TC-1287-02

PHASE II ENVIRONMENTAL SITE ASSESSMENT
OLD BREWHOUSE
TUMWATER, WASHINGTON

FEBRUARY1997

Prepared For:

THE CITY OF TUMWATER
555 ISRAEL ROAD S.W.
TUMWATER, WA 98501

TETRA TECH

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3.3 GROUNDWATER SAMPLING RESULTS 22

3.3.1 Total Petroleum Hydrocarbons 22
3.3.2 Volatile Organic Compounds 22
3.3.3 Polychlorinated Biphenyls 25
3.3.4 Total Metals 25
3.3.5 Dissolved Metals 25

4.0 SITE SUMMARY AND CONCLUSIONS 27

4.1 TOPOGRAPHY AND SITE DRAINAGE 27

4.2 GEOLOGY/HYDROGEOLOGY 28

4.3 AREAS OF INVESTIGATION 28

4.3.1 Former UST 29
4.3.2 Former Paint Shop 29
4.3.3 Electrical Transformer Pad 29
4.3.4 Subfloor Drainage System 30
4.3.5 Aboveground Fuel Tank 30
4.3.6 Road Construction Debris 31
4.3.7 Former Tannery and Surrounding Area 31

4.4 SUMMARY 31

5.0 REFERENCES 33

APPENDIX A. ANALYTICAL DATA REPORT

APPENDIX A-1. ANALYTICAL DATA REPORT FOR SAMPLES COLLECTED ON 16 JANUARY 1997

APPENDIX A-2. ANALYTICAL DATA REPORT FOR SAMPLES COLLECTED ON 20 JANUARY 1997

FIGURES

Number		Page
1	Site Vicinity Map, Old Brewhouse, Tumwater, Washington	2
2	Old Brewhouse Site Map, Tumwater, Washington	3
3	Old Brewhouse Sample Location Map, Tumwater Washington	6

TABLES

Number		Page
1	Summary of Field Activities, Phase II Environmental Site Assessment, Old Brewhouse, Tumwater, Washington	12
2	Field Investigation and Laboratory Analysis Summary, Phase II Environmental Site Assessment, Old Brewhouse, Tumwater, Washington	15
3	Summary of Analytical Results for Soil/Sediment Samples Collected During the Phase II Environmental Site Assessment, Old Brewhouse, Tumwater, Washington	19
4	Summary of Soil Sampling Field Observations and Measurements, Phase II Environmental Site Assessment, Old Brewhouse, Tumwater, Washington	20
5	Summary of Analytical Results for Groundwater Samples Collected During the Phase II Environmental Site Assessment, Old Brewhouse, Tumwater, Washington	23
6	Summary of Groundwater Sampling Field Observations and Measurements, Phase II Environmental Site Assessment, Old Brewhouse, Tumwater, Washington	24

1.0 INTRODUCTION

Tetra Tech, Inc., under contract to the City of Tumwater, has conducted a Phase II Environmental Site Assessment (ESA) at the Old Brewhouse, located at 3245 Boston Street S.W. in Tumwater, Thurston County, Washington. The objective of the ESA was to assess the potential for historical site operations and activities to have resulted in environmental impairment in the vicinity of the Old Brewhouse and surrounding buildings.

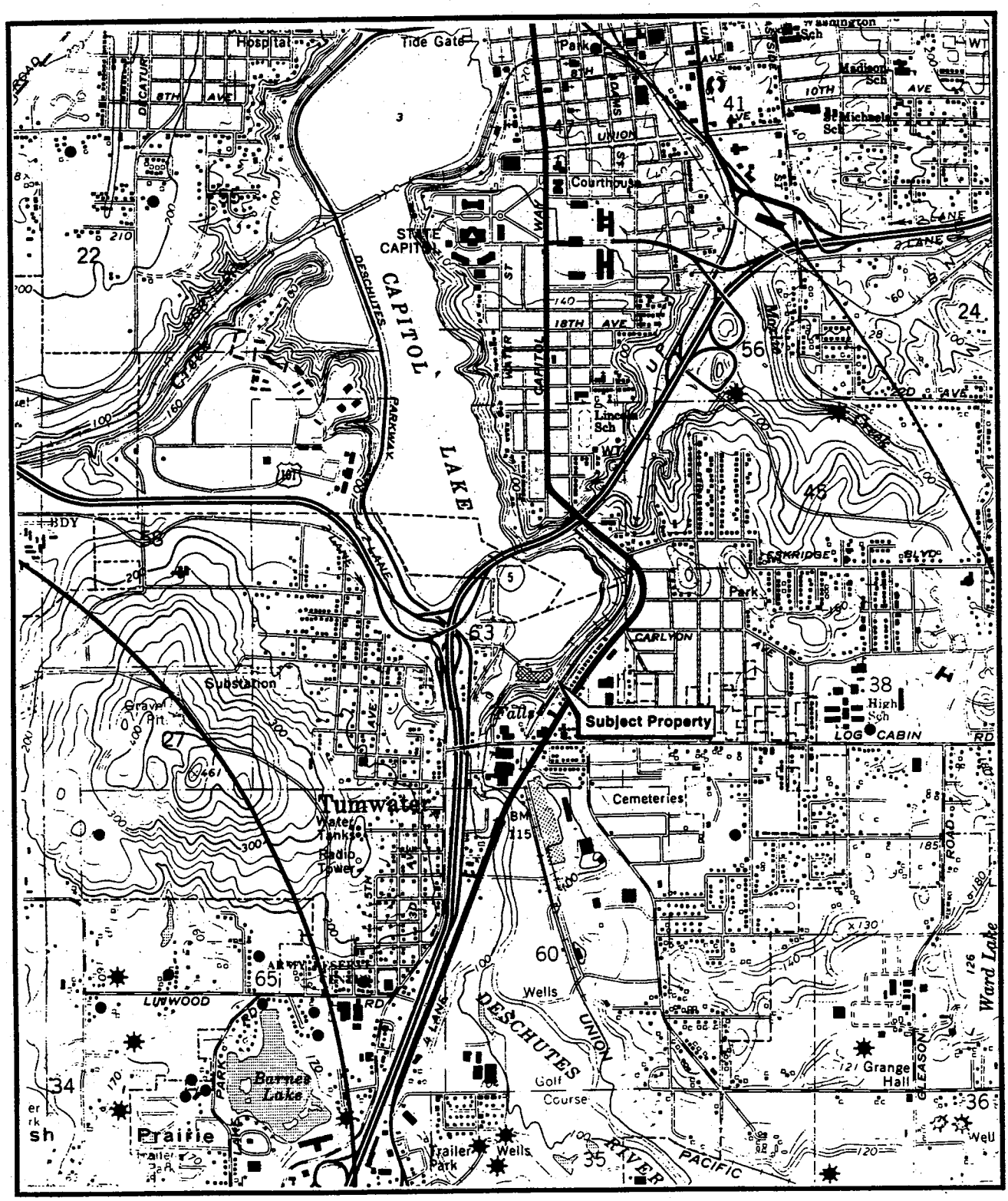
The technical approach employed during the Phase II ESA included: 1) a review of available background information to identify historical property use and site operations, 2) a site inspection to identify specific areas for investigation, and 3) a focused site investigation designed to assess potential soil and groundwater contamination.

This report presents the findings of the Phase II ESA for the Old Brewhouse. It is intended to provide a description of the site, including areas of investigation; as well as a comprehensive description of the January 1997 Phase II ESA, and a summary of site conditions and conclusions. Historical property use and site operations are summarized in the Phase I ESA report prepared for the Old Brewhouse (Tetra Tech 1997).

1.1 SITE DESCRIPTION

The subject property is located in Tumwater, Washington, along the east shore of Capitol Lake at the mouth of the Deschutes River (Figure 1). The property is approximately rectangular in shape and encompasses seven tracts totaling 34.24 acres, including submerged tracts below Capitol Lake and several island marshlands near the shoreline.

The Phase II study area comprises the southern portion of the property which is the site of the original Olympia Brewery complex and adjoining warehouse additions. Figure 2 provides an overview of the Old



Source: USGS TUMWATER, WASH. QUADRANGLE 1981

Figure 1. Site Vicinity Map - Old Brewhouse
Tumwater, Washington

Scale: 1 inch = 2,000 feet

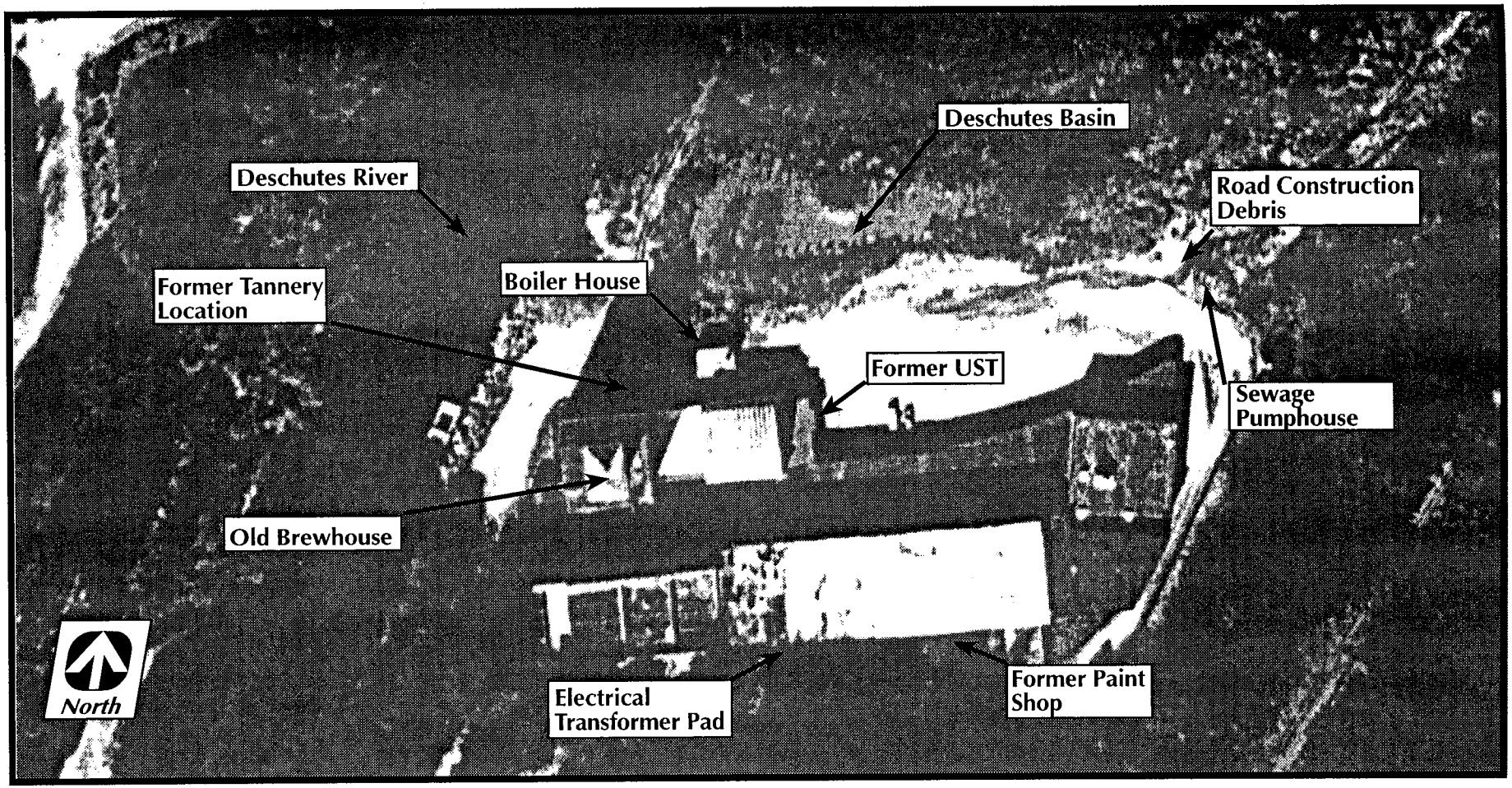


Figure 2. Old Brewhouse Site Map, Tumwater, Washington ***(Adapted from 1992 Aerial Photograph)***

Brewhouse complex and adjacent features. There is a vacant paint shop building located adjacent to the south side of the warehouse, and a boiler building located on the north side of the Old Brewhouse complex. A sewer pumping station owned and operated by the City of Tumwater is located at the northeast corner of the warehouse. The main vehicular access to the subject property and warehouse complex is via a partially paved road that intersects Custer Way from the south. The road loses elevation rapidly as it descends from the uplands on the south to the level graded area that supports the warehouse complex. The graded land surrounding the warehouse is covered with gravel and dirt. An elevated, graded mound near the shoreline north of the warehouse was reportedly formed from the deposition of asphalt and other road construction debris by the City of Tumwater from various road construction projects.

2.0 FIELD INVESTIGATION

This section describes the areas of investigation and provides a summary of the field observation and sample analysis activities conducted during the January 1997 Phase II ESA. Field sampling activities were conducted on 16 and 20 January 1997. These activities included completing utility locating and surface soil sampling on 16 January, and conducting subsoil and groundwater sampling on 20 January.

2.1 AREAS OF INVESTIGATION

Seven discrete areas were identified for investigation based on review of historical site operations and an initial site inspection, including:

- A former underground storage tank
- A former paint shop building
- An electrical transformer pad
- A floor drain system within the main warehouse complex
- An above ground fuel tank
- Stockpiled road construction debris
- Former tannery and surrounding area.

Figure 3 shows the location of each area investigated during the January 1997 Phase II ESA, including site specific sample locations. A summary of field activities, including field measurements and sample collection procedures is provided in Section 2.2, Field Activities Summary. A summary of analyses conducted for each area of investigation is provided in Section 2.3, Analytical Activities Summary. A brief description of areas investigated during the Phase II ESA is provided below.

2.1.1 Former Underground Storage Tank

The interior of the warehouse complex was originally heated by an oil-fired boiler that was reportedly supplied with diesel fuel from an estimated 20,000-gallon underground storage tank (UST) located on the

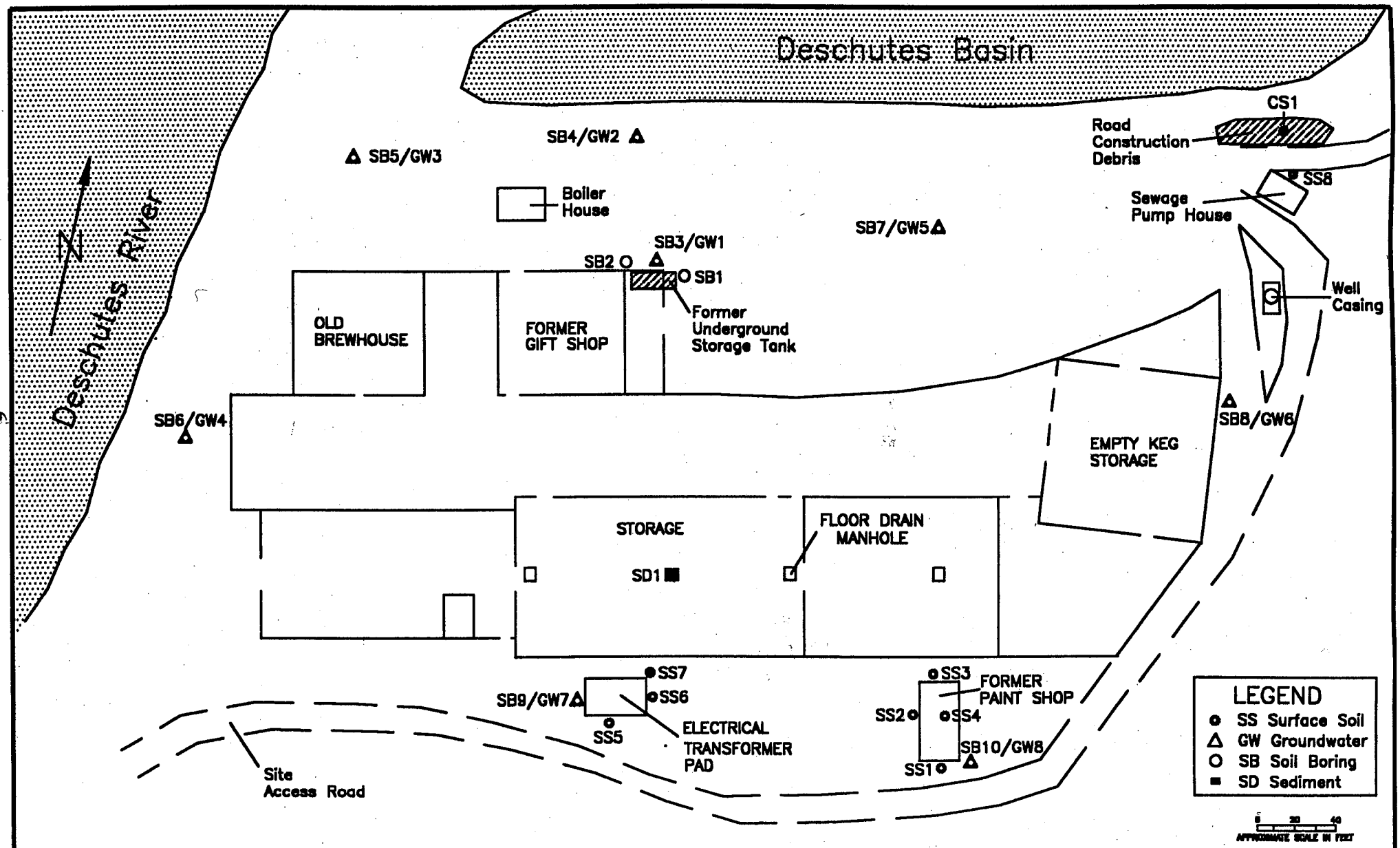


FIGURE 3. OLD BREWHOUSE SAMPLE LOCATION MAP, TUMWATER, WASHINGTON

north side of the warehouse complex (see Figure 3). The tank was decommissioned and removed in April 1986, as was documented in a series of photographs taken during the removal. There was reportedly no evidence of stained soils or sheen observed in the tank excavation at the time of removal (Eckloff, D., 14 January 1997, personal communication). However, no environmental samples were collected during the removal of the onsite UST.

On 20 January 1997, three soil borings, including borings SB1, SB2, and SB3, were driven in the vicinity of the former UST to evaluate soil and groundwater quality. One subsoil sample (Tumwater-SB3), collected from the soil/groundwater interface at approximately 4.5 feet below ground surface (BGS), and one groundwater sample (Tumwater-GW1) were collected and submitted for analyses of total petroleum hydrocarbons (TPH) (see Section 2.3).

2.1.2 Former Paint Shop

The former paint shop consists of a concrete building approximately 25-feet wide by 40-feet long, located adjacent to the southeast corner of the main warehouse complex (see Figure 3). The former paint shop is suspected to have been used to mix paints during previous operations conducted at the site by a former metal cabinet manufacturer (General Metal Craft) in the 1950's (Tetra Tech 1997). The flooring within this structure is comprised of concrete which was observed to be overlain by approximately 1-inch of soil material during the initial site inspection conducted by Tetra Tech personnel. No evidence of floor drain(s) were observed based on an inspection of the concrete surface within the former paint shop. The area surrounding the former paint shop building between the warehouse complex and the site access road, is comprised of vegetated fill material which was observed to contain brick fragments and concrete aggregate at various locations during the Phase II investigation.

On 16 January 1997, three surface soil samples designated as Tumwater-SS1, -SS2, and -SS3 were collected adjacent to each entrance of the paint shop building, and submitted for volatile organic compound (VOC) and metals analyses (see Section 2.3). An additional composite soil sample designated as Tumwater-SS4 was collected from soils overlying the concrete flooring within the former paint shop. This sample was archived by the laboratory at the request of Tetra Tech pending receipt of the other three surface soil analytical results. On 20 January 1997, one soil boring (SB10) was driven adjacent to the southeast corner of the former paint shop, and one groundwater sample, designated as Tumwater-GW8, was collected and submitted for VOC and metals analyses (see Section 2.3). The alternatives for the

location of this soil boring were limited by the saturated nature of the fill material surrounding the paint shop building, which restricted drill rig access in this area.

2.1.3 Electrical Transformer Pad

The warehouse complex is serviced by six transformers that are located on a concrete pad in a fenced enclosure on the south side of the building (see Figure 3). The transformers were purchased from the Puget Sound Power and Light Company in September 1986 (Tetra Tech 1997). The transformers reportedly were tested prior to their sale and were determined to be free of polychlorinated biphenyls (PCBs) (Eckloff, D., 14 January 1997, personal communication).

On 16 January 1997, three surface soil samples designated as Tumwater-SS5, -SS6, and -SS7 were collected immediately adjacent to the concrete transformer pad at locations where runoff would be expected to flow off the pad. These samples were submitted for VOC and PCB analyses (see Section 2.3). On 20 January 1997, one soil boring (SB9) was driven adjacent to the west side of the concrete transformer pad to assess soil and groundwater quality. One subsoil sample, designated as Tumwater-SB9-3.5, was collected at approximately 3.5 feet BGS from an interval revealing soil discoloration. This subsoil sample was subsequently submitted for PCB analysis. One groundwater sample from this location, designated as Tumwater-GW7, was collected and submitted for VOC and PCB analyses (see Section 2.3). The alternatives for the location of soil boring SB9 was limited due to the saturated nature of the fill material surrounding the southern and eastern portions of the transformer pad, which restricted drill rig access at these locations.

2.1.4 Subfloor Drainage System

A subfloor drainage system runs through the southern portion of the warehouse complex (see Figure 3). The drainage system is comprised of a concrete vault (raceway) which is approximately 2-feet wide and extends approximately 2-feet below the surface of the warehouse flooring. Drainage within the concrete raceway flows from east to west beneath the warehouse, and is accessed through a series of four manhole covers (see Figure 3). Tetra Tech personnel observed water flow within the subfloor drainage system during the initial site inspection. However, the origin of the flow through the system could not be determined. The subfloor drainage system reportedly discharges to a storm sewer system (Eckloff, D., 14 January 1997, personal communication). However, the location of the drainage system discharge has not be established based on information obtained by Tetra Tech to-date.

On 16 January 1997, one sediment sample designated as Tumwater-SD1 was collected from the base of the drainage raceway from the furthest accessible downgradient location (i.e., from the third manhole cover to the west), and submitted for semi-volatile organic compound (SVOC) and metals analyses (see Section 2.3). The western most manhole could not be accessed as the cover could not be removed at the time of the investigation. Approximately 0.5-inches of fine sand sediment was observed overlying the base of the raceway at the time of sample collection. Water within the base of the raceway was approximately 1-inch deep and was flowing at an estimated velocity of 0.25 feet per second at the time of sample collection.

2.1.5 Aboveground Fuel Storage Tank

An aboveground storage tank (AST) with an estimated capacity of 120-gallons was reportedly installed at the site by the City of Tumwater in February 1995 to supply diesel fuel to an emergency generator located in the sewage pumphouse structure (see Figure 3). The AST is situated on an L-shaped concrete pad located on the east side of the pumphouse. The concrete pad incorporates a concrete containment basin intended to capture potential overflow from the tank. The AST is covered by an awning structure which extends from the pumphouse over the tank and associated containment.

During the Phase II investigation, a cloth rag was observed within the fill opening on top of the AST. The rag was reportedly used to secure a temporary fuel line (hose) which ran from the top of the tank over the ground to the emergency generator within the sewage pumphouse (Huff, J., 18 January 1997, personal communication). The temporary fuel line was reportedly used to substitute for the original tank piping (i.e., copper line) due to the suspected presence of water in the original fuel supply line. The emergency overflow concrete catch basin located adjacent to the AST appeared to be nearly full of water at the time of the inspection.

On 20 January 1997, one surface soil sample designated as Tumwater-SS8 was collected adjacent to the AST fill opening approximately 1-foot from the edge of the concrete pad. This sample was subsequently submitted for petroleum hydrocarbon analyses (see Section 2.3).

2.1.6 Road Construction Debris

A graded mound north of the sewage pumphouse was reportedly formed from the deposition of asphalt and gravel material by the City of Tumwater from various road construction projects. The oblong-shaped

road construction debris stockpile was observed to be lightly vegetated at the time of inspection, and measured approximately 160-feet in length, 55-feet in width at the center, and approximately 5-feet in average height.

On 16 January 1997, a composite soil sample designated as Tumwater-CS1 was collected from five locations within the stockpiled material and submitted for petroleum hydrocarbon and metals analyses (see Section 2.3).

