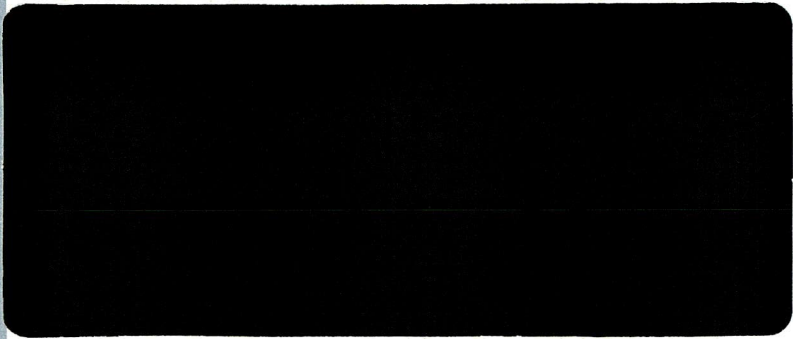




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**INVESTIGATION FOR MAGNITUDE AND
EXTENT OF CONTAMINATION, AND
CONCEPTUAL SITE MODEL**

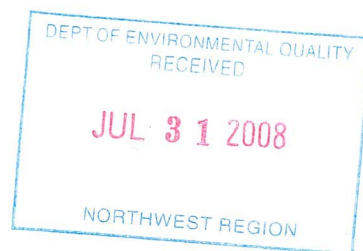
**Tillamook Creamery Association
4185 Highway 101 North
Tillamook, Oregon
LUST 29-08-0695**

Report Prepared For:

**Oregon Department of Environmental Quality
Northwestern Region Office
2020 SW 4th, Suite 400
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On behalf of:

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July 29, 2008

TABLE OF CONTENTS

	<u>Page</u>
1.0 INTRODUCTION	1
1.1 Initial Discovery and Immediate Actions	1
1.2 Background	3
2.0 SITE DESCRIPTION	5
2.1 Site Location	5
2.2 Current Use and Improvements	6
2.3 Surrounding Land Use	6
2.4 Utility Information	6
3.0 REGIONAL AND LOCAL GEOLOGY AND HYDROGEOLOGY	7
3.1 Regional Hydrogeology	7
3.2 Local Hydrogeology	7
3.3 Groundwater Occurrence - Water Well Query	8
3.4 Potential for Inter-Aquifer Connection	10
4.0 INITIAL SITE CHARACTERIZATION	11
4.1 Soil and Water Sampling	11
4.2 Results	11
4.3 Reporting	13
5.0 SUBSURFACE INVESTIGATION	13
5.1 Push Probe Installations, Sampling, Analysis	13
5.2 Soil Sample Analytical Results	15
5.3 Discussion of Analytical Results - Soil	15
6.0 GROUNDWATER INVESTIGATION	17
6.1 Temporary Well Installation and Groundwater Sampling	17
6.2 Groundwater Analytical Results	18
6.3 Results Discussion - Groundwater	21
7.0 CONCEPTUAL SITE MODEL	22
7.1 Summary of Previous CSM (LUST 29-00-0859)	22
7.2 Risk-Based Concentrations	22
7.3 Evaluation of Applicable Exposure Pathways	23
7.4 Contaminants-of-Potential-Concern (CoPCs)	23
7.5 Extent of Soil and Groundwater Contamination	23
7.6 Evaluation of Applicable Exposure Pathways	24
7.6.1 Vapor Intrusion of Soil Contaminants to Indoor Air	24
7.6.2 Volatilization of Soil Contaminants to Outdoor Air	24
7.6.3 Incidental Ingestion, Inhalation, and Dermal Contact of Soil	24
7.6.4 Leachate of Soil Contaminants to Groundwater	25
7.6.5 Volatilization of Groundwater Contaminants to Indoor Air	25
7.6.6 Volatilization of Groundwater Contaminants to Outdoor Air	25
7.6.7 Ingestion of and Inhalation from Tap Water	26
7.6.8 Incidental Ingestion, Inhalation, and Dermal Contact of Excavation Groundwater	26

7.7	Risk-Based Concentrations for Applicable Exposure Pathways	28
7.7.1	Soil RBC Comparisons	28
7.7.2	Groundwater RBC Comparisons	30
7.8	Summary of Soil and Groundwater Evaluation	32
8.0	CONCLUSIONS AND RECOMMENDATIONS	32
8.1	Conclusions	32
8.2	Discussion/Recommendations	34
9.0	LIMITATIONS	36

LIST OF FIGURES

Figure 1 - Site Location Map	2
Figure 2 - Site Map	4
Figure 3 - Water Well Query Results	9
Figure 4 - Analytical Results of Soil Samples	14
Figure 5 - Analytical Results of Groundwater Samples	20

LIST OF TABLES

Table 1. Initial Site Characterization Measures	12
Table 2. Soil Analytical Results	16
Table 3. Groundwater Analytical Results	19
Table 4. Summary of Conceptual Site Model Exposure Pathways	27
Table 5. Comparison of Contaminant Concentrations in Soil to Applicable Soil Exposure RBCs	29
Table 6. Evaluation of RBCs for <i>Applicable</i> Groundwater Exposure Pathways	31

APPENDICES

Appendix A:	Fluid Disposal and Tank Recycling Receipts
Appendix B:	Zoning Information
Appendix C:	Oregon Water Resources Department Well Query Report
Appendix D:	Laboratory Reports and Chain-of-Custody Records
Appendix E:	Push Probe and Monitoring Well Completion Logs
Appendix F:	Historical Groundwater Data Tables

1.0 INTRODUCTION

This report presents the results of an Investigation of Magnitude and Extent of Contamination associated with an abandoned underground storage tank (UST) discovered at the Tillamook Co. Creamery Association, located at 4185 Highway 101 North in Tillamook, Oregon (see **Figure 1 for Site Location Map**). The unregistered UST was encountered by the City of Bay City Public Works Department while installing a new water main along the north side of Latimer Road. The UST was found adjacent to former LUST site 29-00-0859, which received a "No Further Action" designation from the Oregon Department of Environmental Quality (DEQ). Initial Site Characterization activities were completed and are presented in a Twenty-Day Report dated June 27, 2008. This report presents a progress summary of assessment activities and a description of site conditions. This report also includes a Conceptual Site Model (CSM) for evaluating residual concentrations of gasoline range total petroleum hydrocarbons (TPH) and constituents in soil and groundwater beneath the site. The results are evaluated and recommendations for site closure are presented in accordance with DEQ guidance for the assessment and cleanup of petroleum-contaminated sites.

1.1 Initial Discovery and Immediate Actions

An approximately 500-gallon abandoned UST containing a mixture of water and petroleum fuel was discovered on March 31, 2008 by utility workers while installing a new eight (8) inch water main near the southeast entrance to the Tillamook Creamery facility. The UST was encountered at a depth of approximately 36 inches below land surface (BLS) within a pea gravel backfill material. Surrounding native soils consisted primarily of clayey silts, and silty sands. Upon discovery of the UST, a capped two (2) inch diameter fill pipe was found attached to the tank, however no dispensers were observed in the area of the tank. Initial inspection of the tank area indicated no evidence of any prior releases around the fill pipe.

The tank was discovered when the bucket of a backhoe inadvertently punctured the top of the tank leaving an approximately 12-inch hole in the top of the tank. According to witnesses, less than one (1) gallon of watery fluid was released into soils immediately surrounding the exposed tank. Trench work was immediately halted and the area was inspected for fire and explosion hazards.

Prior to removal, a total of 598 gallons of fluids were pumped from the tank and the tank was triple rinsed by Zwald Industrial Services of Tillamook, Oregon. The interior of the tank was monitored for the presence of combustible gases and removed from the trench using a backhoe. Upon removal, standing water was observed in the pit at approximately five (5) feet BLS. The tank was constructed of single-wall steel and measured 45 inches in diameter by approximately six (6) feet long. Inspection of the tank revealed no evidence of heavy corrosion pits, holes, or cracked weld seams in the walls of the tank.

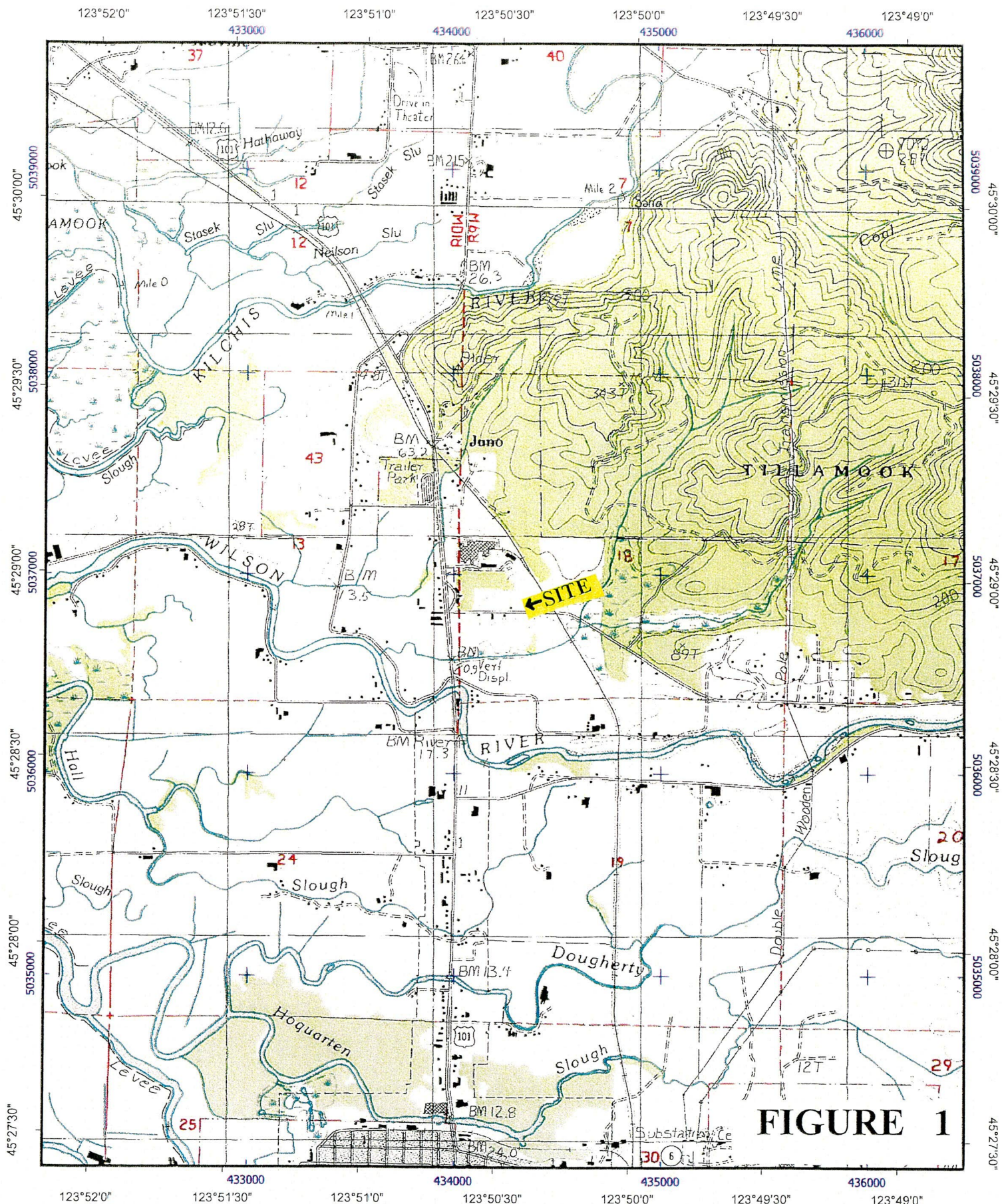
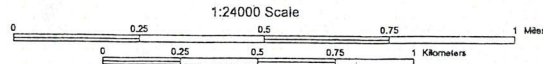
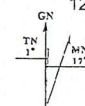


FIGURE 1



Universal Transverse Mercator (UTM) Projection Zone 10
North American Datum of 1983 (NAD83)
UTM Grid shown in Blue



Magnetic declination at center of map on
June 27, 2008

The contents of the UST and used wash water was transported to Pacific Power Vac in Portland, Oregon for disposal. The tank was transported off-site for recycling on April 2, 2008 to Don Averil Recycling, located at 1315 Eckloff Road in Tillamook, Oregon. A copy of the receipt for disposed water is included in **Appendix A**. A copy of the tank recycling receipt is included in **Appendix B**. The location of the abandoned UST is illustrated on the Site Map presented on **Figure 2**.

The release was reported to the DEQ on June 11, 2008 and issued DEQ case number LUST 29-08-0695. A Twenty-Day Report presenting the initial discovery of the UST and initial abatement measures was submitted to the DEQ on June 27, 2008.

1.2 Background

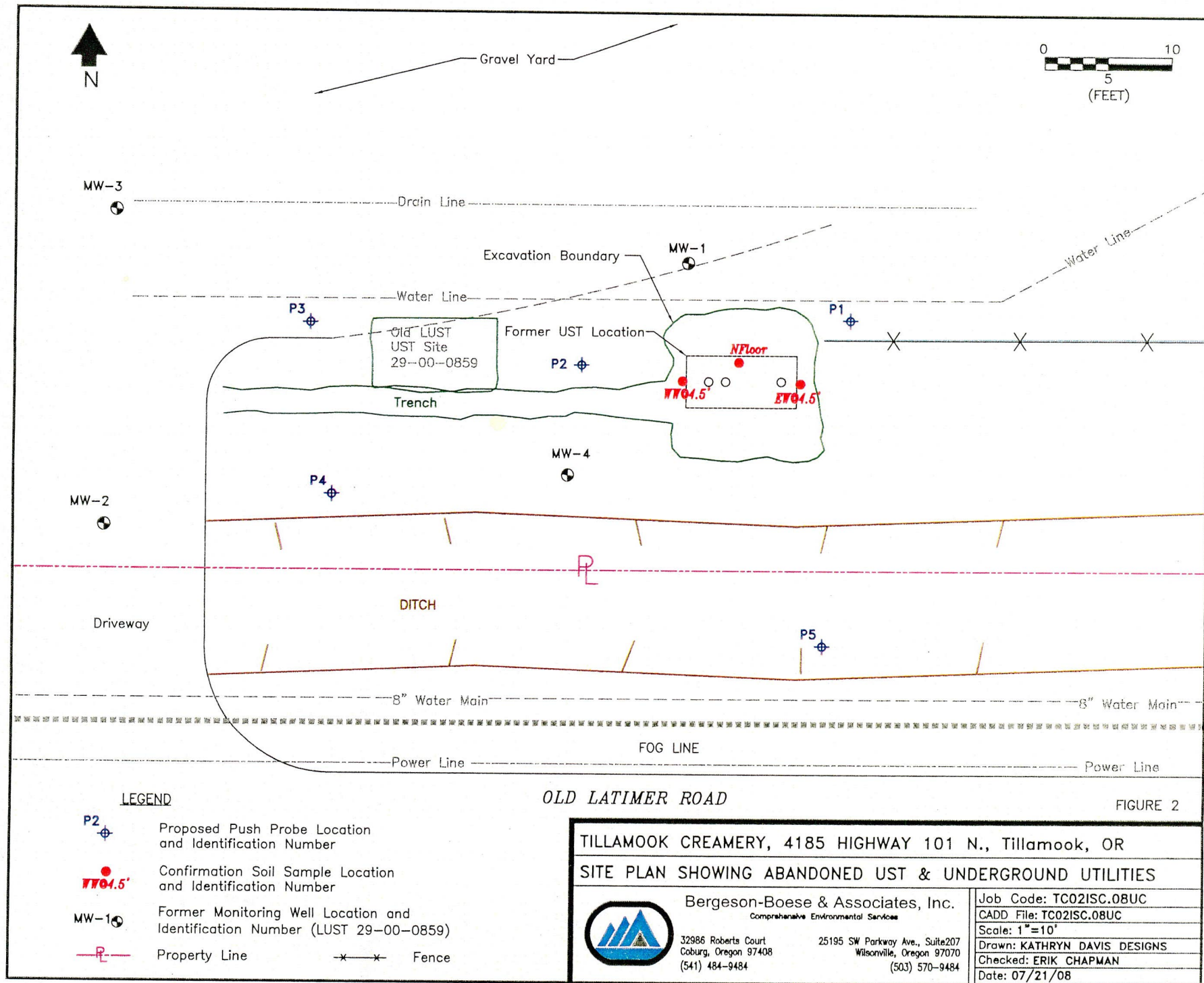
On July 27, 2000, a separate abandoned 675 gallon UST containing unleaded gasoline was discovered on Tillamook Creamery property approximately 25 feet west of the recently discovered UST. The abandoned UST, identified as LUST site 29-00-0859, was eventually decommissioned in-place on November 1, 2000. The location of LUST site 29-00-0859 is illustrated on Figure 2.

On July 17, 2000, BB&A was retained by Tillamook to complete a preliminary assessment (PA) of the soil and groundwater conditions associated with the abandoned tank and to complete subsequent investigations¹. During the PA, two (2) push probe borings were placed near the UST for the purpose of assessing soil and groundwater impacts. Soil and groundwater samples were collected and analyzed for the presence of gasoline by method TPH-Gx, benzene, toluene, ethylbenzene, xylenes (BTEX) and naphthalene. Laboratory results identified total petroleum hydrocarbons (TPH) in the gasoline range in soils adjacent to the tank at 720 milligrams per kilogram (mg/kg), in excess of the Level II Soil Matrix cleanup level of 80 mg/kg established for the site. Benzene was detected in groundwater at a concentration of 110 µg/L, in excess of DEQ's Risk-Based Concentration (RBC) for groundwater ingestion for the occupational receptor (established in DEQ's Risk-Based Decision Making, September 1999).

BB&A installed four (4) groundwater monitoring wells around the perimeter of the decommissioned UST to determine the full magnitude and extent of contamination. Soil samples were analyzed for TPH as gasoline using the NWTPH-Gx method, BTEX and gasoline-related volatile organic compounds (VOCs) using EPA Method 8260B, and total and leachable lead by EPA Method 7421/1311/7421. Neither TPH nor gasoline-related VOCs were detected in soil samples collected beyond the immediate location of the tank.

1

Investigation results are presented in the following reports: "Results of Subsurface Assessment of Abandoned Underground Storage Tank", dated August 17, 2000; "Investigation for Magnitude and Extent of Contamination and Low Impact Site Evaluation", dated December 8, 2000; "Update Report with Conceptual Site Model", dated September 12, 2001; and, Quarterly Update Reports dated November 21, 2001, February 21, 2001, and May 3, 2001, and March 6, 2002.



Between September 2000 and May 2001, BB&A conducted quarterly groundwater monitoring and sampling of the wells. Depth to groundwater was measured between approximately four (4) and seven (7) feet BLS. Groundwater samples collected from the wells were analyzed for BTEX compounds and gasoline-related VOCs using EPA Method 8260B and dissolved lead using EPA Method 7421. Groundwater samples collected from MW-4, located south-southeast of the tank site contained benzene at concentrations ranging from 5.7 µg/L to 7.0 µg/L. Dissolved lead was not detected in any of the wells. Based on groundwater monitoring results, impacts were limited to the immediate vicinity of the UST and are not migrating off-site.

BB&A developed a conceptual site model (CSM) for the site to identify routes of exposure. Based on the CSM, ingestion/inhalation of tap water was eliminated as a complete exposure pathway under future land use conditions and direct contact with groundwater by excavation workers was identified applicable to the site for contaminants of concern (benzene at 5.7 µg/L, and 1,2-dichloroethane at 2.0 ug/L). Later, a beneficial water use survey was completed and determined that ingestion by groundwater was incomplete. Trench worker exposure was eliminated because local utilities (power, telephone, and water) are located less than three (3) feet below land surface (BLS), preventing utility workers from encountering deeper contaminants of concern in the groundwater.

Based on the limited nature of residual soil contamination and low to non-detect groundwater concentrations from four (4) monitoring wells, the DEQ issued a "No Further Action" designation in a letter dated August 20, 2002. The location of former LUST 29-00-0859 and former monitoring wells MW-1 through MW-4 are illustrated on **Figure 2**.

2.0 SITE DESCRIPTION

2.1 Site Location

The Tillamook Creamery facility is located in the southwest quarter of Section 18, Township 1 South, Range 9 West, as referenced to the Willamette Meridian. The subject property lies at an elevation of approximately 24 feet above mean sea level in a generally level area. Tillamook Bay lies 2.5 miles to the west of the site. The nearest surface water body to the site is the Wilson River which is located approximately 1500 feet south of the site.

The entire creamery occupies approximately 45 acres. The location of the abandoned UST is near the southeast entrance of the creamery facility off of Latimer Road. The abandoned UST lies approximately one-quarter (0.25) mile east of the intersection of Latimer Road and Highway 101 North and approximately 25 feet north of Latimer Road. The abandoned UST site is bordered by the gravel parking lot to the north and a drainage ditch, then Latimer Road to the south. The base of the ditch lies partially under public land and partially on Tillamook Creamery property.

2.2 Current Use and Improvements

The subject site is zoned by the Tillamook County as *General Industrial* (M-1). Permitted uses within the M-1 zoning area include light and heavy industrial uses, warehousing, farming and other uses². A small portion of the site is zoned Rural Community (RC). Residential development is not permitted within the M-1 or RC zoning areas.

Site improvements include a large gravel parking area used for creamery delivery and tanker trucks and an entrance driveway to the west of the tank. Two (2) single-story warehouses are located over 200 feet east of the UST site and are occupied by Rod's Dairy Sales and J&K Distribution Company.

2.3 Surrounding Land Use

Surrounding properties to the east are zoned *Forest Zone* (F) and properties to the south are zoned *Farming Zone* (F-1) (see **Appendix B** for a City of Tillamook Zoning Map and Zoning Information). Adjoining properties to the south include Latimer Road, then Bay Breeze Golf Course. The nearest off-site building is a storage building utilized by the golf course for irrigation and landscaping equipment located approximately 250 west-southwest of the abandoned UST.

Based on the designated zoning and current use, occupational and construction/excavation worker scenarios are deemed applicable for the subject property to the north and south and public right-of-ways adjacent to the site.

2.4 Utility Information

A private power line and a telecommunication line are buried less than three (3) feet BLS and backfilled in native soil. Neither utility line is presumed to be conduits for contaminant migration. A private 2-inch diameter water line is located north of the abandoned UST and an eight (8) inch water main is located near the northern fog line for Latimer Road. The location of identified underground utilities in the area is illustrated on **Figure 2**. Information and contact persons for each of the utilities are listed below³:

- 1.) Utility: Power Line
Purpose: Electrical service line to Tillamook Creamery buildings located northeast of UST.
Depth: The approximate depth of the electrical service line is two (2) feet BLS.
Contact: Peoples Utility District (PUD)
1115 Pacific; Tillamook, OR 97141
Rick May - Operations Project Inspector
1-800-422-2535

² Article 3.032 of Tillamook City Ordinance 979, amended December 3, 2003

³ Quarterly Update and Closure Report, LUST Facility 29-00-0859, Bergeson-Boese & Associates, Inc., March 2002

- 2.) Utility: Communication (i.e., telephone line)
Purpose: Telephone Service/Communication
Depth: The approximate depth of the communication service line is three (3) feet BLS.
Contact: Sprint
2714 6th Street; Tillamook, OR 97141
Jerry Luke - 1-541-966-6969
- 3.) Utility: Water Line (2-inch PVC)
Purpose: Potable Water
Depth: The approximate depth of the water line is two (2) to three (3) feet BLS.
Contact: Bay City Public Works Department
P.O. Box 3309; Bay City, OR 97107
John Law - 1-541-377-4121
- 3.) Utility: Water Line
Purpose: Potable water
Depth: The approximate depth of the water line is two (2) to three (3) feet.
Contact: Bay City Public Works Department
P.O. Box 3309; Bay City, OR 97107
John Law - 1-541-377-4121

3.0 REGIONAL AND LOCAL GEOLOGY AND HYDROGEOLOGY

3.1 Regional Hydrogeology

The regional geology of the Tillamook lowlands consists of shallow estuarine bay muds and sands, overlying lithified alluvial deposits. At depth, the alluvial deposits are considered to have high permeability. The primary aquifer in the area consists of permeable terrace gravels which occur at a depth of between 80 to 100 feet below land surface (BLS). The average annual rainfall for Tillamook is approximately 101.5 inches.

3.2 Local Hydrogeology

Information on the local hydrogeology was gathered from previous reports prepared for former LUST 29-00-0859. Soils encountered during previous, and current investigations included gravel from the surface to approximately three (3) feet BLS, overlying silty clay and clayey silt from approximately three (3) feet BLS to approximately 13 feet BLS, and silt and silty gravels from 13 feet to 20 feet BLS. According to static water level measurements collected from monitoring wells MW-1 through MW-4 installed around the perimeter of former LUST site, the shallow groundwater table ranges from four (4) to seven (7) feet BLS. Groundwater table elevations were calculated using the measured depth to groundwater and surveyed reference points on the monitoring wells. The resulting calculated groundwater level elevations indicate that groundwater generally flows in southwest to south-southeast direction under a gradient from 0.013 to 0.030.

3.3 Groundwater Occurrence - Water Well Query

The subject property is located in the Northwest Quarter of the Southwest Quarter of Section 18, Township 1 South, and Range 9 West. Using the Oregon Water Resources Department (OWRD) data base, a search for all well logs located within section 18 was queried. The results of this search and the corresponding well logs identified within the search area are listed below:

Well Type	No. Of Wells
Monitoring Well Reports	9
Geotechnical Hole Reports	17
Water Wells	11
Abandoned Water Wells	1

Eleven (11) active water wells and one (1) abandoned water well were identified in the search area. Sufficient information was available to locate 10 of the water wells. Two (2) of the water wells are located within one-quarter (0.25) mile and two (2) water wells are located between one-quarter (0.25) and one-half (0.5) mile of the abandoned UST site. The locations of the mappable water wells are presented on **Figure 3**. Tabulated results of the water well query and copies of the OWRD wells logs are presented in **Appendix C**.

