Prowell Environmental, Inc.

Phone: 503/452-0972

2216 SW Sunset Boulevard, Portland, OR 97239

Fax: 503/452-1427

E-mail: sprowell@ix.netcom.com

January 21, 2013

Mr. Al Zell
Imperial Manufacturing
2271 N.E. 194th Avenue
Portland, Oregon 97230

Re: Decommissioning Records for Well DEQ-5i
Located at 2271 NE 194th Avenue, Portland, Oregon, 97230

Dear Mr. Zell,

This letter documents the recent decommissioning of groundwater monitoring well DEQ-5i at Imperial Manufacturing's site address noted above. (See Figure 1 for former well location.) Well DEQ-5i was decommissioned on November 29, 2012 by Major Drilling Environmental, LLC (an Oregon licensed driller), on behalf of Cascade Corporation, Portland, Oregon. The decommissioning was performed as part of Cascade's shallow groundwater cleanup program being implemented under Consent Order with the Oregon Department of Environmental Quality (DEQ).

The well was installed in 1993 and was used to monitor upgradient background water level and water quality conditions in the shallow aquifer identified as Troutdale Gravel Aquifer (TGA). The well was located outside Cascade's groundwater cleanup area and its sampling data consistently confirmed compliant, non-detectable levels of volatile organic compounds regulated under Cascade's TGA Consent Order with DEQ. Based on compliant water quality and absence of need for further monitoring, DEQ approved the well for decommissioning in its letter dated October 6, 2009 (copy attached).

DEQ-5i was decommissioned using over-drill methods in accordance with Oregon Administrative Rules, Chapter 690, Division 240. Upon completion, a well abandonment report was filed with the Oregon Water Resource Department (OWRD) on December 18, 2012 (copy attached). For your property ownership records, the OWRD well abandonment report identification number is "Mult 111777".

Please note that two actively used Troutdale Sandstone Aquifer (TSA) monitoring wells [DEQ-5(ds) and DEQ-5(dg)] remain in place at the Imperial Manufacturing site and will be needed for ongoing TSA groundwater monitoring for the foreseeable future. Don't hesitate to let us know if you have any questions about these two remaining wells.

We greatly appreciate your assistance through this process.

Sincerely,

Sarah Prowell, R.G.
Prowell Environmental, Inc.

cc: Mr. John Cushing, Cascade Corporation
Mr. Robert Williams, Oregon Department of Environmental Quality

Attachments:

Figure 1. DEQ-5i Well Location
DEQ-5i Well Abandonment Report (2012)
DEQ-5i Well Installation Log (1993)
DEQ-5i Groundwater Confirmation Sampling Laboratory Report (2010)
DEQ's Decommissioning Approval (10/6/09) and Preceding Proposal (10/5/09)

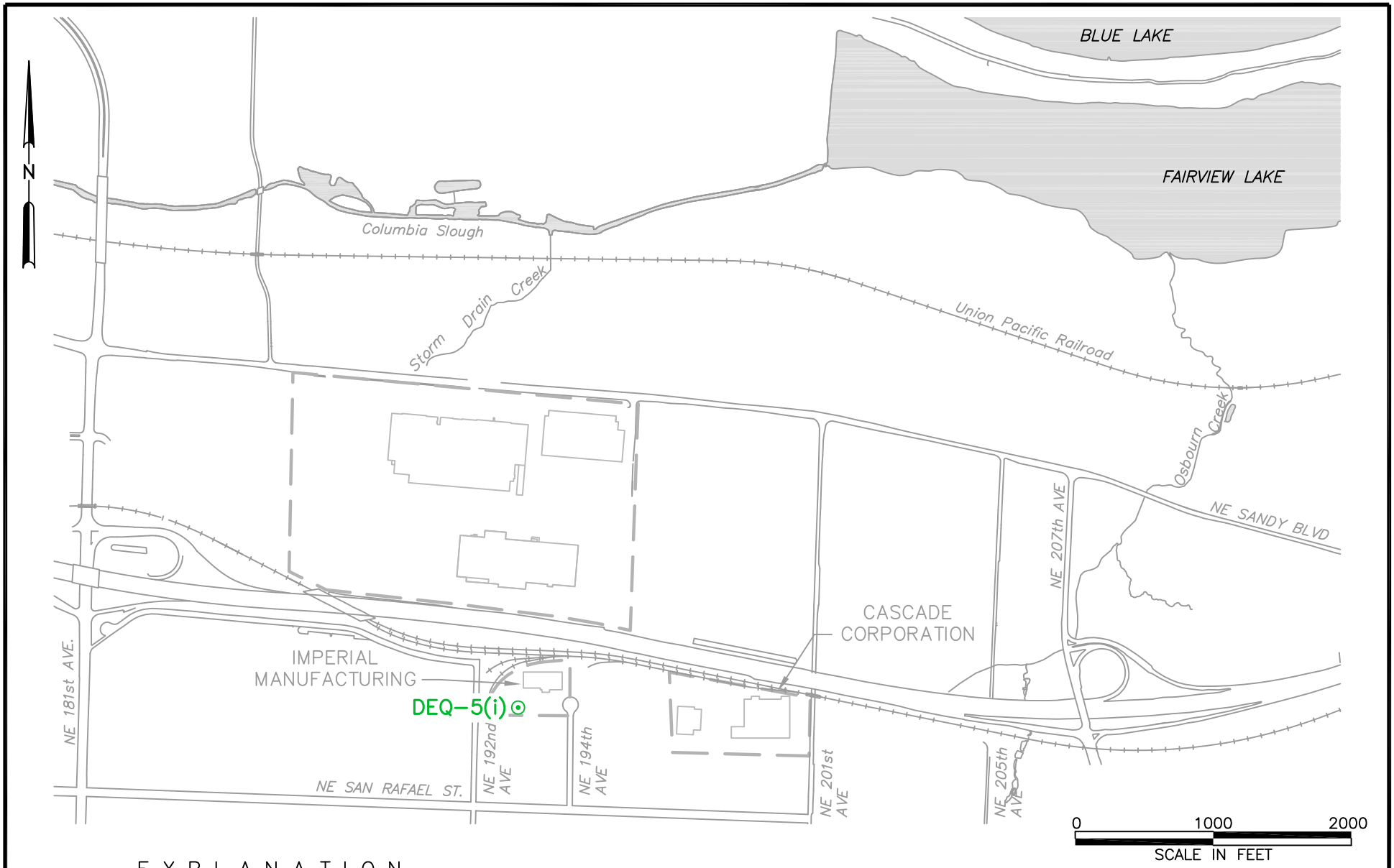


Figure 1
Well DEQ5i on Imperial Manufacturing Property
Decommissioned November 2012
Cascade Corporation

Y:\Prowell Environmental\Cascade\TGA Well Decommissioning\2012 Rpt\ImperialFig1.dwg 1/16/13

DEQ-5i Well Abandonment Report (2012)

MULT 111777

STATE OF OREGON
MONITORING WELL REPORT
(as required by ORS 537.765 & OAR 690-240-0395)

12/18/2012

WELL I.D. LABEL# L

START CARD # 1018604

(1) LAND OWNER

Owner Well I.D. DEQ-5I

First Name _____ Last Name _____

Company IMPERIAL MANUFACTURING

Address 2271 NE 194TH AVE

City PORTLAN State OR Zip 97230

(2) TYPE OF WORK

☐ New ☐ Deepening ☐ Conversion ☐ Alteration (repair/recondition) ☒ Abandonment

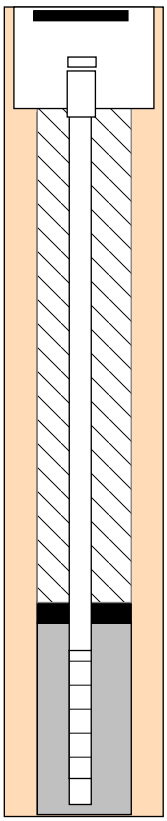
(3) DRILL METHOD

☐ Rotary Air ☐ Rotary Mud ☐ Cable ☐ Hollow Stem Auger ☐ Cable Mud ☐ Reverse Rotary ☒ Other SONIC

(4) CONSTRUCTION

Piezometer Well ☐

Depth of Completed Well 104.50 ft. Special Standard ☐



MONUMENT/VAULT Below Ground
From _____ To _____

BORE HOLE
Diameter 6 From 0 To 104.5

CASING
Dia. _____ From ☐ _____ To _____
Gauge _____ Wld Thrd
Material ◯Steel ◯Plastic ☐ ☐

LINER
Dia. _____ From ☐ _____ To _____
Gauge _____ Wld Thrd
Material ◯Steel ◯Plastic ☐ ☐

SEAL
From 2 To 104.5
Material Bentonite Grout
Amount 300 Pounds Grout weight _____

SCREEN
Casing/Liner _____ Material _____
Diameter _____ From _____ To _____
Slot Size _____

FILTER
From _____ To _____ Material _____ Size of pack _____

(5) WELL TESTS

◯ Pump ◯ Bailer ◯ Air ◯ Flowing Artesian

Yield gal/min	Drawdown	Drill stem/Pump depth	Duration (hr)

Temperature 56 °F Lab analysis ☐ Yes By _____

Supervising Geologist/Engineer _____

Water quality concerns? ☐ Yes (describe below)

From	To	Description	Amount	Units

(6) LOCATION OF WELL (legal description)

County MULTNOMAH Twp 1.00 N N/S Range 3.00 E E/W WM
Sec 29 NW 1/4 of the SE 1/4 Tax Lot 74
Tax Map Number _____ Lot _____
Lat ° ' " or _____ DMS or DD
Long ° ' " or _____ DMS or DD

◉ Street address of well ◯ Nearest address

2271 NE 194TH AVE PORTLAND, OR 97230

(7) STATIC WATER LEVEL

	Date	SWL(psi)	+	SWL(ft)
Existing Well / Predeepening			☐	
Completed Well			☐	

Flowing Artesian? ☐ Dry Hole? ☐

WATER BEARING ZONES Depth water was first found _____

SWL Date	From	To	Est Flow	SWL(psi)	+	SWL(ft)
					☐	
					☐	
					☐	
					☐	
					☐	

(8) WELL LOG

Ground Elevation _____

Material	From	To
CONCRETE	0	2
BENTONITE GROUT	2	104.5

Date Started 11/28/2012 Completed 11/29/2012

(unbonded) Monitor Well Constructor Certification

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

License Number _____ Date _____

Password : (if filing electronically) _____

Signed _____

(bonded) Monitor Well Constructor Certification

I accept responsibility for the construction, deepening, 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 monitoring well construction standards. This report is true to the best of my knowledge and belief.