2.1.7 Former Tannery and Surrounding Area

A total of five soil borings, including SB4, SB5, SB6, SB7, and SB8 were driven on 20 January 1997, to assess general soil and groundwater quality adjacent to the northern warehouse complex (see Figure 3). Soil borings SB6 and SB8 were driven at the west and east ends of the warehouse complex, respectively. One groundwater sample was collected at soil boring locations SB6 and SB8, including samples Tumwater-GW4 and Tumwater-GW6, respectively. These samples were submitted for VOC and metals analyses (see Section 2.3).

Soil boring SB5 was driven in a location assumed downgradient of a former tannery operation which was reportedly located immediately north of the Old Brewhouse (see Figure 3). One groundwater sample designated as Tumwater-GW3 was collected at this location and submitted for VOC and metals analyses.

Soil boring SB4 was driven adjacent to the Deschutes Basin at a location assumed to be downgradient of the former UST area (see Figure 3). During an initial site inspection Tetra Tech personnel observed a slight sheen on the water surface along a localized portion of the shoreline in the general vicinity of boring location SB4. One groundwater sample designated as Tumwater-GW2 was collected at this location and submitted for VOC, petroleum hydrocarbon, and metals analyses.

Soil boring SB7 was driven between the Deschutes Basin and the northern warehouse complex in a location selected to provide general coverage relative to other soil borings located in assumed downgradient positions relative to the Old Brewhouse Complex. One groundwater sample designated as Tumwater-GW5 was collected and submitted for VOC and metals analyses from this location (see Section 2.3).

2.2 FIELD ACTIVITIES SUMMARY

Table 1 provides a summary of the field activities conducted during the Phase II ESA. A brief description of field activities conducted in support of the Phase II ESA is provided in the following sections.

2.2.1 Site Inspection

Tetra Tech personnel conducted a site inspection of the subject site on 8 January 1997. The purpose of the site inspection was to visually inspect and describe the current conditions at the site and surrounding area, and to compile a photographic log of the site for future reference. Preliminary delineation of the locations for soil borings and surface soil samples were established based on the site inspection and information obtained from review of available background information and facility personnel interviews.

2.2.2 Underground Utilities Locating

On 16 January 1997, a private utility locating service was used to identify and clearly mark underground utilities prior to the start of the intrusive (i.e., subsurface) portion of the investigation.

2.2.3 Field Screening Activities and Measurements

Field screening activities conducted at each sampling location included visual and olfactory observations and use of a photoionization detector (PID) to assess for the potential presence of volatile organic vapors. Field measurements collected and recorded during the Phase II ESA included PID readings during surface soil sampling and soil boring installation; and temperature, pH, and conductivity readings during groundwater sample collection. Field instrument calibration and operation was conducted according to manufacturer specifications. Instrument calibration was conducted and recorded in daily calibration log books for each field instrument used during the investigation.

2.2.4 Soil Sampling

This section provides a brief description of surface soil and subsoil sample collection procedures utilized during the Phase II ESA.

2.2.4.1 Surface Soil. Surface soil samples were collected from approximately 6-inches below the ground surface using a clean stainless steel trowel. Prior to sample collection all surface debris (e.g., cobbles, twigs, grass) was removed. Soil samples collected for VOC and/or petroleum hydrocarbon analysis

TABLE 1. SUMMARY OF FIELD ACTIVITIES
PHASE II ENVIRONMENTAL SITE ASSESSMENT
OLD BREWHOUSE, TUMWATER, WASHINGTON

Areas of Investigation	Field Activities						
	Site Inspection	Field Screening and Measurement	Underground Utilities Location	Subsurface Investigation (Direct Push Technique)	Sediment Sampling	Soil Sampling	Groundwater Sampling
Former Underground Storage Tank	✓	✓	✓	✓		✓	✓
Former Paint Shop	✓	✓	✓	✓		✓	✓
Electrical Transformer Pad	✓	✓	✓	✓		✓	✓
Floor Drains	✓	✓			✓		
Aboveground Fuel Tank	✓	✓				✓	
Road Construction Debris	✓	✓				✓	
Former Tannery and Surrounding Area	✓	✓	✓	✓			✓

were placed directly into appropriately labeled sample containers to avoid potential aeration. Soils for the remaining analyses were placed into a clean stainless steel bowl, thoroughly homogenized, and placed into appropriate sample containers. Sample containers were immediately placed in an ice-filled cooler maintained at an optimum temperature of 4° C. All samples were subsequently transported and delivered to the analytical laboratory under standard chain-of-custody documentation.

*2.2.4.2 **Subsoil.*** Soil borings were driven by Cascade Drilling, Inc., of Woodinville, Washington using direct push techniques (i.e., Hydro-punch™). Soil samples were collected continuously for logging and field screening purposes, beginning at 1-foot BGS and extending to first encountered groundwater at each boring location. Undisturbed samples from the borings were collected using a clean stainless steel borehole sampler that was 24 inches long, with an outside diameter of 1.25 inches. Upon retrieval, the soil sampler was placed on clean plastic sheeting, opened, and immediately scanned with a PID for the presence of volatile organic vapors. Subsoil samples were selected and submitted for laboratory analysis based on field screening results. Subsoils submitted for laboratory analyses were placed directly into appropriately labeled sample containers, placed in an ice-filled cooler maintained at 4° C, and transported and delivered to the analytical laboratory under standard chain-of-custody documentation.

At completion, all borings were backfilled using hydrated bentonite chips and capped with soil to match the original surface conditions. A Tetra Tech registered geologist supervised all drilling activities conducted during the investigation.

2.2.5 Floor Drain Sediment Sampling

One floor drain sediment sample was collected from the base of the drainage raceway using a clean stainless steel sample spoon. Sediment was placed into a clean stainless steel bowl, thoroughly homogenized, and placed into appropriately labeled sample containers for subsequent laboratory analysis. The sample containers were immediately placed in an ice-filled cooler maintained at an optimum temperature of 4° C. All samples were transported and delivered to the analytical laboratory under standard chain-of-custody documentation.

2.2.6 Groundwater Sampling

Nine groundwater samples, including one field duplicate sample, were collected from eight of 10 soil boring locations drilled during the Phase II ESA. Groundwater grab samples were collected from a 4-foot

long, 1-inch inside diameter stainless steel screen point (Hydro-punch™). The screen point, once driven into the water table aquifer and its protective shield retracted, was in direct contact with formation groundwater. The top of the screened section was placed at approximately 0.5 to 1.0 feet above the water table to assess the potential presence of floating petroleum hydrocarbons. Groundwater samples were collected from the screen point using a peristaltic pump and clean (dedicated) Teflon™ tubing. Groundwater was purged from each location in an effort to remove fine grained sediment prior to sample collection, and field parameters including temperature, pH, and conductivity were measured (see Section 2.2.3, Field Screening Activities and Measurements). Groundwater field measurement results are summarized in Section 3.3, Groundwater Sampling Results.

2.2.7 Decontamination Procedures

Prior to the start of drilling at the site, the drill rig and other onsite equipment were thoroughly steam cleaned. Subsoil sampling equipment such as borehole samplers, drive points, and stainless steel sampling tools, were decontaminated prior to each use. Each item was scrubbed using Liquinox™, rinsed with potable water, and then final rinsed with distilled water. Surface soil sampling equipment was precleaned, individually wrapped in foil, and sealed in clean plastic bags prior to site entry. No decontamination of surface soil sampling equipment was required between sample locations during the Phase II ESA.

2.3 ANALYTICAL ACTIVITIES SUMMARY

Sample analyses conducted during the Phase II ESA are summarized in Table 2. This table includes the number of samples for each media, the sample type, and the number of analyses and analytical methods for each sample. The analyte selection for each area of investigation was based on suspected and potential hazardous substance(s) anticipated to be associated with historical site uses.

Analysis of samples collected for the Old Brewhouse Phase II ESA was performed by North Creek Analytical laboratory of Bothell, Washington, using procedures based on the following Washington State Department of Ecology (Ecology) and U.S. EPA methods:

TABLE 2. FIELD INVESTIGATION AND LABORATORY ANALYSIS SUMMARY
PHASE II ENVIRONMENTAL SITE ASSESSMENT
OLD BREWHOUSE, TUMWATER, WASHINGTON

Area of Investigation	Media	Number of Samples	Analyses						
			Petroleum Hydrocarbons		Volatile Organic Compounds	Semivolatile Organic Compounds	Polychlorinated Biphenyls	Total Metals	Dissolved Metals
			WTPH-HCID	WTPH-Diesel					
Former UST	Subsoil	1	1	NA	NA	NA	NA	NA	NA
	Groundwater	1	NA	1	NA	NA	NA	NA	NA
Former Paint Shop	Surface soil	4	NA	NA	3	NA	NA	3	NA
	Groundwater	1	NA	NA	1	NA	NA	1	1
Electrical Transformer Pad	Surface soil	3	NA	NA	3	NA	3	NA	NA
	Subsoil	1	NA	NA	NA	NA	1	Na	NA
	Groundwater	1	NA	NA	1	NA	1	NA	NA
Floor Drains	Sediment	1	NA	NA	NA	1	NA	1	NA
Aboveground Fuel Tank	Surface soil	1	NA	1	NA	NA	NA	NA	NA
Road Construction Debris	Soil Composite	1	1	NA	NA	NA	NA	1	NA
Former Tannery and Surrounding Area	Groundwater	5	NA	1	5	NA	NA	5	1

- Ecology Method WTPH-HCID: Hydrocarbon scan (C_7-C_{30}) by gas chromatography.

- Ecology Method WTPH-Diesel/Extended: Diesel-range (C_{12}-C_{24}) and extended oil-range (C_{24}-C_{40}) hydrocarbon analysis by extraction and gas chromatography.

- U.S. EPA Method 8081: PCB analysis by extraction and gas chromatography/electron capture detection (GC/ECD).

- U.S. EPA Method 8270: SVOC analysis by gas chromatography/mass spectroscopy (GC/MS).

- U.S. EPA Method 8240: VOC analysis by gas chromatography/mass spectroscopy (GC/MS).

- U.S. EPA Method 6010A/7000 series: Metals analysis by acid digestion and inductively coupled plasma atomic emission spectroscopy, flame atomic absorption spectroscopy, cold vapor atomic absorption spectroscopy, and graphite furnace atomic absorption spectroscopy.

Field quality assurance/quality control activities conducted during the Phase II ESA are summarized below:

- A trip blank was shipped with the environmental samples sent to the analytical laboratory for analysis of VOCs. Results obtained from the trip blank sample provide a means to evaluate sample accuracy and the potential for VOC cross-contamination.

- Sampling equipment was thoroughly cleaned between each sampling event to prevent potential cross-contamination of the environmental samples.

- A duplicate groundwater sample was collected and submitted blind to the laboratory to evaluate sampling and analytical variability and precision.

- Sample custody was maintained by a Chain-of-Custody record (form) which accompanied all samples submitted for analysis.

3.0 SITE ASSESSMENT RESULTS

This section discusses the results of field and analytical activities conducted in support of the January 1997 Old Brewhouse Phase II ESA. A detailed laboratory analytical data report is provided in Appendix A.

3.1 SOIL SAMPLING RESULTS

Analytical results for soil samples collected during the Phase II ESA are summarized in Table 3. A summary of field observations and measurements collected during soil sampling activities is provided in Table 4.

The sample analysis summary presented in Table 3 includes published Washington State regulatory cleanup levels relevant to the assessment of potential soil contamination at the Old Brewhouse. Washington's hazardous waste cleanup law, the Model Toxics Control Act (MTCA) Cleanup Regulation [Washington Administrative Code (WAC) Chapter 173-340], mandates that site cleanups protect the state's citizens and environment [Revised Code of Washington (RCW) Chapter 70.105D]. The MTCA cleanup regulations establish cleanup requirements for individual sites. The MTCA Method A cleanup criteria defines cleanup levels for 25 of the most common hazardous substances found at sites, and is designed for cleanups that are relatively straight-forward and/or involve only those hazardous substances contained within the Method A list. The use of MTCA Method A soil cleanup levels is appropriate for the initial assessment regarding potential soil contamination at the subject site based on a review of the analytical results obtained during this investigation. Also provided in Table 3, are the published MTCA Method A cleanup levels for industrial soils which may also be applicable to the subject site depending on the future site development plans and current/potential zoning regulations (WAC 173-340-745, as amended January 1996).

TABLE 3. SUMMARY OF ANALYTICAL RESULTS FOR SOIL/SEDIMENT SAMPLES COLLECTED DURING THE PHASE II ENVIRONMENTAL SITE ASSESSMENT OLD BREWHOUSE, TUMWATER, WASHINGTON, JANUARY 1997

Area of Investigation	Sample[a] Identification	Analyses (milligrams/kilogram)										
		WTPH-HCID	WTPH-Diesel	Volatile Organic Compounds	Semivolatile Organic Compounds	PCBs[b] (Aroclor 1260)	Total Metals[c]					
							Arsenic	Barium	Cadmium	Chromium	Lead	Mercury
Former UST	SB3	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Former Paint Shop	SS1	NA	NA	ND	NA	NA	10.8	237	0.47	36.5	86.9	0.064
	SS2	NA	NA	ND	NA	NA	**31.4**	375	**6.06**	27.2	**312**	0.53
	SS3	NA	NA	ND	NA	NA	ND	204	**7.49**	39.8	205	0.17
	SS4	NA	NA	ND	NA	NA	NA	NA	NA	NA	NA	NA
Electrical Transformer Pad	SS5	NA	NA	ND	NA	ND	NA	NA	NA	NA	NA	NA
	SS6	NA	NA	ND	NA	0.143	NA	NA	NA	NA	NA	NA
	SS7	NA	NA	ND	NA	0.229	NA	NA	NA	NA	NA	NA
	SB9	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA	NA
Floor Drains	SD1	NA	NA	NA	2.05[d]	NA	13.1	194	1.67	23.9	52.0	ND
Aboveground Fuel Tank	SS8	NA	**755**	NA	NA	NA	NA	NA	NA	NA	NA	NA
Road Construction Debris	CS-1	ND	NA	NA	NA	NA	ND	51.5	ND	24.4	12.0	ND
Method Reporting Limits (mg/kg)		20/50/100[e]	10	0.2	0.2	0.05	10	0.5	0.25	0.50	10	0.05
MTCA[f] (mg/kg) Method A Soil Cleanup Level		NA	200	NA	NA	1.0	20.0	NA	2.0	100	250	1.0
MTCA[f] (mg/kg) Method A Industrial Soils Cleanup Level		NA	200	NA	NA	10	200	NA	10.0	500	1,000	1.0

[a] The formal sample designation incorporates the Tumwater prefix as designated on the sample chain-of-custody form.
[b] Polychlorinated biphenyls.
[c] Includes only those metals detected in site soils.
[d] Bis(2-ethylhexyl)phthalate.
[e] Gasoline = 20, Diesel = 50, Heavy oil = 100.
[f] The Model Toxics Control Act Cleanup Regulation [(Chapter 173-340-740(2)(a)(i) and 173-340-745(2)(a)(i) WAC, as amended January 1996].
NA = Not applicable.
ND = Not detected at method reporting limit.

TABLE 4. SUMMARY OF SOIL SAMPLING FIELD OBSERVATIONS AND MEASUREMENTS
PHASE II ENVIRONMENTAL SITE ASSESSMENT
OLD BREWHOUSE, TUMWATER, WASHINGTON, JANUARY 1997

Area of Investigation	Sample[a] Identification	Sample Depth (ft-BGS)[b]	Visual and Olfactory Observations		PID[c] Reading (ppm)	Sample Description
			Staining	Odor		
Former UST	SB3	4.5	None	None	0	Dark brown sandy gravel with pebbles, well graded, subangular clasts
Former Paint Shop	SS1	0.5	None	None	0	Dark brown silty sand with some gravel, poorly graded
	SS2	0.5	None	None	0	Dark brown fine sand with some silt, poorly graded
	SS3	0,5	None	None	0	Dark brown silty sand, porly graded
	SS4	NA	None	None	0	Dark brown sand, poorly graded
Electrical Transformer Pad	SS5	0.5	Dark Discoloration	None	0	Dark brown fine sand, poorly graded
	SS6	0.5	None	None	0	Dark brown fine sand, poorly graded
	SS7	0.5	None	None	0	Dark brown sand with some gravel
	SB9	3.5	Black Cinder Material	None	0	Dark brown gravelly sand, intermixed fill debris with black charcoal (cinder) material
Floor Drain	SD1	NA	None	Slight	0	Brown fine sand, poorly graded
Aboveground Fuel Tank	SS8	0.5	None	Petroleum Odor	0	Brown gravelly sand with pebbles, well graded
Road Construction Debris	CS-1	2.5[d]	None	None	0	Dark brown sand with some gravel and cobble, well graded

[a] The formal sample designation incorporates the Tumwater prefix as designated on the sample chain-of-custody form.

[b] ft-BGS = feet below ground surface.

[c] Photoionization detector reading in parts per million (ppm).

[d] Composite sample collected at five discrete locations at approximately 2.5 feet into the stockpiled material using a stainless steel hand auger.

3.1.1 Total Petroleum Hydrocarbons

Total petroleum hydrocarbon (TPH) analyses were conducted on soil samples collected from three areas of investigation, including the former UST, the AST located adjacent to the sewage pumphouse, and from the road construction debris stockpile (see Figure 3). Petroleum hydrocarbon identification analysis (WTPH-HCID) revealed no detected concentrations above the respective method reporting limit in soils from the former UST area and road construction debris materials. Diesel-range TPH was detected at a concentration of 755 milligrams/kilogram (mg/kg) in surface soil sample Tumwater-SS8 collected adjacent to the sewage pumphouse AST. The detection of diesel-range TPH in surface soil sample Tumwater-SS8 exceeds the current MTCA Method A soil cleanup level of 200 mg/kg (see Table 3).

3.1.2 Volatile Organic Compounds

No VOCs were detected in soil samples collected during the Phase II ESA (see Table 3 and Appendix A).

3.1.3 Polychlorinated Biphenyls

PCB analysis was conducted on three surface soil samples and one subsoil sample collected from areas surrounding the electrical transformer pad (see Figure 3). Two surface soil samples, including Tumwater-SS6 and Tumwater-SS7 revealed PCBs (Aroclor 1260) at 0.143 mg/kg and 0.229 mg/kg, respectively. The detected concentrations of PCBs in soils are well below the published MTCA Method A soil cleanup level of 1.0 mg/kg (see Table 3).

3.1.4 Metals

Metals detected in site soils include arsenic, barium, cadmium, chromium, lead, and mercury (see Table 3). Elevated metals concentrations (i.e., those exceeding MTCA Method A) were detected in two surface soil samples collected from the former paint shop area. Surface soil sample Tumwater-SS2 revealed arsenic at a concentration of 31.4 mg/kg, cadmium at 6.06 mg/kg, and lead at 312 mg/kg. Surface soil sample Tumwater-SS3 revealed cadmium at 7.49 mg/kg. No metals concentrations detected in site soils exceed the published MTCA Method A soil cleanup levels for industrial soils (see Table 3).

3.2 FLOOR DRAIN SEDIMENT SAMPLING RESULTS

A single floor drain sediment sample designated as Tumwater-SD1 was collected during the Phase II ESA and analyzed for semi-volatile organic compounds and metals. A single semi-volatile compound, bis(2-ethylhexyl)phthalate, was detected at a concentration of 2.05 mg/kg. This semi-volatile compound is a common plasticizer which is likely a laboratory artifact. Metals detected in sediment sample Tumwater-SD1 include arsenic, barium, cadmium, chromium, and lead at concentrations below the established MTCA Method A soil cleanup levels (see Table 3).

3.3 GROUNDWATER SAMPLING RESULTS

Analytical results for groundwater samples collected during the Phase II ESA are summarized in Table 5. A summary of field observations and measurements collected during groundwater sampling activities is provided in Table 6.

The sample analysis summary presented in Table 5 includes state regulatory criteria relevant to the assessment of potential groundwater contamination at the Old Brewhouse, including MTCA Method A groundwater cleanup levels (WAC, Chapter 173-340-720, as amended January 1996) and MTCA Method B criteria from the Cleanup Levels and Risk Calculations (CLARC II) update, dated February 1996.

3.3.1 Total Petroleum Hydrocarbons

Two groundwater samples, including Tumwater-GW1 collected from the former UST location, and Tumwater-GW2 collected in an assumed downgradient location relative to the former UST and adjacent to the Deschutes Basin, were analyzed for diesel and heavy oil range TPH. Diesel-range TPH was detected in sample Tumwater-GW1 at 0.267 milligrams/liter (mg/L), slightly above the method reporting limit and well below the MTCA Method A groundwater cleanup level of 1.0 mg/L (see Table 5).

3.3.2 Volatile Organic Compounds

No VOCs were detected in groundwater samples collected during the Phase II ESA (see Table 3 and Appendix A).

TABLE 5. SUMMARY OF ANALYTICAL RESULTS FOR GROUNDWATER SAMPLES COLLECTED DURING THE PHASE II ENVIRONMENTAL SITE ASSESSMENT OLD BREWHOUSE, TUMWATER, WASHINGTON, JANUARY 1997

Area of Investigation	Sample[a] Identification	Analyses (milligrams/liter)									
		WTPH-Diesel	Volatile Organic Compounds	PCBs[b]	Total Metals[c]					Dissolved Metals[d]	
					Arsenic	Chromium	Copper	Lead	Zinc	Arsenic	Lead
Former UST	GW1	0.267	ND	NA	NA	NA	NA	NA	NA	NA	NA
Former Paint Shop	GW8	NA	ND	NA	**0.0066**	ND	ND	**0.0123**	0.0085	0.0062	0.0159
Electrical Transformer Pad	GW7	NA	ND	ND	NA	NA	NA	NA	NA	NA	NA
Former Tannery and Surrounding Area	GW2	ND	ND	NA	**0.0077**	ND	ND	0.0047	0.0291	NA	NA
	GW3	NA	ND	NA	**0.0068**	0.0227	0.0554	**0.0123**	0.0554	ND	ND
	GW4	NA	ND	NA	ND	ND	ND	ND	ND	NA	NA
	GW4* dup	NA	ND	NA	**0.0091**	**0.0161**	ND	**0.0029**	0.0283	NA	NA
	GW5	NA	ND	NA	**0.0053**	0.0124	0.0376	**0.0052**	0.0390	NA	NA
	GW6	NA	ND	NA	ND	0.0125	ND	ND	ND	NA	NA
Method Reporting Limit (mg/L)		0.250	0.0010	0.0001	0.0040	0.0100	0.0300	0.0020	0.0554	0.0040	0.0554
MTCA[e] (mg/L) Method A Groundwater Cleanup Level		1.0	NA	0.0001	0.0050	0.050	0.592	0.0050	4.8[f]	0.0050	0.0050

[a] The formal sample designation includes the Tumwater prefix as designated on the sample chain-of-custody form.

[b] Polychlorinated biphenyls.

[c] Includes only those metals detected in groundwater.

[d] Dissolved metals, including arsenic and lead were analyzed for specific samples.

[e] The Model Toxics Control Act Cleanup Regulation [(Chapter 173-340-720(2)(a)(i) WAC, as amended January 1996].

[f] Values based on MTCA Method B criteria from The Cleanup Levels and Risk Calculations (CLARC II) update, February 1996.

NA = Not applicable.

ND = Not detected at method reporting limit.

TBD = To be determined.

* Blind duplicate labeled Tumwater-GW15 on custody forms and laboratory report.

TABLE 6. SUMMARY OF GROUNDWATER SAMPLING FIELD OBSERVATIONS AND MEASUREMENTS
PHASE II ENVIRONMENTAL SITE ASSESSMENT
OLD BREWHOUSE, TUMWATER, WASHINGTON, JANUARY 1997

Area of Investigation	Sample[a] Identification	Depth to Groundwater (ft-BGS)[b]	Field Measurements			Visual and Olfactory Observations		Sample Description
			Temperature (^{o} C)	pH	Conductivity (μmhos/cm)	Sheen	Odor	
Former UST	GW1	4.5	48.3	7.48	192	None	None	Light tan, slightly cloudy
Former Paint Shop	GW8	6.0	49.8	7.42	392	None	None	Light brown, cloudy
Electrical Transformer Pad	GW7	5.0	50.2	7.34	373	None	None	Clear, transparent
Former Tannery and Surrounding Area	GW2	4.0	48.9	7.29	347	None	None	Light tan, slightly cloudy
	GW3	4.5	49.5	7.24	360	None	None	Light tan, slightly cloudy
	GW4	4.5	49.2	7.12	447	None	None	Very light tan, semi-transparent
	GW5	4.0	48.7	7.47	306	None	None	Light tan, slightly cloudy
	GW6	5.5	51.6	7.49	218	None	None	Very light amber, semi-transparent

[a] The formal sample designation includes the Tumwater prefix as designated on the sample chain-of-custody form.

[b] ft-BGS = feet below ground surface.

