



July 23, 2015

Mr. Chuck Carmel
Atlantic Richfield Company
(a BP affiliated company)
4 Centerpointe Drive, Suite 200
La Palma, CA 90623

**Subject: Potential Disturbance of Resource Protection Wells During Site Demolition
ARCO Facility No. 6067
8009 164th Avenue NE
Redmond, Washington
Washington State Department of Ecology VCP #NW2736**

Dear Mr. Carmel,

In anticipation of the upcoming station demolition and underground storage tank (UST) system removal, to be conducted at ARCO Facility No. 6067 by Joe Hall Construction, the contractor retained by the facility owner (Mr. Tim Shalabi), Innovex would like to address the potential for the disturbance or destruction of 12 on-site resource protection wells. Currently there are five groundwater monitoring wells, one soil vapor extraction well, and six vapor probe wells located on the station property, as shown on the attached site map. Boring and well construction logs are attached, as well as a table summarizing well construction details.

During the course of planned demolition and UST removal activities, the contractor may accidentally or unavoidably compromise well surface seals and/or well casings. Complete removal of wells may also occur as excavations are advanced. Per Washington State regulations (Chapter 173-160 WAC), modifications or decommissioning of these resource protection wells can only be done under the supervision of a licensed driller or licensed engineer, with the required permits and reporting to the Department of Ecology.

If the potential exists for site demolition or UST removal work to cause damage to, or require removal of, any of the resource protection wells, we strongly recommend inclusion of proper well protection or decommissioning procedures as part of the site work. Proper protection and decommissioning of these resource protection wells is also very important because the site is located within a City of Redmond wellhead protection area.

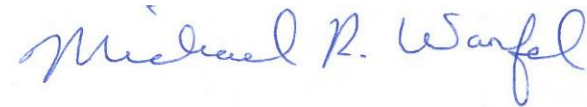
Thank you for your consideration in this matter.

Sincerely,

INNOVEX Environmental Management, Inc.



Laurence Brown, STSC
Staff Geologist



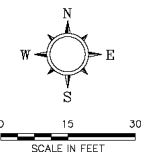
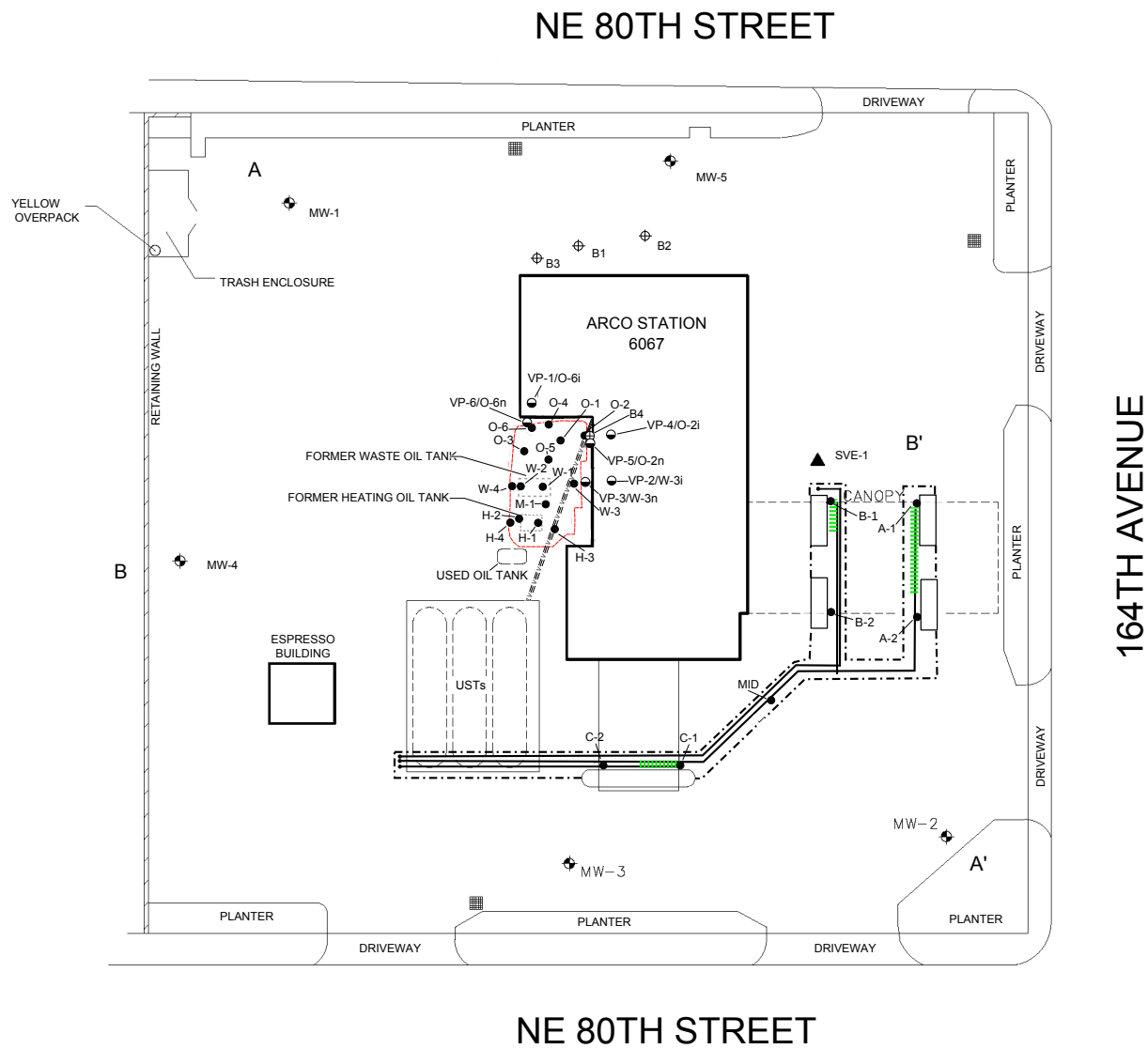
Michael R. Warfel, LG, LHG, RG
Principal Hydrogeologist

cc: Heather Vick/Department of Ecology

ATTACHMENTS:

Site Map
Well and Boring Logs
Well Construction Summary Table

ATTACHMENTS



LEGEND

- | | | |
|-----------|---|---|
| MW-5 |  | GROUNDWATER MONITORING WELL |
| SVE-1 |  | VAPOR EXTRACTION WELL |
| W-2 |  | EXCAVATION SOIL SAMPLE LOCATION |
| B2 |  | SOIL BORING LOCATION |
| VP-1/O-6i |  | HAND AUGER SOIL COLLECTION LOCATION AND VAPOR PROBE WELL LOCATION |
| |  | UST VENT LINES |
| |  | APPROXIMATE EXTENT OF UST EXCAVATION |
| |  | 2" DIAMETER HORIZONTAL PVC SCREEN |
| |  | APPROXIMATE EXTENT OF PRODUCT LINE EXCAVATION |
| |  | CATCH BASIN |

DESIGNED BY

INNOVEX ENVIRONMENTAL

DRAWN BY

LARRY BROWN

JUNE 20, 2014



FIGURE 2

Site Map and Sample Locations

**ARCO FACILITY NO. 6067
8009 164TH AVENUE NE
REDMOND, WA**



16310 NE 80TH St. Suite 300
Redmond, WA 98052
(800) 988-7880

TABLE 2
SUMMARY OF WELL CONSTRUCTION SPECIFICATIONS

ARCO Facility No. 6067
8009 164th Ave NE
Redmond, Washington

GW Monitoring Well	Date Installed	Date Abandoned	MP Elevation feet (RBM)	Well Diameter (inches)	Top of Screen (feet bgs)	Bottom of Screen (feet bgs)	Well Depth (feet bgs)	Screen Length (feet)	Screen Slot Size (inches)	Screen Type
MW-1	10/11/93	NA	37.55	2	15.0	30.0	30.0	15.0	0.020	SCH 40 PVC Slotted Pipe
MW-2	10/11/93	NA	37.38	2	15.0	25.0	25.5	10.0	0.020	SCH 40 PVC Slotted Pipe
MW-3	10/11/93	NA	37.92	2	15.0	25.0	25.5	10.0	0.020	SCH 40 PVC Slotted Pipe
MW-4	04/08/94	NA	38.82	2	10.0	25.0	25.5	15.0	0.020	SCH 40 PVC Slotted Pipe
MW-5	04/08/94	NA	38.31	2	10.0	23.5	25.0	13.5	0.020	SCH 40 PVC Slotted Pipe
SVE-1	10/11/93	NA	38.66	4	15.0	25.0	25.5	10.0	0.020	SCH 40 PVC Slotted Pipe

Soil Vapor Monitoring Well	Date Installed	Date Abandoned	MP Elevation feet (RBM)	Well Diameter (inches)	Top of Sand Pack (feet bgs)	Bottom of Sand Pack (feet bgs)	Well Depth (feet bgs)	Probe Set Depth (feet)	Screen Slot Size (inches)	Probe/Screen Type
O-2i	01/24/14	NA	NS	1/8"	2.0	3.0	2.5	2.5	0.004	Stainless Steel probe
O-2n	01/24/14	NA	NS	1/8"	5.0	6.0	6.5	5.5	0.004	Stainless Steel probe
O-6i	01/24/14	NA	NS	1/8"	5.5	6.5	6.5	6.0	0.004	Stainless Steel probe
O-6n	01/24/14	NA	NS	1/8"	2.0	3.0	2.5	2.5	0.004	Stainless Steel probe
W-3i	01/24/14	NA	NS	1/8"	5.0	6.0	6.5	5.5	0.004	Stainless Steel probe
W-3n	01/24/14	NA	NS	1/8"	2.0	3.0	2.5	2.5	0.004	Stainless Steel probe

Acronyms and Abbreviations:

bgs = below ground surface

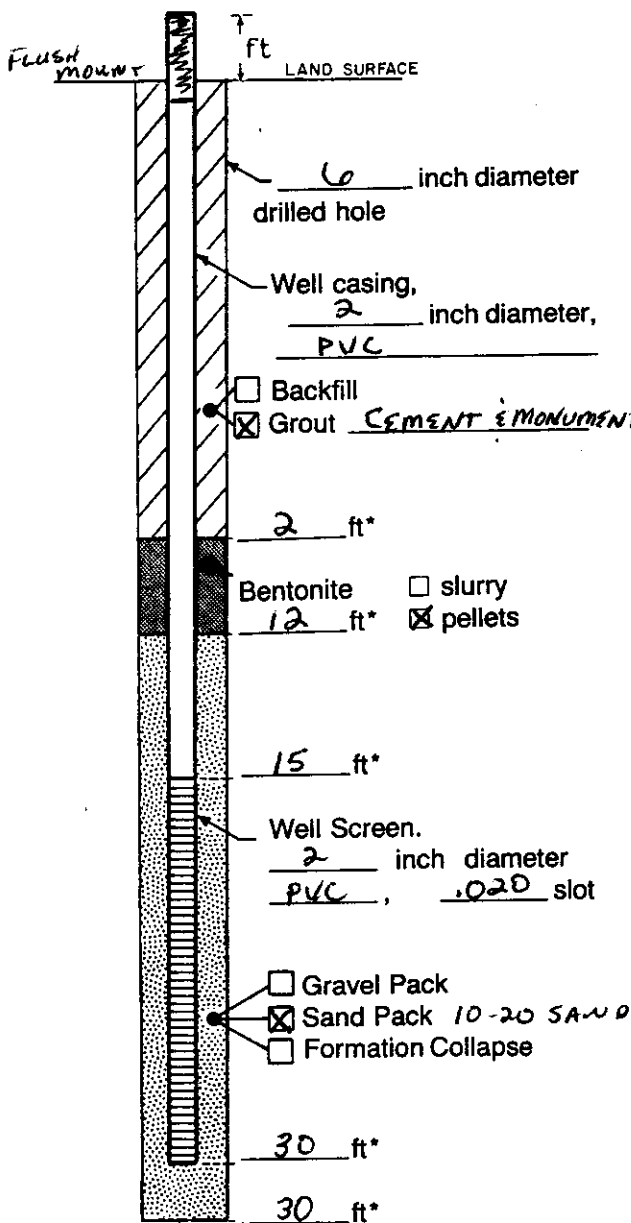
NS = not surveyed

MP = measuring point; typically top of well casing (TOC)