License Number 10432 Date 12/18/2012

Password : (if filing electronically) _____

Signed DONALD J LARSON (E-filed)

Contact Info (optional) _____

ORIGINAL - WATER RESOURCES DEPARTMENT

THIS REPORT MUST BE SUBMITTED TO THE WATER RESOURCES DEPARTMENT WITHIN 30 DAYS OF COMPLETION OF WORK

Form Version:

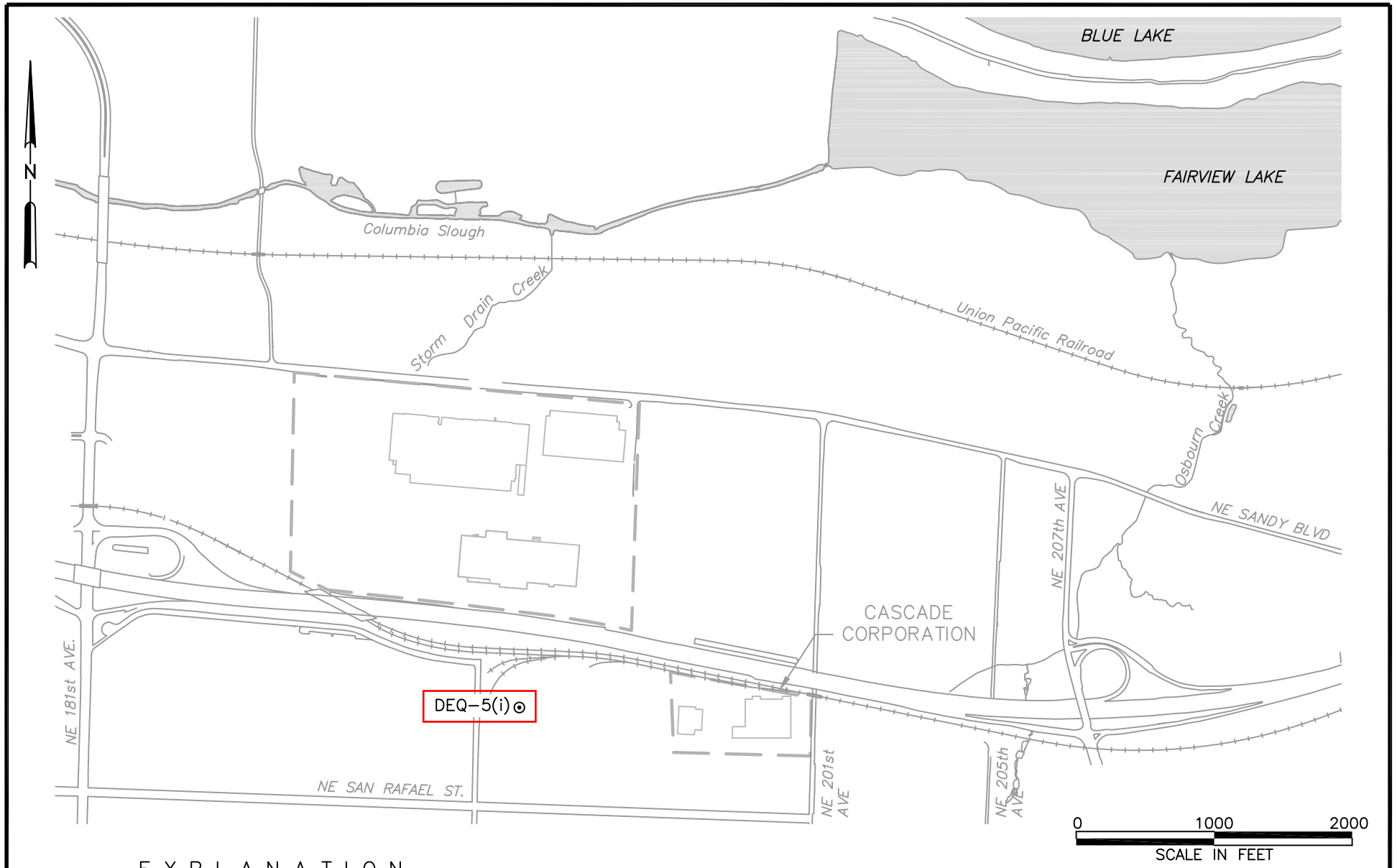


Figure 2
Regional Well Decommissioning
Cascade Corporation – TGA Remedy

Y:\Prowell Environmental\Cascade\TGA Well Decommissioning\2012\Fig2.dwg 4/26/12

DEQ-5i Well Installation Log (1993)

Well Installation Report

EXPLORATORY BORING LOG

Parametrix, Inc.

Project Name: DEQ–EMC WELL INSTALLATION
Boring Number: DEQ-5i
Project Number: 55–1846–23
Sheet: 1 OF 3
Location: IMPERIAL MANUFACTURING
Total Depth: 104.5 FEET
PMX Representative: RICK MALIN
Date Started/Completed: MARCH 31, '93/APRIL 2, '93
Drilled By: STACO WELL SERVICES
Ground Level Elevation: 156.0 FEET
Drill Method: AIR ROTARY
Measuring Point Elevation: 156.92 FEET

SAMPLE NUMBER	SAMPLE TYPE	BLOW COUNT	DEPTH IN FEET	WELL CONSTRUCTION DETAILS	LITHOLOGIC DESCRITION	LITHO-LOGIC COLUMN
				FLUSH MOUNT LOCKABLE CASING SECURED IN CONCRETE 0–1.0 FEET	0–6 FEET: Brown SILTY GRAVELS (GM). Fine to very fine sands present in the silt matrix. Silts tend to be slightly plastic. Gravels are fine to coarse, subrounded to rounded.	
DEQ–5i–5	C		5	HYDRATED GRANULAR BENTONITE 1.0–6 FEET	● 5 feet: Decrease in brown silts, increase in sand. Predominantly basaltic gravels with some quartzites. Fine to coarse gravels. Loose. Fairly well–graded.	
DEQ–5i–10	C		10		6–104 FEET: SANDY GRAVELS (GP). Fine gravels to large cobbles/boulders of predominantly basalt with smaller percentage of quartzites. Rounded to well–rounded. Fine to medium, tannish brown micaceous sand matrix. Small percentage of silt. Appears loose to slightly indurated. Poor to fairly well–graded.	
DEQ–5i–15	C		15	2–INCH SCHEDULE 80 PVC CASING COUPLED WITH FLUSH MOUNT "O" RINGS 0–83 FEET		
DEQ–5i–20	C		20		● 20 feet: Decrease in average gravel size. Drilling loose.	
DEQ–5i–25	C		25	6–INCH BOREHOLE 0–104.5 FEET	● 24 feet: Predominantly fine gravels. Trending toward fairly well–graded. ● 25 feet: signs of cementation.	
DEQ–5i–30	C		30	WATER LEVEL 31.7 FEET BELOW GROUND SURFACE 4/1/93	● 30 feet: Greenish brown to black micaceous very fine to medium sand matrix.	
DEQ–5i–35	C		35		● 33 feet: Fine to medium gravels. Damp. ● 35 feet: Noncemented gravels of predominantly basalt with multi–colored quartzites. Some granitic derived gravels.	
DEQ–5i–40	C		40	HIGH SOLIDS BENTONITE GROUT 6–78.7 FEET	● 38 feet: Producing small quantities of water. ● 40 feet: Increase in coarse gravels. Cementation on some gravels. Rounded to well–rounded. Greenish brown to black micaceous, fine to medium binding sand.	
DEQ–5i–45	C		45	STAINLESS STEEL CENTRALIZER ● 45 FEET	● 45 feet: decrease in signs of cementation.	
DEQ–5i–50	C		50			

EMCON 0043696
CONFIDENTIAL

EXPLORATORY BORING LOG

Parametrix, Inc.

Project Name: DEQ–EMC WELL INSTALLATION
Boring Number: DEQ-5i
Project Number: 55–1846–23
Sheet: 2 OF 3
Location: IMPERIAL MANUFACTURING
Total Depth: 104.5 FEET
PMX Representative: RICK MAUN
Date Started/Completed: MARCH 31, '93/APRIL 2, '93
Drilled By: STACO WELL SERVICES
Ground Level Elevation: 156.0 FEET
Drill Method: AIR ROTARY
Measuring Point Elevation: 156.92 FEET

SAMPLE NUMBER	SAMPLE TYPE	BLOW COUNT	DEPTH IN FEET	WELL CONSTRUCTION DETAILS	LITHOLOGIC DESCRIPTION
DEQ–5I–55	C		55		● 50 feet: Coarse gravels with an increase in nonbasaltic gravels. Increasing signs of cementation. ● 53 feet: Decrease in cementation. Increase in sands, predominantly medium greenish tan micaceous sands. ● 55 feet: Increasing diversity in gravels of granitic origin. Possible sand interbeds.
DEQ–5I–60	C		60		● 60 feet: Increase in signs of cementation. Greenish brown to tan, fine to medium binding sands.
DEQ–5I–65	C		65		● 65 feet: Cemented gravels.
DEQ–5I–70	C		70	HIGH SOLIDS BENTONITE GROUT 6–78.7 FEET	
DEQ–5I–75	C		75		● 73 feet: Indications of basaltic cobbles.
DEQ–5I–80	C		80	HYDRATED BENTONITE 3/8" PELLETS 78.7–80.8 FEET STAINLESS STEEL CENTRALIZER ● 82.5 FEET	● 80 feet: Fine to coarse gravels with indications of basaltic cobbles. Gravels rounded to well–rounded with signs of cementation. Fine to slightly coarse binding sands.
DEQ–5I–85	C		85		
DEQ–5I–90	C		90		● 89 feet: Basalt cobbles and coarse gravels. ● 91 feet: Decrease in gravel size and cementation signs. Larger gravels tend to be of basaltic origin with weathering rinds.
DEQ–5I–95	C		95	2–INCH SCHEDULE 80 0.020–INCH SLOTTED PVC WELL SCREEN 83–103 FEET	● 94 feet: Little or no sign of cementation. Appears loose. Decrease in observed sand percentage.
DEQ–5I–100	C		100	8–12 MESH SILICA SAND 80.8–104 FEET	● 97 feet: Coarse basaltic gravels.