3.3.3 Polychlorinated Biphenyls

No PCBs were detected above specified method reporting limits in sample Tumwater-GW7 which was collected adjacent to the electrical transformer pad (see Table 5).

3.3.4 Total Metals

Total metals (those designated as priority pollutant metals) were analyzed in eight of the nine groundwater samples collected during the Phase II ESA. Metals detected in groundwater at the subject site include arsenic, chromium, copper, lead, and zinc (see Table 5). Arsenic and lead were detected at slightly elevated concentrations (i.e., above MTCA Method A groundwater cleanup levels) in five of the eight samples analyzed, including arsenic at a maximum concentration of 0.0091 mg/L in sample Tumwater-GW15 (duplicate of GW4) and lead at a maximum concentration of 0.0123 mg/L in samples Tumwater-GW8 and Tumwater-GW3.

Groundwater sample Tumwater-GW4 revealed no detected concentrations of metal compounds. However, a duplicate of that sample, Tumwater-GW15 collected concurrently with sample GW4 and submitted blind to the laboratory to avoid detection, revealed arsenic at a concentration of 0.0091 mg/L, lead at 0.0029 mg/L, chromium at 0.0161 mg/L, and zinc at 0.0283 mg/L (see Table 5). These results are an indication of the potential variability in the sample matrix that is believed to be a result of the presence of the suspended fine grain materials (fines) contained within the groundwater samples collected during the site investigation (see Table 6).

3.3.5 Dissolved Metals

To minimize the suspected variability in the groundwater matrix resulting from the presence of suspended fine particulates, two groundwater samples, including Tumwater-GW3 and Tumwater-GW8 were reanalyzed for dissolved metals (arsenic and lead only) on 18 February 1997. Results of the dissolved metals analyses revealed no detectable concentrations of arsenic in sample Tumwater-GW3. However, dissolved lead in sample Tumwater-GW3 and dissolved arsenic and lead in sample Tumwater-GW8 remain at concentrations similar to those for the total metals results in these samples (see Table 5).

The dissolved metals results obtained from the re-analysis of selected samples from the Old Brewhouse site do not necessarily provide conclusive information regarding dissolved metals content in site groundwater due to the presence of the fine-grained sediment and the fact that dissolved metals analyses

are not typically preserved. The groundwater samples collected for total metals analyses were preserved with nitric acid, and were subsequently filtered and reanalyzed for dissolved metals content. The effect of the sample preservative would be to dissolve those metals present in the existing fines into solution over time, thus increasing the potential to detect metals concentrations in groundwater samples where fines may be present.

4.0 SITE SUMMARY AND CONCLUSIONS

This section provides a summary of site status and conclusions based on the January 1997 Phase II ESA conducted on behalf of the City of Tumwater at the Old Brewhouse, in Tumwater, Washington.

4.1 TOPOGRAPHY AND SITE DRAINAGE

The Old Brewhouse and associated warehouse complex is bordered to the south and east by a steeply graded hillside which drains the site. The southern portion of the study area, including the area between the southern boundary of the warehouse complex and the site access road slopes gently to the northeast and is situated at an average elevation of approximately 20 feet above mean sea level. The northern portion of the study area, including the area between the warehouse complex and the Deschutes Basin is graded so as to be relatively flat, and is situated at an average elevation of approximately 10 feet above mean sea level.

Surface water runoff from the bordering hillsides is directed along a concrete flow diversion system which extends along the southern and eastern boundaries of the warehouse complex. Flowing water was observed within the flow diversion system during the site investigation. The water from the flow diversion system is culverted along the northern side of the warehouse complex and reportedly connects with the storm sewer drainage system to the north based on information obtained during the location of underground utilities. However, the actual location of surface water discharge could not be determined during the course of this investigation. No surface water outfalls were observed along either the Deschutes River or the Deschutes Basin in the vicinity of the Old Brewhouse and warehouse complex during the site investigation.

4.2 GEOLOGY/HYDROGEOLOGY

Subsoils in the northern portion of the subject area consist primarily of sandy gravels/gravelly sands based on field observations and coring to the maximum depth investigated in this area of 7 feet BGS in soil boring SB1. During the subsoils investigation it was difficult to differentiate potential fill material from native materials in this area.

The southern portion of the subject area includes surficial fill material ranging in thickness from approximately 2 to 3 feet. Subsoils are comprised primarily of silty sand/sandy silt with a competent 2-foot silty clay layer observed from a depth of approximately 7.5 to 9.5 feet BGS adjacent to the electrical transformer pad where the maximum depth investigated was 11 feet BGS in soil boring SB9.

The general direction of surface and shallow subsurface (groundwater) flow is anticipated to be toward the north and northwest based on general site topography and the location of the Deschutes River and Deschutes Basin. During the subsurface investigation, first encountered groundwater was observed at depths ranging from 4.0 to 4.5 feet BGS in the northern portion of the study area (see Table 6). In the southern portion of the study area, the water table was observed at depths ranging from 5.0 to 6.0 feet BGS. The water table detected south of the warehouse complex is likely governed by the lithology and surface drainage associated with the adjacent hillslope. Shallow groundwater in this area is not necessarily in direct communication with the shallow water table on the north side of the warehouse complex. This interpretation is based primarily on the difference in elevation between the southern and northern water table surfaces, and the silty clay layer which would tend to limit vertical groundwater migration in the southern portion of the site.

4.3 AREAS OF INVESTIGATION

This section summarizes the findings and conclusions for those areas investigated during the January 1997 Phase II ESA conducted at the Old Brewhouse, in Tumwater, Washington.

4.3.1 Former UST

There is no indication that residual petroleum hydrocarbon contamination is present at concentrations exceeding MTCA cleanup levels in the vicinity of the former UST. This finding is based on a review of available information regarding tank removal activities performed in April 1986, and the soil and groundwater sample results obtained during the Phase II ESA.

4.3.2 Former Paint Shop

Metals including arsenic, lead, and cadmium were detected in surface soils at concentrations exceeding MTCA Method A soil cleanup levels (see Table 3). However, the concentrations for these metal compounds were below the established MTCA Method A cleanup levels for industrial soils. Soil sampling locations in the paint-shop area were selected to assess soil quality from those areas determined to have the highest potential for past material disposal, paint waste accumulation during operations, and/or subsequent migration from the building.

Arsenic and lead were detected at concentrations slightly above their respective method reporting limits in the shallow groundwater sample collected adjacent to the former paint shop building. The concentrations of arsenic and lead in this sample exceed the MTCA Method A groundwater cleanup level established for these constituents of 0.005 mg/L (see Table 5). The observed variability in the groundwater matrix due to the presence of suspended fine-grained material may contribute to the detected presence of inorganic constituents in groundwater at this site. This assumption is supported based on discussions with the analytical laboratory which noted a direct correlation between the presence of fine-grained sediments within those containers which revealed detectable metals concentrations (Essig, M., 12 February 1997, personal communication). Field screening observations and analytical results for soils and groundwater samples collected during this investigation do not conclusively indicate that a release to the environment has occurred at the paint shop area due to historical site use.

4.3.3 Electrical Transformer Pad

There is no indication that a release of transformer oil or PCB-containing liquids at concentrations exceeding published MTCA Method A cleanup levels has occurred from the use or maintenance of the electrical transformers housed on the concrete pad on the south side of the warehouse complex based on the findings of soil and groundwater sample results obtained during the Phase II ESA.

4.3.4 Subfloor Drainage System

There is no indication that hazardous substance(s) currently exist in sediments contained within the subfloor drainage system located in the southern section of the warehouse complex based on analytical sample results of this material during the Phase II ESA.

4.3.5 Aboveground Fuel Tank

Diesel-range petroleum hydrocarbons were detected at 755 mg/kg in a surface soil sample collected adjacent to the AST located on the east side of the sewage pumphouse. The detected concentration of diesel-range TPH exceeds current MTCA Method A soil cleanup levels established by Ecology of 200 mg/kg. The source of the TPH in soils at this location is suspected to have resulted from overfilling and spillage of diesel fuel during tank refueling activities. The AST reportedly supplies fuel to an emergency generator housed within the sewage pumphouse, and the need to replenish fuel to the 120 gallon tank is assumed to be infrequent.

The AST is situated on an L-shaped concrete pad located on the east side of the sewage pumphouse. The concrete pad incorporates a concrete containment basin to the east which is intended to capture potential overflow from the tank. However, the current design of the containment system does not obviously restrict potential overflow and spillage at the AST from migrating to adjacent soils, nor does it necessarily direct a fuel release from the AST to the adjacent catch basin based on the inspection during the Phase II ESA. The AST is covered by an awning structure which extends from the pumphouse over the tank and associated containment. However, the emergency overflow concrete catch basin located adjacent to the AST appeared to be nearly full of water at the time of the inspection, providing limited ability to contain fuel should a release from the AST occur.

A cloth rag was observed in the AST fill opening during the site inspection. The rag was reportedly used to secure a temporary fuel line (hose) which runs above ground from the top of the tank to the emergency generator within the sewage pumphouse (Huff, J., 18 February 1997, personal communication). Due to the conditions observed during the Phase II ESA, an evaluation of the current AST and associated containment system design is recommended to ensure compliance with applicable Uniform Fire Code (UFC) regulations, and to minimize the potential for future releases of fuel to the environment.

4.3.6 Road Construction Debris

There is no indication that hazardous substance(s) currently exist in the road construction debris stockpiled north of the sewage pumphouse based on field screening observations and sample analytical results from a composite soil sample of this material collected during the Phase II ESA.

4.3.7 Former Tannery and Surrounding Area

No evidence of suspected soil contamination was observed during the advancement of soil borings in these areas based on field screening results, and no environmental subsoil samples were collected and submitted for analysis.

Arsenic and lead were detected at concentrations slightly above their respective method reporting limits in the shallow groundwater samples collected at various locations in the northern portion of the study area. Both the observed arsenic and lead concentrations exceed the MTCA Method A groundwater cleanup level established by Ecology for these compounds at 0.005 mg/L (see Table 5). The documented variability in the groundwater matrix due to the presence of suspended fine-grained material may contribute to the detection of metals constituents in groundwater at these locations. This assumption is supported by Tetra Tech's discussions with the analytical laboratory as discussed previously (Essig, M., 12 February 1997, personal communication). The analytical results for groundwater samples collected during this investigation do not conclusively indicate that a release to the environment has occurred at this site as a result of historical site use.

4.4 SUMMARY

Diesel range petroleum hydrocarbons were detected in the surface soil sample collected adjacent to the sewage pumphouse station at a concentration exceeding MTCA Method A cleanup levels. In addition, while the concentrations of individual metals in two samples in the vicinity of the former paint shop exceeded MTCA Method A cleanup levels, the concentrations recorded were below the published MTCA Method A cleanup levels for industrial soils.

One groundwater sample from the vicinity of the former paint shop and two samples from the former tannery and surrounding area were found to contain arsenic and lead at concentrations exceeding

established MTCA Method A cleanup levels. Observed arsenic concentrations were nominally above the method reporting limits and Method A cleanup levels (i.e., 0.004 and 0.005 mg/L, respectively), and observed lead concentrations ranged from 0.0047 to 0.0123 mg/L. While these samples provide the information necessary to assess the overall environmental status of shallow groundwater at the site, they are likely representative of worst-case contaminant concentrations based on the screening level sampling technique used and entrainment of suspended fine-grained particulates. A definitive determination of metals concentrations in groundwater at the site would require installation of groundwater monitoring wells in accordance with the requirements of WAC 173-160, which is beyond the scope and intent of this screening level site assessment.

Based on the findings of the Phase I ESA (Tetra Tech 1997), the site inspection, and the analysis of soil and groundwater samples at the Old Brewhouse location, their does not appear to have been significant environmental impairment of the subject property due to current or historical property uses. MTCA site discovery and reporting requirements are provided in WAC 173-340-300 and stipulate that any owner or operator who has information that a release of hazardous substances has occurred, and that the release may be a threat to human health or the environment, shall report such information to Ecology. However, the WAC (173-340-720 and 173-340-740) regulation further states that exceedances of the MTCA Method A cleanup levels do not necessarily trigger requirements of cleanup actions.

5.0 REFERENCES

Eckloff, D. 14 January 1997. Personal Communication (discussion with Harry Goren). Plant Engineer, Pabst Brewing Company, Olympia, WA.

Essig, M. 12 February 1997. Personal Communication (telephone by Rick Osgood). Project Manager for North Creek Analytical, Bothell, WA.

Huff, J. 18 January 1997. Personal Communication (telephone by Harry Goren). City of Tumwater Public Works, Tumwater, WA.

Tetra Tech, Inc. 1997. Phase I Environmental Site Assessment, Old Brewhouse, 3425 Boston Street S.W., Tumwater, Washington. Prepared for the City of Tumwater. Tetra Tech, Inc., Redmond, Washington.

APPENDIX A

ANALYTICAL DATA REPORT

A-1. ANALYTICAL DATA REPORT FOR SAMPLES COLLECTED ON 16 JANUARY 1997

A-2. ANALYTICAL DATA REPORT FOR SAMPLES COLLECTED ON 20 JANUARY 1997

APPENDIX A-1

ANALYTICAL DATA REPORT FOR SAMPLES COLLECTED ON 16 JANUARY 1997

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PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

Tetra Tech, Inc.	Project:	Tumwater Brewhouse	Sampled: 1/16/97
15400 NE 90th, Ste 100	Project Number:	1287-02	Received: 1/17/97
Redmond, WA 98052	Project Manager:	Rick Osgood	Reported: 2/3/97 07:34

ANALYTICAL REPORT FOR SAMPLES:

Sample Description	Laboratory Sample Number	Sample Matrix	Date Sampled
Tumwater-CS1	B701213-01	Soil	1/16/97
Tumwater-SS1	B701213-02	Soil	1/16/97
Tumwater-SS2	B701213-03	Soil	1/16/97
Tumwater-SS3	B701213-04	Soil	1/16/97
Tumwater-SD1	B701213-06	Other dry	1/16/97
Tumwater-SS5	B701213-07	Soil	1/16/97
Tumwater-SS6	B701213-08	Soil	1/16/97
Tumwater-SS7	B701213-09	Soil	1/16/97

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15400 NE 90th, Ste 100	Project Number:	1287-02	Received: 1/17/97
Redmond, WA 98052	Project Manager:	Rick Osgood	Reported: 2/3/97 07:34

Hydrocarbon Identification by Washington DOE Method WTPH-HCID
North Creek Analytical - Bothell

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
Tumwater-CS1			**B701213-01**				**Soil**	
Gasoline Range Hydrocarbons	0170331	1/20/97	1/20/97		20.0	ND	mg/kg dry	
Diesel Range Hydrocarbons	"	"	"		50.0	ND	"	
Heavy Oil Range Hydrocarbons	"	"	"		100	ND	"	
Surrogate: 2-FBP	"	"	"	*50.0-150*		*103*	*%*	

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

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Redmond, WA 98052	Project Manager:	Rick Osgood	Reported: 2/3/97 07:34

Metals by EPA 6010/7000 Series Methods
North Creek Analytical - Bothell

Analyte	Batch Number	Date Prepared	Date Analyzed	Specific Method	Reporting Limit	Result	Units	Notes*
Tumwater-CS1			**B701213-01**				**Soil**	
Arsenic	0170361	1/20/97	1/21/97	EPA 6010A	10.0	ND	mg/kg dry	
Barium	"	"	"	EPA 6010A	0.500	**51.5**	"	
Cadmium	"	"	"	EPA 6010A	0.250	ND	"	
Chromium	"	"	"	EPA 6010A	0.500	**24.4**	"	
Lead	"	"	"	EPA 6010A	10.0	**12.0**	"	
Selenium	"	"	"	EPA 6010A	7.50	ND	"	
Mercury	0170358	"	1/20/97	EPA 7471A	0.0500	ND	"	
Silver	0170361	"	1/22/97	EPA 7760A	1.00	ND	"	
Tumwater-SS1			**B701213-02**				**Soil**	
Arsenic	0170361	1/20/97	1/21/97	EPA 6010A	10.0	**10.8**	mg/kg dry	
Barium	"	"	"	EPA 6010A	0.500	**237**	"	
Cadmium	"	"	"	EPA 6010A	0.250	**0.475**	"	
Chromium	"	"	"	EPA 6010A	0.500	**36.5**	"	
Lead	"	"	"	EPA 6010A	10.0	**86.9**	"	
Selenium	"	"	"	EPA 6010A	7.50	ND	"	
Mercury	0170358	"	1/20/97	EPA 7471A	0.0500	**0.0647**	"	
Silver	0170361	"	1/22/97	EPA 7760A	1.00	ND	"	
Tumwater-SS2			**B701213-03**				**Soil**	
Arsenic	0170361	1/20/97	1/21/97	EPA 6010A	10.0	**31.4**	mg/kg dry	
Barium	"	"	"	EPA 6010A	0.500	**375**	"	
Cadmium	"	"	"	EPA 6010A	0.250	**6.06**	"	
Chromium	"	"	"	EPA 6010A	0.500	**27.2**	"	
Lead	"	"	"	EPA 6010A	10.0	**312**	"	
Selenium	"	"	"	EPA 6010A	7.50	ND	"	
Mercury	0170358	"	1/20/97	EPA 7471A	0.0500	**0.531**	"	
Silver	0170361	"	1/22/97	EPA 7760A	1.00	ND	"	
Tumwater-SS3			**B701213-04**				**Soil**	
Arsenic	0170361	1/20/97	1/21/97	EPA 6010A	10.0	ND	mg/kg dry	
Barium	"	"	"	EPA 6010A	0.500	**204**	"	
Cadmium	"	"	"	EPA 6010A	0.250	**7.49**	"	
Chromium	"	"	"	EPA 6010A	0.500	**39.8**	"	
Lead	"	"	"	EPA 6010A	10.0	**205**	"	
Selenium	"	"	"	EPA 6010A	7.50	ND	"	
Mercury	0170358	"	1/20/97	EPA 7471A	0.0500	**0.170**	"	
Silver	0170361	"	1/22/97	EPA 7760A	1.00	ND	"	

North Creek Analytical, Inc.

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

Matthew Essig, Project Manager

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Redmond, WA 98052	Project Manager:	Rick Osgood	Reported: 2/3/97 07:34

Metals by EPA 6010/7000 Series Methods
North Creek Analytical - Bothell

Analyte	Batch Number	Date Prepared	Date Analyzed	Specific Method	Reporting Limit	Result	Units	Notes*
Tumwater-SD1			**B701213-06**				**Other dry**	
Arsenic	0170361	1/20/97	1/21/97	EPA 6010A	10.0	**13.1**	mg/kg dry	
Barium	"	"	"	EPA 6010A	0.500	**194**	"	
Cadmium	"	"	"	EPA 6010A	0.250	**1.67**	"	
Chromium	"	"	"	EPA 6010A	0.500	**23.9**	"	
Lead	"	"	"	EPA 6010A	10.0	**52.0**	"	
Selenium	"	"	"	EPA 6010A	7.50	ND	"	
Mercury	0170358	"	1/20/97	EPA 7471A	0.0500	ND	"	
Silver	0170361	"	1/22/97	EPA 7760A	1.00	ND	"	

North Creek Analytical, Inc.

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

Matthew Essig, Project Manager

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PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

Tetra Tech, Inc.	Project:	Tumwater Brewhouse	Sampled: 1/16/97
15400 NE 90th, Ste 100	Project Number:	1287-02	Received: 1/17/97
Redmond, WA 98052	Project Manager:	Rick Osgood	Reported: 2/3/97 07:34

Polychlorinated Biphenyls by EPA Method 8081
North Creek Analytical - Bothell

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
Tumwater-SS5			**B701213-07**				**Soil**	**1,2**
Aroclor 1016	0170407	1/23/97	1/30/97		50.0	ND	ug/kg dry	
Aroclor 1221	"	"	"		50.0	ND	"	
Aroclor 1232	"	"	"		50.0	ND	"	
Aroclor 1242	"	"	"		50.0	ND	"	
Aroclor 1248	"	"	"		50.0	ND	"	
Aroclor 1254	"	"	"		50.0	ND	"	
Aroclor 1260	"	"	"		50.0	ND	"	
Surrogate: TCX	"	"	"	*38.0-117*		*111*	*%*	
Tumwater-SS6			**B701213-08**				**Soil**	**1,2**
Aroclor 1016	0170407	1/23/97	1/30/97		50.0	ND	ug/kg dry	
Aroclor 1221	"	"	"		50.0	ND	"	
Aroclor 1232	"	"	"		50.0	ND	"	
Aroclor 1242	"	"	"		50.0	ND	"	
Aroclor 1248	"	"	"		50.0	ND	"	
Aroclor 1254	"	"	"		50.0	ND	"	
Aroclor 1260	"	"	"		50.0	**143**	"	
Surrogate: TCX	"	"	"	*38.0-117*		*99.0*	*%*	
Tumwater-SS7			**B701213-09**				**Soil**	**1,2**
Aroclor 1016	0170407	1/23/97	1/30/97		50.0	ND	ug/kg dry	
Aroclor 1221	"	"	"		50.0	ND	"	
Aroclor 1232	"	"	"		50.0	ND	"	
Aroclor 1242	"	"	"		50.0	ND	"	
Aroclor 1248	"	"	"		50.0	ND	"	
Aroclor 1254	"	"	"		50.0	ND	"	
Aroclor 1260	"	"	"		50.0	**229**	"	
Surrogate: TCX	"	"	"	*38.0-117*		*79.1*	*%*	

North Creek Analytical, Inc.

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

Matthew Essig, Project Manager

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Tetra Tech, Inc.	Project:	Tumwater Brewhouse	Sampled: 1/16/97
15400 NE 90th, Ste 100	Project Number:	1287-02	Received: 1/17/97
Redmond, WA 98052	Project Manager:	Rick Osgood	Reported: 2/3/97 07:34

Volatile Organic Compounds by EPA Method 8240B
North Creek Analytical - Bothell

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
Tumwater-SS1			**B701213-02**				**Soil**	
Acetone	0170502	1/26/97	1/27/97		2.00	ND	mg/kg dry	
Benzene	"	"	"		0.200	ND	"	
Bromodichloromethane	"	"	"		0.200	ND	"	
Bromoform	"	"	"		0.200	ND	"	
Bromomethane	"	"	"		0.200	ND	"	
2-Butanone	"	"	"		2.00	ND	"	
Carbon disulfide	"	"	"		0.200	ND	"	
Carbon tetrachloride	"	"	"		0.200	ND	"	
Chlorobenzene	"	"	"		0.200	ND	"	
Chloroethane	"	"	"		0.200	ND	"	
Chloroform	"	"	"		0.200	ND	"	
Chloromethane	"	"	"		0.200	ND	"	
Dibromochloromethane	"	"	"		0.200	ND	"	
1,1-Dichloroethane	"	"	"		0.200	ND	"	
1,2-Dichloroethane	"	"	"		0.200	ND	"	
1,1-Dichloroethene	"	"	"		0.200	ND	"	
cis-1,2-Dichloroethene	"	"	"		0.200	ND	"	
trans-1,2-Dichloroethene	"	"	"		0.200	ND	"	
1,2-Dichloropropane	"	"	"		0.200	ND	"	
cis-1,3-Dichloropropene	"	"	"		0.200	ND	"	
trans-1,3-Dichloropropene	"	"	"		0.200	ND	"	
Ethylbenzene	"	"	"		0.200	ND	"	
2-Hexanone	"	"	"		2.00	ND	"	
Methylene chloride	"	"	"		1.00	ND	"	
4-Methyl-2-pentanone	"	"	"		2.00	ND	"	
Styrene	"	"	"		0.200	ND	"	
1,1,2,2-Tetrachloroethane	"	"	"		0.200	ND	"	
Tetrachloroethene	"	"	"		0.200	ND	"	
Toluene	"	"	"		0.200	ND	"	
1,1,1-Trichloroethane	"	"	"		0.200	ND	"	
1,1,2-Trichloroethane	"	"	"		0.200	ND	"	
Trichloroethene	"	"	"		0.200	ND	"	
Vinyl chloride	"	"	"		0.200	ND	"	
Xylenes (total)	"	"	"		0.400	ND	"	
Surrogate: 1,2-DCA-d4	"	"	"	*70.0-130*		*67.2*	%	*3*
Surrogate: Toluene-d8	"	"	"	*70.0-130*		*72.1*	"	
Surrogate: 4-BFB	"	"	"	*70.0-130*		*68.6*	"	*3*

North Creek Analytical, Inc.