RBM = MP elevations relative to a Property-specific benchmark elevation of 100.00 feet

WELL CONSTRUCTION LOG

(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

*Depth Below Land Surface

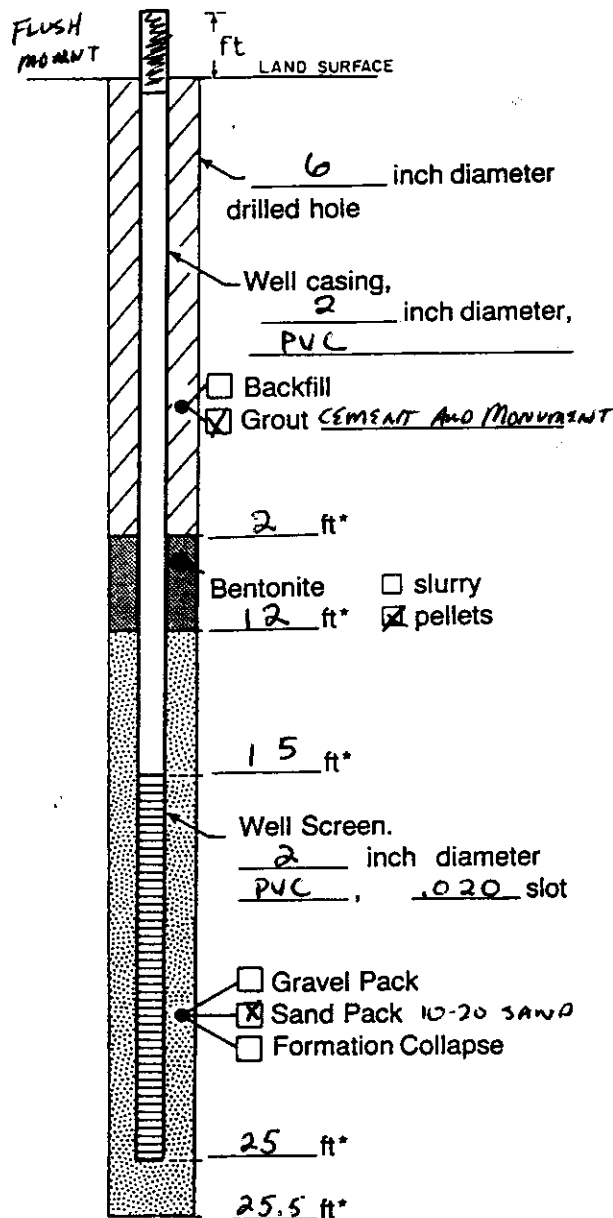
Project WA0276.001 Well MW-1
Town/City REDMOND
County KING State WA
Permit No. N/A
Land-Surface Elevation and Datum ? feet ☐ Surveyed ☐ Estimated
Installation Date(s) 10/11/93
Drilling Method HOLLOW STEM AUGER
Drilling Contractor CASCADE DRILLING, INC.
Drilling Fluid N/A
Development Technique(s) and Date(s) SURGE AND BAIL 10/11/93
Fluid Loss During Drilling N/A gallons
Water Removed During Development ~4.0 gallons
Static Depth to Water ~15 feet below M.P.
Pumping Depth to Water N/A feet below M.P.
Pumping Duration N/A hours
Yield N/A gpm Date —
Specific Capacity N/A gpm/ft
Well Purpose MONITORING WELL

Remarks

Prepared by EUGENE RADCLIFF

WELL CONSTRUCTION LOG

(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

*Depth Below Land Surface

Project WA0276.001 Well MW-2

Town/City REDMOND

County KING State WA

Permit No. N/A

Land-Surface Elevation and Datum ? feet ☐ Surveyed ☐ Estimated

Installation Date(s) 10/11/93

Drilling Method HOLLOW STEM AUGER

Drilling Contractor CASCADE DRILLING, INC.

Drilling Fluid N/A

Development Technique(s) and Date(s)
SURGE AND BAIL 10/11/93

Fluid Loss During Drilling N/A gallons

Water Removed During Development ~4.0 gallons

Static Depth to Water 15.5 feet below M.P.

Pumping Depth to Water N/A feet below M.P.

