

MEMORANDUM

To: Mr. Robert Williams, R.G.
Department of Environmental Quality
2020 SW Fourth Ave., Suite 400
Portland, OR 97201-4987

Sarah Prowell, R.G. and Brooke Schmidt
Prowell Environmental, Inc.
Phone: 503/452-0972
E-mail: sprowell@ix.netcom.com

Date: June 12, 2012

RE: BOP-69(usg) Well Decommissioning Report
TSA East Multnomah County Remedy

Introduction

This well decommissioning report summarizes methods used during the decommissioning of groundwater monitoring well BOP-69(usg) in May 2012, as part of the Troutdale Sandstone Aquifer (TSA) remedy being implemented under Department of Environmental Quality (DEQ) *Consent Order No. WMCSR-NWR-96-08* (DEQ, 1997). The well was located north of Sandy Boulevard, as shown in [Figure 1](#). The well site was 19000 block NE Sandy Boulevard, Gresham, (Tax Lot No. 3) and is owned by Weston Investment Co., LLC, (Portland Maps, 2012).

BOP-69(usg) was installed in 1997 and was screened as a Confining Unit 2 (CU2) equivalent well in an area where CU2 is absent. The well was proposed for decommissioning on April 27 (Prowell, 2012) following its removal from the remedy well network in 2009 (DEQ, 2009) and subsequent confirmation sampling in August 2011. The confirmation sampling results showed trichloroethene (TCE) concentrations (1.3 micrograms per liter [$\mu\text{g/L}$]) remained below the 5 $\mu\text{g/L}$ remedy cleanup level, with all other VOC concentrations remaining non-detectable.

DEQ approved BOP-69(usg) for decommissioning on May 8 (DEQ, 2012), based on consistently compliant TCE concentrations in this well since 2007, and the presence of other nearby wells better suited for long term remedy monitoring.

Methods

The well was decommissioned on May 21 through 24, 2012 by Boart Longyear, an Oregon-licensed well driller. The work was conducted on behalf of Cascade Corporation under Prowell Environmental's oversight, following receipt of the property owner's verbal approval for access and decommissioning (S. Prowell phone communication with J. Weston, May 11, 2012). The decommissioning was performed by over-drilling the original well to its total depth using a truck-mounted roto-sonic rig, removing well construction materials from the subsurface, cleaning the borehole, and sealing it with high solids bentonite grout from total depth to 6 feet below ground surface. The seal was then capped to ground surface with hydrated bentonite chips. The work was performed consistent with Oregon Water

Resource Department (OWRD) regulations and Oregon Administrative Rules (OARs), specifically per overdrill methods described in OAR 690-240-0510(1).

Pre-Decommissioning Tasks. The following work was completed before decommissioning began:

- Performed below-grade utility survey in the well vicinity to confirm clearance before drilling
- Obtained OWRD start card number 1016682, per OAR-690-240-0385
- Measured the well on May 21 for total depth (182.2 feet below ground surface [bgs]) and depth to groundwater (64.33 feet below top of well casing / 61.53 feet bgs).

Well Decommissioning. The original BOP-69(usg) well construction specifications are summarized below and are detailed in the 1997 OWRD well report presented in [Attachment A](#):

- 10-inch diameter borehole extending from ground surface to 185 feet
- 2-inch PVC screen from 175 to 185 feet with sand filter pack from 172 to 185 feet
- Bentonite chip plug from 169 to 172 feet and high solids bentonite grout seal from 5 to 169 feet.