Three (3) of the closest wells to the UST site are described briefly below:

- **Well Log TILL478**, located on the Tillamook Creamery property, is listed for domestic use. The well, constructed in July 1974, is recorded with a total depth of 80 feet BLS with no perforations in its casing (i.e., the well draws water from 80 feet BLS). The well lies approximately 800 feet to the west-northwest of the abandoned UST site, although according to Tillamook Creamery personnel, the exact location of the well is unknown. The well is not currently being used. Potable water is supplied to the creamery by the city of Bay City and will continue to serve as the sole source of potable water in the future.
- **Well Log TILL50600**, is an irrigation well located at the Bay Breeze Golf Course approximately 550 west of the abandoned UST site. Well log information indicates the well was registered for repair or reconditioning to a depth of at least 90 feet BLS. Notes on the well log indicate the well was "unusable" following repair efforts. Casing is reportedly installed in the well from two (2) to 98 feet BLS with no reported perforations (i.e., the well draws water from a depth of 98 feet BLS). BB&A contacted Mr. Mike Lehman, owner of the Bay Breeze Golf Course and the well. According to Mr. Lehman, the well is currently not being used because of low yield and high suspended solids (mainly sand) in the water. Mr. Lehman stated a significant amount

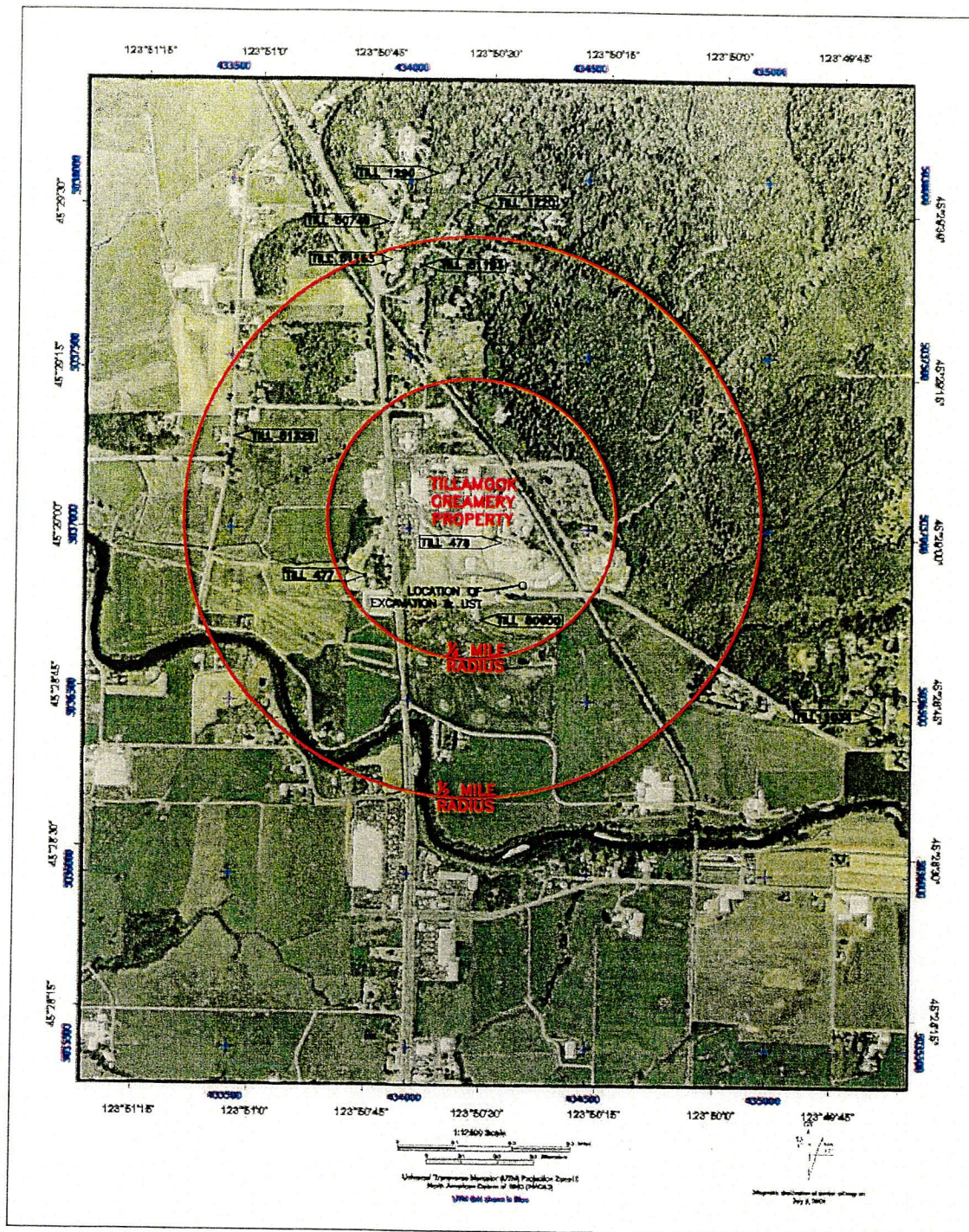


FIGURE 3

TILLAMOOK CREAMERY, 4185 HIGHWAY 101 N., Tillamook, OR
OREGON WATER RESOURCES WATER WELL QUERY RESULTS



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Checked: ERIK CHAPMAN

Date: 07/17/08

of resources and expense would be required to repair the well to usable condition. Mr. Lehman did not indicate whether he had any plans for repairing the well in the future.

- **Well Log TILL477**, is registered as a domestic well with a total depth of 100 feet BLS. Construction details in the well log indicate the well is constructed with 6-inch diameter steel casing installed from near surface to 98 feet BLS with no perforations (i.e., the well draws water from a depth of 98 feet BLS). The well is located on the west side of Highway 101 North, just west of the intersection of Highway 101 North and Latimer Road, or approximately one-quarter mile west of the abandoned UST.

Based on a description of lithology reported for the three (3) closest wells, subsurface lithology consists of “clay”, “blue clay”, and “clay and gravel” from approximately three (3) feet BLS to between 45 to 85 feet BLS. Water bearing zones were reported in TILL478 with in sandy beds encountered at depths of approximately 45 feet BLS and 70 feet BLS. The water bearing zone reported in well TILL477 was reported at approximately 85 feet BLS. No lithology was reported on well log TILL50600.

The average completion depth and the average depths of groundwater extraction for all wells within the search distance are greater than 100 feet. Based on lithology encountered during drilling, there appears to be a relatively consistent occurrence of a relatively low yield clay from near land surface to a minimum depth of 29 feet BLS. In wells closest to the abandoned UST, the impermeable clays extend to depths between 65 and 85 feet BLS. By comparison, groundwater impacts in the vicinity of the abandoned UST are limited to uppermost portion of the shallow groundwater aquifer and are laterally localized around the immediate area. Due to the depths of surrounding water wells, it is concluded that the release and shallow localized impact to groundwater does not threaten groundwater use in the area.

3.4 Potential for Inter-Aquifer Connection

The potential for chemical transport between the upper and lower aquifers is dependent upon the hydrogeologic characteristics of the aquifers and the physical and chemical properties of the released contaminant. Impact to groundwater beneath the site appears to consist of gasoline-range petroleum hydrocarbon constituents (e.g., benzene, toluene, naphthalene, etc.). The specific gravity of these constituents are generally less than 1.0, and residual concentrations of gasoline-range petroleum hydrocarbons are expected to be confined to the upper portion of the saturated zone. Consequently lower aquifers should not be affected under static conditions. However, in situations where active groundwater withdrawal is occurring as a result of pumping, impacted groundwater could be drawn downward affecting lower portions of the shallow aquifer.

4.0 INITIAL SITE CHARACTERIZATION

4.1 Soil and Water Sampling

On April 1, 2008, soil samples were collected from the sidewalls and floor of the excavation and from standing water in the excavation for the purpose of assessing soil and groundwater impacts. Based on the size of the tank (approximately 3.5 feet in diameter) and the depth of burial (approximately three [3] feet), the bottom of the tank was estimated to be approximately 6.5 feet BLS. Approximately 1.5 feet of standing water occupied the bottom of the pit measuring approximately six (6) feet by four (4) feet in area. The surface of the standing water was measured at approximately 4.5 feet BLS. At the time of the initial site characterization sampling, there was a slight hydrocarbon smell noted in the excavation, but no observable sheen on the water.

BB&A collected one (1) sample from the floor of the excavation (NFLOOR@7.5') from native soils at a depth of 7.5 feet BLS, or approximately one (1) foot below the bottom of the tank. The floor sample was collected from saturated soils underlying the standing water in the pit. Sidewall soil samples, EW@4.5' and WW@4.5', were collected from each end of the tank from native soils immediately above the standing water line. All soil samples were collected using a decontaminated stainless steel sampling trowel. Soil and groundwater samples were placed directly into laboratory-prepared containers with appropriate preservatives, uniquely labeled, and preserved on ice pending delivery to the laboratory. The soil and water samples were delivered to Test America in Beaverton, Oregon on April 1, 2008 under chain-of-custody.

Soil and groundwater samples were analyzed for the presence of total petroleum hydrocarbons by method NWTPH-HCID and benzene, toluene, ethylbenzene, xylenes (BTEX) by method EPA 8021B. The water sample was also analyzed for the presence of selected gasoline-related volatile organic compounds (VOCs) and fuel additives by method EPA 8260B and polynuclear aromatic compounds (PAHs) by method EPA 8270M-SIM. The Test America laboratory report and chain-of-custody documents are included in **Appendix D**.

4.2 Results

Initial site characterization sample results are summarized on **Table 1** and illustrated on **Figure 4**. Laboratory results did not identify TPH in the gasoline, diesel or heavy oil range in any of the soil samples. BTEX analysis by EPA Method 8021B identified benzene at a concentration of 0.110 mg/kg in the floor sample along with low concentrations of toluene and xylene. BTEX was not detected in either sample WW@4.5' or EW@4.5'. Based on the absence of detectable TPH or BTEX constituents in sidewall samples WW@4.5' and EW@4.5', it appears that vadose zone soils were not impacted by the historical operation of the abandoned UST. The detected benzene concentration in floor sample NFLOOR@7.5' exceeds DEQ's most stringent Risk-Based Concentration (RBC), however this exposure pathway is later eliminated as a complete exposure pathway for the site.

**Table 1. Initial Site Characterization Measures
Soil and Groundwater Sample Analytical Results**

Soil concentrations in milligrams per kilogram (mg/Kg), or parts per million (ppm).
Groundwater concentrations in micrograms per liter (µg/L), or parts per billion (ppb)
ND: Indicates contaminant was not detected above method-reporting limit shown in parenthesis.
Shading indicates that analysis not performed.
*: Indicates naphthalene detected by Method 8260B

Contaminants-of-Potential-Concern	Soil Sample Results (mg/kg)			Water Sample Results (µg/L)
	EW@4.6'	WW@4.6'	NFLOOR@7.5'	TC-WATER
Gasoline-Range HCID	ND (<30.4)	ND (<31.1)	ND (<29.7)	DET
Diesel-Range HCID	ND (<75.9)	ND (<77.8)	ND (<74.2)	ND (<600)
Heavy Oil Range HCID	ND (<152)	ND (<156)	ND (<148)	ND (<600)
Gasoline-Range TPH				31,300
Diesel-Range TPH				
Heavy Oil Range TPH				
Benzene	ND (<0.0411)	ND (<0.0395)	0.110	2,700
Toluene	ND (<0.0822)	ND (<0.0790)	0.173	5,460
Ethylbenzene	ND (<0.0822)	ND (<0.0790)	ND (<0.0769)	736
Xylenes (Total)	ND (<0.164)	ND (<0.158)	0.296	3,520
MTBE				ND (<200)
1,2-Dichloroethane				ND (<50.0)
1,2-Dibromoethane				ND (<50.0)
Isopropylbenzene				ND (<200)
n-Propylbenzene				98.0
1,3,5-Trimethylbenzene				135
1,2,4-Trimethylbenzene				538
Naphthalene				ND*/249
Acenaphthylene				ND (<0.571)
Acenaphthene				0.505
Fluorene				ND (<0.886)
Phenanthrene				1.88
Anthracene				0.299
Fluoranthene				ND (<0.503)
Pyrene				ND (<0.296)
Benzo(a)anthracene				0.249
Chrysene				0.187
Benzo(b)fluoranthene				ND (<0.0952)
Benzo(k)fluoranthene				ND (<0.0952)
Benzo(a)pyrene				ND (<0.0952)
Indeno(1,2,3-cd)pyrene				ND (<0.0952)
Dibenz(a,h)anthracene				ND (<0.190)
Benzo(g,h,i)perylene				0.101

Laboratory results of the water sample detected TPH in the gasoline range at 31,300 micrograms per liter (µg/L) along with several VOC's and PAH compounds. Among the VOCs detected, benzene was detected at a concentration of 2,700 µg/L, and several PAH compounds were detected at low concentrations, including benzo(a)anthracene at 0.249 µg/L and naphthalene at 249 µg/L.

4.3 Reporting

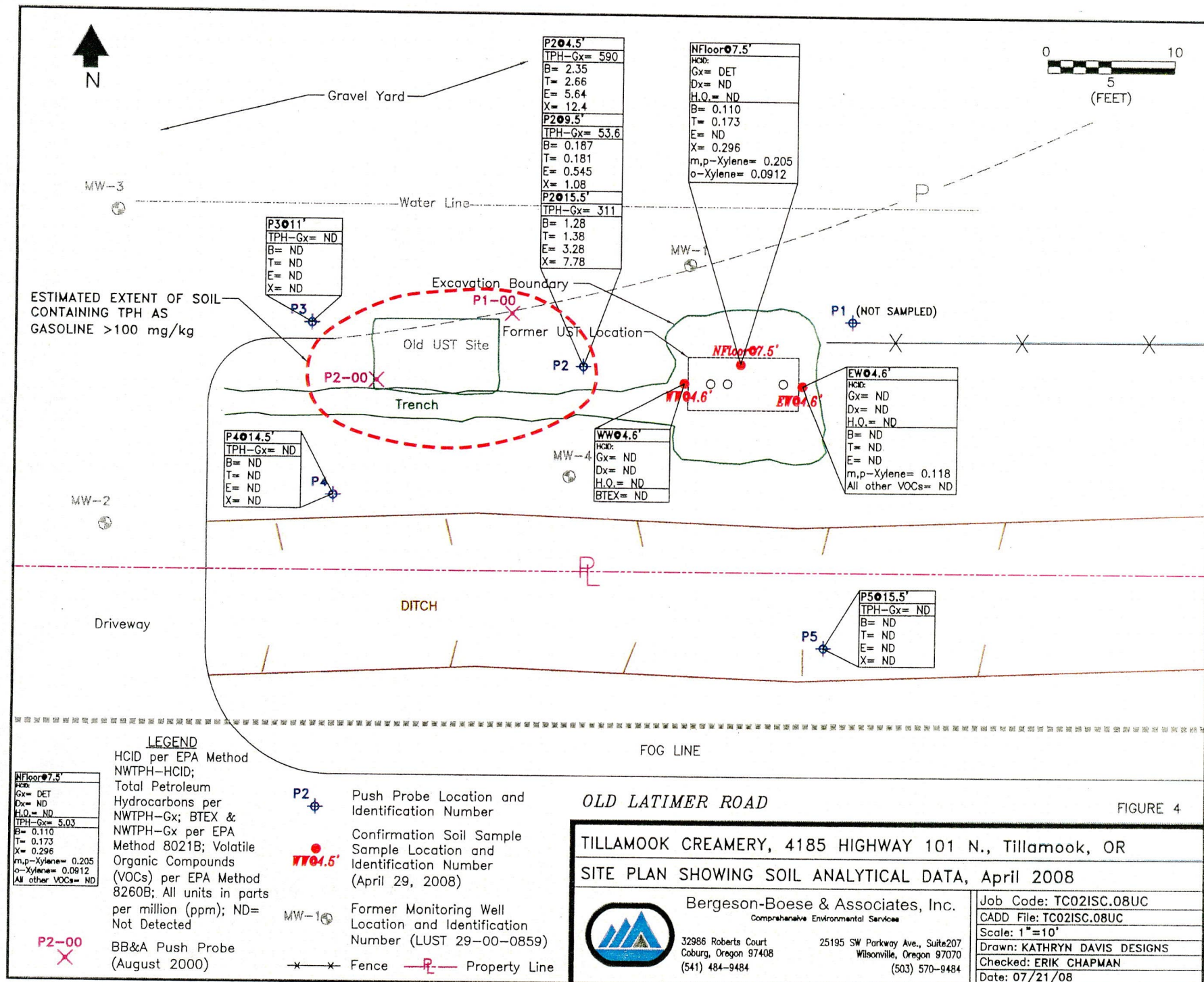
The results of the initial site characterization were presented in a Twenty-Day Report Form for UST Cleanup Project dated June 27, 2008 to fulfill initial reporting requirements associated with the discovery of a below ground release from the abandoned UST. The below ground release was reported to the DEQ by BB&A. Correspondingly, the DEQ issued UST Cleanup File Number LUST 29-08-0695.

5.0 SUBSURFACE INVESTIGATION

5.1 Push Probe Installations, Sampling, Analysis

On April 29, 2008, BB&A conducted a subsurface investigation around the perimeter of the abandoned UST to assess the magnitude and extent of contamination associated with the reported below ground release from the recently discovered abandoned UST. Specifically, the purpose of the subsurface investigation was to confirm the absence of soil impacts and to delineate the lateral extent of contaminated water found in the base of the investigation as identified during the April 1, 2008 initial site characterization sampling activities. Three push probes (P-1, P-2, and P-5) were installed northeast, west, and south-southeast (down gradient) of the abandoned UST. Push probe P-2 is located approximately six (6) feet east of former LUST site 29-00-0859 and approximately 14 feet west of the recently currently-investigated UST. Based on observed petroleum contamination in push probe P-2 near former LUST site 29-00-0859, two (2) additional push probes, P-3 and P-4, were installed in step-out locations further to the northwest and south-southwest of P-2 to delineate the lateral extent of historical residual soil contamination. Push probe locations are presented on **Figure 4**.

Soil samples were collected using GeoProbe stainless steel core barrels approximately 60 inches in length and 3.25 inches in diameter lined with polyethylene liners. Soils collected in the liners were characterized, as well as inspected for potential indications of soil contamination, such as visual or olfactory evidence (i.e., soil staining, or gasoline odors), and detectable volatile organic vapors using an Organic Vapor Meter with Photoionization detector (OVM-PID). Observations, measurements, and other field notes are recorded on the attached push probe logs, included in **Appendix E**.



Discrete soil samples were selected for analysis from soils containing the highest level of volatile organic vapors (using the OVM-PID), or other evidence of contamination. In the absence of observable soil impacts, soil samples were collected from immediately above the observed soil/water interface. Soil samples were collected using clean nitrile gloves, and placed in clean four (4) ounce glass jars, which were sealed with threaded, teflon-lined caps. The jars were filled such that remaining head space volume was minimized. The sample jars were uniquely labeled, logged on a chain-of-custody document, and placed in a refrigerated cooler. Soil samples were delivered to Test America Analytical Laboratories in Beaverton, Oregon for analysis.

Petroleum staining and measurable vapor readings were identified in push probe P-2 between approximately 4.5 feet BLS and 15 feet BLS. No observable evidence of petroleum contamination by field screening was found in the remaining borings. Based on field observations and the observed depth to water, three (3) soil samples were collected from push probe P-2 at depths between 4.5 feet and 15.5 feet BLS and one (1) sample each was collected from between 11 feet and 15.5 feet BLS in push probes P-3 through P-5. Soil samples were analyzed for the presence of TPH using method NWTPH-Gx, and BTEX constituents using EPA Method 8021B.

5.2 Soil Sample Analytical Results

Analytical results of soil samples collected from the push probes are presented in **Table 2** and illustrated on **Figure 4**. The laboratory report and chain-of-custody record for the push probe soil samples are enclosed in **Appendix D**.

Laboratory results indicate the presence of TPH as gasoline in soil samples collected from push probe P-2 at depths of 4.5 feet, 9.5 feet, and 15.5 feet BLS in the vicinity of former LUST site 29-00-0859. TPH concentrations were detected at concentrations ranging from 53.6 mg/kg to a maximum of 590 milligrams per kilogram (mg/kg) with the highest concentrations in the samples collected from depths of 4.5 feet and 15.5 feet BLS. Analysis of BTEX constituents identified benzene in push probe P-2 at concentrations between 0.187 mg/kg to 2.35 mg/kg. Neither TPH nor BTEX constituents were detected above the MRL in samples collected from "step-out" push probe borings P-3, P-4, or P-5.

5.3 Discussion of Analytical Results - Soil

Laboratory results indicate the presence of vadoze zone and saturated zone soil contamination in the vicinity of push probe P-2, located approximately six (6) feet east of former LUST site 29-00-0859. The soil impacts in this area appear to be limited in lateral extent, but extend vertically from approximately 4.5 feet to 15.5 feet BLS. The lateral extent of soil impacts are delineated to the northwest by push probe P-3, to the southwest by push probe P-4, and to the east by sidewall soil samples collected from the recent UST excavation.

Soil contamination in this area was previously identified during an August 2000 preliminary assessment (PA) conducted at the former LUST site 29-00-0859. During the PA, two (2) push

Table 2. Soil Analytical Results

Initial Site Characterization Soil Results - April 1, 2008

Subsurface Investigation - April 29, 2008

All analytical results in milligrams per kilogram (mg/kg).

Total Petroleum Hydrocarbons (TPH) as Gasoline analyzed according to Northwest Method NWTPH-Gx.

Volatile organic compounds analyzed according to EPA Method 8021B/8260B.

Toxicity Characteristic Leachate Procedure (TCLP) lead analyzed according to EPA 1311/6000/7000 Series Methods.

ND = not detected at or above method reporting limit (MRL). Where Shaded = Not Analyzed

The most stringent risk-based concentrations (RBCs) per Oregon Department of Environmental Quality's (DEQ's) *Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites*, September 22, 2003. Screening levels were selected as the *Vapor Intrusion into Buildings* for the occupational receptor.

Results (mg/kg)	Initial Site Characterization Results April 1, 2008			Subsurface Investigation Results April 29, 2008					
	WW@4.5'	EW@4.5'	NFLOOR@7.5'	P2@4.5'	P2@9.5'	P2@15.5'	P3@11'	P4@14.5'	P5@15.5'
TPH-HCID Gas	ND	ND	ND						
TPH-HCID Diesel	ND	ND	ND						
TPH-HCID H. Oil	ND	ND	ND						
TPH-Gx				590	53.6	311	ND (<59.0)	ND (<64.2)	ND (<66.2)
Benzene	ND (<0.0395)	ND (<0.0411)	0.110	2.35	0.187	1.28	ND (<0.369)	ND (<0.401)	ND (<0.414)
Toluene	ND (<0.0790)	ND (<0.0822)	0.173	2.66	0.181	1.38	ND (<0.737)	ND (<0.803)	ND (<0.827)
Ethylbenzene	ND (<0.0790)	ND (<0.0822)	ND (<0.0769)	5.64	0.545	3.28	ND (<0.737)	ND (<0.803)	ND (<0.827)
Xylenes (Total)	ND (<0.158)	ND (<0.164)	0.296	12.4	1.08	7.78	ND (<0.737)	ND (<0.803)	ND (<0.827)

probes (P-1-00 and P-2-00, see **Figure 4**) were placed near the LUST for the purpose of assessing soil and groundwater conditions in support of the in-place decommissioning of the tank. Soil and groundwater samples were collected and analyzed for gasoline-range TPH, BTEX, naphthalene, and PAHs. Analytical results detected gasoline range TPH at a concentration of 720 mg/kg, in excess of Soil Matrix Level II cleanup level of 80 mg/kg. Based on the results of the PA and subsequent investigations, the lateral and vertical extent of soil contamination was determined to be limited to the immediate area surrounding the former LUST⁴. The estimated lateral extent of residual TPH in soil exceeding 100 mg/kg based on previous investigation results is shown on **Figure 4**.

Residual soil impacts associated with LUST site 29-00-0859 were eventually determined to be in compliance with DEQ cleanup requirements stipulated in OAR 340-122-205 through 340-122-360 for all applicable exposure pathways identified for the site⁵.

The only soil impacts attributed to the recent below ground release was found in soil sample NFLOOR@7.5' collected from saturated soils in the floor of the current UST excavation. Based on laboratory results, the detected benzene concentration in this sample (0.110 mg/kg) exceeds only the DEQ's occupational RBC for *Leaching to Groundwater*. None of the other detected BTEX constituents exceeded any of the generic occupational RBCs. Since the sample was collected below the water table, the *Leaching to Groundwater* exposure pathway is best evaluated by the direct sampling and analysis of groundwater. As described in the CSM later in this report, the *Leaching to Groundwater* is not considered to be a complete exposure pathway at the site since groundwater current and future use of groundwater is deemed unlikely.

6.0 GROUNDWATER INVESTIGATION

6.1 Temporary Well Installation and Groundwater Sampling

Upon completing each of the borings and collecting soil samples, temporary dedicated well casing comprised of 1-inch diameter polyvinyl chloride (PVC) was placed in each push probe boring to facilitate groundwater sampling. Each casing was fitted with a 10-foot long section of PVC with 0.010-inch slot size. Prior to sampling groundwater, approximately two (2) to three (3) gallons of groundwater was purged from each temporary well using a low-flow peristaltic pump. New polyethylene tubing was used at each sample location. None of the groundwater purged exhibited

⁴ The lateral and vertical extent of soil impacts at LUST site 29-00-0859 are described in BB&A's initial site characterization report entitled "Results of Subsurface Assessment of Abandoned Underground Storage Tank", dated August 1, 2000 and in a document entitled "Investigation For Magnitude and Extent of Contamination and Low Impact Site Evaluation", dated December 8, 2000. In these documents, maps and a cross-section illustrate the lateral and vertical extent of contamination in excess of 100 mg/kg as gasoline-range TPH.

⁵ BB&A developed a conceptual site model for the site and evaluated soil conditions utilizing DEQ's guidance document entitled *Risk-Based Decision Making for Petroleum-Contaminated Sites*, dated September 29, 1999, and specifically the section on Generic Remedy for Simple Risk-Based Cleanups. The evaluation was reported in BB&A's document titled *Update Report and Conceptual Site Model*, dated September 12, 2001.

any evidence of contamination (i.e., odor or sheen). Groundwater samples were collected from recharging formation water using the peristaltic pump at its lowest setting (0.3 to 0.5 liters per minute), and transferring groundwater directly into laboratory-supplied glassware with appropriate sample preservatives. Each sample container was labeled using a unique identification, logged onto a formal chain-of-custody record, placed on synthetic ice in a chilled cooler, and delivered to Test America Analytical Laboratory in Beaverton, Oregon for analysis.

After probing, temporary casings were removed and the push probe borings were abandoned by backfilling the borings with hydrated bentonite in accordance with OWRD rules.

Groundwater samples were submitted for analysis of petroleum identification using Method NWPTH-Gx, gasoline-range VOCs using EPA Method 8260B, and dissolved lead using EPA 6000/7000 Series Methods.

6.2 Groundwater Analytical Results

Groundwater analytical results are summarized in **Table 3** and on **Figure 5**. Copies of the laboratory reports and chain-of-custody records for the groundwater samples are included in **Appendix D**.

TPH as gasoline was detected in groundwater samples collected from push probes P-2, P-4, and P-5. The highest concentration was detected in push probes P-2 followed by P-4 and P-5. The detected TPH concentrations ranged from 562 µg/L to 8,830 micrograms per liter (µg/L).

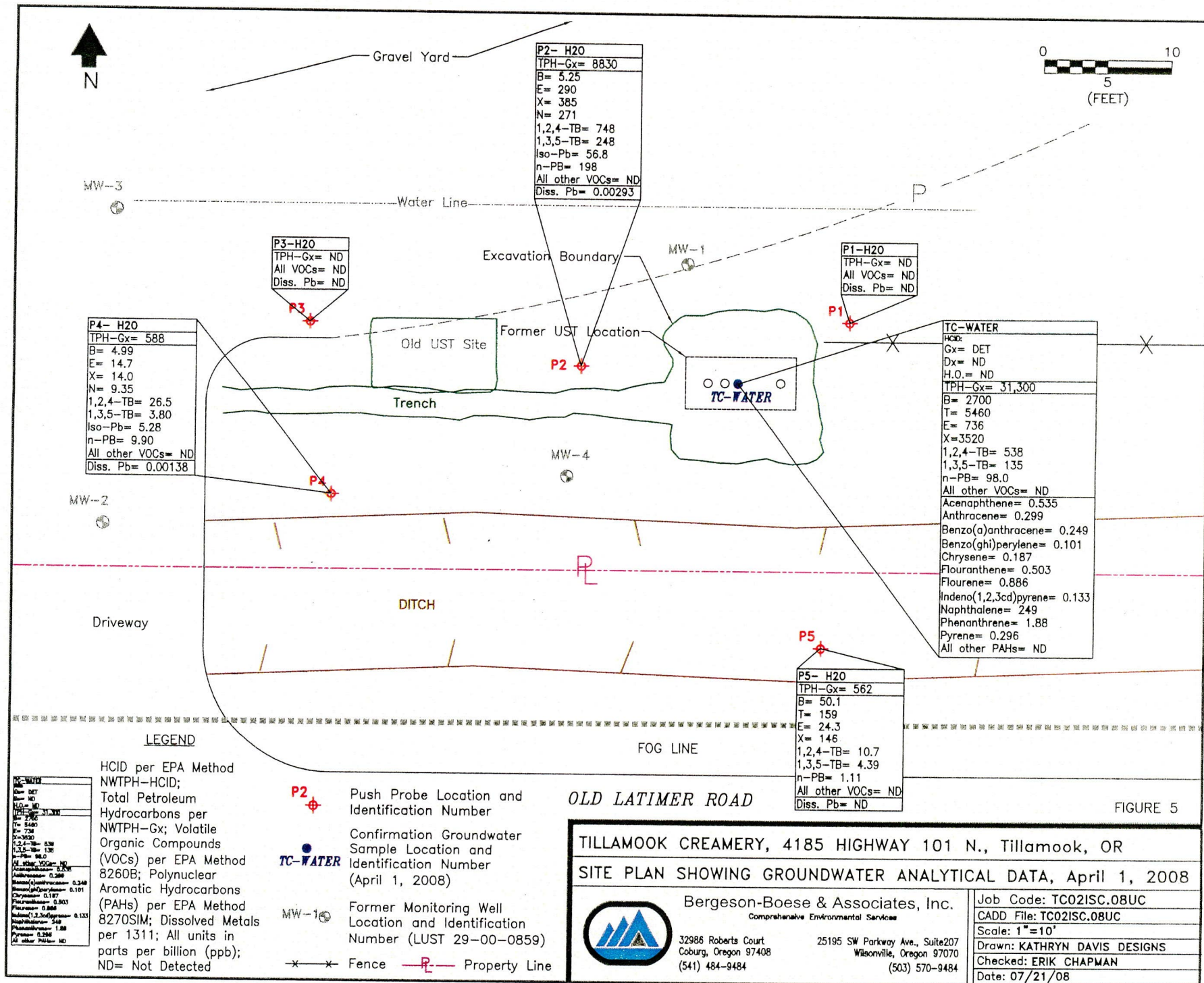
Analytical results by EPA Method 8260B indicate the presence of gasoline-related VOCs in the same push probes (P-2, P-4, and P-5). The highest benzene concentration was detected at 50.1 µg/L. Other VOCs detected in soil samples from P-2, P-4, and P-5 included ethylbenzene xylenes, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, isopropylbenzene, and n-propylbenzene. No VOCs were detected above their respective MRLs in borings P-1, or P-3. Dissolved lead concentrations were detected in push probes P-2 and P-4 at concentrations of 0.00138 mg/L to 0.00293 mg/L, respectively. Lead was not detected above the MRL in borings P-1, P-3, or P-5.