Pumping Duration N/A hours

Yield N/A gpm Date —

Specific Capacity N/A gpm/ft

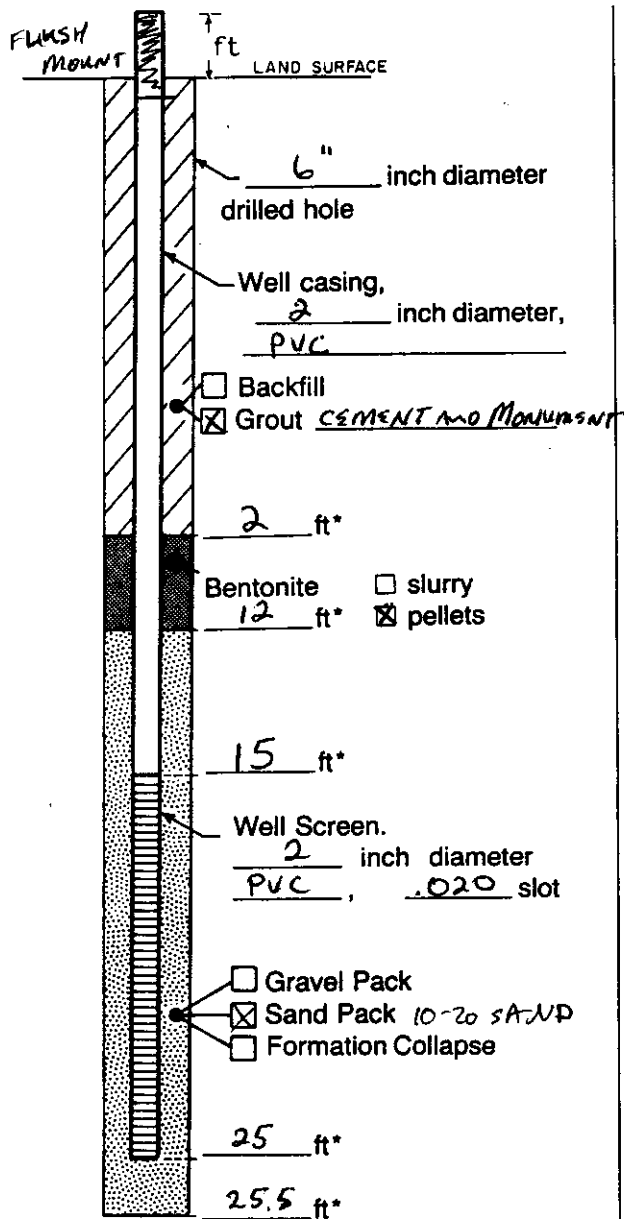
Well Purpose MONITORING WELL

Remarks

Prepared by EUGENE RADCLIFF

WELL CONSTRUCTION LOG

(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

*Depth Below Land Surface

Project WA0276.001 Well MW-3
Town/City REDMOND
County KING State WA
Permit No. N/A
Land-Surface Elevation and Datum ? feet ☐ Surveyed ☐ Estimated
Installation Date(s) 10/11/93
Drilling Method HOLLOW STEM AUGER
Drilling Contractor CASCADE DRILLING, INC.
Drilling Fluid N/A
Development Technique(s) and Date(s) SURGE AND BAIL 10/11/93
Fluid Loss During Drilling N/A gallons
Water Removed During Development ~4.0 gallons
Static Depth to Water 16.5 feet below M.P.
Pumping Depth to Water N/A feet below M.P.
Pumping Duration N/A hours
Yield N/A gpm Date —
Specific Capacity N/A gpm/ft
Well Purpose MONITORING WELL

Remarks

Prepared by EUGENE RADCLIFF



Remarks

Prepared by EUGENE RADCLIFFE

SCROLL 100

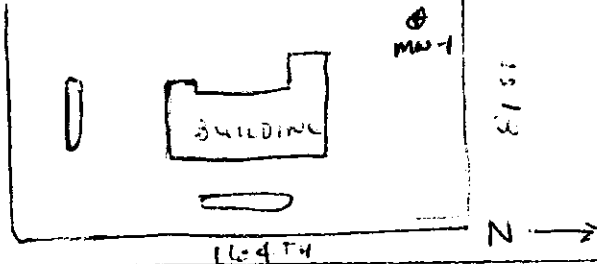


**GERAGHTY
& MILLER, INC.**
Environmental Services

PROJECT NO. WAO267.001 DATE 10/11/93
CLIENT ARCO PRODUCT COMPANY
LOCATION ARCO 6067
LOGGED BY GER DRILLER RANDY
WEATHER Sunny 60's

SOUNDING NO. 3
WELL NO. mw-1
SHEET 1 OF 2

FIELD LOCATION OF BORING: 44700



DRILLING CONTRACTOR CASCADE DRILLING INC
DRILLING METHOD Hollow Stem Auger
DRILL RIG TYPE CM2 75
HOLE DIA. 6" CASING DIA. 2"
HAMMER WT. 140 lb DROP 30 IN.

DATE	10/11
TIME	12 ⁰⁵
WATER LEVEL	Hg. 37

Well Construction	Time	Blows/6 in.	Headspace PID/OVA	Sample ID (* = lab sample)	Depth	Sample Interval	USCS Code	SAMPLE/CORE DESCRIPTION E.g., group name; % range each size (from coarse to fine), shape & angularity of each; grading for coarse/consistency for fine; color; structure; moisture; odor; comments.
	0645				0			3" ASPHALT
								MED. SAND & GRAVELS. SLT HC(?) ODOR
								NO READINGS ON OVM.
								SLT ODOR (HC?)
	7/12/20 10:05	7/12/20	1.2		5	SP		POORLY GRADED SAND W/ GRAVELS. BROWN, MOIST, MED. DENSE SAND (90%) HOMOGENEOUS, SUB-ROUNDED-ROUNDED MED-COARSE SAND GRAINED SAND W/ TRACE FINES & SILTS. GRAVEL (5%) ROUNDED, FINE GRAVEL NO ODOR
								MSD - ^{FEW} SMALL - SMALL COBBLES.
	10/12	12/13/22	0.6		10	SW		WELL GRADED SAND, BROWN, MOIST, MED. DENSE SAND (95%) HOMOGENEOUS, SUB-ANGULAR TO ROUNDED GRAINS, MED GRAINED. W/ TRACE FINES. & FINE GRAVEL FEW FINE GRAVEL
								MOSTLY SAND & FINE-MED GRAVELS IN CUTTINGS.
	10/14	5/4/50-4			15	SP		NO REVERY HOUSLY GRADED SANDS. SIMILAR TO 5' ONLY WET.

