



***SUBSURFACE INVESTIGATION &
CLOSURE REQUEST REPORT***

178⁷³69 S.E. McLoughlin Boulevard
Milwaukie, Oregon

Wohlers Environmental Project No. 04-0003

Prepared For:

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EXECUTIVE SUMMARY

Wohlers Environmental Services, Inc. (Wohlers Environmental) was authorized by Mr. Gurdev Singh Sohi of Delco Petroleum Co. LLC (Delco) to complete subsurface investigation activities at the Delco facility located at 17869 S.E. McLoughlin Boulevard in Milwaukie, Oregon ("subject site"). The scope of activities was based on additional requirements by the Oregon Department of Environmental Quality (DEQ) Leaking Underground Storage Tank (UST) Program, and results associated with previously-completed soil and groundwater sampling events at the subject site.

The subject site is an approximate 0.7-acre commercial property currently used as a Jiffy Lube and retail petroleum fueling facility. Prior to ownership by Delco, the subject site was owned and/or occupied by Flying J and the Milwaukie Fuel Stop.

Prior documented releases at the subject site included a surface release of approximately 81 gallons of fuel in April 1988 (reportedly cleaned up) and a product pipeline release discovered in January 1993. Between June 1993 and November 1999, 14 groundwater monitoring wells were installed on and adjacent to the subject site, and results associated with sampling activities confirmed petroleum impacts to soil and groundwater at the subject site. Free product removal from two onsite groundwater monitoring wells took place between 1994 and 1995. A groundwater pump and treat system was operated at the subject site between 1995 and 1999.

UST decommissioning activities took place at the subject site in 1994 and 1999. The 1994 UST project included decommissioning by removal of five motor oil USTs, and soil cleanup activities reportedly were not completed at this time. The 1999 UST project included decommissioning by removal of one diesel UST and three gasoline USTs on the northern-central portion of the subject site. Over 5,000 tons of petroleum-impacted soil were excavated within and adjacent to the UST cavity and transported offsite for disposal, along with truck tires and other debris (e.g., building materials, auto parts and trash) apparently associated with demolition of a prior onsite station facility.

In 1999 and 2000, four new USTs were installed on the northern-central portion of the subject site. These USTs and their associated components are currently in operation at the subject site.

Four quarters of groundwater monitoring activities were completed at the subject site in 2000 and 2001, and petroleum hydrocarbon constituents were detected in groundwater samples collected from several onsite and offsite monitoring wells. An evaluation of Oregon DEQ Risk-Based Decision Making (RBDM) protocols, however, indicated that petroleum-impacted groundwater at and in the vicinity of the subject site associated with historical releases from the Delco facility does not appear to pose a feasible current risk to human health and the environment.

Based on an Oregon DEQ request, in February 2004 Wohlers Environmental coordinated completion of four drivepoint borings at and adjacent to the subject site. The purpose of completion of additional borings was to collect and evaluate additional groundwater data for the purpose of supporting project file closure and issuance of a No Further Action (NFA) finding by the Oregon DEQ. Analytical results associated with groundwater samples collected in February 2004 indicate that petroleum hydrocarbon constituents either were not detected or were detected at low to moderate concentrations. An evaluation of Oregon DEQ Risk-Based Decision Making (RBDM) protocols indicate that petroleum-impacted groundwater at and in the vicinity of the subject site associated with historical releases from the Delco facility does not appear to pose a current or reasonably likely future risk to human health and the environment.

Based on the findings and conclusions associated with UST decommissioning, quarterly groundwater monitoring and subsurface investigation activities, further investigation and/or field activities at the subject site do not appear warranted. Wohlers Environmental recommends project file closure and issuance of a No Further Action finding for the subject site by the Oregon DEQ.

TABLE OF CONTENTS

<i>Section</i>	<i>Page No.</i>
EXECUTIVE SUMMARY	<i>i</i>
1.0 INTRODUCTION	1
1.1 SITE DESCRIPTION	1
1.2 REGIONAL/LOCAL GEOLOGY & HYDROGEOLOGY	1
2.0 SCOPE OF SERVICES	2
3.0 PREVIOUS SITE ACTIVITIES	2
3.1 HISTORICAL RELEASE INCIDENTS: 1988 – 1993	2
3.2 PHASE I ESA AND FOLLOW-UP ACTIVITIES: MAY 1993	3
3.3 SUBSURFACE INVESTIGATION: JUNE 1993	3
3.4 SITE ACTIVITIES: 1994	3
3.5 UST TIGHTNESS TESTING ACTIVITIES: 1993 – 1994	3
3.6 SITE ACTIVITIES: 1995 – 1996	4
3.7 SITE ACTIVITIES: 1998 – 1999	4
3.8 GROUNDWATER MONITORING ACTIVITIES: 2000 – 2001	5
4.0 SUBSURFACE INVESTIGATION ACTIVITIES	5
5.0 SUBSURFACE INVESTIGATION RESULTS	6
6.0 LAND & GROUNDWATER USE	7
6.1 LAND USE	7
6.2 GROUNDWATER USE	7
7.0 RISK-BASED DECISION MAKING EVALUATION	7
7.1 SOIL PATHWAYS	8
7.2 GROUNDWATER PATHWAYS	9
8.0 SUMMARY OF FINDINGS	11
9.0 CONCLUSIONS	12
10.0 RECOMMENDATIONS	13
11.0 QUALIFICATIONS	13

TABLE OF CONTENTS (Cont.)

FIGURES

Figure 1	Site Vicinity Map
Figure 2	Site Map
Figure 3	Groundwater Sample Location & Analytical Results Map
Figure 4	Conceptual Site Model for Potential Receptors

TABLES

Table 1	Groundwater Sample Analytical Results
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APPENDICES

Appendix A	Exploratory Boring Logs
Appendix B	Field Procedures
Appendix C	Laboratory Analytical Results and Chain-of-Custody Documentation
Appendix D	Zoning Information
Appendix E	Community/Domestic Well Survey Documentation

1.0 INTRODUCTION

Wohlers Environmental Services (Wohlers Environmental) was authorized by Mr. Gurdev Singh Sohi of Delco Petroleum, LLC (Delco) to complete subsurface investigation activities at the Delco facility located at 17869 S.E. McLoughlin Boulevard in Milwaukie, Clackamas County, Oregon (subject site; see Figure 1, "Site Vicinity Map"). The following sections include a description of the site and vicinity and a description of regional and local geology and hydrogeology.

1.1 Site Description

The subject site is an approximate 0.7-acre commercial property currently used as a Jiffy Lube and retail petroleum fueling facility. Prior to ownership by Delco, the subject site was owned and/or occupied by Flying J, Inc. (Flying J) and the Milwaukie Fuel Stop.

The subject site is located in Section 18, Township 2 South and Range 2 East of the Willamette Baseline and Meridian as shown on the U.S. Geological Survey 7.5 minute topographic map for the Gladstone, Oregon Quadrangle (see Figure 1).

Ed's Muffler & Brakes borders the subject site along its northern perimeter and Buster's Restaurant is located south of the subject site. Commercial properties are located east across S.E. McLoughlin Boulevard. Residential properties are located west of and above the subject site (these residential properties are located on an apparent basalt bench approximately 30 feet higher in elevation than the subject site). A Delco office and a Jiffy Lube facility occupy a building located in the western-central portion of the subject site. Fuel dispenser islands are located in the eastern-central portion of the subject site. Underground Storage Tanks (USTs) and an out-of-service Vapor Extraction (VE) system are located along the northern boundary of the subject site (see Figure 2, "Site Map").

1.2 Regional/Local Geology & Hydrogeology

According to the U.S. Department of Agriculture *Soil Survey of Clackamas County, Oregon* dated November 1985, the subject site is underlain by "Humaquepts, ponded" soils with zero to two percent slopes. These deep, poorly-drained soils are found on flood plains and old lake bottoms and are formed in lacustrine material over peat. These soils are subject to brief periods of flooding in winter. Based on information obtained during previously-completed onsite investigation and remediation activities, apparent native subsurface material beneath the subject site consists of clay and clayey silt to depths of up to 15 feet below surface grade (bsg), underlain by silty sand and cobbly gravel (see GeoPro Geological Services' April 2000 "Remedial Excavation Report" for additional information). Based on current and previously-completed field measurements, groundwater levels associated with onsite and offsite monitoring wells have ranged between two feet and nine feet bsg.

The topographic map indicates that the subject site is located approximately 100 feet above mean sea level. Topography in the vicinity of the site is generally flat with a slight rise toward residential properties to the west. The Willamette River is located approximately 0.5 miles west of the subject site, and the Clackamas River discharges into the Willamette River approximately 1.5 miles south of the subject site.

2.0 SCOPE OF SERVICES

Wohlers Environmental was authorized by Mr. Sohi of Delco to complete the following scope of services associated with the Delco facility located at 17869 S.E. McLoughlin Boulevard in Milwaukie, Oregon.

- ◆ Prepare a site-specific Health and Safety Plan (HSP) covering project-specific worker health and safety issues, as required by the Oregon and U.S. Occupational Safety and Health Administrations (OSHA).
- ◆ Coordinate completion of public and private utility location survey to assist in the identification of subsurface public and private utility corridors and/or subsurface obstructions at and adjacent to the subject site.
- ◆ Coordinate completion of four drivepoint borings to a depth of approximately 10 feet bsg, and collect groundwater samples for analysis of petroleum hydrocarbon constituents.
- ◆ Prepare a report summarizing environmental assessment activities with related conclusions and recommendations.

3.0 PREVIOUS SITE ACTIVITIES

The following section summarizes prior site assessment, cleanup and monitoring activities associated with historical petroleum releases at the Delco retail motor fuel facility located at 17869 S.E. McLoughlin Boulevard in Milwaukie, Oregon.

3.1 Historical Release Incidents: 1988 - 1993

In April 1988, an approximate 81-gallon surface spill of fuel was reported and subsequently cleaned up.

In January 1993, a release from a petroleum product line was discovered during installation of an onsite Stage II vapor recovery system. The product line reportedly ran eastward from the onsite UST cavity toward future monitoring well MW-2. Groundwater was not encountered during retrofitting and repair of the product line system, and excavated soil from the associated trench was stockpiled west of the onsite Jiffy Lube facility. A composite soil sample from the excavated material was analyzed for Total Petroleum Hydrocarbon-Gasoline (TPH-G) and Benzene, Toluene, Ethylbenzene and Xylenes (BTEX) and lead constituents. TPH-G constituents were detected at 1,000 milligrams per kilogram (mg/kg) or parts per million (ppm). Benzene and lead were not detected. In February 1993, an "Initial Report Form for UST Cleanup Project" was prepared by Flying J, owner of the subject site at that time.

3.2 Phase I ESA and Follow-up Activities: May 1993

In May 1993, a Phase I Environmental Site Assessment (ESA) was completed by Delta Environmental Consultants, Inc. (Delta) at the Flying J/subject site gasoline station. Results of the Phase I ESA indicated the likelihood of a release of petroleum product at the site. Geo-Tech Explorations, Inc. (Geo-Tech) subsequently completed a Phase II preliminary site characterization that included completion of five soil borings (i.e., borings B-1 through B-5). Free product reportedly was observed in borings B-1 and B-5.

3.3 Subsurface Investigation: June 1993

In June 1993, an additional six borings were drilled and completed as two-inch groundwater monitoring wells (i.e., wells MW-1 through MW-6) with groundwater encountered at approximately seven feet bsg. Silty sands reportedly were observed beneath the subject site with silty clay occurring approximately between seven feet and 10 feet bsg. Soil samples collected between approximately five feet and 6.5 feet bsg contained benzene concentrations ranging from non-detect in a soil sample collected from boring MW-6 to a maximum of 23,000 ppm in a soil sample collected from boring MW-2.

3.4 Site Activities: 1994

In July 1994, soil samples were collected from the trench material stockpile or "spoil pile" located west of the Jiffy Lube facility and analyzed. TPH-Diesel extended (TPH-Dx) constituents (i.e., diesel and heavy oil) were detected at a maximum of 330 ppm.

In July 1994, approximately one inch of free product was observed in onsite well MW-3. Free product from well MW-3 was removed on a weekly basis from July through October 1994, and on a biweekly basis from November 1994 through January 1995. During November and December 1994, five 1,500-gallon Jiffy Lube motor oil USTs were decommissioned by removal and taken offsite for disposal/recycling. Soil cleanup activities were not completed following UST decommissioning activities.

3.5 UST Tightness Testing Activities: 1993 - 1994

Tightness tests were conducted on four onsite UST systems in December 1993 and December 1994. Each UST system reportedly tested 'tight' (i.e., no apparent leak detected using U.S. Environmental Protection Agency [EPA]-mandated testing protocols). Additionally, in September 1994 the onsite regular and unleaded gasoline fuel lines and premium gasoline UST system was tested and passed.