Table 3. Groundwater Analytical Results

All concentrations in micrograms per liter (µg/L), or parts per billion (ppb).

ND: Indicates contaminant was not detected above method-reporting limit shown in parenthesis.

Analyte	P-1	P-2	P-3	P-4	P-5	RBC Ingestion/Inhalation Occup	GW in an Excavation
Gasoline-Range TPH	ND (<80.0)	8,830	ND (<80.0)	588	562	400	12,000
1,2-Dibromoethane	ND (<0.500)	ND (<0.500)	ND (<0.500)	ND (<0.500)	ND (<0.500)	0.034	28
1,2-Dichloroethane	ND (<0.500)	ND (<0.500)	ND (<0.500)	ND (<0.500)	ND (<0.500)	0.75	600
Benzene	ND (<0.200)	5.25	ND (<0.200)	4.99	50.1	2.2	1,700
Toluene	ND (<0.500)	ND (<0.500)	ND (<0.500)	ND (<0.500)	159	9,100	200,000
Ethylbenzene	ND (<0.500)	290	ND (<0.500)	14.7	24.3	5,400	110,000
Xylenes (Total)	ND (<1.00)	385	ND (<1.00)	14.0	146	820	22,000
MTBE	ND (<2.00)	ND (<2.00)	ND (<2.00)	ND (<2.00)	ND (<2.00)	64	59,000
Naphthalene	ND (<2.00)	271	ND (<2.00)	9.35	ND (<2.00)	25	680
Isopropylbenzene	ND (<2.00)	56.8	ND (<2.00)	5.28	ND (<0.500)	2,600	51,000
n-Propylbenzene	ND (<0.500)	198	ND (<0.500)	9.90	1.11	240	4,500
1,3,5-Trimethylbenzene	ND (<0.500)	248	ND (<0.500)	3.80	4.39	49	1,400
1,2,4-Trimethylbenzene	ND (<1.00)	748	ND (<1.00)	26.5	10.7	49	1,300
Dissolved Lead	ND (<0.00100)	0.00293	ND (<0.00100)	0.00138	ND (<0.00100)	—	—



6.3 Results Discussion - Groundwater

Dissolved TPH in the gasoline range and several gasoline-related VOCs are present in groundwater in an area of limited areal extent located between the former LUST 29-00-0859 and recently abandoned UST and Latimer Road. The highest groundwater impacts were identified at push probe P-2, located within a zone of residual soil contamination associated with the former LUST site. The lateral extent of groundwater impacts are delineated to the northwest by push probe P-3 and to the northeast by push probe P-1. The downgradient extent of groundwater impacts likely extends a short distance south-southeast of push probes P-4 and P-5 in the direction of the estimated groundwater flow direction⁶.

Based on a review of historical groundwater sample results from former LUST site 29-00-0859, benzene was initially detected in the immediate are of the former tank location at a concentration of 110 µg/L (previous push probe P-2-00, August 2000 [Figure 5]). The detected benzene concentration in recent push probe P-2 was reported at 5.25 µg/L. Historical benzene concentrations detected in former well MW-4 during sampling events conducted between September 2000 and December 2001 were reported at concentrations ranging from 5.7 µg/L to 7.0 µg/L⁷. The benzene concentration reported in push probe P-4 during this investigation was detected at 4.99 µg/L. A comparison of historical and recent groundwater sample analytical data also indicates similar contaminants in groundwater during historic and recent investigations. Historical groundwater monitoring and sampling data from LUST site 29-00-0859 are presented in **Appendix F**.

A south-southeastern groundwater flow direction places push probe P-5 in a down gradient location and push probes P-2 and P-4 in a cross gradient location relative to the recently discovered UST excavation. The presence of groundwater impacts at P-2 and P-4 would indicate the former LUST site (LUST29-00-0859) as the source of groundwater impacts. Since the nature and magnitude of dissolved contaminants from the former tanks are similar, it is not possible to determine the source of dissolved contaminants at push probe P-5 with certainty. The presence of groundwater impacts at push probe P-5 indicates the down gradient extent of the groundwater impacts, regardless of source, is not delineated and likely extends beneath Latimer Road. The installation and sampling of one (1) additional push probe is recommended on the south side of Latimer Road to fully delineate the lateral extent of dissolved contaminants in accordance with OAR 340-122-0240.

6

Estimated groundwater flow direction is based upon historical groundwater level measurements from former monitoring wells MWV-1 through MW-4 associated with former LUST site 29-00-0859. Groundwater flow directions have historically fluctuated from a southwest to a south-southeast direction. Cumulative results of historical groundwater monitoring results are presented in BB&A's document titled *Quarterly Update with Closure Report*, dated March 6, 2002.

7

Cumulative results of historical groundwater analytical results for the former LUST site (wells MWV-1 through MW-4) are presented in Appendix B of BB&A's report titled *Quarterly Update and Closure Report*, dated March 6, 2002.

7.0 CONCEPTUAL SITE MODEL

In this section, BB&A has developed an updated CSM for the recently discovered UST site for current and reasonably likely future land and water use conditions at the site. The following sections present a summary of the previous CSM and incorporates the findings into the current CSM where applicable. BB&A then compares recent constituent based soil and groundwater data to the current risk-based concentrations (RBCs) for all current exposure pathways deemed applicable for the site under current and reasonably likely future land and water use conditions. Evaluation results are then used to evaluate the site conditions for the purpose of obtaining regulatory site closure.

7.1 Summary of Previous CSM (LUST 29-00-0859)

BB&A originally developed a Conceptual Site Model (CSM) for the previously reported release at LUST 29-00-0859 in September 2001. The original CSM was presented in a document entitled "Update Report With Conceptual Site Model, DEQ USTC No. 29-00-0859" dated September 12, 2001. Revisions to the CSM were completed in a document entitled "Quarterly Update and Closure Report", dated March 6, 2002.

BB&A compared constituent based soil and groundwater data to the RBCs for all complete exposure pathways identified in their CSM. The comparison used the RBCs in DEQ's original guidance document titled "Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites", dated September 29, 1999. Site evaluation was completed under DEQ's guidance for Generic Remedy for Simple Risk-Based Cleanups. BB&A presented the evaluation of site conditions to the DEQ in their March 6, 2002 document titled "Update and Closure Report". Upon completing their review, the DEQ approved the CSM and CSM revision and determined that the site appeared to have met the requirements of OAR 340-122-205 through 340-122-360 and that no further action was required. The "no further action" determination was issued in a DEQ letter to Tillamook Creamery dated August 20, 2002.

7.2 Risk-Based Concentrations

In September 2003, the DEQ issued the *revised* guidance document titled *Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites*. Within that document, default risk-based cleanup levels were revised for one (1) or more of the 25 petroleum-related VOCs, PAHs, and fuel additives (including lead, MTBE, EDB, EDC, iso-propylbenzene, n-propylbenzene, 1,2,4-trimethylbenzene, and 1,3,5-trimethylbenzene) and expanded the list of RBCs to include generic gasoline-range, diesel-range, and heavy oil-range TPH. The default risk-based cleanup levels for these compounds are presented in the risk-based decision making (RBDM) guidance document as *Appendix A - Table of Risk-Based Concentrations [RBCs]*.

7.3 Evaluation of Applicable Exposure Pathways

A review of potential receptors that are appropriate for the site have not changed since 2001 based on current zoning and current and future likely use. As determined in BB&As 2001 CSM, the Occupational; Construction and Excavation Worker receptors scenarios are considered applicable for the site with respect to residual levels of gasoline and related compounds in soil and groundwater.

Routes of entry associated with chemical intake include inhalation of vapors, direct ingestion, and chemical absorption. The CSM evaluates site conditions to assess potential exposure to site contamination. The exposure potential for each pathway is evaluated in the following sections.

7.4 Contaminants-of-Potential-Concern (CoPCs)

Based on historical information about the spill product and analysis of recent near surface soil and groundwater sampling data, the petroleum release at the site appears to be limited to gasoline in groundwater. Regulated contaminants-of-interest (COIs) related to gasoline generally include TPH as gasoline, gasoline-related VOCs (BTEX constituents, naphthalene, MTBE, iso-propylbenzene, n-propylbenzene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, EDB/EDC), and lead. Those COIs detected by analysis in soil and/or groundwater samples collected from the site comprise the contaminants-of-potential-concern (CoCPs). For this site, the CoCPs include TPH as gasoline, BTEX compounds, naphthalene, n-propylbenzene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene and lead. During this investigation MTBE, iso-propylbenzene, EDB, or EDC were not detected in soil or groundwater, and are therefore not considered CoPCs. Each of the identified CoPCs are evaluated below in the Conceptual Site Model (CSM) for soil and groundwater exposure pathways.

7.5 Extent of Soil and Groundwater Contamination

Soil: Laboratory analysis of soil samples collected from the vicinity of the recent below ground release has detected gasoline-range TPH and gasoline-related VOCs in site soils. Benzene, toluene and xylenes were detected in saturated soil below the water table in the floor of the current UST excavation. The detected concentrations were low and appeared to be limited in extent. No gasoline-range TPH or BTEX constituents were detected in the sidewalls of the excavation above the water table. A majority of the soil contamination appears to be related to a previous below ground release from former LUST 29-00-0859 and is limited in extent. Residual soil impacts from the previous below ground release at LUST 29-00-0859 has been evaluated and considered to meet the cleanup requirements of OAR 340-122-205 through 340-122-360 (DEQ correspondence dated August 20, 2002).

Groundwater: Dissolved TPH and VOCs are present in groundwater extending from the vicinity of the former LUST 29-00-0859 and the recently discovered UST and extends south-southeast of this area. Groundwater impacts are delineated upgradient of the former USTs in the northwest

and northeast directions, and groundwater impacts appear to extend to some unknown distance to the south-southeast of push probes P-4 and P-5. The installation of one (1) additional push probe boring is required to fully delineate the down gradient extent of dissolved contaminants.

7.6 Evaluation of Applicable Exposure Pathways

Routes of entry associated with chemical intake include inhalation of vapors, direct ingestion, and chemical absorption. The CSM evaluates site conditions to assess potential exposure to

contaminated soil and groundwater. The exposure potential for each pathway is evaluated in the following sections.

7.6.1 Vapor Intrusion of Soil Contaminants to Indoor Air

In this exposure scenario, inhalation of hazardous compounds may occur if residual soil contaminants volatilize and migrate as vapor-phase contaminants into the on-site structure through permeable portions of the foundation (e.g., cracks, expansion joints, utility hookups, etc.). In accordance with DEQ guidance⁸, this pathway should be considered whenever vadose zone soils contaminated with VOCs are located beneath or within 10 feet of a commercial building. Since the area of soil and groundwater contamination lies over 200 feet from the nearest building, the CSM considers this pathway **not viable** for the on-site occupational receptor.

7.6.2 Volatilization of Soil Contaminants to Outdoor Air

Vapor-phase transport of volatile compounds within the vadose zone occurs primarily as a result of diffusion. Volatilized soil contaminants may migrate vertically through the pore spaces of unsaturated soils and escape to outdoor air. The *Volatilization to Outdoor Air* exposure scenario should be considered whenever vadose zone soils are contaminated with VOCs. Due to the presence of vadose zone soil impacts at push probe P-2, the CSM considers exposure associated with the volatilization of soil contaminants to outdoor air under the current land use scenario **viable** for the site.

7.6.3 Incidental Ingestion, Inhalation, and Dermal Contact of Soil

Activities resulting from direct contact with residual PCS may result in chemical intake from a variety of incidental exposure pathways. The potential for incidental ingestion, inhalation, and dermal contact with contaminated soil is interpreted to be generally restricted to limited-duration construction projects and/or trench work. TPH and VOC-impacted soils are generally considered to be an exposure risk for the occupational receptors if contaminants are present in shallow soils less than three (3) feet BLS. Site contaminants were not detected in the upper three (3) feet of the soil column.

8

"Risk-based Decision Making for the Remediation of Petroleum-Contaminated Sites", DEQ Land Quality Division, September, 2003; Table 2.4.

BB&A researched the type and depth of onsite utilities located within the zone of contamination and found that none of them were buried deeper than three (3) feet BLS. Based on current information, there have been no changes in the location or depth of utilities in the area. Based on BB&A's research, the excavation worker exposure pathway is incomplete for trench workers who are involved in maintaining existing lines because utilities (power, telephone, water) are located less than three (3) feet BLS, preventing trench utility workers from encountering the deeper contaminants of concern. Since future excavation work below three (3) feet is possible during future construction projects, the CSM considers exposure associated with incidental ingestion, inhalation, and dermal contact **complete** for future excavation and construction worker receptors but not complete for the current or future occupational worker.

7.6.4 Leachate of Soil Contaminants to Groundwater

Impact to groundwater from UST releases generally occurs indirectly as a result of contaminants leaching from a primary contaminant source (i.e., impacted "source soils"). Dissolved groundwater contaminants may in turn be ingested directly or volatilized to indoor and/or outdoor air. Factors affecting the leaching potential of soil contaminants include annual precipitation rate, the fraction of organic carbon present in the soils, and the soil porosity. This pathway should be considered whenever vadose zone contamination is found overlying an aquifer that is currently used or is reasonably likely to be used for drinking water. The results of site investigation activities identified soil impacts beneath the water table (in the floor of the UST excavation) and as residual impacts near former LUST 29-00-0859. Residual soil contamination near former LUST 29-00-0859 has met the cleanup requirements of the DEQ and no further action is considered necessary. As a conservative measure, the CSM will evaluate the leaching to groundwater pathway, however, the potential for this pathway to be complete is actually very low since the shallow groundwater table is not likely to be used as a potable water source under current or future water use scenarios.

7.6.5 Volatilization of Groundwater Contaminants to Indoor Air

Under certain conditions, dissolved-phase contaminants may volatilize at the water table surface and migrate as vapor within the unsaturated zone. Inhalation exposure may result if volatilized contaminants migrate vertically and enter indoor enclosed spaces. This pathway should be considered whenever vadose zone groundwater contaminated with VOCs are located beneath or within 10 feet of a commercial building or beneath or within 50 feet of a residential building. Since the nearest building lies over 200 feet to the east (cross gradient) of the zone of contamination, the CSM considers exposure via *Volatilization to Indoor Air* to be **not viable** for the on-site or off-site occupational receptors.

7.6.6 Volatilization of Groundwater Contaminants to Outdoor Air

Dissolved petroleum hydrocarbons may volatilize at the water table surface and migrate as vapor

within the unsaturated zone. Inhalation exposure may occur if volatilized contaminants migrate vertically and escape to outside air. The CSM considers exposure associated with the volatilization of dissolved groundwater contaminants to outdoor air under the current and future land use scenario **viable**.

7.6.7 Ingestion of and Inhalation from Tap Water

One (1) on-site and two (2) off-site water wells are located within one-quarter (0.25) mile from the site. The two (2) closest wells are currently not being used and are not considered likely to be used in the future since the site and surrounding properties to the south (golf course) derive their domestic water from the City of Bay City. In addition, all water wells in the area appear to draw water from a deeper aquifer (over 100 feet BLS). Based upon research performed and since the subject property and adjoining properties are supplied potable water by a municipal water system, the CSM considers this pathway **not viable** under the current and future land use scenario.

7.6.8 Incidental Ingestion, Inhalation, and Dermal Contact of Excavation Groundwater

Activities resulting from direct contact with impacted groundwater may result in chemical intake from a variety of incidental exposure pathways. The potential for incidental ingestion, inhalation, and dermal contact with affected media is possible during construction projects performed in conjunction with site improvements and/or trench work. This pathway is considered complete where construction workers or excavation workers may come into contact with contaminated groundwater in a semi-enclosed space such as an excavation. Groundwater occurs beneath the site and general vicinity at depths greater than three (3) feet BLS. The depth of all utilities located within the impacted zone are buried less than three (3) feet BLS, preventing trench workers from encountering deeper soil and groundwater contamination. Nevertheless, construction work involving excavations for foundations or other structures is unlikely, but possible in the future. The CSM considers exposure to construction workers and trench workers working onsite and in adjoining rights-of-way as **viable**. A summary of exposure pathways is presented in **Table 4**.

Table 4. Summary of Conceptual Site Model Exposure Pathways

NA = Not Applicable

Pathway	Subject Property		Comments
	Occupational	Excavation/ Const. Worker	
Vapor intrusion of soil contaminants into buildings	No	N/A	Excluded since nearby buildings are located over 50 feet from soil impacts.
Volatilization of soil contaminants to outdoor air	Yes	N/A	All soil impacts associated with the recent below ground release are below the water table and not present in vadose zone soils.
Ingestion, inhalation, and dermal contact of soil contaminants	No	Yes	Soil impacts are greater than three (3) feet BLS, preventing exposure to the occupational worker during maintenance work on existing utilities. Depth of utilities are less than three (3) feet BLS, preventing trench workers from exposure to deeper contaminants of concern. Future excavations may extend to deeper depths and result in contact with contaminated media. ✓
Leaching of soil contaminants to groundwater	Yes	N/A	Residual soil contaminants represent on-going source of groundwater impact. However, groundwater is not being consumed. All occupational receptors are excluded since nearby buildings are located over 50 feet from groundwater impacts.
Volatilization of groundwater contaminants into buildings	No	N/A	Not viable since the nearest building is over 200 feet from the zone of groundwater impacts.
Volatilization of groundwater contaminants to outdoor air	Yes	N/A	Due to the presence of groundwater contamination, this exposure pathway is viable, though very unlikely. The area is not occupied by occupational workers and there are not any nearby buildings. Future occupation and development is unlikely given the location (i.e., near the property line). Off-site, the area is a roadway. The use of the roadway is not likely to change.
Ingestion of groundwater, volatilization from tap water	No	N/A	Not viable. The site and adjoining properties are supplied by a municipal water system. Nearest private wells off-site are not located within one-quarter mile and draw water from a deeper aquifer. Future use of nearby wells is unlikely based on interviews with well owners.
Ingestion, inhalation, and dermal contact of dissolved groundwater in an excavation	N/A	Yes	Contact with gasoline-impacted groundwater possible during future construction activities involving trenching and/or excavation greater than three (3) feet BLS.

7.7 Risk-Based Concentrations for Applicable Exposure Pathways

7.7.1 Soil RBC Comparisons

Current soil impacts associated with the recent below ground release appear to be limited to an area in the floor of the recent excavation and immediately surrounding former LUST 29-00-0859. Residual soil impacts from the previous below ground release at LUST 29-00-0859 has been evaluated and considered to meet the cleanup requirements of OAR 340-122-205 through 340-122-360 (DEQ correspondence dated August 20, 2002).

In **Table 5**, below, the analytical results of representative soil samples collected during the recent investigation (i.e., "worst case") are compared to the most stringent applicable RBCs. The leaching to groundwater RBCs are listed for comparison, however, the groundwater ingestion and inhalation from tap water pathway is deemed incomplete.

As presented in **Table 5**, none of the gasoline or gasoline constituent concentrations detected in the "worst case" soil samples collected on-site as represented by samples collected the floor of the recent UST excavation and push probe P-2, contained concentrations exceeding the RBCs for applicable exposure pathways (i.e, RBCs for leaching to groundwater excluded).

Table 5. Comparison of Contaminant Concentrations in Soil to Applicable Soil Exposure RBCs

All concentrations in parts per million (ppm).

Risk-Based Concentrations (RBCs) are for Occupational and Excavation receptor scenarios from Appendix A of DEQ's *Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites* (9/2003)

>MAX: The constituent RBC for this pathway is greater than 100,000 mg/kg; an unlikely attainable concentration.

>Csat: RBC for direct contact at concentration above point of saturation.

NV: Not Volatile, therefore, this RBC is not applicable.

Contaminants-of-Potential-Concern	NFLOOR@7.5' (4/1/2008)	P-2@4.5' (4/29/08)	Leaching to Groundwater	Volatilization to Outdoor Air	Surface soil ingestion, dermal contact, & inhalation	
			Occupational	Occupational	Construction Worker	Excavation Worker
Gasoline-range TPH-HCID	ND (<29.7)		110	80,000	13,000	>MAX
Diesel-Range TPH-HCID	ND (<74.2)		>MAX	>MAX	23,000	>MAX
Heavy- Oil TPH-HCID	ND (<148)		>MAX	>MAX	40,000	>MAX
TPH Gasoline NWTPH-Gx		590	110	80,000	13,000	>MAX
Benzene	ND (<0.0388)	2.35	0.052	48	340	9,400
Toluene	ND	2.66	>Csat	>Csat	24,000	>MAX
Ethylbenzene	0.628	5.64	>Csat	>Csat	28,000	>MAX
Xylenes (Total)	1.6	12.4	100	>Csat	19,000	>MAX

7.7.2 Groundwater RBC Comparisons

In **Table 6** below, the “worst case” groundwater sample collected during this site investigation (“TC-WATER” collected directly from standing water in the excavation) and one (1) sample collected from push probe P-2 are compared to applicable RBCs for on-site conditions. As presented in **Table 6**, petroleum constituents detected in the “worst case” groundwater samples representing conditions within the immediate area of the former UST pit (i.e., pit water in the excavation) exceed the RBCs for *Groundwater in an Excavation* for the Construction Worker and Excavation Worker. Based on groundwater data collected from push probe boring P-2, none of the detected constituents exceeded the applicable RBCs.

Table 6. Evaluation of RBCs for Applicable Groundwater Exposure Pathways

All concentrations in parts per billion (ppb), or micrograms per Liter (µg/L).

Risk-Based Concentrations (RBCs) are for Occupational and Excavation receptor scenarios from Appendix A of DEQ's *Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites* (9/2006)

>S: The constituent RBC for this pathway is greater than the solubility limit of the constituent. Groundwater concentrations exceeding this value may indicate free product. NV = Non Volatile. >Max = The constituent RBC for this pathway is greater than 100,000 mg/kg; an unlikely attainable concentration. NV = non-volatile. NE = Not Established

Contaminants-of-Potential-Concern	P-2-H2O (04/29/08)	TC-WATER (04/01/08)	Groundwater in an Excavation	Volatilization to Outdoor Air
			Construction & Excavation Workers	Occupational
Gasoline-Range TPH	8,830	31,300	12,000	>S
Benzene	5.25	2,700	1,700	13,000
Toluene	ND <(2.50)	5,460	200,000	>S
Ethylbenzene	290	736	110,000	>S
Xylenes (Total)	385	3,520	22,000	>S
MTBE	ND <(10.0)	ND <(200)	59,000	1,100,000
Isopropylbenzene	56.8	ND <(200)	>S	>S
Naphthalene	271	ND <(200)	680	>Max
n-Propylbenzene	198	98.0	>S	>S
1,2,4-Trimethylbenzene	748	538	51,000	>S
1,3,5-Trimethylbenzene	248	135	38,000	>S
Naphthalene		249	680	>Max
Acenaphthylene		ND <(0.571)	NE	NV
Acenaphthene		0.535	25,000	NV
Fluorene		0.886	14,000	NV
Phenanthrene		1.88	NE	NV
Anthracene		0.299	>Max	NV
Fluoranthene		0.503	NV	NV
Pyrene		0.296	NV	NV
Benzo(a)anthracene		0.249	NV	NV
Chrysene		0.187	NV	NV
Benzo(b)fluoranthene		ND <(0.0952)	NV	NV
Benzo(k)fluoranthene		ND <(0.0952)	NV	NV
Benzo(a)pyrene		ND <(0.0952)	NV	NV
Indeno(1,2,3-cd)pyrene		ND <(0.0952)	NE	NV
Dibenz (a,h)anthracene		ND <(0.190)	0.2	NV
Benzo(g,h,i)perylene		0.101	NE	NE
Dissolved Lead	0.00293	NA	NE	NV

7.8 Summary of Soil and Groundwater Evaluation

Based on analytical soil data collected to date, residual concentrations of TPH as gasoline and associated constituents are below all RBCs for all applicable exposure pathways (*Leaching to Groundwater* excluded). The *Leaching to Groundwater* pathway does not result in any unacceptable exposure risk since the groundwater ingestion and inhalation from tap water is deemed incomplete and current groundwater impacts are below *Volatilization to Outdoor Air* RBCs for the occupational receptor.

Exposure pathways considered complete for groundwater included *Groundwater in an Excavation* for the construction and excavation worker and *Volatilization to Outdoor Air* for the Occupational Worker. In the pit water sample, only TPH as gasoline and benzene exceed RBCs for *Groundwater in an Excavation*. Neither lead nor any of the detected PAH constituents exceeded applicable RBCs. Comparison of the pit water analytical results to applicable RBCs is an overly conservative estimate of risk since impacts in the pit water represent undiluted product from the tank and not actual groundwater concentrations. All detected contaminants of concern in groundwater from P-2 were below their respective generic RBCs for the site.

The lateral extent of groundwater impacts appears to be limited in extent, however, the down gradient extent was not determined in the south-southeast direction. Based on COC concentrations in down gradient push probe P-5, the down gradient edge of the plume is estimated to extend a short distance beneath Latimer Road. Occupational receptors to the south-southeast are not considered to be at risk in the future. This conclusion is supported by current soil and groundwater conditions that appear to be limited in extent and the use of the area immediately south of the site as a roadway. Future use of the roadway is not expected to change.

8.0 CONCLUSIONS AND RECOMMENDATIONS

8.1 Conclusions

A summary of the findings of this investigation support the following conclusions:

- The site is currently an industrial property with DEQ Facility Identification Number of 4347. The recent below ground release has been assigned LUST Number 29-08-0695
- Surrounding land use is composed of industrial, farm, and rural community development. Based on the designated zoning for the subject property and its current use, and the zoning and current use of adjoining properties, occupational and construction/excavation worker scenarios are deemed applicable to the site.

- A below ground release of water and gasoline-range petroleum hydrocarbons occurred on March 31, 2008 when utility workers encountered an unregistered, abandoned 500-gallon UST within a utility trench. A release estimated at less than one (1) gallon occurred when the bucket of a backhoe punctured the top of the tank. Further releases were prevented by pumping out the contents of the tank and removing the tank from the excavation on the same day. Inspection of the tank revealed no evidence of heavy corrosion pits, holes, or cracked weld seams in the walls of the tank.
- Previous to this investigation, on July 27, 2000, one (1) abandoned 675-gallon UST containing unleaded gasoline was discovered and eventually decommissioned in-place on November 1, 2000. This separate cleanup site, identified as LUST site number 29-00-0859, is located approximately 25 feet east of the recently discovered UST. A preliminary assessment of the release identified soil and groundwater contamination by gasoline-range constituents. Four (4) monitoring wells were installed for the purpose of defining the full magnitude and extent of impacts. Based on the groundwater monitoring results, impacts were limited to within the vicinity of the UST and did not migrate off-site. Residual soil and groundwater impacts associated with LUST 29-00-0859 was considered to meet the cleanup requirements of OAR 340-122-205 through 340-122-360 and the LUST site was issued a "no further action" designation in a DEQ correspondence dated August 20, 2002.
- On April 1, 2008, BB&A completed an initial site characterization at the site to assess the presence of soil and groundwater impacts. Confirmation soil samples were collected from the sidewalls and floor of the excavation and screened for the presence of total petroleum hydrocarbons using NWTPH-HCID and BTEX using EPA Method 8021B. A water sample was collected from standing water in the excavation and analyzed by TPH-HCID, gasoline-range TPH by NWTPH-Gx method, gasoline-related VOCs by EPA Method 8260B, and PAHs by EPA Method 8270-SIM. Analytical results did not identify any detectable total petroleum hydrocarbons in the sidewall soil samples and low concentrations of BTEX in the floor of the excavation. Analytical results of the water sample indicated the presence of gasoline-range petroleum hydrocarbons, gasoline constituents, and low concentrations of PAHs. Gasoline-range TPH was detected at 31,300 µg/L and benzene was detected at 2,700 µg/L, although the water sample is not considered to represent groundwater conditions.
- On April 29, 2008, five (5) push probes, were advanced to a depth of 20 feet below land surface (BLS) to adequately sample soils and intercept the groundwater table. Soil and groundwater samples were collected from the push probes and monitoring wells for laboratory analyses. Soil samples were analyzed for gasoline-range TPH by NWTPH-Gx and BTEX constituents using EPA Method 8021B. Groundwater samples were analyzed by TPH-Gx, selected gasoline-range VOCs by EPA Method 8260B, and dissolved lead using EPA Method 6000/7000 Series Methods.
- TPH as gasoline and gasoline-related VOCs were detected in soils at push probe P-2, located near the former LUST site 29-00-0859. Soil samples collected from the remaining push probes did not contain TPH as gasoline or any BTEX constituents above their respective

MRLs. Soil impacts at push probe P-2 identified gasoline-range TPH and BTEX constituents in samples collected from 4.5 feet, 9.5 feet, and 15.5 feet BLS.