BORING LOG (Continued)



PROJECT NO. WAC276.001 DATE 10/11/93
 CLIENT ARCO PRODUCTS COMPANY
 LOCATION ARCO 6667

BORING NO. 3
 WELL NO. 1
 SHEET 2 OF 2

Well Construction	Time	Blows/6 in.	Headspace PID/QVA	Sample ID (* = lab sample)	Depth	Sample Interval	USCS Code	SAMPLE/CORE DESCRIPTION	
								E.g., group name; % range each size (from coarse to fine), shape & angularity of each; grading for coarse/consistency for fine; color; structure; moisture; odor; comments.	
	10/19	17/50-4	0.6		20	I	SP	POORLY GRADED SAND w/ GRAVELS. SAND (85%) BROWN, WET, DENSE SAND (85%) HOMOGENEOUS, SUB ROUNDED - ROUNDED, MOSTLY MED - COARSE SAND. w/ FEW FINES. GRAVEL (10%) ROUNDED FINE - MED GRAVEL NO ODOR.	
								SANDS GRADING BACK & FORTH FROM MED TO COARSE LENSES.	
	10/23	36/50-5	0.6		25	I	SP	SAME AS ABOVE ONLY FEWER COARSE SANDS AND MORE COARSE SANDS & FEW FINE GRAVEL	
								SANDS GRADING FROM FINE - COARSE	
	10/28	50/50-6	0.0		30	I	SW	WELL GRADED SAND, BROWNISH GRAY, WET, DENSE SAND (95%) HOMOGENEOUS, SUB ROUNDED TO ROUNDED GRAINS MOSTLY COARSE SANDS w/ FEW MED. SANDS, TRACE FINES. NO ODOR	
	#56							BORING TERMINATED @ 30'	
								WATER ENCOUNTER @ ~115'	
								Eugene Radtke 10/11/93	

BORING LOG



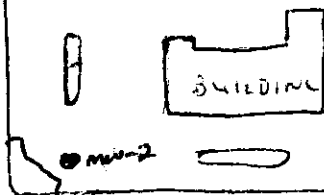
GERAGHTY
& MILLER, INC.
Environmental Services

PROJECT NO. WAC267.001 DATE 10/1/93
CLIENT ARCO PRODUCT COMPANY
LOCATION ARCO 6067
LOGGED BY GER DRILLER RANDY
WEATHER SUNNY 60'S

BORING NO. 2
WELL NO. MW-2
SHEET 1 OF 2

FIELD LOCATION OF BORING:

80' H
EAST



164TH

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DRILLING CONTRACTOR CASCADE DRILLING INC.
DRILLING METHOD HOLLOW STEM AUGER
DRILL RIG TYPE CME 75
HOLE DIA. 6" CASING DIA. 2"
HAMMER WT. 140 lb DROP 30 IN.

DATE	10/11	10/11
TIME	0900	0930
WATER LEVEL	22.51	15.89

Well Construction	Time	Blows/6 in.	Headspace PID/OVA	Sample ID (* = lab sample)	Depth	Sample Interval	USCS Code	SAMPLE/CORE DESCRIPTION E.g., group name; % range each size (from coarse to fine); shape & angularity of each; grading for coarse/consistency for fine; color; structure; moisture; odor; comments.
					0			ASPHALT
								SANDS & GRAVELS FILL (?)
					5	SP		POORLY GRADED SANDS W/ GRAVELS. BLACK, MOIST MED. DENSE, SAND (80-85%), HOMOGENEOUS, SUB ROUND TO ROUND, MOSTLY MEDIUM FINE-MED SANDS W/ FEW COARSE SANDS. FEW-LITTLE FLAKES & SILTS. NOW PLASTIC. GRAVELS; SUB ROUNDED TO ROUNDED (100%) FEW FINE-MED GRAVELS. NO ODOR (MED-LARGE COBBLES IN CUTTINGS.)
					10	SP		SAME AS ABOVE, MORE ANGULAR GRAVELS. (ROCK FRAGMENT IN CUTTINGS) (MED-LARGE COBBLES IN CUTTINGS)
					15	SP		POORLY GRADED (SAME AS ABOVE) SANDS SAME AS ABOVE ONLY BROWN IN COLOR, BUT A MORE COARSE SANDS - NO CLAYS.
					20			

WELL NO. 2

SHEET 2 OF 2

PROJECT NO. WAC276 001 DATE 10/11/93
CLIENT ARCO PRODUCTS COMPANY
LOCATION ARCO 6067

Well Construction	Time	Blows/6 in.	Headspace PUD/OVA	Sample ID (* = lab sample)	Depth	Sample Interval	USCS Code	SAMPLE CORE DESCRIPTION	
								E.g., group name; % range each size from coarse to fine; shape & angularity of each; grading for coarse; consistency for fine; color; structure; moisture; odor comments.	
X	0855	21/50-5	0.0		20	I	SP	POORELY GRADED SANDS. BROWN, WET, DENSE, SAND (90%) HOMOGENEOUS, SUB-ROUNDED TO ROUNDED GRAINS. MOSTLY MED - COARSE SANDS W/ FEW FINES, GRAVELS 75% ROUNDED W/ FINE - MED. GRAVELS	
	0902	31/50-3			25	I		SAME. AS ABOVE ONLY W/ LENSES OF FINE SANDS & SILTS. BORING TERMINATED @ 25' WATER ENCOUNTERED @ 15.5' Eugene Rodolph 10/11/93	
					30				
					35				

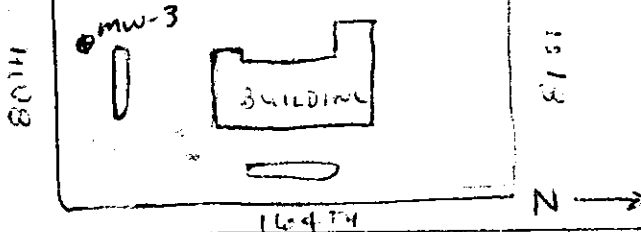
BORING LOG



PROJECT NO. WAC267.001 DATE 10/1/93
 CLIENT ARCO PRODUCT COMPANY
 LOCATION ARCO 6067
 LOGGED BY GER DRILLER RANDY
 WEATHER FOGGY

BORING NO. 1
 WELL NO. MW-3
 SHEET 1 OF 2

FIELD LOCATION OF BORING: WELL



DRILLING CONTRACTOR CASCADE DRILLING INC.
 DRILLING METHOD HOLLOW STEM AUGER
 DRILL RIG TYPE CMS 75
 HOLE DIA. 6" CASING DIA. 2"
 HAMMER WT. 140 lb DROP 30 IN.