The above described well construction was decommissioned using the following procedures:

- Removed the above-grade well-head casing, stanchions, and concrete pad
- Advanced a 10-inch diameter over-drill borehole into the original well borehole from ground surface to 177 feet
- Bailed and cleaned out the borehole to remove cuttings and residual debris to 177 feet
- Obtained OWRD Special Standards approval (see [Attachment A](#)) and advanced a 7 1/2-inch diameter borehole from 177 feet to the total drill depth of 185 feet, due to difficulty advancing the 10-inch casing below 177 feet
- Bailed and cleaned the borehole to remove cuttings and residual debris to 185 feet
- Confirmation measured the borehole depth and estimated downhole seal volume
- Mixed high solids granular bentonite grout (per OAR-690-240-0475), measured grout weight, injected the grout through a tremie pipe set near the bottom of the borehole, filling it upward to 6 feet below ground surface, and allowed to set
- Slowly poured 3/8-inch sodium bentonite chips in two-foot lifts to seal the remaining depth from 6 feet upward to ground surface and hydrated
- Contained all well construction debris in labeled, sealed, DOT-approved 55-gallon drums.

Site Cleanup and Waste Management. Upon completion, the drill site was cleared and restored to pre-decommissioning condition. All drummed waste cuttings and deconstruction debris were transported to Cascade's remediation yard for interim staging, waste characterization, permitting, and transport to an appropriately licensed disposal facility. Above-grade well completion waste was transported from the site for appropriate disposal or recycling.

References

Department of Environmental Quality, 1997. *Order on Consent to The Boeing Company and Cascade Corporation*. Troutdale Sandstone Aquifer. Oregon Department of Environmental Quality No. WMCSR-NWR-96-08, with amendments. February 5.

Department of Environmental Quality, 2009. Email to S. Prowell, Prowell Environmental. *Re: Proposed Lower TSA Monitoring Reductions*. March 11.

Department of Environmental Quality, 2012. Email to S. Prowell, Prowell Environmental. *Re: BOP-69usg Decommissioning Email*. May 8.

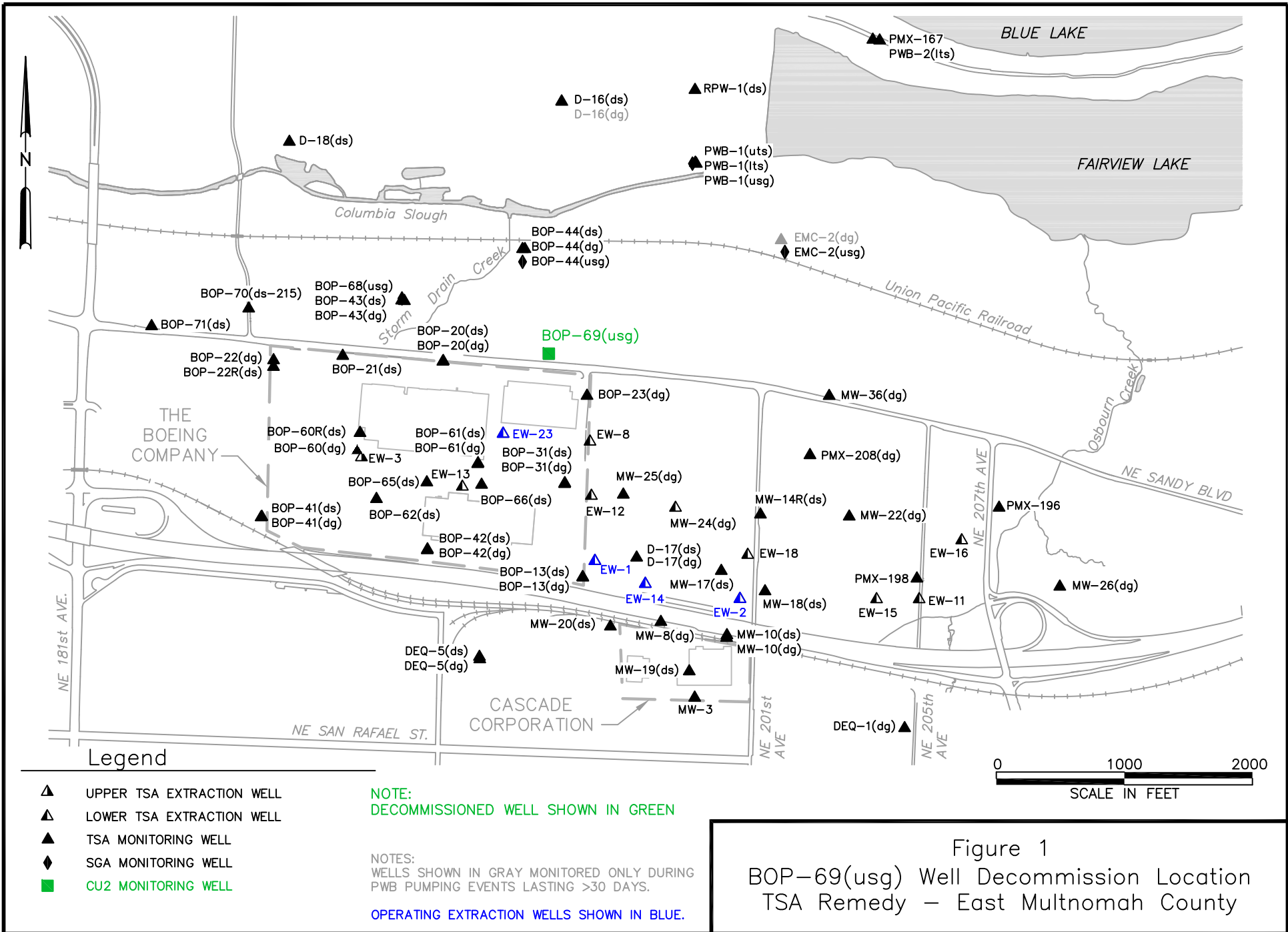
Portland Maps, 2012. www.portlandmaps.com.

