DRAFT
VOLUME I
REMEDIAL INVESTIGATION REPORT
NEW CITY CLEANERS
747 STEVENS BLVD.
RICHLAND, WASHINGTON

Prepared for

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1 INTRODUCTION

1.1 Purpose of Investigation

Paul and Bettie Haverluk, dba New City Cleaners, entered into Order No. 92TC-C180 ("Order") with the Washington Department of Ecology ("Ecology") to conduct environmental investigations at the New City Cleaners ("Site") at 747 Stevens Drive in Richland, Washington (Figure 1-1). The scope of the Order, issued pursuant to the Model Toxics Control Act (MTCA)[1], includes the following primary tasks: (1) a facility background history review, and (2) a remedial investigation study.

Specific to the remedial investigation, the Order requires the Haverluks to conduct an investigation of the Site in accordance with the scope and contents specified in WAC 173-340-350.

The Remedial Investigation (RI) Work Plan, including the Sampling and Analysis plan (the Work Plan) was completed and transmitted to Ecology on February 13, 1997 (EMCON, 1997a). The Work Plan was approved by Ecology by letter dated February 19, 1997. Additional interim deliverables specified in the Order have also been completed and submitted to Ecology as follows:

- The Public Participation Plan, March 6, 1997 (EMCON, 1997b).
- The Pre-investigation Evaluation of Cleanup Action Technologies Report, March 18, 1997 (EMCON, 1997c).
- The Site History Report, April 24, 1997 (EMCON, 1997d).
- Preliminary Phase 1 Investigation Results and Proposed Monitoring Well Locations, April 18, 1997 (EMCON, 1997e).
- Preliminary Data Transmittal, Phase 1 soil and groundwater, Phase 2 soil, July 17, 1997 (EMCON, 1997f).

[1] Chapter 173-340 WAC, *The Model Toxics Control Act*.

- Preliminary Data Transmittals, Phase 2 groundwater, July 25, 1997, October 22, 1997 (EMCON, 1997f,g).

- Monthly Status Reports, April through November, 1997.

This report summarizes the RI work performed and presents the results of the data obtained. Results presented herein include soil quality data, groundwater quality data, groundwater levels, and aquifer characterization test results.

1.2 Project Objectives

The RI was performed to provide information on soil and aquifer characteristics, investigate soil and groundwater quality, and identify indicator hazardous substances and their migration and fate. The overall project data quality objectives (DQOs) were to:

- Determine the nature and extent of contamination in soil and groundwater.

- Perform a baseline exposure evaluation covering human health and the environment.

- Assess compliance with MTCA and applicable, or relevant and appropriate requirements (ARARs).

- Evaluate potential remedial technologies and alternatives.

The soil RI objectives were to: (1) assess the nature and extent of potential surface and subsurface soil contamination from historic activities at the Site; (2) assess the soil and geology of the Site; and (3) characterize the physical parameters (e.g., soil types and grain size).

The groundwater RI objectives were to: (1) assess the nature and extent of potential groundwater contamination at the Site; and (2) further characterize the Site hydrogeology (e.g., occurrence of groundwater, flow direction, and aquifer characteristics).

1.3 Report Organization

The report is organized as follows:

- Section 2 provides a description of the Site and surrounding properties, a Site history review, an operations overview, and a brief summary of previous investigations.

- Section 3 describes the environmental setting of the area, including climate, surface water hydrology, regional geology and hydrogeology, and area water supply wells.
- Section 4 summarizes the RI site investigations.
- Section 5 discusses Site physical and ecological characteristics, including air, topography and features, geology, hydrogeology, surface water hydrology, and the stormwater drainage system.
- Section 6 summarizes the nature and extent of chemicals in soil and groundwater.
- Section 7 provides a conceptual site model, including contaminant sources, migration routes, and fate.
- Section 8 presents the results of the baseline exposure evaluation including both human health and environmental evaluations.
- Appendix A contains the sampling alteration checklists.
- Appendix B contains the lithologic logs.
- Appendix C provides field sampling data sheets for soil and groundwater
- Appendix D presents the soil chemistry and physical data.
- Appendix E presents survey and well development data.
- Appendix F presents the hydraulic conductivity test results.
- Appendix G contains the data validation reports.
- Appendix H contains the interim TPH evaluation.

2 SITE BACKGROUND

2.1 Site Description

The Site address is 747 Stevens Drive in the city of Richland, in Benton County, Washington (Figure 1). The Site consists of a 0.5-acre parcel of land including a one-level cinder block structure (approximate dimensions 100 feet by 40 feet) used as a dry cleaning business.

The Site is bounded on the east by Stevens Drive, on the north by a vacant lot, and on the south by a vehicle maintenance facility for the Richland School District. A former railroad spur, identified as the Hanford Works Railroad, is located on the west property line. A small drainage canal is located off-site immediately west of the railroad spur and flows to the north. The canal empties into the Columbia River approximately 1 mile from the Site. Across the canal to the west is a parking lot and baseball field associated with Carmichael Junior High School and Columbia High School. Across Stevens Drive, east of the Site, is a retail shopping center and mini-mart/service station. The Site is currently zoned for general commercial use, and, as such, is designated as "C2" by the city of Richland.

2.2 Site History and Ownership

Based on interviews with Paul Haverluk, review of records on file at the City of Richland Building Inspection Department, and review of aerial photos, the Site was developed sometime between 1948 and 1957. Based on discussions between EMCON and Hanford site historian Mary Kay Campbell (Mack Tech Co.) (June 1996), the facility was constructed as part of the Hanford Works project and was noted in the records as a "cleaner." The earliest records at the city of Richland available for the Site are dated April 1957; however, no building permit was available for the initial Site development.

Historical use of the property to the north of the Site includes use as a theater, coin shop, bookstore, and carpet store. Historical use of the property to the south of the Site since 1953 has included four auto dealership and service facilities, a tile company, and a vehicle maintenance facility for the Richland School District. Historical use of the property to the west has been the baseball field and parking for the high school; property to the east was formerly utilized as barracks as part of the Hanford Works Project.

2.3 Operations Overview

Historic management and handling of hazardous materials at the Site is summarized below, based on a review of Ecology's files for the Site and interviews with Mr. and Mrs. Haverluk (EMCON 1996, 1997).

The dry cleaning process at the Site used stoddard solvent, a petroleum-based fluid, as the primary cleaning agent from the time of Site development (approximately 1950) until 1974 when an additional process using tetrachloroethene (PCE) came into use. The stoddard solvent was stored in two underground storage tanks (USTs) located near the southwest corner of the building. The PCE was delivered and stored on site in drums. The drums were stored outside of the building on a rack near the southwest corner of the property on the south fence line (Figure 2-1). The drum rack was moved inside the facility in early 1975, following a release of an unknown quantity of PCE to the ground. At the time of the release, a valve on a drum on the rack was observed to be open. Mr. Haverluk's belief is the open valve was due to vandalism. Students from the adjacent school had been observed walking through the area prior to the observation of the open valve.

Waste generated from the stoddard solvent process included filtrate cake from a filter system using diatomaceous earth and/or carbon canisters from an in-line, continuous filtering process. Wastes generated from the PCE process also included filtrate cake from a centrifugal filter system and carbon canisters from an in-line, continuous filtering process. According to Mr. Haverluk, waste generated as part of the dry cleaning process prior to the early 1980s was typically placed in the on-site dumpster and taken to the local landfill for disposal. According to Mr. Haverluk, the dumpster was located in various areas behind (west) of the building. Mr. Haverluk also noted that stilling was seldom used to reclaim either the stoddard solvent or PCE during the period of his ownership and operation; on-site filtering was the preferred operation. Mr. Haverluk stated that, when generated, the still bottoms were typically placed in the dumpster.

Since the early 1980s, all process wastes have been handled under a contract with a waste handling and disposal firm (e.g., Safety Kleen). Mineral spirits are currently delivered to the Site in 55-gallon drums and stored in a locked shed behind the main building. PCE is delivered to the Site in 5-gallon containers and stored inside the building. The US EPA ID Number for the Site is WAD027332238. Based on a 1994 Form 2, Washington State Notification of Dangerous Waste Activities Report, on file with Ecology, waste types identified for the Site include mineral spirits and perchloroethylene. The Small Quantity Generators list identifies the wastes as spent halogenated solvents and other state-regulated wastes.

2.4 Previous Investigations

Two 1,200-gallon stoddard solvent USTs were removed from the Site on April 21, 1992. In addition, one 10,000-gallon UST, reportedly containing Bunker C fuel, and one 500-gallon UST, containing unknown substances (likely kerosene), were removed from the Site at the same time. Tank removal records on file with the Richland Fire Department identify the contents of the 500-gallon UST as kerosene. Approximate UST locations are shown on Figure 2-1.

As part of the UST removal work at the New City Cleaners site, soil and groundwater samples were collected from the UST excavations and other locations. Based on the findings of the assessments, the following hazardous substances were identified in soil and groundwater beneath the Site: PCE; trichloroethene (TCE); 1,2-dichloroethene (DCE); 1,2-dichloroethane; benzene, toluene, ethylbenzene, and total xylenes (BTEX); and total petroleum hydrocarbons (TPH).

Stockpiled soil (approximately 75 to 100 cubic yards), reportedly associated with the UST removals and additional investigations during April 1992, remain on plastic sheeting behind the building. The stockpiles occupy the majority of the area behind the building. A small stockpile (approximately 10 cubic yards) of broken asphalt is near the northwest corner of the Site. A minor amount of debris, including plastic sheeting, steel wire, and wood pallets is located on the southern property line behind the building.

Table 2-1 summarizes the analytical data generated by previous investigations at the Site (Technico, 1992; Novatech, 1992). Figure 2-2 shows the general locations where existing data were collected. Precise sampling locations have not been identified. Soil and groundwater samples were analyzed for volatile organic compound (VOC) analyses by EPA Methods 8260 and 624, and TPH by EPA Method 418.1.

Prior to and concurrent with UST removal activities at the Site, an environmental investigation was underway at the adjacent site to the south (former Spectrum property). This property is now owned by the Richland School District (RSD). The Spectrum property investigation involved the removal by RSD of four on-site USTs and the installation of five groundwater monitoring wells (MW-A through MW-E). Analysis of groundwater samples collected from those wells in 1991 and 1992 indicated the presence of PCE and TCE at concentrations exceeding MTCA Method A cleanup levels.

3 ENVIRONMENTAL SETTING

3.1 Climate

The climate of the Richland area is arid. Based on National Oceanic and Atmospheric Administration (NOAA) data for the city of Richland, the average annual precipitation at the Site is approximately 6 inches. The mean annual temperature is approximately 51 degrees Fahrenheit (F), with the winter months of December, January, and February being the coldest (average of 36 degrees F). Temperatures in the summer months routinely exceed 100 degrees F.

3.2 Surface Water Hydrology

A drainage canal currently parallels the western Site boundary, and is located west of the former railroad alignment (Figure 2-1). Based on historical photos (circa 1948), the canal bisected the Site and the adjacent site to the south prior to development (approximately 1950). The canal was relocated west of the site, presumably at the time of development, into the current location. The canal carries surface water runoff collected from upland areas to the south and west of the facility, including storm drains installed on Wellsian Way. The canal flows north past the site and empties into the Columbia River approximately 1 mile north of the Site.

3.3 Regional Geology

The area is underlain by three regionally extensive geologic units associated with the Columbia River: recent sandy silt alluvium, Quaternary glacial outburst flood deposits, and lacustrine silt and clay (Reidel and Fecht, 1994; Huntingdon, 1993). Figure 3-1 presents a generalized geologic cross-section of the area (Huntingdon, 1993). The alluvial silt and fine sand ranges from 12 to 25 feet thick. The outburst flood deposits, consisting of sand and gravel, typically bedded, with grain sizes ranging from medium sand to boulders, ranges from 25 to 40 feet thick. The lacustrine silt is at least 40 feet thick.

3.4 Regional Hydrogeology

Based on a review of well drillers' logs and environmental reports prepared by others in the vicinity of the Site, groundwater is encountered throughout the area in the gravelly

sand unit at depths approximately 10 to 30 feet below ground surface (bgs). Portions of the upper sandy silt unit may partially confine the gravelly sand aquifer, and are likely saturated below 8 to 12 feet bgs. Due to the confining condition, water levels in wells installed in the gravelly sand unit typically rise to 10 to 15 feet bgs.

Based on a review of environmental reports (by others) in the vicinity of the Site, the regional groundwater flow direction has been variously reported to be to the south, southeast, east, and northeast. Previous studies by the city of Richland indicate that groundwater in the aquifer flows generally from north to south (Huntingdon, 1993) in the vicinity of the Wellsian Way well field (see below). The historical groundwater flow direction(s) in the vicinity of the Site may have been influenced by the elevation of Columbia River and the pumping of the Wellsian Way well field.

3.5 Water Supply Wells

The Wellsian Way well field is comprised of several wells that serve as water supply wells for the city of Richland. The well field is located west of Wellsian Way beginning approximately 300 feet west-southwest of the Site and extends approximately 1 mile to the south. Well locations are shown on Figure 1-1.

Based on discussions with Roger Wright, city of Richland environmental engineer (March 1997), one or more wells in the Wellsian Way well field have operated on a continual basis from the 1940s to 1992. Between 1988 and 1992, only one well (D-5) was in service. Well D-5 is located approximately 1 mile south of the Site. In August 1992, Well D-5 was shut down due to the presence of PCE at concentrations up to 2.9 micrograms per liter (µg/L; equivalent to parts per billion [ppb]). Well D-5 is 76 feet deep, and is screened between 46 and 68 feet bgs. The well field was inactive until December 1996, when a groundwater treatment system was installed and well D-5 was reactivated. Water is currently extracted from the well at a rate of approximately 1,100 gallons per minute and treated in a air stripping unit located near Columbia High School. The well supplies potable water to the city of Richland. All other wells in the well field are either capped or currently inactive.

Ecology's files indicate that a release of unknown quantity occurred from a solvent tank in the vicinity of 500 Wellsian Way, located approximately one-half mile southwest of the Site and one-half mile northeast of D-5. The leak is believed to have occurred in 1993. Analysis of fluids from the tank in June 1993, indicated the presence of 1,1,1-trichloroethane (TCA), PCE, mineral spirits, and TPH.

4 SITE INVESTIGATION

The RI field work began in April 1997 and included investigations of the nature and extent of dry cleaning chemicals and petroleum fuels in soil and groundwater.

Ten Geoprobe™ borings were advanced, two deep soil borings were drilled, and four monitoring wells were drilled and installed as part of the investigation. In addition, 25 surface and 35 subsurface soil samples were collected for soil classification and chemical and physical analyses. Ten groundwater samples were collected from the Geoprobe borings and analyzed. The four new monitoring wells were developed and surveyed. Two existing off-site monitoring wells at the Richland School District property to the south were developed and surveyed at the same time as the new wells. Three quarterly groundwater sampling events (May, August, and November 1997) were conducted. Groundwater samples were collected and analyzed from each of the four new and two existing monitoring wells. An aquifer characterization study consisted of slug testing of two new monitoring wells and seven rounds (monthly) of water level measurements. Physical analyses including total organic carbon (TOC), grain size and vertical hydraulic conductivity were performed on select soil samples.

Work was performed consistent with the procedures described in the Work Plan and addendum, unless otherwise noted. Deviations from the general sampling procedures were brought to the attention of the EMCON project manager, and a sample alteration checklist was completed. Copies of the checklists are provided in Appendix A.

4.1 Soil

A total of 25 surface and 35 subsurface soil samples were collected. Surface samples were collected based on a grid pattern specified in the Work Plan at depths ranging from 0.5 to 1 foot bgs. Subsurface soil samples were collected from Geoprobe borings, drilled soil borings, and monitoring well boreholes. Subsurface soil samples were screened and logged consistent with the Work Plan. Boring logs, including screening results, are included in Appendix B.

Sampling locations were selected based on historic on-site uses and operations, data from previous investigations, the need to spatially distribute borings for statistical analyses, and the need to further characterize soil types and properties. Detailed rationale for soil

sampling location, frequency, and analyses is described in the Work Plan. Soil sample, soil boring, and monitoring well locations are shown on Figure 4-1.

4.1.1 Surface Soil

Surface soil samples were collected from 0 to 0.5 feet bgs at 25 locations at the Site. Field sampling data sheets for the soil samples are presented in Appendix C. All samples were collected at locations consistent with the Work Plan, except as noted below:

- Because of interferences with site structures (the shed and main building), the two southeasterly surface samples in the vicinity of GP-10 were deleted and replaced with sample B-7, located approximately 10 feet west of GP-10.

- The proposed surface samples identified in the Work Plan as GP-2, GP-6, and GP-9 were collected in the locations shown but were labeled as surface sample locations A-4, C-6, and E-4, respectively, and are reported as such in this report. Because of limited access in portions of the Site, the Geoprobe boring locations identified as GP-2, GP-6, and GP-9 were adjusted slightly from the proposed locations (see Section 4.1.2, below).

4.1.2 Subsurface Soil

Geoprobe Borings. Ten Geoprobe borings were advanced to approximately 25 feet bgs, in accordance with the Work Plan. The Geoprobe soil borings were advanced using a hydraulically driven 1.5-inch-diameter steel rod with carbide tip. Soil samples were collected using a lined, 24-inch-long polyethylene tube sampler. The samplers were driven using the hydraulic ram.

All Geoprobe borings locations, as well as sampling intervals and methods, were consistent with the Work Plan, except as noted below:

- Because of limited access in portions of the Site, the Geoprobe boring locations identified as GP-2, GP-6, and GP-9 were adjusted slightly (approximately 5 feet) to allow for rig access.

Soil Borings/Monitoring Wells. Four monitoring well boreholes were drilled to approximately 32 feet bgs and two soil borings were drilled to approximately 47 feet bgs. Soil boring and monitoring well boreholes were advanced using a hollow stem auger and Tubex (air-assisted) drilling rig. The Work Plan proposed three monitoring well borings. Based on the findings of the Geoprobe borings (Phase 1), and in accordance with the Work Plan, the following alterations occurred:

- One additional well (MW-4) was proposed and approved by Ecology, based on the findings of the Geoprobe borings, to further assess the soil and groundwater quality in the northeast corner of the Site. The proposed well locations and modifications were submitted to Ecology on April 18, 1997, and were approved per letter dated April 29, 1997.

- Two additional borings (SB-1, SB-2) were proposed and approved by Ecology, based on the findings of the Geoprobe borings, to further assess soil quality in locations of the former USTs. The proposed boring locations and modifications were submitted to Ecology on April 18, 1997, and were approved per letter dated April 29, 1997.

4.1.3 Soil Sampling and Analyses

Sample types, sampling frequency, and analyses performed for each sample were specified in the Work Plan. Laboratory parameters were selected based on historic Site activities and previously collected soil and groundwater data in the vicinity.

Surface and subsurface soil samples from the soil borings and monitoring well boreholes were submitted for chemical analyses. Per the Work Plan, all surface and subsurface soil samples were analyzed for VOCs, including BTEX. Twenty-three of the 35 subsurface samples were analyzed for TPH as gasoline (TPH-G), as diesel (TPH-D), as oil (TPH-O).

Four surface and seven subsurface soil samples were analyzed for TOC, two subsurface soil samples were analyzed for grain size distribution, and one subsurface soil sample was analyzed for vertical hydraulic conductivity.

Soil sample laboratory reports are presented in Appendix D.

4.2 Groundwater

4.2.1 Temporary Well Points

Ten Geoprobe borings were advanced at the Site during Phase 1 of the RI. Water samples were collected from temporary well points in accordance with the Work Plan, with the following exceptions:

- Based on the limited capacity of the small-diameter polyethylene bailer, the required sample quantities, and the total number of samples, a peristaltic pump was used to extract water samples from the temporary well points.

Representatives from Ecology were on-site during this phase of work and approved the alternative methodology.

4.2.2 Well Installation

Four monitoring wells were installed during RI activities ranging in depths of 31.75 to 32.5 feet bgs. Appendix B presents graphical well completion details. Survey data and well development data are presented in Appendix E.

Wells and piezometers were installed and developed consistent with procedures described in the Work Plan. The wells were surveyed for horizontal and vertical elevations as described in the Work Plan.

4.2.3 Groundwater Monitoring

The four on-site wells and two off-site (RSD) monitoring wells were used for monthly groundwater elevation monitoring as described in the Work Plan. Groundwater levels were measured monthly from May to November 1997. Monitoring well elevation data are summarized on Table 4-1.

4.2.4 Groundwater Sampling and Analyses

Three quarterly groundwater sampling events were conducted in May, August, and November 1997. Sample types, sampling frequency, and analyses performed for each sample were specified in the Work Plan. Groundwater Field Sampling Data Sheets are included in Appendix C.

Groundwater samples were collected from four on-site and two off-site monitoring wells during each sampling event. All groundwater samples were analyzed for VOCs, BTEX, TPH-G, TPH-D, TPH-O and field parameters (specific conductance, pH, temperature, dissolved oxygen, and turbidity).

Groundwater samples were collected consistent with procedures described in the Work Plan, with the following modifications:

- Because of equipment malfunction, turbidity measurements were not collected during the August 1997 groundwater sampling event

Groundwater sample laboratory reports are presented in Appendix D.

4.3 Aquifer Characterization

Horizontal hydraulic conductivity of the gravel and sand aquifer was estimated using the rising head slug test method in two monitoring wells, MW-1 and MW-4. Water levels were monitored with pressure transducers and programmable data loggers. The results were analyzed by methods presented in Cooper et al (1967) and Hvorslev (1951). Aquifer characterization information is presented in Appendix F.

4.4 Investigation Derived Waste

Residuals generated during the RI field activities were soil cuttings, decontamination rinsate water, and groundwater extracted during well development and purging. Ten 55-gallon drums of soil cuttings were generated and are currently stored on-site. Approximately 550 gallons of water were generated and placed in labeled and sealed 55-gallon drums, and are currently stored on-site.

5 SITE CHARACTERISTICS

5.1 Surface Topography and Features

The Site is relatively flat, with an elevation of approximately 355 feet above mean sea level. Asphalt pavement exists east of the fence on the south side of the main building, and along the east property line in front of the building. Water service is provided via buried piping along the north side of the main building. Sanitary sewer service is provided via buried piping from Stevens Drive to the southeast corner of the main building. No storm sewer facilities or dry wells were observed at the Site. Site features are shown on Figure 2-1.

5.2 Site Geology

Three geologic units were identified at the Site. A fourth geologic unit (Lower Silt Unit) likely exists below the site but was not encountered during the investigation. Figures 5-1 and 5-2 present generalized geologic cross sections of the Site. Cross section locations are shown on Figure 4-1. The four units are discussed below.

Fill and Silty Sand Unit. Surficial fill and native silty sand consisting of various mixtures of sand, gravel, and silt were encountered everywhere beneath the Site at a depth of 2 to 7 feet bgs. Backfilled excavations of former USTs consisted of sand and silt mixtures to depths of approximately 12 feet.

Upper Silt Unit. Native, brown to olive silt and sandy silt was encountered in every boring from approximately 2 to 7 feet bgs to approximately 25 feet bgs. The massive silt unit is interpreted as alluvial and fluvial sediment related to overbank deposits of the Columbia River.

Gravelly Sand Unit. Gray gravelly sand was encountered in every boring at approximately 25 feet bgs to a maximum depth of 47 feet bgs. According to Riedel and Fecht (1994), this regionally extensive unit is assumed to be 40 feet thick. The gravelly sand unit is interpreted as sediment related to fluvial and glacial outburst deposits related to the Columbia River. A poorly sorted, medium-grained 2- to 3-foot-thick sand with silt sub-unit lies at the top of the gravelly sand unit.

Lower Silt Unit. A regionally extensive silt and clay of unknown thickness is reported to lie beneath the gravel and sand unit (Riedel and Fecht, 1994).

5.2.1 Physical and Chemical Soil Parameters

Results of physical parameters soil testing are summarized in Table 5-1. Vertical hydraulic conductivities of the Site soils are discussed in Section 5.3.4. TOC values in surface soil samples ranged from 0.06 to 0.84 percent and subsurface soil samples ranged from 0.06 to 0.13 percent.

5.3 Site Hydrogeology

5.3.1 Hydrostratigraphic Units

Four hydrostratigraphic units have been identified at the Site: unsaturated fill and silty sand, upper silt aquitard, gravelly sand aquifer, and lower sand aquitard (Figures 5-1 and 5-2).

Unsaturated Fill and Silty Sand. The fill and silty sand units comprise the majority of the unsaturated soil beneath the Site. Portions of excavated backfill may be saturated below 8 feet bgs.

Upper Silt Aquitard. The upper silt aquitard is a low permeability layer that partially confines underlying aquifer. The upper silt aquitard is saturated below 8 feet bgs. Downward vertical migration of surface precipitation is impeded by the aquitard. Limited quantities of groundwater exist, and groundwater flow velocities are expected to be low (less than 0.1 ft/day).

Gravelly Sand Aquifer. The gravelly sand aquifer is partially confined by the overlying aquitard. The majority of groundwater beneath the Site occurs in the aquifer. The aquifer likely is hydraulically connected to the Columbia River, and is the same aquifer used for domestic water supply at the Wellsian Way well field.

Lower Silt Aquitard. The lower silt aquitard forms an impermeable base to the overlying aquifer, impeding downward vertical flow from the aquifer. The lower silt aquitard was not encountered during the RI, but reportedly is regionally extensive (Huntingdon, 1993).

5.3.2 Hydraulic Conductivity

A short-term, in situ, rising head test (slug test) was used to estimate the horizontal hydraulic conductivity of the gravelly sand aquifer at monitoring well. The results of slug test data and calculations used to estimate the hydraulic conductivity are presented in Appendix F. A sample of the upper silt unit was tested for vertical permeability.

Slug Tests. Slug tests were performed on monitoring wells MW-1 and MW-4 to estimate the hydraulic conductivity of the site-wide aquifer. The average hydraulic conductivity estimated from the slug tests was 1×10^{-2}. This value falls within the range of expected values for sandy aquifers (Freeze and Cherry, 1979).

Laboratory Permeameter Tests. Laboratory permeameter tests were performed on one undisturbed core samples from Geoprobe boring GP-1 to estimate the vertical permeability of the upper silt unit. The vertical permeability was estimated at 9.3×10^{-7} centimeters per second (cm/sec).

5.3.3 Groundwater Elevations, Flow Direction, and Flow Velocity

Groundwater elevations in monitoring wells installed in the gravelly sand aquifer rise to approximately 8 feet bgs, and appear to fluctuate at least 1 foot seasonally. Groundwater level measurements obtained from May 1997 through November 1997 are presented in Table 4-1.

Groundwater flow directions in the gravelly sand aquifer were based on monthly groundwater elevations measured in the four on-site and two off-site monitoring wells during May to November 1997. Groundwater elevation maps for June and November 1997 (Figures 5-3 and 5-4, respectively) indicate a general northeasterly groundwater flow direction during periods of both seasonally high and seasonally low groundwater elevations. Based on these elevations, the average horizontal hydraulic gradient for the Site is 0.0033 ft/ft.

Based on the horizontal hydraulic conductivity and gradient data, the average horizontal groundwater velocity in the gravelly sand aquifer is 0.3 ft/day.

6 NATURE AND EXTENT OF CONTAMINATION

6.1 Soil Quality

The following discussion addresses the surface and subsurface soil samples collected at the Site.

6.1.1 Surface Soil

Following is a discussion of the surface soil results by chemical class. (A comparison of soil results to Method B residential cleanup levels is provided in Section 6.4.4.)

6.1.1.1 TPH/BTEX

No surface soil samples contained detectable concentrations of BTEX. Surface soil samples were not analyzed for TPH-G, TPH-D, or TPH-O. Results are summarized in Table 6-1.

6.1.1.2 VOCs

Only two chemicals were detected in the 25 surface soil samples analyzed for (non-BTEX) VOCs: 14 samples contained PCE and 6 samples contained acetone, at maximum concentrations of 27 and 0.2 mg/kg, respectively. The highest PCE concentrations were detected west of the building at E-3, E-4, and G-4. The acetone was detected near the southwest of the building and approximately 40 feet northwest of the northwest building corner. Figure 6-1 presents the general distribution of VOCs in surface soil samples. Results are summarized in Table 6-2.

6.1.2 Subsurface Soil

Following is a discussion of the subsurface soil results by chemical class. (A comparison of soil results to Method B residential cleanup levels is provided in Section 6.4.4.)

6.1.2.1 TPH/BTEX

Hydrocarbon odors and possible sheens were noted at GP-5, GP-6, and GP-7. TPH-G, TPH-D, and TPH-O were detected in 4 of the 23 subsurface soil samples analyzed for TPH

with maximum concentrations of 2,300, 1,040, and 1,450 mg/kg, respectively. Results are summarized in Table 6-3.

The highest concentrations of TPH-G (GP-5 and GP-6) and TPH-D and TPH-O (SB-1) were found next to the former 1,200-gal USTs. TPH was detected in subsurface soil samples ranging in depth from 5 to 21.5 feet bgs and primarily in the upper silt unit at depths of 5 to 11 feet bgs. Figure 6-2 presents the general distribution of TPH in subsurface soil samples.

Benzene, toluene, and ethylbenzene were not detected in any of the samples analyzed. Total xylenes were detected in only one sample; GP-5-11 at an estimated concentration of 12 mg/kg.

6.1.2.2 VOCs

A total of 11 chemicals were detected in the 35 subsurface soil samples analyzed for (non-BTEX) VOCs. The chlorinated hydrocarbons PCE (27 detections), TCE (10 detections), and cis-1,2-DCE (4 detections) were detected at maximum concentrations of 7.5, 0.95, and 26 mg/kg, respectively. The other six chemicals (acetone and five alkene-aromatic complexes) were detected in only one or two samples, generally at concentrations in the low mg/kg range. These other chemicals may be attributed to impurities present in stoddard solvent. Results are summarized in Table 6-4.

The maximum concentrations of PCE detected in subsurface soil samples were collected near the former drum rack area (MW-1, GP-1) and near the former 1,200-gal USTs (GP-5, GP-6) hydraulically downgradient of former drum rack area (Figure 6-3). Their vertical and lateral migration from the suspected source area (former drum rack area) is likely related to groundwater transport (Section 8).

6.1.3 Statistical Summary of Soil Results

Table 6-5 provides a statistical summary of the surface and subsurface soil results, including number of samples analyzed, detections, MDLs, average, minimum, maximum, the statistical distribution, and the upper 95 percent confidence limit on mean soil concentrations (UCL95).

6.2 Groundwater

The following discussion includes the groundwater samples collected from Geoprobe borings and from the first two quarterly RI groundwater sampling events.

6.2.1 TPH/BTEX

6.2.1.1 Geoprobe Samples

TPH-G was detected in the six samples analyzed and TPH-D was detected in two of the six samples analyzed. Maximum TPH-G and TPH-D concentrations were 6.4 and 0.5 mg/L, respectively. The highest TPH detections were found near the former 1,200-gal USTs (GP-5, GP-6, GP-7). Benzene, toluene, and ethylbenzene were not detected in any of the 10 samples analyzed. Total xylenes were detected in one sample at a concentration of 0.26 mg/L (GPW-5).

6.2.1.2 Monitoring Well Samples

None of the monitoring well samples collected in either sampling round contained detectable concentrations of TPH-G, TPH-D, TPH-O, or BTEX. Results are summarized in Table 6-6. Figure 6-4 presents the TPH-G detections in Geoprobe boring groundwater samples.

6.2.2 VOCs

6.2.2.1 Geoprobe Samples

Four chemicals were detected in the Geoprobe groundwater samples analyzed for (non-BTEX) VOCs. Chlorinated hydrocarbons PCE (10 detections), TCE (4 detections), and cis-1,2-DCE (2 detections) were detected at maximum concentrations of 4.3, 3.5, and 2.3 mg/L, respectively. The highest concentrations of PCE were found near or hydraulically downgradient of the former drum rack area. TCE and cis-1,2-DCE were detected hydraulically downgradient of the former drum rack area. One other chemical (1,2,4-trimethylbenzene) was detected in only one sample (GPW-5) at a concentration of 0.49 mg/L. This chemical may be attributed to impurities present in stoddard solvents. Results are summarized in Table 6-7.

Figure 6-4 presents Geoprobe groundwater sampling results.

6.2.2.2 Monitoring Well Samples

Four chemicals were detected in the monitoring well groundwater samples analyzed for (non-BTEX) VOCs. Only the chlorinated hydrocarbons PCE, TCE, and cis-1,2-DCE were detected in two or more wells during each round. The other chemicals (cis-1,2-DCE and chloroform) were detected in only one well. PCE was detected at all on-site monitoring wells samples from both sampling events. Cis-1,2-DCE was detected in both rounds in the sample from off-site well MW-E at concentrations of 0.0006 to

0.0008 mg/L. Chloroform was only detected in the August sampling round in well MW-D at 0.0009 mg/L. Results are summarized in Table 6-8.

Maximum PCE and TCE concentrations in on-site monitoring well samples were 0.065 (MW-2), and 0.0058 mg/L (MW-2), respectively. None of the on-site well samples contained detectable concentrations of cis-1,2-DCE.

Maximum PCE, TCE, and cis-1,2-DCE concentrations in off-site monitoring well samples were 0.039 (MW-E), 0.0061 (MW-E), and 0.0008 mg/L (MW-E), respectively.

Figure 6-5 presents on-site monitoring well sampling results for PCE and TCE.

6.2.3 Field Parameters

6.2.3.1 Geoprobe Samples

Specific conductance ranged from 1,110 to 1,542 µS/cm. Turbidity (which reflects the amount of particulate matter in a sample) ranged from 56.6 to greater than 1,000 NTU. Measurements generally exceeded 1,000 NTU, indicating significant particulate matter in the Geoprobe samples. Measurements of pH ranged from 6.98 to 7.45. Dissolved oxygen (DO) measurements ranged from 0.89 to 6.58 mg/L. The DO measurements indicated generally aerobic conditions in groundwater at the Geoprobe sampling locations, except at GP-5. Strong hydrocarbon odors were noted at this location. Temperature measurements ranged from 11.0 to 17.0 °C.

6.2.3.2 Monitoring Well Samples

Specific conductance in on-site and off-site monitoring well samples ranged from 813 to 1,725 µS/cm. Turbidity ranged from 2.0 to 101 NTU. Measurements of pH ranged from 7.03 to 7.60. Dissolved oxygen was not measured in the monitoring well samples. Temperature measurements ranged from 14.2 to 19.1 °C.

6.2.4 Statistical Summary of Groundwater Results

Table 6-9 provides a statistical summary of the monitoring well groundwater results.

6.3 Discussion of Results

Remedial investigation field explorations and laboratory analyses indicate that the primary environmental impacts at the New City Cleaners site include: 1) petroleum hydrocarbons in subsurface soil and groundwater related to releases of stoddard dry cleaning solvent and possibly from releases of heating fuel (Bunker C and kerosene), and 2) chlorinated

hydrocarbons in surface soil, subsurface soil, and groundwater related to releases of PCE. Acetone and alkene-aromatic complexes were detected in a limited extent and at generally low concentrations (<0.2 mg/kg). No free product was observed in any soil or groundwater samples. Petroleum hydrocarbon-like odors and sheens were noted at GP-5, GP-6, and GP-7 near the former 1,200-gal USTs. These hydrocarbons likely are the result of releases from these USTs. None of the chlorinated hydrocarbon concentrations detected in RI soil or groundwater samples indicated free product from the suspected PCE release at the former drum storage area. PCE is highly mobile and likely volatilized to the atmosphere and dispersed in the subsurface following the suspected release. Existing PCE concentrations indicate a release of PCE from one or several locations at the Site.

The highest concentrations of petroleum hydrocarbons in soil and dissolved in groundwater were primarily found near or downgradient of the former 1,200-gal USTs. The highest concentrations of VOCs, primarily PCE, in soil and dissolved in groundwater were primarily found near or downgradient of the former drum rack storage area and west of the building. Dissolved VOCs, primarily PCE, were detected in every Geoprobe and monitoring well groundwater sample at the Site, indicating dispersion of PCE from one or several sources. TCE and cis-1,2-DCE detected in soil and groundwater samples collected downgradient of the former drum rack storage area at GP-5 and GP-6 likely are derived from the natural biodegradation of PCE.

7 CONCEPTUAL SITE MODEL

7.1 Conceptual Site Model

The conceptual site model (CSM), which was first developed based on historic Site operations and data from previous site investigations, was re-evaluated in light of the RI results. The updated model, shown in Figure 7-1, summarizes potential contaminant sources, release mechanisms, routes of exposure, and receptors. Primary model components and updates are discussed below.

7.2 Chemicals of Concern

Primary chemicals of concern for the Site are petroleum hydrocarbons (gasoline, diesel, and oil range), PCE, and TCE. These constituents are elevated in both soil and groundwater. The gasoline-range hydrocarbons are attributed to stoddard dry cleaning solvent because gasoline was reported not to have been used at the Site. Diesel and oil-range hydrocarbons are attributed to heating fuels stored in USTs.

7.2.1 Contaminant Sources

Potential contaminant sources are as indicated on the CSM. The Site is active, but potential sources of contamination from dry cleaning operations are currently strictly managed. Based on the results of the RI, it appears that historic releases of stoddard solvent from the former 1,200-gal USTs and releases of PCE from the former drum storage rack area are the most significant sources of contamination. Releases of petroleum hydrocarbons from the former Bunker C and kerosene USTs are considered secondary sources of TPH.

7.3 Contaminant Migration

Free product was not observed during the investigation. Chemical concentrations detected in RI groundwater samples are relatively low, suggesting the absence of residual product beneath the Site, although samples from test pits excavated in 1992 contained PCE concentrations suggesting the presence of product. The low permeability of the upper silt unit typically attenuates downward vertical migration of VOCs. Releases of VOCs likely were limited in quantity, based on descriptions of past practices and site

history. Site hydrogeology, historical site operations, and chemical and product characteristics, therefore, all contributed to limit chemical migration from the Site.

Contaminants in the subsurface migrated historically and currently migrate predominantly as a dissolved phase by advection with unsaturated soil pore water and with groundwater. Volatilization of the VOCs and migration as a vapor in unsaturated soil is considered limited.

7.3.1 Migration Routes and Receptors

Field observations and laboratory results indicate that chemicals have migrated into and through the soil, reaching groundwater. Chemical movement to soil and groundwater represents a primary migration pathway. Infiltration and percolation of precipitation to groundwater in the past was a significant pathway for the transport of VOCs based on their relatively high leachability and mobility in subsurface soil and groundwater.

Groundwater flow, and therefore chemical transport, during non- or limited pumping periods of the Wellsian Way well field, is northeasterly, primarily towards the Columbia River (Lake Wallula). Contaminant concentrations in monitoring well MW-4 and the general non-pumping groundwater flow direction indicate that chlorinated hydrocarbons have migrated to the northeast.

Storm water runoff from the Site is conveyed to off-site surface water, though RI results indicate that this is not a significant pathway in part due to the high volatility of chemicals on-site. Water levels in the stormwater ditch west of the Site approximates those of the potentiometric surface. It is unknown if the ditch is hydraulically connected to the sand aquifer beneath the Site, or if the ditch contributes to, or receives subsurface chemicals at the Site. The ditch ultimately discharges into the Columbia River

Entrainment and transport of chemicals in air can occur through volatilization or dust emissions. Due to the limited extent and concentration of VOCs in surface soil, this is not considered a significant migration route for the Site.

7.4 Contaminant Fate

Both petroleum and chlorinated hydrocarbons are subject to natural attenuation processes that tend to decrease their concentrations at the surface and in the subsurface. The reduction of concentrations by mass transfer (volatilization, dispersion, dilution by mixing with infiltrating precipitation), chemical breakdown (biodegradation, photolysis), and chemical isolation (adsorption to soil) are all indicated in the distribution and concentration of contamination at the Site to a limited or to a significant degree. Reduction rates, however, have not been quantified. These processes will continue to operate at the Site.

8 BASELINE EXPOSURE EVALUATION

The soil and groundwater data were evaluated for human health and ecological risks consistent with MTCA and with the land and water uses at the Site. The human health evaluation was quantitative, and it consisted of the following components:

- Selection of indicator hazardous substance (IHSs)
- Evaluation of exposure pathways for the reasonable maximum exposure (RME) scenario
- Toxicity assessment for IHSs
- Characterization of risks for selected IHSs and completed exposure pathways

The environmental evaluation was semi-quantitative, and it consisted of the following components:

- Selection of IHSs
- Evaluation of exposure pathways

8.1 Land and Water Use

The Site is zoned and used for commercial purposes: a dry cleaning facility. Surrounding properties to the south, east, and north are also used for commercial purposes, including motor car agencies, service stations, a grocery store, and a retail store. The property directly west of the Site, however, is a public high school, and students have been observed trespassing on the Site. Method B residential soil cleanup levels (CULs) were used for evaluating soil conditions on site.

Groundwater occurs approximately 10 feet bgs and it appears to flow generally northeast toward Lake Wallula, part of the Columbia River, approximately a half mile east of the Site. The aquifer is used for drinking water, though there are no drinking water wells currently in use within a half mile of the Site. Well D-5 of the Wellsian Way public water supply field, located a mile south of the Site, is being used, and the water is treated for VOCs with an air stripper prior to distribution to consumers. Method B residential groundwater CULs were used for evaluating groundwater conditions on site.

A seasonal stormwater drainage ditch, located west of the Site, leads to Lake Wallula. The drainage ditch supports a limited community of terrestrial vegetation, but it is ephemeral and is not expected to support aquatic life. Lake Wallula is a Class A water body, which can be used for domestic water supply, stock watering, fish and shellfish habitat, wildlife habitat, recreation, commerce, and navigation. A search of the Washington Department of Fish and Wildlife's Priority Habitat and Species Database identified no threatened or endangered species in the vicinity of the Site. Federal water quality criteria (WQC) were used for evaluating the impacts to the aquatic community from groundwater discharges to surface water.

8.2 Human Health Evaluation

8.2.1 Indicator Hazardous Substances

IHS selection considered the following criteria consistent with MTCA:

- Toxicological characteristics
- Chemical and physical characteristics governing mobility and persistence
- Natural background concentrations
- Thoroughness of testing
- Frequency of detection
- Degradation by-products

8.2.1.1 Indicator Hazardous Substances in Soil

Soil IHSs were selected by comparing the maximum concentration of each analyte detected in surface soil and in subsurface soil to its MTCA Method B soil CUL for protection of groundwater, provided in CLARC[2] (Table 8-1). The soil CUL for protection of groundwater is derived by multiplying the Method B groundwater CUL by a dilution/attenuation factor of 100, and it is always lower than the soil CUL for direct contact. Using the soil CUL for protection of groundwater, therefore, is protective for both exposure pathways. If the maximum value detected in soil exceeded the CUL for protection of groundwater, the analyte was selected as a preliminary IHS in soil. Otherwise, the analyte was eliminated as an IHS in soil.

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[2] Ecology. 1996. Model Toxics Control Act Cleanup Levels and Risk Calculations (CLARC II) Update. Publication #94-145 (updated 1/96). Washington State Department of Ecology, Olympia, Washington.

CULs are not available for the following analytes detected in soil due to lack of toxicity data:

- n-Propylbenzene
- 1,3,5-Trimethylbenzene
- tert-Butylbenzene
- 1,2,4-Trimethylbenzene
- sec-Butylbenzene
- 4-Isopropyltoluene
- n-Butylbenzene.

These analytes were eliminated as IHSs because no toxicity data appears in the literature. Their detection frequencies were low, either 3 percent (for n-propylbenzene and tert-butylbenzene) or 6 percent (for the other analytes), so their elimination as IHSs is not expected to substantially affect the assessment of impacts at the Site.

Method B CULs are not provided for petroleum analytes in CLARC, so the maximum concentrations of TPH-G, TPH-D, and TPH-O were compared to Method A CULs, which are intended to protect both direct contact and groundwater (Table 8-1).

The maximum concentrations of cis-1,2-DCE, PCE, TCE, TPH-G, TPH-D, and TPH-O exceeded their respective soil CULs for protection of groundwater. These analytes comprised the list of preliminary IHSs, which were evaluated for the additional criteria for IHS selection. Since the preliminary list of IHSs was relatively short, no IHSs were eliminated on the basis of chemical or physical characteristics governing mobility or persistence. Natural background concentrations are relevant to metals, but not to VOCs. No IHSs were eliminated on the basis of natural background concentrations. The sampling plan was designed for evaluating the nature and extent of contamination and for selecting IHSs, so thoroughness of testing was not considered an issue. The frequencies of detection for the preliminary IHSs range from 13 percent (TPH-O) to 77 percent (PCE in subsurface soil), so no IHSs were eliminated on the basis of frequency of detection. TCE and cis-1,2-DCE are typical breakdown products of PCE. No IHSs were eliminated or added on the basis of degradation by-products.

The following analytes were selected as human health IHSs for soil:

- Cis-1,2-DCE
- PCE
- TCE
- TPH-G
- TPH-D

- TPH-O

PCE was selected as an IHS in both surface soil and subsurface soil. The other analytes were selected as IHSs in subsurface soil only.

8.2.1.2 Indicator Hazardous Substances in Groundwater

Groundwater IHSs were selected by comparing the maximum concentration of each analyte detected in groundwater samples from monitoring wells to its MTCA Method B groundwater CUL, provided in CLARC (Table 8-2). Geoprobe samples were not used, because they were not collected from properly developed wells and were collected for screening purposes only. If the maximum value detected in groundwater exceeded the CUL, the analyte was selected as an IHS in groundwater. Otherwise, the analyte was eliminated as a preliminary IHS in groundwater.

Although upper 95 percent confidence limits on the means (UCL95s) were calculated for most of the analytes detected in groundwater, maximum concentrations were used for selecting IHSs because the calculated UCL95s exceeded the maximum detected values. (UCL95s were not calculated for analytes detected in soil). The UCL95 is often greater than the maximum detected value when most of the results are near or below the detection limit and there is one large value. In such cases, the distribution might fit the criteria for a lognormal distribution, but the statistics are unreliable. The UCL95 calculated for PCE from monitoring well data was less than the maximum detected value, so its UCL95 was used for IHS screening. The distribution of PCE results is normal, with many detected values, so the statistics are reliable for this analyte.

The maximum detected concentrations of PCE and TCE exceeded their respective groundwater CULs. These analytes comprised the list of preliminary IHSs, which were evaluated for the additional criteria for IHS selection. For the same reasons discussed above for soil, no IHSs were eliminated (or added) on the basis of chemical or physical characteristics governing mobility or persistence, natural background concentrations, thoroughness of testing, frequency of detection, or degradation by-products.

The following analytes were selected as human health IHSs for groundwater:

- PCE
- TCE

8.2.2 Reasonable Maximum Exposure Assessment

The IHSs selected for soil and groundwater were evaluated to determine which exposure pathways are or could be complete for human receptors (Table 8-3). The conceptual site

model (Figure 7-1) summarizes the exposure pathways for both human health and ecological receptors. Exposures were evaluated for Site workers, area workers, trespassers, and groundwater consumers.

PCE was selected as an IHS in surface soil. Since the Site is largely unpaved and unvegetated, Site workers and trespassers could be exposed through direct contact (i.e., incidental ingestion and dermal absorption) with the soil. Site workers who are at the Site on a daily basis likely receive larger exposures than trespassers, who are not at the Site regularly. Dermal absorption from soil is difficult to evaluate; MTCA does not address this exposure pathway. Site workers, area workers, and trespassers could be exposed through inhalation of airborne dust raised from the uncovered soil. Since PCE is volatile, Site workers, area workers, and trespassers could also be exposed to vapors from the soil. Inhalation of dust and vapors in an outdoor setting are usually considered to contribute a negligible portion of exposure compared to direct contact with soil, so inhalation pathways were not evaluated quantitatively.

Cis-1,2-DCE, PCE, TCE, TPH-G, TPH-D, and TPH-O were selected as IHSs in subsurface soil. Site workers and trespassers could come into contact with subsurface soil if the soil was disturbed (e.g., by excavation or trenching). Site workers, area workers, and trespassers could inhale dust raised from disturbed subsurface soil. Otherwise, the surface soil acts as a barrier for these two routes of exposure. Because most of the IHSs (with the exception of TPH-D and TPH-O) are volatile, site workers, area workers, and trespassers could be exposed to vapors from the subsurface soil. As discussed above for surface soil, inhalation pathways were not evaluated quantitatively.

PCE and TCE were selected as IHSs in groundwater. No drinking water well is present at the Site, but the northern limit of the Wellsian Way public water supply well field is 0.25 mile southwest of the site. At present, only the southern-most well in the well field is being used, and no influence from that well has been observed at the Site. Groundwater flow beneath the Site appears to be in a northeasterly direction away from the well field, so it is unlikely that the plume at the Site could intersect the well field. There are no exposure pathways to the groundwater at present.

In the future, if the wells at the northern end of the well field were used, the radius of influence could change so that the plume beneath the Site could be drawn toward the well field. Even if this was to occur, however, the water from the well field is being treated with an air stripper that removes VOCs. Given the operation of this treatment, there appears to be no potential future exposure pathways to VOCs in the groundwater for consumers of the Wellsian Way public water supply.

If a well was drilled on the Site, however, users could be exposed through ingestion of the water, inhalation of vapors from the water, and dermal absorption of chemicals during skin contact with the water. Vapor formation would be highest when the water was heated

(e.g., for cleaning or bathing activities). Skin contact would be greatest during bathing. If Site use remained consistent with the current commercial use, ingestion and inhalation would likely be the most important exposure pathways. The CULs for groundwater are based on residential use, including ingestion of the water and, for VOCs, inhalation of vapors from the water.

Human health risks were calculated for the following exposure pathways:

- Current pathway: incidental ingestion of surface soil by Site workers
- Potential future pathway: incidental ingestion of subsurface soil by Site workers during excavation or trenching activities
- Potential future pathway: ingestion of, and inhalation of vapors from, groundwater from a well drilled on the Site

8.2.3 Toxicity Assessment

Toxicity values for cancer and noncancer health effects are listed in CLARC. The toxicity values listed in CLARC for the soil and groundwater IHSs were checked in USEPA's Integrated Risk Information System (IRIS) database to ensure they were current. None of the toxicity values had been updated in IRIS since CLARC was published, so the CULs listed in CLARC are still valid.

8.2.4 Risk Characterization

The noncancer risk result for an individual chemical is called the hazard quotient (HQ). MTCA defines an acceptable HQ as 1 or less. The total noncarcinogenic risk result for multiple chemicals is called the hazard index (HI). The acceptable HI is also 1 or less. An HQ or HI greater than 1 does not necessarily mean that noncancer health effects will occur, but it does indicate concern for potential effects.

Cancer risk results are expressed as excess lifetime cancer risk: the incremental probability of an individual developing cancer over a lifetime as a result of exposure to a carcinogen. This incremental excess risk is in addition to the nationally observed risk of cancer (2.5×10^{-1}, or one person in four)[3], which is due to such factors as diet, smoking, and natural radiation. Cancer risks are usually presented in scientific notation; the notation 1×10^{-6} means 0.000001 or 1 in a million. MTCA defines an acceptable cancer risk in a

[3] National Toxicology Program. 1991. Sixth Annual Report on Carcinogens. Summary. U.S. Department of Health and Human Services, National Toxicology Program, Research Triangle Park, North Carolina.

residential setting as 1×10^{-6} or less for an individual chemical and 1×10^{-5} total risk for multiple chemicals.

8.2.4.1 Calculation Method

There is a one-to-one correspondence between the CULs listed in CLARC and both noncancer and cancer risks. The Method B CULs for soil and groundwater listed in the "Carcinogen" column are based on a cancer risk of 1×10^{-6}, while the Method B CULs listed in the "Noncarcinogen" column are based on a noncancer HQ of 1.0.

The cancer risk for each IHS was calculated as follows:

$$\text{Risk} = \text{Site Concentration} \times (1 \times 10^{-6}) / \text{Carcinogen CUL}$$

where:

Risk = Cancer risk associated with Site concentration (unitless)

Site Concentration = Concentration of chemical on Site (mg/kg for soil or mg/L for groundwater)

Carcinogen CUL = Carcinogen CUL listed in CLARC (mg/kg for soil or mg/L for groundwater)

The noncancer HQ for each IHS was calculated as follows:

$$\text{HQ} = \text{Site Concentration} \times 1.0 / \text{Noncarcinogen CUL}$$

where:

HQ = Hazard quotient associated with Site concentration (unitless)

Site Concentration = Concentration of chemical on Site (mg/kg for soil or mg/L for groundwater)

Noncarcinogen CUL = Noncarcinogen CUL listed in CLARC (mg/kg for soil or mg/L for groundwater)

Method B CULs are not available for TPH analytes, so their risks were evaluated using Ecology's Interim TPH Policy (Policy).[4] The evaluation is explained in Appendix H. The Policy requires evaluation of benzene, toluene, ethylbenzene, xylenes, and benzo(a)pyrene

[4] Ecology. 1997. *Interim Interpretive and Policy Statement Cleanup of Total Petroleum Hydrocarbons (TPH)*. Publication no. ECY97-600. Washington State Department of Ecology, Olympia, Washington. January.

in addition to the TPH analytes. Benzene, ethylbenzene, toluene, and benzo(a)pyrene were not detected on the Site, but xylenes were. Although xylenes had not been selected as an IHS, they were included in the risk evaluation, according to the Policy.

8.2.4.2 Results

The risk results for direct contact with soil are summarized in Table 8-4, and the risk results for consumption of groundwater are summarized in Table 8-5.

The only exposure pathway currently present is direct contact with surface soil. PCE was the only IHS selected for surface soil. The HQ for direct contact with PCE in surface soil is 0.03, and the cancer risk is 1×10^{-6}. Both of these results are acceptable according to MTCA.

A potential future exposure pathway is direct contact with subsurface soil as a result of excavation or trenching activities. Cis-1,2-DCE, PCE, TCE, TPH-G, TPH-D, and TPH-O were selected as IHSs in subsurface soil. The HI for direct contact with subsurface soil is 1.5, which is above the level of 1 set by MTCA. The contributions from TPH-G (0.7), TPH-O (0.5), and TPH-D (0.3) are roughly equal. The total cancer risk is 4×10^{-7}, which is acceptable according to MTCA.

Another potential future exposure pathway is consumption of groundwater from a well drilled on Site. PCE and TCE were selected as IHSs in groundwater. The HI for consumption of groundwater is 0.4, which is acceptable according to MTCA. The total cancer risk is 4×10^{-5}, which is above the level of 1×10^{-5} set by MTCA. The cancer risk is dominated by PCE (4×10^{-5}).

8.3 Environmental Evaluation

8.3.1 Indicator Hazardous Substances

Since there are no soil CULs designed to protect terrestrial wildlife, only groundwater was evaluated to select IHSs. The federal WQC[5] were reviewed for the chemicals detected in groundwater. There are no WQC available for the chemicals detected in groundwater, but there are advisory values called lowest observed effect levels (LOELs).[6] An LOEL is presented when there are insufficient data to develop a criterion. The LOEL is the lowest concentration reported in the literature that produced an effect in any species tested. The effect might have been either an adverse, toxic effect or a benign effect indicating simply

[5] FR 57(246):60911. December 22, 1992.

[6] EPA. 1991. Water Quality Criteria Summary. Poster produced by USEPA, Office of Science and Technology, Health and Ecological Criteria Division, Washington DC. May 1.

that the organism had a physiological response to the exposure. Since an LOEL is not necessarily as protective as a WQC, the LOELs were divided by 10 for IHS screening purposes.

Groundwater IHSs were selected by comparing the maximum concentration of each analyte detected in groundwater samples from monitoring wells to its LOEL/10 (Table 8-6). Geoprobe samples were not used, because they were not collected from properly developed wells and were collected for screening purposes only. If the maximum value detected in groundwater exceeded the LOEL/10, the analyte was selected as an IHS. Otherwise, the analyte was eliminated as an IHS.

Although UCL95s were calculated for most of the analytes detected in groundwater, maximum concentrations were used for selecting IHSs because the calculated UCL95s exceeded the maximum detected values. The UCL95 is often greater than the maximum detected value when most of the results are near or below the detection limit and there is one large value. In such cases, the distribution might fit the criteria for a lognormal distribution, but the statistics are unreliable. The UCL95 calculated for PCE from monitoring well data was less than the maximum detected value, so its UCL95 was used for IHS screening. The distribution of PCE results is normal, with many detected values, so the statistics are reliable for this analyte.

Since none of the maximum detected concentrations exceeded their respective LOEL/10s, no groundwater IHSs were selected for ecological receptors.

8.3.2 Exposure Pathways

The conceptual site model (Figure 7-1) summarizes the exposure pathways for both human health and ecological receptors.

The seasonal stormwater drainage ditch supports a limited community of terrestrial vegetation. Terrestrial wildlife could be exposed to contaminated surface soils through direct contact (i.e., incidental ingestion and dermal contact). They could also inhale dust and vapor from surface soils and vapor from subsurface soils. Any wildlife present are expected to remain primarily in the vegetated area away from contaminated soils, which would minimize exposures. The drainage ditch is not expected to support any aquatic life.

Aquatic life in Lake Wallula could be exposed to contaminants entering through stormwater runoff from the ditch or through infiltration of groundwater. Since no groundwater IHSs were selected for ecological receptors, the exposures to aquatic life are not expected to present a problem.

8.4 Summary

The chemicals detected on Site were evaluated to identify IHSs for human health and ecological receptors. Potential exposure pathways to both human and ecological receptors were evaluated to determine which pathways are complete or could become complete.

No IHSs were selected for ecological receptors.

Human health risks were calculated for the following IHSs and exposure scenarios:

- Current: Direct contact with PCE in surface soil.
- Potential future: Direct contact with PCE, TCE, TPH-G, TPH-D, TPH-O, and xylenes in subsurface soils during excavation or trenching activities.
- Potential future: Consumption of PCE and TCE in groundwater from a well drilled on Site.

The risks for the Site in its present state are acceptable. This conclusion is consistent with the Department of Health's finding that the "Site does not present a significant hazard to public health at this time (Washington Department of Health, 1994).

In the future, if excavation or trenching activities exposed contaminated subsurface soils to direct contact, exposure to petroleum-contaminated soils could present a potentially unacceptable risk if not controlled. Such exposure could be prevented by providing the workers involved in the soil work with appropriate protective equipment, by minimizing any dust raised during the soil work, and by handling the petroleum-contaminated soils so as not to leave any at the surface at the completion of the project.

Also in the future, if a well was drilled on Site, exposure to PCE in the groundwater would present an unacceptable risk to the users of the well. If the Site continues to be served by the public water supply, which is treated for VOCs, this exposure is prevented.

LIMITATIONS

The services described in this report were performed consistent with generally accepted professional consulting principles and practices. No other warranty, express or implied, is made. These services were performed consistent with our agreement with our client. This report is solely for the use and information of our client unless otherwise noted. Any reliance on this report by a third party is at such party's sole risk.

Opinions and recommendations contained in this report apply to conditions existing when services were performed and are intended only for the client, purposes, locations, time frames, and project parameters indicated. We are not responsible for the impacts of any changes in environmental standards, practices, or regulations subsequent to performance of services. We do not warrant the accuracy of information supplied by others, nor the use of segregated portions of this report.

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TABLES

Table 2-1

Previous Analytical Data
New City Cleaners
Richland, Washington

Sample Name	Date Collected	Sample Matrix	Location	ANALYSES									
				EPA Method (Units)	Trichloroethene (TCE)	Tetrachloroethene (PCE)	1,2 - dichloro-ethane	1,2 - dichloro-ethene	benzene	toluene	ethyl-benzene	total xylenes	TPH
NTS-1-92	?	soil	area of T1, T2	8260 (ug/Kg)	ND	ND	ND	707	146	ND	ND	ND	--
NTS-2-92	?	soil	area of T1, T2	8260 (ug/Kg)	ND	597	ND	437	ND	51	ND	116	--
NTS-3-92	?	water	area of T1, T2	624 (ug/Kg)	ND	ND	842	ND	726	1,590	117	357	--
NTS-4-92	4/28/92	soil	under T4 under east end	418.1 mg/Kg	--	--	--	--	--	--	--	--	1200
NTS-5-92	4/28/92	soil	T3 under west end	418.1 mg/Kg	--	--	--	--	--	--	--	--	13
NTS-6-92	4/28/92	soil	T4	418.1 mg/Kg	--	--	--	--	--	--	--	--	436
NTS-7-92	4/28/92	water	exc. of T1, T2 various test	624 (ug/Kg)	77	70	ND	34	ND	ND	ND	ND	--
NTS-8-92	4/28/92	water	pits various test	8260 (ug/L)	982	5,887	ND	ND	ND	ND	ND	ND	--
NTS-9-92	4/10/92	water	pits various test	8260 (ug/L)	254	15,280	ND	ND	ND	ND	ND	ND	--
NTS-10-92	4/10/92	water	pits	8260 (ug/L)	982	5,887	ND	ND	ND	ND	ND	ND	--
NTS-11-92	4/10/92	water	ditch upstream ditch	8260 (ug/L)	ND	ND	ND	ND	ND	ND	ND	ND	--
NTS-12-92	4/10/92	water	downstream	8260 (ug/L)	ND	ND	ND	ND	ND	ND	ND	ND	--
NTS-13-92	?	?	?	418.1 mg/Kg	--	--	--	--	--	--	--	--	ND
PCE Pit	6/23/92	soil	pit by fence	volatile organic halocarbons	ND	1,100	ND	ND	--	--	--	--	--
PCE Water	6/23/92	water	pit by fence	volatile organic halocarbons	15	23,200	ND	ND	--	--	--	--	--
PCE Pit Dirt	6/23/92	soil	pit by fence	volatile organic halocarbons	ND	2,120,000	ND	ND	--	--	--	--	--
PET tankslt	6/23/92	water	tank pit, T1, T2	volatile organic halocarbons	32.5	80	ND	71.8 - cis 2.2 - trans	--	--	--	--	--

ND = Not detected at or above the Method Reporting Limit.
-- = Not analyzed.

Table 4-1

Groundwater Elevation Summary
New City Cleaners
Richland, Washington

Monitoring Well	Date Measured	Top of Casing Elevation (feet)	Depth to Water (feet)	Groundwater Surface Elevation (feet)
MW-1	05/08/97	355.70	7.99	347.71
	06/19/97		7.95	347.75
	07/17/97		7.99	347.71
	08/12/97		8.10	347.60
	08/20/97		8.14	347.56
	09/25/97		8.36	347.34
	10/21/97		8.45	347.25
	11/13/97		8.52	347.18
MW-2	05/08/97	355.67	8.13	347.54
	06/19/97		8.05	347.62
	07/17/97		8.15	347.52
	08/12/97		8.28	347.39
	08/20/97		8.32	347.35
	09/25/97		8.52	347.15
	10/21/97		8.62	347.05
	11/13/97		8.66	347.01
MW-3	05/08/97	356.19	8.79	347.40
	06/19/97		8.72	347.47
	07/17/97		8.80	347.39
	08/12/97		8.91	347.28
	08/20/97		8.95	347.24
	09/25/97		9.12	347.07
	10/21/97		9.24	346.95
	11/13/97		9.27	346.92
MW-4	05/18/97	356.39	9.25	347.14
	06/19/97		9.12	347.27
	07/17/97		9.22	347.17
	08/12/97		9.32	347.07
	08/20/97		9.40	346.99
	09/25/97		9.59	346.80
	10/21/97		9.69	346.70
	11/13/97		9.72	346.67
Well D	05/08/97	354.74	7.07	347.67
	06/19/97		7.02	347.72
	07/17/97		7.10	347.64
	08/12/97		7.27	347.47
	08/20/97		7.31	347.43
	09/25/97		7.51	347.23
	10/21/97		7.60	347.14
	11/13/97		7.71	347.03

Table 4-1

Groundwater Elevation Summary
New City Cleaners
Richland, Washington

Monitoring Well	Date Measured	Top of Casing Elevation (feet)	Depth to Water (feet)	Groundwater Surface Elevation (feet)
Well E	05/18/97	354.40	6.78	347.62
	06/19/97		6.82	347.58
	07/17/97		6.88	347.52
	08/12/97		7.00	347.40
	08/20/97		7.06	347.34
	09/25/97		7.27	347.13
	10/21/97		7.39	347.01
	11/13/97		7.43	346.97

NOTE:
Top of casing elevations surveyed relative to mean sea level datum (NAVD 1929).

Table 5-1

Physical Parameters - Soil Samples
New City Cleaners Site
Richland, Washington

	Sample Name	Total Organic Carbon(percent)
Surface Soil	SS-A1	0.06
	SS-B7	0.06
	SS-C4	0.24
	SS-E3	0.84
Subsurface Soil	GP-8-1	0.13
	GP-8-15	0.05
	GP-8-21	0.13
	GP-9-12	0.06
	GP-9-23	0.07
	GP-10-17	0.06
	GP-10-21	0.07
		Vertical Hydraulic Conductivity (cm/sec)
	GP-1-11	9.3×10^{-7}
		Sieve Analysis Results (percent)
	GP-1-11	Gravel - 0.0
		Sand - 1.1
		Fines - 98.9
	GP-1-15	Gravel - 0.0
		Sand - 4.1
		Fines - 95.9

Table 6-1
TPH and BTEX in Surface Soil Samples
New City Cleaners Site
Richland, Washington

Sample Name	Date	Depth (feet)	TPH-G (mg/kg)	TPH-D (mg/kg)	TPH-O (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)
SS-A1	03/10/97		—	—	—	< 0.005	< 0.005	< 0.005	< 0.005
SS-A2	03/10/97		—	—	—	< 0.005	< 0.005	< 0.005	< 0.005
SS-A3	03/10/97		—	—	—	< 0.005 E	< 0.005 E	< 0.005 E	< 0.005 E
SS-A4	03/12/97		—	—	—	< 0.005	< 0.005	< 0.005	< 0.005
SS-A6	03/12/97		—	—	—	< 0.005 E	< 0.005 E	< 0.005 E	< 0.005 E
SS-J4 (dup)	03/12/97		—	—	—	< 0.005	< 0.005	< 0.005	< 0.005
SS-B5	03/10/97		—	—	—	< 0.005	< 0.005	< 0.005	< 0.005
SS-B7	03/13/97		—	—	—	< 0.005	< 0.005	< 0.005	< 0.005
SS-C1	03/10/97		—	—	—	< 0.005	< 0.005	< 0.005	< 0.005
SS-C2	03/10/97		—	—	—	< 0.005 E	< 0.005 E	< 0.005 E	< 0.005 E
SS-C3	03/10/97		—	—	—	< 0.005	< 0.005	< 0.005	< 0.005
SS-C4	03/10/97		—	—	—	< 0.005	< 0.005	< 0.005	< 0.005
SS-C6	03/13/97		—	—	—	< 0.005	< 0.005	< 0.005	< 0.005
SS-D5	03/10/97		—	—	—	< 0.005 E	< 0.005 E	< 0.005 E	< 0.005 E
SS-E2	03/10/97		—	—	—	< 0.005	< 0.005	< 0.005	< 0.005
SS-E3	03/10/97		—	—	—	< 0.005 E	< 0.005 E	< 0.005 E	< 0.005 E
SS-E4	03/11/97		—	—	—	< 0.5	< 0.5	< 0.5	< 0.5
SS-E6	03/12/97		—	—	—	< 0.005	< 0.005	< 0.005	< 0.005
SS-F6 (dup)	03/12/97		—	—	—	< 0.005	< 0.005	< 0.005	< 0.005
SS-F5	03/12/97		—	—	—	< 0.005	< 0.005	< 0.005	< 0.005
SS-G2	03/10/97		—	—	—	< 0.005	< 0.005	< 0.005	< 0.005
SS-G3	03/10/97		—	—	—	< 0.005	< 0.005	< 0.005	< 0.005
SS-G4	03/10/97		—	—	—	< 0.5	< 0.5	< 0.5	< 0.5
SS-G6	03/13/97		—	—	—	< 0.005	< 0.005	< 0.005	< 0.005
SS-I3	03/10/97		—	—	—	< 0.005	< 0.005	< 0.005	< 0.005
SS-I4	03/10/97		—	—	—	< 0.005 E	< 0.005 E	< 0.005 E	< 0.005 E
SS-I6	03/12/97		—	—	—	< 0.005	< 0.005	< 0.005	< 0.005

NOTE:
— = Not analyzed.
E = The associated numerical value is an estimated quantity.

Table 6-2
VOCs in Surface Soil Samples
New City Cleaners Site
Richland, Washington

Sample Name	Date	Depth (feet)	Acetone (mg/kg)	Tetrachloro-ethene (mg/kg)
SS-A1	03/10/97	0.5	< 0.05	< 0.005
SS-A2	03/10/97	0.5	< 0.05	0.290
SS-A3	03/10/97	2.0	< 0.05 E	0.610 E
SS-A4	03/12/97	0.5	< 0.05	< 0.005
SS-A6	03/12/97	0.5	< 0.05 E	0.180 E
SS-J4 (dup)	03/12/97	0.5	< 0.05	0.130
SS-B5	03/10/97	0.8	0.062	< 0.005
SS-B7	03/13/97	0.5	0.20	< 0.005
SS-C1	03/10/97	0.5	< 0.05	< 0.005
SS-C2	03/10/97	0.5	< 0.05 E	0.250 E
SS-C3	03/10/97	0.5	< 0.05	0.028
SS-C4	03/10/97	0.5	0.052	< 0.005
SS-C6	03/13/97	0.5	< 0.050	0.005
SS-D5	03/10/97	0.5	0.069 E	0.570 E
SS-E2	03/10/97	0.5	< 0.05	0.009
SS-E3	03/10/97	0.5	< 0.05 E	8.30 E
SS-E4	03/11/97	0.2	< 5	10
SS-E6	03/12/97	0.5	< 0.05	0.006
SS-F6 (dup)	03/12/97	0.5	< 0.05	0.005
SS-F5	03/12/97	0.5	< 0.05	0.023
SS-G2	03/10/97	0.5	< 0.05	< 0.005
SS-G3	03/10/97	0.5	< 0.05	< 0.005
SS-G4	03/10/97	0.5	< 5	27
SS-G6	03/13/97	0.5	< 0.05	0.049
SS-I3	03/10/97	0.5	0.057	< 0.005
SS-I4	03/10/97	0.5	0.069 E	< 0.005 E
SS-I6	03/12/97	0.5	< 0.05	< 0.005

NOTES:
— = Not analyzed.
E = The associated value is an estimated quantity.

Table 6-3

TPH and BTEX in Subsurface Soil Samples
New City Cleaners Site
Richland, Washington

Sample Name	Date	Depth (feet)	TPH-G (mg/kg)	TPH-D (mg/kg)	TPH-O (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)
GP-1-5	03/12/97	5	—	—	—	< 0.5	< 0.5	< 0.5	< 0.5
GP-1-19	03/12/97	19	—	—	—	< 0.030	< 0.030	< 0.030	< 0.030
GP-2-5	03/13/97	5	< 5 E	53 E	512 E	< 0.5	< 0.5	< 0.5	< 0.5
GP-2-21	03/13/97	21	< 5 E	< 25 E	< 100 E	< 0.005	< 0.005	< 0.005	< 0.005
GP-3-15	03/13/97	15	—	—	—	< 0.005	< 0.005	< 0.005	< 0.005
GP-3-19	03/13/97	19	—	—	—	< 0.005	< 0.005	< 0.005	< 0.005
GP-4-7	03/13/97	7	—	—	—	< 0.005	< 0.005	< 0.005	< 0.005
GP-4-19	03/13/97	19	—	—	—	< 0.005	< 0.005	< 0.005	< 0.005
GP-5-11	03/11/97	11	2,300 E	43 O	< 100	< 1.0 E	< 1.0 E	< 1.0 E	12 E
GP-5-21.5	03/11/97	21.5	< 5	< 25	< 100	< 0.005	< 0.005	< 0.005	< 0.005
GP-6-11-15	03/12/97	15	470 N	< 25	< 100	< 0.5 E	< 0.5 E	< 0.5 E	< 0.5 E
GP-6-25 (dup)	03/12/97	15	510 N	< 25	< 100	< 0.5 E	< 0.5 E	< 0.5 E	< 0.5 E
GP-6-21.5	03/12/97	21.5	19	< 25	< 100	< 0.035	< 0.035	< 0.035	< 0.035
GP-7-15	03/12/97	15	< 5	< 25	< 100	< 0.030	< 0.030	< 0.030	< 0.030
GP-7-21.5	03/12/97	21.5	< 5	< 25	< 100	< 0.035	< 0.035	< 0.035	< 0.035
GP-8-1	03/11/97	1	< 5	< 25	< 100	< 0.005	< 0.005	< 0.005	< 0.005
GP-8-15	03/11/97	15	< 5	< 25	< 100	< 0.005	< 0.005	< 0.005	< 0.005
GP-8-21	03/11/97	21	< 5	< 25	< 100	< 0.005	< 0.005	< 0.005	< 0.005
GP-9-12	03/11/97	12	< 5	< 25	< 100	< 0.005	< 0.005	< 0.005	< 0.005
GP-9-23	03/11/97	23	< 5	< 25	< 100	< 0.005	< 0.005	< 0.005	< 0.005
GP-10-17	03/12/97	17	< 5	< 25	< 100	< 0.005	< 0.005	< 0.005	< 0.005
GP-10-21	03/12/97	21	< 5	< 25	< 100	< 0.005	< 0.005	< 0.005	< 0.005
SB-1-7	05/01/97	7	8 a[2]	1,040 E, a[1]	1,450 E, a[1]	—	—	—	—
SB-1-9	05/01/97	9	< 5	< 25	< 100	—	—	—	—
SB-1-12.5	05/01/97	12.5	—	—	—	< 0.03 E	< 0.03 E	< 0.03 E	< 0.03 E
SB-1-27	05/01/97	27	—	—	—	< 0.5	< 0.5	< 0.5	< 0.5
SB-1-35	05/02/97	35	—	—	—	—	—	—	—
SB-1-40	05/02/97	40	—	—	—	< 0.005	< 0.005	< 0.005	< 0.005

Table 6-3

TPH and BTEX in Subsurface Soil Samples
New City Cleaners Site
Richland, Washington

Sample Name	Date	Depth (feet)	TPH-G (mg/kg)	TPH-D (mg/kg)	TPH-O (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)
SB-2-7	05/01/97	7	< 5	70 b	303	—	—	—	—
SB-2-9	05/01/97	9	< 5	< 25 E	< 100 E	< 0.03	< 0.03	< 0.03	< 0.03
SB-2-35	05/01/97	35	—	—	—	< 0.005	< 0.005	< 0.005	< 0.005
MW-1-7	05/01/97	7	< 5	< 25	< 100	< 0.035	< 0.035	< 0.035	< 0.035
MW-1-17.5	05/01/97	17.5	—	—	—	< 0.06	< 0.06	< 0.06	< 0.06
MW-1-27	05/01/97	27	—	—	—	< 0.005	< 0.005	< 0.005	< 0.005
MW-2-7	04/30/97	7	< 5	< 25 E	< 100	—	—	—	—
MW-10-7 (dup)	04/30/97	7	< 5	< 25	< 100	—	—	—	—
MW-2-12.5	04/30/97	12.5	—	—	—	< 0.005	< 0.005	< 0.005	< 0.005
MW-10-12.5 (dup)	04/30/97	12.5	—	—	—	< 0.005	< 0.005	< 0.005	< 0.005
MW-2-27	04/30/97	27	—	—	—	< 0.005	< 0.005	< 0.005	< 0.005
MW-10-27 (dup)	04/30/97	27	—	—	—	< 0.005	< 0.005	< 0.005	< 0.005
MW-3-9	04/30/97	9	< 5	< 25	< 100	< 0.005	< 0.005	< 0.005	< 0.005
MW-3-27	04/30/97	27	—	—	—	< 0.005	< 0.005	< 0.005	< 0.005
MW-4-1	04/30/97	1	—	—	—	—	—	—	—
MW-4-9	04/30/97	9	< 5	< 25	< 100	—	—	—	—
MW-4-17.5	04/30/97	17.5	—	—	—	< 0.005	< 0.005	< 0.005	< 0.005
MW-4-29	04/30/97	29	—	—	—	< 0.005	< 0.005	< 0.005	< 0.005

NOTE:

— = Not analyzed.

E = The associated numerical value is an estimated quantity.

N = Quantitated as gasoline. Sample contained components that eluted in the gasoline range, but the chromatogram did not match the typical gasoline fingerprint.

O = Quantitated as diesel. Sample contained a lighter than diesel component that partially eluted in the diesel range.

a^1 = Quantified as diesel/oil. Sample contained components that eluted in diesel/oil range, but chromatogram did not match the typical diesel/oil fingerprint.

a^2 = Quantified as gas. Sample contained components that eluted in gas range, but chromatogram did not match the typical gas fingerprint.

b = Result is primarily due to the beginning of oil, which elutes in the diesel region.

Table 6-4
VOCs in Subsurface Soil Samples
New City Cleaners Site
Richland, Washington

Sample Name	Date	Depth (feet)	Acetone (mg/kg)	Carbon Disulfide (mg/kg)	*cis*-1,2-Dichloroethene (mg/kg)	Trichloroethene (mg/kg)	Tetrachloroethene (mg/kg)	*n*-Propylbenzene (mg/kg)	1,3,5-Trimethylbenzene (mg/kg)	*tert*-Butylbenzene (mg/kg)	1,2,4-Trimethylbenzene (mg/kg)	*sec*-Butylbenzene (mg/kg)	4-Isopropyltoluene (mg/kg)	*n*-Butylbenzene (mg/kg)
GP-1-5	03/12/97	5	< 5	< 0.5	<0.5	< 0.5	7.5	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
GP-1-19	03/12/97	19	< 0.300	< 0.03	< 0.03	< 0.03	0.440	< 0.120	< 0.120	< 0.120	< 0.120	< 0.120	< 0.120	< 0.120
GP-2-5	03/13/97	5	< 5	< 0.5	26	< 0.5	< 0.5	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
GP-2-21	03/13/97	21	< 0.05	< 0.005	< 0.005	< 0.005	0.009	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
GP-3-15	03/13/97	15	< 0.05	< 0.005	< 0.005	< 0.005	0.085	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
GP-3-19	03/13/97	19	< 0.05	< 0.005	< 0.005	< 0.005	0.150	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
GP-4-7	03/13/97	7	< 0.05	< 0.005	< 0.005	< 0.005	0.190	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
GP-4-19	03/13/97	19	< 0.05	< 0.005	< 0.005	< 0.005	0.150	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
GP-5-11	03/11/97	11	< 10.0 E	< 1.0 E	< 1.0 E	< 1.0 E	1.0 E	10.0 E	16.0 E	7.0 E	51.0 E	7.0 E	9.0 E	8.0 E
GP-5-21.5	03/11/97	21.5	0.060	0.008	< 0.005	0.1	0.980	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
GP-6-11-15	03/12/97	15	< 5 E	< 0.5 E	< 0.5 E	0.6 E	0.6 E	< 2.0 E	< 2.0 E	< 2.0 E	< 2.0 E	< 2.0 E	< 2.0 E	< 2.0 E
GP-6-25 (dup)	03/12/97	15	< 5 E	< 0.5 E	< 0.5 E	1.3 E	1.0 E	< 2.0 E	< 2.0 E	< 2.0 E	< 2.0 E	< 2.0 E	< 2.0 E	< 2.0 E
GP-6-21.5	03/12/97	21.5	< 0.350	< 0.035	< 0.035	0.210	6.50	< 0.140	< 0.140	< 0.140	< 0.140	< 0.140	< 0.140	< 0.140
GP-7-15	03/12/97	15	< 0.300	< 0.03	< 0.03	< 0.03	0.700	< 0.120	< 0.120	< 0.120	< 0.120	< 0.120	< 0.120	< 0.120
GP-7-21.5	03/12/97	21.5	< 0.350	< 0.035	< 0.035	< 0.035	0.350	< 0.140	< 0.140	< 0.140	< 0.140	< 0.140	< 0.140	< 0.140
GP-8-1	03/11/97	1	< 0.05	< 0.005	< 0.005	< 0.005	0.011	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
GP-8-15	03/11/97	15	< 0.05	< 0.005	< 0.005	< 0.005	0.072	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
GP-8-21	03/11/97	21	< 0.05	< 0.005	< 0.005	0.012	0.200	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
GP-9-12	03/11/97	12	< 0.05	< 0.005	0.028	< 0.005	0.480	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
GP-9-23	03/11/97	23	< 0.05	< 0.005	< 0.005	0.023	0.088	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
GP-10-17	03/12/97	17	< 0.05	< 0.005	< 0.005	0.027	0.640	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
GP-10-21	03/12/97	21	< 0.05	< 0.005	< 0.005	0.026	0.460	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
SB-1-7	05/01/97	7	—	—	—	—	—	—	—	—	—	—	—	—
SB-1-9	05/01/97	9	—	—	—	—	—	—	—	—	—	—	—	—
SB-1-12.5	05/01/97	12.5	< 0.300 E	< 0.03 E	0.560 E	0.350 E	< 0.03 E	< 0.120 E	0.180 E	< 0.120 E	0.430 E	0.180 E	0.190 E	0.150 E
SB-1-27	05/01/97	27	< 5	< 0.5	< 0.5	< 0.5	< 0.5	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
SB-1-35	05/02/97	35	—	—	—	—	—	—	—	—	—	—	—	—
SB-1-40	05/02/97	40	< 0.05	< 0.005	< 0.005	< 0.005	< 0.005	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
SB-2-7	05/01/97	7	—	—	—	—	—	—	—	—	—	—	—	—
SB-2-9	05/01/97	9	< 0.300	< 0.03	< 0.03	< 0.03	1.50	< 0.120	< 0.120	< 0.120	< 0.120	< 0.120	< 0.120	< 0.120

Table 6-4
VOCs in Subsurface Soil Samples
New City Cleaners Site
Richland, Washington

Sample Name	Date	Depth (feet)	Acetone (mg/kg)	Carbon Disulfide (mg/kg)	*cis*-1,2-Dichloroethene (mg/kg)	Trichloroethene (mg/kg)	Tetrachloroethene (mg/kg)	*n*-Propylbenzene (mg/kg)	1,3,5-Trimethylbenzene (mg/kg)	*tert*-Butylbenzene (mg/kg)	1,2,4-Trimethylbenzene (mg/kg)	*sec*-Butylbenzene (mg/kg)	4-Isopropyltoluene (mg/kg)	*n*-Butylbenzene (mg/kg)
SB-2-35	05/01/97	35	< 0.05	< 0.005	< 0.005	< 0.005	< 0.005	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
MW-1-7	05/01/97	7	< 0.35	< 0.035	< 0.035	0.09	4.4	< 0.140	< 0.140	< 0.140	< 0.140	< 0.140	< 0.140	< 0.140
MW-1-17.5	05/01/97	17.5	< 2.4	< 0.06	< 0.06	< 0.06	0.095	< 0.240	< 0.240	< 0.240	< 0.240	< 0.240	< 0.240	< 0.240
MW-1-27	05/01/97	27	< 0.05	< 0.005	< 0.005	< 0.005	< 0.005	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
MW-2-7	04/30/97	7	—	—	—	—	—	—	—	—	—	—	—	—
MW-10-7 (dup	04/30/97	7	—	—	—	—	—	—	—	—	—	—	—	—
MW-2-12.5	04/30/97	12.5	< 0.05	< 0.005	< 0.005	< 0.005	0.068 E	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
MW-10-12.5 (	04/30/97	12.5	< 0.05	< 0.005	< 0.005	< 0.005	0.016	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
MW-2-27	04/30/97	27	< 0.05	< 0.005	< 0.005	< 0.005	0.006	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
MW-10-27 (du	04/30/97	27	< 0.05	< 0.005	< 0.005	< 0.005	0.006	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
MW-3-9	04/30/97	9	< 0.05	< 0.005	0.009	0.006	0.65	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
MW-3-27	04/30/97	27	< 0.05	< 0.005	< 0.005	< 0.005	< 0.005	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
MW-4-1	04/30/97	1	—	—	—	—	—	—	—	—	—	—	—	—
MW-4-9	04/30/97	9	—	—	—	—	—	—	—	—	—	—	—	—
MW-4-17.5	04/30/97	17.5	< 0.05	< 0.005	< 0.005	< 0.005	.0.063	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
MW-4-29	04/30/97	29	< 0.05	< 0.005	< 0.005	< 0.005	< 0.005	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02

NOTES:
— = Not analyzed.
E = The associated value is an estimated quantity.

Table 6-5
Summary Statistics - Soil Samples
New City Cleaners Site
Richland, Washington

Compound	Number Analyzed	Number Detected	Minimum Detected (mg/kg)	Maximum Detected (mg/kg)	Average (mg/kg)	Minimum Detection Limit (mg/kg)	Maximum Detection Limit (mg/kg)	Distribution	UCL 95 (mg/kg)
Soils - Surface									
Dichlorodifluoromethane	25	0	NA	NA	NA	0.005	0.5	NA	NA
Chloromethane	25	0	NA	NA	NA	0.005	0.5	NA	NA
Vinyl Chloride	25	0	NA	NA	NA	0.005	0.5	NA	NA
Bromomethane	25	0	NA	NA	NA	0.005	0.5	NA	NA
Chloroethane	25	0	NA	NA	NA	0.005	0.5	NA	NA
Trichlorofluoromethane	25	0	NA	NA	NA	0.005	0.5	NA	NA
Acetone	25	6	0.052	0.2	0.085	0.05	5	Neither	M (0.2)
1,1-Dichloroethene	25	0	NA	NA	NA	0.005	0.5	NA	NA
Carbon Disulfide	25	0	NA	NA	NA	0.005	0.5	NA	NA
Methylene Chloride	25	0	NA	NA	NA	0.01	1	NA	NA
trans-1,2-Dichloroethene	25	0	NA	NA	NA	0.005	0.5	NA	NA
1,1-Dichloroethane	25	0	NA	NA	NA	0.005	0.5	NA	NA
2-Butanone(MEK)	25	0	NA	NA	NA	0.02	2	NA	NA
2,2-Dichloropropane	25	0	NA	NA	NA	0.005	0.5	NA	NA
cis-1,2-Dichloroethene	25	0	NA	NA	NA	0.005	0.5	NA	NA
Chloroform	25	0	NA	NA	NA	0.005	0.5	NA	NA
Bromochloromethane	25	0	NA	NA	NA	0.005	0.5	NA	NA
1,1,1-Trichloroethane	25	0	NA	NA	NA	0.005	0.5	NA	NA
1,1-Dichloropropene	25	0	NA	NA	NA	0.005	0.5	NA	NA
CarbonTetrachloride	25	0	NA	NA	NA	0.005	0.5	NA	NA
1,2-Dichloroethane	25	0	NA	NA	NA	0.005	0.5	NA	NA
Trichloroethene	25	0	NA	NA	NA	0.005	0.5	NA	NA
1,2-Dichloropropane	25	0	NA	NA	NA	0.005	0.5	NA	NA
Bromodichloromethane	25	0	NA	NA	NA	0.005	0.5	NA	NA
Dibromomethane	25	0	NA	NA	NA	0.005	0.5	NA	NA
2-Hexanone	25	0	NA	NA	NA	0.02	2	NA	NA
cis-1,3-Dichloropropene	25	0	NA	NA	NA	0.005	0.5	NA	NA
trans-1,3-Dichloropropene	25	0	NA	NA	NA	0.005	0.5	NA	NA
1,1,2-Trichloroethane	25	0	NA	NA	NA	0.005	0.5	NA	NA

Table 6-5
Summary Statistics - Soil Samples
New City Cleaners Site
Richland, Washington

Compound	Number Analyzed	Number Detected	Minimum Detected (mg/kg)	Maximum Detected (mg/kg)	Average (mg/kg)	Minimum Detection Limit (mg/kg)	Maximum Detection Limit (mg/kg)	Distribution	UCL 95 (mg/kg)
Soils - Surface									
4-Methyl-2-pentanone	25	0	NA	NA	NA	0.02	2	NA	NA
1,3-Dichloropropane	25	0	NA	NA	NA	0.005	0.5	NA	NA
Tetrachloroethene	25	14	0.005	27	3.4	0.005	0.005	Lognormal	M (27)
Dibromochloromethane	25	0	NA	NA	NA	0.005	0.5	NA	NA
1,2-Dibromoethane	25	0	NA	NA	NA	0.02	2	NA	NA
Chloro-benzene	25	0	NA	NA	NA	0.005	0.5	NA	NA
1,1,1,2-Tetrachloroethane	25	0	NA	NA	NA	0.005	0.5	NA	NA
Styrene	25	0	NA	NA	NA	0.005	0.5	NA	NA
Bromoform	25	0	NA	NA	NA	0.005	0.5	NA	NA
Isopropylbenzene	25	0	NA	NA	NA	0.02	2	NA	NA
1,1,2,2-Tetrachloroethane	25	0	NA	NA	NA	0.005	0.5	NA	NA
1,2,3-Trichloropropane	25	0	NA	NA	NA	0.005	0.5	NA	NA
Bromobenzene	25	0	NA	NA	NA	0.005	0.5	NA	NA
n-Propylbenzene	25	0	NA	NA	NA	0.02	2	NA	NA
2-Chlorotoluene	25	0	NA	NA	NA	0.02	2	NA	NA
4-Chlorotoluene	25	0	NA	NA	NA	0.02	2	NA	NA
1,3,5-Trimethylbenzene	25	0	NA	NA	NA	0.02	2	NA	NA
tert-Butylbenzene	25	0	NA	NA	NA	0.02	2	NA	NA
1,2,4-Trimethylbenzene	25	0	NA	NA	NA	0.02	2	NA	NA
sec-Butylbenzene	25	0	NA	NA	NA	0.02	2	NA	NA
1,3-Dichlorobenzene	25	0	NA	NA	NA	0.005	0.5	NA	NA
4-Isopropyltoluene	25	0	NA	NA	NA	0.02	2	NA	NA
1,4-Dichlorobenzene	25	0	NA	NA	NA	0.005	0.5	NA	NA
n-Butylbenzene	25	0	NA	NA	NA	0.02	2	NA	NA
1,2-Dichlorobenzene	25	0	NA	NA	NA	0.005	0.5	NA	NA
1,2-Dibromo-3-chloropropane	25	0	NA	NA	NA	0.02	2	NA	NA
1,2,4-Trichlorobenzene	25	0	NA	NA	NA	0.02	2	NA	NA
1,2,3-Trichlorobenzene	25	0	NA	NA	NA	0.02	2	NA	NA
Naphthalene	25	0	NA	NA	NA	0.02	2	NA	NA
Hexachlorobutadiene	25	0	NA	NA	NA	0.02	2	NA	NA
Benzene	25	0	NA	NA	NA	0.005	0.500	NA	NA
Toluene	25	0	NA	NA	NA	0.005	0.500	NA	NA
Ethylbenzene	25	0	NA	NA	NA	0.005	0.500	NA	NA
Xylenes	25	0	NA	NA	NA	0.005	0.500	NA	NA

Table 6-5
Summary Statistics - Soil Samples
New City Cleaners Site
Richland, Washington

Compound	Number Analyzed	Number Detected	Minimum Detected (mg/kg)	Maximum Detected (mg/kg)	Average (mg/kg)	Minimum Detection Limit (mg/kg)	Maximum Detection Limit (mg/kg)	Distribution	UCL 95 (mg/kg)
Soils - Subsurface									
Dichlorodifluoromethane	35	0	NA	NA	NA	0.005	1.0	NA	NA
Chloromethane	35	0	NA	NA	NA	0.005	1.8	NA	NA
Vinyl Chloride	35	0	NA	NA	NA	0.005	1.0	NA	NA
Bromomethane	35	0	NA	NA	NA	0.005	1.0	NA	NA
Chloroethane	35	0	NA	NA	NA	0.005	1.0	NA	NA
Trichlorofluoromethane	35	0	NA	NA	NA	0.005	1.0	NA	NA
Acetone	35	1	0.060	NA	NA	0.050	10	NA	NA
1,1-Dichloroethene	35	0	NA	NA	NA	0.005	1.0	NA	NA
Carbon Disulfide	35	1	0.008	NA	NA	0.005	1.0	NA	NA
Methylene Chloride	35	0	NA	NA	NA	0.010	2.0	NA	NA
trans-1,2-Dichloroethene	35	0	NA	NA	NA	0.005	1.0	NA	NA
1,1-Dichloroethane	35	0	NA	NA	NA	0.005	1.0	NA	NA
2-Butanone(MEK)	35	0	NA	NA	NA	0.020	4.0	NA	NA
2,2-Dichloropropane	35	0	NA	NA	NA	0.005	1.0	NA	NA
cis-1,2-Dichloroethene	35	4	0.009	26	6.6	0.005	1.0	NA	M (26)
Chloroform	35	0	NA	NA	NA	0.005	1.0	NA	NA
Bromochloromethane	35	0	NA	NA	NA	0.005	1.0	NA	NA
1,1,1-Trichlorocthane	35	0	NA	NA	NA	0.005	1.0	NA	NA
1,1-Dichloropropene	35	0	NA	NA	NA	0.005	1.0	NA	NA
CarbonTetrachloride	35	0	NA	NA	NA	0.005	1.0	NA	NA
1,2-Dichloroethane	35	0	NA	NA	NA	0.005	1.0	NA	NA
Trichloroethene	35	10	0.006	0.950	0.179	0.005	1.0	NA	M (0.950)
1,2-Dichloropropane	35	0	NA	NA	NA	0.005	1.0	NA	NA
Bromodichloromethane	35	0	NA	NA	NA	0.005	1.0	NA	NA
Dibromomethane	35	0	NA	NA	NA	0.005	1.0	NA	NA
2-Hexanone	35	0	NA	NA	NA	0.020	4.0	NA	NA
cis-1,3-Dichloropropene	35	0	NA	NA	NA	0.005	1.0	NA	NA
trans-1,3-Dichloropropene	35	0	NA	NA	NA	0.005	1.0	NA	NA
1,1,2-Trichloroethane	35	0	NA	NA	NA	0.005	1.0	NA	NA
4-Methyl-2-pentanone	35	0	NA	NA	NA	0.020	4.0	NA	NA
1,3-Dichloropropane	35	0	NA	NA	NA	0.005	1.0	NA	NA
Tetrachloroethene	35	27	0.006	7.5	1.02	0.005	0.50	Lognormal	M (7.5)
Dibromochloromethane	35	0	NA	NA	NA	0.005	1.0	NA	NA
1,2-Dibromoethane	35	0	NA	NA	NA	0.020	4.0	NA	NA

Table 6-5
Summary Statistics - Soil Samples
New City Cleaners Site
Richland, Washington

Compound	Number Analyzed	Number Detected	Minimum Detected (mg/kg)	Maximum Detected (mg/kg)	Average (mg/kg)	Minimum Detection Limit (mg/kg)	Maximum Detection Limit (mg/kg)	Distribution	UCL 95 (mg/kg)
Soils - Subsurface									
Chloro-benzene	35	0	NA	NA	NA	0.005	1.0	NA	NA
1,1,1,2-Tetrachloroethane	35	0	NA	NA	NA	0.005	1.0	NA	NA
Styrene	35	0	NA	NA	NA	0.005	1.0	NA	NA
Bromoform	35	0	NA	NA	NA	0.005	1.0	NA	NA
Isopropylbenzene	35	0	NA	NA	NA	0.020	4.0	NA	NA
1,1,2,2-Tetrachloroethane	35	0	NA	NA	NA	0.005	1.0	NA	NA
1,2,3-Trichloropropane	35	0	NA	NA	NA	0.005	1.0	NA	NA
Bromobenzene	35	0	NA	NA	NA	0.005	1.0	NA	NA
n-Propylbenzene	35	1	10	NA	NA	0.020	2.0	NA	NA
2-Chlorotoluene	35	0	NA	NA	NA	0.020	4.0	NA	NA
4-Chlorotoluene	35	0	NA	NA	NA	0.020	4.0	NA	NA
1,3,5-Trimethylbenzene	35	2	0.180	16	8.1	0.020	2.0	NA	NA
tert-Butylbenzene	35	1	7.0	NA	NA	0.020	2.0	NA	NA
1,2,4-Trimethylbenzene	35	2	0.430	51	26	0.020	2.0	NA	NA
sec-Butylbenzene	35	2	0.180	7.0	3.6	0.020	2.0	NA	NA
1,3-Dichlorobenzene	35	0	NA	NA	NA	0.005	1.0	NA	NA
4-Isopropyltoluene	35	2	0.190	9.0	4.6	0.020	2.0	NA	NA
1,4-Dichlorobenzene	35	0	NA	NA	NA	0.005	1.0	NA	NA
n-Butylbenzene	35	2	0.150	8.0	4.1	0.020	2.0	NA	NA
1,2-Dichlorobenzene	35	0	NA	NA	NA	0.005	1.0	NA	NA
1,2-Dibromo-3-chloropropane	35	0	NA	NA	NA	0.020	4.0	NA	NA
1,2,4-Trichlorobenzene	35	0	NA	NA	NA	0.020	4.0	NA	NA
1,2,3-Trichlorobenzene	35	0	NA	NA	NA	0.020	4.0	NA	NA
Naphthalene	35	0	NA	NA	NA	0.020	4.0	NA	NA
Hexachlorobutadiene	35	0	NA	NA	NA	0.020	4.0	NA	NA
TPH-G	23	4	8.0	2300	704	5	5	Lognormal	M (2300)
TPH-D	23	4	43	1040	302	25	25	Neither	M (1040)
TPH-O	23	3	303	1450	755	100	100	Lognormal	M (1450)
Benzene	35	0	NA	NA	NA	0.005	1	NA	NA
Toluene	35	0	NA	NA	NA	0.005	1	NA	NA
Ethylbenzene	35	0	NA	NA	NA	0.005	1	NA	NA
Xylenes	35	1	12	NA	NA	0.005	0.5	NA	NA

NOTE:
NA= Not available.
M indicates default to maximum value, maximum vlaue listed in parentheses.

Table 6-6
TPH and BTEX in Groundwater - Geoprobe™ and Monitoring Well Samples
New City Cleaners Site
Richland, Washington

Sample Name	Date	Depth (feet)	TPH-G (mg/L)	TPH-D (mg/L)	TPH-O (mg/L)	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Total Xylenes (mg/L)	TSS (mg/L)
GPW-1-397-15	03/12/97	15	—	—	—	< 0.010	< 0.010	< 0.010	< 0.010	799
GPW-2-397-17	03/12/97	17	—	—	—	< 0.100	< 0.100	< 0.100	< 0.100	176
GPW-3-397-19	03/12/97	19	—	—	—	< 0.025	< 0.025	< 0.025	< 0.025	1,040
GPW-4-397-19	03/12/97	19	—	—	—	< 0.010	< 0.010	< 0.010	< 0.010	48
GPW-5-397-19	03/12/97	19	6.40 E	0.504 O^2	< 0.750	< 0.050	< 0.050	< 0.050	0.260	3,740
GPW-6-397-15	03/12/97	15	1.70 E, O^1	0.356 O^2	< 0.750	< 0.100	< 0.100	< 0.100	< 0.100	1,690
GPW-7-397-11	03/12/97	11	2.00 O^1	< 0.250	< 0.750	< 0.100	< 0.100	< 0.100	< 0.100	5,630
GPW-8-397-10	03/11/97	10	0.46 O^1	< 0.250	< 0.750	< 0.020	< 0.020	< 0.020	< 0.020	677
GPW-9-397-15	03/11/97	15	1.10 O^1	< 0.250	< 0.750	< 0.100	< 0.100	< 0.100	< 0.100	278 E
GPW-9-397-25 (dup)	03/11/97	15	1.20 O^1	< 0.250	< 0.750	< 0.130	< 0.130	< 0.130	< 0.130	402
GPW-10-397-17	03/12/97	17	0.29 E, O^1	< 0.250	< 0.750	< 0.020	< 0.020	< 0.020	< 0.020	276
MW-1-0597	05/08/97		< 0.05	—	—	< 0.0005	< 0.0005	< 0.0005	< 0.0005	
MW-20-0597 (dup)	05/08/97		< 0.05	< 0.25	< 0.750	< 0.0005	< 0.0005	< 0.0005	< 0.0005	
MW-2-0597[a]	05/08/97		< 0.05	< 0.25	< 0.750	< 0.0005	< 0.0005	< 0.0005	< 0.0005	
MW-3-0597[a]	05/08/97		< 0.05	< 0.25	< 0.750	< 0.0005	< 0.0005	< 0.0005	< 0.0005	
MW-4-0597	05/08/97		< 0.05	< 0.25	< 0.750	< 0.0005	< 0.0005	< 0.0005	< 0.0005	
MW-D-0597	05/12/97		< 0.05	< 0.25	< 0.750	< 0.0005	< 0.0005	< 0.0005	< 0.0005	
MW-E-0597	05/12/97		< 0.05	< 0.25	< 0.750	< 0.0005	< 0.0005	< 0.0005	< 0.0005	
MW-1-0897	08/20/97		< 0.05	< 0.25	NA	< 0.0005	< 0.0005	< 0.0005	< 0.0005	
MW-2-0897	08/20/97		< 0.05	< 0.25	NA	< 0.0005	< 0.0005	< 0.0005	< 0.0005	
MW-5-0897 (dup)	08/20/97		< 0.05	< 0.25	NA	< 0.0005	< 0.0005	< 0.0005	< 0.0005	
MW-3-0897	08/20/97		< 0.05	< 0.25	NA	< 0.0005	< 0.0005	< 0.0005	< 0.0005	
MW-4-0897	08/20/97		< 0.05	< 0.25	NA	< 0.0005	< 0.0005	< 0.0005	< 0.0005	
MW-D-0897	08/20/97		< 0.05	< 0.25	NA	< 0.0005	< 0.0005	< 0.0005	< 0.0005	
MW-E-0897	08/20/97		< 0.05	< 0.25	NA	< 0.0005	< 0.0005	< 0.0005	< 0.0005	

NOTE:

— = Not analyzed.

E = The associated numerical value is an estimated quantity.

O^1 = Quantitated as gasoline. The sample contained an unknown peak that eluted in the gasoline range.

O^2 = Quantitated as diesel. The sample contained components ligher than diesel that partially eluted in the diesel range.

Table 6-7
VOCs in Groundwater - Geoprobe™ Samples
New City Cleaners Site
Richland, Washington

Sample Name	Date	Depth (feet)	TSS (mg/L)	*cis*-1,2-Dichloro-ethene (mg/L)	Trichloro-ethene (mg/L)	Tetrachloro-ethene (mg/L)	1,2,4-Tri-methyl-benzene (mg/L)
GPW-1-397-15	03/12/97	15	799	< 0.010	0.018	0.210	< 0.040
GPW-2-397-17	03/12/97	17	176	< 0.1	< 0.1	4.3	< 0.4
GPW-3-397-19	03/12/97	19	1,040	< 0.025	0.056	1.1	< 0.1
GPW-4-397-19	03/12/97	19	48	< 0.010	< 0.010	0.340	< 0.040
GPW-5-397-19	03/12/97	19	3,740	0.620	0.160	0.9	0.490
GPW-6-397-15	03/12/97	15	1,690	2.3	3.5	1.0	< 0.4
GPW-7-397-11	03/12/97	11	5,630	< 0.1	< 0.1	4.3	< 0.4
GPW-8-397-10	03/11/97	10	677	< 0.020	< 0.020	1.0	< 0.080
GPW-9-397-15	03/11/97	15	278	< 0.1	< 0.1	2.2	< 0.4
GPW-9-397-25 (dup)	03/11/97	15	402	< 0.130	< 0.130	2.2	< 0.5
GPW-10-397-17	03/12/97	17	276	< 0.020	< 0.020	0.059	< 0.080

NOTE:
— = Not analyzed.

Table 6-8
VOCs in Groundwater - Monitoring Well Samples
New City Cleaners Site
Richland, Washington

Sample Name	Date	*cis*-1,2-Dichloro-ethene (mg/L)	Chloroform (mg/L)	Trichloro-ethene (mg/L)	Tetrachloro-ethene (mg/L)
MW-1-0597	05/08/97	< 0.0005	< 0.0005	< 0.0005	0.0028
MW-20-0597 (dup)	05/08/97	< 0.0005	< 0.0005	< 0.0005	0.0033
MW-2-0597[a]	05/08/97	< 0.0005	< 0.0005	0.0042	0.047
MW-3-0597[a]	05/08/97	< 0.0005	< 0.0005	0.0023	0.054
MW-4-0597	05/08/97	< 0.0005	< 0.0005	0.001	0.0026
MW-D-0597	05/12/97	< 0.0005	< 0.0005	< 0.0005	< 0.0005
MW-E-0597	05/12/97	0.0008	< 0.0005	0.0061	0.039
MW-1-0897	08/20/97	< 0.0005	< 0.0005	0.001	0.031
MW-2-0897	08/20/97	< 0.0005	< 0.0005	0.0057	0.058
MW-5-0897 (dup)	08/20/97	< 0.0005	< 0.0005	0.0058	0.065
MW-3-0897	08/20/97	< 0.0005	< 0.0005	0.0017	0.035
MW-4-0897	08/20/97	< 0.0005	< 0.0005	0.001	0.0012
MW-D-0897	08/20/97	< 0.0005	0.0009	< 0.0005	< 0.0005
MW-E-0897	08/20/97	0.0006	< 0.0005	0.0034	0.0077

NOTE:

— = Not analyzed.

[a] Sample names for wells MW-2 and MW-3 were transposed in the field. Data tables reflect the corrected sample locations.

Table 6-9
Summary Statistics - Groundwater Samples
New City Cleaners Site
Richland, Washington

Compound	Number Analyzed	Number Detected	Minimum Detected (mg/L)	Maximum Detected (mg/L)	Average (mg/L)	Minimum Detection Limit (mg/L)	Maximum Detection Limit (mg/L)	Distribution	UCL 95 (mg/L)
Groundwater - Geoprobe™									
Dichlorodifluoromethane	10	0	NA	NA	NA	0.010	0.12	NA	NA
Chloromethane	10	0	NA	NA	NA	0.010	0.12	NA	NA
Vinyl Chloride	10	0	NA	NA	NA	0.010	0.12	NA	NA
Bromomethane	10	0	NA	NA	NA	0.010	0.12	NA	NA
Chloroethane	10	0	NA	NA	NA	0.010	0.12	NA	NA
Trichlorofluoromethane	10	0	NA	NA	NA	0.010	0.12	NA	NA
Acetone	10	0	NA	NA	NA	0.40	4.5	NA	NA
1,1-Dichloroethene	10	0	NA	NA	NA	0.010	0.12	NA	NA
Carbon Disulfide	10	0	NA	NA	NA	0.010	0.12	NA	NA
Methylene Chloride	10	0	NA	NA	NA	0.020	0.22	NA	NA
trans-1,2-Dichloroethene	10	0	NA	NA	NA	0.010	0.12	NA	NA
1,1-Dichloroethane	10	0	NA	NA	NA	0.010	0.12	NA	NA
2-Butanone(MEK)	10	0	NA	NA	NA	0.40	4.5	NA	NA
2,2-Dichloropropane	10	0	NA	NA	NA	0.010	0.12	NA	NA
cis-1,2-Dichloroethene	10	2	0.620	2.300	1.5	0.010	0.12	NA	NA
Chloroform	10	0	NA	NA	NA	0.010	0.12	NA	NA
Bromochloromethane	10	0	NA	NA	NA	0.010	0.12	NA	NA
1,1,1-Trichloroethane	10	0	NA	NA	NA	0.010	0.12	NA	NA
1,1-Dichloropropene	10	0	NA	NA	NA	0.010	0.12	NA	NA
CarbonTetrachloride	10	0	NA	NA	NA	0.010	0.12	NA	NA
1,2-Dichloroethane	10	0	NA	NA	NA	0.010	0.12	NA	NA
Trichloroethene	10	4	0.018	3.5	0.93	0.010	0.12	Neither	M (3.5)
1,2-Dichloropropane	10	0	NA	NA	NA	0.010	0.12	NA	NA
Bromodichloromethane	10	0	NA	NA	NA	0.010	0.12	NA	NA
Dibromomethane	10	0	NA	NA	NA	0.010	0.12	NA	NA
2-Hexanone	10	0	NA	NA	NA	0.40	4.5	NA	NA
cis-1,3-Dichloropropene	10	0	NA	NA	NA	0.010	0.12	NA	NA
trans-1,3-Dichloropropene	10	0	NA	NA	NA	0.010	0.12	NA	NA
1,1,2-Trichloroethane	10	0	NA	NA	NA	0.010	0.12	NA	NA
4-Methyl-2-pentanone	10	0	NA	NA	NA	0.40	4.5	NA	NA
1,3-Dichloropropane	10	0	NA	NA	NA	0.010	0.12	NA	NA
Tetrachloroethene	10	10	0.059	4.3	1.5	NA	NA	Lognormal	11.9

Table 6-9
Summary Statistics - Groundwater Samples
New City Cleaners Site
Richland, Washington

Compound	Number Analyzed	Number Detected	Minimum Detected (mg/L)	Maximum Detected (mg/L)	Average (mg/L)	Minimum Detection Limit (mg/L)	Maximum Detection Limit (mg/L)	Distribution	UCL 95 (mg/L)
Groundwater - Geoprobe™									
Dibromochloromethane	10	0	NA	NA	NA	0.010	0.12	NA	NA
1,2-Dibromoethane	10	0	NA	NA	NA	0.040	1.0	NA	NA
Chloro-benzene	10	0	NA	NA	NA	0.010	0.12	NA	NA
1,1,1,2-Tetrachloroethane	10	0	NA	NA	NA	0.010	0.12	NA	NA
Styrene	10	0	NA	NA	NA	0.010	0.12	NA	NA
Bromoform	10	0	NA	NA	NA	0.010	0.12	NA	NA
Isopropylbenzene	10	0	NA	NA	NA	0.040	0.45	NA	NA
1,1,2,2-Tetrachloroethane	10	0	NA	NA	NA	0.010	0.12	NA	NA
1,2,3-Trichloropropane	10	0	NA	NA	NA	0.010	0.12	NA	NA
Bromobenzene	10	0	NA	NA	NA	0.010	0.12	NA	NA
n-Propylbenzene	10	0	NA	NA	NA	0.040	0.45	NA	NA
2-Chlorotoluene	10	0	NA	NA	NA	0.040	0.45	NA	NA
4-Chlorotoluene	10	0	NA	NA	NA	0.040	0.45	NA	NA
1,3,5-Trimethylbenzene	10	0	NA	NA	NA	0.040	0.45	NA	NA
tert-Butylbenzene	10	0	NA	NA	NA	0.040	0.45	NA	NA
1,2,4-Trimethylbenzene	10	1	0.49	NA	NA	0.040	0.45	NA	NA
sec-Butylbenzene	10	0	NA	NA	NA	0.040	0.45	NA	NA
1,3-Dichlorobenzene	10	0	NA	NA	NA	0.010	0.12	NA	NA
4-Isopropyltoluene	10	0	NA	NA	NA	0.040	0.45	NA	NA
1,4-Dichlorobenzene	10	0	NA	NA	NA	0.010	0.12	NA	NA
n-Butylbenzene	10	0	NA	NA	NA	0.040	0.45	NA	NA
1,2-Dichlorobenzene	10	0	NA	NA	NA	0.010	0.12	NA	NA
1,2-Dibromo-3-chloropropane	10	0	NA	NA	NA	0.040	0.45	NA	NA
1,2,4-Trichlorobenzene	10	0	NA	NA	NA	0.040	0.45	NA	NA
1,2,3-Trichlorobenzene	10	0	NA	NA	NA	0.040	0.45	NA	NA
Naphthalene	10	0	NA	NA	NA	0.040	0.45	NA	NA
Hexachlorobutadiene	10	0	NA	NA	NA	0.040	0.45	NA	NA
TPH-G	6	6	0.29	6.4	2.0	NA	NA	Lognormal	20.8
TPH-D	6	2	0.36	0.50	0.43	0.25	0.25	NA	NA
TPH-O	6	0	NA	NA	NA	0.75	0.75	NA	NA
Benzene	10	0	NA	NA	NA	0.01	0.12	NA	NA
Toluene	10	0	NA	NA	NA	0.01	0.12	NA	NA
Ethylbenzene	10	0	NA	NA	NA	0.01	0.12	NA	NA
Total Xylenes	10	1	0.26	NA	NA	0.01	0.12	NA	NA

Table 6-9
Summary Statistics - Groundwater Samples
New City Cleaners Site
Richland, Washington

Compound	Number Analyzed	Number Detected	Minimum Detected (mg/L)	Maximum Detected (mg/L)	Average (mg/L)	Minimum Detection Limit (mg/L)	Maximum Detection Limit (mg/L)	Distribution	UCL 95 (mg/L)
Groundwater - Monitoring Wells									
Dichlorodifluoromethane	12	0	NA	NA	NA	0.0005	0.0005	NA	NA
Chloromethane	12	0	NA	NA	NA	0.0005	0.0005	NA	NA
Vinyl Chloride	12	0	NA	NA	NA	0.0005	0.0005	NA	NA
Bromomethane	12	0	NA	NA	NA	0.0005	0.0005	NA	NA
Chloroethane	12	0	NA	NA	NA	0.0005	0.0005	NA	NA
Trichlorofluoromethane	12	0	NA	NA	NA	0.0005	0.0005	NA	NA
Acetone	12	0	NA	NA	NA	0.0200	0.0200	NA	NA
1,1-Dichloroethene	12	0	NA	NA	NA	0.0005	0.0005	NA	NA
Carbon Disulfide	12	0	NA	NA	NA	0.0005	0.0005	NA	NA
Methylene Chloride	12	0	NA	NA	NA	0.0010	0.0010	NA	NA
trans-1,2-Dichloroethene	12	0	NA	NA	NA	0.0005	0.0005	NA	NA
1,1-Dichloroethane	12	0	NA	NA	NA	0.0005	0.0005	NA	NA
2-Butanone(MEK)	12	0	NA	NA	NA	0.0200	0.0200	NA	NA
2,2-Dichloropropane	12	0	NA	NA	NA	0.0005	0.0005	NA	NA
cis-1,2-Dichloroethene	12	2	0.0006	0.0008	0.0007	0.0005	0.0005	NA	NA
Chloroform	12	1	0.0009	NA	NA	0.0005	0.0005	NA	NA
Bromochloromethane	12	0	NA	NA	NA	0.0005	0.0005	NA	NA
1,1,1-Trichloroethane	12	0	NA	NA	NA	0.0005	0.0005	NA	NA
1,1-Dichloropropene	12	0	NA	NA	NA	0.0005	0.0005	NA	NA
CarbonTetrachloride	12	0	NA	NA	NA	0.0005	0.0005	NA	NA
1,2-Dichloroethane	12	0	NA	NA	NA	0.0005	0.0005	NA	NA
Trichloroethene	12	9	0.0010	0.0061	0.0029	0.0005	0.0005	Lognormal	0.0087
1,2-Dichloropropane	12	0	NA	NA	NA	0.0005	0.0005	NA	NA
Bromodichloromethane	12	0	NA	NA	NA	0.0005	0.0005	NA	NA
Dibromomethane	12	0	NA	NA	NA	0.0005	0.0005	NA	NA
2-Hexanone	12	0	NA	NA	NA	0.0200	0.0200	NA	NA
cis-1,3-Dichloropropene	12	0	NA	NA	NA	0.0005	0.0005	NA	NA
trans-1,3-Dichloropropene	12	0	NA	NA	NA	0.0005	0.0005	NA	NA
1,1,2-Trichloroethane	12	0	NA	NA	NA	0.0005	0.0005	NA	NA
4-Methyl-2-pentanone	12	0	NA	NA	NA	0.0200	0.0200	NA	NA
1,3-Dichloropropane	12	0	NA	NA	NA	0.0005	0.0005	NA	NA
Tetrachloroethene	12	10	0.001	0.062	0.028	0.0005	0.0005	Normal	0.035
Dibromochloromethane	12	0	NA	NA	NA	0.0005	0.0005	NA	NA
1,2-Dibromoethane	12	0	NA	NA	NA	0.0020	0.0020	NA	NA

Table 6-9
Summary Statistics - Groundwater Samples
New City Cleaners Site
Richland, Washington

Compound	Number Analyzed	Number Detected	Minimum Detected (mg/L)	Maximum Detected (mg/L)	Average (mg/L)	Minimum Detection Limit (mg/L)	Maximum Detection Limit (mg/L)	Distribution	UCL 95 (mg/L)
Groundwater - Monitoring Wells									
Chloro-benzene	12	0	NA	NA	NA	0.0005	0.0005	NA	NA
1,1,1,2-Tetrachloroethane	12	0	NA	NA	NA	0.0005	0.0005	NA	NA
Styrene	12	0	NA	NA	NA	0.0005	0.0005	NA	NA
Bromoform	12	0	NA	NA	NA	0.0005	0.0005	NA	NA
Isopropylbenzene	12	0	NA	NA	NA	0.0020	0.0020	NA	NA
1,1,2,2-Tetrachloroethane	12	0	NA	NA	NA	0.0005	0.0005	NA	NA
1,2,3-Trichloropropane	12	0	NA	NA	NA	0.0005	0.0005	NA	NA
Bromobenzene	12	0	NA	NA	NA	0.0005	0.0005	NA	NA
n-Propylbenzene	12	0	NA	NA	NA	0.0020	0.0020	NA	NA
2-Chlorotoluene	12	0	NA	NA	NA	0.0020	0.0020	NA	NA
4-Chlorotoluene	12	0	NA	NA	NA	0.0020	0.0020	NA	NA
1,3,5-Trimethylbenzene	12	0	NA	NA	NA	0.0020	0.0020	NA	NA
tert-Butylbenzene	12	0	NA	NA	NA	0.0020	0.0020	NA	NA
1,2,4-Trimethylbenzene	12	0	NA	NA	NA	0.0020	0.0020	NA	NA
sec-Butylbenzene	12	0	NA	NA	NA	0.0020	0.0020	NA	NA
1,3-Dichlorobenzene	12	0	NA	NA	NA	0.0005	0.0005	NA	NA
4-Isopropyltoluene	12	0	NA	NA	NA	0.0020	0.0020	NA	NA
1,4-Dichlorobenzene	12	0	NA	NA	NA	0.0005	0.0005	NA	NA
n-Butylbenzene	12	0	NA	NA	NA	0.0020	0.0020	NA	NA
1,2-Dichlorobenzene	12	0	NA	NA	NA	0.0005	0.0005	NA	NA
1,2-Dibromo-3-chloropropane	12	0	NA	NA	NA	0.0020	0.0020	NA	NA
1,2,4-Trichlorobenzene	12	0	NA	NA	NA	0.0020	0.0020	NA	NA
1,2,3-Trichlorobenzene	12	0	NA	NA	NA	0.0020	0.0020	NA	NA
Naphthalene	12	0	NA	NA	NA	0.0020	0.0020	NA	NA
Hexachlorobutadiene	12	0	NA	NA	NA	0.0020	0.0020	NA	NA
TPH-G	12	0	NA	NA	NA	0.05	0.05	NA	NA
TPH-D	12	0	NA	NA	NA	0.25	0.25	NA	NA
TPH-O	6	0	NA	NA	NA	0.75	0.75	NA	NA
Benzene	12	0	NA	NA	NA	0.0005	0.0005	NA	NA
Toluene	12	0	NA	NA	NA	0.0005	0.0005	NA	NA
Ethylbenzene	12	0	NA	NA	NA	0.0005	0.0005	NA	NA
Total Xylenes	12	0	NA	NA	NA	0.0005	0.0005	NA	NA

NOTE:
NA= Not available.
M indicates default to maximum value, maximum vlaue listed in parentheses.

Table 8-1

Human Health Indicator Hazardous Substances in Soil
New City Cleaners
Richland, Washington

Location	Chemical	Number of Detects [a]	Number of Samples [a]	Detection Frequency	Maximum Detected Value (mg/kg) [a]	Method B Soil CUL to Protect Groundwater (mg/kg) [b]	Maximum Exceeds CUL?
Surface	Acetone	6	25	24%	0.2	80	N
	Tetrachloroethene	14	25	56%	27	0.0858	Y
Subsurface	Acetone	1	35	3%	0.06	80	N
	Carbon disulfide	1	35	3%	0.008	80	N
	cis-1,2-Dichloroethene	5	35	14%	26	8	Y
	Trichloroethene	10	35	29%	0.95	0.398	Y
	Tetrachloroethene	27	35	77%	7.5	0.0858	Y
	n-Propylbenzene	1	35	3%	10	NA	N
	1,3,5-Trimethylbenzene	2	35	6%	16	NA	N
	tert-Butylbenzene	1	35	3%	7	NA	N
	1,2,4-Trimethylbenzene	2	35	6%	51	NA	N
	sec-Butylbenzene	2	35	6%	7	NA	N
	4-Isopropyltoluene	2	35	6%	9	NA	N
	n-Butylbenzene	2	35	6%	8	NA	N
	TPH-G	4	23	17%	2300	100	Y
	TPH-D	4	23	17%	1040	200	Y
	TPH-O	3	23	13%	1450	200	Y
	Xylenes	1	35	3%	12	1600	N

NOTE:
CUL = Cleanup level
IHS = Indicator hazardous substance
NA = Not available
TPH-G = Total petroleum hydrocarbons as gasoline
TPH-D = Total petroleum hydrocarbons as diesel
TPH-O = Total petroleum hydrocarbons as oil

[a] From Table 6-5.

[b] From Model Toxics Control Act Cleanup Levels and Risk Calculations (CLARC II) Update. February 1996. Publication No. 94-145. Washington State Department of Ecology, Olympia, Washington. TPH values are Method A residential.

Table 8-2

Human Health Indicator Hazardous Substances in Groundwater
New City Cleaners
Richland, Washington

Chemical	Number of Detects [a]	Number of Samples [a]	Detection Frequency	Maximum Detected Value (mg/L) [a]	Method B Groundwater CUL (mg/L) [b]	Maximum Exceeds CUL?
cis-1,2-Dichloroethene	2	12	17%	0.0008	0.08	N
Chloroform	1	12	8%	0.0009	0.00717	N
Trichloroethene	9	12	75%	0.0061	0.00398	Y
Tetrachloroethene	10	12	83%	0.062	0.000858	Y

NOTE:
CUL = Cleanup level
IHS = Indicator hazardous substance
NA = Not available
UCL95 = Upper 95 percent confidence limit on the mean.
[a] From Table 6-9.
[b] From Model Toxics Control Act Cleanup Levels and Risk Calculations (CLARC II) Update. February 1996. Publication No. 94-145. Washington State Department of Ecology, Olympia, Washington.

Table 8-3
Human Health Exposure Pathway Analysis
New City Cleaners
Richland, Washington

Medium	IHSs	Exposure Pathway	Currently Complete	Potentially Complete in Future	Incomplete	Comments
Surface soil	PCE	Direct contact	X			Site is largely unpaved.
		Inhalation of vapors from soil	X			PCE is volatile.
		Inhalation of dust from soil	X			Site is largely unpaved and unvegetated.
		Leaching to groundwater	X			PCE was detected in groundwater.
Subsurface soil	cis-1,2-DCE, PCE, TCE, TPH-G, TPH-D, TPH-O	Direct contact		X		Could occur during excavation.
		Inhalation of vapors from soil	X			Many soil IHSs are volatile.
		Inhalation of dust from soil		X		Could occur during excavation.
		Leaching to groundwater	X			Some soil IHSs were detected in groundwater.
Groundwater	PCE, TCE	Ingestion		X		Could occur if well drilled on site.
		Inhalation of vapors from groundwater		X		Could occur if well drilled on site.
		Dermal absorption from groundwater		X		Could occur if well drilled on site.