LITHOLOGIC COLUMN

EXPLORATORY BORING LOG

Project Name: DEQ–EMC WELL INSTALLATION
Boring Number: **DEQ-5i**
Project Number: 55–1846–23
Sheet: 3 OF 3
Location: IMPERIAL MANUFACTURING
Total Depth: 104.5 FEET
PMX Representative: RICK MALIN
Date Started/Completed: MARCH 31, '93/APRIL 2, '93
Drilled By: STACO WELL SERVICES
Ground Level Elevation: 156.0 FEET
Drill Method: AIR ROTARY
Measuring Point Elevation: 156.92 FEET

SAMPLE NUMBER	SAMPLE TYPE	BLOW COUNT	DEPTH IN FEET	WELL CONSTRUCTION DETAILS	LITHOLOGIC DESCRITION	LITHO–LOGIC COLUMN
DEQ–5i–104.5	C		105	STAINLESS STEEL CENTRALIZER @ 103 FEET SUMP 103–103.5 FEET BENTONITE 3/8" PELLETS 104–104.5 FEET	104–104.5 FEET: Tannish brown SILTY SAND (SM). Slightly lithified. Apparent increase in fines with depth.	

NOTES:
1. C = CUTTING SAMPLE
2. WELL WAS DRILLED USING TUBEX UNDER REAMING SYSTEM.
3. MEASURING POINT ELEVATION IS THE TOP OF THE DEDICATED SAMPLING PUMP WATER LEVEL ACCESS HOLE.

EMCON 0043698
CONFIDENTIAL

STATE OF OREGON
MONITORING WELL REPORT
(as required by ORS 537.765 & OAR 690-240-095)

RECEIVED APR 14 1993 WATER RESOURCES DEPT. SALEM, OREGON

RECEIVED MAY - 4 1993 WATER RESOURCES DEPT.

MW/IT 3438

1N/3E/29dd

Start Card # 41654

OWRD Installation Report

(1) OWNER/PROJECT:

WELL NO. DEQ 5(i)

Name: Oregon DEQ

Address: 811 SW sixth Ave

City: Portland State: OR Zip: 97204

(2) TYPE OF WORK:

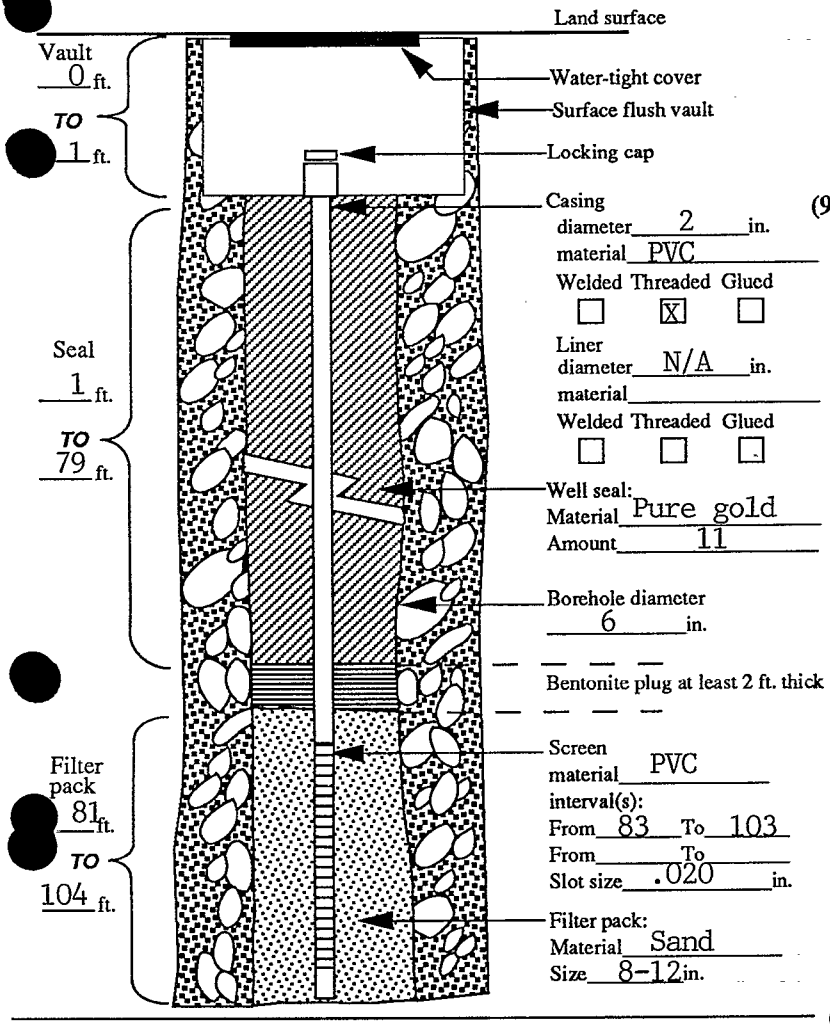
[X] New construction [ ] Repair [ ] Recondition
[ ] Conversion [ ] Deepening [ ] Abandonment

(3) DRILLING METHOD

[X] Rotary Air [ ] Rotary Mud [ ] Cable
[ ] Hollow Stem Auger [ ] Other

(4) BORE HOLE CONSTRUCTION

Special Standards: Yes [ ] No [X] Depth of completed well 104 ft.



(5) WELL TEST:

[ ] Pump [ ] Bailer [X] Air [ ] Flowing Artesian

Permeability: Yield 5 GPM

Conductivity 241 PH 7.22

Temperature of water 57 °F/C Depth artesian flow found N/A ft.

Was water analysis done? [ ] Yes [X] No

By whom?

Depth of strata to be analyzed. From 83 ft. to 103 ft.

Remarks:

Name of supervising Geologist/Engineer Rick Malin

(6) LOCATION OF WELL By legal description

Well Location: County Multnomah

Township 1N (N or S) Range 3E (E or W) Section 29

1. NW 1/4 of SE 1/4 of above section.
2. Street address of well location Lot #1 San Rafeal Industrial District
3. Tax lot number of well location #1
4. ATTACH MAP WITH LOCATION IDENTIFIED.

(7) STATIC WATER LEVEL:

31 Ft. below land surface. Date 4-2-93

Artesian Pressure ___ lb/sq. in. Date ___

(8) WATER BEARING ZONES:

Depth at which water was first found 35

From	To	Est. Flow Rate	SWL
31.7	103.5	5 GPM	31.7

(9) WELL LOG:

Ground elevation

Material	From	To	SWL
Brown silty gravels	0	8	
Sandy gravels	8	103	31.7
Tanish silty sands	103	104	

Date started 3-31-93 Completed 4-2-92

(unbonded) Monitor Well Constructor Certification:

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

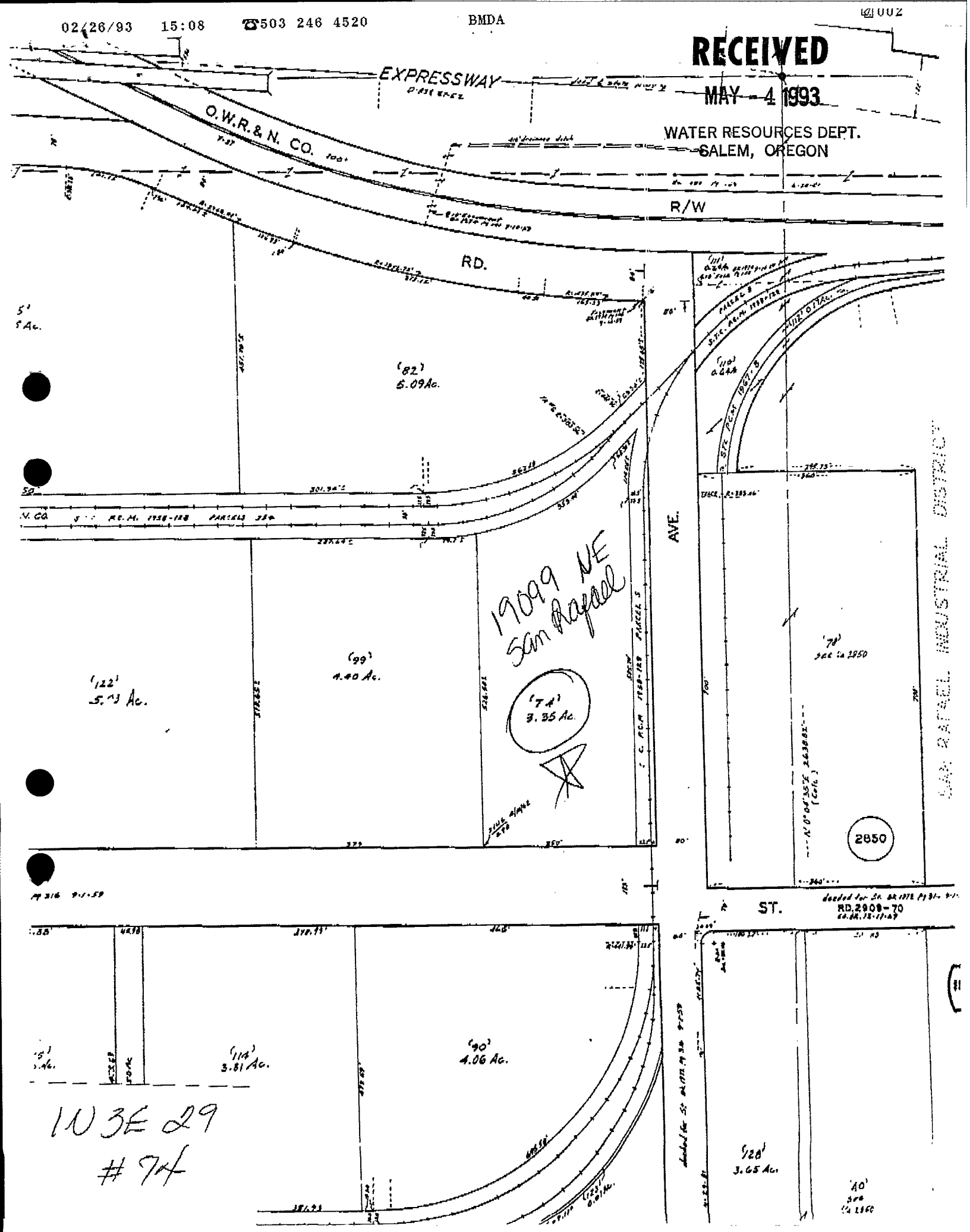
Signed [signature] MWC Number 10308 Date 4/9/93

(bonded) Monitor 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 well construction standards. This report is true to the best of my knowledge and belief.