Prowell Environmental, Inc., 2012. Email to R. Williams, DEQ. *Re: BOP-69usg Decommissioning Email*. April 27.

Figure 1. BOP-69(usg) Well Decommission Location

Attachment A. OWRD Decommissioning Records

- Table A-1. Well and Decommissioning Information
- OWRD Well Abandonment Report (June 11, 2012)
- OWRD Final Order for Special Standards
- OWRD Well Construction Report (August 11, 1997)



ATTACHMENT A. OWRD Decommissioning Records

Table A-1. Well Decommissioning Information

OWRD Well Abandonment Report (June 11, 2012)

OWRD Final Order for Special Standards

OWRD Well Construction Report (August 11, 1997)

**Table A-1
Well and Decommissioning Information
Cascade Corporation - TSA Remedy**

Well Installation				Well Decommissioning				
Well Name	OWRD Well I.D.	MULT Well I.D.	Start Card I.D.	Decommission Completion Date	Decommission Method / Driller	OWRD Final Order Date	MULT Well I.D.	Start Card I.D.
BOP-69(usg)	L10557	54009	95677	5/24/12	Overdrill / Boart Longyear	5/31/12	110013	1016682

NOTES:

Above TSA well approved for decommissioning, per DEQ's May 8, 2012 email.

OWRD = Oregon Water Resource Department.