DATE 10/11
 TIME 9:35
 WATER LEVEL 9.15

Well Construction	Time	Blows/6 in.	Headspace PID/OVA	Sample ID (* = lab sample)	Depth	Sample Interval	USCS Code	SAMPLE/CORE DESCRIPTION E.g., group name; % range each size (from coarse to fine); shape & angularity of each; grading for coarse/consistency for fine; color; structure; moisture; odor; comments.
A	0720				0			3" ASPHALT SAND & GRAVELS - FILL
A	0730 9/11/15	0.6			5	SP		PORELY GRADED SAND W/ GRAVELS - BROWN, SLTLY MOIST, LOOSE SAND (90-95%) HOMOGENEOUS, SUBROUNDED TO ROUNDED GRAINS MED GRAINED SAND W/ 5% COARSE SAND LITTLE SILTS. GRAVELS 5% SUBROUNDED TO ROUNDED GRAINS, MEDIUM GRAVEL NO ODOR
A	0738 15/16/26	0.6			10	SP		SAME AS ABOVE SLIGHTLY DARK IN COLOR
A	0745 50/L				15			NO RECURY - MORE GRAVELS. LOOKS LIKE POORELY GRADED GRAVELS W/ MED SANDS - BROWN
A					20			

BOATING LOG (Continued)



PROJECT NO. WAC276-001 DATE 10/11/93
CLIENT ARCO PRODUCTS COMPANY
LOCATION ARCO 6067

BOATING NO. 1

WELL NO. 3

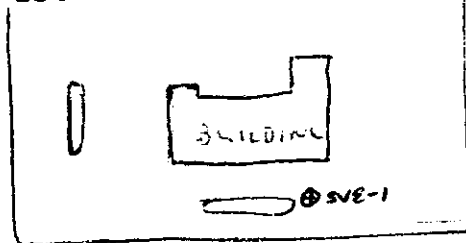
SHEET 2 OF 2

Well Construction	Time	Blows/6 in.	Headspace PID/OVA	Sample ID (* = lab sample)	Depth	Sample Interval	USCS Code	SAMPLE CORE DESCRIPTION
								E.g., group name; % range each size (from coarse to fine); shape & angularity of each; grading for coarse/consistency for fine; color; structure; moisture; odor; comments.
	0752	30/50-5	0.0		20	I	SP	POORLY GRADED SAND W/TRACE GRAVELS - BROWN, WET, DENSE SANDS (95%); HOMOGENEOUS SUBANGULAR SUB-ROUNDED GRAINS, MOSTLY MED-COARSE-GRAINED SAND, W/TRACE OF FINES! GRAVELS (5%); SUB-ROUNDED-ROUNDED FINE GRAVELS. NO HC. ODOOR
	0800	25/50/5	0.0		25	I	SP	SAME AS ABOVE W/ LENSE OF BROWN, WET FINE-MED. GRAINED SAND, ALMOST WELLGRADED LENSE IN SAND.
					30			BOHRING TERMINATED @ 25' WATER ENCOUNTERED @ 16.5' Engin Radcliff 10/11/93
					35			

PROJECT NO. WAC247.001 DATE 10/1/93
CLIENT ARCO PRODUCT COMPANY
LOCATION ARCO 6067
LOGGED BY GER DRILLER RANDY
WEATHER SUNNY 70'S

BORING NO. 4
WELL NO. SWE-
SHEET 1 OF 2

14103



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DRILLING CONTRACTOR CASCADE DRILLING INC.
 DRILLING METHOD cmE 75 Hollow Stem Auger
 DRILL RIG TYPE cmE 75
 HOLE DIA. 6 10" CASING DIA. 4"
 HAMMER WT. 140 lb DROP 30 IN.

DATE	10/11
TIME	1400
WATER LEVEL	17.21

Well Construction	Time	Blows/6 in.	Headspace PID/OVA	Sample ID (* = lab sample)	Depth	Sample Interval	USCS Code	SAMPLE/CORE DESCRIPTION (Fig., group name; % range each size (from coarse to fine); shape & angularity of each; grading for coarse/consistency for fine; color; structure; moisture; odor; comments.
SAND BENTONITE	1230				0			5" ASPHALT SAND & GRAVEL
								BROWN SILTY SAND WELL GRADED.
								BIG ROCK
	1255 50-4				5			NO RECRY
			0.6			I 50		[NO RECRY] POORLY GRADED SAND W/ GRAVEL DK. BROWN - BLACK, MOIST, DENSE, SAND (90%) HOMOGENEOUS, SUB-ANGULAR ROUND-ROUND, FINE TO MED SAND W/ LITTLE SILTS & CLAY, GRAVEL SUB-ANGULAR FINE - MED. GRAVEL NO ODOR
	1305 32/50-3				10			SAME AS ABOVE W/ MORE GRAVEL
	1311 48/50-2 1.8				15			NO RECRY

BOHRING LOG (Continued)



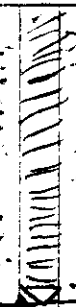
**GERAGHTY
& MILLER, INC.**
Environmental Services