NOTE:
cis-1,2-DCE = cis-1,2-Dichloroethene
CUL = Cleanup level
IHS = Indicator hazardous substance
PCE = Tetrachloroethene
TCE = Trichloroethene
TPH-G = Total petroleum hydrocarbons as gasoline
TPH-D = Total petroleum hydrocarbons as diesel
TPH-O = Total petroleum hydrocarbons as oil

Table 8-4

Human Health Risk Estimates for Soil
New City Cleaners
Richland, Washington

Chemical	Maximum Soil Concentrations		Direct Contact Soil Cleanup Levels		Risk Estimates for Direct Contact with Surface Soil		Risk Estimates for Direct Contact with Subsurface Soil	
	Surface (mg/kg)	Subsurface (mg/kg)	Noncarc. (mg/kg)	Carcinogen (mg/kg)	HQ[a] (unitless)	Risk[b] (unitless)	HQ[a] (unitless)	Risk[b] (unitless)
cis-1,2-DCE	NA	26	800	NA	NA	NA	0.03	NA
PCE	27	7.5	800	19.6	0.03	1.38E-06	0.009	3.83E-07
TCE	NA	0.95	NV	90.9	NA	NA	NV	1.05E-08
TPH-G[c]	NA	2,300	NA	NA	NA	NA	0.70	NA
TPH-D[c]	NA	1,040	NA	NA	NA	NA	0.30	NA
TPH-O[c]	NA	1,450	NA	NA	NA	NA	0.50	NA
Xylenes[c]	NA	12	NA	NA	NA	NA	7.50E-05	NA
Total HI or Cancer Risk					0.03	1.4E-06	1.5	3.9E-07

NOTE:
cis-1,2-DCE = cis-1,2-Dichloroethene
GW = Groundwater
HI = Hazard index
HQ = Hazard quotient
NA = Not applicable
NV = Not available
PCE = Tetrachloroethene
TCE = Trichloroethene
TPH-G = Total petroleum hydrocarbons as gasoline
TPH-D = Total petroleum hydrocarbons as diesel
TPH-O = Total petroleum hydrocarbons as oil
1E-6 is abbreviated scientific notation equivalent to 1×10^{-6} or 0.000001.

[a] HQ = Site Conc. x 1.0 / Noncarcinogen CUL
[b] Risk = Site Conc. x 1E-6 / Carcinogen CUL
[c] Risk estimates from Table H-4.

Table 8-5

Human Health Risk Estimates for Groundwater
New City Cleaners
Richland, Washington

Chemical	Maximum Groundwater Conc. (mg/L)	Groundwater Cleanup Levels		Risk Estimates for Groundwater Consumption	
		Noncarc. (mg/L)	Carcinogen (mg/L)	HQ [a] (unitless)	Risk [b] (unitless)
PCE [c]	0.035	0.08	8.58E-04	0.44	4.08E-05
TCE	0.0061	NV	3.98E-03	NV	1.53E-06
Total HI or Cancer Risk				0.4	4.2E-05

NOTE:
HI = Hazard index
HQ = Hazard quotient
NV = Not available
PCE = Tetrachloroethene
TCE = Trichloroethene
1E-6 is abbreviated scientific notation equivalent to 1 x 10^{-6} or 0.000001.

[a] HQ = Site Conc. x 1.0 / Noncarcinogen CUL

[b] Risk = Site Conc. x 1E-6 / Carcinogen CUL

[c] UCL95 value was used instead of the maximum value. This was the only chemical for which a UCL95 value could be calculated and for which the UCL95 was less than the maximum detected value.

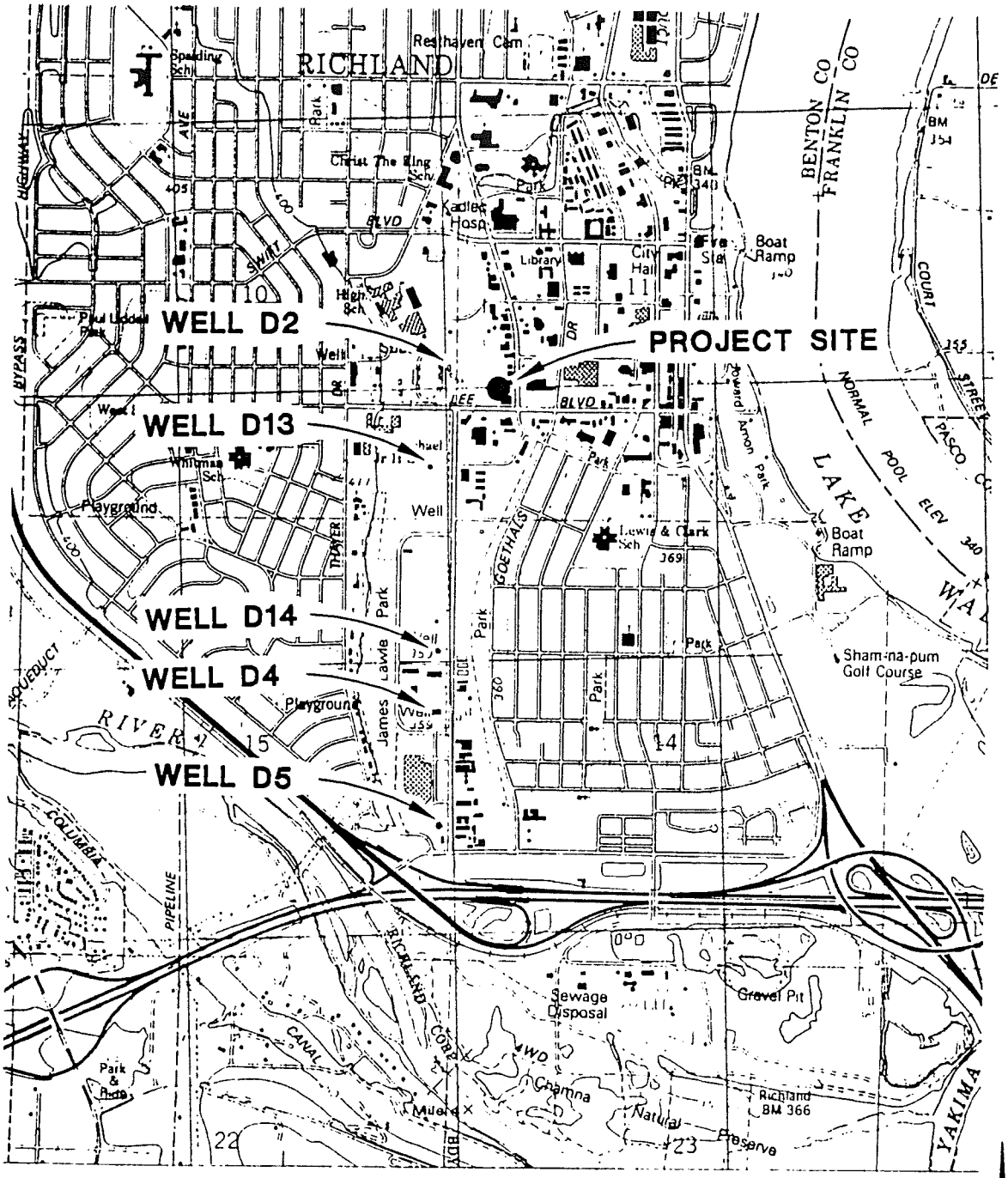
Table 8-6

Ecological Indicator Hazardous Substances in Groundwater
New City Cleaners
Richland, Washington

Chemical	Number of Detects[a]	Number of Samples[a]	Detection Frequency	Maximum Detected Value (mg/L) [a]	Federal LOEL/10 (mg/L) [b]	Maximum Exceeds LOEL/10?
cis-1,2-Dichloroethene	2	12	17%	0.0008	NV	N
Chloroform	1	12	8%	0.0009	0.124	N
Trichloroethene	9	12	75%	0.0061	2.19	N
Tetrachloroethene	10	12	83%	0.062	0.084	N

NOTE:
IHS = Indicator hazardous substance
LOEL = Lowest observed effect level
NV = Not available
UCL95 = Upper 95 percent confidence limit on the mean.
[a] From Table 6-9.
[b] From USEPA. 1991. Water Quality Criteria Summary. Poster produced by USEPA, Office of Science and Technology, Health and Ecological Criteria Division, Washington, D.C. May.

FIGURES



RICHLAND

WASHINGTON

MAP SOURCE: RICHLAND WASHINGTON
U.S.G.S. 7.5' QUADRANGLE

emcon

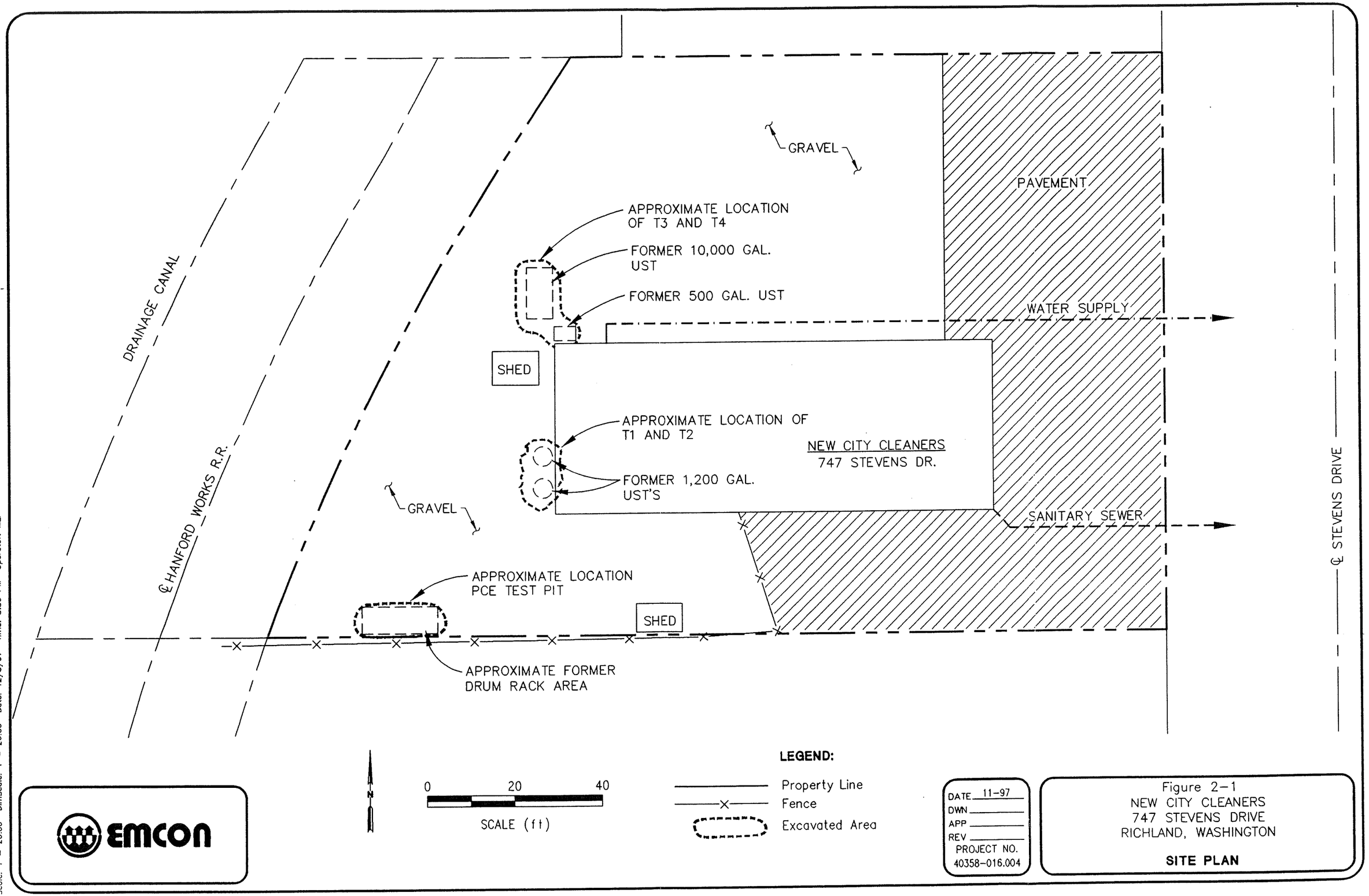
DATE 12-97
DWN. JAB
REV.
APPR. RCL

NEW CITY CLEANERS
747 STEVENS DRIVE
RICHLAND, WASHINGTON

SITE LOCATION MAP

FIGURE
1-1
PROJECT NO.
40358-001.002

1:1 12/8/97 G:\DWG\0358\001\FIG_1-1.DWG



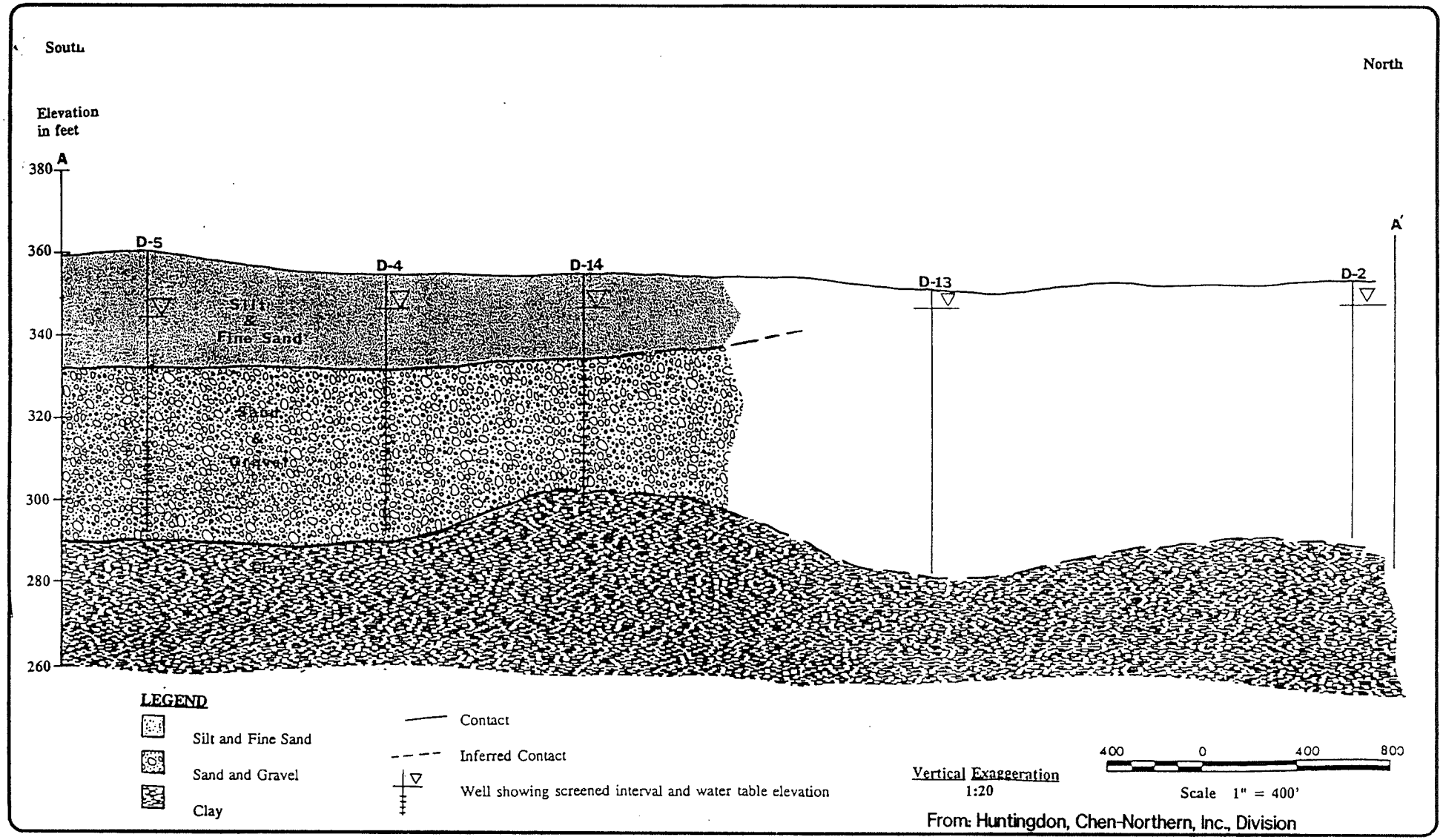
EMCON

DATE 11-97
DWN
APP
REV
PROJECT NO.
40358-016.004

Figure 2-1
NEW CITY CLEANERS
747 STEVENS DRIVE
RICHLAND, WASHINGTON

SITE PLAN

ENW-BOTHELL2/DATA: G:\DWG\40358016\B0004R15.dwg Xrefs: <NONE>
Scale: 1 = 20.00 DimScale: 1 = 20.00 Date: 12/5/97 Time: 3:30 PM Operator: MLP



EMCON

DATE 11-97
DWN. JA
REV.
APPR.
PROJECT NO.
40358-016.004

Figure 3-1
NEW CITY CLEANERS
747 STEVENS DRIVE
RICHLAND, WASHINGTON

REGIONAL GEOLOGIC CROSS SECTION

1= 600 11-25-96 G:\DWG\11X85.DWG

MW-3 B'

MW-4

I-3

I-4

I-6

GP-8

DRAINAGE CANAL

G-2

G-3

G-4

G-6

SB-2

GP-7

F-5

FORMER 10,000 GAL. UST

FORMER 500 GAL. UST

SHED

E-2

E-3

E-4

GP-9

E-6

NEW CITY CLEANERS
747 STEVENS DR.

D-4

D-5

GP-5

FORMER 1,200 GAL. UST'S

℄ HANFORD WORKS R.R.

C-2

C-3

C-4

SB-1

C-6

GP-6

MW-1

B-5

B-7

GP-10

GP-1

GP-2

GP-3

A

MW-2
A'

A-1

A-2

A-3

A-4

A-6

SHED

℄ STEVENS DRIVE

APPROXIMATE FORMER DRUM RACK AREA

GP-4 B

LEGEND:

MW-1 Monitoring Wells
GP-2 Geoprobe Boring
SB-1 Soil Boring
C-4 Surface Soil Sample
Property Line
Fence
A-A' Cross Section Line

N

0 20 40

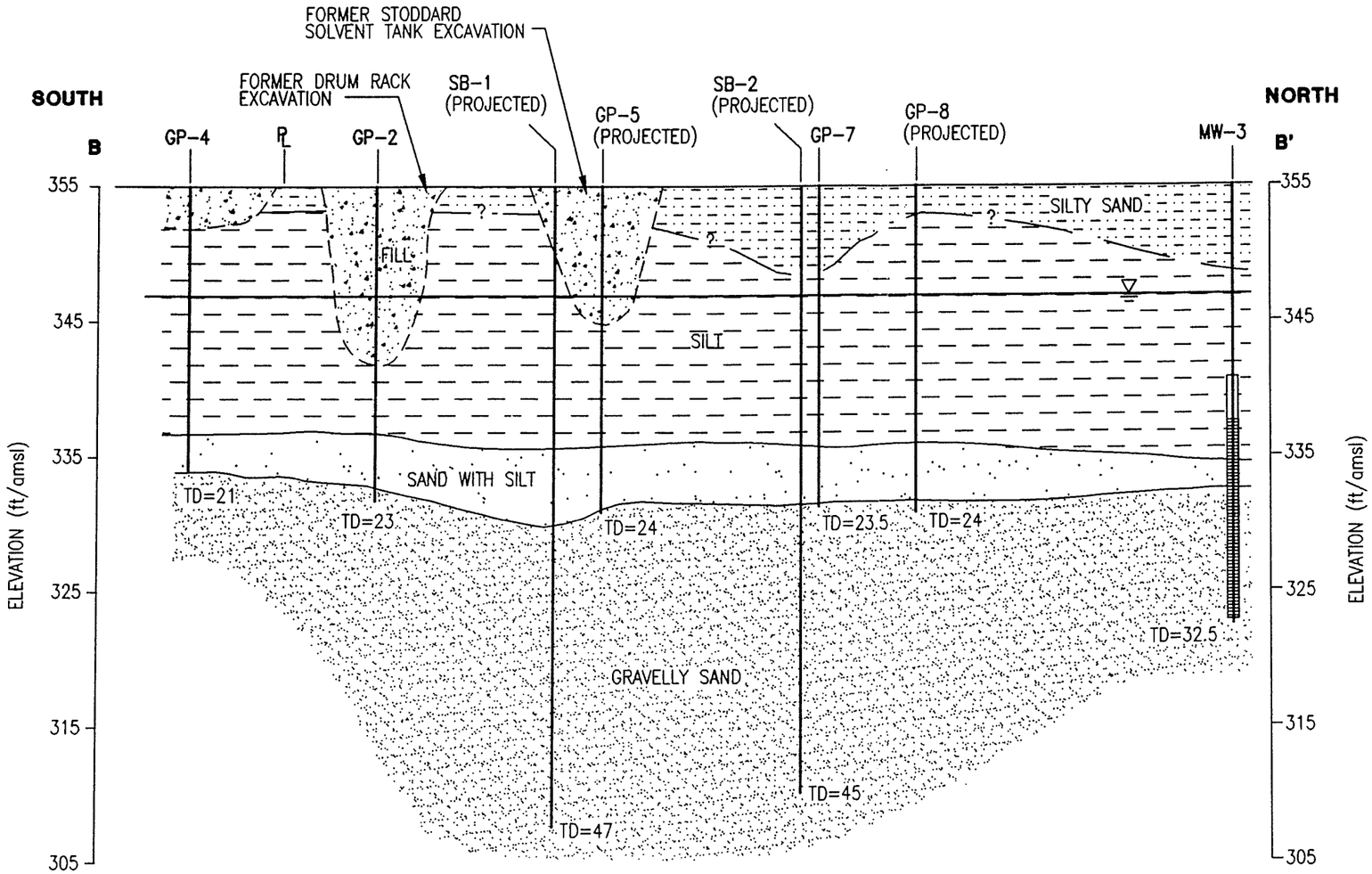
SCALE (ft)

EMCON

DATE 11-97
DWN
APP
REV
PROJECT NO.
40358-016.004

Figure 4-1
NEW CITY CLEANERS
747 STEVENS DRIVE
RICHLAND, WASHINGTON
SOIL SAMPLE, MONITORING WELL AND BORING LOCATIONS

ENW-Bu[illegible] DATA: G:\DWG\40358016\B0004R05.dwg Xrefs: <NONE>
Scale: 1 = 20.00 DimScale: 1 = 20.00 Date: 12/5/97 Time: 12:00 PM Operator: MLP



LEGEND:

- Sand Pack
- Well Screen
- TD=32.5 T.D. = Total Depth of Boring (ft)
- Approximate Elevation of Potentiometric Surface
- MW Monitoring Well
- GP Geoprobe Boring
- SB Soil Boring
- PL Property Line

0 20 40

HORIZONTAL SCALE (ft)

EMCON

DATE	11-97
DWN	JA
APP	
REV	
PROJECT NO.	40358-016.004

Figure 5-2
NEW CITY CLEANERS
747 STEVENS DRIVE
RICHLAND, WASHINGTON
GENERALIZED GEOLOGIC CROSS SECTION B-B'

ENW-BOTHELL2/DATA: G:\DWG\40358016\B00004R13.dwg Xrefs: <NONE>
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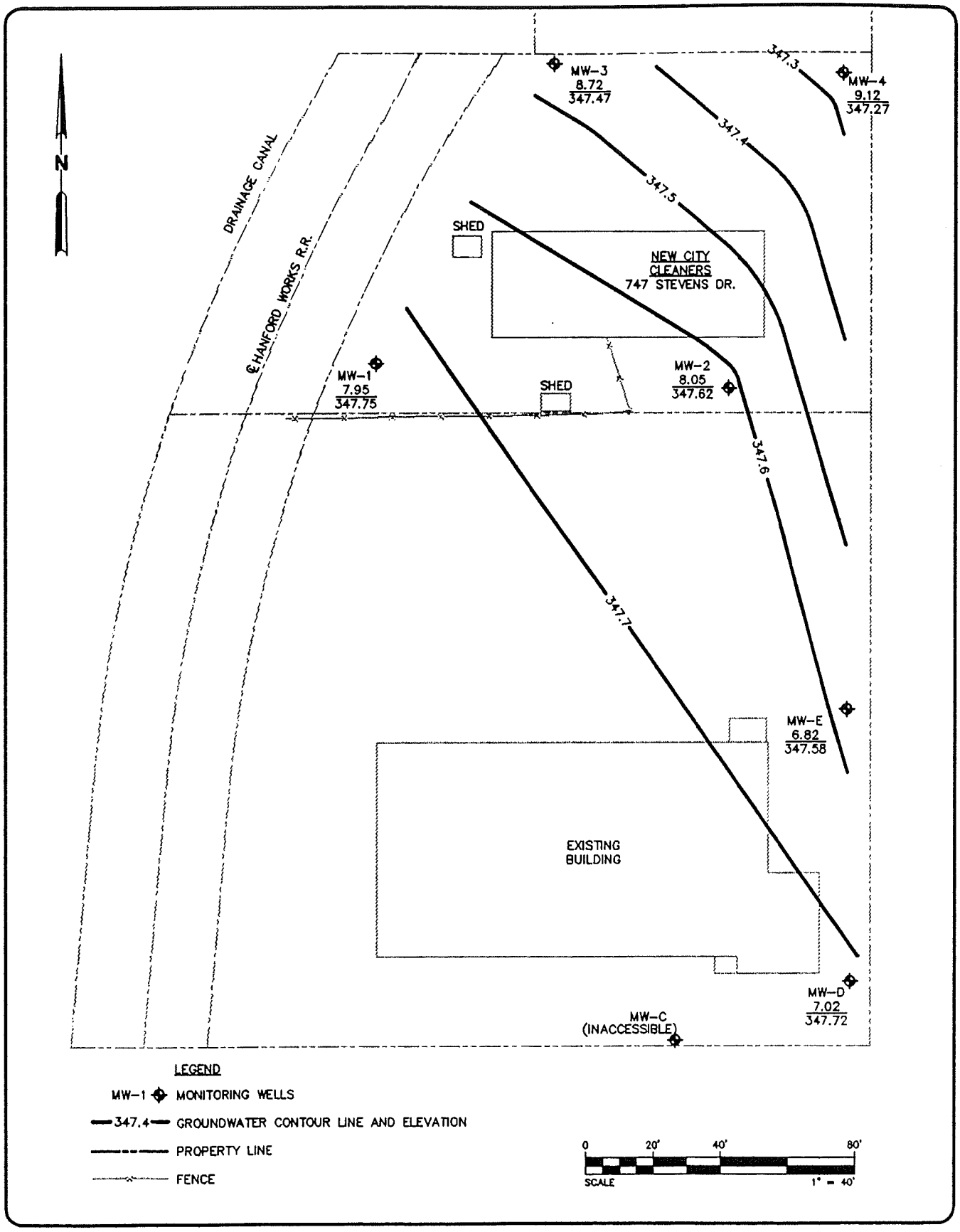
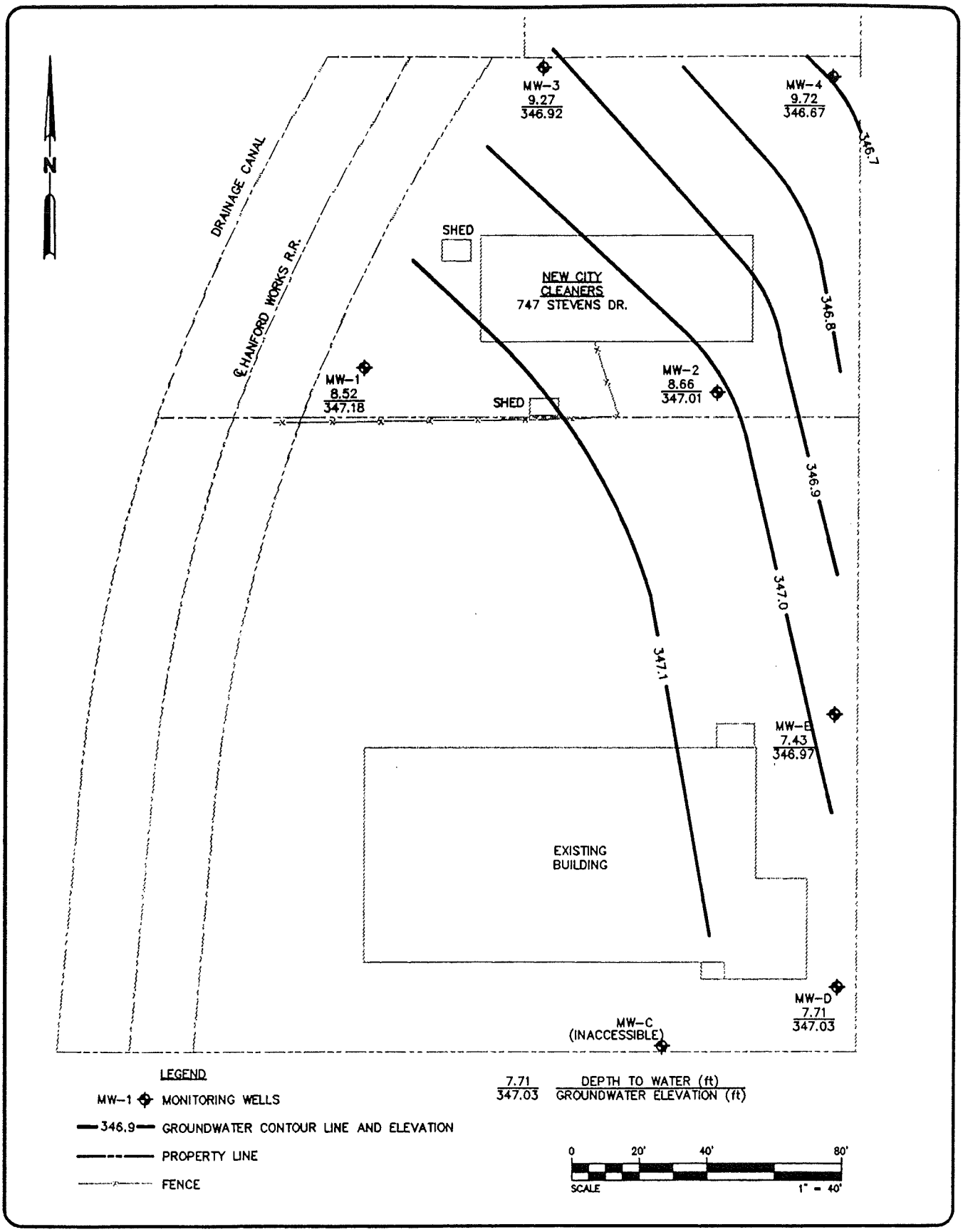


EMCON

DATE 7-97
DWN.
REV.
APPR.
PROJECT NO.
4358-016.004

Figure 5-3
NEW CITY CLEANERS
747 STEVENS DRIVE
RICHLAND, WASHINGTON
POTENTIOMETRIC SURFACE
MEASURED JUNE 19, 1997

1=1 12/5/97 G:\DWG\40358016\B0004R17

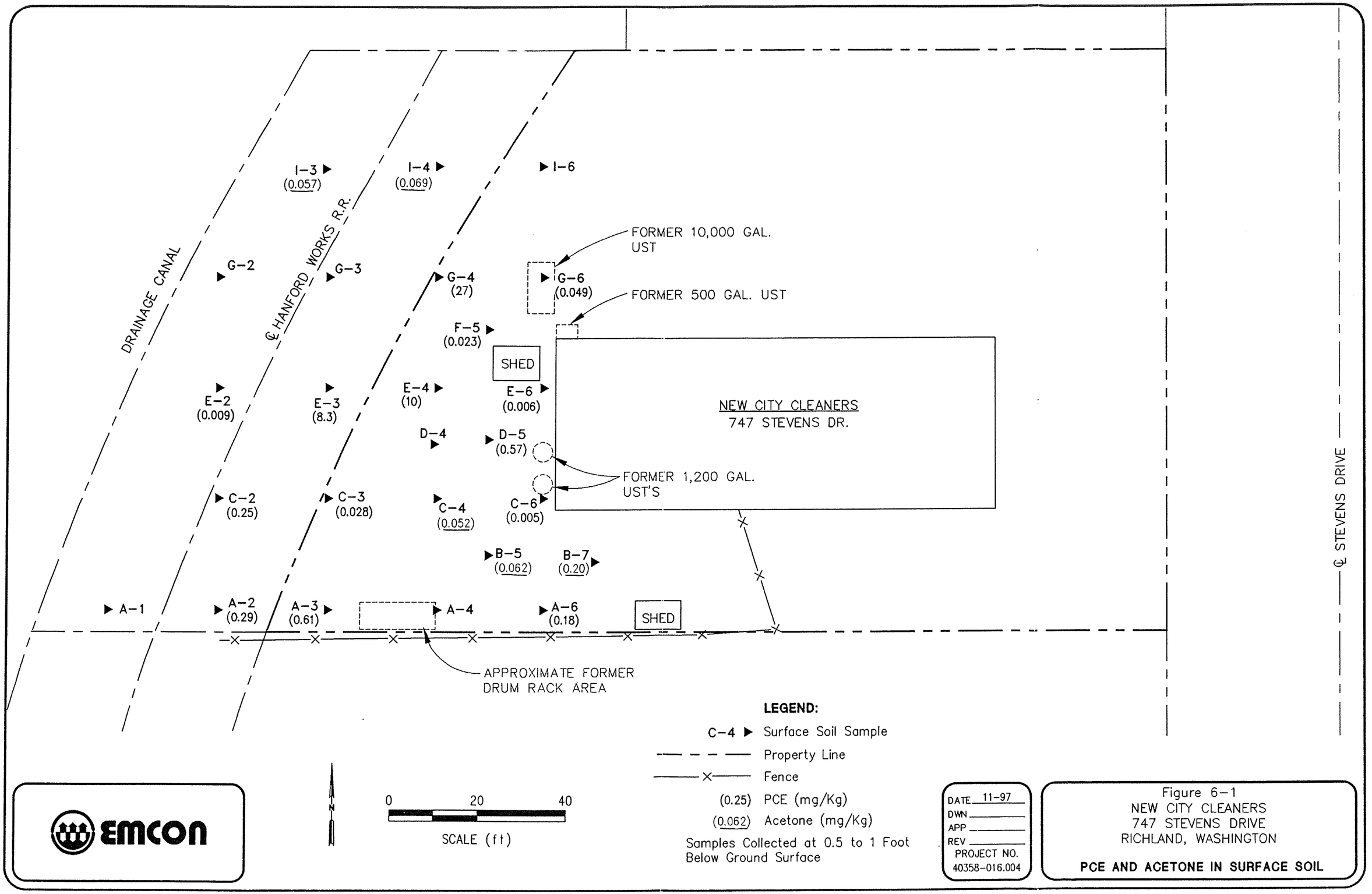


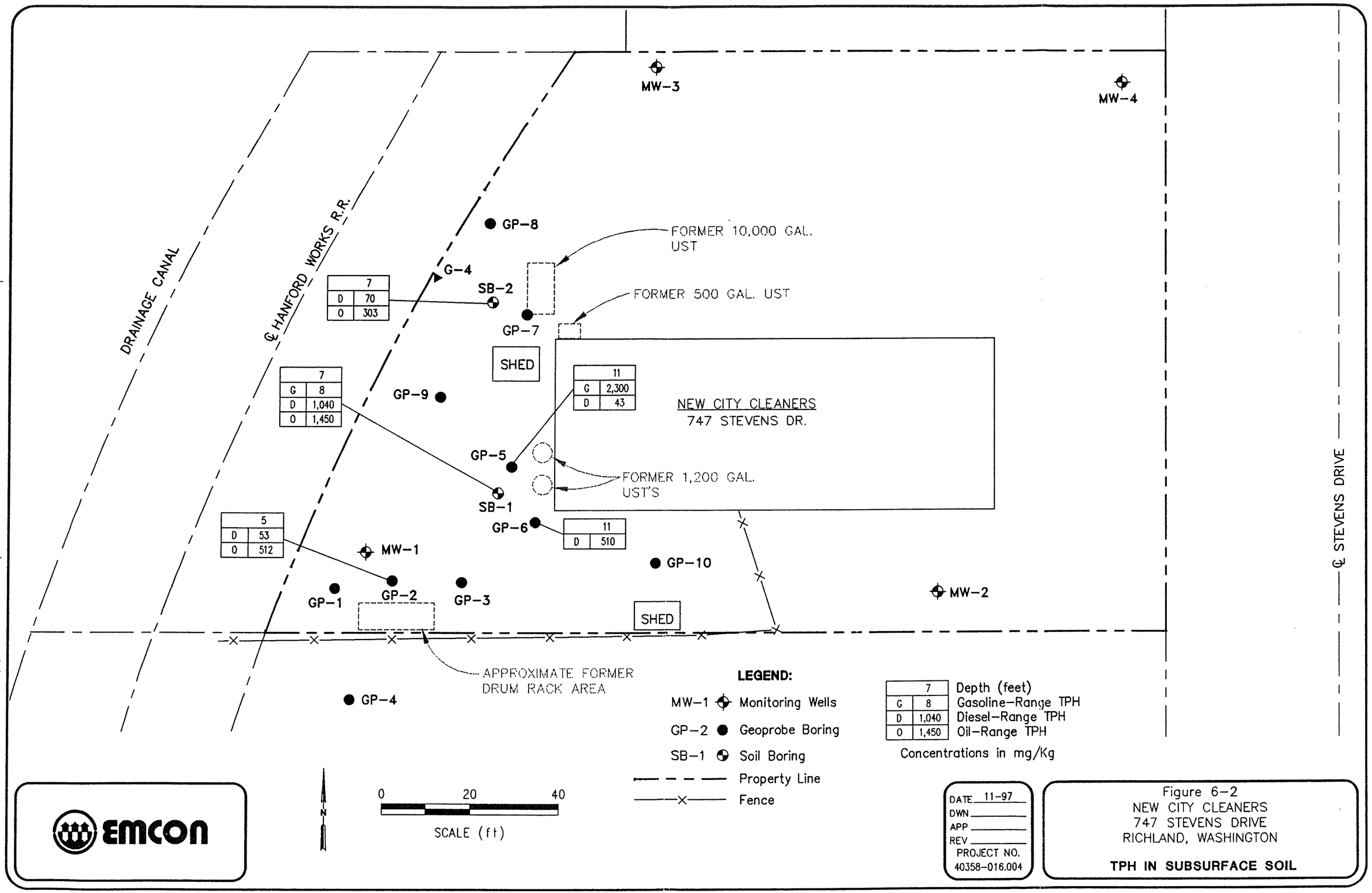
EMCON

DATE 7-97
DWN.
REV.
APPR.
PROJECT NO.
4358-016.004

Figure 5-4
NEW CITY CLEANERS
747 STEVENS DRIVE
RICHLAND, WASHINGTON
POTENTIOMETRIC SURFACE
MEASURED NOVEMBER 13, 1997

1=1 12/5/97 G:\DWG\40358016\B0004R04


I-3
(0.057)
I-4
(0.069)
I-6
DRAINAGE CANAL
℄ HANFORD WORKS R.R.
G-2
G-3
G-4
(27)
G-6
(0.049)
FORMER 10,000 GAL.
UST
FORMER 500 GAL. UST
F-5
(0.023)
SHED
E-2
(0.009)
E-3
(8.3)
E-4
(10)
E-6
(0.006)
NEW CITY CLEANERS
747 STEVENS DR.
D-4
D-5
(0.57)
FORMER 1,200 GAL.
UST'S
C-2
(0.25)
C-3
(0.028)
C-4
(0.052)
C-6
(0.005)
B-5
(0.062)
B-7
(0.20)
A-1
A-2
(0.29)
A-3
(0.61)
A-4
A-6
(0.18)
SHED
APPROXIMATE FORMER
DRUM RACK AREA
℄ STEVENS DRIVE
LEGEND:
C-4 ▶ Surface Soil Sample
Property Line
Fence
(0.25) PCE (mg/Kg)
(0.062) Acetone (mg/Kg)
Samples Collected at 0.5 to 1 Foot
Below Ground Surface
N
0
20
40
SCALE (ft)
EMCON
DATE 11-97
DWN
APP
REV
PROJECT NO.
40358-016.004
Figure 6-1
NEW CITY CLEANERS
747 STEVENS DRIVE
RICHLAND, WASHINGTON
PCE AND ACETONE IN SURFACE SOIL
ENW-BOTHELL2/DATA: G:\DWG\40358016\B0004R22.dwg Xrefs: <NONE>
Scale: 1 = 20.00 DimScale: 1 = 20.00 Date: 12/5/97 Time: 3:53 PM Operator: MLP



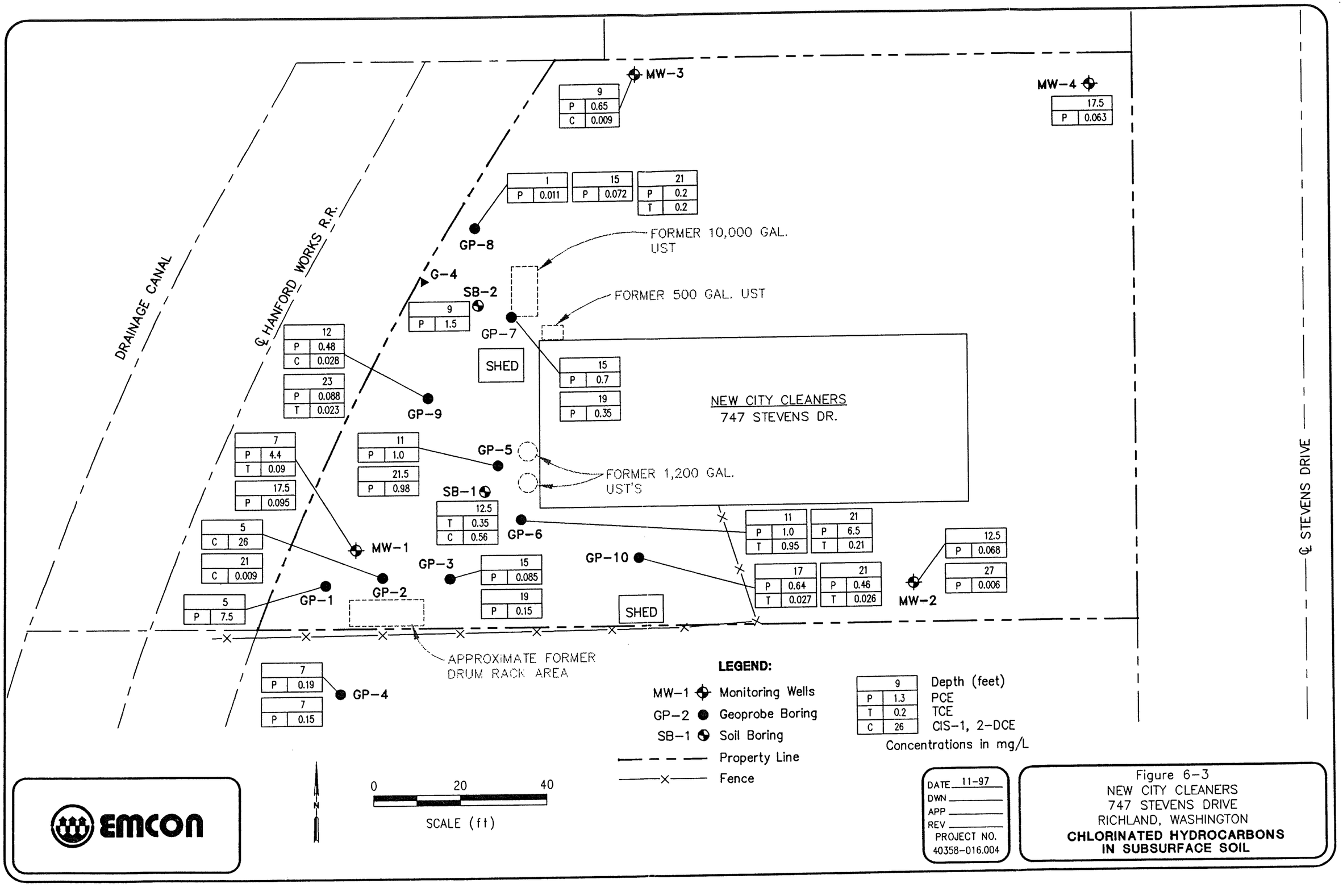
EMCON

DATE 11-97
DWN
APP
REV
PROJECT NO. 40358-016.004

Figure 6-2
NEW CITY CLEANERS
747 STEVENS DRIVE
RICHLAND, WASHINGTON

TPH IN SUBSURFACE SOIL

ENW-BOTHELL2/DATA: G:\DWG\40358016\B0004R19.dwg Xrefs: <NONE>
Scale: 1 = 20.00 DimScale: 1 = 20.00 Date: 12/5/97 Time: 2:33 PM Operator: MLP



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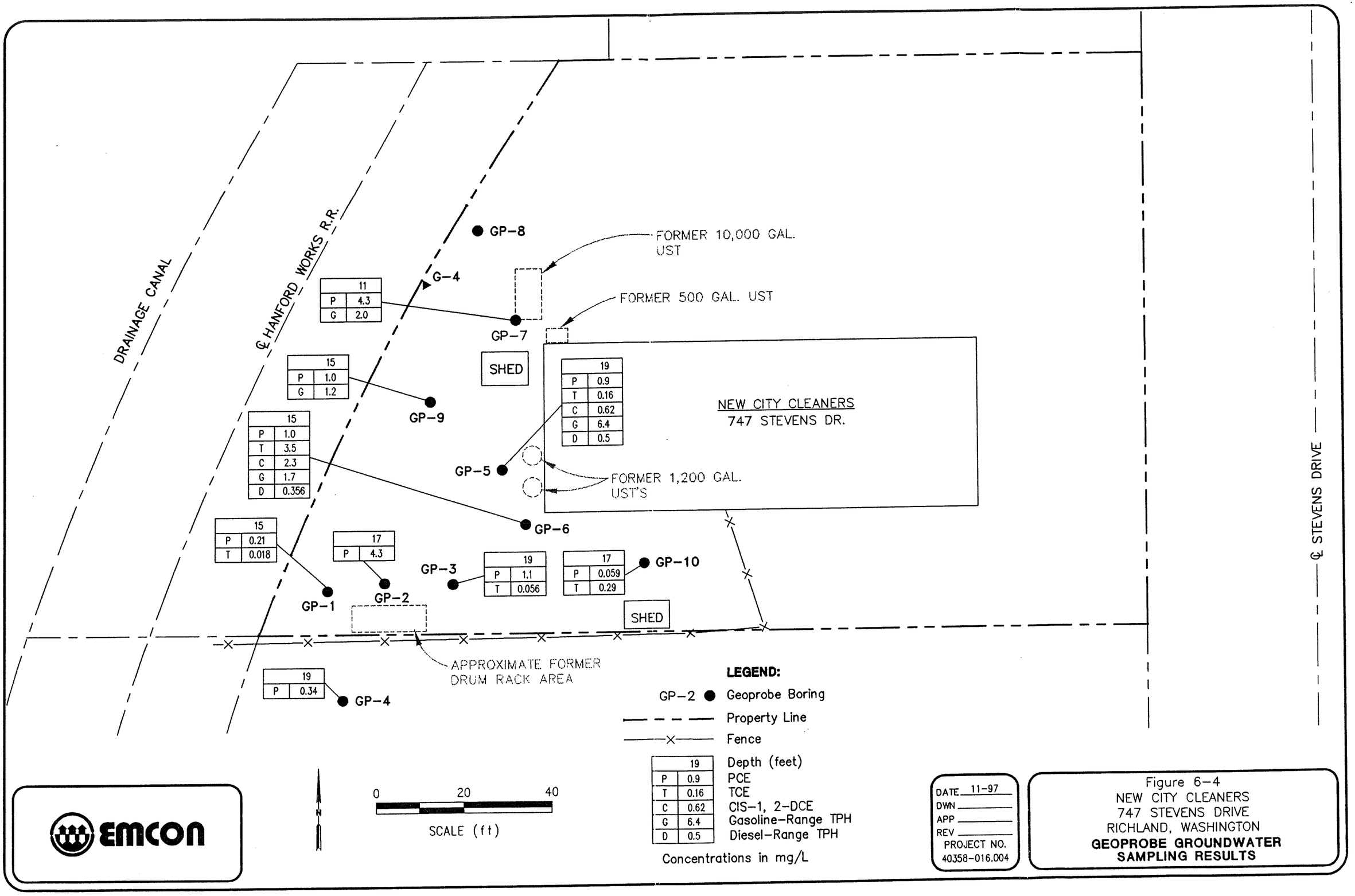
DRAINAGE CANAL
℄ HANFORD WORKS R.R.
℄ STEVENS DRIVE
GP-8
FORMER 10,000 GAL. UST
FORMER 500 GAL. UST
G-4
GP-7
SHED
11
P 4.3
G 2.0
15
P 1.0
G 1.2
GP-9
19
P 0.9
T 0.16
C 0.62
G 6.4
D 0.5
NEW CITY CLEANERS
747 STEVENS DR.
GP-5
FORMER 1,200 GAL. UST'S
15
P 1.0
T 3.5
C 2.3
G 1.7
D 0.356
GP-6
15
P 0.21
T 0.018
17
P 4.3
GP-3
19
P 1.1
T 0.056
17
P 0.059
T 0.29
GP-10
GP-1
GP-2
SHED
APPROXIMATE FORMER DRUM RACK AREA
19
P 0.34
GP-4
LEGEND:
GP-2 Geoprobe Boring
Property Line
Fence
19
P 0.9
T 0.16
C 0.62
G 6.4
D 0.5
Depth (feet)
PCE
TCE
CIS-1, 2-DCE
Gasoline-Range TPH
Diesel-Range TPH
Concentrations in mg/L
N
0 20 40
SCALE (ft)
EMCON
DATE 11-97
DWN
APP
REV
PROJECT NO. 40358-016.004
Figure 6-4
NEW CITY CLEANERS
747 STEVENS DRIVE
RICHLAND, WASHINGTON
GEOPROBE GROUNDWATER SAMPLING RESULTS
ENV-BOTHELL2/DATA: G:\DWG\40358016\B0004R20.dwg Xrefs: <NONE>
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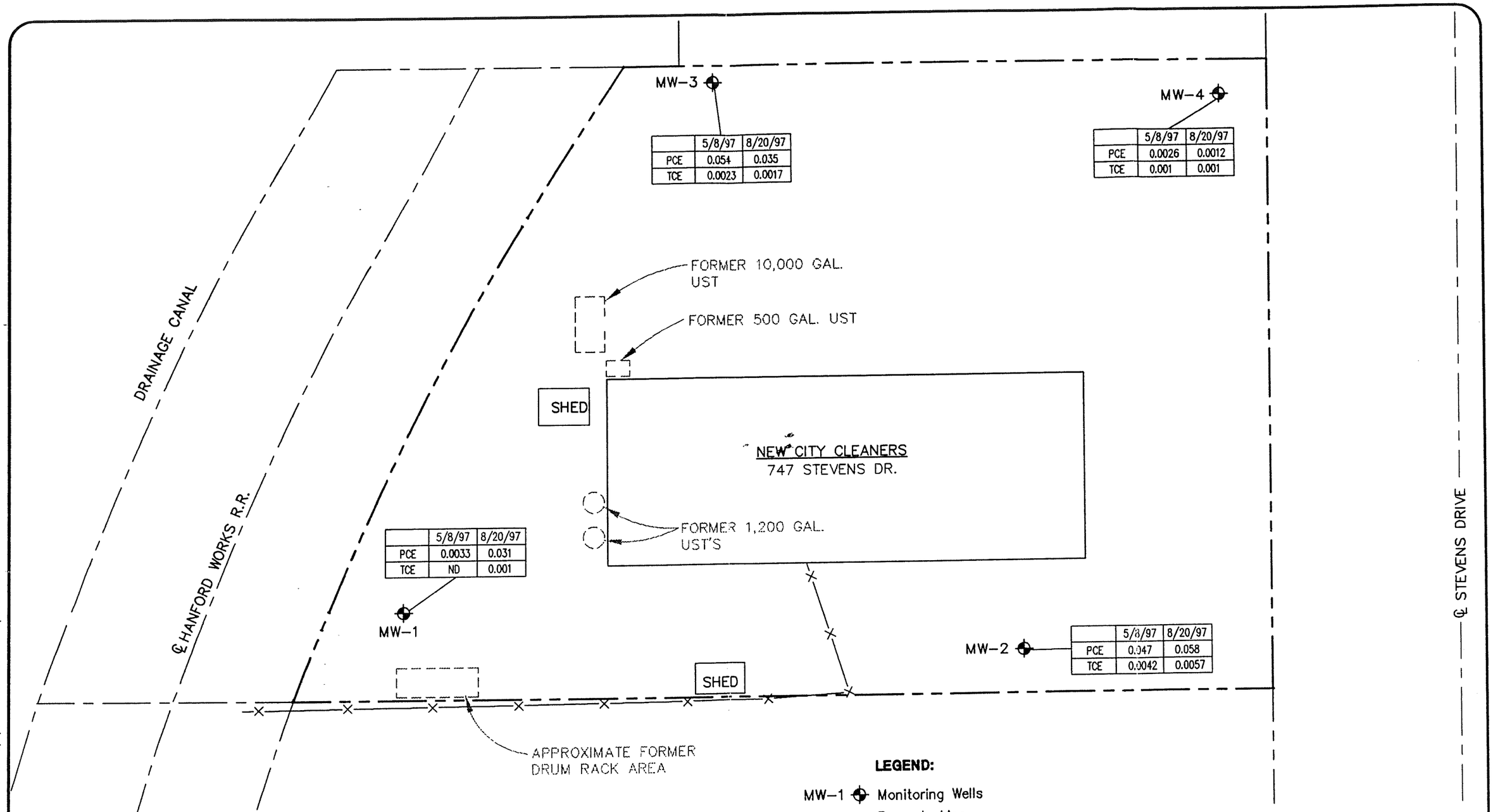

	5/8/97	8/20/97
PCE	0.054	0.035
TCE	0.0023	0.0017

	5/8/97	8/20/97
PCE	0.0026	0.0012
TCE	0.001	0.001

	5/8/97	8/20/97
PCE	0.0033	0.031
TCE	ND	0.001

	5/8/97	8/20/97
PCE	0.047	0.058
TCE	0.0042	0.0057

	5/8/97	8/20/97
PCE	0.047	0.058
TCE	0.0042	0.0057

EMCON

DATE 11-97
DWN
APP
REV
PROJECT NO. 40358-016.004

Figure 6-5
NEW CITY CLEANERS
747 STEVENS DRIVE
RICHLAND, WASHINGTON
MONITORING WELL GROUNDWATER SAMPLING RESULTS - PCE AND TCE (mg/L)

ENW-BOTHELL2/DATA: G:\DWG\40358016\B0004R18.dwg Xrefs: <NONE>
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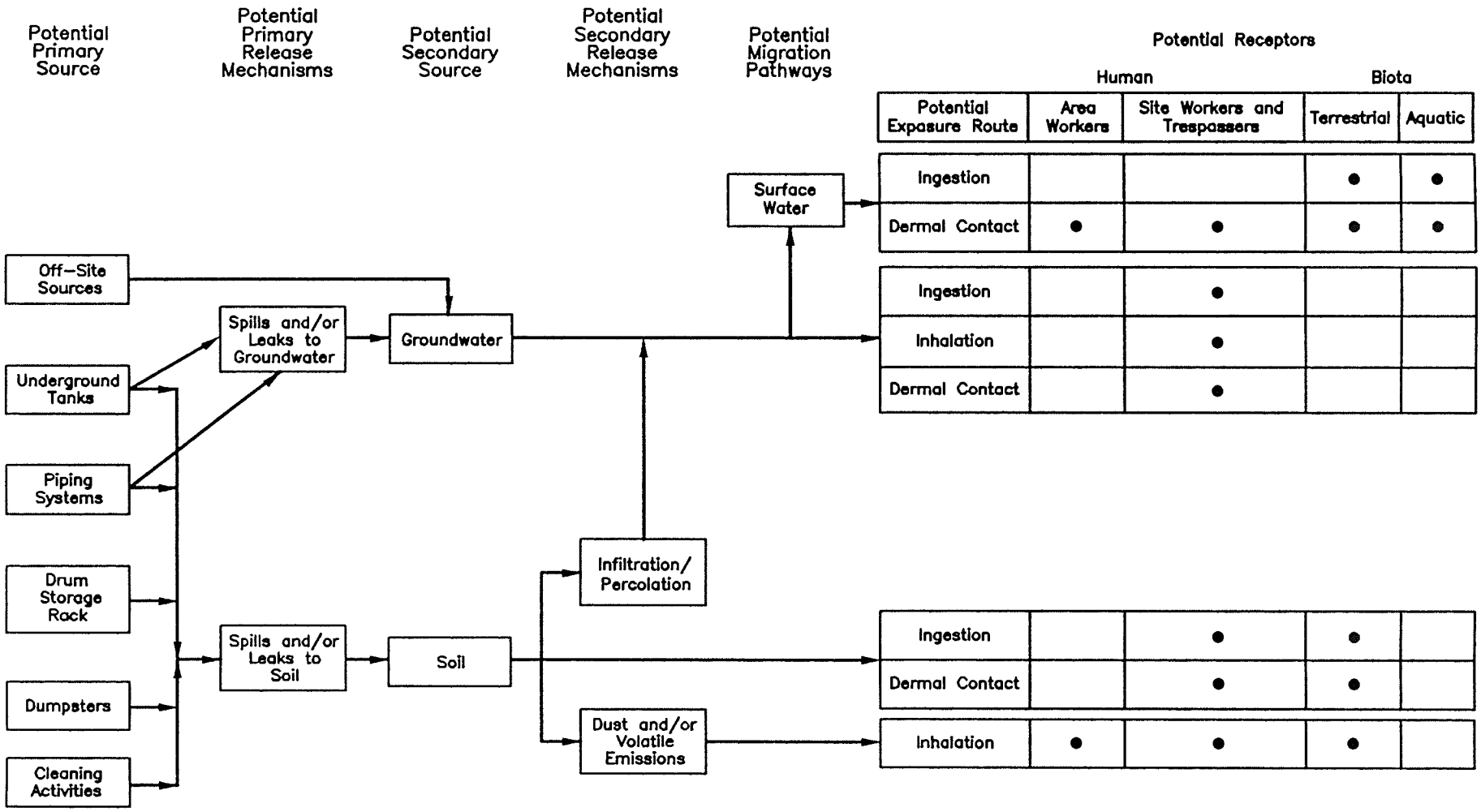


EMCON

DATE	11-97
DWN.	mlp
REV.	
APPR.	
PROJECT NO.	40358-016.004

Figure 7-1
NEW CITY CLEANERS
RICHLAND, WASHINGTON

CONCEPTUAL SITE MODEL

1= 1 12-05-97 G:\DWG\40358016\B0004R12

DRAFT
VOLUME II
APPENDICES
REMEDIAL INVESTIGATION REPORT
NEW CITY CLEANERS
747 STEVENS BLVD.
RICHLAND, WASHINGTON

Prepared for

Copeland, Landye, Bennett, and Wolf, LLP

February 17, 1998

Prepared by

EMCON
W. 7106 Will D. Alton Lane, Suite 102
Spokane, Washington 99224-5760

Project 40358-016.004

APPENDIX A

SAMPLING ALTERATION CHECKLISTS

Sampling Alteration Checklist

Sample program identification: New City Cleaners, Site Investigation

Material to be sampled: Groundwater samples collected from temporary well points on 3/11/97 through 3/13/97.

Measurement variable: Method used for groundwater sample collection for VOCs, TPH-G, TPH-D ext., and TSS from temporary well points.

Standard procedure for analysis: According to Sampling and Analysis Plan (SAP) groundwater samples collected from temporary well points were to be collected using a stainless steel bailer.

Reference: SAP Section 4.6.5 Temporary Wellpoint Sampling Part B.

Variation from standard procedure: A peristaltic pump and dedicated 1/4-inch polyethylene and silicone tubing were used to collect groundwater samples.

Reason for variation: Because of total sample volume required from each well (approximately 2L) and small stainless steel bailer volumes (approximately 10 to 20 ml), a peristaltic pump was utilized to expedite sample collection. The change was approved in the field by Chung Yee and Dan Abbott of Ecology on 3/11/97.

Resultant change in field sample procedure: Groundwater samples collected from temporary well points on 3/11/97 through 3/13/97 were collected using a peristaltic pump and 1/4-inch dedicated polyethylene and silicone tubing.

Special equipment, material, or personnel required: Peristaltic pump and 1/4-inch polyethylene and silicone tubing.

Author's name: John Latta, R.G., Geologist

Date: December 5, 1997

Approval: [signature]

Title: PM

Date: 12/6/97

Sampling Alteration Checklist

Sample program identification: New City Cleaners, Site Investigation

Material to be sampled: Surface Soil Samples

Measurement variable: Location

Standard procedure for analysis: Sampling and Analysis Plan (SAP) defined locations per attached preliminary location plan.

Reference: Preliminary sample location plan from SAP (attached).

Variation from standard procedure: Final locations indicated per attached sample location map. Sample B-7 replaced the two samples in the general vicinity of GP-10. Also, Samples A-4, C-6, and E-4 were collected from locations described as GP-2, GP-6, and GP-9 in the SAP.

Reason for variation: Change in surface soil locations due to location of site buildings and fences with respect to field location of sampling grid.

Resultant change in field sample procedure: N/A

Special equipment, material, or personnel required: N/A

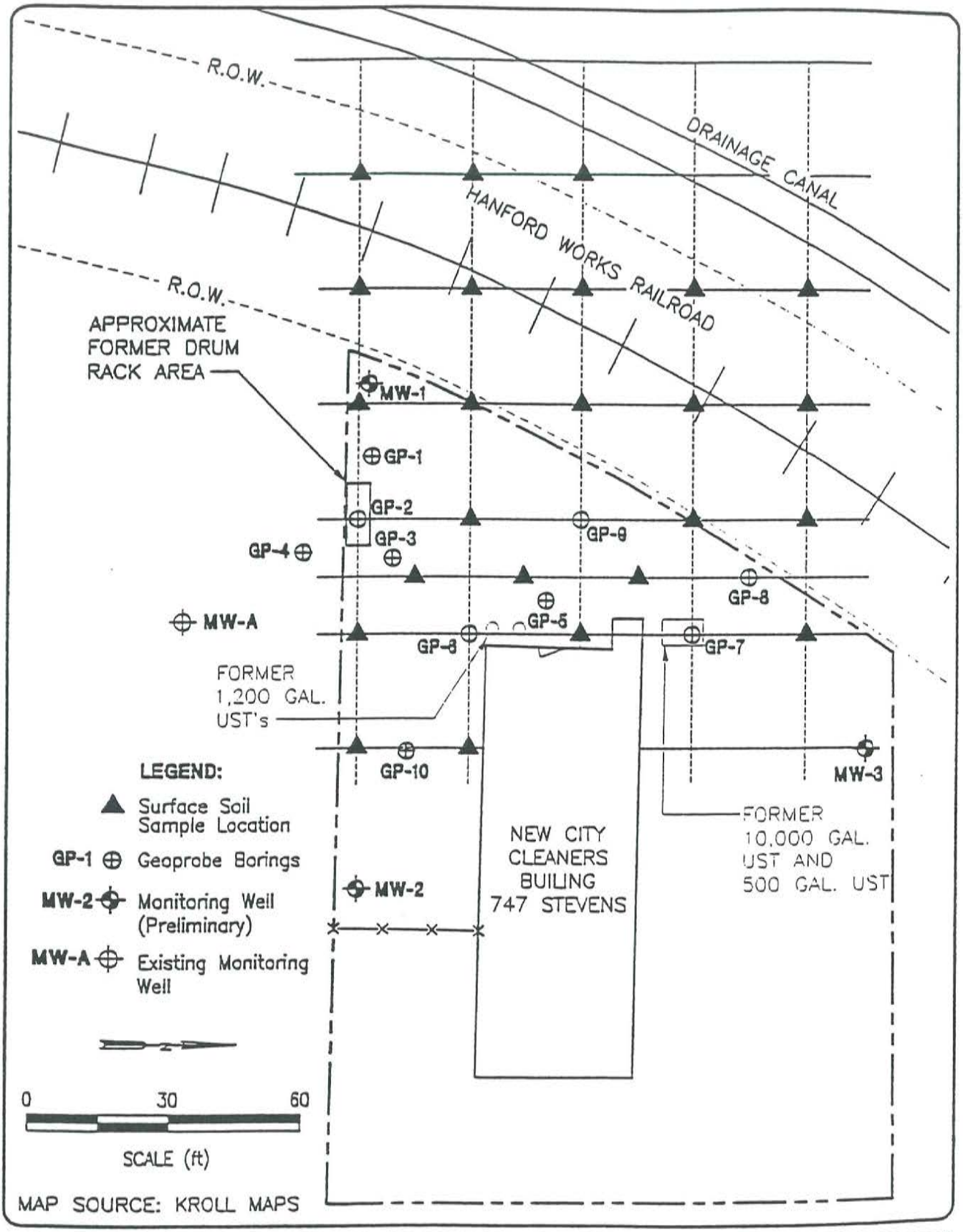
Author's name: John Latta, R.G., Geologist

Date: August 27, 1997

Approval: JL

Title: pm

Date: 8/28/97



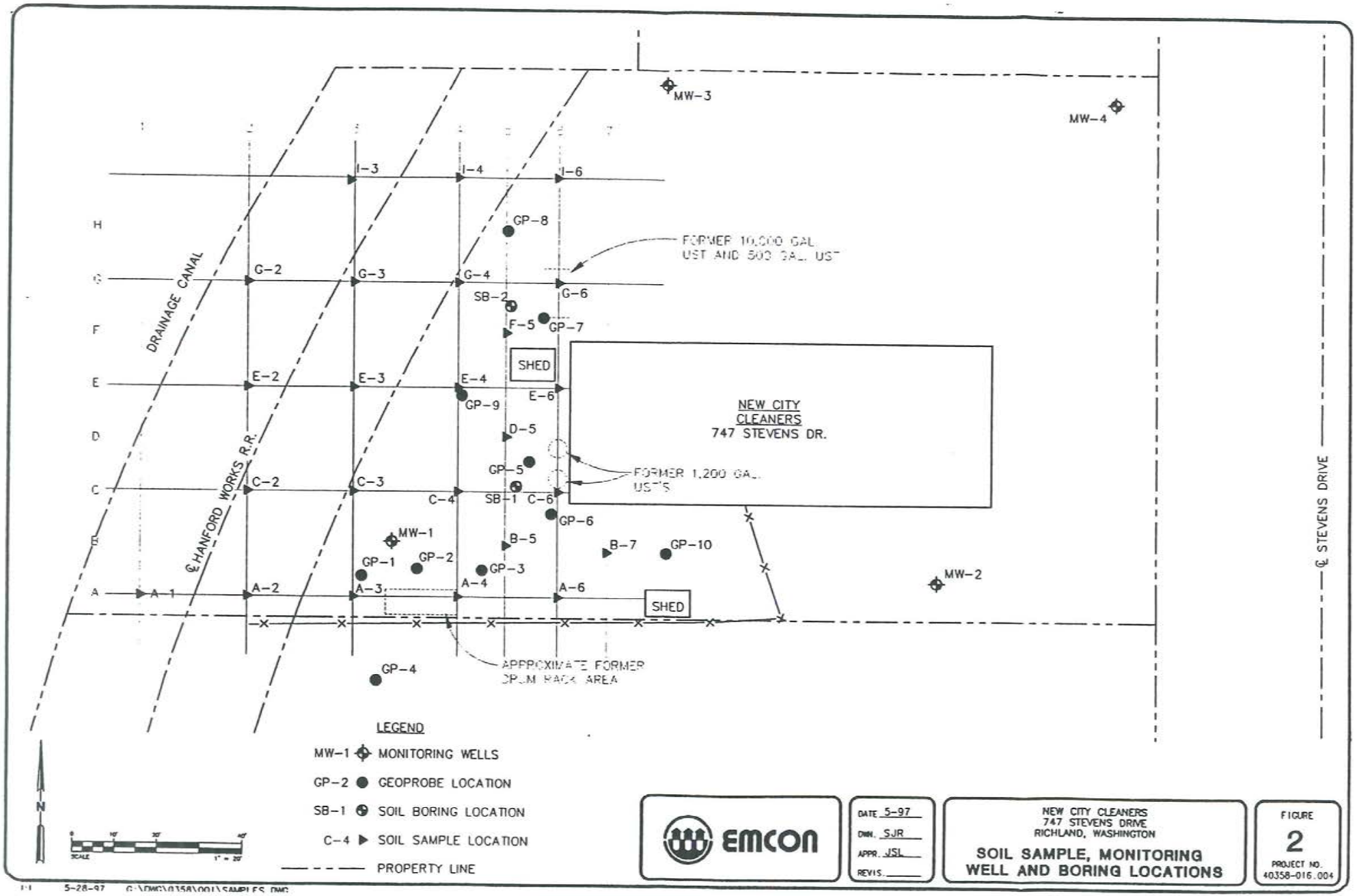
EMCON

DATE	10-96
DWN.	SJR/MLP
REV.	
APPR.	
PROJECT NO.	40358-001.003

Figure 2
NEW CITY CLEANERS
747 STEVENS DRIVE
RICHLAND, WASHINGTON

SAMPLING, BORING AND PRELIMINARY MONITORING WELL LOCATIONS

1=1 12-05-96 G:\DWG\0358\001\003\B0003R03 (PS)


MW-3
MW-4
I-3
I-4
I-6
H
G
F
E
D
C
B
A
A-1
A-2
A-3
A-4
A-6
G-2
G-3
G-4
G-6
E-2
E-3
E-4
E-6
C-2
C-3
C-4
C-6
GP-8
SB-2
F-5
GP-7
GP-9
D-5
GP-5
SB-1
GP-6
B-5
B-7
GP-10
MW-1
GP-1
GP-2
GP-3
GP-4
MW-2
SHED
SHED
NEW CITY
CLEANERS
747 STEVENS DR.
FORMER 10,000 GAL.
UST AND 500 GAL. UST
FORMER 1,200 GAL.
USTS
APPROXIMATE FORMER
SPUM PACK AREA
DRAINAGE CANAL
℄ HANFORD WORKS R.R.
℄ STEVENS DRIVE
LEGEND
MW-1 MONITORING WELLS
GP-2 GEOPROBE LOCATION
SB-1 SOIL BORING LOCATION
C-4 SOIL SAMPLE LOCATION
PROPERTY LINE
N
SCALE
1" = 20'
EMCON
DATE 5-97
DWN. SJR
APPR. JSL
REVIS.
NEW CITY CLEANERS
747 STEVENS DRIVE
RICHLAND, WASHINGTON
SOIL SAMPLE, MONITORING
WELL AND BORING LOCATIONS
FIGURE
2
PROJECT NO.
40358-016.004
5-28-97 G:\DWG\0358\001\SAMPLES.DWG

Sampling Alteration Checklist

Sample program identification: New City Cleaners, Site Investigation

Material to be sampled: Groundwater samples collected from monitor wells on 8/20/97.

Measurement variable: Turbidity

Standard procedure for analysis: Measurement of turbidity in field utilizing a turbidimeter. Units of measurement, NTUs.

Reference: Sampling and Analysis Plan (SAP) Section 4.6.5 Part C.

Variation from standard procedure: Did not measure turbidity during August 20, 1997 Quarterly groundwater sampling event.

Reason for variation: Forgot to take turbidity meter into field.

Resultant change in field sample procedure: Turbidity not quantified. Turbidity observations were recorded on Field Sampling Data Sheets. Noted that in general water quality of samples was clear and colorless.

Special equipment, material, or personnel required: N/A

Author's name: John Latta, R.G., Geologist

Date: August 28, 1997

Approval: [signature]

Title: PM

Date: 8/28/97

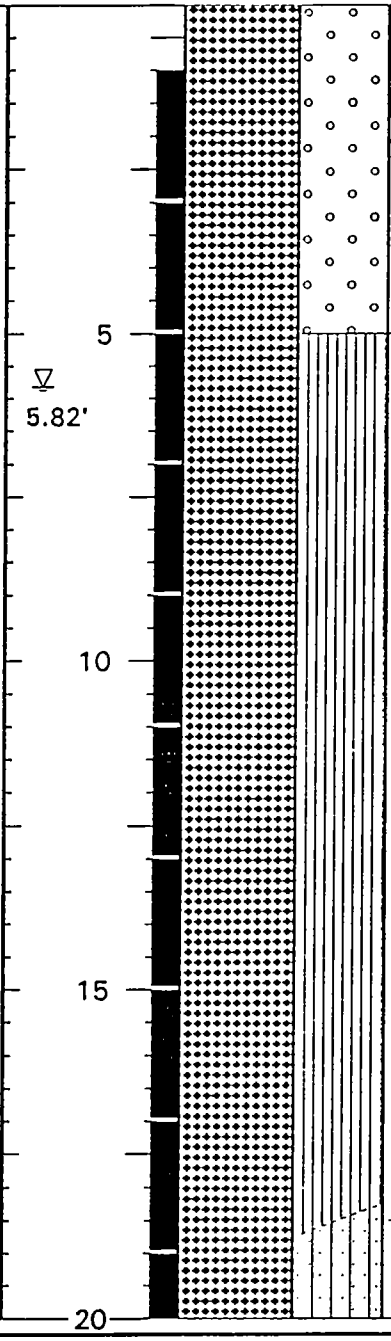
APPENDIX B

BORING LOGS AND WELL COMPLETION DETAILS

LOG OF EXPLORATORY BORING

PROJECT NAME	**New City Cleaners**	BORING NO.	**GP- 1**
LOCATION	**747 Stevens Drive**, Richland, **Washington**	PAGE	**1 OF 2**
DRILLED BY	**Cascade Drilling, Inc.**	GROUND ELEV.	**355.16'**
DRILL METHOD	**GeoProbe**	TOTAL DEPTH	**21.00'**
LOGGED BY	**John Latta/(Nick** Garson)	DATE COMPLETED	**03/12/97**

SAMPLE NUMBER (SAMPLE TYPE)	PID (in ppm)	RECOVERY PERCENT
GP-1-1 (GP)	10.1	6/24
GP-1-3 (GP)	7.1	8/24
GP-1-5 (GP)	35.7	15/24
GP-1-7 (GP)	7.1	22/24
GP-1-9 (GP)	7.1	17/24
GP-1-11 (GP)	3.5	20/24
GP-1-13 (GP)	3.5	16/24
GP-1-15 (GP)	3.5	15/24
GP-1-17 (GP)	3.5	20/24
GP-1-19 (GP)	3.5	20/24



0 to 5.0 feet: GRAVELLY SILTY SAND AND SILTY SAND (SM), brown, fine, 15 percent fines, trace to 10 percent coarse to medium sand, damp. (FILL)

5.0 to 18.5 feet: SILT (ML), light grayish brown, low plasticity, trace to 5 percent fine sand, moist to wet. Local reddish brown iron-oxide staining beginning at 12 feet. (ALLUVIUM)

18.5 to 21.0 feet: SILTY SAND (SP-SM), dark brown to gray, a few percent fines, wet. (ALLUVIUM)

REMARKS

(1) GP = Soil samples collected using 1.5-inch O.D. GeoProbe coreing tube using a 2-foot-long polyethylene liner. (2) -- = No PID reading. (3) NR = Recovery not recorded.

EMCON

LOG OF EXPLORATORY BORING

PROJECT NAME	New City Cleaners	BORING NO.	GP- 1
LOCATION	747 Stevens Drive, Richland, Washington	PAGE	2 OF 2
DRILLED BY	Cascade Drilling, Inc.	GROUND ELEV.	355.16'
DRILL METHOD	GeoProbe	TOTAL DEPTH	21.00'
LOGGED BY	John Latta/(Nick Garson)	DATE COMPLETED	03/12/97

SAMPLE NUMBER (SAMPLE TYPE)	PID (in ppm)	RECOVERY PERCENT	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	WELL DETAILS	LITHOLOGIC COLUMN	LITHOLOGIC DESCRIPTION

18.5 to 21.0 feet: SILTY SAND (SP-SM), continued.

@ 21.0 feet: refusal at top of GRAVELLY SAND.

Total depth drilled = 21.0 feet.
Total depth sampled = 21.0 feet.

WELL COMPLETION DETAILS:

0 to 21.0 feet: abandoned by backfilling with hydrated bentonite chips.

13.0 to 17.0 feet: set temporary well screen to collect groundwater sample GPW-1-397-15.

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REMARKS

(1) GP = Soil samples collected using 1.5-inch O.D. GeoProbe coreing tube using a 2-foot-long polyethylene liner. (2) – = No PID reading. (3) NR = Recovery not recorded.

LOG OF EXPLORATORY BORING

PROJECT NAME	New City Cleaners	BORING NO.	GP- 2
LOCATION	747 Stevens Drive, Richland, Washington	PAGE	1 OF 2
DRILLED BY	Cascade Drilling, Inc.	GROUND ELEV.	355.15'
DRILL METHOD	GeoProbe	TOTAL DEPTH	23.00'
LOGGED BY	John Latta/(Nick Garson)	DATE COMPLETED	03/12/97

SAMPLE NUMBER (SAMPLE TYPE)	PID (in ppm)	RECOVERY PERCENT	LITHOLOGIC DESCRIPTION
GP-2-1 (GP)	–	7/24	**0 to 3.0 feet: FINE SAND WITH GRAVEL (GP),** brown, fine, 5 to 10 percent medium to coarse sand, 5 percent fine gravel, trace fines, damp. (FILL)
GP-2-3 (GP)	1.8	3/24	**3.0 to 11.0 feet: SILTY FINE SAND (SM),** brown to gray, 10 to 15 percent low plasticity fines, trace medium to coarse sand, damp to moist. (FILL)
GP-2-5 (GP)	5.4	6/24	
GP-2-7 (GP)	56.3	10/24	
GP-2-9 (GP)	38.1	11/24	
GP-2-11 (GP)	23.6	6/24	**11.0 to 13.0 feet: GRAVELLY SILTY FINE SAND (ML),** gray, 5 to 10 percent medium sand to fine gravel, 10 to 15 percent low plasticity, moist to wet. (FILL)
GP-2-13 (GP)	5.4	22/24	**13.0 to 18.0 feet: SILT (ML),** light grayish brown, low plasticity, trace to 5 percent fine sand, moist to wet.
GP-2-15 (GP)	5.4	15/24	
GP-2-17 (GP)	1.8	21/24	
GP-2-19 (GP)	1.8	20/24	**18.0 to 22.0 feet: SILTY SAND (SP-SM),** dark brown gray, a few percent low plasticity fines, wet. (ALLUVIUM)

GROUND WATER LEVELS: ▽ 7.35'

DEPTH IN FEET: 5, 10, 15, 20

SAMPLES

WELL DETAILS

LITHOLOGIC COLUMN

REMARKS

(1) GP = Soil samples collected using 1.5-inch O.D. GeoProbe coreing tube using a 2-foot-long polyethylene liner. (2) – = No PID reading. (3) NR = Recovery not recorded.

EMCON

LOG OF EXPLORATORY BORING

PROJECT NAME	New City Cleaners	BORING NO.	GP- 2
LOCATION	747 Stevens Drive, Richland, Washington	PAGE	2 OF 2
DRILLED BY	Cascade Drilling, Inc.	GROUND ELEV.	355.15'
DRILL METHOD	GeoProbe	TOTAL DEPTH	23.00'
LOGGED BY	John Latta/(Nick Garson)	DATE COMPLETED	03/12/97

SAMPLE NUMBER (SAMPLE TYPE)	PID (in ppm)	RECOVERY PERCENT	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	WELL DETAILS	LITHOLOGIC COLUMN	LITHOLOGIC DESCRIPTION
GP-2-21 (GP)	--	20/24		25 30 35 40				**18.0 to 22.0 feet:** SILTY SAND (SP-SM), continued. **22.0 to 23.0 feet:** GRAVELLY SAND (SW), dark brown gray, fine to coarse, with a little fine to medium subrounded gravel, trace fines, wet. (ALLUVIUM) @ 23.0 feet: refusal. Total depth drilled = 23.0 feet. Total depth sampled = 23.0 feet. **WELL COMPLETION DETAILS:** 0 to 23.0 feet: abandoned by backfilling boring with hydrated bentonite chips. 15.0 to 19.0 feet: set temporary well screen to collect groundwater sample GPW-2-397-17.

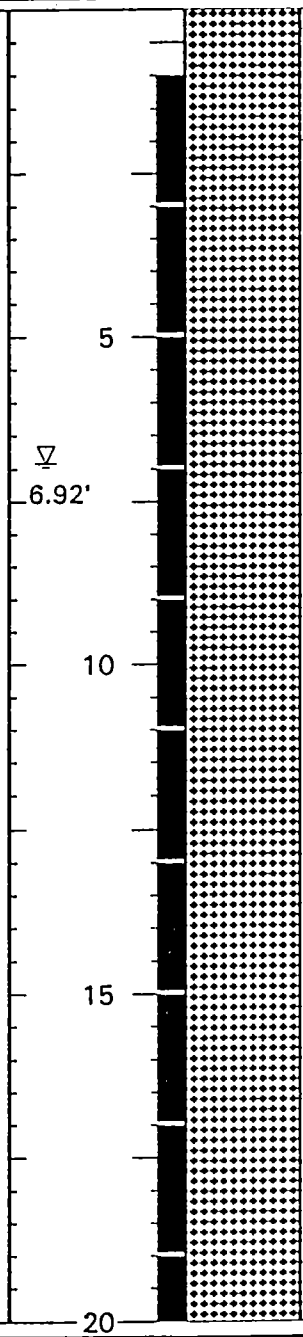
REMARKS

(1) GP = Soil samples collected using 1.5-inch O.D. GeoProbe coreing tube using a 2-foot-long polyethylene liner. (2) -- = No PID reading. (3) NR = Recovery not recorded.

LOG OF EXPLORATORY BORING

PROJECT NAME	New City Cleaners	BORING NO.	GP- 3
LOCATION	747 Stevens Drive, Richland, Washington	PAGE	1 OF 2
DRILLED BY	Cascade Drilling, Inc.	GROUND ELEV.	355.79'
DRILL METHOD	GeoProbe	TOTAL DEPTH	21.00'
LOGGED BY	John Latta	DATE COMPLETED	03/13/97

SAMPLE NUMBER (SAMPLE TYPE)	PID (in ppm)	RECOVERY PERCENT
GP-3-1 (GP)	--	18/24
GP-3-3 (GP)	3.5	13/24
GP-3-5 (GP)	3.5	13/24
GP-3-7 (GP)	3.5	13/24
GP-3-9 (GP)	3.5	17/24
GP-3-11 (GP)	3.5	19/24
GP-3-13 (GP)	3.5	17/24
GP-3-15 (GP)	3.5	21/24
GP-3-17 (GP)	3.5	21/24
GP-3-19 (GP)	1.8	20/24



0 to 0.3 foot: SILTY GRAVEL WITH COBBLES (GM), dark brown gray, damp. Cemented by asphaltic hydrocarbons. (FILL)

0.3 to 2.0 feet: SANDY GRAVEL (GM), gray, fine to coarse gravel, fine to coarse sand, a few percent low plasticity fines, damp. (FILL)

2.0 to 18.0 feet: SILT (ML), light grayish brown, low plasticity, trace to 5 percent fine sand, moist to wet. Local reddish brown iron-oxide staining beginning at 12 feet. (ALLUVIUM)

18.0 to 20.5 feet: SILTY SAND (SP-SM), dark brown gray, a few percent low plasticity fines, wet. (ALLUVIUM)

REMARKS

(1) GP = Soil samples collected using 1.5-inch O.D. GeoProbe coreing tube using a 2-foot-long polyethylene liner. (2) – = No PID reading. (3) NR = Recovery not recorded.

LOG OF EXPLORATORY BORING

PROJECT NAME	New City Cleaners	BORING NO.	GP- 3
LOCATION	747 Stevens Drive, Richland, Washington	PAGE	2 OF 2
DRILLED BY	Cascade Drilling, Inc.	GROUND ELEV.	355.79'
DRILL METHOD	GeoProbe	TOTAL DEPTH	21.00'
LOGGED BY	John Latta	DATE COMPLETED	03/13/97

SAMPLE NUMBER (SAMPLE TYPE)	PID (in ppm)	RECOVERY PERCENT	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	WELL DETAILS	LITHOLOGIC COLUMN	LITHOLOGIC DESCRIPTION

18.0 to 20.5 feet: SILTY SAND (SP-SM), continued.

20.5 to 21.0 feet: GRAVELLY SAND (SW), dark brown gray, fine to coarse, with a little fine to medium subrounded gravel, trace fines, wet. (ALLUVIUM)

@ 21.0 feet: refusal.

Total depth drilled = 21.0 feet.
Total depth sampled = 21.0 feet.

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WELL COMPLETION DETAILS:

0 to 21.0 feet: abandoned by backfilling boring with hydrated bentonite chips.

15.0 to 19.0 feet: set temporary well screen to collect groundwater sample GPW-3-397-19.

REMARKS

(1) GP = Soil samples collected using 1.5-inch O.D. GeoProbe coreing tube using a 2-foot-long polyethylene liner. (2) – = No PID reading. (3) NR = Recovery not recorded.

LOG OF EXPLORATORY BORING

PROJECT NAME	New City Cleaners	BORING NO.	GP- 4
LOCATION	747 Stevens Drive, Richland, Washington	PAGE	1 OF 2
DRILLED BY	Cascade Drilling, Inc.	GROUND ELEV.	355.95'
DRILL METHOD	GeoProbe	TOTAL DEPTH	21.00'
LOGGED BY	John Latta	DATE COMPLETED	03/13/97

SAMPLE NUMBER (SAMPLE TYPE)	PID (in ppm)	RECOVERY PERCENT	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	WELL DETAILS	LITHOLOGIC COLUMN	LITHOLOGIC DESCRIPTION
GP-4-1 (GP)	--	13/24						**0 to 0.3 foot: ASPHALT AND CRUSHED GRAVEL** **0.3 to 3.0 feet: MEDIUM SAND (SP)**, gray, some crushed gravel, damp. (FILL)
GP-4-3 (GP)	1.8	15/24						**3.0 to 18.0 feet: SILT (ML)**, light grayish brown, low plasticity, trace to 5 percent fine sand, moist to wet. Laminated locally. Local reddish brown iron-oxide staining beginning at 12 feet. (ALLUVIUM)
GP-4-5 (GP)	1.8	16/24		5				
GP-4-7 (GP)	1.8	16/24						
GP-4-9 (GP)	1.8	12/24		10				
GP-4-11 (GP)	1.8	22/24						
GP-4-13 (GP)	1.8	16/24	▽ 12.5'					
GP-4-15 (GP)	1.8	19/24		15				
GP-4-17 (GP)	1.8	21/24						**18.0 to 21.0 feet: SILTY SAND (SP-SM)**, a few percent fines, black, wet. (ALLUVIUM)
GP-4-19 (GP)	1.8	22/24		20				

REMARKS

(1) GP = Soil samples collected using 1.5-inch O.D. GeoProbe coreing tube using a 2-foot-long polyethylene liner. (2) – = No PID reading. (3) NR = Recovery not recorded.

LOG OF EXPLORATORY BORING

PROJECT NAME	New City Cleaners	BORING NO.	GP- 4
LOCATION	747 Stevens Drive, Richland, Washington	PAGE	2 OF 2
DRILLED BY	Cascade Drilling, Inc.	GROUND ELEV.	355.95'
DRILL METHOD	GeoProbe	TOTAL DEPTH	21.00'
LOGGED BY	John Latta	DATE COMPLETED	03/13/97

SAMPLE NUMBER (SAMPLE TYPE)	PID (in ppm)	RECOVERY PERCENT	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	WELL DETAILS	LITHOLOGIC COLUMN	LITHOLOGIC DESCRIPTION
				25				**18.0 to 21.0 feet: SILTY SAND (SP-SM),** continued. @ 21.0 feet: refusal at top of GRAVELLY SAND. Total depth drilled = 21.0 feet. Total depth sampled = 21.0 feet. **WELL COMPLETION DETAILS:** 0 to 21.0 feet: abandoned by backfilling boring with hydrated bentonite chips. 15.0 to 19.0 feet: set temporary well screen to collect groundwater sample GPW-4-397-19.
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				35				
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REMARKS

(1) GP = Soil samples collected using 1.5-inch O.D. GeoProbe coreing tube using a 2-foot-long polyethylene liner. (2) – = No PID reading. (3) NR = Recovery not recorded.

LOG OF EXPLORATORY BORING

PROJECT NAME	New City Cleaners	BORING NO.	GP- 5
LOCATION	747 Stevens Drive, Richland, Washington	PAGE	1 OF 2
DRILLED BY	Cascade Drilling, Inc.	GROUND ELEV.	355.86'
DRILL METHOD	GeoProbe	TOTAL DEPTH	24.00'
LOGGED BY	John Latta	DATE COMPLETED	03/11/97

SAMPLE NUMBER (SAMPLE TYPE)	PID (in ppm)	RECOVERY PERCENT	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	WELL DETAILS	LITHOLOGIC COLUMN	LITHOLOGIC DESCRIPTION
GP-5-1 (GP)	3.9	8/24						**0 to 10.0 feet: SILT (ML),** brown. (FILL)
GP-5-3 (GP)	3.9	8/24						
GP-5-5 (GP)	–	0/24		5				
GP-5-7 (GP)	3.9	2/24						
			▽ 8.23'					
GP-5-9 (GP)	3.9	5/24		10				**10.0 to 19.0 feet: SILT (ML),** light greenish gray to light grayish brown, low plasticity, trace to 5 percent fine sand, moist to wet. Strong hydrocarbon odor becomes weaker at 17 feet. Local reddish brown iron-oxide staining beginning at 12 feet. (ALLUVIUM)
GP-5-11 (GP)	509	12/24						
GP-5-13 (GP)	231	18/24						
GP-5-15 (GP)	86	18/24		15				
GP-5-17 (GP)	168	20/24						
GP-5-19 (GP)	23.5	21/24		20				**19.0 to 23.5 feet: SILTY SAND (SP-SM),** black, a few percent fines, wet. Hydrocarbon odor and

REMARKS

(1) GP = Soil samples collected using 1.5-inch O.D. GeoProbe coreing tube using a 2-foot-long polyethylene liner. (2) – = No PID reading. (3) NR = Recovery not recorded.

LOG OF EXPLORATORY BORING

PROJECT NAME	New City Cleaners	BORING NO.	GP- 5
LOCATION	747 Stevens Drive, Richland, Washington	PAGE	2 OF 2
DRILLED BY	Cascade Drilling, Inc.	GROUND ELEV.	355.86'
DRILL METHOD	GeoProbe	TOTAL DEPTH	24.00'
LOGGED BY	John Latta	DATE COMPLETED	03/11/97

SAMPLE NUMBER (SAMPLE TYPE)	PID (in ppm)	RECOVERY PERCENT	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	WELL DETAILS	LITHOLOGIC COLUMN	LITHOLOGIC DESCRIPTION
GP-5-21.5 (GP)	101	21/24		25				sheen. (ALLUVIUM) **23.5 to 24.0 feet: GRAVELLY SAND (SW),** black, fine to coarse, with a little fine to medium subrounded gravel, trace fines, wet. @ 24.0 feet: refusal. Total depth drilled = 24.0 feet. Total depth sampled = 23.5 feet. **WELL COMPLETION DETAILS:** 0 to 24.0 feet: abandoned by backfilling boring with hydrated bentonite chips. 4.0 to 24.0 feet: set temporary well screen 3/11/97 to collect groundwater sample GPW-2-397-17 on 3/13/97.

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REMARKS

(1) GP = Soil samples collected using 1.5-inch O.D. GeoProbe coreing tube using a 2-foot-long polyethylene liner. (2) – = No PID reading. (3) NR = Recovery not recorded.

LOG OF EXPLORATORY BORING

PROJECT NAME	New City Cleaners	BORING NO.	GP- 6
LOCATION	747 Stevens Drive, Richland, Washington	PAGE	1 OF 2
DRILLED BY	Cascade Drilling, Inc.	GROUND ELEV.	355.52'
DRILL METHOD	GeoProbe	TOTAL DEPTH	23.50'
LOGGED BY	John Latta/(Nick Garson)	DATE COMPLETED	03/12/97

SAMPLE NUMBER (SAMPLE TYPE)	PID (in ppm)	RECOVERY PERCENT	LITHOLOGIC DESCRIPTION
			0 to 1.0 foot: FINE SANDY GRAVEL (GM), brown, damp. (FILL)
GP-6-1 (GP)	3.5	13/24	**1.0 to 3.0 feet: SILTY FINE SAND (SM),** brown, 10 to 15 percent low plasticity fines, damp. (ALLUVIUM)
GP-6-3 (GP)	3.5	16/24	**3.0 to 19.0 feet: SILT (ML),** light grayish brown, low plasticity, trace to 5 percent fine sand, moist to wet. Laminated locally. Local reddish brown iron-oxide staining beginning at 12 feet. (ALLUVIUM)
GP-6-5 (GP)	3.5	15/24	
GP-6-7 (GP)	3.5	21/24	
GP-6-9 (GP)	21.4	18/24	
GP-6-11 (GP)	74.9	16/24	
GP-6-13 (GP)	17.8	17/24	
GP-6-15 (GP)	7.1	20/24	
GP-6-17 (GP)	3.5	22/24	**19.0 to 23.0 feet: SILTY SAND (SP-SM),** black, a few percent fines, wet. (ALLUVIUM)

GROUND WATER LEVELS: ▽ 6.78'

DEPTH IN FEET: 5, 10, 15, 20

SAMPLES

WELL DETAILS

LITHOLOGIC COLUMN

REMARKS

(1) GP = Soil samples collected using 1.5-inch O.D. GeoProbe coreing tube using a 2-foot-long polyethylene liner. (2) – = No PID reading. (3) NR = Recovery not recorded.

LOG OF EXPLORATORY BORING

PROJECT NAME	New City Cleaners	BORING NO.	GP- 6
LOCATION	747 Stevens Drive, Richland, Washington	PAGE	2 OF 2
DRILLED BY	Cascade Drilling, Inc.	GROUND ELEV.	355.52'
DRILL METHOD	GeoProbe	TOTAL DEPTH	23.50'
LOGGED BY	John Latta/(Nick Garson)	DATE COMPLETED	03/12/97

SAMPLE NUMBER (SAMPLE TYPE)	PID (in ppm)	RECOVERY PERCENT	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	WELL DETAILS	LITHOLOGIC COLUMN	LITHOLOGIC DESCRIPTION
GP-6-21.5 (GP)	25	20/24		25				**19.0 to 23.0 feet: SILTY SAND (SP-SM),** continued. **23.0 to 23.5 feet: GRAVELLY SAND (SW),** black, fine to coarse, with a little fine to medium subrounded gravel, trace fines, wet. Hydrocarbon odor and sheen. (ALLUVIUM) @ 23.5 feet: refusal. Total depth drilled = 23.5 feet. Total depth sampled = 23.5 feet. **WELL COMPLETION DETAILS:** 0 to 23.5 feet: abandoned by backfilling boring with hydrated bentonite chips. 13.0 to 17.0 feet: set temporary well screen to collect groundwater sample GPW-6-397-15.

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REMARKS

(1) GP = Soil samples collected using 1.5-inch O.D. GeoProbe coreing tube using a 2-foot-long polyethylene liner. (2) -- = No PID reading. (3) NR = Recovery not recorded.

LOG OF EXPLORATORY BORING

PROJECT NAME	New City Cleaners	BORING NO.	GP- 7
LOCATION	747 Stevens Drive, Richland, Washington	PAGE	1 OF 2
DRILLED BY	Cascade Drilling, Inc.	GROUND ELEV.	355.44'
DRILL METHOD	GeoProbe	TOTAL DEPTH	23.50'
LOGGED BY	John Latta/(Nick Garson)	DATE COMPLETED	03/12/97

SAMPLE NUMBER (SAMPLE TYPE)	PID (in ppm)	RECOVERY PERCENT	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	WELL DETAILS	LITHOLOGIC COLUMN	LITHOLOGIC DESCRIPTION
GP-7-1 (GP)	0.0	7/24						**0 to 1.0 foot: FINE SANDY GRAVEL (GM),** brown, damp. (FILL)
GP-7-3 (GP)	3.5	4/24						**1.0 to 3.0 feet: SILTY FINE SAND (SM),** brown, 15 to 20 percent low plasticity fines, less than 5 percent medium to coarse sand, damp. (FILL)
GP-7-5 (GP)	3.5	9/24		5				**3.0 to 7.0 feet: FINE SANDY SILT (ML),** brown, low plasticity, 10 percent fine sand, trace medium to coarse sand damp. (FILL)
GP-7-7 (GP)	3.5	22/24	▽ 7.93'					**7.0 to 19.0 feet: SILT (ML),** light grayish brown, low plasticity, trace to 5 percent fine sand, moist to wet. Laminated locally. Local reddish brown iron-oxide staining beginning at 12 feet. (ALLUVIUM)
GP-7-9 (GP)	3.5	19/24		10				
GP-7-11 (GP)	3.5	13/24						
GP-7-13 (GP)	3.5	16/24						
GP-7-15 (GP)	3.5	17/24		15				
GP-7-17 (GP)	3.5	24/24						**19.0 to 23.0 feet: SILTY SAND (SP-SM),** black, a few percent fines, wet. (ALLUVIUM)
				20				

REMARKS

(1) GP = Soil samples collected using 1.5-inch O.D. GeoProbe coreing tube using a 2-foot-long polyethylene liner. (2) – = No PID reading. (3) NR = Recovery not recorded.

LOG OF EXPLORATORY BORING

PROJECT NAME	New City Cleaners	BORING NO.	GP- 7
LOCATION	747 Stevens Drive, Richland, Washington	PAGE	2 OF 2
DRILLED BY	Cascade Drilling, Inc.	GROUND ELEV.	355.44'
DRILL METHOD	GeoProbe	TOTAL DEPTH	23.50'
LOGGED BY	John Latta/(Nick Garson)	DATE COMPLETED	03/12/97

SAMPLE NUMBER (SAMPLE TYPE)	PID (in ppm)	RECOVERY PERCENT	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	WELL DETAILS	LITHOLOGIC COLUMN	LITHOLOGIC DESCRIPTION
GP-7-21.5 (GP)	3.5	12/24		25 30 35 40				**19.0 to 23.0 feet: SILTY SAND (SP-SM),** continued. **23.0 to 23.5 feet: GRAVELLY SAND (SW),** black, fine to coarse, with a little fine to medium subrounded gravel, trace fines, wet. Hydrocarbon odor and sheen. (ALLUVIUM) @ 23.5 feet: refusal. Total depth drilled = 23.5 feet. Total depth sampled = 23.5 feet. **WELL COMPLETION DETAILS:** 0 to 23.5 feet: abandoned by backfilling boring with hydrated bentonite chips. 3.5 to 23.5 feet: set temporary well screen 3/12/97 to collect groundwater sample GPW-7-397 on 3/13/97.

REMARKS

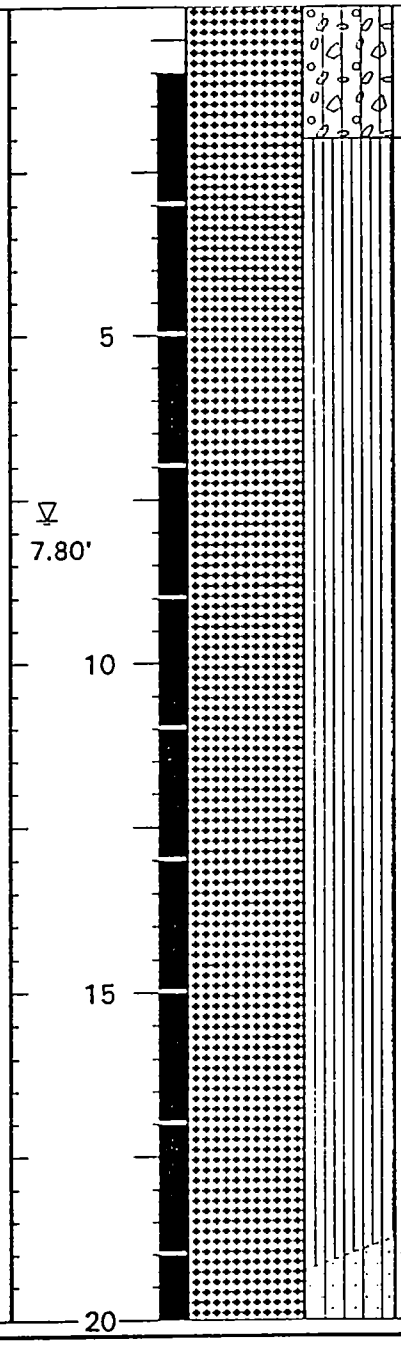
(1) GP = Soil samples collected using 1.5-inch O.D. GeoProbe coreing tube using a 2-foot-long polyethylene liner. (2) -- = No PID reading. (3) NR = Recovery not recorded.

LOG OF EXPLORATORY BORING

PROJECT NAME	New City Cleaners	BORING NO.	GP- 8
LOCATION	747 Stevens Drive, Richland, Washington	PAGE	1 OF 2
DRILLED BY	Cascade Drilling, Inc.	GROUND ELEV.	355.42'
DRILL METHOD	GeoProbe	TOTAL DEPTH	24.00'
LOGGED BY	John Latta	DATE COMPLETED	03/11/97

SAMPLE NUMBER (SAMPLE TYPE)	PID (in ppm)	RECOVERY PERCENT
GP-8-1 (GP)	3.6	14/24
GP-8-3 (GP)	–	NR
GP-8-5 (GP)	3.6	18/24
GP-8-7 (GP)	3.6	18/24
GP-8-9 (GP)	7.2	18/24
GP-8-11 (GP)	3.6	19/24
GP-8-13 (GP)	3.6	17/24
GP-8-15 (GP)	3.6	NR
GP-8-17 (GP)	3.6	NR
GP-8-19 (GP)	3.6	NR

GROUND WATER LEVELS | DEPTH IN FEET | SAMPLES | WELL DETAILS | LITHOLOGIC COLUMN



LITHOLOGIC DESCRIPTION

0 to 2.0 feet: FINE SANDY GRAVEL (GM), brown, damp. (ALLUVIUM)

2.0 to 19.0 feet: SILT (ML), light grayish brown, low plasticity, trace to 5 percent fine sand, moist to wet. Laminated locally. Local reddish brown iron-oxide staining beginning at 15 feet. (ALLUVIUM)

19.0 to 23.0 feet: SILTY SAND (SP-SM), black, a few percent fines, wet. (ALLUVIUM)

REMARKS

(1) GP = Soil samples collected using 1.5-inch O.D. GeoProbe coreing tube using a 2-foot-long polyethylene liner. (2) – = No PID reading. (3) NR = Recovery not recorded.

LOG OF EXPLORATORY BORING

PROJECT NAME	New City Cleaners	BORING NO.	GP- 8
LOCATION	747 Stevens Drive, Richland, Washington	PAGE	2 OF 2
DRILLED BY	Cascade Drilling, Inc.	GROUND ELEV.	355.42'
DRILL METHOD	GeoProbe	TOTAL DEPTH	24.00'
LOGGED BY	John Latta	DATE COMPLETED	03/11/97

SAMPLE NUMBER (SAMPLE TYPE)	PID (in ppm)	RECOVERY PERCENT	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	WELL DETAILS	LITHOLOGIC COLUMN	LITHOLOGIC DESCRIPTION
GP-8-21 (GP)	3.6	12/24						**19.0 to 23.0 feet: SILTY SAND (SP-SM),** continued.
GP-8-23 (GP)	3.6	NR		25				**23.0 to 24.0 feet: GRAVELLY SAND (SW),** black, fine to coarse, with a little fine to medium subrounded gravel, trace fines, wet. @ 24.0 feet: refusal. Total depth drilled = 24.0 feet. Total depth sampled = 24.0 feet. **WELL COMPLETION DETAILS:** 0 to 23.5 feet: abandoned by backfilling boring with hydrated bentonite chips. 13.0 to 17.0 feet: set temporary well screen to collect groundwater sample GPW-8-397-10.
				30				
				35				
				40				

REMARKS

(1) GP = Soil samples collected using 1.5-inch O.D. GeoProbe coreing tube using a 2-foot-long polyethylene liner. (2) – = No PID reading. (3) NR = Recovery not recorded.

LOG OF EXPLORATORY BORING

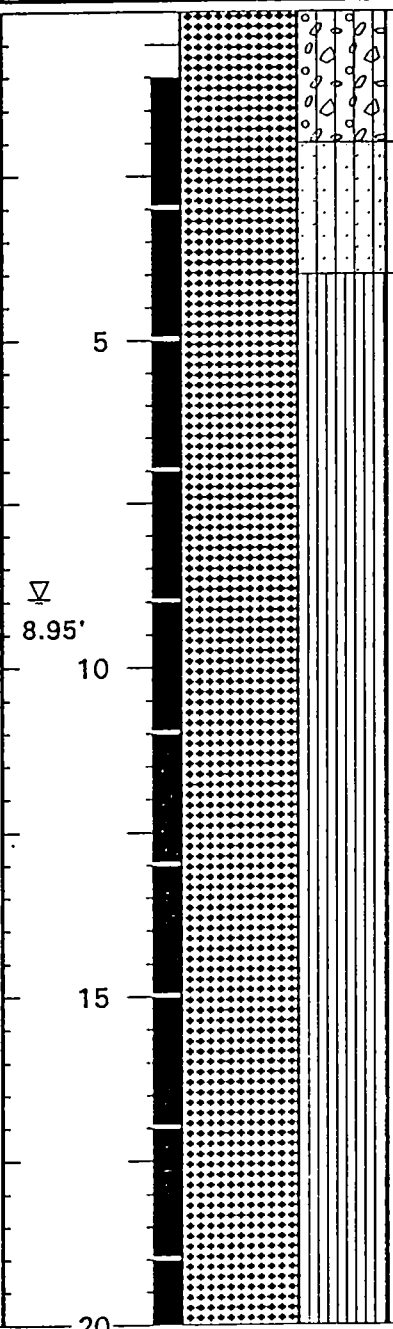
PROJECT NAME New City Cleaners
LOCATION 747 Stevens Drive, Richland, Washington
DRILLED BY Cascade Drilling, Inc.
DRILL METHOD GeoProbe
LOGGED BY John Latta

BORING NO. GP- 9
PAGE 1 OF 2
GROUND ELEV. 356.42'
TOTAL DEPTH 24.00'
DATE COMPLETED 03/11/97

SAMPLE NUMBER (SAMPLE TYPE)	PID (in ppm)	RECOVERY PERCENT	LITHOLOGIC DESCRIPTION
GP-9-1 (GP)	–	12/24	**0 to 2.0 feet: FINE SANDY GRAVEL (GM),** brown, a few percent nonplastic fines, damp. (ALLUVIUM)
GP-9-3 (GP)	3.6	24/24	**2.0 to 4.0 feet: SAND (SM),** brown, medium to fine, a few percent silt, damp. (ALLUVIUM)
GP-9-5 (GP)	451	14/24	**4.0 to 21.0 feet: SILT (ML),** light grayish brown, low plasticity, trace to 5 percent fine sand, moist to wet. Laminated locally. Local reddish brown iron-oxide staining beginning at 15 feet. (ALLUVIUM)
GP-9-7 (GP)	283	18/24	
GP-9-9 (GP)	773	18/24	
GP-9-11 (GP)	936	18/24	
GP-9-13 (GP)	145	18/24	
GP-9-15 (GP)	231	18/24	
GP-9-17 (GP)	–	0/24	
GP-9-19 (GP)	3.9	12/24	

GROUND WATER LEVELS: ▽ 8.95'

DEPTH IN FEET: 5, 10, 15, 20



REMARKS

(1) GP = Soil samples collected using 1.5-inch O.D. GeoProbe coreing tube using a 2-foot-long polyethylene liner. (2) – = No PID reading. (3) NR = Recovery not recorded.

EMCON

LOG OF EXPLORATORY BORING

PROJECT NAME	New City Cleaners	BORING NO.	GP- 9
LOCATION	747 Stevens Drive, Richland, Washington	PAGE	2 OF 2
DRILLED BY	Cascade Drilling, Inc.	GROUND ELEV.	356.42'
DRILL METHOD	GeoProbe	TOTAL DEPTH	24.00'
LOGGED BY	John Latta	DATE COMPLETED	03/11/97

SAMPLE NUMBER (SAMPLE TYPE)	PID (in ppm)	RECOVERY PERCENT	LITHOLOGIC DESCRIPTION
			4.0 to 21.0 feet: SILT (ML), continued.
GP-9-21 (GP)	–	0/24	**21.0 to 22.5 feet: SILTY SAND (SP-SM),** black, a few percent fines, wet. (ALLUVIUM)
GP-9-23 (GP)	3.9	NR	**22.5 to 25.0 feet: GRAVELLY SAND (SW),** black, fine to coarse, with a little fine to medium subrounded gravel, trace fines, wet. (ALLUVIUM)
			@ 25.0 feet: refusal.
			Total depth drilled = 25.0 feet. Total depth sampled = 25.0 feet.
			WELL COMPLETION DETAILS: 0 to 25.0 feet: abandoned by backfilling boring with hydrated bentonite chips. 13.0 to 17.0 feet: set temporary well screen to collect groundwater sample GPW-9-397-15.

GROUND WATER LEVELS | DEPTH IN FEET | SAMPLES | WELL DETAILS | LITHOLOGIC COLUMN

25 30 35 40

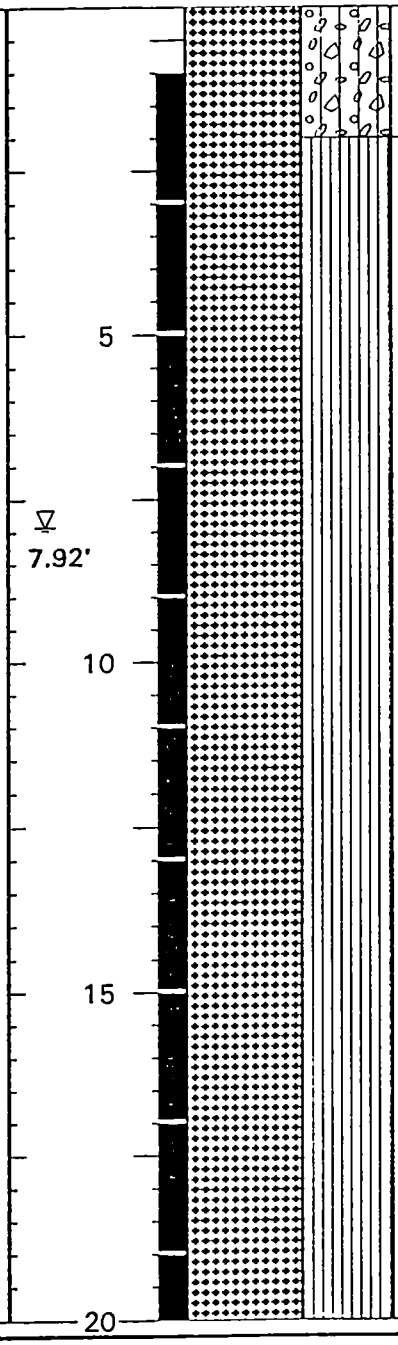
REMARKS

(1) GP = Soil samples collected using 1.5-inch O.D. GeoProbe coreing tube using a 2-foot-long polyethylene liner. (2) – = No PID reading. (3) NR = Recovery not recorded.

LOG OF EXPLORATORY BORING

PROJECT NAME	New City Cleaners	BORING NO.	GP-10
LOCATION	747 Stevens Drive, Richland, Washington	PAGE	1 OF 2
DRILLED BY	Cascade Drilling, Inc.	GROUND ELEV.	355.56'
DRILL METHOD	GeoProbe	TOTAL DEPTH	24.00'
LOGGED BY	John Latta	DATE COMPLETED	03/12/97

SAMPLE NUMBER (SAMPLE TYPE)	PID (in ppm)	RECOVERY PERCENT
GP-10-1 (GP)	3.5	7/24
GP-10-3 (GP)	3.5	15/24
GP-10-5 (GP)	3.5	16/24
GP-10-7 (GP)	3.5	12/24
GP-10-9 (GP)	3.5	16/24
GP-10-11 (GP)	3.5	18/24
GP-10-13 (GP)	3.5	17/24
GP-10-15 (GP)	3.5	23/24
GP-10-17 (GP)	3.5	17/24
GP-10-19	3.5	16/24



LITHOLOGIC DESCRIPTION

0 to 2.0 feet: SANDY GRAVEL (GM), brown to dark gray, fine to coarse gravel, some fine to coarse sand, a few percent nonplastic fines, damp. (ALLUVIUM)

2.0 to 20.5 feet: SILT (ML), light grayish brown, low plasticity, trace to 5 percent fine sand, moist to wet. Laminated locally. Local reddish brown iron-oxide staining beginning at 10 feet. (ALLUVIUM)

REMARKS

(1) GP = Soil samples collected using 1.5-inch O.D. GeoProbe coreing tube using a 2-foot-long polyethylene liner. (2) – = No PID reading. (3) NR = Recovery not recorded.

LOG OF EXPLORATORY BORING

PROJECT NAME	New City Cleaners	BORING NO.	GP-10
LOCATION	747 Stevens Drive, Richland, Washington	PAGE	2 OF 2
DRILLED BY	Cascade Drilling, Inc.	GROUND ELEV.	355.56'
DRILL METHOD	GeoProbe	TOTAL DEPTH	24.00'
LOGGED BY	John Latta	DATE COMPLETED	03/12/97

SAMPLE NUMBER (SAMPLE TYPE)	PID (in ppm)	RECOVERY PERCENT	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	WELL DETAILS	LITHOLOGIC COLUMN	LITHOLOGIC DESCRIPTION
(GP)								**2.0 to 20.5 feet: SILT (ML)**, continued.
GP-10-21 (GP)	3.5	20/24						**20.5 to 22.5 feet: SILTY SAND (SP-SM)**, black, a few percent fines, wet. (ALLUVIUM)
								22.5 to 23.0 feet: GRAVELLY SAND (SW), black, fine to coarse, with a little fine to medium subrounded gravel, trace fines, wet. (ALLUVIUM)
								@ 23.0 feet: refusal.
				25				Total depth drilled = 24.0 feet.
								Total depth sampled = 24.0 feet.
								WELL COMPLETION DETAILS:
								0 to 23.0 feet: abandoned by backfilling boring with hydrated bentonite chips.
				30				13.0 to 17.0 feet: set temporary well screen to collect groundwater sample GPW-10-397-17.
				35				
				40				

REMARKS

(1) GP = Soil samples collected using 1.5-inch O.D. GeoProbe coreing tube using a 2-foot-long polyethylene liner. (2) – = No PID reading. (3) NR = Recovery not recorded.

LOG OF EXPLORATORY BORING

PROJECT NAME	New City Cleaners	BORING NO.	MW- 1
LOCATION	747 Stevens Drive, Richland, Washington	PAGE	1 OF 2
DRILLED BY	Environmental West Exploration	GROUND ELEV.	
DRILL METHOD	Tubex	TOTAL DEPTH	32.30'
LOGGED BY	Nick Garson	DATE COMPLETED	05/01/97

SAMPLE NUMBER (SAMPLE TYPE)	PID (in ppm) (RECOVERY)	BLOW COUNTS	LITHOLOGIC DESCRIPTION
MW-1-1 (SS)	NA (0/24)	3-4-3-3	**0 to 7.0 feet: GRAVELLY SILTY SAND AND SILTY SAND (SM)**, brown, fine, 15 percent fines, trace to 10 percent coarse to medium sand, very loose to loose, damp. (FILL)
MW-1-5 (SS)	NA (0/24)	NA	
MW-1-7 (SS)	17 (24/24)	1-1-3-4	**7.0 to 18.5 feet: SILT (ML)**, light grayish brown, low to medium plasticity, trace to 5 percent fine sand, soft to stiff, damp to wet. Scattered reddish-brown iron-oxide staining beginning at 12.5 feet. (ALLUVIUM)
MW-1-9 (SS)	1.0 (24/24)	1-2-2-3	
MW-1-12.5 (SS)	1.0 (24/24)	3-3-5-6	
MW-1-17.5 (SS)	2.4 (19/24)	3-3-5-12	**18.5 to 23.0 feet: SILTY SAND (SP-SM)**, dark brown to gray, fine, approximately 10 to 15 percent low plasticity fines, trace medium

GROUND WATER LEVELS: ▽ ATD

DEPTH IN FEET: 5, 10, 15, 20

SAMPLES

WELL DETAILS

LITHOLOGIC COLUMN

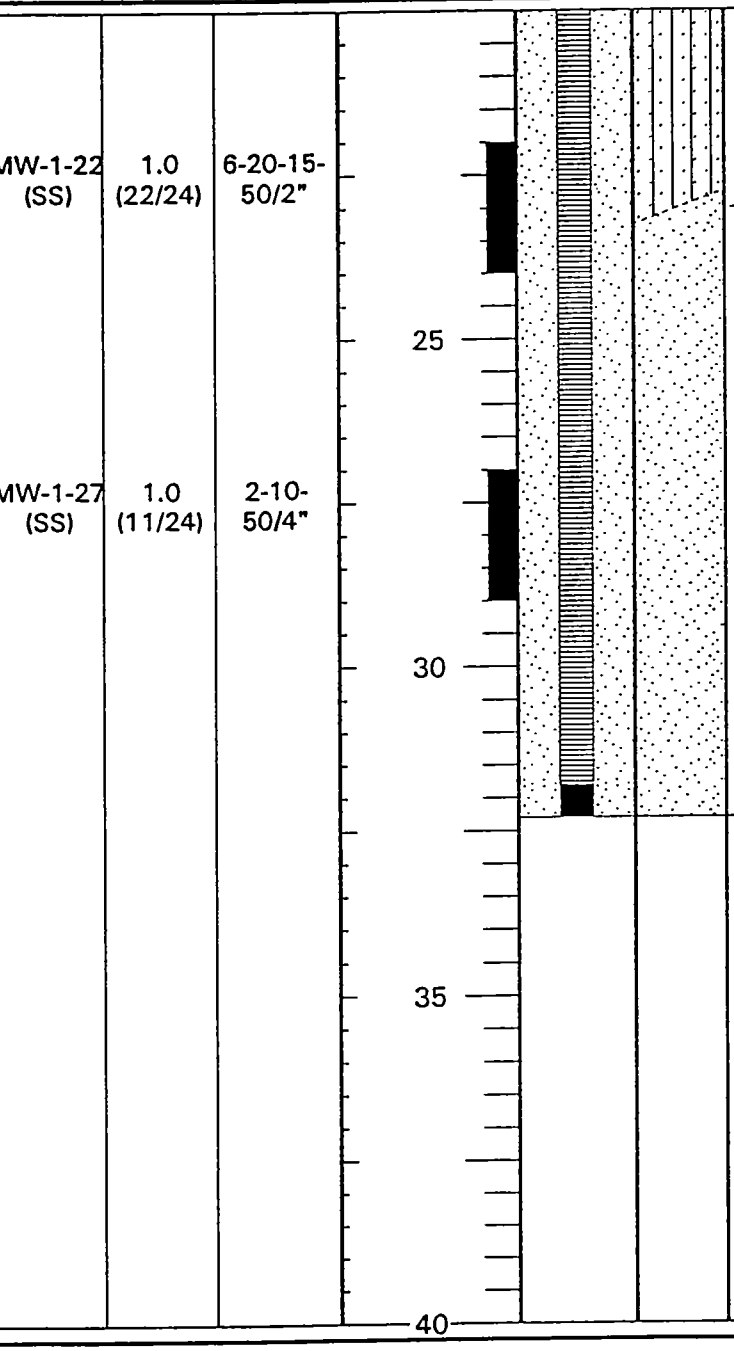
REMARKS

(1)SS = Soil samples collected using 2.5 inch by 24 inch stainless steel sampler. (2) Soil samples field screened with a Photoionization Detector (PID). (3) -- = No PID reading recorded. (4) NA = No sample recovered. (5) Blow counts do not represent SPT results. (6) White triangle = field estimate of water table at time of drilling. (7) Reference elevation = ground surface.

LOG OF EXPLORATORY BORING

PROJECT NAME	New City Cleaners	BORING NO.	MW- 1
LOCATION	747 Stevens Drive, Richland, Washington	PAGE	2 OF 2
DRILLED BY	Environmental West Exploration	GROUND ELEV.	
DRILL METHOD	Tubex	TOTAL DEPTH	32.30'
LOGGED BY	Nick Garson	DATE COMPLETED	05/01/97

SAMPLE NUMBER (SAMPLE TYPE)	PID (in ppm) (RECOVERY)	BLOW COUNTS	LITHOLOGIC DESCRIPTION
			sand, loose to very dense, wet. (ALLUVIUM)
MW-1-22 (SS)	1.0 (22/24)	6-20-15-50/2"	
			23.0 to 32.3 feet: GRAVELLY SAND (SW), dark brown to dark gray, fine to coarse, approximately 20 to 25 percent fine to coarse, angular to subrounded gravel, approximately 5 to 10 percent low plasticity fines, medium dense to very dense, wet. (ALLUVIUM)
MW-1-27 (SS)	1.0 (11/24)	2-10-50/4"	
			Total depth drilled = 32.3 feet. Total depth sampled = 29.0 feet. **WELL COMPLETION DETAILS:** 0 to 16.8 feet: 2-inch-diameter, flush-threaded, schedule 40 PVC blank riser pipe. 16.8 to 31.8 feet: 2-inch-diameter, flush-threaded, schedule 40 PVC well screen with 0.020-inch machined slots. 31.8 to 32.3 feet: 2-inch-diameter, flush-threaded, schedule 40 PVC end cap. Ground surface - flush mount well monument. 0 to 1.0 foot: Concrete. 1.0 to 14.0 feet: 3/8-inch Baroid Holeplug Bentonite chips hydrated with potable water. 14.0 to 32.3 feet: 20 - 40 Colorado Silica Sand.



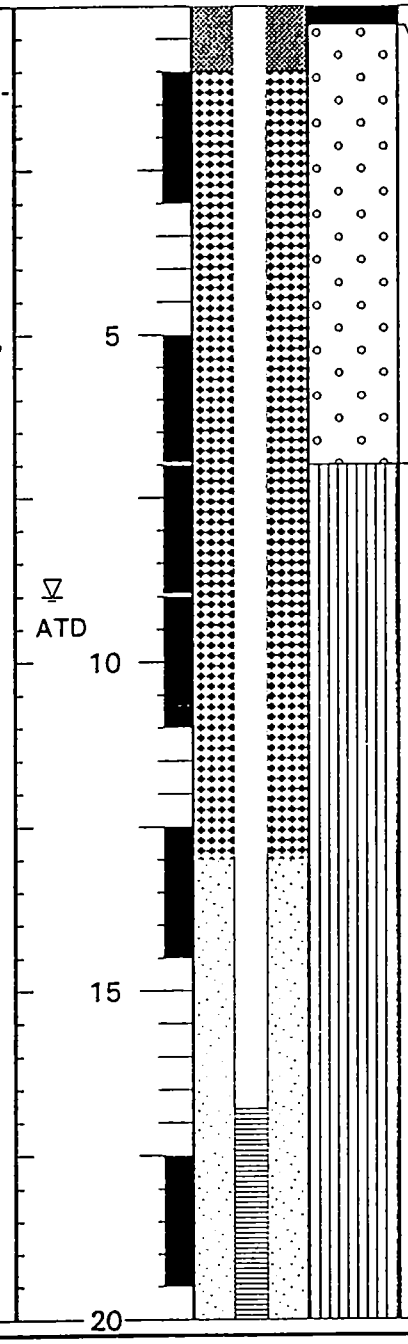
REMARKS

(1)SS = Soil samples collected using 2.5 inch by 24 inch stainless steel sampler. (2) Soil samples field screened with a Photoionization Detector (PID). (3) -- = No PID reading recorded. (4) NA = No sample recovered. (5) Blow counts do not represent SPT results. (6) White triangle = field estimate of water table at time of drilling. (7) Reference elevation = ground surface.