- TPH and gasoline-related VOCs were detected in groundwater samples collected from push probe P-2, P-4, and P-5. The highest concentrations were reported in push probe P-2 located six (6) feet east of the former LUST site 29-00-0859.
- As part of the investigation, BB&A developed an updated CSM for the site. Based on the current physical setting, the Occupational, Construction and Excavation Worker receptor scenarios are considered applicable for this release with respect to residual levels of gasoline related compounds in groundwater. The occupational *Leaching to Groundwater* and the *Volatilization to Outdoor Air* for the construction and excavation worker were identified in the CSM for soil.
- The CSM identified *Volatilization to Outdoor Air* for the Occupational Worker and *Groundwater in an Excavation* for the construction and excavation worker as complete pathways of exposure for site groundwater under current and future land and water use conditions.
- A water well query was completed for the site and surrounding properties within Section 18 of Township 2 South Range 9 West. Neither of two (2) active water wells located within one-quarter mile of the site are currently being used. Based on interviews with the well owners (Tillamook Creamery and Mr. Mike Lehman, owner of the Bay Breeze Golf Course), neither of the water wells are likely to be used in the future since the properties served by the wells are connected to municipal water supplies.
- As part of the CSM, BB&A compared the highest detected contaminants in soil and groundwater to risk-based concentrations (RBCs) developed by the DEQ for applicable exposure pathways and scenarios. Excluding the *Leaching to Groundwater* pathway, none of the detected BTEX constituents in the "worse-case" soil sample exceeded applicable RBCs. The occupational *Leaching to Groundwater* pathway is not likely to result in unacceptable risk since the occupational *Ingestion and Inhalation from Tapwater* pathway is deemed incomplete.
- Results of the evaluation indicates that TPH as gasoline and benzene exceeded the respective RBCs for the *Groundwater in an Excavation Pathway*, however this is considered to be an overly-conservative evaluation of risk. The detected COC concentrations in "worse-case" groundwater sample from push probe P-2 did not exceed any of the applicable RBCs.

8.2 Discussion/Recommendations

Based on the relatively small volume of fluids released during the recent release from LUST 29-08-0695, and results of soil and groundwater sampling completed during this investigation, the impacts to soil and groundwater appear to be limited to the immediate area around the abandoned tank. Some or all of the identified soil contamination appears to be associated with the historical below ground release from former

LUST 29-00-0859. Excluding contaminants found in standing water in the UST excavation, the levels of contaminants in groundwater appear to be protective of human health and the environment under current and future land and water use conditions.

According to historical monitoring data, the predominant groundwater flow direction is to the south-southeast. The down gradient extent of groundwater contamination was not delineated during this investigation as required under OAR 340-122-0240. As such, one (1) additional push probe located on the south side of Latimer Road is recommended. Groundwater samples collected from the new push probe should be analyzed for TPH in the gasoline range using NWTPH-Gx method and gasoline-related VOCs using EPA Method 8260B. Analytical results should then be documented in an addendum letter along with a request for the DEQ to issue a "no further action" determination for the site.

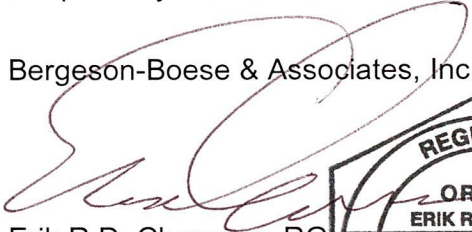
9.0 LIMITATIONS

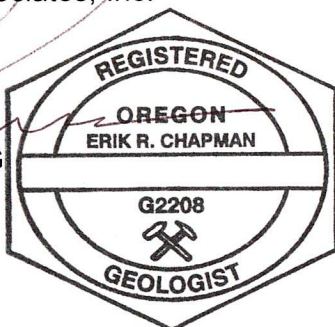
Professional services provided by BB&A have been performed using the degree of care and skill ordinarily exercised, under similar circumstances, by reputable environmental research and consulting firms practicing in this or similar localities. No other warranty, expressed or implied, is made as to the professional advice included in this report.

No investigation is thorough enough to ensure that no contamination is present on a particular property or in a particular area. The analyses of the samples collected only indicates the presence and absence of contaminants in those discrete sample locations. Based on our experience with similar investigations, and within the limits of the scope of work and budget constraints of this project, the samples were collected from areas most likely to be impacted by potential contamination. However, the results from the collected samples should only be considered as an indicator of subsurface conditions and not as a guarantee of the absence of contaminants in areas not sampled.

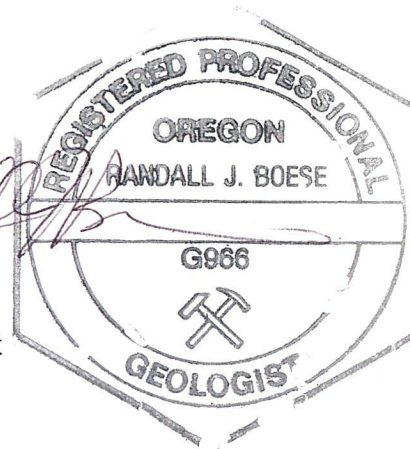
Respectfully submitted,

Bergeson-Boese & Associates, Inc.


Erik R.D. Chapman, RG
Project Manager




Randall J. Boese, RG
Senior Hydrogeologist



APPENDIX A

*Zwald Industrial Services, Inc. Fluid Disposal Receipt
and
Don Averil Recycling Receipt*

Zwold
INDUSTRIAL SERVICES

9540 Hurliman Hill Rd
Tillamook, OR 97141
503-842-1005

STEVEN

Inv

Date	Invoice #
4/4/2008	8106

Bill To
T.C.C.A Accounts Payable 4185 Hwy 101 N. Tillamook, OR 97141

Service Address
T.C.C.A Accounts Payable 4185 HWY 101 N. Tillamook, OR 97141

P.O. or Job No.	Operator	Due Date
60229	Nick/Steve	5/10/2008

Serviced	Description	Loads	Hours	Rate	Amount
3/31/2008	On site pumping out old underground tank	1	1.5	100.00	150.00
4/1/2008	Travel to and from Portland, OR to disposal site	1	4.5	100.00	450.00
4/1/2008	Disposal charges at Pacific Power Vac in Portland Oregon		598	0.275	164.45
223627 INT. AUDIT & APPROVAL DATE MATERIAL 4-1-08 DATE PAID APR 07 2008 QUANT EX D 6341660 Copy					
Thank You! We appreciate your business.					Total \$764.45

Customer's Order No.		Date	
Name			
Address			
SOLD BY	CASH TO ORDER CHARGE	ON ACCT	MORE REID
PART OUT			
QUAN.	DESCRIPTION	PRICE	AMOUNT
	Picked up A		
	Ladle 500 sal Tank		
	and disposed of		
	"Recycle"		
	TAX		
	TOTAL		
0001051		Rec'd by [Signature]	

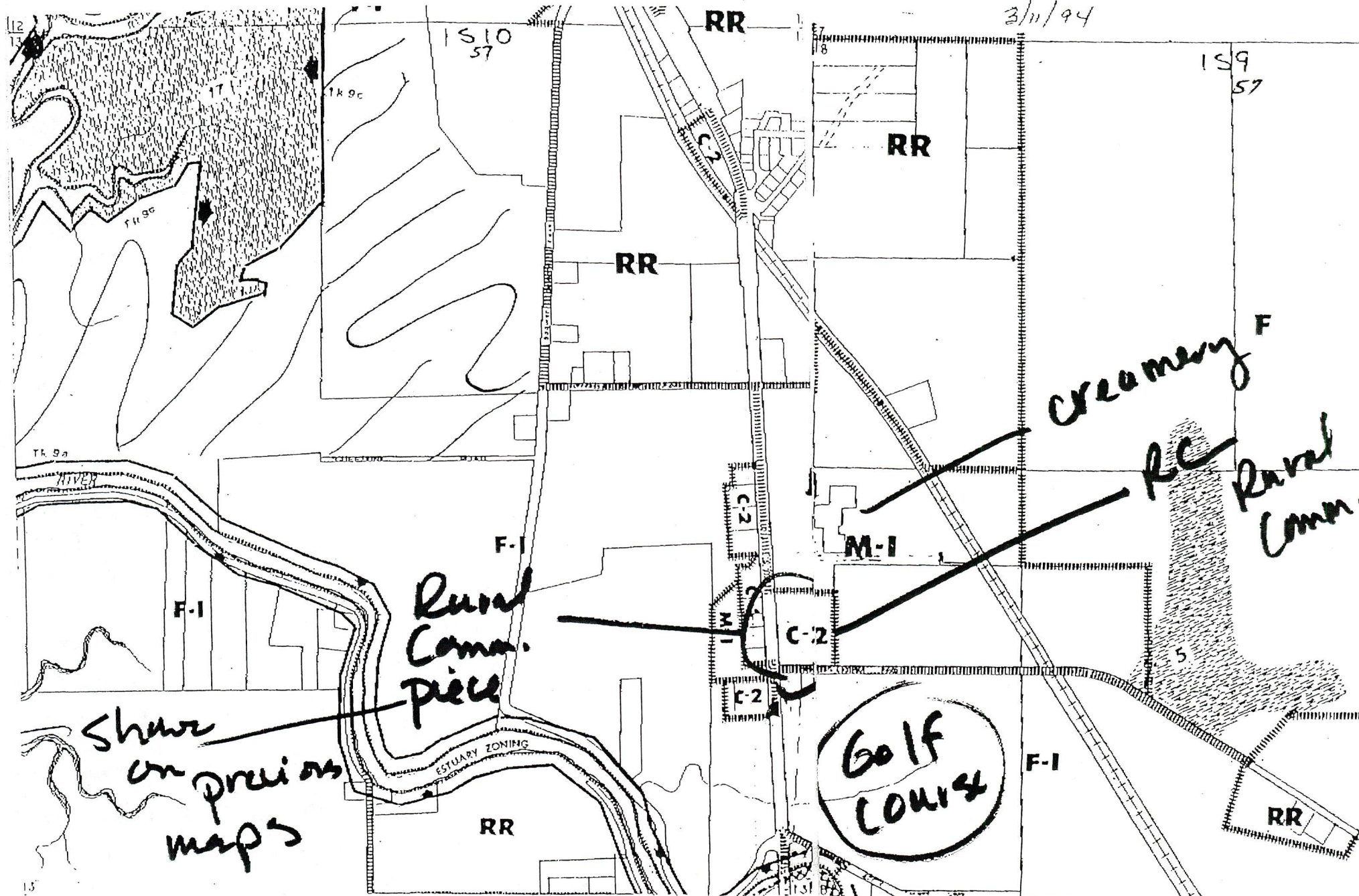
GS 2012 PRINTED IN U.S.A.

Thank You



APPENDIX B

Zoning Information



SECTION 3.032: GENERAL INDUSTRIAL ZONE (M-1)

- (1) **PURPOSE:** The purpose of the M-1 zone is to accommodate uses that cannot be accommodated in other zones due to off-site impacts that could, without sufficient buffers, interrupt the use or enjoyment of surrounding properties. Uses listed in Section 3.032 are permitted in the identified Port of Tillamook Bay Industrial Park "M-1 Zone" and the Tillamook Creamery "M-1 Zone" only.

Land is suitable for the M-1 zone if it:

- (a) Is needed;
 - (b) Is physically capable of accommodating heavy industrial activities;
 - (c) Has access to transportation routes capable of accommodating heavy traffic;
 - (d) Is buffered from residential areas so as not to create conflicts; and
 - (e) Is or can be adequately served by public utilities and services.
 - (f) Land zoned for resource use cannot be zoned M-1 without an approved Exception to Goals 3, 4, and 14.
 - (g) Land zoned for development cannot be zoned M-1 zone without an approved Exception to Goal 14.
- (2) **USES PERMITTED OUTRIGHT:** In the M-1 zone, the following uses and their accessory uses are permitted outright, subject to all applicable supplementary regulations contained in this Ordinance:
- (a) Light industries.
 - (b) Heavy industries.
 - (c) Sales and service activities requiring large outdoor storage space, including the sale and repair of cars, trucks, farm equipment, heavy machinery, and marine craft; the storage of construction, plumbing, heating, paving, electrical , and painting materials; and parking for trucks as part of a construction or shipping operation.
 - (d) Warehousing, including mini-storage, wholesaling, truck dispatch, or storage facilities.
 - (e) Rock quarries, and the mining and processing of sand, gravel, peat and other earth products.

- (f) Farm uses, including aquaculture, and forest uses.
 - (g) Energy resource exploration and extraction.
 - (h) Public park and recreation uses.
 - (i) Utility substations and power transmission lines.
 - (j) Towers for communications, wind energy conversion systems, or structures having similar impacts.
 - (k) Sanitary landfills, waste transfer stations or processing facilities, and recycling centers.
 - (l) Water supply and treatment facilities and sewage treatment plants.
 - (m) Airports.
 - (n) Dwellings for caretakers or watchmen that are accessory to an established use, including mobile home or recreational vehicle.
 - (o) Mobile homes or recreational vehicles used during the construction of a use for which a building permit has been issued.
 - (p) Signs, subject to Section 4.020.
 - (q) Uses listed in Subsections 3.032 (3) (c) through (f) are permitted outright in the Port of Tillamook Bay Industrial Park "M-1 Zone" only.
 - (r) Off-Site Advertising Sign.
- (3) **USES PERMITTED CONDITIONALLY:** In the M-1 zone, except as provided in Subsection (2) (q) of this Section, the following uses and their accessory uses are permitted subject to the provisions of Article 6 and the requirements of all applicable supplementary regulations contained in this Ordinance:
- (a) Industries with exceptionally heavy environmental impacts according to State Department of Environmental Quality standards.
 - (b) Mining and processing activities not specifically listed in Section 3.032 (2).
 - (c) Power generating facilities.
 - (d) Business, government, or professional offices.
 - (e) Convention facilities, including motels and restaurants.

- (f) Fire or ambulance stations.
- (g) Schools.
- (h) Community meeting buildings and associated facilities.
- (i) Temporary mobile kitchen units.
- (j) Auto wrecking yards.
- (k) Recreational campground, provided that in addition to the conditional use criteria contained in Section 6.040 the following criteria are met and/or applied as conditions if approval is granted.
 - 1. The proposed development will not conflict with any existing or emerging patterns of industrial development;
 - 2. Permanent facilities and structures are limited so that they can easily be removed to accommodate an industrial siting; and,
 - 3. Periodic review of the decision shall be conducted by the County Planning Staff to determine if a need is present for the subject parcel to be converted to industrial use.
- (l) Correctional facility.
- (m) Golf Course in Port of Tillamook Bay Industrial Park.
- (4) STANDARDS: Land development in the M-1 zone shall conform to the following standards, unless more restrictive supplemental regulations apply:
 - (a) The minimum yard adjacent to a residential use or zone shall be 20 feet.
 - (b) Building heights shall not exceed 75 feet.
 - (c) Outdoor storage abutting or facing a lot in a residential zone shall be screened with a sight-obscuring fence.
 - (f) Off-street parking and loading areas shall be provided as specified in Section 4.030.

SECTION 3.020: RURAL COMMERCIAL ZONE (RC)

- (1) PURPOSE: The purpose of the RC zone is to permit a moderate level of commercial activities to serve the commercial needs of rural areas, and tourist areas. Commercial uses in the RC zone typically provide goods and services that would be required by most households in the area, and they have relatively few impacts on neighboring areas. Land is suitable for the RC zone because it:
 - (a) Is needed;
 - (b) Is physically capable of being developed;
 - (c) Can obtain access to a public road without causing traffic hazards or congestion;
 - (d) Will not cause significant conflicts with nearby residential uses; and
 - (e) Has sufficient land area to accommodate off-street parking.
- (2) USES PERMITTED OUTRIGHT: In the RC zone, the following uses and their accessory uses are permitted outright, subject to all applicable supplementary regulations contained in this ordinance.
 - (a) General retail trade establishments such as grocery stores, drug stores, or hardware stores, provided that such establishments do not require over 15 parking spaces.
 - (b) Business, government, professional, and medical offices, financial institutions, and libraries requiring less than 15 parking spaces.
 - (c) Eating and drinking establishments, excluding drive-in or fast food restaurants.
 - (d) A single-family dwelling, manufactured or mobile home for the owner of an active business located on the same lot or parcel.
 - (e) Mobile home or recreational vehicle used during the construction of a use for which a building or placement permit has been issued.
 - (f) Swimming, tennis, racquetball, or other similar facilities.
 - (g) Signs, subject to Section 4.020.
 - (h) Dwelling unit or units accessory to an active commercial use, located above the first story.
 - (i) Bed and breakfast enterprise.

- (j) Public park and recreation uses.
 - (k) Miniature Golf Course.
 - (l) Temporary produce stand- Not to exceed 45 days.
- (3) USES PERMITTED CONDITIONALLY: In the R C zone, the following uses and their accessory uses are permitted subject to the provisions of Article IV and the requirements of all applicable supplementary regulations contained in this ordinance:
- (a) General retail trade establishments such as grocery stores, drug stores, and hardware stores, that require 25 parking spaces or fewer.
 - (b) Sales and service activities requiring a large outdoor storage space, including the sale and repair of cars, trucks, farm equipment, heavy machinery and marine craft; the storage of construction, plumbing, heating, paving, electrical and painting materials; and parking for trucks as part of a construction or shipping operation.
 - (c) Warehousing, including mini-storage.
 - (d) Animal hospitals, kennels or other animal boarding facilities.
 - (e) Lodges, clubs, or meeting facilities for private organizations.
 - (f) Temporary mobile kitchen units.
 - (g) Light industries.
 - (h) One-family dwelling,
 - (i) Mobile home or recreational vehicle.
 - (j) Churches and schools.
 - (k) Community meeting buildings and associated facilities.
 - (l) Hospitals, sanitariums, rest homes, and nursing homes.
 - (m) Fire and ambulance stations.
 - (n) Utility substations and power transmission lines.
 - (o) Towers for communications, wind energy conversion systems, or structures having similar impacts.

- (p) Water supply and treatment facilities, and sewage treatment plants.
 - (q) Foster family home accommodating six or more children or adults.
 - (r) Recreational campgrounds without full hook-up requiring community septic system.
 - (s) Off-site advertising sign.
 - (t) Residential care, training, or treatment facility as defined by ORS 443.400; any facility which provides care, training or treatment for six or more physically, mentally, emotionally, or behaviorally disabled individuals. Facilities that provide for five or less are addressed as ADULT FOSTER HOMES or FOSTER FAMILY HOMES.
- (4) STANDARDS: Land divisions and development in the RC zone shall conform to the following standards, unless more restrictive supplemental regulations apply:
- (a) The minimum lot dimensions, yard setbacks, and building height restrictions for structures containing only residential use shall be the same as in the RR zone.
 - (b) Minimum yards for any structure on a lot or parcel adjacent to a residential zone shall be 5 feet on the side adjacent to the residential zone, and 10 feet in the front yard. No rear yard is required.
 - (c) For commercial or combined commercial-residential structures, structures shall be either constructed on the property line or setback at least 3 feet or as required in Section 3.020 (4) (b).
 - (d) All structures shall meet the requirements for clear-vision areas specified in Section 4.010.
 - (e) All uses shall meet off-street parking requirements as provided in Section 4.030.
 - (f) Outdoor storage abutting or facing a lot in a residential zone shall be screened with a sight-obscuring fence.
 - (g) The maximum building height for commercial structures shall be 35 feet except on ocean or bay frontage lots, where it shall be 24 feet, higher structures may be permitted as a conditional use in accordance with Article VI.
 - (h) Scale of Commercial uses:
 - a. Outside an unincorporated community, the use shall not exceed a total of 3,000 square feet of floor area per use within a building(s)

- b. Outside an unincorporated community a lawfully established use that existed prior to the adoption of this Section (December 4, 2002) may be expanded to occupy a maximum of 3,000 square feet of floor area, or an additional 25% of the floor area currently occupied, whichever is greater.

APPENDIX C

Well Use Survey Data Base Results

Well Log Query Results

Township: 1 S, Range: 9 W, Sections: 18, Type of Log: W

Well Log	T-R-S/ QQ-Q	Taxlot	Street of Well	Owner	Company	Special Standards	Well Type	First Water	Completed Depth	Static Water Level	Yield	Completed Date	Received Date	Bonded Constructor	Startcard	Well Id #	New	Abandon	Deepen	Alteration	Conversion	Domestic	Irrigation	Community	Livestock	Industrial	Injection	Thermal	Dewatering	Piezometer
TILL_476	1.00S-9.00W-18			WILLIAMS, ELTON PO BOX 56 BEAVER OR 97108			W	19.00	110.00	40.0	3.0	07/24/1975	07/30/1975	TURNER, RALPH RALPH TURNER DRILLING CO.			✓				✓									
TILL_477	1.00S-9.00W-18 SW-SW			GIENGER, LENHART A 4160 BOSQUIST RD TILLAMOOK OR 97141			W	85.00	100.00	25.0	30.0	08/31/1982	09/09/1982	TRUSSELL, IRA			✓				✓									
TILL_478	1.00S-9.00W-18 NW-SW				TILLAMOOK CHEESE FACTORY BOX 313 TILLAMOOK OR 97141		W	45.00	85.00	10.0	20.0	07/19/1974	07/22/1974	TRUSSELL, IRA			✓				✓									
TILL_479	1.00S-9.00W-18 NW-SW				GREEN ACRES MOTEL; FRED GITEN AUTO CAMP OR 97141		W		187.00	10.0		02/01/1962	02/01/1962				✓													
TILL_1034	1.00S-9.00W-18 SE-SE	400		TURNER, STAN 3680 LATIMER RD N TILLAMOOK OR 97141			W	0.00	0.00	0.0			06/16/1992	EVEY, LARRY C				✓												
TILL_1220	1.00S-9.00W-18 NW-NW	800	JUNO HEIGHTS, TILLAMOOK	HOFFMILLER, KAY 17166 SW BEEF BEND RD SHERWOOD OR 97140			W	96.00	188.00	65.0	10.0	04/30/1994	05/18/1994	EVEY, LARRY C	60085		✓				✓									
TILL_1290	1.00S-9.00W-18 NW-NW	1100		WEISSENFLUH, MICHAEL 4825 ELLEN AVE TILLAMOOK OR 97141			W	13.00	150.00	38.0	15.0	02/07/1995	02/21/1995	EVEY, LARRY C	64907		✓				✓									
TILL_50600	1.00S-9.00W-18 NW-SW	900	2325 LATIMER RD	GIENGER, LENHARD 2325 LATIMER RD TILLAMOOK OR 97141		✓	W			12.0	10.0	06/30/1999	07/13/1999	EVEY, LARRY C LARRY EVEY WELL DRILLING	118655	30299				✓										
TILL_50749	1.00S-9.00W-18 NW-NW	900	ELLEN AVE	MOON, KAREN 2509 7TH ST APT B TILLAMOOK OR 97141			W	115.00	145.00	35.0	20.0	07/26/2000	07/28/2000	EVEY, LARRY C LARRY EVEY WELL DRILLING	126648	36350	✓				✓									
TILL_51163	1.00S-9.00W-18 NW-NW	200	ELLEN AVE	RAWE, OGDER PO BOX 1252 TILLAMOOK OR 97141			W	70.00	100.00	57.0	24.0	06/24/2003	06/27/2003	JANNSEN, ROY N A M JANNSEN DRILLING	156215	64143	✓				✓									
TILL_51193	1.00S-9.00W-18 NW-NW	1000	4805 ELLEN AVE	STANFILL, RICHARD 4590 HWY 101 S TILLAMOOK OR 97141			W	92.00	105.00	31.0	30.0	08/22/2003	08/26/2003	EVEY, LARRY C LARRY EVEY WELL DRILLING	159796	60047	✓				✓									
TILL_51329	1.00S-9.00W-18 SW-SW	900	4000 BOQUIST RD		GIENGER FARMS 4160 BOQUIST RD TILLAMOOK OR 97141		W	87.00	100.00	19.0	50.0	07/28/2004	08/02/2004	BEIER, DALLAS L BEIER & WALDROOP WELL SERVICES INC.	163034	71407				✓		✓								

[Download Data](#)
[Return to Well Log Query](#)

State Well No.

(Please type or print) **WATER RESOURCES DEPT.**

(Do not write above this line) SALEM, OREGON

State Permit No.

Contractor's License No. 247 Date 7-24-75 1975

SP-45658-119

WATER WELL REPORT
STATE OF OREGON

TILL
477

RECEIVED

SEP 9 1982

State Well No.

15/9W-18CC

WATER RESOURCES DEPT.
SALEM, OREGON

State Permit No.

(1) OWNER:

Name Leahart H. Sienger
Address 4160 Besquist Rd
City Willamette State Ore

(2) TYPE OF WORK (check):

New Well ☒ Deepening ☐ Reconditioning ☐ Abandon ☐

If abandonment, describe material and procedure in Item 12.

(3) TYPE OF WELL:

Rotary Air ☐ Driven ☐
Rotary Mud ☐ Dug ☐
Bored ☒

(4) PROPOSED USE (check):

Domestic ☒ Industrial ☐ Municipal ☐
Irrigation ☐ Test Well ☐ Other ☐
Thermal: ☐ Withdrawal ☐ Reinjection ☐

(5) CASING INSTALLED:

Steel ☒ Plastic ☐
Threaded ☐ Welded ☒
6" Diam. from +2 ft. to 98 ft. Gauge 250
" Diam. from ft. to ft. Gauge

LINER INSTALLED:

" Diam. from ft. to ft. Gauge

(6) 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.

(7) SCREENS:

Well screen installed? ☐ Yes ☒ No

Manufacturer's Name
Type Model No.
Diam. Slot Size Set from ft. to ft.
Diam. Slot Size Set from ft. to ft.

(8) WELL TESTS:

Drawdown is amount water level is lowered below static level

Was a pump test made? ☐ Yes ☒ No If yes, by whom?

Field: gal./min. with ft. drawdown after hrs.

Air test gal./min. with drill stem at ft. hrs.

Bailer test 30 gal./min. with 30 ft. drawdown after 2 hrs.

Artesian flow g.p.m.

Temperature of water 54 Depth artesian flow encountered ft.

(9) CONSTRUCTION:

Special standards: Yes ☐ No ☒

Well seal—Material used Cement
Well sealed from land surface to 20 ft.
Diameter of well bore to bottom of seal 10 in.
Diameter of well bore below seal 6 in.
Number of sacks of cement used in well seal 8 sacks
How was cement grout placed? Stemix Pipe

Was pump installed? no Type HP Depth ft.

Was a drive shoe used? ☐ Yes ☒ No Plugs Size: location ft.

Did any strata contain unusable water? ☐ Yes ☒ No

Type of Water? depth of strata

Method of sealing strata off

Was well gravel packed? ☐ Yes ☒ No Size of gravel:

Gravel placed from ft. to ft.