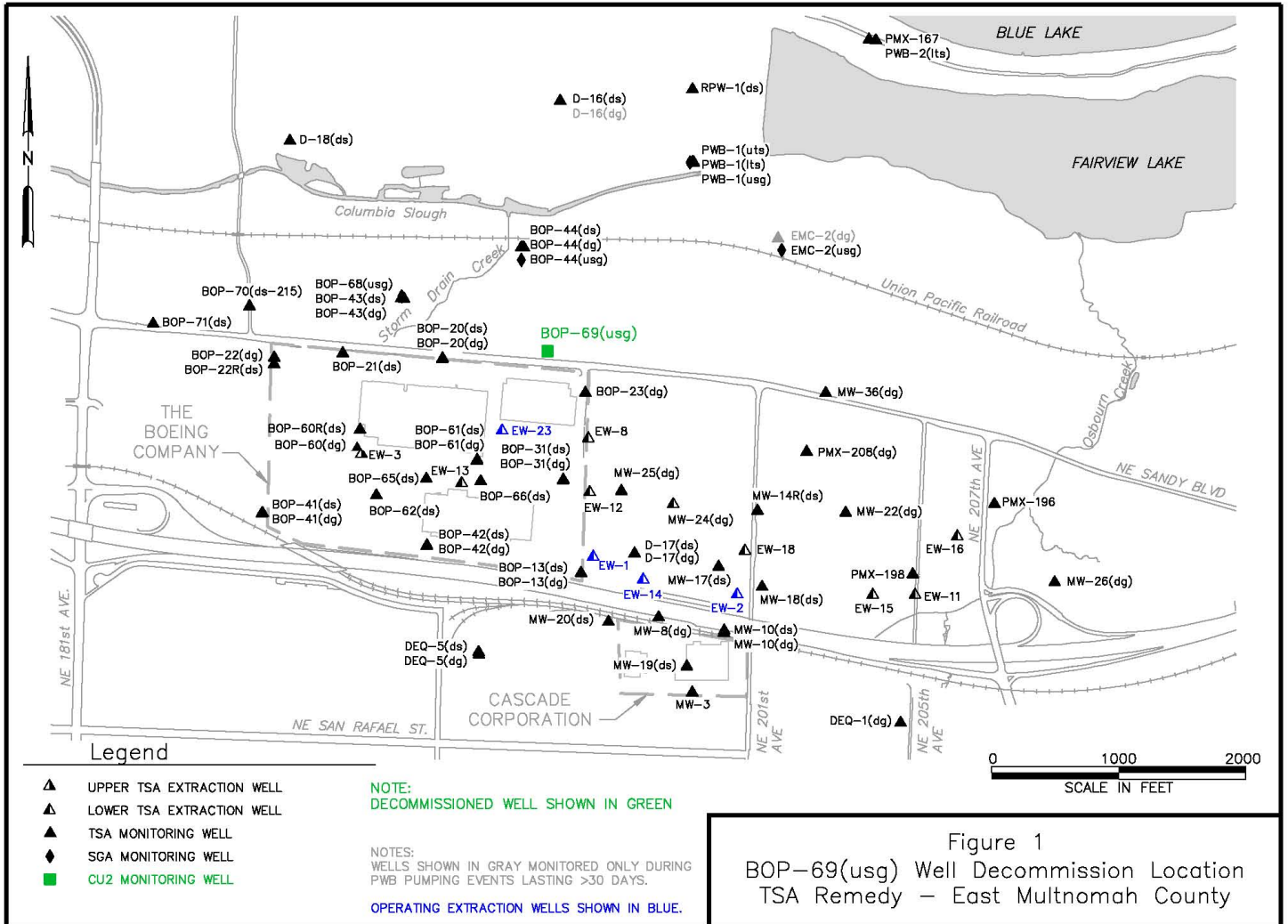
Decommissioning performed in accordance with OAR 690-240-0510, under OWRD Final Order variance approval.

MONITORING WELL REPORT - Map with location identified must be attached and shall include an approximate scale and north arrow

MULT 110013

6/11/2012

Map of Hole



6/11/2012

Map of Hole



Oregon

John A. Kitzhaber, MD, Governor

Water Resources Department

North Mall Office Building
725 Summer St. NE, Suite A
Salem, OR 97301
Phone 503-986-0900
FAX 503-986-0904
www.wrd.state.or.us

May 31, 2012

J TRENT CASTNER #10306
BOART LONGYEAR E & I
PO BOX 1890
MILTON WA 98354

FINAL ORDER

Dear Trent:

The Special Standards Request Form you submitted for owner: The Boeing Company, Start Card number 1016682 (Well I.D. 10557), is hereby approved for the following: You may abandon this monitoring well as described on your Special Standards Request Form. Your Special Standards Request Form is enclosed. All other standards must be adhered to.

The Well Construction Standards serve to protect ground water resources. By approving and issuing this special construction standard the Oregon Water Resources Department is not representing that a well constructed in accordance with this condition will maintain structural integrity or that it meets engineering standards. The well constructor/or landowner is responsible for ensuring that a well is constructed in a manner that protects ground water resources as required under Oregon Administrative Rules 690-200 through 690-240.