LOG OF EXPLORATORY BORING

PROJECT NAME	New City Cleaners	BORING NO.	MW- 2
LOCATION	747 Stevens Drive, Richland, Washington	PAGE	1 OF 2
DRILLED BY	Environmental West Exploration	GROUND ELEV.	
DRILL METHOD	Tubex	TOTAL DEPTH	32.30'
LOGGED BY	Nick Garson	DATE COMPLETED	04/30/97

SAMPLE NUMBER (SAMPLE TYPE)	PID (in ppm) (RECOVERY)	BLOW COUNTS	LITHOLOGIC DESCRIPTION
			0 to 0.3 foot: ASPHALT
MW-2-1 (SS)	0.4 (6/24)	10-30-35-50	0.3 to 7.0 feet: GRAVELLY SILTY SAND AND SILTY SAND (SM), brown, fine, 10 to 15 percent low plasticity fines, 10 to 20 percent medium sand to coarse, angular to subrounded gravel, medium dense to very dense, damp. (FILL)
MW-2-5 (SS)	1.3 (0/24)	20-50/5"	
MW-2-7 (SS)	1.3 (24/24)	3-4-2-4	7.0 to 22.0 feet: SILT (ML), light grayish brown to dark gray, low to medium plasticity, trace to approximately 5 percent fine sand, scattered rootlets, very soft to firm, damp to wet. (ALLUVIUM)
MW-2-9 (SS)	1.0 (24/24)	1-3-4-2	
MW-2-12.5 (SS)	2.0 (24/24)	1-3-3-3	
MW-2-17.5 (SS)	0 (10/24)	2-2-4-5	



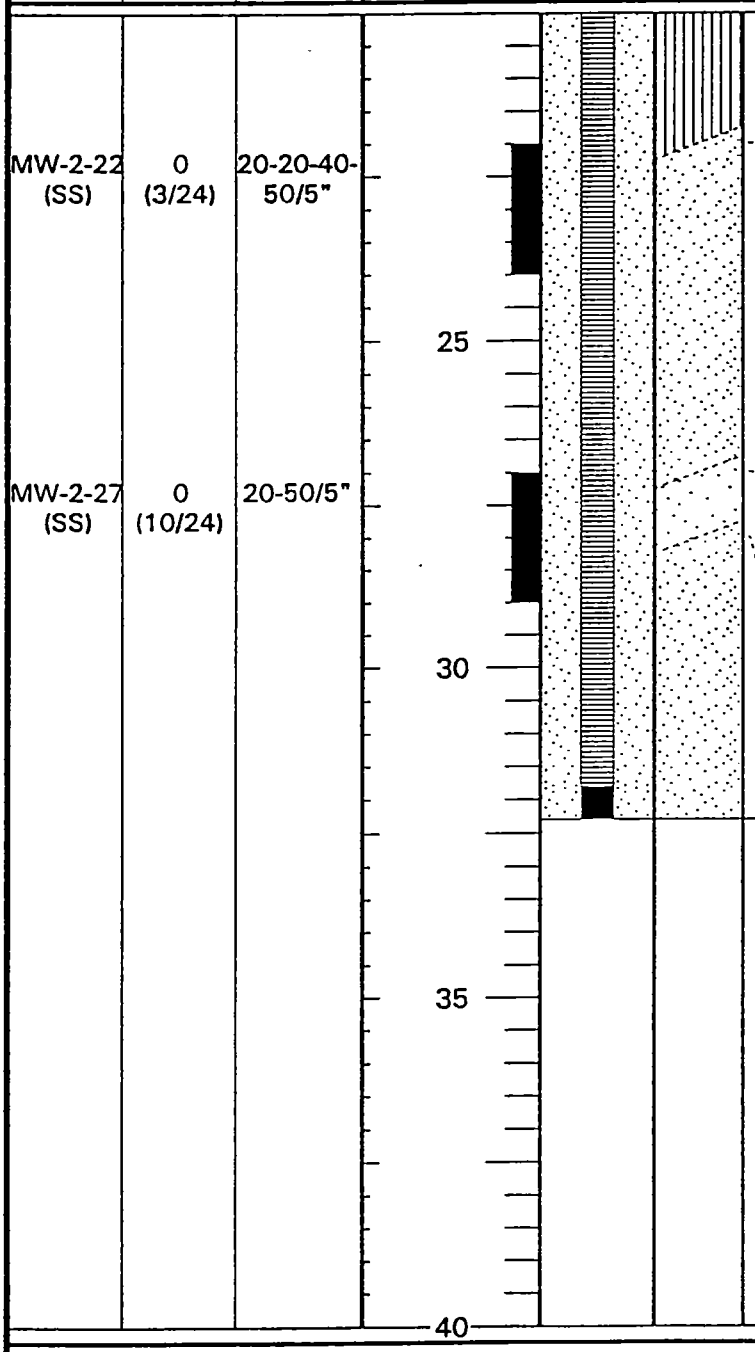
REMARKS

(1)SS = Soil samples collected using 2.5 inch by 24 inch stainless steel sampler. (2) Soil samples field screened with a Photoionization Detector (PID). (3) -- = No PID reading recorded. (4) NA = No sample recovered. (5) Blow counts do not represent SPT results. (6) White triangle = field estimate of water table at time of drilling. (7) Reference elevation = ground surface.

LOG OF EXPLORATORY BORING

PROJECT NAME	New City Cleaners	BORING NO.	MW- 2
LOCATION	747 Stevens Drive, Richland, Washington	PAGE	2 OF 2
DRILLED BY	Environmental West Exploration	GROUND ELEV.	
DRILL METHOD	Tubex	TOTAL DEPTH	32.30'
LOGGED BY	Nick Garson	DATE COMPLETED	04/30/97

SAMPLE NUMBER (SAMPLE TYPE)	PID (in ppm) (RECOVERY)	BLOW COUNTS	LITHOLOGIC DESCRIPTION
			7.0 to 22.0 feet: SILT (ML), continued.
MW-2-22 (SS)	0 (3/24)	20-20-40-50/5"	**22.0 to 27.0 feet: GRAVELLY SAND (SW)**, dark brown to dark gray, fine to coarse, approximately 15 to 20 percent fine to coarse, angular to subrounded gravel, approximately 5 percent low plasticity fines, medium dense to very dense, wet. (ALLUVIUM)
MW-2-27 (SS)	0 (10/24)	20-50/5"	**27.0 to 28.0 feet: SAND (SP)**, dark brown to gray, fine, trace fines and medium sand, medium dense to very dense, wet. (ALLUVIUM)
			28.0 to 32.3 feet: GRAVELLY SAND (SW), as above.
			Total depth drilled = 32.3 feet. Total depth sampled = 29.0 feet. **WELL COMPLETION DETAILS:** 0 to 16.8 feet: 2-inch-diameter, flush-threaded, schedule 40 PVC blank riser pipe. 16.8 to 31.8 feet: 2-inch-diameter, flush-threaded, schedule 40 PVC well screen with 0.020-inch machined slots. 31.8 to 32.3 feet: 2-inch-diameter, flush-threaded, schedule 40 PVC end cap. Ground surface - flush mount well monument. 0 to 1.0 foot: Concrete. 1.0 to 13.0 feet: 3/8-inch Baroid Holeplug Bentonite chips hydrated with potable water. 13.0 to 32.3 feet: 20 - 40 Colorado Silica Sand.



REMARKS

(1)SS = Soil samples collected using 2.5 inch by 24 inch stainless steel sampler. (2) Soil samples field screened with a Photolonization Detector (PID). (3) – = No PID reading recorded. (4) NA = No sample recovered. (5) Blow counts do not represent SPT results. (6) White triangle = field estimate of water table at time of drilling. (7) Reference elevation = ground surface.

LOG OF EXPLORATORY BORING

PROJECT NAME	**New City Cleaners**	BORING NO.	**MW- 3**
LOCATION	**747 Stevens Drive, Richland, Washington**	PAGE	**1 OF 2**
DRILLED BY	**Environmental West Exploration**	GROUND ELEV.	
DRILL METHOD	**Tubex**	TOTAL DEPTH	**32.50'**
LOGGED BY	**Nick Garson**	DATE COMPLETED	**04/30/97**

SAMPLE NUMBER (SAMPLE TYPE)	PID (in ppm) (RECOVERY)	BLOW COUNTS	LITHOLOGIC DESCRIPTION
MW-3-1 (SS)	0 (6/24)	3-20-50/3"	**0 to 6.0 feet: GRAVELLY SILTY SAND AND SILTY SAND (SM)**, brown, fine, 15 to 20 percent low plasticity fines, 10 to 20 percent medium sand to coarse, angular to subrounded gravel, very loose to loose, damp. (FILL)
MW-3-5 (SS)	1.5 (24/24)	4-4-3-4	
MW-3-7 (SS)	0.2 (24/24)	1-1-2-3	**6.0 to 9.0 feet: SANDY SILT (ML)**, brown, low plasticity, approximately 5 to 15 percent fine sand, very soft to soft, damp to wet. (ALLUVIUM)
MW-3-9 (SS)	9.0 (24/24)	1-1-1-1	**9.0 to 17.5 feet: SANDY SILT (ML)**, light grayish brown to dark gray, low plasticity, approximately 5 to 15 percent fine sand, very soft to soft, wet. Local reddish brown iron-oxide staining beginning at 9 feet. (ALLUVIUM)
MW-3-12.5 (SS)	2.8 (24/24)	2-2-3-3	
MW-3-17.5 (SS)	3.2 (24/24)	2-3-6-5	**17.5 to 18.0 feet: SAND (SP)**, dark brown to gray, fine, approximately 5 percent low plasticity fines, very loose to loose, wet. (ALLUVIUM)
			18.0 to 19.4 feet: SILT (ML), light grayish brown to dark gray, low plasticity, approximately

GROUND WATER LEVELS: ▽ ATD

DEPTH IN FEET: 5, 10, 15, 20

SAMPLES

WELL DETAILS

LITHOLOGIC COLUMN

REMARKS

(1)SS = Soil samples collected using 2.5 inch by 24 inch stainless steel sampler. (2) Soil samples field screened with a Photoionization Detector (PID). (3) – = No PID reading recorded. (4) NA = No sample recovered. (5) Blow counts do not represent SPT results. (6) White triangle = field estimate of water table at time of drilling. (7) Reference elevation = ground surface.

EMCON

LOG OF EXPLORATORY BORING

PROJECT NAME	New City Cleaners	BORING NO.	MW- 3
LOCATION	747 Stevens Drive, Richland, Washington	PAGE	2 OF 2
DRILLED BY	Environmental West Exploration	GROUND ELEV.	
DRILL METHOD	Tubex	TOTAL DEPTH	32.50'
LOGGED BY	Nick Garson	DATE COMPLETED	04/30/97

SAMPLE NUMBER (SAMPLE TYPE)	PID (in ppm) (RECOVERY)	BLOW COUNTS	GROUND WATER LEVELS / DEPTH IN FEET / SAMPLES / WELL DETAILS / LITHOLOGIC COLUMN	LITHOLOGIC DESCRIPTION
				5 percent fine sand, soft to firm, wet. (ALLUVIUM)
				19.4 to 22.0 feet: SILTY SAND (SP-SM), dark brown, fine, approximately 5 to 15 percent low plasticity fines, loose, wet. (ALLUVIUM)
MW-3-22 (SS)	0.2 (6/24)	8-10-30-50/3"		**22.0 to 27.0 feet: GRAVELLY SAND (SW),** dark brown to gray, fine to coarse, approximately 10 to 15 percent fine to coarse, angular to subrounded gravel, approximately 5 percent low plasticity fines, medium dense to very dense, wet. (ALLUVIUM)
			25	
MW-3-27 (SS)	0 (12/24)	6-20-50/3"		**27.0 to 28.0 feet: SAND (SP),** gray, fine, trace fines and medium sand, medium dense, wet. (ALLUVIUM)
				28.0 to 32.5 feet: GRAVELLY SAND (SW), dark brown to dark gray, fine to coarse, approximately 15 to 20 percent fine to coarse, angular to subrounded gravel, trace fines, medium dense to very dense, wet. (ALLUVIUM)
			30	
				Total depth drilled = 32.5 feet. Total depth sampled = 29.0 feet. **WELL COMPLETION DETAILS:** 0 to 17.0 feet: 2-inch-diameter, flush-threaded, schedule 40 PVC blank riser pipe. 17.0 to 32.0 feet: 2-inch-diameter, flush-threaded, schedule 40 PVC well screen with 0.020-inch machined slots. 32.0 to 32.5 feet: 2-inch-diameter, flush-threaded, schedule 40 PVC end cap. Ground surface - flush mount well monument. 0 to 1.0 foot: Concrete. 1.0 to 14.0 feet: 3/8-inch Baroid Holeplug Bentonite chips hydrated with potable water. 14.0 to 32.5 feet: 20 - 40 Colorado Silica Sand.
			35	
			40	

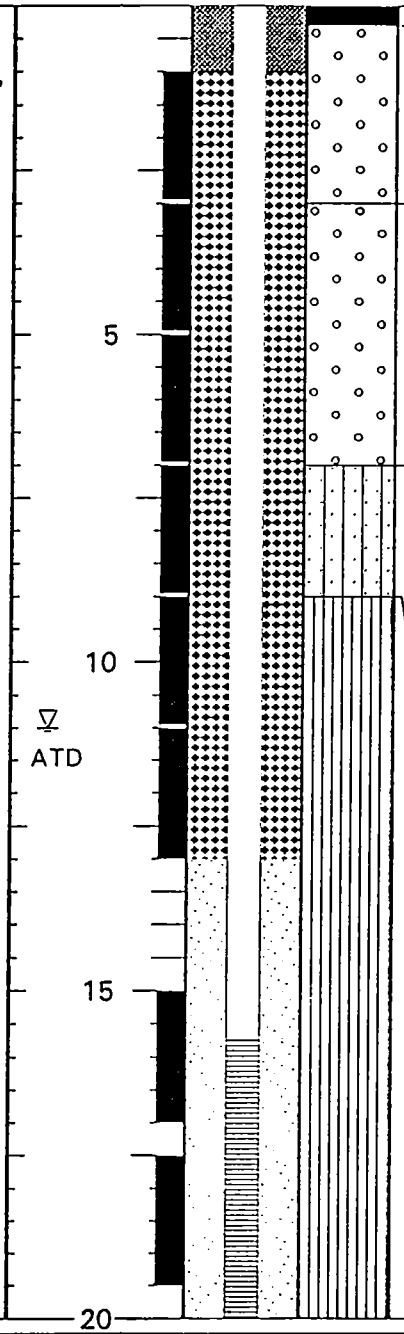
REMARKS

(1)SS = Soil samples collected using 2.5 inch by 24 inch stainless steel sampler. (2) Soil samples field screened with a Photoionization Detector (PID). (3) -- = No PID reading recorded. (4) NA = No sample recovered. (5) Blow counts do not represent SPT results. (6) White triangle = field estimate of water table at time of drilling. (7) Reference elevation = ground surface.

LOG OF EXPLORATORY BORING

PROJECT NAME	New City Cleaners	BORING NO.	MW- 4A/MW- 4B
LOCATION	747 Stevens Drive, Richland, Washington	PAGE	1 OF 2
DRILLED BY	Environmental West Exploration	GROUND ELEV.	
DRILL METHOD	Hollow Stem Auger/Tubex	TOTAL DEPTH	31.75'
LOGGED BY	Nick Garson	DATE COMPLETED	04/30/97

SAMPLE NUMBER (SAMPLE TYPE)	PID (in ppm) (RECOVERY)	BLOW COUNTS	LITHOLOGIC DESCRIPTION
MW-4-1 (SS)	0 (6/24)	12-28/4"	**0 to 0.3 foot: ASPHALT** **0.3 to 3.0 feet: SANDY SILT (ML)**, brown, low plasticity, approximately 5 to 15 percent fine sand, trace to approximately 5 percent medium sand to fine gravel, stiff to very stiff, damp. (FILL)
MW-4-3 (SS)	NA (NA)	NA	**3.0 to 7.0 feet: GRAVEL (GW)**, gray, fine to coarse, angular to subrounded, approximately 5 to 10 percent cobbles up to 4-inch diameter, very dense, damp. (FILL)
MW-4-5 (SS)	NA (NA)	NA	
MW-4-7 (SS)	0 (18/24)	7-12-20-25	**7.0 to 9.0 feet: SILTY SAND (SP-SM)**, brown, fine, approximately 15 to 20 percent low plasticity fines, approximately 5 percent medium sand to fine to coarse, angular to subrounded gravel, trace wood debris, fine laminations, firm to very stiff, damp to moist. (ALLUVIUM)
MW-4-9 (SS)	2.3 (18/24)	4-6-3-3	**9.0 to 24.0 feet: SILT (ML)**, brown, low plasticity, approximately 5 percent fine sand, very soft to hard, moist to wet. (ALLUVIUM)
MW-4-11 (SS)	0 (24/24)	1-1-2-4	ATD
MW-4-15 (SS)	162 (24/24)	5-5-5-10	
MW-4-17.5 (SS)	6000 (24/24)	2-2-2-3	



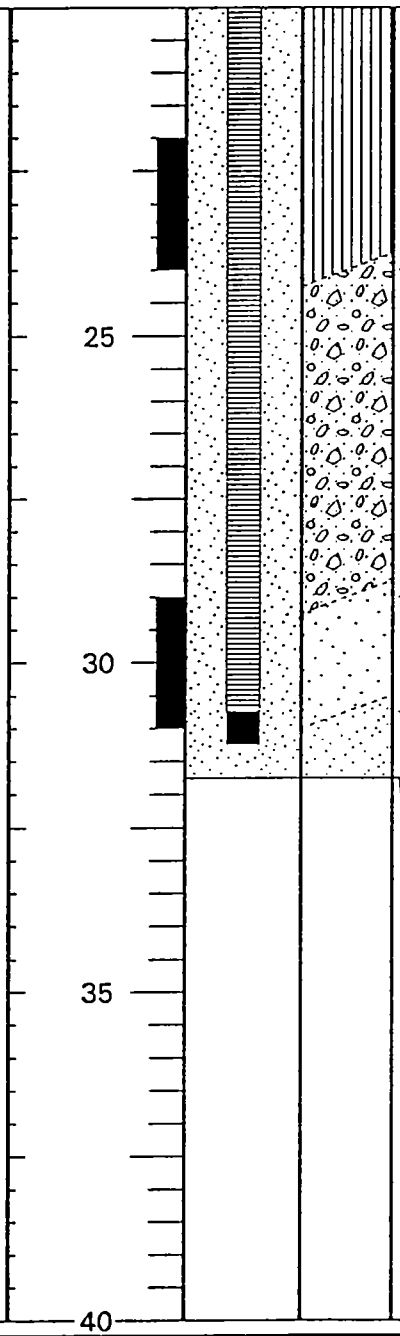
REMARKS

(1)SS = Soil samples collected using 2.5 inch by 24 inch stainless steel sampler. (2) Soil samples field screened with a Photoionization Detector (PID). (3) -- = No PID reading recorded. (4) NA = No sample recovered. (5) Blow counts do not represent SPT results. (6) White triangle = field estimate of water table at time of drilling. (7) Reference elevation = ground surface. (8) Soil samples collected from MW-4A on 4/29/97. Monitoring well installed in MW-4B location on 4/30/97.

LOG OF EXPLORATORY BORING

PROJECT NAME	New City Cleaners	BORING NO.	MW- 4A/MW- 4B
LOCATION	747 Stevens Drive, Richland, Washington	PAGE	2 OF 2
DRILLED BY	Environmental West Exploration	GROUND ELEV.	
DRILL METHOD	Hollow Stem Auger/Tubex	TOTAL DEPTH	31.75'
LOGGED BY	Nick Garson	DATE COMPLETED	04/30/97

SAMPLE NUMBER (SAMPLE TYPE)	PID (in ppm) (RECOVERY)	BLOW COUNTS
MW-4-22 (SS)	1800 (6/24)	2-12-50-3
MW-4-29 (SS)	0 (24/24)	6-5-5-30



9.0 to 24.0 feet: SILT (ML), continued.

24.0 to 29.0 feet: SILTY GRAVEL (GW), dark brown to dark gray, fine to coarse, angular to subrounded, approximately 5 to 10 percent medium to coarse sand, approximately 10 to 15 percent low plasticity fines, very dense, wet. (ALLUVIUM)

29.0 to 30.75 feet: SAND (SP), brown, fine, trace low plasticity fines, loose to medium dense, wet. (ALLUVIUM)

30.75 to 31.75 feet: SAND (SW), gray, medium to coarse, approximately 5 to 10 percent fine sand, approximately 5 percent fine gravel, trace to approximately 5 percent low plasticity fines, loose to medium dense, wet. (ALLUVIUM)

Total depth drilled = 31.75 feet.
Total depth sampled = 31.0 feet.

WELL COMPLETION DETAILS:

0 to 15.75 feet: 2-inch-diameter, flush-threaded, schedule 40 PVC blank riser pipe.
15.75 to 30.75 feet: 2-inch-diameter, flush-threaded, schedule 40 PVC well screen with 0.020-inch machined slots.
30.75 to 31.25 feet: 2-inch-diameter, flush-threaded, schedule 40 PVC end cap.
Ground surface - flush mount well monument.
0 to 1.0 foot: Concrete.
1.0 to 13.0 feet: 3/8-inch Baroid Holeplug Bentonite chips hydrated with potable water.
13.0 to 31.75 feet: 20 - 40 Colorado Silica Sand.

REMARKS

(1)SS = Soil samples collected using 2.5 inch by 24 inch stainless steel sampler. (2) Soil samples field screened with a Photoionization Detector (PID). (3) – = No PID reading recorded. (4) NA = No sample recovered. (5) Blow counts do not represent SPT results. (6) White triangle = field estimate of water table at time of drilling. (7) Reference elevation = ground surface. (8) Soil samples collected from MW-4A on 4/29/97. Monitoring well installed in MW-4B location on 4/30/97.

LOG OF EXPLORATORY BORING

PROJECT NAME	New City Cleaners	BORING NO.	SB- 1
LOCATION	747 Stevens Drive, Richland, Washington	PAGE	1 OF 3
DRILLED BY	Environmental West Exploration	GROUND ELEV.	
DRILL METHOD	Hollow Stem Auger/Tubex	TOTAL DEPTH	47.00'
LOGGED BY	Nick Garson	DATE COMPLETED	05/01/97

SAMPLE NUMBER (SAMPLE TYPE)	PID (in ppm) (RECOVERY)	BLOW COUNTS	LITHOLOGIC DESCRIPTION
SB-1-1 (SS)	2.0 (20/24)	4-5-7-3	**0 to 5.0 feet: SILTY SAND (SM)**, brown, fine, approximately 10 to 15 percent low plasticity fines, approximately 5 percent medium sand to fine gravel, very loose to loose, damp to moist. (FILL)
SB-1-5 (SS)	1.5 (6/24)	1-3-8-8	**5.0 to 12.5 feet: SANDY SILT (ML)**, brown to gray, approximately 10 to 15 percent fine sand, approximately 5 percent medium to coarse sand, very soft to firm, moist to wet. (ALLUVIUM)
SB-1-7 (SS)	1.1 (5/24)	1-3-3-3	
SB-1-9 (SS)	4.0 (9/24)	1-2-3-3	
SB-1-12.5 (SS)	37 (23/24)	5-10-20-20	**12.5 to 23.8 feet: SILT (ML)**, olive-green to gray, low plasticity, trace to approximately 5 percent fine sand, firm to very stiff, wet. (ALLUVIUM)
SB-1-17.5 (SS)	27 (17/24)	4-6-6-6	

GROUND WATER LEVELS: ATD

DEPTH IN FEET: 5, 10, 15, 20

SAMPLES

WELL DETAILS

LITHOLOGIC COLUMN

REMARKS

(1)SS = Soil samples collected using 2.5 inch by 24 inch stainless steel sampler. (2) Soil samples field screened with a Photoionization Detector (PID). (3) -- = No PID reading recorded. (4) NA = No sample recovered. (5) Blow counts do not represent SPT results. (6) White triangle = field estimate of water table at time of drilling. (7) Reference elevation = ground surface. (8) Drilled boring with Hollow Stem Auger until refusal was encountered at approximately 29 feet bgs. Drilled boring from 29 to 47 feet bgs with Tubex drill rig.

EMCON

LOG OF EXPLORATORY BORING

PROJECT NAME	New City Cleaners	BORING NO.	SB- 1
LOCATION	747 Stevens Drive, Richland, Washington	PAGE	2 OF 3
DRILLED BY	Environmental West Exploration	GROUND ELEV.	
DRILL METHOD	Hollow Stem Auger/Tubex	TOTAL DEPTH	47.00'
LOGGED BY	Nick Garson	DATE COMPLETED	05/01/97

SAMPLE NUMBER (SAMPLE TYPE)	PID (in ppm) (RECOVERY)	BLOW COUNTS	LITHOLOGIC DESCRIPTION
			12.5 to 23.8 feet: SILT (ML), continued.
SB-1-22 (SS)	13 (24/24)	2-2-4-8	
			23.8 to 25.0 feet: SILTY SAND (SP-SM), gray, fine, approximately 10 to 15 percent low plasticity fines, trace medium sand, very loose to loose, wet. (ALLUVIUM)
SB-1-27 (SS)	25 (19/24)	10-22-50/3"	**25.0 to 47.0 feet: GRAVELLY SAND (SW),** dark brown to dark gray, fine to coarse, approximately 20 to 25 percent angular to subrounded, fine to coarse gravel, approximately 5 percent fine sand, trace low plasticity fines, loose to very dense, wet. (ALLUVIUM)
SB-1-30 (SS)	1.0 (8/24)	8-16-50/3"	
SB-1-35 (SS)	1.0 (8/24)	15-40-50/3"	

GROUND WATER LEVELS | DEPTH IN FEET | SAMPLES | WELL DETAILS | LITHOLOGIC COLUMN

25 30 35 40

REMARKS

(1)SS = Soil samples collected using 2.5 inch by 24 inch stainless steel sampler. (2) Soil samples field screened with a Photoionization Detector (PID). (3) -- = No PID reading recorded. (4) NA = No sample recovered. (5) Blow counts do not represent SPT results. (6) White triangle = field estimate of water table at time of drilling. (7) Reference elevation = ground surface. (8) Drilled boring with Hollow Stem Auger until refusal was encountered at approximately 29 feet bgs. Drilled boring from 29 to 47 feet bgs with Tubex drill rig.

EMCON

LOG OF EXPLORATORY BORING

PROJECT NAME	New City Cleaners	BORING NO.	SB- 1
LOCATION	747 Stevens Drive, Richland, Washington	PAGE	3 OF 3
DRILLED BY	Environmental West Exploration	GROUND ELEV.	
DRILL METHOD	Hollow Stem Auger/Tubex	TOTAL DEPTH	47.00'
LOGGED BY	Nick Garson	DATE COMPLETED	05/01/97

SAMPLE NUMBER (SAMPLE TYPE)	PID (in ppm) (RECOVERY)	BLOW COUNTS	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	WELL DETAILS	LITHOLOGIC COLUMN	LITHOLOGIC DESCRIPTION
SB-1-40 (SS)	1.0 (8/24)	10-30-50/3"		45				**25.0 to 47.0 feet: GRAVELLY SAND (SW),** continued. Boring heaved at 40 feet bgs. No samples collected below 42 feet bgs.
				50				Total depth drilled = 47.0 feet. Total depth sampled = 42.0 feet. Boring backfilled with hydrated bentonite chips.
				55				
				60				

EMCON

REMARKS

(1)SS = Soil samples collected using 2.5 inch by 24 inch stainless steel sampler. (2) Soil samples field screened with a Photoionization Detector (PID). (3) – = No PID reading recorded. (4) NA = No sample recovered. (5) Blow counts do not represent SPT results. (6) White triangle = field estimate of water table at time of drilling. (7) Reference elevation = ground surface. (8) Drilled boring with Hollow Stem Auger until refusal was encountered at approximately 29 feet bgs. Drilled boring from 29 to 45 feet bgs with Tubex drill rig.

LOG OF EXPLORATORY BORING

PROJECT NAME	**New City Cleaners**	BORING NO.	**SB- 2**
LOCATION	**747 Stevens Drive**, Richland, Washington	PAGE	**1 OF 3**
DRILLED BY	**Environmental** West Exploration	GROUND ELEV.	
DRILL METHOD	**Hollow Stem Auger**/Tubex	TOTAL DEPTH	**45.00'**
LOGGED BY	**Nick Garson**	DATE COMPLETED	**05/01/97**

SAMPLE NUMBER (SAMPLE TYPE)	PID (in ppm) (RECOVERY)	BLOW COUNTS	LITHOLOGIC DESCRIPTION
SB-2-1 (SS)	6.0 (12/24)	3-7-7-5	**0 to 7.0 feet: SILTY SAND (SM)**, brown, fine, approximately 10 to 15 percent low plasticity fines, approximately 5 to 10 percent medium sand to fine gravel, very loose to loose, damp to moist. (FILL)
SB-2-5 (SS)	3.3 (23/24)	4-2-1-2	
SB-2-7 (SS)	2.0 (24/24)	2-2-4-5	**7.0 to 9.0 feet: SANDY SILT (ML)**, brown, low to medium plasticity, approximately 5 to 15 percent fine to medium sand, soft to firm, damp to moist. (ALLUVIUM)
SB-2-9 (SS)	2.0 (24/24)	3-4-7-10	**9.0 to 17.5 feet: SILT (ML)**, olive-green to brown, low to medium plasticity, trace to approximately 5 percent fine sand, soft to stiff, moist to wet. (ALLUVIUM)
SB-2-12.5 (SS)	2.0 (23/24)	2-2-2-4	
SB-2-17.5 (SS)	27 (24/24)	4-6-6-6	**17.5 to 22.0 feet: SANDY SILT (ML)**, brown, low plasticity, approximately 10 to 15 percent fine sand, trace medium sand, soft to firm, wet. (ALLUVIUM)

GROUND WATER LEVELS: ▽ ATD

DEPTH IN FEET: 5, 10, 15, 20

SAMPLES

WELL DETAILS

LITHOLOGIC COLUMN

REMARKS

(1)SS = Soil samples collected using 2.5 inch by 24 inch stainless steel sampler. (2) Soil samples field screened with a Photoionization Detector (PID). (3) -- = No PID reading recorded. (4) NA = No sample recovered. (5) Blow counts do not represent SPT results. (6) White triangle = field estimate of water table at time of drilling. (7) Reference elevation = ground surface. (8) Drilled boring with Hollow Stem Auger until refusal was encountered at approximately 29 feet bgs. Drilled boring from 29 to 45 feet bgs with Tubex drill rig.

EMCON

LOG OF EXPLORATORY BORING

PROJECT NAME	New City Cleaners	BORING NO.	SB- 2
LOCATION	747 Stevens Drive, Richland, Washington	PAGE	2 OF 3
DRILLED BY	Environmental West Exploration	GROUND ELEV.	
DRILL METHOD	Hollow Stem Auger/Tubex	TOTAL DEPTH	45.00'
LOGGED BY	Nick Garson	DATE COMPLETED	05/01/97

SAMPLE NUMBER (SAMPLE TYPE)	PID (in ppm) (RECOVERY)	BLOW COUNTS	LITHOLOGIC DESCRIPTION
			17.5 to 22.0 feet: SANDY SILT (ML), continued.
SB-2-22 (SS)	1.1 (17/24)	2-3-20-50/3"	**22.0 to 24.0 feet: SAND (SP),** dark brown to dark gray, fine, approximately 5 to 10 percent low plasticity fines, trace medium sand, very loose to medium dense, wet. (ALLUVIUM)
SB-2-27 (SS)	1.5 (10/24)	5-5-50/5"	**24.0 to 45.0 feet: GRAVELLY SAND (SW),** dark brown to dark gray, fine to coarse, approximately 15 to 20 percent angular to subrounded, fine to coarse gravel, approximately 5 percent low plasticity fines, loose to very dense, wet. Heave at 40 to 45 feet bgs. (ALLUVIUM)
SB-2-30 (SS)	1.5 (7/24)	10-50/3"	
SB-2-35 (SS)	1.0 (16/24)	5-10-50/5"	

GROUND WATER LEVELS | DEPTH IN FEET | SAMPLES | WELL DETAILS | LITHOLOGIC COLUMN

25 30 35 40

REMARKS

(1)SS = Soil samples collected using 2.5 inch by 24 inch stainless steel sampler. (2) Soil samples field screened with a Photoionization Detector (PID). (3) -- = No PID reading recorded. (4) NA = No sample recovered. (5) Blow counts do not represent SPT results. (6) White triangle = field estimate of water table at time of drilling. (7) Reference elevation = ground surface. (8) Drilled boring with Hollow Stem Auger until refusal was encountered at approximately 29 feet bgs. Drilled boring from 29 to 45 feet bgs with Tubex drill rig.

EMCON

LOG OF EXPLORATORY BORING

PROJECT NAME	New City Cleaners	BORING NO.	SB- 2
LOCATION	747 Stevens Drive, Richland, Washington	PAGE	3 OF 3
DRILLED BY	Environmental West Exploration	GROUND ELEV.	
DRILL METHOD	Hollow Stem Auger/Tubex	TOTAL DEPTH	45.00'
LOGGED BY	Nick Garson	DATE COMPLETED	05/01/97

SAMPLE NUMBER (SAMPLE TYPE)	PID (in ppm) (RECOVERY)	BLOW COUNTS	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	WELL DETAILS	LITHOLOGIC COLUMN	LITHOLOGIC DESCRIPTION
SB-2-40 (SS)	NA (1/24)	20-50/1"		45				**24.0 to 45.0 feet: GRAVELLY SAND (SW),** continued.
								Total depth drilled = 45.0 feet. Total depth sampled = 42.0 feet. Boring backfilled with hydrated bentonite chips.
				50				
				55				
				60				

EMCON

REMARKS

(1)SS = Soil samples collected using 2.5 inch by 24 inch stainless steel sampler. (2) Soil samples field screened with a Photoionization Detector (PID). (3) -- = No PID reading recorded. (4) NA = No sample recovered. (5) Blow counts do not represent SPT results. (6) White triangle = field estimate of water table at time of drilling. (7) Reference elevation = ground surface. (8) Drilled boring with Hollow Stem Auger until refusal was encountered at approximately 29 feet bgs. Drilled boring from 29 to 45 feet bgs with Tubex drill rig.

APPENDIX C

FIELD SAMPLING DATA SHEETS

FIELD SAMPLING DATA SHEET

EMCON
W 7106 Will D. Alton Lane, Suite 101
Spokane, Washington 99224
Office: (509) 838-1144 Fax: (509) 838-1382

PROJECT NAME: **WELL ID:**

SITE ADDRESS: **BLIND ID:** SS-A1

4035B-016.004 **DUP ID:** NA

WIND FROM:	N	NE	E	SE	S	SW	W	NW	(LIGHT)	MEDIUM	HEAVY
WEATHER:	SUNNY		CLOUDY		(RAIN)		?		**TEMPERATURE:**	(F) 45.	°C

(Circle appropriate units)

HYDROLOGY/LEVEL MEASUREMENTS (Nearest 0.01 ft) (Product Thickness) (Water Column) (Water Column x Gal/ft)

Date	Time	DT-Bottom	DT-Product	DT-Water	DTP-DTW	DTB-DTW		Volume (gal)
/ /	:	.	.	.	.	.	X 1	.
/ /	:	.	.	.	.		X 3	.

Gal/ft = (dia./2)² x 0.163	1" = 0.041	2" = 0.163	3" = 0.367	4" = 0.653	6" = 1.469	10" = 4.080	12" = 5.875

§ METHODS: (A) Submersible Pump (B) Peristaltic Pump (C) Disposable Bailer (D) PVC/Teflon Bailer (E) Dedicated Bailer (F) Dedicated Pump (G) Other = G

GROUNDWATER SAMPLING DATA (if product is detected, do NOT sample) Sample Depth: (√ if used)

Bottle Type	Date	Time	Method §	Amount & Volume mL		Preservative (circle)	Ice	Filter	pH	√
VOA Glass	/ /	:		3	40 ml	HCl	YES	NO		
Amber Glass	/ /	:			250, 500, 1L	(None) (HCl) (H_2SO_4)	YES	NO		
White Poly	/ /	:			250, 500, 1L	None	YES	NO	NA	
Yellow Poly	/ /	:			250, 500, 1L	H_2SO_4	YES	NO		
Green Poly	/ /	:			250, 500, 1L	NaOH	YES	NO		
Red Total Poly	/ /	:			250, 500, 1L	HNO_3	YES	NO		
Red Diss. Poly	/ /	:			250, 500, 1L	HNO_3	YES	YES		✓
16 oz glass	3/10/97	14:30	G	1	~~250, 500, 1L~~		YES			

Total Bottles (include duplicate count): 1

Analysis Allowed per Bottle Type	BOTTLE TYPE	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)
	VOA - Glass	(8010) (8010/8020) (8020) (8240) (8260) (BTEX) (TPH-G) (BTEX/TPH-G) OR [ ] WA [ ]
	AMBER - Glass	(PAH) (TPH-HCID) (TPH-D) (TPH-418.1) (Oil &Grease) OR [ ] WA [ ]
	WHITE - Poly	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO_3/CO_3) (Cl) (SO_4) (NO_3) (NO_2) (F)
	YELLOW - Poly	(COD) (TOC) (Total PO_4) (Total Keldahl Nitrogen) (NH_3) (NO_3/NO_2)
	GREEN - Poly	(Cyanide)
	RED TOTAL - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)
	RED DISSOLVED - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silica)
	16 oz glass	8260, WTPH-G, WTPH-D extend.

WATER QUALITY DATA Purge Start Time: : Pump/Bailer Inlet Depth:

Meas.	Method §	Purged (gal)	pH	E Cond (µS)	°F Temp °C	Other	Diss O_2 (mg/l)	Water Quality
1		.	.		.		.	
2		.	.		.		.	
3		.	.		.		.	
4		.	.		.		.	
		.	.		.		.	

[Casing] [Select A-G] [Cumulative Totals] [Circle units] [Clarity, Color]

Silty gravel (GM) brown w/ a few percent fine-coarse sand, damp dense. Sample location beneath a debris pile.

SAMPLER: John Latta (PRINTED NAME) John Latta (SIGNATURE)

FIELD SAMPLING DATA SHEET

EMCON
W 7106 Will D. Alton Lane, Suite 101
Spokane, Washington 99224
Office: (509) 838-1144 Fax: (509) 838-1382

PROJECT NAME: WELL ID:

SITE ADDRESS: BLIND ID: SS-A2

40958-016.004 DUP ID: NA

WIND FROM:	N	NE	E	SE	S	SW	W	NW	LIGHT	MEDIUM	HEAVY
WEATHER:	SUNNY		CLOUDY		(RAIN)		?		TEMPERATURE: (°F) 45. °C		

[Circle appropriate units]

HYDROLOGY/LEVEL MEASUREMENTS (Nearest 0.01 ft) [Product Thickness] [Water Column] [Water Column x Gal/ft]

Date	Time	DT-Bottom	DT-Product	DT-Water	DTP-DTW	DTB-DTW		Volume (gal)
/ /	:	.	.	.	.	.	X 1	.
/ /	:	.	.	.	.		X 3	.

Gal/ft = (dia./2)² x 0.163	1" = 0.041	2" = 0.163	3" = 0.367	4" = 0.653	6" = 1.469	10" = 4.080	12" = 5.875

§ METHODS: (A) Submersible Pump (B) Peristaltic Pump (C) Disposable Bailer (D) PVC/Teflon Bailer (E) Dedicated Bailer (F) Dedicated Pump (G) Other = Grab

GROUNDWATER SAMPLING DATA (if product is detected, do NOT sample) Sample Depth: [√ if used]

Bottle Type	Date	Time	Method §	Amount & Volume mL		Preservative [circle]	Ice	Filter	pH	√
VOA Glass	/ /	:		3	40 ml	HCl	YES	NO		
Amber Glass	/ /	:			250, 500, 1L	(None) (HCl) (H_2SO_4)	YES	NO		
White Poly	/ /	:			250, 500, 1L	None	YES	NO	NA	
Yellow Poly	/ /	:			250, 500, 1L	H_2SO_4	YES	NO		
Green Poly	/ /	:			250, 500, 1L	NaOH	YES	NO		
Red Total Poly	/ /	:			250, 500, 1L	HNO_3	YES	NO		
Red Diss. Poly	/ /	:			250, 500, 1L	HNO_3	YES	YES		
40z glass	3/10/97	14:07	G	1	250, 500, 1L		YES			✓

Total Bottles (include duplicate count): 1

Analysis Allowed per Bottle Type	BOTTLE TYPE	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)
	VOA - Glass	(8010) (8010/8020) (8020) (8240) (8260) (BTEX) (TPH-G) (BTEX/TPH-G) OR [ ] WA [ ]
	AMBER - Glass	(PAH) (TPH-HCID) (TPH-D) (TPH-418.1) (Oil &Grease) OR [ ] WA [ ]
	WHITE - Poly	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO_3/CO_3) (Cl) (SO_4) (NO_3) (NO_2) (F)
	YELLOW - Poly	(COD) (TOC) (Total PO_4) (Total Keldahl Nitrogen) (NH_3) (NO_3/NO_2)
	GREEN - Poly	(Cyanide)
	RED TOTAL - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)
	RED DISSOLVED - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silica)
	40z glass	8260 WTPH-G, WTPH-D ext.

WATER QUALITY DATA Purge Start Time: : Pump/Bailer Inlet Depth:

Meas.	Method §	Purged (gal)	pH	E Cond (µS)	°F Temp °C	Other	Diss O_2 (mg/l)	Water Quality
1		.	.		.		.	
2		.	.		.		.	
3		.	.		.		.	
4		.	.		.		.	
		.	.		.		.	

[Casing] [Select A-G] [Cumulative Totals] [Circle units] [Clarity, Color]

Silty gravel (GM), brown, w/ a few percent fine sand. damp, dense. Sample location beneath some plywood which had to be moved to get sample.

SAMPLER: John Latta (PRINTED NAME) (SIGNATURE) John Latta

FIELD SAMPLING DATA SHEET

EMCON
W 7106 Will D. Alton Lane, Suite 101
Spokane, Washington 99224
Office: (509) 838-1144 Fax: (509) 838-1382

PROJECT NAME: **WELL ID:**

SITE ADDRESS: **BLIND ID:** SS-A3

40358-016.004 **DUP ID:** NA

WIND FROM:	N	NE	E	SE	S	SW	W	NW	(LIGHT)	MEDIUM	HEAVY
WEATHER:	SUNNY		CLOUDY		(RAIN)		?		**TEMPERATURE:**	(F) 45.	°C

[Circle appropriate units]

HYDROLOGY/LEVEL MEASUREMENTS (Nearest 0.01 ft) [Product Thickness] [Water Column] [Water Column x Gal/ft]

Date	Time	DT-Bottom	DT-Product	DT-Water	DTP-DTW	DTB-DTW		Volume (gal)
/ /	:	.	.	.	.	.	X 1	.
/ /	:	.	.	.	.		X 3	.

Gal/ft = (dia./2)² x 0.163	1" = 0.041	2" = 0.163	3" = 0.367	4" = 0.653	6" = 1.469	10" = 4.080	12" = 5.875

§ METHODS: (A) Submersible Pump (B) Peristaltic Pump (C) Disposable Bailer (D) PVC/Teflon Bailer (E) Dedicated Bailer (F) Dedicated Pump (G) Other = Grab

GROUNDWATER SAMPLING DATA (if product is detected, do NOT sample) Sample Depth: [√ if used]

Bottle Type	Date	Time	Method §	Amount & Volume mL		Preservative [circle]	Ice	Filter	pH	√
VOA Glass	/ /	:		3	40 ml	HCl	YES	NO		
Amber Glass	/ /	:			250, 500, 1L	(None) (HCl) (H_2SO_4)	YES	NO		
White Poly	/ /	:			250, 500, 1L	None	YES	NO	NA	
Yellow Poly	/ /	:			250, 500, 1L	H_2SO_4	YES	NO		
Green Poly	/ /	:			250, 500, 1L	NaOH	YES	NO		
Red Total Poly	/ /	:			250, 500, 1L	HNO_3	YES	NO		
Red Diss. Poly	/ /	:			250, 500, 1L	HNO_3	YES	YES		
16 oz glass	3/6/97	14:55	G	1	250, 500, 1L		YES			✓

Total Bottles (Include duplicate count): 1

Analysis Allowed per Bottle Type	BOTTLE TYPE	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)
	VOA - Glass	(8010) (8010/8020) (8020) (8240) (8260) (BTEX) (TPH-G) (BTEX/TPH-G) OR [ ] WA [ ]
	AMBER - Glass	(PAH) (TPH-HCID) (TPH-D) (TPH-418.1) (Oil &Grease) OR [ ] WA [ ]
	WHITE - Poly	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO_3/CO_3) (Cl) (SO_4) (NO_3) (NO_2) (F)
	YELLOW - Poly	(COD) (TOC) (Total PO_4) (Total Kjeldahl Nitrogen) (NH_3) (NO_3/NO_2)
	GREEN - Poly	(Cyanide)
	RED TOTAL - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)
	RED DISSOLVED - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silica)
	16 oz glass	8260, WTPH-G, WTPH-D extend.

WATER QUALITY DATA Purge Start Time: : Pump/Bailer Inlet Depth:

Meas.	Method §	Purged (gal)	pH	E Cond (µS)	°F Temp °C	Other	Diss O_2 (mg/l)	Water Quality
1		.	.		.		.	
2		.	.		.		.	
3		.	.		.		.	
4		.	.		.		.	
		.	.		.		.	

[Casing] [Select A-G] [Cumulative Totals] (Circle units) [Clarity, Color]

Sandy gravel (GM), brown w a few percent silt, damp, dense. Sample location in excavation. Depth of sample approx 2 ft bgs.

SAMPLER: John Latta (PRINTED NAME) John Latta (SIGNATURE)

FIELD SAMPLING DATA SHEET

EMCON
W 7106 Will D. Alton Lane, Suite 101
Spokane, Washington 99224
Office: (509) 838-1144 Fax: (509) 838-1382

PROJECT NAME: **WELL ID:**

SITE ADDRESS: **BLIND ID:** SS-A4

DUP ID: NA

WIND FROM:	N	NE	E	SE	(S)	SW	W	NW	LIGHT	(MEDIUM)	HEAVY
WEATHER:	(SUNNY)	CLOUDY	RAIN	Windy ?					**TEMPERATURE:**	(°F) 45.	°C

[Circle appropriate units]

HYDROLOGY/LEVEL MEASUREMENTS (Nearest 0.01 ft) [Product Thickness] [Water Column] [Water Column x Gal/ft]

Date	Time	DT-Bottom	DT-Product	DT-Water	DTP-DTW	DTB-DTW		Volume (gal)
/ /	:	.	.	.	.	.	X 1	.
/ /	:	.	.	.	.		X 3	.

Gal/ft = (dia./2)² x 0.163	1" = 0.041	2" = 0.163	3" = 0.367	4" = 0.653	6" = 1.469	10" = 4.080	12" = 5.875

§ METHODS: (A) Submersible Pump (B) Peristaltic Pump (C) Disposable Bailer (D) PVC/Teflon Bailer (E) Dedicated Bailer (F) Dedicated Pump (G) Other = Grab

GROUNDWATER SAMPLING DATA (if product is detected, do NOT sample) Sample Depth: [√ if used]

Bottle Type	Date	Time	Method §	Amount & Volume mL		Preservative [circle]	Ice	Filter	pH	√
VOA Glass	/ /	:		3	40 ml	HCl	YES	NO		
Amber Glass	/ /	:			250, 500, 1L	(None) (HCl) (H_2SO_4)	YES	NO		
White Poly	/ /	:			250, 500, 1L	None	YES	NO	NA	
Yellow Poly	/ /	:			250, 500, 1L	H_2SO_4	YES	NO		
Green Poly	/ /	:			250, 500, 1L	NaOH	YES	NO		
Red Total Poly	/ /	:			250, 500, 1L	HNO_3	YES	NO		
Red Diss. Poly	/ /	:			250, 500, 1L	HNO_3	YES	YES		
16oz glass	3/12/97	12:20	G	1	250, 500, 1L		YES			✓
		Total Bottles (include duplicate count):		1						

Analysis Allowed per Bottle Type	BOTTLE TYPE	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)
	VOA - Glass	(8010) (8010/8020) (8020) (8240) (8260) (BTEX) (TPH-G) (BTEX/TPH-G) OR [ ] WA [ ]
	AMBER - Glass	(PAH) (TPH-HCID) (TPH-D) (TPH-418.1) (Oil &Grease) OR [ ] WA [ ]
	WHITE - Poly	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO_3/CO_3) (Cl) (SO_4) (NO_3) (NO_2) (F)
	YELLOW - Poly	(COD) (TOC) (Total PO_4) (Total Keldahl Nitrogen) (NH_3) (NO_3/NO_2)
	GREEN - Poly	(Cyanide)
	RED TOTAL - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)
	RED DISSOLVED - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silica)
	16 oz glass	8260, WTPH-G, WTPH-D extend.

WATER QUALITY DATA Purge Start Time: : Pump/Bailer Inlet Depth:

Meas.	Method §	Purged (gal)	pH	E Cond (µS)	°F Temp °C	Other	Diss O_2 (mg/l)	Water Quality
1		.	.		.		.	
2		.	.		.		.	
3		.	.		.		.	
4		.	.		.		.	
		.	.		.		.	

[Casing] [Select A-G] [Cumulative Totals] [Circle units] [Clarity, Color]

Gray Sandy gravel (GW-GM), fine to coarse rounded gravel, fine to medium sand, a few percent silt, damp, loose to medium. Note rootlets.

SAMPLER: John Latta (PRINTED NAME) (SIGNATURE)

FIELD SAMPLING DATA SHEET

EMCON
W 7106 Will D. Alton Lane, Suite 101
Spokane, Washington 99224
Office: (509) 838-1144 Fax: (509) 838-1382

PROJECT NAME: **WELL ID:**

SITE ADDRESS: **BLIND ID:** SS - A6

40358-016.004 **DUP ID:** SS-J4 NA

WIND FROM:	N	NE	E	SE	(S)	SW	W	NW	LIGHT	(MEDIUM)	HEAVY
WEATHER:	(SUNNY)		CLOUDY		RAIN		?		TEMPERATURE:	°F 45.	°C

[Circle appropriate units]

HYDROLOGY/LEVEL MEASUREMENTS (Nearest 0.01 ft) [Product Thickness] [Water Column] [Water Column x Gal/ft]

Date	Time	DT-Bottom	DT-Product	DT-Water	DTP-DTW	DTB-DTW		Volume (gal)
/ /	:	.	.	.	.	.	X 1	.
/ /	:	.	.	.	.		X 3	.

Gal/ft = (dia./2)² x 0.163	1" = 0.041	2" = 0.163	3" = 0.367	4" = 0.653	6" = 1.469	10" = 4.080	12" = 5.875

§ METHODS: (A) Submersible Pump (B) Peristaltic Pump (C) Disposable Bailer (D) PVC/Teflon Bailer (E) Dedicated Bailer (F) Dedicated Pump (G) Other = Grab

GROUNDWATER SAMPLING DATA (if product is detected, do NOT sample) Sample Depth: [√ if used]

Bottle Type	Date	Time	Method §	Amount & Volume mL		Preservative [circle]	Ice	Filter	pH	√
VOA Glass	/ /	:		3	40 ml	HCl	YES	NO		
Amber Glass	/ /	:			250, 500, 1L	(None) (HCl) (H_2SO_4)	YES	NO		
White Poly	/ /	:			250, 500, 1L	None	YES	NO	NA	
Yellow Poly	/ /	:			250, 500, 1L	H_2SO_4	YES	NO		
Green Poly	/ /	:			250, 500, 1L	NaOH	YES	NO		
Red Total Poly	/ /	:			250, 500, 1L	HNO_3	YES	NO		
Red Diss. Poly	/ /	:			250, 500, 1L	HNO_3	YES	YES		
16 oz glass	3/12/97	12:47	G	2	250, 500, 1L		YES			✓

Total Bottles (include duplicate count): 2

Analysis Allowed per Bottle Type	BOTTLE TYPE	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)
	VOA - Glass	(8010) (8010/8020) (8020) (8240) (8260) (BTEX) (TPH-G) (BTEX/TPH-G) OR [ ] WA [ ]
	AMBER - Glass	(PAH) (TPH-HCID) (TPH-D) (TPH-418.1) (Oil &Grease) OR [ ] WA [ ]
	WHITE - Poly	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO_3/CO_3) (Cl) (SO_4) (NO_3) (NO_2) (F)
	YELLOW - Poly	(COD) (TOC) (Total PO_4) (Total Keldahl Nitrogen) (NH_3) (NO_3/NO_2)
	GREEN - Poly	(Cyanide)
	RED TOTAL - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)
	RED DISSOLVED - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silica)
	16 oz glass	

WATER QUALITY DATA Purge Start Time: : Pump/Bailer Inlet Depth:

Meas.	Method §	Purged (gal)	pH	E Cond (µS)	°F Temp °C	Other	Diss O_2 (mg/l)	Water Quality
1		.	.		.		.	
2		.	.		.		.	
3		.	.		.		.	
4		.	.		.		.	
		.	.		.		.	

[Casing] [Select A-G] [Cumulative Totals] [Circle units] [Clarity, Color]

Collected a field duplicate and labelled ~~J4~~ SS-J4, with a time of 13:00. Sample location at top of soil stockpile.

SAMPLER: John Latta (PRINTED NAME) (SIGNATURE) John Latta

FIELD SAMPLING DATA SHEET

EMCON
W 7106 Will D. Alton Lane, Suite 101
Spokane, Washington 99224
Office: (509) 838-1144 Fax: (509) 838-1382

PROJECT NAME: 40358-016.004 **WELL ID:**

SITE ADDRESS: **BLIND ID:** SS-BS

DUP ID: NA

WIND FROM:	N	NE	E	SE	S	(SW)	W	NW	(LIGHT)	MEDIUM	HEAVY
WEATHER:	SUNNY		CLOUDY		RAIN	Breeze?			**TEMPERATURE:** (°F) 45. °C		

[Circle appropriate units]

HYDROLOGY/LEVEL MEASUREMENTS (Nearest 0.01 ft) [Product Thickness] [Water Column] [Water Column x Gal/ft]

Date	Time	DT-Bottom	DT-Product	DT-Water	DTP-DTW	DTB-DTW		Volume (gal)
/ /	:	.	.	.	.	.	X 1	.
/ /	:	.	.	.	.		X 3	.

Gal/ft = (dia./2)² x 0.163	1" = 0.041	2" = 0.163	3" = 0.367	4" = 0.653	6" = 1.469	10" = 4.080	12" = 5.875

§ METHODS: (A) Submersible Pump (B) Peristaltic Pump (C) Disposable Bailer (D) PVC/Teflon Bailer (E) Dedicated Bailer (F) Dedicated Pump (G) Other = Grab

GROUNDWATER SAMPLING DATA (if product is detected, do NOT sample) Sample Depth: [√ if used]

Bottle Type	Date	Time	Method §	Amount & Volume mL		Preservative (circle)	Ice	Filter	pH	√
VOA Glass	/ /	:		3	40 ml	HCl	YES	NO		
Amber Glass	/ /	:			250, 500, 1L	(None) (HCl) (H_2SO_4)	YES	NO		
White Poly	/ /	:			250, 500, 1L	None	YES	NO	NA	
Yellow Poly	/ /	:			250, 500, 1L	H_2SO_4	YES	NO		
Green Poly	/ /	:			250, 500, 1L	NaOH	YES	NO		
Red Total Poly	/ /	:			250, 500, 1L	HNO_3	YES	NO		
Red Diss. Poly	/ /	:			250, 500, 1L	HNO_3	YES	YES		
16oz glass	3/10/97	16:30	G	1	250, 500, 1L		YES			✓
		Total Bottles (Include duplicate count):		1						

Analysis Allowed per Bottle Type	BOTTLE TYPE	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)
	VOA - Glass	(8010) (8010/8020) (8020) (8240) (8260) (BTEX) (TPH-G) (BTEX/TPH-G) OR [ ] WA [ ]
	AMBER - Glass	(PAH) (TPH-HCID) (TPH-D) (TPH-418.1) (Oil &Grease) OR [ ] WA [ ]
	WHITE - Poly	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO_3/CO_3) (Cl) (SO_4) (NO_3) (NO_2) (F)
	YELLOW - Poly	(COD) (TOC) (Total PO_4) (Total Keldahl Nitrogen) (NH_3) (NO_3/NO_2)
	GREEN - Poly	(Cyanide)
	RED TOTAL - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)
	RED DISSOLVED - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silica)
	16oz glass	8260, WTPH-G, WTPH-D ext.

WATER QUALITY DATA Purge Start Time: : Pump/Bailer Inlet Depth:

Meas.	Method §	Purged (gal)	pH	E Cond (µS)	°F Temp °C	Other	Diss O_2 (mg/l)	Water Quality
1		.	.		.		.	
2		.	.		.		.	
3		.	.		.		.	
4		.	.		.		.	
		.	.		.		.	

[Casing] [Select A-G] [Cumulative Totals] [Circle units] [Clarity, Color]

Sandy gravel (GM), gray, med sand, damp, medium. Asphaltic material at surface. Sample is 10" below described layer.

SAMPLER: John Latta (PRINTED NAME) John Latta (SIGNATURE)

FIELD SAMPLING DATA SHEET

EMCON
W 7106 Will D. Alton Lane, Suite 101
Spokane, Washington 99224
Office: (509) 838-1144 Fax: (509) 838-1382

PROJECT NAME: **WELL ID:**

SITE ADDRESS: **BLIND ID:** SS-B7

DUP ID: NA

WIND FROM:	(N)	NE	E	SE	S	SW	W	NW	(LIGHT)	MEDIUM	HEAVY
WEATHER:	(SUNNY)	CLOUDY	RAIN	?	**TEMPERATURE:**	(°F) 45. °C					

[Circle appropriate units]

HYDROLOGY/LEVEL MEASUREMENTS (Nearest 0.01 ft)

Date	Time	DT-Bottom	DT-Product	DT-Water	DTP-DTW [Product Thickness]	DTB-DTW [Water Column]		[Water Column x Gal/ft] Volume (gal)
/ /	:	.	.	.	.	.	X 1	.
/ /	:	.	.	.	.		X 3	.

Gal/ft = (dia./2)² x 0.163	1" = 0.041	2" = 0.163	3" = 0.367	4" = 0.653	6" = 1.469	10" = 4.080	12" = 5.875

§ METHODS: (A) Submersible Pump (B) Peristaltic Pump (C) Disposable Bailer (D) PVC/Teflon Bailer (E) Dedicated Bailer (F) Dedicated Pump (G) Other = Grab

GROUNDWATER SAMPLING DATA (if product is detected, do NOT sample)

Sample Depth: [√ if used]

Bottle Type	Date	Time	Method §	Amount & Volume mL		Preservative (circle)	Ice	Filter	pH	√
VOA Glass	/ /	:		3	40 ml	HCl	YES	NO		
Amber Glass	/ /	:			250, 500, 1L	(None) (HCl) (H_2SO_4)	YES	NO		
White Poly	/ /	:			250, 500, 1L	None	YES	NO	NA	
Yellow Poly	/ /	:			250, 500, 1L	H_2SO_4	YES	NO		
Green Poly	/ /	:			250, 500, 1L	NaOH	YES	NO		
Red Total Poly	/ /	:			250, 500, 1L	HNO_3	YES	NO		
Red Diss. Poly	/ /	:			250, 500, 1L	HNO_3	YES	YES		
16 oz glass	3/13/97	:	G	1	250, 500, 1L		YES			✓

Total Bottles (include duplicate count): 1

Analysis Allowed per Bottle Type	BOTTLE TYPE	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)
	VOA - Glass	(8010) (8010/8020) (8020) (8240) (8260) (BTEX) (TPH-G) (BTEX/TPH-G) OR [ ] WA [ ]
	AMBER - Glass	(PAH) (TPH-HCID) (TPH-D) (TPH-418.1) (Oil &Grease) OR [ ] WA [ ]
	WHITE - Poly	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO_3/CO_3) (Cl) (SO_4) (NO_3) (NO_2) (F)
	YELLOW - Poly	(COD) (TOC) (Total PO_4) (Total Keldahl Nitrogen) (NH_3) (NO_3/NO_2)
	GREEN - Poly	(Cyanide)
	RED TOTAL - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)
	RED DISSOLVED - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silica)
	16 oz glass	8260, WTPH-G, WTPH-D extend

WATER QUALITY DATA

Purge Start Time: : Pump/Bailer Inlet Depth:

Meas.	Method §	Purged (gal)	pH	E Cond (µS)	°F Temp °C	Other	Diss O_2 (mg/l)	Water Quality
4		.	.		.		.	
3		.	.		.		.	
2		.	.		.		.	
1		.	.		.		.	
0		0.00	.		.		.	

[Casing] [Select A-G] [Cumulative Totals] [Circle units] [Clarity, Color]

SAMPLER: John Latta (PRINTED NAME) (SIGNATURE) John Latta

FIELD SAMPLING DATA SHEET

EMCON
W 7106 Will D. Alton Lane, Suite 101
Spokane, Washington 99224
Office: (509) 838-1144 Fax: (509) 838-1382

PROJECT NAME: **WELL ID:**

SITE ADDRESS: **BLIND ID:** SS-C1

40358-016.004 **DUP ID:** NA

WIND FROM:	N	NE	E	SE	S	SW	W	NW	(LIGHT)	MEDIUM	HEAVY
WEATHER:	SUNNY		CLOUDY		(RAIN)		?		**TEMPERATURE:**	(°F) 45 .	°C

[Circle appropriate units]

HYDROLOGY/LEVEL MEASUREMENTS (Nearest 0.01 ft) [Product Thickness] [Water Column] [Water Column x Gal/ft]

Date	Time	DT-Bottom	DT-Product	DT-Water	DTP-DTW	DTB-DTW		Volume (gal)
/ /	:	.	.	.	.	.	X 1	.
/ /	:	.	.	.	.		X 3	.

Gal/ft = (dia./2)² x 0.163	1" = 0.041	2" = 0.163	3" = 0.367	4" = 0.653	6" = 1.469	10" = 4.080	12" = 5.875

§ METHODS: (A) Submersible Pump (B) Peristaltic Pump (C) Disposable Bailer (D) PVC/Teflon Bailer (E) Dedicated Bailer (F) Dedicated Pump (G) Other =

GROUNDWATER SAMPLING DATA (if product is detected, do NOT sample) Sample Depth: [√ if used]

Bottle Type	Date	Time	Method §	Amount & Volume mL	Preservative [circle]	Ice	Filter	pH	√
VOA Glass	/ /	:		3	40 ml HCl	YES	NO		
Amber Glass	/ /	:			250, 500, 1L (None) (HCl) (H_2SO_4)	YES	NO		
White Poly	/ /	:			250, 500, 1L None	YES	NO	NA	
Yellow Poly	/ /	:			250, 500, 1L H_2SO_4	YES	NO		
Green Poly	/ /	:			250, 500, 1L NaOH	YES	NO		
Red Total Poly	/ /	:			250, 500, 1L HNO_3	YES	NO		
Red Diss. Poly	/ /	:			250, 500, 1L HNO_3	YES	YES		
16 oz glass	3/10/97	14:40		1	~~250, 500,~~ 1L	YES			✓

Total Bottles (include duplicate count): 1

Analysis Allowed per Bottle Type	BOTTLE TYPE	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)
	VOA - Glass	(8010) (8010/8020) (8020) (8240) (8260) (BTEX) (TPH-G) (BTEX/TPH-G) OR [ ] WA [ ]
	AMBER - Glass	(PAH) (TPH-HCID) (TPH-D) (TPH-418.1) (Oil &Grease) OR [ ] WA [ ]
	WHITE - Poly	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO_3/CO_3) (Cl) (SO_4) (NO_3) (NO_2) (F)
	YELLOW - Poly	(COD) (TOC) (Total PO_4) (Total Keldahl Nitrogen) (NH_3) (NO_3/NO_2)
	GREEN - Poly	(Cyanide)
	RED TOTAL - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)
	RED DISSOLVED - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silica)
	16 oz glass	8260, WTPH-G, WTPH-D extend.

WATER QUALITY DATA Purge Start Time: : Pump/Bailer Inlet Depth:

Meas.	Method §	Purged (gal)	pH	E Cond (µS)	°F Temp °C	Other	Diss O_2 (mg/l)	Water Quality
1		.	.		.		.	
2		.	.		.		.	
3		.	.		.		.	
4		.	.		.		.	
		.	.		.		.	

[Casing] [Select A-G] [Cumulative Totals] [Circle units] [Clarity, Color]

Silty gravel (GM), brown w/ a few percent fine-crse sand, damp, dense. Sample location in ~~st~~ abandoned RR. R-O-W.

SAMPLER: John Latta / Nick Garson (PRINTED NAME) John Latta (SIGNATURE)

FIELD SAMPLING DATA SHEET

EMCON
W 7106 Will D. Alton Lane, Suite 101
Spokane, Washington 99224
Office: (509) 838-1144 Fax: (509) 838-1382

PROJECT NAME: **WELL ID:**

SITE ADDRESS: **BLIND ID:** SS-C2

40358-016-004 **DUP ID:** NA

WIND FROM:	N	NE	E	SE	S	SW	W	NW	(LIGHT)	MEDIUM	HEAVY
WEATHER:	SUNNY		CLOUDY		(RAIN)		?		**TEMPERATURE:**	(F) 45 .	°C

[Circle appropriate units]

HYDROLOGY/LEVEL MEASUREMENTS (Nearest 0.01 ft) [Product Thickness] [Water Column] [Water Column x Gal/ft]

Date	Time	DT-Bottom	DT-Product	DT-Water	DTP-DTW	DTB-DTW		Volume (gal)
/ /	:	.	.	.	.	.	X 1	.
/ /	:	.	.	.	.		X 3	.

Gal/ft = (dia./2)² x 0.163	1" = 0.041	2" = 0.163	3" = 0.367	4" = 0.653	6" = 1.469	10" = 4.080	12" = 5.875

§ METHODS: (A) Submersible Pump (B) Peristaltic Pump (C) Disposable Bailer (D) PVC/Teflon Bailer (E) Dedicated Bailer (F) Dedicated Pump (G) Other = Grab

GROUNDWATER SAMPLING DATA (if product is detected, do NOT sample) Sample Depth: [√ if used]

Bottle Type	Date	Time	Method §	Amount & Volume mL		Preservative (circle)	Ice	Filter	pH	√
VOA Glass	/ /	:		3	40 ml	HCl	YES	NO		
Amber Glass	/ /	:			250, 500, 1L	(None) (HCl) (H_2SO_4)	YES	NO		
White Poly	/ /	:			250, 500, 1L	None	YES	NO	NA	
Yellow Poly	/ /	:			250, 500, 1L	H_2SO_4	YES	NO		
Green Poly	/ /	:			250, 500, 1L	NaOH	YES	NO		
Red Total Poly	/ /	:			250, 500, 1L	HNO_3	YES	NO		
Red Diss. Poly	/ /	:			250, 500, 1L	HNO_3	YES	YES		
16 oz glass	3/10/97	13:45	G	1	~~250, 500, 1L~~		YES			✓
		Total Bottles (include duplicate count):		1						

Analysis Allowed per Bottle Type	BOTTLE TYPE	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)
	VOA - Glass	(8010) (8010/8020) (8020) (8240) (8260) (BTEX) (TPH-G) (BTEX/TPH-G) OR [ ] WA [ ]
	AMBER - Glass	(PAH) (TPH-HCID) (TPH-D) (TPH-418.1) (Oil &Grease) OR [ ] WA [ ]
	WHITE - Poly	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO_3/CO_3) (Cl) (SO_4) (NO_3) (NO_2) (F)
	YELLOW - Poly	(COD) (TOC) (Total PO_4) (Total Keldahl Nitrogen) (NH_3) (NO_3/NO_2)
	GREEN - Poly	(Cyanide)
	RED TOTAL - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)
	RED DISSOLVED - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silica)
	16 oz glass	8260, WTPH-G, WTPH-D extended

WATER QUALITY DATA Purge Start Time: : Pump/Bailer Inlet Depth:

Meas.	Method §	Purged (gal)	pH	E Cond (µS)	°F Temp °C	Other	Diss O_2 (mg/l)	Water Quality
1		.	.		.		.	
2		.	.		.		.	
3		.	.		.		.	
4		.	.		.		.	
		.	.		.		.	

[Casing] [Select A-G] [Cumulative Totals] [Circle units] [Clarity, Color]

Brown sandy gravel, damp; some silt. Sample collected 6" below 2 sheets of visqueen assoc. w/ 2 neighboring stockpiles.

SAMPLER: John Latta
(PRINTED NAME)

John Latta
(SIGNATURE)

FIELD SAMPLING DATA SHEET

EMCON
W 7106 Will D. Alton Lane, Suite 101
Spokane, Washington 99224
Office: (509) 838-1144 Fax: (509) 838-1382

PROJECT NAME: 40358-016.004 **WELL ID:**

SITE ADDRESS: **BLIND ID:** SS-C3

DUP ID: NA

WIND FROM:	N	NE	E	SE	S	SW	W	NW	(LIGHT)	MEDIUM	HEAVY
WEATHER:	SUNNY		CLOUDY		(RAIN)		?		**TEMPERATURE:**	(°F) 45 .	°C

[Circle appropriate units]

HYDROLOGY/LEVEL MEASUREMENTS (Nearest 0.01 ft) [Product Thickness] [Water Column] [Water Column x Gal/ft]

Date	Time	DT-Bottom	DT-Product	DT-Water	DTP-DTW	DTB-DTW		Volume (gal)
/ /	:	.	.	.	.	.	X 1	.
/ /	:	.	.	.	.		X 3	.

Gal/ft = (dia./2)² x 0.163	1" = 0.041	2" = 0.163	3" = 0.367	4" = 0.653	6" = 1.469	10" = 4.080	12" = 5.875

§ METHODS: (A) Submersible Pump (B) Peristaltic Pump (C) Disposable Bailer (D) PVC/Teflon Bailer (E) Dedicated Bailer (F) Dedicated Pump (G) Other = Grab

GROUNDWATER SAMPLING DATA (if product is detected, do NOT sample) Sample Depth: [√ if used]

Bottle Type	Date	Time	Method §	Amount & Volume mL		Preservative [circle]	Ice	Filter	pH	√
VOA Glass	/ /	:		3	40 ml	HCl	YES	NO		
Amber Glass	/ /	:			250, 500, 1L	(None) (HCl) (H_2SO_4)	YES	NO		
White Poly	/ /	:			250, 500, 1L	None	YES	NO	NA	
Yellow Poly	/ /	:			250, 500, 1L	H_2SO_4	YES	NO		
Green Poly	/ /	:			250, 500, 1L	NaOH	YES	NO		
Red Total Poly	/ /	:			250, 500, 1L	HNO_3	YES	NO		
Red Diss. Poly	/ /	:			250, 500, 1L	HNO_3	YES	YES		
16 oz glass	3/10/97	15:07	G	1	250, 500, 1L		YES			✓
		Total Bottles (include duplicate count):		1						

Analysis Allowed per Bottle Type	BOTTLE TYPE	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)
	VOA - Glass	(8010) (8010/8020) (8020) (8240) (8260) (BTEX) (TPH-G) (BTEX/TPH-G) OR [ ] WA [ ]
	AMBER - Glass	(PAH) (TPH-HCID) (TPH-D) (TPH-418.1) (Oil &Grease) OR [ ] WA [ ]
	WHITE - Poly	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO_3/CO_3) (Cl) (SO_4) (NO_3) (NO_2) (F)
	YELLOW - Poly	(COD) (TOC) (Total PO_4) (Total Kelda/N Nitrogen) (NH_3) (NO_3/NO_2)
	GREEN - Poly	(Cyanide)
	RED TOTAL - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)
	RED DISSOLVED - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silica)
	16 oz glass	8260, WTPH-G, WTPH-D extend

WATER QUALITY DATA Purge Start Time: : Pump/Bailer Inlet Depth:

Meas.	Method §	Purged (gal)	pH	E Cond (µS)	°F Temp °C	Other	Diss O_2 (mg/l)	Water Quality
1		.	.		.		.	
2		.	.		.		.	
3		.	.		.		.	
4		.	.		.		.	
		.	.		.		.	

[Casing] [Select A-G] [Cumulative Totals] [Circle units] [Clarity, Color]

Silty gravel (GM), brown w/ a few percent fine-crse sand, damp, dense. Noted some dark brown silt.

SAMPLER: John Latta (PRINTED NAME) (SIGNATURE) John Latta

FIELD SAMPLING DATA SHEET

EMCON
W 7106 Will D. Alton Lane, Suite 101
Spokane, Washington 99224
Office: (509) 838-1144 Fax: (509) 838-1382

PROJECT NAME: **WELL ID:**

SITE ADDRESS: **BLIND ID:** SS-C4

40358-016.004 **DUP ID:** NA

WIND FROM:	N	NE	E	SE	S	(SW)	W	NW	(LIGHT)	MEDIUM	HEAVY
WEATHER:	SUNNY		CLOUDY		RAIN	Breeze ?			**TEMPERATURE:**	(F) 45 .	°C

[Circle appropriate units]

HYDROLOGY/LEVEL MEASUREMENTS (Nearest 0.01 ft) [Product Thickness] [Water Column] [Water Column x Gal/ft]

Date	Time	DT-Bottom	DT-Product	DT-Water	DTP-DTW	DTB-DTW		Volume (gal)
/ /	:	.	.	.	.	.	X 1	.
/ /	:	.	.	.	.		X 3	.

Gal/ft = (dia./2)² x 0.163	1" =	0.041	2" =	0.163	3" =	0.367	4" =	0.653	6" =	1.469	10" =	4.080	12" =	5.875

§ METHODS: (A) Submersible Pump (B) Peristaltic Pump (C) Disposable Bailer (D) PVC/Teflon Bailer (E) Dedicated Bailer (F) Dedicated Pump (G) Other =

GROUNDWATER SAMPLING DATA (if product is detected, do NOT sample) Sample Depth: [√ if used]

Bottle Type	Date	Time	Method §	Amount & Volume mL		Preservative [circle]	Ice	Filter	pH	√
VOA Glass	/ /	:		3	40 ml	HCl	YES	NO		
Amber Glass	/ /	:			250, 500, 1L	(None) (HCl) (H_2SO_4)	YES	NO		
White Poly	/ /	:			250, 500, 1L	None	YES	NO	NA	
Yellow Poly	/ /	:			250, 500, 1L	H_2SO_4	YES	NO		
Green Poly	/ /	:			250, 500, 1L	NaOH	YES	NO		
Red Total Poly	/ /	:			250, 500, 1L	HNO_3	YES	NO		
Red Diss. Poly	/ /	:			250, 500, 1L	HNO_3	YES	YES		
16 oz glass	3/10/97	16:15	G	1	250, 500, 1L		YES			✓
	Total Bottles (include duplicate count):			1						

Analysis Allowed per Bottle Type	BOTTLE TYPE	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)
	VOA - Glass	(8010) (8010/8020) (8020) (8240) (8260) (BTEX) (TPH-G) (BTEX/TPH-G) OR [ ] WA [ ]
	AMBER - Glass	(PAH) (TPH-HCID) (TPH-D) (TPH-418.1) (Oil &Grease) OR [ ] WA [ ]
	WHITE - Poly	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO_3/CO_3) (Cl) (SO_4) (NO_3) (NO_2) (F)
	YELLOW - Poly	(COD) (TOC) (Total PO_4) (Total Keldahl Nitrogen) (NH_3) (NO_3/NO_2)
	GREEN - Poly	(Cyanide)
	RED TOTAL - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)
	RED DISSOLVED - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silica)
	16 oz glass	8260, WTPH-G, WTPH-D extend.

WATER QUALITY DATA Purge Start Time: : Pump/Bailer Inlet Depth:

Meas.	Method §	Purged (gal)	pH	E Cond (µS)	°F Temp °C	Other	Diss O_2 (mg/l)	Water Quality
1		.	.		.		.	
2		.	.		.		.	
3		.	.		.		.	
4		.	.		.		.	
		.	.		.		.	

[Casing] [Select A-G] [Cumulative Totals] [Circle units] [Clarity, Color]

Sandy gravel (GM), ~~brown~~ brown gray, w/ a few percent silt, damp, medium.

SAMPLER: John Latta (PRINTED NAME) John Latta (SIGNATURE)

FIELD SAMPLING DATA SHEET

EMCON
W 7106 Will D. Alton Lane, Suite 101
Spokane, Washington 99224
Office: (509) 838-1144 Fax: (509) 838-1382

PROJECT NAME: | **WELL ID:**

SITE ADDRESS: | **BLIND ID:** SS-D4

DUP ID: NA

40358-016.004

WIND FROM:	N	NE	E	SE	S	(SW)	W	NW	LIGHT	(MEDIUM)	HEAVY
WEATHER:	SUNNY		CLOUDY		RAIN	Breeze ?			**TEMPERATURE:**	(F) 45 .	°C

[Circle appropriate units]

HYDROLOGY/LEVEL MEASUREMENTS (Nearest 0.01 ft) [Product Thickness] [Water Column] [Water Column x Gal/ft]

Date	Time	DT-Bottom	DT-Product	DT-Water	DTP-DTW	DTB-DTW		Volume (gal)
/ /	:	.	.	.	.	.	X 1	.
/ /	:	.	.	.	.		X 3	.

Gal/ft = (dia./2)² x 0.163	1" =	0.041	2" =	0.163	3" =	0.367	4" =	0.653	6" =	1.469	10" =	4.080	12" =	5.875

§ METHODS: (A) Submersible Pump (B) Peristaltic Pump (C) Disposable Bailer (D) PVC/Teflon Bailer (E) Dedicated Bailer (F) Dedicated Pump (G) Other = Grab

GROUNDWATER SAMPLING DATA (if product is detected, do NOT sample) Sample Depth: [√ if used]

Bottle Type	Date	Time	Method §	Amount & Volume mL		Preservative [circle]	Ice	Filter	pH	√
VOA Glass	/ /	:		3	40 ml	HCl	YES	NO		
Amber Glass	/ /	:			250, 500, 1L	(None) (HCl) (H_2SO_4)	YES	NO		
White Poly	/ /	:			250, 500, 1L	None	YES	NO	NA	
Yellow Poly	/ /	:			250, 500, 1L	H_2SO_4	YES	NO		
Green Poly	/ /	:			250, 500, 1L	NaOH	YES	NO		
Red Total Poly	/ /	:			250, 500, 1L	HNO_3	YES	NO		
Red Diss. Poly	/ /	:			250, 500, 1L	HNO_3	YES	YES		
16 oz glass	3/10/97	16:40	G	1	250, 500, 1L		YES			✓
		Total Bottles (include duplicate count):		1						

Analysis Allowed per Bottle Type	BOTTLE TYPE	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)
	VOA - Glass	(8010) (8010/8020) (8020) (8240) (8260) (BTEX) (TPH-G) (BTEX/TPH-G) OR [ ] WA [ ]
	AMBER - Glass	(PAH) (TPH-HCID) (TPH-D) (TPH-418.1) (Oil &Grease) OR [ ] WA [ ]
	WHITE - Poly	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO_3/CO_3) (Cl) (SO_4) (NO_3) (NO_2) (F)
	YELLOW - Poly	(COD) (TOC) (Total PO_4) (Total Keldahl Nitrogen) (NH_3) (NO_3/NO_2)
	GREEN - Poly	(Cyanide)
	RED TOTAL - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)
	RED DISSOLVED - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silica)
	16 oz glass	8260, WTPH-G, WTPH-D ext.

WATER QUALITY DATA Purge Start Time: : Pump/Bailer Inlet Depth:

Meas.	Method §	Purged (gal)	pH	E Cond (µS)	°F Temp °C	Other	Diss O_2 (mg/l)	Water Quality
1		.	.		.		.	
2		.	.		.		.	
3		.	.		.		.	
4		.	.		.		.	
		.	.		.		.	

[Casing] [Select A-G] [Cumulative Totals] [Circle units] [Clarity, Color]

Fine sandy silt w/ gravel (ML) w/ a few percent gravel, damp, medium.

SAMPLER: John Letta (PRINTED NAME) John Letta (SIGNATURE)

FIELD SAMPLING DATA SHEET

EMCON
W 7106 Will D. Alton Lane, Suite 101
Spokane, Washington 99224
Office: (509) 838-1144 Fax: (509) 838-1382

PROJECT NAME: **WELL ID:**

SITE ADDRESS: **BLIND ID:** SS - E2

40358-016.004 **DUP ID:** NA

WIND FROM:	N	NE	E	SE	S	SW	W	NW	(LIGHT)	MEDIUM	HEAVY
WEATHER:	SUNNY		CLOUDY		(RAIN)		?		**TEMPERATURE:**	(F) 45 .	°C

[Circle appropriate units]

HYDROLOGY/LEVEL MEASUREMENTS (Nearest 0.01 ft)

Date	Time	DT-Bottom	DT-Product	DT-Water	[Product Thickness] DTP-DTW	[Water Column] DTB-DTW		[Water Column x Gal/ft] Volume (gal)
/ /	:	.	.	.	.	.	X 1	.
/ /	:	.	.	.	.		X 3	.

Gal/ft = (dia./2)² x 0.163	1" = 0.041	2" = 0.163	3" = 0.367	4" = 0.653	6" = 1.469	10" = 4.080	12" = 5.875

§ METHODS: (A) Submersible Pump (B) Peristaltic Pump (C) Disposable Bailer (D) PVC/Teflon Bailer (E) Dedicated Bailer (F) Dedicated Pump (G) Other = Grab

GROUNDWATER SAMPLING DATA (if product is detected, do NOT sample) Sample Depth: [√ if used]

Bottle Type	Date	Time	Method §	Amount & Volume mL		Preservative (circle)	Ice	Filter	pH	√
VOA Glass	/ /	:		3	40 ml	HCl	YES	NO		
Amber Glass	/ /	:			250, 500, 1L	(None) (HCl) (H_2SO_4)	YES	NO		
White Poly	/ /	:			250, 500, 1L	None	YES	NO	NA	
Yellow Poly	/ /	:			250, 500, 1L	H_2SO_4	YES	NO		
Green Poly	/ /	:			250, 500, 1L	NaOH	YES	NO		
Red Total Poly	/ /	:			250, 500, 1L	HNO_3	YES	NO		
Red Diss. Poly	/ /	:			250, 500, 1L	HNO_3	YES	YES		
16 oz glass	3/10/97	13:15	G	1	250, 500, 1L		YES			✓
Total Bottles (include duplicate count):				1						

Analysis Allowed per Bottle Type	BOTTLE TYPE	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)
	VOA - Glass	(8010) (8010/8020) (8020) (8240) (8260) (BTEX) (TPH-G) (BTEX/TPH-G) OR [ ] WA [ ]
	AMBER - Glass	(PAH) (TPH-HCID) (TPH-D) (TPH-418.1) (Oil &Grease) OR [ ] WA [ ]
	WHITE - Poly	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO_3/CO_3) (Cl) (SO_4) (NO_3) (NO_2) (F)
	YELLOW - Poly	(COD) (TOC) (Total PO_4) (Total Keldahl Nitrogen) (NH_3) (NO_3/NO_2)
	GREEN - Poly	(Cyanide)
	RED TOTAL - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)
	RED DISSOLVED - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silica)
	16 oz glass	8260, WTPH-G, WTPH-D ext.

WATER QUALITY DATA Purge Start Time: : Pump/Bailer Inlet Depth:

Meas.	Method §	Purged (gal)	pH	E Cond (µS)	°F Temp °C	Other	Diss O_2 (mg/l)	Water Quality
1		.	.		.		.	
2		.	.		.		.	
3		.	.		.		.	
4		.	.		.		.	
		.	.		.		.	

[Casing] [Select A-G] [Cumulative Totals] [Circle units] [Clarity, Color]

Brown, damp. Silty gravel. Rounded gravel up to 2"-3" dia (In abandoned RR R-O-W.) Tr white caliche.

SAMPLER: John Latta (PRINTED NAME) (SIGNATURE) John Latta

FIELD SAMPLING DATA SHEET

EMCON
W 7106 Will D. Alton Lane, Suite 101
Spokane, Washington 99224
Office: (509) 838-1144 Fax: (509) 838-1382

PROJECT NAME: 40358-016.004 **WELL ID:**

SITE ADDRESS: **BLIND ID:** SS-E3

DUP ID: NA

WIND FROM:	N	NE	E	SE	S	SW	W	NW	(LIGHT)	MEDIUM	HEAVY
WEATHER:	SUNNY		CLOUDY		(RAIN)		?		TEMPERATURE:	(F) 45.	°C

[Circle appropriate units]

HYDROLOGY/LEVEL MEASUREMENTS (Nearest 0.01 ft) [Product Thickness] [Water Column] [Water Column x Gal/ft]

Date	Time	DT-Bottom	DT-Product	DT-Water	DTP-DTW	DTB-DTW		Volume (gal)
/ /	:	.	.	.	.	.	X 1	.
/ /	:	.	.	.	.		X 3	.

Gal/ft = (dia./2)² x 0.163 | 1" = 0.041 | 2" = 0.163 | 3" = 0.367 | 4" = 0.653 | 6" = 1.469 | 10" = 4.080 | 12" = 5.875

§ METHODS: (A) Submersible Pump (B) Peristaltic Pump (C) Disposable Bailer (D) PVC/Teflon Bailer (E) Dedicated Bailer (F) Dedicated Pump (G) Other = Grab

GROUNDWATER SAMPLING DATA (if product is detected, do NOT sample) Sample Depth: [√ if used]

Bottle Type	Date	Time	Method §	Amount & Volume mL	Preservative (circle)	Ice	Filter	pH	√
VOA Glass	/ /	:		3	40 ml HCl	YES	NO		
Amber Glass	/ /	:			250, 500, 1L (None) (HCl) (H_2SO_4)	YES	NO		
White Poly	/ /	:			250, 500, 1L None	YES	NO	NA	
Yellow Poly	/ /	:			250, 500, 1L H_2SO_4	YES	NO		
Green Poly	/ /	:			250, 500, 1L NaOH	YES	NO		
Red Total Poly	/ /	:			250, 500, 1L HNO_3	YES	NO		
Red Diss. Poly	/ /	:			250, 500, 1L HNO_3	YES	YES		
16 oz glass	3/10/97	15:10	G	1	250, 500, 1L	YES			✓
		Total Bottles (include duplicate count):		1					

Analysis Allowed per Bottle Type	BOTTLE TYPE	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)
	VOA - Glass	(8010) (8010/8020) (8020) (8240) (8260) (BTEX) (TPH-G) (BTEX/TPH-G) OR [ ] WA [ ]
	AMBER - Glass	(PAH) (TPH-HCID) (TPH-D) (TPH-418.1) (Oil &Grease) OR [ ] WA [ ]
	WHITE - Poly	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO_3/CO_3) (Cl) (SO_4) (NO_3) (NO_2) (F)
	YELLOW - Poly	(COD) (TOC) (Total PO_4) (Total Keldahl Nitrogen) (NH_3) (NO_3/NO_2)
	GREEN - Poly	(Cyanide)
	RED TOTAL - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)
	RED DISSOLVED - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silica)
	16 oz glass	8260, 1:1 TPH-G, WTPH D extend

WATER QUALITY DATA Purge Start Time: : Pump/Bailer Inlet Depth:

Meas.	Method §	Purged (gal)	pH	E Cond (µS)	°F Temp °C	Other	Diss O_2 (mg/l)	Water Quality
1		.	.		.		.	
2		.	.		.		.	
3		.	.		.		.	
4		.	.		.		.	
		.	.		.		.	

[Casing] [Select A-G] [Cumulative Totals] [Circle units] [Clarity, Color]

Visqueen 6'-37" bgs. Sample collected below. Typical silty gravel.

SAMPLER: John Latta (PRINTED NAME) (SIGNATURE) John Latta

FIELD SAMPLING DATA SHEET

EMCON
W 7106 Will D. Alton Lane, Suite 101
Spokane, Washington 99224
Office: (509) 838-1144 Fax: (509) 838-1382

PROJECT NAME: 40358-016.004 **WELL ID:**

SITE ADDRESS: **BLIND ID:** SS-E4

DUP ID: NA

WIND FROM:	N	NE	E	SE	S	SW	W	NW	LIGHT	MEDIUM	HEAVY
WEATHER:	(SUNNY)		CLOUDY		RAIN		?		TEMPERATURE:	(°F) 40.	°C

(Circle appropriate units)

HYDROLOGY/LEVEL MEASUREMENTS (Nearest 0.01 ft) [Product Thickness] [Water Column] [Water Column x Gal/ft]

Date	Time	DT-Bottom	DT-Product	DT-Water	DTP-DTW	DTB-DTW		Volume (gal)
/ /	:	.	.	.	.	.	X 1	.
/ /	:	.	.	.	.		X 3	.

Gal/ft = (dia./2)² x 0.163	1" = 0.041	2" = 0.163	3" = 0.367	4" = 0.653	6" = 1.469	10" = 4.080	12" = 5.875

§ METHODS: (A) Submersible Pump (B) Peristaltic Pump (C) Disposable Bailer (D) PVC/Teflon Bailer (E) Dedicated Bailer (F) Dedicated Pump (G) Other = Grab

GROUNDWATER SAMPLING DATA (if product is detected, do NOT sample) Sample Depth: [√ if used]

Bottle Type	Date	Time	Method §	Amount & Volume mL		Preservative (circle)	Ice	Filter	pH	√
VOA Glass	/ /	:		3	40 ml	HCl	YES	NO		
Amber Glass	/ /	:			250, 500, 1L	(None) (HCl) (H_2SO_4)	YES	NO		
White Poly	/ /	:			250, 500, 1L	None	YES	NO	NA	
Yellow Poly	/ /	:			250, 500, 1L	H_2SO_4	YES	NO		
Green Poly	/ /	:			250, 500, 1L	NaOH	YES	NO		
Red Total Poly	/ /	:			250, 500, 1L	HNO_3	YES	NO		
Red Diss. Poly	/ /	:			250, 500, 1L	HNO_3	YES	YES		
16 oz glass	3/11/97	17:35	G	1	250, 500, 1L		YES			✓
		Total Bottles (include duplicate count):		1						

Analysis Allowed per Bottle Type	BOTTLE TYPE	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)
	VOA - Glass	(8010) (8010/8020) (8020) (8240) (8260) (BTEX) (TPH-G) (BTEX/TPH-G) OR [ ] WA [ ]
	AMBER - Glass	(PAH) (TPH-HCID) (TPH-D) (TPH-418.1) (Oil &Grease) OR [ ] WA [ ]
	WHITE - Poly	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO_3/CO_3) (Cl) (SO_4) (NO_3) (NO_2) (F)
	YELLOW - Poly	(COD) (TOC) (Total PO_4) (Total Keldahl Nitrogen) (NH_3) (NO_3/NO_2)
	GREEN - Poly	(Cyanide)
	RED TOTAL - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)
	RED DISSOLVED - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silica)
	16 oz glass	8260, WTPH-G, WTPH-D extended

WATER QUALITY DATA Purge Start Time: : Pump/Bailer Inlet Depth:

Meas.	Method §	Purged (gal)	pH	E Cond (µS)	°F Temp °C	Other	Diss O_2 (mg/l)	Water Quality
1		.	.		.		.	
2		.	.		.		.	
3		.	.		.		.	
4		.	.		.		.	
		.	.		.		.	

(Casing) (Select A-G) (Cumulative Totals) (Circle units) (Clarity, Color)

Brown fine sandy gravel (GM), a few percent silt. Sample collected 2" below black visqueen sheet laid under edge of stockpile.

SAMPLER: John Latta
(PRINTED NAME) (SIGNATURE)

FIELD SAMPLING DATA SHEET

EMCON
W 7106 Will D. Alton Lane, Suite 101
Spokane, Washington 99224
Office: (509) 838-1144 Fax: (509) 838-1382

PROJECT NAME: WELL ID:

SITE ADDRESS: BLIND ID: SS - E6

40358-016.004 DUP ID: SS - F6 NA

WIND FROM:	N	NE	E	SE	(S)	SW	W	NW	LIGHT	(MEDIUM)	HEAVY
WEATHER:	(SUNNY)		CLOUDY		RAIN			?	TEMPERATURE:	(°F) 45.	°C

(Circle appropriate units)

HYDROLOGY/LEVEL MEASUREMENTS (Nearest 0.01 ft)

Date	Time	DT-Bottom	DT-Product	DT-Water	[Product Thickness] DTP-DTW	[Water Column] DTB-DTW		[Water Column x Gal/ft] Volume (gal)
/ /	:	.	.	.	.	.	X 1	.
/ /	:	.	.	.	.		X 3	.

Gal/ft = (dia./2)² x 0.163	1" = 0.041	2" = 0.163	3" = 0.367	4" = 0.653	6" = 1.469	10" = 4.080	12" = 5.875

§ METHODS: (A) Submersible Pump (B) Peristaltic Pump (C) Disposable Bailer (D) PVC/Teflon Bailer (E) Dedicated Bailer (F) Dedicated Pump (G) Other = Grab

GROUNDWATER SAMPLING DATA (if product is detected, do NOT sample)

Sample Depth: [√ if used]

Bottle Type	Date	Time	Method §	Amount & Volume mL		Preservative (circle)	Ice	Filter	pH	√
VOA Glass	/ /	:		3	40 ml	HCl	YES	NO		
Amber Glass	/ /	:			250, 500, 1L	(None) (HCl) (H_2SO_4)	YES	NO		
White Poly	/ /	:			250, 500, 1L	None	YES	NO	NA	
Yellow Poly	/ /	:			250, 500, 1L	H_2SO_4	YES	NO		
Green Poly	/ /	:			250, 500, 1L	NaOH	YES	NO		
Red Total Poly	/ /	:			250, 500, 1L	HNO_3	YES	NO		
Red Diss. Poly	/ /	15:20 JSL			250, 500, 1L	HNO_3	YES	YES		
4oz glass	3/12/97	~~10:00~~ 15:30	G (4)	1 X X	250, 500, 1L		YES			✓
4oz glass	3/12/97									

Total Bottles (include duplicate count): 2 X X JSL

Analysis Allowed per Bottle Type	BOTTLE TYPE	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)
	VOA - Glass	(8010) (8010/8020) (8020) (8240) (8260) (BTEX) (TPH-G) (BTEX/TPH-G) OR [ ] WA [ ]
	AMBER - Glass	(PAH) (TPH-HCID) (TPH-D) (TPH-418.1) (Oil &Grease) OR [ ] WA [ ]
	WHITE - Poly	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO_3/CO_3) (Cl) (SO_4) (NO_3) (NO_2) (F)
	YELLOW - Poly	(COD) (TOC) (Total PO_4) (Total Keldahl Nitrogen) (NH_3) (NO_3/NO_2)
	GREEN - Poly	(Cyanide)
	RED TOTAL - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)
	RED DISSOLVED - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silica)
	4oz glass	8260, WTPH-G, WTPH-D extend.

WATER QUALITY DATA

Purge Start Time: : Pump/Bailer Inlet Depth:

Meas.	Method §	Purged (gal)	pH	E Cond (µS)	°F Temp °C	Other	Diss O_2 (mg/l)	Water Quality
1		.	.		.		.	
2		.	.		.		.	
3		.	.		.		.	
4		.	.		.		.	
		.	.		.		.	

[Casing] [Select A-G] [Cumulative Totals] [Circle units] [Clarity, Color]

Collected a duplicate sample labeled F-6 at 1520. JSL Brown gray sandy gravel (GM) with a few percent silt. Gravel fine to coarse rounded to subrounded 60%, fine to coarse sand 25%, damp to wet moist

SAMPLER: John Latta (PRINTED NAME) John Latta (SIGNATURE)

FIELD SAMPLING DATA SHEET

EMCON
W 7106 Will D. Alton Lane, Suite 101
Spokane, Washington 99224
Office: (509) 838-1144 Fax: (509) 838-1382

PROJECT NAME: WELL ID:

SITE ADDRESS: BLIND ID: SS-F5

DUP ID: NA

WIND FROM:	N	NE	E	SE	(S)	SW	W	NW	LIGHT	(MEDIUM)	HEAVY
WEATHER:	SUNNY		CLOUDY		RAIN	Windy			TEMPERATURE:	(F) 40.	°C

90358-C16.004

[Circle appropriate units]

HYDROLOGY/LEVEL MEASUREMENTS (Nearest 0.01 ft)

Date	Time	DT-Bottom	DT-Product	DT-Water	[Product Thickness] DTP-DTW	[Water Column] DTB-DTW		[Water Column x Gal/ft] Volume (gal)
/ /	:	.	.	.	.	.	X 1	.
/ /	:	.	.	.	.		X 3	.

Gal/ft = (dia./2)² x 0.163	1" = 0.041	2" = 0.163	3" = 0.367	4" = 0.653	6" = 1.469	10" = 4.080	12" = 5.875

§ METHODS: (A) Submersible Pump (B) Peristaltic Pump (C) Disposable Bailer (D) PVC/Teflon Bailer (E) Dedicated Bailer (F) Dedicated Pump (G) Other = Grab

GROUNDWATER SAMPLING DATA (if product is detected, do NOT sample)

Sample Depth:

Bottle Type	Date	Time	Method §	Amount & Volume mL		Preservative (circle)	Ice	Filter	pH	[√ if used] √
VOA Glass	/ /	:		3	40 ml	HCl	YES	NO		
Amber Glass	/ /	:			250, 500, 1L	(None) (HCl) (H_2SO_4)	YES	NO		
White Poly	/ /	:			250, 500, 1L	None	YES	NO	NA	
Yellow Poly	/ /	:			250, 500, 1L	H_2SO_4	YES	NO		
Green Poly	/ /	:			250, 500, 1L	NaOH	YES	NO		
Red Total Poly	/ /	:			250, 500, 1L	HNO_3	YES	NO		
Red Diss. Poly	/ /	:			250, 500, 1L	HNO_3	YES	YES		
16oz glass	3/12/97	8:40	G	1	250, 500, 1L		YES			✓

Total Bottles (include duplicate count): 1

Analysis Allowed per Bottle Type	BOTTLE TYPE	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)
	VOA - Glass	(8010) (8010/8020) (8020) (8240) (8260) (BTEX) (TPH-G) (BTEX/TPH-G) OR [ ] WA [ ]
	AMBER - Glass	(PAH) (TPH-HCID) (TPH-D) (TPH-418.1) (Oil &Grease) OR [ ] WA [ ]
	WHITE - Poly	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO_3/CO_3) (Cl) (SO_4) (NO_3) (NO_2) (F)
	YELLOW - Poly	(COD) (TOC) (Total PO_4) (Total Keldahl Nitrogen) (NH_3) (NO_3/NO_2)
	GREEN - Poly	(Cyanide)
	RED TOTAL - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)
	RED DISSOLVED - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silica)
	16 oz glass	8260, WTPH-G, WTPH-D Extended

WATER QUALITY DATA

Purge Start Time: : Pump/Bailer Inlet Depth:

Meas.	Method §	Purged (gal)	pH	E Cond (µS)	°F Temp °C	Other	Diss O_2 (mg/l)	Water Quality
1		.	.		.		.	
2		.	.		.		.	
3		.	.		.		.	
4		.	.		.		.	
		.	.		.		.	

[Casing] [Select A-G] [Cumulative Totals] [Circle units] [Clarity, Color]

Gray sandy gravel (GP), medium to fine sand, fine to medium rounded gravel, damp. Sample collected beneath pile of broken cinder blocks. Soil beneath cinder blocks and above ~~sta~~ sample is stained and asphaltic.

SAMPLER: John Latta (PRINTED NAME) John Latta (SIGNATURE)

FIELD SAMPLING DATA SHEET

EMCON
W 7106 Will D. Alton Lane, Suite 101
Spokane, Washington 99224
Office: (509) 838-1144 Fax: (509) 838-1382

PROJECT NAME: **WELL ID:**

SITE ADDRESS: **BLIND ID:** SS-G2

4035B-06.004 **DUP ID:** NA

WIND FROM:	N	NE	E	SE	S	SW	W	NW	LIGHT	MEDIUM	HEAVY
WEATHER:	SUNNY		CLOUDY		RAIN		?		TEMPERATURE:	(°F) 45.	°C

[Circle appropriate units]

HYDROLOGY/LEVEL MEASUREMENTS (Nearest 0.01 ft) [Product Thickness] [Water Column] [Water Column x Gal/ft]

Date	Time	DT-Bottom	DT-Product	DT-Water	DTP-DTW	DTB-DTW		Volume (gal)
/ /	:	.	.	.	.	.	X 1	.
/ /	:	.	.	.	.		X 3	.

Gal/ft = $(dia./2)^2 \times 0.163$	1" = 0.041	2" = 0.163	3" = 0.367	4" = 0.653	6" = 1.469	10" = 4.080	12" = 5.875

§ METHODS: (A) Submersible Pump (B) Peristaltic Pump (C) Disposable Bailer (D) PVC/Teflon Bailer (E) Dedicated Bailer (F) Dedicated Pump (G) Other = Grab

GROUNDWATER SAMPLING DATA (If product is detected, do NOT sample) Sample Depth: [√ if used]

Bottle Type	Date	Time	Method §	Amount & Volume mL		Preservative (circle)	Ice	Filter	pH	√
VOA Glass	/ /	:		3	40 ml	HCl	YES	NO		
Amber Glass	/ /	:			250, 500, 1L	(None) (HCl) (H_2SO_4)	YES	NO		
White Poly	/ /	:			250, 500, 1L	None	YES	NO	NA	
Yellow Poly	/ /	:			250, 500, 1L	H_2SO_4	YES	NO		
Green Poly	/ /	:			250, 500, 1L	NaOH	YES	NO		
Red Total Poly	/ /	:			250, 500, 1L	HNO_3	YES	NO		
Red Diss. Poly	/ /	:			250, 500, 1L	HNO_3	YES	YES		
16 oz glass	3/10/97	12:55	Grab	1	250, 500, 1L		YES			✓

Total Bottles (include duplicate count): 1

Analysis Allowed per Bottle Type	BOTTLE TYPE	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)
	VOA - Glass	(8010) (8010/8020) (8020) (8240) (8260) (BTEX) (TPH-G) (BTEX/TPH-G) OR [ ] WA [ ]
	AMBER - Glass	(PAH) (TPH-HCID) (TPH-D) (TPH-418.1) (Oil &Grease) OR [ ] WA [ ]
	WHITE - Poly	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO_3/CO_3) (Cl) (SO_4) (NO_3) (NO_2) (F)
	YELLOW - Poly	(COD) (TOC) (Total PO_4) (Total Keldahl Nitrogen) (NH_3) (NO_3/NO_2)
	GREEN - Poly	(Cyanide)
	RED TOTAL - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)
	RED DISSOLVED - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silica)
	16 oz glass	8260, WTPH-G, WTPH-D extend.

WATER QUALITY DATA Purge Start Time: : Pump/Bailer Inlet Depth:

Meas.	Method §	Purged (gal)	pH	E Cond (µS)	°F Temp °C	Other	Diss O_2 (mg/l)	Water Quality
1		.	.		.		.	
2		.	.		.		.	
3		.	.		.		.	
4		.	.		.		.	
		.	.		.		.	

[Casing] [Select A-G] [Cumulative Totals] [Circle units] [Clarity, Color]

Brown, damp. Silty gravel. Rounded gravel up to 2"-3" dia, a trace fine sand. (In abandoned RR R-O-W.)

SAMPLER: John Latta (PRINTED NAME) John Latta (SIGNATURE)

FIELD SAMPLING DATA SHEET

EMCON
W 7106 Will D. Alton Lane, Suite 101
Spokane, Washington 99224
Office: (509) 838-1144 Fax: (509) 838-1382

PROJECT NAME: **WELL ID:**

SITE ADDRESS: **BLIND ID:** SS-G3

DUP ID: NA

40358-016.004

WIND FROM:	N	NE	E	SE	S	SW	W	NW	(LIGHT)	MEDIUM	HEAVY
WEATHER:	SUNNY		CLOUDY		(RAIN)		?		TEMPERATURE: (°F) 45 . °C		

[Circle appropriate units]

HYDROLOGY/LEVEL MEASUREMENTS (Nearest 0.01 ft) [Product Thickness] [Water Column] [Water Column x Gal/ft]

Date	Time	DT-Bottom	DT-Product	DT-Water	DTP-DTW	DTB-DTW		Volume (gal)
/ /	:	.	.	.	.	.	X 1	.
/ /	:	.	.	.	.		X 3	.

Gal/ft = (dia./2)² x 0.163	1" = 0.041	2" = 0.163	3" = 0.367	4" = 0.653	6" = 1.469	10" = 4.080	12" = 5.875

§ METHODS: (A) Submersible Pump (B) Peristaltic Pump (C) Disposable Bailer (D) PVC/Teflon Bailer (E) Dedicated Bailer (F) Dedicated Pump (G) Other = Grab

GROUNDWATER SAMPLING DATA (if product is detected, do NOT sample) Sample Depth: [√ if used]

Bottle Type	Date	Time	Method §	Amount & Volume mL		Preservative (circle)	Ice	Filter	pH	√
VOA Glass	/ /	:		3	40 ml	HCl	YES	NO		
Amber Glass	/ /	:			250, 500, 1L	(None) (HCl) (H_2SO_4)	YES	NO		
White Poly	/ /	:			250, 500, 1L	None	YES	NO	NA	
Yellow Poly	/ /	:			250, 500, 1L	H_2SO_4	YES	NO		
Green Poly	/ /	:			250, 500, 1L	NaOH	YES	NO		
Red Total Poly	/ /	:			250, 500, 1L	HNO_3	YES	NO		
Red Diss. Poly	/ /	:			250, 500, 1L	HNO_3	YES	YES		
~~3/10/97~~	3/10/97	15:15	G	1	250, 500, 1L		YES			✓

16 oz glass Total Bottles (include duplicate count): 1

Analysis Allowed per Bottle Type	BOTTLE TYPE	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)
	VOA - Glass	(8010) (8010/8020) (8020) (8240) (8260) (BTEX) (TPH-G) (BTEX/TPH-G) OR [ ] WA [ ]
	AMBER - Glass	(PAH) (TPH-HCID) (TPH-D) (TPH-418.1) (Oil &Grease) OR [ ] WA [ ]
	WHITE - Poly	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO_3/CO_3) (Cl) (SO_4) (NO_3) (NO_2) (F)
	YELLOW - Poly	(COD) (TOC) (Total PO_4) (Total Keldahl Nitrogen) (NH_3) (NO_3/NO_2)
	GREEN - Poly	(Cyanide)
	RED TOTAL - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)
	RED DISSOLVED - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silica)
	16 oz glass	8260, WTPH-Dext., WTPH-G

WATER QUALITY DATA Purge Start Time: : Pump/Bailer Inlet Depth:

Meas.	Method §	Purged (gal)	pH	E Cond (µS)	°F Temp °C	Other	Diss O_2 (mg/l)	Water Quality
1		.	.		.		.	
2		.	.		.		.	
3		.	.		.		.	
4		.	.		.		.	
		.	.		.		.	

[Casing] [Select A-G] [Cumulative Totals] [Circle units] [Clarity, Color]

Sandy gravel, (GM), brown, a few percent silt, damp, medium.

SAMPLER: John Latta (PRINTED NAME) John Latta (SIGNATURE)

FIELD SAMPLING DATA SHEET

EMCON
W 7106 Will D. Alton Lane, Suite 101
Spokane, Washington 99224
Office: (509) 838-1144 Fax: (509) 838-1382

PROJECT NAME: **WELL ID:**

SITE ADDRESS: **BLIND ID:** SS-G4

DUP ID: NA

40358-016.004

WIND FROM:	N	NE	E	SE	S	SW	W	NW	LIGHT	MEDIUM	HEAVY
WEATHER:	SUNNY		CLOUDY		RAIN		?		TEMPERATURE:	°F . °C	

[Circle appropriate units]

HYDROLOGY/LEVEL MEASUREMENTS (Nearest 0.01 ft) [Product Thickness] [Water Column] [Water Column x Gal/ft]

Date	Time	DT-Bottom	DT-Product	DT-Water	DTP-DTW	DTB-DTW		Volume (gal)
/ /	:	.	.	.	.	.	X 1	.
/ /	:	.	.	.	.		X 3	.

Gal/ft = (dia./2)² x 0.163	1" = 0.041	2" = 0.163	3" = 0.367	4" = 0.653	6" = 1.469	10" = 4.080	12" = 5.875

§ METHODS: (A) Submersible Pump (B) Peristaltic Pump (C) Disposable Bailer (D) PVC/Teflon Bailer (E) Dedicated Bailer (F) Dedicated Pump (G) Other = grab

GROUNDWATER SAMPLING DATA (if product is detected, do NOT sample) Sample Depth: [√ if used]

Bottle Type	Date	Time	Method §	Amount & Volume mL		Preservative [circle]	Ice	Filter	pH	√
VOA Glass	/ /	:		3	40 ml	HCl	YES	NO		
Amber Glass	/ /	:			250, 500, 1L	(None) (HCl) (H_2SO_4)	YES	NO		
White Poly	/ /	:			250, 500, 1L	None	YES	NO	NA	
Yellow Poly	/ /	:			250, 500, 1L	H_2SO_4	YES	NO		
Green Poly	/ /	:			250, 500, 1L	NaOH	YES	NO		
Red Total Poly	/ /	:			250, 500, 1L	HNO_3	YES	NO		
Red Diss. Poly	/ /	:			250, 500, 1L	HNO_3	YES	YES		
16 oz glass	3/10/97	16:00	G	1	250, 500, 1L		YES			✓

Total Bottles (include duplicate count): 1

Analysis Allowed per Bottle Type	BOTTLE TYPE	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)
	VOA - Glass	(8010) (8010/8020) (8020) (8240) (8260) (BTEX) (TPH-G) (BTEX/TPH-G) OR [ ] WA [ ]
	AMBER - Glass	(PAH) (TPH-HCID) (TPH-D) (TPH-418.1) (Oil &Grease) OR [ ] WA [ ]
	WHITE - Poly	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO_3/CO_3) (Cl) (SO_4) (NO_3) (NO_2) (F)
	YELLOW - Poly	(COD) (TOC) (Total PO_4) (Total Keldahl Nitrogen) (NH_3) (NO_3/NO_2)
	GREEN - Poly	(Cyanide)
	RED TOTAL - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)
	RED DISSOLVED - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silica)
	16 oz glass	8260, WTPH-G, WTPH-D ext.

WATER QUALITY DATA Purge Start Time: : Pump/Bailer Inlet Depth:

Meas.	Method §	Purged (gal)	pH	E Cond (µS)	°F Temp °C	Other	Diss O_2 (mg/l)	Water Quality
1		.	.		.		.	
2		.	.		.		.	
3		.	.		.		.	
4		.	.		.		.	
		.	.		.		.	

[Casing] [Select A-G] [Cumulative Totals] [Circle units] [Clarity, Color]

Silty gravel (GM), brown a few percent sand, medium. Visqueen liner about 6"-7" Bgs. Soil 1-2" below visqueen has dk brown "tarry" consist.

SAMPLER: John Latta (PRINTED NAME) John Latta (SIGNATURE)

FIELD SAMPLING DATA SHEET

EMCON
W 7106 Will D. Alton Lane, Suite 101
Spokane, Washington 99224
Office: (509) 838-1144 Fax: (509) 838-1382

PROJECT NAME: **WELL ID:**

SITE ADDRESS: **BLIND ID:** SS-I3

DUP ID: NA

4035B-016.004

WIND FROM:	N	NE	E	SE	S	SW	W	NW	(LIGHT)	MEDIUM	HEAVY
WEATHER:	SUNNY		CLOUDY		(RAIN)		?		TEMPERATURE:	(°F) 45.	°C

[Circle appropriate units]

HYDROLOGY/LEVEL MEASUREMENTS (Nearest 0.01 ft) [Product Thickness] [Water Column] [Water Column x Gal/ft]

Date	Time	DT-Bottom	DT-Product	DT-Water	DTP-DTW	DTB-DTW		Volume (gal)
/ /	:	.	.	.	.	.	X 1	.
/ /	:	.	.	.	.		X 3	.

Gal/ft = (dia./2)² x 0.163	1" =	0.041	2" =	0.163	3" =	0.367	4" =	0.653	6" =	1.469	10" =	4.080	12" =	5.875

§ METHODS: (A) Submersible Pump (B) Peristaltic Pump (C) Disposable Bailer (D) PVC/Teflon Bailer (E) Dedicated Bailer (F) Dedicated Pump (G) Other = Grab

GROUNDWATER SAMPLING DATA (if product is detected, do NOT sample) Sample Depth: [√ if used]

Bottle Type	Date	Time	Method §	Amount & Volume mL		Preservative (circle)	Ice	Filter	pH	√
VOA Glass	/ /	:		3	40 ml	HCl	YES	NO		
Amber Glass	/ /	:			250, 500, 1L	(None) (HCl) (H_2SO_4)	YES	NO		
White Poly	/ /	:			250, 500, 1L	None	YES	NO	NA	
Yellow Poly	/ /	:			250, 500, 1L	H_2SO_4	YES	NO		
Green Poly	/ /	:			250, 500, 1L	NaOH	YES	NO		
Red Total Poly	/ /	:			250, 500, 1L	HNO_3	YES	NO		
Red Diss. Poly	/ /	:			250, 500, 1L	HNO_3	YES	YES		
16 oz glass	3/10/97	15:35	G	1	250, 500, 1L		YES			✓

Total Bottles (include duplicate count): 1

Analysis Allowed per Bottle Type	BOTTLE TYPE	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)
	VOA - Glass	(8010) (8010/8020) (8020) (8240) (8260) (BTEX) (TPH-G) (BTEX/TPH-G) OR [ ] WA [ ]
	AMBER - Glass	(PAH) (TPH-HCID) (TPH-D) (TPH-418.1) (Oil &Grease) OR [ ] WA [ ]
	WHITE - Poly	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO_3/CO_3) (Cl) (SO_4) (NO_3) (NO_2) (F)
	YELLOW - Poly	(COD) (TOC) (Total PO_4) (Total Keldahl Nitrogen) (NH_3) (NO_3/NO_2)
	GREEN - Poly	(Cyanide)
	RED TOTAL - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)
	RED DISSOLVED - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silica)
	16 oz glass	8260, WTPH-G, WTPHD ext.

WATER QUALITY DATA Purge Start Time: : Pump/Bailer Inlet Depth:

Meas.	Method §	Purged (gal)	pH	E Cond (µS)	°F Temp °C	Other	Diss O_2 (mg/l)	Water Quality
1		.	.		.		.	
2		.	.		.		.	
3		.	.		.		.	
4		.	.		.		.	
		.	.		.		.	

[Casing] [Select A-G] [Cumulative Totals] [Circle units] [Clarity, Color]

Silty gravel, (GM) brown, a few percent sand, damp, dense, medium. Sample location in former RR ROW. Rootlets noted in all samples.

SAMPLER: John Latta (PRINTED NAME) John Latta (SIGNATURE)

FIELD SAMPLING DATA SHEET

EMCON
W 7106 Will D. Alton Lane, Suite 101
Spokane, Washington 99224
Office: (509) 838-1144 Fax: (509) 838-1382

PROJECT NAME: **WELL ID:**

SITE ADDRESS: **BLIND ID:** SS-I4

40358-016.004 **DUP ID:** NA

WIND FROM:	N	NE	E	SE	S	SW	W	NW	(LIGHT)	MEDIUM	HEAVY
WEATHER:	SUNNY		CLOUDY		(RAIN)		?		**TEMPERATURE:**	(°F) 45 .	°C

[Circle appropriate units]

HYDROLOGY/LEVEL MEASUREMENTS (Nearest 0.01 ft) [Product Thickness] [Water Column] [Water Column x Gal/ft]

Date	Time	DT-Bottom	DT-Product	DT-Water	DTP-DTW	DTB-DTW		Volume (gal)
/ /	:	.	.	.	.	.	X 1	.
/ /	:	.	.	.	.		X 3	.

Gal/ft = (dia./2)² x 0.163	1" = 0.041	2" = 0.163	3" = 0.367	4" = 0.653	6" = 1.469	10" = 4.080	12" = 5.875

§ METHODS: (A) Submersible Pump (B) Peristaltic Pump (C) Disposable Bailer (D) PVC/Teflon Bailer (E) Dedicated Bailer (F) Dedicated Pump (G) Other = Grab

GROUNDWATER SAMPLING DATA (if product is detected, do NOT sample) Sample Depth: [√ if used]

Bottle Type	Date	Time	Method §	Amount & Volume mL	Preservative [circle]	Ice	Filter	pH	√
VOA Glass	/ /	:		3	40 ml HCl	YES	NO		
Amber Glass	/ /	:			250, 500, 1L (None) (HCl) (H_2SO_4)	YES	NO		
White Poly	/ /	:			250, 500, 1L None	YES	NO	NA	
Yellow Poly	/ /	:			250, 500, 1L H_2SO_4	YES	NO		
Green Poly	/ /	:			250, 500, 1L NaOH	YES	NO		
Red Total Poly	/ /	:			250, 500, 1L HNO_3	YES	NO		
Red Diss. Poly	/ /	:			250, 500, 1L HNO_3	YES	YES		
16 oz glass	3/10/97	15:55	G	1	250, 500, 1L	YES			√
		Total Bottles (include duplicate count):		1					

Analysis Allowed per Bottle Type	BOTTLE TYPE	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)
	VOA - Glass	(8010) (8010/8020) (8020) (8240) (8260) (BTEX) (TPH-G) (BTEX/TPH-G) OR [ ] WA [ ]
	AMBER - Glass	(PAH) (TPH-HCID) (TPH-D) (TPH-418.1) (Oil &Grease) OR [ ] WA [ ]
	WHITE - Poly	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO_3/CO_3) (Cl) (SO_4) (NO_3) (NO_2) (F)
	YELLOW - Poly	(COD) (TOC) (Total PO_4) (Total Keldahl Nitrogen) (NH_3) (NO_3/NO_2)
	GREEN - Poly	(Cyanide)
	RED TOTAL - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)
	RED DISSOLVED - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silica)

WATER QUALITY DATA Purge Start Time: : Pump/Bailer Inlet Depth:

Meas.	Method §	Purged (gal)	pH	E Cond (µS)	°F Temp °C	Other	Diss O_2 (mg/l)	Water Quality
1		.	.		.		.	
2		.	.		.		.	
3		.	.		.		.	
4		.	.		.		.	
		.	.		.		.	

[Casing] [Select A-G] [Cumulative Totals] [Circle units] [Clarity, Color]

Silty gravel (GM), brown, a few percent sand, damp, ~~dense~~ medium. Rootlets.

SAMPLER: John Latta
(PRINTED NAME)

John Latta
(SIGNATURE)

FIELD SAMPLING DATA SHEET

EMCON
W 7106 Will D. Alton Lane, Suite 101
Spokane, Washington 99224
Office: (509) 838-1144 Fax: (509) 838-1382

PROJECT NAME: **WELL ID:**

SITE ADDRESS: **BLIND ID:** SS-I6

40358-016-004 **DUP ID:** NA

WIND FROM:	N	NE	E	SE	(S)	SW	W	NW	LIGHT	(MEDIUM)	HEAVY
WEATHER:	SUNNY		CLOUDY		RAIN	Windy ?			**TEMPERATURE:**	(°F) 40.	°C

[Circle appropriate units]

HYDROLOGY/LEVEL MEASUREMENTS (Nearest 0.01 ft)

Date	Time	DT-Bottom	DT-Product	DT-Water	[Product Thickness] DTP-DTW	[Water Column] DTB-DTW		[Water Column x Gal/ft] Volume (gal)
/ /	:	.	.	.	.	.	X 1	.
/ /	:	.	.	.	.		X 3	.

Gal/ft = (dia./2)² x 0.163	1" = 0.041	2" = 0.163	3" = 0.367	4" = 0.653	6" = 1.469	10" = 4.080	12" = 5.875

§ METHODS: (A) Submersible Pump (B) Peristaltic Pump (C) Disposable Bailer (D) PVC/Teflon Bailer (E) Dedicated Bailer (F) Dedicated Pump (G) Other = Grab

GROUNDWATER SAMPLING DATA (if product is detected, do NOT sample) Sample Depth: [√ if used]

Bottle Type	Date	Time	Method §	Amount & Volume mL		Preservative (circle)	Ice	Filter	pH	√
VOA Glass	/ /	:		3	40 ml	HCl	YES	NO		
Amber Glass	/ /	:			250, 500, 1L	(None) (HCl) (H_2SO_4)	YES	NO		
White Poly	/ /	:			250, 500, 1L	None	YES	NO	NA	
Yellow Poly	/ /	:			250, 500, 1L	H_2SO_4	YES	NO		
Green Poly	/ /	:			250, 500, 1L	NaOH	YES	NO		
Red Total Poly	/ /	:			250, 500, 1L	HNO_3	YES	NO		
Red Diss. Poly	/ /	:			250, 500, 1L	HNO_3	YES	YES		
1lr oz glass	3/12/97	9:05	G	1	250, 500, 1L		YES			✓
		Total Bottles (include duplicate count):		1						

Analysis Allowed per Bottle Type	BOTTLE TYPE	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)
	VOA - Glass	(8010) (8010/8020) (8020) (8240) (8260) (BTEX) (TPH-G) (BTEX/TPH-G) OR [ ] WA [ ]
	AMBER - Glass	(PAH) (TPH-HCID) (TPH-D) (TPH-418.1) (Oil &Grease) OR [ ] WA [ ]
	WHITE - Poly	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO_3/CO_3) (Cl) (SO_4) (NO_3) (NO_2) (F)
	YELLOW - Poly	(COD) (TOC) (Total PO_4) (Total Keldahl Nitrogen) (NH_3) (NO_3/NO_2)
	GREEN - Poly	(Cyanide)
	RED TOTAL - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)
	RED DISSOLVED - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silica)
	1lr oz glass	8260, WTPH-G, WTPH-D extended

WATER QUALITY DATA Purge Start Time: : Pump/Bailer Inlet Depth:

Meas.	Method §	Purged (gal)	pH	E Cond (µS)	°F Temp °C	Other	Diss O_2 (mg/l)	Water Quality
4		.	.		.		.	
3		.	.		.		.	
2		.	.		.		.	
1		.	.		.		.	
0		0.00	.		.		.	

[Casing] [Select A-G] [Cumulative Totals] [Circle units] [Clarity, Color]

Sandy gravel (GP), rounded to subrounded fine to coarse gravel, medium to fine sand, a few percent silt, gray, damp. Sample location in driveway area.

SAMPLER: John Latta (PRINTED NAME) John Latta (SIGNATURE)

FIELD SAMPLING DATA SHEET

EMCON
W 7106 Will D. Alton Lane, Suite 101
Spokane, Washington 99224
Office: (509) 838-1144 Fax: (509) 838-1382

PROJECT NAME: WELL ID: GP-1

SITE ADDRESS: BLIND ID: GPW-1-397-15

40358-016.001 DUP ID: NA

WIND FROM:	N	NE	E	SE	S	SW	W	NW	LIGHT	MEDIUM	HEAVY
WEATHER:	SUNNY		CLOUDY		RAIN		?		TEMPERATURE:	°F . °C	

[Circle appropriate units]

HYDROLOGY/LEVEL MEASUREMENTS (Nearest 0.01 ft)

[Product Thickness] [Water Column] [Water Column x Gal/ft]

Date	Time	DT-Bottom	DT-Product	DT-Water	DTP-DTW	DTB-DTW		Volume (gal)
/ /	:	.	.	.	.	.	X 1	.
/ /	:	.	.	.	.		X 3	.