(10) LOCATION OF WELL:

County Willamette Driller's well number
SW 1/4 SW 1/4 Section 18 T. 15. R. 9 W. W.M.
Tax Lot # Lot Blk Subdivision

Address at well location: W. 101st St. at Latimer Rd

(11) WATER LEVEL: Completed well.

Depth at which water was first found 85 ft.
Static level 25 ft. below land surface. Date 8-31
Artesian pressure lbs. per square inch. Date

(12) WELL LOG:

Diameter of well below casing 6

Depth drilled 100 ft. Depth of completed well 100 ft.

Formation: Describe color, texture, grain size and structure of materials; and show thickness and nature of each stratum and aquifer penetrated, with at least one entry for each change of formation. Report each change in position of Static Water Level and indicate principal water-bearing strata.

MATERIAL	From	To	SWL
Soil	0	2	
Brown clay	2	15	
Blue clay	15	85	
Blue Sand (water)	85	100	20

Work started 8-30 19 82 Completed 8-31 19 82
Date well drilling machine moved off of well 8-31 19 82

Drilling Machine Operator's Certification:

This well was constructed under my direct supervision. Materials used and information reported above are true to my best knowledge and belief.

(Signed) Ira J. Russell Date 8-31/19 82
(Drilling Machine Operator)

Drilling Machine Operator's License No. 533

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 Ira J. Russell (Type or print)
(Person, firm or corporation)

Address Manning Ore

(Signed) Ira J. Russell (Water Well Contractor)

Contractor's License No. 472 Date 8-31 19 82

NOTICE TO WATER WELL CONTRACTOR

The original and first copy of this report are to be filed with the

WATER RESOURCES DEPARTMENT,
SALEM, OREGON 97310
within 30 days from the date of well completion.

SP*12658-690

STATE ENGINEER, SALEM, OREGON 57310
within 30 days from the date
of well completion.

TILL
478

WATER WELL REPORT

STATE OF OREGON

(Please type or print)

(Do not write above this line)

STATE ENGINEER
SALEM, OREGON

JUL 22 1974

State Well No.

15/9W-18cb

State Permit No.

(1) OWNER:

Name Tillamook Cheese Factory
Address Tillamook Ore Box 313

(2) TYPE OF WORK (check):

New Well ☒ Deepening ☐ Reconditioning ☐ Abandon ☐

If abandonment, describe material and procedure in Item 12.

(3) TYPE OF WELL:

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

(4) PROPOSED USE (check):

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

CASING INSTALLED:

Threaded ☐ Welded ☒
6" Diam. from 0 ft. to 80 ft. Gage
" Diam. from ft. to ft. Gage
" Diam. from ft. to ft. Gage

PERFORATIONS:

Perforated? ☒ Yes ☐ No.

Type of perforator used

Size of perforations 3/8 in. by 4 in.
72 perforations from 40 ft. to 80 ft.
perforations from ft. to ft.
perforations from ft. to ft.

(7) SCREENS:

Well screen installed? ☐ Yes ☒ No

Manufacturer's Name _____
Type _____ Model No. _____
Diam. _____ Slot size _____ Set from _____ ft. to _____ ft.
Diam. _____ Slot size _____ Set from _____ ft. to _____ ft.

(8) 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.

" " " "

" " " "

Ballor test 20 gal./min. with 55 ft. drawdown after 2 hrs.

Artesian flow g.p.m.

Temperature of water 54 Depth artesian flow encountered ft.

(9) CONSTRUCTION:

Well seal—Material used Cement
Well sealed from land surface to 20 ft.
Diameter of well bore to bottom of seal 10 in.
Diameter of well bore below seal 6 in.
Number of sacks of cement used in well seal 4 sacks
Number of sacks of bentonite used in well seal sacks
Brand name of bentonite _____
Number of pounds of bentonite per 100 gallons
of water lbs./100 gals.
Was a drive shoe used? ☐ Yes ☒ No Plugs _____ Size location _____ ft.
Did any strata contain unusable water? ☐ Yes ☒ No
Type of water _____ depth of strata _____
Method of sealing strata off _____
Was well gravel packed? ☐ Yes ☒ No Size of gravel: _____
Gravel placed from ft. to ft.

(10) LOCATION OF WELL:

County Tillamook Driller's well number 23
NW 1/4 SW 1/4 Section 18 T. 15 R. 9W W.M.

Bearing and distance from section or subdivision corner

300' E & 300' S of NW Corner Sec 18

(11) WATER LEVEL: Completed well.

Depth at which water was first found 45 ft.

Static level 10 ft. below land surface. Date 7-19-74

Artesian pressure lbs. per square inch. Date

(12) WELL LOG:

Diameter of well below casing 6

Depth drilled 85 ft. Depth of completed well 85 ft.

Formation: Describe color, texture, grain size and structure of materials; and show thickness and nature of each stratum and aquifer penetrated, with at least one entry for each change of formation. Report each change in position of Static Water Level and indicate principal water-bearing strata.

MATERIAL	From	To	SWL
Soil	0	3	
Brown clay	3	45	
Water bearing fine sand	45	60	10
Clay & silt	60	65	10
Water bearing sand	65	80	10
Blue claystone	80	85	10

Work started 7-18 1974 Completed 7-19 1974

Date well drilling machine moved off of well 7-19 1974

Drilling Machine Operator's Certification:

This well was constructed under my direct supervision. Materials used and information reported above are true to my best knowledge and belief.

[Signed] Era Russell Date 7-19, 1974
(Drilling Machine Operator)

Drilling Machine Operator's License No. 533

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 Era Russell
(Person, firm or corporation) (Type on print)

Address Box 30 Manning Ore

[Signed] Era Russell
(Water Well Contractor)

Contractor's License No. 472 Date 7-19, 1974

OBSERVATION WELL

WELL SCHEDULE

GREEN ACRES MOTEL

TILL
479

1/9W-18M(1)

Tillamook Co.

Work Unit _____
Land Owner Fred Olsen Auto Co. Address 1/2 mile north of Tillamook Well No. _____
Location: State _____ County Tillamook 1/4 Sec. _____
Source _____ Confidential _____
Drilling Commenced _____ Completed _____
Driller _____ Address _____
Topography _____
Elevation _____ ft. Datum _____ Meas. point _____
Type of Well _____ Method of Drilling _____
Depth _____ Diameter: top _____ bottom _____ T N E
Chief Aquifer _____ from _____ to _____ S R N
Others _____
Casing: Type _____ Depth _____ Diameter _____ Screen _____
Water Level _____ ft. above _____ ft. above
below _____ below _____
Pump _____ Power _____
Yield _____ Drawdown _____ ft. pumping _____ G.P.M. Time _____
Use _____ Quality _____ Samples _____

Graphic
Log

Geological Formation Record

Written Log by: _____

Casing

Correlation by: _____

Record

From Feet	To Feet	Thick- ness ft.
--------------	------------	--------------------

Character of formation and remarks

Depth 187'
Hard water

T.11
1290

15/9w/1866
WARD) # 64907

(START CARD) # 64967

(1) OWNER: _____ Well Number _____

(2) TYPE OF WORK
☒ New Well ☐ Deepening ☐ Alteration (repair/recondition) ☐ Abandonment

(3) DRILL METHOD:

☒ Rotary Air ☐ Rotary Mud ☐ Cable ☐ Auger

(4) PROPOSED USE:

☒ Domestic	☐ Community	☐ Industrial	☐ Irrigation
☐ Thermal	☐ Injection	☐ Livestock	☐ Other

(5) BORE HOLE CONSTRUCTION:

Special Construction approval ☐ Yes ☒ No Depth of Completed Well 150 ft
Explosives used ☐ Yes ☒ No Type _____ Amount _____

HOLE			SEAL			
Diameter	From	To	Material	From	To	Sacks or pounds
10	0	25	Bentonite	0	25	74
6	25	150	—	—	—	—

How was seal placed: Method ☐ A ☐ B ☐ C ☐ D ☐ E
☒ Other Placed in dry & prudded
 Backfill placed from _____ ft. to _____ ft. Material _____
 Gravel placed from _____ ft. to _____ ft. Size of gravel _____

(6) CASING/LINER: _____

	Diameter	From	To	Gauge	Steel	Plastic	Welded	Threaded
Casing:	6	+30"	78	250	☒	☐	☒	☐
					☐	☐	☐	☐
					☐	☐	☐	☐
					☐	☐	☐	☐
Liner:	4	10	150	160	☒	☐	☐	☐
					☐	☐	☐	☐

Final location of shoe(s) 78

(7) PERFORATIONS/SCREENS:

☒ Perforations		Method <u>Drilled</u>					
☐ Screens		Type _____		Material _____			
From	To	Slot size	Number	Diameter	Tel. pipe size	Casting	Liner
<u>90</u>	<u>150</u>	<u>—</u>	<u>240</u>	<u>1/2</u>	<u>4</u>	☐	☒
						☐	☐
						☐	☐
						☐	☐

(8) WELL TESTS: Minimum testing time is 1 hour

☐ Pump	☐ Bailor	☒ Air	☐ Flowing Artesian
Yield gal/min	Drawdown	Drill stem at	Time
15	92	130	1 hr.

Temperature of water 54 Depth Artesian Flow Found

Was a water analysis done? ☐ Yes By whom _____

Did any strata contain water not suitable for intended use? ☐ Too little

☐ Salty ☐ Muddy ☐ Odor ☐ Colored ☐ Other

Depth of strata:

(9) LOCATION OF WELL by legal description:

County Tillamook Latitude _____ Longitude _____
Township 15 N or S Range 9W E or W. WM.
Section 18 NW 1/4 NW 1/4
Tax Lot 1100 Lot _____ Block _____ Subdivision _____
Street Address of Well (or nearest address) SAME

(10) STATIC WATER LEVEL:

38 ft. below land surface. Date 2-7-95
Artesian pressure lb. per square inch. Date

(11) WATER BEARING ZONES:

Depth at which water was first found 15

From	To	Estimated Flow Rate	SWL

(12) WELL LOG:

Ground Elevation _____

[illegible]

Date started 2-6-95 Completed 2-7-95

(unbonded) Water Well Constructor Certification:

I certify that the work I performed on the construction, alteration, or abandonment of this well is in compliance with Oregon water supply well construction standards. Materials used and information reported above are true to the best of my knowledge and belief.

Signed _____ WWC Number _____
Date _____

(bonded) Water Well Constructor Certification:

I accept responsibility for the construction, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon water supply well construction standards. This report is true to the best of my knowledge and belief.

Signed Liam C. Ellis WWC Number 1221
Date 2-7-95

ORIGINAL & FIRST COPY-WATER RESOURCES DEPARTMENT SECOND COPY-CONSTRUCTOR THIRD COPY-CUSTOMER

Instructions for completing this report are on the last page of this form.

(9) LOCATION OF WELL by legal description:

(3) DRILL METHOD:

(4) PROPOSED USE:

(5) BORE HOLE CONSTRUCTION:

HOLE

SEAL

How was seal placed: Method ☐ A ☐ B ☐ C ☐ D ☐ E

Gravel placed from _____ ft. to _____ ft. Size of gravel _____

(6) CASING/LINER:

Final location of shoe(s) _____

(7) PERFORATIONS/SCREENS:

☐ Screens Type _____ Material _____

(8) WELL TESTS: Minimum testing time is 1 hour

Temperature of water 55 Depth Artesian Flow Found

Was a water analysis done? ☐ Yes By whom

Did any strata contain water not suitable for intended use? ☐ Too little

☐ Salty ☐ Muddy ☐ Odor ☐ Colored ☐ Other

Depth of strata: _____

(10) STATIC WATER LEVEL:

35 ft. below land surface

Date 7-26-00

Artesian pressure _____ lb. per square inch

Date _____

(11) WATER BEARING ZONES:

Depth at which water was first found 115

(12) WELL LOG:

Ground Elevation

WATER RESOURCES DEPT.
SALEM, OREGON

Date started 7-25-00 Completed 7-26-00

(unbonded) Water Well Constructor Certification:

I certify that the work I performed on the construction, alteration, or abandonment of this well is in compliance with Oregon water supply well construction standards. Materials used and information reported above are true to the best of my knowledge and belief.

WWC: Number

Signed _____ Date _____

(bonded) Water Well Constructor Certification:

I accept responsibility for the construction, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon water supply well construction standards. This report is true to the best of my knowledge and belief.

WWC Number

Signed James C. Grier Date 7-26-01

ORIGINAL - WATER RESOURCES DEPARTMENT FIRST COPY - CONSTRUCTOR SECOND COPY - CUSTOMER

APPENDIX D

*Test America Laboratory Report and Chain-of-Custody
Documents*

May 15, 2008

Erik Chapman
Bergeson, Boese and Associates-Wilsonville
25195 SW Parkway Ave Suite 207
Wilsonville, OR 97070

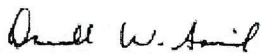
RE: Tillamook Creamery

Enclosed are the results of analyses for samples received by the laboratory on 05/01/08 10:30.
The following list is a summary of the Work Orders contained in this report, generated on 05/15/08 09:25.

If you have any questions concerning this report, please feel free to contact me.

<u>Work Order</u>	<u>Project</u>	<u>ProjectNumber</u>
PRE0022	Tillamook Creamery	TC021SC.080C

TestAmerica Portland



Darrell Auvil, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.

Bergeson, Boese and Associates-Wilsonville

25195 SW Parkway Ave Suite 207
Wilsonville, OR 97070

Project Name:

Tillamook Creamery

Project Number:

TC021SC.080C

Project Manager:

Erik Chapman

Report Created:

05/15/08 09:25

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
P1-H2O	PRE0022-01	Water	04/29/08 14:00	05/01/08 10:30
P2-H2O	PRE0022-02	Water	04/29/08 13:20	05/01/08 10:30
P3-H2O	PRE0022-03	Water	04/29/08 12:30	05/01/08 10:30
P4-H2O	PRE0022-04	Water	04/29/08 11:45	05/01/08 10:30
P5-H2O	PRE0022-05	Water	04/29/08 15:00	05/01/08 10:30
P2@4.5'	PRE0022-12	Soil	04/29/08 12:52	05/01/08 10:30
P2@9.5'	PRE0022-14	Soil	04/29/08 13:05	05/01/08 10:30
P2@15.5'	PRE0022-16	Soil	04/29/08 13:12	05/01/08 10:30
P3@11'	PRE0022-22	Soil	04/29/08 12:20	05/01/08 10:30
P4@14.5'	PRE0022-27	Soil	04/29/08 11:45	05/01/08 10:30
P5@15.5'	PRE0022-30	Soil	04/29/08 14:45	05/01/08 10:30

TestAmerica Portland

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.



Darrell Auvil, Project Manager

Bergeson, Boese and Associates-Wilsonville

25195 SW Parkway Ave Suite 207
Wilsonville, OR 97070

Project Name: **Tillamook Creamery**

Project Number: TC021SC.080C

Project Manager: Erik Chapman

Report Created:

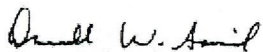
05/15/08 09:25

Gasoline Hydrocarbons per NW TPH-Gx Method
TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PRE0022-01 (P1-H2O)		Water				Sampled: 04/29/08 14:00				
Gasoline Range Hydrocarbons	NW TPH-Gx	ND	----	80.0	ug/l	1x	8050166	05/05/08 16:14	05/06/08 16:25	
Surrogate(s): 4-BFB				87.5%		50 - 150 %	"			"
PRE0022-02 (P2-H2O)		Water				Sampled: 04/29/08 13:20				
Gasoline Range Hydrocarbons	NW TPH-Gx	8830	----	400	ug/l	5x	8050166	05/05/08 16:14	05/06/08 19:10	
Surrogate(s): 4-BFB				133%		50 - 150 %	1x			"
PRE0022-03 (P3-H2O)		Water				Sampled: 04/29/08 12:30				
Gasoline Range Hydrocarbons	NW TPH-Gx	ND	----	80.0	ug/l	1x	8050166	05/05/08 16:14	05/06/08 16:52	
Surrogate(s): 4-BFB				88.7%		50 - 150 %	"			"
PRE0022-04 (P4-H2O)		Water				Sampled: 04/29/08 11:45				
Gasoline Range Hydrocarbons	NW TPH-Gx	588	----	80.0	ug/l	1x	8050166	05/05/08 16:14	05/06/08 17:20	
Surrogate(s): 4-BFB				108%		50 - 150 %	"			"
PRE0022-05 (P5-H2O)		Water				Sampled: 04/29/08 15:00				
Gasoline Range Hydrocarbons	NW TPH-Gx	562	----	80.0	ug/l	1x	8050166	05/05/08 16:14	05/06/08 17:47	
Surrogate(s): 4-BFB				91.3%		50 - 150 %	"			"

TestAmerica Portland

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.



Darrell Auvil, Project Manager

Bergeson, Boese and Associates-Wilsonville

25195 SW Parkway Ave Suite 207
Wilsonville, OR 97070

Project Name: **Tillamook Creamery**

Project Number: TC021SC.080C

Project Manager: Erik Chapman

Report Created:

05/15/08 09:25

Gasoline Hydrocarbons per NW TPH-Gx Method and BTEX per EPA Method 8021B
TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
---------	--------	--------	------	-----	-------	-----	-------	----------	----------	-------

PRE0022-12 (P2@4.5') Soil Sampled: 04/29/08 12:52

Benzene	NW-G, 8021B	2.35	----	0.366	mg/kg dry	10x	8050092	05/02/08 15:00	05/03/08 05:10	
Toluene	"	2.66	----	0.732	"	"	"	"	"	
Ethylbenzene	"	5.64	----	0.732	"	"	"	"	"	
Xylenes (total)	"	12.4	----	0.732	"	"	"	"	"	
Gasoline Range Hydrocarbons	"	590	----	58.6	"	"	"	"	"	

Surrogate(s): a,a,a-TFT (FID) 125% 50 - 150 % " "
a,a,a-TFT (PID) 134% 60 - 130 % " " ZX

PRE0022-14 (P2@9.5') Soil Sampled: 04/29/08 13:05

Benzene	NW-G, 8021B	0.187	----	0.0884	mg/kg dry	2x	8050092	05/02/08 15:00	05/03/08 06:33	
Toluene	"	0.181	----	0.177	"	"	"	"	"	
Ethylbenzene	"	0.545	----	0.177	"	"	"	"	"	
Xylenes (total)	"	1.08	----	0.177	"	"	"	"	"	
Gasoline Range Hydrocarbons	"	53.6	----	14.1	"	"	"	"	"	

Surrogate(s): a,a,a-TFT (FID) 73.9% 50 - 150 % " "
a,a,a-TFT (PID) 77.6% 60 - 130 % " "

PRE0022-16 (P2@15.5') Soil Sampled: 04/29/08 13:12

Benzene	NW-G, 8021B	1.28	----	0.373	mg/kg dry	10x	8050092	05/02/08 15:00	05/03/08 09:18	
Toluene	"	1.38	----	0.746	"	"	"	"	"	
Ethylbenzene	"	3.28	----	0.746	"	"	"	"	"	
Xylenes (total)	"	7.78	----	0.746	"	"	"	"	"	
Gasoline Range Hydrocarbons	"	311	----	59.7	"	"	"	"	"	

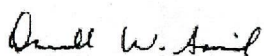
Surrogate(s): a,a,a-TFT (FID) 110% 50 - 150 % " "
a,a,a-TFT (PID) 110% 60 - 130 % " "

PRE0022-22 (P3@11') Soil Sampled: 04/29/08 12:20

Benzene	NW-G, 8021B	ND	----	0.369	mg/kg dry	10x	8050092	05/02/08 15:00	05/03/08 10:41	RL1
Toluene	"	ND	----	0.737	"	"	"	"	"	RL1
Ethylbenzene	"	ND	----	0.737	"	"	"	"	"	RL1
Xylenes (total)	"	ND	----	0.737	"	"	"	"	"	RL1
Gasoline Range Hydrocarbons	"	ND	----	59.0	"	"	"	"	"	RL1

Surrogate(s): a,a,a-TFT (FID) 67.6% 50 - 150 % " "
a,a,a-TFT (PID) 61.6% 60 - 130 % " "

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Darrell Auvil, Project Manager

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Bergeson, Boese and Associates-Wilsonville

25195 SW Parkway Ave Suite 207
Wilsonville, OR 97070

Project Name: **Tillamook Creamery**

Project Number: TC021SC.080C

Project Manager: Erik Chapman

Report Created:

05/15/08 09:25

Gasoline Hydrocarbons per NW TPH-Gx Method and BTEX per EPA Method 8021B

TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PRE0022-27 (P4@14.5')		Soil		Sampled: 04/29/08 11:45						
Benzene	NW-G, 8021B	ND	----	0.401	mg/kg dry	10x	8050092	05/02/08 15:00	05/03/08 09:45	RL1
Toluene	"	ND	----	0.803	"	"	"	"	"	RL1
Ethylbenzene	"	ND	----	0.803	"	"	"	"	"	RL1
Xylenes (total)	"	ND	----	0.803	"	"	"	"	"	RL1
Gasoline Range Hydrocarbons	"	ND	----	64.2	"	"	"	"	"	RL1
<i>Surrogate(s): a,a,a-TFT (FID)</i>				72.2%		50 - 150 %	"			"
<i>a,a,a-TFT (PID)</i>				64.8%		60 - 130 %	"			"

PRE0022-30 (P5@15.5')		Soil		Sampled: 04/29/08 14:45						
Benzene	NW-G, 8021B	ND	----	0.414	mg/kg dry	10x	8050092	05/02/08 15:00	05/03/08 06:05	RL1
Toluene	"	ND	----	0.827	"	"	"	"	"	RL1
Ethylbenzene	"	ND	----	0.827	"	"	"	"	"	RL1
Xylenes (total)	"	ND	----	0.827	"	"	"	"	"	RL1
Gasoline Range Hydrocarbons	"	ND	----	66.2	"	"	"	"	"	RL1
<i>Surrogate(s): a,a,a-TFT (FID)</i>				66.2%		50 - 150 %	"			RL1
<i>a,a,a-TFT (PID)</i>				60.5%		60 - 130 %	"			RL1

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Bergeson, Boese and Associates-Wilsonville

25195 SW Parkway Ave Suite 207

Wilsonville, OR 97070

Project Name: **Tillamook Creamery**

Project Number: TC021SC.080C

Project Manager: Erik Chapman

Report Created:

05/15/08 09:25

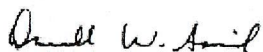
Dissolved Metals per EPA 6000/7000 Series Methods

TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PRE0022-01 (P1-H2O)		Water		Sampled: 04/29/08 14:00						
Lead	EPA 6020	ND	----	0.00100	mg/l	1x	8050245	05/07/08 08:30	05/08/08 02:19	
PRE0022-02 (P2-H2O)		Water		Sampled: 04/29/08 13:20						
Lead	EPA 6020	0.00293	----	0.00100	mg/l	1x	8050245	05/07/08 08:30	05/08/08 02:28	
PRE0022-03 (P3-H2O)		Water		Sampled: 04/29/08 12:30						
Lead	EPA 6020	ND	----	0.00100	mg/l	1x	8050245	05/07/08 08:30	05/08/08 02:36	
PRE0022-04 (P4-H2O)		Water		Sampled: 04/29/08 11:45						
Lead	EPA 6020	0.00138	----	0.00100	mg/l	1x	8050245	05/07/08 08:30	05/08/08 02:44	
PRE0022-05 (P5-H2O)		Water		Sampled: 04/29/08 15:00						
Lead	EPA 6020	ND	----	0.00100	mg/l	1x	8050245	05/07/08 08:30	05/08/08 02:52	

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Darrell Auvil, Project Manager

Bergeson, Boese and Associates-Wilsonville

25195 SW Parkway Ave Suite 207
Wilsonville, OR 97070

Project Name: **Tillamook Creamery**

Project Number: TC021SC.080C

Project Manager: Erik Chapman

Report Created:

05/15/08 09:25

Selected Volatile Organic Compounds (Including BTEX) per EPA Method 8260B
TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
---------	--------	--------	------	-----	-------	-----	-------	----------	----------	-------

PRE0022-01 (P1-H2O)

Water

Sampled: 04/29/08 14:00

1,2-Dibromoethane	EPA 8260B	ND	----	0.500	ug/l	1x	8050251	05/08/08 07:00	05/08/08 13:34	
1,2-Dichloroethane	"	ND	----	0.500	"	"	"	"	"	
Benzene	"	ND	----	0.200	"	"	"	"	"	
Toluene	"	ND	----	0.500	"	"	"	"	"	
Ethylbenzene	"	ND	----	0.500	"	"	"	"	"	
Xylenes (total)	"	ND	----	1.00	"	"	"	"	"	
Methyl tert-butyl ether	"	ND	----	2.00	"	"	"	"	"	
Naphthalene	"	ND	----	2.00	"	"	"	"	"	
1,2,4-Trimethylbenzene	"	ND	----	1.00	"	"	"	"	"	
1,3,5-Trimethylbenzene	"	ND	----	0.500	"	"	"	"	"	
Isopropylbenzene	"	ND	----	2.00	"	"	"	"	"	
n-Propylbenzene	"	ND	----	0.500	"	"	"	"	"	

Surrogate(s):	4-BFB			101%		80 - 120 %	"			"
	1,2-DCA-d4			103%		80 - 120 %	"			"
	Dibromofluoromethane			103%		80 - 120 %	"			"
	Toluene-d8			102%		80 - 120 %	"			"

PRE0022-02 (P2-H2O)

Water

Sampled: 04/29/08 13:20

RL7

1,2-Dibromoethane	EPA 8260B	ND	----	2.50	ug/l	5x	8050251	05/08/08 07:00	05/08/08 14:01	
1,2-Dichloroethane	"	ND	----	2.50	"	"	"	"	"	
Benzene	"	5.25	----	1.00	"	"	"	"	"	
Toluene	"	ND	----	2.50	"	"	"	"	"	
Ethylbenzene	"	290	----	2.50	"	"	"	"	"	
Xylenes (total)	"	385	----	5.00	"	"	"	"	"	
Methyl tert-butyl ether	"	ND	----	10.0	"	"	"	"	"	
Naphthalene	"	271	----	10.0	"	"	"	"	"	
1,2,4-Trimethylbenzene	"	748	----	5.00	"	"	"	"	"	
1,3,5-Trimethylbenzene	"	248	----	2.50	"	"	"	"	"	
Isopropylbenzene	"	56.8	----	10.0	"	"	"	"	"	
n-Propylbenzene	"	198	----	2.50	"	"	"	"	"	

Surrogate(s):	4-BFB			98.4%		80 - 120 %	1x			"
	1,2-DCA-d4			101%		80 - 120 %	"			"
	Dibromofluoromethane			99.4%		80 - 120 %	"			"
	Toluene-d8			101%		80 - 120 %	"			"

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Darrell Auvil, Project Manager

Bergeson, Boese and Associates-Wilsonville

25195 SW Parkway Ave Suite 207
Wilsonville, OR 97070

Project Name: **Tillamook Creamery**

Project Number: TC021SC.080C

Project Manager: Erik Chapman

Report Created:

05/15/08 09:25

Selected Volatile Organic Compounds (Including BTEX) per EPA Method 8260B
TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
---------	--------	--------	------	-----	-------	-----	-------	----------	----------	-------

PRE0022-03 (P3-H2O)

Water

Sampled: 04/29/08 12:30

1,2-Dibromoethane	EPA 8260B	ND	----	0.500	ug/l	1x	8050251	05/08/08 07:00	05/08/08 14:28	
1,2-Dichloroethane	"	ND	----	0.500	"	"	"	"	"	
Benzene	"	ND	----	0.200	"	"	"	"	"	
Toluene	"	ND	----	0.500	"	"	"	"	"	
Ethylbenzene	"	ND	----	0.500	"	"	"	"	"	
Xylenes (total)	"	ND	----	1.00	"	"	"	"	"	
Methyl tert-butyl ether	"	ND	----	2.00	"	"	"	"	"	
Naphthalene	"	ND	----	2.00	"	"	"	"	"	
1,2,4-Trimethylbenzene	"	ND	----	1.00	"	"	"	"	"	
1,3,5-Trimethylbenzene	"	ND	----	0.500	"	"	"	"	"	
Isopropylbenzene	"	ND	----	2.00	"	"	"	"	"	
n-Propylbenzene	"	ND	----	0.500	"	"	"	"	"	

Surrogate(s):	4-BFB	101%	80 - 120 %	"	"
	1,2-DCA-d4	103%	80 - 120 %	"	"
	Dibromofluoromethane	100%	80 - 120 %	"	"
	Toluene-d8	101%	80 - 120 %	"	"