3.6 Site Activities: 1995 - 1996

In January 1995, onsite wells MW-7, MW-8 and MW-9 were installed. In February 1995, well MW-3 was damaged during site characterization activities and subsequently was decommissioned. During groundwater sampling completed in June 1995, free product was observed in and removed from well MW-7 (i.e., located in the vicinity of former well MW-3). Free product was not reported in any onsite monitoring wells after September 1995.

Between September 1995 and August 1996, onsite monitoring well MW-10 was installed. In August 1996, offsite well MW-11 was installed in the reported downgradient groundwater flow direction north of the Jiffy Lube facility and west of Ed's Muffler & Brakes. Wells MW-12 and MW-13 were installed onsite in August/September 1996.

A groundwater pump and treatment system operated at the subject site from late 1995 to September 1999.

3.7 Site Activities: 1998 - 1999

In January 1998, gasoline UST product lines and tanks were tightness tested and passed. The onsite 8,000-gallon diesel UST and associated lines, however, failed the tightness test. During remedial activities in September 1999, apparent abandoned product lines were encountered between the onsite UST cavity and well MW-2.

In October 1999, four steel USTs were excavated and transported to Northwest Truck Parts Recycling by Pacific Northern Environmental, Inc. (PNE). The USTs included one 8,000-gallon diesel and three 12,000-gallon gasoline tanks. The tanks formerly were located in the northern-central portion of the subject site. Visible holes or ruptured areas reportedly were not observed at the time of decommissioning. To prevent erosion under the adjacent Ed's Muffler & Brakes building, a temporary steel sheet pile retaining wall was installed approximately 52 inches from the southern edge of the building. The retaining wall was installed in October 1999 to an approximate depth of 30 feet bsg.

Following UST removal, the petroleum-impacted soil in the former UST cavity was over-excavated to an approximate depth of 12 feet bsg with over-excavation of petroleum-impacted soil in several onsite locations to approximately 15 feet bsg. Approximately 5,000 tons of petroleum-impacted soil were excavated and transported to TPS Technologies in Portland, Oregon for thermal treatment/disposal. Groundwater that accumulated in the excavation was pumped into onsite holding tanks, aerated, and discharged under an Oregon DEQ National Pollutant Discharge Elimination System (NPDES) permit into an onsite storm drain. An estimated 200,000 gallons of accumulated groundwater were discharged into the onsite storm drain.

The former UST cavity was extended east, southeast and west based on soil sample analytical results. At the western extent of the excavation, an unreported accumulation of disposed materials (i.e., building materials, auto parts and trash) was uncovered, apparently dating from the early 1960s when a prior station had been demolished. Approximately 230 tons of soil and 10 truck tires were transported offsite for disposal from this unreported 'dump' area (see the above-referenced "Remedial Excavation Report" for further details regarding UST decommissioning and soil over-excavation activities).

As previously referenced, a groundwater pump and treatment system operated at the subject site from late 1995 to September 1999 but reportedly has not operated since UST decommissioning and soil cleanup activities were completed in October 1999. In November 1999, onsite wells MW-14 and MW-15 were installed. In late 1999 and early 2000, four new USTs and associated systems were installed on the northern-central portion of the subject site.

3.8 Groundwater Monitoring Activities: 2000 - 2001

In August 2000, GeoPro Geologic Services (GeoPro) completed Third Quarter 2000 groundwater monitoring. A description of these activities was included in the September 2000 "Quarterly Report: Groundwater Monitoring/August 2000" previously submitted by GeoPro to the Oregon DEQ.

Wohlers Environmental completed Fourth Quarter 2000 and First Quarter 2001 groundwater monitoring in January 2001 and March 2001, respectively. A description of these activities was included in the May 2001 "Fourth Quarter 2000 & First Quarter 2001 Groundwater Monitoring Report" previously submitted by Wohlers Environmental to the Oregon DEQ.

Wohlers Environmental completed Second Quarter 2001 groundwater monitoring in June 2001. A description of these activities was included in the September 2001 "Second Quarter 2001 Groundwater Monitoring Report" previously submitted by Wohlers Environmental to the Oregon DEQ.

4.0 SUBSURFACE INVESTIGATION ACTIVITIES

Following is a summary of subsurface investigation activities completed in late February 2004 at the subject site, including a description of drivepoint boring and associated groundwater sampling procedures. Prior to initiation of field activities, Wohlers Environmental completed a site-specific HSP associated with field activities, as required by the U.S. and Oregon OSHA agencies.

On 24 February 2004, Wohlers Environmental personnel coordinated completion of four drivepoint borings (i.e., borings DP-1 through DP-4) at and adjacent to the subject site. Locations of site features and drivepoint borings DP-1 through DP-4 are illustrated on Figure 2, and boring locations and sampling objectives were approved by the Oregon DEQ UST Project Manager prior to completion of the borings.

Drivepoint boring DP-4 was completed in the northeastern corner of the subject site adjacent to stormwater catch basins located in this area while the remaining three borings (i.e., borings DP-1, DP-2 and DP-3) were completed north, west and east, respectively, of the adjoining "Ed's Muffler & Brakes" building. Each of the drivepoint borings was completed to approximately 10 feet bsg. Soil samples were not collected from the borings, as previously discussed and agreed to by representatives of Delco and the Oregon DEQ. Exploratory boring logs are included in Appendix A ("Exploratory Boring Logs").

Shallow groundwater was encountered in each of the borings between five feet and 10 feet bsg, and one groundwater sample was collected from each of the borings for laboratory analyses. The groundwater samples were placed in appropriate sample containers, stored at approximately four degrees centigrade, and transported to an analytical laboratory under chain-of-custody protocols.

Field sampling procedures are included in Appendix B (Field Procedures) and chain-of-custody documentation is included in Appendix C (Laboratory Analytical Results and Chain-of-Custody Documentation).

Each of the four groundwater samples was analyzed for TPH-Dx constituents. The groundwater sample collected from boring DP-1 was analyzed for the full suite of Volatile Organic Compound (VOC) constituents using EPA Method 8260. Groundwater samples collected from the remaining three borings were analyzed for Oregon DEQ Risk-Based Decision Making (RBDM) VOC constituents using modified EPA Method 8260. Groundwater samples collected from borings DP-1 and DP-4 were analyzed for TPH-Gasoline extended (TPH-Gx) constituents. The groundwater sample collected from boring DP-1 was analyzed for Polynuclear Aromatic Hydrocarbon (PAH) constituents. Groundwater samples were analyzed on normal laboratory turnaround time to assist in controlling project-related costs.

5.0 SUBSURFACE INVESTIGATION RESULTS

Analytical results associated with groundwater samples collected in each of the four drivepoint borings indicated that TPH-Dx constituents were not detected with the exception of groundwater sample DP-1-W, in which diesel constituents as oil were detected at 1,150 ppm. Follow-up PAH analysis indicated that low concentrations of six PAH constituents were detected in this sample (only one carcinogenic PAH constituent, chrysene, was detected in the sample at 3.3 micrograms per liter [ug/l] or parts per billion [ppb]).

VOC constituents were not detected in groundwater samples collected from drivepoint borings DP-2 and DP-3. VOC constituents detected in groundwater sample DP-1-W included benzene at 0.7 ppb, xylenes at 4.0 ppb and 1,2,4-TriMethylBenzene (1,2,4-TMB) at 6.0 ppb. VOC constituents detected in groundwater sample DP-4-W included benzene at 24.0 ppb, toluene at 2.0 ppb, ethylbenzene at 4.0 ppb, xylenes at 17.0 ppb, naphthalene at 8.0 ppb, 1,2,4-TMB at 41.0 ppb, 1,3,5-TMB at 10 ppb, IsoPropylBenzene (IPB) at 10.0 ppb, N-PropylBenzene (NPB) at 28 ppb and Methyl Tertiary Butyl Ether (MTBE) at 75 ppb. TPH-Gx constituents were detected in groundwater sample DP-4-W at 655 ppb. TPH-Gx constituents were not detected in groundwater sample DP-1-W. Analytical results are illustrated on Figure 3, "Groundwater Sample Analytical Results Map," and included in Table 1, "Groundwater Sample Analytical Results," and Appendix C.

6.0 LAND & GROUNDWATER USE

The following sections describe current and reasonably likely future land use and groundwater use at and in the vicinity of the subject site.

6.1 Land Use

Based on Clackamas County Master Plan designations, zoning at and in the vicinity of the subject site is "General Commercial" (C-3). Multifamily and urban residential and single-family residential uses are not permitted (see Appendix D, "Zoning Information").

Current land use at and adjacent to the subject site is commercial, including S.E. McLoughlin Boulevard (Highway 99E) adjacent to and east of the site with commercial beyond, Buster's Restaurant adjacent to and south of the site with commercial beyond, Ed's Muffler & Brakes adjacent to and north of the site with commercial beyond, and a basalt cliff face adjacent to and west of the site with residential beyond situated approximately 50 feet higher in elevation than the subject site.

6.2 Groundwater Use

Based on information provided by the City of Milwaukie, potable water at and in the vicinity of the subject site is provided by Oak Lodge Water District #4, and will be into the foreseeable future. According to City representatives, potable water supplies are more than adequate for current and foreseeable future water demand at and in the vicinity of the subject site.

Review of domestic and community well log files maintained by the Oregon Water Resources Department (OWRD) has indicated that only one domestic potable water well is located within 0.25 miles of the subject site (see Appendix E, "Domestic and Community Well Survey," for additional information). The well has a casing depth of 60 feet, is located approximately 0.2 miles southwest of the subject site and is separated from the subject site by a low ridge.

7.0 RISK-BASED DECISION MAKING EVALUATION

The Oregon DEQ has published a guidance document entitled "Risk-Based Decision Making (RBDM) for the Remediation of Petroleum-Contaminated Sites" (September 2003) that is applicable to petroleum hydrocarbon releases from regulated Underground Storage Tanks (USTs) or other sources. "Risk" from exposure to chemicals generally is defined as the combination of a chemical's toxicity and the degree of human exposure to that chemical. In order to have "risk" to humans, three elements must be present, including a **chemical source**, an **exposure pathway**, and a **human receptor**. According to the Oregon DEQ RBDM guidance document, if any one of these three elements is absent at the subject site then there is no perceived risk.

The Oregon DEQ RBDM guidance document includes generic risk-based cleanup levels for three petroleum hydrocarbon whole products, 25 individual petroleum hydrocarbon constituents, and eight chlorinated solvents. The generic Risk-Based Concentrations (RBCs) are cleanup levels that have been based on conservative default site conditions that are calculated to be protective of human health through a combination of nine exposure pathways and five human receptor scenarios.

To evaluate whether or not all three elements of risk are present at a given site, a Conceptual Site Model (CSM) is developed on a site-specific basis. The CSM includes an evaluation of petroleum hydrocarbon whole products and individual chemical constituents detected in soil and/or groundwater, current and reasonably likely future exposure pathways, and current and reasonably likely human receptors. The CSM developed for the subject site is included as Figure 4, "Conceptual Site Model."

Contaminants of Potential Concern (COPCs) represent petroleum hydrocarbon whole products or individual chemical constituents that have been detected at concentrations that exceed one or more of the generic RBCs for an applicable exposure pathway and human receptor scenario. COPCs have not been identified based on results associated with applicable soil and groundwater sampling at and adjacent to the subject site.

As noted in Section 6.0 above, the subject property and all adjoining properties are zoned "General Commercial" (C-3) and the subject site is located in an area of commercial land use. Residential land use is not a permitted use of the subject property according to the C-3 zoning ordinance. Based on this land use and zoning designation, the following RBDM evaluation focuses on Occupational, Construction Worker, and Excavation Worker human receptor scenarios.

7.1 Soil Pathways

Soil Ingestion, Dermal Contact and Inhalation (RBC_{ss}): Analytical results associated with site assessment and cleanup activities completed in 1999 have indicated that petroleum constituents in soil samples either were not detected or were below generic RBC_{ss} exposure pathway target cleanup levels. Accordingly, current or reasonably likely future risk to Occupational, Construction Worker, and Excavation Worker receptors by the surface or subsurface "Soil Ingestion, Dermal Contact and Inhalation" exposure pathway are not expected and have not been included on the CSM.

Soil Volatilization to Outdoor Air (RBC_{so}): Analytical results associated with site assessment and cleanup activities completed in 1999 have indicated that petroleum constituents either were not detected or were below generic RBC_{so} exposure pathway target cleanup levels. Accordingly, current or reasonably likely future risk to Occupational receptors by the soil "Volatilization to Outdoor Air" exposure pathway is not expected and has not been included on the CSM.

Soil Vapor Intrusion into Buildings (RBC_{si}): Analytical results associated with site assessment and cleanup activities completed in 1999 have indicated that petroleum constituents in soil samples either were not detected or were below generic RBC_{si} exposure pathway target cleanup levels with the exception of benzene detected in several soil samples exceeding the RBC_{si} exposure pathway target cleanup level of 1.2 ppm established for Occupational receptors. The nearest building, however, is located over 10 lateral feet from the nearest observed location of remaining petroleum-impacted soil exceeding 1.2 ppm benzene and accordingly, current or reasonably likely future risk to Occupational receptors by the soil "Vapor Intrusion into Buildings" exposure pathway is not expected and has not been included on the CSM.

