.486
		10/10/00	3.02	17.63	4.3	0.0012	nd	0.19	0.36
		9/23/02	4.04	16.61	0.89	nd<0.005	nd<0.005	0.14	0.13
MW8	21.29	1/30/96	3.90	17.39	nd	nd	nd	nd	0.001
		6/20/96	3.94	17.35	nd	-	-	-	-
		9/11/96	4.14	17.15	nd	nd	nd	nd	nd
		12/10/96	3.97	17.32	nd	-	-	-	-
		4/3/97	3.86	17.43	nd	nd	nd	nd	nd
		1/31/98	3.88	17.41	nd	nd	nd	nd	nd
		10/10/00	3.25	18.04	nd	nd	nd	nd	nd
		9/23/02	3.94	17.35	nd<0.05	nd<0.001	nd<0.001	nd<0.001	0.003
MW9	23.98	1/30/96	4.32	19.66	nd	nd	nd	nd	nd
		6/20/96	4.47	19.51	nd	-	-		
		9/11/96	4.65	19.33	nd	nd	nd	nd	nd
		12/10/96	4.31	19.67	nd	-	-	-	-
		4/3/97	3.96	20.00	nd	nd	nd	nd	nd
		1/31/98	4.23	19.75	nd	nd	nd	nd	nd
		10/10/00	4.25	19.73	nd	nd	nd	nd	nd
		9/23/02	4.83	19.15	nd<0.05	nd<0.001	nd<0.001	nd<0.001	0.002
MW10	19.89	1/30/96	6.06	13.83	0.93	nd	nd	0.062	.0397
		6/20/96	5.78	14.11	1.1	-	-	-	-
		9/11/96	6.43	13.46	0.58	nd	nd	0.043	0.171
		12/10/96	5.64	14.25	nd	nd	nd	nd	0.0012
		4/3/97	5.81	14.08	nd	nd	nd	0.0021	0.0052
		1/31/98	5.70	14.19	nd	nd	nd	nd	nd
		10/10/00	6.46	13.43	nd	nd	nd	nd	nd
		9/23/02	7.02	12.87	nd<0.05	nd<0.001	nd<0.001	nd<0.001	0.002
MTCA METHOD A					0.8	0.005	1.0	0.7	1.0

Note: Data prior to 1/31/98 were obtained from Columbia Environmental Inc. Reports.
- ... Denotes data not available.