PRE0022-04 (P4-H2O)

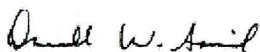
Water

Sampled: 04/29/08 11:45

1,2-Dibromoethane	EPA 8260B	ND	----	0.500	ug/l	1x	8050251	05/08/08 07:00	05/08/08 14:54	
1,2-Dichloroethane	"	ND	----	0.500	"	"	"	"	"	
Benzene	"	4.99	----	0.200	"	"	"	"	"	
Toluene	"	ND	----	0.500	"	"	"	"	"	
Ethylbenzene	"	14.7	----	0.500	"	"	"	"	"	
Xylenes (total)	"	14.0	----	1.00	"	"	"	"	"	
Methyl tert-butyl ether	"	ND	----	2.00	"	"	"	"	"	
Naphthalene	"	9.35	----	2.00	"	"	"	"	"	
1,2,4-Trimethylbenzene	"	26.5	----	1.00	"	"	"	"	"	
1,3,5-Trimethylbenzene	"	3.80	----	0.500	"	"	"	"	"	
Isopropylbenzene	"	5.28	----	2.00	"	"	"	"	"	
n-Propylbenzene	"	9.90	----	0.500	"	"	"	"	"	

Surrogate(s):	4-BFB	108%	80 - 120 %	"	"
	1,2-DCA-d4	105%	80 - 120 %	"	"
	Dibromofluoromethane	103%	80 - 120 %	"	"
	Toluene-d8	104%	80 - 120 %	"	"

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Darrell Auviil, Project Manager

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25195 SW Parkway Ave Suite 207
Wilsonville, OR 97070

Project Name: **Tillamook Creamery**
Project Number: TC021SC.080C
Project Manager: Erik Chapman

Report Created:
05/15/08 09:25

Selected Volatile Organic Compounds (Including BTEX) per EPA Method 8260B
TestAmerica Portland

TestAmerica Portland

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Donald W. Smith

Darrell Auvil, Project Manager

Bergeson, Boese and Associates-Wilsonville

25195 SW Parkway Ave Suite 207
Wilsonville, OR 97070

Project Name: **Tillamook Creamery**

Project Number: TC021SC.080C

Project Manager: Erik Chapman

Report Created:

05/15/08 09:25

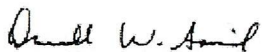
Percent Dry Weight (Solids) per Standard Methods

TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PRE0022-12 (P2@4.5')					Soil			Sampled: 04/29/08 12:52		
% Solids	NCA SOP	68.3	----	0.0100	% by Weight	1x	8050210	05/06/08 14:25	05/06/08 14:25	
PRE0022-14 (P2@9.5')					Soil			Sampled: 04/29/08 13:05		
% Solids	NCA SOP	54.1	----	0.0100	% by Weight	1x	8050210	05/06/08 14:25	05/06/08 14:25	
PRE0022-16 (P2@15.5')					Soil			Sampled: 04/29/08 13:12		
% Solids	NCA SOP	65.1	----	0.0100	% by Weight	1x	8050210	05/06/08 14:25	05/06/08 14:25	
PRE0022-22 (P3@11')					Soil			Sampled: 04/29/08 12:20		
% Solids	NCA SOP	67.0	----	0.0100	% by Weight	1x	8050210	05/06/08 14:25	05/06/08 14:25	
PRE0022-27 (P4@14.5')					Soil			Sampled: 04/29/08 11:45		
% Solids	NCA SOP	62.3	----	0.0100	% by Weight	1x	8050210	05/06/08 14:25	05/06/08 14:25	
PRE0022-30 (P5@15.5')					Soil			Sampled: 04/29/08 14:45		
% Solids	NCA SOP	59.2	----	0.0100	% by Weight	1x	8050210	05/06/08 14:25	05/06/08 14:25	

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Darrell Auvil, Project Manager

Bergeson, Boese and Associates-Wilsonville

25195 SW Parkway Ave Suite 207
Wilsonville, OR 97070

Project Name: **Tillamook Creamery**

Project Number: TC021SC.080C

Project Manager: Erik Chapman

Report Created:

05/15/08 09:25

Gasoline Hydrocarbons per NW TPH-Gx Method - Laboratory Quality Control Results

TestAmerica Portland

QC Batch: 8050166

Water Preparation Method: EPA 5030B

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (8050166-BLK1)								Extracted: 05/05/08 16:14						
Gasoline Range Hydrocarbons	NW TPH-Gx	ND	---	80.0	ug/l	1x	--	--	--	--	--	--	05/06/08 05:08	
Surrogate(s): 4-BFB		Recovery: 85.3%		Limits: 50-150%		"		05/06/08 05:08						
LCS (8050166-BS1)								Extracted: 05/05/08 16:14						
Gasoline Range Hydrocarbons	NW TPH-Gx	453	---	80.0	ug/l	1x	--	500	90.7%	(70-130)	--	--	05/06/08 04:14	
Surrogate(s): 4-BFB		Recovery: 93.4%		Limits: 50-150%		"		05/06/08 04:14						
LCS Dup (8050166-BSD1)								Extracted: 05/05/08 16:14						
Gasoline Range Hydrocarbons	NW TPH-Gx	491	---	80.0	ug/l	1x	--	500	98.2%	(70-130)	8.01%	(35)	05/06/08 04:41	
Surrogate(s): 4-BFB		Recovery: 93.0%		Limits: 50-150%		"		05/06/08 04:41						
Duplicate (8050166-DUP1)				QC Source: PRE0022-01				Extracted: 05/05/08 16:14						
Gasoline Range Hydrocarbons	NW TPH-Gx	ND	---	80.0	ug/l	1x	ND	--	--	--	NR	(35)	05/06/08 20:32	
Surrogate(s): 4-BFB		Recovery: 88.0%		Limits: 50-150%		"		05/06/08 20:32						
Duplicate (8050166-DUP2)				QC Source: PRE0022-02				Extracted: 05/05/08 16:14						
Gasoline Range Hydrocarbons	NW TPH-Gx	1540	---	80.0	ug/l	1x	8830	--	--	--	141%	(35)	05/06/08 21:00	R2
Surrogate(s): 4-BFB		Recovery: 133%		Limits: 50-150%		"		05/06/08 21:00						

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Darrell Auvil, Project Manager

Bergeson, Boese and Associates-Wilsonville

25195 SW Parkway Ave Suite 207
Wilsonville, OR 97070

Project Name: **Tillamook Creamery**

Project Number: **TC021SC.080C**

Project Manager: **Erik Chapman**

Report Created:

05/15/08 09:25

Gasoline Hydrocarbons per NW TPH-Gx Method and BTEX per EPA Method 8021B - Laboratory Quality Control Results

TestAmerica Portland

QC Batch: 8050092

Soil Preparation Method: EPA 5035 Modified

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
---------	--------	--------	------	-----	-------	-----	---------------	-----------	-------	----------	-------	----------	----------	-------

Blank (8050092-BLK1)

Extracted: 05/02/08 15:00

Benzene	NW-G, 8021B	ND	---	0.0249	mg/kg wet	1x	--	--	--	--	--	--	05/03/08 04:43	
Toluene	"	ND	---	0.0497	"	"	--	--	--	--	--	--	"	
Ethylbenzene	"	ND	---	0.0497	"	"	--	--	--	--	--	--	"	
Xylenes (total)	"	ND	---	0.0497	"	"	--	--	--	--	--	--	"	
Gasoline Range Hydrocarbons	"	ND	---	3.98	"	"	--	--	--	--	--	--	"	
Surrogate(s): a,a,a-TFT (FID) Recovery: 102% Limits: 50-150% " 05/03/08 04:43														
a,a,a-TFT (PID) 102% 60-130% " "														

LCS (8050092-BS1)

Extracted: 05/02/08 15:00

Benzene	NW-G, 8021B	0.466	---	0.0244	mg/kg wet	1x	--	0.488	95.5%	(65-130)	--	--	05/03/08 03:48	
Toluene	"	0.479	---	0.0488	"	"	--	"	98.3%	"	--	--	"	
Ethylbenzene	"	0.493	---	0.0488	"	"	--	"	101%	"	--	--	"	
Xylenes (total)	"	1.47	---	0.0488	"	"	--	1.46	101%	"	--	--	"	
Surrogate(s): a,a,a-TFT (PID) Recovery: 105% Limits: 60-130% " 05/03/08 03:48														

LCS (8050092-BS2)

Extracted: 05/02/08 15:00

Gasoline Range Hydrocarbons	NW-G, 8021B	19.9	---	7.53	mg/kg wet	1x	--	23.5	84.4%	(70-130)	--	--	05/03/08 04:15	
Surrogate(s): a,a,a-TFT (FID) Recovery: 105% Limits: 50-150% " 05/03/08 04:15														

Duplicate (8050092-DUP1)

QC Source: PRE0022-30

Extracted: 05/02/08 15:00

Gasoline Range Hydrocarbons	NW-G, 8021B	ND	---	66.2	mg/kg dry	10x	ND	--	--	--	NR	(40)	05/03/08 05:38	RL1
Surrogate(s): a,a,a-TFT (FID) Recovery: 65.8% Limits: 50-150% " 05/03/08 05:38														

Matrix Spike (8050092-MS1)

QC Source: PRE0022-14

Extracted: 05/02/08 15:00

Benzene	NW-G, 8021B	1.83	---	0.0884	mg/kg dry	2x	0.187	1.77	93.1%	(65-130)	--	--	05/03/08 07:00	
Toluene	"	1.88	---	0.177	"	"	0.181	"	95.9%	"	--	--	"	
Ethylbenzene	"	2.27	---	0.177	"	"	0.545	"	97.6%	"	--	--	"	
Xylenes (total)	"	6.22	---	0.177	"	"	1.08	5.30	97.0%	"	--	--	"	
Surrogate(s): a,a,a-TFT (PID) Recovery: 76.3% Limits: 60-130% " 05/03/08 07:00														

Matrix Spike (8050092-MS2)

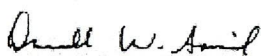
QC Source: PRE0022-27

Extracted: 05/02/08 15:00

Gasoline Range Hydrocarbons	NW-G, 8021B	169	---	64.2	mg/kg dry	10x	ND	201	84.1%	(65-130)	--	--	05/03/08 10:13	
Surrogate(s): a,a,a-TFT (FID) Recovery: 117% Limits: 50-150% " 05/03/08 10:13														

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The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.



Darrell Auvil, Project Manager

Bergeson, Boese and Associates-Wilsonville

25195 SW Parkway Ave Suite 207
Wilsonville, OR 97070

Project Name:

Tillamook Creamery

Project Number:

TC021SC.080C

Project Manager:

Erik Chapman

Report Created:

05/15/08 09:25

Gasoline Hydrocarbons per NW TPH-Gx Method and BTEX per EPA Method 8021B - Laboratory Quality Control Results

TestAmerica Portland

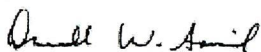
QC Batch: 8050092

Soil Preparation Method: EPA 5035 Modified

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Matrix Spike Dup (8050092-MSD1)			QC Source: PRE0022-14				Extracted: 05/02/08 15:00							
Benzene	NW-G, 8021B	1.81	---	0.0884	mg/kg dry	2x	0.187	1.77	91.5%	(65-130)	1.52%	(20)	05/03/08 07:28	
Toluene	"	1.87	---	0.177	"	"	0.181	"	95.4%	"	0.425%	"	"	
Ethylbenzene	"	2.27	---	0.177	"	"	0.545	"	97.5%	"	0.0817%	"	"	
Xylenes (total)	"	6.20	---	0.177	"	"	1.08	5.30	96.6%	"	0.299%	"	"	
Surrogate(s): a,a,a-TFT (PID)		Recovery: 76.7%		Limits: 60-130%		"		05/03/08 07:28						

TestAmerica Portland

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.



Darrell Auvil, Project Manager

Bergeson, Boese and Associates-Wilsonville

25195 SW Parkway Ave Suite 207
Wilsonville, OR 97070

Project Name:

Tillamook Creamery

Project Number:

TC021SC.080C

Project Manager:

Erik Chapman

Report Created:

05/15/08 09:25

Dissolved Metals per EPA 6000/7000 Series Methods - Laboratory Quality Control Results

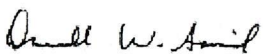
TestAmerica Portland

QC Batch: 8050245

Water Preparation Method: EPA 200/3005 Diss

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (8050245-BLK1)										Extracted: 05/07/08 08:30				
Lead	EPA 6020	ND	---	0.00100	mg/l	1x	--	--	--	--	--	--	05/08/08 02:03	
LCS (8050245-BS1)										Extracted: 05/07/08 08:30				
Lead	EPA 6020	0.105	---	0.00111	mg/l	1x	--	0.111	94.3%	(80-120)	--	--	05/08/08 02:11	
Duplicate (8050245-DUP1)										QC Source: PRE0174-07 Extracted: 05/07/08 08:30				
Lead	EPA 6020	ND	---	0.00100	mg/l	1x	ND	--	--	--	4.29%	(20)	05/08/08 04:14	
Matrix Spike (8050245-MS1)										QC Source: PRE0174-07 Extracted: 05/07/08 08:30				
Lead	EPA 6020	0.102	---	0.00111	mg/l	1x	0.000137	0.111	91.7%	(75-125)	--	--	05/08/08 04:31	
Matrix Spike Dup (8050245-MSD1)										QC Source: PRE0174-07 Extracted: 05/07/08 08:30				
Lead	EPA 6020	0.102	---	0.00111	mg/l	1x	0.000137	0.111	91.5%	(75-125)	0.251%	(20)	05/08/08 04:39	
Post Spike (8050245-PS1)										QC Source: PRE0174-07 Extracted: 05/07/08 08:30				
Lead	EPA 6020	0.0924	---		ug/ml	1x	0.000137	0.100	92.3%	(75-125)	--	--	05/08/08 04:47	

TestAmerica Portland



Darrell Auvil, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.

Bergeson, Boese and Associates-Wilsonville

25195 SW Parkway Ave Suite 207
Wilsonville, OR 97070

Project Name: **Tillamook Creamery**

Project Number: TC021SC.080C

Project Manager: Erik Chapman

Report Created:
05/15/08 09:25

Selected Volatile Organic Compounds (Including BTEX) per EPA Method 8260B - Laboratory Quality Control Results
TestAmerica Portland

QC Batch: 8050251

Water Preparation Method: EPA 5030B

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (8050251-BLK1)										Extracted: 05/08/08 07:00				
1,2-Dibromoethane	EPA 8260B	ND	---	0.500	ug/l	1x	--	--	--	--	--	--	05/08/08 10:27	
1,2-Dichloroethane	"	ND	---	0.500	"	"	--	--	--	--	--	--	"	
Benzene	"	ND	---	0.200	"	"	--	--	--	--	--	--	"	
Toluene	"	ND	---	0.500	"	"	--	--	--	--	--	--	"	
Ethylbenzene	"	ND	---	0.500	"	"	--	--	--	--	--	--	"	
Xylenes (total)	"	ND	---	1.00	"	"	--	--	--	--	--	--	"	
Methyl tert-butyl ether	"	ND	---	2.00	"	"	--	--	--	--	--	--	"	
Naphthalene	"	ND	---	2.00	"	"	--	--	--	--	--	--	"	
1,2,4-Trimethylbenzene	"	ND	---	1.00	"	"	--	--	--	--	--	--	"	
1,3,5-Trimethylbenzene	"	ND	---	0.500	"	"	--	--	--	--	--	--	"	
Isopropylbenzene	"	ND	---	2.00	"	"	--	--	--	--	--	--	"	
n-Propylbenzene	"	ND	---	0.500	"	"	--	--	--	--	--	--	"	
Surrogate(s): 4-BFB Recovery: 105% Limits: 80-120% "														05/08/08 10:27
1,2-DCA-d4 104% 80-120% "														"
Dibromofluoromethane 105% 80-120% "														"
Toluene-d8 105% 80-120% "														"

LCS (8050251-BS1)

Extracted: 05/08/08 07:00

1,2-Dibromoethane	EPA 8260B	21.7	---	0.500	ug/l	1x	--	20.0	109%	(80-140)	--	--	05/08/08 08:29	
1,2-Dichloroethane	"	20.5	---	0.500	"	"	--	"	103%	(75-135)	--	--	"	
Benzene	"	21.4	---	0.200	"	"	--	"	107%	(80-120)	--	--	"	
Toluene	"	21.9	---	0.500	"	"	--	"	109%	(80-125)	--	--	"	
Ethylbenzene	"	22.0	---	0.500	"	"	--	"	110%	(80-130)	--	--	"	
Xylenes (total)	"	63.1	---	1.00	"	"	--	60.0	105%	"	--	--	"	
Methyl tert-butyl ether	"	20.4	---	2.00	"	"	--	20.0	102%	(80-135)	--	--	"	
Naphthalene	"	20.2	---	2.00	"	"	--	"	101%	(60-150)	--	--	"	
1,2,4-Trimethylbenzene	"	21.1	---	1.00	"	"	--	"	106%	(75-125)	--	--	"	
1,3,5-Trimethylbenzene	"	20.9	---	0.500	"	"	--	"	105%	(75-135)	--	--	"	
Isopropylbenzene	"	21.6	---	2.00	"	"	--	"	108%	(80-140)	--	--	"	
n-Propylbenzene	"	21.4	---	0.500	"	"	--	"	107%	(80-130)	--	--	"	
Surrogate(s): 4-BFB Recovery: 98.4% Limits: 80-120% "														05/08/08 08:29
1,2-DCA-d4 98.2% 80-120% "														"
Dibromofluoromethane 100% 80-120% "														"
Toluene-d8 101% 80-120% "														"

TestAmerica Portland



Darrell Auvil, Project Manager

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Bergeson, Boese and Associates-Wilsonville

25195 SW Parkway Ave Suite 207
Wilsonville, OR 97070

Project Name: **Tillamook Creamery**

Project Number: TC021SC.080C

Project Manager: Erik Chapman

Report Created:

05/15/08 09:25

Selected Volatile Organic Compounds (Including BTEX) per EPA Method 8260B - Laboratory Quality Control Results

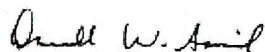
TestAmerica Portland

QC Batch: 8050251

Water Preparation Method: EPA 5030B

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
LCS Dup (8050251-BSD1)										Extracted: 05/08/08 07:00				
1,2-Dibromoethane	EPA 8260B	23.1	---	0.500	ug/l	1x	--	20.0	115%	(80-140)	6.16%	(25)	05/08/08 08:57	
1,2-Dichloroethane	"	21.6	---	0.500	"	"	--	"	108%	(75-135)	4.89%	"	"	
Benzene	"	22.4	---	0.200	"	"	--	"	112%	(80-120)	4.66%	"	"	
Toluene	"	22.9	---	0.500	"	"	--	"	114%	(80-125)	4.56%	"	"	
Ethylbenzene	"	23.7	---	0.500	"	"	--	"	118%	(80-130)	7.53%	"	"	
Xylenes (total)	"	70.5	---	1.00	"	"	--	60.0	118%	"	11.1%	"	"	
Methyl tert-butyl ether	"	22.0	---	2.00	"	"	--	20.0	110%	(80-135)	7.74%	"	"	
Naphthalene	"	23.0	---	2.00	"	"	--	"	115%	(60-150)	12.7%	"	"	
1,2,4-Trimethylbenzene	"	24.0	---	1.00	"	"	--	"	120%	(75-125)	12.6%	"	"	
1,3,5-Trimethylbenzene	"	24.1	---	0.500	"	"	--	"	120%	(75-135)	14.1%	"	"	
Isopropylbenzene	"	23.7	---	2.00	"	"	--	"	119%	(80-140)	9.53%	"	"	
n-Propylbenzene	"	24.3	---	0.500	"	"	--	"	121%	(80-130)	12.5%	"	"	
Surrogate(s): 4-BFB		Recovery: 99.2%		Limits: 80-120%		"							05/08/08 08:57	
1,2-DCA-d4		96.7%		80-120%		"							"	
Dibromofluoromethane		97.2%		80-120%		"							"	
Toluene-d8		98.6%		80-120%		"							"	

TestAmerica Portland



Darrell Auvil, Project Manager

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Bergeson, Boese and Associates-Wilsonville

25195 SW Parkway Ave Suite 207
Wilsonville, OR 97070

Project Name:

Tillamook Creamery

Project Number:

TC021SC.080C

Project Manager:

Erik Chapman

Report Created:

05/15/08 09:25

Percent Dry Weight (Solids) per Standard Methods - Laboratory Quality Control Results

TestAmerica Portland

QC Batch: 8050210

Other dry Preparation Method: Dry Weight

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Duplicate (8050210-DUP1)			QC Source: PRE0019-02					Extracted: 05/06/08 14:25						
% Solids	NCA SOP	78.7	---	0.0100	% by Weight	1x	78.0	--	--	--	0.893% (20)		05/06/08 14:25	

TestAmerica Portland



Darrell Auvil, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.

Bergeson, Boese and Associates-Wilsonville

25195 SW Parkway Ave Suite 207
Wilsonville, OR 97070

Project Name: **Tillamook Creamery**

Project Number: TC021SC.080C

Project Manager: Erik Chapman

Report Created:

05/15/08 09:25

Notes and Definitions

Report Specific Notes:

- R2 - The RPD exceeded the acceptance limit.
- RL1 - Reporting limit raised due to sample matrix effects.
- RL7 - Sample required dilution due to high concentrations of target analyte.
- ZX - Due to sample matrix effects, the surrogate recovery was outside the acceptance limits.

Laboratory Reporting Conventions:

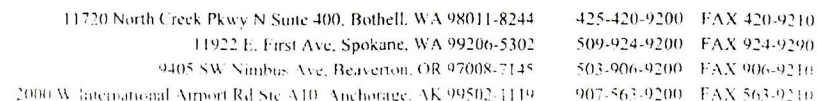
- DET - Analyte DETECTED at or above the Reporting Limit. Qualitative Analyses only.
- ND - Analyte NOT DETECTED at or above the reporting limit (MDL or MRL, as appropriate).
- NR/NA - Not Reported / Not Available
- dry - Sample results reported on a Dry Weight Basis. Results and Reporting Limits have been corrected for Percent Dry Weight.
- wet - Sample results and reporting limits reported on a Wet Weight Basis (as received). Results with neither 'wet' nor 'dry' are reported on a Wet Weight Basis.
- RPD - RELATIVE PERCENT DIFFERENCE (RPDs calculated using Results, not Percent Recoveries).
- MRL - METHOD REPORTING LIMIT. Reporting Level at, or above, the lowest level standard of the Calibration Table.
- MDL* - METHOD DETECTION LIMIT. Reporting Level at, or above, the statistically derived limit based on 40CFR, Part 136, Appendix B. *MDLs are listed on the report only if the data has been evaluated below the MRL. Results between the MDL and MRL are reported as Estimated Results.
- Dil - Dilutions are calculated based on deviations from the standard dilution performed for an analysis, and may not represent the dilution found on the analytical raw data.
- Reporting Limits - Reporting limits (MDLs and MRLs) are adjusted based on variations in sample preparation amounts, analytical dilutions and percent solids, where applicable.
- Electronic Signature - Electronic Signature added in accordance with TestAmerica's *Electronic Reporting and Electronic Signatures Policy*. Application of electronic signature indicates that the report has been reviewed and approved for release by the laboratory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

TestAmerica Portland

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.



Darrell Auvil, Project Manager



Work Order #: PRE0022

TEMP:	3.0	PAGE 1 OF 4
	5.9	

TestAmerica

ANALYTICAL TESTING CORPORATION

11720 North Creek Pkwy N Suite 400, Bothell, WA 98011-8244
 11922 E. First Ave, Spokane, WA 99206-5302
 9405 SW Nimbus Ave, Beaverton, OR 97008-7145
 2000 W International Airport Rd Ste A10, Anchorage, AK 99502-1119

425-420-9200 FAX 420-9210
 509-924-9200 FAX 924-9290
 503-906-9200 FAX 906-9210
 907-563-9200 FAX 563-9210

CHAIN OF CUSTODY REPORT

Work Order #: **PRE0022**

CLIENT: **Burgess - Boese & Associates, Inc**
 REPORT TO: **Burgess - Boese & Associates E Chapman**
 ADDRESS: **25195 SW Parkway Ave # 201**
W. US Highway OR 97070
 PHONE: **(503) 570-9484** FAX: **(503) 570-0384**
 PROJECT NAME: **Tellamale Creaming**
 PROJECT NUMBER: **TC02 ISC. O&UC**
 SAMPLED BY: **E Chapman**

INVOICE TO: **COSECO, OFFICE**
ATTN: Ron Burgess

P.O. NUMBER: **1242-08-W**

TURNAROUND REQUEST

in Business Days *

Organic & Inorganic Analyses

☒ 7 ☐ 5 ☐ 4 ☐ 3 ☐ 2 ☐ 1 ☐ <1

STD Petroleum Hydrocarbon Analyses

☒ 4 ☐ 3 ☐ 2 ☐ 1 ☐ <1

OTHER Specify:

* Turnaround Requests less than standard may incur Rush Charges

CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	REQUESTED ANALYSES										MATRIX (W. S. O.)	# OF CONT.	LOCATION COMMENTS	TA WO ID
1 P103.5'	1338												5	1	
2 P106'	1342														
3 P108.5'	1344														
4 P1011'	1348														
5 P1014'	1350														
6 P1015.5'	1352														
7 P204.5'	1252	X													
8 P207'	1255														
9 P209.5'	1305	X													
10 P2012'	1310														

RELEASED BY: **E Chapman**
 PRINT NAME: **E Chapman**
 RELEASED BY: **Bob F J**
 PRINT NAME: **Bob F J**

FIRM: **BBA**
 FIRM: **TAP**

DATE: **4/30/08**
 TIME: **1200**
 DATE: **5/1/08**
 TIME: **10:30**

RECEIVED BY: **Bob F J**
 PRINT NAME: **Bob F J**
 RECEIVED BY: **Jamie J Dow**
 PRINT NAME: **J. Ireland**

FIRM: **TAP**
 FIRM: **TAP**

DATE: **5/1/08**
 TIME: **9:55**
 DATE: **5/1/08**
 TIME: **10:30**

ADDITIONAL REMARKS:

TAL-1000 (9/97)

TEMP: **3.0**
 PAGE **24**

5.9

TestAmerica

ANALYTICAL TESTING CORPORATION

11720 North Creek Pkwy N Suite 400, Bothell, WA 98011-8244
 11922 E First Ave, Spokane, WA 99206-5302
 9405 SW Nimbus Ave, Beaverton, OR 97008-7145
 2000 W International Airport Rd Ste A10, Anchorage, AK 99502-1119

425-420-9200 FAX 420-9210
 509-924-9200 FAX 924-9290
 503-906-9200 FAX 906-9210
 907-563-9200 FAX 563-9210

CHAIN OF CUSTODY REPORT

Work Order #: **PRE0022**

CLIENT: Bergeson - Boese & Associates, Inc			INVOICE TO: COBURN, OFFICE			TURNAROUND REQUEST in Business Days * Organic & Inorganic Analyses ☒ 7 ☐ 5 ☐ 4 ☐ 3 ☐ 2 ☐ 1 ☐ <1 STD Petroleum Hydrocarbon Analyses ☒ 4 ☐ 3 ☐ 2 ☐ 1 ☐ <1 STD ☐ OTHER Specify:			
REPORT TO: Bergeson - Boese & Associates ECHAMMAN			ATTN: Cor Bergeson						
ADDRESS: 25195 SW Parkway Ave # 201			P.O. NUMBER: 1242-08-W						
PHONE: (509) 570-9484 FAX: (509) 570-0384			PRESERVATIVE						
PROJECT NAME: Tellamook Creamery			REQUESTED ANALYSES						
PROJECT NUMBER: TC02 ISC DEUC									
SAMPLED BY: E Chapman									
CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	TPHAX/STEX/STEX/STEX							
1 P2@15.5'	4/29/08 1312	X							
2 P2@18'	1315								
3 P3@3'	1205								
4 P3@4.5'	1210								
5 P3@6'	1214								
6 P3@6'	1216								
7 P3@14.8'	1220	X							
8 P4@3'	1120								
9 P4@6.5'	1124								
10 P4@8.5'	1130								
RELEASED BY: E Chapman	FIRM: BBA	DATE: 4/30/08	TIME: 1200	RECEIVED BY: Bob F	FIRM: TAP	DATE: 5/1/08	TIME: 9:55		
PRINT NAME: E Chapman		DATE: 5/1/08	TIME: 10:30	RECEIVED BY: Jamie Ireland	FIRM: TAP	DATE: 5/1/08	TIME: 10:30		
ADDITIONAL REMARKS:									

TestAmerica

ANALYTICAL TESTING CORPORATION

11720 North Creek Pkwy N Suite 400, Bothell, WA 98011-8244 425-420-9200 FAX 420-9210
 11922 E. First Ave, Spokane, WA 99206-5302 509-924-9200 FAX 924-9290
 9405 SW Nimbus Ave, Beaverton, OR 97008-7145 503-906-9200 FAX 906-9210
 2000 W International Airport Rd Ste A10 Anchorage, AK 99502-1119 907-563-9200 FAX 563-9210

CHAIN OF CUSTODY REPORT

Work Order #: **PRE0022**

CLIENT: Bergeson - Boese & Associates, Inc		INVOICE TO: COSEC, OFFICE		TURNAROUND REQUEST in Business Days * Organic & Inorganic Analyses ☒ 7 ☐ 5 ☐ 4 ☐ 3 ☐ 2 ☐ 1 ☐ <1 STD Petroleum Hydrocarbon Analyses ☒ 4 ☐ 3 ☐ 2 ☐ 1 ☐ <1 STD ☐ OTHER Specify: _____ * Turnaround Request less than standard may incur Rush Charges	
REPORT TO: Bergeson - Boese & Assoc. E Chapman		ATTN: Con Bergeson			
ADDRESS: 25145 SW Parkway Ave # 201		P.O. NUMBER: 1242-08-W			
PHONE: (503) 570-9484 OR 97070					
FAX: (503) 570-0384					
PROJECT NAME: Tellinack Creamery		PRESERVATIVE			
PROJECT NUMBER: TC02 ISC DBUC					
SAMPLED BY: E Chapman		REQUESTED ANALYSES			
CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	TAP 6X / STEEL 850118		MATRIX (W, S, O)	# OF CONT.
1 PY @ 11.5'	4/29/08 1140			S	1
2 PY @ 14.5'	1145 X				
3 PS @ 8.5'	1437				
4 PS @ 10.5'	1440				
5 PS @ 15.5'	1445 X				2
6					i
7					
8					
9					
10					
RELEASED BY: [Signature]	DATE: 4/30/08	RECEIVED BY: [Signature]	DATE: 5/1/08		
PRINT NAME: Eric Chapman	FIRM: BBA	PRINT NAME: Bob F	FIRM: TAP		
RELEASED BY: [Signature]	DATE: 5/1/08	RECEIVED BY: [Signature]	DATE: 5/1/08		
PRINT NAME: Bob P	FIRM: TAP	PRINT NAME: J. Ireland	FIRM: TAP		
ADDITIONAL REMARKS:				TEMP: 3.0	PAGE 4 OF 4

5.9

TestAmerica Sample Receipt Checklist

Received by:

Unpacked by:

Logged-in by:

Work Order No. PRE0022

(section A)

(section B)

Date: 5/1/08

Date: 5/1/08

Date: 5/1/08

Client: BBA

Time: 10:30

Initials: BLE

Initials: JI

Project: Tillamook Creamery

Initials: JI

Temperature out of range:

***ESI Clients (see Section C)

Cooler Temperature (IR): 59 °C plastic glass NA (oil/air samples, ESI client)

Temperature Blank: _____ °C

Not enough Ice
No Ice
Ice Melted
Win 4 Hours
Other: _____

A Custody Seals: (# _____)

Signature: Y N Dated: _____

☒ None

Container Type:

2 #Cooler(s)

____ #Box(s)

____ None (____ #Other: _____)

Coolant Type:

____ Gel Ice

☒ Loose Ice

____ None

Packing Material:

____ Bubble Bags

____ Styrofoam Cubbies

☒ None (____ Other: _____)

Received from:

☒ TA Courier

____ Envoy

____ UPS

____ Fed Ex

____ Client

____ TDP

____ DHL

____ SDS

____ Mid-Valley

____ GS/TA

____ GS/Envoy

____ Other: _____

B

Sample Status:

(If N circled, see NOD)

General:

Intact?