If you have any questions regarding this letter, I may be contacted at (503) 986-0851, or by e-mail at Kristopher.R.Byrd@wrdd.state.or.us.

Sincerely,

Kristopher Byrd, Coordinator
Well Construction Program
Well Construction and Compliance Section

enclosure

cc: Bill Ferber, W Region Manager
File

This is a final order in other than a contested case. This order is subject to judicial review under ORS 183.484. Any petition for judicial review must be filed within the 60 day time period specified by ORS 183.484(2). Pursuant to ORS 536.075 and OAR 137-004-0080 you may either petition for judicial review or petition the Director for reconsideration of this order. A petition for reconsideration may be granted or denied by the director, and if no action is taken within 60 days following the date the petition was filed, the petition shall be deemed denied.

6/11/2012

Map of Hole



Oregon Water Resources Department
725 Summer Street NE, Suite A
Salem Oregon 97301-1266
(503) 986-0900
www.wrd.state.or.us

Special Standards Request Form

REQUEST FOR WRITTEN APPROVAL TO USE CONSTRUCTION METHODS NOT INCLUDED IN OREGON ADMINISTRATIVE RULES 690-200 THROUGH 690-240

Before the request can be considered, this form must be completed. Requests shall be submitted to the Well Construction Program Coordinator, Water Resources Department, 725 Summer Street NE, Suite A, Salem OR 97301-1266. Requests may also be considered by the appropriate Regional Manager.

Date of request: 5/23/2012 Oral approval date (if applicable): 5/24/2012

Bonded Well Constructor (name, license #, and mailing address): Trent Castner 10306

P.O. Box 1890, Milton, WA 98354

(1) Location of Well: NW 1/4 NE 1/4 Tax lot _____ Section 29,
Township 1 N, Range 3 E, Multnomah County
Address at well site: 1900 Block of Sandy Blvd., Troutdale, OR

(2) Start Card Number(s)(for work to be done): 1016682

(3) Name and Address of Land Owner: The Boeing Company
P.O. Box 370 m/s 7A-XA, Seattle, WA 98184

(4) Distance to the nearest septic tank, drainfield, closed sewage line (if water supply well)
N/A

(5) The unusual site conditions which necessitate this request: While abandoning, by overdrilling,
the 185' two inch monitoring well (original start card number 95677). The 10" casing used to overdrill the
well bore hole became stuck at 177' below ground surface

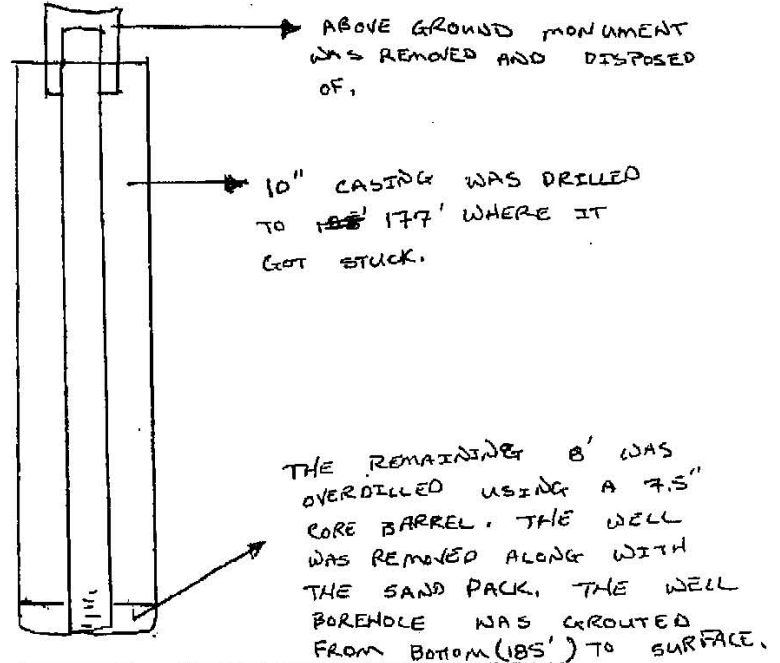
(6) The proposed construction methods that the bonded well constructor believes will be
adequate for this well: (attach additional pages if needed)

The remaining 8' portion of the well borehole will be cleaned out using a 7.5" O.D. corebarrel; the 2" PVC
well screen and sand pack will be removed. The well borehole will then be grouted from the bottom
of boring to land surface using a high solids bentonite grout.