PROJECT NO. WAC276.001 DATE 10/11/93
CLIENT ARCO PRODUCTS COMPANY
LOCATION ARCO 6067

ECRING NO. 4

WELL NO. 508 - 1

SHEET 2 OF 2

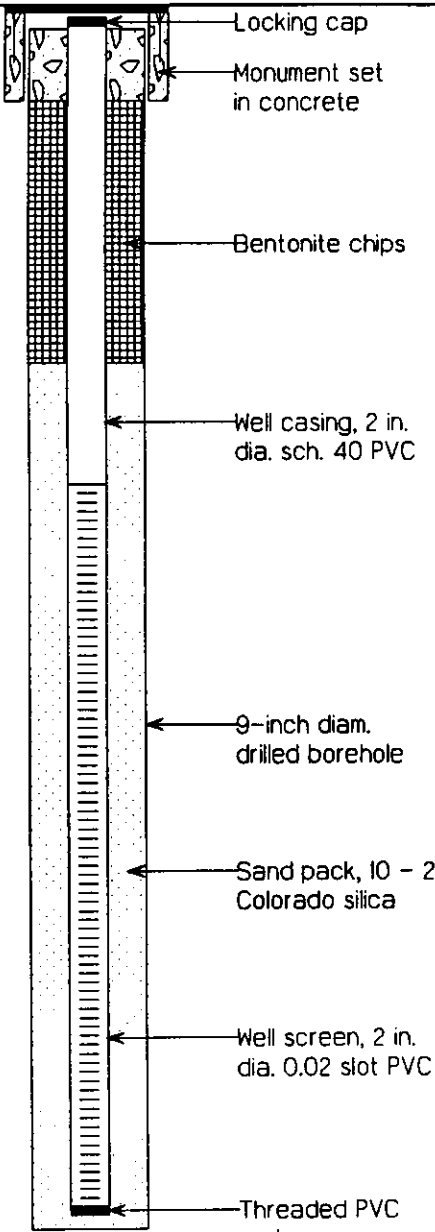
Well Construction	Time	Blows/6 in.	Headspace PID/OVA	Sample ID (* = lab sample)	Depth	Sample Interval	USCS Code	SAMPLE/CORE DESCRIPTION
								E.g., group name; % range each size (from coarse to fine), shape & angularity of each; grading for coarse/consistency for fine; color; structure; moisture; odor; comments.
	131	26/50-5	3.1	20	SP			FLUOR GRAPED SANDS w/ GRAVEL. BROWN, WET DENSE SAND (80%) NONHOMOGENEOUS, SUB-ROUNDED - ROUND, MOSTLY MED - COARSE GRAINS, w/ LITTLE FINES (MOSTLY SILTS) GRAVEL (5%) ANGULAR - SUBROUNDED, FINE - MED GRAVEL NO ODOR
	132	50-5	3.2	25				HEAVING SANDS. SAME AS ABOVE - NO GRAVELS, MORE COARSE SAND. BORING TERMINATED @ 25' WATER ENCOUNTERED @ Eugen Radchey 12/11/93
				35				

PROJECT NAME: ARCO STATION NO. 6067
PROJECT NO: WA0276.021

LOG OF MW-4
Page 1 of 1

CLIENT NAME: ARCO PRODUCTS COMPANY
PROJECT LOCATION: REDMOND, WASHINGTON
DATE STARTED: 8-APRIL-94
DATE COMPLETED: 8-APRIL-94
LOGGED BY: E. RADCLIFF
CHECKED BY: J. SADLER

SURFACE ELEV: 39.09feet
DATUM: CITY OF REDMOND
DRILL COMPANY: CASCADE DRILLING, INC.
DRILLER: RODNEY LABROSSE
DRILL METHOD: HOLLOW STEM AUGER
SAMPLING METHOD: SPLIT SPOON SAMPLER

WELL CONSTRUCTION	DEPTH (feet)	BLOWS PER SIX IN.	SAMPLES AND GRAPHIC LOG	MATERIALS DESCRIPTION
				ASPHALT (4-Inches) FILL - Sand, gravel, cobbles, organics. POORLY GRADED SAND (SP) - Brown, moist, medium-dense, medium-grained rounded to subrounded sand (85 %), fine to coarse-grained sand (10 %), trace fines, (PID = 0.0 ppm, no hydrocarbon odor). As above, fewer coarse-grained sands, (PID = 0.0 ppm). As above, very dense, no coarse-grained sands. WELL GRADED SAND (SW) - Brown, wet, very dense, fine- to coarse-grained rounded to subrounded sand (90 %), few fines, (PID = 0 ppm). As above, few medium gravels, no odor. Borehole terminated at 25.5 feet bls. Groundwater encountered at 15 feet bls during drilling.

Blow counts determined using a 2.5-inch diameter split-spoon sampler driven with a 140 pound hammer, falling 30 inches. Blow counts are recorded for determining relative density only and should not be construed as appropriate for structural design purposes.