Leaching to Groundwater (RBC_{sw}): Analytical results associated with site assessment and cleanup activities completed in 1999 have indicated that petroleum constituents either were not detected or were below generic RBC_{sw} exposure pathway target cleanup levels with the exception of benzene and MTBE detected in soil samples exceeding the RBC_{sw} exposure pathway target cleanup levels of 0.052 ppm and 0.3 ppm, respectively, established for Occupational receptors.

Review of community and domestic well log files maintained by the OWRD has indicated that only one domestic potable water well is located within 0.25 miles of the subject site (see Appendix E, "Community/Domestic Well Survey Documentation" for additional information). This well has a casing depth of approximately 60 feet, is located approximately 0.2 miles southwest of the subject site and is separated from the subject site by a low ridge. In addition, information obtained from the City of Milwaukie has indicated that potable water for the subject site and nearby properties is supplied by Oak Lodge Water District #4 and likely will be for the foreseeable future. Also, asphalt, concrete and/or buildings cover or 'cap' the majority of the surface area and adjacent sites, limiting or eliminating surface water infiltration. Based on these site-specific circumstances, soil "Leaching to Groundwater" for current or future consumptive water use has not been included as a current or reasonably likely future exposure pathway on the CSM.

7.2 Groundwater Pathways

Ingestion & Inhalation from Tapwater (RBC_{tw}): Analytical results associated with the last four groundwater monitoring events (i.e., August 2000, January 2001, March 2001 and June 2001) and February 2004 drivepoint boring groundwater sampling activities have indicated that petroleum constituents either were not detected or were below the generic RBC_{tw} exposure pathway target cleanup levels established for Occupational receptors with the exceptions of benzene, MTBE, TPH-Gx and TPH-Dx as oil.

Review of community and domestic well log files maintained by the OWRD has indicated that only one domestic potable water well is located within 0.25 miles of the subject site. This well has a casing depth of approximately 60 feet, is located approximately 0.2 miles southwest of the subject site and is separated from the subject site by a low ridge. In addition, information obtained from the City of Milwaukie has indicated that potable water for the subject site and nearby properties is supplied by Oak Lodge Water District #4 and likely will be for the foreseeable future. Based on these site-specific circumstances, current or reasonably likely future risk to Occupational receptors by the groundwater "Ingestion and Inhalation from Tapwater" exposure pathway is not expected and has not been included on the CSM.

Volatilization to Outdoor Air (RBC_{wo}): Analytical results associated with the last four groundwater monitoring events and February 2004 drivepoint boring groundwater sampling activities have indicated that petroleum constituents either were not detected or were below the generic RBC_{wo} exposure pathway target cleanup levels established for Occupational receptors. Accordingly, current or reasonably likely future risk to Occupational receptors by the groundwater "Volatilization to Outdoor Air" exposure pathway is not expected and has not been included on the CSM.

Vapor Intrusion into Buildings (RBC_{wi}): Analytical results associated with the last four groundwater monitoring events and February 2004 drivepoint boring groundwater sampling activities have indicated that petroleum constituents either were not detected or were below the generic RBC_{wi} exposure pathway target cleanup levels established for occupational receptors. Accordingly, current or reasonably likely future risk to Occupational receptors by the groundwater "Vapor Intrusion into Buildings" exposure pathway is not expected and has not been included on the CSM.

Groundwater in Excavation (RBC_{we}): Analytical results associated with the last four groundwater monitoring events and February 2004 drivepoint boring groundwater sampling activities have indicated that petroleum constituents either were not detected or were below the generic RBC_{we} exposure pathway target cleanup levels established for occupational receptors. Accordingly, current or reasonably likely future risk to Occupational receptors by the "Groundwater in Excavation" exposure pathway is not expected and has not been included on the CSM.

8.0 SUMMARY OF FINDINGS

The following is a summary of findings associated with completion of subsurface investigation activities associated with the Delco retail motor fuel facility located at 17869 S.E. McLoughlin Boulevard in Milwaukie, Oregon.

- ◆ Historical release incidents at the subject site reportedly resulted in petroleum impacts to soil and groundwater. Groundwater monitoring wells were installed on and adjacent to the subject site between 1993 and 1999. Free product removal from two onsite groundwater monitoring wells took place between 1994 and 1995. A groundwater pump and treat system was operated at the subject site between 1995 and 1999.
- ◆ UST decommissioning activities took place at the subject site in 1994 and 1999, and resulted in excavation and removal of over 5,000 tons of petroleum-impacted soil from the subject site.
- ◆ Analytical results associated with groundwater samples collected from each of four drivepoint borings completed in February 2004 indicated that TPH-Dx constituents were not detected with the exception of groundwater sample DP-1-W in which diesel constituents as oil were detected at 1,150 ppm. Follow-up PAH analysis indicated that relatively low concentrations of six PAH constituents were detected, and only one carcinogenic PAH, chrysene, was detected in this sample at 3.3 ppb.

- ◆ VOC constituents were not detected in groundwater samples collected in February 2004 from drivepoint borings DP-2 and DP-3. VOC constituents detected in the groundwater sample collected from boring DP-1 included benzene (0.7 ppb), xylenes (4 ppb) and 1,2,4-TMB (6 ppb). VOC constituents detected in the groundwater sample collected from boring DP-4 included benzene (24 ppb), toluene (2 ppb), ethylbenzene (4 ppb), xylenes (17 ppb), naphthalene (8 ppb), 1,2,4-TMB (41 ppb), 1,3,5-TMB (10 ppb), IPB (10 ppb), NPB (28 ppb) and MTBE (75 ppb).
- ◆ TPH-Gx constituents were detected in groundwater sample DP-4-W at 655 ppb. TPH-Gx constituents were not detected in groundwater sample DP-1-W.
- ◆ Analytical results associated with soil assessment and cleanup activities completed in 1999 indicate that petroleum constituents either were not detected or were below the generic Occupational target cleanup levels for the soil "Ingestion, Dermal Contact and Inhalation" and "Volatilization to Outdoor Air" exposure pathways.
- ◆ Analytical results associated with soil assessment and cleanup activities completed in 1999 indicate that petroleum constituents either were not detected or were below generic Occupational target cleanup levels for the soil "Vapor Intrusion Into Buildings" exposure pathway with the exception of benzene detected in several soil samples exceeding the occupational target cleanup level for benzene of 1.2 ppm. The nearest building, however, is located at least 10 lateral feet from the nearest observed location of remaining petroleum-impacted soil exceeding 1.2 ppm benzene.
- ◆ Analytical results associated with soil assessment and cleanup activities completed in 1999 indicate that petroleum COPCs either were not detected or were below the generic Occupational target cleanup levels for the soil "Leaching to Groundwater" exposure pathway with the exception of benzene and MTBE constituents. Benzene and MTBE were detected in soil samples exceeding the Occupational soil "Leaching to Groundwater" exposure pathway target cleanup levels of 0.052 ppm and 0.3 ppm, respectively.
- ◆ Analytical results associated with the last four groundwater monitoring events have indicated that petroleum COPCs either were not detected or were below the generic Occupational target cleanup levels established for the groundwater "Volatilization to Outdoor Air," groundwater "Vapor Intrusion into Buildings" and "Groundwater in Excavation" exposure pathways.
- ◆ Analytical results associated with the last four groundwater monitoring events (i.e., August 2000, January 2001, March 2001 and June 2001) and February 2004 drivepoint boring groundwater sampling activities indicate that petroleum COPCs either were not detected or were below the generic Occupational groundwater "Ingestion & Inhalation from Tapwater" exposure pathway target cleanup levels established for occupational receptors with the exceptions of benzene, MTBE, TPH-Gx and TPH-Dx as oil.

- ◆ Review of community and domestic potable water well log files maintained by OWRD indicated that only one domestic potable water well is located within 0.25 miles of the subject site. This well has a casing depth of approximately 60 feet, is located approximately 0.2 miles southwest of the subject site and is separated from the subject site by a low ridge. In addition, information obtained from the City of Milwaukie indicated that potable water for the subject site and nearby properties is supplied by Oak Lodge Water District #4 and likely will be for the foreseeable future.

9.0 CONCLUSIONS

The following conclusions are presented based on the findings associated with previous and current onsite and offsite investigation and cleanup activities associated with the Delco retail motor fuel facility located at 17869 S.E. McLoughlin Boulevard in Milwaukie, Oregon.

- ◆ Removal of four USTs and approximately 5,000 tons of petroleum-impacted soil at the subject site in 1999 appears to have eliminated the majority of the primary and secondary sources of petroleum impacts to subsurface soil and groundwater at the subject site associated with historical petroleum releases at the Delco retail motor fuel facility.
- ◆ Based on site and regional-specific conditions and circumstances, “Soil Ingestion, Dermal Contact and Inhalation,” soil “Volatilization to Outdoor Air,” soil “Vapor Intrusion into Buildings” and soil “Leaching to Groundwater” associated with petroleum-impacted soils at the subject site do not appear to represent current or reasonably likely future exposure pathways.
- ◆ Based on site and regional-specific conditions and circumstances, groundwater “Ingestion and Inhalation from Tapwater,” groundwater “Volatilization to Outdoor Air,” groundwater “Vapor Intrusion into Buildings” and “Groundwater in Excavation” associated with petroleum-impacted shallow groundwater at the subject site do not appear to represent current or reasonably likely future exposure pathways.
- ◆ Based on an evaluation of Oregon DEQ RBDM protocols, petroleum-impacted soil and groundwater at the subject site associated with historical releases of petroleum from the Delco retail motor fuel facility do not appear to pose a significant and/or feasible current risk to human health and the environment.

10.0 RECOMMENDATIONS

Based on the findings and conclusions associated with UST decommissioning and cleanup, quarterly groundwater monitoring and subsurface investigation activities, further investigation and/or filed activities at the subject site do not appear warranted. Wohlers Environmental recommends project file closure and issuance of a No Further Action finding for the subject site by the Oregon DEQ.

11.0 QUALIFICATIONS

Our professional services have been performed, our findings obtained, and our recommendations prepared in accordance with customary principles and practices in the fields of environmental science and engineering. This statement is in lieu of other statements either expressed or implied. Wohlers Environmental is not responsible for the independent conclusions, opinions or recommendations made by others based on the records review, site observations, field exploration, or laboratory test data presented in this report.

Environmental assessments and evaluations are inherently limited in that conclusions are drawn and recommendations developed from information obtained from limited research and site evaluation. For these types of evaluations, it is often necessary to use information prepared by others and Wohlers Environmental cannot be responsible for the accuracy of such information. Additionally, the passage of time may result in a change in the environmental characteristics at this and any other site and surrounding properties. This report does not warrant against future operations or conditions, nor does this report warrant against operations or conditions present of a type or at a location not investigated. This report is not a regulatory compliance audit and is not intended to satisfy the requirements of any local, state, or federal real estate transfer laws.

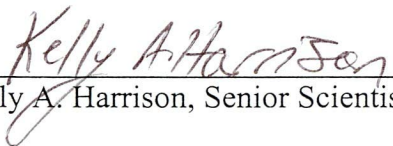
This report is intended for the sole use of **Delco Petroleum Company, Inc.** This report may not be used or relied upon by any other party without the written consent of Wohlers Environmental. The scope of services performed in execution of this evaluation may not be appropriate to satisfy the needs of other users, and use or re-use of this document or the findings, conclusions, or recommendations is at the risk of said user.

The conclusions presented in this report are, in part, based upon subsurface sampling performed at selected locations and depths. There may be conditions between borings or samples that differ significantly from those presented in this report and which cannot be predicted by this study.

Wohlers Environmental does not warrant the correctness, completeness, currentness, merchantability, or fitness of any information related to records review provided in this report. Such information is not the product of an independent review conducted by Wohlers Environmental, but is only available environmental information obtained by or provided to Wohlers Environmental.