6/11/2012

Map of Hole

- (7) Diagram showing the pertinent features of the proposed well design and construction:
(attach additional pages if needed)



PLEASE NOTE:

- (1) The Well Construction Standards serve to protect ground water resources. By approving and issuing this special construction standard the Oregon Water Resources Department is not representing that a well constructed in accordance with this condition will maintain structural integrity or that it meets engineering standards. The well constructor/or landowner is responsible for ensuring that a well is constructed in a manner that protects ground water resources as required under Oregon Administrative Rules 690-200 through 690-240.
- (2) If it should be determined at some future date that the well, due to its construction, is allowing ground water contamination, waste or loss of artesian pressure, the undersigned shall return to the site and rectify the problem.
- (3) If oral approval was granted, a written request must be submitted to the Department either within three (3) working days of the date of oral approval or prior to the completion of the associated well work. Failure to submit a written request as described above may void prior oral approval.

I have read and understand the above information. I further attest that the information provided is accurate to the best of my knowledge.

Bonded Constructor Signature: J. Trent Castro

MONITORING WELL REPORT WATER RESOURCES DEPT. SALEM, OREGON

Start Card # 95677

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

(1) OWNER/PROJECT: WELL NO. BOP-69mag

Name The Boeing Co. Address PO Box 3707 M/S 7A-XA City Seattle State WA

(2) TYPE OF WORK:

- New construction [X] Conversion [] Alteration [] Deepening [] Abandonment []

(3) DRILLING METHOD SALEM, OREGON

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

(6) LOCATION OF WELL By legal description

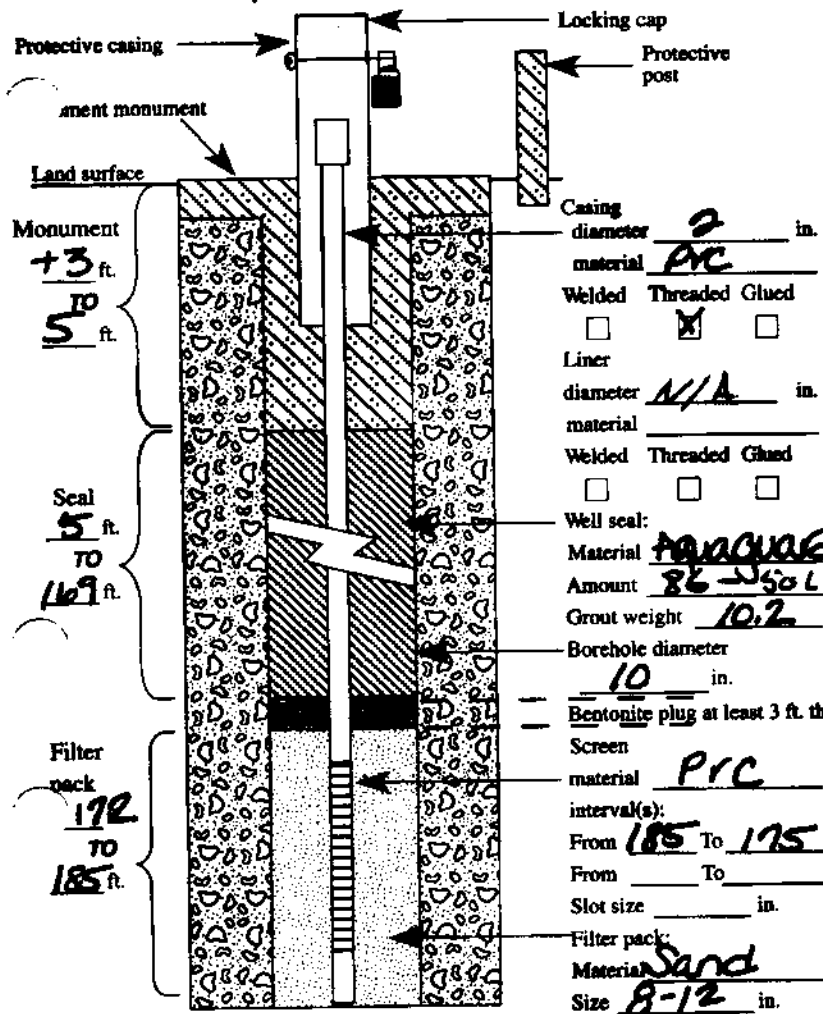
Well Location: County Multnomah Township IN (N or S) Range 3E (E or W) Section 2E 1. NW 1/4 of NE 1/4 of above section. 2. Either Street address of well location Sandy Blvd