Gal/ft = (dia./2)² x 0.163	1" = 0.041	2" = 0.163	3" = 0.367	4" = 0.653	6" = 1.469	10" = 4.080	12" = 5.875

§ METHODS: (A) Submersible Pump (B) Peristaltic Pump (C) Disposable Bailer (D) PVC/Teflon Bailer (E) Dedicated Bailer (F) Dedicated Pump (G) Other = ~~B~~

GROUNDWATER SAMPLING DATA (if product is detected, do NOT sample)

Sample Depth: [√ if used]

Bottle Type	Date	Time	Method §	Amount & Volume mL	Preservative [circle]	Ice	Filter	pH	√
VOA Glass	3/12/97	16:20	B	~~6~~ 4 ~~5~~ 40 ml	HCl	YES	NO		✓
Amber Glass	3/12/97	16:20	B	1	250, 500, (1L)	(None) (HCl) (H_2SO_4)	YES	NO		✓
White Poly	3/12/97	16:20	B	1	250 (500) 1L	None	YES	NO	NA	✓
Yellow Poly	/ /	:			250, 500, 1L	H_2SO_4	YES	NO		
Green Poly	/ /	:			250, 500, 1L	NaOH	YES	NO		
Red Total Poly	/ /	:			250, 500, 1L	HNO_3	YES	NO		
Red Diss. Poly	/ /	:			250, 500, 1L	HNO_3	YES	YES		
	/ /	:			250, 500, 1L		YES			

Total Bottles (include duplicate count): 8

Analysis Allowed per Bottle Type	BOTTLE TYPE	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)
	VOA - Glass	(8010) (8010/8020) (8020) (8240) (8260) (BTEX) (TPH-G) (BTEX/TPH-G) OR [ ] WA [ ]
	AMBER - Glass	(PAH) (TPH-HCID) (TPH-D) (TPH-418.1) (Oil &Grease) OR [ ] WA [ ]
	WHITE - Poly	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO_3/CO_3) (Cl) (SO_4) (NO_3) (NO_2) (F)
	YELLOW - Poly	(COD) (TOC) (Total PO_4) (Total Keldahl Nitrogen) (NH_3) (NO_3/NO_2)
	GREEN - Poly	(Cyanide)
	RED TOTAL - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)
	RED DISSOLVED - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silica)

WATER QUALITY DATA

Purge Start Time: : Turb. Pump/Bailer Inlet Depth: 15

Meas.	Method §	Purged (gal)	pH	E Cond (µS)	°F Temp (°C)	Other	Diss O_2 (mg/l)	Water Quality
1	B	0.5	7.21	1,170	14.0	>1000 NTU	2.04	SL cldy brown
2		.	.		.		.	
3		.	.		.		.	
4		.	.		.		.	
		.	.		.		.	

[Casing] [Select A-G] [Cumulative Totals] [Circle units] [Clarity, Color]

SAMPLER: John Latta / Nick Garson (PRINTED NAME) John Latta (SIGNATURE)

FIELD SAMPLING DATA SHEET

EMCON
W 7106 Will D. Alton Lane, Suite 101
Spokane, Washington 99224
Office: (509) 838-1144 Fax: (509) 838-1382

PROJECT NAME: New City Cleaners WELL ID: GP-2
SITE ADDRESS: 747 Stevens Drive Richland, WA BLIND ID: GPW2-397 17
4035E-016.004 DUP ID: NA

WIND FROM:	N	(NE)	E	SE	S	SW	W	NW	(LIGHT)	MEDIUM	HEAVY
WEATHER:	(SUNNY)		CLOUDY		RAIN		?		TEMPERATURE:	(°F) 45.	°C

[Circle appropriate units]

HYDROLOGY/LEVEL MEASUREMENTS (Nearest 0.01 ft) [Product Thickness] [Water Column] [Water Column x Gal/ft]

Date	Time	DT-Bottom	DT-Product	DT-Water	DTP-DTW	DTB-DTW		Volume (gal)
/ /	:	.	.	.	.	.	X 1	.
/ /	:	.	.	.	.		X 3	.

Gal/ft = (dia./2)² x 0.163	1" =	0.041	2" =	0.163	3" =	0.367	4" =	0.653	6" =	1.469	10" =	4.080	12" =	5.875

§ METHODS: (A) Submersible Pump (B) Peristaltic Pump (C) Disposable Bailer (D) PVC/Teflon Bailer (E) Dedicated Bailer (F) Dedicated Pump (G) Other =

GROUNDWATER SAMPLING DATA (if product is detected, do NOT sample) Sample Depth: [√ if used]

Bottle Type	Date	Time	Method §	Amount & Volume mL		Preservative [circle]	Ice	Filter	pH	√
VOA Glass	3/13/97	10:25	B	56	JSL 40 ml	HCl	YES	NO		✓
Amber Glass	3/13/97	10:25	B	1	250, 500, 1L	(None) (HCl) (H_2SO_4)	YES	NO		✓
White Poly	3/13/97	10:25	B	1	250, 500, 1L	None	YES	NO	NA	✓
Yellow Poly	/ /	:			250, 500, 1L	H_2SO_4	YES	NO		
Green Poly	/ /	:			250, 500, 1L	NaOH	YES	NO		
Red Total Poly	/ /	:			250, 500, 1L	HNO_3	YES	NO		
Red Diss. Poly	/ /	:			250, 500, 1L	HNO_3	YES	YES		
	/ /	:			250, 500, 1L		YES			

Total Bottles (include duplicate count): 8

Analysis Allowed per Bottle Type	BOTTLE TYPE	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)
	VOA - Glass	(8010) (8010/8020) (8020) (8240) ((8260)) (BTEX) ((TPH-G)) (BTEX/TPH-G) OR [ ] WA [X]
	AMBER - Glass	(PAH) (TPH-HCID) ((TPH-D)) (TPH-418.1) (Oil &Grease) Extended OR [ ] WA [X]
	WHITE - Poly	(pH) (Conductivity) (TDS) ((TSS)) (BOD) (Turbidity) (Alkalinity) (HCO_3/CO_3) (Cl) (SO_4) (NO_3) (NO_2) (F)
	YELLOW - Poly	(COD) (TOC) (Total PO_4) (Total Keldahl Nitrogen) (NH_3) (NO_3/NO_2)
	GREEN - Poly	(Cyanide)
	RED TOTAL - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)
	RED DISSOLVED - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silica)

WATER QUALITY DATA Purge Start Time: : Turbid (Pump)/Bailer Inlet Depth: 17

Meas.	Method §	Purged (gal)	pH	E Cond (µS)	°F Temp (°C)	Other	Diss O_2 (mg/l)	Water Quality
1	B	0.3	6.95	1,110	16.0	>1000 NTU	6.5	Cldy brown
2		.	.		.		2.1	
3		.	.		.		.	
4		.	.		.		.	
		.	.		.		.	

[Casing] [Select A-G] [Cumulative Totals] [Circle units] [Clarity, Color]

SAMPLER: GARSON LATTIT
(PRINTED NAME)

(SIGNATURE)

FIELD SAMPLING DATA SHEET

EMCON
W 7106 Will D. Alton Lane, Suite 101
Spokane, Washington 99224
Office: (509) 838-1144 Fax: (509) 838-1382

PROJECT NAME: New city CLEANERS 40358-016.004 WELL ID: GPW - 3 - 397 - 19
SITE ADDRESS: 747 Stevens Drive Richland, WA BLIND ID: GP-1
DUP ID: NA

WIND FROM:	N	NE	E	SE	S	SW	W	NW	LIGHT	MEDIUM	HEAVY
WEATHER:	SUNNY		CLOUDY		RAIN		?		TEMPERATURE:	°F ~40.	°C

[Circle appropriate units]

HYDROLOGY/LEVEL MEASUREMENTS (Nearest 0.01 ft)

Date	Time	DT-Bottom	DT-Product	DT-Water	[Product Thickness] DTP-DTW	[Water Column] DTB-DTW		[Water Column x Gal/ft] Volume (gal)
/ /	:	.	.	.	.	.	X 1	.
/ /	:	.	.	.	.		X 3	.

Gal/ft = (dia./2)² x 0.163	1" = 0.041	2" = 0.163	3" = 0.367	4" = 0.653	6" = 1.469	10" = 4.080	12" = 5.875

§ METHODS: (A) Submersible Pump (B) Peristaltic Pump (C) Disposable Bailer (D) PVC/Teflon Bailer (E) Dedicated Bailer (F) Dedicated Pump (G) Other =

GROUNDWATER SAMPLING DATA (if product is detected, do NOT sample)

Sample Depth:

Bottle Type	Date	Time	Method §	Amount & Volume mL		Preservative [circle]	Ice	Filter	pH	[√ if used] √
VOA Glass	3/12/97	19:07	B	36	40 ml	HCl	YES	NO		✓
Amber Glass	3/13/97	7:50	B	1	250, 500, (1L)	(None) (HCl) (H_2SO_4)	YES	NO		✓
White Poly	3/13/97	7:50	B	1	250 (500) 1L	None	YES	NO	NA	✓
Yellow Poly	/ /	:			250, 500, 1L	H_2SO_4	YES	NO		
Green Poly	/ /	:			250, 500, 1L	NaOH	YES	NO		
Red Total Poly	/ /	:			250, 500, 1L	HNO_3	YES	NO		
Red Diss. Poly	/ /	:			250, 500, 1L	HNO_3	YES	YES		
	/ /	:			250, 500, 1L		YES			

Total Bottles (include duplicate count): 8

Analysis Allowed per Bottle Type	BOTTLE TYPE	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)
	VOA - Glass	(8010) (8010/8020) (8020) (8240) (8260) (BTEX) (TPH-G) (BTEX/TPH-G) OR [ ] WA [ ]
	AMBER - Glass	(PAH) (TPH-HCID) (TPH-D) (TPH-418.1) (Oil &Grease) OR [ ] WA [ ]
	WHITE - Poly	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO_3/CO_3) (Cl) (SO_4) (NO_3) (NO_2) (F)
	YELLOW - Poly	(COD) (TOC) (Total PO_4) (Total Keldahl Nitrogen) (NH_3) (NO_3/NO_2)
	GREEN - Poly	(Cyanide)
	RED TOTAL - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)
	RED DISSOLVED - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silica)
		(Ntu)

WATER QUALITY DATA

Purge Start Time: : Turb Pump/Bailer Inlet Depth: 19

Meas.	Method §	Purged (gal)	pH	E Cond (µS)	°F Temp °C	Other	Diss O_2 (mg/l)	Water Quality
1	B	0.25	7.45	1230	11.0	56.8	6.58	
2		.	.		.		.	
3		.	.		.		.	
4		.	.		.		.	
		.	.		.		.	

[Casing] [Select A-G] [Cumulative Totals] [Circle units] [Clarity, Color]

SAMPLER: NICK GARSON/JOHN LATTA
(PRINTED NAME)

(SIGNATURE)

FIELD SAMPLING DATA SHEET

EMCON
W 7106 Will D. Alton Lane, Suite 101
Spokane, Washington 99224
Office: (509) 838-1144 Fax: (509) 838-1382

PROJECT NAME: **WELL ID:** GP-4

SITE ADDRESS: **BLIND ID:** GPW-4-397-19

DUP ID: NA

WIND FROM:	N	NE	E	SE	S	SW	W	NW	(LIGHT)	MEDIUM	HEAVY
WEATHER:	SUNNY (◐) CLOUDY				RAIN		?		**TEMPERATURE:**	(F) 45 .	°C

(Circle appropriate units)

HYDROLOGY/LEVEL MEASUREMENTS (Nearest 0.01 ft)

[Product Thickness] [Water Column] [Water Column x Gal/ft]

Date	Time	DT-Bottom	DT-Product	DT-Water	DTP-DTW	DTB-DTW		Volume (gal)
3/13/97	14:02	19.0	.	12.5	.	.	X 1	.
/ /	:	.	.	.	.		X 3	.

Gal/ft = (dia./2)² x 0.163	1" = 0.041	2" = 0.163	3" = 0.367	4" = 0.653	6" = 1.469	10" = 4.080	12" = 5.875

§ METHODS: (A) Submersible Pump (B) Peristaltic Pump (C) Disposable Bailer (D) PVC/Teflon Bailer (E) Dedicated Bailer (F) Dedicated Pump (G) Other =

GROUNDWATER SAMPLING DATA (if product is detected, do NOT sample)

Sample Depth: [√ if used]

Bottle Type	Date	Time	Method §	Amount & Volume mL		Preservative (circle)	Ice	Filter	pH	√
VOA Glass	3/13/97	14:50	B	56	40 ml	HCl	YES	NO		✓
Amber Glass	3/13/97	14:50	B	1	250, 500, 1L	(None) (HCl) (H_2SO_4)	YES	NO		✓
White Poly	3/13/97	14:50	B	1	250, 500, 1L	None	YES	NO	NA	✓
Yellow Poly	/ /	:			250, 500, 1L	H_2SO_4	YES	NO		
Green Poly	/ /	:			250, 500, 1L	NaOH	YES	NO		
Red Total Poly	/ /	:			250, 500, 1L	HNO_3	YES	NO		
Red Diss. Poly	/ /	:			250, 500, 1L	HNO_3	YES	YES		
	/ /	:			250, 500, 1L		YES			

Total Bottles (include duplicate count): 6

Analysis Allowed per Bottle Type	BOTTLE TYPE	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)
	VOA - Glass	(8010) (8010/8020) (8020) (8240) (8260) (BTEX) (TPH-G) (BTEX/TPH-G) OR [ ] WA [X]
	AMBER - Glass	(PAH) (TPH-HCID) (TPH-D) (TPH-418.1) (Oil &Grease) OR [ ] WA [X]
	WHITE - Poly	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO_3/CO_3) (Cl) (SO_4) (NO_3) (NO_2) (F)
	YELLOW - Poly	(COD) (TOC) (Total PO_4) (Total Keldahl Nitrogen) (NH_3) (NO_3/NO_2)
	GREEN - Poly	(Cyanide)
	RED TOTAL - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)
	RED DISSOLVED - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silica)

WATER QUALITY DATA

Purge Start Time: : Turbid Pump/Bailer Inlet Depth:

Meas.	Method §	Purged (gal)	pH	E Cond (µS)	°F Temp (°C)	Other	Diss O_2 (mg/l)	Water Quality
1	B	0.2	7.39	1,205	14.2	999	5.42	Sl cldy brown
2		.	.		.	NTU	.	
3		.	.		.		.	
4		.	.		.		.	
		.	.		.		.	

[Casing] [Select A-G] [Cumulative Totals] [Circle units] [Clarity, Color]

SAMPLER: John Latta
(PRINTED NAME)

John Latta
(SIGNATURE)

FIELD SAMPLING DATA SHEET

EMCON
W 7106 Will D. Alton Lane, Suite 101
Spokane, Washington 99224
Office: (509) 838-1144 Fax: (509) 838-1382

PROJECT NAME: New City Cleaners **WELL ID:** GP-5

SITE ADDRESS: 747 Stevens Drive Richland WA **BLIND ID:** GPW-5-397-19

40358-016.004 **DUP ID:** NA

WIND FROM:	N	NE	E	SE	S	SW	W	NW	LIGHT	MEDIUM	HEAVY
WEATHER:	(SUNNY)	CLOUDY	RAIN	?	TEMPERATURE:	°F 50 .	°C				

[Circle appropriate units]

HYDROLOGY/LEVEL MEASUREMENTS (Nearest 0.01 ft) Stickup = 0.7 feet

Date	Time	DT-Bottom	DT-Product	DT-Water	DTP-DTW [Product Thickness]	DTB-DTW [Water Column]		[Water Column x Gal/ft] Volume (gal)
3/13/97	12:20	21.40	.	8.93	None	12.47	X 1	.
/ /	:	.	.	.	.		X 3	.

Gal/ft = (dia./2)² x 0.163	1" = 0.041	2" = 0.163	3" = 0.367	4" = 0.653	6" = 1.469	10" = 4.080	12" = 5.875

§ METHODS: (A) Submersible Pump (B) Peristaltic Pump (C) Disposable Bailer (D) PVC/Teflon Bailer (E) Dedicated Bailer (F) Dedicated Pump (G) Other =

GROUNDWATER SAMPLING DATA (if product is detected, do NOT sample) Sample Depth:

Bottle Type	Date	Time	Method §	Amount & Volume mL	Preservative [circle]	Ice	Filter	pH	√ if used
VOA Glass	3/13/97	12:55	B	6	(40 ml)	HCl	YES	NO		√
Amber Glass	3/13/97	12:55	B	1	250, 500, (1L)	(None) (HCl) (H_2SO_4)	YES	NO		√
White Poly	3/13/97	12:55	B	1	250, (500) 1L	None	YES	NO	NA	√
Yellow Poly	/ /	:			250, 500, 1L	H_2SO_4	YES	NO		
Green Poly	/ /	:			250, 500, 1L	NaOH	YES	NO		
Red Total Poly	/ /	:			250, 500, 1L	HNO_3	YES	NO		
Red Diss. Poly	/ /	:			250, 500, 1L	HNO_3	YES	YES		
	/ /	:			250, 500, 1L		YES			

Total Bottles (include duplicate count): 8

Analysis Allowed per Bottle Type	BOTTLE TYPE	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)
	VOA - Glass	(8010) (8010/8020) (8020) (8240) (8260) (BTEX) (TPH-G) (BTEX/TPH-G) OR [ ] WA [ ]
	AMBER - Glass	(PAH) (TPH-HCID) (TPH-D) (TPH-418.1) (Oil &Grease) OR [ ] WA [ ]
	WHITE - Poly	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO_3/CO_3) (Cl) (SO_4) (NO_3) (NO_2) (F)
	YELLOW - Poly	(COD) (TOC) (Total PO_4) (Total Keldahl Nitrogen) (NH_3) (NO_3/NO_2)
	GREEN - Poly	(Cyanide)
	RED TOTAL - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)
	RED DISSOLVED - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silica)

WATER QUALITY DATA Purge Start Time: : Turbidity NTU Pump/Bailer Inlet Depth: 19

Meas.	Method §	Purged (gal)	pH	E Cond (µS)	°F Temp °C	Other	Diss O_2 (mg/l)	Water Quality
4	B	1.50	7.09	1434	15.0	>1000	0.89	Brown, cloudy, slight
3		.	.		.		.	Sheen, slight
2		.	.		.		.	Solvent-like odor
1		.	.		.		.	
0		0.00	.		.		.	

[Casing] [Select A-G] [Cumulative Totals] [Circle units] [Clarity, Color]

- Sheen near top of H_2O table, approx 9-10' bgs, w/a solvent-like odor. No discernible sheen @ base of temp well from approx 18-21' bgs.
- Slight sheen observed during sample collection (slight solvent-like odor)

SAMPLER: NICK LARSON (PRINTED NAME) (SIGNATURE)

FIELD SAMPLING DATA SHEET

EMCON
W 7106 Will D. Alton Lane, Suite 101
Spokane, Washington 99224
Office: (509) 838-1144 Fax: (509) 838-1382

PROJECT NAME: | WELL ID: GP-6
SITE ADDRESS: | BLIND ID: GPW-6-397-15
DUP ID: NA

WIND FROM:	N	NE	E	SE	(S)	SW	W	NW	LIGHT	(MEDIUM)	HEAVY
WEATHER:	SUNNY	(CLOUDY)	RAIN	?	TEMPERATURE:	(°F) 45 . °C					

[Circle appropriate units]

HYDROLOGY/LEVEL MEASUREMENTS (Nearest 0.01 ft) [Product Thickness] [Water Column] [Water Column x Gal/ft]

Date	Time	DT-Bottom	DT-Product	DT-Water	DTP-DTW	DTB-DTW		Volume (gal)
/ /	:	.	.	.	.	.	X 1	.
/ /	:	.	.	.	.		X 3	.

Gal/ft = (dia./2)² x 0.163	1" = 0.041	2" = 0.163	3" = 0.367	4" = 0.653	6" = 1.469	10" = 4.080	12" = 5.875

§ METHODS: (A) Submersible Pump (B) Peristaltic Pump (C) Disposable Bailer (D) PVC/Teflon Bailer (E) Dedicated Bailer (F) Dedicated Pump (G) Other =

GROUNDWATER SAMPLING DATA (if product is detected, do NOT sample) Sample Depth: [√ if used]

Bottle Type	Date	Time	Method §	Amount & Volume mL		Preservative (circle)	Ice	Filter	pH	√
VOA Glass	3/12/97	14:25	B	3 x 40	40 ml	HCl	YES	NO		✓
Amber Glass	3/12/97	14:25	B	1	250, 500 (1L)	(None) (HCl) (H_2SO_4)	YES	NO		✓
White Poly	3/12/97	14:25	B	1	250 (500) 1L	None	YES	NO	NA	✓
Yellow Poly	/ /	:			250, 500, 1L	H_2SO_4	YES	NO		
Green Poly	/ /	:			250, 500, 1L	NaOH	YES	NO		
Red Total Poly	/ /	:			250, 500, 1L	HNO_3	YES	NO		
Red Diss. Poly	/ /	:			250, 500, 1L	HNO_3	YES	YES		
	/ /	:			250, 500, 1L		YES			

Total Bottles (include duplicate count): 8

Analysis Allowed per Bottle Type	BOTTLE TYPE	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)
	VOA - Glass	(8010) (8010/8020) (8020) (8240) (8260) (BTEX) (TPH-G) (BTEX/TPH-G) OR [ ] WA [X]
	AMBER - Glass	(PAH) (TPH-HCID) (TPH-D) (TPH-418.1) (Oil &Grease) Extended OR [ ] WA [X]
	WHITE - Poly	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO_3/CO_3) (Cl) (SO_4) (NO_3) (NO_2) (F)
	YELLOW - Poly	(COD) (TOC) (Total PO_4) (Total Keldahl Nitrogen) (NH_3) (NO_3/NO_2)
	GREEN - Poly	(Cyanide)
	RED TOTAL - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)
	RED DISSOLVED - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silica)

WATER QUALITY DATA Purge Start Time: : Turbid (Pump/Bailer Inlet Depth: 15

Meas.	Method §	Purged (gal)	pH	E Cond (µS)	°F Temp (°C)	Other	Diss O_2 (mg/l)	Water Quality
1	B	0.4	7.05	1,542	14.8	>3000 NTU	1.98	SL cldy brown w/
2		.	.		.		.	discontinuous
3		.	.		.		.	sheen.
4		.	.		.		.	
		.	.		.		.	

[Casing] [Select A-G] [Cumulative Totals] [Circle units] [Clarity, Color]

Note discontinuous sheen.

SAMPLER: John Latta (PRINTED NAME) (SIGNATURE)

FIELD SAMPLING DATA SHEET

EMCON
W 7106 Will D. Alton Lane, Suite 101
Spokane, Washington 99224
Office: (509) 838-1144 Fax: (509) 838-1382

PROJECT NAME: New City Cleaners — WELL ID: GP-7

SITE ADDRESS: 747 Stevens Drive Richland, WA — BLIND ID: GPW-7-397-11

40358-016.004 — DUP ID: NA

WIND FROM:	N	NE	E	SE	S	SW	W	NW	LIGHT	MEDIUM	HEAVY
WEATHER:	SUNNY		CLOUDY		RAIN		?		TEMPERATURE:	°F ~50.	°C

[Circle appropriate units]

HYDROLOGY/LEVEL MEASUREMENTS (Nearest 0.01 ft) Stickup: +1.45' * T.O.C. [Product Thickness] [Water Column] [Water Column x Gal/ft]

Date	Time	DT-Bottom	DT-Product	DT-Water	DTP-DTW	DTB-DTW		Volume (gal)
3/13/97	13:40	23.63	.	9.38'	None	.	X 1	.
/ /	:	.	.	.	.		X 3	.

Gal/ft = (dia./2)² x 0.163	1" =	0.041	2" =	0.163	3" =	0.367	4" =	0.653	6" =	1.469	10" =	4.080	12" =	5.875

§ METHODS: (A) Submersible Pump (B) Peristaltic Pump (C) Disposable Bailer (D) PVC/Teflon Bailer (E) Dedicated Bailer (F) Dedicated Pump (G) Other =

GROUNDWATER SAMPLING DATA (if product is detected, do NOT sample) — Sample Depth: — [√ if used]

Bottle Type	Date	Time	Method §	Amount & Volume mL		Preservative (circle)	Ice	Filter	pH	√
VOA Glass	3/13/97	14:10	B	8 6	(40 ml)	HCl	YES	NO		✓
Amber Glass	3/13/97	14:10	B	1	250, 500, (1L)	(None) ((HCl)) (H_2SO_4)	YES	NO		✓
White Poly	3/13/97	14:10	B	1	250 (500) 1L	None	YES	NO	NA	✓
Yellow Poly	/ /	:			250, 500, 1L	H_2SO_4	YES	NO		
Green Poly	/ /	:			250, 500, 1L	NaOH	YES	NO		
Red Total Poly	/ /	:			250, 500, 1L	HNO_3	YES	NO		
Red Diss. Poly	/ /	:			250, 500, 1L	HNO_3	YES	YES		
	/ /	:			250, 500, 1L		YES			

Total Bottles (include duplicate count): 8

Analysis Allowed per Bottle Type	BOTTLE TYPE	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)
	VOA - Glass	(8010) (8010/8020) (8020) (8240) (8260) (BTEX) (TPH-G) (BTEX/TPH-G) OR [ ] WA [ ]
	AMBER - Glass	(PAH) (TPH-HCID) (TPH-D) (TPH-418.1) (Oil &Grease) OR [ ] WA [ ]
	WHITE - Poly	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO_3/CO_3) (Cl) (SO_4) (NO_3) (NO_2) (F)
	YELLOW - Poly	(COD) (TOC) (Total PO_4) (Total Keldahl Nitrogen) (NH_3) (NO_3/NO_2)
	GREEN - Poly	(Cyanide)
	RED TOTAL - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)
	RED DISSOLVED - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silica)

WATER QUALITY DATA — Purge Start Time: : — Turbidity (NTU) — Pump/Bailer Inlet Depth: 11

Meas.	Method §	Purged (gal)	pH	E Cond (µS)	°F Temp (°C)	Other	Diss O_2 (mg/l)	Water Quality
4	B	1.5	7.17	1,315	12.4	327	2.15	Sl cldy brown
3		.	.		.		.	
2		.	.		.		.	
1		.	.		.		.	
0		0.00	.		.		.	

[Casing] [Select A-G] [Cumulative Totals] [Circle units] [Clarity, Color]

SAMPLER: Nick Carson (PRINTED NAME) _____ (SIGNATURE)

FIELD SAMPLING DATA SHEET

EMCON
W 7106 Will D. Alton Lane, Suite 101
Spokane, Washington 99224
Office: (509) 838-1144 Fax: (509) 838-1382

PROJECT NAME: **WELL ID:** GP-8

SITE ADDRESS: **BLIND ID:** GPW-8-397-10

DUP ID: NA

40358-016.004

WIND FROM:	N	NE	E	SE	S	SW	W	NW	LIGHT	MEDIUM	HEAVY
WEATHER:	SUNNY		(CLOUDY)		RAIN		?		TEMPERATURE:	(°F) 45.	°C

[Circle appropriate units]

HYDROLOGY/LEVEL MEASUREMENTS (Nearest 0.01 ft)

Date	Time	DT-Bottom	DT-Product	DT-Water	[Product Thickness] DTP-DTW	[Water Column] DTB-DTW		[Water Column x Gal/ft] Volume (gal)
3/11/97	10:20	17.00	.	8.00	9.	.	X 1	0.2
/ /	:	.	.	.	.		X 3	0.6

Gal/ft = (dia./2)² x 0.163	1" = 0.041	2" = 0.163	3" = 0.367	4" = 0.653	6" = 1.469	10" = 4.080	12" = 5.875

§ METHODS: (A) Submersible Pump (B) Peristaltic Pump (C) Disposable Bailer (D) PVC/Teflon Bailer (E) Dedicated Bailer (F) Dedicated Pump (G) Other =

GROUNDWATER SAMPLING DATA (if product is detected, do NOT sample) Sample Depth:

Bottle Type	Date	Time	Method §	Amount & Volume mL		Preservative (circle)	Ice	Filter	pH	[√ if used] √
VOA Glass	3/11/97	10:15	B	80	40 ml	HCl	YES	NO		✓
Amber Glass	3/11/97	10:15	P	1	250, (500), 1L	(None) (HCl) (H_2SO_4)	YES	NO		✓
White Poly	3/11/97	10:15	P	1	250, 500, (1L)	None	YES	NO	NA	✓
Yellow Poly	/ /	:			250, 500, 1L	H_2SO_4	YES	NO		
Green Poly	/ /	:			250, 500, 1L	NaOH	YES	NO		
Red Total Poly	/ /	:			250, 500, 1L	HNO_3	YES	NO		
Red Diss. Poly	/ /	:			250, 500, 1L	HNO_3	YES	YES		
	/ /	:			250, 500, 1L		YES			

Total Bottles (include duplicate count): 8

Analysis Allowed per Bottle Type	BOTTLE TYPE	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)
	VOA - Glass	(8010) (8010/8020) (8020) (8240) (8260) (BTEX) (TPH-G) (BTEX/TPH-G) OR [ ] WA [ ]
	AMBER - Glass	(PAH) (TPH-HCID) (TPH-D) (TPH-418.1) (Oil & Grease) WTPH-D ext OR [ ] WA [ ]
	WHITE - Poly	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO_3/CO_3) (Cl) (SO_4) (NO_3) (NO_2) (F)
	YELLOW - Poly	(COD) (TOC) (Total PO_4) (Total Keldahl Nitrogen) (NH_3) (NO_3/NO_2)
	GREEN - Poly	(Cyanide)
	RED TOTAL - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)
	RED DISSOLVED - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silica)

WATER QUALITY DATA Purge Start Time: : Turbid NTU Pump/Bailer Inlet Depth:

Meas.	Method §	Purged (gal)	pH	E Cond (µS)	°F Temp (°C)	Other	Diss O_2 (mg/l)	Water Quality
1	B	0.4	5.93	581	14.0	354	1.53	Slddy brown
2	B	0.7	7.14	1241	14.0	~~35~~ 281	2.58	" " "
3		.	.		.		.	
4		.	.		.		.	
		.	.		.		.	

[Casing] [Select A-G] [Cumulative Totals] [Circle units] [Clarity, Color]

Water table elev. 8' bgs. Confining conditions, free water not encountered till screen at 13-17'. Tried to sample w/ screen at 7-11' but no free water.

SAMPLER: John Latta (PRINTED NAME) (SIGNATURE) John Latta

FIELD SAMPLING DATA SHEET

EMCON
W 7106 Will D. Alton Lane, Suite 101
Spokane, Washington 99224
Office: (509) 838-1144 Fax: (509) 838-1382

PROJECT NAME: 40358-016.004 **WELL ID:** GP-9

SITE ADDRESS: **BLIND ID:** GPW-9-397-15

DUP ID: GPW-9-397-25 ~~NA~~ @ 0800

WIND FROM:	N	NE	E	SE	S	SW	W	NW	LIGHT	MEDIUM	HEAVY
WEATHER:	(SUNNY)		CLOUDY		RAIN		?		TEMPERATURE:	(°F) 55	°C

[Circle appropriate units]

HYDROLOGY/LEVEL MEASUREMENTS (Nearest 0.01 ft) [Product Thickness] [Water Column] [Water Column x Gal/ft]

Date	Time	DT-Bottom	DT-Product	DT-Water	DTP-DTW	DTB-DTW		Volume (gal)
/ /	:	.	.	.	.	.	X 1	.
/ /	:	.	.	.	.		X 3	.

Gal/ft = (dia./2)² x 0.163	1" = 0.041	2" = 0.163	3" = 0.367	4" = 0.653	6" = 1.469	10" = 4.080	12" = 5.875

§ METHODS: (A) Submersible Pump (B) Peristaltic Pump (C) Disposable Bailer (D) PVC/Teflon Bailer (E) Dedicated Bailer (F) Dedicated Pump (G) Other =

GROUNDWATER SAMPLING DATA (if product is detected, do NOT sample) Sample Depth: [√ if used]

Bottle Type	Date	Time	Method §	Amount & Volume mL		Preservative (circle)	Ice	Filter	pH	√
VOA Glass	3/11/97	14:15	B	80	40 ml	HCl	YES	NO		
Amber Glass	3/11/97	14:15	B	2	250, 500, 1L	(None) (HCl) (H_2SO_4)	YES	NO		
White Poly	3/11/97	14:15	B	2	250, 500, 1L	None	YES	NO	NA	
Yellow Poly	/ /	:			250, 500, 1L	H_2SO_4	YES	NO		
Green Poly	/ /	:			250, 500, 1L	NaOH	YES	NO		
Red Total Poly	/ /	:			250, 500, 1L	HNO_3	YES	NO		
Red Diss. Poly	/ /	:			250, 500, 1L	HNO_3	YES	YES		
	/ /	:			250, 500, 1L		YES			

Total Bottles (include duplicate count): 10 incl

Analysis Allowed per Bottle Type	BOTTLE TYPE	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)
	VOA - Glass	(8010) (8010/8020) (8020) (8240) (8260) (BTEX) (TPH-G) (BTEX/TPH-G) OR [ ] WA [ ]
	AMBER - Glass	(PAH) (TPH-HCID) (TPH-D) (TPH-418.1) (Oil &Grease) OR [ ] WA [ ]
	WHITE - Poly	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO_3/CO_3) (Cl) (SO_4) (NO_3) (NO_2) (F)
	YELLOW - Poly	(COD) (TOC) (Total PO_4) (Total Keldahl Nitrogen) (NH_3) (NO_3/NO_2)
	GREEN - Poly	(Cyanide)
	RED TOTAL - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)
	RED DISSOLVED - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silica)

WATER QUALITY DATA Purge Start Time: 14:15 Turb. (Pump)/Bailer Inlet Depth: 15'

Meas.	Method §	Purged (gal)	pH	E Cond (µS)	°F Temp (°C)	Other	Diss O_2 (mg/l)	Water Quality
1	B	0.5	7.19	1244.0	17.0	>1000 NTU	1.51	Sl Cldy brown
2		.	.		.		.	
3		.	.		.		.	
4		.	.		.		.	
		.	.		.		.	

[Casing] [Select A-G] [Cumulative Totals] [Circle units] [Clarity, Color]

Collected a field duplicate labeled GPW-9-397-25' and gave it a dummy time of 0800.

SAMPLER: John Latta (PRINTED NAME) (SIGNATURE) John Latta

FIELD SAMPLING DATA SHEET

EMCON
W 7106 Will D. Alton Lane, Suite 101
Spokane, Washington 99224
Office: (509) 838-1144 Fax: (509) 838-1382

PROJECT NAME: 40358-016 001 **WELL ID:** GP-10

SITE ADDRESS: **BLIND ID:** GPW-10-397-H17 JSL

DUP ID: NA

WIND FROM:	N	NE	E	SE	(S)	SW	W	NW	LIGHT	(MEDIUM)	HEAVY
WEATHER:	(SUNNY)		CLOUDY		RAIN		(Windy)		**TEMPERATURE:**	(°F) 40.	°C

[Circle appropriate units]

HYDROLOGY/LEVEL MEASUREMENTS (Nearest 0.01 ft)

Date	Time	DT-Bottom	DT-Product	DT-Water	[Product Thickness] DTP-DTW	[Water Column] DTB-DTW		[Water Column x Gal/ft] Volume (gal)
/ /	:	.	.	.	.	.	X 1	.
/ /	:	.	.	.	.		X 3	.

Gal/ft = (dia./2)² x 0.163	1" = 0.041	2" = 0.163	3" = 0.367	4" = 0.653	6" = 1.469	10" = 4.080	12" = 5.875

§ METHODS: (A) Submersible Pump (B) Peristaltic Pump (C) Disposable Bailer (D) PVC/Teflon Bailer (E) Dedicated Bailer (F) Dedicated Pump (G) Other =

GROUNDWATER SAMPLING DATA (if product is detected, do NOT sample) Sample Depth: [√ if used]

Bottle Type	Date	Time	Method §	Amount & Volume mL		Preservative [circle]	Ice	Filter	pH	√
VOA Glass	3/12/97	12:00	B	3@	JSV 40 ml	HCl	YES	NO		✓
Amber Glass	3/12/97	12:00	B	1	250, 500, (1L)	(None) (HCl) (H_2SO_4)	YES	NO		✓
White Poly	3/12/97	12:00	B	1	250, (500), 1L	None	YES	NO	NA	✓
Yellow Poly	/ /	:			250, 500, 1L	H_2SO_4	YES	NO		
Green Poly	/ /	:			250, 500, 1L	NaOH	YES	NO		
Red Total Poly	/ /	:			250, 500, 1L	HNO_3	YES	NO		
Red Diss. Poly	/ /	:			250, 500, 1L	HNO_3	YES	YES		
	/ /	:			250, 500, 1L		YES			

Total Bottles (include duplicate count):

Analysis Allowed per Bottle Type	BOTTLE TYPE	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)
	VOA - Glass	(8010) (8010/8020) (8020) (8240) (8260) (BTEX) (TPH-G) (BTEX/TPH-G) OR [ ] WA [X]
	AMBER - Glass	(PAH) (TPH-HCID) (TPH-D) (TPH-418.1) (Oil &Grease) OR [ ] WA [X]
	WHITE - Poly	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO_3/CO_3) (Cl) (SO_4) (NO_3) (NO_2) (F)
	YELLOW - Poly	(COD) (TOC) (Total PO_4) (Total Keldahl Nitrogen) (NH_3) (NO_3/NO_2)
	GREEN - Poly	(Cyanide)
	RED TOTAL - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)
	RED DISSOLVED - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silica)

WATER QUALITY DATA Purge Start Time: : Turb.d (Pump/Bailer Inlet Depth: ~~15~~ JSL 17'

Meas.	Method §	Purged (gal)	pH	E Cond (µS)	°F Temp (°C)	Other	Diss O_2 (mg/l)	Water Quality
1	B	0.1	7.38	1,260	13.7	437	7.4	Sl cldy brown
2		.	.		.		.	
3		.	.		.		.	
4		.	.		.		.	
		.	.		.		.	

[Casing] [Select A-G] [Cumulative Totals] [Circle units] [Clarity, Color]

SAMPLER: John Latta (PRINTED NAME) John Latta (SIGNATURE)

FIELD SAMPLING DATA SHEET

EMCON
W 7106 Will D. Alton Lane, Suite 101
Spokane, Washington 99224
Office: (509) 838-1144 Fax: (509) 838-1382

PROJECT NAME: NEW CITY CLEANERS — WELL ID: MW-1

SITE ADDRESS: 747 STEVENS DR., RICHLAND, WA — BLIND ID: MW-1-0597

PROJECT NUMBER: 40358-016.001 TASK 3 — DUP ID: ~~MS/MSD~~ MW-2D-0597 ~~NA~~

WIND FROM:	N	NE	E	SE	S	SW	W	NW	LIGHT	MEDIUM	HEAVY
WEATHER:	(SUNNY)		CLOUDY		RAIN		?		TEMPERATURE:	(°F) ~~75~~ .	°C

(Circle appropriate units)

HYDROLOGY/LEVEL MEASUREMENTS (Nearest 0.01 ft)

Date	Time	DT-Bottom	DT-Product	DT-Water	[Product Thickness] DTP-DTW	[Water Column] DTB-DTW		[Water Column x Gal/ft] Volume (gal)
5/8/97	12:40	30.80	.	7.99	.	22.81	X 1	3.72
5/8/97	17:59	.	.	8.00	.		X 3	11.15

Gal/ft = (dia./2)² x 0.163 — 1" = 0.041 | (2") = 0.163 | 3" = 0.367 | 4" = 0.653 | 6" = 1.469 | 10" = 4.080 | 12" = 5.875

§ METHODS: (P) Peristaltic Pump (D) Disposable Bailer (T) Teflon Bailer (O) Other =

GROUNDWATER SAMPLING DATA (if product is detected, do NOT sample)

Sample Depth:

Bottle Type	Date	Time	Method §	Amount & Volume mL	Preservative (circle)	Ice	Filter	pH	[√ if used] √
VOA Glass	5/8/97	18:10	P	~~3~~ 5 40 ml	HCl	YES	NO		√
Amber Glass	5/8/97	18:10	P	~~2~~ 1 1L	HCl	YES	NO		√
White Poly	/ /	:		JSL 250, 500, 1L	None	YES	NO	NA	
Yellow Poly	/ /	:		250, 500, 1L	H_2SO_4	YES	NO		
Green Poly	/ /	:		250, 500, 1L	NaOH	YES	NO		
Red Total Poly	/ /	:		250, 500, 1L	HNO_3	YES	NO		
Red Diss. Poly	/ /	:		250, 500, 1L	HNO_3	YES	YES		
	/ /	:		JSL 250, 500, 1L		YES			

Total Bottles (include duplicate count): ~~6~~ 12 Including field duplicate

Analysis Allowed per Bottle Type	BOTTLE TYPE	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)
	VOA - Glass	(8260) (PH-G) OR [ ] WA [X]
	AMBER - Glass	(PH-D (Extended)) OR [ ] WA [X]
	WHITE - Poly	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO_3/CO_3) (Cl) (SO_4) (NO_3) (NO_2) (F)
	YELLOW - Poly	(COD) (TOC) (Total PO_4) (Total Keldahl Nitrogen) (NH_3) (NO_3/NO_2)
	GREEN - Poly	(Cyanide)
	RED TOTAL - Poly	(As) (Sb) (Be) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)
	RED DISSOLVED - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silica)

WATER QUALITY DATA

Purge Start Time: 17:43 — Time (Pump)/Bailer Inlet Depth: 26'

Meas.	Method §	Purged (gal)	pH	E Cond (µS)	°F Temp (°C)	Other	Turbid. (NTU)	Water Quality
1	P	3.72	7.01	1063	17.0	17:47	277	Cldy brn
2	P	7.44	7.25	1055	16.6	17:53	24.1	Sl cldy brn
3	P	11.15	7.31	947	16.6	17:58	10.8	V. Sl cldy brn.
4		.	.		.		.	
		.	.		.		.	

[Casing] [Select P-O-T-O] [Cumulative Totals] [Circle units] [Clarity, Color]

Gave field duplicate a dummy time of 12:10.

SAMPLER: John Latta (PRINTED NAME) — John Latta (SIGNATURE)

FIELD SAMPLING DATA SHEET

EMCON
W 7106 Will D. Alton Lane, Suite 101
Spokane, Washington 99224
Office: (509) 838-1144 Fax: (509) 838-1382

PROJECT NAME: NEW CITY CLEANERS WELL ID: MW-2 3 JSL 7/14/97

SITE ADDRESS: 747 STEVENS DR., RICHLAND, WA BLIND ID: MW-2 0597

PROJECT NUMBER: 40358-016.001 TASK 3 DUP ID: ~~MW-20-0597~~ MW-10-0597 JSL ~~NA~~

WIND FROM:	N	NE	E	SE	S	SW	W	NW	LIGHT	MEDIUM	HEAVY
WEATHER:	(SUNNY)		CLOUDY		RAIN		?		TEMPERATURE:	(F) . °C	

(Circle appropriate units)

HYDROLOGY/LEVEL MEASUREMENTS (Nearest 0.01 ft)

Date	Time	DT-Bottom	DT-Product	DT-Water	[Product Thickness] DTP-DTW	[Water Column] DTB-DTW		[Water Column x Gal/ft] Volume (gal)
5/8/97	12:34	31.05	.	8.79	.	22.26	X 1	3.63
5/8/97	6:58	.	.	8.79	.		X 3	10.86

Gal/ft = (dia./2)² x 0.163	1" = 0.041	(2") 0.163	3" = 0.367	4" = 0.653	6" = 1.469	10" = 4.080	12" = 5.875

§ METHODS: (P) Peristaltic Pump (D) Disposable Bailer (T) Teflon Bailer (O) Other =

GROUNDWATER SAMPLING DATA (if product is detected, do NOT sample)

Sample Depth:

Bottle Type	Date	Time	Method §	Amount & Volume mL		Preservative (circle)	Ice	Filter	pH	√ if used
VOA Glass	5/8/97	17:00	P	5	40 ml	HCl	YES	NO		√
Amber Glass	5/8/97	17:00	P	1	1L	HCl	YES	NO		√
White Poly	/ /	:			250, 500, 1L	None	YES	NO	NA	
Yellow Poly	/ /	:			250, 500, 1L	H_2SO_4	YES	NO		
Green Poly	/ /	:			250, 500, 1L	NaOH	YES	NO		
Red Total Poly	/ /	:			250, 500, 1L	HNO_3	YES	NO		
Red Diss. Poly	/ /	:			250, 500, 1L	HNO_3	YES	YES		
	/ /	:		JSL	250, 500, 1L		YES			

Total Bottles (include duplicate count): ~~16~~ 12 including JSL 12 incl. MW-10-0597 rinse sample

Analysis Allowed per Bottle Type	BOTTLE TYPE	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)
	VOA - Glass	8260 TPH-G OR [ ] WA [X]
	AMBER - Glass	TPH-D (Extended) OR [ ] WA [X]
	WHITE - Poly	~~(pH)~~ (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO_3/CO_3) (Cl) (SO_4) (NO_3) (NO_2) (F)
	YELLOW - Poly	(COD) (TOC) (Total PO_4) (Total Keldahl Nitrogen) (NH_3) (NO_3/NO_2)
	GREEN - Poly	(Cyanide)
	RED TOTAL - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)
	RED DISSOLVED - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silica)

WATER QUALITY DATA

Purge Start Time: 16:25 (Pump/Bailer) Inlet Depth: 26'

Meas.	Method §	Purged (gal)	pH	E Cond (µS)	°F Temp (°C)	Other	Turbid. (NTU)	Water Quality
1	P	3.63	7.28	1177	16.9	16:28	~~16.25~~ 11.9 JSL	Cldy dk brn.
2	P	7.26	7.39	1175	16.7	16:35	25.8	Sl cldy brn.
3	P	10.86	7.39	1177	16.9	16:45	~~25.2~~ JSL	" " "
4		.	.		.		17.9	
		.	.		.		.	

(Casing) (Select P-O-T-O) (Cumulative Totals) (Circle units) (Clarity, Color)

~~Rinse~~ Equipment rinse sample MW-~~20~~10-0597. Pumped ~~spoon~~ DI H_2O through silicone tubing from bottle into sample containers. Gave a dummy time of 12:10. Cascade Clear premium drinking water.

SAMPLER: John Latta (PRINTED NAME) John Latta (SIGNATURE)

FIELD SAMPLING DATA SHEET

EMCON
W 7106 Will D. Alton Lane, Suite 101
Spokane, Washington 99224
Office: (509) 838-1144 Fax: (509) 838-1382

PROJECT NAME: NEW CITY CLEANERS WELL ID: MW-3 JSV 7/14/97

SITE ADDRESS: 747 STEVENS DR., RICHLAND, WA BLIND ID: MW-3-0597

PROJECT NUMBER: 40358-016.001 TASK 3 DUP ID: MS/MSD NA

WIND FROM:	N	(NE)	E	SE	S	SW	W	NW	LIGHT	MEDIUM	HEAVY
WEATHER:	(SUNNY)		CLOUDY		RAIN		?		TEMPERATURE:	(°F) 75.	°C

[Circle appropriate units]

HYDROLOGY/LEVEL MEASUREMENTS (Nearest 0.01 ft) [Product Thickness] [Water Column] [Water Column x Gal/ft]

Date	Time	DT-Bottom	DT-Product	DT-Water	DTP-DTW	DTB-DTW		Volume (gal)
5/8/97	12:21	28.98	.	8.13	.	20.85	X 1	3.40
5/8/97	14:37	.	.	8.14	.		X 3	10.20

Gal/ft = (dia./2)² x 0.163	1" = 0.041	(2") = 0.163	3" = 0.367	4" = 0.653	6" = 1.469	10" = 4.080	12" = 5.875

§ METHODS: (P) Peristaltic Pump (D) Disposable Bailer (T) Teflon Bailer (O) Other =

GROUNDWATER SAMPLING DATA (if product is detected, do NOT sample) Sample Depth: [√ if used]

Bottle Type	Date	Time	Method §	Amount & Volume mL	Preservative (circle)	Ice	Filter	pH	√
VOA Glass	5/8/97	14:50	P	3 ~~5~~ 10	40 ml HCl	YES	NO		√
Amber Glass	5/8/97	14:50	P	2	1L HCl	YES	NO		√
White Poly	/ /	:			250, 500, 1L None	YES	NO	NA	
Yellow Poly	/ /	:			250, 500, 1L H_2SO_4	YES	NO		
Green Poly	/ /	:			250, 500, 1L NaOH	YES	NO		
Red Total Poly	/ /	:			250, 500, 1L HNO_3	YES	NO		
Red Diss. Poly	/ /	:			250, 500, 1L HNO_3	YES	YES		
	/ /	:			250, 500, 1L	YES			

Total Bottles (Include duplicate count): 12 incl MS/MSDs

Analysis Allowed per Bottle Type	BOTTLE TYPE	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)
	VOA - Glass	(8260) (TPH-G) OR [ ] WA [X]
	AMBER - Glass	(TPH-D (Extended)) OR [ ] WA [X]
	WHITE - Poly	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO_3/CO_3) (Cl) (SO_4) (NO_3) (NO_2) (F)
	YELLOW - Poly	(COD) (TOC) (Total PO_4) (Total Keldahl Nitrogen) (NH_3) (NO_3/NO_2)
	GREEN - Poly	(Cyanide)
	RED TOTAL - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)
	RED DISSOLVED - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silica)

WATER QUALITY DATA Purge Start Time: 14:19 Time (Pump)/Bailer Inlet Depth: 24

Meas.	Method §	Purged (gal)	pH	E Cond (µS)	°F Temp (°C)	Other	Turbid. (NTU)	Water Quality
1	P	3.40	7.14	1287	17.8	14:23	~~53~~ 91.5	Cldy gray
2	P	6.80	7.36	1280	17.1	14:29	14.6	Sl cldy gray
3	P	10.20	7.48	1235	17.0	14:36	4.40	V.Sl. cldy gray
4		.	.		.		.	
		.	.		.		.	

[Casing] [Select P-O-T-O] [Cumulative Totals] [Circle units] [Clarity, Color]

SAMPLER: John Latta (PRINTED NAME) (SIGNATURE) John Latta

FIELD SAMPLING DATA SHEET

EMCON
W 7106 Will D. Alton Lane, Suite 101
Spokane, Washington 99224
Office: (509) 838-1144 Fax: (509) 838-1382

PROJECT NAME: NEW CITY CLEANERS — WELL ID: MW-4

SITE ADDRESS: 747 STEVENS DR., RICHLAND, WA — BLIND ID: MW-4-0597

PROJECT NUMBER: 40358-016.001 TASK 3 — DUP ID: NA

WIND FROM:	N	NE	E	SE	S	SW	W	NW	LIGHT	MEDIUM	HEAVY
WEATHER:	(SUNNY)		CLOUDY		RAIN		?		TEMPERATURE:	(°F) 75.	°C

[Circle appropriate units]

HYDROLOGY/LEVEL MEASUREMENTS (Nearest 0.01 ft)

[Product Thickness] [Water Column] [Water Column x Gal/ft]

Date	Time	DT-Bottom	DT-Product	DT-Water	DTP-DTW	DTB-DTW		Volume (gal)
5/8/97	12:28	29.35	.	9.25	.	20.10	X 1	3.28
5/8/97	15:52	.	.	9.26	.		X 3	9.83

Gal/ft = (dia./2)² x 0.163 — 1" = 0.041 | (2)" = 0.163 | 3" = 0.367 | 4" = 0.653 | 6" = 1.469 | 10" = 4.080 | 12" = 5.875

§ METHODS: (P) Peristaltic Pump (D) Disposable Bailer (T) Teflon Bailer (O) Other =

GROUNDWATER SAMPLING DATA (if product is detected, do NOT sample)

Sample Depth: [√ if used]

Bottle Type	Date	Time	Method §	Amount & Volume mL		Preservative (circle)	Ice	Filter	pH	√
VOA Glass	5/8/97	16:00	P	5	40 ml	HCl	YES	NO		√
Amber Glass	5/8/97	16:00	P	1	1L	HCl	YES	NO		√
White Poly	/ /	:			250, 500, 1L	None	YES	NO	NA	
Yellow Poly	/ /	:			250, 500, 1L	H_2SO_4	YES	NO		
Green Poly	/ /	:			250, 500, 1L	NaOH	YES	NO		
Red Total Poly	/ /	:			250, 500, 1L	HNO_3	YES	NO		
Red Diss. Poly	/ /	:			250, 500, 1L	HNO_3	YES	YES		
	/ /	:			250, 500, 1L		YES			

Total Bottles (include duplicate count): 6

Analysis Allowed per Bottle Type

BOTTLE TYPE	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)
VOA - Glass	8260 TPH-G — OR [ ] WA [X]
AMBER - Glass	TPH-D (Extended) — OR [ ] WA [X]
WHITE - Poly	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO_3/CO_3) (Cl) (SO_4) (NO_3) (NO_2) (F)
YELLOW - Poly	(COD) (TOC) (Total PO_4) (Total Keldahl Nitrogen) (NH_3) (NO_3/NO_2)
GREEN - Poly	(Cyanide)
RED TOTAL - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)
RED DISSOLVED - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silica)

WATER QUALITY DATA

Purge Start Time: 15 : 35 — Time (Pump)/Bailer Inlet Depth: 24'

Meas.	Method §	Purged (gal)	pH	E Cond (µS)	°F Temp (°C)	Other	Turbid. (NTU)	Water Quality
1	P	3.28	7.24	1040	16.8	13:38	126.	Cldy brn
2	P	6.55	7.44	1050	16.7	13:45	1.99	V.SI Cldy brn
3	P	9.83	7.46	1053	16.8	13:52	1.47	Clear colorless
4		.	.		.		.	
		.	.		.		.	

[Casing] [Select P-D-T-O] [Cumulative Totals] [Circle units] [Clarity, Color]

SAMPLER: John Latta (PRINTED NAME) — John Latta (SIGNATURE)

FIELD SAMPLING DATA SHEET

EMCON
W 7106 Will D. Alton Lane, Suite 101
Spokane, Washington 99224
Office: (509) 838-1144 Fax: (509) 838-1382

PROJECT NAME: NEW CITY CLEANERS — WELL ID: MW-D

SITE ADDRESS: 747 STEVENS DR., RICHLAND, WA — BLIND ID: MW-D-0597

PROJECT NUMBER: 40358-016.001 TASK 3 — DUP ID: NA

WIND FROM:	N	NE	E	SE	S	SW	W	(NW)	(LIGHT)	MEDIUM	HEAVY
WEATHER:	(SUNNY)	CLOUDY	RAIN	?	TEMPERATURE:	(°F) 90.	°C				

(Circle appropriate units)

HYDROLOGY/LEVEL MEASUREMENTS (Nearest 0.01 ft)

Date	Time	DT-Bottom	DT-Product	DT-Water	[Product Thickness] DTP-DTW	[Water Column] DTB-DTW		[Water Column x Gal/ft] Volume (gal)
5/12/97	13:49	15.08	.	7.05	.	8.03	X 1	5.24
5/12/97	15:45	.	.	15.00	.		X 3	15.73

Gal/ft = (dia./2)² x 0.163	1" =	0.041	2" =	0.163	3" =	0.367	(4") =	0.653	6" =	1.469	10" =	4.080	12" =	5.875

§ METHODS: (P) Peristaltic Pump (D) Disposable Bailer (T) Teflon Bailer (O) Other =

GROUNDWATER SAMPLING DATA (If product is detected, do NOT sample) — Sample Depth: — [√ if used]

Bottle Type	Date	Time	Method §	Amount & Volume mL	Preservative (circle)	Ice	Filter	pH	√
VOA Glass	5/12/97	16:00	P	5	40 ml HCl	YES	NO		√
Amber Glass	5/12/97	16:00	P	1	1L HCl	YES	NO		√
White Poly	/ /	:			250, 500, 1L None	YES	NO	NA	
Yellow Poly	/ /	:			250, 500, 1L H_2SO_4	YES	NO		
Green Poly	/ /	:			250, 500, 1L NaOH	YES	NO		
Red Total Poly	/ /	:			250, 500, 1L HNO_3	YES	NO		
Red Diss. Poly	/ /	:			250, 500, 1L HNO_3	YES	YES		
	/ /	:			250, 500, 1L	YES			

Total Bottles (Include duplicate count): 6

Analysis Allowed per Bottle Type

BOTTLE TYPE	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)
VOA - Glass	(8260 TPH-G) OR [ ] WA [X]
AMBER - Glass	(TPH-D (Extended)) OR [ ] WA [X]
WHITE - Poly	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO_3/CO_3) (Cl) (SO_4) (NO_3) (NO_2) (F)
YELLOW - Poly	(COD) (TOC) (Total PO_4) (Total Keldahl Nitrogen) (NH_3) (NO_3/NO_2)
GREEN - Poly	(Cyanide)
RED TOTAL - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)
RED DISSOLVED - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silica)
	JSL

WATER QUALITY DATA — Purge Start Time: 15:08 — Time — (Pump)/Bailer Inlet Depth: 14'

Meas.	Method §	Purged (gal)	pH	E Cond (µS)	°F Temp (°C)	Other	Turbid. (NTU)	Water Quality
1	P	5.24	6.94	1692	16.1	15:16	42.3	V.SI cldy green
2	P	10.48	7.03	1725	15.5	15:34	20.9	" " " "
3	P	~~15.73~~	—	—	—	15:43	—	" " " "
4		11.00	.		.		.	
		.	.		.		.	

[Casing] [Select P-D-T-O] [Cumulative Totals] [Circle units] [Clarity, Color]

Started pumping from 11.5' BTOC, after 2 pore volumes purged intake had been placed at 15' BTOC to keep up w/ drawdown. Well pumped dry after purging 11 gallons allowed to recharge to 14.80 @ 15:55

SAMPLER: John Latta (PRINTED NAME) — John Latta (SIGNATURE)

FIELD SAMPLING DATA SHEET

EMCON
W 7106 Will D. Alton Lane, Suite 101
Spokane, Washington 99224
Office: (509) 838-1144 Fax: (509) 838-1382

PROJECT NAME: NEW CITY CLEANERS — WELL ID: MW-E

SITE ADDRESS: 747 STEVENS DR., RICHLAND, WA — BLIND ID: MW-E-0597

PROJECT NUMBER: 40358-016.001 TASK 3 — DUP ID: NA

WIND FROM:	N	NE	E	SE	S	SW	W	(NW)	(LIGHT)	MEDIUM	HEAVY
WEATHER:	(SUNNY)	CLOUDY	RAIN	?	TEMPERATURE:	(F) 90 .	°C				

[Circle appropriate units]

HYDROLOGY/LEVEL MEASUREMENTS (Nearest 0.01 ft)

Date	Time	DT-Bottom	DT-Product	DT-Water	[Product Thickness] DTP-DTW	[Water Column] DTB-DTW		[Water Column x Gal/ft] Volume (gal)
5/12/97	13:52	15.47	.	6.80	.	8.67	X 1	5.66
/ /	14:53	.	.	11.70	.		X 3	16.98

Gal/ft = (dia./2)² x 0.163	1" = 0.041	2" = 0.163	3" = 0.367	(4") = 0.653	6" = 1.469	10" = 4.080	12" = 5.875

§ METHODS: (P) Peristaltic Pump (D) Disposable Bailer (T) Teflon Bailer (O) Other =

GROUNDWATER SAMPLING DATA (if product is detected, do NOT sample) — Sample Depth: — (√ if used)

Bottle Type	Date	Time	Method §	Amount & Volume mL	Preservative (circle)	Ice	Filter	pH	√
VOA Glass	5/12/97	15:00	P	5	40 ml HCl	YES	NO		√
Amber Glass	5/12/97	15:00	P	1	1L HCl	YES	NO		√
White Poly	/ /	:			250, 500, 1L None	YES	NO	NA	
Yellow Poly	/ /	:			250, 500, 1L H_2SO_4	YES	NO		
Green Poly	/ /	:			250, 500, 1L NaOH	YES	NO		
Red Total Poly	/ /	:			250, 500, 1L HNO_3	YES	NO		
Red Diss. Poly	/ /	:			250, 500, 1L HNO_3	YES	YES		
	/ /	:			250, 500, 1L	YES			

Total Bottles (include duplicate count): 6

Analysis Allowed per Bottle Type

BOTTLE TYPE	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)
VOA - Glass	(8260 TPH-G) OR [ ] WA [X]
AMBER - Glass	(TPH-D (Extended)) OR [ ] WA [X]
WHITE - Poly	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO_3/CO_3) (Cl) (SO_4) (NO_3) (NO_2) (F)
YELLOW - Poly	(COD) (TOC) (Total PO_4) (Total Keldahl Nitrogen) (NH_3) (NO_3/NO_2)
GREEN - Poly	(Cyanide)
RED TOTAL - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)
RED DISSOLVED - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silica)

WATER QUALITY DATA — Purge Start Time: 14:25 — Time — (Pump)/Bailer Inlet Depth: 14'

Meas.	Method §	Purged (gal)	pH	E Cond (µS)	°F Temp (°C)	Other	Turbid. (NTU)	Water Quality
1	P	5.66	6.30	540	17.4	14:31	134.	Dk gray, cloudy
2	P	11.32	7.07	793	16.1	14:40	66.2	" " "
3	P	16.98	7.37	813	15.7	14:53	16.3	Slcldy brn gray
4		.	.		.		.	
		.	.		.		.	

[Casing] [Select P-O-T-O] [Cumulative Totals] [Circle units] [Clarity, Color]

SAMPLER: John Lotta (PRINTED NAME) (SIGNATURE) John Lotta

FIELD SAMPLING DATA SHEET

EMCON
W 7106 Will D. Alton Lane, Suite 101
Spokane, Washington 99224
Office: (509) 838-1144 Fax: (509) 838-1382

PROJECT NAME: NEW CITY CLEANERS — WELL ID: MW-1

SITE ADDRESS: 747 STEVENS DR., RICHLAND, WA — BLIND ID: MW-1-0897

PROJECT NUMBER: 40358-016.004 TASK 3 — DUP ID: MW-B-0897

WIND FROM:	N	NE	E	SE	S	(SW)	W	NW	LIGHT	(MEDIUM)	HEAVY
WEATHER:	SUNNY		(CLOUDY)		(RAIN)	Dusty ?			TEMPERATURE:	(°F) 85.	°C

(Circle appropriate units)

HYDROLOGY/LEVEL MEASUREMENTS (Nearest 0.01 ft) [Product Thickness] [Water Column] [Water Column x Gal/ft]

Date	Time	DT-Bottom	DT-Product	DT-Water	DTP-DTW	DTB-DTW		Volume (gal)
8/20/97	16:38	30.80	.	8.14	.	22.66	X 1	3.7
/ /	17:06	.	.	8.21	.		X 3	11.1

Gal/ft = (dia./2)² x 0.163 | 1" = 0.041 | (2") = 0.163 | 3" = 0.367 | 4" = 0.653 | 6" = 1.469 | 10" = 4.080 | 12" = 5.875

§ METHODS: (A) Submersible Pump (B) Peristaltic Pump (C) Disposable Bailer (D) PVC/Teflon Bailer (E) Dedicated Bailer (F) Dedicated Pump (G) Other =

GROUNDWATER SAMPLING DATA (if product is detected, do NOT sample) — Sample Depth: — (√ if used)

Bottle Type	Date	Time	Method §	Amount & Volume mL		Preservative (circle)	Ice	Filter	pH	√
VOA Glass	8/20/97	17:14	B	5	40 ml	HCl	YES	NO		√
Amber Glass	8/20/97	17:14	B	2	1L	HCl	YES	NO		√
White Poly	/ /	:			250, 500, 1L	None	YES	NO	NA	
Yellow Poly	/ /	:			250, 500, 1L	H_2SO_4	YES	NO		
Green Poly	/ /	:			250, 500, 1L	NaOH	YES	NO		
Red Total Poly	/ /	:			250, 500, 1L	HNO_3	YES	NO		
Red Diss. Poly	/ /	:			250, 500, 1L	HNO_3	YES	YES		
	/ /	:			250, 500, 1L		YES			

Total Bottles (include duplicate count): 14 Including equipment rinse sample

Analysis Allowed per Bottle Type

BOTTLE TYPE	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)
VOA - Glass	(8260) (TPH-G) OR [ ] WA [X]
AMBER - Glass	(TPH-D (Extended)) OR [ ] WA [X]
WHITE - Poly	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO_3/CO_3) (Cl) (SO_4) (NO_3) (NO_2) (F)
YELLOW - Poly	(COD) (TOC) (Total PO_4) (Total Keldahl Nitrogen) (NH_3) (NO_3/NO_2)
GREEN - Poly	(Cyanide)
RED TOTAL - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)
RED DISSOLVED - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silica)

WATER QUALITY DATA — Purge Start Time: 16:54 — Time — (Pump)/Bailer Inlet Depth: 26'

Meas.	Method §	Purged (gal)	pH	E Cond (µS)	°F Temp (°C)	~~Other~~	Diss O_2 (mg/l)	Water Quality
4	B	3.7	7.26	1153	17.0	1659	.	Sl cldy gray
3	B	7.4	7.40	1164	16.8	1703	.	Vsl cldy gray
2	B	11.1	7.43	1164	16.7	1706	.	Clear colorless
1		.	.		.		.	
0		0.00	.		.		.	

[Casing] [Select A-G] [Cumulative Totals] [Circle units] [Clarity, Color]

Gave equipment rinse sample the name MW-B-0897; collected at 1655.

SAMPLER: John Latta (PRINTED NAME) (SIGNATURE) John Latta

FIELD SAMPLING DATA SHEET

EMCON
W 7106 Will D. Alton Lane, Suite 101
Spokane, Washington 99224
Office: (509) 838-1144 Fax: (509) 838-1382

PROJECT NAME: NEW CITY CLEANERS — WELL ID: MW-2

SITE ADDRESS: 747 STEVENS DR., RICHLAND, WA — BLIND ID: MW-2-0897

PROJECT NUMBER: 40358-016.004 TASK 3 — DUP ID: MW-5-0897

WIND FROM:	N	NE	E	SE	S	(SW)	W	NW	(LIGHT)	MEDIUM	HEAVY
WEATHER:	SUNNY		(CLOUDY)		RAIN		?		TEMPERATURE:	(°F) 85.	°C

[Circle appropriate units]

HYDROLOGY/LEVEL MEASUREMENTS (Nearest 0.01 ft) — [Product Thickness] — [Water Column] — [Water Column x Gal/ft]

Date	Time	DT-Bottom	DT-Product	DT-Water	DTP-DTW	DTB-DTW		Volume (gal)
8/20/97	14:20	~~31.05~~	.	8.32	.	20.66	X 1	3.4
/ /	14:41	28.98 (JSL)	.	8.36	.		X 3	~~13.2~~ 10.2

Gal/ft = (dia./2)² x 0.163	1" =	0.041	(2") =	0.163	3" =	0.367	4" =	0.653	6" =	1.469	10" =	4.080	12" =	5.875

§ METHODS: (A) Submersible Pump (B) Peristaltic Pump (C) Disposable Bailer (D) PVC/Teflon Bailer (E) Dedicated Bailer (F) Dedicated Pump (G) Other =

GROUNDWATER SAMPLING DATA (if product is detected, do NOT sample) — Sample Depth: — [√ if used]

Bottle Type	Date	Time	Method §	Amount & Volume mL		Preservative (circle)	Ice	Filter	pH	√
VOA Glass	8/20/97	14:54	B	5	40 ml	HCl	YES	NO		√
Amber Glass	8/20/97	14:54	B	2	1L	HCl	YES	NO		√
White Poly	/ /	:			250, 500, 1L	None	YES	NO	NA	
Yellow Poly	/ /	:			250, 500, 1L	H_2SO_4	YES	NO		
Green Poly	/ /	:			250, 500, 1L	NaOH	YES	NO		
Red Total Poly	/ /	:			250, 500, 1L	HNO_3	YES	NO		
Red Diss. Poly	/ /	:			250, 500, 1L	HNO_3	YES	YES		
	/ /	:			250, 500, 1L		YES			

Total Bottles (include duplicate count): 14 including field duplicate

Analysis Allowed per Bottle Type	BOTTLE TYPE	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)
	VOA - Glass	(8260) (TPH-G) OR [ ] WA [X]
	AMBER - Glass	(TPH-D (Extended)) OR [ ] WA [X]
	WHITE - Poly	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO_3/CO_3) (Cl) (SO_4) (NO_3) (NO_2) (F)
	YELLOW - Poly	(COD) (TOC) (Total PO_4) (Total Keldahl Nitrogen) (NH_3) (NO_3/NO_2)
	GREEN - Poly	(Cyanide)
	RED TOTAL - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)
	RED DISSOLVED - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silica)

WATER QUALITY DATA — Purge Start Time: 14:27 — Time — (Pump)/Bailer Inlet Depth: ~~20'~~ 24' (JSL)

Meas.	Method §	Purged (gal)	pH	E Cond (µS)	°F Temp (°C)	Other	Diss O_2 (mg/l)	Water Quality
1	B	3.4	7.51	1142	18.6	14:33	.	Clear colorless
2	B	6.8	7.58	1139	18.0	14:37	.	" "
3	B	10.2	7.60	1158	17.9	14:41	.	" "
4		.	.		.		.	
~~0~~		~~0.00~~	.		.		.	

[Casing] [Select A-G] [Cumulative Totals] [Circle units] [Clarity, Color]

Field duplicate MW-5-0897, gave a dummy time of 11:37.

SAMPLER: John Latta (PRINTED NAME) — John Latta (SIGNATURE)

FIELD SAMPLING DATA SHEET

EMCON
W 7106 Will D. Alton Lane, Suite 101
Spokane, Washington 99224
Office: (509) 838-1144 Fax: (509) 838-1382

PROJECT NAME: NEW CITY CLEANERS — WELL ID: MW-3

SITE ADDRESS: 747 STEVENS DR., RICHLAND, WA — BLIND ID: MW-3-0897

PROJECT NUMBER: 40358-016.004 TASK 3 — DUP ID:

WIND FROM:	N	NE	E	SE	S	(SW)	W	NW	LIGHT	(MEDIUM)	HEAVY
WEATHER:	SUNNY	(CLOUDY)		RAIN	Dusty				TEMPERATURE:	(°F) 85.	°C

[Circle appropriate units]

HYDROLOGY/LEVEL MEASUREMENTS (Nearest 0.01 ft) — [Product Thickness] — [Water Column] — [Water Column x Gal/ft]

Date	Time	DT-Bottom	DT-Product	DT-Water	DTP-DTW	DTB-DTW		Volume (gal)
8/20/97	16:02	31.05	.	8.95	.	22.10	X 1	3.6
/ /	16:16	.	.	8.96	.		X 3	10.8

Gal/ft = (dia./2)² x 0.163	1" = 0.041	(2") = 0.163	3" = 0.367	4" = 0.653	6" = 1.469	10" = 4.080	12" = 5.875

§ METHODS: (A) Submersible Pump (B) Peristaltic Pump (C) Disposable Bailer (D) PVC/Teflon Bailer (E) Dedicated Bailer (F) Dedicated Pump (G) Other =

GROUNDWATER SAMPLING DATA (if product is detected, do NOT sample) — Sample Depth: — [√ if used]

Bottle Type	Date	Time	Method §	Amount & Volume mL		Preservative (circle)	Ice	Filter	pH	√
VOA Glass	8/20/97	16:23	B	5	40 ml	HCl	YES	NO		√
Amber Glass	8/20/97	16:23	B	2	1L	HCl	YES	NO		√
White Poly	/ /	:			250, 500, 1L	None	YES	NO	NA	
Yellow Poly	/ /	:			250, 500, 1L	H_2SO_4	YES	NO		
Green Poly	/ /	:			250, 500, 1L	NaOH	YES	NO		
Red Total Poly	/ /	:			250, 500, 1L	HNO_3	YES	NO		
Red Diss. Poly	/ /	:			250, 500, 1L	HNO_3	YES	YES		
	/ /	:			250, 500, 1L		YES			

Total Bottles (include duplicate count): 7

Analysis Allowed per Bottle Type

BOTTLE TYPE	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)
VOA - Glass	(8260) (TPH-G) OR [ ] WA [X]
AMBER - Glass	(TPH-D (Extended)) OR [ ] WA [X]
WHITE - Poly	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO_3/CO_3) (Cl) (SO_4) (NO_3) (NO_2) (F)
YELLOW - Poly	(COD) (TOC) (Total PO_4) (Total Keldahl Nitrogen) (NH_3) (NO_2/NO_3)
GREEN - Poly	(Cyanide)
RED TOTAL - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)
RED DISSOLVED - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silica)

WATER QUALITY DATA — Purge Start Time: 16:04 — Time — (Pump)/Bailer Inlet Depth: 210'

Meas.	Method §	Purged (gal)	pH	E Cond (µS)	°F Temp (°C)	~~Other~~	Diss O_2 (mg/l)	Water Quality
1	B	3.6	7.51	994	17.6	1608	.	Sl cldy gray
2	B	7.2	7.53	986	17.1	1611	.	Clear colorless
3	B	10.8	7.56	987	17.0	1616	.	" "
4		.	.		.		.	
5		~~0.00~~	.		.		.	

[Casing] [Select A-G] [Cumulative Totals] [Circle units] [Clarity, Color]

SAMPLER: John Latta (PRINTED NAME) — John Latta (SIGNATURE)

FIELD SAMPLING DATA SHEET

EMCON
W 7106 Will D. Alton Lane, Suite 101
Spokane, Washington 99224
Office: (509) 838-1144 Fax: (509) 838-1382

PROJECT NAME: NEW CITY CLEANERS — WELL ID: MW-D

SITE ADDRESS: 747 STEVENS DR., RICHLAND, WA — BLIND ID: MW-D-0897

PROJECT NUMBER: 40358-016.004 TASK 3 — DUP ID:

WIND FROM:	N	NE	E	SE	S	(SW)	W	NW	(LIGHT)	MEDIUM	HEAVY
WEATHER:	(SUNNY)	CLOUDY	RAIN	?	TEMPERATURE:	(°F) 85.	°C				

[Circle appropriate units]

HYDROLOGY/LEVEL MEASUREMENTS (Nearest 0.01 ft)

Date	Time	DT-Bottom	DT-Product	DT-Water	[Product Thickness] DTP-DTW	[Water Column] DTB-DTW		[Water Column x Gal/ft] Volume (gal)
8/20/97	12:52	15.08	.	7.31	.	7.77	X 1	5.1
/ /	13:12	.	.	14.89	.		X 3	15.3

Gal/ft = (dia./2)² x 0.163	1" =	2" =	3" =	(4") =	6" =	10" =	12" =
	0.041	0.163	0.367	0.653	1.469	4.080	5.875

§ METHODS: (A) Submersible Pump (B) Peristaltic Pump (C) Disposable Bailer (D) PVC/Teflon Bailer (E) Dedicated Bailer (F) Dedicated Pump (G) Other =

GROUNDWATER SAMPLING DATA (if product is detected, do NOT sample) — Sample Depth: — [√ if used]

Bottle Type	Date	Time	Method §	Amount & Volume mL		Preservative [circle]	Ice	Filter	pH	√
VOA Glass	8/20/97	14:07	B	5	40 ml	HCl	YES	NO		√
Amber Glass	8/20/97	14:07	B	2	1L	HCl	YES	NO		√
White Poly	/ /	:			250, 500, 1L	None	YES	NO	NA	
Yellow Poly	/ /	:			250, 500, 1L	H_2SO_4	YES	NO		
Green Poly	/ /	:			250, 500, 1L	NaOH	YES	NO		
Red Total Poly	/ /	:			250, 500, 1L	HNO_3	YES	NO		
Red Diss. Poly	/ /	:			250, 500, 1L	HNO_3	YES	YES		
	/ /	:			250, 500, 1L		YES			

Total Bottles (include duplicate count): 7

Analysis Allowed per Bottle Type

BOTTLE TYPE	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)
VOA - Glass	(8260) (TPH-G) OR [ ] WA [X]
AMBER - Glass	(TPH-D (Extended)) OR [ ] WA [X]
WHITE - Poly	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO_3/CO_3) (Cl) (SO_4) (NO_3) (NO_2) (F)
YELLOW - Poly	(COD) (TOC) (Total PO_4) (Total Keldahl Nitrogen) (NH_3) (NO_3/NO_2)
GREEN - Poly	(Cyanide)
RED TOTAL - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)
RED DISSOLVED - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silica)
	(JSL)

WATER QUALITY DATA — Purge Start Time: 12:50 — Time (Pump/Bailer) Inlet Depth: 14' 15'

Meas.	Method §	Purged (gal)	pH	E Cond (µS)	°F Temp (°C)	~~Other~~	Diss O_2 (mg/l)	Water Quality
+1	B	5.1	6.86	448	18.5	1301	.	Clear, yell tint
+2	B	10.2	7.27	1384	17.6	1312	.	V. Cloudy yell
+2	~~B~~	~~15.3~~	.		.		.	
+1		.	.		.		.	
0		0.00	.		.		.	

[Casing] [Select A-G] [Cumulative Totals] [Circle units] [Clarity, Color]

Well purged dry after removal of 2 casing volumes. Allowed WL to recover to 14.18' BTOC prior to sample collection

SAMPLER: John Latta (PRINTED NAME) — John Latta (SIGNATURE)

FIELD SAMPLING DATA SHEET

EMCON

W 7106 Will D. Alton Lane, Suite 101
Spokane, Washington 99224
Office: (509) 838-1144 Fax: (509) 838-1382

PROJECT NAME: NEW CITY CLEANERS — WELL ID: MW-4

SITE ADDRESS: 747 STEVENS DR., RICHLAND, WA — BLIND ID: MW-4-0897

PROJECT NUMBER: 40358-016.004 TASK 3 — DUP ID: MS/MSD

WIND FROM:	N	NE	E	SE	S	(SW)	W	NW	LIGHT	(MEDIUM)	HEAVY
WEATHER:	SUNNY	(CLOUDY)	RAIN	Dusty					TEMPERATURE:	(°F) 85.	°C

[Circle appropriate units]

HYDROLOGY/LEVEL MEASUREMENTS (Nearest 0.01 ft)

Date	Time	DT-Bottom	DT-Product	DT-Water	[Product Thickness] DTP-DTW	[Water Column] DTB-DTW	[Water Column x Gal/ft]	Volume (gal)
8/20/97	15:12	29.35	.	9.40	.	19.95	X 1	3.25
/ /	15:24	.	.	9.44	.		X 3	9.75

Gal/ft = (dia./2)² x 0.163	1" = 0.041	(2") = 0.163	3" = 0.367	4" = 0.653	6" = 1.469	10" = 4.080	12" = 5.875

§ METHODS: (A) Submersible Pump (B) Peristaltic Pump (C) Disposable Bailer (D) PVC/Teflon Bailer (E) Dedicated Bailer (F) Dedicated Pump (G) Other =

GROUNDWATER SAMPLING DATA (if product is detected, do NOT sample) — Sample Depth: — [√ if used]

Bottle Type	Date	Time	Method §	Amount & Volume mL		Preservative [circle]	Ice	Filter	pH	√
VOA Glass	8/20/97	15:50	B	610	40 ml	HCl	YES	NO		√
Amber Glass	8/20/97	15:50	B	74	1L	HCl	YES	NO		√
White Poly	/ /	:			250, 500, 1L	None	YES	NO	NA	
Yellow Poly	/ /	:			250, 500, 1L	H_2SO_4	YES	NO		
Green Poly	/ /	:			250, 500, 1L	NaOH	YES	NO		
Red Total Poly	/ /	:			250, 500, 1L	HNO_3	YES	NO		
Red Diss. Poly	/ /	:			250, 500, 1L	HNO_3	YES	YES		
	/ /	:			250, 500, 1L		YES			

Total Bottles (include duplicate count): 14 including MS/MSD

Analysis Allowed per Bottle Type	BOTTLE TYPE	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)
	VOA - Glass	(8260) (TPH-G) OR [ ] WA [X]
	AMBER - Glass	(TPH-D (Extended)) OR [ ] WA [X]
	WHITE - Poly	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO_3/CO_3) (Cl) (SO_4) (NO_3) (NO_2) (F)
	YELLOW - Poly	(COD) (TOC) (Total PO_4) (Total Keldahl Nitrogen) (NH_3) (NO_3/NO_2)
	GREEN - Poly	(Cyanide)
	RED TOTAL - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)
	RED DISSOLVED - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silica)

WATER QUALITY DATA — Purge Start Time: 15:14

Meas.	Method §	Purged (gal)	pH	E Cond (µS)	°F Temp (°C)	Time ~~Other~~	Pump/Bailer Inlet Depth: 24' Diss O_2 (mg/l)	Water Quality
#1	B	3.25	7.50	956	18.0	1518	.	Clear colorless
#2	B	6.50	7.56	926	17.6	1521	.	" "
#3	B	9.75	7.55	941	17.6	1524	.	" "
+		.	.		.		.	
~~0~~		~~0.00~~	.		.		.	

[Casing] [Select A-G] [Cumulative Totals] [Circle units] [Clarity, Color]

SAMPLER: John Latta (PRINTED NAME) (SIGNATURE) John Latta

FIELD SAMPLING DATA SHEET

EMCON
W 7106 Will D. Alton Lane, Suite 101
Spokane, Washington 99224
Office: (509) 838-1144 Fax: (509) 838-1382

PROJECT NAME: NEW CITY CLEANERS — WELL ID: MW-E

SITE ADDRESS: 747 STEVENS DR., RICHLAND, WA — BLIND ID: MW-E-0897

PROJECT NUMBER: 40358-016.004 TASK 3 — DUP ID:

WIND FROM:	N	NE	E	SE	S	SW	W	NW	LIGHT	MEDIUM	HEAVY
WEATHER:	SUNNY		(CLOUDY)		RAIN		?		TEMPERATURE:	(°F) 85.	°C

[Circle appropriate units]

HYDROLOGY/LEVEL MEASUREMENTS (Nearest 0.01 ft)

Date	Time	DT-Bottom	DT-Product	DT-Water	[Product Thickness] DTP-DTW	[Water Column] DTB-DTW		[Water Column x Gal/ft] Volume (gal)
8/20/97	11:50	15.47	.	7.06	.	8.41	X 1	5.5
/ /	12:27	.	.	12.25	.		X 3	16.5

Gal/ft = (dia./2)² x 0.163	1" = 0.041	2" = 0.163	3" = 0.367	(4") = 0.653	6" = 1.469	10" = 4.080	12" = 5.875

§ METHODS: (A) Submersible Pump (B) Peristaltic Pump (C) Disposable Bailer (D) PVC/Teflon Bailer (E) Dedicated Bailer (F) Dedicated Pump (G) Other =

GROUNDWATER SAMPLING DATA (if product is detected, do NOT sample) — Sample Depth:

Bottle Type	Date	Time	Method §	Amount & Volume mL	Preservative (circle)	Ice	Filter	pH	[√ if used] √
VOA Glass	8/20/97	12:45	B	5	40 ml HCl	YES	NO		√
Amber Glass	8/20/97	12:45	B	2	1L HCl	YES	NO		√
White Poly	/ /	:			250, 500, 1L None	YES	NO	NA	
Yellow Poly	/ /	:			250, 500, 1L H_2SO_4	YES	NO		
Green Poly	/ /	:			250, 500, 1L NaOH	YES	NO		
Red Total Poly	/ /	:			250, 500, 1L HNO_3	YES	NO		
Red Diss. Poly	/ /	:			250, 500, 1L HNO_3	YES	YES		
	/ /	:			250, 500, 1L	YES			

Total Bottles (include duplicate count): 7

Analysis Allowed per Bottle Type

BOTTLE TYPE	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)
VOA - Glass	(8260) (TPH-G) OR [ ] WA [X]
AMBER - Glass	(TPH-D (Extended)) OR [ ] WA [X]
WHITE - Poly	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO_3/CO_3) (Cl) (SO_4) (NO_3) (NO_2) (F)
YELLOW - Poly	(COD) (TOC) (Total PO_4) (Total Keldahl Nitrogen) (NH_3) (NO_3/NO_2)
GREEN - Poly	(Cyanide)
RED TOTAL - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)
RED DISSOLVED - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silica)

WATER QUALITY DATA — Purge Start Time: 11:53 — Time — (Pump)/Bailer Inlet Depth: ~~11'~~ 13' (JSL)

Meas.	Method §	Purged (gal)	pH	E Cond (µS)	°F Temp (°C)	~~Other~~	Diss O_2 (mg/l)	Water Quality
4 1	B	5.5	7.42	466	20.8	1203	.	Cloudy gray
3 2	B	11.0	7.48	764	19.7	1214	.	Sl cldy gray
2 3	B	16.5	7.50	1020	19.1	1227	.	Clear, wk brn tint
1 4	B	22.0	7.56	1029	19.1	1238	.	Clear, colorless
~~0~~		~~0.00~~	.		.		.	

[Casing] [Select A-G] [Cumulative Totals] [Circle units] [Clarity, Color]

Because conductivity was not stable, a 4th casing volume was purged prior to sampling

SAMPLER: John Latta
(PRINTED NAME)

John Latta
(SIGNATURE)

APPENDIX D

LAB REPORTS

Columbia Analytical Services, Inc.

April 2, 1997

Service Request No: K9701638

Rob Lindsay
EMCON
W 7106 Will D. Alton Lane, Suite 101
Spokane, WA 99204-5760

Re: New City Cleaners/40358-016-004 Task 3

Dear Rob:

Enclosed are the results of the sample(s) submitted to our laboratory on March 13, 1997. For your reference, these analyses have been assigned our service request number K9701638.

The analysis of sample SS-C2 for volatiles was completed after hold time expired.

Sample GP-5-11, SS-D4, SS-E3, and SS-A3 had surrogates outside acceptance limits due to matrix interferences.

All analyses were performed according to our laboratory's quality assurance program. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the samples analyzed.

Please call if you have any questions. My extension is 243.

Respectfully submitted,

Columbia Analytical Services, Inc.

Richard Craven
Project Chemist

RAC/sam

1317 South 13th Avenue • P.O. Box 479 • Kelso, Washington 98626 • Telephone 360/577-7222 • Fax 360/636-1068

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
J	Estimated concentration. The value is less than the method reporting limit, but greater than the method detection limit.
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NAN	Not Analyzed
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected at or above the MRL
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/40358-016.004 task3
Sample Matrix: Soil

Service Request: K9701638
Date Collected: 3/10-11/97
Date Received: 3/13/97
Date Extracted: NA
Date Analyzed: 3/25/97

Carbon, Total Organic
ASTM D4129-82M
Units: Percent (%)
Dry Weight Basis

Sample Name	Lab Code	MRL	Result
SS-C4	K9701638-003	0.05	0.24
SS-E3	K9701638-008	0.05	0.84
SS-A1	K9701638-012	0.05	0.06
GP-8-1'	K9701638-017	0.05	0.13
GP-8-15'	K9701638-018	0.05	0.05
GP-8-21'	K9701638-019	0.05	0.13
GP-9-12'	K9701638-021	0.05	0.06
GP-9-23	K9701638-024	0.05	0.07
Method Blank	K9701638-MB	0.05	ND

M Modified for analysis of soil.

Approved By: _____ Date: 3/28/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON	**Service Request:**	K9701638
Project:	New City Cleaners/40358-016.004 task3	**Date Collected:**	3/11/97
Sample Matrix:	Water	**Date Received:**	3/13/97
		Date Extracted:	NA
		Date Analyzed:	3/18/97

Solids, Total Suspended (TSS)
EPA Method 160.2
Units: mg/L (ppm)

Sample Name	Lab Code	MRL	Result
GPW-8-397-10	K9701638-020	5	677
GPW-9-397-15'	K9701638-022	5	278
GPW-9-397-25'	K9701638-023	5	402
Method Blank	K9701638-MB	5	ND

Approved By: _____ Date: 3/28/97

1AMRL/102594
01638WET.KY1 - 1AMRL (2) 3/28/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON	**Service Request:**	K9701638
Project:	New City Cleaners/40358-016.004 task3	**Date Collected:**	3/11/97
Sample Matrix:	Soil	**Date Received:**	3/13/97
		Date Extracted:	3/25/97
		Date Analyzed:	3/25/97

Total Petroleum Hydrocarbons as Diesel and Oil
Washington DOE Method WTPH-D
Units: mg/Kg (ppm)
Dry Weight Basis

Analyte:		Diesel	Oil*
Method Reporting Limit:		25	100
Sample Name	**Lab Code**		
GP-8-1'	K9701638-017	ND	ND
GP-8-15'	K9701638-018	ND	ND
GP-8-21'	K9701638-019	ND	ND
GP-9-12'	K9701638-021	ND	ND
GP-9-23	K9701638-024	ND	ND
GP-5-11	K9701638-026	43(O)	ND
GP-5-21.5	K9701638-027	ND	ND
Method Blank	K970325-MB	ND	ND

* Quantified using 30-weight motor oil as a standard.

O Quantitated as diesel. The sample contained a lighter than diesel component that partially eluted in the diesel range.

Approved By: Lorin E Partwood Date: 3/27/97

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON	**Service Request:**	K9701638
Project:	New City Cleaners/40358-016.004 task3	**Date Collected:**	3/11/97
Sample Matrix:	Soil	**Date Received:**	3/13/97
		Date Extracted:	3/25/97
		Date Analyzed:	3/25/97

Surrogate Recovery Summary
Total Petroleum Hydrocarbons as Diesel and Oil
Washington DOE Method WTPH-D

Sample Name	Lab Code	Percent Recovery o-Terphenyl
GP-8-1'	K9701638-017	93
GP-8-15'	K9701638-018	87
GP-8-21'	K9701638-019	90
GP-9-12'	K9701638-021	91
GP-9-23	K9701638-024	88
GP-5-11	K9701638-026	86
GP-5-21.5	K9701638-027	88
Method Blank	K970325-MB	86

CAS Acceptance Limits: 56-116

Approved By: Tom E Portwood Date: 3/27/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON	**Service Request:**	K9701638
Project:	New City Cleaners/40358-016.004 task3	**Date Collected:**	3/11/97
Sample Matrix:	Water	**Date Received:**	3/13/97
		Date Extracted:	3/17/97
		Date Analyzed:	3/18/97

Total Petroleum Hydrocarbon as Diesel and Oil
Washington DOE Method WTPH-D
Units: µg/L (ppb)

Analyte:	Diesel	Oil*
Method Reporting Limit:	250	750

Sample Name	Lab Code		
GPW-8-397-10	K9701638-020	ND	ND
GPW-9-397-15'	K9701638-022	ND	ND
GPW-9-397-25'	K9701638-023	ND	ND
Method Blank	K970317-WB	ND	ND

* Quantified using 30 weight motor oil as a standard.

Approved By: Shawn D Smith Date: 3/24/97

2A/102094
01638PHC.JS1 - TPHw 3/20/97

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: New City Cleaners/40358-016.004 task3
Sample Matrix: Water

Service Request: K9701638
Date Collected: 3/11/97
Date Received: 3/13/97
Date Extracted: 3/17/97
Date Analyzed: 3/18/97

Surrogate Recovery Summary
Total Petroleum Hydrocarbons as Diesel and Oil
Washington DOE Method WTPH-D

Sample Name	Lab Code	Percent Recovery o-Terphenyl
GPW-8-397-10	K9701638-020	80
GPW-9-397-15'	K9701638-022	84
GPW-9-397-25'	K9701638-023	84
Method Blank	K970317-WB	87

CAS Acceptance Limits: 59-110

Approved By: Shawn X Smith Date: 3/24/97

SUR1/111594
01638PHC.JS1 - TPHwSUR 3/20/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/40358-016.004 task3
Sample Matrix: Soil

Service Request: K9701638
Date Collected: 3/11/97
Date Received: 3/13/97
Date Extracted: NA
Date Analyzed: 3/23/97

Total Petroleum Hydrocarbons as Gasoline
Washington DOE Method WTPH-G
Units: mg/Kg (ppm)
Dry Weight Basis

Sample Name	Lab Code	MRL	Result
GP-8-1'	K9701638-017	5	ND
GP-8-15'	K9701638-018	5	ND
GP-8-21'	K9701638-019	5	ND
GP-9-12'	K9701638-021	5	ND
GP-9-23	K9701638-024	5	ND
GP-5-11	K9701638-026	5	2300
GP-5-21.5	K9701638-027	5	ND
Method Blank	K970320-MB	5	ND

Approved By: _____ Date: 4/4/97

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: New City Cleaners/40358-016.004 task3
Sample Matrix: Soil

Service Request: K9701638
Date Collected: 3/11/97
Date Received: 3/13/97
Date Extracted: NA
Date Analyzed: 3/23/97

Surrogate Recovery Summary
Total Petroleum Hydrocarbons as Gasoline
Washington DOE Method WTPH-G

Sample Name	Lab Code	Percent Recovery 1,4-Difluorobenzene
GP-8-1'	K9701638-017	65
GP-8-15'	K9701638-018	67
GP-8-21'	K9701638-019	59
GP-9-12'	K9701638-021	65
GP-9-23	K9701638-024	59
GP-5-11	K9701638-026	61
GP-5-21.5	K9701638-027	57
Method Blank	K970320-MB	70

CAS Acceptance Limits: 48-129

Approved By: _____ Date: 4/1/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/ #40358-016.004 task3
Sample Matrix: Soil

Service Request: K9701638
Date Collected: 3/10,11/97
Date Received: 3/13/97
Date Extracted: NA

Volatile Organic Compounds
EPA Method 8260A
Units: µg/Kg (ppb)
Dry Weight Basis

	Sample Name:	SS-D4	SS-B5	SS-C4
	Lab Code:	K9701638-001	K9701638-002	K9701638-003
	Date Analyzed:	3/20/97	3/20/97	3/21/97
Analyte	**MRL**			
Tetrachloroethene (PCE)	5	570	ND	ND
Dibromochloromethane	5	ND	ND	ND
1,2-Dibromoethane (EDB)	20	ND	ND	ND
Chlorobenzene	5	ND	ND	ND
1,1,1,2-Tetrachloroethane	5	ND	ND	ND
Ethylbenzene	5	ND	ND	ND
Total Xylenes	5	ND	ND	ND
Styrene	5	ND	ND	ND
Bromoform	5	ND	ND	ND
Isopropylbenzene	20	ND	ND	ND
1,1,2,2-Tetrachloroethane	5	ND	ND	ND
1,2,3-Trichloropropane	5	ND	ND	ND
Bromobenzene	5	ND	ND	ND
n -Propylbenzene	20	ND	ND	ND
2-Chlorotoluene	20	ND	ND	ND
4-Chlorotoluene	20	ND	ND	ND
1,3,5-Trimethylbenzene	20	ND	ND	ND
tert -Butylbenzene	20	ND	ND	ND
1,2,4-Trimethylbenzene	20	ND	ND	ND
sec -Butylbenzene	20	ND	ND	ND
1,3-Dichlorobenzene	5	ND	ND	ND
4-Isopropyltoluene	20	ND	ND	ND
1,4-Dichlorobenzene	5	ND	ND	ND
n -Butylbenzene	20	ND	ND	ND
1,2-Dichlorobenzene	5	ND	ND	ND
1,2-Dibromo-3-chloropropane (DBCP)	20	ND	ND	ND
1,2,4-Trichlorobenzene	20	ND	ND	ND
1,2,3-Trichlorobenzene	20	ND	ND	ND
Naphthalene	20	ND	ND	ND
Hexachlorobutadiene	20	ND	ND	ND

Approved By: _____ Date: 3/31/97

3S2P/101894

01638VOA.LW2 - 8260s 3/31/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/ #40358-016.004 task3
Sample Matrix: Soil

Service Request: K9701638
Date Collected: 3/10,11/97
Date Received: 3/13/97
Date Extracted: NA

Volatile Organic Compounds
EPA Method 8260A
Units: µg/Kg (ppb)
Dry Weight Basis

	Sample Name:	SS-D4	SS-B5	SS-C4
	Lab Code:	K9701638-001	K9701638-002	K9701638-003
	Date Analyzed:	3/20/97	3/20/97	3/21/97
Analyte	**MRL**			
Dichlorodifluoromethane (CFC 12)	5	ND	ND	ND
Chloromethane	5	ND	ND	ND
Vinyl Chloride	5	ND	ND	ND
Bromomethane	5	ND	ND	ND
Chloroethane	5	ND	ND	ND
Trichlorofluoromethane (CFC 11)	5	ND	ND	ND
Acetone	50	69	62	52
1,1-Dichloroethene	5	ND	ND	ND
Carbon Disulfide	5	ND	ND	ND
Methylene Chloride	10	ND	ND	ND
trans-1,2-Dichloroethene	5	ND	ND	ND
1,1-Dichloroethane	5	ND	ND	ND
2-Butanone (MEK)	20	ND	ND	ND
2,2-Dichloropropane	5	ND	ND	ND
cis-1,2-Dichloroethene	5	ND	ND	ND
Chloroform	5	ND	ND	ND
Bromochloromethane	5	ND	ND	ND
1,1,1-Trichloroethane (TCA)	5	ND	ND	ND
1,1-Dichloropropene	5	ND	ND	ND
Carbon Tetrachloride	5	ND	ND	ND
1,2-Dichloroethane	5	ND	ND	ND
Benzene	5	ND	ND	ND
Trichloroethene (TCE)	5	ND	ND	ND
1,2-Dichloropropane	5	ND	ND	ND
Bromodichloromethane	5	ND	ND	ND
Dibromomethane	5	ND	ND	ND
2-Hexanone	20	ND	ND	ND
cis-1,3-Dichloropropene	5	ND	ND	ND
Toluene	5	ND	ND	ND
trans-1,3-Dichloropropene	5	ND	ND	ND
1,1,2-Trichloroethane	5	ND	ND	ND
4-Methyl-2-pentanone (MIBK)	20	ND	ND	ND
1,3-Dichloropropane	5	ND	ND	ND

Approved By: _____ Date: 3/31/97

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: New City Cleaners/40358-016.004 task3
Sample Matrix: Water

Service Request: K9701638
Date Collected: 3/11/97
Date Received: 3/13/97
Date Extracted: NA
Date Analyzed: 3/25/97

Surrogate Recovery Summary
Total Petroleum Hydrocarbons as Gasoline
Washington DOE Method WTPH-G

Sample Name	Lab Code	Percent Recovery 4-Bromofluorobenzene
GPW-8-397-10	K9701638-020	94
GPW-9-397-15'	K9701638-022	110
GPW-9-397-25'	K9701638-023	114
TB1-397	K9701638-025	94
Method Blank	K970325-MB	94

CAS Acceptance Limits: 65-117

Approved By: _____ Date: 4/4/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON	**Service Request:**	K9701638
Project:	New City Cleaners/40358-016.004 task3	**Date Collected:**	3/11/97
Sample Matrix:	Water	**Date Received:**	3/13/97
		Date Extracted:	NA
		Date Analyzed:	3/25/97

Total Petroleum Hydrocarbons as Gasoline
Washington DOE Method WTPH-G
Units: µg/L (ppb)

Sample Name	Lab Code	MRL	Result
GPW-8-397-10	K9701638-020	50	460(O)
GPW-9-397-15'	K9701638-022	50	1100(O)
GPW-9-397-25'	K9701638-023	50	1200(O)
TB1-397	K9701638-025	50	ND
Method Blank	K970325-MB	50	ND

O Quantitated as gasoline. The sample contained a component that eluted in the gas range.

Approved By: _____ Date: 4/1/97

1AMRL/102594
01638VOAJS2 - GASw 4/1/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/ #40358-016.004 task3
Sample Matrix: Soil

Service Request: K9701638
Date Collected: 3/10,11/97
Date Received: 3/13/97
Date Extracted: NA

Volatile Organic Compounds
EPA Method 8260A
Units: µg/Kg (ppb)
Dry Weight Basis

	Sample Name:	SS-D4	SS-B5	SS-C4
	Lab Code:	K9701638-001	K9701638-002	K9701638-003
	Date Analyzed:	3/20/97	3/20/97	3/21/97
Analyte	**MRL**			
Dichlorodifluoromethane (CFC 12)	5	ND	ND	ND
Chloromethane	5	ND	ND	ND
Vinyl Chloride	5	ND	ND	ND
Bromomethane	5	ND	ND	ND
Chloroethane	5	ND	ND	ND
Trichlorofluoromethane (CFC 11)	5	ND	ND	ND
Acetone	50	69	62	52
1,1-Dichloroethene	5	ND	ND	ND
Carbon Disulfide	5	ND	ND	ND
Methylene Chloride	10	ND	ND	ND
trans-1,2-Dichloroethene	5	ND	ND	ND
1,1-Dichloroethane	5	ND	ND	ND
2-Butanone (MEK)	20	ND	ND	ND
2,2-Dichloropropane	5	ND	ND	ND
cis-1,2-Dichloroethene	5	ND	ND	ND
Chloroform	5	ND	ND	ND
Bromochloromethane	5	ND	ND	ND
1,1,1-Trichloroethane (TCA)	5	ND	ND	ND
1,1-Dichloropropene	5	ND	ND	ND
Carbon Tetrachloride	5	ND	ND	ND
1,2-Dichloroethane	5	ND	ND	ND
Benzene	5	ND	ND	ND
Trichloroethene (TCE)	5	ND	ND	ND
1,2-Dichloropropane	5	ND	ND	ND
Bromodichloromethane	5	ND	ND	ND
Dibromomethane	5	ND	ND	ND
2-Hexanone	20	ND	ND	ND
cis-1,3-Dichloropropene	5	ND	ND	ND
Toluene	5	ND	ND	ND
trans-1,3-Dichloropropene	5	ND	ND	ND
1,1,2-Trichloroethane	5	ND	ND	ND
4-Methyl-2-pentanone (MIBK)	20	ND	ND	ND
1,3-Dichloropropane	5	ND	ND	ND

Approved By: _____ Date: 3/31/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/ #40358-016.004 task3
Sample Matrix: Soil

Service Request: K9701638
Date Collected: 3/10,11/97
Date Received: 3/13/97
Date Extracted: NA

Volatile Organic Compounds
EPA Method 8260A
Units: µg/Kg (ppb)
Dry Weight Basis

	Sample Name:	SS-D4	SS-B5	SS-C4
	Lab Code:	K9701638-001	K9701638-002	K9701638-003
	Date Analyzed:	3/20/97	3/20/97	3/21/97
Analyte	**MRL**			
Tetrachloroethene (PCE)	5	570	ND	ND
Dibromochloromethane	5	ND	ND	ND
1,2-Dibromoethane (EDB)	20	ND	ND	ND
Chlorobenzene	5	ND	ND	ND
1,1,1,2-Tetrachloroethane	5	ND	ND	ND
Ethylbenzene	5	ND	ND	ND
Total Xylenes	5	ND	ND	ND
Styrene	5	ND	ND	ND
Bromoform	5	ND	ND	ND
Isopropylbenzene	20	ND	ND	ND
1,1,2,2-Tetrachloroethane	5	ND	ND	ND
1,2,3-Trichloropropane	5	ND	ND	ND
Bromobenzene	5	ND	ND	ND
n-Propylbenzene	20	ND	ND	ND
2-Chlorotoluene	20	ND	ND	ND
4-Chlorotoluene	20	ND	ND	ND
1,3,5-Trimethylbenzene	20	ND	ND	ND
tert-Butylbenzene	20	ND	ND	ND
1,2,4-Trimethylbenzene	20	ND	ND	ND
sec-Butylbenzene	20	ND	ND	ND
1,3-Dichlorobenzene	5	ND	ND	ND
4-Isopropyltoluene	20	ND	ND	ND
1,4-Dichlorobenzene	5	ND	ND	ND
n-Butylbenzene	20	ND	ND	ND
1,2-Dichlorobenzene	5	ND	ND	ND
1,2-Dibromo-3-chloropropane (DBCP)	20	ND	ND	ND
1,2,4-Trichlorobenzene	20	ND	ND	ND
1,2,3-Trichlorobenzene	20	ND	ND	ND
Naphthalene	20	ND	ND	ND
Hexachlorobutadiene	20	ND	ND	ND

Approved By: _____ Date: 3/31/97

3S2P/101894

01638VOA.LW2 - 8260s 3/31/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/ #40358-016.004 task3
Sample Matrix: Soil

Service Request: K9701638
Date Collected: 3/10,11/97
Date Received: 3/13/97
Date Extracted: NA

Volatile Organic Compounds
EPA Method 8260A
Units: µg/Kg (ppb)
Dry Weight Basis

	Sample Name:	SS-I4	SS-I3	SS-G3
	Lab Code:	K9701638-005	K9701638-006	K9701638-007
	Date Analyzed:	3/21/97	3/21/97	3/21/97
Analyte	**MRL**			
Dichlorodifluoromethane (CFC 12)	5	ND	ND	ND
Chloromethane	5	ND	ND	ND
Vinyl Chloride	5	ND	ND	ND
Bromomethane	5	ND	ND	ND
Chloroethane	5	ND	ND	ND
Trichlorofluoromethane (CFC 11)	5	ND	ND	ND
Acetone	50	69	57	ND
1,1-Dichloroethene	5	ND	ND	ND
Carbon Disulfide	5	ND	ND	ND
Methylene Chloride	10	ND	ND	ND
trans-1,2-Dichloroethene	5	ND	ND	ND
1,1-Dichloroethane	5	ND	ND	ND
2-Butanone (MEK)	20	ND	ND	ND
2,2-Dichloropropane	5	ND	ND	ND
cis-1,2-Dichloroethene	5	ND	ND	ND
Chloroform	5	ND	ND	ND
Bromochloromethane	5	ND	ND	ND
1,1,1-Trichloroethane (TCA)	5	ND	ND	ND
1,1-Dichloropropene	5	ND	ND	ND
Carbon Tetrachloride	5	ND	ND	ND
1,2-Dichloroethane	5	ND	ND	ND
Benzene	5	ND	ND	ND
Trichloroethene (TCE)	5	ND	ND	ND
1,2-Dichloropropane	5	ND	ND	ND
Bromodichloromethane	5	ND	ND	ND
Dibromomethane	5	ND	ND	ND
2-Hexanone	20	ND	ND	ND
cis-1,3-Dichloropropene	5	ND	ND	ND
Toluene	5	ND	ND	ND
trans-1,3-Dichloropropene	5	ND	ND	ND
1,1,2-Trichloroethane	5	ND	ND	ND
4-Methyl-2-pentanone (MIBK)	20	ND	ND	ND
1,3-Dichloropropane	5	ND	ND	ND

Approved By: _____ Date: 3/31/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/ #40358-016.004 task3
Sample Matrix: Soil

Service Request: K9701638
Date Collected: 3/10,11/97
Date Received: 3/13/97
Date Extracted: NA

Volatile Organic Compounds
EPA Method 8260A
Units: µg/Kg (ppb)
Dry Weight Basis

	Sample Name:	SS-I4	SS-I3	SS-G3
	Lab Code:	K9701638-005	K9701638-006	K9701638-007
	Date Analyzed:	3/21/97	3/21/97	3/21/97
Analyte	**MRL**			
Tetrachloroethene (PCE)	5	ND	ND	ND
Dibromochloromethane	5	ND	ND	ND
1,2-Dibromoethane (EDB)	20	ND	ND	ND
Chlorobenzene	5	ND	ND	ND
1,1,1,2-Tetrachloroethane	5	ND	ND	ND
Ethylbenzene	5	ND	ND	ND
Total Xylenes	5	ND	ND	ND
Styrene	5	ND	ND	ND
Bromoform	5	ND	ND	ND
Isopropylbenzene	20	ND	ND	ND
1,1,2,2-Tetrachloroethane	5	ND	ND	ND
1,2,3-Trichloropropane	5	ND	ND	ND
Bromobenzene	5	ND	ND	ND
n -Propylbenzene	20	ND	ND	ND
2-Chlorotoluene	20	ND	ND	ND
4-Chlorotoluene	20	ND	ND	ND
1,3,5-Trimethylbenzene	20	ND	ND	ND
tert -Butylbenzene	20	ND	ND	ND
1,2,4-Trimethylbenzene	20	ND	ND	ND
sec -Butylbenzene	20	ND	ND	ND
1,3-Dichlorobenzene	5	ND	ND	ND
4-Isopropyltoluene	20	ND	ND	ND
1,4-Dichlorobenzene	5	ND	ND	ND
n -Butylbenzene	20	ND	ND	ND
1,2-Dichlorobenzene	5	ND	ND	ND
1,2-Dibromo-3-chloropropane (DBCP)	20	ND	ND	ND
1,2,4-Trichlorobenzene	20	ND	ND	ND
1,2,3-Trichlorobenzene	20	ND	ND	ND
Naphthalene	20	ND	ND	ND
Hexachlorobutadiene	20	ND	ND	ND

Approved By: _____ Date: 3/31/97

3S2P/101894

01638VOA.LW2 - 8260s (2) 3/31/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/ #40358-016.004 task3
Sample Matrix: Soil

Service Request: K9701638
Date Collected: 3/10,11/97
Date Received: 3/13/97
Date Extracted: NA

Volatile Organic Compounds
EPA Method 8260A
Units: µg/Kg (ppb)
Dry Weight Basis

	Sample Name:	SS-E3	SS-C3	SS-A3
	Lab Code:	K9701638-008	K9701638-009	K9701638-010
	Date Analyzed:	3/20/97	3/20/97	3/20/97
Analyte	**MRL**			
Dichlorodifluoromethane (CFC 12)	5	ND	ND	ND
Chloromethane	5	ND	ND	ND
Vinyl Chloride	5	ND	ND	ND
Bromomethane	5	ND	ND	ND
Chloroethane	5	ND	ND	ND
Trichlorofluoromethane (CFC 11)	5	ND	ND	ND
Acetone	50	ND	ND	ND
1,1-Dichloroethene	5	ND	ND	ND
Carbon Disulfide	5	ND	ND	ND
Methylene Chloride	10	ND	ND	ND
trans-1,2-Dichloroethene	5	ND	ND	ND
1,1-Dichloroethane	5	ND	ND	ND
2-Butanone (MEK)	20	ND	ND	ND
2,2-Dichloropropane	5	ND	ND	ND
cis-1,2-Dichloroethene	5	ND	ND	ND
Chloroform	5	ND	ND	ND
Bromochloromethane	5	ND	ND	ND
1,1,1-Trichloroethane (TCA)	5	ND	ND	ND
1,1-Dichloropropene	5	ND	ND	ND
Carbon Tetrachloride	5	ND	ND	ND
1,2-Dichloroethane	5	ND	ND	ND
Benzene	5	ND	ND	ND
Trichloroethene (TCE)	5	ND	ND	ND
1,2-Dichloropropane	5	ND	ND	ND
Bromodichloromethane	5	ND	ND	ND
Dibromomethane	5	ND	ND	ND
2-Hexanone	20	ND	ND	ND
cis-1,3-Dichloropropene	5	ND	ND	ND
Toluene	5	ND	ND	ND
trans-1,3-Dichloropropene	5	ND	ND	ND
1,1,2-Trichloroethane	5	ND	ND	ND
4-Methyl-2-pentanone (MIBK)	20	ND	ND	ND
1,3-Dichloropropane	5	ND	ND	ND

Approved By: _____ Date: 3/31/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/ #40358-016.004 task3
Sample Matrix: Soil

Service Request: K9701638
Date Collected: 3/10,11/97
Date Received: 3/13/97
Date Extracted: NA

Volatile Organic Compounds
EPA Method 8260A
Units: µg/Kg (ppb)
Dry Weight Basis

	Sample Name:	SS-E3	SS-C3	SS-A3
	Lab Code:	K9701638-008	K9701638-009	K9701638-010
	Date Analyzed:	3/20/97	3/20/97	3/20/97
Analyte	**MRL**			
Tetrachloroethene (PCE)	5	8300	28	610
Dibromochloromethane	5	ND	ND	ND
1,2-Dibromoethane (EDB)	20	ND	ND	ND
Chlorobenzene	5	ND	ND	ND
1,1,1,2-Tetrachloroethane	5	ND	ND	ND
Ethylbenzene	5	ND	ND	ND
Total Xylenes	5	ND	ND	ND
Styrene	5	ND	ND	ND
Bromoform	5	ND	ND	ND
Isopropylbenzene	20	ND	ND	ND
1,1,2,2-Tetrachloroethane	5	ND	ND	ND
1,2,3-Trichloropropane	5	ND	ND	ND
Bromobenzene	5	ND	ND	ND
n -Propylbenzene	20	ND	ND	ND
2-Chlorotoluene	20	ND	ND	ND
4-Chlorotoluene	20	ND	ND	ND
1,3,5-Trimethylbenzene	20	ND	ND	ND
tert -Butylbenzene	20	ND	ND	ND
1,2,4-Trimethylbenzene	20	ND	ND	ND
sec -Butylbenzene	20	ND	ND	ND
1,3-Dichlorobenzene	5	ND	ND	ND
4-Isopropyltoluene	20	ND	ND	ND
1,4-Dichlorobenzene	5	ND	ND	ND
n -Butylbenzene	20	ND	ND	ND
1,2-Dichlorobenzene	5	ND	ND	ND
1,2-Dibromo-3-chloropropane (DBCP)	20	ND	ND	ND
1,2,4-Trichlorobenzene	20	ND	ND	ND
1,2,3-Trichlorobenzene	20	ND	ND	ND
Naphthalene	20	ND	ND	ND
Hexachlorobutadiene	20	ND	ND	ND

Approved By: _____ Date: 3/31/97

3S2P/101894

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/ #40358-016.004 task3
Sample Matrix: Soil

Service Request: K9701638
Date Collected: 3/10,11/97
Date Received: 3/13/97
Date Extracted: NA

Volatile Organic Compounds
EPA Method 8260A
Units: µg/Kg (ppb)
Dry Weight Basis

	Sample Name:	SS-C1	SS-A1	SS-A2
	Lab Code:	K9701638-011	K9701638-012	K9701638-013
	Date Analyzed:	3/21/97	3/20/97	3/20/97
Analyte	**MRL**			
Dichlorodifluoromethane (CFC 12)	5	ND	ND	ND
Chloromethane	5	ND	ND	ND
Vinyl Chloride	5	ND	ND	ND
Bromomethane	5	ND	ND	ND
Chloroethane	5	ND	ND	ND
Trichlorofluoromethane (CFC 11)	5	ND	ND	ND
Acetone	50	ND	ND	ND
1,1-Dichloroethene	5	ND	ND	ND
Carbon Disulfide	5	ND	ND	ND
Methylene Chloride	10	ND	ND	ND
trans-1,2-Dichloroethene	5	ND	ND	ND
1,1-Dichloroethane	5	ND	ND	ND
2-Butanone (MEK)	20	ND	ND	ND
2,2-Dichloropropane	5	ND	ND	ND
cis-1,2-Dichloroethene	5	ND	ND	ND
Chloroform	5	ND	ND	ND
Bromochloromethane	5	ND	ND	ND
1,1,1-Trichloroethane (TCA)	5	ND	ND	ND
1,1-Dichloropropene	5	ND	ND	ND
Carbon Tetrachloride	5	ND	ND	ND
1,2-Dichloroethane	5	ND	ND	ND
Benzene	5	ND	ND	ND
Trichloroethene (TCE)	5	ND	ND	ND
1,2-Dichloropropane	5	ND	ND	ND
Bromodichloromethane	5	ND	ND	ND
Dibromomethane	5	ND	ND	ND
2-Hexanone	20	ND	ND	ND
cis-1,3-Dichloropropene	5	ND	ND	ND
Toluene	5	ND	ND	ND
trans-1,3-Dichloropropene	5	ND	ND	ND
1,1,2-Trichloroethane	5	ND	ND	ND
4-Methyl-2-pentanone (MIBK)	20	ND	ND	ND
1,3-Dichloropropane	5	ND	ND	ND

Approved By: _____ Date: 3/31/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/ #40358-016.004 task3
Sample Matrix: Soil

Service Request: K9701638
Date Collected: 3/10,11/97
Date Received: 3/13/97
Date Extracted: NA

Volatile Organic Compounds
EPA Method 8260A
Units: µg/Kg (ppb)
Dry Weight Basis

	Sample Name:	SS-C1	SS-A1	SS-A2
	Lab Code:	K9701638-011	K9701638-012	K9701638-013
	Date Analyzed:	3/21/97	3/20/97	3/20/97
Analyte	**MRL**			
Tetrachloroethene (PCE)	5	ND	ND	290
Dibromochloromethane	5	ND	ND	ND
1,2-Dibromoethane (EDB)	20	ND	ND	ND
Chlorobenzene	5	ND	ND	ND
1,1,1,2-Tetrachloroethane	5	ND	ND	ND
Ethylbenzene	5	ND	ND	ND
Total Xylenes	5	ND	ND	ND
Styrene	5	ND	ND	ND
Bromoform	5	ND	ND	ND
Isopropylbenzene	20	ND	ND	ND
1,1,2,2-Tetrachloroethane	5	ND	ND	ND
1,2,3-Trichloropropane	5	ND	ND	ND
Bromobenzene	5	ND	ND	ND
n -Propylbenzene	20	ND	ND	ND
2-Chlorotoluene	20	ND	ND	ND
4-Chlorotoluene	20	ND	ND	ND
1,3,5-Trimethylbenzene	20	ND	ND	ND
tert -Butylbenzene	20	ND	ND	ND
1,2,4-Trimethylbenzene	20	ND	ND	ND
sec -Butylbenzene	20	ND	ND	ND
1,3-Dichlorobenzene	5	ND	ND	ND
4-Isopropyltoluene	20	ND	ND	ND
1,4-Dichlorobenzene	5	ND	ND	ND
n -Butylbenzene	20	ND	ND	ND
1,2-Dichlorobenzene	5	ND	ND	ND
1,2-Dibromo-3-chloropropane (DBCP)	20	ND	ND	ND
1,2,4-Trichlorobenzene	20	ND	ND	ND
1,2,3-Trichlorobenzene	20	ND	ND	ND
Naphthalene	20	ND	ND	ND
Hexachlorobutadiene	20	ND	ND	ND

Approved By: Jeff Kotoff Date: 3/31/97

3S2P/101894

01638VOA.LW2 - 8260s (4) 3/31/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/ #40358-016.004 task3
Sample Matrix: Soil

Service Request: K9701638
Date Collected: 3/10,11/97
Date Received: 3/13/97
Date Extracted: NA

Volatile Organic Compounds
EPA Method 8260A
Units: µg/Kg (ppb)
Dry Weight Basis

	Sample Name:	SS-C2	SS-E2	SS-G2
	Lab Code:	K9701638-014(H)	K9701638-015	K9701638-016
	Date Analyzed:	3/27/97	3/20/97	3/21/97
Analyte	**MRL**			
Dichlorodifluoromethane (CFC 12)	5	ND	ND	ND
Chloromethane	5	ND	ND	ND
Vinyl Chloride	5	ND	ND	ND
Bromomethane	5	ND	ND	ND
Chloroethane	5	ND	ND	ND
Trichlorofluoromethane (CFC 11)	5	ND	ND	ND
Acetone	50	ND	ND	ND
1,1-Dichloroethene	5	ND	ND	ND
Carbon Disulfide	5	ND	ND	ND
Methylene Chloride	10	ND	ND	ND
trans-1,2-Dichloroethene	5	ND	ND	ND
1,1-Dichloroethane	5	ND	ND	ND
2-Butanone (MEK)	20	ND	ND	ND
2,2-Dichloropropane	5	ND	ND	ND
cis-1,2-Dichloroethene	5	ND	ND	ND
Chloroform	5	ND	ND	ND
Bromochloromethane	5	ND	ND	ND
1,1,1-Trichloroethane (TCA)	5	ND	ND	ND
1,1-Dichloropropene	5	ND	ND	ND
Carbon Tetrachloride	5	ND	ND	ND
1,2-Dichloroethane	5	ND	ND	ND
Benzene	5	ND	ND	ND
Trichloroethene (TCE)	5	ND	ND	ND
1,2-Dichloropropane	5	ND	ND	ND
Bromodichloromethane	5	ND	ND	ND
Dibromomethane	5	ND	ND	ND
2-Hexanone	20	ND	ND	ND
cis-1,3-Dichloropropene	5	ND	ND	ND
Toluene	5	ND	ND	ND
trans-1,3-Dichloropropene	5	ND	ND	ND
1,1,2-Trichloroethane	5	ND	ND	ND
4-Methyl-2-pentanone (MIBK)	20	ND	ND	ND
1,3-Dichloropropane	5	ND	ND	ND

H The analysis was performed past the recommended hold time; see case narrative.

Approved By: _____ Date: 3/31/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/ #40358-016.004 task3
Sample Matrix: Soil

Service Request: K9701638
Date Collected: 3/10,11/97
Date Received: 3/13/97
Date Extracted: NA

Volatile Organic Compounds
EPA Method 8260A
Units: µg/Kg (ppb)
Dry Weight Basis

	Sample Name:	SS-C2	SS-E2	SS-G2
	Lab Code:	K9701638-014(H)	K9701638-015	K9701638-016
	Date Analyzed:	3/27/97	3/20/97	3/21/97
Analyte	**MRL**			
Tetrachloroethene (PCE)	5	250	9	ND
Dibromochloromethane	5	ND	ND	ND
1,2-Dibromoethane (EDB)	20	ND	ND	ND
Chlorobenzene	5	ND	ND	ND
1,1,1,2-Tetrachloroethane	5	ND	ND	ND
Ethylbenzene	5	ND	ND	ND
Total Xylenes	5	ND	ND	ND
Styrene	5	ND	ND	ND
Bromoform	5	ND	ND	ND
Isopropylbenzene	20	ND	ND	ND
1,1,2,2-Tetrachloroethane	5	ND	ND	ND
1,2,3-Trichloropropane	5	ND	ND	ND
Bromobenzene	5	ND	ND	ND
n-Propylbenzene	20	ND	ND	ND
2-Chlorotoluene	20	ND	ND	ND
4-Chlorotoluene	20	ND	ND	ND
1,3,5-Trimethylbenzene	20	ND	ND	ND
tert-Butylbenzene	20	ND	ND	ND
1,2,4-Trimethylbenzene	20	ND	ND	ND
sec-Butylbenzene	20	ND	ND	ND
1,3-Dichlorobenzene	5	ND	ND	ND
4-Isopropyltoluene	20	ND	ND	ND
1,4-Dichlorobenzene	5	ND	ND	ND
n-Butylbenzene	20	ND	ND	ND
1,2-Dichlorobenzene	5	ND	ND	ND
1,2-Dibromo-3-chloropropane (DBCP)	20	ND	ND	ND
1,2,4-Trichlorobenzene	20	ND	ND	ND
1,2,3-Trichlorobenzene	20	ND	ND	ND
Naphthalene	20	ND	ND	ND
Hexachlorobutadiene	20	ND	ND	ND

H The analysis was performed past the recommended hold time; see case narrative.