Y N

Containers Match COC?

Y N none given

IDs Match COC?

Y N

For Analyses Requested:

Correct Type & Preservation?

Y N

Adequate Volume?

Y N

Within Hold Time?

Y N

Volatiles/ Oil Quality:

VOAs/ Syringes free of Headspace?

Y N NA

TB on COC?

not provided Y N NA

Metals:

HNO3 Preserved?

Y N NA

Dissolved Metals Filtered?

Y N NA

C ***ESI Clients Only:

Temperature Blank: _____ °C not provided

All preserved bottles checked Y N NA (voas/soils/all unp.)

All preserved accordingly? Y N (see NOD) NA (voas/soils/all unp.)

FED EX/ UPS: Was the tracking paper keepable? YES NO

If circled NO, what is the Tracking number? _____

FED EX Goldstreak UPS DHL Other: _____

Project Managers:

Comments: _____

PM Reviewed: _____ (Initial/Date)

April 17, 2008

Erik Chapman
Bergeson, Boese and Associates-Wilsonville
25195 SW Parkway Ave Suite 207
Wilsonville, OR 97070

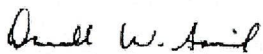
RE: Tillamook Creamery

Enclosed are the results of analyses for samples received by the laboratory on 04/01/08 15:02.
The following list is a summary of the Work Orders contained in this report, generated on 04/17/08 13:02.

If you have any questions concerning this report, please feel free to contact me.

<u>Work Order</u>	<u>Project</u>	<u>ProjectNumber</u>
PRD0028	Tillamook Creamery	TC021SC.080C

TestAmerica Portland



Darrell Auvil, Project Manager

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Bergeson, Boese and Associates-Wilsonville

25195 SW Parkway Ave Suite 207
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Project Name:

Tillamook Creamery

Project Number:

TC021SC.080C

Project Manager:

Erik Chapman

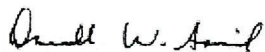
Report Created:

04/17/08 13:02

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
EW@4.6'	PRD0028-04	Soil	04/01/08 10:15	04/01/08 15:02
WW@4.6'	PRD0028-06	Soil	04/01/08 10:17	04/01/08 15:02
NFLOOR@7.5'	PRD0028-09	Soil	04/01/08 12:10	04/01/08 15:02
TC-WATER	PRD0028-10	Water	04/01/08 12:00	04/01/08 15:02

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Bergeson, Boese and Associates-Wilsonville

25195 SW Parkway Ave Suite 207
Wilsonville, OR 97070

Project Name: **Tillamook Creamery**

Project Number: TC021SC.080C

Project Manager: Erik Chapman

Report Created:

04/17/08 13:02

Hydrocarbon Identification per NW-TPH Methodology
TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PRD0028-04 (EW@4.6')		Soil		Sampled: 04/01/08 10:15						
Gasoline Range Hydrocarbons	NWTPH HCID	ND	----	30.4	mg/kg dry	1x	8040083	04/02/08 16:25	04/02/08 21:32	
Diesel Range Hydrocarbons	"	ND	----	75.9	"	"	"	"	"	
Heavy Oil Range Hydrocarbons	"	ND	----	152	"	"	"	"	"	
Surrogate(s): 1-Chlorooctadecane		91.2%		50 - 150 %		"		"		
PRD0028-06 (WW@4.6')		Soil		Sampled: 04/01/08 10:17						
Gasoline Range Hydrocarbons	NWTPH HCID	ND	----	31.1	mg/kg dry	1x	8040083	04/02/08 16:25	04/02/08 22:01	
Diesel Range Hydrocarbons	"	ND	----	77.8	"	"	"	"	"	
Heavy Oil Range Hydrocarbons	"	ND	----	156	"	"	"	"	"	
Surrogate(s): 1-Chlorooctadecane		91.2%		50 - 150 %		"		"		
PRD0028-09 (NFLOOR@7.5')		Soil		Sampled: 04/01/08 12:10						
Gasoline Range Hydrocarbons	NWTPH HCID	ND	----	29.7	mg/kg dry	1x	8040083	04/02/08 16:25	04/02/08 22:30	
Diesel Range Hydrocarbons	"	ND	----	74.2	"	"	"	"	"	
Heavy Oil Range Hydrocarbons	"	ND	----	148	"	"	"	"	"	
Surrogate(s): 1-Chlorooctadecane		94.9%		50 - 150 %		"		"		
PRD0028-10 (TC-WATER)		Water		Sampled: 04/01/08 12:00						
Gasoline Range Hydrocarbons	NWTPH HCID	DET	----	0.238	mg/l	1x	8040170	04/04/08 13:50	04/06/08 11:29	
Diesel Range Hydrocarbons	"	ND	----	0.600	"	"	"	"	"	
Heavy Oil Range Hydrocarbons	"	ND	----	0.600	"	"	"	"	"	
Surrogate(s): 1-Chlorooctadecane		105%		50 - 150 %		"		"		

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Darrell W. Auvil

Darrell Auvil, Project Manager



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25195 SW Parkway Ave Suite 207
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Project Name: **Tillamook Creamery**

Project Number: TC021SC.080C

Project Manager: Erik Chapman

Report Created:

04/17/08 13:02

Gasoline Hydrocarbons per NW TPH-Gx Method
TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PRD0028-04 (EW@4.6')		Soil		Sampled: 04/01/08 10:15						
Gasoline Range Hydrocarbons	NW TPH-Gx	ND	----	3.29	mg/kg dry	1x	8040217	04/07/08 14:30	04/08/08 11:03	
Surrogate(s): a,a,a-TFT		73.1%		50 - 150 %		"		"		
PRD0028-06 (WW@4.6')		Soil		Sampled: 04/01/08 10:17						
Gasoline Range Hydrocarbons	NW TPH-Gx	ND	----	3.16	mg/kg dry	1x	8040217	04/07/08 14:30	04/08/08 11:31	
Surrogate(s): a,a,a-TFT		78.1%		50 - 150 %		"		"		
PRD0028-09 (NFLOOR@7.5')		Soil		Sampled: 04/01/08 12:10						
Gasoline Range Hydrocarbons	NW TPH-Gx	5.03	----	3.08	mg/kg dry	1x	8040217	04/07/08 14:30	04/08/08 11:58	
Surrogate(s): a,a,a-TFT		76.6%		50 - 150 %		"		"		

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Project Name: **Tillamook Creamery**

Project Number: TC021SC.080C

Project Manager: Erik Chapman

Report Created:

04/17/08 13:02

BTEX per EPA Method 8021B

TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PRD0028-04 (EW@4.6')		Soil					Sampled: 04/01/08 10:15			
Benzene	EPA 8021B	ND	----	0.0411	mg/kg dry	1x	8040217	04/07/08 14:30	04/08/08 11:03	
Toluene	"	ND	----	0.0822	"	"	"	"	"	
Ethylbenzene	"	ND	----	0.0822	"	"	"	"	"	
Xylenes (total)	"	ND	----	0.164	"	"	"	"	"	
m,p-Xylene	"	0.118	----	0.0822	"	"	"	"	"	
o-Xylene	"	ND	----	0.0822	"	"	"	"	"	
<i>Surrogate(s): 4-BFB (PID)</i>										
					70 - 130 %	"				"
<i>a,a,a-TFT (PID)</i>					77.0%	60 - 130 %	"			"

PRD0028-06 (WW@4.6')		Soil					Sampled: 04/01/08 10:17			
Benzene	EPA 8021B	ND	----	0.0395	mg/kg dry	1x	8040217	04/07/08 14:30	04/08/08 11:31	
Toluene	"	ND	----	0.0790	"	"	"	"	"	
Ethylbenzene	"	ND	----	0.0790	"	"	"	"	"	
Xylenes (total)	"	ND	----	0.158	"	"	"	"	"	
m,p-Xylene	"	ND	----	0.0790	"	"	"	"	"	
o-Xylene	"	ND	----	0.0790	"	"	"	"	"	
<i>Surrogate(s): 4-BFB (PID)</i>										
					70 - 130 %	"				"
<i>a,a,a-TFT (PID)</i>					81.2%	60 - 130 %	"			"

PRD0028-09 (NFLOOR@7.5')		Soil					Sampled: 04/01/08 12:10			
Benzene	EPA 8021B	0.110	----	0.0385	mg/kg dry	1x	8040217	04/07/08 14:30	04/08/08 11:58	
Toluene	"	0.173	----	0.0769	"	"	"	"	"	
Ethylbenzene	"	ND	----	0.0769	"	"	"	"	"	
Xylenes (total)	"	0.296	----	0.154	"	"	"	"	"	
m,p-Xylene	"	0.205	----	0.0769	"	"	"	"	"	
o-Xylene	"	0.0912	----	0.0769	"	"	"	"	"	
<i>Surrogate(s): 4-BFB (PID)</i>										
					70 - 130 %	"				"
<i>a,a,a-TFT (PID)</i>					80.8%	60 - 130 %	"			"

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25195 SW Parkway Ave Suite 207

Wilsonville, OR 97070

Project Number: TC021SC.080C

Project Manager: Erik Chapman

Report Created:

04/17/08 13:02

Selected Volatile Organic Compounds (Including BTEX) per EPA Method 8260B

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Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PRD0028-10 (TC-WATER)										RL7
1,2-Dibromoethane	EPA 8260B	ND	----	50.0	ug/l	100x	8040320	04/09/08 08:00	04/09/08 16:07	
1,2-Dichloroethane	"	ND	----	50.0	"	"	"	"	"	
Benzene	"	2700	----	20.0	"	"	"	"	"	
Toluene	"	5460	----	50.0	"	"	"	"	"	
Ethylbenzene	"	736	----	50.0	"	"	"	"	"	
Xylenes (total)	"	3520	----	100	"	"	"	"	"	
Methyl tert-butyl ether	"	ND	----	200	"	"	"	"	"	
Naphthalene	"	ND	----	200	"	"	"	"	"	
1,2,4-Trimethylbenzene	"	538	----	100	"	"	"	"	"	
1,3,5-Trimethylbenzene	"	135	----	50.0	"	"	"	"	"	
Isopropylbenzene	"	ND	----	200	"	"	"	"	"	
n-Propylbenzene	"	98.0	----	50.0	"	"	"	"	"	
<i>Surrogate(s): 4-BFB</i>			<i>92.8%</i>		<i>80 - 120 %</i>	<i>1x</i>				<i>"</i>
<i>1,2-DCA-d4</i>			<i>101%</i>		<i>80 - 120 %</i>	<i>"</i>				<i>"</i>
<i>Dibromofluoromethane</i>			<i>95.8%</i>		<i>80 - 120 %</i>	<i>"</i>				<i>"</i>
<i>Toluene-d8</i>			<i>97.6%</i>		<i>80 - 120 %</i>	<i>"</i>				<i>"</i>

Darrell Auvil, Project Manager

Bergeson, Boese and Associates-Wilsonville

25195 SW Parkway Ave Suite 207
Wilsonville, OR 97070

Project Name: **Tillamook Creamery**

Project Number: TC021SC.080C

Project Manager: Erik Chapman

Report Created:

04/17/08 13:02

Percent Dry Weight (Solids) per Standard Methods

TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PRD0028-04 (EW@4.6')		Soil								Sampled: 04/01/08 10:15
% Solids	NCA SOP	59.9	----	0.0100	% by Weight	1x	8040263	04/07/08 16:07	04/07/08 16:07	
PRD0028-06 (WW@4.6')		Soil								Sampled: 04/01/08 10:17
% Solids	NCA SOP	61.4	----	0.0100	% by Weight	1x	8040263	04/07/08 16:07	04/07/08 16:07	
PRD0028-09 (NFLOOR@7.5')		Soil								Sampled: 04/01/08 12:10
% Solids	NCA SOP	64.9	----	0.0100	% by Weight	1x	8040263	04/07/08 16:07	04/07/08 16:07	

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Bergeson, Boese and Associates-Wilsonville

25195 SW Parkway Ave Suite 207
Wilsonville, OR 97070

Project Name:

Tillamook Creamery

Project Number:

TC021SC.080C

Project Manager:

Erik Chapman

Report Created:

04/17/08 13:02

Gasoline Hydrocarbons by NWTPH-Gx and BTEX by EPA Method 8021B
TestAmerica Spokane

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PRD0028-10 (TC-WATER)		Water					Sampled: 04/01/08 12:00			
Gasoline Range Hydrocarbons	NWTPH-G/8021 B	31300	----	1000	ug/l	10x	8040081	04/11/08 12:00	04/14/08 14:54	
Surrogate(s): 4-BFB (FID)		138%		36 - 150 %	1x					

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Wilsonville, OR 97070

Project Name: **Tillamook Creamery**

Project Number: **TC021SC.080C**

Project Manager: **Erik Chapman**

Report Created:
04/17/08 13:02

Hydrocarbon Identification per NW-TPH Methodology - Laboratory Quality Control Results

TestAmerica Portland

QC Batch: 8040083

Soil Preparation Method: EPA 3550 Fuels

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
---------	--------	--------	------	-----	-------	-----	---------------	-----------	-------	----------	-------	----------	----------	-------

Blank (8040083-BLK1)

Extracted: 04/02/08 16:25

Gasoline Range Hydrocarbons	NWTPH HCID	ND	---	20.0	mg/kg wet	1x	--	--	--	--	--	--	04/02/08 18:39	
Diesel Range Hydrocarbons	"	ND	---	50.0	"	"	--	--	--	--	--	--	"	
Heavy Oil Range Hydrocarbons	"	ND	---	100	"	"	--	--	--	--	--	--	"	
Surrogate(s): 1-Chlorooctadecane Recovery: 104% Limits: 50-150% " 04/02/08 18:39														

Duplicate (8040083-DUP1)

QC Source: PRC0900-01

Extracted: 04/02/08 16:25

Gasoline Range Hydrocarbons	NWTPH HCID	ND	---	23.7	mg/kg dry	1x	ND	--	--	--	NR (50)	04/02/08 19:08
Diesel Range Hydrocarbons	"	ND	---	59.2	"	"	ND	--	--	--	NR "	"
Heavy Oil Range Hydrocarbons	"	ND	---	118	"	"	ND	--	--	--	NR "	"
Surrogate(s): 1-Chlorooctadecane Recovery: 96.3% Limits: 50-150% " 04/02/08 19:08												

QC Batch: 8040170

Water Preparation Method: EPA 3510 Fuels

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
---------	--------	--------	------	-----	-------	-----	---------------	-----------	-------	----------	-------	----------	----------	-------

Blank (8040170-BLK1)

Extracted: 04/04/08 13:50

Gasoline Range Hydrocarbons	NWTPH HCID	ND	---	0.125	mg/l	1x	--	--	--	--	--	--	04/06/08 11:01	
Diesel Range Hydrocarbons	"	ND	---	0.315	"	"	--	--	--	--	--	--	"	
Heavy Oil Range Hydrocarbons	"	ND	---	0.315	"	"	--	--	--	--	--	--	"	
Surrogate(s): 1-Chlorooctadecane Recovery: 82.5% Limits: 50-150% " 04/06/08 11:01														

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Darrell Auvil, Project Manager



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25195 SW Parkway Ave Suite 207
Wilsonville, OR 97070

Project Name: **Tillamook Creamery**

Project Number: TC021SC.080C

Project Manager: Erik Chapman

Report Created:

04/17/08 13:02

Gasoline Hydrocarbons per NW TPH-Gx Method - Laboratory Quality Control Results

TestAmerica Portland

QC Batch: 8040217

Soil Preparation Method: AK101 Prep

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (8040217-BLK1)							Extracted: 04/07/08 14:30							
Gasoline Range Hydrocarbons	NW TPH-Gx	ND	---	1.94	mg/kg wet	1x	--	--	--	--	--	--	04/07/08 22:57	
Surrogate(s): a,a,a-TFT		Recovery:	103%	Limits: 50-150%		"		04/07/08 22:57						
LCS (8040217-BS1)							Extracted: 04/07/08 14:30							
a,a,a-TFT		103%		50-150%		1x		04/07/08 22:02						
LCS (8040217-BS2)							Extracted: 04/07/08 14:30							
Gasoline Range Hydrocarbons	NW TPH-Gx	22.6	---	3.78	mg/kg wet	1x	--	23.6	95.5%	(70-130)	--	--	04/07/08 22:30	
Surrogate(s): a,a,a-TFT		Recovery:	104%	Limits: 50-150%		"		04/07/08 22:30						
Duplicate (8040217-DUP1)				QC Source: PRC0833-02				Extracted: 04/07/08 14:30						
Gasoline Range Hydrocarbons	NW TPH-Gx	ND	---	2.61	mg/kg dry	1x	ND	--	--	--	4.30%	(40)	04/07/08 23:24	
Surrogate(s): a,a,a-TFT		Recovery:	76.7%	Limits: 50-150%		"		04/07/08 23:24						
Duplicate (8040217-DUP2)				QC Source: PRC0900-01				Extracted: 04/07/08 14:30						
Gasoline Range Hydrocarbons	NW TPH-Gx	ND	---	2.50	mg/kg dry	1x	ND	--	--	--	NR	(40)	04/08/08 00:18	
Surrogate(s): a,a,a-TFT		Recovery:	82.7%	Limits: 50-150%		"		04/08/08 00:18						
Matrix Spike (8040217-MS2)				QC Source: PRC0900-03				Extracted: 04/07/08 14:30						
Gasoline Range Hydrocarbons	NW TPH-Gx	14.3	---	2.40	mg/kg dry	1x	0.348	15.0	93.2%	(65-130)	--	--	04/08/08 07:30	
Surrogate(s): a,a,a-TFT		Recovery:	87.9%	Limits: 50-150%		"		04/08/08 07:30						

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Darrell Auvil, Project Manager



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25195 SW Parkway Ave Suite 207
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Project Name: **Tillamook Creamery**

Project Number: **TC021SC.080C**

Project Manager: **Erik Chapman**

Report Created:

04/17/08 13:02

BTEX per EPA Method 8021B - Laboratory Quality Control Results

TestAmerica Portland

QC Batch: 8040217

Soil Preparation Method: AK101 Prep

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
---------	--------	--------	------	-----	-------	-----	---------------	-----------	-------	----------	-------	----------	----------	-------

Blank (8040217-BLK1)

Extracted: 04/07/08 14:30

Benzene	EPA 8021B	ND	---	0.0243	mg/kg wet	1x	--	--	--	--	--	--	04/07/08 22:57	
Toluene	"	ND	---	0.0485	"	"	--	--	--	--	--	--	"	
Ethylbenzene	"	ND	---	0.0485	"	"	--	--	--	--	--	--	"	
Xylenes (total)	"	ND	---	0.0971	"	"	--	--	--	--	--	--	"	
m,p-Xylene	"	ND	---	0.0485	"	"	--	--	--	--	--	--	"	
o-Xylene	"	ND	---	0.0485	"	"	--	--	--	--	--	--	"	

Surrogate(s): a,a,a-TFT (PID)

Recovery: 107%

Limits: 60-130% "

04/07/08 22:57

LCS (8040217-BS1)

Extracted: 04/07/08 14:30

Benzene	EPA 8021B	0.502	---	0.0250	mg/kg wet	1x	--	0.500	100%	(75-135)	--	--	04/07/08 22:02	
Toluene	"	0.502	---	0.0500	"	"	--	"	100%	(80-130)	--	--	"	
Ethylbenzene	"	0.512	---	0.0500	"	"	--	"	103%	"	--	--	"	
Xylenes (total)	"	1.56	---	0.100	"	"	--	1.50	104%	"	--	--	"	

Surrogate(s): a,a,a-TFT (PID)

Recovery: 107%

Limits: 60-130% "

04/07/08 22:02

Matrix Spike (8040217-MS1)

QC Source: PRC0900-02

Extracted: 04/07/08 14:30

Benzene	EPA 8021B	0.584	---	0.0297	mg/kg dry	1x	ND	0.593	98.4%	(65-135)	--	--	04/08/08 01:40	
Toluene	"	0.582	---	0.0593	"	"	ND	"	98.2%	(70-130)	--	--	"	
Ethylbenzene	"	0.592	---	0.0593	"	"	ND	"	99.9%	(70-140)	--	--	"	
Xylenes (total)	"	1.79	---	0.119	"	"	ND	1.78	101%	(65-140)	--	--	"	

Surrogate(s): a,a,a-TFT (PID)

Recovery: 86.2%

Limits: 60-130% "

04/08/08 01:40

Matrix Spike Dup (8040217-MSD1)

QC Source: PRC0900-02

Extracted: 04/07/08 14:30

Benzene	EPA 8021B	0.649	---	0.0297	mg/kg dry	1x	ND	0.593	109%	(65-135)	10.6%	(20)	04/08/08 02:07	
Toluene	"	0.645	---	0.0593	"	"	ND	"	109%	(70-130)	10.2%	"	"	
Ethylbenzene	"	0.657	---	0.0593	"	"	ND	"	111%	(70-140)	10.4%	"	"	
Xylenes (total)	"	2.00	---	0.119	"	"	ND	1.78	112%	(65-140)	10.7%	"	"	

Surrogate(s): a,a,a-TFT (PID)

Recovery: 90.4%

Limits: 60-130% "

04/08/08 02:07

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Darrell Auvil, Project Manager

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25195 SW Parkway Ave Suite 207
Wilsonville, OR 97070

Project Name: **Tillamook Creamery**

Project Number: TC021SC.080C

Project Manager: Erik Chapman

Report Created:

04/17/08 13:02

Selected Volatile Organic Compounds (Including BTEX) per EPA Method 8260B - Laboratory Quality Control Results

TestAmerica Portland

QC Batch: 8040320

Water Preparation Method: EPA 5030B

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
---------	--------	--------	------	-----	-------	-----	---------------	-----------	-------	----------	-------	----------	----------	-------

Blank (8040320-BLK1)

Extracted: 04/09/08 08:00

1,2-Dibromoethane	EPA 8260B	ND	---	0.500	ug/l	1x	--	--	--	--	--	--	04/09/08 10:20	
1,2-Dichloroethane	"	ND	---	0.500	"	"	--	--	--	--	--	--	"	
Benzene	"	ND	---	0.200	"	"	--	--	--	--	--	--	"	A-01
Toluene	"	ND	---	0.500	"	"	--	--	--	--	--	--	"	
Ethylbenzene	"	ND	---	0.500	"	"	--	--	--	--	--	--	"	
Xylenes (total)	"	ND	---	1.00	"	"	--	--	--	--	--	--	"	
Methyl tert-butyl ether	"	ND	---	2.00	"	"	--	--	--	--	--	--	"	
Naphthalene	"	ND	---	2.00	"	"	--	--	--	--	--	--	"	
1,2,4-Trimethylbenzene	"	ND	---	1.00	"	"	--	--	--	--	--	--	"	
1,3,5-Trimethylbenzene	"	ND	---	0.500	"	"	--	--	--	--	--	--	"	
Isopropylbenzene	"	ND	---	2.00	"	"	--	--	--	--	--	--	"	
n-Propylbenzene	"	ND	---	0.500	"	"	--	--	--	--	--	--	"	

Surrogate(s): 4-BFB	Recovery:	92.4%	Limits:	80-120%	"	04/09/08 10:20
1,2-DCA-d4		102%		80-120%	"	"
Dibromofluoromethane		96.0%		80-120%	"	"
Toluene-d8		98.4%		80-120%	"	"

LCS (8040320-BS1)

Extracted: 04/09/08 08:00

1,2-Dibromoethane	EPA 8260B	20.5	---	0.500	ug/l	1x	--	20.0	103%	(80-140)	--	--	04/09/08 08:53	
1,2-Dichloroethane	"	19.7	---	0.500	"	"	--	"	98.4%	(75-135)	--	--	"	
Benzene	"	19.1	---	0.200	"	"	--	"	95.4%	(80-120)	--	--	"	
Toluene	"	19.6	---	0.500	"	"	--	"	97.8%	(80-125)	--	--	"	
Ethylbenzene	"	20.2	---	0.500	"	"	--	"	101%	(80-130)	--	--	"	
Xylenes (total)	"	60.2	---	1.00	"	"	--	60.0	100%	"	--	--	"	
Methyl tert-butyl ether	"	18.6	---	2.00	"	"	--	20.0	93.1%	(80-135)	--	--	"	
Naphthalene	"	21.7	---	2.00	"	"	--	"	108%	(60-150)	--	--	"	
1,2,4-Trimethylbenzene	"	21.4	---	1.00	"	"	--	"	107%	(75-125)	--	--	"	
1,3,5-Trimethylbenzene	"	20.4	---	0.500	"	"	--	"	102%	(75-135)	--	--	"	
Isopropylbenzene	"	20.4	---	2.00	"	"	--	"	102%	(80-140)	--	--	"	
n-Propylbenzene	"	21.0	---	0.500	"	"	--	"	105%	(80-130)	--	--	"	