3. ATTACH MAP WITH LOCATION IDENTIFIED. Map shall include approximate scale and north arrow.

(7) STATIC WATER LEVEL: 55 Ft. below land surface. Date 7/1/97 Artesian Pressure N/A lb/sq. in. Date

BORE HOLE CONSTRUCTION

Special Standards Yes [] No [X] Depth of completed well 185 ft.



(8) WATER BEARING ZONES:

Table with columns: From, To, Est. Flow Rate, SWL. Data rows: 95-105 (3), 130-145 (10-20), 170-185 (150). SWL values: 75, 76, 55.

(9) WELL LOG: Ground elevation

Well log table with columns: Material, From, To, SWL. Materials include Brn Gravelly Silt, Brn Gravel Gravelly Silt, Gray's brn cemented sandstone, Gray sandstone, Gray Conglomerate, Gray Cong. w/ sand, Dark gray brn moderately cemented.

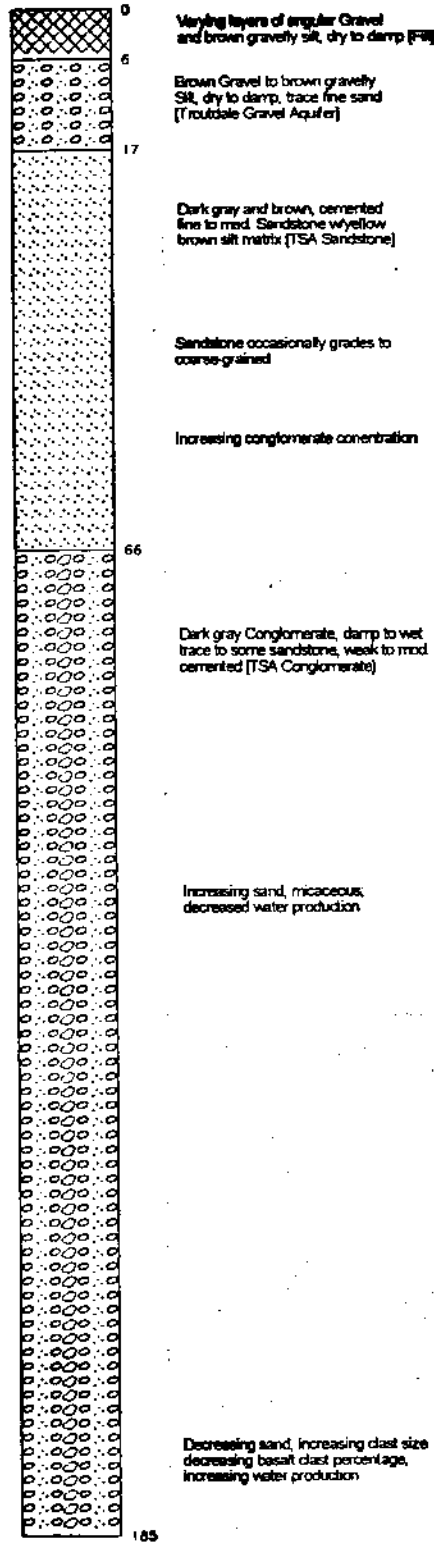
(5) WELL TEST:

- Pump [] Bailer [] Air [] Flowing Artesian [] Permeability Yield GPM Conductivity PH Temperature of water 56 °F/C Depth artesian flow found 95 ft. Was water analysis done? [] Yes [] No By whom? Depth of strata to be analyzed. From ft. to ft. Remarks:

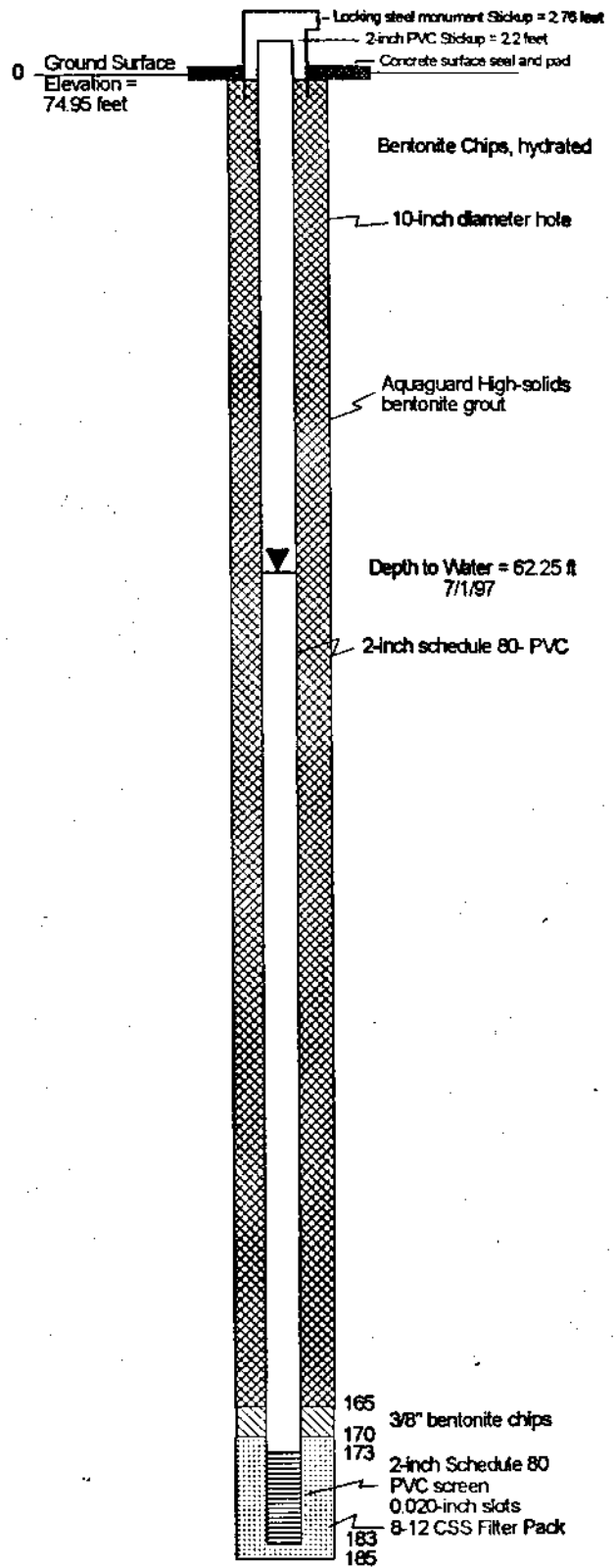
(unbonded) Monitor Well Constructor Certification: I certify that the work I performed on the construction, alteration, or abandonment of this well is in compliance with Oregon well construction standards. Materials used and information reported above are true to the best of my knowledge and belief. MWC Number 10 Signed Tony L. Reynolds Date 7-23

(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. 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. MWC Number 11

Lithologic



Construction



Completion Date: 7/1/97