Approved By: _____ Date: 3/31/97

3S2P/101894

01638VOA.LW2 - 8260s (5) 3/31/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/ #40358-016.004 task3
Sample Matrix: Soil

Service Request: K9701638
Date Collected: 3/10,11/97
Date Received: 3/13/97
Date Extracted: NA

Volatile Organic Compounds
EPA Method 8260A
Units: µg/Kg (ppb)
Dry Weight Basis

	Sample Name:	GP-8-1'	GP-8-15'	GP-8-21'
	Lab Code:	K9701638-017	K9701638-018	K9701638-019
	Date Analyzed:	3/20/97	3/20/97	3/21/97
Analyte	**MRL**			
Dichlorodifluoromethane (CFC 12)	5	ND	ND	ND
Chloromethane	5	ND	ND	ND
Vinyl Chloride	5	ND	ND	ND
Bromomethane	5	ND	ND	ND
Chloroethane	5	ND	ND	ND
Trichlorofluoromethane (CFC 11)	5	ND	ND	ND
Acetone	50	ND	ND	ND
1,1-Dichloroethene	5	ND	ND	ND
Carbon Disulfide	5	ND	ND	ND
Methylene Chloride	10	ND	ND	ND
trans-1,2-Dichloroethene	5	ND	ND	ND
1,1-Dichloroethane	5	ND	ND	ND
2-Butanone (MEK)	20	ND	ND	ND
2,2-Dichloropropane	5	ND	ND	ND
cis-1,2-Dichloroethene	5	ND	ND	ND
Chloroform	5	ND	ND	ND
Bromochloromethane	5	ND	ND	ND
1,1,1-Trichloroethane (TCA)	5	ND	ND	ND
1,1-Dichloropropene	5	ND	ND	ND
Carbon Tetrachloride	5	ND	ND	ND
1,2-Dichloroethane	5	ND	ND	ND
Benzene	5	ND	ND	ND
Trichloroethene (TCE)	5	ND	ND	12
1,2-Dichloropropane	5	ND	ND	ND
Bromodichloromethane	5	ND	ND	ND
Dibromomethane	5	ND	ND	ND
2-Hexanone	20	ND	ND	ND
cis-1,3-Dichloropropene	5	ND	ND	ND
Toluene	5	ND	ND	ND
trans-1,3-Dichloropropene	5	ND	ND	ND
1,1,2-Trichloroethane	5	ND	ND	ND
4-Methyl-2-pentanone (MIBK)	20	ND	ND	ND
1,3-Dichloropropane	5	ND	ND	ND

Approved By: _____ Date: 3/31/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/ #40358-016.004 task3
Sample Matrix: Soil

Service Request: K9701638
Date Collected: 3/10,11/97
Date Received: 3/13/97
Date Extracted: NA

Volatile Organic Compounds
EPA Method 8260A
Units: µg/Kg (ppb)
Dry Weight Basis

	Sample Name:	GP-8-1'	GP-8-15'	GP-8-21'
	Lab Code:	K9701638-017	K9701638-018	K9701638-019
	Date Analyzed:	3/20/97	3/20/97	3/21/97
Analyte	**MRL**			
Tetrachloroethene (PCE)	5	11	72	200
Dibromochloromethane	5	ND	ND	ND
1,2-Dibromoethane (EDB)	20	ND	ND	ND
Chlorobenzene	5	ND	ND	ND
1,1,1,2-Tetrachloroethane	5	ND	ND	ND
Ethylbenzene	5	ND	ND	ND
Total Xylenes	5	ND	ND	ND
Styrene	5	ND	ND	ND
Bromoform	5	ND	ND	ND
Isopropylbenzene	20	ND	ND	ND
1,1,2,2-Tetrachloroethane	5	ND	ND	ND
1,2,3-Trichloropropane	5	ND	ND	ND
Bromobenzene	5	ND	ND	ND
n -Propylbenzene	20	ND	ND	ND
2-Chlorotoluene	20	ND	ND	ND
4-Chlorotoluene	20	ND	ND	ND
1,3,5-Trimethylbenzene	20	ND	ND	ND
tert -Butylbenzene	20	ND	ND	ND
1,2,4-Trimethylbenzene	20	ND	ND	ND
sec -Butylbenzene	20	ND	ND	ND
1,3-Dichlorobenzene	5	ND	ND	ND
4-Isopropyltoluene	20	ND	ND	ND
1,4-Dichlorobenzene	5	ND	ND	ND
n -Butylbenzene	20	ND	ND	ND
1,2-Dichlorobenzene	5	ND	ND	ND
1,2-Dibromo-3-chloropropane (DBCP)	20	ND	ND	ND
1,2,4-Trichlorobenzene	20	ND	ND	ND
1,2,3-Trichlorobenzene	20	ND	ND	ND
Naphthalene	20	ND	ND	ND
Hexachlorobutadiene	20	ND	ND	ND

Approved By: _____ Date: 3/31/97

3S2P/101894

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/ #40358-016.004 task3
Sample Matrix: Soil

Service Request: K9701638
Date Collected: 3/10,11/97
Date Received: 3/13/97
Date Extracted: NA

Volatile Organic Compounds
EPA Method 8260A
Units: µg/Kg (ppb)
Dry Weight Basis

	Sample Name:	GP-9-12'	GP-9-23	GP-5-21.5
	Lab Code:	K9701638-021	K9701638-024	K9701638-027
	Date Analyzed:	3/21/97	3/21/97	3/21/97
Analyte	**MRL**			
Dichlorodifluoromethane (CFC 12)	5	ND	ND	ND
Chloromethane	5	ND	ND	ND
Vinyl Chloride	5	ND	ND	ND
Bromomethane	5	ND	ND	ND
Chloroethane	5	ND	ND	ND
Trichlorofluoromethane (CFC 11)	5	ND	ND	ND
Acetone	50	ND	ND	60
1,1-Dichloroethene	5	ND	ND	ND
Carbon Disulfide	5	ND	ND	8
Methylene Chloride	10	ND	ND	ND
trans-1,2-Dichloroethene	5	ND	ND	ND
1,1-Dichloroethane	5	ND	ND	ND
2-Butanone (MEK)	20	ND	ND	ND
2,2-Dichloropropane	5	ND	ND	ND
cis-1,2-Dichloroethene	5	28	ND	ND
Chloroform	5	ND	ND	ND
Bromochloromethane	5	ND	ND	ND
1,1,1-Trichloroethane (TCA)	5	ND	ND	ND
1,1-Dichloropropene	5	ND	ND	ND
Carbon Tetrachloride	5	ND	ND	ND
1,2-Dichloroethane	5	ND	ND	ND
Benzene	5	ND	ND	ND
Trichloroethene (TCE)	5	ND	23	100
1,2-Dichloropropane	5	ND	ND	ND
Bromodichloromethane	5	ND	ND	ND
Dibromomethane	5	ND	ND	ND
2-Hexanone	20	ND	ND	ND
cis-1,3-Dichloropropene	5	ND	ND	ND
Toluene	5	ND	ND	ND
trans-1,3-Dichloropropene	5	ND	ND	ND
1,1,2-Trichloroethane	5	ND	ND	ND
4-Methyl-2-pentanone (MIBK)	20	ND	ND	ND
1,3-Dichloropropane	5	ND	ND	ND

Approved By: _____ Date: 3/21/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/ #40358-016.004 task3
Sample Matrix: Soil

Service Request: K9701638
Date Collected: 3/10,11/97
Date Received: 3/13/97
Date Extracted: NA

Volatile Organic Compounds
EPA Method 8260A
Units: µg/Kg (ppb)
Dry Weight Basis

	Sample Name:	GP-9-12'	GP-9-23	GP-5-21.5
	Lab Code:	K9701638-021	K9701638-024	K9701638-027
	Date Analyzed:	3/21/97	3/21/97	3/21/97
Analyte	**MRL**			
Tetrachloroethene (PCE)	5	480	88	980
Dibromochloromethane	5	ND	ND	ND
1,2-Dibromoethane (EDB)	20	ND	ND	ND
Chlorobenzene	5	ND	ND	ND
1,1,1,2-Tetrachloroethane	5	ND	ND	ND
Ethylbenzene	5	ND	ND	ND
Total Xylenes	5	ND	ND	ND
Styrene	5	ND	ND	ND
Bromoform	5	ND	ND	ND
Isopropylbenzene	20	ND	ND	ND
1,1,2,2-Tetrachloroethane	5	ND	ND	ND
1,2,3-Trichloropropane	5	ND	ND	ND
Bromobenzene	5	ND	ND	ND
n-Propylbenzene	20	ND	ND	ND
2-Chlorotoluene	20	ND	ND	ND
4-Chlorotoluene	20	ND	ND	ND
1,3,5-Trimethylbenzene	20	ND	ND	ND
tert-Butylbenzene	20	ND	ND	ND
1,2,4-Trimethylbenzene	20	ND	ND	ND
sec-Butylbenzene	20	ND	ND	ND
1,3-Dichlorobenzene	5	ND	ND	ND
4-Isopropyltoluene	20	ND	ND	ND
1,4-Dichlorobenzene	5	ND	ND	ND
n-Butylbenzene	20	ND	ND	ND
1,2-Dichlorobenzene	5	ND	ND	ND
1,2-Dibromo-3-chloropropane (DBCP)	20	ND	ND	ND
1,2,4-Trichlorobenzene	20	ND	ND	ND
1,2,3-Trichlorobenzene	20	ND	ND	ND
Naphthalene	20	ND	ND	ND
Hexachlorobutadiene	20	ND	ND	ND

Approved By: _____ Date: 3/31/97

3S2P/101894

01638VOA.LW2 - 8260s (7) 3/31/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/ #40358-016.004 task3
Sample Matrix: Soil

Service Request: K9701638
Date Collected: 3/10,11/97
Date Received: 3/13/97
Date Extracted: 3/17/97

Volatile Organic Compounds
EPA Method 8260A
Units: mg/Kg (ppm)
Dry Weight Basis

	Sample Name:	SS-G4	GP-5-11	SS-E4
	Lab Code:	K9701638-004	K9701638-026(C)	K9701638-028
	Date Analyzed:	3/23/97	3/23/97	3/23/97
Analyte	**MRL**			
Tetrachloroethene (PCE)	0.5 - 100 ppb	27	1	10
Dibromochloromethane	0.5	ND	<1	ND
1,2-Dibromoethane (EDB)	2	ND	<4	ND
Chlorobenzene	0.5	ND	<1	ND
1,1,1,2-Tetrachloroethane	0.5	ND	<1	ND
Ethylbenzene	0.5	ND	<1	ND
Total Xylenes	0.5	ND	12	ND
Styrene	0.5	ND	<1	ND
Bromoform	0.5	ND	<1	ND
Isopropylbenzene	2	ND	<4	ND
1,1,2,2-Tetrachloroethane	0.5	ND	<1	ND
1,2,3-Trichloropropane	0.5	ND	<1	ND
Bromobenzene	0.5	ND	<1	ND
n-Propylbenzene	2	ND	10	ND
2-Chlorotoluene	2	ND	<4	ND
4-Chlorotoluene	2	ND	<4	ND
1,3,5-Trimethylbenzene	2	ND	16	ND
tert-Butylbenzene	2	ND	7	ND
1,2,4-Trimethylbenzene	2	ND	51	ND
sec-Butylbenzene	2	ND	7	ND
1,3-Dichlorobenzene	0.5	ND	<1	ND
4-Isopropyltoluene	2	ND	9	ND
1,4-Dichlorobenzene	0.5	ND	<1	ND
n-Butylbenzene	2	ND	8	ND
1,2-Dichlorobenzene	0.5	ND	<1	ND
1,2-Dibromo-3-chloropropane (DBCP)	2	ND	<4	ND
1,2,4-Trichlorobenzene	2	ND	<4	ND
1,2,3-Trichlorobenzene	2	ND	<4	ND
Naphthalene	2	ND	<4	ND
Hexachlorobutadiene	2	ND	<4	ND

C The MRL is elevated because the sample required diluting.

Approved By: _____ Date: 3/31/97

3S2P/101894

01638VOA.LW1 - 8260s 3/31/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/ #40358-016.004 task3
Sample Matrix: Soil

Service Request: K9701638
Date Collected: 3/10,11/97
Date Received: 3/13/97
Date Extracted: 3/17/97

Volatile Organic Compounds
EPA Method 8260A
Units: mg/Kg (ppm)
Dry Weight Basis

	Sample Name:	SS-G4	GP-5-11	SS-E4
	Lab Code:	K9701638-004	K9701638-026(C)	K9701638-028
	Date Analyzed:	3/23/97	3/23/97	3/23/97
Analyte	**MRL**			
Dichlorodifluoromethane (CFC 12)	0.5	ND	<1	ND
Chloromethane	0.5	ND	<1	ND
Vinyl Chloride	0.5	ND	<1	ND
Bromomethane	0.5	ND	<1	ND
Chloroethane	0.5	ND	<1	ND
Trichlorofluoromethane (CFC 11)	0.5	ND	<1	ND
Acetone	5	ND	<10	ND
1,1-Dichloroethene	0.5	ND	<1	ND
Carbon Disulfide	0.5	ND	<1	ND
Methylene Chloride	1	ND	<2	ND
trans-1,2-Dichloroethene	0.5	ND	<1	ND
1,1-Dichloroethane	0.5	ND	<1	ND
2-Butanone (MEK)	2	ND	<4	ND
2,2-Dichloropropane	0.5	ND	<1	ND
cis-1,2-Dichloroethene	0.5	ND	<1	ND
Chloroform	0.5	ND	<1	ND
Bromochloromethane	0.5	ND	<1	ND
1,1,1-Trichloroethane (TCA)	0.5	ND	<1	ND
1,1-Dichloropropene	0.5	ND	<1	ND
Carbon Tetrachloride	0.5	ND	<1	ND
1,2-Dichloroethane	0.5	ND	<1	ND
Benzene	0.5	ND	<1	ND
Trichloroethene (TCE)	0.5	ND	<1	ND
1,2-Dichloropropane	0.5	ND	<1	ND
Bromodichloromethane	0.5	ND	<1	ND
Dibromomethane	0.5	ND	<1	ND
2-Hexanone	2	ND	<4	ND
cis-1,3-Dichloropropene	0.5	ND	<1	ND
Toluene	0.5	ND	<1	ND
trans-1,3-Dichloropropene	0.5	ND	<1	ND
1,1,2-Trichloroethane	0.5	ND	<1	ND
4-Methyl-2-pentanone (MIBK)	2	ND	<4	ND
1,3-Dichloropropane	0.5	ND	<1	ND

C The MRL is elevated because the sample required diluting.

Approved By: _____ Date: 3/31/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/ #40358-016.004 task3
Sample Matrix: Soil

Service Request: K9701638
Date Collected: NA
Date Received: NA
Date Extracted: 3/17/97

Volatile Organic Compounds
EPA Method 8260A
Units: mg/Kg (ppm)
Dry Weight Basis

	Sample Name:	Method Blank
	Lab Code:	K970323-MB
	Date Analyzed:	3/23/97
Analyte	**MRL**	
Dichlorodifluoromethane (CFC 12)	0.5	ND
Chloromethane	0.5	ND
Vinyl Chloride	0.5	ND
Bromomethane	0.5	ND
Chloroethane	0.5	ND
Trichlorofluoromethane (CFC 11)	0.5	ND
Acetone	5	ND
1,1-Dichloroethene	0.5	ND
Carbon Disulfide	0.5	ND
Methylene Chloride	1	ND
trans-1,2-Dichloroethene	0.5	ND
1,1-Dichloroethane	0.5	ND
2-Butanone (MEK)	2	ND
2,2-Dichloropropane	0.5	ND
cis-1,2-Dichloroethene	0.5	ND
Chloroform	0.5	ND
Bromochloromethane	0.5	ND
1,1,1-Trichloroethane (TCA)	0.5	ND
1,1-Dichloropropene	0.5	ND
Carbon Tetrachloride	0.5	ND
1,2-Dichloroethane	0.5	ND
Benzene	0.5	ND
Trichloroethene (TCE)	0.5	ND
1,2-Dichloropropane	0.5	ND
Bromodichloromethane	0.5	ND
Dibromomethane	0.5	ND
2-Hexanone	2	ND
cis-1,3-Dichloropropene	0.5	ND
Toluene	0.5	ND
trans-1,3-Dichloropropene	0.5	ND
1,1,2-Trichloroethane	0.5	ND
4-Methyl-2-pentanone (MIBK)	2	ND
1,3-Dichloropropane	0.5	ND

Approved By: _____ Date: 3/31/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/ #40358-016.004 task3
Sample Matrix: Soil

Service Request: K9701638
Date Collected: NA
Date Received: NA
Date Extracted: 3/17/97

Volatile Organic Compounds
EPA Method 8260A
Units: mg/Kg (ppm)
Dry Weight Basis

	Sample Name:	Method Blank
	Lab Code:	K970323-MB
	Date Analyzed:	3/23/97
Analyte	**MRL**	
Tetrachloroethene (PCE)	0.5	ND
Dibromochloromethane	0.5	ND
1,2-Dibromoethane (EDB)	2	ND
Chlorobenzene	0.5	ND
1,1,1,2-Tetrachloroethane	0.5	ND
Ethylbenzene	0.5	ND
Total Xylenes	0.5	ND
Styrene	0.5	ND
Bromoform	0.5	ND
Isopropylbenzene	2	ND
1,1,2,2-Tetrachloroethane	0.5	ND
1,2,3-Trichloropropane	0.5	ND
Bromobenzene	0.5	ND
n -Propylbenzene	2	ND
2-Chlorotoluene	2	ND
4-Chlorotoluene	2	ND
1,3,5-Trimethylbenzene	2	ND
tert -Butylbenzene	2	ND
1,2,4-Trimethylbenzene	2	ND
sec -Butylbenzene	2	ND
1,3-Dichlorobenzene	0.5	ND
4-Isopropyltoluene	2	ND
1,4-Dichlorobenzene	0.5	ND
n -Butylbenzene	2	ND
1,2-Dichlorobenzene	0.5	ND
1,2-Dibromo-3-chloropropane (DBCP)	2	ND
1,2,4-Trichlorobenzene	2	ND
1,2,3-Trichlorobenzene	2	ND
Naphthalene	2	ND
Hexachlorobutadiene	2	ND

Approved By: _____ Date: 3/31/97

3S2P/101894

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/ #40358-016.004 task3
Sample Matrix: Soil

Service Request: K9701638
Date Collected: NA
Date Received: NA
Date Extracted: NA

Volatile Organic Compounds
EPA Method 8260A
Units: µg/Kg (ppb)
Dry Weight Basis

	Sample Name:	Method Blank	Method Blank	Method Blank
	Lab Code:	K970320-MB1	K970320-MB2	K970321-MB
	Date Analyzed:	3/20/97	3/20/97	3/21/97
Analyte	**MRL**			
Dichlorodifluoromethane (CFC 12)	5	ND	ND	ND
Chloromethane	5	ND	ND	ND
Vinyl Chloride	5	ND	ND	ND
Bromomethane	5	ND	ND	ND
Chloroethane	5	ND	ND	ND
Trichlorofluoromethane (CFC 11)	5	ND	ND	ND
Acetone	50	ND	ND	ND
1,1-Dichloroethene	5	ND	ND	ND
Carbon Disulfide	5	ND	ND	ND
Methylene Chloride	10	ND	ND	ND
trans-1,2-Dichloroethene	5	ND	ND	ND
1,1-Dichloroethane	5	ND	ND	ND
2-Butanone (MEK)	20	ND	ND	ND
2,2-Dichloropropane	5	ND	ND	ND
cis-1,2-Dichloroethene	5	ND	ND	ND
Chloroform	5	ND	ND	ND
Bromochloromethane	5	ND	ND	ND
1,1,1-Trichloroethane (TCA)	5	ND	ND	ND
1,1-Dichloropropene	5	ND	ND	ND
Carbon Tetrachloride	5	ND	ND	ND
1,2-Dichloroethane	5	ND	ND	ND
Benzene	5	ND	ND	ND
Trichloroethene (TCE)	5	ND	ND	ND
1,2-Dichloropropane	5	ND	ND	ND
Bromodichloromethane	5	ND	ND	ND
Dibromomethane	5	ND	ND	ND
2-Hexanone	20	ND	ND	ND
cis-1,3-Dichloropropene	5	ND	ND	ND
Toluene	5	ND	ND	ND
trans-1,3-Dichloropropene	5	ND	ND	ND
1,1,2-Trichloroethane	5	ND	ND	ND
4-Methyl-2-pentanone (MIBK)	20	ND	ND	ND
1,3-Dichloropropane	5	ND	ND	ND

Approved By: _____ Date: 3/31/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/ #40358-016.004 task3
Sample Matrix: Soil

Service Request: K9701638
Date Collected: NA
Date Received: NA
Date Extracted: NA

Volatile Organic Compounds
EPA Method 8260A
Units: µg/Kg (ppb)
Dry Weight Basis

	Sample Name:	Method Blank	Method Blank	Method Blank
	Lab Code:	K970320-MB1	K970320-MB2	K970321-MB
	Date Analyzed:	3/20/97	3/20/97	3/21/97
Analyte	**MRL**			
Tetrachloroethene (PCE)	5	ND	ND	ND
Dibromochloromethane	5	ND	ND	ND
1,2-Dibromoethane (EDB)	20	ND	ND	ND
Chlorobenzene	5	ND	ND	ND
1,1,1,2-Tetrachloroethane	5	ND	ND	ND
Ethylbenzene	5	ND	ND	ND
Total Xylenes	5	ND	ND	ND
Styrene	5	ND	ND	ND
Bromoform	5	ND	ND	ND
Isopropylbenzene	20	ND	ND	ND
1,1,2,2-Tetrachloroethane	5	ND	ND	ND
1,2,3-Trichloropropane	5	ND	ND	ND
Bromobenzene	5	ND	ND	ND
n-Propylbenzene	20	ND	ND	ND
2-Chlorotoluene	20	ND	ND	ND
4-Chlorotoluene	20	ND	ND	ND
1,3,5-Trimethylbenzene	20	ND	ND	ND
tert-Butylbenzene	20	ND	ND	ND
1,2,4-Trimethylbenzene	20	ND	ND	ND
sec-Butylbenzene	20	ND	ND	ND
1,3-Dichlorobenzene	5	ND	ND	ND
4-Isopropyltoluene	20	ND	ND	ND
1,4-Dichlorobenzene	5	ND	ND	ND
n-Butylbenzene	20	ND	ND	ND
1,2-Dichlorobenzene	5	ND	ND	ND
1,2-Dibromo-3-chloropropane (DBCP)	20	ND	ND	ND
1,2,4-Trichlorobenzene	20	ND	ND	ND
1,2,3-Trichlorobenzene	20	ND	ND	ND
Naphthalene	20	ND	ND	ND
Hexachlorobutadiene	20	ND	ND	ND

Approved By: _____ Date: 3/31/97

3S2P/101894

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/ #40358-016.004 task3
Sample Matrix: Soil

Service Request: K9701638
Date Collected: NA
Date Received: NA
Date Extracted: NA

Volatile Organic Compounds
EPA Method 8260A
Units: µg/Kg (ppb)
Dry Weight Basis

	Sample Name:	Method Blank
	Lab Code:	K970327-MB
	Date Analyzed:	3/27/97
Analyte	**MRL**	
Dichlorodifluoromethane (CFC 12)	5	ND
Chloromethane	5	ND
Vinyl Chloride	5	ND
Bromomethane	5	ND
Chloroethane	5	ND
Trichlorofluoromethane (CFC 11)	5	ND
Acetone	50	ND
1,1-Dichloroethene	5	ND
Carbon Disulfide	5	ND
Methylene Chloride	10	ND
trans-1,2-Dichloroethene	5	ND
1,1-Dichloroethane	5	ND
2-Butanone (MEK)	20	ND
2,2-Dichloropropane	5	ND
cis-1,2-Dichloroethene	5	ND
Chloroform	5	ND
Bromochloromethane	5	ND
1,1,1-Trichloroethane (TCA)	5	ND
1,1-Dichloropropene	5	ND
Carbon Tetrachloride	5	ND
1,2-Dichloroethane	5	ND
Benzene	5	ND
Trichloroethene (TCE)	5	ND
1,2-Dichloropropane	5	ND
Bromodichloromethane	5	ND
Dibromomethane	5	ND
2-Hexanone	20	ND
cis-1,3-Dichloropropene	5	ND
Toluene	5	ND
trans-1,3-Dichloropropene	5	ND
1,1,2-Trichloroethane	5	ND
4-Methyl-2-pentanone (MIBK)	20	ND
1,3-Dichloropropane	5	ND

Approved By: _____ Date: 3/31/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/ #40358-016.004 task3
Sample Matrix: Soil

Service Request: K9701638
Date Collected: NA
Date Received: NA
Date Extracted: NA

Volatile Organic Compounds
EPA Method 8260A
Units: µg/Kg (ppb)
Dry Weight Basis

	Sample Name:	Method Blank
	Lab Code:	K970327-MB
	Date Analyzed:	3/27/97
Analyte	**MRL**	
Tetrachloroethene (PCE)	5	ND
Dibromochloromethane	5	ND
1,2-Dibromoethane (EDB)	20	ND
Chlorobenzene	5	ND
1,1,1,2-Tetrachloroethane	5	ND
Ethylbenzene	5	ND
Total Xylenes	5	ND
Styrene	5	ND
Bromoform	5	ND
Isopropylbenzene	20	ND
1,1,2,2-Tetrachloroethane	5	ND
1,2,3-Trichloropropane	5	ND
Bromobenzene	5	ND
n -Propylbenzene	20	ND
2-Chlorotoluene	20	ND
4-Chlorotoluene	20	ND
1,3,5-Trimethylbenzene	20	ND
tert -Butylbenzene	20	ND
1,2,4-Trimethylbenzene	20	ND
sec -Butylbenzene	20	ND
1,3-Dichlorobenzene	5	ND
4-Isopropyltoluene	20	ND
1,4-Dichlorobenzene	5	ND
n -Butylbenzene	20	ND
1,2-Dichlorobenzene	5	ND
1,2-Dibromo-3-chloropropane (DBCP)	20	ND
1,2,4-Trichlorobenzene	20	ND
1,2,3-Trichlorobenzene	20	ND
Naphthalene	20	ND
Hexachlorobutadiene	20	ND

Approved By: _____ Date: 3/31/97

3S2P/101894

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: New City Cleaners/ #40358-016.004 task3
Sample Matrix: Soil

Service Request: K9701638
Date Collected: 3/10,11/97
Date Received: 3/13/97
Date Extracted: NA
Date Analyzed: 3/20-27/97

Surrogate Recovery Summary
Volatile Organic Compounds
EPA Method 8260A

		Percent Recovery		
Sample Name	**Lab Code**	Dibromofluoromethane	Toluene-d_8	4-Bromofluorobenzene
SS-D4	K9701638-001	104	86	54(A)
SS-B5	K9701638-002	96	97	81
SS-C4	K9701638-003	104	94	74
SS-I4	K9701638-005	101	95	73
SS-I3	K9701638-006	98	99	83
SS-G3	K9701638-007	102	98	82
SS-E3	K9701638-008	105	89	54(A)
SS-C3	K9701638-009	106	91	72
SS-A3	K9701638-010	108	88	65(A)
SS-C1	K9701638-011	99	98	77
SS-A1	K9701638-012	101	96	86
SS-A2	K9701638-013	103	94	73
SS-C2	K9701638-014	110	98	85
SS-E2	K9701638-015	102	95	78
SS-G2	K9701638-016	98	99	81
GP-8-1'	K9701638-017	101	96	83
GP-8-15'	K9701638-018	101	96	87
GP-8-21'	K9701638-019	100	96	86
	CAS Acceptance Limits:	82-122	84-116	67-129

A Outside acceptance limits; see case narrative.

Approved By: _____ Date: 3/31/97

SUR3/110094
01638VOA.LW2 - 8260aSUR 3/31/97

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: New City Cleaners/ #40358-016.004 task3
Sample Matrix: Soil

Service Request: K9701638
Date Collected: 3/10,11/97
Date Received: 3/13/97
Date Extracted: NA
Date Analyzed: 3/20-27/97

Surrogate Recovery Summary
Volatile Organic Compounds
EPA Method 8260A

Sample Name	Lab Code	Percent Recovery		
		Dibromofluoromethane	Toluene-d_8	4-Bromofluorobenzene
GP-9-12'	K9701638-021	102	97	91
GP-9-23	K9701638-024	101	95	81
GP-5-21.5	K9701638-027	101	95	74
Method Blank	K970320-MB1	98	99	96
Method Blank	K970320-MB2	95	96	82
Method Blank	K970321-MB	95	97	79
Method Blank	K970327-MB	98	100	95
CAS Acceptance Limits:		82-122	84-116	67-129

Approved By: _____ Date: 3/31/97

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: New City Cleaners/ #40358-016.004 task3
Sample Matrix: Soil

Service Request: K9701638
Date Collected: 3/10,11/97
Date Received: 3/13/97
Date Extracted: 3/17/97
Date Analyzed: 3/23/97

Surrogate Recovery Summary
Volatile Organic Compounds
EPA Method 8260A

Sample Name	Lab Code	Percent Recovery		
		Dibromofluoromethane	Toluene-d_8	4-Bromofluorobenzene
SS-G4	K9701638-004	97	100	102
GP-5-11	K9701638-026	98	100	164(A)
SS-E4	K9701638-028	100	100	104
Method Blank	K970323-MB	99	99	89
CAS Acceptance Limits:		82-122	84-116	67-129

A Outside acceptance limits; see case narrative.

Approved By: _____ Date: 3/31/97

SUR3/110094
01638VOA.LW1 - 8260aSUR 3/31/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/ #40358-016.004 Task 3
Sample Matrix: Water

Service Request: K9701662
Date Collected: 3/12/97
Date Received: 3/14/97
Date Extracted: NA

Volatile Organic Compounds
EPA Method 8260A
Units: µg/L (ppb)

	Sample Name:	GPW-10-397-17	GPW-6-397-15	GPW-1-397-15
	Lab Code:	K9701662-010(C)	K9701662-014(C)	K9701662-019(C)
	Date Analyzed:	3/25/97	3/25/97	3/25/97
Analyte	**MRL**			
Dichlorodifluoromethane (CFC 12)	0.5	<20	<100	<10
Chloromethane	0.5	<20	<100	<10
Vinyl Chloride	0.5	<20	<100	<10
Bromomethane	0.5	<20	<100	<10
Chloroethane	0.5	<20	<100	<10
Trichlorofluoromethane (CFC 11)	0.5	<20	<100	<10
Acetone	20	<800	<4000	<400
1,1-Dichloroethene	0.5	<20	<100	<10
Carbon Disulfide	0.5	<20	<100	<10
Methylene Chloride	1	<40	<200	<20
trans-1,2-Dichloroethene	0.5	<20	<100	<10
1,1-Dichloroethane	0.5	<20	<100	<10
2-Butanone (MEK)	20	<800	<4000	<400
2,2-Dichloropropane	0.5	<20	<100	<10
cis-1,2-Dichloroethene	0.5	<20	2300	<10
Chloroform	0.5	<20	<100	<10
Bromochloromethane	0.5	<20	<100	<10
1,1,1-Trichloroethane (TCA)	0.5	<20	<100	<10
1,1-Dichloropropene	0.5	<20	<100	<10
Carbon Tetrachloride	0.5	<20	<100	<10
1,2-Dichloroethane	0.5	<20	<100	<10
Benzene	0.5	<20	<100	<10
Trichloroethene (TCE)	0.5	<20	3500	18
1,2-Dichloropropane	0.5	<20	<100	<10
Bromodichloromethane	0.5	<20	<100	<10
Dibromomethane	0.5	<20	<100	<10
2-Hexanone	20	<800	<4000	<400
cis-1,3-Dichloropropene	0.5	<20	<100	<10
Toluene	0.5	<20	<100	<10
trans-1,3-Dichloropropene	0.5	<20	<100	<10
1,1,2-Trichloroethane	0.5	<20	<100	<10
4-Methyl-2-pentanone (MIBK)	20	<800	<4000	<400
1,3-Dichloropropane	0.5	<20	<100	<10

C The MRL is elevated because the sample required diluting.

Approved By: _____ Date: 3/31/97

01662VOA.LW3 - 8260w2p 3/31/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/ #40358-016.004 Task 3
Sample Matrix: Water

Service Request: K9701662
Date Collected: 3/12/97
Date Received: 3/14/97
Date Extracted: NA

Volatile Organic Compounds
EPA Method 8260A
Units: µg/L (ppb)

	Sample Name:	GPW-10-397-17	GPW-6-397-15	GPW-1-397-15
	Lab Code:	K9701662-010(C)	K9701662-014(C)	K9701662-019(C)
	Date Analyzed:	3/25/97	3/25/97	3/25/97
Analyte	**MRL**			
Tetrachloroethene (PCE)	0.5	59	1000	210
Dibromochloromethane	0.5	<20	<100	<10
1,2-Dibromoethane (EDB)	2	<80	<400	<40
Chlorobenzene	0.5	<20	<100	<10
1,1,1,2-Tetrachloroethane	0.5	<20	<100	<10
Ethylbenzene	0.5	<20	<100	<10
Total Xylenes	0.5	<20	<100	<10
Styrene	0.5	<20	<100	<10
Bromoform	0.5	<20	<100	<10
Isopropylbenzene	2	<80	<400	<40
1,1,2,2-Tetrachloroethane	0.5	<20	<100	<10
1,2,3-Trichloropropane	0.5	<20	<100	<10
Bromobenzene	0.5	<20	<100	<10
n-Propylbenzene	2	<80	<400	<40
2-Chlorotoluene	2	<80	<400	<40
4-Chlorotoluene	2	<80	<400	<40
1,3,5-Trimethylbenzene	2	<80	<400	<40
tert-Butylbenzene	2	<80	<400	<40
1,2,4-Trimethylbenzene	2	<80	<400	<40
sec-Butylbenzene	2	<80	<400	<40
1,3-Dichlorobenzene	0.5	<20	<100	<10
4-Isopropyltoluene	2	<80	<400	<40
1,4-Dichlorobenzene	0.5	<20	<100	<10
n-Butylbenzene	2	<80	<400	<40
1,2-Dichlorobenzene	0.5	<20	<100	<10
1,2-Dibromo-3-chloropropane (DBCP)	2	<80	<400	<40
1,2,4-Trichlorobenzene	2	<80	<400	<40
1,2,3-Trichlorobenzene	2	<80	<400	<40
Naphthalene	2	<80	<400	<40
Hexachlorobutadiene	2	<80	<400	<40

C The MRL is elevated because the sample required diluting.

Approved By: _____ Date: 3/31/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/ #40358-016.004 task3
Sample Matrix: Water

Service Request: K9701638
Date Collected: 3/11/97
Date Received: 3/13/97
Date Extracted: NA

Volatile Organic Compounds
EPA Method 8260A
Units: µg/L (ppb)

	Sample Name:	GPW-8-397-10	GPW-9-397-15'	GPW-9-397-25'
	Lab Code:	K9701638-020(C)	K9701638-022(C)	K9701638-023(C)
	Date Analyzed:	3/25/97	3/25/97	3/25/97
Analyte	**MRL**			
Dichlorodifluoromethane (CFC 12)	0.5	<20	<100	<130
Chloromethane	0.5	<20	<100	<130
Vinyl Chloride	0.5	<20	<100	<130
Bromomethane	0.5	<20	<100	<130
Chloroethane	0.5	<20	<100	<130
Trichlorofluoromethane (CFC 11)	0.5	<20	<100	<130
Acetone	20	<800	<4000	<5000
1,1-Dichloroethene	0.5	<20	<100	<130
Carbon Disulfide	0.5	<20	<100	<130
Methylene Chloride	1	<40	<200	<250
trans-1,2-Dichloroethene	0.5	<20	<100	<130
1,1-Dichloroethane	0.5	<20	<100	<130
2-Butanone (MEK)	20	<800	<4000	<5000
2,2-Dichloropropane	0.5	<20	<100	<130
cis-1,2-Dichloroethene	0.5	<20	<100	<130
Chloroform	0.5	<20	<100	<130
Bromochloromethane	0.5	<20	<100	<130
1,1,1-Trichloroethane (TCA)	0.5	<20	<100	<130
1,1-Dichloropropene	0.5	<20	<100	<130
Carbon Tetrachloride	0.5	<20	<100	<130
1,2-Dichloroethane	0.5	<20	<100	<130
Benzene	0.5	<20	<100	<130
Trichloroethene (TCE)	0.5	<20	<100	<130
1,2-Dichloropropane	0.5	<20	<100	<130
Bromodichloromethane	0.5	<20	<100	<130
Dibromomethane	0.5	<20	<100	<130
2-Hexanone	20	<800	<4000	<5000
cis-1,3-Dichloropropene	0.5	<20	<100	<130
Toluene	0.5	<20	<100	<130
trans-1,3-Dichloropropene	0.5	<20	<100	<130
1,1,2-Trichloroethane	0.5	<20	<100	<130
4-Methyl-2-pentanone (MIBK)	20	<800	<4000	<5000
1,3-Dichloropropane	0.5	<20	<100	<130

C The MRL is elevated because the sample required diluting.

Approved By: _____ Date: 3/31/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/ #40358-016.004 task3
Sample Matrix: Water

Service Request: K9701638
Date Collected: 3/11/97
Date Received: 3/13/97
Date Extracted: NA

Volatile Organic Compounds
EPA Method 8260A
Units: µg/L (ppb)

		Sample Name:	TB1-397	Method Blank
		Lab Code:	K9701638-025	K970325-MB
		Date Analyzed:	3/25/97	3/25/97
Analyte	**MRL**			
Dichlorodifluoromethane (CFC 12)	0.5		ND	ND
Chloromethane	0.5		ND	ND
Vinyl Chloride	0.5		ND	ND
Bromomethane	0.5		ND	ND
Chloroethane	0.5		ND	ND
Trichlorofluoromethane (CFC 11)	0.5		ND	ND
Acetone	20		ND	ND
1,1-Dichloroethene	0.5		ND	ND
Carbon Disulfide	0.5		ND	ND
Methylene Chloride	1		ND	ND
trans-1,2-Dichloroethene	0.5		ND	ND
1,1-Dichloroethane	0.5		ND	ND
2-Butanone (MEK)	20		ND	ND
2,2-Dichloropropane	0.5		ND	ND
cis-1,2-Dichloroethene	0.5		ND	ND
Chloroform	0.5		ND	ND
Bromochloromethane	0.5		ND	ND
1,1,1-Trichloroethane (TCA)	0.5		ND	ND
1,1-Dichloropropene	0.5		ND	ND
Carbon Tetrachloride	0.5		ND	ND
1,2-Dichloroethane	0.5		ND	ND
Benzene	0.5		ND	ND
Trichloroethene (TCE)	0.5		ND	ND
1,2-Dichloropropane	0.5		ND	ND
Bromodichloromethane	0.5		ND	ND
Dibromomethane	0.5		ND	ND
2-Hexanone	20		ND	ND
cis-1,3-Dichloropropene	0.5		ND	ND
Toluene	0.5		ND	ND
trans-1,3-Dichloropropene	0.5		ND	ND
1,1,2-Trichloroethane	0.5		ND	ND
4-Methyl-2-pentanone (MIBK)	20		ND	ND
1,3-Dichloropropane	0.5		ND	ND

Approved By: _____ Date: 3/31/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/ #40358-016.004 task3
Sample Matrix: Water

Service Request: K9701638
Date Collected: 3/11/97
Date Received: 3/13/97
Date Extracted: NA

Volatile Organic Compounds
EPA Method 8260A
Units: µg/L (ppb)

	Sample Name:	GPW-8-397-10	GPW-9-397-15'	GPW-9-397-25'
	Lab Code:	K9701638-020(C)	K9701638-022(C)	K9701638-023(C)
	Date Analyzed:	3/25/97	3/25/97	3/25/97
Analyte	**MRL**			
Tetrachloroethene (PCE)	0.5	1000	2200	2200
Dibromochloromethane	0.5	<20	<100	<130
1,2-Dibromoethane (EDB)	2	<80	<400	<500
Chlorobenzene	0.5	<20	<100	<130
1,1,1,2-Tetrachloroethane	0.5	<20	<100	<130
Ethylbenzene	0.5	<20	<100	<130
Total Xylenes	0.5	<20	<100	<130
Styrene	0.5	<20	<100	<130
Bromoform	0.5	<20	<100	<130
Isopropylbenzene	2	<80	<400	<500
1,1,2,2-Tetrachloroethane	0.5	<20	<100	<130
1,2,3-Trichloropropane	0.5	<20	<100	<130
Bromobenzene	0.5	<20	<100	<130
n-Propylbenzene	2	<80	<400	<500
2-Chlorotoluene	2	<80	<400	<500
4-Chlorotoluene	2	<80	<400	<500
1,3,5-Trimethylbenzene	2	<80	<400	<500
tert-Butylbenzene	2	<80	<400	<500
1,2,4-Trimethylbenzene	2	<80	<400	<500
sec-Butylbenzene	2	<80	<400	<500
1,3-Dichlorobenzene	0.5	<20	<100	<130
4-Isopropyltoluene	2	<80	<400	<500
1,4-Dichlorobenzene	0.5	<20	<100	<130
n-Butylbenzene	2	<80	<400	<500
1,2-Dichlorobenzene	0.5	<20	<100	<130
1,2-Dibromo-3-chloropropane (DBCP)	2	<80	<400	<500
1,2,4-Trichlorobenzene	2	<80	<400	<500
1,2,3-Trichlorobenzene	2	<80	<400	<500
Naphthalene	2	<80	<400	<500
Hexachlorobutadiene	2	<80	<400	<500

C The MRL is elevated because the sample required diluting.

Approved By: _____ Date: 3/31/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/ #40358-016.004 task3
Sample Matrix: Water

Service Request: K9701638
Date Collected: 3/11/97
Date Received: 3/13/97
Date Extracted: NA

Volatile Organic Compounds
EPA Method 8260A
Units: µg/L (ppb)

		Sample Name:	TB1-397	Method Blank
		Lab Code:	K9701638-025	K970325-MB
		Date Analyzed:	3/25/97	3/25/97
Analyte	**MRL**			
Tetrachloroethene (PCE)	0.5		ND	ND
Dibromochloromethane	0.5		ND	ND
1,2-Dibromoethane (EDB)	2		ND	ND
Chlorobenzene	0.5		ND	ND
1,1,1,2-Tetrachloroethane	0.5		ND	ND
Ethylbenzene	0.5		ND	ND
Total Xylenes	0.5		ND	ND
Styrene	0.5		ND	ND
Bromoform	0.5		ND	ND
Isopropylbenzene	2		ND	ND
1,1,2,2-Tetrachloroethane	0.5		ND	ND
1,2,3-Trichloropropane	0.5		ND	ND
Bromobenzene	0.5		ND	ND
n-Propylbenzene	2		ND	ND
2-Chlorotoluene	2		ND	ND
4-Chlorotoluene	2		ND	ND
1,3,5-Trimethylbenzene	2		ND	ND
tert-Butylbenzene	2		ND	ND
1,2,4-Trimethylbenzene	2		ND	ND
sec-Butylbenzene	2		ND	ND
1,3-Dichlorobenzene	0.5		ND	ND
4-Isopropyltoluene	2		ND	ND
1,4-Dichlorobenzene	0.5		ND	ND
n-Butylbenzene	2		ND	ND
1,2-Dichlorobenzene	0.5		ND	ND
1,2-Dibromo-3-chloropropane (DBCP)	2		ND	ND
1,2,4-Trichlorobenzene	2		ND	ND
1,2,3-Trichlorobenzene	2		ND	ND
Naphthalene	2		ND	ND
Hexachlorobutadiene	2		ND	ND

Approved By: _____ Date: 3/31/97

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: New City Cleaners/ #40358-016.004 task3
Sample Matrix: Water

Service Request: K9701638
Date Collected: 3/11/97
Date Received: 3/13/97
Date Extracted: NA
Date Analyzed: 3/25/97

Surrogate Recovery Summary
Volatile Organic Compounds
EPA Method 8260A

		Percent Recovery		
Sample Name	**Lab Code**	Dibromofluoromethane	Toluene-d_8	4-Bromofluorobenzene
GPW-8-397-10	K9701638-020	101	101	98
GPW-9-397-15'	K9701638-022	100	101	99
GPW-9-397-25'	K9701638-023	100	101	97
TB1-397	K9701638-025	100	101	97
Method Blank	K970325-MB	97	99	94
CAS Acceptance Limits:		91-117	90-110	82-119

Approved By: _____ Date: 3/31/97

SUR3/111594
01638VOA.LW3 - 8260wSUR 3/31/97

Columbia Analytical Services, Inc.

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

1317 South 13th Ave. • Kelso, WA 98626 • (360) 577-7222 • (800) 695-7222 • FAX (360) 636-1068

DATE March 11, 1997 PAGE 1 OF 2

PROJECT NAME New City Cleaners #40358-0116.004 Task 3

PROJECT MANAGER Rob Lindsay

COMPANY/ADDRESS EMCON

W. 7106 Alton Ln #101

Spokane, WA 99224 PHONE 509 838-1144

SAMPLERS SIGNATURE John Latta

SAMPLE I.D.	DATE	TIME	LAB I.D.	SAMPLE MATRIX	NUMBER OF CONTAINERS	Base/Neu/Acid Organics GC/MS 625/8270	Volatile Organics GC/MS 624/8240	Halogenated or Aromatic Volatiles 601/8010 ☐ 602/8020 ☐	Pesticides/PCBs 608/8080	Total Petroleum Hydrocarbons EPA/418.1 ☐ OR/418.1 ☐ WA/418.1 ☐	TPH/Gas/BTEX 5030/8015/8020 Gas X BTEX ☐	TPH/8015 Modified Diesel X Hydrocarbon Scan ☐	TPH/HCID ☐ OR/HCID ☐ WA/HCID ☐	TCLP Metals ☐ VOA ☐ Semi Pest/ VOA ☐ Herb ☐	Metals (total or dissolved) List Below	Cyanide	pH, Cond, Cl, SO_4, PO_4, F, Br NO_2, NO_3 (circle)	NH_3-N, COD, Total-P, TKN, TOC (circle)	Total Organic Halides (TOX) 9020 ☐ (AOX) 1650A ☐	8260	REMARKS
SS-D4	3/10/97	16:40	K971638-1	Soil	1						1	1								1	labeled SS-D5
SS-B5	"	16:30	-2	"	1						1	1								1	
SS-C4	"	16:15	-3	"	1						1	1								1	
SS-G4	"	16:00	-4	"	1						1	1								1	
SS-I4	"	15:55	-5	"	1						1	1								1	
SS-I3	"	15:35	-6	"	1						1	1								1	
SS-G3	"	15:15	-7	"	1						1	1								1	
SS-E3	"	15:10	-8	"	1						1	1								1	
SS-C3	"	15:07	-9	"	1						1	1								1	
SS-A3	"	14:55	-10	"	1						1	1								1	

RELINQUISHED BY:
Signature: John Latta
Printed Name: John Latta
Firm: EMCON
Date/Time: 3/11/97 6PM

RECEIVED BY:
Signature: [illegible]
Printed Name: [illegible]
Firm: FED EX CAS
Date/Time: 3/12/97 10:30

TURNAROUND REQUIREMENTS
___ 24 hr ___ 48 hr. ___ 5 day
___ Standard (10-15 working days)
___ Provide Verbal Preliminary Results
___ Provide FAX preliminary Results
Requested Report Date ___

REPORT REQUIREMENTS
___ I. Routine Report
___ II. Report (includes DUP MS, MSD, as required, may be charged as samples)
___ III. Data Validation Report (includes All Raw Data)
___ IV. CLP Deliverable Report

INVOICE INFORMATION:
P.O.# ___
Bill To ___

SAMPLE RECEIPT:
Shipping VIA: ___
Shipping #: ___
Condition: ___
Lab No: K971638

RELINQUISHED BY:
Signature
Printed Name
Firm
Date/Time

RECEIVED BY:
Signature
Printed Name
Firm
Date/Time

SPECIAL INSTRUCTIONS/COMMENTS:
WTPH-G
WTPH-D Extended
8260 = VOCs and BTEX

DISTRIBUTION: WHITE - return to originator; YELLOW - lab; PINK - retained by originator

400-05

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

Columbia Analytical Services, Inc. 1317 South 13th Ave. • Kelso, WA 98626 • (206) 577-7222 • (800) 695-7222 • FAX (206) 636-1068

DATE March 11, 1997 PAGE 2 OF 3

PROJECT NAME New City Cleaners # 40358-016.001 Task 3

PROJECT MANAGER Rob Lindsay

COMPANY/ADDRESS EMCON

W. 7106 Alton Ln #101

Spokane, WA 99224 PHONE 509 838-1144

SAMPLERS SIGNATURE John Latta

SAMPLE I.D.	DATE	TIME	LAB I.D.	SAMPLE MATRIX	NUMBER OF CONTAINERS	Base/Neu/Acid Organics GC/MS 625/8270	Volatile Organics GC/MS 624/8240	Halogenated or Aromatic Volatiles 601/8010 ☐ 602/8020 ☐	Pesticides/PCBs 608/8080	Total Petroleum Hydrocarbons EPA/418.1 ☐ OR/418.1 ☐ WA/418.1 ☐	TPH/Gas/BTEX 5030/8015/8020 Gas ☒ BTEX ☐	TPH/8015 Modified Diesel ☒ Hydrocarbon Scan ☐	TPH/HCID ☐ OR/HCID ☐ WA/HCID ☐	TCLP Metals ☐ VOA ☐	Semi Pest/ VOA ☐ Herb ☐	Metals (total or dissolved) List Below	Cyanide	pH, Cond, Cl, SO_4, PO_4, F, Br NO_2, NO_3 (circle)	NH_3-N, COD, Total-P, TKN (TOC) (circle)	Total Organic Halides (TOX) 9020 ☐ (AOX) 1650 ☐	8260	TSS	REMARKS
SS-C1	3/10/97	14:40	-11	Soil	1						1	1									1		
SS-A1	"	14:30	-12	"	1						1	1									1		
SS-A2	"	14:07	-13	"	1						1	1									1		
SS-C2	"	13:45	-14	"	1						1	1									1		
SS-E2	"	13:15	-15	"	1						1	1									1		
SS-G2	"	12:59	-16	"	1						1	1									1		
GP-B-1'	3/11/97	8:13	-17	"	2						1	1							1		1		
GP-B-15'	"	10:50	-18	"	2						1	1							1		1		
GP-B-21'	"	11:25	-19	"	2						1	1							1		1		
GPW-B-397-10	"	10:15	-20	Water	B						1	1									1	1	

RELINQUISHED BY:
Signature: John Latta
Printed Name: John Latta
Firm: EMCON
Date/Time: 3/11/97 6PM

RECEIVED BY:
Signature: C. Laukkanen
Printed Name: C. LAUKKANEN
Firm: CAS-K
Date/Time: 3/12/97 FEDEX 1030

TURNAROUND REQUIREMENTS
___ 24 hr ___ 48 hr. ___ 5 day
___ Standard (10-15 working days)
___ Provide Verbal Preliminary Results
___ Provide FAX preliminary Results
Requested Report Date ___

REPORT REQUIREMENTS
___ I. Routine Report
___ II. Report (includes DUP.MS. MSD, as required, may be charged as samples)
___ III. Data Validation Report (includes All Raw Data)
___ IV. CLP Deliverable Report

INVOICE INFORMATION:
P.O.# ___
Bill To ___

SAMPLE RECEIPT:
Shipping VIA: ___
Shipping #: ___
Condition: ___
Lab No: K9711638

RELINQUISHED BY:
Signature ___
Printed Name ___
Firm ___
Date/Time ___

RECEIVED BY:
Signature ___
Printed Name ___
Firm ___
Date/Time ___

SPECIAL INSTRUCTIONS/COMMENTS:
8260 = VOCs and BTEX
WTPH-G
WTPH-D extended

00049

DISTRIBUTION: WHITE returns with analysis; YELLOW PINK retained by originator

Analytical Services Inc. — CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

1317 South 13th Ave. • Kelso, WA 98626 • (360) 577-7222 • (800) 695-7222 • FAX (360) 636-1068

DATE March 11, 1997 PAGE 1 OF 2

PROJECT NAME New City Cleaners, 4035B-016.004 Task 3

PROJECT MANAGER Rob Lindsay

COMPANY/ADDRESS EMCON

W. 7106 Allon Ln. # 101

Spokane, WA 99224 PHONE 509 838-1144

SAMPLERS SIGNATURE John Latta

SAMPLE I.D.	DATE	TIME	LAB I.D.	SAMPLE MATRIX	NUMBER OF CONTAINERS	ANALYSIS REQUESTED	REMARKS
SS-D4	3/10/97	16:40		Soil	1		
SS-B5	"	16:30		"	1		
SS-C4	"	16:15		"	1		
SS-G4	"	16:00		"	1		
SS-I4	"	15:55		"	1		
SS-I3	"	15:35		"	1		
SS-G3	"	15:15		"	1		
SS-E3	"	15:10		"	1		
SS-C3	"	15:07		"	1		
SS-A3	"	14:55		"	1		

Base/Neu/Acid Organics GC/MS 625/8270 ☐ Volatile Organics GC/MS 624/8240 ☐ Halogenated or Aromatic Volatiles 601/8010 ☐ 602/8020 ☐ Pesticides/PCBs 608/8080 ☐ Total Petroleum Hydrocarbons Diesel 418.1 ☐ OR/418.1 ☐ WA418.1 ☐ PH/Gas/BTEX 5030/8015/8020 Gas ☒ BTEX ☐ PH/8015 Modified Diesel ☒ Hydrocarbon Scan ☐ PH/HCID ☐ OR/HCID ☐ VA/HCID ☐ CLP Metals ☐ VOA ☐ Semi Pest VOA ☐ Herb ☐ Metals (total or dissolved) List Below ☐ Cyanide ☐ EH. Cond. Cl, SO_4, PO_4, F, Br NO_2, NO_3 (circle) ☐ NH_3-N. COD. Total-P. TKN (TOC) ☐ Total Organic Halides (TOX) 9020 ☐ (AOX) 1650 ☐ 8260 ☐

Hold VSL 3/15/97

Run 3/15/97 D

Run 3/15/97

Run 3/15/97 D

RELINQUISHED BY:
John Latta
Signature
John Latta
Printed Name
EMCON
Firm
3/11/97 6PM
Date/Time

RECEIVED BY:
Signature
Printed Name
FED EX
Firm
3/12/97
Date/Time

TURNAROUND REQUIREMENTS
___ 24 hr ___ 48 hr. ___ 5 day
___ Standard (10-15 working days)
___ Provide Verbal Preliminary Results
___ Provide FAX preliminary Results
Requested Report Date ___

REPORT REQUIREMENTS
___ I. Routine Report
___ II. Report (includes CLP, U.S. MSO, as required, may be charged as samples)
___ III. Data Validation Report (includes All Raw Data)
___ IV. CLP Deliverable Report

INVOICE INFORMATION:
P.O.# ___
Bill To ___

SAMPLE RECEIPT:
Shipping VIA: ___
Shipping #: ___
Condition: ___
Lab No: ___

RELINQUISHED BY:
Signature
Printed Name
Firm
Date/Time

RECEIVED BY:
Signature
Printed Name
Firm
Date/Time

SPECIAL INSTRUCTIONS/COMMENTS:
WTPH-G
WTPH-D Extended
8260 = VOCs and BTEX

DISTRIBUTION: WHITE - return to originator; YELLOW - lab. PINK - retained by originator

400-05

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

Columbia Analytical Services, Inc. 1317 South 13th Ave. • Kelso, WA 98626 • (360) 577-7222 • (800) 695-7222 • FAX (360) 636-1068

DATE March 11, 1997 PAGE 3 OF 3

PROJECT NAME New City Cleaner #40358-016.004 Task 3
PROJECT MANAGER Rob Lindsay
COMPANY/ADDRESS EMCON
W. 7106 Alton Ln. #103
Spokane, WA 99223 PHONE 509 838-1144
SAMPLERS SIGNATURE John Latta

SAMPLE I.D.	DATE	TIME	LAB I.D.	SAMPLE MATRIX	NUMBER OF CONTAINERS	Base/Neu/Acid Organics GC/MS 625/8270	Volatile Organics GC/MS 624/8240	Halogenated or Aromatic Volatiles 601/8010 ☐ 602/8020 ☐	Pesticides/PCBs 608/8080	Total Petroleum Hydrocarbons EPA/418.1 ☐ OR/418.1 ☐ WA/418.1 ☐	TPH/Gas/BTEX 5030/8015/8020 Gas ☒ BTEX ☐	TPH/8015 Modified Diesel ☒	TPH/HCID ☐ Hydrocarbon Scan ☐ WA/HCID ☐ OR/HCID ☐	TCLP Metals ☐ VOA ☐	Semi Pest/ VOA ☐ Herb ☐ Metals (total or dissolved) List Below	Cyanide	pH, Cond, Cl, SO_4, PO_4, F, Br NO_2, NO_3 (circle)	NH_3-N, COD, Total-P, TKN (TOC) (circle)	Total Organic Halides (TOX) 9020 ☐ (AOX) 1650A ☐	8260	TSS	REMARKS
GP-9-12'	3/11/97	14:50	-21	Soil	2						1	1						1		1			
GPW-9-397-15'	"	14:15	-22	Water	8						1	1								1	1		
GPW-9-397-25	"	0800	-23	Water	8						1	1								1	1		
GP-9-23	"	15:45	-24	Soil	2						1	1						1		1	~~1~~ JSL		
~~TB1-397 (JSL)~~ trip blanks	"	—	-25	Water	~~6~~						1									1			
GP-5-11	3/11/97	1640	-26	Soil	2						1	1						1		1			
GP-5-21.5	"	1720	-27	Soil	2						1	1						1		1			
SS-E4	"	1735	-28	Soil	1						1	1						~~1~~ JSL		1			

RELINQUISHED BY:
John Latta
Signature
John Latta
Printed Name
EMCON
Firm
3/11/97 6PM
Date/Time

RECEIVED BY:
Signature
CLAULANEN
Printed Name
CAS/K
Firm
FED Ex 3/12/97 1030
Date/Time

TURNAROUND REQUIREMENTS
___ 24 hr ___ 48 hr. ___ 5 day
___ Standard (10-15 working days)
___ Provide Verbal Preliminary Results
___ Provide FAX preliminary Results
Requested Report Date ___

REPORT REQUIREMENTS
___ I. Routine Report
___ II. Report (includes DUP.MS. MSD, as required, may be charged as samples)
___ III. Data Validation Report (includes All Raw Data)
___ IV. CLP Deliverable Report

INVOICE INFORMATION:
P.O.# ___
Bill To ___

SAMPLE RECEIPT:
Shipping VIA: ___
Shipping #: ___
Condition: ___
Lab No: K9711638

RELINQUISHED BY:
Signature
Printed Name
Firm
Date/Time

RECEIVED BY:
Signature
Printed Name
Firm
Date/Time

SPECIAL INSTRUCTIONS/COMMENTS:
8260 = VOCs and BTEX
WTPH-G
WTPH-G Extended.

DISTRIBUTION: WHITE - return to originator; YELLOW - lab; PINK - retained by originator

400-05

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

Columbia Analytical Services, Inc. — 1317 South 13th Ave. • Kelso, WA 98626 • (360) 577-7222 • (800) 695-7222 • FAX (360) 636-1068

DATE March 11 1997 PAGE 3 OF 3

PROJECT NAME New City Cleaner #4035.01 Task 3

PROJECT MANAGER Rob Lindsay

COMPANY/ADDRESS EMCON

W. 7106 Allen Ln. #103

Spokane, WA 99223 PHONE 535-1144

SAMPLERS SIGNATURE John Fitta

SAMPLE I.D.	DATE	TIME	LAB I.D.	SAMPLE MATRIX	NUMBER OF CONTAINERS	Base/Neu/Acid Organics (GC/MS 625/8270	Volatile Organics (GC/MS 624/8240	Halogenated or Aromatic Volatiles (601/8010 ☐ 602/8020 ☐	Pesticides/PCBs (608/8080	Total Petroleum Hydrocarbons (EPA 418.1 ☐ ORI 418.1 ☐ WA 418.1 ☐	TPH (Gas/BTEX 503d/8015/8020 (Gas ☒ BTEX ☐	TPH/8015 Modified (Diesel ☒ Hydrocarbon Scan ☐	TPH/HCID ☐ ORI/HCID ☐ WA/HCID ☐	TCLP Metals ☐ VOA ☐ Semi Vol ☐	Metals (total or dissolved) (List Below	Cyanide	pH, Cond, Cl, SO4, PO4, F, Br, NO2, NO3 (circle)	NH3-N, COD, Total-P, TKN (circle)	Total Organic Halides (TOX) 9020 ☐ (AOX) 1650 ☐	8260	755	REMARKS
GP-9-12'	3/11/97	14:50		Soil	2					1	1							1		1		
GPW-9-397-15'	"	14:15		Water	9					1	1									1	1	
GPW-9-397-25	"	0800		Water	8					1	1									1	1	
GP-9-23	"	15:45		Soil	2					1	1							1		1	~~JSL~~	
~~TBI-397 (JSL) trip blanks~~	"	—		Water	6					1										1		JSL 3/16/97
GP-5-11	3/11/97	1640		Soil	2					1	1						JSL 3/15/97	1		1		Hold TOC
GP-5-21.5	"	1720		Soil	2					1	1							1		1		Hold TOC
SS-E4	"	1735		Soil	1					1	1									1		
											Hold JSL 3/15/97											

RELINQUISHED BY:
John Fitta
Signature
John Fitta
Printed Name
EMCON
Firm
3/11/97 6PM
Date/Time

RECEIVED BY:
Signature
Printed Name
Firm
Fed Ex 3/12/97
Date/Time

TURNAROUND REQUIREMENTS
___ 24 hr ___ 48 hr. ___ 5 day
___ Standard (10-15 working days)
___ Provide Verbal Preliminary Results
___ Provide FAX preliminary Results
Requested Report Date ___

REPORT REQUIREMENTS
___ I. Routine Report
___ II. Report (includes DUP.MS. MSD, as required, may be charged as samples)
___ III. Data Validation Report (includes All Raw Data)
___ IV. CLP Deliverable Report

INVOICE INFORMATION:
P.O.# ___
Bill To ___

SAMPLE RECEIPT:
Shipping VIA: ___
Shipping #: ___
Condition: ___
Lab No: ___

RELINQUISHED BY:
Signature
Printed Name
Firm
Date/Time

RECEIVED BY:
Signature
Printed Name
Firm
Date/Time

SPECIAL INSTRUCTIONS/COMMENTS:
8260 : Acetone and BTEX
WTPH-G
WTPH-G Extended

DISTRIBUTION: WHITE - return to originator; YELLOW - lab; PINK - retained by originator

400-05

5098381382 P.04
EMCON SPOKANE
MAR-15-1997 14:49

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

Columbia Analytical Services™ 1317 South 13th Ave. • Kelso, WA 98626 • (206) 577-7222 • (800) 695-7222 • FAX (206) 636-1068

DATE March 11, 1997 PAGE 2 OF 4

PROJECT NAME New City Cleaners # 10355-Claim 054 T.#3

PROJECT MANAGER Rob Lindsay

COMPANY/ADDRESS EMCON

W. 710 Alton Ln. #101

Spokane, WA 99224 PHONE 93[illegible]-1144

SAMPLERS SIGNATURE [signature]

SAMPLE I.D.	DATE	TIME	LAB I.D.	SAMPLE MATRIX	NUMBER OF CONTAINERS	Base/Neu/Acid Organics GC/MS 625/8270	Volatile Organics GC/MS 624/8240	Halogenated or Aromatic Volatiles 601/8010 ☐ 602/8020 ☐	Pesticides/PCBs 608/8080	Total Petroleum Hydrocarbons EPA 418.1 ☐ OR/418.1 ☐ WA/418.1 ☐	TPH/Gas/BTEX 503/8015/8020 Gas ☒ BTEX ☐	TPH/8015 Modified Diesel ☒ Hydrocarbon Scan ☐	TPH/HCID ☐ OR/HCID ☐ WA/HCID ☐	TCLP Metals ☐ VOA ☐ Semi ☐ Pest ☐ VOA ☐ Herbo ☐	Metals (total or dissolved) List Below	Cyanide	pH, Cond, Cl, SO_4, PO_4, F, Br NO_2, NO_3, (circle)	NH_3-N, COD, Total-P, TKN (TOC) (circle)	Total Organic Halides TOX) 9020 ☐ (AOX) 1650 ☐	9.2 ☐	T.S.S	REMARKS
SS-C1	3/10/97	14:40		Soil	1								HOLD				Run		1			
SS-A1	"	14:30		"	1								WSL				WSL 3/15/97 (1)		1			
SS-A2	"	14:07		"	1								3/15/97						1			
SS-C2	"	13:45		"	1														1			
SS-E2	"	13:15		"	1														1			
SS-G2	"	12:59		"	1												Run WSL (1) 3/15/97		1			
GP-B-1'	3/11/97	8:13		"	2														1			HOLD WSL 3/15/97
GP-B-15'	"	10:50		"	2														1			
GP-B-21'	"	11:25		"	2														1			
GPW-5-397-10	"	10:15		Water	8														1			

RELINQUISHED BY:
Signature [signature]
Printed Name Sara Latta
Firm EMCON
Date/Time 3/11/97 4PM

RECEIVED BY:
Signature
Printed Name
Firm
Date/Time 3/12/97

TURNAROUND REQUIREMENTS
___ 24 hr ___ 48 hr. ___ 5 day
___ Standard (10-15 working days)
___ Provide Verbal Preliminary Results
___ Provide FAX preliminary Results
Requested Report Date

REPORT REQUIREMENTS
___ I. Routine Report
___ II. Report (includes DUP.MS. MSD, as required, may be charged as samples)
___ III Data Validation Report (includes All Raw Data)
___ IV. CLP Deliverable Report

INVOICE INFORMATION:
P.O.#
Bill To

SAMPLE RECEIPT:
Shipping VIA:
Shipping #:
Condition:
Lab No:

RELINQUISHED BY:
Signature
Printed Name
Firm
Date/Time

RECEIVED BY:
Signature
Printed Name
Firm
Date/Time

SPECIAL INSTRUCTIONS/COMMENTS:
8260 - VOCs incl BTEX
WTPH-G
WTPH-D extended

DISTRIBUTION: WHITE - return originator; YELLOW - lab; PINK - retained by originator

400-05

Columbia Analytical Services, Inc.

April 2, 1997

Service Request No: K9701662

Rob Lindsay
EMCON
W 7106 Will D. Alton Lane, Suite 101
Spokane, WA 99204-5760

Re: New City Cleaners/40358-016.004 Task 3

Dear Rob:

Enclosed are the results of the sample(s) submitted to our laboratory on March 14, 1997. For your reference, these analyses have been assigned our service request number K9701662.

The detection limit for chloromethane in samples GP6-25 and GP-1-5 is elevated due to matrix interferences in the blank.

Samples GP6-11-15, GP6-25, SS-A6 and SS-J4 have surrogates outside acceptance criteria due to matrix interference.

All analyses were performed according to our laboratory's quality assurance program. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the samples analyzed.

Please call if you have any questions. My extension is 243.

Respectfully submitted,

Columbia Analytical Services, Inc.

Richard Craven
Project Chemist

RAC/lj

1317 South 13th Avenue • P.O. Box 479 • Kelso, Washington 98626 • Telephone 360/577-7222 • Fax 360/636-1068

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
J	Estimated concentration. The value is less than the method reporting limit, but greater than the method detection limit.
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NAN	Not Analyzed
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected at or above the MRL
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/40358-016-004 Task 3
Sample Matrix: Water

Service Request: K9701662
Date Collected: 3/12,13/97
Date Received: 3/14/97
Date Extracted: NA
Date Analyzed: 3/18,20/97

Solids, Total Suspended (TSS)
EPA Method 160.2
Units: mg/L (ppm)

Sample Name	Lab Code	MRL	Result
GPW-10-397-17	K9701662-010	5	276
GPW-6-397-15	K9701662-014	5	1690
GPW-1-397-15	K9701662-019	5	799
GPW-3-397-19 3/13	K9701662-023	5	1040
Method Blank	K9701662-MB	5	ND

Approved By: _____ Date: 3/28/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON	**Service Request:**	K9701662
Project:	New City Cleaners/40358-016-004 Task 3	**Date Collected:**	3/12/97
Sample Matrix:	Soil	**Date Received:**	3/14/97
		Date Extracted:	NA
		Date Analyzed:	3/19/97

Carbon, Total Organic
ASTM D4129-82M
Units: Percent (%)
Dry Weight Basis

Sample Name	Lab Code	MRL	Result
GP-10-17	K9701662-008	0.05	0.06
GP-10-21	K9701662-009	0.05	0.07
Method Blank	K9701662-MB	0.05	ND

Approved By: _____ Date: 3/28/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON	**Service Request:**	K9701662
Project:	New City Cleaners/40358-016.004 Task 3	**Date Collected:**	3/12/97
Sample Matrix:	Soil	**Date Received:**	3/14/97
		Date Extracted:	3/25/97
		Date Analyzed:	3/25,26/97

Total Petroleum Hydrocarbons as Diesel and Oil
Washington DOE Method WTPH-D
Units: mg/Kg (ppm)
Dry Weight Basis

Analyte:		Diesel	Oil*
Method Reporting Limit:		25	100
Sample Name	**Lab Code**		
GP-7-15	K9701662-003	ND	ND
GP-7-21.5	K9701662-004	ND	ND
GP-10-17	K9701662-008	ND	ND
GP-10-21	K9701662-009	ND	ND
GP6-11-15	K9701662-011	ND	ND
GP6-25	K9701662-012	ND	ND
GP6-21.5	K9701662-013	ND	ND
Method Blank	K970325-MB	ND	ND

* Quantified using 30-weight motor oil as a standard.

Approved By: _____ Date: 3/27/97

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON	**Service Request:**	K9701662
Project:	New City Cleaners/40358-016.004 Task 3	**Date Collected:**	3/12/97
Sample Matrix:	Soil	**Date Received:**	3/14/97
		Date Extracted:	3/25/97
		Date Analyzed:	3/25,26/97

Surrogate Recovery Summary
Total Petroleum Hydrocarbons as Diesel and Oil
Washington DOE Method WTPH-D

Sample Name	Lab Code	Percent Recovery o-Terphenyl
GP-7-15	K9701662-003	90
GP-7-21.5	K9701662-004	89
GP-10-17	K9701662-008	91
GP-10-21	K9701662-009	93
GP6-11-15	K9701662-011	84
GP6-25	K9701662-012	90
GP6-21.5	K9701662-013	93
Method Blank	K970325-MB	86

CAS Acceptance Limits: 56-116

Approved By: _____ Date: 3/27/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON	**Service Request:**	K9701662
Project:	New City Cleaners/40358-016.004 Task 3	**Date Collected:**	3/12/97
Sample Matrix:	Water	**Date Received:**	3/14/97
		Date Extracted:	3/17/97
		Date Analyzed:	3/18/97

Total Petroleum Hydrocarbon as Diesel and Oil
Washington DOE Method WTPH-D
Units: µg/L (ppb)

Analyte:	Diesel	Oil*
Method Reporting Limit:	250	750

Sample Name	Lab Code		
GPW-10-397-17	K9701662-010	ND	ND
GPW-6-397-15	K9701662-014	356(O)	ND
Method Blank	K970317-WB	ND	ND

* Quantified using 30 weight motor oil as a standard.

O Quantitated as diesel. The sample contained components lighter than diesel that partially eluted in the diesel range.

Approved By: Raun C Smith Date: 3/24/97

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: New City Cleaners/40358-016.004 Task 3
Sample Matrix: Water

Service Request: K9701662
Date Collected: 3/12/97
Date Received: 3/14/97
Date Extracted: 3/17/97
Date Analyzed: 3/18/97

Surrogate Recovery Summary
Total Petroleum Hydrocarbons as Diesel and Oil
Washington DOE Method WTPH-D

Sample Name	Lab Code	Percent Recovery o-Terphenyl
GPW-10-397-17	K9701662-010	81
GPW-6-397-15	K9701662-014	82
Method Blank	K970317-WB	87

CAS Acceptance Limits: 59-110

Approved By: Shawn D. Smith Date: 3/24/97

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SURJ/111594
01662PHC.JS1 - TPHwSUR 3/20/97

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON	**Service Request:**	K9701662
Project:	New City Cleaners/40358-016.004 Task 3	**Date Collected:**	3/12/97
Sample Matrix:	Soil	**Date Received:**	3/14/97
		Date Extracted:	NA
		Date Analyzed:	3/22-23/97

Total Petroleum Hydrocarbons as Gasoline
Washington DOE Method WTPH-G
Units: mg/Kg (ppm)
Dry Weight Basis

Sample Name	Lab Code	MRL	Result
GP-7-15	K9701662-003	5	ND
GP-7-21.5	K9701662-004	5	ND
GP-10-17	K9701662-008	5	ND
GP-10-21	K9701662-009	5	ND
GP6-11-15	K9701662-011	5	470(N)
GP6-25	K9701662-012	5	510(N)
GP6-21.5	K9701662-013	5	19
Method Blank	K970320-MB	5	ND

N Quantitated as gasoline. The sample contained components that eluted in the gasoline range, but the chromatogram did not match the typical gasoline fingerprint.

Approved By: Sharon Porter Date: 4/1/97

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON	**Service Request:**	K9701662
Project:	New City Cleaners/40358-016.004 Task 3	**Date Collected:**	3/12/97
Sample Matrix:	Soil	**Date Received:**	3/14/97
		Date Extracted:	NA
		Date Analyzed:	3/22-23/97

Surrogate Recovery Summary
Total Petroleum Hydrocarbons as Gasoline
Washington DOE Method WTPH-G

Sample Name	Lab Code	Percent Recovery 1,4-Difluorobenzene
GP-7-15	K9701662-003	62
GP-7-21.5	K9701662-004	54
GP-10-17	K9701662-008	54
GP-10-21	K9701662-009	53
GP6-11-15	K9701662-011	60
GP6-25	K9701662-012	118
GP6-21.5	K9701662-013	58
Method Blank	K970320-MB	70

CAS Acceptance Limits: 48-129

Approved By: Sharon Post Date: 4/1/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON	**Service Request:**	K9701662
Project:	New City Cleaners/40358-016.004 Task 3	**Date Collected:**	3/12/97
Sample Matrix:	Water	**Date Received:**	3/14/97
		Date Extracted:	NA
		Date Analyzed:	3/26,27/97

Total Petroleum Hydrocarbons as Gasoline
Washington DOE Method WTPH-G
Units: µg/L (ppb)

Sample Name	Lab Code	MRL	Result
GPW-10-397-17	K9701662-010(H)	50	290(O)
GPW-6-397-15	K9701662-014(H)	50	1700(O)
Method Blank	K970326-MB	50	ND

H The analysis was performed past the recommended hold time; see case narrative.
O Quantitated as gasoline. The sample contained an unknown peak that eluted in the gasoline range.

Approved By: _____ Date: 4/2/97

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COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: New City Cleaners/40358-016.004 Task 3
Sample Matrix: Water

Service Request: K9701662
Date Collected: 3/12/97
Date Received: 3/14/97
Date Extracted: NA
Date Analyzed: 3/26,27/97

Surrogate Recovery Summary
Total Petroleum Hydrocarbons as Gasoline
Washington DOE Method WTPH-G

Sample Name	Lab Code	Percent Recovery 4-Bromofluorobenzene
GPW-10-397-17	K9701662-010(H)	91
GPW-6-397-15	K9701662-014(H)	207(A)
Method Blank	K970326-MB	90

CAS Acceptance Limits: 65-117

A Outside acceptance limits; see case narrative.

Approved By: _____ Date: 4/2/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/ #40358-016.004 Task 3
Sample Matrix: Soil

Service Request: K9701662
Date Collected: 3/12,13/97
Date Received: 3/14/97
Date Extracted: NA

Volatile Organic Compounds
EPA Method 8260A
Units: µg/Kg (ppb)
Dry Weight Basis

	Sample Name:	SS-F5	SS-I6	GP-7-15
	Lab Code:	K9701662-001	K9701662-002	K9701662-003(C)
	Date Analyzed:	3/23/97	3/22/97	3/22/97
Analyte	**MRL**			
Dichlorodifluoromethane (CFC 12)	5	ND	ND	<30
Chloromethane	5	ND	ND	<30
Vinyl Chloride	5	ND	ND	<30
Bromomethane	5	ND	ND	<30
Chloroethane	5	ND	ND	<30
Trichlorofluoromethane (CFC 11)	5	ND	ND	<30
Acetone	50	ND	ND	<300
1,1-Dichloroethene	5	ND	ND	<30
Carbon Disulfide	5	ND	ND	<30
Methylene Chloride	10	ND	ND	<60
trans-1,2-Dichloroethene	5	ND	ND	<30
1,1-Dichloroethane	5	ND	ND	<30
2-Butanone (MEK)	20	ND	ND	<120
2,2-Dichloropropane	5	ND	ND	<30
cis-1,2-Dichloroethene	5	ND	ND	<30
Chloroform	5	ND	ND	<30
Bromochloromethane	5	ND	ND	<30
1,1,1-Trichloroethane (TCA)	5	ND	ND	<30
1,1-Dichloropropene	5	ND	ND	<30
Carbon Tetrachloride	5	ND	ND	<30
1,2-Dichloroethane	5	ND	ND	<30
Benzene	5	ND	ND	<30
Trichloroethene (TCE)	5	ND	ND	<30
1,2-Dichloropropane	5	ND	ND	<30
Bromodichloromethane	5	ND	ND	<30
Dibromomethane	5	ND	ND	<30
2-Hexanone	20	ND	ND	<120
cis-1,3-Dichloropropene	5	ND	ND	<30
Toluene	5	ND	ND	<30
trans-1,3-Dichloropropene	5	ND	ND	<30
1,1,2-Trichloroethane	5	ND	ND	<30
4-Methyl-2-pentanone (MIBK)	20	ND	ND	<120
1,3-Dichloropropane	5	ND	ND	<30

C The MRL is elevated because the sample required diluting.

Approved By: _____ Date: 3/31/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/ #40358-016.004 Task 3
Sample Matrix: Soil

Service Request: K9701662
Date Collected: 3/12,13/97
Date Received: 3/14/97
Date Extracted: NA

Volatile Organic Compounds
EPA Method 8260A
Units: µg/Kg (ppb)
Dry Weight Basis

	Sample Name:	SS-F5	SS-I6	GP-7-15
	Lab Code:	K9701662-001	K9701662-002	K9701662-003(C)
	Date Analyzed:	3/23/97	3/22/97	3/22/97
Analyte	**MRL**			
Tetrachloroethene (PCE)	5	23	ND	700
Dibromochloromethane	5	ND	ND	<30
1,2-Dibromoethane (EDB)	20	ND	ND	<120
Chlorobenzene	5	ND	ND	<30
1,1,1,2-Tetrachloroethane	5	ND	ND	<30
Ethylbenzene	5	ND	ND	<30
Total Xylenes	5	ND	ND	<30
Styrene	5	ND	ND	<30
Bromoform	5	ND	ND	<30
Isopropylbenzene	20	ND	ND	<120
1,1,2,2-Tetrachloroethane	5	ND	ND	<30
1,2,3-Trichloropropane	5	ND	ND	<30
Bromobenzene	5	ND	ND	<30
n-Propylbenzene	20	ND	ND	<120
2-Chlorotoluene	20	ND	ND	<120
4-Chlorotoluene	20	ND	ND	<120
1,3,5-Trimethylbenzene	20	ND	ND	<120
tert-Butylbenzene	20	ND	ND	<120
1,2,4-Trimethylbenzene	20	ND	ND	<120
sec-Butylbenzene	20	ND	ND	<120
1,3-Dichlorobenzene	5	ND	ND	<30
4-Isopropyltoluene	20	ND	ND	<120
1,4-Dichlorobenzene	5	ND	ND	<30
n-Butylbenzene	20	ND	ND	<120
1,2-Dichlorobenzene	5	ND	ND	<30
1,2-Dibromo-3-chloropropane (DBCP)	20	ND	ND	<120
1,2,4-Trichlorobenzene	20	ND	ND	<120
1,2,3-Trichlorobenzene	20	ND	ND	<120
Naphthalene	20	ND	ND	<120
Hexachlorobutadiene	20	ND	ND	<120

C The MRL is elevated because the sample required diluting.

Approved By: _____ Date: 3/31/97

3S2P/101894

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/ #40358-016.004 Task 3
Sample Matrix: Soil

Service Request: K9701662
Date Collected: 3/12,13/97
Date Received: 3/14/97
Date Extracted: NA

Volatile Organic Compounds
EPA Method 8260A
Units: µg/Kg (ppb)
Dry Weight Basis

	Sample Name:	GP-7-21.5	SS-A4	SS-A6
	Lab Code:	K9701662-004(C)	K9701662-005	K9701662-006
	Date Analyzed:	3/22/97	3/22/97	3/21/97
Analyte	**MRL**			
Dichlorodifluoromethane (CFC 12)	5	<35	ND	ND
Chloromethane	5	<35	ND	ND
Vinyl Chloride	5	<35	ND	ND
Bromomethane	5	<35	ND	ND
Chloroethane	5	<35	ND	ND
Trichlorofluoromethane (CFC 11)	5	<35	ND	ND
Acetone	50	<350	ND	ND
1,1-Dichloroethene	5	<35	ND	ND
Carbon Disulfide	5	<35	ND	ND
Methylene Chloride	10	<70	ND	ND
trans-1,2-Dichloroethene	5	<35	ND	ND
1,1-Dichloroethane	5	<35	ND	ND
2-Butanone (MEK)	20	<140	ND	ND
2,2-Dichloropropane	5	<35	ND	ND
cis-1,2-Dichloroethene	5	<35	ND	ND
Chloroform	5	<35	ND	ND
Bromochloromethane	5	<35	ND	ND
1,1,1-Trichloroethane (TCA)	5	<35	ND	ND
1,1-Dichloropropene	5	<35	ND	ND
Carbon Tetrachloride	5	<35	ND	ND
1,2-Dichloroethane	5	<35	ND	ND
Benzene	5	<35	ND	ND
Trichloroethene (TCE)	5	<35	ND	ND
1,2-Dichloropropane	5	<35	ND	ND
Bromodichloromethane	5	<35	ND	ND
Dibromomethane	5	<35	ND	ND
2-Hexanone	20	<140	ND	ND
cis-1,3-Dichloropropene	5	<35	ND	ND
Toluene	5	<35	ND	ND
trans-1,3-Dichloropropene	5	<35	ND	ND
1,1,2-Trichloroethane	5	<35	ND	ND
4-Methyl-2-pentanone (MIBK)	20	<140	ND	ND
1,3-Dichloropropane	5	<35	ND	ND

C The MRL is elevated because the sample required diluting.

Approved By: _____ Date: 3/31/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/ #40358-016.004 Task 3
Sample Matrix: Soil

Service Request: K9701662
Date Collected: 3/12,13/97
Date Received: 3/14/97
Date Extracted: NA

Volatile Organic Compounds
EPA Method 8260A
Units: µg/Kg (ppb)
Dry Weight Basis

	Sample Name:	GP-7-21.5	SS-A4	SS-A6
	Lab Code:	K9701662-004(C)	K9701662-005	K9701662-006
	Date Analyzed:	3/22/97	3/22/97	3/21/97
Analyte	**MRL**			
Tetrachloroethene (PCE)	5	350	ND	180
Dibromochloromethane	5	<35	ND	ND
1,2-Dibromoethane (EDB)	20	<140	ND	ND
Chlorobenzene	5	<35	ND	ND
1,1,1,2-Tetrachloroethane	5	<35	ND	ND
Ethylbenzene	5	<35	ND	ND
Total Xylenes	5	<35	ND	ND
Styrene	5	<35	ND	ND
Bromoform	5	<35	ND	ND
Isopropylbenzene	20	<140	ND	ND
1,1,2,2-Tetrachloroethane	5	<35	ND	ND
1,2,3-Trichloropropane	5	<35	ND	ND
Bromobenzene	5	<35	ND	ND
n-Propylbenzene	20	<140	ND	ND
2-Chlorotoluene	20	<140	ND	ND
4-Chlorotoluene	20	<140	ND	ND
1,3,5-Trimethylbenzene	20	<140	ND	ND
tert-Butylbenzene	20	<140	ND	ND
1,2,4-Trimethylbenzene	20	<140	ND	ND
sec-Butylbenzene	20	<140	ND	ND
1,3-Dichlorobenzene	5	<35	ND	ND
4-Isopropyltoluene	20	<140	ND	ND
1,4-Dichlorobenzene	5	<35	ND	ND
n-Butylbenzene	20	<140	ND	ND
1,2-Dichlorobenzene	5	<35	ND	ND
1,2-Dibromo-3-chloropropane (DBCP)	20	<140	ND	ND
1,2,4-Trichlorobenzene	20	<140	ND	ND
1,2,3-Trichlorobenzene	20	<140	ND	ND
Naphthalene	20	<140	ND	ND
Hexachlorobutadiene	20	<140	ND	ND

C The MRL is elevated because the sample required diluting.

Approved By: _____ Date: 3/31/97

3S2P/101894

01662VOA.LW2 - 8260s (2) 3/31/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/ #40358-016.004 Task 3
Sample Matrix: Soil

Service Request: K9701662
Date Collected: 3/12,13/97
Date Received: 3/14/97
Date Extracted: NA

Volatile Organic Compounds
EPA Method 8260A
Units: µg/Kg (ppb)
Dry Weight Basis

	Sample Name:	SS-J4	GP-10-17	GP-10-21
	Lab Code:	K9701662-007	K9701662-008	K9701662-009
	Date Analyzed:	3/22/97	3/21/97	3/21/97
Analyte	**MRL**			
Dichlorodifluoromethane (CFC 12)	5	ND	ND	ND
Chloromethane	5	ND	ND	ND
Vinyl Chloride	5	ND	ND	ND
Bromomethane	5	ND	ND	ND
Chloroethane	5	ND	ND	ND
Trichlorofluoromethane (CFC 11)	5	ND	ND	ND
Acetone	50	ND	ND	ND
1,1-Dichloroethene	5	ND	ND	ND
Carbon Disulfide	5	ND	ND	ND
Methylene Chloride	10	ND	ND	ND
trans-1,2-Dichloroethene	5	ND	ND	ND
1,1-Dichloroethane	5	ND	ND	ND
2-Butanone (MEK)	20	ND	ND	ND
2,2-Dichloropropane	5	ND	ND	ND
cis-1,2-Dichloroethene	5	ND	ND	ND
Chloroform	5	ND	ND	ND
Bromochloromethane	5	ND	ND	ND
1,1,1-Trichloroethane (TCA)	5	ND	ND	ND
1,1-Dichloropropene	5	ND	ND	ND
Carbon Tetrachloride	5	ND	ND	ND
1,2-Dichloroethane	5	ND	ND	ND
Benzene	5	ND	ND	ND
Trichloroethene (TCE)	5	ND	27	26
1,2-Dichloropropane	5	ND	ND	ND
Bromodichloromethane	5	ND	ND	ND
Dibromomethane	5	ND	ND	ND
2-Hexanone	20	ND	ND	ND
cis-1,3-Dichloropropene	5	ND	ND	ND
Toluene	5	ND	ND	ND
trans-1,3-Dichloropropene	5	ND	ND	ND
1,1,2-Trichloroethane	5	ND	ND	ND
4-Methyl-2-pentanone (MIBK)	20	ND	ND	ND
1,3-Dichloropropane	5	ND	ND	ND

Approved By: _____ Date: 3/31/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/ #40358-016.004 Task 3
Sample Matrix: Soil

Service Request: K9701662
Date Collected: 3/12,13/97
Date Received: 3/14/97
Date Extracted: NA

Volatile Organic Compounds
EPA Method 8260A
Units: µg/Kg (ppb)
Dry Weight Basis

	Sample Name:	SS-J4	GP-10-17	GP-10-21
	Lab Code:	K9701662-007	K9701662-008	K9701662-009
	Date Analyzed:	3/22/97	3/21/97	3/21/97
Analyte	**MRL**			
Tetrachloroethene (PCE)	5	130	640	460
Dibromochloromethane	5	ND	ND	ND
1,2-Dibromoethane (EDB)	20	ND	ND	ND
Chlorobenzene	5	ND	ND	ND
1,1,1,2-Tetrachloroethane	5	ND	ND	ND
Ethylbenzene	5	ND	ND	ND
Total Xylenes	5	ND	ND	ND
Styrene	5	ND	ND	ND
Bromoform	5	ND	ND	ND
Isopropylbenzene	20	ND	ND	ND
1,1,2,2-Tetrachloroethane	5	ND	ND	ND
1,2,3-Trichloropropane	5	ND	ND	ND
Bromobenzene	5	ND	ND	ND
n-Propylbenzene	20	ND	ND	ND
2-Chlorotoluene	20	ND	ND	ND
4-Chlorotoluene	20	ND	ND	ND
1,3,5-Trimethylbenzene	20	ND	ND	ND
tert-Butylbenzene	20	ND	ND	ND
1,2,4-Trimethylbenzene	20	ND	ND	ND
sec-Butylbenzene	20	ND	ND	ND
1,3-Dichlorobenzene	5	ND	ND	ND
4-Isopropyltoluene	20	ND	ND	ND
1,4-Dichlorobenzene	5	ND	ND	ND
n-Butylbenzene	20	ND	ND	ND
1,2-Dichlorobenzene	5	ND	ND	ND
1,2-Dibromo-3-chloropropane (DBCP)	20	ND	ND	ND
1,2,4-Trichlorobenzene	20	ND	ND	ND
1,2,3-Trichlorobenzene	20	ND	ND	ND
Naphthalene	20	ND	ND	ND
Hexachlorobutadiene	20	ND	ND	ND

Approved By: _____ Date: 3/31/97

3S2P/101894

01662VOA.LW2 - 8260s (3) 3/31/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/ #40358-016.004 Task 3
Sample Matrix: Soil

Service Request: K9701662
Date Collected: 3/12,13/97
Date Received: 3/14/97
Date Extracted: NA

Volatile Organic Compounds
EPA Method 8260A
Units: µg/Kg (ppb)
Dry Weight Basis

	Sample Name:	GP6-21.5	SS-E6	SS-F6
	Lab Code:	K9701662-013(C)	K9701662-015	K9701662-016
	Date Analyzed:	3/22/97	3/21/97	3/22/97
Analyte	**MRL**			
Dichlorodifluoromethane (CFC 12)	5	<35	ND	ND
Chloromethane	5	<35	ND	ND
Vinyl Chloride	5	<35	ND	ND
Bromomethane	5	<35	ND	ND
Chloroethane	5	<35	ND	ND
Trichlorofluoromethane (CFC 11)	5	<35	ND	ND
Acetone	50	<350	ND	ND
1,1-Dichloroethene	5	<35	ND	ND
Carbon Disulfide	5	<35	ND	ND
Methylene Chloride	10	<70	ND	ND
trans-1,2-Dichloroethene	5	<35	ND	ND
1,1-Dichloroethane	5	<35	ND	ND
2-Butanone (MEK)	20	<140	ND	ND
2,2-Dichloropropane	5	<35	ND	ND
cis-1,2-Dichloroethene	5	<35	ND	ND
Chloroform	5	<35	ND	ND
Bromochloromethane	5	<35	ND	ND
1,1,1-Trichloroethane (TCA)	5	<35	ND	ND
1,1-Dichloropropene	5	<35	ND	ND
Carbon Tetrachloride	5	<35	ND	ND
1,2-Dichloroethane	5	<35	ND	ND
Benzene	5	<35	ND	ND
Trichloroethene (TCE)	5	210	ND	ND
1,2-Dichloropropane	5	<35	ND	ND
Bromodichloromethane	5	<35	ND	ND
Dibromomethane	5	<35	ND	ND
2-Hexanone	20	<140	ND	ND
cis-1,3-Dichloropropene	5	<35	ND	ND
Toluene	5	<35	ND	ND
trans-1,3-Dichloropropene	5	<35	ND	ND
1,1,2-Trichloroethane	5	<35	ND	ND
4-Methyl-2-pentanone (MIBK)	20	<140	ND	ND
1,3-Dichloropropane	5	<35	ND	ND

C The MRL is elevated because the sample required diluting.

Approved By: _____ Date: 3/31/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/ #40358-016.004 Task 3
Sample Matrix: Soil

Service Request: K9701662
Date Collected: 3/12,13/97
Date Received: 3/14/97
Date Extracted: NA

Volatile Organic Compounds
EPA Method 8260A
Units: µg/Kg (ppb)
Dry Weight Basis

	Sample Name:	GP6-21.5	SS-E6	SS-F6
	Lab Code:	K9701662-013(C)	K9701662-015	K9701662-016
	Date Analyzed:	3/22/97	3/21/97	3/22/97
Analyte	**MRL**			
Tetrachloroethene (PCE)	5	6500	6	5
Dibromochloromethane	5	<35	ND	ND
1,2-Dibromoethane (EDB)	20	<140	ND	ND
Chlorobenzene	5	<35	ND	ND
1,1,1,2-Tetrachloroethane	5	<35	ND	ND
Ethylbenzene	5	<35	ND	ND
Total Xylenes	5	<35	ND	ND
Styrene	5	<35	ND	ND
Bromoform	5	<35	ND	ND
Isopropylbenzene	20	<140	ND	ND
1,1,2,2-Tetrachloroethane	5	<35	ND	ND
1,2,3-Trichloropropane	5	<35	ND	ND
Bromobenzene	5	<35	ND	ND
n-Propylbenzene	20	<140	ND	ND
2-Chlorotoluene	20	<140	ND	ND
4-Chlorotoluene	20	<140	ND	ND
1,3,5-Trimethylbenzene	20	<140	ND	ND
tert-Butylbenzene	20	<140	ND	ND
1,2,4-Trimethylbenzene	20	<140	ND	ND
sec-Butylbenzene	20	<140	ND	ND
1,3-Dichlorobenzene	5	<35	ND	ND
4-Isopropyltoluene	20	<140	ND	ND
1,4-Dichlorobenzene	5	<35	ND	ND
n-Butylbenzene	20	<140	ND	ND
1,2-Dichlorobenzene	5	<35	ND	ND
1,2-Dibromo-3-chloropropane (DBCP)	20	<140	ND	ND
1,2,4-Trichlorobenzene	20	<140	ND	ND
1,2,3-Trichlorobenzene	20	<140	ND	ND
Naphthalene	20	<140	ND	ND
Hexachlorobutadiene	20	<140	ND	ND

C The MRL is elevated because the sample required diluting.

Approved By: _____ Date: 3/31/97

3S2P/101894

01662VOA.LW2 - 8260a (4) 3/31/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/ #40358-016.004 Task 3
Sample Matrix: Soil

Service Request: K9701662
Date Collected: 3/12,13/97
Date Received: 3/14/97
Date Extracted: NA

Volatile Organic Compounds
EPA Method 8260A
Units: µg/Kg (ppb)
Dry Weight Basis

	Sample Name:	GP-1-19	GP3-19	GP3-15
	Lab Code:	K9701662-018(C)	K9701662-020	K9701662-021
	Date Analyzed:	3/22/97	3/22/97	3/23/97
Analyte	**MRL**			
Dichlorodifluoromethane (CFC 12)	5	<30	ND	ND
Chloromethane	5	<30	ND	ND
Vinyl Chloride	5	<30	ND	ND
Bromomethane	5	<30	ND	ND
Chloroethane	5	<30	ND	ND
Trichlorofluoromethane (CFC 11)	5	<30	ND	ND
Acetone	50	<300	ND	ND
1,1-Dichloroethene	5	<30	ND	ND
Carbon Disulfide	5	<30	ND	ND
Methylene Chloride	10	<60	ND	ND
trans-1,2-Dichloroethene	5	<30	ND	ND
1,1-Dichloroethane	5	<30	ND	ND
2-Butanone (MEK)	20	<120	ND	ND
2,2-Dichloropropane	5	<30	ND	ND
cis-1,2-Dichloroethene	5	<30	ND	ND
Chloroform	5	<30	ND	ND
Bromochloromethane	5	<30	ND	ND
1,1,1-Trichloroethane (TCA)	5	<30	ND	ND
1,1-Dichloropropene	5	<30	ND	ND
Carbon Tetrachloride	5	<30	ND	ND
1,2-Dichloroethane	5	<30	ND	ND
Benzene	5	<30	ND	ND
Trichloroethene (TCE)	5	<30	ND	ND
1,2-Dichloropropane	5	<30	ND	ND
Bromodichloromethane	5	<30	ND	ND
Dibromomethane	5	<30	ND	ND
2-Hexanone	20	<120	ND	ND
cis-1,3-Dichloropropene	5	<30	ND	ND
Toluene	5	<30	ND	ND
trans-1,3-Dichloropropene	5	<30	ND	ND
1,1,2-Trichloroethane	5	<30	ND	ND
4-Methyl-2-pentanone (MIBK)	20	<120	ND	ND
1,3-Dichloropropane	5	<30	ND	ND

C The MRL is elevated because the sample required diluting.

Approved By: _____ Date: 3/31/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON	**Service Request:**	K9701662
Project:	New City Cleaners/ #40358-016.004 Task 3	**Date Collected:**	3/12,13/97
Sample Matrix:	Soil	**Date Received:**	3/14/97
		Date Extracted:	NA

Volatile Organic Compounds
EPA Method 8260A
Units: µg/Kg (ppb)
Dry Weight Basis

		Sample Name:	GP-1-19	GP3-19	GP3-15
		Lab Code:	K9701662-018(C)	K9701662-020	K9701662-021
		Date Analyzed:	3/22/97	3/22/97	3/23/97
Analyte	**MRL**				
Tetrachloroethene (PCE)	5		440	150	85
Dibromochloromethane	5		<30	ND	ND
1,2-Dibromoethane (EDB)	20		<120	ND	ND
Chlorobenzene	5		<30	ND	ND
1,1,1,2-Tetrachloroethane	5		<30	ND	ND
Ethylbenzene	5		<30	ND	ND
Total Xylenes	5		<30	ND	ND
Styrene	5		<30	ND	ND
Bromoform	5		<30	ND	ND
Isopropylbenzene	20		<120	ND	ND
1,1,2,2-Tetrachloroethane	5		<30	ND	ND
1,2,3-Trichloropropane	5		<30	ND	ND
Bromobenzene	5		<30	ND	ND
n-Propylbenzene	20		<120	ND	ND
2-Chlorotoluene	20		<120	ND	ND
4-Chlorotoluene	20		<120	ND	ND
1,3,5-Trimethylbenzene	20		<120	ND	ND
tert-Butylbenzene	20		<120	ND	ND
1,2,4-Trimethylbenzene	20		<120	ND	ND
sec-Butylbenzene	20		<120	ND	ND
1,3-Dichlorobenzene	5		<30	ND	ND
4-Isopropyltoluene	20		<120	ND	ND
1,4-Dichlorobenzene	5		<30	ND	ND
n-Butylbenzene	20		<120	ND	ND
1,2-Dichlorobenzene	5		<30	ND	ND
1,2-Dibromo-3-chloropropane (DBCP)	20		<120	ND	ND
1,2,4-Trichlorobenzene	20		<120	ND	ND
1,2,3-Trichlorobenzene	20		<120	ND	ND
Naphthalene	20		<120	ND	ND
Hexachlorobutadiene	20		<120	ND	ND

C The MRL is elevated because the sample required diluting.

Approved By: _____ Date: 3/31/97

3S2P/101894

01662VOA.LW2 - 8260s (5) 3/31/97

00022

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/ #40358-016.004 Task 3
Sample Matrix: Soil

Service Request: K9701662
Date Collected: 3/12,13/97
Date Received: 3/14/97
Date Extracted: NA

Volatile Organic Compounds
EPA Method 8260A
Units: µg/Kg (ppb)
Dry Weight Basis

	Sample Name:	SS-G6	SS-C6	Method Blank
	Lab Code:	K9701662-024	K9701662-025	K970320-MB
	Date Analyzed:	3/23/97	3/23/97	3/20/97
Analyte	**MRL**			
Dichlorodifluoromethane (CFC 12)	5	ND	ND	ND
Chloromethane	5	ND	ND	ND
Vinyl Chloride	5	ND	ND	ND
Bromomethane	5	ND	ND	ND
Chloroethane	5	ND	ND	ND
Trichlorofluoromethane (CFC 11)	5	ND	ND	ND
Acetone	50	ND	ND	ND
1,1-Dichloroethene	5	ND	ND	ND
Carbon Disulfide	5	ND	ND	ND
Methylene Chloride	10	ND	ND	ND
trans-1,2-Dichloroethene	5	ND	ND	ND
1,1-Dichloroethane	5	ND	ND	ND
2-Butanone (MEK)	20	ND	ND	ND
2,2-Dichloropropane	5	ND	ND	ND
cis-1,2-Dichloroethene	5	ND	ND	ND
Chloroform	5	ND	ND	ND
Bromochloromethane	5	ND	ND	ND
1,1,1-Trichloroethane (TCA)	5	ND	ND	ND
1,1-Dichloropropene	5	ND	ND	ND
Carbon Tetrachloride	5	ND	ND	ND
1,2-Dichloroethane	5	ND	ND	ND
Benzene	5	ND	ND	ND
Trichloroethene (TCE)	5	ND	ND	ND
1,2-Dichloropropane	5	ND	ND	ND
Bromodichloromethane	5	ND	ND	ND
Dibromomethane	5	ND	ND	ND
2-Hexanone	20	ND	ND	ND
cis-1,3-Dichloropropene	5	ND	ND	ND
Toluene	5	ND	ND	ND
trans-1,3-Dichloropropene	5	ND	ND	ND
1,1,2-Trichloroethane	5	ND	ND	ND
4-Methyl-2-pentanone (MIBK)	20	ND	ND	ND
1,3-Dichloropropane	5	ND	ND	ND

Approved By: _____ Date: 3/31/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/ #40358-016.004 Task 3
Sample Matrix: Soil

Service Request: K9701662
Date Collected: 3/12,13/97
Date Received: 3/14/97
Date Extracted: NA

Volatile Organic Compounds
EPA Method 8260A
Units: µg/Kg (ppb)
Dry Weight Basis

	Sample Name:	SS-G6	SS-C6	Method Blank
	Lab Code:	K9701662-024	K9701662-025	K970320-MB
	Date Analyzed:	3/23/97	3/23/97	3/20/97
Analyte	**MRL**			
Tetrachloroethene (PCE)	5	49	5	ND
Dibromochloromethane	5	ND	ND	ND
1,2-Dibromoethane (EDB)	20	ND	ND	ND
Chlorobenzene	5	ND	ND	ND
1,1,1,2-Tetrachloroethane	5	ND	ND	ND
Ethylbenzene	5	ND	ND	ND
Total Xylenes	5	ND	ND	ND
Styrene	5	ND	ND	ND
Bromoform	5	ND	ND	ND
Isopropylbenzene	20	ND	ND	ND
1,1,2,2-Tetrachloroethane	5	ND	ND	ND
1,2,3-Trichloropropane	5	ND	ND	ND
Bromobenzene	5	ND	ND	ND
n -Propylbenzene	20	ND	ND	ND
2-Chlorotoluene	20	ND	ND	ND
4-Chlorotoluene	20	ND	ND	ND
1,3,5-Trimethylbenzene	20	ND	ND	ND
tert -Butylbenzene	20	ND	ND	ND
1,2,4-Trimethylbenzene	20	ND	ND	ND
sec -Butylbenzene	20	ND	ND	ND
1,3-Dichlorobenzene	5	ND	ND	ND
4-Isopropyltoluene	20	ND	ND	ND
1,4-Dichlorobenzene	5	ND	ND	ND
n -Butylbenzene	20	ND	ND	ND
1,2-Dichlorobenzene	5	ND	ND	ND
1,2-Dibromo-3-chloropropane (DBCP)	20	ND	ND	ND
1,2,4-Trichlorobenzene	20	ND	ND	ND
1,2,3-Trichlorobenzene	20	ND	ND	ND
Naphthalene	20	ND	ND	ND
Hexachlorobutadiene	20	ND	ND	ND

Approved By: _____ Date: 3/31/97

3S2P/101894

01662VOA.LW2 - 8260s (6) 3/31/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/ #40358-016.004 Task 3
Sample Matrix: Soil

Service Request: K9701662
Date Collected: 3/12,13/97
Date Received: 3/14/97
Date Extracted: 3/17/97

Volatile Organic Compounds
EPA Method 8260A
Units: mg/Kg (ppm)
Dry Weight Basis

	Sample Name:	GP6-11-15	GP6-25	GP-1-5
	Lab Code:	K9701662-011	K9701662-012	K9701662-017
	Date Analyzed:	3/24/97	3/24/97	3/24/97
Analyte	**MRL**			
Dichlorodifluoromethane (CFC 12)	0.5	ND	ND	ND
Chloromethane	0.5	ND	<3(X)	<1(X)
Vinyl Chloride	0.5	ND	ND	ND
Bromomethane	0.5	ND	ND	ND
Chloroethane	0.5	ND	ND	ND
Trichlorofluoromethane (CFC 11)	0.5	ND	ND	ND
Acetone	5	ND	ND	ND
1,1-Dichloroethene	0.5	ND	ND	ND
Carbon Disulfide	0.5	ND	ND	ND
Methylene Chloride	1	ND	ND	ND
trans-1,2-Dichloroethene	0.5	ND	ND	ND
1,1-Dichloroethane	0.5	ND	ND	ND
2-Butanone (MEK)	2	ND	ND	ND
2,2-Dichloropropane	0.5	ND	ND	ND
cis-1,2-Dichloroethene	0.5	ND	ND	ND
Chloroform	0.5	ND	ND	ND
Bromochloromethane	0.5	ND	ND	ND
1,1,1-Trichloroethane (TCA)	0.5	ND	ND	ND
1,1-Dichloropropene	0.5	ND	ND	ND
Carbon Tetrachloride	0.5	ND	ND	ND
1,2-Dichloroethane	0.5	ND	ND	ND
Benzene	0.5	ND	ND	ND
Trichloroethene (TCE)	0.5	0.6	1.3	ND
1,2-Dichloropropane	0.5	ND	ND	ND
Bromodichloromethane	0.5	ND	ND	ND
Dibromomethane	0.5	ND	ND	ND
2-Hexanone	2	ND	ND	ND
cis-1,3-Dichloropropene	0.5	ND	ND	ND
Toluene	0.5	ND	ND	ND
trans-1,3-Dichloropropene	0.5	ND	ND	ND
1,1,2-Trichloroethane	0.5	ND	ND	ND
4-Methyl-2-pentanone (MIBK)	2	ND	ND	ND
1,3-Dichloropropane	0.5	ND	ND	ND

X See case narrative.

Approved By: _____ Date: 3/31/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/ #40358-016.004 Task 3
Sample Matrix: Soil

Service Request: K9701662
Date Collected: 3/12,13/97
Date Received: 3/14/97
Date Extracted: 3/17/97

Volatile Organic Compounds
EPA Method 8260A
Units: mg/Kg (ppm)
Dry Weight Basis

	Sample Name:	GP6-11-15	GP6-25	GP-1-5
	Lab Code:	K9701662-011	K9701662-012	K9701662-017
	Date Analyzed:	3/24/97	3/24/97	3/24/97
Analyte	**MRL**			
Tetrachloroethene (PCE)	0.5	0.6	1.0	7.5
Dibromochloromethane	0.5	ND	ND	ND
1,2-Dibromoethane (EDB)	2	ND	ND	ND
Chlorobenzene	0.5	ND	ND	ND
1,1,1,2-Tetrachloroethane	0.5	ND	ND	ND
Ethylbenzene	0.5	ND	ND	ND
Total Xylenes	0.5	ND	ND	ND
Styrene	0.5	ND	ND	ND
Bromoform	0.5	ND	ND	ND
Isopropylbenzene	2	ND	ND	ND
1,1,2,2-Tetrachloroethane	0.5	ND	ND	ND
1,2,3-Trichloropropane	0.5	ND	ND	ND
Bromobenzene	0.5	ND	ND	ND
n-Propylbenzene	2	ND	ND	ND
2-Chlorotoluene	2	ND	ND	ND
4-Chlorotoluene	2	ND	ND	ND
1,3,5-Trimethylbenzene	2	ND	ND	ND
tert-Butylbenzene	2	ND	ND	ND
1,2,4-Trimethylbenzene	2	ND	ND	ND
sec-Butylbenzene	2	ND	ND	ND
1,3-Dichlorobenzene	0.5	ND	ND	ND
4-Isopropyltoluene	2	ND	ND	ND
1,4-Dichlorobenzene	0.5	ND	ND	ND
n-Butylbenzene	2	ND	ND	ND
1,2-Dichlorobenzene	0.5	ND	ND	ND
1,2-Dibromo-3-chloropropane (DBCP)	2	ND	ND	ND
1,2,4-Trichlorobenzene	2	ND	ND	ND
1,2,3-Trichlorobenzene	2	ND	ND	ND
Naphthalene	2	ND	ND	ND
Hexachlorobutadiene	2	ND	ND	ND

Approved By: _____ Date: 3/31/97

3S2P/101894

01662VOA.LW1 - 8260s 3/31/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/ #40358-016.004 Task 3
Sample Matrix: Soil

Service Request: K9701662
Date Collected: NA
Date Received: NA
Date Extracted: NA

Volatile Organic Compounds
EPA Method 8260A
Units: µg/Kg (ppb)
Dry Weight Basis

	Sample Name:	Method Blank	Method Blank
	Lab Code:	K970322-MB1	K970322-MB2
	Date Analyzed:	3/22/97	3/22/97
Analyte	**MRL**		
Dichlorodifluoromethane (CFC 12)	5	ND	ND
Chloromethane	5	ND	ND
Vinyl Chloride	5	ND	ND
Bromomethane	5	ND	ND
Chloroethane	5	ND	ND
Trichlorofluoromethane (CFC 11)	5	ND	ND
Acetone	50	ND	ND
1,1-Dichloroethene	5	ND	ND
Carbon Disulfide	5	ND	ND
Methylene Chloride	10	ND	ND
trans-1,2-Dichloroethene	5	ND	ND
1,1-Dichloroethane	5	ND	ND
2-Butanone (MEK)	20	ND	ND
2,2-Dichloropropane	5	ND	ND
cis-1,2-Dichloroethene	5	ND	ND
Chloroform	5	ND	ND
Bromochloromethane	5	ND	ND
1,1,1-Trichloroethane (TCA)	5	ND	ND
1,1-Dichloropropene	5	ND	ND
Carbon Tetrachloride	5	ND	ND
1,2-Dichloroethane	5	ND	ND
Benzene	5	ND	ND
Trichloroethene (TCE)	5	ND	ND
1,2-Dichloropropane	5	ND	ND
Bromodichloromethane	5	ND	ND
Dibromomethane	5	ND	ND
2-Hexanone	20	ND	ND
cis-1,3-Dichloropropene	5	ND	ND
Toluene	5	ND	ND
trans-1,3-Dichloropropene	5	ND	ND
1,1,2-Trichloroethane	5	ND	ND
4-Methyl-2-pentanone (MIBK)	20	ND	ND
1,3-Dichloropropane	5	ND	ND

Approved By: _____ Date: 3/31/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/ #40358-016.004 Task 3
Sample Matrix: Soil

Service Request: K9701662
Date Collected: NA
Date Received: NA
Date Extracted: NA

Volatile Organic Compounds
EPA Method 8260A
Units: µg/Kg (ppb)
Dry Weight Basis

	Sample Name:	Method Blank	Method Blank
	Lab Code:	K970322-MB1	K970322-MB2
	Date Analyzed:	3/22/97	3/22/97
Analyte	**MRL**		
Tetrachloroethene (PCE)	5	ND	ND
Dibromochloromethane	5	ND	ND
1,2-Dibromoethane (EDB)	20	ND	ND
Chlorobenzene	5	ND	ND
1,1,1,2-Tetrachloroethane	5	ND	ND
Ethylbenzene	5	ND	ND
Total Xylenes	5	ND	ND
Styrene	5	ND	ND
Bromoform	5	ND	ND
Isopropylbenzene	20	ND	ND
1,1,2,2-Tetrachloroethane	5	ND	ND
1,2,3-Trichloropropane	5	ND	ND
Bromobenzene	5	ND	ND
n-Propylbenzene	20	ND	ND
2-Chlorotoluene	20	ND	ND
4-Chlorotoluene	20	ND	ND
1,3,5-Trimethylbenzene	20	ND	ND
tert-Butylbenzene	20	ND	ND
1,2,4-Trimethylbenzene	20	ND	ND
sec-Butylbenzene	20	ND	ND
1,3-Dichlorobenzene	5	ND	ND
4-Isopropyltoluene	20	ND	ND
1,4-Dichlorobenzene	5	ND	ND
n-Butylbenzene	20	ND	ND
1,2-Dichlorobenzene	5	ND	ND
1,2-Dibromo-3-chloropropane (DBCP)	20	ND	ND
1,2,4-Trichlorobenzene	20	ND	ND
1,2,3-Trichlorobenzene	20	ND	ND
Naphthalene	20	ND	ND
Hexachlorobutadiene	20	ND	ND

Approved By: _____ Date: 3/31/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/ #40358-016.004 Task 3
Sample Matrix: Soil

Service Request: K9701662
Date Collected: NA
Date Received: NA
Date Extracted: 3/17/97

Volatile Organic Compounds
EPA Method 8260A
Units: mg/Kg (ppm)
Dry Weight Basis

	Sample Name:	Method Blank
	Lab Code:	K970324-MB
	Date Analyzed:	3/24/97
Analyte	**MRL**	
Dichlorodifluoromethane (CFC 12)	0.5	ND
Chloromethane	0.5	ND
Vinyl Chloride	0.5	ND
Bromomethane	0.5	ND
Chloroethane	0.5	ND
Trichlorofluoromethane (CFC 11)	0.5	ND
Acetone	5	ND
1,1-Dichloroethene	0.5	ND
Carbon Disulfide	0.5	ND
Methylene Chloride	1	ND
trans-1,2-Dichloroethene	0.5	ND
1,1-Dichloroethane	0.5	ND
2-Butanone (MEK)	2	ND
2,2-Dichloropropane	0.5	ND
cis-1,2-Dichloroethene	0.5	ND
Chloroform	0.5	ND
Bromochloromethane	0.5	ND
1,1,1-Trichloroethane (TCA)	0.5	ND
1,1-Dichloropropene	0.5	ND
Carbon Tetrachloride	0.5	ND
1,2-Dichloroethane	0.5	ND
Benzene	0.5	ND
Trichloroethene (TCE)	0.5	ND
1,2-Dichloropropane	0.5	ND
Bromodichloromethane	0.5	ND
Dibromomethane	0.5	ND
2-Hexanone	2	ND
cis-1,3-Dichloropropene	0.5	ND
Toluene	0.5	ND
trans-1,3-Dichloropropene	0.5	ND
1,1,2-Trichloroethane	0.5	ND
4-Methyl-2-pentanone (MIBK)	2	ND
1,3-Dichloropropane	0.5	ND

Approved By: _____ Date: 3/31/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/ #40358-016.004 Task 3
Sample Matrix: Soil

Service Request: K9701662
Date Collected: NA
Date Received: NA
Date Extracted: 3/17/97

Volatile Organic Compounds
EPA Method 8260A
Units: mg/Kg (ppm)
Dry Weight Basis

	Sample Name:	Method Blank
	Lab Code:	K970324-MB
	Date Analyzed:	3/24/97
Analyte	**MRL**	
Tetrachloroethene (PCE)	0.5	ND
Dibromochloromethane	0.5	ND
1,2-Dibromoethane (EDB)	2	ND
Chlorobenzene	0.5	ND
1,1,1,2-Tetrachloroethane	0.5	ND
Ethylbenzene	0.5	ND
Total Xylenes	0.5	ND
Styrene	0.5	ND
Bromoform	0.5	ND
Isopropylbenzene	2	ND
1,1,2,2-Tetrachloroethane	0.5	ND
1,2,3-Trichloropropane	0.5	ND
Bromobenzene	0.5	ND
n-Propylbenzene	2	ND
2-Chlorotoluene	2	ND
4-Chlorotoluene	2	ND
1,3,5-Trimethylbenzene	2	ND
tert-Butylbenzene	2	ND
1,2,4-Trimethylbenzene	2	ND
sec-Butylbenzene	2	ND
1,3-Dichlorobenzene	0.5	ND
4-Isopropyltoluene	2	ND
1,4-Dichlorobenzene	0.5	ND
n-Butylbenzene	2	ND
1,2-Dichlorobenzene	0.5	ND
1,2-Dibromo-3-chloropropane (DBCP)	2	ND
1,2,4-Trichlorobenzene	2	ND
1,2,3-Trichlorobenzene	2	ND
Naphthalene	2	ND
Hexachlorobutadiene	2	ND

Approved By: _____ Date: 4/3/97

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: New City Cleaners/ #40358-016.004 Task 3
Sample Matrix: Soil

Service Request: K9701662
Date Collected: 3/12,13/97
Date Received: 3/14/97
Date Extracted: NA
Date Analyzed: 3/20-23/97

Surrogate Recovery Summary
Volatile Organic Compounds
EPA Method 8260A

Sample Name	Lab Code	Percent Recovery Dibromofluoromethane	Toluene-d_8	4-Bromofluorobenzene
SS-F5	K9701662-001	111	97	84
SS-I6	K9701662-002	109	96	86
GP-7-15	K9701662-003	106	100	101
GP-7-21.5	K9701662-004	105	101	97
SS-A4	K9701662-005	109	96	82
SS-A6	K9701662-006	106	97	48(A)
SS-J4	K9701662-007	110	94	62(A)
GP-10-17	K9701662-008	102	96	87
GP-10-21	K9701662-009	100	96	85
GP6-21.5	K9701662-013	107	101	110
SS-E6	K9701662-015	104	94	80
SS-F6	K9701662-016	110	97	87
GP-1-19	K9701662-018	106	102	98
GP3-19	K9701662-020	107	100	98
GP3-15	K9701662-021	107	102	100
SS-G6	K9701662-024	107	102	93
SS-C6	K9701662-025	109	101	90
Method Blank	K970320-MB	95	96	82
Method Blank	K970322-MB1	100	100	94
Method Blank	K970322-MB2	100	101	95
CAS Acceptance Limits:		82-122	84-116	67-129

A Outside acceptance limits; see case narrative.

Approved By: _____ Date: 3/31/97

SUR3/110094
01662VOA.LW2 - 8260aSUR 3/31/97

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: New City Cleaners/ #40358-016.004 Task 3
Sample Matrix: Soil

Service Request: K9701662
Date Collected: 3/12,13/97
Date Received: 3/14/97
Date Extracted: 3/17/97
Date Analyzed: 3/24/97

Surrogate Recovery Summary
Volatile Organic Compounds
EPA Method 8260A

Sample Name	Lab Code	Percent Recovery		
		Dibromofluoromethane	Toluene-d_8	4-Bromofluorobenzene
GP6-11-15	K9701662-011	98	101	161(A)
GP6-25	K9701662-012	97	100	165(A)
GP-1-5	K9701662-017	96	99	104
Method Blank	K970324-MB	97	101	103
CAS Acceptance Limits:		82-122	84-116	67-129

A Outside acceptance limits; see case narrative.

Approved By: _____ Date: 3/31/97

SUR3/110094
01662VOA.LW1 - 8260sSUR 3/31/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/ #40358-016.004 Task 3
Sample Matrix: Water

Service Request: K9701662
Date Collected: 3/12/97
Date Received: 3/14/97
Date Extracted: NA

Volatile Organic Compounds
EPA Method 8260A
Units: µg/L (ppb)

		GPW-3-397-19		
	Sample Name:	**3/12**	**Method Blank**	**Method Blank**
	Lab Code:	K9701662-022(C)	K970325-MB	K970327-MB
	Date Analyzed:	3/25/97	3/25/97	3/27/97
Analyte	**MRL**			
Dichlorodifluoromethane (CFC 12)	0.5	<25	ND	ND
Chloromethane	0.5	<25	ND	ND
Vinyl Chloride	0.5	<25	ND	ND
Bromomethane	0.5	<25	ND	ND
Chloroethane	0.5	<25	ND	ND
Trichlorofluoromethane (CFC 11)	0.5	<25	ND	ND
Acetone	20	<1000	ND	ND
1,1-Dichloroethene	0.5	<25	ND	ND
Carbon Disulfide	0.5	<25	ND	ND
Methylene Chloride	1	<50	ND	ND
trans-1,2-Dichloroethene	0.5	<25	ND	ND
1,1-Dichloroethane	0.5	<25	ND	ND
2-Butanone (MEK)	20	<1000	ND	ND
2,2-Dichloropropane	0.5	<25	ND	ND
cis-1,2-Dichloroethene	0.5	<25	ND	ND
Chloroform	0.5	<25	ND	ND
Bromochloromethane	0.5	<25	ND	ND
1,1,1-Trichloroethane (TCA)	0.5	<25	ND	ND
1,1-Dichloropropene	0.5	<25	ND	ND
Carbon Tetrachloride	0.5	<25	ND	ND
1,2-Dichloroethane	0.5	<25	ND	ND
Benzene	0.5	<25	ND	ND
Trichloroethene (TCE)	0.5	56	ND	ND
1,2-Dichloropropane	0.5	<25	ND	ND
Bromodichloromethane	0.5	<25	ND	ND
Dibromomethane	0.5	<25	ND	ND
2-Hexanone	20	<1000	ND	ND
cis-1,3-Dichloropropene	0.5	<25	ND	ND
Toluene	0.5	<25	ND	ND
trans-1,3-Dichloropropene	0.5	<25	ND	ND
1,1,2-Trichloroethane	0.5	<25	ND	ND
4-Methyl-2-pentanone (MIBK)	20	<1000	ND	ND
1,3-Dichloropropane	0.5	<25	ND	ND

C The MRL is elevated because the sample required diluting.

Approved By: _____ Date: 3/31/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON	**Service Request:**	K9701662
Project:	New City Cleaners/ #40358-016.004 Task 3	**Date Collected:**	3/12/97
Sample Matrix:	Water	**Date Received:**	3/14/97
		Date Extracted:	NA

Volatile Organic Compounds
EPA Method 8260A
Units: µg/L (ppb)

		GPW-3-397-19		
	Sample Name:	**3/12**	**Method Blank**	**Method Blank**
	Lab Code:	K9701662-022(C)	K970325-MB	K970327-MB
	Date Analyzed:	3/25/97	3/25/97	3/27/97
Analyte	**MRL**			
Tetrachloroethene (PCE)	0.5	1100	ND	ND
Dibromochloromethane	0.5	<25	ND	ND
1,2-Dibromoethane (EDB)	2	<100	ND	ND
Chlorobenzene	0.5	<25	ND	ND
1,1,1,2-Tetrachloroethane	0.5	<25	ND	ND
Ethylbenzene	0.5	<25	ND	ND
Total Xylenes	0.5	<25	ND	ND
Styrene	0.5	<25	ND	ND
Bromoform	0.5	<25	ND	ND
Isopropylbenzene	2	<100	ND	ND
1,1,2,2-Tetrachloroethane	0.5	<25	ND	ND
1,2,3-Trichloropropane	0.5	<25	ND	ND
Bromobenzene	0.5	<25	ND	ND
n-Propylbenzene	2	<100	ND	ND
2-Chlorotoluene	2	<100	ND	ND
4-Chlorotoluene	2	<100	ND	ND
1,3,5-Trimethylbenzene	2	<100	ND	ND
tert-Butylbenzene	2	<100	ND	ND
1,2,4-Trimethylbenzene	2	<100	ND	ND
sec-Butylbenzene	2	<100	ND	ND
1,3-Dichlorobenzene	0.5	<25	ND	ND
4-Isopropyltoluene	2	<100	ND	ND
1,4-Dichlorobenzene	0.5	<25	ND	ND
n-Butylbenzene	2	<100	ND	ND
1,2-Dichlorobenzene	0.5	<25	ND	ND
1,2-Dibromo-3-chloropropane (DBCP)	2	<100	ND	ND
1,2,4-Trichlorobenzene	2	<100	ND	ND
1,2,3-Trichlorobenzene	2	<100	ND	ND
Naphthalene	2	<100	ND	ND
Hexachlorobutadiene	2	<100	ND	ND

C The MRL is elevated because the sample required diluting.