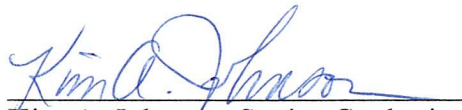
Report Prepared By:

Report Reviewed By:

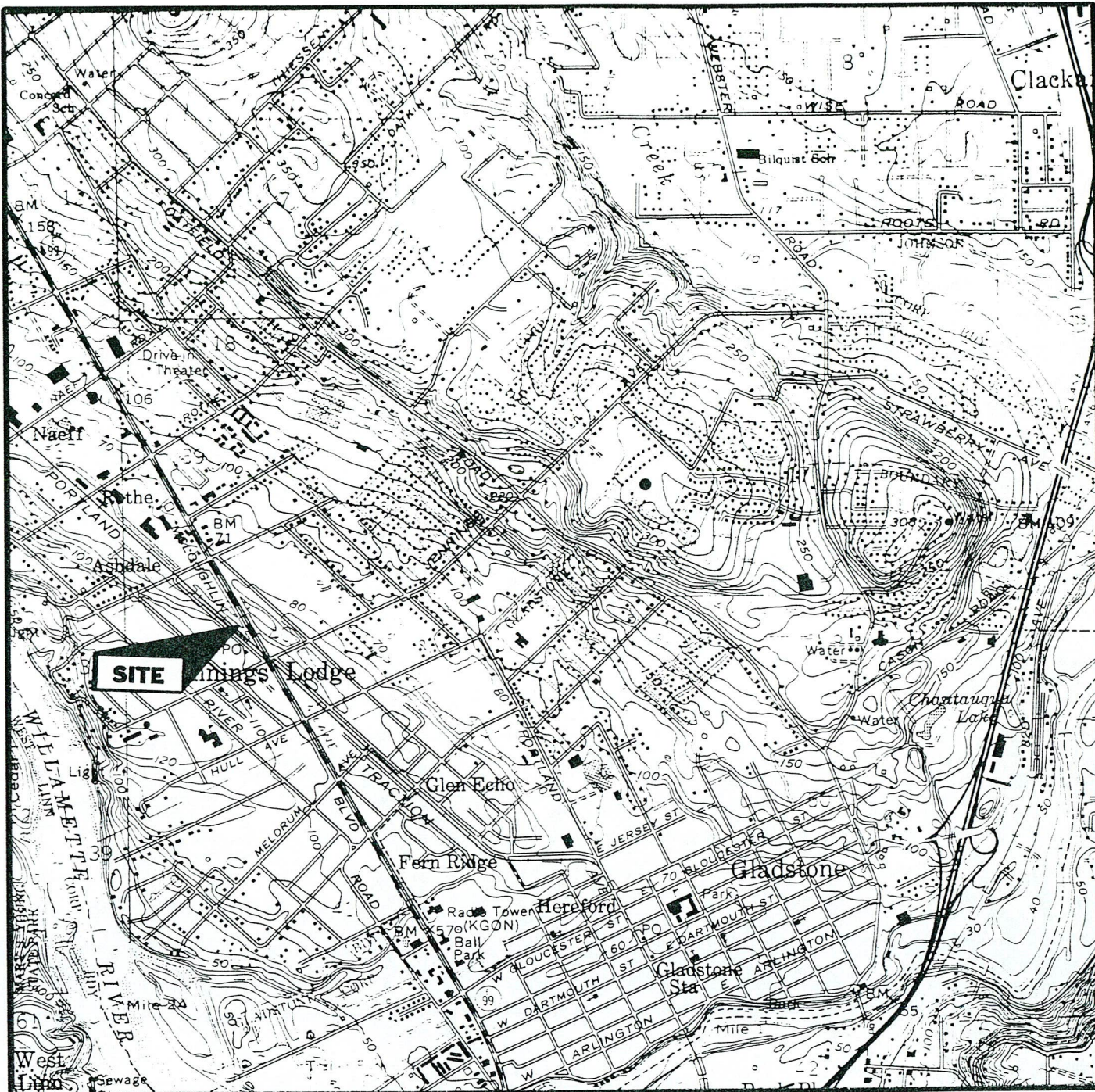

Kelly A. Harrison, Senior Scientist


Christopher C. Wohlers, Senior Consultant

Report Reviewed By:


Kim A. Johnson, Senior Geologist





SOURCE: USGS 7.5 MINUTE TOPOGRAPHIC SURVEY MAP OF
GLADSTONE, OREGON QUADRANGLE. 1961, PHOTOREVISED 1984.

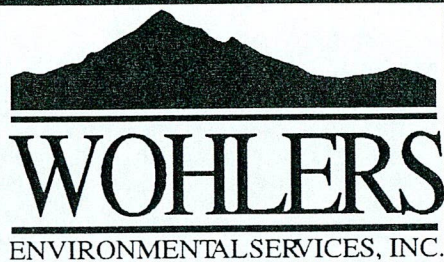


FIGURE 1

SITE VICINITY MAP

DELCO PETROLEUM RETAIL FUELING FACILITY
17869 S.E. MCLOUGHLIN BOULEVARD
MILWAUKIE, OREGON

PROJECT NO.:	04-0003
DATE:	03/25/04
SCALE:	1 : 24,000
FILE:	FG1040003
DRAWN BY:	MM

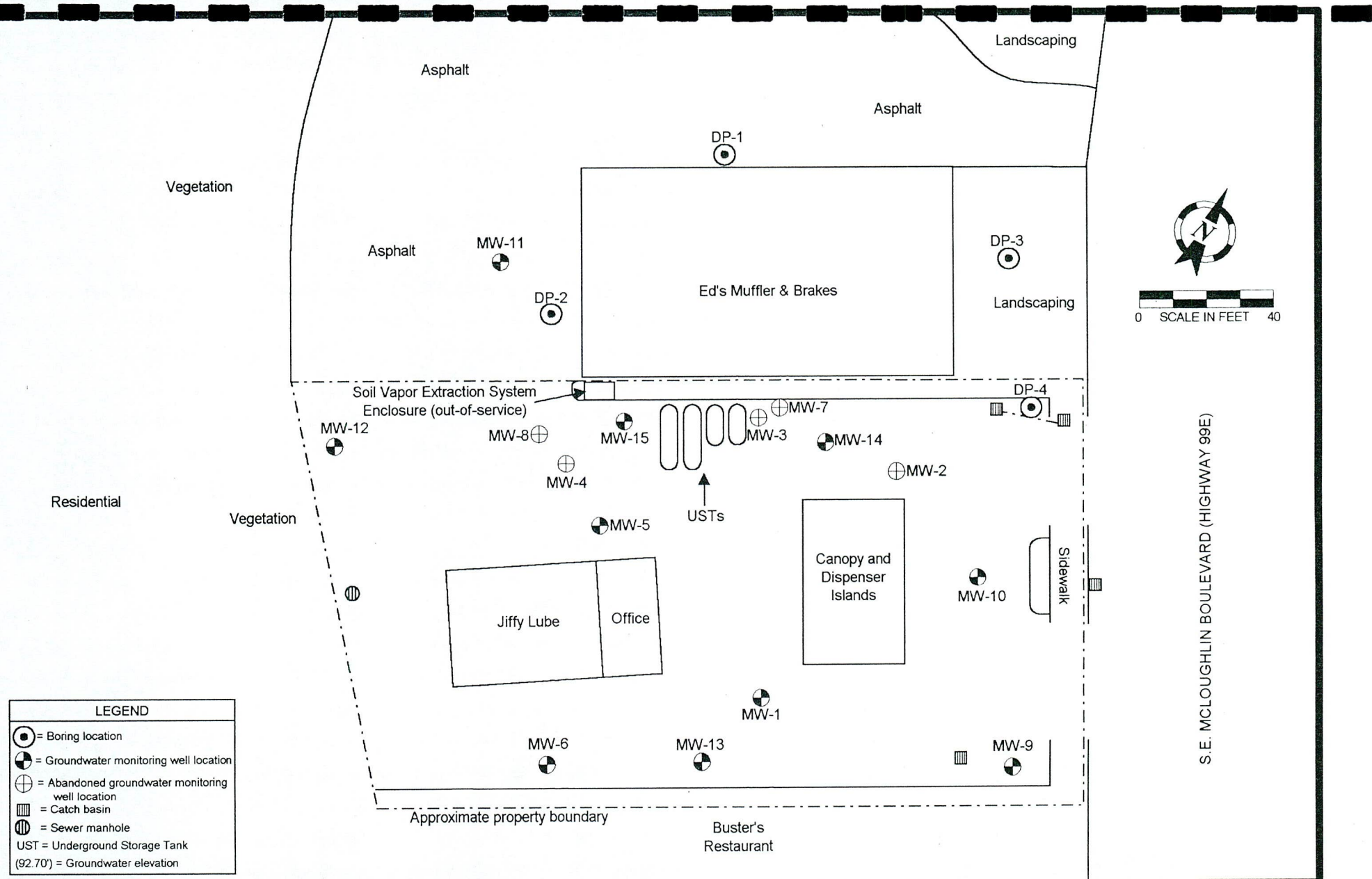
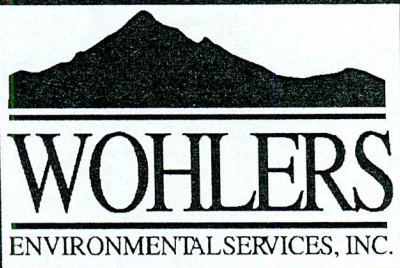