Surrogate(s): 4-BFB	Recovery:	97.5%	Limits:	80-120%	"	04/09/08 08:53
1,2-DCA-d4		101%		80-120%	"	"
Dibromofluoromethane		100%		80-120%	"	"
Toluene-d8		99.6%		80-120%	"	"

TestAmerica Portland

Darrell W. Auvil

Darrell Auvil, Project Manager

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Bergeson, Boese and Associates-Wilsonville

25195 SW Parkway Ave Suite 207
Wilsonville, OR 97070

Project Name: **Tillamook Creamery**

Project Number: TC021SC.080C

Project Manager: Erik Chapman

Report Created:

04/17/08 13:02

Selected Volatile Organic Compounds (Including BTEX) per EPA Method 8260B - Laboratory Quality Control Results

TestAmerica Portland

QC Batch: 8040320

Water Preparation Method: EPA 5030B

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
LCS Dup (8040320-BSD1)										Extracted: 04/09/08 08:00				
1,2-Dibromoethane	EPA 8260B	19.9	---	0.500	ug/l	1x	--	20.0	99.6%	(80-140)	2.87%	(25)	04/09/08 09:22	
1,2-Dichloroethane	"	18.6	---	0.500	"	"	--	"	93.1%	(75-135)	5.48%	"	"	
Benzene	"	18.0	---	0.200	"	"	--	"	90.2%	(80-120)	5.66%	"	"	
Toluene	"	18.5	---	0.500	"	"	--	"	92.4%	(80-125)	5.73%	"	"	
Ethylbenzene	"	19.1	---	0.500	"	"	--	"	95.6%	(80-130)	5.40%	"	"	
Xylenes (total)	"	56.9	---	1.00	"	"	--	60.0	94.9%	"	5.65%	"	"	
Methyl tert-butyl ether	"	18.0	---	2.00	"	"	--	20.0	90.0%	(80-135)	3.39%	"	"	
Naphthalene	"	21.9	---	2.00	"	"	--	"	110%	(60-150)	1.15%	"	"	
1,2,4-Trimethylbenzene	"	20.4	---	1.00	"	"	--	"	102%	(75-125)	4.54%	"	"	
1,3,5-Trimethylbenzene	"	19.4	---	0.500	"	"	--	"	97.0%	(75-135)	4.98%	"	"	
Isopropylbenzene	"	19.4	---	2.00	"	"	--	"	96.8%	(80-140)	5.43%	"	"	
n-Propylbenzene	"	19.8	---	0.500	"	"	--	"	98.9%	(80-130)	5.94%	"	"	
Surrogate(s): 4-BFB	Recovery:	97.2%	Limits:	80-120%	"									
1,2-DCA-d4		102%		80-120%	"									
Dibromofluoromethane		99.6%		80-120%	"									
Toluene-d8		100%		80-120%	"									

TestAmerica Portland

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Darrell W. Auvil

Darrell Auvil, Project Manager



Bergeson, Boese and Associates-Wilsonville

25195 SW Parkway Ave Suite 207
Wilsonville, OR 97070

Project Name: **Tillamook Creamery**

Project Number: TC021SC.080C

Project Manager: Erik Chapman

Report Created:

04/17/08 13:02

Polynuclear Aromatic Compounds per EPA 8270M-SIM - Laboratory Quality Control Results

TestAmerica Portland

QC Batch: 8040088

Water Preparation Method: 3520B Liq-Liq

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (8040088-BLK1)										Extracted: 04/02/08 17:50				
Acenaphthene	EPA 8270m	ND	---	0.100	ug/l	1x	--	--	--	--	--	--	04/03/08 21:23	
Acenaphthylene	"	ND	---	0.100	"	"	--	--	--	--	--	--	"	
Anthracene	"	ND	---	0.100	"	"	--	--	--	--	--	--	"	
Benzo (a) anthracene	"	ND	---	0.100	"	"	--	--	--	--	--	--	"	
Benzo (a) pyrene	"	ND	---	0.100	"	"	--	--	--	--	--	--	"	
Benzo (b) fluoranthene	"	ND	---	0.100	"	"	--	--	--	--	--	--	"	
Benzo (ghi) perylene	"	ND	---	0.100	"	"	--	--	--	--	--	--	"	
Benzo (k) fluoranthene	"	ND	---	0.100	"	"	--	--	--	--	--	--	"	
Chrysene	"	ND	---	0.100	"	"	--	--	--	--	--	--	"	
Dibenzo (a,h) anthracene	"	ND	---	0.200	"	"	--	--	--	--	--	--	"	
Fluoranthene	"	ND	---	0.100	"	"	--	--	--	--	--	--	"	
Fluorene	"	ND	---	0.100	"	"	--	--	--	--	--	--	"	
Indeno (1,2,3-cd) pyrene	"	ND	---	0.100	"	"	--	--	--	--	--	--	"	
Naphthalene	"	ND	---	0.100	"	"	--	--	--	--	--	--	"	
Phenanthrene	"	ND	---	0.100	"	"	--	--	--	--	--	--	"	
Pyrene	"	ND	---	0.100	"	"	--	--	--	--	--	--	"	
Surrogate(s): Fluorene-d10		Recovery: 69.8%		Limits: 25-125%	"								04/03/08 21:23	
Pyrene-d10		63.3%		23-150%	"								"	
Benzo (a) pyrene-d12		74.8%		10-125%	"								"	

LCS (8040088-BS1)

Extracted: 04/02/08 17:50

Acenaphthene	EPA 8270m	2.15	---	0.100	ug/l	1x	--	2.50	85.9%	(26-135)	--	--	04/03/08 21:51	
Benzo (a) pyrene	"	2.25	---	0.100	"	"	--	"	89.9%	(38-137)	--	--	"	
Pyrene	"	1.82	---	0.100	"	"	--	"	72.7%	(33-133)	--	--	"	
Surrogate(s): Fluorene-d10		Recovery: 88.5%		Limits: 25-125%	"								04/03/08 21:51	
Pyrene-d10		70.8%		23-150%	"								"	
Benzo (a) pyrene-d12		80.3%		10-125%	"								"	

LCS Dup (8040088-BSD1)

Extracted: 04/02/08 17:50

Acenaphthene	EPA 8270m	2.07	---	0.100	ug/l	1x	--	2.50	82.9%	(26-135)	3.60%	(60)	04/03/08 22:38	
Benzo (a) pyrene	"	2.26	---	0.100	"	"	--	"	90.4%	(38-137)	0.560%	"	"	
Pyrene	"	1.85	---	0.100	"	"	--	"	74.2%	(33-133)	1.94%	"	"	
Surrogate(s): Fluorene-d10		Recovery: 84.6%		Limits: 25-125%	"								04/03/08 22:38	
Pyrene-d10		71.8%		23-150%	"								"	
Benzo (a) pyrene-d12		85.1%		10-125%	"								"	

TestAmerica Portland

Darrell W. Auvil

Darrell Auvil, Project Manager

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Bergeson, Boese and Associates-Wilsonville

25195 SW Parkway Ave Suite 207
Wilsonville, OR 97070

Project Name:

Tillamook Creamery

Project Number:

TC021SC.080C

Project Manager:

Erik Chapman

Report Created:

04/17/08 13:02

Percent Dry Weight (Solids) per Standard Methods - Laboratory Quality Control Results

TestAmerica Portland

QC Batch: 8040263

Other dry Preparation Method: Dry Weight

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Duplicate (8040263-DUP1)			QC Source: PRD0028-04					Extracted: 04/07/08 16:07						
% Solids	NCA SOP	59.9	---	0.0100	% by Weight	1x	59.9	--	--	--	0.00% (20)		04/07/08 16:07	

TestAmerica Portland

Darrell W. Auvil

Darrell Auvil, Project Manager

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Bergeson, Boese and Associates-Wilsonville

25195 SW Parkway Ave Suite 207
Wilsonville, OR 97070

Project Name: **Tillamook Creamery**

Project Number: TC021SC.080C

Project Manager: Erik Chapman

Report Created:

04/17/08 13:02

Gasoline Hydrocarbons by NWTPH-Gx and BTEX by EPA Method 8021B - Laboratory Quality Control Results

TestAmerica Spokane

QC Batch: 8040081

Water Preparation Method: GC Volatiles

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
---------	--------	--------	------	-----	-------	-----	---------------	-----------	-------	----------	-------	----------	----------	-------

Blank (8040081-BLK1)

Extracted: 04/11/08 12:00

Gasoline Range Hydrocarbons	NWTPH-G/8 021B	ND	---	100	ug/l	1x	--	--	--	--	--	--	04/11/08 14:01	
Surrogate(s): 4-BFB (FID)		Recovery: 105%	Limits: 36-150%		"		04/11/08 14:01							

LCS (8040081-BS1)

Extracted: 04/11/08 12:00

Gasoline Range Hydrocarbons	NWTPH-G/8 021B	868	---	100	ug/l	1x	--	1000	86.8%	(80-120)	--	--	04/11/08 17:31	
Surrogate(s): 4-BFB (FID)		Recovery: 125%	Limits: 36-150%		"		04/11/08 17:31							

Duplicate (8040081-DUP1)

QC Source: SRD0066-04

Extracted: 04/11/08 12:00

Gasoline Range Hydrocarbons	NWTPH-G/8 021B	ND	---	100	ug/l	1x	ND	--	--	--	10.9% (35)		04/11/08 16:37	
Surrogate(s): 4-BFB (FID)		Recovery: 101%	Limits: 36-150%		"		04/11/08 16:37							

Matrix Spike (8040081-MS1)

QC Source: SRD0066-04

Extracted: 04/11/08 12:00

Gasoline Range Hydrocarbons	NWTPH-G/8 021B	906	---	100	ug/l	1x	32.1	1000	87.4%	(55.6-126)	--	--	04/11/08 17:04	
Surrogate(s): 4-BFB (FID)		Recovery: 123%	Limits: 36-150%		"		04/11/08 17:04							

TestAmerica Portland

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Darrell W. Auvil

Darrell Auvil, Project Manager



Bergeson, Boese and Associates-Wilsonville

25195 SW Parkway Ave Suite 207
Wilsonville, OR 97070

Project Name: **Tillamook Creamery**

Project Number: TC021SC.080C

Project Manager: Erik Chapman

Report Created:

04/17/08 13:02

Notes and Definitions

Report Specific Notes:

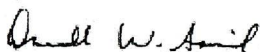
- A-01 - system contamination
- RL1 - Reporting limit raised due to sample matrix effects.
- RL7 - Sample required dilution due to high concentrations of target analyte.

Laboratory Reporting Conventions:

- DET - Analyte DETECTED at or above the Reporting Limit. Qualitative Analyses only.
- ND - Analyte NOT DETECTED at or above the reporting limit (MDL or MRL, as appropriate).
- NR/NA - Not Reported / Not Available
- dry - Sample results reported on a Dry Weight Basis. Results and Reporting Limits have been corrected for Percent Dry Weight.
- wet - Sample results and reporting limits reported on a Wet Weight Basis (as received). Results with neither 'wet' nor 'dry' are reported on a Wet Weight Basis.
- RPD - RELATIVE PERCENT DIFFERENCE (RPDs calculated using Results, not Percent Recoveries).
- MRL - METHOD REPORTING LIMIT. Reporting Level at, or above, the lowest level standard of the Calibration Table.
- MDL* - METHOD DETECTION LIMIT. Reporting Level at, or above, the statistically derived limit based on 40CFR, Part 136, Appendix B. *MDLs are listed on the report only if the data has been evaluated below the MRL. Results between the MDL and MRL are reported as Estimated Results.
- Dil - Dilutions are calculated based on deviations from the standard dilution performed for an analysis, and may not represent the dilution found on the analytical raw data.
- Reporting Limits - Reporting limits (MDLs and MRLs) are adjusted based on variations in sample preparation amounts, analytical dilutions and percent solids, where applicable.
- Electronic Signature - Electronic Signature added in accordance with TestAmerica's *Electronic Reporting and Electronic Signatures Policy*. Application of electronic signature indicates that the report has been reviewed and approved for release by the laboratory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

TestAmerica Portland

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Darrell Auvil, Project Manager



TestAmerica

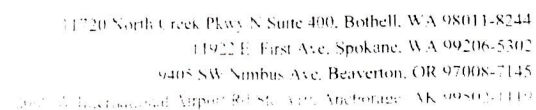
ANALYTICAL TESTING CORPORATION

11720 North Creek Pkwy N Suite 400, Bothell, WA 98011-8244 425-420-9200 FAX 420-9210
 11922 E First Ave, Spokane, WA 99206-5302 509-924-9200 FAX 924-9290
 9405 SW Nimbus Ave, Beaverton, OR 97008-7145 503-906-9200 FAX 906-9210
 600 W. International Airport Rd Ste. 300 Anchorage, AK 99502-1115 907-563-9200 FAX 563-9210

CHAIN OF CUSTODY REPORT

Work Order #: **PRD0028**

CLIENT: Bergeon Boese & Assoc		INVOICE TO: Ren Bergeon Colony		TURNAROUND REQUEST in Business Days * Organic & Inorganic Analyses ☒ 7 ☐ 5 ☐ 4 ☐ 3 ☐ 2 ☐ 1 ☐ <1 STD Petroleum Hydrocarbon Analyses ☒ 4 ☐ 3 ☐ 2 ☐ 1 ☐ <1 STD OTHER Specify: * Turnaround Requests less than standard may incur Rush Charges			
REPORT TO: Erik Chapman ADDRESS: 25195 SW Parkway Ave 207 Wilsonville OR 97140		P.O. NUMBER:					
PHONE: 503 570-9489 FAX: 503 570-0887		PRESERVATIVE:					
PROJECT NAME: T. Hauler Creekway		PROJECT NUMBER: T0021X.080C		REQUESTED ANALYSES			
SAMPLED BY: PRSC							
CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	TPH #1-D	BTX 802-B				
1 NW@4.6'	4/1/08 1010						
2 NFLOOR@7'	1020						
3 SW@4.6'	1012						
4 EW@4.6'	1015	X	X				
5 SFLOOR@7'	1022						
6 WW@4.6'	1017	X	X				
7 STICKPILE1	1048						
8 STICKPILE2	1045						
9 NFLOOR@7.5'	1210	X	X				
RELEASED BY: [Signature]		DATE: 4/1/08		RECEIVED BY: Jamie & [Signature]		DATE: 4/1/08	
PRINT NAME: ERIK CHAPMAN		FIRM: BBA		PRINT NAME: S. Ireland		FIRM: TAP	
RELEASED BY:		DATE:		RECEIVED BY:		DATE:	
PRINT NAME:		FIRM:		PRINT NAME:		FIRM:	
ADDITIONAL REMARKS: * Quantify if defect by NWTPH methods as appropriate				TEMP: 10.7		PAGE 1 OF 2	
				3.8			



425-420-9200 FAX 420-9210
500-924-9200 FAX 924-9290
503-906-9200 FAX 906-9210
907-563-9200 FAX 563-9210

Work Order #: PRD0028

CLIENT		INVOICE TO:		TURNAROUND REQUEST	
REPORT TO:		P.O. NUMBER		in Business Days *	
ADDRESS		PRESERVATIVE		Organic & Inorganic Analyses	
PHONE		REQUESTED ANALYSES		Petrochemical Hydrocarbon Analyses	
PROJECT NAME		OTHER		Specify:	
PROJECT NUMBER		MATRIX (W, S, O)		= OF CONT.	
SAMPLED BY		LOCATION COMMENTS		TA WO ID	
TC-WATER	4/1/08 1200	X	X	X	not filtered
* Turnaround Requests less than standard may incur Rush Charges * Quantity of defect using NWPPH Methods					

TestAmerica Sample Receipt Checklist

Received by:

Unpacked by:

Logged-in by:

Work Order No. PR00028

(Section A)

(Section B)

Date: 4/1/03

Date: 4/1/03

Date: 4/1/03

Client: BBA

Time: 15:02

Initials: JE

Initials: JE

Project: Tillamook Creamery

Initials: JE

Temperature out of range:

***ESI Clients (see Section C)

☐ Not enough Ice
☐ No Ice
☐ Ice Melted
☐ Within 4 Hours
☐ Other

Cooler Temperature (IR): 5.8 C plastic glass NA (oil/air samples, ESI client)

Temperature Blank: _____ C

A Custody Seals: (# _____)

Signature: Y N Dated: _____

☒ None

Received from:

____ TA Courier

____ Senvoy

____ UPS

____ Fed Ex

☒ Client

____ TDP

____ DHL

____ SDS

____ Mid-Valley

____ GS/TA

____ GS/Senvoy

____ Other

Container Type:

1 #Cooler(s)

____ #Box(s)

____ None (____ #Other: _____)

Coolant Type:

☒ Gel Ice

____ Loose Ice

____ None

Packing Material:

☒ Bubble Bags

____ Styrofoam Cubbies

____ None (____ Other: _____)

B

Sample Status:

(If N circled, see NOD)

General:

Intact? Y N

Containers Match COC? Y N none given

IDs Match COC? Y N

For Analyses Requested:

Correct Type & Preservation? Y N

Adequate Volume? Y N

Within Hold Time? Y N

Volatiles/ Oil Quality:

VOAs/ Syringes free of Headspace? Y N NA

TB on COC? (not provided) Y N NA

Metals

HNO3 Preserved? Y N NA

Dissolved Metals Filtered? Y N NA

C ***ESI Clients Only:

Temperature Blank: _____ C not provided

All preserved bottles checked Y N NA (voas/soils/all unp.)

All preserved accord. Y N (see NOD) NA (voas/soils/all unp.)

FED EX/ UPS Was the tracking paper keepable? YES NO

If circled: NO, what is the Tracking number? _____

FED EX Goldstreak UPS DHL Other: _____

Project Managers:

Comments: _____

PM Reviewed: _____ (Initial/Date)

APPENDIX E

Push Probe and Monitoring Well Completion Logs

PROBE LOG

PAGE 1 OF 1

PROBE NO.: P1
 PROJECT CODE: TC02ISC.08UC
 CADD FILE: TC02ISC.08UC
 PROJECT: TILLAMOOK CREAMERY
 LOCATION: 2500 LATIMER ROAD
 TILLAMOOK, OR

TOTAL DEPTH: 20'
 SURFACE ELEVATION: N/A
 PROBING METHOD: MACRO CORE
 PROBED BY: PACIFIC NORTHWEST DRILLING
 LOGGED BY: ERIK CHAPMAN
 DATE COMPLETED: 4/29/08

DEPTH (feet)	SAMPLE IDENTIFICATION AND LAB RESULTS	PID	H ₂ O LEVEL	LITHOLOGIC DESCRIPTION	LITHOLOGY	DEPTH (feet)	PROBE ABANDONMENT
0				- GRAVEL/ Soil Surface		0	
	TC02-P1-3.5'	0.0		- Clayey SILT (ML): dark brown, soft, dry			
				- greyish-brown w/ brown mottled, wet			
5	TC02-P1-6'	0.0		- grey w/ orange mottling, firm, slightly moist		5	
	TC02-P1-8.5'	0.0					
10	TC02-P1-11'	0.0				10	
	TC02-P1-14'	0.0		- SAND (SM): greyish brown, fine-grained sand, trace silt, soft, moist			
15	TC02-P1-15.5'	0.0		- SILT (ML): grey w/ orange mottling, firm, slightly moist to dry, wet @ 16.5' BLS		15	
			WD				
20		0.0		- SAND (SM): dark grey, fine-grained sand, firm, moist		20	
25						25	

LEGEND

WD Water Level in borehole during drilling (i.e. first encountered)

NOTES:

NOTE: CLASSIFICATION OF SOILS BASED ON THE UNITED SOILS CLASSIFICATION SYSTEM.



Bergeson-Boee + Associates, Inc.
 Comprehensive Environmental Services

32986 Roberts Court
 Coburg, Oregon 97408
 (541) 484-9484

25185 SW Parkway Ave., Suite 207
 Wilsonville, Oregon 97070
 (503) 570-9484

PROBE LOG

PAGE 1 OF 1

PROBE NO.: P2
 PROJECT CODE: TC02ISC.08UC
 CADD FILE: TC02ISC.08UC
 PROJECT: TILLAMOOK CREAMERY
 LOCATION: 2500 LATIMER ROAD
 TILLAMOOK, OR

TOTAL DEPTH: 20'
 SURFACE ELEVATION: N/A
 PROBING METHOD: MACRO CORE
 PROBED BY: PACIFIC NORTHWEST DRILLING
 LOGGED BY: ERIK CHAPMAN
 DATE COMPLETED: 4/29/08

DEPTH (feet)	SAMPLE IDENTIFICATION AND LAB RESULTS	PID	H ₂ O LEVEL	LITHOLOGIC DESCRIPTION	LITHOLOGY	DEPTH (feet)	PROBE ABANDONMENT
0				- SOIL SURFACE		0	
				- GRAVEL (GM): grey, fine grained, rounded (pea-gravel), moist to wet			
5	TC02-P2-4.5'	405		- Clayey SILT (ML): dark grey, moist, strong hydrocarbon odor		5	
	TC02-P2-7'	80.5		- greyish brown/orange mottling, soft, slightly moist,			
		20.5		- grey, firm			
10	TC02-P2-9.5'	12.9		- grey w/ orange mottling, soft, slightly moist		10	
	TC02-P2-12'	0.0					
15	TC02-P2-15.5'	12.5	WD			15	
	TC02-P2-18'	0.0		- SILT (ML): greyish brown, saturated			
				- dry			
20				- SILT (ML): grey w/ orange mottling, firm, slightly moist, black fine-grained sand in shoe		20	
25						25	

LEGEND

WD Water Level in borehole during drilling (i.e. first encountered)

NOTES:

NOTE: CLASSIFICATION OF SOILS BASED ON THE UNITED SOILS CLASSIFICATION SYSTEM.



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PROBE LOG

PAGE 1 OF 1

PROBE NO.: P3
 PROJECT CODE: TC02ISC.08UC
 CADD FILE: TC02ISC.08UC
 PROJECT: TILLAMOOK CREAMERY
 LOCATION: 2500 LATIMER ROAD
 TILLAMOOK, OR

TOTAL DEPTH: 15'
 SURFACE ELEVATION: N/A
 PROBING METHOD: MACRO CORE
 PROBED BY: PACIFIC NORTHWEST DRILLING
 LOGGED BY: ERIK CHAPMAN
 DATE COMPLETED: 4/29/08

DEPTH (feet)	SAMPLE IDENTIFICATION AND LAB RESULTS	PID	H ₂ O LEVEL	LITHOLOGIC DESCRIPTION	LITHOLOGY	DEPTH (feet)	PROBE ABANDONMENT
0				ASPHALT		0	
	TC02-P3-3'	0.0		GRAVEL (GM): grey, fine-medium grained, rounded, dry			
				Clayey SILT (ML): dark grey, trace clay, soft, moist			
5	TC02-P3-4.5'	0.0		grey w/ brown mottling, slightly moist		5	
	TC02-P3-6'	0.0		becomes dry			
	TC02-P3-8'	0.0					
10	TC02-P3-10.5'	0.0				10	
		0.0	WD	wet			
				Silty SAND (SP): greyish brown mottled w/ orange-reddish brown, soft, wet			
15						15	
20						20	
25						25	

LEGEND

WD Water Level in borehole during drilling (i.e. first encountered)

NOTES:

NOTE: CLASSIFICATION OF SOILS BASED ON THE UNITED SOILS CLASSIFICATION SYSTEM.



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PROBE LOG

PAGE 1 OF 1

PROBE NO.: P4
 PROJECT CODE: TC02ISC.08UC
 CADD FILE: TC02ISC.08UC
 PROJECT: TILLAMOOK CREAMERY
 LOCATION: 2500 LATIMER ROAD
 TILLAMOOK, OR

TOTAL DEPTH: 20'
 SURFACE ELEVATION: N/A
 PROBING METHOD: MACRO CORE
 PROBED BY: PACIFIC NORTHWEST DRILLING
 LOGGED BY: ERIK CHAPMAN
 DATE COMPLETED: 4/29/08

DEPTH (feet)	SAMPLE IDENTIFICATION AND LAB RESULTS	PID	H ₂ O LEVEL	LITHOLOGIC DESCRIPTION	LITHOLOGY	DEPTH (feet)	PROBE ABANDONMENT
0				ASPHALT		0	
				GRAVEL (GM): grey, med-coarse grained			
	TC02-P4-3'	0.0	WD	Clayey SILT (ML): grey, soft, wet			
		0.0					
5				grey, soft, wet		5	
	TC02-P4-6.5'	0.0		grey w/ brown mottling, firm, slightly moist			
	TC02-P4-8.5'	0.0					
10						10	
	TC02-P4-11.5'	0.0	WD	reddish brown, dry			
15				Silty SAND (SP): brown w/ grey mottling, fine-grained, soft, moist		15	
	TC02-P4-14.5'	0.0					
				SILT (ML): grey, trace fine sand, soft, slightly moist			
20						20	
25						25	

LEGEND

WD Water Level in borehole during drilling (i.e. first encountered)

NOTES:

NOTE: CLASSIFICATION OF SOILS BASED ON THE UNITED SOILS CLASSIFICATION SYSTEM.



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PROBE LOG

PAGE 1 OF 1

PROBE NO.: P5
 PROJECT CODE: TC02ISC.08UC
 CADD FILE: TC02ISC.08UC
 PROJECT: TILLAMOOK CREAMERY
 LOCATION: 2500 LATIMER ROAD
 TILLAMOOK, OR

TOTAL DEPTH: 20'
 SURFACE ELEVATION: N/A
 PROBING METHOD: MACRO CORE
 PROBED BY: PACIFIC NORTHWEST DRILLING
 LOGGED BY: ERIK CHAPMAN
 DATE COMPLETED: 4/29/08

DEPTH (feet)	SAMPLE IDENTIFICATION AND LAB RESULTS	PID	H ₂ O LEVEL	LITHOLOGIC DESCRIPTION	LITHOLOGY	DEPTH (feet)	PROBE ABANDONMENT
0				- GRAVEL SURFACE silt, brown		0	
		0.0		- Clayey SILT (ML): grey w/ orange mottling, dry, soft, no sample due to low recovery			
5		0.0				5	
		0.0					
	TC02-P5-8.5'	0.0					
10		0.0				10	
	TC02-P5-10.5'	0.0					
15		0.0		- Silty SAND (SP): brown, w/ grey mottling, fine-grained sand, slightly moist		15	
	TC02-P5-15.5'	0.0	WD =	saturated			
20						20	
25						25	

LEGEND

WD Water Level in borehole during drilling (i.e. first encountered)

NOTES:

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APPENDIX F

Historical Groundwater Monitoring and Sample Data Tables
(LUST 29-00-0859)

Tillamook Co. Creamery Association
4185 Highway 101 North
Tillamook, Oregon 97141
DEQ USTC No. 29-00-0859

DTW = Depth to water
WTE = Water Table Elevation
Where Shaded = Not Analyzed

[illegible][illegible]

Monitoring Well MW-3

Date	PVC Elev.	DTW	WTE	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	EDB	EDC	MTBE	Dissolved Lead	iso-Propylbenzene	n-Propylbenzene	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene
9/25/00	99.91	6.79	93.12	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
12/12/00	99.91	4.45	95.46	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA
3/9/01	99.91	4.68	95.23	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA
5/30/01	99.91	5.32	94.59													
9/13/01	99.91	6.06	93.85													
12/5/01	99.91	2.32	97.59													

Monitoring Well MW-4

Date	PVC Elev.	DTW	WTE	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	EDB	EDC	MTBE	Dissolved Lead	iso-Propylbenzene	n-Propylbenzene	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene
5/30/01	100.25	7.18	93.07	7.0	ND	1.0	ND	ND	ND	2.2	ND	NA	3.6	2.9	ND	ND
9/13/01	100.25	7.59	92.66	6.9	ND	ND	1.3	ND	ND	ND	ND	NA	1.7	ND	1.2	ND
12/5/01	100.25	2.48	97.77	5.7	ND	5.6	ND	ND	ND	2.0	ND	NA	3.1	3.8	1.3	ND



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