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Tetra Tech, Inc.	Project:	Tumwater Brewhouse	Sampled: 1/16/97
15400 NE 90th, Ste 100	Project Number:	1287-02	Received: 1/17/97
Redmond, WA 98052	Project Manager:	Rick Osgood	Reported: 2/3/97 07:34

Volatile Organic Compounds by EPA Method 8240B
North Creek Analytical - Bothell

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
Tumwater-SS2			**B701213-03**				**Soil**	
Acetone	0170502	1/26/97	1/27/97		2.00	ND	mg/kg dry	
Benzene	"	"	"		0.200	ND	"	
Bromodichloromethane	"	"	"		0.200	ND	"	
Bromoform	"	"	"		0.200	ND	"	
Bromomethane	"	"	"		0.200	ND	"	
2-Butanone	"	"	"		2.00	ND	"	
Carbon disulfide	"	"	"		0.200	ND	"	
Carbon tetrachloride	"	"	"		0.200	ND	"	
Chlorobenzene	"	"	"		0.200	ND	"	
Chloroethane	"	"	"		0.200	ND	"	
Chloroform	"	"	"		0.200	ND	"	
Chloromethane	"	"	"		0.200	ND	"	
Dibromochloromethane	"	"	"		0.200	ND	"	
1,1-Dichloroethane	"	"	"		0.200	ND	"	
1,2-Dichloroethane	"	"	"		0.200	ND	"	
1,1-Dichloroethene	"	"	"		0.200	ND	"	
cis-1,2-Dichloroethene	"	"	"		0.200	ND	"	
trans-1,2-Dichloroethene	"	"	"		0.200	ND	"	
1,2-Dichloropropane	"	"	"		0.200	ND	"	
cis-1,3-Dichloropropene	"	"	"		0.200	ND	"	
trans-1,3-Dichloropropene	"	"	"		0.200	ND	"	
Ethylbenzene	"	"	"		0.200	ND	"	
2-Hexanone	"	"	"		2.00	ND	"	
Methylene chloride	"	"	"		1.00	ND	"	
4-Methyl-2-pentanone	"	"	"		2.00	ND	"	
Styrene	"	"	"		0.200	ND	"	
1,1,2,2-Tetrachloroethane	"	"	"		0.200	ND	"	
Tetrachloroethene	"	"	"		0.200	ND	"	
Toluene	"	"	"		0.200	ND	"	
1,1,1-Trichloroethane	"	"	"		0.200	ND	"	
1,1,2-Trichloroethane	"	"	"		0.200	ND	"	
Trichloroethene	"	"	"		0.200	ND	"	
Vinyl chloride	"	"	"		0.200	ND	"	
Xylenes (total)	"	"	"		0.400	ND	"	
Surrogate: 1,2-DCA-d4	"	"	"	*70.0-130*		*74.8*	*%*	
Surrogate: Toluene-d8	"	"	"	*70.0-130*		*80.4*	"	
Surrogate: 4-BFB	"	"	"	*70.0-130*		*78.0*	"	

North Creek Analytical, Inc.

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Tetra Tech, Inc.	Project:	Tumwater Brewhouse	Sampled: 1/16/97
15400 NE 90th, Ste 100	Project Number:	1287-02	Received: 1/17/97
Redmond, WA 98052	Project Manager:	Rick Osgood	Reported: 2/3/97 07:34

Volatile Organic Compounds by EPA Method 8240B
North Creek Analytical - Bothell

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
Tumwater-SS3			**B701213-04**				**Soil**	
Acetone	0170502	1/26/97	1/27/97		2.00	ND	mg/kg dry	
Benzene	"	"	"		0.200	ND	"	
Bromodichloromethane	"	"	"		0.200	ND	"	
Bromoform	"	"	"		0.200	ND	"	
Bromomethane	"	"	"		0.200	ND	"	
2-Butanone	"	"	"		2.00	ND	"	
Carbon disulfide	"	"	"		0.200	ND	"	
Carbon tetrachloride	"	"	"		0.200	ND	"	
Chlorobenzene	"	"	"		0.200	ND	"	
Chloroethane	"	"	"		0.200	ND	"	
Chloroform	"	"	"		0.200	ND	"	
Chloromethane	"	"	"		0.200	ND	"	
Dibromochloromethane	"	"	"		0.200	ND	"	
1,1-Dichloroethane	"	"	"		0.200	ND	"	
1,2-Dichloroethane	"	"	"		0.200	ND	"	
1,1-Dichloroethene	"	"	"		0.200	ND	"	
cis-1,2-Dichloroethene	"	"	"		0.200	ND	"	
trans-1,2-Dichloroethene	"	"	"		0.200	ND	"	
1,2-Dichloropropane	"	"	"		0.200	ND	"	
cis-1,3-Dichloropropene	"	"	"		0.200	ND	"	
trans-1,3-Dichloropropene	"	"	"		0.200	ND	"	
Ethylbenzene	"	"	"		0.200	ND	"	
2-Hexanone	"	"	"		2.00	ND	"	
Methylene chloride	"	"	"		1.00	ND	"	
4-Methyl-2-pentanone	"	"	"		2.00	ND	"	
Styrene	"	"	"		0.200	ND	"	
1,1,2,2-Tetrachloroethane	"	"	"		0.200	ND	"	
Tetrachloroethene	"	"	"		0.200	ND	"	
Toluene	"	"	"		0.200	ND	"	
1,1,1-Trichloroethane	"	"	"		0.200	ND	"	
1,1,2-Trichloroethane	"	"	"		0.200	ND	"	
Trichloroethene	"	"	"		0.200	ND	"	
Vinyl chloride	"	"	"		0.200	ND	"	
Xylenes (total)	"	"	"		0.400	ND	"	
Surrogate: 1,2-DCA-d4	"	"	"	*70.0-130*		*69.2*	%	*3*
Surrogate: Toluene-d8	"	"	"	*70.0-130*		*77.4*	"	
Surrogate: 4-BFB	"	"	"	*70.0-130*		*74.6*	"	

North Creek Analytical, Inc.

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

Matthew Essig, Project Manager

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Tetra Tech, Inc.	Project:	Tumwater Brewhouse	Sampled: 1/16/97
15400 NE 90th, Ste 100	Project Number:	1287-02	Received: 1/17/97
Redmond, WA 98052	Project Manager:	Rick Osgood	Reported: 2/3/97 07:34

Volatile Organic Compounds by EPA Method 8240B
North Creek Analytical - Bothell

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
Tumwater-SS5			**B701213-07**				**Soil**	
Acetone	0170502	1/26/97	1/27/97		2.00	ND	mg/kg dry	
Benzene	"	"	"		0.200	ND	"	
Bromodichloromethane	"	"	"		0.200	ND	"	
Bromoform	"	"	"		0.200	ND	"	
Bromomethane	"	"	"		0.200	ND	"	
2-Butanone	"	"	"		2.00	ND	"	
Carbon disulfide	"	"	"		0.200	ND	"	
Carbon tetrachloride	"	"	"		0.200	ND	"	
Chlorobenzene	"	"	"		0.200	ND	"	
Chloroethane	"	"	"		0.200	ND	"	
Chloroform	"	"	"		0.200	ND	"	
Chloromethane	"	"	"		0.200	ND	"	
Dibromochloromethane	"	"	"		0.200	ND	"	
1,1-Dichloroethane	"	"	"		0.200	ND	"	
1,2-Dichloroethane	"	"	"		0.200	ND	"	
1,1-Dichloroethene	"	"	"		0.200	ND	"	
cis-1,2-Dichloroethene	"	"	"		0.200	ND	"	
trans-1,2-Dichloroethene	"	"	"		0.200	ND	"	
1,2-Dichloropropane	"	"	"		0.200	ND	"	
cis-1,3-Dichloropropene	"	"	"		0.200	ND	"	
trans-1,3-Dichloropropene	"	"	"		0.200	ND	"	
Ethylbenzene	"	"	"		0.200	ND	"	
2-Hexanone	"	"	"		2.00	ND	"	
Methylene chloride	"	"	"		1.00	ND	"	
4-Methyl-2-pentanone	"	"	"		2.00	ND	"	
Styrene	"	"	"		0.200	ND	"	
1,1,2,2-Tetrachloroethane	"	"	"		0.200	ND	"	
Tetrachloroethene	"	"	"		0.200	ND	"	
Toluene	"	"	"		0.200	ND	"	
1,1,1-Trichloroethane	"	"	"		0.200	ND	"	
1,1,2-Trichloroethane	"	"	"		0.200	ND	"	
Trichloroethene	"	"	"		0.200	ND	"	
Vinyl chloride	"	"	"		0.200	ND	"	
Xylenes (total)	"	"	"		0.400	ND	"	
Surrogate: 1,2-DCA-d4	"	"	"	*70.0-130*		*69.2*	%	*3*
Surrogate: Toluene-d8	"	"	"	*70.0-130*		*80.1*	"	
Surrogate: 4-BFB	"	"	"	*70.0-130*		*76.9*	"	

North Creek Analytical, Inc.

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

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Tetra Tech, Inc.	Project:	Tumwater Brewhouse	Sampled: 1/16/97
15400 NE 90th, Ste 100	Project Number:	1287-02	Received: 1/17/97
Redmond, WA 98052	Project Manager:	Rick Osgood	Reported: 2/3/97 07:34

Volatile Organic Compounds by EPA Method 8240B
North Creek Analytical - Bothell

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
Tumwater-SS6			**B701213-08**				**Soil**	
Acetone	0170502	1/26/97	1/27/97		2.00	ND	mg/kg dry	
Benzene	"	"	"		0.200	ND	"	
Bromodichloromethane	"	"	"		0.200	ND	"	
Bromoform	"	"	"		0.200	ND	"	
Bromomethane	"	"	"		0.200	ND	"	
2-Butanone	"	"	"		2.00	ND	"	
Carbon disulfide	"	"	"		0.200	ND	"	
Carbon tetrachloride	"	"	"		0.200	ND	"	
Chlorobenzene	"	"	"		0.200	ND	"	
Chloroethane	"	"	"		0.200	ND	"	
Chloroform	"	"	"		0.200	ND	"	
Chloromethane	"	"	"		0.200	ND	"	
Dibromochloromethane	"	"	"		0.200	ND	"	
1,1-Dichloroethane	"	"	"		0.200	ND	"	
1,2-Dichloroethane	"	"	"		0.200	ND	"	
1,1-Dichloroethene	"	"	"		0.200	ND	"	
cis-1,2-Dichloroethene	"	"	"		0.200	ND	"	
trans-1,2-Dichloroethene	"	"	"		0.200	ND	"	
1,2-Dichloropropane	"	"	"		0.200	ND	"	
cis-1,3-Dichloropropene	"	"	"		0.200	ND	"	
trans-1,3-Dichloropropene	"	"	"		0.200	ND	"	
Ethylbenzene	"	"	"		0.200	ND	"	
2-Hexanone	"	"	"		2.00	ND	"	
Methylene chloride	"	"	"		1.00	ND	"	
4-Methyl-2-pentanone	"	"	"		2.00	ND	"	
Styrene	"	"	"		0.200	ND	"	
1,1,2,2-Tetrachloroethane	"	"	"		0.200	ND	"	
Tetrachloroethene	"	"	"		0.200	ND	"	
Toluene	"	"	"		0.200	ND	"	
1,1,1-Trichloroethane	"	"	"		0.200	ND	"	
1,1,2-Trichloroethane	"	"	"		0.200	ND	"	
Trichloroethene	"	"	"		0.200	ND	"	
Vinyl chloride	"	"	"		0.200	ND	"	
Xylenes (total)	"	"	"		0.400	ND	"	
Surrogate: 1,2-DCA-d4	"	"	"	*70.0-130*		*68.3*	*%*	*3*
Surrogate: Toluene-d8	"	"	"	*70.0-130*		*77.9*	"	
Surrogate: 4-BFB	"	"	"	*70.0-130*		*74.7*	"	

North Creek Analytical, Inc.

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

Matthew Essig, Project Manager

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Tetra Tech, Inc.	Project:	Tumwater Brewhouse	Sampled: 1/16/97
15400 NE 90th, Ste 100	Project Number:	1287-02	Received: 1/17/97
Redmond, WA 98052	Project Manager:	Rick Osgood	Reported: 2/3/97 07:34

Volatile Organic Compounds by EPA Method 8240B
North Creek Analytical - Bothell

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
Tumwater-SS7			**B701213-09**				**Soil**	
Acetone	0170502	1/26/97	1/27/97		2.00	ND	mg/kg dry	
Benzene	"	"	"		0.200	ND	"	
Bromodichloromethane	"	"	"		0.200	ND	"	
Bromoform	"	"	"		0.200	ND	"	
Bromomethane	"	"	"		0.200	ND	"	
2-Butanone	"	"	"		2.00	ND	"	
Carbon disulfide	"	"	"		0.200	ND	"	
Carbon tetrachloride	"	"	"		0.200	ND	"	
Chlorobenzene	"	"	"		0.200	ND	"	
Chloroethane	"	"	"		0.200	ND	"	
Chloroform	"	"	"		0.200	ND	"	
Chloromethane	"	"	"		0.200	ND	"	
Dibromochloromethane	"	"	"		0.200	ND	"	
1,1-Dichloroethane	"	"	"		0.200	ND	"	
1,2-Dichloroethane	"	"	"		0.200	ND	"	
1,1-Dichloroethene	"	"	"		0.200	ND	"	
cis-1,2-Dichloroethene	"	"	"		0.200	ND	"	
trans-1,2-Dichloroethene	"	"	"		0.200	ND	"	
1,2-Dichloropropane	"	"	"		0.200	ND	"	
cis-1,3-Dichloropropene	"	"	"		0.200	ND	"	
trans-1,3-Dichloropropene	"	"	"		0.200	ND	"	
Ethylbenzene	"	"	"		0.200	ND	"	
2-Hexanone	"	"	"		2.00	ND	"	
Methylene chloride	"	"	"		1.00	ND	"	
4-Methyl-2-pentanone	"	"	"		2.00	ND	"	
Styrene	"	"	"		0.200	ND	"	
1,1,2,2-Tetrachloroethane	"	"	"		0.200	ND	"	
Tetrachloroethene	"	"	"		0.200	ND	"	
Toluene	"	"	"		0.200	ND	"	
1,1,1-Trichloroethane	"	"	"		0.200	ND	"	
1,1,2-Trichloroethane	"	"	"		0.200	ND	"	
Trichloroethene	"	"	"		0.200	ND	"	
Vinyl chloride	"	"	"		0.200	ND	"	
Xylenes (total)	"	"	"		0.400	ND	"	
Surrogate: 1,2-DCA-d4	"	"	"	*70.0-130*		*71.1*	*%*	
Surrogate: Toluene-d8	"	"	"	*70.0-130*		*80.2*	"	
Surrogate: 4-BFB	"	"	"	*70.0-130*		*78.5*	"	

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Matthew Essig, Project Manager

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Tetra Tech, Inc.	Project:	Tumwater Brewhouse	Sampled: 1/16/97
15400 NE 90th, Ste 100	Project Number:	1287-02	Received: 1/17/97
Redmond, WA 98052	Project Manager:	Rick Osgood	Reported: 2/3/97 07:34

Semivolatile Organic Compounds by EPA Method 8270
North Creek Analytical - Bothell

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
Tumwater-SD1			**B701213-06**				**Other dry**	
Acenaphthene	0170479	1/27/97	1/31/97		0.200	ND	mg/kg dry	
Acenaphthylene	"	"	"		0.200	ND	"	
Aniline	"	"	"		0.200	ND	"	
Anthracene	"	"	"		0.200	ND	"	
Benzoic Acid	"	"	"		1.00	ND	"	
Benzo (a) anthracene	"	"	"		0.200	ND	"	
Benzo (b) fluoranthene	"	"	"		0.200	ND	"	
Benzo (k) fluoranthene	"	"	"		0.200	ND	"	
Benzo (ghi) perylene	"	"	"		0.200	ND	"	
Benzo (a) pyrene	"	"	"		0.200	ND	"	
Benzyl alcohol	"	"	"		0.200	ND	"	
Bis(2-chloroethoxy)methane	"	"	"		0.200	ND	"	
Bis(2-chloroethyl)ether	"	"	"		0.200	ND	"	
Bis(2-chloroisopropyl)ether	"	"	"		0.200	ND	"	
Bis(2-ethylhexyl)phthalate	"	"	"		1.00	**2.05**	"	
4-Bromophenyl phenyl ether	"	"	"		0.200	ND	"	
Butyl benzyl phthalate	"	"	"		0.200	ND	"	
Carbazole	"	"	"		1.00	ND	"	
4-Chloroaniline	"	"	"		0.200	ND	"	
2-Chloronaphthalene	"	"	"		0.200	ND	"	
4-Chloro-3-methylphenol	"	"	"		0.200	ND	"	
2-Chlorophenol	"	"	"		0.200	ND	"	
4-Chlorophenyl phenyl ether	"	"	"		0.200	ND	"	
Chrysene	"	"	"		0.200	ND	"	
Dibenzo (a,h) anthracene	"	"	"		0.200	ND	"	
Dibenzofuran	"	"	"		0.200	ND	"	
Di-n-butyl phthalate	"	"	"		1.00	ND	"	
1,3-Dichlorobenzene	"	"	"		0.200	ND	"	
1,4-Dichlorobenzene	"	"	"		0.200	ND	"	
1,2-Dichlorobenzene	"	"	"		0.200	ND	"	
3,3'-Dichlorobenzidine	"	"	"		10.0	ND	"	
2,4-Dichlorophenol	"	"	"		0.200	ND	"	
Diethyl phthalate	"	"	"		0.200	ND	"	
2,4-Dimethylphenol	"	"	"		0.200	ND	"	
Dimethyl phthalate	"	"	"		0.200	ND	"	
4,6-Dinitro-2-methylphenol	"	"	"		1.00	ND	"	
2,4-Dinitrophenol	"	"	"		1.00	ND	"	
2,4-Dinitrotoluene	"	"	"		0.200	ND	"	

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Tetra Tech, Inc.	Project:	Tumwater Brewhouse	Sampled: 1/16/97
15400 NE 90th, Ste 100	Project Number:	1287-02	Received: 1/17/97
Redmond, WA 98052	Project Manager:	Rick Osgood	Reported: 2/3/97 07:34

Semivolatile Organic Compounds by EPA Method 8270
North Creek Analytical - Bothell

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
Tumwater-SD1 (continued)			**B701213-06**				**Other dry**	
2,6-Dinitrotoluene	0170479	1/27/97	1/31/97		0.200	ND	mg/kg dry	
Di-n-octyl phthalate	"	"	"		0.200	ND	"	
Fluoranthene	"	"	"		0.200	ND	"	
Fluorene	"	"	"		0.200	ND	"	
Hexachlorobenzene	"	"	"		0.200	ND	"	
Hexachlorobutadiene	"	"	"		0.200	ND	"	
Hexachlorocyclopentadiene	"	"	"		0.200	ND	"	
Hexachloroethane	"	"	"		0.200	ND	"	
Indeno (1,2,3-cd) pyrene	"	"	"		0.200	ND	"	
Isophorone	"	"	"		0.200	ND	"	
2-Methylnaphthalene	"	"	"		0.200	ND	"	
2-Methylphenol	"	"	"		0.200	ND	"	
4-Methylphenol	"	"	"		0.200	ND	"	
Naphthalene	"	"	"		0.200	ND	"	
2-Nitroaniline	"	"	"		1.00	ND	"	
3-Nitroaniline	"	"	"		1.00	ND	"	
4-Nitroaniline	"	"	"		1.00	ND	"	
Nitrobenzene	"	"	"		0.200	ND	"	
2-Nitrophenol	"	"	"		0.200	ND	"	
4-Nitrophenol	"	"	"		1.00	ND	"	
N-Nitrosodiphenylamine	"	"	"		0.400	ND	"	
N-Nitrosodi-n-propylamine	"	"	"		0.200	ND	"	
Pentachlorophenol	"	"	"		1.00	ND	"	
Phenanthrene	"	"	"		0.200	ND	"	
Phenol	"	"	"		0.200	ND	"	
Pyrene	"	"	"		0.200	ND	"	
1,2,4-Trichlorobenzene	"	"	"		0.200	ND	"	
2,4,5-Trichlorophenol	"	"	"		1.00	ND	"	
2,4,6-Trichlorophenol	"	"	"		0.200	ND	"	
Surrogate: 2-FP	"	"	"	*19.0-141*		*64.7*	*%*	
Surrogate: Phenol-d6	"	"	"	*44.0-128*		*65.0*	"	
Surrogate: 2,4,6-TBP	"	"	"	*10.0-137*		*74.2*	"	
Surrogate: Nitrobenzene-d5	"	"	"	*33.0-108*		*54.4*	"	
Surrogate: 2-FBP	"	"	"	*51.0-124*		*71.2*	"	
Surrogate: p-Terphenyl-d14	"	"	"	*48.0-149*		*80.6*	"	

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Tetra Tech, Inc.	Project:	Tumwater Brewhouse	Sampled:	1/16/97
15400 NE 90th, Ste 100	Project Number:	1287-02	Received:	1/17/97
Redmond, WA 98052	Project Manager:	Rick Osgood	Reported:	2/3/97 07:34

Dry Weight Determination
North Creek Analytical - Bothell

Sample Name	Lab ID	Matrix	Result	Units
Tumwater-CS1	B701213-01	Soil	87.3	%
Tumwater-SS1	B701213-02	Soil	61.8	%
Tumwater-SS2	B701213-03	Soil	73.3	%
Tumwater-SS3	B701213-04	Soil	64.2	%
Tumwater-SD1	B701213-06	Other dry	64.9	%
Tumwater-SS5	B701213-07	Soil	72.1	%
Tumwater-SS6	B701213-08	Soil	72.7	%
Tumwater-SS7	B701213-09	Soil	68.8	%

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Tetra Tech, Inc.	Project:	Tumwater Brewhouse	Sampled: 1/16/97
15400 NE 90th, Ste 100	Project Number:	1287-02	Received: 1/17/97
Redmond, WA 98052	Project Manager:	Rick Osgood	Reported: 2/3/97 07:34

Hydrocarbon Identification by Washington DOE Method WTPH-HCID/Quality Control
North Creek Analytical - Bothell

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit / Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Batch: 0170331	**Date Prepared: 1/20/97**				**Extraction Method: HCID (WA)**					
Blank	**0170331-BLK1**									
Gasoline Range Hydrocarbons	1/20/97			**ND**	mg/kg dry	**20.0**				
Diesel Range Hydrocarbons	"			**ND**	"	**50.0**				
Heavy Oil Range Hydrocarbons	"			**ND**	"	**100**				
Surrogate: 2-FBP	"	*DET*		*DET*	"	*50.0-150*	*116*			

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Tetra Tech, Inc.	Project:	Tumwater Brewhouse	Sampled: 1/16/97
15400 NE 90th, Ste 100	Project Number:	1287-02	Received: 1/17/97
Redmond, WA 98052	Project Manager:	Rick Osgood	Reported: 2/3/97 07:34

Metals by EPA 6010/7000 Series Methods/Quality Control
North Creek Analytical - Bothell

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit / Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Batch: 0170358	**Date Prepared: 1/20/97**					**Extraction Method: BrCl Digestion**				
Blank	**0170358-BLK1**									
Mercury	1/20/97			ND	mg/kg dry	0.0500				
LCS	**0170358-BS1**									
Mercury	1/20/97	0.25		0.262	mg/kg dry	80.0-120	105			
Duplicate	**0170358-DUP1**		**B701213-01**							
Mercury	1/20/97		ND	ND	mg/kg dry			20.0		
Matrix Spike	**0170358-MS1**		**B701213-01**							
Mercury	1/20/97	0.286	ND	0.364	mg/kg dry	80.0-120	**127**			4
Matrix Spike Dup	**0170358-MSD1**		**B701213-01**							
Mercury	1/20/97	0.286	ND	0.369	mg/kg dry	80.0-120	**129**	20.0	**1.56**	4
Batch: 0170361	**Date Prepared: 1/20/97**					**Extraction Method: EPA 3050**				
Blank	**0170361-BLK1**									
Arsenic	1/21/97			**ND**	mg/kg dry	**10.0**				
Barium	"			**ND**	"	**0.500**				
Cadmium	"			**ND**	"	**0.250**				
Chromium	"			**ND**	"	**0.500**				
Lead	"			**ND**	"	**10.0**				
Selenium	"			**ND**	"	**7.50**				
Silver	1/22/97			**ND**	"	**1.00**				
LCS	**0170361-BS1**									
Arsenic	1/21/97	50		36.9	mg/kg dry	70.0-130	73.8			
Barium	"	50		37.1	"	70.0-130	74.2			
Cadmium	"	50		36.6	"	70.0-130	73.2			
Chromium	"	50		38.9	"	70.0-130	77.8			
Lead	"	50		37.9	"	70.0-130	75.8			
Selenium	"	50		39.1	"	70.0-130	78.2			
Silver	1/22/97	12.5		11.7	"	75.0-125	93.6			
Duplicate	**0170361-DUP1**		**B701211-02**							
Arsenic	1/21/97		ND	ND	mg/kg dry			20.0		
Barium	"		47.7	44.3	"			20.0	**13.7**	
Cadmium	"		ND	ND	"			20.0		

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North Creek Analytical, Inc.