Approved By: _____ Date: 3/31/97

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: New City Cleaners/ #40358-016.004 Task 3
Sample Matrix: Water

Service Request: K9701662
Date Collected: 3/12/97
Date Received: 3/14/97
Date Extracted: NA
Date Analyzed: 3/25-27/97

Surrogate Recovery Summary
Volatile Organic Compounds
EPA Method 8260A

Sample Name	Lab Code	Percent Recovery		
		Dibromofluoromethane	Toluene-d_8	4-Bromofluorobenzene
GPW-10-397-17	K9701662-010	100	99	95
GPW-6-397-15	K9701662-014	99	102	99
GPW-1-397-15	K9701662-019	103	102	100
GPW-3-397-19 3/12	K9701662-022	102	101	98
Method Blank	K970325-MB	97	99	94
Method Blank	K970327-MB	100	99	93

CAS Acceptance Limits: 91-117 90-110 82-119

Approved By: _____ Date: 3/31/97

SUR3/111594
01662VOA.LW3 - 8260wSUR 3/31/97

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

Columbia Analytical Services, Inc. 1317 South 13th Ave. • Kelso, WA 98626 • (206) 577-7222 • (800) 695-7222 • FAX (206) 636-1068

DATE 3/13/97 PAGE 1 OF 3

PROJECT NAME New City Cleaners #40358-D16.004 Task 3

PROJECT MANAGER Rob Lindsay

COMPANY/ADDRESS EMCON

W. 7106 Alton Ln. #101

Spokane, WA 99224 PHONE 509 838-1144

SAMPLERS SIGNATURE John Latta

SAMPLE I.D.	DATE	TIME	LAB I.D.	SAMPLE MATRIX	NUMBER OF CONTAINERS	Base/Neu/Acid Organics GC/MS 625/8270	Volatile Organics GC/MS 624/8240	Halogenated or Aromatic Volatiles 601/8010 ☐ 602/8020 ☐	Pesticides/PCBs 608/8080	Total Petroleum Hydrocarbons EPA/418.1 ☐ OR/418.1 ☐ WA/418.1 ☐	TPH/Gas/BTEX 5030/8015/8020 Gas ☒ BTEX ☐	TPH/8015 Modified Diesel ☒ Hydrocarbon Scan ☐	TPH/HCID ☐ OR/HCID ☐ WA/HCID ☐	TCLP Metals ☐ VOA ☐	Semi Pest/ VOA ☐ Herb ☐ Metals (total or dissolved) List Below	Cyanide	pH, Cond, Cl, SO_4, PO_4, F, Br NO_2, NO_3 (circle)	NH_3-N, COD, Total-P, TKN, (circle)	Total Organic Halides (TOX) 9020 ☐ (AOX) 1650A ☐	8260	TSS	REMARKS
SS-F5	3/12/97	0840		Soil	1						1	1							1		labeled SS-F7. VOA/CAS
SS-J5 ~~J6~~ I6	3/12/97	09:05		"	1						1	1							1		
GP-7-15	3/12/97	09:10		"	2						1	1						1	1		
GP-7-21.5	3/12/97	09:00		"	2						1	1						1	1		
SS-A4	3/12/97	12:20		"	1						1	1							1		
SS-A6	3/12/97	12:47		"	1						1	1							1		
SS-J4	3/12/97	13:00		"	1						1	1							1		
GP-10-17	3/12/97	13:00		"	2						1	1						1	1		
GP-10-21	3/12/97	12:50		"	2						1	1						1	1		labeled GP-10-15 / VOA/CAS
GPW-10-397-17	3/12/97	12:00		Water	8						1	1							1	1	

RELINQUISHED BY:
John Latta
Signature
John Latta
Printed Name
EMCON
Firm
3/13/97 10AM
Date/Time

RECEIVED BY:
Signature
Printed Name
~~EMCO~~ FEDEX
Firm
3/13/97
Date/Time

TURNAROUND REQUIREMENTS
___ 24 hr ___ 48 hr. ___ 5 day
___ Standard (10-15 working days)
___ Provide Verbal Preliminary Results
___ Provide FAX preliminary Results
Requested Report Date ___

REPORT REQUIREMENTS
___ I. Routine Report
___ II. Report (includes DUP MS. MSD, as required, may be charged as samples)
___ III. Data Validation Report (includes All Raw Data)
___ IV. CLP Deliverable Report

INVOICE INFORMATION:
P.O.# ___
Bill To ___

SAMPLE RECEIPT:
Shipping VIA: ___
Shipping #: ___
Condition: ___
Lab No: K9711662

RELINQUISHED BY:
Signature
Printed Name
Firm
Date/Time

RECEIVED BY:
Mary Coburn
Signature
Mary Coburn
Printed Name
CAS
Firm
3-14-97 10:00
Date/Time

SPECIAL INSTRUCTIONS/COMMENTS:
8260 = BTEX & VOCs
WTPHD extend
WTPH-G

Sample SS-F5 labeled SS-F7, GP-10-21 labeled GP-10-15 went by dates + times.

DISTRIBUTION: WHITE - return with report; YELLOW; PINK - retained by originator

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

DATE 3/13/97 PAGE 2 OF 3

PROJECT NAME New City Cleaners # 40358-016.004 TASK 3

PROJECT ATTN Rob Lindsay - EMCON Spokane

COMPANY/ADDRESS West 706 Alton Lane #101

Spokane, WA 99224

PHONE (509) 838-1144

SAMPLERS SIGNATURE [signature] / John Latta

SAMPLE I.D.	DATE	TIME	LAB I.D.	SAMPLE MATRIX	NUMBER OF CONTAINERS	TPH - HCID State:	TPH - G State: WA	TPH - D Extended State: WA	TPH - 418.1 State:	TPH - Other	Halogenated or Aromatic Volatiles 601/8010 / 602/8020	Volatile Organics GC/MS 624-8240	Base/Neu/Acid Organics GC/MS 625/8270	Pesticides/PCBS 8080 PCB ONLY	PAH 8310 HPCL	TCLP Metals / Semi VOA / VOA	Metals Total / DISS List Below	Cyanide	pH, Cond, Cl, SO_4, PO_4, F, Br	NO_2 NO_3 (Circle)	NH_3 - N, COD, Total-P TKN, TOC TOX (Circle)	135	REMARKS
GP6-11-15	3/12/97	1440		Soil	2		1	1								1				1			
GP6-25	3/12/97	0840		↓	2		1	1								1				1			
GP6-21.5	3/12/97	1455		Soil	2		1	1								1				1			
GPW-6-397-15	3/12/97	1425		Water	8		1	1								1					1		
SS-E6	3/12/97	1520		Soil	4		1	1								1							
SS-F6	3/12/97	1530		"	1		1	1								1							
GP-1-5	3/12/97	1605		Soil	2		1	1								1				1			
GP-1-19	3/12/97	1645		Soil	2		1	1								1				1			
GPW-1-397-15	3/12/97	1620		Water	8		1	1								1					1		
YNG TB-2	3/12/97																						

RELINQUISHED BY:
Signature: John Latta
Printed Name: John Latta
Firm: EMCON
Date/Time: 3/13/97 10AM

RECEIVED BY:
Signature:
Printed Name:
Firm: FED EX
Date/Time: 3/13/97

TURNAROUND REQUIREMENTS
___ 24 hr ___ 48 hr. ___ 5 day
✓ Standard (10-15 working days)
✓ Provide Verbal Preliminary Results
✓ Provide FAX preliminary Results
Requested Report Date ___

REPORT REQUIREMENTS
___ I. Routine Report
___ II. Report (includes DUP.MAS. MSD, as required, may be charged as samples)
___ III. Data Validation Report (includes All Raw Data)
___ IV. CLP Deliverable Report

INVOICE INFORMATION:
P.O # ___
Bill To ___

SAMPLE RECEIPT:
Shipping VIA: ___
Shipping to: ___
Condition: ___
Lab No: k97.1662

RELINQUISHED BY:
Signature:
Printed Name:
Firm:
Date/Time:

RECEIVED BY:
Signature: Mary Coburn
Printed Name: Mary Coburn
Firm: CAS
Date/Time: 3-14-97 10:00

SPECIAL INSTRUCTIONS/COMMENTS:
*8260 = BTEX + VOC's
WTPH-D Extended
WTPH-G

00037

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

Columbia Analytical Services, Inc. 1317 South 13th Ave. • Kelso, WA 98626 • (360) 577-7222 • (800) 695-7222 • FAX (360) 636-1068

DATE 3/13/97 PAGE 3 OF 3

PROJECT NAME New City Cleaners #10358-016.004 (3)
PROJECT MANAGER Rob Lindsay
COMPANY/ADDRESS EMCON
West 7126 Mitun Lane #101
Spokane, WA 99224 PHONE (509) 838-1144
SAMPLERS SIGNATURE M. Mitch Barr

SAMPLE I.D.	DATE	TIME	LAB I.D.	SAMPLE MATRIX	NUMBER OF CONTAINERS	Base/Neu/Acid Organics GC/MS 625/8270	Volatile Organics GC/MS 624/8240	Halogenated or Aromatic Volatiles 601/8010 ☐ 602/8020 ☐	Pesticides/PCBs 608/8080	Total Petroleum Hydrocarbons EPA/418.1 ☐ OR/418.1 ☐ WA/418.1 ☐	TPH/Gas/BTEX Gas ☒ BTEX ☐	TPH/8015 Modified 5030/8015/8020 Diesel ☒	TPH/HCID ☐ Hydrocarbon Scan ☐ WA/HCID ☐ OR/HCID ☐	TCLP Metals ☐ VOA ☐	Semi Pest/ VOA ☐ Herb ☐ Metals (total or dissolved) List Below	Cyanide	pH, Cond. Cl, SO_4, PO_4, F, Br NO_2, NO_3 (circle)	NH_3-N, COD, Total-P, TKN, (TOC) (circle)	Total Organic Halides (TOX) 9020 ☐ (AOX) 1650A ☐	VOC 8260	TSS	REMARKS
GP3-21 19 15'	3/13/97	8:40		Soil	2						1	1						1		1		4 oz labeled GP-3-21
GP3-15	3/13/97	8:50		Soil	2						1	1						1		1		
GPW-3-397-19	3/12/97	1907		Water	6						X									X		Rec'd one vial broken in cooler.
GPW-3-397-14	3/13/97	750		WATER	2							X									X	
SS-G6	3/13/97	0825		Soil	1						X	X								X		
SS-C6	3/13/97	0840		Soil	1						X	X								X		

RELINQUISHED BY:
John Latta
Signature
John Latta
Printed Name
EMCON
Firm
3/13/97 10AM
Date/Time

RECEIVED BY:
Signature
Printed Name
FEDEX
Firm
3/13/97
Date/Time

TURNAROUND REQUIREMENTS
___ 24 hr ___ 48 hr. ___ 5 day
✓ Standard (10-15 working days)
✓ Provide Verbal Preliminary Results
✓ Provide FAX preliminary Results
Requested Report Date ___

REPORT REQUIREMENTS
___ I. Routine Report
___ II. Report (includes DUP.MS. MSD, as required, may be charged as samples)
___ III. Data Validation Report (includes All Raw Data)
___ IV. CLP Deliverable Report

INVOICE INFORMATION:
P.O.# ___
Bill To ___

SAMPLE RECEIPT:
Shipping VIA: ___
Shipping #. ___
Condition: ___
Lab No: k97-1662

RELINQUISHED BY:
Signature
Printed Name
Firm
Date/Time

RECEIVED BY:
Mary Coburn
Signature
Mary Coburn
Printed Name
CAS
Firm
3-14-97 10:00
Date/Time

SPECIAL INSTRUCTIONS/COMMENTS:
VOC 8260 = BTEX + VOC's
WTPH-D Extended
WTPH-G

00038

DISTRIBUTION: WHITE - Return to Originator; YELLOW - Lab; PINK - Originator retained

05

Columbia Analytical Services, Inc.

April 8, 1997

Service Request No: K9701685

Rob Lindsay
EMCON
W 7106 Will D. Alton Lane, Suite 101
Spokane, WA 99204-5760

Re: New City Cleaners/40358-016.004 task 3

Dear Rob:

Enclosed are the results of the sample(s) submitted to our laboratory on March 15, 1997. Preliminary results were transmitted via facsimile on April 7, 1997. For your reference, these analyses have been assigned our service request number K9701685.

All analyses were performed according to our laboratory's quality assurance program. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the samples analyzed.

Please call if you have any questions. My extension is 243.

Respectfully submitted,

Columbia Analytical Services, Inc.

Richard Craven
Project Chemist

RAC/td

1317 South 13th Avenue • P.O. Box 479 • Kelso, Washington 98626 • Telephone 360/577-7222 • Fax 360/636-1068

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
J	Estimated concentration. The value is less than the method reporting limit, but greater than the method detection limit.
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NAN	Not Analyzed
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected at or above the MRL
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON	**Service Request:**	K9701685
Project:	New City Cleaners/40358-016.004 task 3	**Date Collected:**	3/13/97
Sample Matrix:	Soil	**Date Received:**	3/15/97
		Date Extracted:	NA
		Date Analyzed:	3/25/97

Carbon, Total Organic
ASTM D4129-82M
Units: Percent (%)
Dry Weight Basis

Sample Name	Lab Code	MRL	Result
SS-B7	K9701685-006	0.05	0.06
Method Blank	K9701685-MB	0.05	ND

Approved By: _____ Date: 4/8/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/40358-016.004 task 3
Sample Matrix: Water

Service Request: K9701685
Date Collected: 3/13/97
Date Received: 3/15/97
Date Extracted: NA
Date Analyzed: 3/20/97

Solids, Total Suspended (TSS)
EPA Method 160.2
Units: mg/L (ppm)

Sample Name	Lab Code	MRL	Result
GPW-5-0397-19	K9701685-001	5	3740
GPW-2-0397-17	K9701685-002	5	176
GPW-7-0397-11	K9701685-003	5	5630
GPW-7-0397-19	K9701685-004	5	48
Method Blank	K9701685-MB	5	ND

Approved By: _____ Date: 4/8/97

1AMRL/102594
01685WET.LJ1 - TSS 4/8/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON	**Service Request:**	K9701685
Project:	New City Cleaners/40358-016.004 task 3	**Date Collected:**	3/13/97
Sample Matrix:	Water	**Date Received:**	3/15/97
		Date Extracted:	3/17/97
		Date Analyzed:	3/18/97

Total Petroleum Hydrocarbon as Diesel and Oil
Washington DOE Method WTPH-D
Units: µg/L (ppb)

Analyte:	Diesel	Oil*
Method Reporting Limit:	250	750

Sample Name	Lab Code		
GPW-5-397-19	K9701685-001	504(O)	ND
GPW-7-397-11	K9701685-003	ND	ND
Method Blank	K970317-WB	ND	ND

* Quantified using 30 weight motor oil as a standard.

O Quantitated as diesel. The sample contained components lighter than diesel that partially eluted in the diesel range.

Approved By: Shawn D. Smith Date: 3/24/97

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON	**Service Request:**	K9701685
Project:	New City Cleaners/40358-016.004 task 3	**Date Collected:**	3/13/97
Sample Matrix:	Water	**Date Received:**	3/15/97
		Date Extracted:	3/17/97
		Date Analyzed:	3/18/97

Surrogate Recovery Summary
Total Petroleum Hydrocarbons as Diesel and Oil
Washington DOE Method WTPH-D

Sample Name	Lab Code	Percent Recovery o-Terphenyl
GPW-5-397-19	K9701685-001	73
GPW-7-397-11	K9701685-003	78
Method Blank	K970317-WB	87

CAS Acceptance Limits: 59-110

Approved By: Shawn L Smith Date: 3/24/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/40358-016.004 task 3
Sample Matrix: Water

Service Request: K9701685
Date Collected: 3/13/97
Date Received: 3/15/97
Date Extracted: NA
Date Analyzed: 3/26-27/97

Total Petroleum Hydrocarbons as Gasoline
Washington DOE Method WTPH-G
Units: µg/L (ppb)

Sample Name	Lab Code	MRL	Result
GPW-5-397-19	K9701685-001	50	6400
GPW-7-397-11	K9701685-003	50	2000(O)
TB-2-397	K9701685-010	50	ND
Method Blank	K970326-MB	50	ND

O Quantitated as gasoline . The sample contained an unknown peak that eluted in the gasoline range.

Approved By: Sharon Post Date: 4/1/97

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON	**Service Request:**	K9701685
Project:	New City Cleaners/40358-016.004 task 3	**Date Collected:**	3/13/97
Sample Matrix:	Water	**Date Received:**	3/15/97
		Date Extracted:	NA
		Date Analyzed:	3/26-27/97

Surrogate Recovery Summary
Total Petroleum Hydrocarbons as Gasoline
Washington DOE Method WTPH-G

Sample Name	Lab Code	Percent Recovery 4-Bromofluorobenzene
GPW-5-397-19	K9701685-001	308(A)
GPW-7-397-11	K9701685-003	89
TB-2-397	K9701685-010	86
Method Blank	K970326-MB	90

CAS Acceptance Limits: 65-117

A Outside acceptance limits due to matrix interference.

Approved By: _____ Date: 4/8/97

SUR1/111594
01685VOA.JS1 - GASwSUR 4/8/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/#40358-016.004 task 3
Sample Matrix: Soil

Service Request: K9701685
Date Collected: 3/13/97
Date Received: 3/15/97
Date Extracted: NA

Volatile Organic Compounds
EPA Method 8260A
Units: µg/Kg (ppb)
Dry Weight Basis

	Sample Name:	GP4-19	SS-B7	GP4-7
	Lab Code:	K9701685-005	K9701685-006	K9701685-007
	Date Analyzed:	3/25/97	3/25/97	3/25/97
Analyte	**MRL**			
Dichlorodifluoromethane (CFC 12)	5	ND	ND	ND
Chloromethane	5	ND	ND	ND
Vinyl Chloride	5	ND	ND	ND
Bromomethane	5	ND	ND	ND
Chloroethane	5	ND	ND	ND
Trichlorofluoromethane (CFC 11)	5	ND	ND	ND
Acetone	50	ND	200	ND
1,1-Dichloroethene	5	ND	ND	ND
Carbon Disulfide	5	ND	ND	ND
Methylene Chloride	10	ND	ND	ND
trans-1,2-Dichloroethene	5	ND	ND	ND
1,1-Dichloroethane	5	ND	ND	ND
2-Butanone (MEK)	20	ND	ND	ND
2,2-Dichloropropane	5	ND	ND	ND
cis-1,2-Dichloroethene	5	ND	ND	ND
Chloroform	5	ND	ND	ND
Bromochloromethane	5	ND	ND	ND
1,1,1-Trichloroethane (TCA)	5	ND	ND	ND
1,1-Dichloropropene	5	ND	ND	ND
Carbon Tetrachloride	5	ND	ND	ND
1,2-Dichloroethane	5	ND	ND	ND
Benzene	5	ND	ND	ND
Trichloroethene (TCE)	5	ND	ND	ND
1,2-Dichloropropane	5	ND	ND	ND
Bromodichloromethane	5	ND	ND	ND
Dibromomethane	5	ND	ND	ND
2-Hexanone	20	ND	ND	ND
cis-1,3-Dichloropropene	5	ND	ND	ND
Toluene	5	ND	ND	ND
trans-1,3-Dichloropropene	5	ND	ND	ND
1,1,2-Trichloroethane	5	ND	ND	ND
4-Methyl-2-pentanone (MIBK)	20	ND	ND	ND
1,3-Dichloropropane	5	ND	ND	ND

Approved By: Lisa Weisdorf Date: 3/31/97

01685VOA.DW2 - 8260s 3/31/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/#40358-016.004 task 3
Sample Matrix: Soil

Service Request: K9701685
Date Collected: 3/13/97
Date Received: 3/15/97
Date Extracted: NA

Volatile Organic Compounds
EPA Method 8260A
Units: µg/Kg (ppb)
Dry Weight Basis

	Sample Name:	GP4-19	SS-B7	GP4-7
	Lab Code:	K9701685-005	K9701685-006	K9701685-007
	Date Analyzed:	3/25/97	3/25/97	3/25/97
Analyte	**MRL**			
Tetrachloroethene (PCE)	5	150	ND	190
Dibromochloromethane	5	ND	ND	ND
1,2-Dibromoethane (EDB)	20	ND	ND	ND
Chlorobenzene	5	ND	ND	ND
1,1,1,2-Tetrachloroethane	5	ND	ND	ND
Ethylbenzene	5	ND	ND	ND
Total Xylenes	5	ND	ND	ND
Styrene	5	ND	ND	ND
Bromoform	5	ND	ND	ND
Isopropylbenzene	20	ND	ND	ND
1,1,2,2-Tetrachloroethane	5	ND	ND	ND
1,2,3-Trichloropropane	5	ND	ND	ND
Bromobenzene	5	ND	ND	ND
n-Propylbenzene	20	ND	ND	ND
2-Chlorotoluene	20	ND	ND	ND
4-Chlorotoluene	20	ND	ND	ND
1,3,5-Trimethylbenzene	20	ND	ND	ND
tert-Butylbenzene	20	ND	ND	ND
1,2,4-Trimethylbenzene	20	ND	ND	ND
sec-Butylbenzene	20	ND	ND	ND
1,3-Dichlorobenzene	5	ND	ND	ND
4-Isopropyltoluene	20	ND	ND	ND
1,4-Dichlorobenzene	5	ND	ND	ND
n-Butylbenzene	20	ND	ND	ND
1,2-Dichlorobenzene	5	ND	ND	ND
1,2-Dibromo-3-chloropropane (DBCP)	20	ND	ND	ND
1,2,4-Trichlorobenzene	20	ND	ND	ND
1,2,3-Trichlorobenzene	20	ND	ND	ND
Naphthalene	20	ND	ND	ND
Hexachlorobutadiene	20	ND	ND	ND

Approved By: Lisa Weistopf Date: 3/31/97

3S2P/101894

01685VOA.DW2 - 8260s 3/31/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/#40358-016.004 task 3
Sample Matrix: Soil

Service Request: K9701685
Date Collected: 3/13/97
Date Received: 3/15/97
Date Extracted: NA

Volatile Organic Compounds
EPA Method 8260A
Units: µg/Kg (ppb)
Dry Weight Basis

	Sample Name:	GP2-21	Method Blank
	Lab Code:	K9701685-009	K970325-MB
	Date Analyzed:	3/25/97	3/25/97
Analyte	**MRL**		
Dichlorodifluoromethane (CFC 12)	5	ND	ND
Chloromethane	5	ND	ND
Vinyl Chloride	5	ND	ND
Bromomethane	5	ND	ND
Chloroethane	5	ND	ND
Trichlorofluoromethane (CFC 11)	5	ND	ND
Acetone	50	ND	ND
1,1-Dichloroethene	5	ND	ND
Carbon Disulfide	5	ND	ND
Methylene Chloride	10	ND	ND
trans-1,2-Dichloroethene	5	ND	ND
1,1-Dichloroethane	5	ND	ND
2-Butanone (MEK)	20	ND	ND
2,2-Dichloropropane	5	ND	ND
cis-1,2-Dichloroethene	5	ND	ND
Chloroform	5	ND	ND
Bromochloromethane	5	ND	ND
1,1,1-Trichloroethane (TCA)	5	ND	ND
1,1-Dichloropropene	5	ND	ND
Carbon Tetrachloride	5	ND	ND
1,2-Dichloroethane	5	ND	ND
Benzene	5	ND	ND
Trichloroethene (TCE)	5	ND	ND
1,2-Dichloropropane	5	ND	ND
Bromodichloromethane	5	ND	ND
Dibromomethane	5	ND	ND
2-Hexanone	20	ND	ND
cis-1,3-Dichloropropene	5	ND	ND
Toluene	5	ND	ND
trans-1,3-Dichloropropene	5	ND	ND
1,1,2-Trichloroethane	5	ND	ND
4-Methyl-2-pentanone (MIBK)	20	ND	ND
1,3-Dichloropropane	5	ND	ND

Approved By: Lisa Weistaf Date: 3/31/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/#40358-016.004 task 3
Sample Matrix: Soil

Service Request: K9701685
Date Collected: 3/13/97
Date Received: 3/15/97
Date Extracted: NA

Volatile Organic Compounds
EPA Method 8260A
Units: µg/Kg (ppb)
Dry Weight Basis

	Sample Name:	GP2-21	Method Blank
	Lab Code:	K9701685-009	K970325-MB
	Date Analyzed:	3/25/97	3/25/97
Analyte	**MRL**		
Tetrachloroethene (PCE)	5	9	ND
Dibromochloromethane	5	ND	ND
1,2-Dibromoethane (EDB)	20	ND	ND
Chlorobenzene	5	ND	ND
1,1,1,2-Tetrachloroethane	5	ND	ND
Ethylbenzene	5	ND	ND
Total Xylenes	5	ND	ND
Styrene	5	ND	ND
Bromoform	5	ND	ND
Isopropylbenzene	20	ND	ND
1,1,2,2-Tetrachloroethane	5	ND	ND
1,2,3-Trichloropropane	5	ND	ND
Bromobenzene	5	ND	ND
n-Propylbenzene	20	ND	ND
2-Chlorotoluene	20	ND	ND
4-Chlorotoluene	20	ND	ND
1,3,5-Trimethylbenzene	20	ND	ND
tert-Butylbenzene	20	ND	ND
1,2,4-Trimethylbenzene	20	ND	ND
sec-Butylbenzene	20	ND	ND
1,3-Dichlorobenzene	5	ND	ND
4-Isopropyltoluene	20	ND	ND
1,4-Dichlorobenzene	5	ND	ND
n-Butylbenzene	20	ND	ND
1,2-Dichlorobenzene	5	ND	ND
1,2-Dibromo-3-chloropropane (DBCP)	20	ND	ND
1,2,4-Trichlorobenzene	20	ND	ND
1,2,3-Trichlorobenzene	20	ND	ND
Naphthalene	20	ND	ND
Hexachlorobutadiene	20	ND	ND

Approved By: Lisa Weistaff Date: 3/31/97

3S2P/101894

01685VOA.DW2 - 8260s (3) 3/31/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/#40358-016.004 task 3
Sample Matrix: Soil

Service Request: K9701685
Date Collected: 3/13/97
Date Received: 3/15/97
Date Extracted: 3/22/97

Volatile Organic Compounds
EPA Method 8260A
Units: mg/Kg (ppm)
Dry Weight Basis

	Sample Name:	GP2-5	Method Blank
	Lab Code:	K9701685-008	K970324-MB
	Date Analyzed:	3/24/97	3/24/97
Analyte	**MRL**		
Dichlorodifluoromethane (CFC 12)	0.5	ND	ND
Chloromethane	0.5	ND	ND
Vinyl Chloride	0.5	ND	ND
Bromomethane	0.5	ND	ND
Chloroethane	0.5	ND	ND
Trichlorofluoromethane (CFC 11)	0.5	ND	ND
Acetone	5	ND	ND
1,1-Dichloroethene	0.5	ND	ND
Carbon Disulfide	0.5	ND	ND
Methylene Chloride	1	ND	ND
trans-1,2-Dichloroethene	0.5	ND	ND
1,1-Dichloroethane	0.5	ND	ND
2-Butanone (MEK)	2	ND	ND
2,2-Dichloropropane	0.5	ND	ND
cis-1,2-Dichloroethene	0.5	26	ND
Chloroform	0.5	ND	ND
Bromochloromethane	0.5	ND	ND
1,1,1-Trichloroethane (TCA)	0.5	ND	ND
1,1-Dichloropropene	0.5	ND	ND
Carbon Tetrachloride	0.5	ND	ND
1,2-Dichloroethane	0.5	ND	ND
Benzene	0.5	ND	ND
Trichloroethene (TCE)	0.5	ND	ND
1,2-Dichloropropane	0.5	ND	ND
Bromodichloromethane	0.5	ND	ND
Dibromomethane	0.5	ND	ND
2-Hexanone	2	ND	ND
cis-1,3-Dichloropropene	0.5	ND	ND
Toluene	0.5	ND	ND
trans-1,3-Dichloropropene	0.5	ND	ND
1,1,2-Trichloroethane	0.5	ND	ND
4-Methyl-2-pentanone (MIBK)	2	ND	ND
1,3-Dichloropropane	0.5	ND	ND

Approved By: Lisa Weistroff Date: 3/31/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/#40358-016.004 task 3
Sample Matrix: Soil

Service Request: K9701685
Date Collected: 3/13/97
Date Received: 3/15/97
Date Extracted: 3/22/97

Volatile Organic Compounds
EPA Method 8260A
Units: mg/Kg (ppm)
Dry Weight Basis

	Sample Name:	GP2-5	Method Blank
	Lab Code:	K9701685-008	K970324-MB
	Date Analyzed:	3/24/97	3/24/97
Analyte	**MRL**		
Tetrachloroethene (PCE)	0.5	ND	ND
Dibromochloromethane	0.5	ND	ND
1,2-Dibromoethane (EDB)	2	ND	ND
Chlorobenzene	0.5	ND	ND
1,1,1,2-Tetrachloroethane	0.5	ND	ND
Ethylbenzene	0.5	ND	ND
Total Xylenes	0.5	ND	ND
Styrene	0.5	ND	ND
Bromoform	0.5	ND	ND
Isopropylbenzene	2	ND	ND
1,1,2,2-Tetrachloroethane	0.5	ND	ND
1,2,3-Trichloropropane	0.5	ND	ND
Bromobenzene	0.5	ND	ND
n-Propylbenzene	2	ND	ND
2-Chlorotoluene	2	ND	ND
4-Chlorotoluene	2	ND	ND
1,3,5-Trimethylbenzene	2	ND	ND
tert-Butylbenzene	2	ND	ND
1,2,4-Trimethylbenzene	2	ND	ND
sec-Butylbenzene	2	ND	ND
1,3-Dichlorobenzene	0.5	ND	ND
4-Isopropyltoluene	2	ND	ND
1,4-Dichlorobenzene	0.5	ND	ND
n-Butylbenzene	2	ND	ND
1,2-Dichlorobenzene	0.5	ND	ND
1,2-Dibromo-3-chloropropane (DBCP)	2	ND	ND
1,2,4-Trichlorobenzene	2	ND	ND
1,2,3-Trichlorobenzene	2	ND	ND
Naphthalene	2	ND	ND
Hexachlorobutadiene	2	ND	ND

Approved By: Lisa Weisdorf Date: 3/31/97

3S2P/101894

01685VOA.DW2 - 8260s (2) 3/31/97

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: New City Cleaners/#40358-016.004 task 3
Sample Matrix: Soil

Service Request: K9701685
Date Collected: 3/13/97
Date Received: 3/15/97
Date Extracted: 3/22/97
Date Analyzed: 3/24-25/97

Surrogate Recovery Summary
Volatile Organic Compounds
EPA Method 8260A

		Percent Recovery		
Sample Name	**Lab Code**	Dibromofluoromethane	Toluene-d_8	4-Bromofluorobenzene
GP4-19	K9701685-005	108	103	105
SS-B7	K9701685-006	93	99	86
GP4-7	K9701685-007	108	105	107
GP2-5	K9701685-008	98	101	99
GP2-21	K9701685-009	107	104	107
Method Blank	K970324-MB	97	99	95
Method Blank	K970325-MB	101	102	98
CAS Acceptance Limits:		82-122	84-116	67-129

Approved By: Lisa Weistaf Date: 3/31/97

SUR3/110094
01685VOA.DW2 - 8260sSUR 3/31/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/#40358-016.004 task 3
Sample Matrix: Water

Service Request: K9701685
Date Collected: 3/13/97
Date Received: 3/15/97
Date Extracted: NA

Volatile Organic Compounds
EPA Method 8260A
Units: µg/L (ppb)

		Sample Name:	GPW-5-397-19	GPW-2-397-17	GPW-7-397-11
		Lab Code:	K9701685-001(C)	K9701685-002(C)	K9701685-003(C)
		Date Analyzed:	3/27/97	3/26/97	3/26/97
Analyte	**MRL**				
Dichlorodifluoromethane (CFC 12)	0.5		<50	<100	<100
Chloromethane	0.5		<50	<100	<100
Vinyl Chloride	0.5		<50	<100	<100
Bromomethane	0.5		<50	<100	<100
Chloroethane	0.5		<50	<100	<100
Trichlorofluoromethane (CFC 11)	0.5		<50	<100	<100
Acetone	20		<2000	<4000	<4000
1,1-Dichloroethene	0.5		<50	<100	<100
Carbon Disulfide	0.5		<50	<100	<100
Methylene Chloride	1		<100	<200	<200
trans-1,2-Dichloroethene	0.5		<50	<100	<100
1,1-Dichloroethane	0.5		<50	<100	<100
2-Butanone (MEK)	20		<2000	<4000	<4000
2,2-Dichloropropane	0.5		<50	<100	<100
cis-1,2-Dichloroethene	0.5		620	<100	<100
Chloroform	0.5		<50	<100	<100
Bromochloromethane	0.5		<50	<100	<100
1,1,1-Trichloroethane (TCA)	0.5		<50	<100	<100
1,1-Dichloropropene	0.5		<50	<100	<100
Carbon Tetrachloride	0.5		<50	<100	<100
1,2-Dichloroethane	0.5		<50	<100	<100
Benzene	0.5		<50	<100	<100
Trichloroethene (TCE)	0.5		160	<100	<100
1,2-Dichloropropane	0.5		<50	<100	<100
Bromodichloromethane	0.5		<50	<100	<100
Dibromomethane	0.5		<50	<100	<100
2-Hexanone	20		<2000	<4000	<4000
cis-1,3-Dichloropropene	0.5		<50	<100	<100
Toluene	0.5		<50	<100	<100
trans-1,3-Dichloropropene	0.5		<50	<100	<100
1,1,2-Trichloroethane	0.5		<50	<100	<100
4-Methyl-2-pentanone (MIBK)	20		<2000	<4000	<4000
1,3-Dichloropropane	0.5		<50	<100	<100

C The MRL is elevated because the sample required diluting.

Approved By: Lisa Weistkopf Date: 3/31/97

01685VOA.DW1 - 8260w2p 3/31/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/#40358-016.004 task 3
Sample Matrix: Water

Service Request: K9701685
Date Collected: 3/13/97
Date Received: 3/15/97
Date Extracted: NA

Volatile Organic Compounds
EPA Method 8260A
Units: µg/L (ppb)

		Sample Name:	GPW-5-397-19	GPW-2-397-17	GPW-7-397-11
		Lab Code:	K9701685-001(C)	K9701685-002(C)	K9701685-003(C)
		Date Analyzed:	3/27/97	3/26/97	3/26/97
Analyte	**MRL**				
Tetrachloroethene (PCE)	0.5		900	4300	4300
Dibromochloromethane	0.5		<50	<100	<100
1,2-Dibromoethane (EDB)	2		<200	<400	<400
Chlorobenzene	0.5		<50	<100	<100
1,1,1,2-Tetrachloroethane	0.5		<50	<100	<100
Ethylbenzene	0.5		<50	<100	<100
Total Xylenes	0.5		260	<100	<100
Styrene	0.5		<50	<100	<100
Bromoform	0.5		<50	<100	<100
Isopropylbenzene	2		<200	<400	<400
1,1,2,2-Tetrachloroethane	0.5		<50	<100	<100
1,2,3-Trichloropropane	0.5		<50	<100	<100
Bromobenzene	0.5		<50	<100	<100
n-Propylbenzene	2		<200	<400	<400
2-Chlorotoluene	2		<200	<400	<400
4-Chlorotoluene	2		<200	<400	<400
1,3,5-Trimethylbenzene	2		<200	<400	<400
tert-Butylbenzene	2		<200	<400	<400
1,2,4-Trimethylbenzene	2		490	<400	<400
sec-Butylbenzene	2		<200	<400	<400
1,3-Dichlorobenzene	0.5		<50	<100	<100
4-Isopropyltoluene	2		<200	<400	<400
1,4-Dichlorobenzene	0.5		<50	<100	<100
n-Butylbenzene	2		<200	<400	<400
1,2-Dichlorobenzene	0.5		<50	<100	<100
1,2-Dibromo-3-chloropropane (DBCP)	2		<200	<400	<400
1,2,4-Trichlorobenzene	2		<200	<400	<400
1,2,3-Trichlorobenzene	2		<200	<400	<400
Naphthalene	2		<200	<400	<400
Hexachlorobutadiene	2		<200	<400	<400

C The MRL is elevated because the sample required diluting.

Approved By: Lisa Weintraub Date: 3/31/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/#40358-016.004 task 3
Sample Matrix: Water

Service Request: K9701685
Date Collected: 3/13/97
Date Received: 3/15/97
Date Extracted: NA

Volatile Organic Compounds
EPA Method 8260A
Units: µg/L (ppb)

	Sample Name:	GPW-7-397-19	TB-2-397	Method Blank
	Lab Code:	K9701685-004(C)	K9701685-010	K970326-MB
	Date Analyzed:	3/26/97	3/26/97	3/26/97
Analyte	**MRL**			
Dichlorodifluoromethane (CFC 12)	0.5	<10	ND	ND
Chloromethane	0.5	<10	ND	ND
Vinyl Chloride	0.5	<10	ND	ND
Bromomethane	0.5	<10	ND	ND
Chloroethane	0.5	<10	ND	ND
Trichlorofluoromethane (CFC 11)	0.5	<10	ND	ND
Acetone	20	<400	ND	ND
1,1-Dichloroethene	0.5	<10	ND	ND
Carbon Disulfide	0.5	<10	ND	ND
Methylene Chloride	1	<20	ND	ND
trans-1,2-Dichloroethene	0.5	<10	ND	ND
1,1-Dichloroethane	0.5	<10	ND	ND
2-Butanone (MEK)	20	<400	ND	ND
2,2-Dichloropropane	0.5	<10	ND	ND
cis-1,2-Dichloroethene	0.5	<10	ND	ND
Chloroform	0.5	<10	ND	ND
Bromochloromethane	0.5	<10	ND	ND
1,1,1-Trichloroethane (TCA)	0.5	<10	ND	ND
1,1-Dichloropropene	0.5	<10	ND	ND
Carbon Tetrachloride	0.5	<10	ND	ND
1,2-Dichloroethane	0.5	<10	ND	ND
Benzene	0.5	<10	ND	ND
Trichloroethene (TCE)	0.5	<10	ND	ND
1,2-Dichloropropane	0.5	<10	ND	ND
Bromodichloromethane	0.5	<10	ND	ND
Dibromomethane	0.5	<10	ND	ND
2-Hexanone	20	<400	ND	ND
cis-1,3-Dichloropropene	0.5	<10	ND	ND
Toluene	0.5	<10	ND	ND
trans-1,3-Dichloropropene	0.5	<10	ND	ND
1,1,2-Trichloroethane	0.5	<10	ND	ND
4-Methyl-2-pentanone (MIBK)	20	<400	ND	ND
1,3-Dichloropropane	0.5	<10	ND	ND

C The MRL is elevated because the sample required diluting.

Approved By: Lisa Weistaff Date: 3/31/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/#40358-016.004 task 3
Sample Matrix: Water

Service Request: K9701685
Date Collected: 3/13/97
Date Received: 3/15/97
Date Extracted: NA

Volatile Organic Compounds
EPA Method 8260A
Units: µg/L (ppb)

		Sample Name:	GPW-7-397-19	TB-2-397	Method Blank
		Lab Code:	K9701685-004(C)	K9701685-010	K970326-MB
		Date Analyzed:	3/26/97	3/26/97	3/26/97
Analyte	**MRL**				
Tetrachloroethene (PCE)	0.5		340	ND	ND
Dibromochloromethane	0.5		<10	ND	ND
1,2-Dibromoethane (EDB)	2		<40	ND	ND
Chlorobenzene	0.5		<10	ND	ND
1,1,1,2-Tetrachloroethane	0.5		<10	ND	ND
Ethylbenzene	0.5		<10	ND	ND
Total Xylenes	0.5		<10	ND	ND
Styrene	0.5		<10	ND	ND
Bromoform	0.5		<10	ND	ND
Isopropylbenzene	2		<40	ND	ND
1,1,2,2-Tetrachloroethane	0.5		<10	ND	ND
1,2,3-Trichloropropane	0.5		<10	ND	ND
Bromobenzene	0.5		<10	ND	ND
n-Propylbenzene	2		<40	ND	ND
2-Chlorotoluene	2		<40	ND	ND
4-Chlorotoluene	2		<40	ND	ND
1,3,5-Trimethylbenzene	2		<40	ND	ND
tert-Butylbenzene	2		<40	ND	ND
1,2,4-Trimethylbenzene	2		<40	ND	ND
sec-Butylbenzene	2		<40	ND	ND
1,3-Dichlorobenzene	0.5		<10	ND	ND
4-Isopropyltoluene	2		<40	ND	ND
1,4-Dichlorobenzene	0.5		<10	ND	ND
n-Butylbenzene	2		<40	ND	ND
1,2-Dichlorobenzene	0.5		<10	ND	ND
1,2-Dibromo-3-chloropropane (DBCP)	2		<40	ND	ND
1,2,4-Trichlorobenzene	2		<40	ND	ND
1,2,3-Trichlorobenzene	2		<40	ND	ND
Naphthalene	2		<40	ND	ND
Hexachlorobutadiene	2		<40	ND	ND

C The MRL is elevated because the sample required diluting.

Approved By: Lisa Aleistarf Date: 3/31/97

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: New City Cleaners/#40358-016.004 task 3
Sample Matrix: Water

Service Request: K9701685
Date Collected: 3/13/97
Date Received: 3/15/97
Date Extracted: NA
Date Analyzed: 3/26-27/97

Surrogate Recovery Summary
Volatile Organic Compounds
EPA Method 8260A

		Percent Recovery		
Sample Name	**Lab Code**	Dibromofluoromethane	Toluene-d_8	4-Bromofluorobenzene
GPW-5-397-19	K9701685-001	99	100	99
GPW-2-397-17	K9701685-002	101	100	95
GPW-7-397-11	K9701685-003	100	100	93
GPW-7-397-19	K9701685-004	100	100	92
TB-2-397	K9701685-010	101	98	94
Method Blank	K970326-MB	101	101	98
CAS Acceptance Limits:		91-117	90-110	82-119

Approved By: Lisa Kleinkopf Date: 3/31/97

****
***** ACTIVITY REPORT *****
****

TRANSMISSION OK

TX/RX NO.	9436
CONNECTION TEL	15098381382
CONNECTION ID	
START TIME	04/08 09:48
USAGE TIME	12'32
PAGES	19
RESULT	OK

Columbia Analytical Services — CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

1317 South 13th Ave. • Kelso, WA 98626 • (360) 577-7222 • (800) 695-7222 • FAX (360) 636-1068

DATE 3/13/97 PAGE 1 OF 2

PROJECT NAME New City Cleaners # 410355-016.004 TASK 3

PROJECT MANAGER Rob Lindsay

COMPANY/ADDRESS EMCON

W. 7106 Alton Lane #101

Spokane, WA 99224 PHONE (509) 838-1144

SAMPLERS SIGNATURE [signature]

SAMPLE I.D.	DATE	TIME	LAB I.D.	SAMPLE MATRIX	NUMBER OF CONTAINERS	Base/Neu/Acid Organics GC/MS 625/8270	Volatile Organics GC/MS 624/8240	Halogenated or Aromatic Volatiles 601/8010 ☐ 602/8020 ☐	Pesticides/PCBs 608/8080	Total Petroleum Hydrocarbons EPA/418.1 ☐ OR/418.1 ☐ WA/418.1 ☐	TPH/Gas/BTEX 5030/8015/8020 Gas X BTEX ☐	TPH/8015 Modified Diesel X Hydrocarbon Scan ☐	TPH/HCID ☐ OR/HCID ☐ WA/HCID ☐	TCLP Metals ☐ VOA ☐ Semi Pest/ Herb ☐	Metals (total or dissolved) List Below	Cyanide	pH, Cond, Cl, SO_4, PO_4, F, Br NO_2, NO_3 (circle)	NH_3-N, COD, Total-P, TKN, (TOC) (circle)	Total Organic Halides (TOX) 9020 ☐ (AOX) 1650A ☐	8260	HSS	REMARKS
GPW-5-397-19	3/13/97	1255	K97-1685-1	WATER	8						X	X								X	X	
GPW-2-397-17		1025	-2	WATER	8						X	X								X	X	
GPW-7-397-11		1410	-3	WATER	8						X	X								X	X	
GPW-4-397-19		1450	-4	WATER	8						X	X								X	X	
GP4-19		1537	-5	Soil	2						X	X						X		X		
SS-B7		1500	-6	Soil	1						X	X								X		
GP4-7		1547	-7	Soil	2						X	X						X		X		
GP2-5		1000	-8	Soil	2						X	X						X		X		
GP2-21		1100	-9	Soil	2						X	X						X		X		
GP4-19	↓	1537	—	Soil	2						X	X						X		X		listed twice on COC

RELINQUISHED BY:
Signature: [signature]
Printed Name: Nicic Larson
Firm: EMCON
Date/Time: 3/13/97 1600

RECEIVED BY:
Signature: [signature]
Printed Name:
Firm: Fed Ex
Date/Time: 3/14/97 12PM

TURNAROUND REQUIREMENTS
___ 24 hr ___ 48 hr. ___ 5 day
✓ Standard (10-15 working days)
✓ Provide Verbal Preliminary Results
✓ Provide FAX preliminary Results
Requested Report Date ___

REPORT REQUIREMENTS
___ I. Routine Report
___ II. Report (includes DUP.MS. MSD, as required, may be charged as samples)
___ III. Data Validation Report (includes All Raw Data)
___ IV. CLP Deliverable Report

INVOICE INFORMATION:
P.O.# ___
Bill To ___

SAMPLE RECEIPT:
Shipping VIA. ___
Shipping #: ___
Condition: ___
Lab No: K971685

RELINQUISHED BY:
Signature ___
Printed Name ___
Firm ___
Date/Time ___

RECEIVED BY:
Signature: [signature]
Printed Name: [signature]
Firm: CAS
Date/Time: 3/15/97 1000

SPECIAL INSTRUCTIONS/COMMENTS:
VOC 8260 - BTEX + VOC's
WTPH-D Extended
WTPH-G

DISTRIBUTION: WHITE - return to originator; YELLOW - lab; PINK - retained by originator

400-03

Analytical Services Inc. — CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

1317 South 13th Ave. • Kelso, WA 98626 • (360) 577-7222 • (800) 695-7222 • FAX (360) 636-1068

DATE 3/13/97 PAGE 2 OF 2

PROJECT NAME New City Cleaners #40358-016,004(3)
PROJECT MANAGER Rob Lindsay
COMPANY/ADDRESS EMCON
W. 7106 Alton Lane #101
Spokane, WA 99224 PHONE (509) 838-1144
SAMPLERS SIGNATURE [signature]

SAMPLE I.D.	DATE	TIME	LAB I.D.	SAMPLE MATRIX	NUMBER OF CONTAINERS	Base/Neu/Acid Organics GC/MS 625/8270	Volatile Organics GC/MS 624/8240	Halogenated or Aromatic Volatiles 601/8010 ☐ 602/8020 ☐	Pesticides/PCBs 608/8080	Total Petroleum Hydrocarbons EPA418.1 ☐ OR418.1 ☐ WA418.1 ☐	TPH/Gas/BTEX 5030/8015/8020 Gas X BTEX ☐	TPH/8015 Modified Diesel X	TPH/HCID ☐ Hydrocarbon Scan ☐ WA/HCID ☐ OR/HCID ☐	TCLP Metals ☐ VOA ☐ Semi PesV VOA ☐ Herb ☐	Metals (total or dissolved) List Below	Cyanide	pH, Cond. Cl, SO_4, PO_4, F, Br NO_2, NO_3 (circle)	NH_3-N, COD, Total-P, TKN, TOC (circle)	Total Organic Halides (TOX) 9020 ☐ (AOX) 1650A ☐	VOC 8260		REMARKS
TB-2-397	3/13/97	—	K971685-10	Water	9						X									X		

RELINQUISHED BY:
Signature [signature]
Printed Name NICK GARSON
Firm EMCON
Date/Time 3/13/97 1600

RECEIVED BY:
Signature
Printed Name
Firm Fed Ex
Date/Time 3/14/97 12PM

TURNAROUND REQUIREMENTS
___ 24 hr ___ 48 hr. ___ 5 day
✓ Standard (10-15 working days)
✓ Provide Verbal Preliminary Results
✓ Provide FAX preliminary Results
Requested Report Date ___

REPORT REQUIREMENTS
___ I. Routine Report
___ II. Report (includes DUP.MS. MSD, as required, may be charged as samples)
___ III. Data Validation Report (includes All Raw Data)
___ IV. CLP Deliverable Report

INVOICE INFORMATION:
P.O.# ___
Bill To ___

SAMPLE RECEIPT:
Shipping VIA: ___
Shipping #: ___
Condition: ___
Lab No: K97-1685

RELINQUISHED BY:
Signature
Printed Name
Firm
Date/Time

RECEIVED BY:
Signature [signature]
Printed Name [signature]
Firm
Date/Time 3/15/97 1000

SPECIAL INSTRUCTIONS/COMMENTS:
VOC 8260 - BTEX + VOC's
WTPH-G

DISTRIBUTION: WHITE - return to originator; YELLOW - lab; PINK - retained by originator

400-05

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

Columbia Analytical Services™ 1317 South 13th Ave. • Kelso, WA 98626 • (360) 577-7222 • (800) 695-7222 • FAX (360) 636-1068

DATE 3/13/97 PAGE 1 OF 2

TASK 3

PROJECT NAME: New City Cleaners #10358-018.004

PROJECT MANAGER: Rob Lindsay

COMPANY/ADDRESS: Emcon

W. 7106 Alton Ave #101

Spokane WA 99224 PHONE (509) 838-1171

SAMPLERS SIGNATURE: [signature]

SAMPLE I.D.	DATE	TIME	LAB I.D.	SAMPLE MATRIX	NUMBER OF CONTAINERS	Base/Neu/Acid Organics GC/MS 625/8270	Volatile Organics GC/MS 624/8240	Halogenated or Aromatic Volatiles 601/8010 ☐ 602/8020 ☐	Pesticides/PCBs 608/8080	Total Petroleum Hydrocarbons EPA 418.1 ☐ WA 418.1 ☐	PH/Gas/BTEX 5030/8015/8020 ☐	PH/8015 Modified ☐ Diesel ☐ Hydrocarbon Scan ☐	PH/HCID ☐ ORHCID ☐ VAHCID ☐	CLP Metals ☐ VOA ☐ Semi. Pest/Herb ☐	Metals (total or dissolved) List Below	Cyanide	pH, Cond, Cl, SO_4, PO_4, F, Br NO_2, NO_3 (circle) (circle)	pH, NH3-N, COD, Total-P, TKN, TOC (circle)	Total Organic Halides (TOX) 9020 ☐ (AOX) 1650 ☐	8260	HSS	REMARKS
GPW-5-397-19	3/13/97	1255		WATER	8						X	X								X	X	
GPW-2-397-19		1025		WATER	8				HOLD JSL → 3/15/97		X	X								X	X	
GPW-7-397-11		1410		WATER	8						X	X								X	X	
GPW-4-397-19		1450		WATER	8						X	X								X	X	
GP4-19		1537		SOIL	2				HOLD JSL 3/15/97		X	X			Hold 3/15/97 JSL					X		
SS-B7		1500		SOIL	1						X	X								X		
GP4-7		1547		SOIL	2						X	X								X		
GP2-5		1000		SOIL	2						X	X								X		Hold TOC
GP2-21		1100		SOIL	2						X	X								X		
GP7-19	✓	1537		SOIL	2						X	X								X		

RELINQUISHED BY:
Signature: [signature]
Printed Name: Nick Larsen
Firm: Emcon
Date/Time: 3-13-97 1600

RECEIVED BY:
Signature:
Printed Name: Fed Ex
Firm:
Date/Time: 3/14/97 12PM

TURNAROUND REQUIREMENTS
___ 24 hr ___ 48 hr. ___ 5 day
✓ Standard (10-15 working days)
✓ Provide Verbal Preliminary Results
✓ Provide FAX preliminary Results
Requested Report Date: ___

REPORT REQUIREMENTS
___ I. Routine Report
___ II. Report (includes DUP, LCS, MSD, as required, may be charged as samples)
___ III. Data Validation Report (includes All Raw Data)
___ IV. CLP Deliverable Report

INVOICE INFORMATION:
P.O.#:
Bill To:

SAMPLE RECEIPT:
Shipping VIA:
Shipping #:
Condition:
Lab No:

RELINQUISHED BY:
Signature:
Printed Name:
Firm:
Date/Time:

RECEIVED BY:
Signature:
Printed Name:
Firm:
Date/Time:

SPECIAL INSTRUCTIONS/COMMENTS:
VOC 8260 - BTEX + VPCs
WTPH-D Extended
WTPH-G

400-06

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

Analytical Services Inc. 1317 South 13th Ave. • Kelso, WA 98626 • (360) 577-7222 • (800) 695-7222 • FAX (360) 636-1068

DATE 3/13/97 PAGE 2 OF 2

PROJECT NAME New City Commons #40358-016.004(3)

PROJECT MANAGER Rob Lindsay

COMPANY/ADDRESS EMCON

W. 7106 Alton Lane #101

Spokane, WA 99224 PHONE (509) 838-1144

SAMPLERS SIGNATURE

SAMPLE I.D.	DATE	TIME	LAB I.D.	SAMPLE MATRIX	NUMBER OF CONTAINERS	Base/Neu/Acid Organics GC/MS 625/8270	Volatile Organics GC/MS 624/8240	Halogenated or Aromatic Volatiles 601/8010 ☐ 602/8020 ☐	Pesticides/PCBs 608/8080	Total Petroleum Hydrocarbons EPA418.1 ☐ OR418.1 ☐ WA418.1 ☐	TPH/Gas/BTEX 5030/8015/8020 Gas ☒ BTEX ☐	TPH/8015 Modified: Diesel ☒ Hydrocarbon Scan ☐	TPHAHCID ☐ NAHCID ☐ ORHCID ☐	TCLP Metals ☐ VOA ☐ VOA ☐ Semi ☐ Pest ☐ Herb ☐	Metals (total or dissolved) List Below	Cyanide	pH, Cond, Cl, SO_4, PO_4, F, Br NO_2, NO_3 (circle)	NH_3-N, COD, Total-P, TKN, TOC (circle)	Total Organic Halides (TOX) 9020 ☐ (AOX) 1650A ☐	VOC 8260		REMARKS
TB-2-397	3/12/97	—		Water	9						X									X		

RELINQUISHED BY:
Signature
Printed Name: MIC GARSON
Firm: EMCON
Date/Time: 3/13/97 1600

RECEIVED BY:
Signature
Printed Name
Firm: Fed Ex
Date/Time: 3/14/97 12PM

TURNAROUND REQUIREMENTS
___ 24 hr ___ 48 hr. ___ 5 day
✓ Standard (10-15 working days)
✓ Provide Verbal Preliminary Results
✓ Provide FAX preliminary Results
Requested Report Date

REPORT REQUIREMENTS
___ I. Routine Report
___ II. Report (includes DUP./MS./MSD, as required, may be charged as samples)
___ III. Data Validation Report (includes All Raw Data)
___ IV. CLP Deliverable Report

INVOICE INFORMATION:
P.O.#
Bill To

SAMPLE RECEIPT:
Shipping VIA:
Shipping #:
Condition:
Lab No:

RELINQUISHED BY:
Signature
Printed Name
Firm
Date/Time

RECEIVED BY:
Signature
Printed Name
Firm
Date/Time

SPECIAL INSTRUCTIONS/COMMENTS:
VOC-8260 - BTEX + VOC's
WTPH-G

DISTRIBUTION: WHITE - return to originator; YELLOW - lab; PINK - retained by originator

400-05

TOTAL P.09

Columbia Analytical Services Inc.

April 11, 1997

Service Request No: K9701685

Rob Lindsay
EMCON
W 7106 Will D. Alton Lane, Suite 101
Spokane, WA 99204-5760

APR 14 1997

Re: New City Cleaners/40358-016.004 task 3

Dear Rob:

Enclosed are the revised pages for the sample(s) submitted to our laboratory on March 15, 1997. For your reference, these analyses have been assigned our service request number K9701685.

All analyses were performed according to our laboratory's quality assurance program. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the samples analyzed.

Please call if you have any questions. My extension is 243.

Respectfully submitted,

Columbia Analytical Services, Inc.

Richard Craven
Project Chemist

RAC/ll

1317 South 13th Avenue • P.O. Box 479 • Kelso, Washington 98626 • Telephone 360/577-7222 • Fax 360/636-1068

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
J	Estimated concentration. The value is less than the method reporting limit, but greater than the method detection limit.
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NAN	Not Analyzed
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected at or above the MRL
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/#40358-016.004 task 3
Sample Matrix: Water

Service Request: K9701685
Date Collected: 3/13/97
Date Received: 3/15/97
Date Extracted: NA

Volatile Organic Compounds
EPA Method 8260A
Units: µg/L (ppb)

	Sample Name:	GPW-4-397-19	TB-2-397	Method Blank
	Lab Code:	K9701685-004(C)	K9701685-010	K970326-MB
	Date Analyzed:	3/26/97	3/26/97	3/26/97
Analyte	**MRL**			
Tetrachloroethene (PCE)	0.5	340	ND	ND
Dibromochloromethane	0.5	<10	ND	ND
1,2-Dibromoethane (EDB)	2	<40	ND	ND
Chlorobenzene	0.5	<10	ND	ND
1,1,1,2-Tetrachloroethane	0.5	<10	ND	ND
Ethylbenzene	0.5	<10	ND	ND
Total Xylenes	0.5	<10	ND	ND
Styrene	0.5	<10	ND	ND
Bromoform	0.5	<10	ND	ND
Isopropylbenzene	2	<40	ND	ND
1,1,2,2-Tetrachloroethane	0.5	<10	ND	ND
1,2,3-Trichloropropane	0.5	<10	ND	ND
Bromobenzene	0.5	<10	ND	ND
n-Propylbenzene	2	<40	ND	ND
2-Chlorotoluene	2	<40	ND	ND
4-Chlorotoluene	2	<40	ND	ND
1,3,5-Trimethylbenzene	2	<40	ND	ND
tert-Butylbenzene	2	<40	ND	ND
1,2,4-Trimethylbenzene	2	<40	ND	ND
sec-Butylbenzene	2	<40	ND	ND
1,3-Dichlorobenzene	0.5	<10	ND	ND
4-Isopropyltoluene	2	<40	ND	ND
1,4-Dichlorobenzene	0.5	<10	ND	ND
n-Butylbenzene	2	<40	ND	ND
1,2-Dichlorobenzene	0.5	<10	ND	ND
1,2-Dibromo-3-chloropropane (DBCP)	2	<40	ND	ND
1,2,4-Trichlorobenzene	2	<40	ND	ND
1,2,3-Trichlorobenzene	2	<40	ND	ND
Naphthalene	2	<40	ND	ND
Hexachlorobutadiene	2	<40	ND	ND

C The MRL is elevated because the sample required diluting.

Approved By: _____ Date: 4/11/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/#40358-016.004 task 3
Sample Matrix: Water

Service Request: K9701685
Date Collected: 3/13/97
Date Received: 3/15/97
Date Extracted: NA

Volatile Organic Compounds
EPA Method 8260A
Units: µg/L (ppb)

		Sample Name:	GPW-4-397-19	TB-2-397	Method Blank
		Lab Code:	K9701685-004(C)	K9701685-010	K970326-MB
		Date Analyzed:	3/26/97	3/26/97	3/26/97
Analyte	**MRL**				
Dichlorodifluoromethane (CFC 12)	0.5		<10	ND	ND
Chloromethane	0.5		<10	ND	ND
Vinyl Chloride	0.5		<10	ND	ND
Bromomethane	0.5		<10	ND	ND
Chloroethane	0.5		<10	ND	ND
Trichlorofluoromethane (CFC 11)	0.5		<10	ND	ND
Acetone	20		<400	ND	ND
1,1-Dichloroethene	0.5		<10	ND	ND
Carbon Disulfide	0.5		<10	ND	ND
Methylene Chloride	1		<20	ND	ND
trans-1,2-Dichloroethene	0.5		<10	ND	ND
1,1-Dichloroethane	0.5		<10	ND	ND
2-Butanone (MEK)	20		<400	ND	ND
2,2-Dichloropropane	0.5		<10	ND	ND
cis-1,2-Dichloroethene	0.5		<10	ND	ND
Chloroform	0.5		<10	ND	ND
Bromochloromethane	0.5		<10	ND	ND
1,1,1-Trichloroethane (TCA)	0.5		<10	ND	ND
1,1-Dichloropropene	0.5		<10	ND	ND
Carbon Tetrachloride	0.5		<10	ND	ND
1,2-Dichloroethane	0.5		<10	ND	ND
Benzene	0.5		<10	ND	ND
Trichloroethene (TCE)	0.5		<10	ND	ND
1,2-Dichloropropane	0.5		<10	ND	ND
Bromodichloromethane	0.5		<10	ND	ND
Dibromomethane	0.5		<10	ND	ND
2-Hexanone	20		<400	ND	ND
cis-1,3-Dichloropropene	0.5		<10	ND	ND
Toluene	0.5		<10	ND	ND
trans-1,3-Dichloropropene	0.5		<10	ND	ND
1,1,2-Trichloroethane	0.5		<10	ND	ND
4-Methyl-2-pentanone (MIBK)	20		<400	ND	ND
1,3-Dichloropropane	0.5		<10	ND	ND

C The MRL is elevated because the sample required diluting.

Approved By: _____ Date: 4/11/97

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: New City Cleaners/#40358-016.004 task 3
Sample Matrix: Water

Service Request: K9701685
Date Collected: 3/13/97
Date Received: 3/15/97
Date Extracted: NA
Date Analyzed: 3/26-27/97

Surrogate Recovery Summary
Volatile Organic Compounds
EPA Method 8260A

		Percent Recovery		
Sample Name	**Lab Code**	Dibromofluoromethane	Toluene-d_8	4-Bromofluorobenzene
GPW-5-397-19	K9701685-001	99	100	99
GPW-2-397-17	K9701685-002	101	100	95
GPW-7-397-11	K9701685-003	100	100	93
GPW-4-397-19	K9701685-004	100	100	92
TB-2-397	K9701685-010	101	98	94
Method Blank	K970326-MB	101	101	98
CAS Acceptance Limits:		91-117	90-110	82-119

Approved By: _____ Date: 4/11/97

Columbia Analytical Services, Inc.

May 20, 1997

Service Request No: K9702899

Rob Lindsay
EMCON
W 7106 Will D. Alton Lane, Suite 101
Spokane, WA 99204-5760

Re: New City Cleaners/40358-016.004(3)

Dear Rob:

Enclosed are the results of the sample(s) submitted to our laboratory on May 1, 1997. For your reference, these analyses have been assigned our service request number K9702899.

All analyses were performed according to our laboratory's quality assurance program. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the samples analyzed.

Please call if you have any questions. My extension is 243.

Respectfully submitted,

Columbia Analytical Services, Inc.

Richard Craven
Project Chemist

RAC/mc

1317 South 13th Avenue • P.O. Box 479 • Kelso, Washington 98626 • Telephone 360/577-7222 • Fax 360/636-1068

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
J	Estimated concentration. The value is less than the method reporting limit, but greater than the method detection limit.
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NAN	Not Analyzed
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected at or above the MRL
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON	**Service Request:**	K9702899
Project:	New City Cleaners/40358-016.004(3)	**Date Collected:**	4/29/97
Sample Matrix:	Soil	**Date Received:**	5/1/97
		Date Extracted:	NA
		Date Analyzed:	5/8,14/97

Carbon, Total Organic
ASTM D4129-82 Modified
Units: Percent (%)
Dry Weight Basis

Sample Name	Lab Code	MRL	Result
MW-4a-1	K9702899-001	0.05	0.23
MW-4a-17.5	K9702899-003	0.05	0.07
MW-4a-29	K9702899-004	0.05	ND
MW-3-27	K9702899-006	0.05	ND
Method Blank	K9702899-MB	0.05	ND

Approved By: _____ Date: 5/16/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON	**Service Request:**	K9702899
Project:	New City Cleaners/40358-016.004(3)	**Date Collected:**	4/29/97
Sample Matrix:	Soil	**Date Received:**	5/1/97
		Date Extracted:	5/9/97
		Date Analyzed:	5/14,15/97

Total Petroleum Hydrocarbons as Diesel and Oil
Washington DOE Method WTPH-D
Units: mg/Kg (ppm)
Dry Weight Basis

Analyte:		Diesel	Oil*
Method Reporting Limit:		25	100
Sample Name	**Lab Code**		
MW-4a-9	K9702899-002	ND	ND
MW-3-9	K9702899-005	ND	ND
Method Blank	K970509-MB	ND	ND

* Quantified using 30-weight motor oil as a standard.

Approved By: Lora E. Rontwood Date: 5/16/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON	Service Request:	K9702899
Project:	New City Cleaners/40358-016.004(3)	Date Collected:	4/29/97
Sample Matrix:	Soil	Date Received:	5/1/97
		Date Extracted:	5/13/97
		Date Analyzed:	5/13/97

Total Petroleum Hydrocarbons as Gasoline
Washington DOE Method WTPH-G
Units: mg/Kg (ppm)
Dry Weight Basis

Sample Name	Lab Code	MRL	Result
MW-4a-9	K9702899-002	5	ND
MW-3-9	K9702899-005	5	ND
Method Blank	K970513-MB	5	ND

Approved By: _____ Date: 5/18/97

IAMRL/102594
02899VOA.JG1 - GASo 5/18/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/40358-016.004(3)
Sample Matrix: Soil

Service Request: K9702899
Date Collected: 4/29/97
Date Received: 5/1/97
Date Extracted: NA

Volatile Organic Compounds
EPA Method 8260A
Units: µg/Kg (ppb)
Dry Weight Basis

	Sample Name:	MW-4a-17.5	MW-4a-29	MW-3-9
	Lab Code:	K9702899-003	K9702899-004	K9702899-005
	Date Analyzed:	5/7/97	5/7/97	5/7/97
Analyte	**MRL**			
Dichlorodifluoromethane (CFC 12)	5	ND	ND	ND
Chloromethane	5	ND	ND	ND
Vinyl Chloride	5	ND	ND	ND
Bromomethane	5	ND	ND	ND
Chloroethane	5	ND	ND	ND
Trichlorofluoromethane (CFC 11)	5	ND	ND	ND
Acetone	50	ND	ND	ND
1,1-Dichloroethene	5	ND	ND	ND
Carbon Disulfide	5	ND	ND	ND
Methylene Chloride	10	ND	ND	ND
trans-1,2-Dichloroethene	5	ND	ND	ND
1,1-Dichloroethane	5	ND	ND	ND
2-Butanone (MEK)	20	ND	ND	ND
2,2-Dichloropropane	5	ND	ND	ND
cis-1,2-Dichloroethene	5	ND	ND	9
Chloroform	5	ND	ND	ND
Bromochloromethane	5	ND	ND	ND
1,1,1-Trichloroethane (TCA)	5	ND	ND	ND
1,1-Dichloropropene	5	ND	ND	ND
Carbon Tetrachloride	5	ND	ND	ND
1,2-Dichloroethane	5	ND	ND	ND
Benzene	5	ND	ND	ND
Trichloroethene (TCE)	5	ND	ND	6
1,2-Dichloropropane	5	ND	ND	ND
Bromodichloromethane	5	ND	ND	ND
Dibromomethane	5	ND	ND	ND
2-Hexanone	20	ND	ND	ND
cis-1,3-Dichloropropene	5	ND	ND	ND
Toluene	5	ND	ND	ND
trans-1,3-Dichloropropene	5	ND	ND	ND
1,1,2-Trichloroethane	5	ND	ND	ND
4-Methyl-2-pentanone (MIBK)	20	ND	ND	ND
1,3-Dichloropropane	5	ND	ND	ND

Approved By: _____ Date: 5/15/97

02899VOA.LW1 - 8260s 5/14/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/40358-016.004(3)
Sample Matrix: Soil

Service Request: K9702899
Date Collected: 4/29/97
Date Received: 5/1/97
Date Extracted: NA

Volatile Organic Compounds
EPA Method 8260A
Units: µg/Kg (ppb)
Dry Weight Basis

	Sample Name:	MW-4a-17.5	MW-4a-29	MW-3-9
	Lab Code:	K9702899-003	K9702899-004	K9702899-005
	Date Analyzed:	5/7/97	5/7/97	5/7/97
Analyte	**MRL**			
Tetrachloroethene (PCE)	5	63	ND	650
Dibromochloromethane	5	ND	ND	ND
1,2-Dibromoethane (EDB)	20	ND	ND	ND
Chlorobenzene	5	ND	ND	ND
1,1,1,2-Tetrachloroethane	5	ND	ND	ND
Ethylbenzene	5	ND	ND	ND
Total Xylenes	5	ND	ND	ND
Styrene	5	ND	ND	ND
Bromoform	5	ND	ND	ND
Isopropylbenzene	20	ND	ND	ND
1,1,2,2-Tetrachloroethane	5	ND	ND	ND
1,2,3-Trichloropropane	5	ND	ND	ND
Bromobenzene	5	ND	ND	ND
n -Propylbenzene	20	ND	ND	ND
2-Chlorotoluene	20	ND	ND	ND
4-Chlorotoluene	20	ND	ND	ND
1,3,5-Trimethylbenzene	20	ND	ND	ND
tert -Butylbenzene	20	ND	ND	ND
1,2,4-Trimethylbenzene	20	ND	ND	ND
sec -Butylbenzene	20	ND	ND	ND
1,3-Dichlorobenzene	5	ND	ND	ND
4-Isopropyltoluene	20	ND	ND	ND
1,4-Dichlorobenzene	5	ND	ND	ND
n -Butylbenzene	20	ND	ND	ND
1,2-Dichlorobenzene	5	ND	ND	ND
1,2-Dibromo-3-chloropropane (DBCP)	20	ND	ND	ND
1,2,4-Trichlorobenzene	20	ND	ND	ND
1,2,3-Trichlorobenzene	20	ND	ND	ND
Naphthalene	20	ND	ND	ND
Hexachlorobutadiene	20	ND	ND	ND

Approved By: _____ Date: 5/15/97

3S2P/101894

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/40358-016.004(3)
Sample Matrix: Soil

Service Request: K9702899
Date Collected: 4/29/97
Date Received: 5/1/97
Date Extracted: NA

Volatile Organic Compounds
EPA Method 8260A
Units: µg/Kg (ppb)
Dry Weight Basis

		Sample Name:	MW-3-27	Method Blank
		Lab Code:	K9702899-006	K970507-MB
		Date Analyzed:	5/7/97	5/7/97
Analyte	**MRL**			
Dichlorodifluoromethane (CFC 12)	5		ND	ND
Chloromethane	5		ND	ND
Vinyl Chloride	5		ND	ND
Bromomethane	5		ND	ND
Chloroethane	5		ND	ND
Trichlorofluoromethane (CFC 11)	5		ND	ND
Acetone	50		ND	ND
1,1-Dichloroethene	5		ND	ND
Carbon Disulfide	5		ND	ND
Methylene Chloride	10		ND	ND
trans-1,2-Dichloroethene	5		ND	ND
1,1-Dichloroethane	5		ND	ND
2-Butanone (MEK)	20		ND	ND
2,2-Dichloropropane	5		ND	ND
cis-1,2-Dichloroethene	5		ND	ND
Chloroform	5		ND	ND
Bromochloromethane	5		ND	ND
1,1,1-Trichloroethane (TCA)	5		ND	ND
1,1-Dichloropropene	5		ND	ND
Carbon Tetrachloride	5		ND	ND
1,2-Dichloroethane	5		ND	ND
Benzene	5		ND	ND
Trichloroethene (TCE)	5		ND	ND
1,2-Dichloropropane	5		ND	ND
Bromodichloromethane	5		ND	ND
Dibromomethane	5		ND	ND
2-Hexanone	20		ND	ND
cis-1,3-Dichloropropene	5		ND	ND
Toluene	5		ND	ND
trans-1,3-Dichloropropene	5		ND	ND
1,1,2-Trichloroethane	5		ND	ND
4-Methyl-2-pentanone (MIBK)	20		ND	ND
1,3-Dichloropropane	5		ND	ND

Approved By: _____ Date: 5/15/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/40358-016.004(3)
Sample Matrix: Soil

Service Request: K9702899
Date Collected: 4/29/97
Date Received: 5/1/97
Date Extracted: NA

Volatile Organic Compounds
EPA Method 8260A
Units: µg/Kg (ppb)
Dry Weight Basis

		Sample Name:	MW-3-27	Method Blank
		Lab Code:	K9702899-006	K970507-MB
		Date Analyzed:	5/7/97	5/7/97
Analyte	**MRL**			
Tetrachloroethene (PCE)	5		ND	ND
Dibromochloromethane	5		ND	ND
1,2-Dibromoethane (EDB)	20		ND	ND
Chlorobenzene	5		ND	ND
1,1,1,2-Tetrachloroethane	5		ND	ND
Ethylbenzene	5		ND	ND
Total Xylenes	5		ND	ND
Styrene	5		ND	ND
Bromoform	5		ND	ND
Isopropylbenzene	20		ND	ND
1,1,2,2-Tetrachloroethane	5		ND	ND
1,2,3-Trichloropropane	5		ND	ND
Bromobenzene	5		ND	ND
n-Propylbenzene	20		ND	ND
2-Chlorotoluene	20		ND	ND
4-Chlorotoluene	20		ND	ND
1,3,5-Trimethylbenzene	20		ND	ND
tert-Butylbenzene	20		ND	ND
1,2,4-Trimethylbenzene	20		ND	ND
sec-Butylbenzene	20		ND	ND
1,3-Dichlorobenzene	5		ND	ND
4-Isopropyltoluene	20		ND	ND
1,4-Dichlorobenzene	5		ND	ND
n-Butylbenzene	20		ND	ND
1,2-Dichlorobenzene	5		ND	ND
1,2-Dibromo-3-chloropropane (DBCP)	20		ND	ND
1,2,4-Trichlorobenzene	20		ND	ND
1,2,3-Trichlorobenzene	20		ND	ND
Naphthalene	20		ND	ND
Hexachlorobutadiene	20		ND	ND

Approved By: _____ Date: 5/15/97

3S2P/101894

APPENDIX A

LABORATORY QC RESULTS

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: New City Cleaners/40358-016.004(3)
Sample Matrix: Soil

Service Request: K9702899
Date Collected: 4/29/97
Date Received: 5/1/97
Date Extracted: NA
Date Analyzed: 5/8/97

Duplicate Summary
Carbon, Total Organic
ASTM D4129-82 Modified
Units: Percent (%)
Dry Weight Basis

Sample Name	Lab Code	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference
MW-4a-1	K9702899-001D	0.05	0.23	0.25	0.24	8

Approved By: _____ Date: 5/16/97

DUP1A/102194
02899WET.LJ2 - TOCDS 5/16/97

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: New City Cleaners/40358-016.004(3)
Sample Matrix: Soil

Service Request: K9702899
Date Collected: 4/29/97
Date Received: 5/1/97
Date Extracted: NA
Date Analyzed: 5/8/97

Matrix Spike Summary
Carbon, Total Organic
ASTM D4129-82 Modified
Units: Percent (%)
Dry Weight Basis

Sample Name	Lab Code	MRL	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery	CAS Percent Recovery Acceptance Limits
MW-4a-1	K9702899-001MS	0.05	1.49	0.23	1.70	99	75-125

Approved By: _____ Date: 5/16/97

MS1A/102194
02899WET.LJ2 - TOC.MW 5/16/97

00012

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: New City Cleaners/40358-016.004(3)
Sample Matrix: Soil

Service Request: K9702899
Date Collected: 4/29/97
Date Received: 5/1/97
Date Extracted: 5/9/97
Date Analyzed: 5/14,15/97

Surrogate Recovery Summary
Total Petroleum Hydrocarbons as Diesel and Oil
Washington DOE Method WTPH-D

Sample Name	Lab Code	Percent Recovery o-Terphenyl
MW-4a-9	K9702899-002	87
MW-3-9	K9702899-005	92
Batch QC	K9702929-004	79
Batch QC	K9702929-004MS	86
Batch QC	K9702929-004DMS	93
Lab Control Sample	K970509-LCS	89
Method Blank	K970509-MB	77

CAS Acceptance Limits: 56-116

Approved By: Lorna E. Patwood Date: 5/16/97

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON	**Service Request:**	K9702899
Project:	New City Cleaners/40358-016.004(3)	**Date Collected:**	NA
Sample Matrix:	Soil	**Date Received:**	NA
		Date Extracted:	5/9/97
		Date Analyzed:	5/15/97

Matrix Spike/Duplicate Matrix Spike Summary
Total Petroleum Hydrocarbons as Diesel and Oil
Washington DOE Method WTPH-D
Units: mg/Kg (ppm)
Dry Weight Basis

Sample Name:	Batch QC
Lab Code:	K9702929-004DMS

	Spike Level		Sample	Spike Result		Percent Recovery		CAS Acceptance	Relative Percent	CAS RPD Acceptance
Analyte	MS	DMS	**Result**	MS	DMS	MS	DMS	Limits	**Difference**	**Limit**
Diesel	210	190	ND	160	160	76	84	19-145	10	40

Approved By: Tom S. Portwood Date: 5/16/97

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON	**Service Request:**	K9702899
Project:	New City Cleaners/40358-016.004(3)	**Date Collected:**	NA
LCS Matrix:	Soil	**Date Received:**	NA
		Date Extracted:	5/9/97
		Date Analyzed:	5/14/97

Laboratory Control Sample Summary
Total Petroleum Hydrocarbons as Diesel and Oil
Washington DOE Method WTPH-D
Units: mg/Kg (ppm)

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits
Diesel	150	121	81	60-120

Approved By: Lorna E Portwood Date: 5/16/97

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON	**Service Request:**	K9702899
Project:	New City Cleaners/40358-016.004(3)	**Date Collected:**	4/29/97
Sample Matrix:	Soil	**Date Received:**	5/1/97
		Date Extracted:	5/13/97
		Date Analyzed:	5/13-14/97

Surrogate Recovery Summary
Total Petroleum Hydrocarbons as Gasoline
Washington DOE Method WTPH-G

Sample Name	Lab Code	Percent Recovery 1,4-Difluorobenzene
MW-4a-9	K9702899-002	89
MW-3-9	K9702899-005	84
MW-4a-9	K9702899-002MS	98
MW-4a-9	K9702899-002DMS	95
Lab Control Sample	K970514-LCS	115
Method Blank	K970513-MB	80

CAS Acceptance Limits: 48-129

Approved By: _____ Date: 5/16/97

SUR1/111594
02899VOA_IG1 - GASxSUR 5/18/97

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON	**Service Request:**	K9702899
Project:	New City Cleaners/40358-016.004(3)	**Date Collected:**	4/29/97
Sample Matrix:	Soil	**Date Received:**	5/1/97
		Date Extracted:	5/13/97
		Date Analyzed:	5/14/97

Matrix Spike/Duplicate Matrix Spike Summary
Total Petroleum Hydrocarbons as Gasoline
Washington DOE Method WTPH-G
Units: mg/Kg (ppm)
Dry Weight Basis

Sample Name: MW-4a-9
Lab Code: K9702899-002DMS

	Spike Level		Sample	Spike Result		Percent Recovery		CAS Acceptance	Relative Percent	CAS RPD Acceptance
Analyte	MS	DMS	**Result**	MS	DMS	MS	DMS	Limits	**Difference**	**Limit**
Gasoline	63	64	ND	56	56	89	88	59-135	1	40

Approved By: _____ Date: 5/18/97

DMS1SRPD/120594
02899VOA.JG1 - DMS1SRPD 5/18/97

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON	**Service Request:**	K9702899
Project:	New City Cleaners/40358-016.004(3)	**Date Collected:**	NA
LCS Matrix:	Soil	**Date Received:**	NA
		Date Extracted:	5/13/97
		Date Analyzed:	5/14/97

Laboratory Control Sample Summary
Total Petroleum Hydrocarbons as Gasoline
Washington DOE Method WTPH-G
Units: mg/Kg (ppm)

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits
Gasoline	50	48	96	82-155

Approved By: _____ Date: 5/15/97

LCS/102194

02899VOAJG1 - GAS&LCS 5/18/97

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: New City Cleaners/40358-016.004(3)
Sample Matrix: Soil

Service Request: K9702899
Date Collected: 4/29/97
Date Received: 5/1/97
Date Extracted: NA
Date Analyzed: 5/7/97

Matrix Spike/Duplicate Matrix Spike Summary
Volatile Organic Compounds
EPA Method 8260A
Units: µg/Kg (ppb)
Dry Weight Basis

Sample Name: MW-3-27
Lab Code: K9702899-006MS, K9702899-006DMS

Analyte	Spike Level MS	Spike Level DMS	Sample Result	Spike Result MS	Spike Result DMS	Percent Recovery MS	Percent Recovery DMS	CAS Acceptance Limits	Relative Percent Difference
1,1-Dichloroethene	62	60	ND	64	64	103	107	51-147	4
Benzene	62	60	ND	63	63	102	105	70-120	3
Trichloroethene (TCE)	62	60	ND	65	64	105	107	60-123	2
Toluene	62	60	ND	63	62	102	103	66-125	<1
Chlorobenzene	62	60	ND	60	59	97	98	64-124	1
1,2-Dichlorobenzene	62	60	ND	57	57	92	95	55-117	3
Naphthalene	62	60	ND	50	56	81	93	13-142	14

Approved By: _____ Date: 5/15/97

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: New City Cleaners/40358-016.004(3)
LCS Matrix: Soil

Service Request: K9702899
Date Collected: NA
Date Received: NA
Date Extracted: NA
Date Analyzed: 5/7/97

Laboratory Control Sample Summary
Volatile Organic Compounds
EPA Method 8260A
Units: µg/Kg (ppb)

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits
1,1-Dichloroethene	50	47	94	70-130
Benzene	50	47	94	70-130
Trichloroethene	50	49	98	70-130
Toluene	50	48	96	70-130
Chlorobenzene	50	48	96	70-130
1,2-Dichlorobenzene	50	49	98	70-130
Naphthalene	50	53	106	70-130

Approved By: _____ Date: 5/15/97

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: New City Cleaners/40358-016.004(3)
Sample Matrix: Soil

Service Request: K9702899
Date Collected: 4/29/97
Date Received: 5/1/97
Date Extracted: NA
Date Analyzed: 5/7/97

Surrogate Recovery Summary
Volatile Organic Compounds
EPA Method 8260A

Sample Name	Lab Code	Percent Recovery Dibromofluoromethane	Toluene-d_8	4-Bromofluorobenzene
MW-4a-17.5	K9702899-003	110	100	100
MW-4a-29	K9702899-004	108	100	100
MW-3-9	K9702899-005	109	101	104
MW-3-27	K9702899-006	110	99	99
MW-3-27	K9702899-006MS	102	100	102
MW-3-27	K9702899-006DMS	104	100	102
Lab Control Sample	K970507-LCS	104	98	99
Method Blank	K970507-MB	103	99	96
CAS Acceptance Limits:		82-122	84-116	67-129

Approved By: _____ Date: 5/15/97

SUR3/110094
02899VOA.LW1 - 8260sSUR 5/14/97

APPENDIX B

CHAIN OF CUSTODY INFORMATION

EMCON — CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

DATE 4/30/97 PAGE 1 OF 1

PROJECT NAME New City Cleaners #40358-016(004)(3)
PROJECT ATTN: Rob Lindsay
COMPANY/ADDRESS 7106 West Willo. Alton Lane Suite 101 Spokane, WA 99224
PHONE (509) 838-1144
SAMPLERS SIGNATURE M. Nicholson

SAMPLE I.D.	DATE	TIME	LAB I.D.	SAMPLE MATRIX	NUMBER OF CONTAINERS	TPH - HCID State:	TPH - G State: WA ✓	BTEX ✓	TPH - D State: WA ✓	OIL ✓	TPH - 418.1 State: WA ✓	TPH - Other	Halogenated or Aromatic Volatiles 601/8010 ___ 602/8020 ___	Volatile Organics GC/MS 624-8240	Base/Neu/Acid Organics GC/MS 625/8270	Pesticides/PCBS 8080 PCB ONLY	PAH 8100 GC ___ 8310 HPCL ___	TCLP Metals ___ Semi VOA ___ VOA ___ Pest/Herb	Metals List Total ___ DISS ___ Below	Cyanide	pH, Cond Cl, SO_4, PO_4 F, Br	NO_2 NO_3 (Circle)	NH_3 - N, COD, Total-P TKN, TOC, TOX (Circle)	VOC 8260	TOC	REMARKS
MW-4a-1	4/29/97	1005	9899-1	Soil	1																			X		
MW-4a-9	↓	1045	2	↓	2		X	X																		rec'd broken MC
MW-4a-17.5		1110	3		2																		X			
MW-4a-29		1200	4		2																		X			
MW-3-1	4/30/97	1040	5		1									rec'd broken												Hold-broken MC
MW-3-9	↓	1055	6		3		X	X															X			
MW-3-27	↓	1145	7	↓	2																		X			broken MC

RELINQUISHED BY:
Signature: M. Nicholson
Printed Name: NICK GARSON
Firm: EMCON
Date/Time: 4/30/97 1400

RECEIVED BY:
Signature: [illegible]
Printed Name: [illegible]
Firm: [illegible]
Date/Time: 5/1/97 1015

TURNAROUND REQUIREMENTS
___ 24 hr ___ 48 hr. ___ 5 day
✓ Standard (10-15 working days)
___ Provide Verbal Preliminary Results
✓ Provide FAX preliminary Results
Requested Report Date ___

REPORT REQUIREMENTS
___ I. Routine Report
___ II. Report (includes DUP MAS. MSD, as required, may be charged as samples)
___ III. Data Validation Report (includes All Raw Data)
___ IV. CLP Deliverable Report

INVOICE INFORMATION:
PO # ___
Bill To ___

SAMPLE RECEIPT:
Shipping VIA: ___
Shipping to: ___
Condition ___
Lab No: K9708899

RELINQUISHED BY:
Signature ___
Printed Name ___
Firm ___
Date/Time ___

RECEIVED BY:
Signature ___
Printed Name ___
Firm ___
Date/Time ___

SPECIAL INSTRUCTIONS/COMMENTS:
Refer to Richard CRAVENS for Report Requirements As STATED IN EMCON'S QAPP.

$2000

Columbia Analytical Services, Inc.

May 27, 1997

Service Request No: K9702929

Rob Lindsay
EMCON
15055 SW Sequoia Parkway, Suite 140
P.O. Box 231269
Portland, OR 97224

Re: New City Cleaners/40358-016.004(3)

Dear Rob:

Enclosed are the results of the sample(s) submitted to our laboratory on May 2, 1997. For your reference, these analyses have been assigned our service request number K9702929.

All analyses were performed according to our laboratory's quality assurance program. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the samples analyzed.

Please call if you have any questions. My extension is 243.

Respectfully submitted,

Columbia Analytical Services, Inc.

Richard Craven
Project Chemist

RAC/td

1317 South 13th Avenue • P.O. Box 479 • Kelso, Washington 98626 • Telephone 360/577-7222 • Fax 360/636-1068

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
J	Estimated concentration. The value is less than the method reporting limit, but greater than the method detection limit.
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NAN	Not Analyzed
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected at or above the MRL
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/40358-016.004(3)
Sample Matrix: Soil

Service Request: K9702929
Date Collected: 4/30/97
Date Received: 5/2/97
Date Extracted: NA
Date Analyzed: 5/14/97

Carbon, Total Organic
ASTM D4129-82 Modified
Units: Percent (%)
Dry Weight Basis

Sample Name	Lab Code	MRL	Result
MW-2-12.5	K9702929-005	0.05	0.08
MW-2-27	K9702929-006	0.05	0.05
Method Blank	K9702929-MB	0.05	ND

Approved By: _____ Date: 5/16/97

1AMRL/102594
02929WET.LJ1 - TOCS 5/16/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON	**Service Request:**	K9702929
Project:	New City Cleaners/40358-016.004(3)	**Date Collected:**	5/1/97
Sample Matrix:	Soil	**Date Received:**	5/2/97
		Date Extracted:	5/9/97
		Date Analyzed:	5/14,15/97

Total Petroleum Hydrocarbons as Diesel and Oil
Washington DOE Method WTPH-D
Units: mg/Kg (ppm)
Dry Weight Basis

Analyte:		Diesel	Oil*
Method Reporting Limit:		25	100
Sample Name	**Lab Code**		
MW-1-7	K9702929-001	ND	ND
MW-2-7	K9702929-004	ND	ND
MW-10-7	K9702929-007	ND	ND
Method Blank	K970509-MB	ND	ND

* Quantified using 30-weight motor oil as a standard.

Approved By: MMarthe Date: 5/19/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON	**Service Request:**	K9702929
Project:	New City Cleaners/40358-016.004(3)	**Date Collected:**	4/30-5/1/97
Sample Matrix:	Soil	**Date Received:**	5/2/97
		Date Extracted:	5/13/97
		Date Analyzed:	5/13/97

Total Petroleum Hydrocarbons as Gasoline
Washington DOE Method WTPH-G
Units: mg/Kg (ppm)
Dry Weight Basis

Sample Name	Lab Code	MRL	Result
MW-1-7	K9702929-001	5	ND
MW-2-7	K9702929-004	5	ND
MW-10-7	K9702929-007	5	ND
Method Blank	K970513-MB	5	ND

Approved By: _____ Date: 5/18/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/40358-016.004(3)
Sample Matrix: Soil

Service Request: K9702929
Date Collected: 4/30-5/1/97
Date Received: 5/2/97
Date Extracted: NA

Volatile Organic Compounds
EPA Method 8260A
Units: µg/Kg (ppb)
Dry Weight Basis

	Sample Name:	MW-1-7	MW-1-27	MW-2-12.5
	Lab Code:	K9702929-001(C)	K9702929-003	K9702929-005
	Date Analyzed:	5/8/97	5/7/97	5/8/97
Analyte	**MRL**			
Dichlorodifluoromethane (CFC 12)	5	<35	ND	ND
Chloromethane	5	<35	ND	ND
Vinyl Chloride	5	<35	ND	ND
Bromomethane	5	<35	ND	ND
Chloroethane	5	<35	ND	ND
Trichlorofluoromethane (CFC 11)	5	<35	ND	ND
Acetone	50	<350	ND	ND
1,1-Dichloroethene	5	<35	ND	ND
Carbon Disulfide	5	<35	ND	ND
Methylene Chloride	10	<70	ND	ND
trans-1,2-Dichloroethene	5	<35	ND	ND
1,1-Dichloroethane	5	<35	ND	ND
2-Butanone (MEK)	20	<140	ND	ND
2,2-Dichloropropane	5	<35	ND	ND
cis-1,2-Dichloroethene	5	<35	ND	ND
Chloroform	5	<35	ND	ND
Bromochloromethane	5	<35	ND	ND
1,1,1-Trichloroethane (TCA)	5	<35	ND	ND
1,1-Dichloropropene	5	<35	ND	ND
Carbon Tetrachloride	5	<35	ND	ND
1,2-Dichloroethane	5	<35	ND	ND
✗ Benzene	5	<35	ND	ND
Trichloroethene (TCE)	5	90	ND	ND
1,2-Dichloropropane	5	<35	ND	ND
Bromodichloromethane	5	<35	ND	ND
Dibromomethane	5	<35	ND	ND
2-Hexanone	20	<140	ND	ND
cis-1,3-Dichloropropene	5	<35	ND	ND
✗ Toluene	5	<35	ND	ND
trans-1,3-Dichloropropene	5	<35	ND	ND
1,1,2-Trichloroethane	5	<35	ND	ND
4-Methyl-2-pentanone (MIBK)	20	<140	ND	ND
1,3-Dichloropropane	5	<35	ND	ND

C The MRL is elevated because the sample required diluting.

Approved By: _____ Date: 5/22/97

02929VOA.LWI - 8260s 5/22/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/40358-016.004(3)
Sample Matrix: Soil

Service Request: K9702929
Date Collected: 4/30-5/1/97
Date Received: 5/2/97
Date Extracted: NA

Volatile Organic Compounds
EPA Method 8260A
Units: µg/Kg (ppb)
Dry Weight Basis

	Sample Name:	MW-1-7	MW-1-27	MW-2-12.5
	Lab Code:	K9702929-001(C)	K9702929-003	K9702929-005
	Date Analyzed:	5/8/97	5/7/97	5/8/97
Analyte	**MRL**			
Tetrachloroethene (PCE)	5	4400	ND	68
Dibromochloromethane	5	<35	ND	ND
1,2-Dibromoethane (EDB)	20	<140	ND	ND
Chlorobenzene	5	<35	ND	ND
1,1,1,2-Tetrachloroethane	5	<35	ND	ND
X Ethylbenzene	5	<35	ND	ND
X Total Xylenes	5	<35	ND	ND
Styrene	5	<35	ND	ND
Bromoform	5	<35	ND	ND
Isopropylbenzene	20	<140	ND	ND
1,1,2,2-Tetrachloroethane	5	<35	ND	ND
1,2,3-Trichloropropane	5	<35	ND	ND
Bromobenzene	5	<35	ND	ND
n-Propylbenzene	20	<140	ND	ND
2-Chlorotoluene	20	<140	ND	ND
4-Chlorotoluene	20	<140	ND	ND
1,3,5-Trimethylbenzene	20	<140	ND	ND
tert-Butylbenzene	20	<140	ND	ND
1,2,4-Trimethylbenzene	20	<140	ND	ND
sec-Butylbenzene	20	<140	ND	ND
1,3-Dichlorobenzene	5	<35	ND	ND
4-Isopropyltoluene	20	<140	ND	ND
1,4-Dichlorobenzene	5	<35	ND	ND
n-Butylbenzene	20	<140	ND	ND
1,2-Dichlorobenzene	5	<35	ND	ND
1,2-Dibromo-3-chloropropane (DBCP)	20	<140	ND	ND
1,2,4-Trichlorobenzene	20	<140	ND	ND
1,2,3-Trichlorobenzene	20	<140	ND	ND
Naphthalene	20	<140	ND	ND
Hexachlorobutadiene	20	<140	ND	ND

C The MRL is elevated because the sample required diluting.

Approved By: _____ Date: 5/22/97

3S2P/101894

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/40358-016.004(3)
Sample Matrix: Soil

Service Request: K9702929
Date Collected: 4/30-5/1/97
Date Received: 5/2/97
Date Extracted: NA

Volatile Organic Compounds
EPA Method 8260A
Units: µg/Kg (ppb)
Dry Weight Basis

	Sample Name:	MW-2-27	MW-10-12.5	MW-10-27
	Lab Code:	K9702929-006	K9702929-008	K9702929-009
	Date Analyzed:	5/8/97	5/8/97	5/8/97
Analyte	**MRL**			
Dichlorodifluoromethane (CFC 12)	5	ND	ND	ND
Chloromethane	5	ND	ND	ND
Vinyl Chloride	5	ND	ND	ND
Bromomethane	5	ND	ND	ND
Chloroethane	5	ND	ND	ND
Trichlorofluoromethane (CFC 11)	5	ND	ND	ND
Acetone	50	ND	ND	ND
1,1-Dichloroethene	5	ND	ND	ND
Carbon Disulfide	5	ND	ND	ND
Methylene Chloride	10	ND	ND	ND
trans-1,2-Dichloroethene	5	ND	ND	ND
1,1-Dichloroethane	5	ND	ND	ND
2-Butanone (MEK)	20	ND	ND	ND
2,2-Dichloropropane	5	ND	ND	ND
cis-1,2-Dichloroethene	5	ND	ND	ND
Chloroform	5	ND	ND	ND
Bromochloromethane	5	ND	ND	ND
1,1,1-Trichloroethane (TCA)	5	ND	ND	ND
1,1-Dichloropropene	5	ND	ND	ND
Carbon Tetrachloride	5	ND	ND	ND
1,2-Dichloroethane	5	ND	ND	ND
Benzene	5	ND	ND	ND
Trichloroethene (TCE)	5	ND	ND	ND
1,2-Dichloropropane	5	ND	ND	ND
Bromodichloromethane	5	ND	ND	ND
Dibromomethane	5	ND	ND	ND
2-Hexanone	20	ND	ND	ND
cis-1,3-Dichloropropene	5	ND	ND	ND
Toluene	5	ND	ND	ND
trans-1,3-Dichloropropene	5	ND	ND	ND
1,1,2-Trichloroethane	5	ND	ND	ND
4-Methyl-2-pentanone (MIBK)	20	ND	ND	ND
1,3-Dichloropropane	5	ND	ND	ND

Approved By: _____ Date: 5/12/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/40358-016.004(3)
Sample Matrix: Soil

Service Request: K9702929
Date Collected: 4/30-5/1/97
Date Received: 5/2/97
Date Extracted: NA

Volatile Organic Compounds
EPA Method 8260A
Units: µg/Kg (ppb)
Dry Weight Basis

	Sample Name:	MW-2-27	MW-10-12.5	MW-10-27
	Lab Code:	K9702929-006	K9702929-008	K9702929-009
	Date Analyzed:	5/8/97	5/8/97	5/8/97
Analyte	**MRL**			
Tetrachloroethene (PCE)	5	6	16	6
Dibromochloromethane	5	ND	ND	ND
1,2-Dibromoethane (EDB)	20	ND	ND	ND
Chlorobenzene	5	ND	ND	ND
1,1,1,2-Tetrachloroethane	5	ND	ND	ND
Ethylbenzene	5	ND	ND	ND
Total Xylenes	5	ND	ND	ND
Styrene	5	ND	ND	ND
Bromoform	5	ND	ND	ND
Isopropylbenzene	20	ND	ND	ND
1,1,2,2-Tetrachloroethane	5	ND	ND	ND
1,2,3-Trichloropropane	5	ND	ND	ND
Bromobenzene	5	ND	ND	ND
n-Propylbenzene	20	ND	ND	ND
2-Chlorotoluene	20	ND	ND	ND
4-Chlorotoluene	20	ND	ND	ND
1,3,5-Trimethylbenzene	20	ND	ND	ND
tert-Butylbenzene	20	ND	ND	ND
1,2,4-Trimethylbenzene	20	ND	ND	ND
sec-Butylbenzene	20	ND	ND	ND
1,3-Dichlorobenzene	5	ND	ND	ND
4-Isopropyltoluene	20	ND	ND	ND
1,4-Dichlorobenzene	5	ND	ND	ND
n-Butylbenzene	20	ND	ND	ND
1,2-Dichlorobenzene	5	ND	ND	ND
1,2-Dibromo-3-chloropropane (DBCP)	20	ND	ND	ND
1,2,4-Trichlorobenzene	20	ND	ND	ND
1,2,3-Trichlorobenzene	20	ND	ND	ND
Naphthalene	20	ND	ND	ND
Hexachlorobutadiene	20	ND	ND	ND

Approved By: _____ Date: 5/22/97

3S2P/101894

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/40358-016.004(3)
Sample Matrix: Soil

Service Request: K9702929
Date Collected: NA
Date Received: NA
Date Extracted: NA

Volatile Organic Compounds
EPA Method 8260A
Units: µg/Kg (ppb)
Dry Weight Basis

	Sample Name:	Method Blank	Method Blank
	Lab Code:	K970507-MB	K970508-MB
	Date Analyzed:	5/7/97	5/8/97
Analyte	**MRL**		
Dichlorodifluoromethane (CFC 12)	5	ND	ND
Chloromethane	5	ND	ND
Vinyl Chloride	5	ND	ND
Bromomethane	5	ND	ND
Chloroethane	5	ND	ND
Trichlorofluoromethane (CFC 11)	5	ND	ND
Acetone	50	ND	ND
1,1-Dichloroethene	5	ND	ND
Carbon Disulfide	5	ND	ND
Methylene Chloride	10	ND	ND
trans-1,2-Dichloroethene	5	ND	ND
1,1-Dichloroethane	5	ND	ND
2-Butanone (MEK)	20	ND	ND
2,2-Dichloropropane	5	ND	ND
cis-1,2-Dichloroethene	5	ND	ND
Chloroform	5	ND	ND
Bromochloromethane	5	ND	ND
1,1,1-Trichloroethane (TCA)	5	ND	ND
1,1-Dichloropropene	5	ND	ND
Carbon Tetrachloride	5	ND	ND
1,2-Dichloroethane	5	ND	ND
Benzene	5	ND	ND
Trichloroethene (TCE)	5	ND	ND
1,2-Dichloropropane	5	ND	ND
Bromodichloromethane	5	ND	ND
Dibromomethane	5	ND	ND
2-Hexanone	20	ND	ND
cis-1,3-Dichloropropene	5	ND	ND
Toluene	5	ND	ND
trans-1,3-Dichloropropene	5	ND	ND
1,1,2-Trichloroethane	5	ND	ND
4-Methyl-2-pentanone (MIBK)	20	ND	ND
1,3-Dichloropropane	5	ND	ND

Approved By: _____ Date: 5/22/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/40358-016.004(3)
Sample Matrix: Soil

Service Request: K9702929
Date Collected: NA
Date Received: NA
Date Extracted: NA

Volatile Organic Compounds
EPA Method 8260A
Units: µg/Kg (ppb)
Dry Weight Basis

	Sample Name:	Method Blank	Method Blank
	Lab Code:	K970507-MB	K970508-MB
	Date Analyzed:	5/7/97	5/8/97
Analyte	**MRL**		
Tetrachloroethene (PCE)	5	ND	ND
Dibromochloromethane	5	ND	ND
1,2-Dibromoethane (EDB)	20	ND	ND
Chlorobenzene	5	ND	ND
1,1,1,2-Tetrachloroethane	5	ND	ND
Ethylbenzene	5	ND	ND
Total Xylenes	5	ND	ND
Styrene	5	ND	ND
Bromoform	5	ND	ND
Isopropylbenzene	20	ND	ND
1,1,2,2-Tetrachloroethane	5	ND	ND
1,2,3-Trichloropropane	5	ND	ND
Bromobenzene	5	ND	ND
n-Propylbenzene	20	ND	ND
2-Chlorotoluene	20	ND	ND
4-Chlorotoluene	20	ND	ND
1,3,5-Trimethylbenzene	20	ND	ND
tert-Butylbenzene	20	ND	ND
1,2,4-Trimethylbenzene	20	ND	ND
sec-Butylbenzene	20	ND	ND
1,3-Dichlorobenzene	5	ND	ND
4-Isopropyltoluene	20	ND	ND
1,4-Dichlorobenzene	5	ND	ND
n-Butylbenzene	20	ND	ND
1,2-Dichlorobenzene	5	ND	ND
1,2-Dibromo-3-chloropropane (DBCP)	20	ND	ND
1,2,4-Trichlorobenzene	20	ND	ND
1,2,3-Trichlorobenzene	20	ND	ND
Naphthalene	20	ND	ND
Hexachlorobutadiene	20	ND	ND

Approved By: _____ Date: 5/22/97

3S2P/101894

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/40358-016.004(3)
Sample Matrix: Soil

Service Request: K9702929
Date Collected: 4/30-5/1/97
Date Received: 5/2/97
Date Extracted: 5/15/97

Volatile Organic Compounds
EPA Method 8260A
Units: µg/Kg (ppb)
Dry Weight Basis

		Sample Name:	MW-1-17.5	Method Blank
		Lab Code:	K9702929-002(C)	K970515-MB
		Date Analyzed:	5/15/97	5/15/97
Analyte	**MRL**			
Dichlorodifluoromethane (CFC 12)	5		<60	<50
Chloromethane	5		<60	<50
Vinyl Chloride	5		<60	<50
Bromomethane	5		<60	<50
Chloroethane	5		<60	<50
Trichlorofluoromethane (CFC 11)	5		<60	<50
Acetone	50		<2400	<2000
1,1-Dichloroethene	5		<60	<50
Carbon Disulfide	5		<60	<50
Methylene Chloride	10		<120	<100
trans-1,2-Dichloroethene	5		<60	<50
1,1-Dichloroethane	5		<60	<50
2-Butanone (MEK)	20		<2400	<2000
2,2-Dichloropropane	5		<60	<50
cis-1,2-Dichloroethene	5		<60	<50
Chloroform	5		<60	<50
Bromochloromethane	5		<60	<50
1,1,1-Trichloroethane (TCA)	5		<60	<50
1,1-Dichloropropene	5		<60	<50
Carbon Tetrachloride	5		<60	<50
1,2-Dichloroethane	5		<60	<50
Benzene	5		<60	<50
Trichloroethene (TCE)	5		<60	<50
1,2-Dichloropropane	5		<60	<50
Bromodichloromethane	5		<60	<50
Dibromomethane	5		<60	<50
2-Hexanone	20		<2400	<2000
cis-1,3-Dichloropropene	5		<60	<50
Toluene	5		<60	<50
trans-1,3-Dichloropropene	5		<60	<50
1,1,2-Trichloroethane	5		<60	<50
4-Methyl-2-pentanone (MIBK)	20		<2400	<2000
1,3-Dichloropropane	5		<60	<50

C The MRL is elevated because the sample required diluting.

Approved By: _____ Date: 5/22/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/40358-016.004(3)
Sample Matrix: Soil

Service Request: K9702929
Date Collected: 4/30-5/1/97
Date Received: 5/2/97
Date Extracted: 5/15/97

Volatile Organic Compounds
EPA Method 8260A
Units: µg/Kg (ppb)
Dry Weight Basis

		Sample Name:	MW-1-17.5	Method Blank
		Lab Code:	K9702929-002(C)	K970515-MB
		Date Analyzed:	5/15/97	5/15/97
Analyte	**MRL**			
Tetrachloroethene (PCE)	5		95	<50
Dibromochloromethane	5		<60	<50
1,2-Dibromoethane (EDB)	20		<240	<200
Chlorobenzene	5		<60	<50
1,1,1,2-Tetrachloroethane	5		<60	<50
Ethylbenzene	5		<60	<50
Total Xylenes	5		<60	<50
Styrene	5		<60	<50
Bromoform	5		<60	<50
Isopropylbenzene	20		<240	<200
1,1,2,2-Tetrachloroethane	5		<60	<50
1,2,3-Trichloropropane	5		<60	<50
Bromobenzene	5		<60	<50
n-Propylbenzene	20		<240	<200
2-Chlorotoluene	20		<240	<200
4-Chlorotoluene	20		<240	<200
1,3,5-Trimethylbenzene	20		<240	<200
tert-Butylbenzene	20		<240	<200
1,2,4-Trimethylbenzene	20		<240	<200
sec-Butylbenzene	20		<240	<200
1,3-Dichlorobenzene	5		<60	<50
4-Isopropyltoluene	20		<240	<200
1,4-Dichlorobenzene	5		<60	<50
n-Butylbenzene	20		<240	<200
1,2-Dichlorobenzene	5		<60	<50
1,2-Dibromo-3-chloropropane (DBCP)	20		<240	<200
1,2,4-Trichlorobenzene	20		<240	<200
1,2,3-Trichlorobenzene	20		<240	<200
Naphthalene	20		<240	<200
Hexachlorobutadiene	20		<240	<200

C The MRL is elevated because the sample required diluting.

Approved By: _____ Date: 5/22/97

3S2P/101894

APPENDIX A

LABORATORY QC RESULTS

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: New City Cleaners/40358-016.004(3)
Sample Matrix: Soil

Service Request: K9702929
Date Collected: 4/30/97
Date Received: 5/2/97
Date Extracted: NA
Date Analyzed: 5/14/97

Duplicate Summary
Carbon, Total Organic
ASTM D4129-82 Modified
Units: Percent (%)
Dry Weight Basis

Sample Name	Lab Code	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference
MW-2-12.5	K9702929-005D	0.05	0.08	0.08	0.08	< 1

Approved By: _____ Date: 5/16/97

DUP1A/102194
02929WET.LJ1 - TOCDS 5/16/97

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: New City Cleaners/40358-016.004(3)
Sample Matrix: Soil

Service Request: K9702929
Date Collected: 4/30/97
Date Received: 5/2/97
Date Extracted: NA
Date Analyzed: 2/14/97

Matrix Spike Summary
Carbon, Total Organic
ASTM D4129-82 Modified
Units: Percent (%)
Dry Weight Basis

Sample Name	Lab Code	MRL	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery	CAS Percent Recovery Acceptance Limits
MW-2-12.5	K9702929-005MS	0.05	2.49	0.08	2.66	104	75-125

Approved By: _____ Date: 5/16/97

MS1A/102194
02929WET.LJ1 - TOCMW 5/16/97

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON	**Service Request:**	K9702929
Project:	New City Cleaners/40358-016.004(3)	**Date Collected:**	5/1/97
Sample Matrix:	Soil	**Date Received:**	5/2/97
		Date Extracted:	5/9/97
		Date Analyzed:	5/14,15/97

Surrogate Recovery Summary
Total Petroleum Hydrocarbons as Diesel and Oil
Washington DOE Method WTPH-D

Sample Name	Lab Code	Percent Recovery o-Terphenyl
MW-1-7	K9702929-001	97
MW-2-7	K9702929-004	79
MW-10-7	K9702929-007	108
MW-2-7	K9702929-004MS	86
MW-2-7	K9702929-004DMS	93
Lab Control Sample	K970509-LCS	89
Method Blank	K970509-MB	77

CAS Acceptance Limits: 56-116

Approved By: MMarthe Date: 5/19/97

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON	**Service Request:**	K9702929
Project:	New City Cleaners/40358-016.004(3)	**Date Collected:**	5/1/97
Sample Matrix:	Soil	**Date Received:**	5/2/97
		Date Extracted:	5/9/97
		Date Analyzed:	5/15/97

Matrix Spike/Duplicate Matrix Spike Summary
Total Petroleum Hydrocarbons as Diesel and Oil
Washington DOE Method WTPH-D
Units: mg/Kg (ppm)
Dry Weight Basis

Sample Name: MW-2-7
Lab Code: K9702929-004DMS

Analyte	Spike Level MS	Spike Level DMS	Sample Result	Spike Result MS	Spike Result DMS	Percent Recovery MS	Percent Recovery DMS	CAS Acceptance Limits	Relative Percent Difference	CAS RPD Acceptance Limit
Diesel	210	190	ND	160	160	76	84	19-145	10	40

Approved By: MMarthe Date: 5/19/97

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON	**Service Request:**	K9702929
Project:	New City Cleaners/40358-016.004(3)	**Date Collected:**	NA
LCS Matrix:	Soil	**Date Received:**	NA
		Date Extracted:	5/9/97
		Date Analyzed:	5/14/97

Laboratory Control Sample Summary
Total Petroleum Hydrocarbons as Diesel and Oil
Washington DOE Method WTPH-D
Units: mg/Kg (ppm)

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits
Diesel	150	121	81	60-120

Approved By: MMathe Date: 5/19/97

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: New City Cleaners/40358-016.004(3)
Sample Matrix: Soil

Service Request: K9702929
Date Collected: 4/30-5/1/97
Date Received: 5/2/97
Date Extracted: 5/13/97
Date Analyzed: 5/14/97

Matrix Spike/Duplicate Matrix Spike Summary
Total Petroleum Hydrocarbons as Gasoline
Washington DOE Method WTPH-G
Units: mg/Kg (ppm)
Dry Weight Basis

Sample Name: MW-1-7
Lab Code: K9702929-001MS, K9702929-001DMS

	Spike Level		Sample	Spike Result		Percent Recovery		CAS Acceptance	Relative Percent	CAS RPD Acceptance
Analyte	MS	DMS	**Result**	MS	DMS	MS	DMS	Limits	**Difference**	**Limit**
Gasoline	63	64	ND	58	51	92	79	59-135	15	40

Approved By: _____ Date: 5/13/97

DMS1SRPD/120594
02929VOA.JG1 - DMS1SRPD 5/18/97

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON	**Service Request:**	K9702929
Project:	New City Cleaners/40358-016.004(3)	**Date Collected:**	NA
LCS Matrix:	Soil	**Date Received:**	NA
		Date Extracted:	5/13/97
		Date Analyzed:	5/14/97

Laboratory Control Sample Summary
Total Petroleum Hydrocarbons as Gasoline
Washington DOE Method WTPH-G
Units: mg/Kg (ppm)

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits
Gasoline	50	48	96	82-155

Approved By: _____ Date: 5/18/97

LCS/102194

02929VOA.JG1 - GASsLCS 5/18/97

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON	**Service Request:**	K9702929
Project:	New City Cleaners/40358-016.004(3)	**Date Collected:**	4/30-5/1/97
Sample Matrix:	Soil	**Date Received:**	5/2/97
		Date Extracted:	5/13/97
		Date Analyzed:	5/13-14/97

Surrogate Recovery Summary
Total Petroleum Hydrocarbons as Gasoline
Washington DOE Method WTPH-G

Sample Name	Lab Code	Percent Recovery 1,4-Difluorobenzene
MW-1-7	K9702929-001	94
MW-2-7	K9702929-004	89
MW-10-7	K9702929-007	87
MW-1-7	K9702929-001MS	102
MW-1-7	K9702929-001DMS	100
Lab Control Sample	K970513-LCS	115
Method Blank	K970513-MB	106

CAS Acceptance Limits: 48-129

Approved By: _____ Date: 5/16/97

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: New City Cleaners/40358-016.004(3)
Sample Matrix: Soil

Service Request: K9702929
Date Collected: 5/1/97
Date Received: 5/2/97
Date Extracted: NA
Date Analyzed: 5/7/97

Matrix Spike/Duplicate Matrix Spike Summary
Volatile Organic Compounds
EPA Method 8260A
Units: µg/Kg (ppb)
Dry Weight Basis

Sample Name: MW-1-27
Lab Code: K9702929-003MS, K9702929-003DMS

Analyte	Spike Level MS	Spike Level DMS	Sample Result	Spike Result MS	Spike Result DMS	Percent Recovery MS	Percent Recovery DMS	CAS Acceptance Limits	Relative Percent Difference
1,1-Dichloroethene	57	57	ND	65	64	114	112	51-147	2
Benzene	57	57	ND	63	63	111	111	70-120	<1
Trichloroethene (TCE)	57	57	ND	65	64	114	112	60-123	2
Toluene	57	57	ND	62	61	109	107	66-125	2
Chlorobenzene	57	57	ND	61	60	107	105	64-124	2
1,2-Dichlorobenzene	57	57	ND	58	58	102	102	55-117	<1
Naphthalene	57	57	ND	57	55	100	96	13-142	4

Approved By: _____ Date: 5/22/97

DMS1S/102194
02929VOA.LW1 - 8260sDMS 5/22/97

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: New City Cleaners/40358-016.004(3)
LCS Matrix: Soil

Service Request: K9702929
Date Collected: NA
Date Received: NA
Date Extracted: NA
Date Analyzed: 5/7/97

Laboratory Control Sample Summary
Volatile Organic Compounds
EPA Method 8260A
Units: µg/Kg (ppb)

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits
1,1-Dichloroethene	50	47	94	70-130
Benzene	50	47	94	70-130
Trichloroethene	50	49	98	70-130
Toluene	50	48	96	70-130
Chlorobenzene	50	48	96	70-130
1,2-Dichlorobenzene	50	49	98	70-130
Naphthalene	50	53	106	70-130

Approved By: _____ Date: 5/22/97

LCS/060194
02929VOA.LW1 - 8260sLCS 5/22/97

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: New City Cleaners/40358-016.004(3)
Sample Matrix: Soil

Service Request: K9702929
Date Collected: 4/30-5/1/97
Date Received: 5/2/97
Date Extracted: NA
Date Analyzed: 5/7-8/97

Surrogate Recovery Summary
Volatile Organic Compounds
EPA Method 8260A

Sample Name	Lab Code	Percent Recovery		
		Dibromofluoromethane	Toluene-d_8	4-Bromofluorobenzene
MW-1-7	K9702929-001	108	100	100
MW-1-27	K9702929-003	108	100	98
MW-2-12.5	K9702929-005	107	100	96
MW-2-27	K9702929-006	110	100	99
MW-10-12.5	K9702929-008	110	99	97
MW-10-27	K9702929-009	109	102	100
MW-1-27	K9702929-003MS	104	98	99
MW-1-27	K9702929-003DMS	102	98	99
Lab Control Sample	K970507-LCS	104	98	99
Method Blank	K970507-MB	103	99	96
Method Blank	K970508-MB	103	99	94
CAS Acceptance Limits:		82-122	84-116	67-129

Approved By: _____ Date: 5/22/97

SUR3/110094
02929VOA.LW1 - 8260sSUR 5/22/97

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: New City Cleaners/40358-016.004(3)
Sample Matrix: Soil

Service Request: K9702929
Date Collected: 4/30-5/1/97
Date Received: 5/2/97
Date Extracted: 5/15/97
Date Analyzed: 5/15/97

Surrogate Recovery Summary
Volatile Organic Compounds
EPA Method 8260A

		Percent Recovery		
Sample Name	**Lab Code**	Dibromofluoromethane	Toluene-d_8	4-Bromofluorobenzene
MW-1-17.5	K9702929-002	99	100	96
Method Blank	K970515-MB	101	97	92
CAS Acceptance Limits:		82-122	84-116	67-129

Approved By: _____ Date: 5/22/97

SUR3/110094
02929VOA.LWI - 8260sSUR (2) 5/22/97

APPENDIX B

CHAIN OF CUSTODY INFORMATION

EMCON CHAIN OF CUSTODY/LABORATORY ANALYSIS REPORT FORM

DATE 5/1/97 PAGE 1 OF 1

PROJECT NAME New City Cleaners #40355-016.004(3)
PROJECT ATTN: Rob Lindsay
COMPANY/ADDRESS 7106 West Willard Alton Lane Suite 101 Spokane, WA 99224
PHONE (509) 838-1144
SAMPLERS SIGNATURE [signature]

SAMPLE I.D.	DATE	TIME	LAB I.D.	SAMPLE MATRIX	NUMBER OF CONTAINERS	ANALYSIS REQUEST: PETROLEUM HCS — TPH - HCID State:	TPH - G State: NA BTEX	TPH - D State: NA Oil	TPH - 418.1 State: NA TPH-D Extended	TPH - Other	ORGANIC — Halogenated or Aromatic Volatiles 601/8010 / 602/8020	Volatile Organics GC/MS 624-8240	Base/Neu/Acid Organics GC/MS 625/8270	Pesticides/PCBS 8080 PCB ONLY	PAH 8310 HPCL	TCLP Metals Semi VOA VOA Pest/Herb	Metals Total DISS List Below	Cyanide	ORGANIC METALS/INORGANICS — pH, Cond Cl, SO_4, PO_4 F, Br NO_2 NO_3 (Circle)	NH_3 - N, COD, Total-P TKN, TOC, TOX (Circle)	VOC 8260	NO ANALYSIS	REMARKS
MW-1-7	5/1/97	0820	K9709-1	Soil	2		X	X													X		
MW-1-17.5		0845	-2		2																X		HOLD
MW-1-27		0915	3		2																X		
MW-2-7	4/30/97	1515	4		2		X	X															
MW-2-12.5		1535	5		2																X		
MW-2-27		1610	6		2																X		
MW-10-7		1240	7		2		X	X															
MW-10-12.5		1215	8		2																X		
MW-10-27		1230	9		2																X		

RELINQUISHED BY:
Signature: [signature]
Printed Name: Nick Gibson
Firm: Emcon
Date/Time: 5/1/97 1330

RECEIVED BY:
Signature: [signature]
Printed Name: [illegible]
Firm: [illegible]
Date/Time: 5/2/97 1015

TURNAROUND REQUIREMENTS
___ 24 hr. ___ 48 hr. ___ 5 day
✓ Standard (10-15 working days)
___ Provide Verbal Preliminary Results
✓ Provide FAX preliminary Results
Requested Report Date ___

REPORT REQUIREMENTS
___ I. Routine Report
___ II. Report (includes DUP MAS MSD, as required, may be charged as samples)
___ III. Data Validation Report (includes All Raw Data)
___ IV. CLP Deliverable Report

INVOICE INFORMATION:
P.O.# ___
Bill To ___

SAMPLE RECEIPT:
Shipping VIA: ___
Shipping Id: ___
Condition: ___
Lab No: K9709929

RELINQUISHED BY:
Signature ___
Printed Name ___
Firm ___
Date/Time ___

RECEIVED BY:
Signature ___
Printed Name ___
Firm ___
Date/Time ___

SPECIAL INSTRUCTIONS/COMMENTS:
Refer to Richard Craven's for Report Requirements as stated in Emcon's QAPP

820000

Columbia Analytical Services inc.

May 27, 1997

Service Request No: K9702981

Rob Lindsay
EMCON
W 7106 Will D. Alton Lane, Suite 101
Spokane, WA 99204-5760

Re: New City Cleaners/40358-016.004(3)

Dear Rob:

Enclosed are the results of the sample(s) submitted to our laboratory on May 5, 1997. For your reference, these analyses have been assigned our service request number K9702981.

A volatile surrogate in sample SB-1-12.5 was outside acceptance criteria due to matrix interference.

All analyses were performed according to our laboratory's quality assurance program. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the samples analyzed.

Please call if you have any questions. My extension is 243.

Respectfully submitted,

Columbia Analytical Services, Inc.

Richard Craven
Project Chemist

RAC/mc

4317 South 12th Avenue • P.O. Box 479 • Kelso, Washington 98626 • Telephone 360/577-7222 • Fax 360/636-1068

COLUMBIA ANALYTICAL SERVICES, Inc.

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
J	Estimated concentration. The value is less than the method reporting limit, but greater than the method detection limit.
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NAN	Not Analyzed
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected at or above the MRL
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/40358-016.004(3)
Sample Matrix: Soil

Service Request: K9702981
Date Collected: 5/1/97
Date Received: 5/5/97
Date Extracted: NA
Date Analyzed: 5/16/97

Carbon, Total Organic
ASTM D4129-82 Modified
Units: Percent (%)
Dry Weight Basis

Sample Name	Lab Code	MRL	Result
SB-2-35	K9702981-003	0.05	0.15
Method Blank	K9702981-MB	0.05	ND

Approved By: _____ Date: 5/20/97

IAMRL/102594
02981WET.LJ1 - TOCS 5/20/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON	**Service Request:**	K9702981
Project:	New City Cleaners/40358-016.004(3)	**Date Collected:**	5/1/97
Sample Matrix:	Soil	**Date Received:**	5/5/97
		Date Extracted:	5/6,8,14/97
		Date Analyzed:	5/9,12,13,20/97

Total Petroleum Hydrocarbons as Diesel and Oil
Washington DOE Method WTPH-D
Units: mg/Kg (ppm)
Dry Weight Basis

Analyte:		Diesel	Oil*
Method Reporting Limit:		25	100
Sample Name	**Lab Code**		
SB-2-7	K9702981-001	70(b)	303
SB-2-9	K9702981-002	ND	ND
SB-1-7	K9702981-004(a)	1040	1450
SB-1-9	K9702981-005	ND	ND
Method Blank 5/6/97	K9702981-MB	ND	ND
Method Blank 5/8/97	K9702981-MB	ND	ND
Method Blank 5/14/97	K9702981-MB	ND	ND

* Quantified using 30-weight motor oil as a standard.

(a) Quantified as diesel/oil. The sample contained components that eluted in the diesel/oil range, but the chromatogram did not match the typical diesel/oil fingerprint.

(b) This result is primarily due to the beginning of oil, which elutes in the diesel region.

Approved By: _____ Date: 5/27/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON	**Service Request:**	K9702981
Project:	New City Cleaners/40358-016.004(3)	**Date Collected:**	5/1/97
Sample Matrix:	Soil	**Date Received:**	5/5/97
		Date Extracted:	5/7/97
		Date Analyzed:	5/7/97

Total Petroleum Hydrocarbons as Gasoline
EPA Methods 5030A and Washington DOE Method WTPH-G
Units: mg/Kg (ppm)
Dry Weight Basis

Analyte:	**TPH as Gasoline**
Method Reporting Limit:	5

Sample Name	**Lab Code**	
SB-2-7	K9702981-001	ND
SB-2-9	K9702981-002	ND
SB-1-7	K9702981-004	8(a)
SB-1-9	K9702981-005	ND
Method Blank	K9702981-MB	ND

(a) Quantified as gas. The sample contained components that eluted in the gas range, but the chromatogram did not match the typical gas fingerprint.