FIGURE 2
SITE MAP

DELCO PETROLEUM RETAIL FUELING FACILITY
17869 S.E. MCLOUGHLIN BOULEVARD
MILWAUKIE, OREGON



PROJECT NO.:	04-0003
DATE:	3/3/04
SCALE:	1" = 40'
FILE:	FG040003
DRAWN BY:	KB

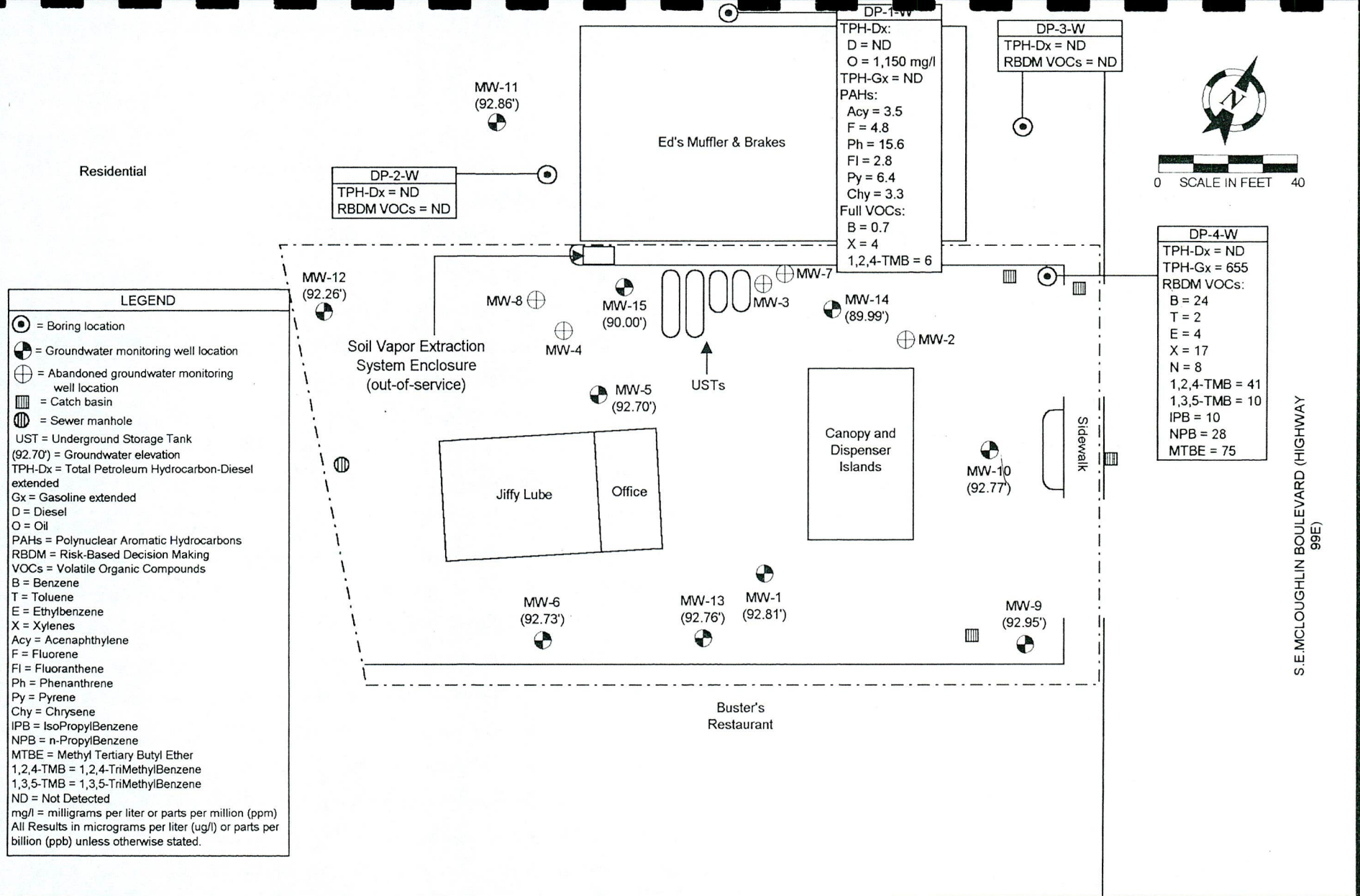


FIGURE 3

GROUNDWATER SAMPLE LOCATION & ANALYTICAL RESULTS MAP

DELCO PETROLEUM RETAIL FUELING FACILITY
 17869 S.E. MCLOUGHLIN BOULEVARD
 MILWAUKIE, OREGON

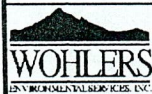
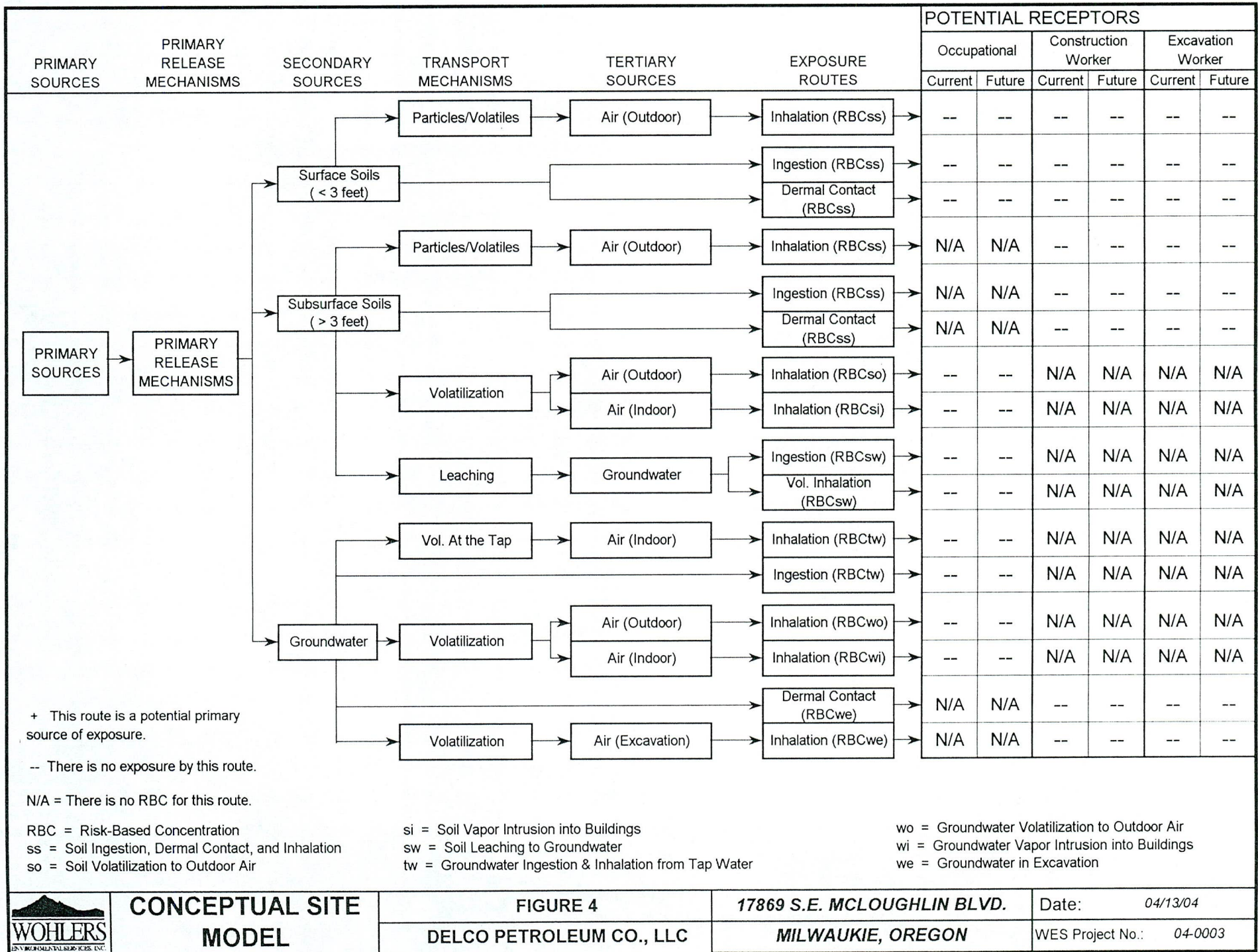
PROJECT NO.: 04-0003

DATE: 03/24/04

SCALE: 1" = 40'

FILE: GWResults

DRAWN BY: KB



CONCEPTUAL SITE MODEL

FIGURE 4

DELCO PETROLEUM CO., LLC

17869 S.E. MCLOUGHLIN BLVD.

MILWAUKIE, OREGON

Date: 04/13/04

WES Project No.: 04-0003

TABLE 1

GROUNDWATER SAMPLE ANALYTICAL RESULTS

DELCO PETROLEUM RETAIL FUELING FACILITY
17873 S.E. MCLOUGHLIN BOULEVARD
MILWAUKIE, OREGON
WES Project No. 04-0003

Sample ID	Date Sampled	TPH-Dx (mg/l)		TPH-Gx (ug/l)	8260 VOCs (ug/l)	RBDM VOCs (ug/l)	PAHs (ug/l)
		Diesel	Oil				
DP-1-W	2/24/04	ND	1,150	ND	B = 0.7 X = 4 1,2,4-TMB = 6	--	Acy = 3.5 F = 4.8 Ph = 15.6 Fl = 2.8 Py = 6.4 Chy = 3.3
DP-2-W	2/24/04	ND	ND	--	--	ND	--
DP-3-W	2/24/04	ND	ND	--	--	ND	--
DP-4-W	2/24/04	ND*	ND	655	--	B = 24 E = 4 T = 2 X = 17 IPB = 10 NPB = 28 MTBE = 75 N = 8 1,2,4-TMB = 41 1,3,5-TMB = 10	--

* Laboratory indicated that gasoline was detected in this sample.

WES = Wohlers Environmental Services, Inc.

ID = Identification

TPH = Total Petroleum Hydrocarbon

Dx = Diesel extended

Gx = Gasoline extended

RBDM = Risk-Based Decision Making

VOCs = Volatile Organic Compounds

PAHs = Polynuclear Aromatic Hydrocarbons

ug/l = micrograms per liter or parts per billion (ppb)

mg/l = milligrams per liter or parts per million (ppm)

Acy = Acenaphthylene

F = Fluorene

Ph = Phenanthrene

Fl = Fluoranthene

Py = Pyrene

Chy = Chrysene

B = Benzene

T = Toluene

E = Ethylbenzene

X = Xylenes

IPB = IsoPropylBenzene

NPB = n-PropylBenzene

N = Naphthalene

MTBE = Methyl Tertiary Butyl Ether

1,3,5-TMB = 1,3,5-TriMethylBenzene

1,2,4-TMB = 1,2,4-TriMethylBenzene

EDB/EDC = Ethylene DiBromide/Ethylene DiChloride

ND = Not Detected

-- = Not Analyzed

APPENDIX A

EXPLORATORY BORING LOGS

LEGEND OF TERMS AND SYMBOLS USED ON EXPLORATORY LOGS

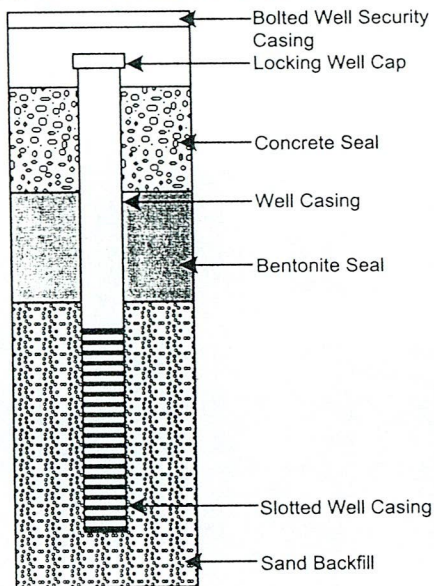
ASTM SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS			GROUP DESCRIPTIONS			MAJOR DIVISIONS			GROUP DESCRIPTIONS			
Coarse Grained Soils	Gravel and Gravelly Soils	Clean Gravel (little or no fines)		GW	Well-graded GRAVEL	Fine Grained Soils	Silt and Clay	Liquid Limit Less than 50%		ML	SILT	
				GP	Poorly-graded GRAVEL					CL	Lean CLAY	
		More than 50% of Coarse Fraction Retained on No.4 Sieve	Gravel with Fines (appreciable amount of fines)		GM				Silty GRAVEL		OL	Organic SILT/Organic CLAY
					GC				Clayey GRAVEL			
More than 50% Retained on No. 200 Sieve Size	Sand and Sandy Soils	Clean Sand (little or no fines)		SW	Well-graded SAND	50% or More Passing No. 200 Sieve Size	Silt and Clay	Liquid Limit 50% or more		MH	Elastic SILT	
				SP	Poorly-graded SAND					CH	Fat CLAY	
	50% or More of Coarse Fraction Passing on No. 4 Sieve	Sand with Fines (appreciable amount of fines)		SM	Silty SAND					OH	Organic Silt/Organic Clay	
				SC	Clayey SAND							
						Highly Organic Soils				PT	PEAT	

COMPONENT PROPORTIONS

DESCRIPTIVE TERMS	RANGE OF PROPORTION
Trace	0 - 5%
Few	5 - 10%
Little	10 - 25%
Some	25 - 45%
Mostly	50 - 100%

GROUNDWATER WELL MODEL



MOISTURE CONTENT

DRY	Absence of moisture, dusty, dry to the touch.
MOIST	Damp but no visible water.
WET	Visible free water, usually soil is below water table.

SAMPLE TYPE SYMBOLS

	2.0" OD* Split Spoon (SPT) (140 lb. hammer with 30 in. drop)
	Shelby Tube
	3.0" OD* Split Spoon with Brass Rings
	Small Bag Sample
	Large Bag (Bulk) Sample
	Core Run
	Non-standard Penetration Test (with Split Spoon sampler)

* OD = Outside diameter

TEST SYMBOLS

GS	Grain Size Distribution
%F	Percent Fines
CN	Consolidation
TX	Triaxial Compression
UC	Unconfined Compression
DS	Direct Shear
K	Permeability
PP	Pocket Penetrometer
	Approximate Compressive Strength (tsf)
TV	Torvane
	Approximate Shear Strength (tsf)
CBR	California Bearing Ratio
MD	Moisture/Density Relationship
PID	Photoionization Device Reading
AL	Atterberg Limits: PL Plastic Limit LL Liquid Limit

COMPONENT DEFINITIONS

COMPONENT	SIZE RANGE
Boulders	Larger than 12 in.
Cobbles	3 in. to 12 in.
Gravel	3 in. to No. 4 (4.5 mm)
Coarse Gravel	3 in. to 3/4 in.
Fine Gravel	3/4 in. to No. 4 (4.5 mm)
Sand	No. 4 (4.5 mm) to No. 200 (0.074 mm)
Coarse Sand	No. 4 (4.5 mm) to No. 10 (2.0 mm)
Medium Sand	No. 10 (2.0 mm) to No. 40 (0.42 mm)
Fine Sand	No. 40 (0.42 mm) to No. 200 (0.074 mm)
Silt and Clay	Smaller than No. 200 (0.074 mm)

RELATIVE DENSITY OR CONSISTENCY VERSES SPT N-VALUE

COHESIONLESS SOILS			COHESIVE SOILS		
Density	N (blows/ft.)	Approximate Relative Density (%)	Consistency	N (blows/ft.)	Approximate Undrained Shear Strength (psf)
Very Loose	0 to 4	0 - 15	Very Soft	0 to 2	250 - 500
Loose	4 to 10	15 - 35	Soft	2 to 4	500 - 1000
Medium Dense	10 to 30	35 - 65	Medium Stiff	4 to 8	500 - 1000
Dense	30 to 50	65 - 85	Stiff	8 to 15	1000 - 2000
Very Dense	over 50	85 - 100	Very Stiff	15 to 30	2000 - 4000
			Hard	over 30	>4000

Notes: Soil classifications presented on exploration logs are based on visual and laboratory observation in general accordance with ASTM D 2487 and ASTM D 2488.

Soil descriptions are presented in the following general order:

Density/consistency, color, modifier (if any), GROUP NAME, additions to group name (if any), moisture content, proportion, gradation, and angularity of constituents, additional comments. (GEOLOGIC INTERPRETATION)

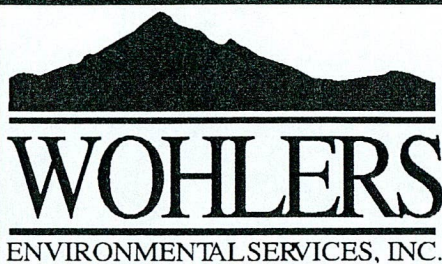
Please refer to the discussion in the report text as well as the exploration logs for a more complete description of subsurface conditions

DEPTH (feet)	PID (ppm)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DEPTH	USCS SOIL TYPE	GRAPHICS LOG	DESCRIPTION
0							No soil sampling.
5							Water sample collected from temporary screen from 5' - 10' bsg.
10							Strong petroleum odor, discontinuous free product layer.
15							Collected water sample DP-1-W.
20							
25							
30							
35							

FIELD LOCATION: ~ 42' east and 4' north of the northwest corner of Ed's Muffler shop.