Matthew Essig, Project Manager

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Tetra Tech, Inc.	Project:	Tumwater Brewhouse	Sampled: 1/16/97
15400 NE 90th, Ste 100	Project Number:	1287-02	Received: 1/17/97
Redmond, WA 98052	Project Manager:	Rick Osgood	Reported: 2/3/97 07:34

Metals by EPA 6010/7000 Series Methods/Quality Control
North Creek Analytical - Bothell

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Duplicate (continued)	**0170361-DUP1**		**B701211-02**							
Chromium	1/21/97		17.9	15.7	mg/kg dry			20.0	**13.1**	
Lead	"		ND	ND	"			20.0		
Selenium	"		ND	ND	"			20.0		
Silver	1/22/97		ND	ND	"			20.0		
Matrix Spike	**0170361-MS1**		**B701211-02**							
Arsenic	1/21/97	58.8	ND	45.7	mg/kg dry	60.0-140	**77.7**			
Barium	"	58.8	47.7	93.2	"	70.0-130	**77.4**			
Cadmium	"	58.8	ND	43.3	"	70.0-130	**73.6**			
Chromium	"	58.8	17.9	62.6	"	70.0-130	**76.0**			
Lead	"	58.8	ND	50.2	"	70.0-130	**85.4**			
Selenium	"	58.8	ND	42.9	"	60.0-140	**73.0**			
Silver	1/22/97	14.7	ND	15.2	"	75.0-125	**103**			
Matrix Spike	**0170361-MS2**		**B701211-02**							
Arsenic	1/21/97	118	ND	102	mg/kg dry	60.0-140	**86.4**			
Barium	"	118	47.7	159	"	70.0-130	**94.3**			
Cadmium	"	118	ND	104	"	70.0-130	**88.1**			
Chromium	"	118	17.9	125	"	70.0-130	**90.8**			
Lead	"	118	ND	104	"	70.0-130	**88.1**			
Selenium	"	118	ND	104	"	60.0-140	**88.1**			
Matrix Spike Dup	**0170361-MSD1**		**B701211-02**							
Arsenic	1/21/97	58.8	ND	41.3	mg/kg dry	60.0-140	**70.2**	20.0	**10.1**	
Barium	"	58.8	47.7	75.6	"	70.0-130	**47.4**	20.0	**48.1**	5,6
Cadmium	"	58.8	ND	42.5	"	70.0-130	**72.3**	20.0	**1.78**	
Chromium	"	58.8	17.9	59.8	"	70.0-130	**71.3**	20.0	**6.38**	
Lead	"	58.8	ND	44.5	"	70.0-130	**75.7**	20.0	**12.0**	
Selenium	"	58.8	ND	40.3	"	60.0-140	**68.5**	20.0	**6.36**	
Silver	1/22/97	14.7	ND	13.8	"	75.0-125	**93.9**	20.0	**9.24**	

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Tetra Tech, Inc.	Project:	Tumwater Brewhouse	Sampled: 1/16/97
15400 NE 90th, Ste 100	Project Number:	1287-02	Received: 1/17/97
Redmond, WA 98052	Project Manager:	Rick Osgood	Reported: 2/3/97 07:34

Polychlorinated Biphenyls by EPA Method 8081/Quality Control
North Creek Analytical - Bothell

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit / Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Batch: 0170407	**Date Prepared: 1/23/97**					**Extraction Method: EPA 3550**				
Blank	**0170407-BLK1**									1,2
Aroclor 1016	1/30/97			**ND**	ug/kg dry	**50.0**				
Aroclor 1221	"			**ND**	"	**50.0**				
Aroclor 1232	"			**ND**	"	**50.0**				
Aroclor 1242	"			**ND**	"	**50.0**				
Aroclor 1248	"			**ND**	"	**50.0**				
Aroclor 1254	"			**ND**	"	**50.0**				
Aroclor 1260	"			**ND**	"	**50.0**				
Surrogate: TCX	"	*6.67*		*6.32*	"	*38.0-117*	*94.8*			
LCS	**0170407-BS1**									1,2
Aroclor 1260	1/30/97	333		304	ug/kg dry	37.0-98.0	91.3			
Surrogate: TCX	"	*6.67*		*5.93*	"	*38.0-117*	*88.9*			
Matrix Spike	**0170407-MS1**		**B701213-07**							1,2
Aroclor 1260	1/30/97	462	ND	345	ug/kg dry	37.0-98.0	**74.7**			
Surrogate: TCX	"	*9.25*		*10.2*	"	*38.0-117*	*110*			
Matrix Spike Dup	**0170407-MSD1**		**B701213-07**							1,2
Aroclor 1260	1/30/97	462	ND	329	ug/kg dry	37.0-98.0	**71.2**	38.0	**4.80**	
Surrogate: TCX	"	*9.25*		*9.96*	"	*38.0-117*	*108*			

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ra Tech, Inc.	Project:	Tumwater Brewhouse	Sampled: 1/16/97
00 NE 90th, Ste 100	Project Number:	1287-02	Received: 1/17/97
lmond, WA 98052	Project Manager:	Rick Osgood	Reported: 2/3/97 07:34

Volatile Organic Compounds by EPA Method 8240B/Quality Control
North Creek Analytical - Bothell

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit / Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
tch: 0170502	**Date Prepared: 1/26/97**				**Extraction Method: MeOH Extraction**					
nk	**0170502-BLK1**									
tone	1/27/97			ND	mg/kg dry	2.00				
nzene	"			ND	"	0.200				
modichloromethane	"			ND	"	0.200				
moform	"			ND	"	0.200				
momethane	"			ND	"	0.200				
utanone	"			ND	"	2.00				
bon disulfide	"			ND	"	0.200				
bon tetrachloride	"			ND	"	0.200				
orobenzene	"			ND	"	0.200				
oroethane	"			ND	"	0.200				
oroform	"			ND	"	0.200				
oromethane	"			ND	"	0.200				
romochloromethane	"			ND	"	0.200				
-Dichloroethane	"			ND	"	0.200				
-Dichloroethane	"			ND	"	0.200				
-Dichloroethene	"			ND	"	0.200				
1,2-Dichloroethene	"			ND	"	0.200				
s-1,2-Dichloroethene	"			ND	"	0.200				
-Dichloropropane	"			ND	"	0.200				
1,3-Dichloropropene	"			ND	"	0.200				
s-1,3-Dichloropropene	"			ND	"	0.200				
ylbenzene	"			ND	"	0.200				
lexanone	"			ND	"	2.00				
thylene chloride	"			ND	"	1.00				
Methyl-2-pentanone	"			ND	"	2.00				
rene	"			ND	"	0.200				
2,2-Tetrachloroethane	"			ND	"	0.200				
rachloroethene	"			ND	"	0.200				
luene	"			ND	"	0.200				
1-Trichloroethane	"			ND	"	0.200				
2-Trichloroethane	"			ND	"	0.200				
chloroethene	"			ND	"	0.200				
yl chloride	"			ND	"	0.200				
lenes (total)	"			ND	"	0.400				
rogate: 1,2-DCA-d4	"	*2.5*		*2.12*	"	*70.0-130*	*84.8*			
rogate: Toluene-d8	"	*2.5*		*2.46*	"	*70.0-130*	*98.4*			
rogate: 4-BFB	"	*2.5*		*2.31*	"	*70.0-130*	*92.4*			

th Creek Analytical, Inc.

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

tthew Essig, Project Manager

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Environmental Laboratory Services

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PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

Tetra Tech, Inc.	Project:	Tumwater Brewhouse	Sampled: 1/16/97
15400 NE 90th, Ste 100	Project Number:	1287-02	Received: 1/17/97
Redmond, WA 98052	Project Manager:	Rick Osgood	Reported: 2/3/97 07:34

Volatile Organic Compounds by EPA Method 8240B/Quality Control
North Creek Analytical - Bothell

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit / Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Matrix Spike	**0170502-MS1**		**B701213-09**							
Benzene	1/27/97	0.727	ND	0.548	mg/kg dry	70.0-130	**75.4**			
Chlorobenzene	"	0.727	ND	0.535	"	70.0-130	**73.6**			
1,1-Dichloroethene	"	0.727	ND	0.447	"	70.0-130	**61.5**			6
Toluene	"	0.727	ND	0.561	"	70.0-130	**77.2**			
Trichloroethene	"	0.727	ND	0.534	"	70.0-130	**73.5**			
Surrogate: 1,2-DCA-d4	"	*3.63*		*2.49*	"	*70.0-130*	*68.6*			*3*
Surrogate: Toluene-d8	"	*3.63*		*2.81*	"	*70.0-130*	*77.4*			
Surrogate: 4-BFB	"	*3.63*		*2.72*	"	*70.0-130*	*74.9*			
Matrix Spike Dup	**0170502-MSD1**		**B701213-09**							
Benzene	1/27/97	0.727	ND	0.565	mg/kg dry	70.0-130	**77.7**	15.0	**3.00**	
Chlorobenzene	"	0.727	ND	0.572	"	70.0-130	**78.7**	15.0	**6.70**	
1,1-Dichloroethene	"	0.727	ND	0.484	"	70.0-130	**66.6**	15.0	**7.96**	6
Toluene	"	0.727	ND	0.594	"	70.0-130	**81.7**	15.0	**5.66**	
Trichloroethene	"	0.727	ND	0.573	"	70.0-130	**78.8**	15.0	**6.96**	
Surrogate: 1,2-DCA-d4	"	*3.63*		*2.62*	"	*70.0-130*	*72.2*			
Surrogate: Toluene-d8	"	*3.63*		*2.96*	"	*70.0-130*	*81.5*			
Surrogate: 4-BFB	"	*3.63*		*2.90*	"	*70.0-130*	*79.9*			

North Creek Analytical, Inc.

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Matthew Essig, Project Manager

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Tetra Tech, Inc.	Project:	Tumwater Brewhouse	Sampled: 1/16/97
15400 NE 90th, Ste 100	Project Number:	1287-02	Received: 1/17/97
Redmond, WA 98052	Project Manager:	Rick Osgood	Reported: 2/3/97 07:34

Semivolatile Organic Compounds by EPA Method 8270/Quality Control
North Creek Analytical - Bothell

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Batch: 0170479	**Date Prepared: 1/27/97**				**Extraction Method: EPA 3550**					
Blank	**0170479-BLK1**									
Acenaphthene	1/28/97			ND	mg/kg dry	0.100				
Acenaphthylene	"			ND	"	0.100				
Aniline	"			ND	"	0.100				
Anthracene	"			ND	"	0.100				
Benzoic Acid	"			ND	"	0.500				
Benzo (a) anthracene	"			ND	"	0.100				
Benzo (b) fluoranthene	"			ND	"	0.100				
Benzo (k) fluoranthene	"			ND	"	0.100				
Benzo (ghi) perylene	"			ND	"	0.100				
Benzo (a) pyrene	"			ND	"	0.100				
Benzyl alcohol	"			ND	"	0.100				
Bis(2-chloroethoxy)methane	"			ND	"	0.100				
Bis(2-chloroethyl)ether	"			ND	"	0.100				
Bis(2-chloroisopropyl)ether	"			ND	"	0.100				
Bis(2-ethylhexyl)phthalate	"			ND	"	0.500				
4-Bromophenyl phenyl ether	"			ND	"	0.100				
Butyl benzyl phthalate	"			ND	"	0.100				
Carbazole	"			ND	"	0.500				
4-Chloroaniline	"			ND	"	0.100				
2-Chloronaphthalene	"			ND	"	0.100				
4-Chloro-3-methylphenol	"			ND	"	0.100				
2-Chlorophenol	"			ND	"	0.100				
4-Chlorophenyl phenyl ether	"			ND	"	0.100				
Chrysene	"			ND	"	0.100				
Dibenzo (a,h) anthracene	"			ND	"	0.100				
Dibenzofuran	"			ND	"	0.100				
Di-n-butyl phthalate	"			ND	"	0.500				
1,3-Dichlorobenzene	"			ND	"	0.100				
1,4-Dichlorobenzene	"			ND	"	0.100				
1,2-Dichlorobenzene	"			ND	"	0.100				
3,3'-Dichlorobenzidine	"			ND	"	5.00				
2,4-Dichlorophenol	"			ND	"	0.100				
Diethyl phthalate	"			ND	"	0.100				
2,4-Dimethylphenol	"			ND	"	0.100				
Dimethyl phthalate	"			ND	"	0.100				
4,6-Dinitro-2-methylphenol	"			ND	"	0.500				
2,4-Dinitrophenol	"			ND	"	0.500				

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

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Tetra Tech, Inc.	Project:	Tumwater Brewhouse	Sampled: 1/16/97
15400 NE 90th, Ste 100	Project Number:	1287-02	Received: 1/17/97
Redmond, WA 98052	Project Manager:	Rick Osgood	Reported: 2/3/97 07:34

Semivolatile Organic Compounds by EPA Method 8270/Quality Control
North Creek Analytical - Bothell

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit / Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Blank (continued)	**0170479-BLK1**									
2,4-Dinitrotoluene	1/28/97			ND	mg/kg dry	0.100				
2,6-Dinitrotoluene	"			ND	"	0.100				
Di-n-octyl phthalate	"			ND	"	0.100				
Fluoranthene	"			ND	"	0.100				
Fluorene	"			ND	"	0.100				
Hexachlorobenzene	"			ND	"	0.100				
Hexachlorobutadiene	"			ND	"	0.100				
Hexachlorocyclopentadiene	"			ND	"	0.100				
Hexachloroethane	"			ND	"	0.100				
Indeno (1,2,3-cd) pyrene	"			ND	"	0.100				
Isophorone	"			ND	"	0.100				
2-Methylnaphthalene	"			ND	"	0.100				
2-Methylphenol	"			ND	"	0.100				
4-Methylphenol	"			ND	"	0.100				
Naphthalene	"			ND	"	0.100				
2-Nitroaniline	"			ND	"	0.500				
3-Nitroaniline	"			ND	"	0.500				
4-Nitroaniline	"			ND	"	0.500				
Nitrobenzene	"			ND	"	0.100				
2-Nitrophenol	"			ND	"	0.100				
4-Nitrophenol	"			ND	"	0.500				
N-Nitrosodiphenylamine	"			ND	"	0.200				
N-Nitrosodi-n-propylamine	"			ND	"	0.100				
Pentachlorophenol	"			ND	"	0.500				
Phenanthrene	"			ND	"	0.100				
Phenol	"			ND	"	0.100				
Pyrene	"			ND	"	0.100				
1,2,4-Trichlorobenzene	"			ND	"	0.100				
2,4,5-Trichlorophenol	"			ND	"	0.500				
2,4,6-Trichlorophenol	"			ND	"	0.100				
Surrogate: 2-FP	"	*3.34*		*2.33*	"	*19.0-141*	*69.8*			
Surrogate: Phenol-d6	"	*3.34*		*2.32*	"	*44.0-128*	*69.5*			
Surrogate: 2,4,6-TBP	"	*3.34*		*2.60*	"	*10.0-137*	*77.8*			
Surrogate: Nitrobenzene-d5	"	*3.34*		*2.33*	"	*33.0-108*	*69.8*			
Surrogate: 2-FBP	"	*3.34*		*2.61*	"	*51.0-124*	*78.1*			
Surrogate: p-Terphenyl-d14	"	*3.34*		*2.55*	"	*48.0-149*	*76.3*			

North Creek Analytical, Inc.

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Tetra Tech, Inc.	Project:	Tumwater Brewhouse	Sampled: 1/16/97
15400 NE 90th, Ste 100	Project Number:	1287-02	Received: 1/17/97
Redmond, WA 98052	Project Manager:	Rick Osgood	Reported: 2/3/97 07:34

Semivolatile Organic Compounds by EPA Method 8270/Quality Control
North Creek Analytical - Bothell

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
LCS	**0170479-BS1**									
Acenaphthene	1/28/97	3.34		2.88	mg/kg dry	48.0-110	86.2			
4-Chloro-3-methylphenol	"	6.68		4.24	"	34.0-115	63.5			
2-Chlorophenol	"	6.69		4.21	"	57.0-110	62.9			
1,4-Dichlorobenzene	"	3.34		2.54	"	39.0-110	76.0			
2,4-Dinitrotoluene	"	3.34		2.88	"	50.0-110	86.2			
4-Nitrophenol	"	6.68		4.89	"	26.0-116	73.2			
N-Nitrosodi-n-propylamine	"	3.35		3.05	"	28.0-147	91.0			
Pentachlorophenol	"	6.68		5.04	"	46.0-120	75.4			
Phenol	"	6.68		4.05	"	35.0-110	60.6			
Pyrene	"	3.34		2.71	"	35.0-143	81.1			
1,2,4-Trichlorobenzene	"	3.35		2.56	"	39.0-110	76.4			
Surrogate: 2-FP	"	*3.34*		*2.27*	"	*19.0-141*	*68.0*			
Surrogate: Phenol-d6	"	*3.34*		*2.36*	"	*44.0-128*	*70.7*			
Surrogate: 2,4,6-TBP	"	*3.34*		*2.89*	"	*10.0-137*	*86.5*			
Surrogate: Nitrobenzene-d5	"	*3.34*		*2.29*	"	*33.0-108*	*68.6*			
Surrogate: 2-FBP	"	*3.34*		*2.69*	"	*51.0-124*	*80.5*			
Surrogate: p-Terphenyl-d14	"	*3.34*		*2.69*	"	*48.0-149*	*80.5*			
Matrix Spike	**0170479-MS1**		**B701213-06**							
Acenaphthene	1/28/97	5.15	ND	4.28	mg/kg dry	34.0-122	**83.1**			
4-Chloro-3-methylphenol	"	10.3	ND	7.20	"	26.0-129	**69.9**			
2-Chlorophenol	"	10.3	ND	7.71	"	43.0-131	**74.9**			
1,4-Dichlorobenzene	"	5.15	ND	3.29	"	34.0-131	**63.9**			
2,4-Dinitrotoluene	"	5.15	ND	3.45	"	10.0-126	**67.0**			
4-Nitrophenol	"	10.3	ND	6.37	"	10.0-111	**61.8**			
N-Nitrosodi-n-propylamine	"	5.16	ND	4.34	"	29.0-160	**84.1**			
Pentachlorophenol	"	10.3	ND	6.32	"	46.0-120	**61.4**			
Phenol	"	10.3	ND	7.40	"	41.0-118	**71.8**			
Pyrene	"	5.15	ND	4.32	"	44.0-122	**83.9**			
1,2,4-Trichlorobenzene	"	5.16	ND	3.96	"	10.0-176	**76.7**			
Surrogate: 2-FP	"	*5.15*		*3.46*	"	*19.0-141*	*67.2*			
Surrogate: Phenol-d6	"	*5.15*		*3.66*	"	*44.0-128*	*71.1*			
Surrogate: 2,4,6-TBP	"	*5.15*		*3.41*	"	*10.0-137*	*66.2*			
Surrogate: Nitrobenzene-d5	"	*5.15*		*3.33*	"	*33.0-108*	*64.7*			
Surrogate: 2-FBP	"	*5.14*		*3.96*	"	*51.0-124*	*77.0*			
Surrogate: p-Terphenyl-d14	"	*5.15*		*4.15*	"	*48.0-149*	*80.6*			

North Creek Analytical, Inc.

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

Matthew Essig, Project Manager

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Tetra Tech, Inc.	Project:	Tumwater Brewhouse	Sampled: 1/16/97
15400 NE 90th, Ste 100	Project Number:	1287-02	Received: 1/17/97
Redmond, WA 98052	Project Manager:	Rick Osgood	Reported: 2/3/97 07:34

Semivolatile Organic Compounds by EPA Method 8270/Quality Control
North Creek Analytical - Bothell

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Matrix Spike Dup	**0170479-MSD1**		**B701213-06**							
Acenaphthene	1/28/97	5.15	ND	4.88	mg/kg dry	34.0-122	**94.8**	56.0	**13.2**	
4-Chloro-3-methylphenol	"	10.3	ND	7.25	"	26.0-129	**70.4**	29.0	**0.713**	
2-Chlorophenol	"	10.3	ND	7.35	"	43.0-131	**71.4**	27.0	**4.78**	
1,4-Dichlorobenzene	"	5.15	ND	3.83	"	34.0-131	**74.4**	23.0	**15.2**	
2,4-Dinitrotoluene	"	5.15	ND	3.86	"	10.0-126	**75.0**	22.0	**11.3**	
4-Nitrophenol	"	10.3	ND	6.48	"	10.0-111	**62.9**	43.0	**1.76**	
N-Nitrosodi-n-propylamine	"	5.16	ND	5.06	"	29.0-160	**98.1**	25.0	**15.4**	
Pentachlorophenol	"	10.3	ND	6.22	"	46.0-120	**60.4**	29.0	**1.64**	
Phenol	"	10.3	ND	7.20	"	41.0-118	**69.9**	29.0	**2.68**	
Pyrene	"	5.15	ND	4.65	"	44.0-122	**90.3**	31.0	**7.35**	
1,2,4-Trichlorobenzene	"	5.16	ND	4.66	"	10.0-176	**90.3**	24.0	**16.3**	
Surrogate: 2-FP	"	*5.15*		*4.07*	"	*19.0-141*	*79.0*			
Surrogate: Phenol-d6	"	*5.15*		*4.17*	"	*44.0-128*	*81.0*			
Surrogate: 2,4,6-TBP	"	*5.15*		*4.57*	"	*10.0-137*	*88.7*			
Surrogate: Nitrobenzene-d5	"	*5.15*		*3.88*	"	*33.0-108*	*75.3*			
Surrogate: 2-FBP	"	*5.14*		*4.38*	"	*51.0-124*	*85.2*			
Surrogate: p-Terphenyl-d14	"	*5.15*		*4.58*	"	*48.0-149*	*88.9*			

North Creek Analytical, Inc.

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

Matthew Essig, Project Manager

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Tetra Tech, Inc.	Project:	Tumwater Brewhouse	Sampled: 1/16/97
15400 NE 90th, Ste 100	Project Number:	1287-02	Received: 1/17/97
Redmond, WA 98052	Project Manager:	Rick Osgood	Reported: 2/3/97 07:34

Notes and Definitions

#	Note
1	To reduce matrix interference, the sample extract has undergone sulfuric acid clean-up, method 3665, which is specific to hydrocarbon contamination.
2	To reduce matrix interference, the sample extract has undergone copper clean-up, method 3660, which is specific to sulfur contamination.
3	The surrogate recovery for this sample is outside of established control limits. Review of associated QC indicates the recovery for this surrogate does not represent an out-of-control condition.
4	The spike recovery for this QC sample is outside of established control limits. Review of associated batch QC indicates the recovery for this analyte does not represent an out-of-control condition for the batch.
5	The RPD value for this QC sample is above the established control limit. Review of associated QC indicates the high RPD does not represent an out-of-control condition for the batch.
6	The spike recovery for this QC sample is outside of NCA established control limits due to sample matrix interference.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
Recov.	Recovery
RPD	Relative Percent Difference

North Creek Analytical, Inc.

Matthew Essig, Project Manager

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TETRA TECH, INC.
15400 NE 90th, Suite 100
Redmond, Washington 98052
(206) 883-1912
FAX (206) 881-6997

CHAIN OF CUSTODY

DOCUMENT B701213

PROJECT NAME: Tumwater Brewhouse | PROJECT NO.: 1287-02

SAMPLERS: (signature) Rick E. Osgood

Tt Contact: Rick Osgood

SAMPLE ID	TIME	DATE	MEDIA: Air	Surface Water	Ground Water	Soil	Sediment			NUMBER OF CONTAINERS	ANALYSIS: WHCID	RCRA Metals	VOCs	SVOCs	PCBs	REMARKS
Tumwater-CS1	1245	1/16/97				X				2	1	1				Std TAT B701213
Tumwater-SS1	1310					X				2		1	1			
Tumwater-SS2	1320					X				2		1	1			
Tumwater-SS3	1330					X				2		1	1			
Tumwater-SS4	1335					X				2						
Tumwater-SD1	1420						X			2		1		1		Archive (hold for analysis) (6 wks OK)
Tumwater-SS5	1430					X				2			1		1	
Tumwater-SS6	1440					X				2			1		1	
Tumwater-SS7	1450	—				X				2			1		1	

Rick E. Osgood 1/16/97

RELINQUISHED BY (signature): Rick E. Osgood	DATE/TIME: 1/17/97 1640	TOTAL NUMBER OF CONTAINERS: 18		RECEIVED FOR LAB BY (Signature): Lisa Hurley	DATE/TIME: 1-17-97 16:40
RECEIVED BY (signature)	DATE/TIME	RELINQUISHED BY (signature)	DATE/TIME	CONDITION OF CONTENTS	TEMPERATURE UPON RECEIPT: 6°C
RELINQUISHED BY (signature)	DATE/TIME	RECEIVED BY (signature)	DATE/TIME	REMARKS	
RECEIVED BY (signature)	DATE/TIME	METHOD OF SHIPMENT	AIRBILL NO.		