Signed [signature] MWC Number 10097 Date 4/9/93

RECEIVED
MAY - 4 1993
WATER RESOURCES DEPT.
SALEM, OREGON



1N3E 29
#74

DEQ-5i Groundwater Confirmation Sampling Laboratory Report (2010)

Pre-decommissioning
VOC Results (sample date 1/7/10)

Client: Prowell Environmental, Incorporated
Project: CascadeTGA
Sample Matrix: Water

Service Request: K1000189
Date Collected: 01/07/2010
Date Received: 01/08/2010

Volatile Organic Compounds

Sample Name: DEQ-5i-010710
Lab Code: K1000189-007

Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: ug/L
Basis: NA

Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Dichlorodifluoromethane	ND	U	0.50	1	01/12/10	01/12/10	KWG1000353	
Chloromethane	ND	U	0.50	1	01/12/10	01/12/10	KWG1000353	
Vinyl Chloride	ND	U	0.50	1	01/12/10	01/12/10	KWG1000353	
Bromomethane	ND	U	0.50	1	01/12/10	01/12/10	KWG1000353	
Chloroethane	ND	U	0.50	1	01/12/10	01/12/10	KWG1000353	
Trichlorofluoromethane	ND	U	0.50	1	01/12/10	01/12/10	KWG1000353	
Trichlorotrifluoroethane	ND	U	0.50	1	01/12/10	01/12/10	KWG1000353	
1,1-Dichloroethene	ND	U	0.50	1	01/12/10	01/12/10	KWG1000353	
Methylene Chloride	ND	U	2.0	1	01/12/10	01/12/10	KWG1000353	
trans-1,2-Dichloroethene	ND	U	0.50	1	01/12/10	01/12/10	KWG1000353	
1,1-Dichloroethane	ND	U	0.50	1	01/12/10	01/12/10	KWG1000353	
cis-1,2-Dichloroethene	ND	U	0.50	1	01/12/10	01/12/10	KWG1000353	
Chloroform	**0.74**		0.50	1	01/12/10	01/12/10	KWG1000353	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	1	01/12/10	01/12/10	KWG1000353	
Carbon Tetrachloride	ND	U	0.50	1	01/12/10	01/12/10	KWG1000353	
1,2-Dichloroethane (EDC)	ND	U	0.50	1	01/12/10	01/12/10	KWG1000353	
Trichloroethene (TCE)	ND	U	0.50	1	01/12/10	01/12/10	KWG1000353	
1,2-Dichloropropane	ND	U	0.50	1	01/12/10	01/12/10	KWG1000353	
Bromodichloromethane	ND	U	0.50	1	01/12/10	01/12/10	KWG1000353	
2-Chloroethyl Vinyl Ether	ND	U	5.0	1	01/12/10	01/12/10	KWG1000353	
cis-1,3-Dichloropropene	ND	U	0.50	1	01/12/10	01/12/10	KWG1000353	
trans-1,3-Dichloropropene	ND	U	0.50	1	01/12/10	01/12/10	KWG1000353	
1,1,2-Trichloroethane	ND	U	0.50	1	01/12/10	01/12/10	KWG1000353	
Tetrachloroethene (PCE)	ND	U	0.50	1	01/12/10	01/12/10	KWG1000353	
Dibromochloromethane	ND	U	0.50	1	01/12/10	01/12/10	KWG1000353	
Chlorobenzene	ND	U	0.50	1	01/12/10	01/12/10	KWG1000353	
Bromoform	ND	U	0.50	1	01/12/10	01/12/10	KWG1000353	
1,1,2,2-Tetrachloroethane	ND	U	0.50	1	01/12/10	01/12/10	KWG1000353	
1,3-Dichlorobenzene	ND	U	0.50	1	01/12/10	01/12/10	KWG1000353	
1,4-Dichlorobenzene	ND	U	0.50	1	01/12/10	01/12/10	KWG1000353	
1,2-Dichlorobenzene	ND	U	0.50	1	01/12/10	01/12/10	KWG1000353	

Comments:

Client: Prowell Environmental, Incorporated
Project: CascadeTGA
Sample Matrix: Water

Service Request: K1000189
Date Collected: 01/07/2010
Date Received: 01/08/2010

Volatile Organic Compounds

Sample Name: DEQ-5i-010710
Lab Code: K1000189-007

Units: ug/L
Basis: NA

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	98	73-122	01/12/10	Acceptable
Toluene-d8	112	78-129	01/12/10	Acceptable
4-Bromofluorobenzene	95	68-117	01/12/10	Acceptable

Comments:

DEQ's Decommissioning Approval (10/6/09) and Preceding Proposal (10/5/09)

Oregon
Theodore Kulongoski, Governor

Department of Environmental Quality
Northwest Region-Eastside Office
1550 NW Eastman Parkway, Suite 290
Gresham, OR 97030-3832
(503) 667-8414
FAX (503)674-5148

October 6, 2009

received
10/8/09

Mr. John Cushing
Cascade Corporation
2201 NE 201st Avenue
Fairview OR 97024

Cascade Corporation's TGA Remedy
RE: Approval for Well Decommissioning, Cascade Corporation Site, DEQ File ECSI #635

Dear Mr. Cushing:

The Department of Environmental Quality (DEQ) has reviewed the email submittal of wells proposed for decommissioning presented submitted by your consultant, Prowell Environmental, on October 5, 2009. The email included a list of 50 wells that have either previously been approved for decommissioning by DEQ or clearly meet the well decommissioning criteria that have been developed for this site. The email also included maps showing locations of the wells and tables with well construction details.

see email attached

DEQ agrees with the documentation for decommissioning the 50 wells and your identified next step to contact the Oregon Water Resource Department to determine other requirements they may have for well decommissioning. I understand that once you have sufficient information you will prepare bid specifications and proceed to select a contractor for the decommissioning. Based on discussion today during our project meeting, you anticipate beginning the decommissioning work before the end of 2009.

Once the decommissioning work is completed, please provide DEQ with a summary of the work for the site file. If you need any further information you can contact me at 503-667-8414 x55008 or by email at kent.mavis.d@deq.state.or.us .

Sincerely,

Mavis D. Kent

Mavis D. Kent
DEQ Project Manager

pc: Sarah Prowell; Bruce Gilles, DEQ-NWR

From: Sarah Prowell
To: Mavis Kent (KENT.Mavis.D@deq.state.or.us);
cc: John Cushing (jcushing@cascorp.com);
Subject: TGA Master Well Decommissioning Information
Date: Monday, October 05, 2009 4:07:00 PM
Attachments: TGA Master Well Decom Figures.pdf
TGA Master Well Decom Tables.pdf

Mavis,

FYI, please find attached figures and tables regarding the 50 Cascade Corp. TGA remedy wells that have now accumulated for decommissioning. I have a call in to Chris Byrd, Oregon Water Resource Department, to notify him of the plans to decommission and to seek his input. Please let me know if you have any questions regarding the attached information.

Thanks. Sarah

Sarah Prowell, R.G.
Prowell Environmental, Inc.
2216 SW Sunset Blvd.
Portland, Oregon 97239
Phone: 503/452-0972
Fax: 503/452-1427
sprowell@ix.netcom.com

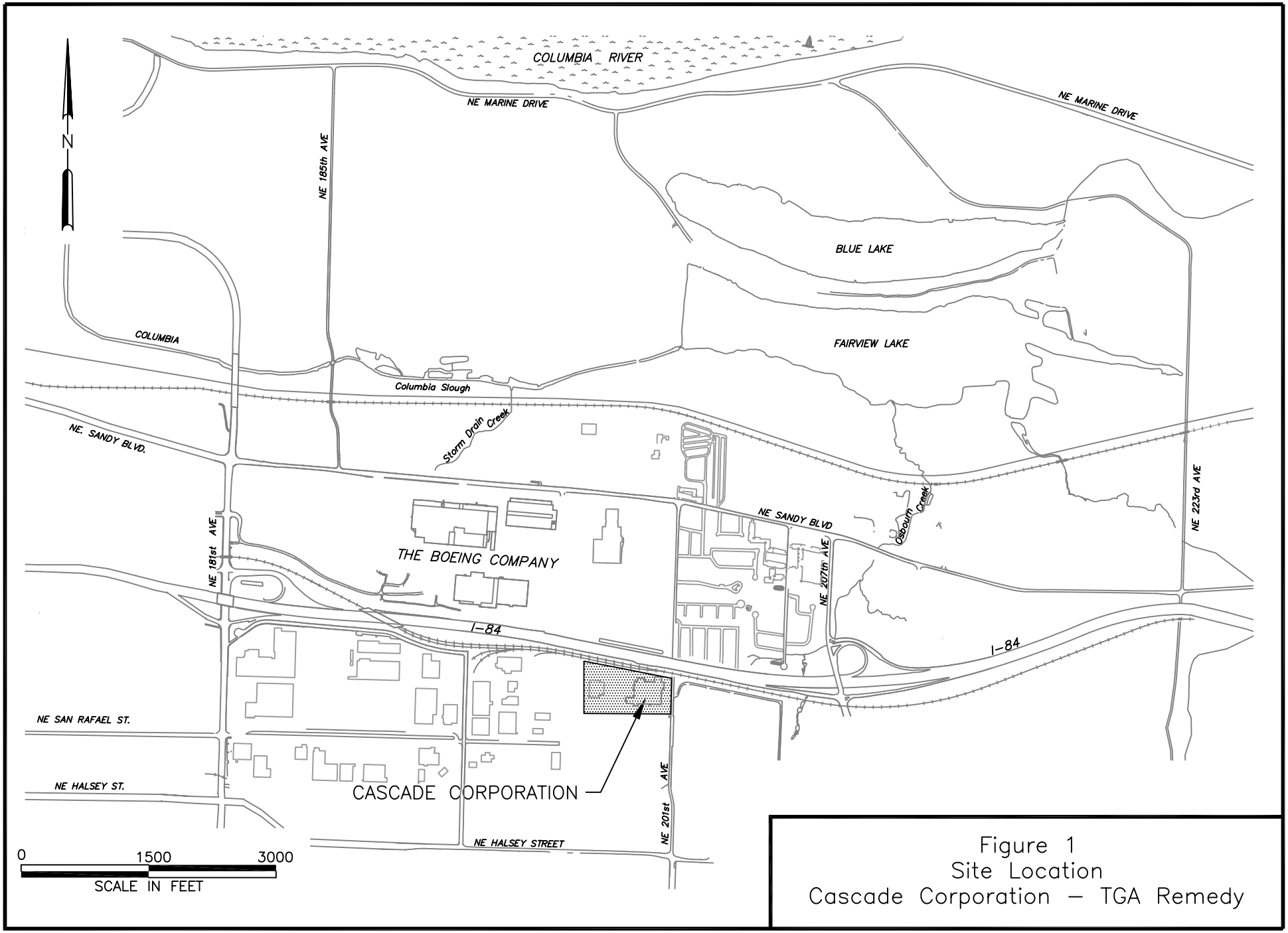


Figure 1
Site Location
Cascade Corporation – TGA Remedy

Y:\Prowell Environmental\Cascade\TGA Well Decommissioning\2009 Work Plan\Fig1.dwg 9/29/09