TOTAL DEPTH: 10'
BORING DIAMETER: 2 1/4"
WATER DEPTH FIRST: 5'

DRILLING METHOD: Drivepoint
DRILL DATE: 2/24/04



LOG OF EXPLORATORY BORING DATA

DELCO PETROLEUM
17869 S.E. MCLOUGHLIN BLVD.
MILWAUKIE, OREGON

PROJECT NO.: 04-0003

IDENT #: DP-1

CLIENT: Delco Petroleum

DATE: 03/26/04

LOCATION: Milwaukie

DRILLER: Geotech

LOGGED BY: BSM

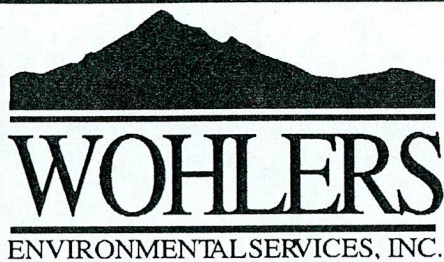
FILE: DP040003

DEPTH (feet)	PID (ppm)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DEPTH	USCS SOIL TYPE	GRAPHICS LOG	DESCRIPTION
0							No soil sampling.
5							Water sample collected from temporary screen from 5' - 10' bsg.
10							
15							Collected water sample DP-2-W.
20							
25							
30							
35							

FIELD LOCATION: ~ 16' west and 17' north of the southwest corner of Ed's Muffler shop.

TOTAL DEPTH: 10'
BORING DIAMETER: 2 1/4"
WATER DEPTH FIRST: 5'

DRILLING METHOD: Drivepoint
DRILL DATE: 2/24/04



LOG OF EXPLORATORY BORING DATA

DELCO PETROLEUM
17869 S.E. MCLOUGHLIN BLVD.
MILWAUKIE, OREGON

PROJECT NO.: 04-0003

IDENT #: DP-2

CLIENT: Delco Petroleum

DATE: 03/26/04

LOCATION: Milwaukie

DRILLER: Geotech

LOGGED BY: BSM

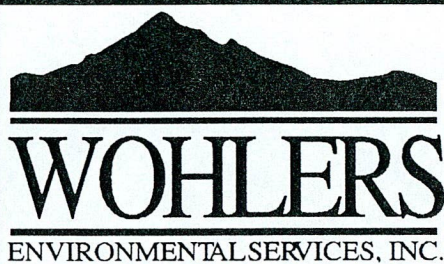
FILE: DP040003

DEPTH (feet)	PID (ppm)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DEPTH	USCS SOIL TYPE	GRAPHICS LOG	DESCRIPTION
0							0
							No soil sampling.
5							5
							Water sample collected from temporary screen from 5' - 10' bsg.
10							10
15							15
							Collected water sample DP-3-W.
20							20
25							25
30							30
35							35

FIELD LOCATION: ~ 21' east and 26' north of the southeast corner of Ed's Muffler shop.

TOTAL DEPTH: 10'
BORING DIAMETER: 2 1/4"
WATER DEPTH FIRST: 5'

DRILLING METHOD: Drivepoint
DRILL DATE: 2/24/04



LOG OF EXPLORATORY BORING DATA

DELCO PETROLEUM
17869 S.E. MCLOUGHLIN BLVD.
MILWAUKIE, OREGON

PROJECT NO.: 04-0003

IDENT #: DP-3

CLIENT: Delco Petroleum

DATE: 03/26/04

LOCATION: Milwaukie

DRILLER: Geotech

LOGGED BY: BSM

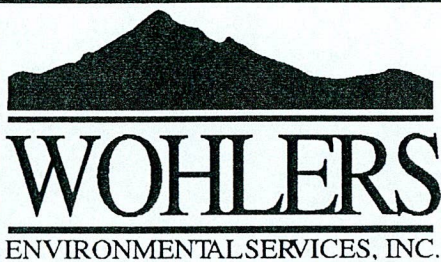
FILE: DP040003

DEPTH (feet)	PID (ppm)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DEPTH	USCS SOIL TYPE	GRAPHICS LOG	DESCRIPTION
0							No soil sampling.
5							Water sample collected from temporary screen from 5' - 10' bsg.
10							
15							Collected water sample DP-4-W.
20							
25							
30							
35							

FIELD LOCATION: ~ 22' east and 10' south of the southeast corner of Ed's Muffler shop.

TOTAL DEPTH: 10'
BORING DIAMETER: 2 1/4"
WATER DEPTH FIRST: 5'

DRILLING METHOD: Drivepoint
DRILL DATE: 2/24/04



LOG OF EXPLORATORY BORING DATA

DELCO PETROLEUM
17869 S.E. MCLOUGHLIN BLVD.
MILWAUKIE, OREGON

PROJECT NO.: 04-0003

IDENT #: DP-4

CLIENT: Delco Petroleum

DATE: 03/26/04

LOCATION: Milwaukie

DRILLER: Geotech

LOGGED BY: BSM

FILE: DP040003

APPENDIX B

FIELD PROCEDURES

FIELD PROCEDURES

I. Exploratory Borings

Prior to initiation of drilling activities, public utility locating services are contacted to survey locations at or near the proposed boring locations. Public utility locating services typically will survey only public access/right-of-way locations, and will generally not survey private property locations where most borings will be located. The locations surveyed by the public utility locating services are evaluated by Wohlers Environmental Services, Inc. ("Wohlers Environmental") staff prior to finalizing boring locations.

In locations where extensive drilling is planned, or where complex subsurface site utilities are expected, or as other applicable site-specific conditions warrant, private utility locating services will be contacted to survey applicable private and public areas. Focus will be on the specific locations of the proposed borings, including survey for metallic underground lines, tanks, and other subsurface objects. If the services of a private locating firm are deemed advisable by Wohlers Environmental and the Client, the results of the private utility locate will be evaluated by Wohlers Environmental staff prior to finalizing boring locations.

When using a hand auger, soil samples will be collected from within the auger head. Continuous soil samples are obtained from drivepoint borings using a macro-sampler. Samples typically will be collected at five foot intervals during the drilling of the boring and visual and olfactory observations of the soil sample will be completed and logged into the field notebook. Soil sample material at each discrete sampling interval will be divided with one portion placed in a zip-lock plastic sandwich bag and one portion placed in a four or nine-ounce glass sampling jar.

When using a mechanized, hollow stem auger drill rig, soil samples will be collected with a split-spoon sampler advanced through the center of the hollow stem auger into undisturbed soil ahead of the auger tip. Samples typically will be collected at five foot intervals (occasional continuous sampling will occur in response to site-specific conditions) during the drilling of the boring. Samples will be removed from the split spoon sampler and visual and olfactory observations of the soil sample will be completed and logged into the field notebook. Soil sample material from the split-spoon sampler from each discrete sampling interval will be divided with one portion placed in a zip-lock plastic sandwich bag and one portion placed in a four or eight ounce glass sampling jar. Soil samples will be given a sample identification number, with date/time of collection, depth, and sampler logged onto the glass sampling jar and the Chain-of-Custody document.

Continuous soil samples are obtained from drivepoint borings using a macro-sampler. Samples typically will be collected at five foot intervals during the drilling of the boring and visual and olfactory observations of the soil sample will be completed and logged into the field notebook. Soil sample material at each discrete sampling interval will be divided with one portion placed in a zip-lock plastic sandwich bag and one portion placed in a four or nine-ounce glass sampling jar. Soil samples will be given a sample identification number, with date/time of collection, depth, and sampler logged onto the glass sampling jar and the Chain-of-Custody document.

II. Groundwater sampling

Where water was present within drivepoint borings, water-producing subsurface materials are screened and a small amount of water purged from the borings prior to sample collection. Water samples are obtained from drivepoint borings by lowering a length of flexible PVC tubing into the boring and either pumping water out using a peristaltic pump or manually filling the tubing by placing a check valve on the end of the tubing. Groundwater samples collected will be placed in appropriate sampling containers, stored at approximately four degrees centigrade, and transported to an analytical laboratory under chain-of-custody protocols.

Groundwater samples will be given a sample identification number, with date/time of collection, and sampler logged onto the glass sampling jar and the chain of custody document.

III. Soil & Groundwater Sample Collection & Analytical Protocols

Soil and groundwater sample collection and analytical protocols are intended to provide consistent and accurate results. These protocols have been developed from the following applicable regulatory documents:

- ◆ Oregon Administrative Rules (OAR) for Underground Storage Tanks, Section 340-122-242
- ◆ Test Methods for Evaluating Solid Waste, U.S. EPA SW-846, 3rd Edition (November 1986)

Sampling supplies and equipment used to collect soil and groundwater samples will be either replaced or thoroughly cleaned using an Alconox or similar cleansing solution prior and after use. Equipment that is cleaned subsequently will be rinsed using tap water followed by a distilled water flush. Sealed and laboratory-cleaned/sterilized sample containers will be used to store the samples prior to laboratory analysis.

APPENDIX C

***LABORATORY ANALYTICAL RESULTS AND
CHAIN-OF-CUSTODY DOCUMENTATION***

LABORATORY REPORT

Wohlers Environmental Services
7440 SW Hunziker St., Suite C
Tigard, Oregon 97223

PROJECT NAME/SITE: Delco
PROJECT NUMBER: 04-0003
EXTRACTION DATE: 2-24-04 to 2-25-04

REPORT NUMBER: 49974
REPORT DATE: 2-26-04
PAGE: 1 of 1

NWTPH-Dx

Analyte: Total Petroleum Hydrocarbon Quantification for water

Field ID	Lab ID	Diesel mg/L (ppm)	Heavy Oil mg/L (ppm)	Surrogate Recovery (%)
DP-1-W	L6699	ND	1,150	*
DP-2-W	L6700	ND	ND	115
DP-3-W	L6701	ND	ND	79
DP-4-W	L6702	ND ‡	ND	86
BLANK	-	ND	ND	-
Reporting Limit	-	0.25	0.50	-

Surrogate is o-Terphenyl

ND = Not Detected (below reporting limit or detection limit)

* Surrogate peak is not discernible on chromatogram from analyte peak.

‡ Gas present.

NWTPH-Gx

Analyte: Total Petroleum Hydrocarbon Quantification for water

Field ID	Lab ID	µg/L (ppb)	Surrogate Recovery (%)
DP-1-W	L6699	ND	89
BLANK	-	ND	-
Reporting Limit	-	250	-

Surrogate is p-Bromofluorobenzene

ND = Not Detected (below reporting limit or detection limit)

LABORATORY REPORT

Wohlers Environmental Services
7440 SW Hunziker St., Suite C
Tigard, Oregon 97223

PROJECT NAME/SITE: Delco
PROJECT NUMBER: 04-0003
EXTRACTION DATE: 3-2-04

REPORT NUMBER: 49974A
REPORT DATE: 3-3-04
PAGE: 1 of 1

NWTPH-Gx

Analyte: Total Petroleum Hydrocarbon Quantification for water

Field ID	Lab ID	µg/L (ppb)	Surrogate Recovery (%)
DP-4-W	L6702	655	86
BLANK	-	ND	-
Reporting Limit	-	250	-

Surrogate is p-Bromofluorobenzene

ND = Not Detected (below reporting limit or detection limit)

Wy'East*Wy'East Environmental Sciences, Inc.*

EPA Method 8260

Analyte: Volatile Organics in water

Field ID: **DP-1-W**Site Name: **Delco**

Lab ID: L6699X.D

Site Number: 04-0003

Analysis date: 2-24-04

Report Number: 49974

CAS#	Compound	Sample (µg/L)	Blank (µg/L)	Quantitation Limit
67-64-1	Acetone	ND	ND	20
71-43-2	Benzene	0.7	ND	0.5
108-86-1	Bromobenzene	ND	ND	2
74-97-5	Bromochloromethane	ND	ND	2
75-27-4	Bromodichloromethane	ND	ND	2
75-25-2	Bromoform	ND	ND	2
74-83-9	Bromomethane	ND	ND	3
78-93-3	2-Butanone (MEK)	ND	ND	10
104-51-8	n-Butylbenzene	ND	ND	2
135-98-8	sec-Butylbenzene	ND	ND	2
98-06-6	tert-Butylbenzene	ND	ND	2
56-23-5	Carbon tetrachloride	ND	ND	2
108-90-7	Chlorobenzene	ND	ND	2
75-00-3	Chloroethane	ND	ND	6
67-66-3	Chloroform	ND	ND	2
74-87-3	Chloromethane	ND	ND	2
95-49-8	2-Chlorotoluene	ND	ND	2
106-43-4	4-Chlorotoluene	ND	ND	2
128-48-1	Dibromochloromethane	ND	ND	2
96-12-8	1,2-Dibromo-3-chloropropane	ND	ND	2
106-93-4	1,2-Dibromoethane	ND	ND	2
74-95-3	Dibromomethane	ND	ND	2
95-50-1	1,2-Dichlorobenzene	ND	ND	2
541-73-1	1,3-Dichlorobenzene	ND	ND	2
106-46-7	1,4-Dichlorobenzene	ND	ND	2
75-71-8	Dichlorodifluoromethane	ND	ND	4
75-34-3	1,1-Dichloroethane	ND	ND	2
107-06-2	1,2-Dichloroethane	ND	ND	2
75-35-4	1,1-Dichloroethylene	ND	ND	5
156-59-2	cis-1,2-Dichloroethylene	ND	ND	3
156-60-5	trans-1,2-Dichloroethylene	ND	ND	2
78-87-5	1,2-Dichloropropane	ND	ND	2
142-28-9	1,3-Dichloropropane	ND	ND	2
594-20-7	2,2-Dichloropropane	ND	ND	2