Approved By: _____ Date: 5/22/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/40358-016.004(3)
Sample Matrix: Soil

Service Request: K9702981
Date Collected: 5/1/97
Date Received: 5/5/97
Date Extracted: NA

Volatile Organic Compounds
EPA Method 8260A
Units: µg/Kg (ppb)
Dry Weight Basis

	Sample Name:	SB-2-9	SB-2-35	SB-1-12.5
	Lab Code:	K9702981-002(C)	K9702981-003	K9702981-006(D)
	Date Analyzed:	5/9/97	5/9/97	5/9/97
Analyte	**MRL**			
Dichlorodifluoromethane (CFC 12)	5	<30	ND	<30
Chloromethane	5	<30	ND	<30
Vinyl Chloride	5	<30	ND	<30
Bromomethane	5	<30	ND	<30
Chloroethane	5	<30	ND	<30
Trichlorofluoromethane (CFC 11)	5	<30	ND	<30
Acetone	50	<300	ND	<300
1,1-Dichloroethene	5	<30	ND	<30
Carbon Disulfide	5	<30	ND	<30
Methylene Chloride	10	<60	ND	<60
trans-1,2-Dichloroethene	5	<30	ND	<30
1,1-Dichloroethane	5	<30	ND	<30
2-Butanone (MEK)	20	<120	ND	<120
2,2-Dichloropropane	5	<30	ND	<30
cis-1,2-Dichloroethene	5	<30	ND	560
Chloroform	5	<30	ND	<30
Bromochloromethane	5	<30	ND	<30
1,1,1-Trichloroethane (TCA)	5	<30	ND	<30
1,1-Dichloropropene	5	<30	ND	<30
Carbon Tetrachloride	5	<30	ND	<30
1,2-Dichloroethane	5	<30	ND	<30
Benzene	5	<30	ND	<30
Trichloroethene (TCE)	5	<30	ND	350
1,2-Dichloropropane	5	<30	ND	<30
Bromodichloromethane	5	<30	ND	<30
Dibromomethane	5	<30	ND	<30
2-Hexanone	20	<120	ND	<120
cis-1,3-Dichloropropene	5	<30	ND	<30
Toluene	5	<30	ND	<30
trans-1,3-Dichloropropene	5	<30	ND	<30
1,1,2-Trichloroethane	5	<30	ND	<30
4-Methyl-2-pentanone (MIBK)	20	<120	ND	<120
1,3-Dichloropropane	5	<30	ND	<30

C The MRL is elevated because the sample required diluting.
D The MRL is elevated because of matrix interferences and because the sample required diluting.

Approved By: _____ Date: 5/21/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/40358-016.004(3)
Sample Matrix: Soil

Service Request: K9702981
Date Collected: 5/1/97
Date Received: 5/5/97
Date Extracted: NA

Volatile Organic Compounds
EPA Method 8260A
Units: µg/Kg (ppb)
Dry Weight Basis

	Sample Name:	SB-2-9	SB-2-35	SB-1-12.5
	Lab Code:	K9702981-002(C)	K9702981-003	K9702981-006(D)
	Date Analyzed:	5/9/97	5/9/97	5/9/97
Analyte	**MRL**			
Tetrachloroethene (PCE)	5	1500	ND	<30
Dibromochloromethane	5	<30	ND	<30
1,2-Dibromoethane (EDB)	20	<120	ND	<120
Chlorobenzene	5	<30	ND	<30
1,1,1,2-Tetrachloroethane	5	<30	ND	<30
Ethylbenzene	5	<30	ND	<30
Total Xylenes	5	<30	ND	<30
Styrene	5	<30	ND	<30
Bromoform	5	<30	ND	<30
Isopropylbenzene	20	<120	ND	<120
1,1,2,2-Tetrachloroethane	5	<30	ND	<30
1,2,3-Trichloropropane	5	<30	ND	<30
Bromobenzene	5	<30	ND	<30
n-Propylbenzene	20	<120	ND	<120
2-Chlorotoluene	20	<120	ND	<120
4-Chlorotoluene	20	<120	ND	<120
1,3,5-Trimethylbenzene	20	<120	ND	180
tert-Butylbenzene	20	<120	ND	<120
1,2,4-Trimethylbenzene	20	<120	ND	430
sec-Butylbenzene	20	<120	ND	180
1,3-Dichlorobenzene	5	<30	ND	<30
4-Isopropyltoluene	20	<120	ND	190
1,4-Dichlorobenzene	5	<30	ND	<30
n-Butylbenzene	20	<120	ND	150
1,2-Dichlorobenzene	5	<30	ND	<30
1,2-Dibromo-3-chloropropane (DBCP)	20	<120	ND	<120
1,2,4-Trichlorobenzene	20	<120	ND	<120
1,2,3-Trichlorobenzene	20	<120	ND	<120
Naphthalene	20	<120	ND	<120
Hexachlorobutadiene	20	<120	ND	<120

C The MRL is elevated because the sample required diluting.
D The MRL is elevated because of matrix interferences and because the sample required diluting.

Approved By: Heather Hyde Date: 5/21/97

3S2P/101894

02981VOA.CLI - 8260s 5/21/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/40358-016.004(3)
Sample Matrix: Soil

Service Request: K9702981
Date Collected: 5/1/97
Date Received: 5/5/97
Date Extracted: NA

Volatile Organic Compounds
EPA Method 8260A
Units: µg/Kg (ppb)
Dry Weight Basis

	Sample Name:	SB-1-40	Method Blank	Method Blank
	Lab Code:	K9702981-007	K970509-MB	K970512-MB
	Date Analyzed:	5/12/97	5/9/97	5/12/97
Analyte	**MRL**			
Dichlorodifluoromethane (CFC 12)	5	ND	ND	ND
Chloromethane	5	ND	ND	ND
Vinyl Chloride	5	ND	ND	ND
Bromomethane	5	ND	ND	ND
Chloroethane	5	ND	ND	ND
Trichlorofluoromethane (CFC 11)	5	ND	ND	ND
Acetone	50	ND	ND	ND
1,1-Dichloroethene	5	ND	ND	ND
Carbon Disulfide	5	ND	ND	ND
Methylene Chloride	10	ND	ND	ND
trans-1,2-Dichloroethene	5	ND	ND	ND
1,1-Dichloroethane	5	ND	ND	ND
2-Butanone (MEK)	20	ND	ND	ND
2,2-Dichloropropane	5	ND	ND	ND
cis-1,2-Dichloroethene	5	ND	ND	ND
Chloroform	5	ND	ND	ND
Bromochloromethane	5	ND	ND	ND
1,1,1-Trichloroethane (TCA)	5	ND	ND	ND
1,1-Dichloropropene	5	ND	ND	ND
Carbon Tetrachloride	5	ND	ND	ND
1,2-Dichloroethane	5	ND	ND	ND
Benzene	5	ND	ND	ND
Trichloroethene (TCE)	5	ND	ND	ND
1,2-Dichloropropane	5	ND	ND	ND
Bromodichloromethane	5	ND	ND	ND
Dibromomethane	5	ND	ND	ND
2-Hexanone	20	ND	ND	ND
cis-1,3-Dichloropropene	5	ND	ND	ND
Toluene	5	ND	ND	ND
trans-1,3-Dichloropropene	5	ND	ND	ND
1,1,2-Trichloroethane	5	ND	ND	ND
4-Methyl-2-pentanone (MIBK)	20	ND	ND	ND
1,3-Dichloropropane	5	ND	ND	ND

Approved By: Matthew Hyde Date: 5/21/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/40358-016.004(3)
Sample Matrix: Soil

Service Request: K9702981
Date Collected: 5/1/97
Date Received: 5/5/97
Date Extracted: NA

Volatile Organic Compounds
EPA Method 8260A
Units: µg/Kg (ppb)
Dry Weight Basis

	Sample Name:	SB-1-40	Method Blank	Method Blank
	Lab Code:	K9702981-007	K970509-MB	K970512-MB
	Date Analyzed:	5/12/97	5/9/97	5/12/97
Analyte	**MRL**			
Tetrachloroethene (PCE)	5	ND	ND	ND
Dibromochloromethane	5	ND	ND	ND
1,2-Dibromoethane (EDB)	20	ND	ND	ND
Chlorobenzene	5	ND	ND	ND
1,1,1,2-Tetrachloroethane	5	ND	ND	ND
Ethylbenzene	5	ND	ND	ND
Total Xylenes	5	ND	ND	ND
Styrene	5	ND	ND	ND
Bromoform	5	ND	ND	ND
Isopropylbenzene	20	ND	ND	ND
1,1,2,2-Tetrachloroethane	5	ND	ND	ND
1,2,3-Trichloropropane	5	ND	ND	ND
Bromobenzene	5	ND	ND	ND
n-Propylbenzene	20	ND	ND	ND
2-Chlorotoluene	20	ND	ND	ND
4-Chlorotoluene	20	ND	ND	ND
1,3,5-Trimethylbenzene	20	ND	ND	ND
tert-Butylbenzene	20	ND	ND	ND
1,2,4-Trimethylbenzene	20	ND	ND	ND
sec-Butylbenzene	20	ND	ND	ND
1,3-Dichlorobenzene	5	ND	ND	ND
4-Isopropyltoluene	20	ND	ND	ND
1,4-Dichlorobenzene	5	ND	ND	ND
n-Butylbenzene	20	ND	ND	ND
1,2-Dichlorobenzene	5	ND	ND	ND
1,2-Dibromo-3-chloropropane (DBCP)	20	ND	ND	ND
1,2,4-Trichlorobenzene	20	ND	ND	ND
1,2,3-Trichlorobenzene	20	ND	ND	ND
Naphthalene	20	ND	ND	ND
Hexachlorobutadiene	20	ND	ND	ND

Approved By: Heather Hyde Date: 5/21/97

3S2P/101894

02981VOA.CLI - 8260s (2) 5/21/97

APPENDIX A

LABORATORY QC RESULTS

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: New City Cleaners/40358-016.004(3)
Sample Matrix: Soil

Service Request: K9702981
Date Collected: 5/1/97
Date Received: 5/5/97
Date Extracted: NA
Date Analyzed: 5/16/97

Duplicate Summary
Carbon. Total Organic
ASTM D4129-82 Modified
Units: Percent (%)
Dry Weight Basis

Sample Name	Lab Code	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference
SB-2-35	K9702981-003D	0.05	0.15	0.13	0.14	14

Approved By: _____ Date: 5/20/97

DUP1A/102194
02981WET.LJ1 - TOCDS 5/20/97

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: New City Cleaners/40358-016.004(3)
Sample Matrix: Soil

Service Request: K9702981
Date Collected: 5/1/97
Date Received: 5/5/97
Date Extracted: NA
Date Analyzed: 5/16/97

Matrix Spike Summary
Carbon, Total Organic
ASTM D4129-82 Modified
Units: Percent (%)
Dry Weight Basis

Sample Name	Lab Code	MRL	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery	CAS Percent Recovery Acceptance Limits
SB-2-35	K9702981-003MS	0.05	4.54	0.15	4.39	93	75-125

Approved By: _____ Date: 5/20/97

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON	**Service Request:**	K9702981
Project:	New City Cleaners/40358-016.004(3)	**Date Collected:**	NA
LCS Matrix:	Soil	**Date Received:**	NA
		Date Extracted:	NA
		Date Analyzed:	5/16/97

Laboratory Control Sample Summary
Carbon, Total Organic
ASTM D4129-82 Modified
Units: Percent (%)

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits
rbon, Total Organic	0.62	0.62	100	85-115

Approved By: _____ Date: 5/20/97

I.CS/102194
02981WET.LJ1 - LCS 5/20/97

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: New City Cleaners/40358-016.004(3)
Sample Matrix: Soil

Service Request: K9702981
Date Collected: 5/1/97
Date Received: 5/5/97
Date Extracted: NA
Date Analyzed: 5/9-12/97

Surrogate Recovery Summary
Volatile Organic Compounds
EPA Method 8260A

		Percent Recovery		
Sample Name	**Lab Code**	Dibromofluoromethane	Toluene-d_8	4-Bromofluorobenzene
SB-2-9	K9702981-002	107	100	102
SB-2-35	K9702981-003	109	100	106
SB-1-12.5	K9702981-006	106	98	414(A)
SB-1-40	K9702981-007	108	100	100
SB-2-35	K9702981-003MS	101	99	99
SB-2-35	K9702981-003DMS	101	100	99
Lab Control Sample	K970509-LCS	101	100	101
Method Blank	K970509-MB	101	98	94
Method Blank	K970512-MB	101	99	95
CAS Acceptance Limits:		82-122	84-116	67-129

A Outside acceptance limits; see case narrative.

Approved By: Heather Hyde Date: 5/21/97

SUR3/110094
02981VOA.CLI - 8260sSUR 5/21/97

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: New City Cleaners/40358-016.004(3)
Sample Matrix: Soil

Service Request: K9702981
Date Collected: 5/1/97
Date Received: 5/5/97
Date Extracted: NA
Date Analyzed: 5/9/97

Matrix Spike/Duplicate Matrix Spike Summary
Volatile Organic Compounds
EPA Method 8260A
Units: µg/Kg (ppb)
Dry Weight Basis

Sample Name: SB-2-35
Lab Code: K9702981-003

Analyte	Spike Level MS	Spike Level DMS	Sample Result	Spike Result MS	Spike Result DMS	Percent Recovery MS	Percent Recovery DMS	CAS Acceptance Limits	Relative Percent Difference
1,1-Dichloroethene	56	57	ND	54	56	96	98	51-147	2
Benzene	56	57	ND	56	58	100	102	70-120	2
Trichloroethene (TCE)	56	57	ND	58	61	104	107	60-123	3
Toluene	56	57	ND	58	59	104	104	66-125	<1
Chlorobenzene	56	57	ND	57	58	102	102	64-124	<1
1,2-Dichlorobenzene	56	57	ND	55	57	98	100	55-117	2
Naphthalene	56	57	ND	54	60	96	105	13-142	9

Approved By: Matthew Hayes Date: 5/21/97

DMS1S/102194
02981VOA.CLI - 8260sDMS 5/21/97

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: New City Cleaners/40358-016.004(3)
LCS Matrix: Soil

Service Request: K9702981
Date Collected: NA
Date Received: NA
Date Extracted: NA
Date Analyzed: 5/9/97

Laboratory Control Sample Summary
Volatile Organic Compounds
EPA Method 8260A
Units: µg/Kg (ppb)

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits
1,1-Dichloroethene	50	49	98	70-130
Benzene	50	50	100	70-130
Trichloroethene	50	51	102	70-130
Toluene	50	54	108	70-130
Chlorobenzene	50	51	102	70-130
1,2-Dichlorobenzene	50	50	100	70-130
Naphthalene	50	51	102	70-130

Approved By: Nathan Hyde Date: 5/21/97

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: New City Cleaners/40358-016.004(3)
Sample Matrix: Soil

Service Request: K9702981
Date Collected: 5/1/97
Date Received: 5/5/97
Date Extracted: 5/6,8,14/97
Date Analyzed: 5/9,12,13,20/97

Surrogate Recovery Summary
Total Petroleum Hydrocarbons as Diesel and Oil
Washington DOE Method WTPH-D

Sample Name	Lab Code	Percent Recovery p-Terphenyl
SB-2-7	K9702981-001	91
SB-2-7	K9702981-001MS	82
SB-2-9	K9702981-002	74(b)
SB-1-7	K9702981-004	134(a)
SB-1-7	K9702981-004DUP	136(a)
SB-1-9	K9702981-005	81
Method Blank 5/6/97	K9702981-MB	95
Method Blank 5/8/97	K9702981-MB	91
Method Blank 5/14/97	K9702981-MB	92
Lab Control Sample 5/6/97	K9702981-LCS	99
Lab Control Sample 5/8/97	K9702981-LCS	93
Lab Control Sample 5/14/97	K9702981-LCS	103

CAS Acceptance Limits: 81-112

(a) Outside of acceptance limits because of matrix interferences. The chromatogram showed nontarget components that interfered with the analysis.

(b) Outside of acceptance limits because of matrix effects. This sample was analyzed a second time, and again produced unacceptable recovery values. The results from the initial analysis are reported.

Approved By: _____ Date: 5/27/97

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: New City Cleaners/40358-016.004(3)
Sample Matrix: Soil

Service Request: K9702981
Date Collected: 5/1/97
Date Received: 5/5/97
Date Extracted: 5/14/97
Date Analyzed: 5/20/97

Duplicate Summary
Total Petroleum Hydrocarbons as Diesel and Oil
Washington DOE Method WTPH-D
Units: mg/Kg (ppm)
Dry Weight Basis

Sample Name: SB-1-7
Lab Code: K9702981-004DUP

Analyte	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference	CAS RPD Acceptance Limit
Diesel	25	1040	960	1000	8	40
Oil	100	1450	1320	1385	9	40

Approved By: _____ Date: 5/22/97

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON	**Service Request:**	K9702981
Project:	New City Cleaners/40358-016.004(3)	**Date Collected:**	5/1/97
Sample Matrix:	Soil	**Date Received:**	5/5/97
		Date Extracted:	5/14/97
		Date Analyzed:	5/20/97

Matrix Spike Summary
Total Petroleum Hydrocarbons as Diesel and Oil
Washington DOE Method WTPH-D
Units: mg/Kg (ppm)
Dry Weight Basis

Sample Name: SB-2-7
Lab Code: K9702981-001MS

Analyte	MRL	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery	CAS Percent Recovery Acceptance Limits
Diesel	25	328	68	275	63(a)	66-120

(a) Outside of acceptance limits. Sample is heterogeneous. Homogeneity could not be readily achieved using routine laboratory practices.

Approved By: _____ Date: 5/27/97

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON	**Service Request:**	K9702981
Project:	New City Cleaners/40358-016.004(3)	**Date Collected:**	NA
LCS Matrix:	Soil	**Date Received:**	NA
		Date Extracted:	5/6/97
		Date Analyzed:	5/9/97

Laboratory Control Sample Summary
Total Petroleum Hydrocarbons as Diesel and Oil
Washington DOE Method WTPH-D
Units: mg/Kg (ppm)

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits
Diesel	301	277	92	83-119

Approved By: _____ Date: 5/07/97

LCS/102194

02981PHC.EC1 - TPHsLCS 5/22/97

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON	**Service Request:**	K9702981
Project:	New City Cleaners/40358-016.004(3)	**Date Collected:**	NA
LCS Matrix:	Soil	**Date Received:**	NA
		Date Extracted:	5/8/97
		Date Analyzed:	5/10/97

Laboratory Control Sample Summary
Total Petroleum Hydrocarbons as Diesel and Oil
Washington DOE Method WTPH-D
Units: mg/Kg (ppm)

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits
Diesel	301	266	88	83-119

Approved By: _____ Date: 5/22/97

LCS/102194

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON	**Service Request:**	K9702981
Project:	New City Cleaners/40358-016.004(3)	**Date Collected:**	NA
LCS Matrix:	Soil	**Date Received:**	NA
		Date Extracted:	5/14/97
		Date Analyzed:	5/20/97

Laboratory Control Sample Summary
Total Petroleum Hydrocarbons as Diesel and Oil
Washington DOE Method WTPH-D
Units: mg/Kg (ppm)

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits
Diesel	254	259	102	83-119

Approved By: _____ Date: 5/22/97

LCS/102194

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: New City Cleaners/40358-016.004(3)
Sample Matrix: Soil

Service Request: K9702981
Date Collected: 5/1/97
Date Received: 5/5/97
Date Extracted: 5/7/97
Date Analyzed: 5/7/97

Surrogate Recovery Summary
Total Petroleum Hydrocarbons as Gasoline
EPA Methods 5030A and Washington DOE Method WTPH-G

Sample Name	Lab Code	Percent Recovery 1,4-BFB (PID - BTEX)	Percent Recovery 1,4-BFB (FID - GAS)
SB-2-7	K9702981-001	NA	90
SB-2-9	K9702981-002	NA	91
SB-1-7	K9702981-004	NA	86
SB-1-9	K9702981-005	NA	84
Method Blank	K9702981-MB	NA	98
Lab Control Sample	K9702981-GLCS	NA	82
SB-2-7	K9702981-001GAS MS	NA	72
CAS Acceptance Limits:		59-116	59-115

Approved By: _____ Date: 5/21/97

SUR2/111594
02981PHC.DJ1 - GBTXsSUR 5/22/97

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: New City Cleaners/40358-016.004(3)
Sample Matrix: Soil

Service Request: K9702981
Date Collected: 5/1/97
Date Received: 5/5/97
Date Extracted: 5/12/97
Date Analyzed: 5/12/97

Matrix Spike Summary
BTEX and Total Petroleum Hydrocarbons as Gasoline
EPA Methods 5030A/8020 and Washington DOE Method WTPH-G
Units: mg/Kg (ppm)
Dry Weight Basis

Sample Name: SB-2-7
Lab Code: K9702981-001

Analyte	MRL	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery	CAS Percent Recovery Acceptance Limits
Gasoline	5	53	ND	59	111	59-135

NS Not spiked with gasoline.

Approved By: _____ Date: 5/22/97

MS1S/102194
02981PHC.DJ1 - GBTXsMS 5/22/97

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON	**Service Request:**	K9702981
Project:	New City Cleaners/40358-016.004(3)	**Date Collected:**	NA
LCS Matrix:	Soil	**Date Received:**	NA
		Date Extracted:	5/7/97
		Date Analyzed:	5/7/97

Laboratory Control Sample Summary
Total Petroleum Hydrocarbons as Gasoline
EPA Methods 5030A and Washington DOE Method WTPH-G
Units: mg/Kg (ppm)

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits
Gasoline	48	56	117	82-155

Approved By: _____ Date: 5/22/97

LCS/102194

02981PHC.DJ1 - GBTXsLCS 5/22/97

APPENDIX B

CHAIN OF CUSTODY INFORMATION

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

DATE 5/5/97 PAGE 1 OF 1

PROJECT NAME New City Cleaners #40358-016.004(3)
PROJECT MGR: Rob Lindsay
COMPANY/ADDRESS 7106 West Wild Rhon Lane Suite 101 Spokane, WA 99224
PHONE (509) 838-1144
SAMPLERS SIGNATURE M. Christian Green

SAMPLE I.D.	DATE	TIME	LAB I.D.	SAMPLE MATRIX	NUMBER OF CONTAINERS	TPH - HCID State:	TPH - G ✓ BTEX State:	TPH - D Oil ✓ State: WK TPH-Extended	TPH - 418.1 State:	TPH - Other	Halogenated or Aromatic Volatiles 601/8010 ___ 602/8020 ___	Volatile Organics GC/MS 624-8240	Base/Neu/Acid Organics GC/MS 625/8270	Pesticides/PCBS 8080 PCB ONLY	PAH 8100 GC ___ 8310 HPCL ___	TCLP Metals ___ Semi VOA ___ VOA ___ Pest/Herb	Metals Total ___ DISS ___ List Below	Cyanide	pH, Cond Cl, SO_4, PO_4 F, Br NO_2 NO_3 (Circle)	NH_3 - N, COD, Total-P TKN, TOC TOX (Circle)	VOC 8260	REMARKS
SB-2-7	5/1/97	1410	29810-001	Soil	2		X	X														
SB-2-9	5/1/97	1415	-002		2		X	X													X	
SB-2-35	5/1/97	1655	-003		2																X	
SB-1-7	5/1/97	1200	-004		1		X	X														
SB-1-9	5/1/97	1205	-005		2		X	X														
SB-1-12.5	5/1/97	1215	-006		2																X	
SB-1-40	5/2/97	0910	-007	↓	2																X	

RELINQUISHED BY:
M. Christian Green
Signature
NICK GARSON
Printed Name
ENCON
Firm
5/5/97 0800
Date/Time

RECEIVED BY:
DJ Mosier
Signature
DJ MOSIER
Printed Name
CHS
Firm
05-05-97 0800
Date/Time

RELINQUISHED BY:
Signature
Printed Name
Firm
Date/Time

RECEIVED BY:
Signature
Printed Name
Firm
Date/Time

TURNAROUND REQUIREMENTS
___ 24 hr ___ 48 hr ___ 5 day
✓ Standard (10-15 working days)
___ Provide Verbal Preliminary Results
✓ Provide FAX preliminary Results
Requested Report Date ___

REPORT REQUIREMENTS
___ I. Routine Report
___ II. Report (includes DUP.MAS. MSD, as required, may be charged as samples)
___ III. Data Validation Report (includes All Raw Data)
___ IV. CLP Deliverable Report

INVOICE INFORMATION:
P.O # ___
Bill To ___

SAMPLE RECEIPT:
Shipping VIA ___
Shipping to ___
Condition ___
Lab No ___

SPECIAL INSTRUCTIONS/COMMENTS:
Return to Richland Cleaners for Report Requirements as stated in Encon's QAPP

00027

Columbia Analytical Services, Inc.

June 2, 1997

Service Request No: K9703152

Rob Lindsay
EMCON
W 7106 Will D. Alton Lane, Suite 101
Spokane, WA 99204-5760

Re: New City Cleaners/40358-016.004 Task 3

Dear Rob:

Enclosed are the results of the sample(s) submitted to our laboratory on May 10, 1997. For your reference, these analyses have been assigned our service request number K9703152.

All analyses were performed according to our laboratory's quality assurance program. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the samples analyzed.

Please call if you have any questions. My extension is 243.

Respectfully submitted,

Columbia Analytical Services, Inc.

Richard Craven
Project Chemist

RC/td

1317 South 13th Avenue • P.O. Box 479 • Kelso, Washington 98626 • Telephone 360/577-7222 • Fax 360/636-1068

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
J	Estimated concentration. The value is less than the method reporting limit, but greater than the method detection limit.
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NAN	Not Analyzed
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected at or above the MRL
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

ient:	EMCON	**Service Request:**	K9703152
ect:	New City Cleaners/40358-016.004 Task 3	**Date Collected:**	5/8/97
ple Matrix:	Water	**Date Received:**	5/10/97
		Date Extracted:	NA

Volatile Organic Compounds by GC/MS

Units:	ug/L (ppb)	Sample Name:	MW-1-0597
Basis:	NA	Lab Code:	K9703152-001
ethods:	EPA 5030A/8260A	Date Analyzed:	5/22/97

Analyte	Methods	MRL	Dilution Factor	MW-1-0597	MW-20-0597	MW-2-0597
chlorodifluoromethane	EPA 5030A/8260A	0.5	1	ND	ND	ND
loromethane	EPA 5030A/8260A	0.5	1	ND	ND	ND
Vinyl Chloride	EPA 5030A/8260A	0.5	1	ND	ND	ND
omomethane	EPA 5030A/8260A	0.5	1	ND	ND	ND
loroethane	EPA 5030A/8260A	0.5	1	ND	ND	ND
richlorofluoromethane (CFC 11)	EPA 5030A/8260A	0.5	1	ND	ND	ND
Acetone	EPA 5030A/8260A	20	1	ND	ND	ND
1-Dichloroethene	EPA 5030A/8260A	0.5	1	ND	ND	ND
rbon Disulfide	EPA 5030A/8260A	0.5	1	ND	ND	ND
Methylene Chloride	EPA 5030A/8260A	1	1	ND	ND	ND
trans-1,2-Dichloroethene	EPA 5030A/8260A	0.5	1	ND	ND	ND
1-Dichloroethane	EPA 5030A/8260A	0.5	1	ND	ND	ND
Butanone (MEK)	EPA 5030A/8260A	20	1	ND	ND	ND
2,2-Dichloropropane	EPA 5030A/8260A	0.5	1	ND	ND	ND
cis-1,2-Dichloroethene	EPA 5030A/8260A	0.5	1	ND	ND	ND
oroform	EPA 5030A/8260A	0.5	1	ND	ND	ND
iochloromethane	EPA 5030A/8260A	0.5	1	ND	ND	ND
1,1,1-Trichloroethane (TCA)	EPA 5030A/8260A	0.5	1	ND	ND	ND
1,1-Dichloropropene	EPA 5030A/8260A	0.5	1	ND	ND	ND
rbon Tetrachloride	EPA 5030A/8260A	0.5	1	ND	ND	ND
2-Dichloroethane (EDC)	EPA 5030A/8260A	0.5	1	ND	ND	ND
Benzene	EPA 5030A/8260A	0.5	1	ND	ND	ND
Trichloroethene (TCE)	EPA 5030A/8260A	0.5	1	ND	ND	2.3
2-Dichloropropane	EPA 5030A/8260A	0.5	1	ND	ND	ND
omodichloromethane	EPA 5030A/8260A	0.5	1	ND	ND	ND
Dibromomethane	EPA 5030A/8260A	0.5	1	ND	ND	ND
2-Hexanone	EPA 5030A/8260A	20	1	ND	ND	ND
s-1,3-Dichloropropene	EPA 5030A/8260A	0.5	1	ND	ND	ND
luene	EPA 5030A/8260A	0.5	1	ND	ND	ND
trans-1,3-Dichloropropene	EPA 5030A/8260A	0.5	1	ND	ND	ND
1,1,2-Trichloroethane	EPA 5030A/8260A	0.5	1	ND	ND	ND
Methyl-2-pentanone (MIBK)	EPA 5030A/8260A	20	1	ND	ND	ND
3-Dichloropropane	EPA 5030A/8260A	0.5	1	ND	ND	ND
Tetrachloroethene (PCE)	EPA 5030A/8260A	0.5	1	2.8	3.3	54
Dibromochloromethane	EPA 5030A/8260A	0.5	1	ND	ND	ND
2-Dibromoethane (EDB)	EPA 5030A/8260A	2	1	ND	ND	ND
lorobenzene	EPA 5030A/8260A	0.5	1	ND	ND	ND
1,1,1,2-Tetrachloroethane	EPA 5030A/8260A	0.5	1	ND	ND	ND
Ethylbenzene	EPA 5030A/8260A	0.5	1	ND	ND	ND
lenes, Total	EPA 5030A/8260A	0.5	1	ND	ND	ND
rene	EPA 5030A/8260A	0.5	1	ND	ND	ND
Bromoform	EPA 5030A/8260A	0.5	1	ND	ND	ND
Isopropylbenzene (Cumene)	EPA 5030A/8260A	2	1	ND	ND	ND

Approved By: CC Haines Date: 5/27/97

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON	**Service Request:**	K9703152
Project:	New City Cleaners/40358-016.004 Task 3	**Date Collected:**	5/8/97
Sample Matrix:	Water	**Date Received:**	5/10/97
		Date Extracted:	NA

Volatile Organic Compounds by GC/MS

Units:	ug/L (ppb)	Sample Name:	MW-1-0597
Basis:	NA	Lab Code:	K9703152-001
Methods:	EPA 5030A/8260A	Date Analyzed:	5/22/97

Analyte	Methods	MRL	Dilution Factor	MW-1-0597	MW-20-0597	MW-2-0597
				K9703152-001	K9703152-002	K9703152-003
				5/22/97	5/22/97	5/22/97
1,1,2,2-Tetrachloroethane	EPA 5030A/8260A	0.5	1	ND	ND	ND
1,2,3-Trichloropropane	EPA 5030A/8260A	0.5	1	ND	ND	ND
Bromobenzene	EPA 5030A/8260A	0.5	1	ND	ND	ND
n-Propylbenzene	EPA 5030A/8260A	2	1	ND	ND	ND
2-Chlorotoluene	EPA 5030A/8260A	2	1	ND	ND	ND
4-Chlorotoluene	EPA 5030A/8260A	2	1	ND	ND	ND
1,3,5-Trimethylbenzene	EPA 5030A/8260A	2	1	ND	ND	ND
tert-Butylbenzene	EPA 5030A/8260A	2	1	ND	ND	ND
1,2,4-Trimethylbenzene	EPA 5030A/8260A	2	1	ND	ND	ND
sec-Butylbenzene	EPA 5030A/8260A	2	1	ND	ND	ND
1,3-Dichlorobenzene	EPA 5030A/8260A	0.5	1	ND	ND	ND
4-Isopropyltoluene	EPA 5030A/8260A	2	1	ND	ND	ND
1,4-Dichlorobenzene	EPA 5030A/8260A	0.5	1	ND	ND	ND
n-Butylbenzene	EPA 5030A/8260A	2	1	ND	ND	ND
1,2-Dichlorobenzene	EPA 5030A/8260A	0.5	1	ND	ND	ND
1,2-Dibromo-3-chloropropane (DBCP)	EPA 5030A/8260A	2	1	ND	ND	ND
-Trichlorobenzene	EPA 5030A/8260A	2	1	ND	ND	ND
1,2,3-Trichlorobenzene	EPA 5030A/8260A	2	1	ND	ND	ND
Naphthalene	EPA 5030A/8260A	2	1	ND	ND	ND
Hexachlorobutadiene	EPA 5030A/8260A	2	1	ND	ND	ND

Approved By: C C Haines Date: 5/27/97

3S2p/051697a

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

ient:	EMCON	**Service Request:**	K9703152
ject:	New City Cleaners/40358-016.004 Task 3	**Date Collected:**	5/8/97
ple Matrix:	Water	**Date Received:**	5/10/97
		Date Extracted:	NA

Volatile Organic Compounds by GC/MS

Units:	ug/L (ppb)	Sample Name:	MW-10-0597	MW-3-0597	MW-4-0597
Basis:	NA	Lab Code:	K9703152-004	K9703152-005	K9703152-006
ethods:	EPA 5030A/8260A	Date Analyzed:	5/22/97	5/22/97	5/22/97

Analyte	Methods	MRL	Dilution Factor			
chlorodifluoromethane	EPA 5030A/8260A	0.5	1	ND	ND	ND
loromethane	EPA 5030A/8260A	0.5	1	1.2	ND	ND
Vinyl Chloride	EPA 5030A/8260A	0.5	1	ND	ND	ND
omomethane	EPA 5030A/8260A	0.5	1	ND	ND	ND
loroethane	EPA 5030A/8260A	0.5	1	ND	ND	ND
richlorofluoromethane (CFC 11)	EPA 5030A/8260A	0.5	1	ND	ND	ND
Acetone	EPA 5030A/8260A	20	1	ND	ND	ND
1-Dichloroethene	EPA 5030A/8260A	0.5	1	ND	ND	ND
rbon Disulfide	EPA 5030A/8260A	0.5	1	ND	ND	ND
ethylene Chloride	EPA 5030A/8260A	1	1	ND	ND	ND
trans-1,2-Dichloroethene	EPA 5030A/8260A	0.5	1	ND	ND	ND
1-Dichloroethane	EPA 5030A/8260A	0.5	1	ND	ND	ND
Butanone (MEK)	EPA 5030A/8260A	20	1	ND	ND	ND
2,2-Dichloropropane	EPA 5030A/8260A	0.5	1	ND	ND	ND
cis-1,2-Dichloroethene	EPA 5030A/8260A	0.5	1	ND	ND	ND
oroform	EPA 5030A/8260A	0.5	1	4.1	ND	ND
nochloromethane	EPA 5030A/8260A	0.5	1	ND	ND	ND
,1-Trichloroethane (TCA)	EPA 5030A/8260A	0.5	1	ND	ND	ND
1,1-Dichloropropene	EPA 5030A/8260A	0.5	1	ND	ND	ND
rbon Tetrachloride	EPA 5030A/8260A	0.5	1	ND	ND	ND
2-Dichloroethane (EDC)	EPA 5030A/8260A	0.5	1	ND	ND	ND
Benzene	EPA 5030A/8260A	0.5	1	ND	ND	ND
Trichloroethene (TCE)	EPA 5030A/8260A	0.5	1	ND	4.2	1.0
2-Dichloropropane	EPA 5030A/8260A	0.5	1	ND	ND	ND
omodichloromethane	EPA 5030A/8260A	0.5	1	ND	ND	ND
Dibromomethane	EPA 5030A/8260A	0.5	1	ND	ND	ND
2-Hexanone	EPA 5030A/8260A	20	1	ND	ND	ND
s-1,3-Dichloropropene	EPA 5030A/8260A	0.5	1	ND	ND	ND
luene	EPA 5030A/8260A	0.5	1	ND	ND	ND
trans-1,3-Dichloropropene	EPA 5030A/8260A	0.5	1	ND	ND	ND
1,1,2-Trichloroethane	EPA 5030A/8260A	0.5	1	ND	ND	ND
Methyl-2-pentanone (MIBK)	EPA 5030A/8260A	20	1	ND	ND	ND
3-Dichloropropane	EPA 5030A/8260A	0.5	1	ND	ND	ND
Tetrachloroethene (PCE)	EPA 5030A/8260A	0.5	1	ND	47	2.6
Dibromochloromethane	EPA 5030A/8260A	0.5	1	ND	ND	ND
2-Dibromoethane (EDB)	EPA 5030A/8260A	2	1	ND	ND	ND
lorobenzene	EPA 5030A/8260A	0.5	1	ND	ND	ND
1,1,1,2-Tetrachloroethane	EPA 5030A/8260A	0.5	1	ND	ND	ND
Ethylbenzene	EPA 5030A/8260A	0.5	1	ND	ND	ND
,p-Xylenes	EPA 5030A/8260A	0.5	1	ND	ND	ND
yrene	EPA 5030A/8260A	0.5	1	ND	ND	ND
Bromoform	EPA 5030A/8260A	0.5	1	ND	ND	ND
Isopropylbenzene (Cumene)	EPA 5030A/8260A	2	1	ND	ND	ND

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pproved By: C C Heines Date: 5/27/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/40358-016.004 Task 3
Sample Matrix: Water

Service Request: K9703152
Date Collected: 5/8/97
Date Received: 5/10/97
Date Extracted: NA

Volatile Organic Compounds by GC/MS

Units: ug/L (ppb)
Basis: NA
Methods: EPA 5030A/8260A

Analyte	Methods	MRL	Dilution Factor	Sample Name: MW-10-0597 Lab Code: K9703152-004 Date Analyzed: 5/22/97	MW-3-0597 K9703152-005 5/22/97	MW-4-0597 K9703152-006 5/22/97
1,1,2,2-Tetrachloroethane	EPA 5030A/8260A	0.5	1	ND	ND	ND
1,2,3-Trichloropropane	EPA 5030A/8260A	0.5	1	ND	ND	ND
Bromobenzene	EPA 5030A/8260A	0.5	1	ND	ND	ND
n-Propylbenzene	EPA 5030A/8260A	2	1	ND	ND	ND
2-Chlorotoluene	EPA 5030A/8260A	2	1	ND	ND	ND
4-Chlorotoluene	EPA 5030A/8260A	2	1	ND	ND	ND
1,3,5-Trimethylbenzene	EPA 5030A/8260A	2	1	ND	ND	ND
tert-Butylbenzene	EPA 5030A/8260A	2	1	ND	ND	ND
1,2,4-Trimethylbenzene	EPA 5030A/8260A	2	1	ND	ND	ND
sec-Butylbenzene	EPA 5030A/8260A	2	1	ND	ND	ND
1,3-Dichlorobenzene	EPA 5030A/8260A	0.5	1	ND	ND	ND
4-Isopropyltoluene	EPA 5030A/8260A	2	1	ND	ND	ND
1,4-Dichlorobenzene	EPA 5030A/8260A	0.5	1	ND	ND	ND
n-Butylbenzene	EPA 5030A/8260A	2	1	ND	ND	ND
1,2-Dichlorobenzene	EPA 5030A/8260A	0.5	1	ND	ND	ND
1,2-Dibromo-3-chloropropane (DBCP)	EPA 5030A/8260A	2	1	ND	ND	ND
Trichlorobenzene	EPA 5030A/8260A	2	1	ND	ND	ND
1,2,3-Trichlorobenzene	EPA 5030A/8260A	2	1	ND	ND	ND
Naphthalene	EPA 5030A/8260A	2	1	ND	ND	ND
Hexachlorobutadiene	EPA 5030A/8260A	2	1	ND	ND	ND

Approved By: C C Davies Date: 5/27/97

3S2p/051697a

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

ent: EMCON
ject: New City Cleaners/40358-016.004 Task 3
ple Matrix: Water

Service Request: K9703152
Date Collected: NA
Date Received: NA
Date Extracted: NA

Volatile Organic Compounds by GC/MS

Units: ug/L (ppb)
Basis: NA
thods: EPA 5030A/8260A

Sample Name: Method Blank
Lab Code: K970522-MB
Date Analyzed: 5/22/97

Analyte	Methods	MRL	Dilution Factor	
chlorodifluoromethane	EPA 5030A/8260A	0.5	1	ND
loromethane	EPA 5030A/8260A	0.5	1	ND
Vinyl Chloride	EPA 5030A/8260A	0.5	1	ND
Bromomethane	EPA 5030A/8260A	0.5	1	ND
loroethane	EPA 5030A/8260A	0.5	1	ND
chlorofluoromethane (CFC 11)	EPA 5030A/8260A	0.5	1	ND
Acetone	EPA 5030A/8260A	20	1	ND
1-Dichloroethene	EPA 5030A/8260A	0.5	1	ND
rbon Disulfide	EPA 5030A/8260A	0.5	1	ND
thylene Chloride	EPA 5030A/8260A	1	1	ND
trans-1,2-Dichloroethene	EPA 5030A/8260A	0.5	1	ND
1-Dichloroethane	EPA 5030A/8260A	0.5	1	ND
Butanone (MEK)	EPA 5030A/8260A	20	1	ND
-Dichloropropane	EPA 5030A/8260A	0.5	1	ND
cis-1,2-Dichloroethene	EPA 5030A/8260A	0.5	1	ND
oroform	EPA 5030A/8260A	0.5	1	ND
nochloromethane	EPA 5030A/8260A	0.5	1	ND
,1-Trichloroethane (TCA)	EPA 5030A/8260A	0.5	1	ND
1,1-Dichloropropene	EPA 5030A/8260A	0.5	1	ND
rbon Tetrachloride	EPA 5030A/8260A	0.5	1	ND
-Dichloroethane (EDC)	EPA 5030A/8260A	0.5	1	ND
nzene	EPA 5030A/8260A	0.5	1	ND
Trichloroethene (TCE)	EPA 5030A/8260A	0.5	1	ND
-Dichloropropane	EPA 5030A/8260A	0.5	1	ND
omodichloromethane	EPA 5030A/8260A	0.5	1	ND
bromomethane	EPA 5030A/8260A	0.5	1	ND
2-Hexanone	EPA 5030A/8260A	20	1	ND
-1,3-Dichloropropene	EPA 5030A/8260A	0.5	1	ND
luene	EPA 5030A/8260A	0.5	1	ND
ans-1,3-Dichloropropene	EPA 5030A/8260A	0.5	1	ND
1,1,2-Trichloroethane	EPA 5030A/8260A	0.5	1	ND
Methyl-2-pentanone (MIBK)	EPA 5030A/8260A	20	1	ND
3-Dichloropropane	EPA 5030A/8260A	0.5	1	ND
trachloroethene (PCE)	EPA 5030A/8260A	0.5	1	ND
Dibromochloromethane	EPA 5030A/8260A	0.5	1	ND
2-Dibromoethane (EDB)	EPA 5030A/8260A	2	1	ND
lorobenzene	EPA 5030A/8260A	0.5	1	ND
1,1,1,2-Tetrachloroethane	EPA 5030A/8260A	0.5	1	ND
Ethylbenzene	EPA 5030A/8260A	0.5	1	ND
lenes, Total	EPA 5030A/8260A	0.5	1	ND
yrene	EPA 5030A/8260A	0.5	1	ND
Bromoform	EPA 5030A/8260A	0.5	1	ND
Isopropylbenzene (Cumene)	EPA 5030A/8260A	2	1	ND

pproved By: CC Hawes Date: 5/27/97

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/40358-016.004 Task 3
Sample Matrix: Water

Service Request: K9703152
Date Collected: NA
Date Received: NA
Date Extracted: NA

Volatile Organic Compounds by GC/MS

Units: ug/L (ppb)
Basis: NA
Methods: EPA 5030A/8260A

Sample Name: Method Blank
Lab Code: K970522-MB
Date Analyzed: 5/22/97

Analyte	Methods	MRL	Dilution Factor	
1,1,2,2-Tetrachloroethane	EPA 5030A/8260A	0.5	1	ND
1,2,3-Trichloropropane	EPA 5030A/8260A	0.5	1	ND
Bromobenzene	EPA 5030A/8260A	0.5	1	ND
n-Propylbenzene	EPA 5030A/8260A	2	1	ND
2-Chlorotoluene	EPA 5030A/8260A	2	1	ND
4-Chlorotoluene	EPA 5030A/8260A	2	1	ND
1,3,5-Trimethylbenzene	EPA 5030A/8260A	2	1	ND
tert-Butylbenzene	EPA 5030A/8260A	2	1	ND
1,2,4-Trimethylbenzene	EPA 5030A/8260A	2	1	ND
sec-Butylbenzene	EPA 5030A/8260A	2	1	ND
1,3-Dichlorobenzene	EPA 5030A/8260A	0.5	1	ND
4-Isopropyltoluene	EPA 5030A/8260A	2	1	ND
1,4-Dichlorobenzene	EPA 5030A/8260A	0.5	1	ND
n-Butylbenzene	EPA 5030A/8260A	2	1	ND
1,2-Dichlorobenzene	EPA 5030A/8260A	0.5	1	ND
[illegible] Dibromo-3-chloropropane (DBCP)	EPA 5030A/8260A	2	1	ND
[illegible]-Trichlorobenzene	EPA 5030A/8260A	2	1	ND
1,2,3-Trichlorobenzene	EPA 5030A/8260A	2	1	ND
Naphthalene	EPA 5030A/8260A	2	1	ND
Hexachlorobutadiene	EPA 5030A/8260A	2	1	ND

Approved By: C Davies Date: 5/27/97

3S2p/051697a

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON	**Service Request:**	K9703152
Project:	New City Cleaners/40358-016.004 Task 3	**Date Collected:**	5/8/97
Sample Matrix:	Water	**Date Received:**	5/10/97
		Date Extracted:	5/15/97
		Date Analyzed:	5/23-24/97

Total Petroleum Hydrocarbon as Diesel and Oil
Washington DOE Method WTPH-D
Units: µg/L (ppb)

Analyte:	**Diesel**	**Oil***
Method Reporting Limit:	250	750

Sample Name	**Lab Code**		
MW-20-0597	K9703152-002	ND	ND
MW-2-0597	K9703152-003	ND	ND
MW-10-0597	K9703152-004	ND	ND
MW-3-0597	K9703152-005	ND	ND
MW-4-0597	K9703152-006	ND	ND
Method Blank	K970515-MB	ND	ND

* Quantified using 30 weight motor oil as a standard.

Approved By: Lorna E. Portwood Date: 5/30/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/40358-016.004 Task 3
Sample Matrix: Water

Service Request: K9703152
Date Collected: 5/8/97
Date Received: 5/10/97
Date Extracted: NA
Date Analyzed: 5/20/97

Total Petroleum Hydrocarbons as Gasoline
Washington DOE Method WTPH-G
Units: µg/L (ppb)

Sample Name	Lab Code	MRL	Result
MW-1-0597	K9703152-001	50	ND
MW-20-0597	K9703152-002	50	ND
MW-2-0597	K9703152-003	50	ND
MW-10-0597	K9703152-004	50	ND
MW-3-0597	K9703152-005	50	ND
MW-4-0597	K9703152-006	50	ND
TB1-0597	K9703152-007	50	ND
Method Blank	K970520-MB	50	ND

Approved By: _____ Date: 5/28/97

APPENDIX A

LABORATORY QC RESULTS

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: New City Cleaners/40358-016.004 Task 3
Sample Matrix: Water

Service Request: K9703152
Date Collected: 5/8/97
Date Received: 5/10/97
Date Extracted: NA
Date Analyzed: 5/22/97

Surrogate Recovery Summary
Volatile Organic Compounds by GC/MS

Prep Method: EPA 5030A
Analysis Method: 8260A

Units: Percent
Basis: NA

Sample Name	Lab Code	Test Notes	Percent Recovery		
			Dibromofluoromethane	Toluene-d8	4-Bromofluorobenzene
MW-1-0597	K9703152-001		109	99	92
MW-20-0597	K9703152-002		106	99	92
MW-2-0597	K9703152-003		109	101	92
MW-10-0597	K9703152-004		107	101	92
MW-3-0597	K9703152-005		110	101	93
MW-4-0597	K9703152-006		108	101	93
MW-3-0597	K9703152-005MS		108	102	100
MW-3-0597	K9703152-005DMS		108	101	100
Method Blank	K970522-MB		102	100	90
CAS Acceptance Limits:			91-117	90-110	82-119

Approved By: C C Heines Date: 5/27/97

SUR3/050897a
03152VOA.LW3 - SUR 5/27/97

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

ıt:	EMCON	**Service Request:**	K9703152
oject:	New City Cleaners/40358-016.004 Task 3	**Date Collected:**	5/8/97
ample Matrix:	Water	**Date Received:**	5/10/97
		Date Extracted:	NA
		Date Analyzed:	5/22/97

Matrix Spike/Duplicate Matrix Spike Summary
Volatile Organic Compounds by GC/MS

Sample Name:	MW-3-0597	Units:	ug/L (ppb)
ıb Code:	K9703152-005MS K9703152-005DMS	Basis:	NA
st Notes:			

									Percent Recovery				
				Spike Level		Sample	Spike Result				CAS Acceptance	Relative Percent	Result
Analyte	Prep Method	Analysis Method	MRL	MS	DMS	Result	MS	DMS	MS	DMS	Limits	Difference	Notes
.,1-Dichloroethene	EPA 5030A	8260A	0.5	10	10	ND	11	11	110	110	83-112	<1	
Benzene	EPA 5030A	8260A	0.5	10	10	ND	10	10	100	100	85-116	<1	
ichloroethene (TCE)	EPA 5030A	8260A	0.5	10	10	4.2	13	13	89	90	84-113	<1	
)luene	EPA 5030A	8260A	0.5	10	10	ND	9.9	9.8	99	98	89-112	1	
Chlorobenzene	EPA 5030A	8260A	0.5	10	10	ND	8.9	9.0	89	90	86-113	1	
·Dichlorobenzene	EPA 5030A	8260A	0.5	10	10	ND	9.4	9.6	94	96	87-115	2	
thalene	EPA 5030A	8260A	2	10	10	ND	10	10	100	100	65-151	<1	

Approved By: C C Heines Date: 5/27/97

S/031497a
03152VOA.LW3 - DMS 5/27/97

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: New City Cleaners/40358-016.004 Task 3
Sample Matrix: Water

Service Request: K9703152
Date Collected: 5/8/97
Date Received: 5/10/97
Date Extracted: 5/15/97
Date Analyzed: 5/23-24/97

Surrogate Recovery Summary
Total Petroleum Hydrocarbons as Diesel and Oil
Washington DOE Method WTPH-D

Sample Name	Lab Code	Percent Recovery o-Terphenyl
MW-20-0597	K9703152-002	85
MW-2-0597	K9703152-003	81
MW-10-0597	K9703152-004	88
MW-3-0597	K9703152-005	84
MW-4-0597	K9703152-006	86
MW-3-0597	K9703152-005MS	91
MW-3-0597	K9703152-005DMS	87
Method Blank	K970515-MB	81

CAS Acceptance Limits: 59-110

Approved By: Lorna E. Patwood Date: 5/30/97

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON	**Service Request:**	K9703152
Project:	New City Cleaners/40358-016.004 Task 3	**Date Collected:**	5/8/97
Sample Matrix:	Water	**Date Received:**	5/10/97
		Date Extracted:	5/15/97
		Date Analyzed:	5/23-24/97

Matrix Spike/Duplicate Matrix Spike Summary
Total Petroleum Hydrocarbons as Diesel and Oil
Washington DOE Method WTPH-D
Units: µg/L (ppb)

Sample Name: MW-3-0597
Lab Code: K9703152-005DMS

	Spike Level		Sample	Spike Result		Percent Recovery		CAS Acceptance	Relative Percent	CAS RPD Acceptance
Analyte	MS	DMS	**Result**	MS	DMS	MS	DMS	Limits	**Difference**	**Limit**
Diesel	2000	2000	ND	1580	1450	79	73	39-117	9	30

Approved By: Tonia E. Portwood Date: 5/30/97

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: New City Cleaners/40358-016.004 Task 3
Sample Matrix: Water

Service Request: K9703152
Date Collected: 5/8/97
Date Received: 5/10/97
Date Extracted: NA
Date Analyzed: 5/20/97

Surrogate Recovery Summary
Total Petroleum Hydrocarbons as Gasoline
Washington DOE Method WTPH-G

Sample Name	Lab Code	Percent Recovery 4-Bromofluorobenzene
MW-1-0597	K9703152-001	71
MW-20-0597	K9703152-002	66
MW-2-0597	K9703152-003	73
MW-10-0597	K9703152-004	66
MW-3-0597	K9703152-005	68
MW-4-0597	K9703152-006	69
TB1-0597	K9703152-007	69
MW-3-0597	K9703152-005MS	86
MW-3-0597	K9703152-005DMS	89
Method Blank	K970520-MB	70

CAS Acceptance Limits: 65-117

Approved By: _____ Date: 5/20/97

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON	**Service Request:**	K9703152
Project:	New City Cleaners/40358-016.004 Task 3	**Date Collected:**	5/8/97
Sample Matrix:	Water	**Date Received:**	5/10/97
		Date Extracted:	NA
		Date Analyzed:	5/21/97

Matrix Spike/Duplicate Matrix Spike Summary
Total Petroleum Hydrocarbons as Gasoline
Washington DOE Method WTPH-G
Units: µg/L (ppb)

Sample Name: MW-3-0597
Lab Code: K9703152-005MS, K9703152-005DMS

Analyte	Spike Level MS	Spike Level DMS	Sample Result	Spike Result MS	Spike Result DMS	Percent Recovery MS	Percent Recovery DMS	CAS Acceptance Limits	Relative Percent Difference	CAS RPD Acceptance Limit
Gasoline	1000	1000	ND	860	930	86	93	70-121	8	30

Approved By: _____ Date: 5/28/97

DMS1SRPD/120594
03152VOA.LW4 - DMS1SRPD 5/28/97

APPENDIX B

CHAIN OF CUSTODY INFORMATION

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

Analytical Services Inc. 1317 South 13th Ave. • Kelso, WA 98626 • (360) 577-7222 • (800) 695-7222 • FAX (360) 636-1068

DATE May 9, 1997 PAGE 1 OF 1

PROJECT NAME New City Cleaners # 4035B-016.004 Task 3

PROJECT MANAGER Reb Lindsay

COMPANY/ADDRESS EMCON

W. 7106 Alton Ln. #101

Spokane, WA 99224 PHONE (509) 838-1144

SAMPLERS SIGNATURE John Latta

SAMPLE I.D.	DATE	TIME	LAB I.D.	SAMPLE MATRIX	NUMBER OF CONTAINERS	Base/Neu/Acid Organics GC/MS 625/8270	Volatile Organics GC/MS 624/8240	Halogenated or Aromatic Volatiles 601/8010 ☐ 602/8020 ☐	Pesticides/PCBs 608/8080	Total Petroleum Hydrocarbons EPA/418.1 ☐ OR/418.1 ☐ WA/418.1 ☐	TPH/Gas/BTEX 5030/8015/8020 Gas X BTEX ☐	TPH/8015 Modified Extend. Diesel X	TPH/HCID ☐ Hydrocarbon Scan ☐ WA/HCID ☐ OR/HCID ☐	TCLP Metals ☐ VOA ☐ Semi ☐ Pest/ VOA ☐ Herb ☐	Metals (total or dissolved) List Below	Cyanide	pH, Cond. Cl, SO_4, PO_4, F, Br NO_2, NO_3 (circle)	NH_3-N, COD, Total-P, TKN, TOC (circle)	Total Organic Halides (TOX) 9020 ☐ (AOX) 1650A ☐	8260		REMARKS
MW-1-0597	5/8/97	1810		Water	6						1	1								1		1 - 1L Amber broken
MW-20-0597	5/8/97	1210		"	6						1	1								1		① VOA broken
MW-2-0597	5/8/97	1700		"	6						1	1								1		
MW-10-0597	5/8/97	1240		"	6						1	1								1		
MW-3-0597	5/8/97	1450		"	12						1	1								1		
MW-4-0597	5/8/97	1600		"	6						1	1								1		
TBi-0597	5/8/97	1300		"	3						1									1		

RELINQUISHED BY:
John Latta
Signature
John S. Latta
Printed Name
EMCON
Firm
5/9/97 8:45 AM
Date/Time

RECEIVED BY:
Mary Coburn
Signature
Mary Coburn
Printed Name
CAS
Firm
5-10-97 8:00
Date/Time

TURNAROUND REQUIREMENTS
___ 24 hr ___ 48 hr ___ 5 day
___ Standard (10-15 working days)
___ Provide Verbal Preliminary Results
___ Provide FAX preliminary Results
Requested Report Date ___

REPORT REQUIREMENTS
___ I. Routine Report
___ II. Report (includes DUP MS MSD, as required, may be charged as samples)
___ III. Data Validation Report (includes All Raw Data)
___ IV. CLP Deliverable Report

INVOICE INFORMATION:
P.O # ___
Bill To ___

SAMPLE RECEIPT:
Shipping VIA ___
Shipping # ___
Condition: ___
Lab No K97-3152

RELINQUISHED BY:
Signature
Printed Name
Firm
Date/Time

RECEIVED BY:
Signature
Printed Name
Firm
Date/Time

SPECIAL INSTRUCTIONS/COMMENTS:

Sample MW-3-0597 includes a set of containers for MS/MSD
2-VOAs for ea. WTPH-G
3-VOAs for ea 8260
1-1L Amber fo WTPH-D Extended
Shipped 1 set of trip blanks TBI-0597

DISTRIBUTION WHITE - return to originator, YELLOW - lab, PINK - retained by originator

400-05

Columbia Analytical Services Inc.

June 2, 1997

Service Request No: K9703242

Rob Lindsay
EMCON
15055 SW Sequoia Parkway, Suite 140
P.O. Box 231269
Portland, OR 97224

Re: New City Cleaners/40358-016.004

Dear Rob:

Enclosed are the results of the sample(s) submitted to our laboratory on May 14, 1997. For your reference, these analyses have been assigned our service request number K9703242.

All analyses were performed according to our laboratory's quality assurance program. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the samples analyzed.

Please call if you have any questions. My extension is 243.

Respectfully submitted,

Columbia Analytical Services, Inc.

Richard Craven
Project Chemist

RAC/mc

1317 South 13th Avenue • P.O. Box 479 • Kelso, Washington 98626 • Telephone 360/577-7222 • Fax 360/636-1068

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
J	Estimated concentration. The value is less than the method reporting limit, but greater than the method detection limit.
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NAN	Not Analyzed
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected at or above the MRL
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/40358-016.004
Sample Matrix: Water

Service Request: K9703242
Date Collected: 5/12/97
Date Received: 5/14/97
Date Extracted: NA

Volatile Organic Compounds
EPA Method 8260A
Units: µg/L (ppb)

	Sample Name:	W-D-0597	MW-E-0597	Method Blank
	Lab Code:	K9703242-001	K9703242-002	K970523-MB
	Date Analyzed:	5/23/97	5/23/97	5/23/97
Analyte	**MRL**			
Dichlorodifluoromethane (CFC 12)	0.5	ND	ND	ND
Chloromethane	0.5	ND	ND	ND
Vinyl Chloride	0.5	ND	ND	ND
Bromomethane	0.5	ND	ND	ND
Chloroethane	0.5	ND	ND	ND
Trichlorofluoromethane (CFC 11)	0.5	ND	ND	ND
Acetone	20	ND	ND	ND
1,1-Dichloroethene	0.5	ND	ND	ND
Carbon Disulfide	0.5	ND	ND	ND
Methylene Chloride	1	ND	ND	ND
trans-1,2-Dichloroethene	0.5	ND	ND	ND
1,1-Dichloroethane	0.5	ND	ND	ND
2-Butanone (MEK)	20	ND	ND	ND
2,2-Dichloropropane	0.5	ND	ND	ND
cis-1,2-Dichloroethene	0.5	ND	0.8	ND
Chloroform	0.5	ND	ND	ND
Bromochloromethane	0.5	ND	ND	ND
1,1,1-Trichloroethane (TCA)	0.5	ND	ND	ND
1,1-Dichloropropene	0.5	ND	ND	ND
Carbon Tetrachloride	0.5	ND	ND	ND
1,2-Dichloroethane	0.5	ND	ND	ND
Benzene	0.5	ND	ND	ND
Trichloroethene (TCE)	0.5	ND	6.1	ND
1,2-Dichloropropane	0.5	ND	ND	ND
Bromodichloromethane	0.5	ND	ND	ND
Dibromomethane	0.5	ND	ND	ND
2-Hexanone	20	ND	ND	ND
cis-1,3-Dichloropropene	0.5	ND	ND	ND
Toluene	0.5	ND	ND	ND
trans-1,3-Dichloropropene	0.5	ND	ND	ND
1,1,2-Trichloroethane	0.5	ND	ND	ND
4-Methyl-2-pentanone (MIBK)	20	ND	ND	ND
1,3-Dichloropropane	0.5	ND	ND	ND

Approved By: Diane E. Weigel Date: 5/30/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/40358-016.004
Sample Matrix: Water

Service Request: K9703242
Date Collected: 5/12/97
Date Received: 5/14/97
Date Extracted: NA

Volatile Organic Compounds
EPA Method 8260A
Units: µg/L (ppb)

	Sample Name:	W-D-0597	MW-E-0597	Method Blank
	Lab Code:	K9703242-001	K9703242-002	K970523-MB
	Date Analyzed:	5/23/97	5/23/97	5/23/97
Analyte	**MRL**			
Tetrachloroethene (PCE)	0.5	ND	39	ND
Dibromochloromethane	0.5	ND	ND	ND
1,2-Dibromoethane (EDB)	2	ND	ND	ND
Chlorobenzene	0.5	ND	ND	ND
1,1,1,2-Tetrachloroethane	0.5	ND	ND	ND
Ethylbenzene	0.5	ND	ND	ND
Total Xylenes	0.5	ND	ND	ND
Styrene	0.5	ND	ND	ND
Bromoform	0.5	ND	ND	ND
Isopropylbenzene	2	ND	ND	ND
1,1,2,2-Tetrachloroethane	0.5	ND	ND	ND
1,2,3-Trichloropropane	0.5	ND	ND	ND
Bromobenzene	0.5	ND	ND	ND
n-Propylbenzene	2	ND	ND	ND
2-Chlorotoluene	2	ND	ND	ND
4-Chlorotoluene	2	ND	ND	ND
1,3,5-Trimethylbenzene	2	ND	ND	ND
tert-Butylbenzene	2	ND	ND	ND
1,2,4-Trimethylbenzene	2	ND	ND	ND
sec-Butylbenzene	2	ND	ND	ND
1,3-Dichlorobenzene	0.5	ND	ND	ND
4-Isopropyltoluene	2	ND	ND	ND
1,4-Dichlorobenzene	0.5	ND	ND	ND
n-Butylbenzene	2	ND	ND	ND
1,2-Dichlorobenzene	0.5	ND	ND	ND
1,2-Dibromo-3-chloropropane (DBCP)	2	ND	ND	ND
1,2,4-Trichlorobenzene	2	ND	ND	ND
1,2,3-Trichlorobenzene	2	ND	ND	ND
Naphthalene	2	ND	ND	ND
Hexachlorobutadiene	2	ND	ND	ND

Approved By: Diane E Weigel Date: 5/30/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON	**Service Request:**	K9703242
Project:	New City Cleaners/40358-016.004	**Date Collected:**	5/12/97
Sample Matrix:	Water	**Date Received:**	5/14/97
		Date Extracted:	5/19/97
		Date Analyzed:	5/21/97

Total Petroleum Hydrocarbons as Diesel and Oil
Washington DOE Method WTPH-D
Units: µg/L (ppb)

Analyte:		**Diesel**	**Oil***
Method Reporting Limit:		250	750
Sample Name	**Lab Code**		
W-D-0597	K9703242-001	ND	ND
MW-E-0597	K9703242-002	ND	ND
Method Blank	K970519-MB	ND	ND

* Quantified using 30-weight motor oil as a standard.

Approved By: _____ Date: 5/30/97

2A/102094
03242PHC.BTI - TPHs 5/30/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON	**Service Request:**	K9703242
Project:	New City Cleaners/40358-016.004	**Date Collected:**	5/12/97
Sample Matrix:	Water	**Date Received:**	5/14/97
		Date Extracted:	NA
		Date Analyzed:	5/23/97

Total Petroleum Hydrocarbons as Gasoline
Washington DOE Method WTPH-G
Units: µg/L (ppb)

Sample Name	Lab Code	MRL	Result
W-D-0597	K9703242-001	50	ND
W-D-0597	K9703242-001Dup	50	ND
MW-E-0597	K9703242-002	50	ND
Method Blank	K970523-MB	50	ND

Approved By: _____ Date: 5/28/97

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: New City Cleaners/40358-016.004
Sample Matrix: Water

Service Request: K9703242
Date Collected: 5/12/97
Date Received: 5/14/97
Date Extracted: NA
Date Analyzed: 5/23/97

Surrogate Recovery Summary
Volatile Organic Compounds
EPA Method 8260A

		Percent Recovery		
Sample Name	**Lab Code**	Dibromofluoromethane	Toluene-d_8	4-Bromofluorobenzene
W-D-0597	K9703242-001	106	99	91
MW-E-0597	K9703242-002	109	102	93
W-D-0597	K9703242-001MS	107	100	100
W-D-0597	K9703242-001DMS	105	100	100
Lab Control Sample	K970523-LCS	110	101	100
Method Blank	K970523-MB	107	100	91
CAS Acceptance Limits:		91-117	90-110	82-119

Approved By: Diane E. Wiegel Date: 5/30/97

SUR3/111594
03242VOA.LW1 - 8260wSUR 5/28/97

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: New City Cleaners/40358-016.004
Sample Matrix: Water

Service Request: K9703242
Date Collected: 5/12/97
Date Received: 5/14/97
Date Extracted: NA
Date Analyzed: 5/23/97

Matrix Spike/Duplicate Matrix Spike Summary
Volatile Organic Compounds
EPA Method 8260A
Units: µg/L (ppb)

Sample Name: W-D-0597
Lab Code: K9703242-001

Analyte	Spike Level MS	Spike Level DMS	Sample Result	Spike Result MS	Spike Result DMS	Percent Recovery MS	Percent Recovery DMS	CAS Acceptance Limits	Relative Percent Difference
1,1-Dichloroethene	10	10	ND	10	9.6	100	96	83-112	4
Benzene	10	10	ND	9.7	9.2	97	92	85-116	5
Trichloroethene	10	10	ND	9.5	8.9	95	89	84-113	7
Toluene	10	10	ND	9.7	9.2	97	92	89-112	5
Chlorobenzene	10	10	ND	9.0	8.9	90	89	86-113	1
1,2-Dichlorobenzene	10	10	ND	9.1	9.2	91	92	87-115	1
Naphthalene	10	10	ND	11	12	110	120	65-151	9

Approved By: Diane E. Weigel Date: 5/30/97

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: New City Cleaners/40358-016.004
LCS Matrix: Water

Service Request: K9703242
Date Collected: NA
Date Received: NA
Date Extracted: NA
Date Analyzed: 5/23/97

Laboratory Control Sample Summary
Volatile Organic Compounds
EPA Method 8260A
Units: µg/L (ppb)

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits
1,1-Dichloroethene	10	11	110	77-123
Benzene	10	9.6	96	86-115
Trichloroethene	10	9.0	90	84-120
Toluene	10	9.2	92	86-116
Chlorobenzene	10	8.7	87(A)	88-114
1,2-Dichlorobenzene	10	8.8	88	83-119
Naphthalene	10	7.8	78	65-152

A Outside acceptance limits; see case narrative.

Approved By: Diane E. Wiegel Date: 5/30/97

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: New City Cleaners/40358-016.004
Sample Matrix: Water

Service Request: K9703242
Date Collected: 5/12/97
Date Received: 5/14/97
Date Extracted: 5/19/97
Date Analyzed: 5/21/97

Surrogate Recovery Summary
Total Petroleum Hydrocarbons as Diesel and Oil
Washington DOE Method WTPH-D

Sample Name	Lab Code	Percent Recovery o-Terphenyl
W-D-0597	K9703242-001	103
MW-E-0597	K9703242-002	106
W-D-0597	K9703242-001DUP	105
MW-E-0597	K9703242-002MS	106
Lab Control Sample	K970519-LCS	106
Method Blank	K970519-MB	102

CAS Acceptance Limits: 59-110

Approved By: _____ Date: 5/30/97

SURI/111594
03242PHC.BT1 - sur 5/30/97

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: New City Cleaners/40358-016.004
Sample Matrix: Water

Service Request: K9703242
Date Collected: 5/12/97
Date Received: 5/14/97
Date Extracted: 5/19/97
Date Analyzed: 5/21/97

Duplicate Summary
Total Petroleum Hydrocarbons as Diesel and Oil
Washington DOE Method WTPH-D
Units: µg/L (ppb)

Sample Name: W-D-0597
Lab Code: K9703242-001DUP

Analyte	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference	CAS RPD Acceptance Limit
Diesel	250	ND	ND	ND	-	40
Oil	750	ND	ND	ND	-	40

Approved By: _____ Date: 5/30/97

DUP1SRPD/102194
03242PHC.BT1 - dup 5/30/97

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: New City Cleaners/40358-016.004
Sample Matrix: Water

Service Request: K9703242
Date Collected: 5/12/97
Date Received: 5/14/97
Date Extracted: 5/19/97
Date Analyzed: 5/21/97

Matrix Spike Summary
Total Petroleum Hydrocarbons as Diesel and Oil
Washington DOE Method WTPH-D
Units: µg/L (ppb)

Sample Name: MW-E-0597
Lab Code: K9703242-002MS

Analyte	MRL	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery	CAS Percent Recovery Acceptance Limits
Diesel	250	2000	ND	1530	77	39-117

Approved By: _____ Date: 5/30/97

MSISMRL/120194
03242PHC.BTI - ms 5/30/97

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON	**Service Request:**	K9703242
Project:	New City Cleaners/40358-016.004	**Date Collected:**	NA
LCS Matrix:	Water	**Date Received:**	NA
		Date Extracted:	5/19/97
		Date Analyzed:	5/21/97

Laboratory Control Sample Summary
Total Petroleum Hydrocarbons as Diesel and Oil
Washington DOE Method WTPH-D
Units: µg/L (ppb)

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits
Diesel	2000	1440	72	46-108

Approved By: _____ Date: 5/30/97

LCS/102194

03242PHC.BTI - lcs 5/30/97

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: New City Cleaners/40358-016.004
Sample Matrix: Water

Service Request: K9703242
Date Collected: 5/12/97
Date Received: 5/14/97
Date Extracted: NA
Date Analyzed: 5/23-24/97

Surrogate Recovery Summary
Total Petroleum Hydrocarbons as Gasoline
Washington DOE Method WTPH-G

Sample Name	Lab Code	Percent Recovery 4-Bromofluorobenzene
W-D-0597	K9703242-001	72
W-D-0597	K9703242-001Dup	71
MW-E-0597	K9703242-002	71
Batch QC	K9703347-001	71
Batch QC	K9703347-001MS	84
Batch QC	K9703347-001DMS	85
Lab Control Sample	K970524-LCS	89
Method Blank	K970523-MB	69

CAS Acceptance Limits: 65-117

Approved By: _____ Date: 5/28/97

SUR1/111594
03242VOA.LW2 - GASwSUR 5/28/97

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON	**Service Request:**	K9703242
Project:	New City Cleaners/40358-016.004	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	NA
		Date Analyzed:	5/24/97

Matrix Spike/Duplicate Matrix Spike Summary
Total Petroleum Hydrocarbons as Gasoline
Washington DOE Method WTPH-G
Units: µg/L (ppb)

Sample Name: Batch QC
Lab Code: K9703347-001DMS

	Spike Level		Sample	Spike Result		Percent Recovery		CAS Acceptance	Relative Percent	CAS RPD Acceptance
Analyte	MS	DMS	**Result**	MS	DMS	MS	DMS	Limits	**Difference**	**Limit**
Gasoline	1000	1000	ND	770	850	77	85	70-121	10	30

Approved By: _____ Date: 5/28/97

DMS1SRPD/120594
03242VOA.LW2 - DMS1SRPD 5/28/97

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON	**Service Request:**	K9703242
Project:	New City Cleaners/40358-016.004	**Date Collected:**	NA
LCS Matrix:	Water	**Date Received:**	NA
		Date Extracted:	NA
		Date Analyzed:	5/24/97

Laboratory Control Sample/Duplicate Laboratory Control Sample Summary
Total Petroleum Hydrocarbons as Gasoline
Washington DOE Method WTPH-G
Units: µg/L (ppb)

	True Value		Result		Percent Recovery			
Analyte	LCS	DLCS	LCS	DLCS	LCS	DLCS	CAS Acceptance Limits	**Relative Percent Difference**
Gasoline	1000	1000	810	820	81	82	76-138	1

Approved By: _____ Date: 5/28/97

DLCS/102194
03242VOA.LW2 - GASwDLCS 5/28/97

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: New City Cleaners/40358-016.004
Sample Matrix: Water

Service Request: K9703242
Date Collected: 5/12/97
Date Received: 5/14/97
Date Extracted: NA
Date Analyzed: 5/23/97

Duplicate Summary
Total Petroleum Hydrocarbons as Gasoline
Washington DOE Method WTPH-G
Units: µg/L (ppb)

Sample Name: W-D-0597
Lab Code: K9703242-001

Analyte	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference	CAS RPD Acceptance Limit
Gasoline	50	ND	ND	<1	-	30

Approved By: _____ Date: 5/28/97

DUP1SRPD/102194
03242VOA.LW2 - GASwDUP 5/28/97

Columbia Analytical Services, Inc.

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

1317 South 13th Ave. • Kelso, WA 98626 • (360) 577-7222 • (800) 695-7222 • FAX (360) 636-1068

DATE May 13, 1997 PAGE 1 OF 1

PROJECT NAME New City Cleaners #10358-016.004 Task 3

PROJECT MANAGER Rob Lindsay

COMPANY/ADDRESS EMCON

W. 7106 Alton Ln. #101

Spokane, WA 99224 PHONE 509 838-1144

SAMPLERS SIGNATURE John Latta

SAMPLE I.D.	DATE	TIME	LAB I.D.	SAMPLE MATRIX	NUMBER OF CONTAINERS	Base/Neu/Acid Organics GC/MS 625/8270	Volatile Organics GC/MS 624/8240	Halogenated or Aromatic Volatiles 601/8010 ☐ 602/8020 ☐	Pesticides/PCBs 608/8080	Total Petroleum Hydrocarbons EPA/418.1 ☐ OR418.1 ☐ WA418.1 ☐	TPH/Gas/BTEX 5030/8015/8020 Gas X BTEX ☐	TPH/8015 Modified Diesel X Hydrocarbon Scan ☐ Washington Extended	TPH/HCID ☐ OR/HCID ☐ WA/HCID ☐	TCLP Metals ☐ VOA ☐ Semi VOA ☐ Pest/Herb ☐	Metals (total or dissolved) List Below	Cyanide	pH, Cond. Cl, SO_4, PO_4, F, Br NO_2, NO_3 (circle)	NH_3-N, COD, Total-P, TKN, TOC (circle)	Total Organic Halides (TOX) 9020 ☐ (AOX) 1650A ☐	8260		REMARKS
MW-D-0597	5/12/97	1600		Water	6						1	1								1		
MW-E-0597	5/12/97	1500		"	6						1	1								1		
TB-2-0597	5/9/97			"	2															X JSL		

RELINQUISHED BY:

Signature: John Latta

Printed Name: John Latta

Firm: EMCON

Date/Time: 5/13/97 10 AM

RECEIVED BY:

Signature: [illegible]

Printed Name: [illegible]

Firm: [illegible]

Date/Time: 5/14/97 1040

TURNAROUND REQUIREMENTS

___ 24 hr ___ 48 hr ___ 5 day

___ Standard (10-15 working days)

___ Provide Verbal Preliminary Results

___ Provide FAX preliminary Results

Requested Report Date _____

REPORT REQUIREMENTS

___ I Routine Report

___ II Report (includes DUP MS, MSD, as required may be charged as samples)

___ III Data Validation Report (includes All Raw Data)

___ IV CLP Deliverable Report

INVOICE INFORMATION:

P.O. # _____

Bill To _____

SAMPLE RECEIPT:

Shipping VIA _____

Shipping # _____

Condition _____

Lab No K9703217

RELINQUISHED BY:

Signature

Printed Name

Firm

Date/Time

RECEIVED BY:

Signature

Printed Name

Firm

Date/Time

SPECIAL INSTRUCTIONS/COMMENTS:

WTPH-G
WTPH-D Extended } ~~All samples~~ JSL

Hold TB-2-0597 do not analyse unless instructed.

Please Return Coolers.

WHITE - [illegible] YELLOW - [illegible] PINK - [illegible]

400

Columbia Analytical Services inc.

June 4, 1997

Service Request No: K9703203

Rob Lindsay
EMCON
W 7106 Will D. Alton Lane, Suite 101
Spokane, WA 99204-5760

Re: New City Cleaners/40358-016.004(3)

Dear Rob:

Enclosed are the results of the sample(s) submitted to our laboratory on May 13, 1997. For your reference, these analyses have been assigned our service request number K9703203.

All analyses were performed according to our laboratory's quality assurance program. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the samples analyzed.

Please call if you have any questions. My extension is 243.

Respectfully submitted,

Columbia Analytical Services, Inc.

Richard Craven
Project Chemist

RAC/td

1317 South 13th Avenue • P.O. Box 479 • Kelso, Washington 98626 • Telephone 360/577-7222 • Fax 360/636-1068

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
J	Estimated concentration. The value is less than the method reporting limit, but greater than the method detection limit.
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NAN	Not Analyzed
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected at or above the MRL
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/40358-016.004 (3)
Sample Matrix: Soil

Service Request: K9703203
Date Collected: 5/1/97
Date Received: 5/13/97
Date Extracted: NA
Date Analyzed: 5/20/97

Solids, Total
EPA Method 160.3 Modified
Units: Percent (%)

Sample Name	Lab Code	Result
SB-1-27	K9703203-021	81.3

Approved By: _____ Date: 5/27/97

1A/102094
03203VOA_AM1 - TSolids 5/27/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/40358-016.004(3)
Sample Matrix: Soil

Service Request: K9703203
Date Collected: 5/2/97
Date Received: 5/13/97
Date Extracted: NA
Date Analyzed: 5/22/97

Carbon, Total Organic
ASTM D4129-82M
Units: Percent (%)
Dry Weight Basis

Sample Name	Lab Code	MRL	Result
SB-1-35	K9703203-023	0.05	ND
Method Blank	K9703203-MB	0.05	ND

Approved By: _____ Date: 5/23/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/40358-016.004(3)
Sample Matrix: Soil

Service Request: K9703203
Date Collected: 5/1/97
Date Received: 5/13/97
Date Extracted: 5/15/97

Volatile Organic Compounds
EPA Method 8260A
Units: mg/Kg (ppm)
Dry Weight Basis

	Sample Name:	SB-1-27	Method Blank
	Lab Code:	K9703203-021	K970515-MB
	Date Analyzed:	5/15/97	5/15/97
Analyte	**MRL**		
Dichlorodifluoromethane (CFC 12)	0.5	ND	ND
Chloromethane	0.5	ND	ND
Vinyl Chloride	0.5	ND	ND
Bromomethane	0.5	ND	ND
Chloroethane	0.5	ND	ND
Trichlorofluoromethane (CFC 11)	0.5	ND	ND
Acetone	5	ND	ND
1,1-Dichloroethene	0.5	ND	ND
Carbon Disulfide	0.5	ND	ND
Methylene Chloride	1	ND	ND
trans-1,2-Dichloroethene	0.5	ND	ND
1,1-Dichloroethane	0.5	ND	ND
2-Butanone (MEK)	2	ND	ND
2,2-Dichloropropane	0.5	ND	ND
cis-1,2-Dichloroethene	0.5	ND	ND
Chloroform	0.5	ND	ND
Bromochloromethane	0.5	ND	ND
1,1,1-Trichloroethane (TCA)	0.5	ND	ND
1,1-Dichloropropene	0.5	ND	ND
Carbon Tetrachloride	0.5	ND	ND
1,2-Dichloroethane	0.5	ND	ND
Benzene	0.5	ND	ND
Trichloroethene (TCE)	0.5	ND	ND
1,2-Dichloropropane	0.5	ND	ND
Bromodichloromethane	0.5	ND	ND
Dibromomethane	0.5	ND	ND
2-Hexanone	2	ND	ND
cis-1,3-Dichloropropene	0.5	ND	ND
Toluene	0.5	ND	ND
trans-1,3-Dichloropropene	0.5	ND	ND
1,1,2-Trichloroethane	0.5	ND	ND
4-Methyl-2-pentanone (MIBK)	2	ND	ND
1,3-Dichloropropane	0.5	ND	ND

Approved By: CC Davies Date: 5/27/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/40358-016.004(3)
Sample Matrix: Soil

Service Request: K9703203
Date Collected: 5/1/97
Date Received: 5/13/97
Date Extracted: 5/15/97

Volatile Organic Compounds
EPA Method 8260A
Units: mg/Kg (ppm)
Dry Weight Basis

	Sample Name:	SB-1-27	Method Blank
	Lab Code:	K9703203-021	K970515-MB
	Date Analyzed:	5/15/97	5/15/97
Analyte	**MRL**		
Tetrachloroethene (PCE)	0.5	ND	ND
Dibromochloromethane	0.5	ND	ND
1,2-Dibromoethane (EDB)	2	ND	ND
Chlorobenzene	0.5	ND	ND
1,1,1,2-Tetrachloroethane	0.5	ND	ND
Ethylbenzene	0.5	ND	ND
Total Xylenes	0.5	ND	ND
Styrene	0.5	ND	ND
Bromoform	0.5	ND	ND
Isopropylbenzene	2	ND	ND
1,1,2,2-Tetrachloroethane	0.5	ND	ND
1,2,3-Trichloropropane	0.5	ND	ND
Bromobenzene	0.5	ND	ND
n-Propylbenzene	2	ND	ND
2-Chlorotoluene	2	ND	ND
4-Chlorotoluene	2	ND	ND
1,3,5-Trimethylbenzene	2	ND	ND
tert-Butylbenzene	2	ND	ND
1,2,4-Trimethylbenzene	2	ND	ND
sec-Butylbenzene	2	ND	ND
1,3-Dichlorobenzene	0.5	ND	ND
4-Isopropyltoluene	2	ND	ND
1,4-Dichlorobenzene	0.5	ND	ND
n-Butylbenzene	2	ND	ND
1,2-Dichlorobenzene	0.5	ND	ND
1,2-Dibromo-3-chloropropane (DBCP)	2	ND	ND
1,2,4-Trichlorobenzene	2	ND	ND
1,2,3-Trichlorobenzene	2	ND	ND
Naphthalene	2	ND	ND
Hexachlorobutadiene	2	ND	ND

Approved By: CC Weiss Date: 5/27/97

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: New City Cleaners/40358-016.004(3)
Sample Matrix:

Service Request: K9703203
Date Collected: 5/1/97
Date Received: 5/13/97
Date Extracted: 5/15/97
Date Analyzed: 5/15/97

Surrogate Recovery Summary
Volatile Organic Compounds
EPA Method 8260A

		Percent Recovery		
Sample Name	**Lab Code**	Dibromofluoromethane	Toluene-d_8	4-Bromofluorobenzene
SB-1-27	K9703203-021	98	100	143(A)
Method Blank	K970515-MB	101	97	92
CAS Acceptance Limits:		82-122	84-116	67-129

A Outside acceptance limits due to matrix interference.

Approved By: _____ Date: 6/5/97

SURJ/110094
03203VOA.CL1 - 8260sSUR 6/4/97

CHAIN OF CUSTODY/LABORATORY ANALYSIS REPORT FORM

DATE 5/6/97 PAGE 1 OF 4

PROJECT NAME New City Cleaners #10358-016.0046

PROJECT ATTN Rob Lindsay

COMPANY/ADDRESS ENCON - Spokane

PHONE (509) 638-1144

SAMPLERS SIGNATURE [signature]

SAMPLE I.D.	DATE	TIME	LAB I.D.	SAMPLE MATRIX	NUMBER OF CONTAINERS	REMARKS
MW-1-9	5/1/97	0825	3203-1	Soil	2	Hold
MW-1-12.5	↓	0635	2		2	
MW-1-22	↓	0900	3		2	
MW-2-1	4/30/97	1500	4		2	
MW-2-5		1505	5		1	
MW-2-9		1520	6		4	
MW-2-17.5		1550	7		2	
MW-3-5		1045	8		2	
MW-3-7		1050	9		2	
MW-3-12.5	↓	1105	10	↓	2	

ANALYSIS REQUEST

PETROLEUM HCS						ORGANIC								ORGANIC METALS/INORGANICS						
TPH - HCID State:	TPH - G / BTEX State:	TPH - D / OIL State:	TPH - 418.1 State:	TPH - Other	Halogenated or Aromatic Volatiles 601/8010 / 602/8020	Volatile Organics GC/MS 624-8240	Base/Neu/Acid Organics GC/MS 625/8270	Pesticides/PCBS 8080 PCB ONLY	PAH 8100 GC / 8310 HPCL	TCLP Metals	Semi VOA / VOA / Pest/Herb	Metals Total / DISS List Below	Cyanide	pH, Cond Cl, SO_4, PO_4 F, Br NO_2 NO_3 (Circle)	NH_3 - N, COD, Total-P TKN, TOC, TOX (Circle)					

RELINQUISHED BY:
Signature [signature]
Printed Name VICE GARSON
Firm ENCON
Date/Time 5/6/97 1400

RECEIVED BY:
Signature [signature]
Printed Name OSMOSIER
Firm CTS
Date/Time 05/06/97 1400

RELINQUISHED BY:
Signature [signature]
Printed Name Amy Gray
Firm CTS-Bothell
Date/Time 05/12/97 18:30

RECEIVED BY:
Signature [signature]
Printed Name [illegible]
Firm CTS
Date/Time 5/13/97 [illegible]

TURNAROUND REQUIREMENTS
___ 24 hr ___ 48 hr. ___ 5 day
___ Standard (10-15 working days)
___ Provide Verbal Preliminary Results
___ Provide FAX preliminary Results
Requested Report Date _____

REPORT REQUIREMENTS
___ I. Routine Report
___ II. Report (includes DUP MAS. MSD, as required, may be charged as samples)
___ III. Data Validation Report (includes All Raw Data)
___ IV. CLP Deliverable Report

INVOICE INFORMATION:
P.O.# _____
Bill To _____

SAMPLE RECEIPT:
Shipping VIA _____
Shipping Id _____
Condition: _____
Lab No. 9703203

SPECIAL INSTRUCTIONS/COMMENTS:
Hold All Samples

80000

CHAIN OF CUSTODY/LABORATORY ANALYSIS REPORT FORM

DATE 5/6/97 PAGE 2 OF 4

PROJECT NAME New City Cleaners #40358-016.004(3)
PROJECT ATTN: Rob Lindsay
COMPANY/ADDRESS EMCON - Spokane
PHONE (509) 838-1144
SAMPLERS SIGNATURE

SAMPLE I.D.	DATE	TIME	LAB I.D.	SAMPLE MATRIX	NUMBER OF CONTAINERS	ANALYSIS REQUEST: PETROLEUM HCS / ORGANIC / ORGANIC METALS/INORGANICS	REMARKS
MW-3-17.5	4/30/97	1120	3208-11	Soil	2		Hold
MW-3-22	↓	1135	12		2		
MW-4-7	4/29/97	1040	13		2		
MW-4-11		1050	14		2		
MW-4-15		1100	15		2		
MW-4-22	↓	1115	16	↓	2		↓

ANALYSIS REQUEST — PETROLEUM HCS: TPH - HCID State: / TPH - G State: / BTEX / TPH - D State: / OIL / TPH - 418.1 State: / TPH - Other / Halogenated or Aromatic Volatiles 601/8010 / 602/8020 / Volatile Organics GC/MS 624-8240 / Base/Neu/Acid Organics GC/MS 625/8270 / Pesticides/PCBs 8080 / PCB ONLY / PAH 8310 / 8100 GC / HPCL / TCLP Metals / Semi VOA / VOA / Pest/Herb / Metals Total / DISS / List Below / Cyanide / pH, Cond, Cl, SO_4, PO_4, F, Br, NO_2, NO_3 (Circle) / NH_3 - N, COD, Total-P TKN, TOC, TOX (Circle)

RELINQUISHED BY:
Signature
Printed Name: NICK BARSON
Firm: EMCON
Date/Time: 5/6/97 1400

RECEIVED BY:
Signature
Printed Name: DD Mosier
Firm: CHS
Date/Time: 05/06/97

RELINQUISHED BY:
Signature
Printed Name: Amy Gray
Firm: CAS-Bothell
Date/Time: 05/12/97 18:30

RECEIVED BY:
Signature
Printed Name
Firm: CAS
Date/Time: 5/13/97 700

TURNAROUND REQUIREMENTS
___ 24 hr ___ 48 hr. ___ 5 day
___ Standard (10-15 working days)
___ Provide Verbal Preliminary Results
___ Provide FAX preliminary Results
Requested Report Date ___

REPORT REQUIREMENTS
___ I. Routine Report
___ II. Report (includes DUP MAS MSD, as required, may be charged as samples)
___ III. Data Validation Report (includes All Raw Data)
___ IV. CLP Deliverable Report

INVOICE INFORMATION:
P.O.# ___
Bill To ___

SAMPLE RECEIPT:
Shipping VIA ___
Shipping Id. ___
Condition ___
Lab No 19703203

SPECIAL INSTRUCTIONS/COMMENTS:
Hold All Samples

60000

CHAIN OF CUSTODY/LABORATORY ANALYSIS REPORT FORM

DATE 5/6/97 PAGE 3 OF 4

PROJECT NAME New City Lumber #40358-016.004(3)
PROJECT ATTN: Rob Lindsay
COMPANY/ADDRESS EMCON - Spokane
PHONE (509) 838-1144
SAMPLERS SIGNATURE J. Nicholson

SAMPLE I.D.	DATE	TIME	LAB I.D.	SAMPLE MATRIX	NUMBER OF CONTAINERS
SB-1-1	5/1/97	1150	8208-17	Soil	2
SB-1-5		1155	18		1
SB-1-17.5		1220	19		2
SB-1-22		1230	20		2
SB-1-27		1235	21		2
SB-1-30	5/2/97	0830	22		2
SB-1-35		0845	23		2
SB-2-1	5/1/97	1345	24		2
SB-2-5		1400	25		2
SB-2-12.5		1425	24		2

ANALYSIS REQUEST

PETROLEUM HCS: TPH - HCID (State:); TPH - G (State:) — BTEX; TPH - D (State:) — OIL; TPH - 418.1 (State:); TPH - Other

ORGANIC: Halogenated or Aromatic Volatiles 601/8010 — 602/8020; Volatile Organics GC/MS 624-8240; Base/Neu/Acid Organics GC/MS 625/8270; Pesticides/PCBS 8080 PCB ONLY; PAH 8310 HPCL; TCLP Metals — Semi VOA — VOA — Pest/Herb; Metals Total — DISS — List Below; Cyanide

ORGANIC METALS/INORGANICS: pH, Cond Cl, SO_4, PO_4 F, Br, NO_2 NO_3 (Circle); NH_3 - N, COD, Total-P TKN, TOC, TOX (Circle)

REMARKS: Hold; Hold 3

RELINQUISHED BY:
Signature: J. Nicholson
Printed Name: NICK GARSON
Firm: EMCON
Date/Time: 5/6/97 1400

RECEIVED BY:
Signature: D. Mosier
Printed Name: DT MOSIER
Firm: CHS
Date/Time: 05/06/97

RELINQUISHED BY:
Signature: Amy Gray
Printed Name: Amy Gray
Firm: CAS-Bothell
Date/Time: 05/12/97 18:30

RECEIVED BY:
Signature:
Printed Name: KIM STARK
Firm: CAS
Date/Time: 5/13/97 00

TURNAROUND REQUIREMENTS
___ 24 hr ___ 48 hr. ___ 5 day
___ Standard (10-15 working days)
___ Provide Verbal Preliminary Results
___ Provide FAX preliminary Results
Requested Report Date ___

REPORT REQUIREMENTS
___ I. Routine Report
___ II. Report (includes DUP, MAS, MSD, as required, may be charged as samples)
___ III. Data Validation Report (includes All Raw Data)
___ IV. CLP Deliverable Report

INVOICE INFORMATION:
P.O.# ___
Bill To ___

SAMPLE RECEIPT:
Shipping VIA: ___
Shipping Id: ___
Condition: ___
Lab No: 19703203

SPECIAL INSTRUCTIONS/COMMENTS:
Hold All Samples

00010

EMCON — CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

DATE 5/6/97 PAGE 3 OF 4

PROJECT NAME New City Cleaners #40358-016.004(2)
PROJECT ATTN: Rob Lindsay
COMPANY/ADDRESS EMCON - Spokane
PHONE (509) 838-1144
SAMPLERS SIGNATURE J. Nicholson

SAMPLE I.D.	DATE	TIME	LAB I.D.	SAMPLE MATRIX	NUMBER OF CONTAINERS	REMARKS
SB-2-17.5	5/1/97	1430	3203-27	Soil	2	Hold
SB-2-22	↓	1445	28	↓	2	↓
SB-2-27		1455	29		2	
SB-2-30		1640	30		2	

ANALYSIS REQUEST

PETROLEUM HCS: TPH - HCID State: ___; TPH - G ___ BTEX ___ State: ___; TPH - D ___ OIL ___ State: ___; TPH - 418.1 State: ___; TPH - Other

ORGANIC: Halogenated or Aromatic Volatiles 601/8010 ___ 602/8020 ___; Volatile Organics GC/MS 624-8240; Base/Neu/Acid Organics GC/MS 625/8270; Pesticides/PCBS 8080 PCB ONLY; PAH 8310 HPCL ___ 8100 GC ___; TCLP Metals ___ Semi VOA ___ VOA ___ Pest/Herb ___; Metals Total ___ DISS ___ List Below; Cyanide

ORGANIC METALS/INORGANICS: pH, Cond Cl, SO_4, PO_4 F, Br, NO_2 NO_3 (Circle); NH_3 - N, COD, Total-P TKN, TOC, TOX (Circle)

RELINQUISHED BY:
Signature: J. Nicholson
Printed Name: NICHOLSON
Firm: EMCON
Date/Time: 5/6/97 1400

RECEIVED BY:
Signature: D. Mosier
Printed Name: D MOSIER
Firm: CHS
Date/Time: 05/06/97 1400

RELINQUISHED BY:
Signature: Cindy Gray
Printed Name: Andy Gray
Firm: CAS - Bothell
Date/Time: 5/12/97 18:30

RECEIVED BY:
Signature: [illegible]
Printed Name: [illegible]
Firm: CAS
Date/Time: 5/13/97 1000

TURNAROUND REQUIREMENTS
___ 24 hr ___ 48 hr. ___ 5 day
___ Standard (10-15 working days)
___ Provide Verbal Preliminary Results
___ Provide FAX preliminary Results
Requested Report Date ___

REPORT REQUIREMENTS
___ I. Routine Report
___ II. Report (includes DUP MAS MSD, as required, may be charged as samples)
___ III. Data Validation Report (includes All Raw Data)
___ IV. CLP Deliverable Report

INVOICE INFORMATION:
PO # ___
Bill To ___

SAMPLE RECEIPT:
Shipping VIA ___
Shipping Id. ___
Condition ___
Lab No: K9705303

SPECIAL INSTRUCTIONS/COMMENTS:
Hold All Samples

00011

Columbia Analytical Services inc.

June 5, 1997

Service Request No: K9703664

Rob Lindsay
EMCON
W 7106 Will D. Alton Lane, Suite 101
Spokane, WA 99204-5760

Re: New City Cleaners/40358-016.004 Task 3

Dear Rob:

Enclosed are the results of the rush sample(s) submitted to our laboratory on May 30, 1997. For your reference, these analyses have been assigned our service request number K9703664.

Analysis of these samples was completed after the end of recommended hold times.

All analyses were performed according to our laboratory's quality assurance program. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the samples analyzed.

Please call if you have any questions. My extension is 239.

Respectfully submitted,

Columbia Analytical Services, Inc.

(for)

Howard Boorse
Project Chemist

HB/mc

17 South 13th Avenue • P.O. Box 479 • Kelso, Washington 98626 • Telephone 360/577-7222 • Fax 360/636-1068

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
J	Estimated concentration. The value is less than the method reporting limit, but greater than the method detection limit.
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NAN	Not Analyzed
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected at or above the MRL
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON	**Service Request:**	K9703664
Project:	New City Cleaners/40358-016.004 Task 3	**Date Collected:**	3/13/97
Sample Matrix:	Soil	**Date Received:**	5/30/97
		Date Extracted:	6/2/97
		Date Analyzed:	6/2,3/97

Total Petroleum Hydrocarbons as Gasoline
Washington DOE Method WTPH-G
Units: mg/Kg (ppm)
Dry Weight Basis

Sample Name	Lab Code	MRL	Result
GP2-5	K9703664-001	5	ND
GP2-21	K9703664-002	5	ND
Method Blank	K970602-MB	5	ND

Approved By: _____ Date: 6-6-97

LAMRL/102594
03664VOA.MS1 - GASa 6/6/97

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON	**Service Request:**	K9703664
Project:	New City Cleaners/40358-016.004 Task 3	**Date Collected:**	3/13/97
Sample Matrix:	Soil	**Date Received:**	5/30/97
		Date Extracted:	6/2/97
		Date Analyzed:	6/2,3/97

Surrogate Recovery Summary
Total Petroleum Hydrocarbons as Gasoline
Washington DOE Method WTPH-G

Sample Name	**Lab Code**	**Percent Recovery** 1,4-Difluorobenzene
GP2-5	K9703664-001	117
GP2-21	K9703664-002	115
GP2-21	K9703664-002MS	107
GP2-21	K9703664-002DMS	99
Lab Control Sample	K970602-LCS	116
Method Blank	K970602-MB	115

CAS Acceptance Limits: 48-129

Approved By: _____ Date: 6·6·97

SURJ/111594
03664VOA_MS1 - GAS&SUR 6/6/97

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: New City Cleaners/40358-016.004 Task 3
Sample Matrix: Soil

Service Request: K9703664
Date Collected: 3/13/97
Date Received: 5/30/97
Date Extracted: 6/2/97
Date Analyzed: 6/2/97

Matrix Spike/Duplicate Matrix Spike Summary
Total Petroleum Hydrocarbons as Gasoline
Washington DOE Method WTPH-G
Units: mg/Kg (ppm)
Dry Weight Basis

Sample Name: GP2-21
Lab Code: K9703664-002MS, K9703664-002DMS

	Spike Level		Sample	Spike Result		Percent Recovery		CAS Acceptance	Relative Percent	CAS RPD Acceptance
Analyte	MS	DMS	**Result**	MS	DMS	MS	DMS	Limits	**Difference**	**Limit**
Gasoline	52	52	ND	51	45	98	87	59-135	11	40

Approved By: _____ Date: 6.6.97

DMS1SRPD/120594
03664VOA_MS1 - DMS1SRPD 6/6/97

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON	**Service Request:**	K9703664
Project:	New City Cleaners/40358-016.004 Task 3	**Date Collected:**	NA
LCS Matrix:	Soil	**Date Received:**	NA
		Date Extracted:	6/2/97
		Date Analyzed:	6/2/97

Laboratory Control Sample Summary
Total Petroleum Hydrocarbons as Gasoline
Washington DOE Method WTPH-G
Units: mg/Kg (ppm)

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits
Gasoline	48	57	119	82-155

Approved By: _____ Date: 6.6.97

LCS/102194

03664VOA.MS1 - GASxLCS 6/6/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON	**Service Request:**	K9703664
Project:	New City Cleaners/40358-016.004 Task 3	**Date Collected:**	3/13/97
Sample Matrix:	Soil	**Date Received:**	5/30/97
		Date Extracted:	6/2/97
		Date Analyzed:	6/3/97

Total Petroleum Hydrocarbons as Diesel and Oil
Washington DOE Method WTPH-D
Units: mg/Kg (ppm)
Dry Weight Basis

Analyte:		Diesel	Oil*
Method Reporting Limit:		25	100
Sample Name	**Lab Code**		
GP2-5	K9703664-001	53(O)	512
GP2-21	K9703664-002	ND	ND
Method Blank	K970602-MB	ND	ND

* Quantitated using 30-weight motor oil as a standard.

O Quantitated as diesel. The sample contained a heavier than diesel component that partially eluted in the diesel range.

Approved By: _____ Date: 6.6.97

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON	**Service Request:**	K9703664
Project:	New City Cleaners/40358-016.004 Task 3	**Date Collected:**	3/13/97
Sample Matrix:	Soil	**Date Received:**	5/30/97
		Date Extracted:	6/2/97
		Date Analyzed:	6/3/97

Surrogate Recovery Summary
Total Petroleum Hydrocarbons as Diesel and Oil
Washington DOE Method WTPH-D

Sample Name	**Lab Code**	**Percent Recovery** o-Terphenyl
GP2-5	K9703664-001	96
GP2-21	K9703664-002	87
GP2-5	K9703664-001MS	87
GP2-5	K9703664-001DMS	91
Lab Control Sample	K970602-LCS	89
Method Blank	K970602-MB	87

CAS Acceptance Limits: 56-116

Approved By: MMarthe Date: 6/5/97

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON	**Service Request:**	K9703664
Project:	New City Cleaners/40358-016.004 Task 3	**Date Collected:**	3/13/97
Sample Matrix:	Soil	**Date Received:**	5/30/97
		Date Extracted:	6/2/97
		Date Analyzed:	6/3/97

Matrix Spike/Duplicate Matrix Spike Summary
Total Petroleum Hydrocarbons as Diesel and Oil
Washington DOE Method WTPH-D
Units: mg/Kg (ppm)
Dry Weight Basis

Sample Name: GP2-5
Lab Code: K9703664-001DMS

	Spike Level		Sample	Spike Result		Percent Recovery		CAS Acceptance	Relative Percent	CAS RPD Acceptance
Analyte	MS	DMS	**Result**	MS	DMS	MS	DMS	Limits	**Difference**	**Limit**
Diesel	190	190	53	187	191	71	73	19-145	2	40

Approved By: MMantle Date: 6/5/97

DMS1SRPDW28194.dms 6/5/97

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON	**Service Request:**	K9703664
Project:	New City Cleaners/40358-016.004 Task 3	**Date Collected:**	NA
LCS Matrix:	Soil	**Date Received:**	NA
		Date Extracted:	6/2/97
		Date Analyzed:	6/3/97

Laboratory Control Sample Summary
Total Petroleum Hydrocarbons as Diesel and Oil
Washington DOE Method WTPH-D
Units: mg/Kg (ppm)

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits
Diesel	160	125	78	60-120

Approved By: MMunthe Date: 6/5/97

LCS/102194
03664PHC.LP1 - lcs 6/5/97

SEP 2 2 1997

Columbia Analytical Services inc.

September 18, 1997

Service Request No: K9706067

Rob Lindsay
EMCON
W 7106 Will D. Alton Lane, Suite 101
Spokane, WA 99204-5760

Re: New City Cleaners/40358-016.004

Dear Rob:

Enclosed are the results of the sample(s) submitted to our laboratory on August 22, 1997. For your reference, these analyses have been assigned our service request number K9706067.

All analyses were performed according to our laboratory's quality assurance program. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the samples analyzed.

Please call if you have any questions. My extension is 243.

Respectfully submitted,

Columbia Analytical Services, Inc.

Richard Craven
Project Chemist

RAC/bf

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
J	Estimated concentration. The value is less than the method reporting limit, but greater than the method detection limit.
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NAN	Not Analyzed
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected at or above the MRL
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON	**Service Request:**	K9706067
Project:	New City Cleaners/40358-016.004	**Date Collected:**	8/20/97
Sample Matrix:	Water	**Date Received:**	8/22/97
		Date Extracted:	NA
		Date Analyzed:	9/2,3/97

Total Petroleum Hydrocarbons as Gasoline
Washington DOE Method WTPH-G
Units: µg/L (ppb)

Sample Name	Lab Code	MRL	Result
MW-B-0897	K9706067-001	50	ND
MW-D-0897	K9706067-002	50	ND
MW-E-0897	K9706067-003	50	ND
MW-1-0897	K9706067-004	50	ND
MW-2-0897	K9706067-005	50	ND
MW-3-0897	K9706067-006	50	ND
MW-4-0897	K9706067-007	50	ND
MW-5-0897	K9706067-008	50	ND
TB-1-0897	K9706067-009	50	ND
Method Blank	K970902-MB	50	ND

Approved By: _____ Date: 9/9/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON	**Service Request:**	K9706067
Project:	New City Cleaners/40358-016.004	**Date Collected:**	8/20/97
Sample Matrix:	Water	**Date Received:**	8/22/97

Total Petroleum Hydrocarbons as Diesel

Sample Name:	MW-B-0897	Units:	ug/L (ppb)
Lab Code:	K9706067-001	Basis:	NA
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Diesel	METHOD	W/TPH-D	250	1	8/27/97	8/28/97	ND	

Approved By: _____ Date: 9/15/97

1S22/052595

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON	**Service Request:**	K9706067
Project:	New City Cleaners/40358-016.004	**Date Collected:**	8/20/97
Sample Matrix:	Water	**Date Received:**	8/22/97

Total Petroleum Hydrocarbons as Diesel

Sample Name:	MW-D-0897	Units:	ug/L (ppb)
Lab Code:	K9706067-002	Basis:	NA
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Diesel	METHOD	W/TPH-D	250	1	8/27/97	8/28/97	ND	

Approved By: JMP Date: 9/15/97

IS22/052595

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON	**Service Request:**	K9706067
Project:	New City Cleaners/40358-016.004	**Date Collected:**	8/20/97
Sample Matrix:	Water	**Date Received:**	8/22/97

Total Petroleum Hydrocarbons as Diesel

Sample Name:	MW-E-0897	Units:	ug/L (ppb)
Lab Code:	K9706067-003	Basis:	NA
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Diesel	METHOD	W/TPH-D	250	1	8/27/97	8/28/97	ND	

Approved By: JM Date: 9/15/97

IS22/052595

00006

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

lient:	EMCON	**Service Request:**	K9706067
Project:	New City Cleaners/40358-016.004	**Date Collected:**	8/20/97
Sample Matrix:	Water	**Date Received:**	8/22/97

Total Petroleum Hydrocarbons as Diesel

Sample Name:	MW-1-0897	Units:	ug/L (ppb)
Lab Code:	K9706067-004	Basis:	NA
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Diesel	METHOD	W/TPH-D	250	1	8/27/97	8/28/97	ND	

Approved By: JHP Date: 9/15/97

IS22/052595

00007

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON	**Service Request:**	K9706067
Project:	New City Cleaners/40358-016.004	**Date Collected:**	8/20/97
Sample Matrix:	Water	**Date Received:**	8/22/97

Total Petroleum Hydrocarbons as Diesel

Sample Name:	MW-2-0897	Units:	ug/L (ppb)
Lab Code:	K9706067-005	Basis:	NA
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Diesel	METHOD	W/TPH-D	250	1	8/27/97	8/28/97	ND	

Approved By: _____ Date: 9/15/97

00008

1S22/052595

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON	**Service Request:**	K9706067
Project:	New City Cleaners/40358-016.004	**Date Collected:**	8/20/97
Sample Matrix:	Water	**Date Received:**	8/22/97

Total Petroleum Hydrocarbons as Diesel

Sample Name:	MW-3-0897	Units:	ug/L (ppb)
Lab Code:	K9706067-006	Basis:	NA
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Diesel	METHOD	W/TPH-D	250	1	8/27/97	8/29/97	ND	

Approved By: JMP Date: 9/15/97

IS22/052595

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON	**Service Request:**	K9706067
Project:	New City Cleaners/40358-016.004	**Date Collected:**	8/20/97
Sample Matrix:	Water	**Date Received:**	8/22/97

Total Petroleum Hydrocarbons as Diesel

Sample Name:	MW-4-0897	Units:	ug/L (ppb)
Lab Code:	K9706067-007	Basis:	NA
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Diesel	METHOD	W/TPH-D	250	1	8/27/97	8/29/97	ND	

Approved By: JMP Date: 9/15/97

1S22/052595

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON	**Service Request:**	K9706067
Project:	New City Cleaners/40358-016.004	**Date Collected:**	8/20/97
Sample Matrix:	Water	**Date Received:**	8/22/97

Total Petroleum Hydrocarbons as Diesel

Sample Name:	MW-5-0897	Units:	ug/L (ppb)
Lab Code:	K9706067-008	Basis:	NA
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Diesel	METHOD	W/TPH-D	250	1	8/27/97	8/29/97	ND	

Approved By: _____ Date: 9/15/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON	**Service Request:**	K9706067
Project:	New City Cleaners/40358-016.004	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

Total Petroleum Hydrocarbons as Diesel

Sample Name:	Method Blank	Units:	ug/L (ppb)
Lab Code:	K970827-MB	Basis:	NA
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Diesel	METHOD	W/TPH-D	250	1	8/27/97	8/28/97	ND	

Approved By: JMP Date: 9/15/97

IS22/052595

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/40358-016.004
Sample Matrix: Water

Service Request: K9706067
Date Collected: 8/20/97
Date Received: 8/22/97
Date Extracted: NA

Volatile Organic Compounds
EPA Method 8260A
Units: µg/L (ppb)

	Sample Name:	MW-B-0897	MW-D-0897	MW-E-0897
	Lab Code:	K9706067-001	K9706067-002	K9706067-003
	Date Analyzed:	9/3/97	9/3/97	9/3/97
Analyte	**MRL**			
Dichlorodifluoromethane (CFC 12)	0.5	ND	ND	ND
Chloromethane	0.5	ND	ND	ND
Vinyl Chloride	0.5	ND	ND	ND
Bromomethane	0.5	ND	ND	ND
Chloroethane	0.5	ND	ND	ND
Trichlorofluoromethane (CFC 11)	0.5	ND	ND	ND
Acetone	20	ND	ND	ND
1,1-Dichloroethene	0.5	ND	ND	ND
Carbon Disulfide	0.5	ND	ND	ND
Methylene Chloride	1	ND	ND	ND
trans-1,2-Dichloroethene	0.5	ND	ND	ND
1,1-Dichloroethane	0.5	ND	ND	ND
2-Butanone (MEK)	20	ND	ND	ND
2,2-Dichloropropane	0.5	ND	ND	ND
cis-1,2-Dichloroethene	0.5	ND	ND	0.6
Chloroform	0.5	ND	0.9	ND
Bromochloromethane	0.5	ND	ND	ND
1,1,1-Trichloroethane (TCA)	0.5	ND	ND	ND
1,1-Dichloropropene	0.5	ND	ND	ND
Carbon Tetrachloride	0.5	ND	ND	ND
1,2-Dichloroethane	0.5	ND	ND	ND
✓ Benzene	0.5	ND	ND	ND
Trichloroethene (TCE)	0.5	ND	ND	3.4
1,2-Dichloropropane	0.5	ND	ND	ND
Bromodichloromethane	0.5	ND	ND	ND
Dibromomethane	0.5	ND	ND	ND
2-Hexanone	20	ND	ND	ND
cis-1,3-Dichloropropene	0.5	ND	ND	ND
✓ Toluene	0.5	ND	ND	ND
trans-1,3-Dichloropropene	0.5	ND	ND	ND
1,1,2-Trichloroethane	0.5	ND	ND	ND
4-Methyl-2-pentanone (MIBK)	20	ND	ND	ND
1,3-Dichloropropane	0.5	ND	ND	ND

Approved By: Elaine E. Wiegel Date: 9/18/97

00013

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/40358-016.004
Sample Matrix: Water

Service Request: K9706067
Date Collected: 8/20/97
Date Received: 8/22/97
Date Extracted: NA

Volatile Organic Compounds
EPA Method 8260A
Units: µg/L (ppb)

	Sample Name:	MW-B-0897	MW-D-0897	MW-E-0897
	Lab Code:	K9706067-001	K9706067-002	K9706067-003
	Date Analyzed:	9/3/97	9/3/97	9/3/97
Analyte	**MRL**			
Tetrachloroethene (PCE)	0.5	ND	ND	7.7
Dibromochloromethane	0.5	ND	ND	ND
1,2-Dibromoethane (EDB)	2	ND	ND	ND
Chlorobenzene	0.5	ND	ND	ND
1,1,1,2-Tetrachloroethane	0.5	ND	ND	ND
Ethylbenzene	0.5	ND	ND	ND
Total Xylenes	0.5	ND	ND	ND
Styrene	0.5	ND	ND	ND
Bromoform	0.5	ND	ND	ND
Isopropylbenzene	2	ND	ND	ND
1,1,2,2-Tetrachloroethane	0.5	ND	ND	ND
1,2,3-Trichloropropane	0.5	ND	ND	ND
Bromobenzene	0.5	ND	ND	ND
n-Propylbenzene	2	ND	ND	ND
2-Chlorotoluene	2	ND	ND	ND
4-Chlorotoluene	2	ND	ND	ND
1,3,5-Trimethylbenzene	2	ND	ND	ND
tert-Butylbenzene	2	ND	ND	ND
1,2,4-Trimethylbenzene	2	ND	ND	ND
sec-Butylbenzene	2	ND	ND	ND
1,3-Dichlorobenzene	0.5	ND	ND	ND
4-Isopropyltoluene	2	ND	ND	ND
1,4-Dichlorobenzene	0.5	ND	ND	ND
n-Butylbenzene	2	ND	ND	ND
1,2-Dichlorobenzene	0.5	ND	ND	ND
1,2-Dibromo-3-chloropropane (DBCP)	2	ND	ND	ND
1,2,4-Trichlorobenzene	2	ND	ND	ND
1,2,3-Trichlorobenzene	2	ND	ND	ND
Naphthalene	2	ND	ND	ND
Hexachlorobutadiene	2	ND	ND	ND

Approved By: Diane E. Wiegel Date: 9/18/97

700014

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/40358-016.004
Sample Matrix: Water

Service Request: K9706067
Date Collected: 8/20/97
Date Received: 8/22/97
Date Extracted: NA

Volatile Organic Compounds
EPA Method 8260A
Units: µg/L (ppb)

	Sample Name:	MW-1-0897	MW-2-0897	MW-3-0897
	Lab Code:	K9706067-004	K9706067-005	K9706067-006
	Date Analyzed:	9/3/97	9/3/97	9/3/97
Analyte	**MRL**			
Dichlorodifluoromethane (CFC 12)	0.5	ND	ND	ND
Chloromethane	0.5	ND	ND	ND
Vinyl Chloride	0.5	ND	ND	ND
Bromomethane	0.5	ND	ND	ND
Chloroethane	0.5	ND	ND	ND
Trichlorofluoromethane (CFC 11)	0.5	ND	ND	ND
Acetone	20	ND	ND	ND
1,1-Dichloroethene	0.5	ND	ND	ND
Carbon Disulfide	0.5	ND	ND	ND
Methylene Chloride	1	ND	ND	ND
trans-1,2-Dichloroethene	0.5	ND	ND	ND
1,1-Dichloroethane	0.5	ND	ND	ND
2-Butanone (MEK)	20	ND	ND	ND
2,2-Dichloropropane	0.5	ND	ND	ND
cis-1,2-Dichloroethene	0.5	ND	ND	ND
Chloroform	0.5	ND	ND	ND
Bromochloromethane	0.5	ND	ND	ND
1,1,1-Trichloroethane (TCA)	0.5	ND	ND	ND
1,1-Dichloropropene	0.5	ND	ND	ND
Carbon Tetrachloride	0.5	ND	ND	ND
1,2-Dichloroethane	0.5	ND	ND	ND
✓ Benzene	0.5	ND	ND	ND
Trichloroethene (TCE)	0.5	1.0	5.7	1.7
1,2-Dichloropropane	0.5	ND	ND	ND
Bromodichloromethane	0.5	ND	ND	ND
Dibromomethane	0.5	ND	ND	ND
2-Hexanone	20	ND	ND	ND
cis-1,3-Dichloropropene	0.5	ND	ND	ND
✓ Toluene	0.5	ND	ND	ND
trans-1,3-Dichloropropene	0.5	ND	ND	ND
1,1,2-Trichloroethane	0.5	ND	ND	ND
4-Methyl-2-pentanone (MIBK)	20	ND	ND	ND
1,3-Dichloropropane	0.5	ND	ND	ND

Approved By: Elaine E. Wright Date: 9/18/97

00015

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/40358-016.004
Sample Matrix: Water

Service Request: K9706067
Date Collected: 8/20/97
Date Received: 8/22/97
Date Extracted: NA

Volatile Organic Compounds
EPA Method 8260A
Units: µg/L (ppb)

		Sample Name:	MW-1-0897	MW-2-0897	MW-3-0897
		Lab Code:	K9706067-004	K9706067-005	K9706067-006
		Date Analyzed:	9/3/97	9/3/97	9/3/97
Analyte	**MRL**				
Tetrachloroethene (PCE)	0.5		31	58	35
Dibromochloromethane	0.5		ND	ND	ND
1,2-Dibromoethane (EDB)	2		ND	ND	ND
Chlorobenzene	0.5		ND	ND	ND
1,1,1,2-Tetrachloroethane	0.5		ND	ND	ND
Ethylbenzene	0.5		ND	ND	ND
Total Xylenes	0.5		ND	ND	ND
Styrene	0.5		ND	ND	ND
Bromoform	0.5		ND	ND	ND
Isopropylbenzene	2		ND	ND	ND
1,1,2,2-Tetrachloroethane	0.5		ND	ND	ND
1,2,3-Trichloropropane	0.5		ND	ND	ND
Bromobenzene	0.5		ND	ND	ND
n-Propylbenzene	2		ND	ND	ND
2-Chlorotoluene	2		ND	ND	ND
4-Chlorotoluene	2		ND	ND	ND
1,3,5-Trimethylbenzene	2		ND	ND	ND
tert-Butylbenzene	2		ND	ND	ND
1,2,4-Trimethylbenzene	2		ND	ND	ND
sec-Butylbenzene	2		ND	ND	ND
1,3-Dichlorobenzene	0.5		ND	ND	ND
4-Isopropyltoluene	2		ND	ND	ND
1,4-Dichlorobenzene	0.5		ND	ND	ND
n-Butylbenzene	2		ND	ND	ND
1,2-Dichlorobenzene	0.5		ND	ND	ND
1,2-Dibromo-3-chloropropane (DBCP)	2		ND	ND	ND
1,2,4-Trichlorobenzene	2		ND	ND	ND
1,2,3-Trichlorobenzene	2		ND	ND	ND
Naphthalene	2		ND	ND	ND
Hexachlorobutadiene	2		ND	ND	ND

Approved By: Diane E. Wiegel Date: 9/18/97

00016

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/40358-016.004
Sample Matrix: Water

Service Request: K9706067
Date Collected: 8/20/97
Date Received: 8/22/97
Date Extracted: NA

Volatile Organic Compounds
EPA Method 8260A
Units: µg/L (ppb)

	Sample Name:	MW-4-0897	MW-5-0897	TB-1-0897
	Lab Code:	K9706067-007	K9706067-008	K9706067-009
	Date Analyzed:	9/3/97	9/3/97	9/3/97
Analyte	**MRL**			
Dichlorodifluoromethane (CFC 12)	0.5	ND	ND	ND
Chloromethane	0.5	ND	ND	ND
Vinyl Chloride	0.5	ND	ND	ND
Bromomethane	0.5	ND	ND	ND
Chloroethane	0.5	ND	ND	ND
Trichlorofluoromethane (CFC 11)	0.5	ND	ND	ND
Acetone	20	ND	ND	ND
1,1-Dichloroethene	0.5	ND	ND	ND
Carbon Disulfide	0.5	ND	ND	ND
Methylene Chloride	1	ND	ND	ND
trans-1,2-Dichloroethene	0.5	ND	ND	ND
1,1-Dichloroethane	0.5	ND	ND	ND
2-Butanone (MEK)	20	ND	ND	ND
2,2-Dichloropropane	0.5	ND	ND	ND
cis-1,2-Dichloroethene	0.5	ND	ND	ND
Chloroform	0.5	ND	ND	ND
Bromochloromethane	0.5	ND	ND	ND
1,1,1-Trichloroethane (TCA)	0.5	ND	ND	ND
1,1-Dichloropropene	0.5	ND	ND	ND
Carbon Tetrachloride	0.5	ND	ND	ND
1,2-Dichloroethane	0.5	ND	ND	ND
Benzene	0.5	ND	ND	ND
Trichloroethene (TCE)	0.5	1.0	5.8	ND
1,2-Dichloropropane	0.5	ND	ND	ND
Bromodichloromethane	0.5	ND	ND	ND
Dibromomethane	0.5	ND	ND	ND
2-Hexanone	20	ND	ND	ND
cis-1,3-Dichloropropene	0.5	ND	ND	ND
Toluene	0.5	ND	ND	ND
trans-1,3-Dichloropropene	0.5	ND	ND	ND
1,1,2-Trichloroethane	0.5	ND	ND	ND
4-Methyl-2-pentanone (MIBK)	20	ND	ND	ND
1,3-Dichloropropane	0.5	ND	ND	ND

Approved By: Diane E. Vriegel Date: 9/18/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/40358-016.004
Sample Matrix: Water

Service Request: K9706067
Date Collected: 8/20/97
Date Received: 8/22/97
Date Extracted: NA

Volatile Organic Compounds
EPA Method 8260A
Units: µg/L (ppb)

	Sample Name:	MW-4-0897	MW-5-0897	TB-1-0897
	Lab Code:	K9706067-007	K9706067-008	K9706067-009
	Date Analyzed:	9/3/97	9/3/97	9/3/97
Analyte	**MRL**			
Tetrachloroethene (PCE)	0.5	1.2	65	ND
Dibromochloromethane	0.5	ND	ND	ND
1,2-Dibromoethane (EDB)	2	ND	ND	ND
Chlorobenzene	0.5	ND	ND	ND
1,1,1,2-Tetrachloroethane	0.5	ND	ND	ND
Ethylbenzene	0.5	ND	ND	ND
Total Xylenes	0.5	ND	ND	ND
Styrene	0.5	ND	ND	ND
Bromoform	0.5	ND	ND	ND
Isopropylbenzene	2	ND	ND	ND
1,1,2,2-Tetrachloroethane	0.5	ND	ND	ND
1,2,3-Trichloropropane	0.5	ND	ND	ND
Bromobenzene	0.5	ND	ND	ND
n-Propylbenzene	2	ND	ND	ND
2-Chlorotoluene	2	ND	ND	ND
4-Chlorotoluene	2	ND	ND	ND
1,3,5-Trimethylbenzene	2	ND	ND	ND
tert-Butylbenzene	2	ND	ND	ND
1,2,4-Trimethylbenzene	2	ND	ND	ND
sec-Butylbenzene	2	ND	ND	ND
1,3-Dichlorobenzene	0.5	ND	ND	ND
4-Isopropyltoluene	2	ND	ND	ND
1,4-Dichlorobenzene	0.5	ND	ND	ND
n-Butylbenzene	2	ND	ND	ND
1,2-Dichlorobenzene	0.5	ND	ND	ND
1,2-Dibromo-3-chloropropane (DBCP)	2	ND	ND	ND
1,2,4-Trichlorobenzene	2	ND	ND	ND
1,2,3-Trichlorobenzene	2	ND	ND	ND
Naphthalene	2	ND	ND	ND
Hexachlorobutadiene	2	ND	ND	ND

Approved By: Diane E. Weigel Date: 9/18/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/40358-016.004
Sample Matrix: Water

Service Request: K9706067
Date Collected: NA
Date Received: NA
Date Extracted: NA

Volatile Organic Compounds
EPA Method 8260A
Units: µg/L (ppb)