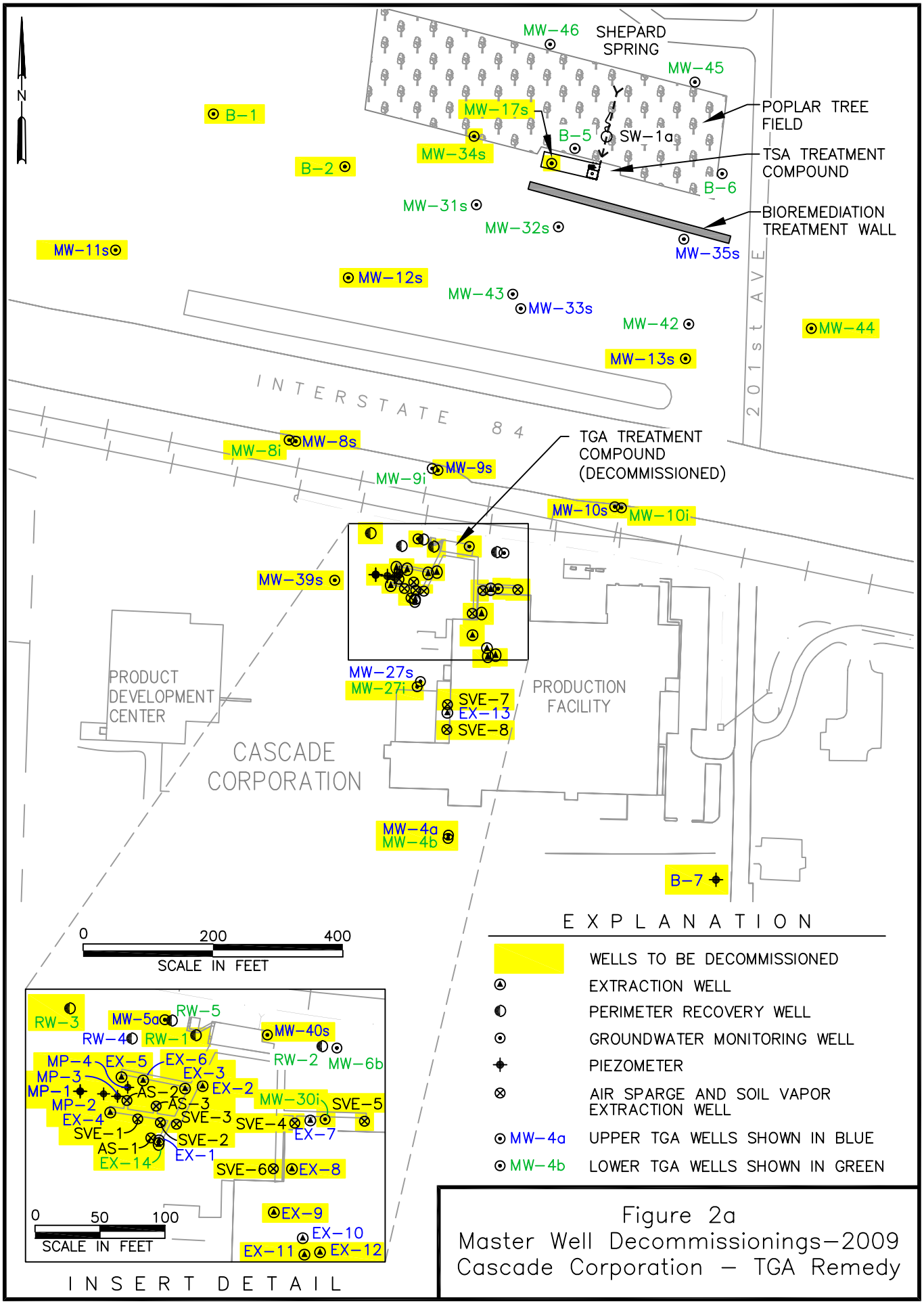


Figure 2a
Master Well Decommissionings–2009
Cascade Corporation – TGA Remedy

Y:\Prowell Environmental\Cascade\TGA Well Decommissioning\2009 Work Plan\Fig2a.dwg 9/29/09

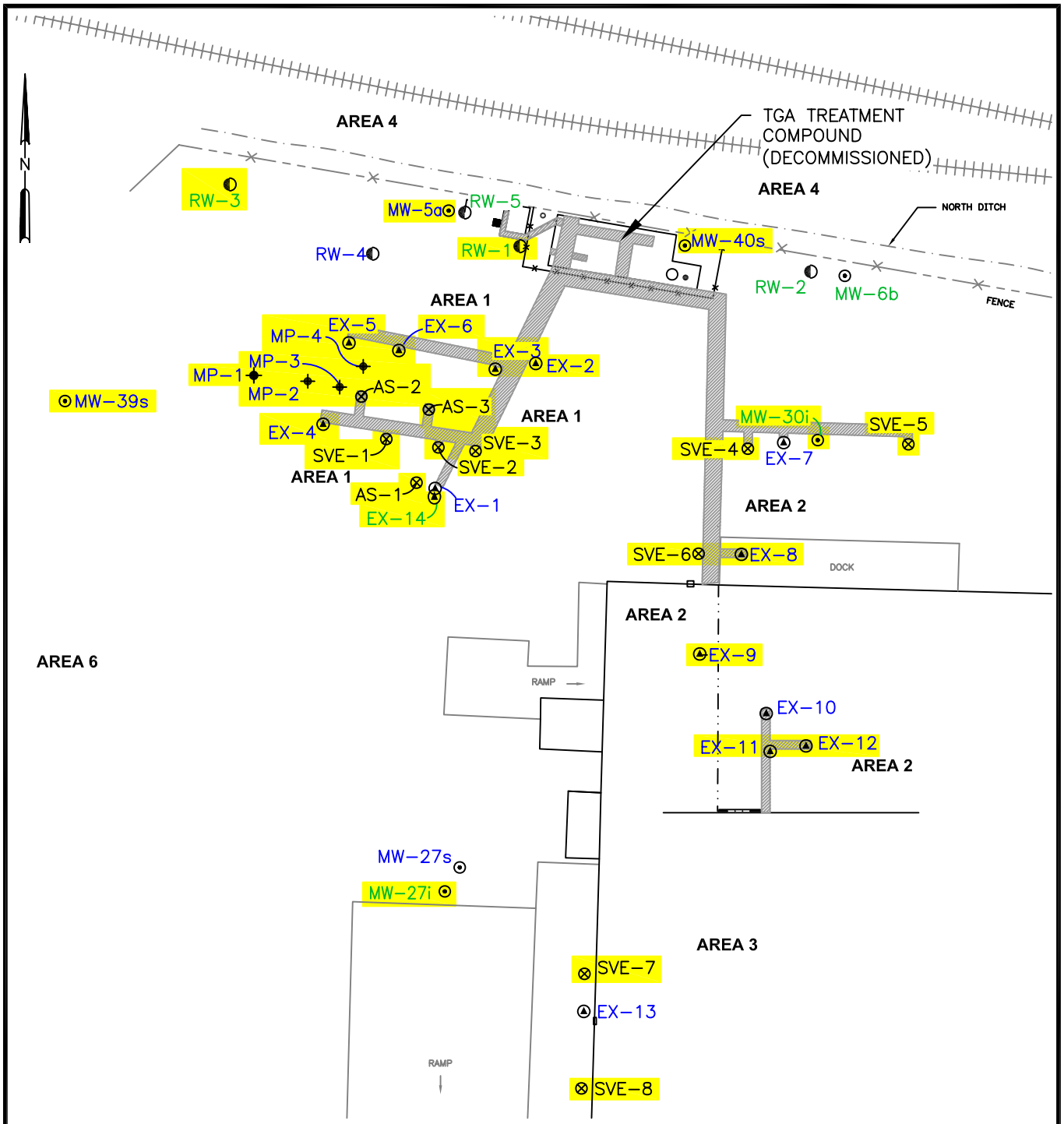


Figure 2b
On-Site Source Area
Well Decommissionings – 2009
Cascade Corporation – TGA Remedy