Lab ID: L6699X.D

Page 2 of 2

CAS#	Compound	Sample (µg/L)	Blank (µg/L)	Quantitation Limit
563-58-6	1,1-Dichloropropene	ND	ND	2
10061-01-5	cis-1,3-Dichloropropene	ND	ND	2
10061-02-6	trans-1,3-Dichloropropene	ND	ND	2
100-41-4	Ethylbenzene	ND	ND	1
87-68-3	Hexachlorobutadiene	ND	ND	2
591-78-6	2-Hexanone	ND	ND	10
98-82-8	Isopropylbenzene	ND	ND	2
99-87-6	p-Isopropyltoluene	ND	ND	2
75-09-2	Methylene chloride	ND	ND	2
108-10-1	Methyl-t-butylether (MTBE)	ND	ND	4
108-10-1	4-Methyl-2-pentanone	ND	ND	10
91-20-3	Naphthalene	ND	ND	2
103-65-1	n-Propylbenzene	ND	ND	3
100-42-5	Styrene	ND	ND	2
630-20-6	1,1,1,2-Tetrachloroethane	ND	ND	2
79-34-5	1,1,2,2-Tetrachloroethane	ND	ND	2
127-18-4	Tetrachloroethylene	ND	ND	2
108-88-3	Toluene	ND	5	1
87-61-6	1,2,3-Trichlorobenzene	ND	ND	3
120-82-1	1,2,4-Trichlorobenzene	ND	ND	3
71-55-6	1,1,1-Trichloroethane	ND	ND	2
79-00-5	1,1,2-Trichloroethane	ND	ND	2
79-01-6	Trichloroethylene	ND	ND	2
75-69-4	Trichlorofluoromethane	ND	ND	3
96-18-4	1,2,3-Trichloropropane	ND	ND	3
95-63-6	1,2,4-Trimethylbenzene	6	ND	2
108-67-8	1,3,5-Trimethylbenzene	ND	ND	2
75-01-4	Vinyl chloride	ND	ND	4
1330-20-7	Total Xylenes	4	11	2

Surrogates:	Percent Recovery:
460-00-4 4-Bromofluorobenzene	99
107-06-2 1,2-Dichloroethane-d4	116
108-88-3 Toluene-d8	106

Wy'East*Wy'East Environmental Sciences, Inc.*

EPA Method 8260

Analyte: Volatile Organics in water

Field ID: **DP-2-W**Site Name: **Delco**

Lab ID: L6700.D

Site Number: 04-0003

Analysis date: 2/24/04

Report Number: 49415

CAS#	Compound	Sample (µg/L)	Blank (µg/L)	Quantitation Limit
71-43-2	Benzene	ND	ND	0.50
106-93-4	1,2-Dibromoethane	ND	ND	2
107-06-2	1,2-Dichloroethane	ND	ND	2
100-41-4	Ethylbenzene	ND	ND	2
98-82-8	Isopropylbenzene	ND	ND	2
1634-04-4	Methyl-tertbutylether (MTBE)	ND	ND	5
91-20-3	Naphthalene	ND	ND	2
103-65-1	n-Propylbenzene	ND	ND	2
108-88-3	Toluene	ND	ND	2
95-63-6	1,2,4-Trimethylbenzene	ND	ND	2
108-67-8	1,3,5-Trimethylbenzene	ND	ND	2
1330-20-7	Total Xylenes	ND	ND	2

	Surrogates:	Percent Recovery:
460-00-4	4-Bromofluorobenzene	100
107-06-2	1,2-Dichloroethane-d4	103
108-88-3	Toluene-d8	100

Wy'East*Wy'East Environmental Sciences, Inc.*

EPA Method 8260

Analyte: Volatile Organics in water

Field ID: **DP-3-W**

Lab ID: L6701.D

Analysis date: 2/24/04

Site Name: **Delco**

Site Number: 04-0003

Report Number: 49415

CAS#	Compound	Sample (µg/L)	Blank (µg/L)	Quantitation Limit
71-43-2	Benzene	ND	ND	0.50
106-93-4	1,2-Dibromoethane	ND	ND	2
107-06-2	1,2-Dichloroethane	ND	ND	2
100-41-4	Ethylbenzene	ND	ND	2
98-82-8	Isopropylbenzene	ND	ND	2
1634-04-4	Methyl-tertbutylether (MTBE)	ND	ND	5
91-20-3	Naphthalene	ND	ND	2
103-65-1	n-Propylbenzene	ND	ND	2
108-88-3	Toluene	ND	ND	2
95-63-6	1,2,4-Trimethylbenzene	ND	ND	2
108-67-8	1,3,5-Trimethylbenzene	ND	ND	2
1330-20-7	Total Xylenes	ND	ND	2

	Surrogates:	Percent Recovery:
460-00-4	4-Bromofluorobenzene	103
107-06-2	1,2-Dichloroethane-d4	108
108-88-3	Toluene-d8	102

Wy'East*Wy'East Environmental Sciences, Inc.*

EPA Method 8260

Analyte: Volatile Organics in water

Field ID: **DP-4-W**Site Name: **Delco**

Lab ID: L6702X.D

Site Number: 04-0003

Analysis date: 2/24/04

Report Number: 49415

CAS#	Compound	Sample (µg/L)	Blank (µg/L)	Quantitation Limit
71-43-2	Benzene	24	ND	0.50
106-93-4	1,2-Dibromoethane	ND	ND	2
107-06-2	1,2-Dichloroethane	ND	ND	2
100-41-4	Ethylbenzene	4	ND	2
98-82-8	Isopropylbenzene	10	ND	2
1634-04-4	Methyl-tertbutylether (MTBE)	75	ND	5
91-20-3	Naphthalene	8	ND	2
103-65-1	n-Propylbenzene	28	ND	2
108-88-3	Toluene	2	ND	2
95-63-6	1,2,4-Trimethylbenzene	41	ND	2
108-67-8	1,3,5-Trimethylbenzene	10	ND	2
1330-20-7	Total Xylenes	17	ND	2

	Surrogates:	Percent Recovery:
460-00-4	4-Bromofluorobenzene	103
107-06-2	1,2-Dichloroethane-d4	111
108-88-3	Toluene-d8	103

Wy'East

Environmental Sciences, Inc

Oregon PAH GC/MS-SIM

Analyte: Polynuclear Aromatic Hydrocarbon (PAH's) in Water

Field ID:	DP-1-W	Site Name:	Delco
Lab ID:	L6699DIL.D	Site Number:	04-00003
Extraction date:	2/26/2004	Report Number:	49974
Date Acquired	3/1/2004	unit:	ug/L

Compound	Sample (ug/L)	Blank	Detection Limit**
Naphthalene	ND	ND	1.1
Acenaphthylene	3.5	ND	1.1
Acenaphthene	ND	ND	1.1
Fluorene	4.8	ND	1.1
Phenanthrene	15.6	ND	1.1
Anthracene	ND	ND	1.1
Fluoranthene	2.8	ND	1.1
Pyrene	6.4	ND	1.1
Benzo(a)anthracene	ND	ND	1.1
Chrysene	3.3	ND	1.1
Benzo(b)fluoranthene	ND	ND	1.1
Benzo(k)fluoranthene	ND	ND	1.1
Benzo(a)pyrene	ND	ND	1.1
Indeno(1,2,3-c,d)pyrene	ND	ND	1.1
Dibenzo(a,h)anthracene	ND	ND	1.1
Benzo(g,h,i)perylene	ND	ND	1.1

Surrogate:	Percent Recovery
2-fluoro-1-1'-biphenyl	126

** Raised detection limit. Sample was run at a dilution due to large amount of contamination.

APPENDIX D

ZONING INFORMATION

SECTION 500 - COMMERCIAL DISTRICTS**503 GENERAL COMMERCIAL (C-3) (5/22/03)**

503.01	PURPOSE
503.02	AREA OF APPLICATION
503.03	PRIMARY USES
503.04	ACCESSORY USES
503.05	USES SUBJECT TO REVIEW BY THE PLANNING DIRECTOR
503.06	CONDITIONAL USES
503.07	PROHIBITED AND PREEXISTING USES
503.08	DIMENSIONAL REQUIREMENTS
503.09	DEVELOPMENT STANDARDS

503.01 PURPOSE

This section is adopted to implement the policies of the Comprehensive Plan for General Commercial areas. The intent of these provisions is to:

- A. Provide for General Commercial areas to meet County residents' shopping needs for a wide range of good and services located in areas accessible by transit and automobile.
- B. Provide for transit and pedestrian-oriented mixed use areas consistent with the policies of the Comprehensive Plan.
- C. Provide for the sale of large-scale items in areas with good transportation access and minimal conflict with other uses.

503.02 AREA OF APPLICATION

This district is to be applied to those areas which are particularly suited for intensive commercial development. Property may be designated General Commercial when all the following criteria are satisfied:

- A. The site has been designated General Commercial on the Comprehensive Plan.
- B. The property and affected area is presently provided with adequate public facilities, services and transportation networks to support the use, or such facilities, services, and transportation networks are planned to be provided concurrently with the development of the property.

503.03 PRIMARY USES

- A. The following uses shall be allowed as primary uses in General Commercial districts:
 - 1. Any use permitted within the Retail Commercial District.
 - 2. Service and retail uses where there is a need for outdoor areas in order to conduct business activities and sales or storage areas are an integral part of the use such as lumber yards or auto sales.
- B. Business Park Uses: Uses which satisfy the provisions of Section 606.03, which are not otherwise listed

as primary uses under 503.03A, above, may locate within this district provided no smoke, noise or odors shall be emitted that detract from the character of a commercial district.

- C. Special Housing: Housing facilities for senior citizens or handicapped persons, subject to the provisions of Section 811.
- D. Institutional Uses: Colleges, educational institutes, and trade schools; art, music or dance studios; radio and television studios, excluding transmission towers.
- E. Cultural/Public Use: Galleries and museums; assembly or convention facilities, theatres for performing arts; exhibition halls, libraries, senior centers and fraternal organizations.
- F. Wireless telecommunication facilities listed in Subsections 835.04, subject to Section 835. (3/14/02)

503.04 ACCESSORY USES

- A. The following uses will be allowed as accessory uses in General Commercial districts:
 - 1. Temporary buildings for uses incidental to construction work, which buildings shall be removed upon completion or abandonment of the construction work.
 - 2. Any other accessory use and structure, not otherwise prohibited, customarily accessory and incidental to a permitted principal use.
 - 3. The temporary storage within an enclosed structure of source-separated recyclable/reusable materials generated and/or used on site prior to onsite reuse or removal by the generator or licensed or franchised collector to a user or broker.
 - 4. Recyclable drop off sites subject to Section 819.
 - 5. Bus shelters, subject to Section 823, bike racks, street furniture, drinking fountains, and other pedestrian and transit amenities.
 - 6. Solar collection apparatus.

503.05 USES SUBJECT TO REVIEW BY THE PLANNING DIRECTOR (3/14/02)

The following use may be approved by the Planning Director pursuant to Subsection 1305.02: (3/14/02)

- A. A. Wireless telecommunication facilities listed in Subsection 835.05, subject to Section 835. (3/14/02)

503.06 CONDITIONAL USES

- A. The following conditional uses may be allowed subject to review by the Hearings Officer pursuant to Section 1300. Approval shall not be granted unless the proposal complies with Section 1203 and any applicable provisions of Section 800. (5/22/03)
 - 1. Hydroelectric facilities, subject to Section 829; (5/22/03)
 - 2. Telephone exchanges, utility substations, railroad rights-of-way, and public utility structures including shops and garages; (5/22/03)
 - 3. Radio and television transmission and receiving towers and earth stations, provided that the base of such towers shall not be closer to the property line than a distance equal to the height of the tower; (5/22/03)
 - 4. Heliport landing areas; (5/22/03)
 - 5. Outdoor stadiums and race tracks; (5/22/03)
 - 6. Multi-use developments, subject to Section 1016. (5/22/03)

503.07 PROHIBITED AND PREEXISTING USES

- A. Uses of structures and land not specifically permitted under this section are prohibited in all General

Commercial districts.