	Sample Name:	Method Blank	Method Blank
	Lab Code:	K970903-MB	K970908-MB
	Date Analyzed:	9/3/97	9/8/97
Analyte	**MRL**		
Dichlorodifluoromethane (CFC 12)	0.5	ND	ND
Chloromethane	0.5	ND	ND
Vinyl Chloride	0.5	ND	ND
Bromomethane	0.5	ND	ND
Chloroethane	0.5	ND	ND
Trichlorofluoromethane (CFC 11)	0.5	ND	ND
Acetone	20	ND	ND
1,1-Dichloroethene	0.5	ND	ND
Carbon Disulfide	0.5	ND	ND
Methylene Chloride	1	ND	ND
trans-1,2-Dichloroethene	0.5	ND	ND
1,1-Dichloroethane	0.5	ND	ND
2-Butanone (MEK)	20	ND	ND
2,2-Dichloropropane	0.5	ND	ND
cis-1,2-Dichloroethene	0.5	ND	ND
Chloroform	0.5	ND	ND
Bromochloromethane	0.5	ND	ND
1,1,1-Trichloroethane (TCA)	0.5	ND	ND
1,1-Dichloropropene	0.5	ND	ND
Carbon Tetrachloride	0.5	ND	ND
1,2-Dichloroethane	0.5	ND	ND
✓ Benzene	0.5	ND	ND
Trichloroethene (TCE)	0.5	ND	ND
1,2-Dichloropropane	0.5	ND	ND
Bromodichloromethane	0.5	ND	ND
Dibromomethane	0.5	ND	ND
2-Hexanone	20	ND	ND
cis-1,3-Dichloropropene	0.5	ND	ND
✓ Toluene	0.5	ND	ND
trans-1,3-Dichloropropene	0.5	ND	ND
1,1,2-Trichloroethane	0.5	ND	ND
4-Methyl-2-pentanone (MIBK)	20	ND	ND
1,3-Dichloropropane	0.5	ND	ND

Approved By: Diane E. Weigel Date: 9/18/97

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: New City Cleaners/40358-016.004
Sample Matrix: Water

Service Request: K9706067
Date Collected: NA
Date Received: NA
Date Extracted: NA

Volatile Organic Compounds
EPA Method 8260A
Units: µg/L (ppb)

	Sample Name:	Method Blank	Method Blank
	Lab Code:	K970903-MB	K970908-MB
	Date Analyzed:	9/3/97	9/8/97
Analyte	**MRL**		
Tetrachloroethene (PCE)	0.5	ND	ND
Dibromochloromethane	0.5	ND	ND
1,2-Dibromoethane (EDB)	2	ND	ND
Chlorobenzene	0.5	ND	ND
1,1,1,2-Tetrachloroethane	0.5	ND	ND
Ethylbenzene	0.5	ND	ND
Total Xylenes	0.5	ND	ND
Styrene	0.5	ND	ND
Bromoform	0.5	ND	ND
Isopropylbenzene	2	ND	ND
1,1,2,2-Tetrachloroethane	0.5	ND	ND
1,2,3-Trichloropropane	0.5	ND	ND
Bromobenzene	0.5	ND	ND
n-Propylbenzene	2	ND	ND
2-Chlorotoluene	2	ND	ND
4-Chlorotoluene	2	ND	ND
1,3,5-Trimethylbenzene	2	ND	ND
tert-Butylbenzene	2	ND	ND
1,2,4-Trimethylbenzene	2	ND	ND
sec-Butylbenzene	2	ND	ND
1,3-Dichlorobenzene	0.5	ND	ND
4-Isopropyltoluene	2	ND	ND
1,4-Dichlorobenzene	0.5	ND	ND
n-Butylbenzene	2	ND	ND
1,2-Dichlorobenzene	0.5	ND	ND
1,2-Dibromo-3-chloropropane (DBCP)	2	ND	ND
1,2,4-Trichlorobenzene	2	ND	ND
1,2,3-Trichlorobenzene	2	ND	ND
Naphthalene	2	ND	ND
Hexachlorobutadiene	2	ND	ND

Approved By: Diane E. Weigel Date: 9/18/97

APPENDIX A

LABORATORY QC RESULTS

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON	**Service Request:**	K9706067
Project:	New City Cleaners/40358-016.004	**Date Collected:**	8/20/97
Sample Matrix:	Water	**Date Received:**	8/22/97
		Date Extracted:	NA
		Date Analyzed:	9/2,3/97

Surrogate Recovery Summary
Total Petroleum Hydrocarbons as Gasoline
Washington DOE Method WTPH-G

Sample Name	Lab Code	Percent Recovery 4-Bromofluorobenzene
MW-B-0897	K9706067-001	83
MW-D-0897	K9706067-002	83
MW-E-0897	K9706067-003	84
MW-1-0897	K9706067-004	83
MW-2-0897	K9706067-005	84
MW-3-0897	K9706067-006	83
MW-4-0897	K9706067-007	83
MW-5-0897	K9706067-008	84
TB-1-0897	K9706067-009	79
MW-4-0897	K9706067-007MS	94
MW-4-0897	K9706067-007DMS	93
Lab Control Sample	K970902-LCS	97
Method Blank	K970902-MB	84

CAS Acceptance Limits: 65-117

Approved By: _____ Date: 9/9/97

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON	**Service Request:**	K9706067
Project:	New City Cleaners/40358-016.004	**Date Collected:**	8/20/97
Sample Matrix:	Water	**Date Received:**	8/22/97
		Date Extracted:	NA
		Date Analyzed:	9/3/97

Matrix Spike/Duplicate Matrix Spike Summary
Total Petroleum Hydrocarbons as Gasoline
Washington DOE Method WTPH-G
Units: µg/L (ppb)

Sample Name: MW-4-0897
Lab Code: K9706067-007MS, K9706067-007DMS

Analyte	Spike Level MS	Spike Level DMS	Sample Result	Spike Result MS	Spike Result DMS	Percent Recovery MS	Percent Recovery DMS	CAS Acceptance Limits	Relative Percent Difference	CAS RPD Acceptance Limit
Gasoline	1000	1000	ND	880	890	88	89	70-121	1	30

Approved By: _____ Date: 9/9/97

00023

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: New City Cleaners/40358-016.004
LCS Matrix: Water

Service Request: K9706067
Date Collected: NA
Date Received: NA
Date Extracted: NA
Date Analyzed: 9/3/97

Laboratory Control Sample Summary
Total Petroleum Hydrocarbons as Gasoline
Washington DOE Method WTPH-G
Units: µg/L (ppb)

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits
Gasoline	1000	840	84	76-138

Approved By: _____ Date: 9/9/97

00024

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: New City Cleaners/40358-016.004
Service Request: K9706067
Date Analyzed: 9/2/97

Initial Calibration Verification (ICV) Summary
Total Petroleum Hydrocarbons as Gasoline

Sample Name: ICV
Lab Code: 0902F002
Test Notes:
Units: ug/L (ppb)
Basis: NA

Analyte	Analysis Method	True Value	Result	Percent Recovery	Result Notes
Gasoline	W-TPHG	2000	2000	100	

Approved By: _____ Date: 9/9/97

00025

LCS/52595
06067VOA.SS2 - ICV 9/8/97

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: New City Cleaners/40358-016.004

Service Request: K9706067
Date Analyzed: 9/2/97

Continuing Calibration Verification (CCV) Summary
Total Petroleum Hydrocarbons as Gasoline

Sample Name: CCV1
Lab Code: 0902F016
Test Notes:

Units: ug/L (ppb)
Basis: NA

Analyte	Analysis Method	True Value	Result	Percent Recovery	Result Notes
Gasoline	W-TPHG	2000	1870	94	

Approved By: _____ Date: 9/9/97

00026

LCS/52595
06067VOA.SS2 - CCV 9/8/97

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: New City Cleaners/40358-016.004
Service Request: K9706067
Date Analyzed: 9/3/97

Continuing Calibration Verification (CCV) Summary
Total Petroleum Hydrocarbons as Gasoline

Sample Name: CCV2
Lab Code: 0902F028
Test Notes:
Units: ug/L (ppb)
Basis: NA

Analyte	Analysis Method	True Value	Result	Percent Recovery	Result Notes
Gasoline	W-TPHG	2000	1900	95	

Approved By: _____ Date: 9/9/97

00027

LCS/52595
06067VOA.SS2 - CCV (2) 9/8/97

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

lient:	EMCON	**Service Request:**	K9706067
Project:	New City Cleaners/40358-016.004	**Date Collected:**	8/20/97
Sample Matrix:	Water	**Date Received:**	8/22/97
		Date Extracted:	8/27/97
		Date Analyzed:	8/28-29/97

Surrogate Recovery Summary
Total Petroleum Hydrocarbons as Diesel

Prep Method:	METHOD	Units:	PERCENT
AnalysisMethod:	W/TPH-D	Basis:	NA

Sample Name	Lab Code	Test Notes	Percent Recovery o-Terphenyl
MW-B-0897	K9706067-001		92
MW-D-0897	K9706067-002		93
MW-E-0897	K9706067-003		92
MW-1-0897	K9706067-004		95
MW-2-0897	K9706067-005		96
MW-3-0897	K9706067-006		92
MW-4-0897	K9706067-007		90
MW-5-0897	K9706067-008		88
MW-4-0897	K9706067-007MS		86
MW-4-0897	K9706067-007DMS		92
.ab Control Sample	K970827-LCS		93
Method Blank	K970827-MB		91

CAS Acceptance Limits: 59-110

Approved By: _____ Date: 9/15/97

00028

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

nt:	EMCON	**Service Request:**	K9706067
ject:	New City Cleaners/40358-016.004	**Date Collected:**	8/20/97
Sample Matrix:	Water	**Date Received:**	8/22/97
		Date Extracted:	8/27/97
		Date Analyzed:	8/29/97

Matrix Spike/Duplicate Matrix Spike Summary
Total Petroleum Hydrocarbons as Diesel

Sample Name:	MW-4-0897	**Units:**	ug/L (ppb)
ab Code:	K9706067-007MS, K9706067-007DMS	**Basis:**	NA
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	Spike Level MS	Spike Level DMS	Sample Result	Spike Result MS	Spike Result DMS	Percent Recovery MS	Percent Recovery DMS	CAS Acceptance Limits	Relative Percent Difference	Result Notes
Diesel	METHOD	W/TPH-D	250	2000	2000	ND	1530	1580	76	79	39-117	3	

Approved By: _____ Date: 9/15/97

DMS/052595

06067PHC.JS1 - WTPHD DMS 9/15/97

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON	**Service Request:**	K9706067
Project:	New City Cleaners/40358-016.004	**Date Collected:**	NA
LCS Matrix:	Water	**Date Received:**	NA
		Date Extracted:	8/27/97
		Date Analyzed:	8/28/97

Laboratory Control Sample Summary
Total Petroleum Hydrocarbons as Diesel

Sample Name:	Lab Control Sample	**Units:**	ug/L (ppb)
Lab Code:	K970827-LCS	**Basis:**	NA
Test Notes:			

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Diesel	METHOD	W/TPH-D	2000	1470	74	46-108	

Approved By: JHP Date: 9/15/97 00030

LCS/52595
06067PHC.JS1 - WTPHD LCS 9/15/97

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON	**Service Request:**	K9706067
Project:	New City Cleaners/40358-016.004	**Date Analyzed:**	8/28/97

Continuing Calibration Verification (CCV) Summary
Total Petroleum Hydrocarbons as Diesel

Sample Name:	CCV1	Units:	mg/L (ppm)
Lab Code:	0828F006	Basis:	NA
Test Notes:			

Analyte	Analysis Method	True Value	Result	Percent Recovery	Result Notes
Diesel	W/TPH-D	1000	948	95	

Approved By: JM Date: 9/15/97

LCS/52595

06067PHC.JS3 - CCV 9/15/97

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: New City Cleaners/40358-016.004

Service Request: K9706067
Date Analyzed: 8/28/97

Continuing Calibration Verification (CCV) Summary
Total Petroleum Hydrocarbons as Diesel

Sample Name: CCV2
Lab Code: 0828F036
Test Notes:

Units: mg/L (ppm)
Basis: NA

Analyte	Analysis Method	True Value	Result	Percent Recovery	Result Notes
Diesel	W/TPH-D	1000	961	96	

Approved By: JMP Date: 9/15/97

00032

LCS/52595

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: New City Cleaners/40358-016.004
Service Request: K9706067
Date Analyzed: 8/28/97

Continuing Calibration Verification (CCV) Summary
Total Petroleum Hydrocarbons as Diesel

Sample Name: CCV3
Lab Code: 0828F066
Test Notes:
Units: mg/L (ppm)
Basis: NA

Analyte	Analysis Method	True Value	Result	Percent Recovery	Result Notes
Diesel	W/TPH-D	1000	958	96	

Approved By: JMH Date: 9/15/97

LCS/52595

06067PHC.JS3 - CCV (3) 9/15/97

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Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: New City Cleaners/40358-016.004
Service Request: K9706067
Date Analyzed: 8/29/97

Continuing Calibration Verification (CCV) Summary
Total Petroleum Hydrocarbons as Diesel

Sample Name: CCV4
Lab Code: 0828F096
Test Notes:
Units: mg/L (ppm)
Basis: NA

Analyte	Analysis Method	True Value	Result	Percent Recovery	Result Notes
Diesel	W/TPH-D	1000	963	96	

Approved By: JMP Date: 9/15/97

00034

LCS/52595

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: New City Cleaners/40358-016.004

Service Request: K9706067
Date Analyzed: 8/28/97

Continuing Calibration Blank (CCB) Summary
Total Petroleum Hydrocarbons as Diesel

Sample Name: CCB1
Lab Code: 0828F012
Test Notes:

Units: ug/L (ppb)
Basis: NA

Analyte	Analysis Method	MRL	Result	Result Notes
Diesel	W/TPH-D	250	ND	

Approved By: _____ Date: 9/15/97

00035

LCS/52595

06067PHC.JS3 - CCB 9/15/97

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: New City Cleaners/40358-016.004

Service Request: K9706067
Date Analyzed: 8/28/97

Continuing Calibration Blank (CCB) Summary
Total Petroleum Hydrocarbons as Diesel

Sample Name: CCB2
Lab Code: 0828F042
Test Notes:

Units: ug/L (ppb)
Basis: NA

Analyte	Analysis Method	MRL	Result	Result Notes
Diesel	W/TPH-D	250	ND	

Approved By: _____ Date: 9/15/97

00036

LCS/52595

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: New City Cleaners/40358-016.004

Service Request: K9706067
Date Analyzed: 8/28/97

Continuing Calibration Blank (CCB) Summary
Total Petroleum Hydrocarbons as Diesel

Sample Name: CCB3
Lab Code: 0828F072
Test Notes:

Units: ug/L (ppb)
Basis: NA

Analyte	Analysis Method	MRL	Result	Result Notes
Diesel	W/TPH-D	250	ND	

Approved By: JHP Date: 9/15/97 00037

LCS/52595

06067PHC.JS3 - CCB (3) 9/15/97

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: New City Cleaners/40358-016.004

Service Request: K9706067
Date Analyzed:

Continuing Calibration Blank (CCB) Summary
Total Petroleum Hydrocarbons as Diesel

Sample Name: CCB4
Lab Code: NA
Test Notes:

Units: ug/L (ppb)
Basis: NA

Analyte	Analysis Method	MRL	Result	Result Notes
Diesel	W/TPH-D	250	ND	

Approved By: JM Date: 9/15/97

00038

LCS/52595

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: New City Cleaners/40358-016.004
Sample Matrix: Water

Service Request: K9706067
Date Collected: 8/20/97
Date Received: 8/22/97
Date Extracted: NA
Date Analyzed: 9/3-8/97

Surrogate Recovery Summary
Volatile Organic Compounds
EPA Method 8260A

Sample Name	Lab Code	Percent Recovery Dibromofluoromethane	Toluene-d_8	4-Bromofluorobenzene
MW-B-0897	K9706067-001	102	100	102
MW-D-0897	K9706067-002	106	101	104
MW-E-0897	K9706067-003	104	100	102
MW-1-0897	K9706067-004	104	101	104
MW-2-0897	K9706067-005	107	100	103
MW-3-0897	K9706067-006	102	101	101
MW-4-0897	K9706067-007	104	100	103
MW-5-0897	K9706067-008	106	101	104
TB-1-0897	K9706067-009	104	100	102
MW-4-0897	K9706067-007MS	102	101	100
MW-4-0897	K9706067-007DMS	98	98	95
Lab Control Sample	K970903-LCS	102	101	107
Method Blank	K970903-MB	100	100	103
Method Blank	K970908-MB	99	99	99
CAS Acceptance Limits:		86-118	88-110	86-115

Approved By: Diane E. Wiegel Date: 9/18/97

00039

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: New City Cleaners/40358-016.004
Sample Matrix: Water

Service Request: K9706067
Date Collected: 8/20/97
Date Received: 8/22/97
Date Extracted: NA
Date Analyzed: 9/8/97

Matrix Spike/Duplicate Matrix Spike Summary
Volatile Organic Compounds
EPA Method 8260A
Units: µg/L (ppb)

Sample Name: MW-4-0897
Lab Code: K9706067-007MS, K9706067-007DMS

Analyte	Spike Level MS	Spike Level DMS	Sample Result	Spike Result MS	Spike Result DMS	Percent Recovery MS	Percent Recovery DMS	CAS Acceptance Limits	Relative Percent Difference
1,1-Dichloroethene	10	10	ND	11	11	110	110	83-112	<1
Benzene	10	10	ND	11	11	110	110	85-116	<1
Trichloroethene	10	10	1.0	12	12	110	110	84-113	<1
Toluene	10	10	ND	11	11	110	110	89-112	<1
Chlorobenzene	10	10	ND	10	10	100	100	86-113	<1
1,2-Dichlorobenzene	10	10	ND	9.8	10	98	100	87-115	2
Naphthalene	10	10	ND	9.6	10	96	100	65-151	4

Approved By: Diane E. Weigel Date: 9/18/97

00040

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: New City Cleaners/40358-016.004
LCS Matrix: Water

Service Request: K9706067
Date Collected: NA
Date Received: NA
Date Extracted: NA
Date Analyzed: 9/3/97

Laboratory Control Sample Summary
Volatile Organic Compounds
EPA Method 8260A
Units: µg/L (ppb)

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits
1,1-Dichloroethene	10	10	100	77-123
Benzene	10	9.7	97	86-115
Trichloroethene	10	9.9	99	84-120
Toluene	10	9.8	98	86-116
Chlorobenzene	10	9.5	95	88-114
1,2-Dichlorobenzene	10	9.6	96	83-119
Naphthalene	10	11	110	65-152

Approved By: Diane E. Wiegel Date: 9/18/97

00041

APPENDIX B

CHAIN OF CUSTODY INFORMATION

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

Columbia Analytical Services™ 1317 South 13th Ave. • Kelso, WA 98626 • (360) 577-7222 • (800) 695-7222 • FAX (360) 636-1068

DATE Aug. 21, 1997 PAGE 1 OF 1

00043

PROJECT NAME New City Cleaners # 40358-016.004

PROJECT MANAGER Rob Lindsay

COMPANY/ADDRESS EMCON

W. 7106 Allon Ln., #101 Spokane, WA 99224

FAX 509 838-1382 PHONE 509 838-1144

SAMPLERS SIGNATURE John Latta

SAMPLE I.D.	DATE	TIME	LAB I.D.	SAMPLE MATRIX	NUMBER OF CONTAINERS	Base/Neu/Acid Organics GC/MS 625/8270	Volatile Organics GC/MS 624/8240	Halogenated or Aromatic Volatiles 601/8010 ☐ 602/8020 ☐	Pesticides/PCBs 608/8080	Total Petroleum Hydrocarbons EPA/418.1 ☐ OR/418.1 ☐ WA/418.1 ☐	TPH(Gas/BTEX 5030/8015/8020 Gas X BTEX ☐ WA	TPH/8015 Modified Diesel X Hydrocarbon WA	TPH/HCID ☐ WA/HCID ☐ OR/HCID ☐ Scan ☐	TCLP Metals ☐ VOA ☐ Semi Pest/ VOA ☐ Herb ☐	Metals (total or dissolved) List Below	Cyanide	pH. Cond. Cl. SO_4. PO_4. F. Br NO_2. NO_3. (circle)	NH_3-N. COD. Total-P. TKN. TOC (circle)	Total Organic Halides (TOX) 9020 ☐ (AOX) 1650A ☐	8260		REMARKS
MW-B-0897	8/20/97	1655	1	Water	7						X	X								X		
MW-D-0897	8/20/97	1407	2	"	7						X	X								X		
MW-E-0897	8/20/97	1245	3	"	7						X	X								X		
MW-1-0897	8/20/97	1714	4	"	7						X	X								X		
MW-2-0897	8/20/97	1454	5	"	7						X	X								X		
MW-3-0897	8/20/97	1623	6	"	7						X	X								X		
MW-4-0897	8/20/97	1550	7	"	14						X	X								X		
MW-5-0897	8/20/97	1137	8	"	7						X	X								X		
TB-1-0897	8/20/97	—	9	"	4						X									X		

RELINQUISHED BY:
Signature: John Latta
Printed Name: John Latta
Firm: EMCON
Date/Time: 8/21/97 9AM

RECEIVED BY:
Signature:
Printed Name:
Firm: FEDEX
Date/Time: PU # 36

TURNAROUND REQUIREMENTS
___ 24 hr ___ 48 hr. ___ 5 day
___ Standard (10-15 working days)
___ Provide Verbal Preliminary Results
___ Provide FAX preliminary Results
Requested Report Date: ___

REPORT REQUIREMENTS
___ I. Routine Report
___ II. Report (includes DUP MS. MSD, as required, may be charged as samples)
X III. Data Validation Report (includes All Raw Data)
___ IV. CLP Deliverable Report

INVOICE INFORMATION:
P.O.#
Bill To

SAMPLE RECEIPT:
Shipping VIA:
Shipping #:
Condition:
Lab No: K97-6067

RELINQUISHED BY:
Signature:
Printed Name:
Firm:
Date/Time:

RECEIVED BY:
Signature: Lori K. Ham
Printed Name: Lori K. Ham
Firm: CAS
Date/Time: 082297 1030

SPECIAL INSTRUCTIONS/COMMENTS:

TRIBL___ WH___ stum___ ator; ___ OW - I___ INK - ___ d by c___ or ___ 40

APPENDIX E

SURVEY DATA, WELL DEVELOPMENT DATA

1"=30'

30 15 0 30 60 90

SCALE IN FEET

ELEVATION TABLE (5/97)

BORING	ELEVATION	TOP PVC
MW-1		355.70'
MW-2 3		356.19'
MW-8 2		355.67'
MW-4		356.39'
SB-1	355.3'	
SB-2	355.4'	
WELL "E"		354.40'
WELL "D"		354.74'
WATER LEVEL OF DITCH: 5/08/97 = 346.96'		

ELEVATION TABLE (3/97)

BORING	ELEVATION	TOP PVC
A-1		
A-6		
I-3		
I-8		
GP-1	355.16'	
GP-2	355.15'	
GP-3	355.79'	
GP-4	355.95'	
GP-5	355.86'	356.52'
GP-6	355.52'	
GP-7	355.44'	356.89'
GP-8	355.42'	
GP-9	356.42'	
GP-10	355.56'	
WATER LEVEL OF DITCH: 3/13/97 = 347.21'		

STEVENS DRIVE

40'

GARY B. WAGNER
STATE OF WASHINGTON
30440
REGISTERED
PROFESSIONAL LAND SURVEYOR
EXPIRES 11-08-97

LEGEND

- = MONITOR WELL
- A-6 = BORING LOCATION
- = RSI CONTROL
- = WATER LEVEL
- = FENCE

MW-1 Development

FIELD SAMPLING DATA SHEET

EMCON
W 7106 Will D. Alton Lane, Suite 101
Spokane, Washington 99224
Office: (509) 838-1144 Fax: (509) 838-1382

PROJECT NAME: New City Cleaners **WELL ID:** MW-1

SITE ADDRESS: 747 Stevens Drive Richland **BLIND ID:**

DUP ID: NA

WIND FROM:	N	NE	E	SE	S	SW	W	NW	LIGHT	MEDIUM	HEAVY
WEATHER:	SUNNY		CLOUDY		RAIN		?		TEMPERATURE:	°F . °C	

(Circle appropriate units)

HYDROLOGY/LEVEL MEASUREMENTS (Nearest 0.01 ft) (Product Thickness) (Water Column) (Water Column x Gal/ft)

Date	Time	DT-Bottom	DT-Product	DT-Water	DTP-DTW	DTB-DTW		Volume (gal)
5/2/91	8:03	.	~~8.03~~	8.03	.	.	X 1	.
/ /	:	.	.	.	.		X 3	.

Gal/ft = (dia./2)² x 0.163	1" = 0.041	2" = 0.163	3" = 0.367	4" = 0.653	6" = 1.469	10" = 4.080	12" = 5.875

§ METHODS: (A) Submersible Pump (B) Peristaltic Pump (C) Disposable Bailer (D) PVC/Teflon Bailer (E) Dedicated Bailer (F) Dedicated Pump (G) Other =

N/A

GROUNDWATER SAMPLING DATA (if product is detected, do NOT sample) Sample Depth: (√ if used)

Bottle Type	Date	Time	Method §	Amount & Volume mL	Preservative (circle)	Ice	Filter	pH	√
VOA Glass	/ /	:		3	40 ml HCl	YES	NO		
Amber Glass	/ /	:			250, 500, 1L (None) (HCl) (H_2SO_4)	YES	NO		
White Poly	/ /	:			250, 500, 1L None	YES	NO	NA	
Yellow Poly	/ /	:			250, 500, 1L H_2SO_4	YES	NO		
Green Poly	/ /	:			250, 500, 1L NaOH	YES	NO		
Red Total Poly	/ /	:			250, 500, 1L HNO_3	YES	NO		
Red Diss. Poly	/ /	:			250, 500, 1L HNO_3	YES	YES		
	/ /	:			250, 500, 1L	YES			
	Total Bottles (include duplicate count):								

Analysis Allowed per Bottle Type	BOTTLE TYPE	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)
	VOA - Glass	(8010) (8010/8020) (8020) (8240) (8260) (BTEX) (TPH-G) (BTEX/TPH-G) OR [ ] WA [ ]
	AMBER - Glass	(PAH) (TPH-HCID) (TPH-D) (TPH-418.1) (Oil &Grease) OR [ ] WA [ ]
	WHITE - Poly	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO_3/CO_3) (Cl) (SO_4) (NO_3) (NO_2) (F)
	YELLOW - Poly	(COD) (TOC) (Total PO_4) (Total Keldahl Nitrogen) (NH_3) (NO_3/NO_2)
	GREEN - Poly	(Cyanide)
	RED TOTAL - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)
	RED DISSOLVED - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silica)

N/A

WATER QUALITY DATA Purge Start Time: : Pump/Bailer Inlet Depth:

Meas.	Method §	Purged (gal)	pH	E Cond (µS)	°F Temp °C	Other	Diss O_2 (mg/l)	Water Quality
4		.	.		.		.	
3		.	.		.		.	
2		.	.		.		.	
1		.	.		.		.	
0		0.00	.		.		.	

[Casing] [Select A-G] [Cumulative Totals] [Circle units] [Clarity, Color]

2: pumped approx 50 gallons from well with a Brainard-Kilman pump. Development by Environmental West personnel. H_2O to drums on-site.

SAMPLER: N. Garson

(PRINTED NAME) (SIGNATURE)

MW-2 Development

FIELD SAMPLING DATA SHEET

EMCON
W 7106 Will D. Alton Lane, Suite 101
Spokane, Washington 99224
Office: (509) 838-1144 Fax: (509) 838-1382

PROJECT NAME: New City Cleaners **WELL ID:** MW-2

SITE ADDRESS: 747 Stevens Drive **BLIND ID:**

DUP ID: NA

WIND FROM:	N	NE	E	SE	S	SW	W	NW	LIGHT	MEDIUM	HEAVY
WEATHER:	SUNNY		CLOUDY		RAIN		?		TEMPERATURE:	°F . °C	

(Circle appropriate units)

HYDROLOGY/LEVEL MEASUREMENTS (Nearest 0.01 ft) [Product Thickness] [Water Column] [Water Column x Gal/ft]

Date	Time	DT-Bottom	DT-Product	DT-Water	DTP-DTW	DTB-DTW		Volume (gal)
5/2/97	8:18	.	.	8.18	.	.	X 1	.
5/1/97	15:05	.	.	8.2	.		X 3	.

Gal/ft = (dia./2)² x 0.163	1" = 0.041	2" = 0.163	3" = 0.367	4" = 0.653	6" = 1.469	10" = 4.080	12" = 5.875

§ METHODS: (A) Submersible Pump (B) Peristaltic Pump (C) Disposable Bailer (D) PVC/Teflon Bailer (E) Dedicated Bailer (F) Dedicated Pump (G) Other =

N/A **GROUNDWATER SAMPLING DATA** (if product is detected, do NOT sample) Sample Depth: (√ if used)

Bottle Type	Date	Time	Method §	Amount & Volume mL	Preservative (circle)	Ice	Filter	pH	√
VOA Glass	/ /	:		3	40 ml HCl	YES	NO		
Amber Glass	/ /	:			250, 500, 1L (None) (HCl) (H_2SO_4)	YES	NO		
White Poly	/ /	:			250, 500, 1L None	YES	NO	NA	
Yellow Poly	/ /	:			250, 500, 1L H_2SO_4	YES	NO		
Green Poly	/ /	:			250, 500, 1L NaOH	YES	NO		
Red Total Poly	/ /	:			250, 500, 1L HNO_3	YES	NO		
Red Diss. Poly	/ /	:			250, 500, 1L HNO_3	YES	YES		
	/ /	:			250, 500, 1L	YES			

Total Bottles (include duplicate count):

Analysis Allowed per Bottle Type	BOTTLE TYPE	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)
	VOA - Glass	(8010) (8010/8020) (8020) (8240) (8260) (BTEX) (TPH-G) (BTEX/TPH-G) OR [ ] WA [ ]
	AMBER - Glass	(PAH) (TPH-HCID) (TPH-D) (TPH-418.1) (Oil &Grease) OR [ ] WA [ ]
	WHITE - Poly	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO_3/CO_3) (Cl) (SO_4) (NO_3) (NO_2) (F)
	YELLOW - Poly	(COD) (TOC) (Total PO_4) (Total Keldahl Nitrogen) (NH_3) (NO_3/NO_2)
	GREEN - Poly	(Cyanide)
	RED TOTAL - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)
	RED DISSOLVED - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silica)

N/A **WATER QUALITY DATA** Purge Start Time: : Pump/Bailer Inlet Depth:

Meas.	Method §	Purged (gal)	pH	E Cond (µS)	°F Temp °C	Other	Diss O_2 (mg/l)	Water Quality
4		.	.		.		.	
3		.	.		.		.	
2		.	.		.		.	
1		.	.		.		.	
0		0.00	.		.		.	

[Casing] [Select A-G] [Cumulative Totals] [Circle units] [Clarity, Color]

1: Pumped approximately 50 gallons from MW-2 with Brainard-Kilman pump. Development by Environmental West personnel. H2O to drums on site

SAMPLER: N. Barson

(PRINTED NAME) (SIGNATURE)

MW-3 development

FIELD SAMPLING DATA SHEET

EMCON
W 7106 Will D. Alton Lane, Suite 101
Spokane, Washington 99224
Office: (509) 838-1144 Fax: (509) 838-1382

PROJECT NAME: New City Cleaners **WELL ID:** MW-3

SITE ADDRESS: 747 Stevens, Richland **BLIND ID:**

DUP ID: NA

WIND FROM:	N	NE	E	SE	S	SW	W	NW	LIGHT	MEDIUM	HEAVY
WEATHER:	SUNNY		CLOUDY		RAIN		?		**TEMPERATURE:**	°F . °C	

(Circle appropriate units)

HYDROLOGY/LEVEL MEASUREMENTS (Nearest 0.01 ft)

Date	Time	DT-Bottom	DT-Product	DT-Water	[Product Thickness] DTP-DTW	[Water Column] DTB-DTW		[Water Column x Gal/ft] Volume (gal)
5/2/97	9:45	.	.	8.84	.	.	X 1	.
5/1/97	15:05	.	.	8.8	.		X 3	.

Gal/ft = (dia./2)² x 0.163	1" =	0.041	2" =	0.163	3" =	0.367	4" =	0.653	6" =	1.469	10" =	4.080	12" =	5.875

§ METHODS: (A) Submersible Pump (B) Peristaltic Pump (C) Disposable Bailer (D) PVC/Teflon Bailer (E) Dedicated Bailer (F) Dedicated Pump (G) Other =

N/A

GROUNDWATER SAMPLING DATA (if product is detected, do NOT sample) Sample Depth: [√ if used]

Bottle Type	Date	Time	Method §	Amount & Volume mL	Preservative (circle)	Ice	Filter	pH	√
VOA Glass	/ /	:		3	40 ml HCl	YES	NO		
Amber Glass	/ /	:			250, 500, 1L (None) (HCl) (H_2SO_4)	YES	NO		
White Poly	/ /	:			250, 500, 1L None	YES	NO	NA	
Yellow Poly	/ /	:			250, 500, 1L H_2SO_4	YES	NO		
Green Poly	/ /	:			250, 500, 1L NaOH	YES	NO		
Red Total Poly	/ /	:			250, 500, 1L HNO_3	YES	NO		
Red Diss. Poly	/ /	:			250, 500, 1L HNO_3	YES	YES		
	/ /	:			250, 500, 1L	YES			
		Total Bottles (include duplicate count):							

Analysis Allowed per Bottle Type	BOTTLE TYPE	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)
	VOA - Glass	(8010) (8010/8020) (8020) (8240) (8260) (BTEX) (TPH-G) (BTEX/TPH-G) OR [ ] WA [ ]
	AMBER - Glass	(PAH) (TPH-HCID) (TPH-D) (TPH-418.1) (Oil &Grease) OR [ ] WA [ ]
	WHITE - Poly	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO_3/CO_3) (Cl) (SO_4) (NO_3) (NO_2) (F)
	YELLOW - Poly	(COD) (TOC) (Total PO_4) (Total Kjeldahl Nitrogen) (NH_3) (NO_3/NO_2)
	GREEN - Poly	(Cyanide)
	RED TOTAL - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)
	RED DISSOLVED - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silica)

N/A

WATER QUALITY DATA Purge Start Time: : Pump/Bailer Inlet Depth:

Meas.	Method §	Purged (gal)	pH	E Cond (µS)	°F Temp °C	Other	Diss O_2 (mg/l)	Water Quality
4		.	.		.		.	
3		.	.		.		.	
2		.	.		.		.	
1		.	.		.		.	
0		0.00	.		.		.	

[Casing] [Select A-G] [Cumulative Totals] [Circle units] [Clarity, Color]

11: Pumped approximately 50-gallons of H_2O from MW-3 with Braichard-Kilman pump. Development by Environmental West personnel. H_2O to drums on site.

SAMPLER: N. Garson

(PRINTED NAME) (SIGNATURE)

MW-4 Development

FIELD SAMPLING DATA SHEET

EMCON
W 7106 Will D. Alton Lane, Suite 101
Spokane, Washington 99224
Office: (509) 838-1144 Fax: (509) 838-1382

PROJECT NAME: New City Cleaners **WELL ID:** MW-4

SITE ADDRESS: 747 Stevens Drive **BLIND ID:**

DUP ID: NA

WIND FROM:	N	NE	E	SE	S	SW	W	NW	LIGHT	MEDIUM	HEAVY
WEATHER:	SUNNY		CLOUDY		RAIN		?		TEMPERATURE:	°F . °C	

(Circle appropriate units)

HYDROLOGY/LEVEL MEASUREMENTS (Nearest 0.01 ft) [Product Thickness] [Water Column] [Water Column x Gal/ft]

Date	Time	DT-Bottom	DT-Product	DT-Water	DTP-DTW	DTB-DTW		Volume (gal)
5/2/97	9:45	.	.	9.27	.	.	X 1	.
5/1/97	15:05	.	.	9.3	.		X 3	.

Gal/ft = (dia./2)² x 0.163	1" = 0.041	2" = 0.163	3" = 0.367	4" = 0.653	6" = 1.469	10" = 4.080	12" = 5.875

§ METHODS: (A) Submersible Pump (B) Peristaltic Pump (C) Disposable Bailer (D) PVC/Teflon Bailer (E) Dedicated Bailer (F) Dedicated Pump (G) Other =

N/A **GROUNDWATER SAMPLING DATA** (if product is detected, do NOT sample) Sample Depth: [√ if used]

Bottle Type	Date	Time	Method §	Amount & Volume mL	Preservative (circle)	Ice	Filter	pH	√
VOA Glass	/ /	:		3	40 ml HCl	YES	NO		
Amber Glass	/ /	:			250, 500, 1L (None) (HCl) (H_2SO_4)	YES	NO		
White Poly	/ /	:			250, 500, 1L None	YES	NO	NA	
Yellow Poly	/ /	:			250, 500, 1L H_2SO_4	YES	NO		
Green Poly	/ /	:			250, 500, 1L NaOH	YES	NO		
Red Total Poly	/ /	:			250, 500, 1L HNO_3	YES	NO		
Red Diss. Poly	/ /	:			250, 500, 1L HNO_3	YES	YES		
	/ /	:			250, 500, 1L	YES			

Total Bottles (include duplicate count):

Analysis Allowed per Bottle Type	BOTTLE TYPE	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)
	VOA - Glass	(8010) (8010/8020) (8020) (8240) (8260) (BTEX) (TPH-G) (BTEX/TPH-G) OR [ ] WA [ ]
	AMBER - Glass	(PAH) (TPH-HCID) (TPH-D) (TPH-418.1) (Oil &Grease) OR [ ] WA [ ]
	WHITE - Poly	(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO_3/CO_3) (Cl) (SO_4) (NO_3) (NO_2) (F)
	YELLOW - Poly	(COD) (TOC) (Total PO_4) (Total Kjeldahl Nitrogen) (NH_3) (NO_3/NO_2)
	GREEN - Poly	(Cyanide)
	RED TOTAL - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)
	RED DISSOLVED - Poly	(As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silica)

N/A **WATER QUALITY DATA** Purge Start Time: : Pump/Bailer Inlet Depth:

Meas.	Method §	Purged (gal)	pH	E Cond (µS)	°F Temp °C	Other	Diss O_2 (mg/l)	Water Quality
4		.	.		.		.	
3		.	.		.		.	
2		.	.		.		.	
1		.	.		.		.	
0		0.00	.		.		.	

(Casing) (Select A-G) (Cumulative Totals) (Circle units) (Clarity, Color)

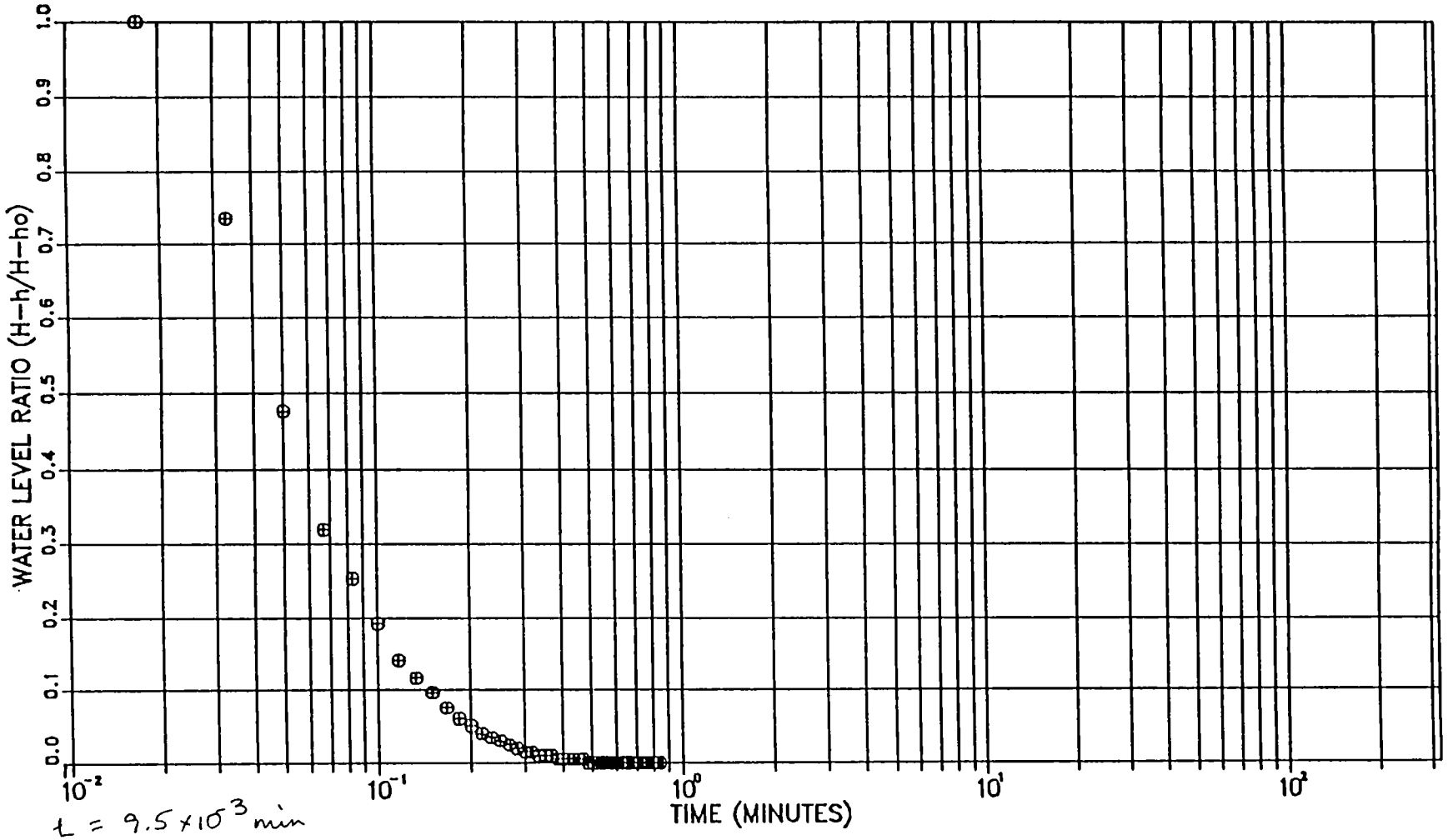
5/1: Pumped ~50-gallons from MW-4 w/ Brainard-Kilman pump. Development by Environmental West personnel. H_2O to drums on-site.

SAMPLER: N. Garson.

(PRINTED NAME) (SIGNATURE)

APPENDIX F

HYDRAULIC TESTING DATA

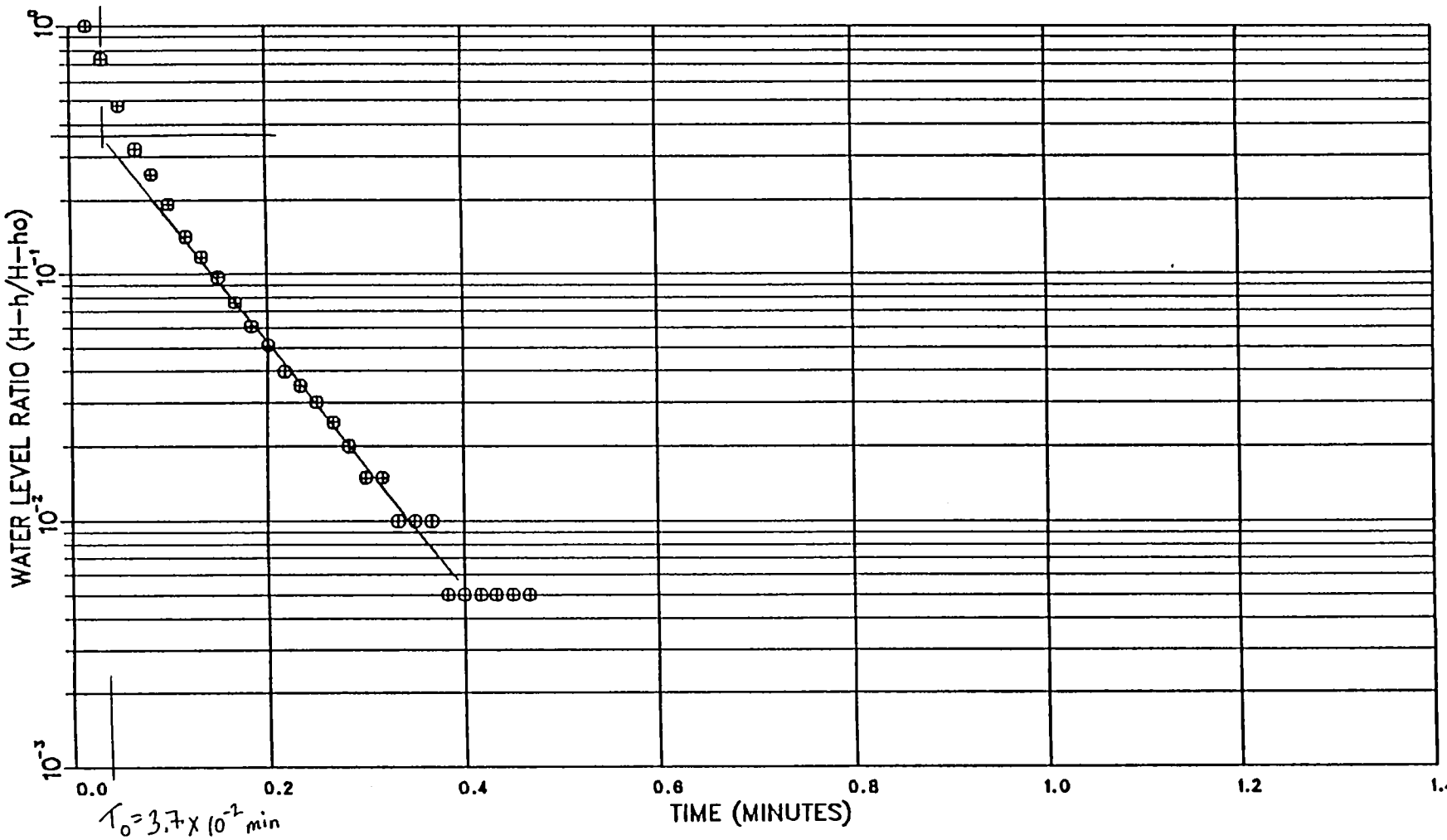


HYDROLOGIC TESTING
NEW CITY CLEANERS
RICHLAND, WASHINGTON

Cooper — ~~WATT~~ MW-4 RISING HEAD TEST

Figure

PROJECT NO.
0358-016.00



HYDROLOGIC TESTING
NEW CITY CLEANERS
RICHLAND, WASHINGTON

Hvorslev ~~W4T1~~ MW-4 RISING HEAD TE:

Figure

PROJECT NO.
40358-016.004

Date	Wednesday November 12, 1997 3:19 PM				
PlotFile	C:\TERRA\NCMW4R01.PRN				
DataFile	C:\TERRA\NCMW4RH1.RAW				
ncmw4rh1					
Date	Time	DTW (ft)	H-h	H-Ho	H-h/H-Ho
11/12/97	15:15:22	13.26	0.00	4.549	0.000
11/12/97	15:15:23	13.26	0.00	4.549	0.000
11/12/97	15:15:24	13.26	0.00	4.549	0.000
11/12/97	15:15:25	8.71	4.55	4.549	1.000
11/12/97	15:15:26	9.91	3.35	4.549	0.736
11/12/97	15:15:27	11.09	2.17	4.549	0.477
11/12/97	15:15:28	11.80	1.46	4.549	0.320
11/12/97	15:15:29	12.10	1.16	4.549	0.254
11/12/97	15:15:30	12.38	0.88	4.549	0.193
11/12/97	15:15:31	12.61	0.65	4.549	0.142
11/12/97	15:15:32	12.73	0.53	4.549	0.117
11/12/97	15:15:33	12.82	0.44	4.549	0.097
11/12/97	15:15:34	12.91	0.35	4.549	0.076
11/12/97	15:15:35	12.98	0.28	4.549	0.061
11/12/97	15:15:36	13.03	0.23	4.549	0.051
11/12/97	15:15:37	13.08	0.18	4.549	0.040
11/12/97	15:15:38	13.10	0.16	4.549	0.035
11/12/97	15:15:39	13.12	0.14	4.549	0.030
11/12/97	15:15:40	13.14	0.12	4.549	0.025
11/12/97	15:15:41	13.17	0.09	4.549	0.020
11/12/97	15:15:42	13.19	0.07	4.549	0.015
11/12/97	15:15:43	13.19	0.07	4.549	0.015
11/12/97	15:15:44	13.21	0.05	4.549	0.010
11/12/97	15:15:45	13.21	0.05	4.549	0.010
11/12/97	15:15:46	13.21	0.05	4.549	0.010
11/12/97	15:15:47	13.24	0.02	4.549	0.005
11/12/97	15:15:48	13.24	0.02	4.549	0.005
11/12/97	15:15:49	13.24	0.02	4.549	0.005
11/12/97	15:15:50	13.24	0.02	4.549	0.005
11/12/97	15:15:51	13.24	0.02	4.549	0.005
11/12/97	15:15:52	13.24	0.02	4.549	0.005
11/12/97	15:15:53	13.26	0.00	4.549	0.000
11/12/97	15:15:54	13.26	0.00	4.549	0.000
11/12/97	15:15:55	13.26	0.00	4.549	0.000
11/12/97	15:15:56	13.26	0.00	4.549	0.000
11/12/97	15:15:57	13.26	0.00	4.549	0.000
11/12/97	15:15:58	13.26	0.00	4.549	0.000
11/12/97	15:15:59	13.26	0.00	4.549	0.000
11/12/97	15:16:00	13.26	0.00	4.549	0.000
11/12/97	15:16:01	13.26	0.00	4.549	0.000
11/12/97	15:16:02	13.26	0.00	4.549	0.000
11/12/97	15:16:03	13.26	0.00	4.549	0.000
11/12/97	15:16:04	13.28	-0.02	4.549	-0.005
11/12/97	15:16:05	13.26	0.00	4.549	0.000
11/12/97	15:16:06	13.26	0.00	4.549	0.000

11/12/97	15:16:07	13.26	0.00	4.549	0.000
11/12/97	15:16:08	13.26	0.00	4.549	0.000
11/12/97	15:16:09	13.26	0.00	4.549	0.000
11/12/97	15:16:10	13.26	0.00	4.549	0.000
11/12/97	15:16:11	13.28	-0.02	4.549	-0.005
11/12/97	15:16:12	13.26	0.00	4.549	0.000
11/12/97	15:16:13	13.26	0.00	4.549	0.000
11/12/97	15:16:14	13.26	0.00	4.549	0.000

COMPUTATION SHEET

PROJECT TITLE: _____ PROJECT NO: _____

DESCRIPTION: ~~Test~~ Cooper SHEET _____ OF _____

REP. BY: _____ DATE: _____ CHKD BY: _____ DATE: _____

~~WTTI~~

MW-4 $T = \frac{1.0\, r^2}{t}$

$r = 0.083$ ft

$t = 9.5 \times 10^{-3}$ min

$b = 15$ ft

$$T = \frac{(0.083\text{ft})^2}{9.5 \times 10^{-3}\text{ min}} = 7.25 \times 10^{-1}\ \text{ft}^2/\text{min}$$

$$= (7.25 \times 10^{-1}\ \text{ft}^2/\text{min})(1\ \text{min}/60\ \text{sec})\left(\frac{144\ \text{in}^2}{1\ \text{ft}^2}\right)\left(\frac{6.452\ \text{cm}^2}{1\ \text{in}^2}\right)$$

$$= 11.2\ \text{cm}^2/\text{sec}$$

$$= (11.2\ \text{cm}^2/\text{sec}/\text{cm})\left(\frac{1\ \text{in}^3}{16.39\ \text{cm}^3}\right)\left(\frac{1\ \text{gal}}{231\ \text{in}^3}\right)\left(\frac{60\ \text{sec}}{1\ \text{min}}\right)\left(\frac{60\ \text{min}}{1\ \text{hr}}\right)$$

$$\times\left(\frac{24\ \text{hr}}{1\ \text{day}}\right)\left(\frac{100\ \text{cm}}{1\ \text{m}}\right)\left(\frac{1\ \text{m}}{3.281\ \text{ft}}\right)$$

$T = 7.79 \times 10^3$ gallons/day/ft

$$K_{b=15} = \left(\frac{11.2\ \text{cm}^2/\text{sec}}{15\ \text{ft}}\right)\left(\frac{3.281\ \text{ft}}{1\ \text{m}}\right)\left(\frac{1\ \text{m}}{100\ \text{cm}}\right)$$

$K_{b=15} = 2.5 \times 10^{-2}$ cm/sec

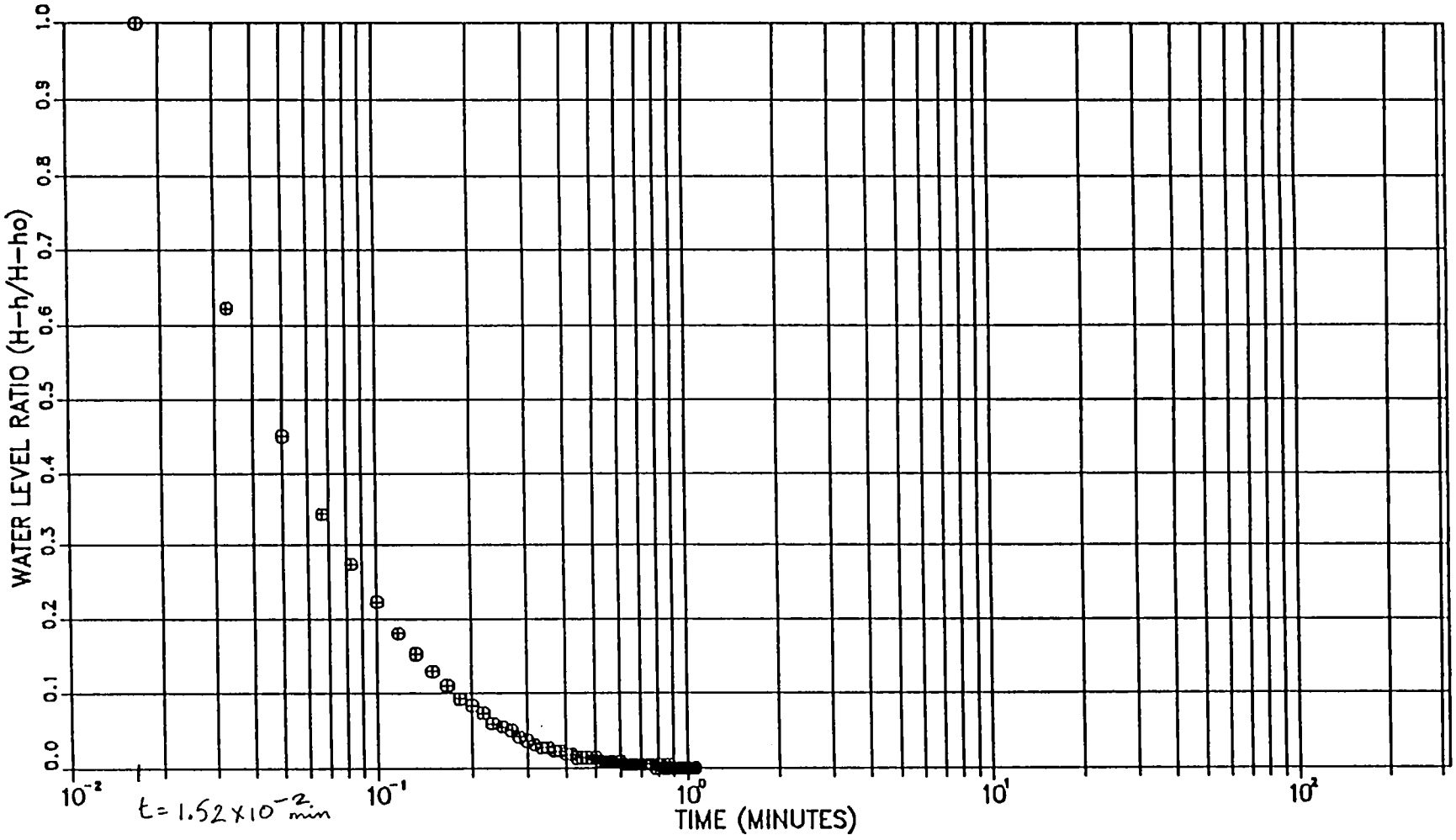
if $b = 40$ ft

$$K_{b=40\ \text{ft}} = \left(\frac{11.2\ \text{cm}^2/\text{sec}}{40\ \text{ft}}\right)\left(\frac{3.281\ \text{ft}}{1\ \text{m}}\right)\left(\frac{1\ \text{m}}{100\ \text{cm}}\right)$$

$K_{b=40} = 9.2 \times 10^{-3}$ cm/sec

EMCON

Form DR001

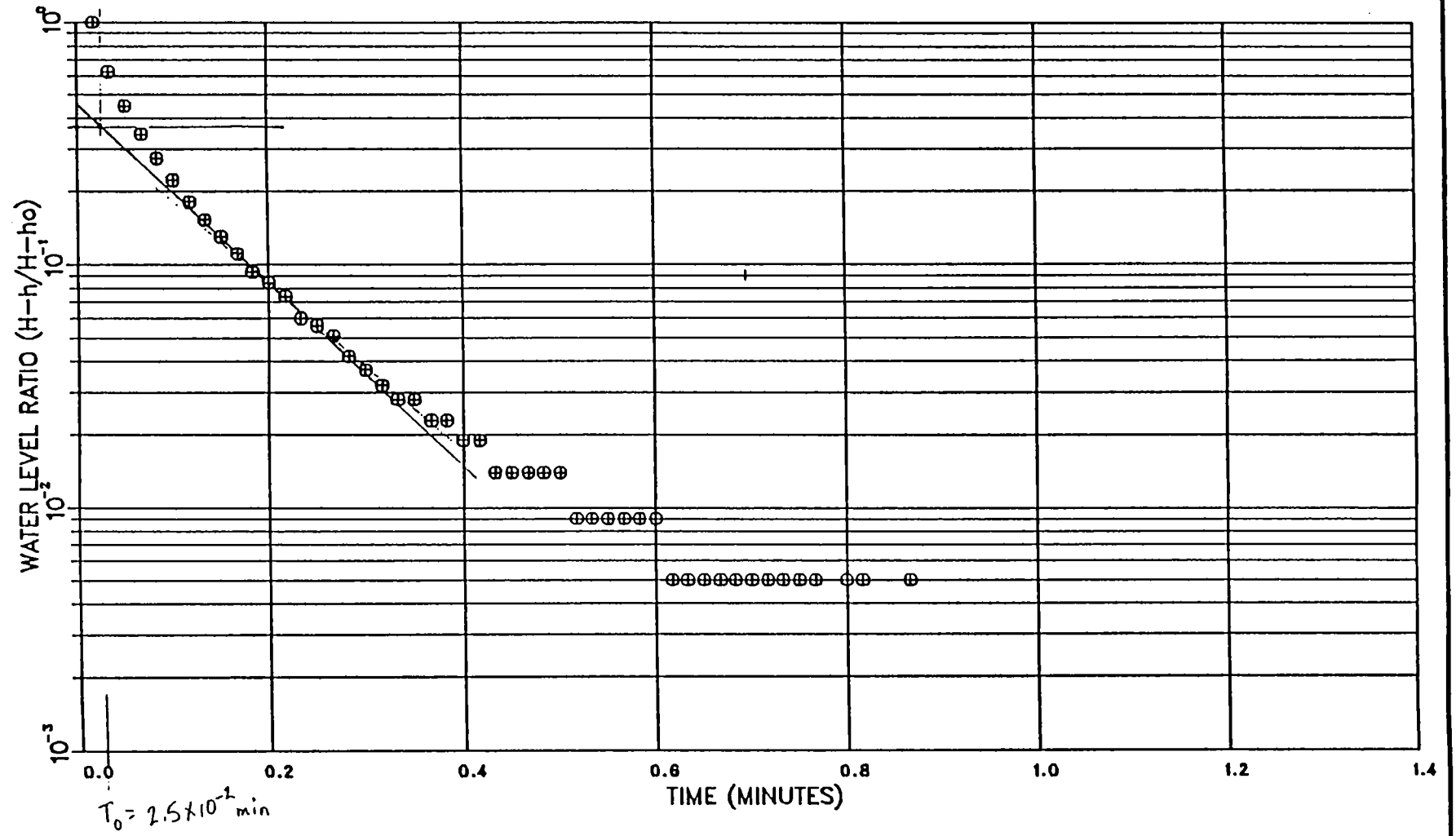


HYDROLOGIC TESTING
NEW CITY CLEANERS
RICHLAND, WASHINGTON

Cooper ~~WIT3~~ MW-1 RISING HEAD TEST

Figure

PROJECT NO.
0358-016.00



HYDROLOGIC TESTING
NEW CITY CLEANERS
RICHLAND, WASHINGTON

Hvorslev ~~W1T3~~ MW-1 RISING HEAD TEST

Figure

PROJECT NO.
40358-016.004

Date Monday November 17, 1997 12:28 PM					
PlotFile C:\TERRA\NCMW3R01.PRN					
DataFile C:\TERRA\NCMW1RH3.RAW					
ncmw1rh3					
Date	Time	DTW (ft)	H-h	H-Ho	H-h/H-Ho
11/12/97	13:24:17	14.21	0.00	4.97	0.000
11/12/97	13:24:18	14.21	0.00	4.97	0.000
11/12/97	13:24:19	14.21	0.00	4.97	0.000
11/12/97	13:24:20	14.23	-0.02	4.97	-0.005
11/12/97	13:24:21	9.24	4.97	4.97	0.999
11/12/97	13:24:22	11.11	3.10	4.97	0.623
11/12/97	13:24:23	11.97	2.24	4.97	0.451
11/12/97	13:24:24	12.50	1.71	4.97	0.344
11/12/97	13:24:25	12.84	1.36	4.97	0.274
11/12/97	13:24:26	13.10	1.11	4.97	0.223
11/12/97	13:24:27	13.31	0.90	4.97	0.181
11/12/97	13:24:28	13.44	0.76	4.97	0.153
11/12/97	13:24:29	13.56	0.65	4.97	0.130
11/12/97	13:24:30	13.65	0.55	4.97	0.111
11/12/97	13:24:31	13.74	0.46	4.97	0.093
11/12/97	13:24:32	13.79	0.41	4.97	0.084
11/12/97	13:24:33	13.84	0.37	4.97	0.074
11/12/97	13:24:34	13.91	0.30	4.97	0.060
11/12/97	13:24:35	13.93	0.28	4.97	0.056
11/12/97	13:24:36	13.95	0.25	4.97	0.051
11/12/97	13:24:37	14.00	0.21	4.97	0.042
11/12/97	13:24:38	14.02	0.18	4.97	0.037
11/12/97	13:24:39	14.05	0.16	4.97	0.032
11/12/97	13:24:40	14.07	0.14	4.97	0.028
11/12/97	13:24:41	14.07	0.14	4.97	0.028
11/12/97	13:24:42	14.09	0.12	4.97	0.023
11/12/97	13:24:43	14.09	0.12	4.97	0.023
11/12/97	13:24:44	14.11	0.09	4.97	0.019
11/12/97	13:24:45	14.11	0.09	4.97	0.019
11/12/97	13:24:46	14.14	0.07	4.97	0.014
11/12/97	13:24:47	14.14	0.07	4.97	0.014
11/12/97	13:24:48	14.14	0.07	4.97	0.014
11/12/97	13:24:49	14.14	0.07	4.97	0.014
11/12/97	13:24:50	14.14	0.07	4.97	0.014
11/12/97	13:24:51	14.16	0.05	4.97	0.009
11/12/97	13:24:52	14.16	0.05	4.97	0.009
11/12/97	13:24:53	14.16	0.05	4.97	0.009
11/12/97	13:24:54	14.16	0.05	4.97	0.009
11/12/97	13:24:55	14.16	0.05	4.97	0.009
11/12/97	13:24:56	14.16	0.05	4.97	0.009
11/12/97	13:24:57	14.18	0.02	4.97	0.005
11/12/97	13:24:58	14.18	0.02	4.97	0.005
11/12/97	13:24:59	14.18	0.02	4.97	0.005
11/12/97	13:25:00	14.18	0.02	4.97	0.005
11/12/97	13:25:01	14.18	0.02	4.97	0.005

11/12/97	13:25:02	14.18	0.02	4.97	0.005
11/12/97	13:25:03	14.18	0.02	4.97	0.005
11/12/97	13:25:04	14.18	0.02	4.97	0.005
11/12/97	13:25:05	14.18	0.02	4.97	0.005
11/12/97	13:25:06	14.18	0.02	4.97	0.005
11/12/97	13:25:07	14.21	0.00	4.97	0.000
11/12/97	13:25:08	14.18	0.02	4.97	0.005
11/12/97	13:25:09	14.18	0.02	4.97	0.005
11/12/97	13:25:10	14.21	0.00	4.97	0.000
11/12/97	13:25:11	14.21	0.00	4.97	0.000
11/12/97	13:25:12	14.18	0.02	4.97	0.005
11/12/97	13:25:13	14.21	0.00	4.97	0.000
11/12/97	13:25:14	14.21	0.00	4.97	0.000
11/12/97	13:25:15	14.21	0.00	4.97	0.000
11/12/97	13:25:16	14.21	0.00	4.97	0.000
11/12/97	13:25:17	14.21	0.00	4.97	0.000
11/12/97	13:25:18	14.21	0.00	4.97	0.000
11/12/97	13:25:19	14.21	0.00	4.97	0.000
11/12/97	13:25:20	14.21	0.00	4.97	0.000
11/12/97	13:25:21	14.21	0.00	4.97	0.000
11/12/97	13:25:22	14.21	0.00	4.97	0.000
11/12/97	13:25:23	14.21	0.00	4.97	0.000

COMPUTATION SHEET

PROJECT TITLE: _____ PROJECT NO: _____

DESCRIPTION: ~~t_f = 1 sec~~ Cooper SHEET _____ OF _____

REP. BY: _____ DATE: _____ CHKD BY: _____ DATE: _____

~~WL-3~~
MW-1

$$T = \frac{1.0\,r^2}{t}$$

$r = 0.083$ ft
$t = 1.52 \times 10^{-2}$ min
$b = 15$ ft

$$= \frac{(0.083\text{ ft})^2}{1.52 \times 10^{-2}\text{ min}}$$

$$= (4.53 \times 10^{-2}\ \text{ft}^2/\text{min})(1\text{ min}/60\text{ sec})(144\text{ in}^2/\text{ft}^2)\left(\frac{6.452\text{ cm}^2}{1\text{ in}^2}\right)$$

$T = 7.02\ \text{cm}^2/\text{sec}$

$$K = \frac{T}{b} = \left(\frac{7.02\text{ cm}^2/\text{sec}}{15\text{ ft}}\right)\left(\frac{3.281\text{ ft}}{1\text{ m}}\right)\left(\frac{1\text{ m}}{100\text{ cm}}\right)$$

$$K_{b15} = 1.5 \times 10^{-2}\ \text{cm/sec}$$

$T = 7.02\ \text{cm}^3/\text{sec/cm}$

$$= (7.02\ \text{cm}^3/\text{sec/cm})\left(\frac{1\text{ in}^3}{16.39\text{ cm}^3}\right)\left(\frac{1\text{ gall}}{231\text{ in}^3}\right)\left(\frac{60\text{ sec}}{1\text{ min}}\right)\left(\frac{60\text{ min}}{1\text{ hr}}\right)\left(\frac{24\text{ hr}}{1\text{ day}}\right)$$

$$\times\left(\frac{100\text{ cm}}{1\text{ m}}\right)\left(\frac{1\text{ m}}{3.281\text{ ft}}\right)$$

$$T = 4.88 \times 10^3\ \text{gallons/day/ft}$$

if $b = 40$

$$K_{b=40} = \frac{T}{b} = \frac{(7.02\text{ cm}^2/\text{sec})}{(40\text{ ft})}\left(\frac{3.281\text{ ft}}{1\text{ m}}\right)\left(\frac{1\text{ m}}{100\text{ cm}}\right)$$

$$K_{b=40} = 5.8 \times 10^{-3}\ \text{cm/sec}$$

EMCON

COMPUTATION SHEET

PROJECT TITLE: _____ PROJECT NO: _____

DESCRIPTION: ~~Slug Test~~ Hvorslev SHEET _____ OF _____

PREP. BY: _____ DATE: _____ CHKD BY: _____ DATE: _____

~~WLFS~~ MW-1 $T_o = 2.5 \times 10^{-2}$ min $r = 0.083$ ft

$L = 15$ ft

$R = 0.5$ ft

$$K = \frac{r^2 \ln(L/R)}{2LT_o}$$

$$= \frac{(0.083\text{ft})^2 \ln(15\text{ft}/0.5\text{ft})}{2(15\text{ft})(2.5\times10^{-2}\text{min})}$$

$$= (3.1\times10^{-2}\text{ft/min})(1440\text{min/day})\left(\frac{3.53\times10^{-4}\text{cm/sec}}{1\text{ft/day}}\right)$$

$$\boxed{K = 1.6\times10^{-2}\text{ cm/sec}}$$

~~WLFS~~ MW-4 $T_o = 3.7 \times 10^{-2}$ min

$L = 15$ ft

$R = 0.5$ ft

$r = 0.083$ ft

$$K = \frac{r^2 \ln(L/R)}{2LT_o}$$

$$= \frac{(0.083\text{ft})^2 \ln(15\text{ft}/0.5\text{ft})}{2(15\text{ft})(3.7\times10^{-2}\text{min})}$$

$$= (2.1\times10^{-2}\text{ft/min})(1440\text{min/day})\left(\frac{3.53\times10^{-4}\text{cm/sec}}{1\text{ft/day}}\right)$$

$$\boxed{K = 1.1\times10^{-2}\text{cm/sec}}$$

COMPUTATION SHEET

PROJECT TITLE: _____ PROJECT NO: _____

DESCRIPTION: _____ SHEET _____ OF _____

PREP. BY: _____ DATE: _____ CHKD BY: _____ DATE: _____

Geometric Mean

	K	ln(K)
	1.6×10^{-2} cm/sec	-4.14
	1.1×10^{-2} cm/sec	-4.51
	2.5×10^{-2} cm/sec	-3.69
	1.5×10^{-2} cm/sec	-4.20
Sum		-16.53

Mean ln(K) = -4.13

exp [Mean ln(K)] = 1.6×10^{-2}

EMCON

APPENDIX G

DATA VALIDATION REPORTS

Data Validation and Management

All sample data received from the analytical laboratories were reviewed to determine compliance with data quality objectives (DQOs) as specified in the Work Plan. Data were reviewed according to procedures in the Quality Assurance Project Plan, and following data validation guidelines in USEPA Contract Laboratory Program National Functional Guidelines for Inorganic and Organic Data Review (USEPA, 1994a, b). Data that did not meet the validation criteria were assigned data qualifiers to restrict or modify appropriate uses. Results of the data validation process are presented in the data validation reports in Appendix G.

Data were entered into a personal-computer-compatible database with their assigned data qualifiers. Most of the data were transferred directly into the database from electronic deliverables provided by the laboratory, and some data were hand entered. A 100 percent check for accuracy was performed on data that were hand entered, and a minimum 10 percent accuracy check was performed on data that were entered by electronic transfer.

The laboratory assigned data qualifiers that were retained in the project database were as follows:

- < (a less than symbol) - The analyte was not detected at the method detection limit (MDL) shown.
- A - Out of limits due to matrix interference.
- B - Out of limits due to matrix effects.

Data qualifiers assigned during data validation review were as follows:

- E - The associated numerical value is an estimated quantity.

Data were judged to meet QA objectives for precision, accuracy, representativeness, and comparability, and were judged acceptable for their intended use. All sample analyses exceeded the QA objectives for completeness of 95 percent. Some of the data were assigned laboratory and data validation qualifiers which modify their usefulness. The data qualifier definitions are as defined above. The usefulness of individual results are modified by assigned data qualifiers.

Data Evaluation Procedures

Data were evaluated using the procedures described in the Work Plan. Statistical analyses of soil and groundwater data were conducted following procedures in Statistical Guidance for Ecology Site Managers (Ecology, 1992, as amended), and using MTCAStat v2.1 site module software developed by Ecology.

The groundwater results were evaluated by analytical method and compound. Data from off-site wells were not included in the groundwater statistics.

Consistent with WAC 173-340-720(8)(g) and -740 (7)(g), detectable levels below the practical quantitation limit (PQL) were assigned a value equal to the method detection limit (MDL), and non-detects were assigned a value equal to one-half the MDL. For samples that required dilution in order to accurately quantify compounds, the PQLs were conservatively assumed to be identical to "non-diluted" compound PQLs. The substitution of an MDL value for a detectable level less than the PQL in a diluted sample would have resulted in under estimation of some values. A factor of 10 times the minimum detection limit was used as a guideline for assigning MDL values to concentrations that were less than PQLs. TPH-D and TPH-O results were reported by the laboratory using "reporting limits" therefore, no adjustments were made for values between the MDL and PQL.

MTCAStat software requires that censored values (non-detects) for a compound have the same PQL/MDL in order to evaluate the distribution and to calculate an upper confidence limit (UCL) on mean concentrations. Soil sample distributions were evaluated using the minimum and maximum MDLs because the non-detect concentrations varied when converted to a dry-weight basis. The data distributions were either normal, lognormal, or neither.

Compounds that showed between 15 and 50 percent non-detects were evaluated by substituting the minimum MDL for the non-detects. The data distributions were evaluated using the probability plot function. Based on the distribution evaluation, the UCL was then determined using the normal or lognormal functions. For compound distributions that were neither lognormal or normal, the maximum value was reported for the UCL.

DATA VALIDATION REPORT

NEW CITY CLEANERS
RICHLAND, WASHINGTON

PHASE 1 SOIL AND WATER SAMPLING
March 1997

This report summarizes the review of analytical results for soil and water sampling conducted at the New City Cleaners site in Richland, Washington. Data validation was performed following procedures specified in Section 5 of the Work Plan (EMCON, 1997). A total of forty-six soil samples, three soil field duplicate samples, eleven water samples, one water field duplicate sample, and two trip blanks were collected March 10 through 13, 1997. Sample numbers, dates collected, and laboratory sample numbers are presented in Table 1. Samples were analyzed by Columbia Analytical Services (CAS), at their Kelso, Washington, facility, and are associated with Service Request Numbers K9701638, K9701662, K9701685 and K9703664.

Data Qualifications

The following comments refer to the laboratory performance in meeting the quality assurance/quality control (QA/QC) guidelines outlined in the Work Plan. Laboratory results were reviewed following USEPA procedures (USEPA, 1994a,b) and method-specific QC guidelines (USEPA 1983, 1986; Ecology, 1992).

The data were judged to be acceptable for their intended use. Definitions of data qualifiers assigned as a result of this data validation review are as follows:

- E - The associated numerical value is an estimated quantity.

Unless specifically noted below, laboratory results for the samples listed in Table 1 were within QC criteria, and no data qualifiers were assigned during data validation review. The laboratory assigned the following data qualifiers:

- < - Analyte was not detected at the reporting limit specified.
- F - Out of limits due to matrix interference.

The data qualifiers retained in the data base are those from EMCON's data validation and those qualifiers assigned by the laboratory.

Holding Times

All sample analyses were conducted within holding times with the following exceptions. The 8260A analysis on sample SS-C2, the WTPH as gasoline analyses on samples GPW-10-397-17 and GPW-6-397-15, and the WTPH as gasoline, diesel, and oil analyses on samples GP2-5 and GP2-21, were performed past the recommended hold times. Estimated (E) data qualifiers were assigned to these sample results based on holding time criteria.

Method Blank Results

Method blanks were analyzed at the required frequency. No compounds were detected in the method blanks and no data qualifiers were assigned to sample results based on method blank results.

Field Duplicates

Four field duplicate samples (three soil duplicates and one water duplicate) were collected and analyzed during Phase 1 sampling. Results for compounds detected in the field duplicate analyses are presented in Table 2. Based on USEPA guidance for laboratory duplicate analyses (USEPA, 1994a), and professional judgment, the relative percent difference (RPD) between concentrations reported for duplicate samples was used to evaluate precision, with an objective of ≤ 20 percent RPD for soil TOC analyses, ≤ 10 percent RPD for water TSS analyses, ≤ 25 percent for water organic analyses, and ≤ 35 to 40 percent RPD for soil organic analyses. Compounds that showed a variability greater than the objectives were TSS in sample GPW-9-397-15 and trichloroethene and tetrachloroethene in sample GP-6-11-15. Estimated (E) data qualifiers were assigned to these sample results based on field duplicate analyses.

Laboratory Duplicates

Laboratory duplicate analyses were conducted at the required frequencies. The RPD between concentrations reported for laboratory duplicate results was used to evaluate analytical precision, with an objective of ≤ 25 percent RPD for inorganic analyses per USEPA (1994a) guidelines. All laboratory duplicate analyses were within the objective and no data qualifiers were assigned to sample results based on laboratory duplicate analyses.

Surrogate Recovery Results

Surrogate recoveries were within QC criteria except for the sample analyses listed in Table 3. Estimated (E) data qualifiers were assigned to results for samples with surrogate recoveries that did not meet QC limits based on USEPA (1994b) guidelines.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Results

Matrix spike/matrix spike duplicate (MS/MSD) samples were analyzed at the required frequency for all analyses. All MS and MSD percent recoveries, and the RPDs between the duplicate results, were within acceptance criteria. No data qualifiers were assigned to sample results based on MS/MSD analyses.

Reporting Limits

Sample results were reported using method reporting limits. Method reporting limits for some samples were elevated because the samples required diluting. The method reporting limit for chloromethane in samples GP6-25 and GP-1-5 was raised due to matrix interferences in the laboratory blank.

Completeness

Completeness of the data was evaluated by comparison of the number of analyses planned for the samples collected versus the number of analyses that were conducted. All planned sample analyses were conducted, giving a completeness of 100 percent.

Overall Assessment of Data

The usefulness of the data were assessed on guidelines established in USEPA (1994a, b), the analytical methods, and the Work Plan. Data qualifiers were assigned to sample results during this data validation review based on missed holding times, RPDs of field duplicates, and surrogate recoveries. The data are judged to be ACCEPTABLE for their intended use. The usefulness of individual results is modified by the assigned data qualifier.

REFERENCES

Ecology. 1992. *Total Petroleum Hydrocarbons Analytical Methods for Soil and Water.* Washington State Department of Ecology Guidance for Remediation of Releases from Underground Storage Tanks. Appendix L.

EMCON. 1997. *Remedial Investigation Work Plan, New City Cleaners, Richland, WA.* Prepared for Copeland, Landye, Bennett and Wolf, LLP. February 13.

USEPA. 1983. *Methods for Chemical Analysis of Water and Wastes.* U.S. Environmental Protection Agency, Environmental Monitoring and Support Laboratory, Cincinnati, Ohio. EPA-600/4-79-020.

USEPA. 1986. *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods.* U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response. EPA-530/SW-846.

USEPA. 1994a. *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review.* U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response. EPA 540/R-94/013. February.

USEPA. 1994b. *USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review.* U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response. EPA 540/R-94/012. February.

Table 1
Phase 1 Soil and Water Samples for Laboratory Analysis
March 1997
New City Cleaners

Sampling Location	Sample Number	Field Duplicate Sample Number	Date Collected	CAS Service Request Number	CAS Sample Number
SS-D4	SS-D4		3/10/97	K9701638	K9701638-1
SS-B5	SS-B5		3/10/97	K9701638	K9701638-2
SS-C4	SS-C4		3/10/97	K9701638	K9701638-3
SS-G4	SS-G4		3/10/97	K9701638	K9701638-4
SS-I4	SS-I4		3/10/97	K9701638	K9701638-5
SS-I3	SS-I3		3/10/97	K9701638	K9701638-6
SS-G3	SS-G3		3/10/97	K9701638	K9701638-7
SS-E3	SS-E3		3/10/97	K9701638	K9701638-8
SS-C3	SS-C3		3/10/97	K9701638	K9701638-9
SS-A3	SS-A3		3/10/97	K9701638	K9701638-10
SS-C1	SS-C1		3/10/97	K9701638	K9701638-11
SS-A1	SS-A1		3/10/97	K9701638	K9701638-12
SS-A2	SS-A2		3/10/97	K9701638	K9701638-13
SS-C2	SS-C2		3/10/97	K9701638	K9701638-14
SS-E2	SS-E2		3/10/97	K9701638	K9701638-15
SS-G2	SS-G2		3/10/97	K9701638	K9701638-16
GP-8-1'	GP-8-1'		3/11/97	K9701638	K9701638-17
GP-8-15'	GP-8-15'		3/11/97	K9701638	K9701638-18
GP-8-21'	GP-8-21'		3/11/97	K9701638	K9701638-19
GPW-8-397-10	GPW-8-397-10		3/11/97	K9701638	K9701638-20
GP-9-12'	GP-9-12'		3/11/97	K9701638	K9701638-21
GPW-9-397-15'	GPW-9-397-15'	GPW-9-397-25	3/11/97	K9701638	K9701638-22;23
GP-9-23	GP-9-23		3/11/97	K9701638	K9701638-24
	TB-1-397[a]		3/11/97	K9701638	K9701638-25
GP-5-11	GP-5-11		3/11/97	K9701638	K9701638-26
GP-5-21.5	GP-5-21.5		3/11/97	K9701638	K9701638-27
SS-E4	SS-E4		3/11/97	K9701638	K9701638-28
SS-F5	SS-F5		3/12/97	K9701662	K9701662-1
SS-I6	SS-I6		3/12/97	K9701662	K9701662-2
GP-7-15	GP-7-15		3/12/97	K9701662	K9701662-3
GP-7-21.5	GP-7-21.5		3/12/97	K9701662	K9701662-4
SS-A4	SS-A4		3/12/97	K9701662	K9701662-5

Table 1
Phase 1 Soil and Water Samples for Laboratory Analysis
March 1997
New City Cleaners

Sampling Location	Sample Number	Field Duplicate Sample Number	Date Collected	CAS Service Request Number	CAS Sample Number
SS-A6	SS-A6	SS-J4	3/12/97	K9701662	K9701662-6;7
GP-10-17	GP-10-17		3/12/97	K9701662	K9701662-8
GP-10-21	GP-10-21		3/12/97	K9701662	K9701662-9
GPW-10-397-17	GPW-10-397-17		3/12/97	K9701662	K9701662-10
GP6-11-15	GP6-11-15	GP6-25	3/12/97	K9701662	K9701662-11;12
GP6-21.5	GP6-21.5		3/12/97	K9701662	K9701662-13
GPW-6-397-15	GPW-6-397-15		3/12/97	K9701662	K9701662-14
SS-E6	SS-E6	SS-F6	3/12/97	K9701662	K9701662-15;16
GP-1-5	GP-1-5		3/12/97	K9701662	K9701662-17
GP-1-19	GP-1-19		3/12/97	K9701662	K9701662-18
GPW-1-397-15	GPW-1-397-15		3/12/97	K9701662	K9701662-19
GP3-19	GP3-19		3/13/97	K9701662	K9701662-20
GP3-15	GP3-15		3/13/97	K9701662	K9701662-21
GPW-3-397-19(3/12)	GPW-3-397-19(3/12)		3/12/97	K9701662	K9701662-22
GPW-3-397-19(3/13)	GPW-3-397-19(3/13)		3/13/97	K9701662	K9701662-23
SS-G6	SS-G6		3/13/97	K9701662	K9701662-24
SS-C6	SS-C6		3/13/97	K9701662	K9701662-25
GPW-5-397-19	GPW-5-397-19		3/12/97	K9701685	K9701685-1
GPW-2-397-17	GPW-2-397-17		3/12/97	K9701685	K9701685-2
GPW-7-397-11	GPW-7-397-11		3/12/97	K9701685	K9701685-3
GPW-4-397-19	GPW-4-397-19		3/12/97	K9701685	K9701685-4
GP4-19	GP4-19		3/13/97	K9701685	K9701685-5
SS-B7	SS-B7		3/13/97	K9701685	K9701685-6
GP4-7	GP4-7		3/12/97	K9701685	K9701685-7
GP2-5	GP2-5		3/13/97	K9701685	K9701685-8
GP2-21	GP2-21		3/13/97	K9701685	K9701685-9
	TB-2-397[a]		3/13/97	K9701685	K9701685-10

[a] Trip blank sample.

Table 2
Phase 1 Soil and Water Sample Field Duplicate Results
March 1997
New City Cleaners

Compound	Concentrations						RPD (percent)
	Units	Sample	Q	Duplicate	Q	Average	
Sample Location: GPW-9-397-15							
TSS	mg/L	278		402		340	36
Diesel	µg/L	250	<	250	<	NA	NC
Oil	µg/L	750	<	750	<	NA	NC
Gasoline	µg/L	1100		1200		1150	9
Tetrachloroethene	µg/L	2200		2200		2200	0
Sample Location: GP-6-11-15							
Diesel	mg/kg	25	<	25	<	NA	NC
Oil	mg/kg	100	<	100	<	NA	NC
Gasoline	mg/kg	470		510		490	8
Trichloroethene	mg/kg	0.6	E	1.3	E	0.95	74
Tetrachloroethene	mg/kg	0.6	E	1.0	E	0.8	50
Sample Location: SS-A6							
Tetrachloroethene	µg/kg	180	E	130	E	155	32
Sample Location: SS-E6							
Tetrachloroethene	µg/kg	6		5		5.5	18

NOTES:
NA = not applicable, one or both of the samples is non-detect.
NC = not calculated.
Q columns contain data qualifiers: see report for data qualifier definitions.

Table 3
Surrogate Recoveries Not Meeting QC Criteria
Phase 1 Soil and Water Sampling
March 1997
New City Cleaners

Sample	Analysis	Surrogate Recovery	Qualifier
SS-D4	VOCs	54 percent	E - All VOCs
SS-E3	VOCs	54 percent	E - All VOCs
SS-A3	VOCs	65 percent	E - All VOCs
GP-5-11	VOCs	164 percent	E - All VOCs
SS-A6	VOCs	48 percent	E - All VOCs
SS-I4	VOCs	62 percent	E - All VOCs
GP-6-11-15	VOCs	161 percent	E - All VOCs
GP-6-25	VOCs	165 percent	E - All VOCs
GPW-6-397-15	WTPH-G	207 percent	E - TPH-G
GPW-5-397-19	WTPH-G	308 percent	E - TPH-G

Note:
E - The associated numerical value is an estimated quantity.

DATA VALIDATION REPORT

NEW CITY CLEANERS
RICHLAND, WASHINGTON

PHASE 2 SOIL SAMPLING
April/May 1997

This report summarizes the review of analytical results for soil sampling conducted at the New City Cleaners site in Richland, Washington. Data validation was performed following procedures specified in Section 5 of the Work Plan (EMCON, 1997). A total of twenty-one soil samples and three field duplicate samples were collected April 29 through May 2, 1997. Sample numbers, dates collected, and laboratory sample numbers are presented in Table 1. Samples were analyzed by Columbia Analytical Services (CAS), at their Kelso, Washington, facility, and are associated with Service Request Numbers K9702899, K9702929, K9702981, and K9703203.

Data Qualifications

The following comments refer to the laboratory performance in meeting the quality assurance/quality control (QA/QC) guidelines outlined in the Work Plan. Laboratory results were reviewed following USEPA procedures (USEPA, 1994a,b) and method-specific QC guidelines (USEPA 1983, 1986; Ecology, 1992).

The data were judged to be acceptable for their intended use. Definitions of data qualifiers assigned as a result of this data validation review are as follows:

- E - The associated numerical value is an estimated quantity.

Unless specifically noted below, laboratory results for the samples listed in Table 1 were within QC criteria, and no data qualifiers were assigned during data validation review. The laboratory assigned the following data qualifiers:

- < - Analyte was not detected at the reporting limit specified.
- A - Out of limits due to matrix interference.
- B - Out of limits due to matrix effects.

The data qualifiers retained in the data base are those from EMCON's data validation and those qualifiers assigned by the laboratory.

Holding Times

All sample analyses were conducted within holding times with the exception of the WTPH-G matrix spike and duplicate matrix spike performed on sample MW-4a-9. The primary sample analysis was performed within the recommended holding time, and the spike recoveries were within acceptance limits. Data quality does not appear to be affected and no data qualifiers were assigned to sample results based on holding time criteria.

Method Blank Results

Method blanks were analyzed at the required frequency. No compounds were detected in the method blanks and no data qualifiers were assigned to sample results based on method blank results.

Field Duplicates

Three field duplicate samples were collected and analyzed during Phase 2 sampling. Results for compounds detected in the field duplicate analyses are presented in Table 2. Based on USEPA guidance for laboratory duplicate analyses (USEPA, 1994a) and professional judgment, the relative percent difference (RPD) between concentrations reported for duplicate samples was used to evaluate precision, with an objective of ≤ 35 to 40 percent RPD for organic analyses. The only compound that showed a variability greater than the objectives was tetrachloroethene in sample MW-2-12.5. An estimated (E) data qualifier was assigned to this sample result based on field duplicate analyses.

Laboratory Duplicates

Laboratory duplicate analyses were conducted at the required frequencies. The RPD between concentrations reported for laboratory duplicate results was used to evaluate analytical precision, with an objective of ≤ 20 percent RPD for TOC analyses and ≤ 35 percent for diesel and oil analyses per USEPA (1994a) guidelines. All laboratory duplicate analyses were within the objectives and no data qualifiers were assigned to sample results based on laboratory duplicate analyses.

Surrogate Recovery Results

Surrogate recoveries were within QC criteria except for the sample analyses listed in Table 3. Estimated (E) data qualifiers were assigned to results for samples with surrogate recoveries that did not meet QC limits based on USEPA (1994b) guidelines.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Results

Matrix spike/matrix spike duplicate (MS/MSD) samples were analyzed at the required frequency for all analyses. All MS and MSD percent recoveries, and the RPDs between the duplicate results, were within acceptance criteria with the exception of the diesel MS recovery in sample SB-2-7. The estimated (E) data qualifier was assigned to this sample result based on the MS analysis.

Reporting Limits

Sample results were reported using method reporting limits. EPA Method 8260A method reporting limits for some samples were elevated because the samples required diluting.

Completeness

Completeness of the data were evaluated by comparison of the number of analyses planned for the samples collected versus the number of analyses that were conducted. All planned sample analyses were conducted, giving a completeness of 100 percent.

Overall Assessment of Data

The usefulness of the data were assessed on guidelines established in USEPA (1994a, b), the analytical methods, and the Work Plan. Data qualifiers were assigned to sample results during this data validation review based on RPDs of field duplicates, surrogate recoveries, and matrix spike recoveries. The data are judged to be ACCEPTABLE for their intended use. The usefulness of individual results is modified by the assigned data qualifier.

REFERENCES

Ecology. 1992. *Total Petroleum Hydrocarbons Analytical Methods for Soil and Water.* Washington State Department of Ecology Guidance for Remediation of Releases from Underground Storage Tanks. Appendix L.

EMCON. 1997. *Remedial Investigation Work Plan, New City Cleaners, Richland, WA.* Prepared for Copeland, Landye, Bennett and Wolf, LLP. February 13.

USEPA. 1983. *Methods for Chemical Analysis of Water and Wastes.* U.S. Environmental Protection Agency, Environmental Monitoring and Support Laboratory, Cincinnati, Ohio. EPA-600/4-79-020.

USEPA. 1986. *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods.* U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response. EPA-530/SW-846.

USEPA. 1994a. *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review.* U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response. EPA 540/R-94/013. February.

USEPA. 1994b. *USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review.* U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response. EPA 540/R-94/012. February.

Table 1

Phase 2 Soil Samples for Laboratory Analysis
April/May 1997
New City Cleaners

Sampling Location	Sample Number	Field Duplicate Sample Number	Date Collected	CAS Service Request Number	CAS Sample Number
MW-4a	MW-4a-1		4/29/97	K9702899	K9702899-1
MW-4a	MW-4a-9		4/29/97	K9702899	K9702899-2
MW-4a	MW-4a-17.5		4/29/97	K9702899	K9702899-3
MW-4a	MW-4a-29		4/29/97	K9702899	K9702899-4
MW-3	MW-3-9		4/30/97	K9702899	K9702899-5
MW-3	MW-3-27		4/30/97	K9702899	K9702899-6
MW-1	MW-1-7		5/1/97	K9702929	K9702929-1
MW-1	MW-1-17.5		5/1/97	K9702929	K9702929-2
MW-1	MW-1-27		5/1/97	K9702929	K9702929-3
MW-2	MW-2-7	MW-10-7	4/30/97	K9702929	K9702929-4;7
MW-2	MW-2-12.5	MW-10-12.5	4/30/97	K9702929	K9702929-5;8
MW-2	MW-2-27	MW-10-27	4/30/97	K9702929	K9702929-6;9
SB-2	SB-2-7		5/1/97	K9702981	K9702981-1
SB-2	SB-2-9		5/1/97	K9702981	K9702981-2
SB-2	SB-2-35		5/1/97	K9702981	K9702981-3
SB-1	SB-1-7		5/1/97	K9702981	K9702981-4
SB-1	SB-1-9		5/1/97	K9702981	K9702981-5
SB-1	SB-1-12.5		5/1/97	K9702981	K9702981-6
SB-1	SB-1-40		5/2/97	K9702981	K9702981-7
SB-1	SB-1-27		5/1/97	K9703203	K9703203-21

Table 2
Soil and Water Sample Field Duplicate Results
Phase 2, April/May 1997
New City Cleaners

Compound	Concentrations						RPD (percent)
	Units	Sample	Q	Duplicate	Q	Average	
Sample Location: MW-2-7							
Diesel	mg/kg	25	<	25	<	NA	NC
Oil	mg/kg	100	<	100	<	NA	NC
Gasoline	mg/kg	5	<	5	<	NA	NC
Sample Location: MW-2-12.5							
Tetrachloroethene	µg/kg	68		16		42	124
Sample Location: MW-2-27							
Tetrachloroethene	µg/kg	6		6		6	0

NOTES:
NA = not applicable, one or both of the samples is non-detect.
NC = not calculated.
Q columns contain data qualifiers: see report for data qualifier definitions.

Table 3

Surrogate Recoveries Not Meeting QC Criteria
Phase 2 Soil Sampling
April/May 1997
New City Cleaners

Sample	Analysis	Surrogate Recovery	Qualifier
SB-1-12.5	VOCs	414 percent	E - All VOCs
SB-2-9	WTPH-D	74 percent	E - TPH-D and Oil
SB-1-7	WTPH-D	134 percent	E - TPH-D and Oil
SB-1-7 (Lab duplicate)	WTPH-D	136 percent	E - TPH-D and Oil

Note:
E - The associated numerical value is an estimated quantity.

DATA VALIDATION REPORT

NEW CITY CLEANERS
RICHLAND, WASHINGTON

FIRST ROUND GROUNDWATER SAMPLING
May 1997

This report summarizes the review of analytical results for water sampling conducted at the New City Cleaners site in Richland, Washington. Data validation was performed following procedures specified in Section 5 of the Work Plan (EMCON, 1997). A total of six water samples, one field duplicate sample, one rinsate blank, and one trip blank were collected May 8 and 12, 1997, from monitoring wells MW-1 through MW-4, MW-D and MW-E. Sample numbers, dates collected, and laboratory sample numbers are presented in Table 1. Samples were analyzed by Columbia Analytical Services (CAS), at their Kelso, Washington, facility, and are associated with Service Request Numbers K9703152 and K9703242.

Data Qualifications

The following comments refer to the laboratory performance in meeting the quality assurance/quality control (QA/QC) guidelines outlined in the Work Plan. Laboratory results were reviewed following USEPA procedures (USEPA, 1994a,b) and method-specific QC guidelines (USEPA 1983, 1986; Ecology, 1992).

Laboratory results for the samples listed in Table 1 were within QC criteria, and no data qualifiers were assigned during data validation review. The data were judged to be acceptable for their intended use. The laboratory assigned the following data qualifiers:

- < - Analyte was not detected at the reporting limit specified.
- A - Outside acceptance limits.

The data qualifiers retained in the data base are those qualifiers assigned by the laboratory.

Holding Times

All sample analyses were conducted within holding times and no data qualifiers were assigned to these sample results based on holding time criteria.

Method Blank Results

Method blanks were analyzed at the required frequency. No compounds were detected in the method blanks and no data qualifiers were assigned to sample results based on method blank results.

Field Duplicates

One field duplicate sample was collected and analyzed during First Round groundwater monitoring. Results for compounds detected in the field duplicate analyses are presented in Table 2. Based on USEPA guidance for laboratory duplicate analyses (USEPA, 1994a), and professional judgment, the relative percent difference (RPD) between concentrations reported for duplicate samples was used to evaluate precision, with an objective of ≤ 25 percent for organic analyses. All detected compounds were within this objective and no data qualifiers were assigned to these sample results based on field duplicate analyses.

Laboratory Duplicates

Laboratory duplicate analyses were conducted at the required frequencies. The RPD between concentrations reported for laboratory duplicate results was used to evaluate analytical precision, with an objective of ≤ 25 percent RPD for organic analyses per USEPA (1994a) guidelines. All laboratory duplicate analyses were within the objective and no data qualifiers were assigned to sample results based on laboratory duplicate analyses.

Surrogate Recovery Results

Surrogate recoveries were within QC criteria and no data qualifiers were assigned to sample results based on surrogate recovery results.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Results

Matrix spike/matrix spike duplicate (MS/MSD) samples were analyzed at the required frequency for all analyses. All MS and MSD percent recoveries, and the RPDs between the duplicate results, were within acceptance criteria. No data qualifiers were assigned to sample results based on MS/MSD analyses.

Reporting Limits

Sample results were reported using routine method reporting limits.

Completeness

Completeness of the data was evaluated by comparison of the number of analyses planned for the samples collected versus the number of analyses that were conducted. The trip blank, TB-1-0597, was not analyzed for EPA Method 8260A due to a laboratory oversight, and sample MW-1-0597 was not analyzed for WTPHD because the sample bottle broke in transit. This gives a completeness of 92 percent, just below the objective of 95 percent.

Overall Assessment of Data

The usefulness of the data were assessed on guidelines established in USEPA (1994a, b), the analytical methods, and the Work Plan. No data qualifiers were assigned during this data validation, and the data are judged to be acceptable for their intended use.

REFERENCES

Ecology. 1992. *Total Petroleum Hydrocarbons Analytical Methods for Soil and Water.* Washington State Department of Ecology Guidance for Remediation of Releases from Underground Storage Tanks. Appendix L.

EMCON. 1997. *Remedial Investigation Work Plan, New City Cleaners, Richland, WA.* Prepared for Copeland, Landye, Bennett and Wolf, LLP. February 13.

USEPA. 1983. *Methods for Chemical Analysis of Water and Wastes.* U.S. Environmental Protection Agency, Environmental Monitoring and Support Laboratory, Cincinnati, Ohio. EPA-600/4-79-020.

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USEPA. 1994b. *USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review.* U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response. EPA 540/R-94/012. February.

Table 1

First Round Groundwater Samples for Laboratory Analysis
May 1997
New City Cleaners, Richland, Washington

Sampling Location	Sample Number	Field Duplicate Sample Number	Date Collected	CAS Service Request Number	CAS Sample Number
MW-1	MW-1-0597	MW-20-0597	5/8/97	K9703152	K9703152-1;2
MW-2	MW-2-0597		5/8/97	K9703152	K9703152-3
	MW-10-0597[a]		5/8/97	K9703152	K9703152-4
MW-3	MW-3-0597		5/8/97	K9703152	K9703152-5
MW-4	MW-4-0597		5/8/97	K9703152	K9703152-6
	TB1-0597[b]		5/8/97	K9703152	K9703152-7
MW-D	MW-D-0597		5/12/97	K9703242	K9703242-1
MW-E	MW-E-0597		5/12/97	K9703242	K9703242-2

NOTE:
[a] Rinsate blank sample.
[b] Trip blank sample.

Table 2
Water Sample Field Duplicate Results
First Round, May 1997
New City Cleaners
Richland, Washington

Compound	Concentrations						RPD
	Units	Sample	Q	Duplicate	Q	Average	(percent)
Sample Location: MW-1-0597							
Diesel	µg/L	—		250	<	NA	NC
Oil	µg/L	—	<	750	<	NA	NC
Gasoline	µg/L	50		50	<	NA	NC
Tetrachloroethene	µg/L	2.8		3.3		3.05	.16

NOTES:
— = Sample not analyzed, bottle was broken in transit to laboratory.
NA = not applicable, one or both of the samples is non-detect.
NC = not calculated.
Q columns contain data qualifiers: see report for data qualifier definitions.

DATA VALIDATION REPORT

NEW CITY CLEANERS
RICHLAND, WASHINGTON

WATER SAMPLING
August 1997

This report summarizes the review of analytical results for water sampling conducted at the New City Cleaners in Richland, Washington. Data validation was performed following procedures specified in Section 5 of the Work Plan (EMCON, 1996). A total of six water samples, one field duplicate sample, one rinsate blank, and one trip blank were collected August 20, 1997. Sample numbers, dates collected, and laboratory sample numbers are presented in Table 1. Samples were analyzed by Columbia Analytical Services (CAS), at their Kelso, Washington, facility.

Data Qualifications

The following comments refer to the laboratory performance in meeting the quality assurance/quality control (QA/QC) guidelines outlined in the Work Plan. Laboratory results were reviewed following USEPA procedures (USEPA, 1994a,b) and method-specific QC guidelines (USEPA 1983, 1986; Ecology, 1992).

Laboratory results for the samples listed in Table 1 were within QC criteria, and no data qualifiers were assigned during data validation review. The data were judged to be acceptable for their intended use. The laboratory assigned the following data qualifier:

- < - Analyte was not detected.

The data qualifiers retained in the data base are those qualifiers assigned by the laboratory.

Holding Times

All sample analyses were conducted within holding times and no data qualifiers were assigned to these sample results based on holding time criteria.

Method Blank Results

Method blanks were analyzed at the required frequency. No compounds were detected in the method blanks and no data qualifiers were assigned to sample results based on method blank results.

Field Duplicates

One field duplicate sample was collected and analyzed. Results for compounds detected in the field duplicate analyses are presented in Table 2. Based on USEPA guidance for laboratory duplicate analyses (USEPA, 1994a), and professional judgment, the relative percent difference (RPD) between concentrations reported for duplicate samples was used to evaluate precision, with an objective of ≤ 25 percent for organic analyses. All detected compounds were within this objective and no data qualifiers were assigned to these sample results based on field duplicate analyses.

Laboratory Duplicates

Laboratory duplicate analyses were not performed during this round of sampling. However, laboratory precision was adequately demonstrated through acceptable RPDs between matrix spike and matrix spike duplicate analyses. Data usability is likely not affected by the absence of laboratory duplicates.

Surrogate Recovery Results

Surrogate recoveries were within QC criteria and no data qualifiers were assigned to sample results based on surrogate recovery results.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Results

Matrix spike/matrix spike duplicate (MS/MSD) samples were analyzed at the required frequency for all analyses. All MS and MSD percent recoveries, and the RPDs between the duplicate results, were within acceptance criteria. No data qualifiers were assigned to sample results based on MS/MSD analyses.

Reporting Limits

Sample results were reported using routine method reporting limits.

Completeness

Completeness of the data were evaluated by comparison of the number of analyses planned for the samples collected versus the number of analyses that were conducted. All planned sample analyses were conducted, giving a completeness of 100 percent.

Overall Assessment of Data

The usefulness of the data were assessed on guidelines established in USEPA (1994a, b), the analytical methods, and the Work Plan. No data qualifiers were assigned during this data validation, and the data are judged to be acceptable for their intended use.

REFERENCES

Ecology. 1992. Total petroleum hydrocarbons analytical methods for soil and water. Washington State Department of Ecology Guidance for Remediation of Releases from Underground Storage Tanks Appendix L.

EMCON. 1995. Remedial investigation work plan UNOCAL Edmonds bulk fuel terminal. Prepared for UNOCAL Corporation. Prepared by EMCON.

USEPA. 1983. Methods for chemical analysis of water and wastes. U.S. Environmental Protection Agency, Environmental Monitoring and Support Laboratory, Cincinnati, Ohio. EPA-600/4-79-020.

USEPA. 1986. Test methods for evaluating solid waste: physical/chemical methods. U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response. EPA-530/SW-846.

USEPA. 1994a. USEPA contract laboratory program national functional guidelines for inorganic data review. U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response. EPA 540/R-94/013. February.

USEPA. 1994b. USEPA contract laboratory program national functional guidelines for organic data review. U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response. EPA 540/R-94/012. February.

Table 1
Water Samples for Laboratory Analysis
August 1997
New City Cleaners, Richland, Washington

Sampling Location	Sample Number	Field Duplicate Sample Number	Date Collected	CAS Service Request Number	CAS Sample Number
	MW-B-0897[a]		8/20/97	K9706067	K9706067-1
MW-D	MW-D-0897		8/20/97	K9706067	K9706067-2
MW-E	MW-E-0897		8/20/97	K9706067	K9706067-3
MW-1	MW-1-0897		8/20/97	K9706067	K9706067-4
MW-2	MW-2-0897	MW-5-0897	8/20/97	K9706067	K9706067-5;8
MW-3	MW-3-0897		8/20/97	K9706067	K9706067-6
MW-4	MW-4-0897		8/20/97	K9706067	K9706067-7
	TB1-0897[b]		8/20/97	K9706067	K9706067-9

Notes:
[a] Rinsate blank sample.
[b] Trip blank sample.

Table 2
Water Sample Field Duplicate Results
August 1997
New City Cleaners
Richland, Washington

Compound	Concentrations						RPD
	Units	Sample	Q	Duplicate	Q	Average	(percent)
Sample Location:	MW-2-0897						
Diesel	µg/L	250	<	250	<	NA	NC
Gasoline	µg/L	50	<	50	<	NA	NC
Trichloroethene	µg/L	5.7		5.8		5.75	2
Tetrachloroethene	µg/L	58		65		61.5	11

NOTES:
NA = not applicable, one or both of the samples is non-detect.
NC = not calculated.
Q columns contain data qualifiers: see report for data qualifier definitions.

APPENDIX H
INTERIM TPH EVALUATION

Risks for direct contact with soil were calculated according to the Policy.

Table H-1 summarizes the soil concentrations used in the evaluation. The maximum detected concentrations of total petroleum hydrocarbons (TPH) as gasoline (TPH-G), diesel (TPH-D), and oil (TPH-O) were divided into aliphatic and aromatic compound groups according to default assumptions presented by Steve Robb of Ecology.

Table H-2 summarizes the chemical-specific parameters used in the evaluation (e.g., reference doses).

Table H-3 shows the calculation of residual soil saturation concentration, which forms the upper limit for soil cleanup levels. Above the residual saturation concentration, product can flow down through soil due to gravity alone (i.e., no infiltration is necessary).

Table H-4 shows the calculation of hazard indices (HIs) for direct contact with soil under a Method B residential scenario. Hazard quotients (HQs) are calculated for each compound group and then summed to produce the total HI. HIs are calculated separately for TPH-G, TPH-D, and TPH-O. The results are summarized in the report.

Table H-1

Soil Concentrations (mg/kg)[a]
New City Cleaners Site
Richland, Washington

Compound Group	TPH-G	TPH-D	TPH-O
Noncarcinogens			
Aliphatics EC5-EC6	345	0	0
Aliphatics >EC6-EC8	345	0	0
Aliphatics >EC8-EC10	460	104	145
Aliphatics >EC10-EC12	0	104	145
Aliphatics >EC12-EC16	0	104	145
Aliphatics >EC16	0	104	145
Aromatics EC5-EC7	0	0	0
Aromatics >EC7-EC8	0	0	0
Aromatics >EC8-EC10	1,138	156	218
Aromatics >EC10-EC12	0	156	218
Aromatics >EC12-EC16	0	156	218
Aromatics >EC16-EC21	0	156	218
Aromatics >EC21-EC35	0	0	0
Total "TPH"	2,300	1,040	1,450
Toluene	0	NA	NA
Ethylbenzene	0	NA	NA
Xylenes	12	NA	NA
Carcinogens			
Benzene	0	NA	NA
Benzo(a)pyrene	NA	0	0

NOTE:

EC = Equivalent carbon number.

NA = Not applicable.

TPH = Total petroleum hydrocarbons.

[a] The TPH values were distributed among the EC ranges according to the default soil compositions recommended by Steve Robb at New Directions for Petroleum Cleanups: Interim TPH Policy. April 24, 1997, Bellevue, Washington. The concentration of xylenes was subtracted from the aromatics >EC8-EC10 range in TPH-G to avoid double-counting the xylenes.

Table H-2

Chemical-Specific Parameters
New City Cleaners Site
Richland, Washington

Compound Group	Surrogate Chemical	MW (g/mol)	S (mg/L)	H (cm^3/cm^3)	Koc (L/kg)	ORfD (mg/kg/day)	OCPF $(mg/kg/day)^{-1}$	INH (unitless)	AB1 (unitless)	ABS (unitless)
Source	Interim Policy	Interim Policy	Interim Policy	Interim Policy	Interim Policy	Interim Policy	Interim Policy	BPJ	Default	Default
Noncarcinogens										
Aliphatics EC5-EC6	n-Hexane	81	2.80E+01	3.40E+01	7.94E+02	0.06	NA	2	1	1
Aliphatics >EC6-EC8	n-Hexane	100	4.20E+00	5.10E+01	3.98E+03	0.06	NA	2	1	1
Aliphatics >EC8-EC10	n-Hexane	130	3.30E-01	8.20E+01	3.16E+04	0.06	NA	2	1	1
Aliphatics >EC10-EC12	n-Hexane	160	2.60E-02	1.30E+02	2.51E+05	0.06	NA	2	1	1
Aliphatics >EC12-EC16	n-Hexane	200	5.90E-04	5.40E+02	5.01E+06	0.06	NA	1	1	1
Aliphatics >EC16	n-Hexane	270	1.00E-06	6.40E+03	1.00E+09	0.06	NA	1	1	1
Aromatics EC5-EC7	Benzene/ Pyrene	78	1.80E+03	2.30E-01	7.94E+01	0.03	NA	2	1	1
Aromatics >EC7-EC8	Toluene	92	5.20E+02	2.70E-01	2.51E+02	0.03	NA	2	1	1
Aromatics >EC8-EC10	Pyrene	120	6.50E+01	4.90E-01	1.58E+03	0.03	NA	2	1	1
Aromatics >EC10-EC12	Pyrene	130	2.50E+01	1.40E-01	2.51E+03	0.03	NA	2	1	1
Aromatics >EC12-EC16	Pyrene	150	5.80E+00	5.40E-02	5.01E+03	0.03	NA	1	1	1
Aromatics >EC16-EC21	Pyrene	190	5.10E-01	1.30E-02	1.58E+04	0.03	NA	1	1	1
Aromatics >EC21-EC35	Pyrene	240	6.60E-03	6.80E-04	1.26E+05	0.03	NA	1	1	1
Toluene	NA	92	5.20E+02	2.70E-01	2.51E+02	0.2	NA	2	1	1
Ethylbenzene	NA	106	1.52E+02		1.10E+03	0.1	NA	2	1	1
Xylenes	NA	106	1.98E+02		2.40E+02	2	NA	2	1	1
Carcinogens										
Benzene	NA	78	1.80E+03	2.30E-01	7.94E+01	NA	0.029	2	1	1
Benzo(a)pyrene	NA	252	1.20E-03		5.50E+06	NA	7.3	1	1	1

NOTE:
AB1 = Gastrointestinal absorption factor.
ABS = Inhalation absorption factor.
BPJ = Best professional judgement.
C_{sat} = Soil concentration at which dissolved pore-water and vapor phases become saturated.
EC = Equivalent carbon number.
f = Fraction of compound group in petroleum mixture.
H = Henry's law constant.
INH = Inhalation correction factor.
Interim Policy = Ecology. January 1997. Interim Interpretive and Policy Statement Cleanup of Total Petroleum Hydrocarbons (TPH). Publication No. ECY97-600.
K_{oc} = Soil organic carbon/water partition coefficient.
NA = Not applicable.
OCPF = Oral cancer potency factor.
ORfD = Oral reference dose.
S = Water solubility.

Table H-3

Residual Soil Saturation Concentrations
New City Cleaners Site
Richland, Washington

Soil Porosity q_T (cm^3/cm^3)	Soil Bulk Density r_b (g/cm^3)	Portion of Vadose Zone Saturated % (unitless)	Product Density			Residual Saturation		
			Gasoline r_p (g/ml)	Diesel r_p (g/ml)	Oil r_p (g/ml)	**Gasoline RS (mg/kg)**	**Diesel RS (mg/kg)**	**Oil RS (mg/kg)**
0.3	1.85	0.15	0.7	0.8	0.9	**17,027**	**19,459**	**21,892**

NOTE:

Equation: $RS = q_T \times \% \times r_p \times 10^3$ mg/g / ($r_b \times 10^{-3}$ kg/g).

Table H-4
Protection of Direct Contact for Method B Residential Scenario
TPH-G Concentrations
New City Cleaners Site
Richland, Washington

Compound Group	Soil Concentration SC (mg/kg)	Reference Dose ORfD (mg/kg/day)	Potency Factor OCPF $(mg/kg/day)^{-1}$	Soil Ingestion Factor (1/day)	Multiplier (kg/mg)	HQ or Risk (unitless)
Source	Table H-1	Table H-2	Table H-2	Expo.Param.	Equations 1&2	Equations 3&4
Noncarcinogens						
Aliphatics EC5-EC6	345	0.06	NA	1.25E-05	2.08E-04	0.07
Aliphatics >EC6-EC8	345	0.06	NA	1.25E-05	2.08E-04	0.07
Aliphatics >EC8-EC10	460	0.06	NA	1.25E-05	2.08E-04	0.10
Aliphatics >EC10-EC12	0	0.06	NA	1.25E-05	2.08E-04	0.00
Aliphatics >EC12-EC16	0	0.06	NA	1.25E-05	2.08E-04	0.00
Aliphatics >EC16	0	0.06	NA	1.25E-05	2.08E-04	0.00
Aromatics EC5-EC7	0	0.03	NA	1.25E-05	4.17E-04	0.00
Aromatics >EC7-EC8	0	0.03	NA	1.25E-05	4.17E-04	0.00
Aromatics >EC8-EC10	1,138	0.03	NA	1.25E-05	4.17E-04	0.47
Aromatics >EC10-EC12	0	0.03	NA	1.25E-05	4.17E-04	0.00
Aromatics >EC12-EC16	0	0.03	NA	1.25E-05	4.17E-04	0.00
Aromatics >EC16-EC21	0	0.03	NA	1.25E-05	4.17E-04	0.00
Aromatics >EC21-EC35	0	0.03	NA	1.25E-05	4.17E-04	0.00
Total "TPH"	2,288					0.71
Toluene	0	0.2	NA	1.25E-05	6.25E-05	0.00
Ethylbenzene	0	0.1	NA	1.25E-05	1.25E-04	0.00
Xylenes	12	2	NA	1.25E-05	6.25E-06	7.50E-05
Total Hazard Index						0.71
Carcinogens						
Benzene	0	NA	0.029	1.00E-06	2.90E-08	0.00E+00
Benzo(a)pyrene	NA	NA	7.3	1.00E-06	7.30E-06	NA
Total Cancer Risk						0.00E+00

Exposure Parameters

Parameter	Abbreviation	Value	Units	Source
Average body weight	ABW	16	kg	WAC 173-340-740
Soil ingestion rate	SIR	200	mg/day	WAC 173-340-740
Frequency of contact	FOC	1	unitless	WAC 173-340-740
Lifetime	LIFE	75	yr	WAC 173-340-740
Duration of exposure	DUR	6	yr	WAC 173-340-740
Gastrointestinal absorption rate	AB1	1	unitless	WAC 173-340-740
Units conversion factor	UCF	1.00E+06	mg/kg	WAC 173-340-740
Noncancer soil ingestion factor	$Factor_n$	1.25E-05	1/day	SIR*FOC/(ABW*AB1*UCF)
Cancer soil ingestion factor	$Factor_c$	1.00E-06	1/day	SIR*FOC*DUR/(ABW*AB1*UCF*LIFE)

NOTE:
EC = Equivalent carbon number.
HQ = Hazard quotient.
NA = Not applicable.
OCPF = Oral carcinogenic potency factor.
ORfD = Oral reference dose.
TPH = Total petroleum hydrocarbons.

EQUATIONS:
1: Noncarcinogens: $Multiplier_n = Factor_n / ORfD$
2: Carcinogens: $Multiplier_c = Factor_c * OCPF$
3: Noncarcinogens: $HQ = SC * Multiplier_n$
4: Carcinogens: $Risk = SC * Multiplier_c$

Table H-4
Protection of Direct Contact for Method B Residential Scenario
TPH-G Concentrations
New City Cleaners Site
Richland, Washington

Compound Group	Soil Concentration SC (mg/kg)	Reference Dose ORfD (mg/kg/day)	Potency Factor OCPF $(mg/kg/day)^{-1}$	Soil Ingestion Factor (1/day)	Multiplier (kg/mg)	HQ or Risk (unitless)
Source	Table H-1	Table H-2	Table H-2	Expo.Param.	Equations 1&2	Equations 3&4
Noncarcinogens						
Aliphatics EC5-EC6	0	0.06	NA	1.25E-05	2.08E-04	0.00
Aliphatics >EC6-EC8	0	0.06	NA	1.25E-05	2.08E-04	0.00
Aliphatics >EC8-EC10	104	0.06	NA	1.25E-05	2.08E-04	0.02
Aliphatics >EC10-EC12	104	0.06	NA	1.25E-05	2.08E-04	0.02
Aliphatics >EC12-EC16	104	0.06	NA	1.25E-05	2.08E-04	0.02
Aliphatics >EC16	104	0.06	NA	1.25E-05	2.08E-04	0.02
Aromatics EC5-EC7	0	0.03	NA	1.25E-05	4.17E-04	0.00
Aromatics >EC7-EC8	0	0.03	NA	1.25E-05	4.17E-04	0.00
Aromatics >EC8-EC10	156	0.03	NA	1.25E-05	4.17E-04	0.07
Aromatics >EC10-EC12	156	0.03	NA	1.25E-05	4.17E-04	0.07
Aromatics >EC12-EC16	156	0.03	NA	1.25E-05	4.17E-04	0.07
Aromatics >EC16-EC21	156	0.03	NA	1.25E-05	4.17E-04	0.07
Aromatics >EC21-EC35	0	0.03	NA	1.25E-05	4.17E-04	0.00
Total "TPH"	1,040					0.35
Toluene	NA	0.2	NA	1.25E-05	6.25E-05	NA
Ethylbenzene	NA	0.1	NA	1.25E-05	1.25E-04	NA
Xylenes	NA	2	NA	1.25E-05	6.25E-06	NA
Total Hazard Index						0.35
Carcinogens						
Benzene	NA	NA	0.029	1.00E-06	2.90E-08	NA
Benzo(a)pyrene	0	NA	7.3	1.00E-06	7.30E-06	0.00E+00
Total Cancer Risk						0.00E+00

Exposure Parameters

Parameter	Abbreviation	Value	Units	Source
Average body weight	ABW	16	kg	WAC 173-340-740
Soil ingestion rate	SIR	200	mg/day	WAC 173-340-740
Frequency of contact	FOC	1	unitless	WAC 173-340-740
Lifetime	LIFE	75	yr	WAC 173-340-740
Duration of exposure	DUR	6	yr	WAC 173-340-740
Gastrointestinal absorption rate	AB1	1	unitless	WAC 173-340-740
Units conversion factor	UCF	1.00E+06	mg/kg	WAC 173-340-740
Noncancer soil ingestion factor	$Factor_n$	1.25E-05	1/day	SIR*FOC/(ABW*AB1*UCF)
Cancer soil ingestion factor	$Factor_c$	1.00E-06	1/day	SIR*FOC*DUR/(ABW*AB1*UCF*LIFE)

NOTE:
EC = Equivalent carbon number.
HQ = Hazard quotient.
NA = Not applicable.
OCPF = Oral carcinogenic potency factor.
ORfD = Oral reference dose.
TPH = Total petroleum hydrocarbons.

EQUATIONS:
1: Noncarcinogens: $Multiplier_n = Factor_n / ORfD$
2: Carcinogens: $Multiplier_c = Factor_c * OCPF$
3: Noncarcinogens: $HQ = SC * Multiplier_n$
4: Carcinogens: $Risk = SC * Multiplier_c$

Table H-4
Protection of Direct Contact for Method B Residential Scenario
TPH-G Concentrations
New City Cleaners Site
Richland, Washington

Compound Group	Soil Concentration SC (mg/kg)	Reference Dose ORfD (mg/kg/day)	Potency Factor OCPF $(mg/kg/day)^{-1}$	Soil Ingestion Factor (1/day)	Multiplier (kg/mg)	HQ or Risk (unitless)
Source	Table H-1	Table H-2	Table H-2	Expo.Param.	Equations 1&2	Equations 3&4
Noncarcinogens						
Aliphatics EC5-EC6	0	0.06	NA	1.25E-05	2.08E-04	0.00
Aliphatics >EC6-EC8	0	0.06	NA	1.25E-05	2.08E-04	0.00
Aliphatics >EC8-EC10	145	0.06	NA	1.25E-05	2.08E-04	0.03
Aliphatics >EC10-EC12	145	0.06	NA	1.25E-05	2.08E-04	0.03
Aliphatics >EC12-EC16	145	0.06	NA	1.25E-05	2.08E-04	0.03
Aliphatics >EC16	145	0.06	NA	1.25E-05	2.08E-04	0.03
Aromatics EC5-EC7	0	0.03	NA	1.25E-05	4.17E-04	0.00
Aromatics >EC7-EC8	0	0.03	NA	1.25E-05	4.17E-04	0.00
Aromatics >EC8-EC10	218	0.03	NA	1.25E-05	4.17E-04	0.09
Aromatics >EC10-EC12	218	0.03	NA	1.25E-05	4.17E-04	0.09
Aromatics >EC12-EC16	218	0.03	NA	1.25E-05	4.17E-04	0.09
Aromatics >EC16-EC21	218	0.03	NA	1.25E-05	4.17E-04	0.09
Aromatics >EC21-EC35	0	0.03	NA	1.25E-05	4.17E-04	0.00
Total "TPH"	1,450					0.48
Toluene	NA	0.2	NA	1.25E-05	6.25E-05	NA
Ethylbenzene	NA	0.1	NA	1.25E-05	1.25E-04	NA
Xylenes	NA	2	NA	1.25E-05	6.25E-06	NA
Total Hazard Index						0.48
Carcinogens						
Benzene	NA	NA	0.029	1.00E-06	2.90E-08	NA
Benzo(a)pyrene	0	NA	7.3	1.00E-06	7.30E-06	0.00E+00
Total Cancer Risk						0.00E+00

Exposure Parameters

Parameter	Abbreviation	Value	Units	Source
Average body weight	ABW	16	kg	WAC 173-340-740
Soil ingestion rate	SIR	200	mg/day	WAC 173-340-740
Frequency of contact	FOC	1	unitless	WAC 173-340-740
Lifetime	LIFE	75	yr	WAC 173-340-740
Duration of exposure	DUR	6	yr	WAC 173-340-740
Gastrointestinal absorption rate	AB1	1	unitless	WAC 173-340-740
Units conversion factor	UCF	1.00E+06	mg/kg	WAC 173-340-740
Noncancer soil ingestion factor	$Factor_n$	1.25E-05	1/day	SIR*FOC/(ABW*AB1*UCF)
Cancer soil ingestion factor	$Factor_c$	1.00E-06	1/day	SIR*FOC*DUR/(ABW*AB1*UCF*LIFE)

NOTE:
EC = Equivalent carbon number.
HQ = Hazard quotient.
NA = Not applicable.
OCPF = Oral carcinogenic potency factor.
ORfD = Oral reference dose.
TPH = Total petroleum hydrocarbons.

EQUATIONS:
1: Noncarcinogens: $Multiplier_n = Factor_n / ORfD$
2: Carcinogens: $Multiplier_c = Factor_c * OCPF$
3: Noncarcinogens: $HQ = SC * Multiplier_n$
4: Carcinogens: $Risk = SC * Multiplier_c$