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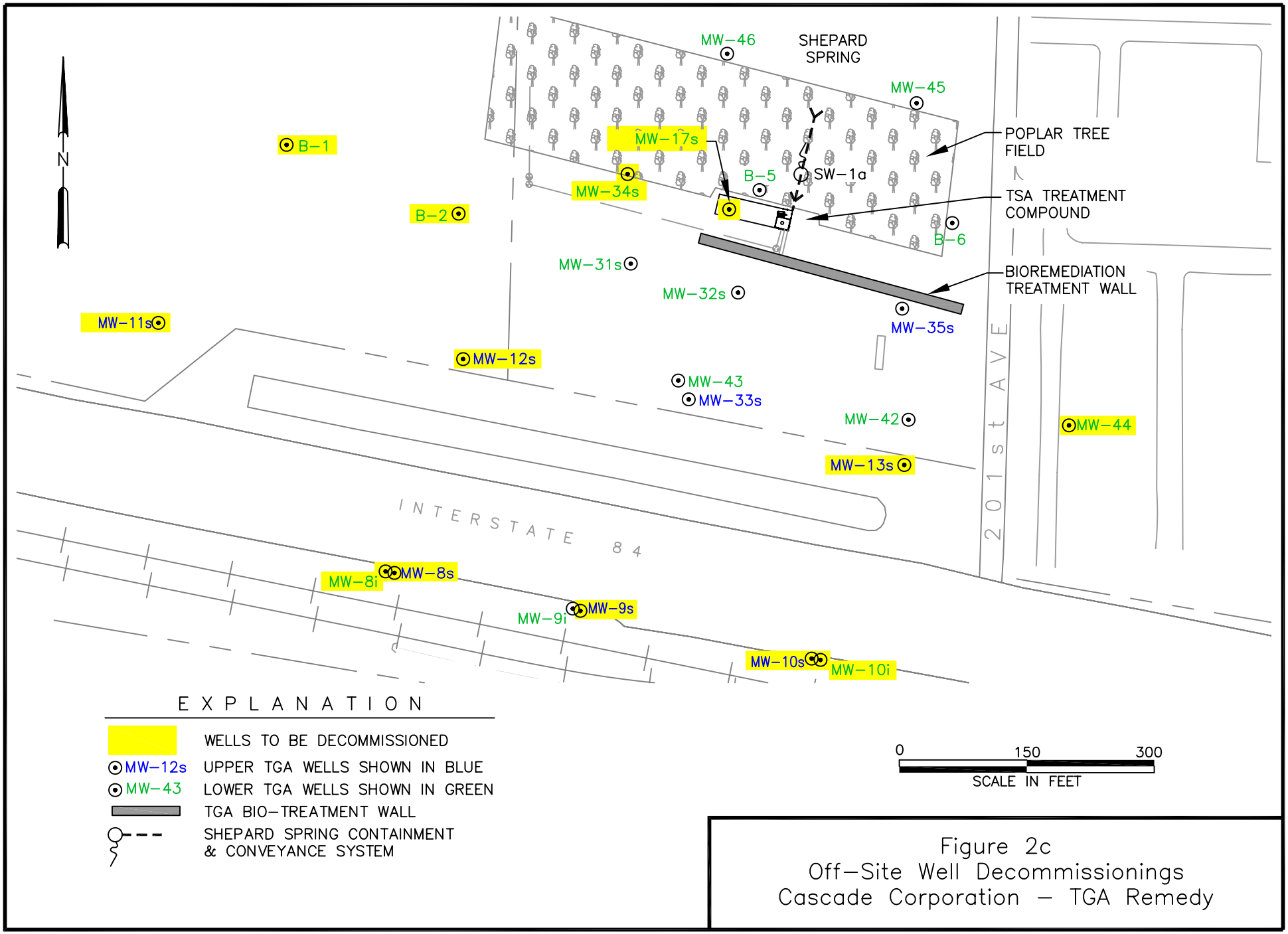

Figure 2c
Off-Site Well Decommissionings
Cascade Corporation – TGA Remedy

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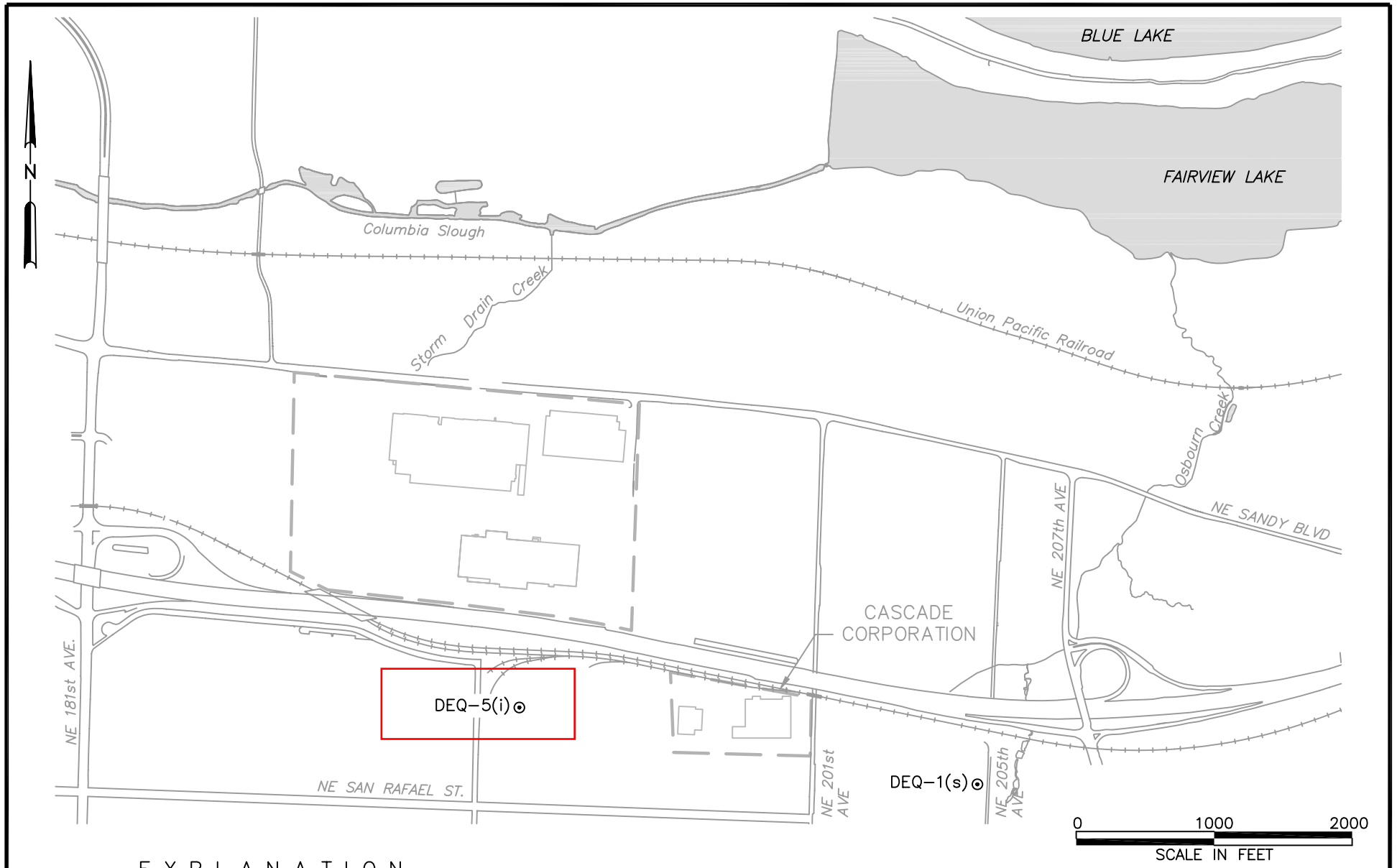

Figure 3
Regional Well Decommissionings – 2009
Cascade Corporation – TGA Remedy

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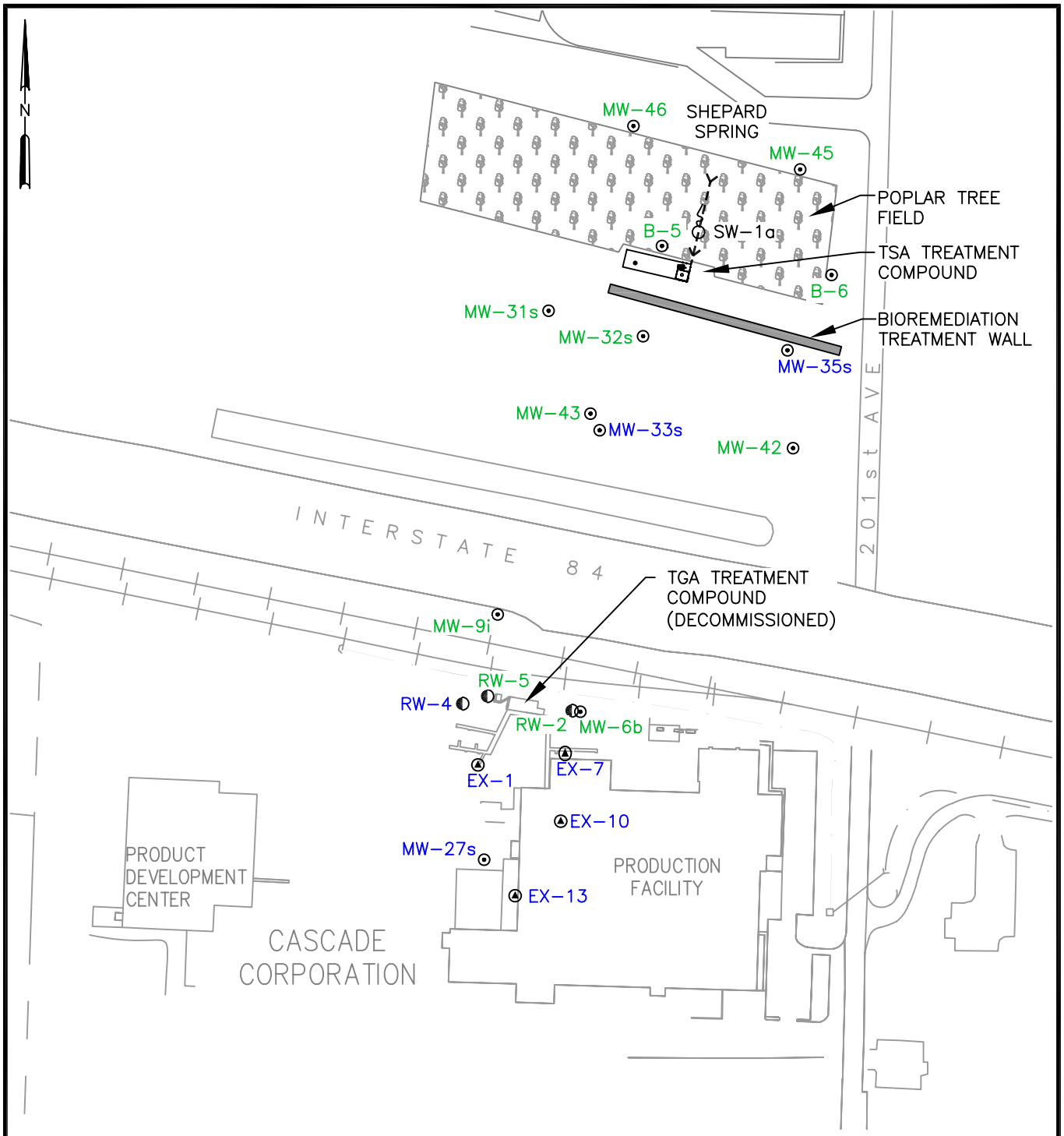

E X P L A N A T I O N

- EXTRACTION WELL
- PERIMETER RECOVERY WELL
- MONITORING WELL
- MW-33s UPPER TGA WELLS SHOWN IN BLUE
- MW-43 LOWER TGA WELLS SHOWN IN GREEN

0 200 400
SCALE IN FEET

NOTE: WELLS TO BE DECOMMISSIONED ARE NOT SHOWN.