Distribution: Original - Lab Copy Yellow copy - Final Tetra Tech Copy Pink Copy - Field File Copy

APPENDIX A-2

ANALYTICAL DATA REPORT FOR SAMPLES COLLECTED ON 20 JANUARY 1997

NORTH CREEK ANALYTICAL
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Tetra Tech, Inc.	Project: Tumwater Brewhouse	Sampled: 1/20/97
15400 NE 90th, Ste 100	Project Number: 1278-02	Received: 1/21/97
Redmond, WA 98052	Project Manager: Rick Osgood	Reported: 2/4/97 14:16

ANALYTICAL REPORT FOR SAMPLES:

Sample Description	Laboratory Sample Number	Sample Matrix	Date Sampled
TRIP BLANK	B701242-01	Water	1/20/97
TUMWATER-SB3-4.0	B701242-02	Soil	1/20/97
TUMWATER-GW1	B701242-03	Water	1/20/97
TUMWATER-GW2	B701242-04	Water	1/20/97
TUMWATER-GW3	B701242-05	Water	1/20/97
TUMWATER-GW4	B701242-06	Water	1/20/97
TUMWATER-GW5	B701242-07	Water	1/20/97
TUMWATER-GW6	B701242-08	Water	1/20/97
TUMWATER-SB9-3.5	B701242-09	Soil	1/20/97
TUMWATER-GW7	B701242-10	Water	1/20/97
TUMWATER-GW8	B701242-11	Water	1/20/97
TUMWATER-GW15	B701242-12	Water	1/20/97
TUMWATER-SS8	B701242-13	Soil	1/20/97

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Tetra Tech, Inc.	Project:	Tumwater Brewhouse	Sampled: 1/20/97
15400 NE 90th, Ste 100	Project Number:	1278-02	Received: 1/21/97
Redmond, WA 98052	Project Manager:	Rick Osgood	Reported: 2/4/97 14:16

Hydrocarbon Identification by Washington DOE Method WTPH-HCID
North Creek Analytical - Bothell

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
TUMWATER-SB3-4.0			**B701242-02**				**Soil**	
Gasoline Range Hydrocarbons	0170389	1/22/97	1/24/97		20.0	ND	mg/kg dry	
Diesel Range Hydrocarbons	"	"	"		50.0	ND	"	
Heavy Oil Range Hydrocarbons	"	"	"		100	ND	"	
Surrogate: 2-FBP	"	"	"	*50.0-150*		*109*	*%*	

North Creek Analytical, Inc.

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Tetra Tech, Inc.	Project:	Tumwater Brewhouse	Sampled: 1/20/97
15400 NE 90th, Ste 100	Project Number:	1278-02	Received: 1/21/97
Redmond, WA 98052	Project Manager:	Rick Osgood	Reported: 2/4/97 14:16

Diesel Hydrocarbons (C12-C24) by WTPH-D
North Creek Analytical - Bothell

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
TUMWATER-SS8			**B701242-13**				**Soil**	**1**
Diesel Range Hydrocarbons	0170457	1/24/97	1/27/97		10.0	**755**	mg/kg dry	
Surrogate: 2-FBP	"	"	"	*50.0-150*		*80.6*	%	

North Creek Analytical, Inc.

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Matthew Essig, Project Manager

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Tetra Tech, Inc.	Project:	Tumwater Brewhouse	Sampled: 1/20/97
15400 NE 90th, Ste 100	Project Number:	1278-02	Received: 1/21/97
Redmond, WA 98052	Project Manager:	Rick Osgood	Reported: 2/4/97 14:16

Diesel Hydrocarbons (C12-C24) and Heavy Oil (C24-C40) by WTPH-D (extended)
North Creek Analytical - Bothell

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
TUMWATER-GW1			**B701242-03**				**Water**	
Diesel Range Hydrocarbons	0170394	1/22/97	1/24/97		0.250	**0.267**	mg/l	
Heavy Oil Range Hydrocarbons	"	"	"		0.750	ND	"	
Surrogate: 2-FBP	"	"	"	*50.0-150*		*80.2*	*%*	
TUMWATER-GW2			**B701242-04**				**Water**	
Diesel Range Hydrocarbons	0170394	1/22/97	1/24/97		0.250	ND	mg/l	
Heavy Oil Range Hydrocarbons	"	"	"		0.750	ND	"	
Surrogate: 2-FBP	"	"	"	*50.0-150*		*82.4*	*%*	

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Tetra Tech, Inc.	Project:	Tumwater Brewhouse	Sampled: 1/20/97
15400 NE 90th, Ste 100	Project Number:	1278-02	Received: 1/21/97
Redmond, WA 98052	Project Manager:	Rick Osgood	Reported: 2/4/97 14:16

Metals by EPA 6010/7000 Series Methods
North Creek Analytical - Bothell

Analyte	Batch Number	Date Prepared	Date Analyzed	Specific Method	Reporting Limit	Result	Units	Notes*
TUMWATER-GW2			**B701242-04**				**Water**	
Antimony	0170454	1/23/97	1/24/97	EPA 6010A	0.100	ND	mg/l	
Beryllium	"	"	"	EPA 6010A	0.00500	ND	"	
Cadmium	"	"	"	EPA 6010A	0.00500	ND	"	
Chromium	"	"	"	EPA 6010A	0.0100	ND	"	
Copper	"	"	"	EPA 6010A	0.0300	ND	"	
Nickel	"	"	"	EPA 6010A	0.0300	ND	"	
Thallium	"	"	"	EPA 6010A	0.200	ND	"	
Zinc	"	"	"	EPA 6010A	0.0200	**0.0291**	"	
Arsenic	0170447	"	1/30/97	EPA 7060A	0.00400	**0.00770**	"	
Lead	"	"	1/24/97	EPA 7421	0.00200	**0.00471**	"	
Mercury	0170427	"	1/23/97	EPA 7470A	0.00100	ND	"	
Selenium	0170447	"	1/29/97	EPA 7740	0.00500	ND	"	
Silver	0170446	"	1/24/97	EPA 7760A	0.0200	ND	"	
TUMWATER-GW3			**B701242-05**				**Water**	
Antimony	0170454	1/23/97	1/24/97	EPA 6010A	0.100	ND	mg/l	
Beryllium	"	"	"	EPA 6010A	0.00500	ND	"	
Cadmium	"	"	"	EPA 6010A	0.00500	ND	"	
Chromium	"	"	"	EPA 6010A	0.0100	**0.0227**	"	
Copper	"	"	"	EPA 6010A	0.0300	**0.0463**	"	
Nickel	"	"	"	EPA 6010A	0.0300	ND	"	
Thallium	"	"	"	EPA 6010A	0.200	ND	"	
Zinc	"	"	"	EPA 6010A	0.0200	**0.0554**	"	
Arsenic	0170447	"	1/30/97	EPA 7060A	0.00400	**0.00680**	"	
Lead	"	"	1/24/97	EPA 7421	0.00200	**0.0123**	"	
Mercury	0170427	"	1/23/97	EPA 7470A	0.00100	ND	"	
Selenium	0170447	"	1/29/97	EPA 7740	0.00500	ND	"	
Silver	0170446	"	1/24/97	EPA 7760A	0.0200	ND	"	
TUMWATER-GW4			**B701242-06**				**Water**	
Antimony	0170454	1/23/97	1/24/97	EPA 6010A	0.100	ND	mg/l	
Beryllium	"	"	"	EPA 6010A	0.00500	ND	"	
Cadmium	"	"	"	EPA 6010A	0.00500	ND	"	
Chromium	"	"	"	EPA 6010A	0.0100	ND	"	
Copper	"	"	"	EPA 6010A	0.0300	ND	"	
Nickel	"	"	"	EPA 6010A	0.0300	ND	"	
Thallium	"	"	"	EPA 6010A	0.200	ND	"	
Zinc	"	"	"	EPA 6010A	0.0200	ND	"	

North Creek Analytical, Inc.

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Tetra Tech, Inc.	Project:	Tumwater Brewhouse	Sampled: 1/20/97
15400 NE 90th, Ste 100	Project Number:	1278-02	Received: 1/21/97
Redmond, WA 98052	Project Manager:	Rick Osgood	Reported: 2/4/97 14:16

Metals by EPA 6010/7000 Series Methods
North Creek Analytical - Bothell

Analyte	Batch Number	Date Prepared	Date Analyzed	Specific Method	Reporting Limit	Result	Units	Notes*
TUMWATER-GW4 (continued)			**B701242-06**				**Water**	
Arsenic	0170447	1/23/97	1/30/97	EPA 7060A	0.00400	ND	mg/l	
Lead	"	"	1/24/97	EPA 7421	0.00200	ND	"	
Mercury	0170427	"	1/23/97	EPA 7470A	0.00100	ND	"	
Selenium	0170447	"	1/29/97	EPA 7740	0.00500	ND	"	
Silver	0170446	"	1/24/97	EPA 7760A	0.0200	ND	"	
TUMWATER-GW5			**B701242-07**				**Water**	
Antimony	0170454	1/23/97	1/24/97	EPA 6010A	0.100	ND	mg/l	
Beryllium	"	"	"	EPA 6010A	0.00500	ND	"	
Cadmium	"	"	"	EPA 6010A	0.00500	ND	"	
Chromium	"	"	"	EPA 6010A	0.0100	**0.0124**	"	
Copper	"	"	"	EPA 6010A	0.0300	**0.0376**	"	
Nickel	"	"	"	EPA 6010A	0.0300	ND	"	
Thallium	"	"	"	EPA 6010A	0.200	ND	"	
Zinc	"	"	"	EPA 6010A	0.0200	**0.0390**	"	
Arsenic	0170447	"	1/30/97	EPA 7060A	0.00400	**0.00530**	"	
Lead	"	"	1/24/97	EPA 7421	0.00200	**0.00523**	"	
Mercury	0170427	"	1/23/97	EPA 7470A	0.00100	ND	"	
Selenium	0170447	"	1/29/97	EPA 7740	0.00500	ND	"	
Silver	0170446	"	1/24/97	EPA 7760A	0.0200	ND	"	
TUMWATER-GW6			**B701242-08**				**Water**	
Antimony	0170454	1/23/97	1/24/97	EPA 6010A	0.100	ND	mg/l	
Beryllium	"	"	"	EPA 6010A	0.00500	ND	"	
Cadmium	"	"	"	EPA 6010A	0.00500	ND	"	
Chromium	"	"	"	EPA 6010A	0.0100	**0.0125**	"	
Copper	"	"	"	EPA 6010A	0.0300	ND	"	
Nickel	"	"	"	EPA 6010A	0.0300	ND	"	
Thallium	"	"	"	EPA 6010A	0.200	ND	"	
Zinc	"	"	"	EPA 6010A	0.0200	ND	"	
Arsenic	0170447	"	1/30/97	EPA 7060A	0.00400	ND	"	
Lead	"	"	1/24/97	EPA 7421	0.00200	ND	"	
Mercury	0170427	"	1/23/97	EPA 7470A	0.00100	ND	"	
Selenium	0170447	"	1/29/97	EPA 7740	0.00500	ND	"	
Silver	0170446	"	1/24/97	EPA 7760A	0.0200	ND	"	
TUMWATER-GW8			**B701242-11**				**Water**	
Antimony	0170454	1/23/97	1/24/97	EPA 6010A	0.100	ND	mg/l	

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15400 NE 90th, Ste 100	Project Number:	1278-02	Received: 1/21/97
Redmond, WA 98052	Project Manager:	Rick Osgood	Reported: 2/4/97 14:16

Metals by EPA 6010/7000 Series Methods
North Creek Analytical - Bothell

Analyte	Batch Number	Date Prepared	Date Analyzed	Specific Method	Reporting Limit	Result	Units	Notes*
TUMWATER-GW8 (continued)			**B701242-11**				**Water**	
Beryllium	0170454	1/23/97	1/24/97	EPA 6010A	0.00500	ND	mg/l	
Cadmium	"	"	"	EPA 6010A	0.00500	ND	"	
Chromium	"	"	"	EPA 6010A	0.0100	ND	"	
Copper	"	"	"	EPA 6010A	0.0300	ND	"	
Nickel	"	"	"	EPA 6010A	0.0300	ND	"	
Thallium	"	"	"	EPA 6010A	0.200	ND	"	
Zinc	"	"	"	EPA 6010A	0.0200	**0.0285**	"	
Arsenic	0170447	"	1/30/97	EPA 7060A	0.00400	**0.00660**	"	
Lead	"	"	1/24/97	EPA 7421	0.00200	**0.0123**	"	
Mercury	0170427	"	1/23/97	EPA 7470A	0.00100	ND	"	
Selenium	0170447	"	1/29/97	EPA 7740	0.00500	ND	"	
Silver	0170446	"	1/24/97	EPA 7760A	0.0200	ND	"	
TUMWATER-GW15			**B701242-12**				**Water**	
Antimony	0170454	1/23/97	1/24/97	EPA 6010A	0.100	ND	mg/l	
Beryllium	"	"	"	EPA 6010A	0.00500	ND	"	
Cadmium	"	"	"	EPA 6010A	0.00500	ND	"	
Chromium	"	"	"	EPA 6010A	0.0100	**0.0161**	"	
Copper	"	"	"	EPA 6010A	0.0300	ND	"	
Nickel	"	"	"	EPA 6010A	0.0300	ND	"	
Thallium	"	"	"	EPA 6010A	0.200	ND	"	
Zinc	"	"	"	EPA 6010A	0.0200	**0.0283**	"	
Arsenic	0170447	"	1/30/97	EPA 7060A	0.00400	**0.00910**	"	
Lead	"	"	1/24/97	EPA 7421	0.00200	**0.00291**	"	
Mercury	0170427	"	1/23/97	EPA 7470A	0.00100	ND	"	
Selenium	0170447	"	1/29/97	EPA 7740	0.00500	ND	"	
Silver	0170446	"	1/24/97	EPA 7760A	0.0200	ND	"	

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15400 NE 90th, Ste 100	Project Number:	1278-02	Received: 1/21/97
Redmond, WA 98052	Project Manager:	Rick Osgood	Reported: 2/4/97 14:16

Polychlorinated Biphenyls by EPA Method 8081
North Creek Analytical - Bothell

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
TUMWATER-SB9-3.5			**B701242-09**				**Soil**	**2,3**
Aroclor 1016	0170551	1/29/97	1/30/97		50.0	ND	ug/kg	
Aroclor 1221	"	"	"		50.0	ND	"	
Aroclor 1232	"	"	"		50.0	ND	"	
Aroclor 1242	"	"	"		50.0	ND	"	
Aroclor 1248	"	"	"		50.0	ND	"	
Aroclor 1254	"	"	"		50.0	ND	"	
Aroclor 1260	"	"	"		50.0	ND	"	
Surrogate: TCX	"	"	"	*38.0-117*		*86.1*	%	
TUMWATER-GW7			**B701242-10**				**Water**	**2,3**
Aroclor 1016	0170416	1/23/97	1/31/97		0.100	ND	ug/l	
Aroclor 1221	"	"	"		0.100	ND	"	
Aroclor 1232	"	"	"		0.100	ND	"	
Aroclor 1242	"	"	"		0.100	ND	"	
Aroclor 1248	"	"	"		0.100	ND	"	
Aroclor 1254	"	"	"		0.100	ND	"	
Aroclor 1260	"	"	"		0.100	ND	"	
Surrogate: TCX	"	"	"	*40.0-130*		*96.4*	%	

North Creek Analytical, Inc.

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Matthew Essig, Project Manager

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15400 NE 90th, Ste 100	Project Number:	1278-02	Received: 1/21/97
Redmond, WA 98052	Project Manager:	Rick Osgood	Reported: 2/4/97 14:16

Volatile Organic Compounds by EPA Method 8240B
North Creek Analytical - Bothell

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
TRIP BLANK			**B701242-01**				**Water**	
Acetone	0170566	1/29/97	1/29/97		10.0	ND	ug/l	
Benzene	"	"	"		1.00	ND	"	
Bromodichloromethane	"	"	"		1.00	ND	"	
Bromoform	"	"	"		1.00	ND	"	
Bromomethane	"	"	"		1.00	ND	"	
2-Butanone	"	"	"		10.0	ND	"	
Carbon disulfide	"	"	"		1.00	ND	"	
Carbon tetrachloride	"	"	"		1.00	ND	"	
Chlorobenzene	"	"	"		1.00	ND	"	
Chloroethane	"	"	"		1.00	ND	"	
Chloroform	"	"	"		1.00	ND	"	
Chloromethane	"	"	"		1.00	ND	"	
Dibromochloromethane	"	"	"		1.00	ND	"	
1,1-Dichloroethane	"	"	"		1.00	ND	"	
1,2-Dichloroethane	"	"	"		1.00	ND	"	
1,1-Dichloroethene	"	"	"		1.00	ND	"	
cis-1,2-Dichloroethene	"	"	"		1.00	ND	"	
trans-1,2-Dichloroethene	"	"	"		1.00	ND	"	
1,2-Dichloropropane	"	"	"		1.00	ND	"	
cis-1,3-Dichloropropene	"	"	"		1.00	ND	"	
trans-1,3-Dichloropropene	"	"	"		1.00	ND	"	
Ethylbenzene	"	"	"		1.00	ND	"	
2-Hexanone	"	"	"		10.0	ND	"	
Methylene chloride	"	"	"		5.00	ND	"	
4-Methyl-2-pentanone	"	"	"		10.0	ND	"	
Styrene	"	"	"		1.00	ND	"	
1,1,2,2-Tetrachloroethane	"	"	"		1.00	ND	"	
Tetrachloroethene	"	"	"		1.00	ND	"	
Toluene	"	"	"		1.00	ND	"	
1,1,1-Trichloroethane	"	"	"		1.00	ND	"	
1,1,2-Trichloroethane	"	"	"		1.00	ND	"	
Trichloroethene	"	"	"		1.00	ND	"	
Vinyl chloride	"	"	"		1.00	ND	"	
Xylenes (total)	"	"	"		2.00	ND	"	
Surrogate: 1,2-DCA-d4	"	"	"	*80.0-120*		*99.2*	*%*	
Surrogate: Toluene-d8	"	"	"	*80.0-120*		*102*	"	
Surrogate: 4-BFB	"	"	"	*80.0-120*		*99.2*	"	

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15400 NE 90th, Ste 100	Project Number:	1278-02	Received: 1/21/97
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Volatile Organic Compounds by EPA Method 8240B
North Creek Analytical - Bothell

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
TUMWATER-GW2			**B701242-04**				**Water**	
Acetone	0170566	1/29/97	1/29/97		10.0	ND	ug/l	
Benzene	"	"	"		1.00	ND	"	
Bromodichloromethane	"	"	"		1.00	ND	"	
Bromoform	"	"	"		1.00	ND	"	
Bromomethane	"	"	"		1.00	ND	"	
2-Butanone	"	"	"		10.0	ND	"	
Carbon disulfide	"	"	"		1.00	ND	"	
Carbon tetrachloride	"	"	"		1.00	ND	"	
Chlorobenzene	"	"	"		1.00	ND	"	
Chloroethane	"	"	"		1.00	ND	"	
Chloroform	"	"	"		1.00	ND	"	
Chloromethane	"	"	"		1.00	ND	"	
Dibromochloromethane	"	"	"		1.00	ND	"	
1,1-Dichloroethane	"	"	"		1.00	ND	"	
1,2-Dichloroethane	"	"	"		1.00	ND	"	
1,1-Dichloroethene	"	"	"		1.00	ND	"	
cis-1,2-Dichloroethene	"	"	"		1.00	ND	"	
trans-1,2-Dichloroethene	"	"	"		1.00	ND	"	
1,2-Dichloropropane	"	"	"		1.00	ND	"	
cis-1,3-Dichloropropene	"	"	"		1.00	ND	"	
trans-1,3-Dichloropropene	"	"	"		1.00	ND	"	
Ethylbenzene	"	"	"		1.00	ND	"	
2-Hexanone	"	"	"		10.0	ND	"	
Methylene chloride	"	"	"		5.00	ND	"	
4-Methyl-2-pentanone	"	"	"		10.0	ND	"	
Styrene	"	"	"		1.00	ND	"	
1,1,2,2-Tetrachloroethane	"	"	"		1.00	ND	"	
Tetrachloroethene	"	"	"		1.00	ND	"	
Toluene	"	"	"		1.00	ND	"	
1,1,1-Trichloroethane	"	"	"		1.00	ND	"	
1,1,2-Trichloroethane	"	"	"		1.00	ND	"	
Trichloroethene	"	"	"		1.00	ND	"	
Vinyl chloride	"	"	"		1.00	ND	"	
Xylenes (total)	"	"	"		2.00	ND	"	
Surrogate: 1,2-DCA-d4	"	"	"	*80.0-120*		*103*	%	
Surrogate: Toluene-d8	"	"	"	*80.0-120*		*100*	"	
Surrogate: 4-BFB	"	"	"	*80.0-120*		*97.6*	"	

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15400 NE 90th, Ste 100	Project Number:	1278-02	Received: 1/21/97
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Volatile Organic Compounds by EPA Method 8240B
North Creek Analytical - Bothell

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
TUMWATER-GW3			**B701242-05**				**Water**	
Acetone	0170566	1/29/97	1/29/97		10.0	ND	ug/l	
Benzene	"	"	"		1.00	ND	"	
Bromodichloromethane	"	"	"		1.00	ND	"	
Bromoform	"	"	"		1.00	ND	"	
Bromomethane	"	"	"		1.00	ND	"	
2-Butanone	"	"	"		10.0	ND	"	
Carbon disulfide	"	"	"		1.00	ND	"	
Carbon tetrachloride	"	"	"		1.00	ND	"	
Chlorobenzene	"	"	"		1.00	ND	"	
Chloroethane	"	"	"		1.00	ND	"	
Chloroform	"	"	"		1.00	ND	"	
Chloromethane	"	"	"		1.00	ND	"	
Dibromochloromethane	"	"	"		1.00	ND	"	
1,1-Dichloroethane	"	"	"		1.00	ND	"	
1,2-Dichloroethane	"	"	"		1.00	ND	"	
1,1-Dichloroethene	"	"	"		1.00	ND	"	
cis-1,2-Dichloroethene	"	"	"		1.00	ND	"	
trans-1,2-Dichloroethene	"	"	"		1.00	ND	"	
1,2-Dichloropropane	"	"	"		1.00	ND	"	
cis-1,3-Dichloropropene	"	"	"		1.00	ND	"	
trans-1,3-Dichloropropene	"	"	"		1.00	ND	"	
Ethylbenzene	"	"	"		1.00	ND	"	
2-Hexanone	"	"	"		10.0	ND	"	
Methylene chloride	"	"	"		5.00	ND	"	
4-Methyl-2-pentanone	"	"	"		10.0	ND	"	
Styrene	"	"	"		1.00	ND	"	
1,1,2,2-Tetrachloroethane	"	"	"		1.00	ND	"	
Tetrachloroethene	"	"	"		1.00	ND	"	
Toluene	"	"	"		1.00	ND	"	
1,1,1-Trichloroethane	"	"	"		1.00	ND	"	
1,1,2-Trichloroethane	"	"	"		1.00	ND	"	
Trichloroethene	"	"	"		1.00	ND	"	
Vinyl chloride	"	"	"		1.00	ND	"	
Xylenes (total)	"	"	"		2.00	ND	"	
Surrogate: 1,2-DCA-d4	"	"	"	*80.0-120*		*98.4*	*%*	
Surrogate: Toluene-d8	"	"	"	*80.0-120*		*97.6*	"	
Surrogate: 4-BFB	"	"	"	*80.0-120*		*99.2*	"	

North Creek Analytical, Inc.