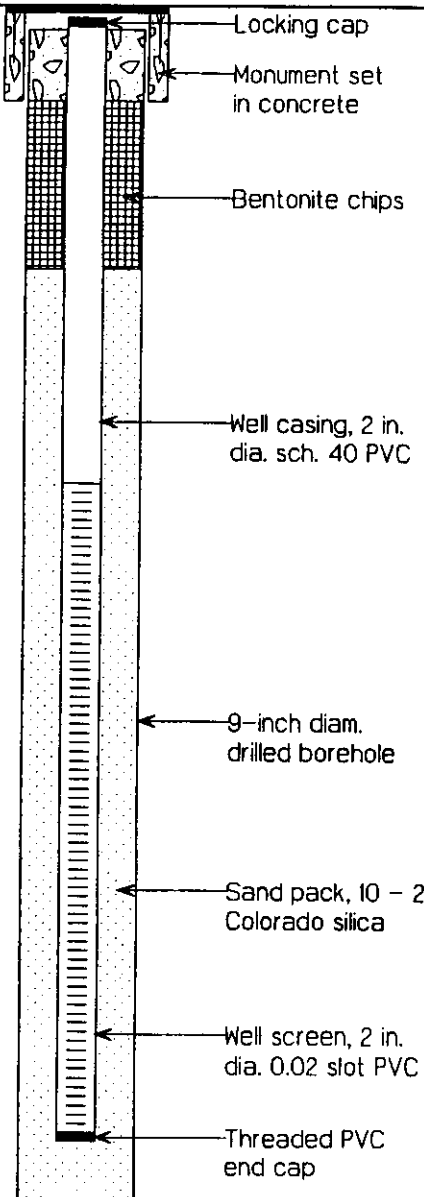


PROJECT NAME: ARCO STATION NO. 6067
PROJECT NO: WA0276.021

LOG OF MW-5
Page 1 of 1

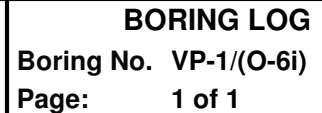
CLIENT NAME: ARCO PRODUCTS COMPANY
PROJECT LOCATION: REDMOND, WASHINGTON
DATE STARTED: 8-APRIL-94
DATE COMPLETED: 8-APRIL-94
LOGGED BY: E. RADCLIFF
CHECKED BY: J. SADLER

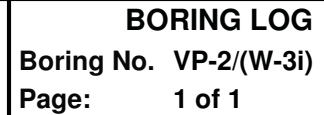
SURFACE ELEV: 38.48feet
DATUM: CITY OF REDMOND
DRILL COMPANY: CASCADE DRILLING, INC.
DRILLER: RODNEY LABROSSE
DRILL METHOD: HOLLOW STEM AUGER
SAMPLING METHOD: SPLIT SPOON SAMPLER

WELL CONSTRUCTION	DEPTH (feet)	BLOWS PER SIX IN.	SAMPLES AND GRAPHIC LOG	MATERIALS DESCRIPTION
				ASPHALT (4-Inches) FILL - Sand, organics, brown. POORLY GRADED SAND (SP) - Brown, moist, medium-dense, subrounded medium-grained sand (90 %), few fine-grained sands and silts, trace coarse-grained sand, (PID = 0.0 ppm, no hydrocarbon odor). POORLY GRADED SAND (SP) - Brown, moist, very dense, subrounded fine- to medium-grained sand (85 %), few fines, (PID = 0.0 ppm, no hydrocarbon odor). WELL GRADED SAND (SW) - Brown, wet, very dense, fine- to coarse-grained subrounded sand (90 %), trace silts and medium gravels, (PID = 0 ppm). POORLY GRADED SAND (SP) - Brown, wet, coarse-grained subrounded sand (80-85%), little silts, trace gravels, (PID = 0.0 ppm, no hydrocarbon odor). As above, dense, medium-grained sands (90%), few silts. Borehole terminated at 25 feet bls. Groundwater encountered at 13 feet bls during drilling.

Blow counts determined using a 2.5-inch diameter split-spoon sampler driven with a 140 pound hammer, falling 30 inches. Blow counts are recorded for determining relative density only and should not be construed as appropriate for structural design purposes.







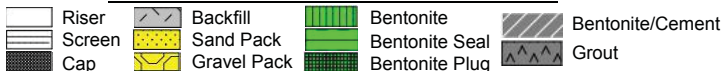
Borehole Cl. Date:	01/23/2014	Boring Depth (ft):	6.5	Well Depth (ft):	2.5
Borehole Cl. Company:	Cascade Drilling	Boring Diameter (in):	3.5	Well Diam. (in):	0.125
Borehole Cl. Method:	Vac Truck	Sampling Method(s):	Grab	Screen Slot S. (in):	0.004
Drilling Start Date:	01/23/2014	Logged By:	Larry Brown	Riser Material:	Nylon Tubing
Drilling End Date:	01/24/2014	Boring Location (X):		Screen Material:	Stainless Steel Screen
Drilling Company:	Cascade Drilling	Boring Location (Y):		Seal Material(s):	Bentonite Granules
Drilling Method:	Vac Truck Only	Boring Elevation (Z):		Filter Pack:	2/12 Sand

[illegible]

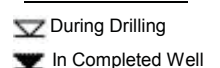
SAMPLE TYPES

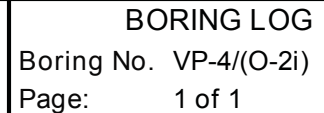
GR - Grab SH - Shelby Tube
EN - Encor Sampler CO - Core Barrel
SS - Split Spoon DP - Direct Push

WELL/BORING CONSTRUCTION MATERIALS



WATER LEVELS





Borehole Cl. Date:	01/23/2014	Boring Depth (ft):	6.5	Well Depth (ft):	6.5
Borehole Cl. Company:	Cascade Drilling	Boring Diameter (in):	3.5	Well Diam. (in):	0.125
Borehole Cl. Method:	Vac Truck	Sampling Method(s):	Grab	Screen Slot S. (in):	0.004
Drilling Start Date:	01/23/2014	Logged By:	Larry Brown	Riser Material:	Nylon Tubing
Drilling End Date:	01/24/2014	Boring Location (X):		Screen Material:	Stainless Steel Screen
Drilling Company:	Cascade Drilling	Boring Location (Y):		Seal Material(s):	Bentonite Granules
Drilling Method:	Vac Truck Only	Boring Elevation (Z):		Filter Pack:	2/12 Sand

[illegible]

SAMPLE TYPES

GR - Grab	SH - Shelby Tube
EN - Encor Sampler	CO - Core Barrel
SS - Split Spoon	DP - Direct Push

WELL/BORING CONSTRUCTION MATERIALS

	Riser		Backfill		Bentonite		Bentonite/Cement
	Screen		Sand Pack		Bentonite Seal		Grout
	Cap		Gravel Pack		Bentonite Plug		

WATER LEVELS

 During Drilling
 In Completed Well