Figure 4
Remedy Features and Well Locations
Cascade Corporation – TGA Remedy

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Table 1
Master List of TGA Wells for Decommissioning - By Area
Cascade Corporation - TGA Remedy

Well Location	Well Name	TGA Subunit	Well Description
Regional / Background			
Regional	DEQ-1s	Upper	Piezometer / Monitor Well
Regional	DEQ-5i	Lower	Piezometer / Monitor Well
On-site / Upgradient Background			
On-site	B-7	Lower	Piezometer / Monitor Well
On-site	MW-4a	Upper	Monitor Well
On-site	MW-4b	Lower	Monitor Well
On-site / Area 1 (and 6)			
Area 1	AS-1	Upper	Air Sparge "Geotechnical Hole"
Area 1	AS-2	Upper	Air Sparge "Geotechnical Hole"
Area 1	AS-3	Upper	Air Sparge "Geotechnical Hole"
Area 1	EX-2	Upper	Extraction Well
Area 1	EX-3	Upper	Extraction Well
Area 1	EX-4	Upper	Extraction Well
Area 1	EX-5	Upper	Extraction Well
Area 1	EX-6	Upper	Extraction Well
Area 1	EX-14	Lower	Extraction Well
Area 1	MP-1	Upper	Nested Piezometer
Area 1	MP-2	Upper	Nested Piezometer
Area 1	MP-3	Upper	Nested Piezometer
Area 1	MP-4	Upper	Nested Piezometer
Area 6	MW-39s	Upper	Monitor Well
Area 1	SVE-1	Unsaturated	Soil Vapor Extraction Well
Area 1	SVE-2	Unsaturated	Soil Vapor Extraction Well
Area 1	SVE-3	Unsaturated	Soil Vapor Extraction Well
On-site / Area 2			
Area 2	EX-8	Upper	Extraction Well
Area 2	EX-9	Upper	Monitor Well
Area 2	EX-11	Upper	Extraction Well
Area 2	EX-12	Upper	Extraction Well
Area 2	MW-30i	Lower	Monitor Well
Area 2	SVE-4	Unsaturated	Soil Vapor Extraction Well
Area 2	SVE-5	Unsaturated	Soil Vapor Extraction Well
Area 2	SVE-6	Unsaturated	Soil Vapor Extraction Well
On-site / Area 3			
Area 3	MW-27i	Lower	Monitor Well
Area 3	SVE-7	Unsaturated	Soil Vapor Extraction Well
Area 3	SVE-8	Unsaturated	Soil Vapor Extraction Well

Table 1
Master List of TGA Wells for Decommissioning - By Area
Cascade Corporation - TGA Remedy

Well Location	Well Name	TGA Subunit	Well Description
On-site / Area 4			
Area 4	MW-5a	Upper	Monitor Well
Area 4	MW-40s	Perched	Monitor Well
Area 4	RW-1	Lower	Perimeter Recovery Well
Area 4	RW-3	Lower	Perimeter Recovery Well
Off-site / South of I-84			
UPRR	MW-8s	Upper	Monitor Well
UPRR	MW-8i	Lower	Monitor Well
UPRR	MW-9s	Upper	Monitor Well
UPRR	MW-10s	Upper	Monitor Well
UPRR	MW-10i	Lower	Monitor Well
Off-site / North of I-84			
Boyd Coffee	B-1	Lower	Monitor Well
Boyd Coffee	B-2	Lower	Monitor Well
Boyd Coffee	MW-11s	Upper	Monitor Well
Boyd Coffee	MW-12s	Upper	Monitor Well
ODOT	MW-13s	Upper	Monitor Well
Cascade Offsite	MW-34s	Upper	Monitor Well
ODOT	MW-44	Lower	Monitor Well
Cascade Offsite	MW-17s	Lower	Monitor Well
Total Wells:	**50**		

NOTE:
UPRR = Union Pacific Railroad property; ODOT = Oregon Department of Transportation property.

Table 2
Date of TGA Well Disuse or Decommission Approval
Cascade Corporation - TGA Remedy

Well Name	Date of Discontinued Use or Decommissioning Approval	
SVE-4	Before 1998	Discontinued use prior to final remedy startup in 1998
SVE-5	Before 1998	Discontinued use prior to final remedy startup in 1998
SVE-6	Before 1998	Discontinued use prior to final remedy startup in 1998
SVE-7	Before 1998	Discontinued use prior to final remedy startup in 1998
SVE-8	Before 1998	Discontinued use prior to final remedy startup in 1998
AS-1	3/1/1999	Discontinued air sparge test use after 3/1/1999
AS-2	3/1/1999	Discontinued air sparge test use after 3/1/1999
AS-3	3/1/1999	Discontinued air sparge test use after 3/1/1999
SVE-1	11/12/2002	Discontinued use after 11/12/2002
SVE-2	11/12/2002	Discontinued use after 11/12/2002
SVE-3	11/12/2002	Discontinued use after 11/12/2002
MP-2	3/31/2009	Discontinued water level monitor use, per DEQ's 3/31/03 letter approval.
MP-3	3/31/2009	Discontinued water level monitor use, per DEQ's 3/31/03 letter approval.
MP-4	3/31/2009	Discontinued water level monitor use, per DEQ's 3/31/03 letter approval.
DEQ-1s	8/4/2004	Discontinued water level m monitoring use after 8/4/2004
DEQ-5i	8/4/2004	Discontinued water level m monitoring use after 8/4/2004
B-1	3/22/2007	Approved for decommissioning, per DEQ's 3/22/07 email.
MW-11s	3/22/2007	Approved for decommissioning, per DEQ's 3/22/07 email.
MW-27i	3/22/2007	Approved for decommissioning, per DEQ's 3/22/07 email.
MW-40s	3/22/2007	Approved for decommissioning, per DEQ's 3/22/07 email.
B-7	10/17/2007	Approved for decommissioning, per DEQ's 10/17/07 email.
EX-14	10/17/2007	Approved for decommissioning, per DEQ's 10/17/07 email.
MW-5a	10/17/2007	Approved for decommissioning, per DEQ's 10/17/07 email.
MW-8s	10/17/2007	Approved for decommissioning, per DEQ's 10/17/07 email.
MW-9s	10/17/2007	Approved for decommissioning, per DEQ's 10/17/07 email.
MW-10s	10/17/2007	Approved for decommissioning, per DEQ's 10/17/07 email.
EX-2	7/29/2009	Approved for decommissioning, per DEQ's 7/29/09 email.
EX-3	7/29/2009	Approved for decommissioning, per DEQ's 7/29/09 email.
EX-4	7/29/2009	Approved for decommissioning, per DEQ's 7/29/09 email.
EX-5	7/29/2009	Approved for decommissioning, per DEQ's 7/29/09 email.
EX-6	7/29/2009	Approved for decommissioning, per DEQ's 7/29/09 email.
EX-8	7/29/2009	Approved for decommissioning, per DEQ's 7/29/09 email.
EX-9	7/29/2009	Approved for decommissioning, per DEQ's 7/29/09 email.
EX-11	7/29/2009	Approved for decommissioning, per DEQ's 7/29/09 email.
EX-12	7/29/2009	Approved for decommissioning, per DEQ's 7/29/09 email.
MP-1	7/29/2009	Approved for decommissioning, per DEQ's 7/29/09 email.

Table 2
Date of TGA Well Disuse or Decommission Approval
Cascade Corporation - TGA Remedy

MW-4a	7/29/2009	Approved for decommissioning, per DEQ's 7/29/09 email.
MW-4b	7/29/2009	Approved for decommissioning, per DEQ's 7/29/09 email.
MW-30i	7/29/2009	Approved for decommissioning, per DEQ's 7/29/09 email.
MW-39s	7/29/2009	Approved for decommissioning, per DEQ's 7/29/09 email.
RW-1	7/29/2009	Approved for decommissioning, per DEQ's 7/29/09 email.
RW-3	7/29/2009	Approved for decommissioning, per DEQ's 7/29/09 email.
B-2	9/24/2009	Approved for decommissioning, per DEQ's 9/24/09 email.
MW-8i	9/24/2009	Approved for decommissioning, per DEQ's 9/24/09 email.
MW-10i	9/24/2009	Approved for decommissioning, per DEQ's 9/24/09 email.
MW-12s	9/24/2009	Approved for decommissioning, per DEQ's 9/24/09 email.
MW-13s	9/24/2009	Approved for decommissioning, per DEQ's 9/24/09 email.
MW-17s	9/24/2009	Approved for decommissioning, per DEQ's 9/24/09 email.
MW-34s	9/24/2009	Approved for decommissioning, per DEQ's 9/28/09 email.
MW-44	9/24/2009	Approved for decommissioning, per DEQ's 9/24/09 email.

Total Wells: 50

NOTE:

UPRR = Union Pacific Railroad property; ODOT = Oregon Department of Transportation property.