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

Matthew Essig, Project Manager

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

BOTHELL ■ (206) 481-9200 ■ FAX 485-2992
SPOKANE ■ (509) 924-9200 ■ FAX 924-9290
PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

Tetra Tech, Inc.	Project:	Tumwater Brewhouse	Sampled: 1/20/97
15400 NE 90th, Ste 100	Project Number:	1278-02	Received: 1/21/97
Redmond, WA 98052	Project Manager:	Rick Osgood	Reported: 2/4/97 14:16

Volatile Organic Compounds by EPA Method 8240B
North Creek Analytical - Bothell

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
TUMWATER-GW4			**B701242-06**				**Water**	
Acetone	0170566	1/29/97	1/29/97		10.0	ND	ug/l	
Benzene	"	"	"		1.00	ND	"	
Bromodichloromethane	"	"	"		1.00	ND	"	
Bromoform	"	"	"		1.00	ND	"	
Bromomethane	"	"	"		1.00	ND	"	
2-Butanone	"	"	"		10.0	ND	"	
Carbon disulfide	"	"	"		1.00	ND	"	
Carbon tetrachloride	"	"	"		1.00	ND	"	
Chlorobenzene	"	"	"		1.00	ND	"	
Chloroethane	"	"	"		1.00	ND	"	
Chloroform	"	"	"		1.00	ND	"	
Chloromethane	"	"	"		1.00	ND	"	
Dibromochloromethane	"	"	"		1.00	ND	"	
1,1-Dichloroethane	"	"	"		1.00	ND	"	
1,2-Dichloroethane	"	"	"		1.00	ND	"	
1,1-Dichloroethene	"	"	"		1.00	ND	"	
cis-1,2-Dichloroethene	"	"	"		1.00	ND	"	
trans-1,2-Dichloroethene	"	"	"		1.00	ND	"	
1,2-Dichloropropane	"	"	"		1.00	ND	"	
cis-1,3-Dichloropropene	"	"	"		1.00	ND	"	
trans-1,3-Dichloropropene	"	"	"		1.00	ND	"	
Ethylbenzene	"	"	"		1.00	ND	"	
2-Hexanone	"	"	"		10.0	ND	"	
Methylene chloride	"	"	"		5.00	ND	"	
4-Methyl-2-pentanone	"	"	"		10.0	ND	"	
Styrene	"	"	"		1.00	ND	"	
1,1,2,2-Tetrachloroethane	"	"	"		1.00	ND	"	
Tetrachloroethene	"	"	"		1.00	ND	"	
Toluene	"	"	"		1.00	ND	"	
1,1,1-Trichloroethane	"	"	"		1.00	ND	"	
1,1,2-Trichloroethane	"	"	"		1.00	ND	"	
Trichloroethene	"	"	"		1.00	ND	"	
Vinyl chloride	"	"	"		1.00	ND	"	
Xylenes (total)	"	"	"		2.00	ND	"	
Surrogate: 1,2-DCA-d4	"	"	"	*80.0-120*		*102*	%	
Surrogate: Toluene-d8	"	"	"	*80.0-120*		*93.6*	"	
Surrogate: 4-BFB	"	"	"	*80.0-120*		*99.2*	"	

North Creek Analytical, Inc.

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Matthew Essig, Project Manager

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Environmental Laboratory Services

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Tetra Tech, Inc.	Project:	Tumwater Brewhouse	Sampled: 1/20/97
15400 NE 90th, Ste 100	Project Number:	1278-02	Received: 1/21/97
Redmond, WA 98052	Project Manager:	Rick Osgood	Reported: 2/4/97 14:16

Volatile Organic Compounds by EPA Method 8240B
North Creek Analytical - Bothell

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
TUMWATER-GW5			**B701242-07**				**Water**	
Acetone	0170566	1/29/97	1/29/97		10.0	ND	ug/l	
Benzene	"	"	"		1.00	ND	"	
Bromodichloromethane	"	"	"		1.00	ND	"	
Bromoform	"	"	"		1.00	ND	"	
Bromomethane	"	"	"		1.00	ND	"	
2-Butanone	"	"	"		10.0	ND	"	
Carbon disulfide	"	"	"		1.00	ND	"	
Carbon tetrachloride	"	"	"		1.00	ND	"	
Chlorobenzene	"	"	"		1.00	ND	"	
Chloroethane	"	"	"		1.00	ND	"	
Chloroform	"	"	"		1.00	ND	"	
Chloromethane	"	"	"		1.00	ND	"	
Dibromochloromethane	"	"	"		1.00	ND	"	
1,1-Dichloroethane	"	"	"		1.00	ND	"	
1,2-Dichloroethane	"	"	"		1.00	ND	"	
1,1-Dichloroethene	"	"	"		1.00	ND	"	
cis-1,2-Dichloroethene	"	"	"		1.00	ND	"	
trans-1,2-Dichloroethene	"	"	"		1.00	ND	"	
1,2-Dichloropropane	"	"	"		1.00	ND	"	
cis-1,3-Dichloropropene	"	"	"		1.00	ND	"	
trans-1,3-Dichloropropene	"	"	"		1.00	ND	"	
Ethylbenzene	"	"	"		1.00	ND	"	
2-Hexanone	"	"	"		10.0	ND	"	
Methylene chloride	"	"	"		5.00	ND	"	
4-Methyl-2-pentanone	"	"	"		10.0	ND	"	
Styrene	"	"	"		1.00	ND	"	
1,1,2,2-Tetrachloroethane	"	"	"		1.00	ND	"	
Tetrachloroethene	"	"	"		1.00	ND	"	
Toluene	"	"	"		1.00	ND	"	
1,1,1-Trichloroethane	"	"	"		1.00	ND	"	
1,1,2-Trichloroethane	"	"	"		1.00	ND	"	
Trichloroethene	"	"	"		1.00	ND	"	
Vinyl chloride	"	"	"		1.00	ND	"	
Xylenes (total)	"	"	"		2.00	ND	"	
Surrogate: 1,2-DCA-d4	"	"	"	*80.0-120*		*102*	*%*	
Surrogate: Toluene-d8	"	"	"	*80.0-120*		*99.2*	"	
Surrogate: 4-BFB	"	"	"	*80.0-120*		*99.2*	"	

North Creek Analytical, Inc.

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Matthew Essig, Project Manager

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NORTH CREEK ANALYTICAL
Environmental Laboratory Services

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Tetra Tech, Inc.	Project:	Tumwater Brewhouse	Sampled: 1/20/97
15400 NE 90th, Ste 100	Project Number:	1278-02	Received: 1/21/97
Redmond, WA 98052	Project Manager:	Rick Osgood	Reported: 2/4/97 14:16

Volatile Organic Compounds by EPA Method 8240B
North Creek Analytical - Bothell

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
TUMWATER-GW6			**B701242-08**				**Water**	
Acetone	0170566	1/29/97	1/29/97		10.0	ND	ug/l	
Benzene	"	"	"		1.00	ND	"	
Bromodichloromethane	"	"	"		1.00	ND	"	
Bromoform	"	"	"		1.00	ND	"	
Bromomethane	"	"	"		1.00	ND	"	
2-Butanone	"	"	"		10.0	ND	"	
Carbon disulfide	"	"	"		1.00	ND	"	
Carbon tetrachloride	"	"	"		1.00	ND	"	
Chlorobenzene	"	"	"		1.00	ND	"	
Chloroethane	"	"	"		1.00	ND	"	
Chloroform	"	"	"		1.00	ND	"	
Chloromethane	"	"	"		1.00	ND	"	
Dibromochloromethane	"	"	"		1.00	ND	"	
1,1-Dichloroethane	"	"	"		1.00	ND	"	
1,2-Dichloroethane	"	"	"		1.00	ND	"	
1,1-Dichloroethene	"	"	"		1.00	ND	"	
cis-1,2-Dichloroethene	"	"	"		1.00	ND	"	
trans-1,2-Dichloroethene	"	"	"		1.00	ND	"	
1,2-Dichloropropane	"	"	"		1.00	ND	"	
cis-1,3-Dichloropropene	"	"	"		1.00	ND	"	
trans-1,3-Dichloropropene	"	"	"		1.00	ND	"	
Ethylbenzene	"	"	"		1.00	ND	"	
2-Hexanone	"	"	"		10.0	ND	"	
Methylene chloride	"	"	"		5.00	ND	"	
4-Methyl-2-pentanone	"	"	"		10.0	ND	"	
Styrene	"	"	"		1.00	ND	"	
1,1,2,2-Tetrachloroethane	"	"	"		1.00	ND	"	
Tetrachloroethene	"	"	"		1.00	ND	"	
Toluene	"	"	"		1.00	ND	"	
1,1,1-Trichloroethane	"	"	"		1.00	ND	"	
1,1,2-Trichloroethane	"	"	"		1.00	ND	"	
Trichloroethene	"	"	"		1.00	ND	"	
Vinyl chloride	"	"	"		1.00	ND	"	
Xylenes (total)	"	"	"		2.00	ND	"	
Surrogate: 1,2-DCA-d4	"	"	"	*80.0-120*		*103*	*%*	
Surrogate: Toluene-d8	"	"	"	*80.0-120*		*95.2*	"	
Surrogate: 4-BFB	"	"	"	*80.0-120*		*97.6*	"	

North Creek Analytical, Inc.

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

Matthew Essig, Project Manager

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

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Tetra Tech, Inc.	Project:	Tumwater Brewhouse	Sampled: 1/20/97
15400 NE 90th, Ste 100	Project Number:	1278-02	Received: 1/21/97
Redmond, WA 98052	Project Manager:	Rick Osgood	Reported: 2/4/97 14:16

Volatile Organic Compounds by EPA Method 8240B
North Creek Analytical - Bothell

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
TUMWATER-GW7			**B701242-10**				**Water**	
Acetone	0170566	1/29/97	1/29/97		10.0	ND	ug/l	
Benzene	"	"	"		1.00	ND	"	
Bromodichloromethane	"	"	"		1.00	ND	"	
Bromoform	"	"	"		1.00	ND	"	
Bromomethane	"	"	"		1.00	ND	"	
2-Butanone	"	"	"		10.0	ND	"	
Carbon disulfide	"	"	"		1.00	ND	"	
Carbon tetrachloride	"	"	"		1.00	ND	"	
Chlorobenzene	"	"	"		1.00	ND	"	
Chloroethane	"	"	"		1.00	ND	"	
Chloroform	"	"	"		1.00	ND	"	
Chloromethane	"	"	"		1.00	ND	"	
Dibromochloromethane	"	"	"		1.00	ND	"	
1,1-Dichloroethane	"	"	"		1.00	ND	"	
1,2-Dichloroethane	"	"	"		1.00	ND	"	
1,1-Dichloroethene	"	"	"		1.00	ND	"	
cis-1,2-Dichloroethene	"	"	"		1.00	ND	"	
trans-1,2-Dichloroethene	"	"	"		1.00	ND	"	
1,2-Dichloropropane	"	"	"		1.00	ND	"	
cis-1,3-Dichloropropene	"	"	"		1.00	ND	"	
trans-1,3-Dichloropropene	"	"	"		1.00	ND	"	
Ethylbenzene	"	"	"		1.00	ND	"	
2-Hexanone	"	"	"		10.0	ND	"	
Methylene chloride	"	"	"		5.00	ND	"	
4-Methyl-2-pentanone	"	"	"		10.0	ND	"	
Styrene	"	"	"		1.00	ND	"	
1,1,2,2-Tetrachloroethane	"	"	"		1.00	ND	"	
Tetrachloroethene	"	"	"		1.00	ND	"	
Toluene	"	"	"		1.00	ND	"	
1,1,1-Trichloroethane	"	"	"		1.00	ND	"	
1,1,2-Trichloroethane	"	"	"		1.00	ND	"	
Trichloroethene	"	"	"		1.00	ND	"	
Vinyl chloride	"	"	"		1.00	ND	"	
Xylenes (total)	"	"	"		2.00	ND	"	
Surrogate: 1,2-DCA-d4	"	"	"	*80.0-120*		*106*	*%*	
Surrogate: Toluene-d8	"	"	"	*80.0-120*		*96.0*	"	
Surrogate: 4-BFB	"	"	"	*80.0-120*		*99.2*	"	

North Creek Analytical, Inc.

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Matthew Essig, Project Manager

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Environmental Laboratory Services

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Tetra Tech, Inc.	Project:	Tumwater Brewhouse	Sampled: 1/20/97
15400 NE 90th, Ste 100	Project Number:	1278-02	Received: 1/21/97
Redmond, WA 98052	Project Manager:	Rick Osgood	Reported: 2/4/97 14:16

Volatile Organic Compounds by EPA Method 8240B
North Creek Analytical - Bothell

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
TUMWATER-GW8			**B701242-11**				**Water**	
Acetone	0170566	1/29/97	1/29/97		10.0	ND	ug/l	
Benzene	"	"	"		1.00	ND	"	
Bromodichloromethane	"	"	"		1.00	ND	"	
Bromoform	"	"	"		1.00	ND	"	
Bromomethane	"	"	"		1.00	ND	"	
2-Butanone	"	"	"		10.0	ND	"	
Carbon disulfide	"	"	"		1.00	ND	"	
Carbon tetrachloride	"	"	"		1.00	ND	"	
Chlorobenzene	"	"	"		1.00	ND	"	
Chloroethane	"	"	"		1.00	ND	"	
Chloroform	"	"	"		1.00	ND	"	
Chloromethane	"	"	"		1.00	ND	"	
Dibromochloromethane	"	"	"		1.00	ND	"	
1,1-Dichloroethane	"	"	"		1.00	ND	"	
1,2-Dichloroethane	"	"	"		1.00	ND	"	
1,1-Dichloroethene	"	"	"		1.00	ND	"	
cis-1,2-Dichloroethene	"	"	"		1.00	ND	"	
trans-1,2-Dichloroethene	"	"	"		1.00	ND	"	
1,2-Dichloropropane	"	"	"		1.00	ND	"	
cis-1,3-Dichloropropene	"	"	"		1.00	ND	"	
trans-1,3-Dichloropropene	"	"	"		1.00	ND	"	
Ethylbenzene	"	"	"		1.00	ND	"	
2-Hexanone	"	"	"		10.0	ND	"	
Methylene chloride	"	"	"		5.00	ND	"	
4-Methyl-2-pentanone	"	"	"		10.0	ND	"	
Styrene	"	"	"		1.00	ND	"	
1,1,2,2-Tetrachloroethane	"	"	"		1.00	ND	"	
Tetrachloroethene	"	"	"		1.00	ND	"	
Toluene	"	"	"		1.00	ND	"	
1,1,1-Trichloroethane	"	"	"		1.00	ND	"	
1,1,2-Trichloroethane	"	"	"		1.00	ND	"	
Trichloroethene	"	"	"		1.00	ND	"	
Vinyl chloride	"	"	"		1.00	ND	"	
Xylenes (total)	"	"	"		2.00	ND	"	
Surrogate: 1,2-DCA-d4	"	"	"	*80.0-120*		*106*	*%*	
Surrogate: Toluene-d8	"	"	"	*80.0-120*		*96.8*	"	
Surrogate: 4-BFB	"	"	"	*80.0-120*		*101*	"	

North Creek Analytical, Inc.

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Tetra Tech, Inc.	Project:	Tumwater Brewhouse	Sampled: 1/20/97
15400 NE 90th, Ste 100	Project Number:	1278-02	Received: 1/21/97
Redmond, WA 98052	Project Manager:	Rick Osgood	Reported: 2/4/97 14:16

Volatile Organic Compounds by EPA Method 8240B
North Creek Analytical - Bothell

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
TUMWATER-GW15			**B701242-12**				**Water**	
Acetone	0170566	1/29/97	1/29/97		10.0	ND	ug/l	
Benzene	"	"	"		1.00	ND	"	
Bromodichloromethane	"	"	"		1.00	ND	"	
Bromoform	"	"	"		1.00	ND	"	
Bromomethane	"	"	"		1.00	ND	"	
2-Butanone	"	"	"		10.0	ND	"	
Carbon disulfide	"	"	"		1.00	ND	"	
Carbon tetrachloride	"	"	"		1.00	ND	"	
Chlorobenzene	"	"	"		1.00	ND	"	
Chloroethane	"	"	"		1.00	ND	"	
Chloroform	"	"	"		1.00	ND	"	
Chloromethane	"	"	"		1.00	ND	"	
Dibromochloromethane	"	"	"		1.00	ND	"	
1,1-Dichloroethane	"	"	"		1.00	ND	"	
1,2-Dichloroethane	"	"	"		1.00	ND	"	
1,1-Dichloroethene	"	"	"		1.00	ND	"	
cis-1,2-Dichloroethene	"	"	"		1.00	ND	"	
trans-1,2-Dichloroethene	"	"	"		1.00	ND	"	
1,2-Dichloropropane	"	"	"		1.00	ND	"	
cis-1,3-Dichloropropene	"	"	"		1.00	ND	"	
trans-1,3-Dichloropropene	"	"	"		1.00	ND	"	
Ethylbenzene	"	"	"		1.00	ND	"	
2-Hexanone	"	"	"		10.0	ND	"	
Methylene chloride	"	"	"		5.00	ND	"	
4-Methyl-2-pentanone	"	"	"		10.0	ND	"	
Styrene	"	"	"		1.00	ND	"	
1,1,2,2-Tetrachloroethane	"	"	"		1.00	ND	"	
Tetrachloroethene	"	"	"		1.00	ND	"	
Toluene	"	"	"		1.00	ND	"	
1,1,1-Trichloroethane	"	"	"		1.00	ND	"	
1,1,2-Trichloroethane	"	"	"		1.00	ND	"	
Trichloroethene	"	"	"		1.00	ND	"	
Vinyl chloride	"	"	"		1.00	ND	"	
Xylenes (total)	"	"	"		2.00	ND	"	
Surrogate: 1,2-DCA-d4	"	"	"	*80.0-120*		*107*	*%*	
Surrogate: Toluene-d8	"	"	"	*80.0-120*		*88.8*	"	
Surrogate: 4-BFB	"	"	"	*80.0-120*		*98.4*	"	

North Creek Analytical, Inc.

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Matthew Essig, Project Manager

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PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

Tetra Tech, Inc.	Project:	Tumwater Brewhouse	Sampled:	1/20/97
15400 NE 90th, Ste 100	Project Number:	1278-02	Received:	1/21/97
Redmond, WA 98052	Project Manager:	Rick Osgood	Reported:	2/4/97 14:16

Dry Weight Determination
North Creek Analytical - Bothell

Sample Name	Lab ID	Matrix	Result	Units
TUMWATER-SB3-4.0	B701242-02	Soil	93.2	%
TUMWATER-SB9-3.5	B701242-09	Soil	79.9	%
TUMWATER-SS8	B701242-13	Soil	85.4	%

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Tetra Tech, Inc.	Project:	Tumwater Brewhouse	Sampled: 1/20/97
15400 NE 90th, Ste 100	Project Number:	1278-02	Received: 1/21/97
Redmond, WA 98052	Project Manager:	Rick Osgood	Reported: 2/4/97 14:16

Hydrocarbon Identification by Washington DOE Method WTPH-HCID/Quality Control
North Creek Analytical - Bothell

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit / Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Batch: 0170389	**Date Prepared: 1/22/97**				**Extraction Method: EPA 3550**					
Blank	**0170389-BLK1**									
Gasoline Range Hydrocarbons	1/23/97			**ND**	mg/kg dry	**20.0**				
Diesel Range Hydrocarbons	"			**ND**	"	**50.0**				
Heavy Oil Range Hydrocarbons	"			**ND**	"	**100**				
Surrogate: 2-FBP	"	*DET*		*DET*	"	*50.0-150*	*107*			

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Tetra Tech, Inc.	Project:	Tumwater Brewhouse	Sampled: 1/20/97
15400 NE 90th, Ste 100	Project Number:	1278-02	Received: 1/21/97
Redmond, WA 98052	Project Manager:	Rick Osgood	Reported: 2/4/97 14:16

Diesel Hydrocarbons (C12-C24) by WTPH-D/Quality Control
North Creek Analytical - Bothell

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit / Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Batch: 0170457	**Date Prepared: 1/24/97**					**Extraction Method: EPA 3550**				
Blank	**0170457-BLK1**									
Diesel Range Hydrocarbons	1/27/97			**ND**	mg/kg dry	**10.0**				
Surrogate: 2-FBP	"	*11.5*		*8.43*	"	*50.0-150*	*73.3*			
LCS	**0170457-BS1**									
Diesel Range Hydrocarbons	1/27/97	68		62.0	mg/kg dry	59.0-135	91.2			
Surrogate: 2-FBP	"	*11.5*		*7.86*	"	*50.0-150*	*68.3*			
Duplicate	**0170457-DUP1**		**B701313-01**							**4**
Diesel Range Hydrocarbons	1/27/97		423	502	mg/kg dry			50.0	**17.1**	
Surrogate: 2-FBP	"	*16.5*		*13.0*	"	*50.0-150*	*78.8*			

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Tetra Tech, Inc.	Project: Tumwater Brewhouse	Sampled: 1/20/97
15400 NE 90th, Ste 100	Project Number: 1278-02	Received: 1/21/97
Redmond, WA 98052	Project Manager: Rick Osgood	Reported: 2/4/97 14:16

Diesel Hydrocarbons (C12-C24) and Heavy Oil (C24-C40) by WTPH-D (extended)/Quality Control
North Creek Analytical - Bothell

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit / Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Batch: 0170394	**Date Prepared: 1/22/97**					**Extraction Method: EPA 3520/600 Series**				
Blank	**0170394-BLK1**									
Diesel Range Hydrocarbons	1/23/97			**ND**	mg/l	**0.250**				
Heavy Oil Range Hydrocarbons	"			**ND**	"	**0.750**				
Surrogate: 2-FBP	"	*0.344*		*0.238*	"	*50.0-150*	*69.2*			
LCS	**0170394-BS1**									
Diesel Range Hydrocarbons	1/23/97	2.04		1.75	mg/l	52.0-131	85.8			
Surrogate: 2-FBP	"	*0.344*		*0.233*	"	*50.0-150*	*67.7*			
Duplicate	**0170394-DUP1**		**B701223-03**							**5**
Diesel Range Hydrocarbons	1/23/97		ND	ND	mg/l			44.0		
Surrogate: 2-FBP	"	*0.687*		*0.568*	"	*50.0-150*	*82.7*			
Duplicate	**0170394-DUP2**		**B701223-04**							
Diesel Range Hydrocarbons	1/23/97		0.396	0.478	mg/l			44.0	**18.8**	5
Surrogate: 2-FBP	"	*0.687*		*0.573*	"	*50.0-150*	*83.4*			

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Tetra Tech, Inc.	Project: Tumwater Brewhouse	Sampled: 1/20/97
15400 NE 90th, Ste 100	Project Number: 1278-02	Received: 1/21/97
Redmond, WA 98052	Project Manager: Rick Osgood	Reported: 2/4/97 14:16

Metals by EPA 6010/7000 Series Methods/Quality Control
North Creek Analytical - Bothell

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit / Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Batch: 0170427	**Date Prepared: 1/23/97**					**Extraction Method: BrCl Digestion**				
Blank	**0170427-BLK1**									
Mercury	1/23/97			**ND**	mg/l	**0.00100**				
LCS	**0170427-BS1**									
Mercury	1/23/97	0.005		0.00559	mg/l	70.0-130	112			
Duplicate	**0170427-DUP1**		**B701171-06**							
Mercury	1/23/97		ND	ND	mg/l			20.0		
Matrix Spike	**0170427-MS1**		**B701171-06**							
Mercury	1/23/97	0.005	ND	0.00595	mg/l	75.0-125	**119**			
Matrix Spike Dup	**0170427-MSD1**		**B701171-06**							
Mercury	1/23/97	0.005	ND	0.00605	mg/l	75.0-125	**121**	20.0	**1.67**	
Batch: 0170446	**Date Prepared: 1/23/97**					**Extraction Method: EPA 3010**				
Blank	**0170446-BLK1**									
Silver	1/24/97			**ND**	mg/l	**0.0200**				
LCS	**0170446-BS1**									
Silver	1/24/97	0.25		0.205	mg/l	75.0-125	82.0			
Duplicate	**0170446-DUP1**		**B701242-06**							
Silver	1/24/97		ND	ND	mg/l			20.0		
Matrix Spike	**0170446-MS1**		**B701242-06**							
Silver	1/24/97	0.25	ND	0.247	mg/l	75.0-125	**98.8**			
Matrix Spike Dup	**0170446-MSD1**		**B701242-06**							
Silver	1/24/97	0.25	ND	0.232	mg/l	75.0-125	**92.8**	20.0	**6.26**	
Batch: 0170447	**Date Prepared: 1/23/97**					**Extraction Method: EPA 3020**				
Blank	**0170447-BLK1**									
Arsenic	1/30/97			**ND**	mg/l	**0.00400**				
Lead	1/24/97			**ND**	"	**0.00200**				
Selenium	1/29/97			**ND**	"	**0.00500**				

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Tetra Tech, Inc.	Project: Tumwater Brewhouse	Sampled: 1/20/97
15400 NE 90th, Ste 100	Project Number: 1278-02	Received: 1/21/97
Redmond, WA 98052	Project Manager: Rick Osgood	Reported: 2/4/97 14:16

Metals by EPA 6010/7000 Series Methods/Quality Control
North Creek Analytical - Bothell