- B. The use of a manufactured dwelling, except as an office in a manufactured dwelling or recreational vehicle sales lot, unless authorized under the provisions of Section 1204 for temporary permits. (11/24/99)
- C. New one-family and two-family dwellings except when incidental to a principal use. (6-22-81)
- D. Preexisting legally established dwellings may be allowed to remodel or expand without public hearing review. In addition, the following provisions shall apply: (11-5-98)
 - 1. Change of Use: A legally established dwelling may be converted to any use permitted in the district, subject to all requirements of this Ordinance for new development. (11-5-98)
 - 2. Lot Division, Adjustments and Setbacks: No minimum lot size shall be required for partitions or lot line adjustments created for preexisting dwellings. However, the setback and/or fire wall requirements of the Uniform Building Code shall be satisfied.
 - 3. Designated historic landmarks and corridors shall be preserved as provided under Section 707.
- E. All other preexisting structures and uses not specifically permitted in Section 503 shall be nonconforming uses subject to provisions of Section 1206. (6-22-81)
- F. In areas designated as Industrial on the Urban Growth Concept Map, Comprehensive Plan Map IV-8, retail uses larger than sixty-thousand (60,000) square feet of gross leasable area per building or business are prohibited. (5/3/01)

503.08 DIMENSIONAL REQUIREMENTS

- A. Purpose: The purposes of these requirements and limitations are to:
 - 1. Provide for protection of adjacent properties.
 - 2. Provide for efficient utilization of General Commercial area.
 - 3. Ensure that the minimum operational requirements of the development are provided onsite.
 - 4. Establish the maximum limits of development.
- B. General Requirements: The following dimensional requirements shall apply to development of sites zoned General Commercial:
 - 1. Minimum Site Area: No limitation, except a two-acre minimum for the area defined as Hinckley Road on the north, Cleo Battin on the south, and between 82nd Avenue and I-205.
 - 2. Minimum Front Yard Setback: Fifteen (15) feet. Structures on corner lots shall observe the minimum setback on both streets.
 - 3. Maximum Front Yard Setback: Buildings at or near a transit stop along a major transit street shall have a maximum front yard setback of 20 feet. "At or near" means within 250 feet of an intersection along a major transit street where a transit stop is within 250 feet of the intersection. (9-8-94)
 - 4. The 20 foot maximum setback shall apply in both directions along the major transit street and along the intersecting street to the depth of the commercial zoning designation. This setback applies to the side of the major transit street having the transit stop, and applies whether the intersecting street is a public street or signalized private road. (Please see the diagram in Section 1005.03E3.) (9-8-94)
 - 5. Along a signalized private road the maximum setback shall apply only along the first 250 feet from the major transit street. (9-8-94)
 - 6. Buildings with nonconforming front yard setbacks may have additional height added as an expansion without being brought into conformance with this maximum setback. (9-8-94)
 - 7. This maximum setback requirement from a major transit street or intersecting street does not apply to warehouses or industrial buildings with less than 5,000 square feet of attached offices. (9-8-94)
 - 8. This maximum setback from major transit streets and intersecting streets shall contain no on-site parking, however vehicular circulation lanes are permitted if crossing walkways are designed to ensure safety for pedestrians. (9-8-94)
 - 9. Minimum Rear Yard Setbacks: None required except when rear yard abuts a more restrictive district. When rear yard abuts a more restrictive district, setbacks shall be fifteen (15) feet. Ten (10) feet shall be added to the rear yard setback for each ten (10) foot increment in building height over

thirty-five (35) feet.

10. Minimum Side Yard Setback: None required except when side yard abuts a more restrictive district. When side yard abuts a more restrictive district, setbacks shall be fifteen (15) feet. Ten (10) feet shall be added to the side yard setback for each ten (10) feet increment in building height over thirty-five (35) feet.
 11. Minimum Street Frontage: Fifty (50) feet.
 12. Minimum Lot Size: No limitation.
 13. Maximum Lot Coverage: No limitation.
 14. Minimum landscaping: Fifteen (15) percent of total site area.
 15. Building Height: No limitation.
 16. Corner Vision: No sight-obscuring structures or plantings exceeding thirty (30) inches in height shall be located within a twenty (20) foot radius of the lot corner nearest the intersection of two public, county or state roads, or from the intersection of a private driveway or easement and a public, county or state road. Trees located within a twenty (20) foot radius of any such intersection shall be maintained to allow ten (10) feet of visual clearance below the lowest hanging branches.
- C. Exceptions to General Requirements: The requirements under subsection 503.09(B) above are subject to modification under the provisions of Section 900. (3/14/02)
- D. Modifications/Variations: The requirements of subsection 503.09(B) may be modified by staff when such modification is consistent with the purposes set forth under Subsection 503.09(A), with the Comprehensive Plan and with the requirements and provisions of Section 1205. The effect of the proposed modification on the natural features of the site and the use and preservation of solar access shall be considered when applicable. Proposed reductions in setbacks, frontage, or other requirements which exceed twenty (20) percent of the requirement of the district shall be subject to staff review with notice procedures set forth in Section 1305.02. (3/14/02)

503.09 DEVELOPMENT STANDARDS

- A. Design Review: All development within this district is subject to the requirements prescribed under Section 1000 and to the procedures and application requirements under Section 1100.
- B. Community Plans: All development within a Community or Design Plan Area as described in Chapter 10 of the Comprehensive Plan shall also comply with the specific policies and standards for the adopted Community or Design Plan. (6/29/00)
- C. Operational Impacts: Processes and equipment employed and goods processed or sold shall be limited to those which are not objectionable, as determined by the Hearings Officer, by reason of odor, dust, smoke, cinders, gas, fumes, noise, vibration, refuse matter or water-carried wastes.
- D. Landscaping: The function of landscaping in the General Commercial District shall be to implement boulevard, and transitway provisions of the Comprehensive Plan, identify access points, define internal circulation, provide onsite traffic control, and buffer adjacent residential uses.
- E. Manufactured Dwelling Parks: Existing manufactured dwelling parks shall not be redeveloped with a different use until a plan for relocation of the existing tenants is submitted and approved by the Planning Director or his designate. (11/24/99)

(LAST TEXT REVISION 5/22/03)

APPENDIX E

COMMUNITY/DOMESTIC WELL SURVEY DOCUMENTATION



SOURCE: USGS 7.5 MINUTE TOPOGRAPHIC SURVEY MAP OF GLADSTONE, OREGON QUADRANGLE. 1961, PHOTOREVISED 1984.

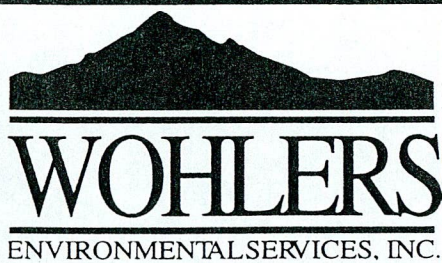


FIGURE D-1
**COMMUNITY/DOMESTIC
WELL SURVEY**
DELCO PETROLEUM RETAIL FUELING FACILITY
17873 S.E. MCLOUGHLIN BOULEVARD
MILWAUKIE, OREGON

PROJECT NO.:	04-0003
DATE:	03/25/04
SCALE:	1 : 24,000
FILE:	FG1040003
DRAWN BY:	MM

**COMMUNITY/DOMESTIC WELL SURVEY
IDENTIFIABLE WELLS WITHIN A 1/4 MILE RADIUS OF**

DELCO PETROLEUM RETAIL FUELING FACILITY
17873 S.E. MCLOUGHLIN BOULEVARD
MILWAUKIE, OREGON
WES Project No. 04-0003

WELL ID NO.	NAME	WELL ADDRESS OR NEAREST ADDRESS/LOCATION	USGS MAP COORDINATES	DATE COMPL'D	DRILL DEPTH (feet bsg)	STATIC WATER (feet bsg)	FIRST WATER (feet bsg)	SCREENED INTERVAL (feet bsg)	CASING DEPTH (feet bsg)	TYPE OF WELL
4206	Joe Mellmer	18120 S.E. Blanton Street Milwaukie, Oregon	S18, T2S, R2E	05/13/63	60	35	Not listed	Not listed	1 - 60	Domestic

WES = Wohlers Environmental Services, Inc.

ID = Identification

USGS = United States Geological Survey

bsg = below surface grade

CLAC

NOTICE TO WATER WELL CONTRACTOR
The original and first copy
of this report are to be
filed with the
STATE ENGINEER, SALEM 10, OREGON
within 30 days from the date
of well completion.

WATER WELL REPORT
STATE OF OREGON
(Please type or print)

04208

2/2-18
1963 # 9
State Well No.
State Permit No.

(1) OWNER:

Name Joe Mellmer
Address 1820 SE Blanton
Milwaukie 22, Ore

(2) LOCATION OF WELL:

County Clatsop Driller's well number
1/4 Section 18 T. 2 S R. 2 E W.M.
Bearing and distance from section or subdivision corner

(3) TYPE OF WORK (check):

New Well ☒ Deepening ☐ Reconditioning ☐ Abandon ☐
Abandonment, describe material and procedure in Item 12.

(4) PROPOSED USE (check):

Domestic ☒ Industrial ☐ Municipal ☐
Irrigation ☐ Test Well ☐ Other ☐

(5) TYPE OF WELL:

Rotary ☐ Driven ☐
Cable ☒ Jetted ☐
Dug ☐ Bored ☐

(6) CASING INSTALLED:

Threaded ☐ Welded ☒
6" Diam. from 1 ft. to 60 ft. Gage 25
" Diam. from ft. to ft. Gage
" Diam. from ft. to ft. Gage

(7) PERFORATIONS:

Perforated? ☐ Yes ☒ No
Type of perforator used
Size of perforations in. by in.
perforations from ft. to ft.
perforations from ft. to ft.
perforations from ft. to ft.
perforations from ft. to ft.
perforations from ft. to ft.

(8) SCREENS:

Well screen installed ☐ Yes ☒ No
Manufacturer's Name
Model No.
Slot size Set from ft. to ft.
Diam. Slot size Set from ft. to ft.

(9) CONSTRUCTION:

Well seal—Material used in seal BENTONITE
Depth of seal 20 ft. Was a packer used?
Diameter of well bore to bottom of seal 9 in.
Were any loose strata cemented off? ☐ Yes ☒ No Depth
Was a drive shoe used? ☒ Yes ☐ No
Was well gravel packed? ☐ Yes ☒ No Size of gravel:
Gravel placed from ft. to ft.
Did any strata contain unusable water? ☐ Yes ☒ No
Type of water? Depth of strata
Method of sealing strata off

(10) WATER LEVELS:

Static level 35 ft. below land surface Date 5/13/63

(11) WELL TESTS:

Drawdown is amount water level is lowered below static level
Was a pump test made? ☐ Yes ☒ No If yes, by whom?
Yield: gal./min. with ft. drawdown after hrs.
" " " "
" " " "
" " " "
Bailer test 30 gal./min. with 5 ft. drawdown after 1 hrs.
Artesian flow g.p.m. Date
Temperature of water Was a chemical analysis made? ☐ Yes ☒ No

(12) WELL LOG:

Diameter of well below casing 6
Depth drilled 60 ft. Depth of completed well 60 ft.
Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.

MATERIAL	FROM	TO
TOP - Soil	0	2
CLAY - Red	2	18
Boulders -	18	28
GRAVEL - CORASE	28	48
GRAVEL - Red - CEMENT	48	50
SAND + GRAVEL - CORASE	50	59
GRAVEL - CORASE	59	60
WATER BEARING		

Work started 5/9 - 19 63 Completed 5/13 - 19 63
Date well drilling machine moved off of well 5/13/63 19 63

(13) PUMP:

Manufacturer's Name Fairbanks - Morse
Type: St H.P. 1

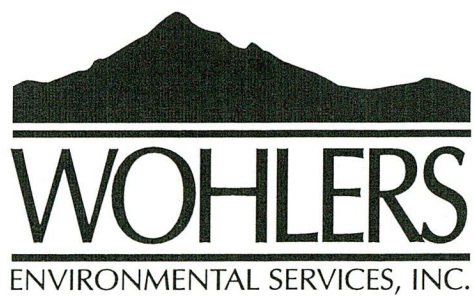
Water Well Contractor's Certification:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME Skyles Drilling & Supply
(Person, firm or corporation) (Type or print)
Address 19215 SE McLaughlin Gladstone

Drilling Machine Operator's License No. 222

[Signed] George H. Skyles
(Water Well Contractor)



7440 S.W. Hunziker Street, Suite C
Tigard, Oregon 97223

(503) 670-1344 • Fax (503) 670-1701