Table 3
TGA Well Construction Summary
For Wells to be Decommissioned
Cascade Corporation - TGA Remedy

Well	Unit	Completed Date	OWRD Well I.D.	MULT Well I.D.	Start Card I.D.	Total Well Depth (ft, bgs)	Borehole Diam. (inches)	Casing Diam. (inches)	A or B[a]	Ground Surface Elevation (ft, MSL)	Top of Well Casing Elevation (ft, MSL)	Boring Depth (ft, bgs)	Screen Slot Size (inches)	Screen Interval (ft, bgs)	Screen Material	Lith Log	Well Log	OWRD Log
AS-1 (MW-28i)	L	9/21/94	NA	4416	60366	48.6	12 / 8	1.25	B	142.6	142.33	48.6	0.010	33.5-48.1	SS	X	X	X[b]
AS-2	U	12/2/97	NA	NA	NA	26	9	1.25	B	142.6	Approx. 142.3	26.3	0.020	23-26	S 40 PVC	X	X	X[b]
AS-3	U	11/18/97	NA	NA	NA	25	7	1.25	B	142.6	Approx. 142.3	25	0.020	23-25	S 40 PVC	X	X	X[b]
B-1	L	9/8/93	NA	54768	58108	20	6	2	A	120.1	119.90	21	0.020	15-20	S 40 PVC	X	X	X
B-2	L	9/2/93	NA	3746	58107	25.5	8	2	A	121.6	124.02	58	0.020	20.5-25.5	S 40 PVC	X	X	X
B-7	U	9/13/93	NA	54769	58106	16	7	2	A	151.9	154.10	16	0.020	11-16	S 40 PVC	NA	NA	X
DEQ-1s	U	10/22/90	NA	NA	NA	37.2	6	2	A	151.2	150.93	39.7	0.020	16.2-36.2	S 80 PVC	X	X	NA
DEQ-5i	L	4/2/93	NA	3435	41654	103.5	6	2	B	156.0	156.92	104.5	0.020	83-103	S 80 PVC	X	X	X
EX-2	U	12/5/97	L20776	55108	105492	27	10	4	B	141.7	141.07	28	0.020	7-27	SS	X	X	X
EX-3	U	12/5/97	L17176	55114	105521	27.5	10	4	B	141.8	141.40	28.5	0.020	7.5-27.5	SS	X	X	X
EX-4	U	12/4/97	L20773	55111	105489	26	10	4	B	143.0	142.78	27	0.020	6-26	SS	X	X	X
EX-5	U	12/4/97	L20774	55110	105490	27	10	4	B	142.5	142.25	28	0.020	7-27	SS	X	X	X
EX-6	U	12/4/97	L20775	55109	105491	27	10	4	B	142.5	141.80	28	0.020	7-27	SS	X	X	X
EX-8 (C-118)	U	6/5/95	NA	NA	NA	25.8	6	2	B	145.9	145.50	26	0.020	5.5-25.5	SS	X	X	NA
EX-9 (C-117v)	U	6/4/95	NA	NA	NA	25.3	6	2	B	145.8	145.67	25.3	0.020	5-25	SS	X	X	NA
EX-11 (C-114v)	U	12/27/94	NA	4591	32061	25.5	5.75	2	B	145.9	145.77	25.5	0.020	5.3-25.1	SS	X	X	X
EX-12 (C-116v)	U	12/29/94	NA	4593	32063	25.6	5.75	2	B	145.9	145.77	25.6	0.020	5.4-25.2	SS	X	X	X
EX-14	L	5/2/01	L43845	63886	134972	61.7	10.75 / 5	4	B	142.9	142.16	65.4	0.020	29.7-59.7	S 40 PVC	X	X	X
MP-1[c]	U	12/2/97	NA	55122	N/A	25	12	1.25	B	143.0	142.63, 142.52, 142.64	16.5, 20.5, 26	0.020	15-16, 19-20, 24-25	S 40 PVC	X	X	X
MP-2[c]	U	12/2/97	NA	55126	N/A	25	12	1.25	B	143.0	142.46, 142.41, 142.31	16.5, 20.5, 26.5	0.020	15-16, 19-20, 24-25	S 40 PVC	X	X	X
MP-3[c]	U	12/2/97	NA	55127	N/A	25	12	1.25	B	143.0	142.14, 142.17, 142.26	16.5, 20.5, 26.2	0.020	15-16, 19-20, 24-25	S 40 PVC	X	X	X

Table 3
TGA Well Construction Summary
For Wells to be Decommissioned
Cascade Corporation - TGA Remedy

Well	Unit	Completed Date	OWRD Well I.D.	MULT Well I.D.	Start Card I.D.	Total Well Depth (ft, bgs)	Borehole Diam. (inches)	Casing Diam. (inches)	A or B[a]	Ground Surface Elevation (ft, MSL)	Top of Well Casing Elevation (ft, MSL)	Boring Depth (ft, bgs)	Screen Slot Size (inches)	Screen Interval (ft, bgs)	Screen Material	Lith Log	Well Log	OWRD Log
MP-4[c]	U	12/2/97		55121	N/A	25	12?	1.25	B	143.0	141.70, 141.75, 141.75	16.5, 20.5, 26.2	0.020	15-16, 19-20, 24-25	S 40 PVC	X	X	X
MW-4a	U	10/13/88	NA	NA	NA	20.7	6	2	B	148.1	147.83	20.7	Unknown	6-19.5	PVC	X	X	**NA**
MW-4b	L	10/12/88	NA	NA	NA	49	8 / 6	2	B	148.0	147.71	51	Unknown	34-48	PVC	X	X	**NA**
MW-5a	U	10/19/88	NA	NA	NA	26	6	2	B	140.9	140.18	27	Unknown	11-26	PVC	X	X	**NA**
MW-8s	U	4/14/90	NA	NA	NA	26.6	10 / 8	2	B	136.9	136.27	27	0.020	16-26	S 40 PVC	X	X	**NA**
MW-8i	L	5/4/90	NA	NA	NA	46.6	10 / 8	2	B	136.9	136.24	50.5	0.020	36-46	S 40 PVC	X	X	**NA**
MW-9s	U	4/20/90	NA	NA	NA	22.6	10	2	B	136.4	135.29	23	0.020	12-22	S 40 PVC	X	X	**NA**
MW-10s	U	5/1/90	NA	NA	NA	20.6	10 / 8	2	B	136.1	135.45	21.2	0.020	10-20	S 40 PVC	X	X	**NA**
MW-10i	L	4/26/90	NA	NA	NA	45.6	10 / 8	2	B	135.9	135.45	50	0.020	35-45	S 40 PVC	X	X	**NA**
MW-11s	U	11/30/90	NA	NA	NA	27	6	2	A	130.2	132.30	38	0.020	11-26	S 40 PVC	X	X	**NA**
MW-12s	U	11/16/90	NA	NA	NA	26	6	4	A	126.0	128.14	50.5	0.020	9-24	S 40 PVC	X	X	**NA**
MW-13s	U	11/15/90	NA	NA	NA	26	8	2.5	A	128.2	130.06	34	0.020	9-24	S 80 PVC	X	X	**NA**
MW-17s	L	5/6/92	NA	3112	41570	22.4	12 / 8	4	A	119.1	121.56	23	0.020	8.9-18.9	S 40 PVC	X	X	X
MW-27i	L	9/19/94	NA	NA	NA	48	12 / 8	4	B	144.0	143.02	48.4	0.020	33.1-47.4	S 40 PVC	X	X	**NA**
MW-30i	L	6/27/95	NA	5143	77926	46	12 / 8	4	A	142.1	141.77	46.2	0.020	25-45	SS	X	X	X
MW-34s	L	8/16/95	NA	4984	82034	17.5	7	2	A	117.6	119.41	17.5	0.020	7.4-16.9	S 40 PVC	X	X	X
MW-39s	U	12/1/97	L20771	55113	105487	19	7	2	B	146.0	145.36	19.2	0.020	8.5-18.5	S 40 PVC	X	X	X
MW-40s	U	12/3/97	L20772	55112	105488	26.5	10	4	B	141.0	140.26	27	0.020	5.5-25.5	SS	X	X	X
MW-44	L	7/12/01	L43843	64485	134970	31	7	2	B	120.6	120.33	32.2	0.020	19.6-29.6	S 40 PVC	X	X	X
RW-1	L	1/28/91	NA	120	25465	47	12	6	B	140.9	138.24	54	0.035	19.1-44.9	SS	X	X	X
RW-3	L	3/20/92	NA	3017	36671	56	11	6	B	139.0	141.83	59.5	0.020	20-30 30-55	SS	X	X	X
SVE-1	U	2/3/94		52165	59785	11	6	2	B	142.5	142.26	16	0.010	5.5-10.5	S 40 PVC	X	X	X
SVE-2	U	2/4/94		52164	59786	11	6	2	B	142.2	141.93	16	0.010	5.5-10.5	S 40 PVC	X	X	X
SVE-3	U	2/1/94		52163	59787	11	6	2	B	142.2	141.89	14.5	0.010	5.5-10.5	S 40 PVC	X	X	X

Table 3
TGA Well Construction Summary
For Wells to be Decommissioned
Cascade Corporation - TGA Remedy

Well	Unit	Completed Date	OWRD Well I.D.	MULT Well I.D.	Start Card I.D.	Total Well Depth (ft, bgs)	Borehole Diam. (inches)	Casing Diam. (inches)	A or B[a]	Ground Surface Elevation (ft, MSL)	Top of Well Casing Elevation (ft, MSL)	Boring Depth (ft, bgs)	Screen Slot Size (inches)	Screen Interval (ft, bgs)	Screen Material	Lith Log	Well Log	OWRD Log
SVE-4	U	2/24/94		52167	59792	11	10 / 6	2	B	142.3	141.97	48	0.010	4.5-9.5	S 40 PVC	X	X	X
SVE-5	U	2/16/94		52146	59793	17.5	10	2	B	141.9	141.69	50	0.010	7-17	S 40 PVC	X	X	X
SVE-6	U	3/1/94		**NA**	**NA**	10	6	2	B	142.5	142.25	23.7	0.010	4.5-9.5	S 40 PVC	X	X	**NA**
SVE-7	U	3/28/94		52168	59783	8	6	2	B	145.5	145.23	19	0.010	2.2-7.2	S 40 PVC	X	X	X
SVE-8	U	3/23/94		52170	59781	8	10 / 6	2	B	145.7	145.43	50.25	0.010	3-8	S 40 PVC	X	X	X

NOTES:

[a]A= well completion is above-grade; B= well completion is flush-mount.

[b]Air sparge wells AS-1, AS-2, and AS-3 were identifed as "Geotechnical Holes", per OWRD rules. AS-1 was constructed in decommissioned well MW-28i; Start Card # and MULT # are for original monitor well MW-28i.

[c] MP-1 through MP-4 are 1.25 inch diameter nested piezometers (with screen mid-points at apparoximately 16.5, 20.5, 26 ft bgs).

[d] SVE-1 through SVE-8 are soil vapor extraction wells with screens above the groundwater table.

With the exceptions footnooted above, the tabled wells include former TGA remedy extraction or monitoring wells.

ft, MSL = feet w/respect to mean sea level; ft, bgs = feet below ground surface; SS = stainless steel;

NA = Well log and/or well identifiction numbers Not Available (i.e., not found during September 2009 search of Oregon Water Resource Department online database search).