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit / Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
LCS	**0170447-BS1**									
Arsenic	1/30/97	0.05		0.0502	mg/l	75.0-125	100			
Lead	1/24/97	0.025		0.0235	"	75.0-125	94.0			
Selenium	1/29/97	0.025		0.0236	"	75.0-125	94.4			
Duplicate	**0170447-DUP1**		**B701242-04**							
Arsenic	1/30/97		0.00770	0.00740	mg/l			20.0	**3.97**	
Lead	1/24/97		0.00471	0.00400	"			20.0	**16.3**	5
Selenium	1/29/97		ND	ND	"			20.0		
Matrix Spike	**0170447-MS1**		**B701242-04**							
Arsenic	1/30/97	0.05	0.00770	0.0571	mg/l	70.0-130	**98.8**			
Lead	1/24/97	0.025	0.00471	0.0259	"	70.0-130	**84.8**			
Selenium	1/29/97	0.025	ND	0.0175	"	70.0-130	**70.0**			
Matrix Spike Dup	**0170447-MSD1**		**B701242-04**							
Arsenic	1/30/97	0.05	0.00770	0.0583	mg/l	70.0-130	**101**	20.0	**2.20**	
Lead	1/24/97	0.025	0.00471	0.0262	"	70.0-130	**86.0**	20.0	**1.41**	
Selenium	1/29/97	0.025	ND	0.0193	"	70.0-130	**77.2**	20.0	**9.78**	
Batch: 0170454	**Date Prepared: 1/23/97**					**Extraction Method: EPA 3010**				
Blank	**0170454-BLK1**									
Antimony	1/24/97			**ND**	mg/l	**0.100**				
Beryllium	"			**ND**	"	**0.00500**				
Cadmium	"			**ND**	"	**0.00500**				
Chromium	"			**ND**	"	**0.0100**				
Copper	"			**ND**	"	**0.0300**				
Nickel	"			**ND**	"	**0.0300**				
Thallium	"			**ND**	"	**0.200**				
Zinc	"			**ND**	"	**0.0200**				
LCS	**0170454-BS1**									
Antimony	1/24/97	1		0.882	mg/l	80.0-120	88.2			
Beryllium	"	1		0.875	"	80.0-120	87.5			
Cadmium	"	1		0.863	"	80.0-120	86.3			
Chromium	"	1		0.906	"	80.0-120	90.6			
Copper	"	1		0.905	"	80.0-120	90.5			
Nickel	"	1		0.904	"	80.0-120	90.4			
Thallium	"	1		0.817	"	80.0-120	81.7			

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Tetra Tech, Inc.	Project:	Tumwater Brewhouse	Sampled: 1/20/97
15400 NE 90th, Ste 100	Project Number:	1278-02	Received: 1/21/97
Redmond, WA 98052	Project Manager:	Rick Osgood	Reported: 2/4/97 14:16

Metals by EPA 6010/7000 Series Methods/Quality Control
North Creek Analytical - Bothell

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
LCS (continued)	**0170454-BS1**									
Zinc	1/24/97	1		0.873	mg/l	80.0-120	87.3			
Duplicate	**0170454-DUP1**		**B701242-06**							
Antimony	1/24/97		ND	ND	mg/l			20.0		
Beryllium	"		ND	ND	"			20.0		
Cadmium	"		ND	ND	"			20.0		
Chromium	"		ND	ND	"			20.0		
Copper	"		ND	ND	"			20.0		
Nickel	"		ND	ND	"			20.0		
Thallium	"		ND	ND	"			20.0		
Zinc	"		ND	ND	"			20.0		
Matrix Spike	**0170454-MS1**		**B701242-06**							
Antimony	1/24/97	1	ND	0.901	mg/l	80.0-120	**90.1**			
Beryllium	"	1	ND	0.888	"	80.0-120	**88.8**			
Cadmium	"	1	ND	0.885	"	80.0-120	**88.5**			
Chromium	"	1	ND	0.916	"	80.0-120	**91.6**			
Copper	"	1	ND	0.909	"	80.0-120	**90.9**			
Nickel	"	1	ND	0.893	"	80.0-120	**89.3**			
Thallium	"	1	ND	0.835	"	80.0-120	**83.5**			
Zinc	"	1	ND	0.907	"	80.0-120	**90.7**			
Matrix Spike Dup	**0170454-MSD1**		**B701242-06**							
Antimony	1/24/97	1	ND	0.902	mg/l	80.0-120	**90.2**	20.0	**0.111**	
Beryllium	"	1	ND	0.882	"	80.0-120	**88.2**	20.0	**0.678**	
Cadmium	"	1	ND	0.865	"	80.0-120	**86.5**	20.0	**2.29**	
Chromium	"	1	ND	0.896	"	80.0-120	**89.6**	20.0	**2.21**	
Copper	"	1	ND	0.876	"	80.0-120	**87.6**	20.0	**3.70**	
Nickel	"	1	ND	0.871	"	80.0-120	**87.1**	20.0	**2.49**	
Thallium	"	1	ND	0.798	"	80.0-120	**79.8**	20.0	**4.53**	6
Zinc	"	1	ND	0.884	"	80.0-120	**88.4**	20.0	**2.57**	

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Tetra Tech, Inc.	Project:	Tumwater Brewhouse	Sampled: 1/20/97
15400 NE 90th, Ste 100	Project Number:	1278-02	Received: 1/21/97
Redmond, WA 98052	Project Manager:	Rick Osgood	Reported: 2/4/97 14:16

Polychlorinated Biphenyls by EPA Method 8081/Quality Control
North Creek Analytical - Bothell

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit / Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Batch: 0170407	**Date Prepared: 1/23/97**				**Extraction Method: EPA 3550**					
Blank	**0170407-BLK1**									2,3
Aroclor 1016	1/30/97			**ND**	ug/kg dry	**50.0**				
Aroclor 1221	"			**ND**	"	**50.0**				
Aroclor 1232	"			**ND**	"	**50.0**				
Aroclor 1242	"			**ND**	"	**50.0**				
Aroclor 1248	"			**ND**	"	**50.0**				
Aroclor 1254	"			**ND**	"	**50.0**				
Aroclor 1260	"			**ND**	"	**50.0**				
Surrogate: TCX	"	*6.67*		*6.32*	"	*38.0-117*	*94.8*			
LCS	**0170407-BS1**									2,3
Aroclor 1260	1/30/97	333		304	ug/kg dry	37.0-98.0	91.3			
Surrogate: TCX	"	*6.67*		*5.93*	"	*38.0-117*	*88.9*			
Matrix Spike	**0170407-MS1**		**B701213-07**							2,3
Aroclor 1260	1/30/97	462	ND	345	ug/kg dry	37.0-98.0	**74.7**			
Surrogate: TCX	"	*9.25*		*10.2*	"	*38.0-117*	*110*			
Matrix Spike Dup	**0170407-MSD1**		**B701213-07**							2,3
Aroclor 1260	1/30/97	462	ND	329	ug/kg dry	37.0-98.0	**71.2**	38.0	**4.80**	
Surrogate: TCX	"	*9.25*		*9.96*	"	*38.0-117*	*108*			
Batch: 0170416	**Date Prepared: 1/23/97**				**Extraction Method: EPA 3520/600 Series**					
Blank	**0170416-BLK1**									2,3
Aroclor 1016	1/31/97			**ND**	ug/l	**0.100**				
Aroclor 1221	"			**ND**	"	**0.100**				
Aroclor 1232	"			**ND**	"	**0.100**				
Aroclor 1242	"			**ND**	"	**0.100**				
Aroclor 1248	"			**ND**	"	**0.100**				
Aroclor 1254	"			**ND**	"	**0.100**				
Aroclor 1260	"			**ND**	"	**0.100**				
Surrogate: TCX	"	*0.2*		*0.186*	"	*40.0-130*	*93.0*			
LCS	**0170416-BS1**									2,3
Aroclor 1260	1/31/97	10		9.17	ug/l	33.0-122	91.7			
Surrogate: TCX	"	*0.2*		*0.193*	"	*40.0-130*	*96.5*			

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Tetra Tech, Inc.	Project:	Tumwater Brewhouse	Sampled: 1/20/97
15400 NE 90th, Ste 100	Project Number:	1278-02	Received: 1/21/97
Redmond, WA 98052	Project Manager:	Rick Osgood	Reported: 2/4/97 14:16

Polychlorinated Biphenyls by EPA Method 8081/Quality Control
North Creek Analytical - Bothell

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit / Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
LCS Dup	**0170416-BSD1**									2,3
Aroclor 1260	1/31/97	10		8.71	ug/l	33.0-122	87.1	21.0	5.15	
Surrogate: TCX	"	*0.2*		*0.196*	"	*40.0-130*	*98.0*			
Batch: 0170551	**Date Prepared: 1/29/97**					**Extraction Method: EPA 3550**				
Blank	**0170551-BLK1**									2,3
Aroclor 1016	1/30/97			**ND**	ug/kg	**50.0**				
Aroclor 1221	"			**ND**	"	**50.0**				
Aroclor 1232	"			**ND**	"	**50.0**				
Aroclor 1242	"			**ND**	"	**50.0**				
Aroclor 1248	"			**ND**	"	**50.0**				
Aroclor 1254	"			**ND**	"	**50.0**				
Aroclor 1260	"			**ND**	"	**50.0**				
Surrogate: TCX	"	*6.67*		*6.28*	"	*38.0-117*	*94.2*			
LCS	**0170551-BS1**									2,3
Aroclor 1260	1/30/97	333		271	ug/kg	37.0-98.0	81.4			
Surrogate: TCX	"	*6.67*		*6.47*	"	*38.0-117*	*97.0*			
Matrix Spike	**0170551-MS1**		**B701339-01**							2,3
Aroclor 1260	1/30/97	333	ND	337	ug/kg	37.0-98.0	**101**			6
Surrogate: TCX	"	*6.67*		*7.35*	"	*38.0-117*	*110*			
Matrix Spike Dup	**0170551-MSD1**		**B701339-01**							2,3
Aroclor 1260	1/30/97	333	ND	324	ug/kg	37.0-98.0	**97.3**	38.0	**3.73**	
Surrogate: TCX	"	*6.67*		*7.36*	"	*38.0-117*	*110*			

North Creek Analytical, Inc.

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Tetra Tech, Inc.	Project:	Tumwater Brewhouse	Sampled: 1/20/97
15400 NE 90th, Ste 100	Project Number:	1278-02	Received: 1/21/97
Redmond, WA 98052	Project Manager:	Rick Osgood	Reported: 2/4/97 14:16

Volatile Organic Compounds by EPA Method 8240B/Quality Control
North Creek Analytical - Bothell

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit / Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Batch: 0170566	**Date Prepared: 1/29/97**				**Extraction Method: EPA 5030**					
Blank	**0170566-BLK1**									
Acetone	1/29/97			**ND**	ug/l	**10.0**				
Benzene	"			**ND**	"	**1.00**				
Bromodichloromethane	"			**ND**	"	**1.00**				
Bromoform	"			**ND**	"	**1.00**				
Bromomethane	"			**ND**	"	**1.00**				
2-Butanone	"			**ND**	"	**10.0**				
Carbon disulfide	"			**ND**	"	**1.00**				
Carbon tetrachloride	"			**ND**	"	**1.00**				
Chlorobenzene	"			**ND**	"	**1.00**				
Chloroethane	"			**ND**	"	**1.00**				
Chloroform	"			**ND**	"	**1.00**				
Chloromethane	"			**ND**	"	**1.00**				
Dibromochloromethane	"			**ND**	"	**1.00**				
1,1-Dichloroethane	"			**ND**	"	**1.00**				
1,2-Dichloroethane	"			**ND**	"	**1.00**				
1,1-Dichloroethene	"			**ND**	"	**1.00**				
cis-1,2-Dichloroethene	"			**ND**	"	**1.00**				
trans-1,2-Dichloroethene	"			**ND**	"	**1.00**				
1,2-Dichloropropane	"			**ND**	"	**1.00**				
cis-1,3-Dichloropropene	"			**ND**	"	**1.00**				
trans-1,3-Dichloropropene	"			**ND**	"	**1.00**				
Ethylbenzene	"			**ND**	"	**1.00**				
2-Hexanone	"			**ND**	"	**10.0**				
Methylene chloride	"			**ND**	"	**5.00**				
4-Methyl-2-pentanone	"			**ND**	"	**10.0**				
Styrene	"			**ND**	"	**1.00**				
1,1,2,2-Tetrachloroethane	"			**ND**	"	**1.00**				
Tetrachloroethene	"			**ND**	"	**1.00**				
Toluene	"			**ND**	"	**1.00**				
1,1,1-Trichloroethane	"			**ND**	"	**1.00**				
1,1,2-Trichloroethane	"			**ND**	"	**1.00**				
Trichloroethene	"			**ND**	"	**1.00**				
Vinyl chloride	"			**ND**	"	**1.00**				
Xylenes (total)	"			**ND**	"	**2.00**				
Surrogate: 1,2-DCA-d4	"	*12.5*		*12.3*	"	*80.0-120*	*98.4*			
Surrogate: Toluene-d8	"	*12.5*		*12.6*	"	*80.0-120*	*101*			
Surrogate: 4-BFB	"	*12.5*		*12.3*	"	*80.0-120*	*98.4*			

North Creek Analytical, Inc.

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

Matthew Essig, Project Manager

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SPOKANE ■ (509) 924-9200 ■ FAX 924-9290
PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

Tetra Tech, Inc.	Project:	Tumwater Brewhouse	Sampled: 1/20/97
15400 NE 90th, Ste 100	Project Number:	1278-02	Received: 1/21/97
Redmond, WA 98052	Project Manager:	Rick Osgood	Reported: 2/4/97 14:16

Volatile Organic Compounds by EPA Method 8240B/Quality Control
North Creek Analytical - Bothell

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Matrix Spike	**0170566-MS1**		**B701242-04**							
Benzene	1/29/97	5	ND	5.28	ug/l	80.0-120	**106**			
Chlorobenzene	"	5	ND	5.13	"	80.0-120	**103**			
1,1-Dichloroethene	"	5	ND	5.19	"	80.0-120	**104**			
Toluene	"	5	ND	5.08	"	80.0-120	**102**			
Trichloroethene	"	5	ND	5.28	"	80.0-120	**106**			
Surrogate: 1,2-DCA-d4	"	*12.5*		*13.0*	"	*80.0-120*	*104*			
Surrogate: Toluene-d8	"	*12.5*		*12.5*	"	*80.0-120*	*100*			
Surrogate: 4-BFB	"	*12.5*		*12.4*	"	*80.0-120*	*99.2*			
Matrix Spike Dup	**0170566-MSD1**		**B701242-04**							
Benzene	1/29/97	5	ND	5.24	ug/l	80.0-120	**105**	15.0	**0.948**	
Chlorobenzene	"	5	ND	5.07	"	80.0-120	**101**	15.0	**1.96**	
1,1-Dichloroethene	"	5	ND	5.11	"	80.0-120	**102**	15.0	**1.94**	
Toluene	"	5	ND	5.05	"	80.0-120	**101**	15.0	**0.985**	
Trichloroethene	"	5	ND	5.26	"	80.0-120	**105**	15.0	**0.948**	
Surrogate: 1,2-DCA-d4	"	*12.5*		*12.9*	"	*80.0-120*	*103*			
Surrogate: Toluene-d8	"	*12.5*		*12.5*	"	*80.0-120*	*100*			
Surrogate: 4-BFB	"	*12.5*		*12.3*	"	*80.0-120*	*98.4*			

North Creek Analytical, Inc.

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

Matthew Essig, Project Manager

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Tetra Tech, Inc.	Project:	Tumwater Brewhouse	Sampled: 1/20/97
15400 NE 90th, Ste 100	Project Number:	1278-02	Received: 1/21/97
Redmond, WA 98052	Project Manager:	Rick Osgood	Reported: 2/4/97 14:16

Notes and Definitions

#	Note
1	The hydrocarbons present are a complex mixture of diesel range and heavy oil range organics.
2	To reduce matrix interference, the sample extract has undergone sulfuric acid clean-up, method 3665, which is specific to hydrocarbon contamination.
3	To reduce matrix interference, the sample extract has undergone copper clean-up, method 3660, which is specific to sulfur contamination.
4	The sample chromatographic pattern does not resemble the fuel standard used for quantitation.
5	Analyses are not controlled on RPD values from sample concentrations less than 10 times the reporting limit.
6	The spike recovery for this QC sample is outside of established control limits. Review of associated batch QC indicates the recovery for this analyte does not represent an out-of-control condition for the batch.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
Recov.	Recovery
RPD	Relative Percent Difference

TETRA TECH, INC.
15400 NE 90th, Suite 100
Redmond, Washington 98052
(206) 883-1912
FAX (206) 881-6997

CHAIN OF CUSTODY

DOCUMENT B701242

PROJECT NAME: Tumwater Brewhouse | PROJECT NO.: 1278-02

SAMPLERS: (signature) Rick E. Osgood

Tt Contact:

SAMPLE ID	TIME	DATE	MEDIA: Air	Surface Water	Ground Water	Soil	Sediment	Water	NUMBER OF CONTAINERS	ANALYSIS: HCID	WTPH-D(extended)	VOCs	Priority Pollutant Metals	PCBs	WTPH-D	REMARKS
Trip Blank	—	1/20/97						X	2			X				B701242-01
Tumwater-SB3-4.0	0920					X			1	X						-02
Tumwater-GW1	0930				X				2		X					-03
Tumwater-GW2	1040				X				5		X	X				-04
Tumwater-GW3	1120				X				3			X	X			-05
Tumwater-GW4	1155				X				3			X	X			-06
Tumwater-GW5	1255				X				3			X	X			-07
Tumwater-GW6	1340				X				3			X	X			-08
Tumwater-SB9-3.5	1440					X			1					X		-09
Tumwater-GW7	1455				X				3			X		X		-10
Tumwater-GW8	1640				X				3			X	X			-11
Tumwater-GW15	1700				X				3			X	X			-12
Tumwater-SS8	1715					X			1						X	Hold for Analysis 13

RELINQUISHED BY (signature): Rick E. Osgood	DATE/TIME: 1/21/97 1350	TOTAL NUMBER OF CONTAINERS		RECEIVED FOR LAB BY (Signature): Nina Hulley	DATE/TIME: 1-21-97 13:50
RECEIVED BY (signature)	DATE/TIME	RELINQUISHED BY (signature)	DATE/TIME	CONDITION OF CONTENTS	TEMPERATURE UPON RECEIPT
RELINQUISHED BY (signature)	DATE/TIME	RECEIVED BY (signature)	DATE/TIME	REMARKS: STD TAT	
RECEIVED BY (signature)	DATE/TIME	METHOD OF SHIPMENT	AIRBILL NO.		

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PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

Tetra Tech, Inc.	Project:	Tumwater Brewhouse	Sampled: 1/20/97
15400 NE 90th, Ste 100	Project Number:	1278-02	Received: 2/12/97
Redmond, WA 98052	Project Manager:	Rick Osgood	Reported: 2/18/97 16:28

ANALYTICAL REPORT FOR SAMPLES:

Sample Description	Laboratory Sample Number	Sample Matrix	Date Sampled
TUMWATER-GW3	B702145-01	Water	1/20/97
TUMWATER-GW8	B702145-02	Water	1/20/97

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Tetra Tech, Inc.	Project:	Tumwater Brewhouse	Sampled: 1/20/97
15400 NE 90th, Ste 100	Project Number:	1278-02	Received: 2/12/97
Redmond, WA 98052	Project Manager:	Rick Osgood	Reported: 2/18/97 16:28

Dissolved Metals by EPA 6010/7000 Series Methods
North Creek Analytical - Bothell

Analyte	Batch Number	Date Prepared	Date Analyzed	Specific Method	Reporting Limit	Result	Units	Notes*
TUMWATER-GW3			**B702145-01**				**Water**	
Arsenic	0270290	2/18/97	2/18/97	EPA 7060A	0.00400	ND	mg/l	
Lead	"	"	"	EPA 7421	0.00200	**0.0126**	"	
TUMWATER-GW8			**B702145-02**				**Water**	
Arsenic	0270290	2/18/97	2/18/97	EPA 7060A	0.00400	**0.00620**	mg/l	
Lead	"	"	"	EPA 7421	0.00200	**0.0159**	"	

North Creek Analytical, Inc.

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

Matthew Essig, Project Manager

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Tetra Tech, Inc.	Project:	Tumwater Brewhouse	Sampled: 1/20/97
15400 NE 90th, Ste 100	Project Number:	1278-02	Received: 2/12/97
Redmond, WA 98052	Project Manager:	Rick Osgood	Reported: 2/18/97 16:28

Dissolved Metals by EPA 6010/7000 Series Methods/Quality Control
North Creek Analytical - Bothell

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit / Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Batch: 0270290	**Date Prepared: 2/18/97**					**Extraction Method: EPA 3020**				
Blank	**0270290-BLK1**									
Arsenic	2/18/97			**ND**	mg/l	**0.00400**				
Lead	"			**ND**	"	**0.00200**				
LCS	**0270290-BS1**									
Arsenic	2/18/97	0.0500		0.0478	mg/l	75.0-125	95.6			
Lead	"	0.0250		0.0264	"	75.0-125	106			
Duplicate	**0270290-DUP1**		**B702145-01**							
Arsenic	2/18/97		ND	ND	mg/l			20.0		
Lead	"		0.0126	0.0126	"			20.0	**0**	
Matrix Spike	**0270290-MS1**		**B702145-01**							
Arsenic	2/18/97	0.0500	ND	0.0515	mg/l	70.0-130	**103**			
Lead	"	0.0250	0.0126	0.0408	"	70.0-130	**113**			
Matrix Spike Dup	**0270290-MSD1**		**B702145-01**							
Arsenic	2/18/97	0.0500	ND	0.0486	mg/l	70.0-130	**97.2**	20.0	**5.79**	
Lead	"	0.0250	0.0126	0.0402	"	70.0-130	**110**	20.0	**2.69**	

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

North Creek Analytical, Inc.

Matthew Essig, Project Manager

18939 120th Avenue N.E., Suite 101, Bothell, WA 98011-9508
East 11115 Montgomery, Suite B, Spokane, WA 99206-4776
9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132

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PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

Tetra Tech, Inc.	Project:	Tumwater Brewhouse	Sampled: 1/20/97
15400 NE 90th, Ste 100	Project Number:	1278-02	Received: 2/12/97
Redmond, WA 98052	Project Manager:	Rick Osgood	Reported: 2/18/97 16:28

Notes and Definitions

#	Note
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
Recov.	Recovery
RPD	Relative Percent Difference

TETRA TECH, INC.
15400 NE 90th, Suite 100
Redmond, Washington 98052
(206) 883-1912
FAX (206) 881-6997

CHAIN OF CUSTODY

3-DAY TAT

DOCUMENT B701242

PROJECT NAME: Tumwater Brewhouse | PROJECT NO.: 1278-02

SAMPLERS: (signature) Rick E. Osgood

Tt Contact:

SAMPLE ID	TIME	DATE	MEDIA: Air	Surface Water	Ground Water	Soil	Sediment	Water	NUMBER OF CONTAINERS	ANALYSIS: HCID	WTPH-D (extended)	VOCs	Priority Pollutant Metals	PCBs	WTPH-D	Diss As + Pb	REMARKS
Trip Blank	—	1/20/97						X	2			X					B701242-01
Tumwater-SB3-4.0	0920					X			1	X							-02
Tumwater-GW1	0930				X				2		X						-03
Tumwater-GW2	1040				X				5		X	X	X				-04
Tumwater-GW3	1120				X				3			X	X				-05
Tumwater-GW4	1155				X				3			X	X				-06
Tumwater-GW5	1255				X				3			X	X				-07
Tumwater-GW6	1340				X				3			X	X				-08
Tumwater-SB9-3.5	1440					X			1					X			-09
Tumwater-GW7	1455				X				3			X		X			-10
Tumwater-GW8	1640				X				3			X	X				-11
Tumwater-GW15	1700				X				3			X	X				-12
Tumwater-SS8	1715					X			1						X		Hold for Analysis 13

RELINQUISHED BY (signature): Rick E. Osgood	DATE/TIME: 1/21/97/1350	TOTAL NUMBER OF CONTAINERS		RECEIVED FOR LAB BY (Signature): Nina Hawley	DATE/TIME: 1-21-97 13:50
RECEIVED BY (signature)	DATE/TIME	RELINQUISHED BY (signature)	DATE/TIME	CONDITION OF CONTENTS	TEMPERATURE UPON RECEIPT
RELINQUISHED BY (signature)	DATE/TIME	RECEIVED BY (signature)	DATE/TIME	REMARKS: STD TAT	
RECEIVED BY (signature)	DATE/TIME	METHOD OF SHIPMENT	AIRBILL NO.		

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