



June 26, 2018

Jen Woody
Hydrogeologist
Oregon Water Resources Department (OWRD)
725 Summer St. NE, Suite A
Salem Oregon 97301

Subject: Request for a 5-Year Time Extension for ASR Limited License #002
July 2018 to July 2023

Dear Jen:

On behalf of the City of Beaverton (City) this letter requests a 5-year time extension for the ASR Limited License #002. In summary, the applicant makes the following requests as part of this renewal:

- A 5-year time extension for the modified Limited License #002 from July 22, 2018 to July 22, 2023.
- Inclusion of the attached table and map for clarification of ASR well locations and ownership.
- An increase in maximum storage volume by 15% to **1.73 billion gallons**.
- Request to move location of proposed well ASR 6.
- Request a change in the ASR Limited License #002 (Condition 12-B) accounting system from defining recovered water based on pumping rates to voluntary selection of the type of water recovered (e.g. native groundwater vs. stored ASR water).
- Request to change Hanson Well to ASR 5.

We understand that certain criteria must be met in order to grant an extension; a discussion of the points provided above along with ASR-related criteria for the request is provided in this letter.

Introduction

The City requests a renewal of Limited License #002 to continue exploring the feasibility of expanding their ASR program in the Cooper Mountain-Bull Mountain area in conjunction with the Tualatin Valley Water District (TVWD).

Since the previous Limited License #002 extension in 2013, the City has operated its ASR wellfield at the Sorrento Water Works site storing annually up to 450 million gallons (MG) through two ASR wells (ASR 2 and ASR 4), with a combined injection and recovery rate of up to 5 mgd. These existing ASR wells have served as key water supply facilities for the City. Over the last several years, the City has evaluated expansion of their ASR facilities by constructing an additional ASR well at the Sorrento Facility completed deeper than the existing ASR wells (referred to as ASR 5) and also the eastern flank of Cooper Mountain (referred to as ASR 6 [WASH 74133]). In addition to these locations, the City continues to evaluate other sites within their service area for potential ASR development.

Based on the foregoing, and because of the likelihood of additional expansion of the current ASR system, the City requests more time for testing prior to applying for an ASR permit. Specifically, the City would like to request a 5-year extension to the ASR Limited License #002 from July 22, 2018 to July 22, 2023. In addition, as outlined in this memo, the City also requests certain specific changes to the limited license to better align with on-going and future development of their ASR system, including the addition of new authorized ASR well locations as described above.

Compliance with the Terms and Conditions of the Current Limited License

Several terms and conditions are defined in ASR Limited License #002, such as groundwater monitoring and water quality sampling. The City has complied with the terms of Limited License #002 and has worked in good faith to report ASR pilot testing data to the Department on a regular basis. The City has not received notice from the Department that they are out of compliance with the terms of the license.

Specifically, the following has been completed to comply with the terms and conditions of the license:

- ASR Well Locations - Changes to the preliminary locations of ASR wells outlined in the Limited License #002 have been requested in writing and approved by the Department.
- Maximum Rate Compliance:
 - City of Beaverton - ASR No. 2 and No. 4 each have maintained a maximum injection and recovery rates of 3 mgd or less, which complies with the terms of the license, as amended.
- Maximum Storage Volume Compliance - The maximum storage volume has not exceeded 1.5 billion gallons. The current ASR storage volume is approximately 950 MG through 2017. Nearly all of the ASR storage volume total is related to the City's use of Condition 12B, which allows use of native groundwater up to 1,350 gpm before withdrawn water is considered stored ASR water. Based on ASR Recovery and native groundwater recovery through 2017, the City has actually pumped more water than it has recharged by approximately 381 MG. As such, the 950 MG of storage volume held by the City does not represent physical stored water, but is an accounting total of stored water available for recovery.
- Condition 1 – This letter requests an extension.
- Condition 2 – The City has notified OWRD verbally and in writing prior to injection and recovery each year.
- Condition 3 – The City has kept record of the injection and recovery volumes and has reported the data to the Department in the annual ASR reports submitted to the Department.
- Condition 4 – Any proposed modifications to the limited license have been submitted to the Department in writing.
- Condition 5 – The City understands that the limited license does not receive a priority date like a water right.
- Condition 6 – The City completed Department of Environmental Quality (DEQ) Underground Injection Control (UIC) registrations for their operational ASR wells, and complied with all state and local permits with regard to injecting, recovering, and pumping to waste.
- Condition 7 – The Department received ASR work plans prior to pilot testing at each ASR well and has received addendums that outlined proposed changes to the monitoring plans for ASR wells operated by the City.

- Condition 8 – Injected water and recovered water have met all state (Oregon Health Authority – Drinking Water Program and state regulatory ASR water quality criteria) and federal drinking water standards, with no exceedance of regulatory screening levels to date for the ASR wells operated by the City.
- Condition 9 – The City continues to collect water quality samples in compliance with the terms outlined in the ASR Limited License #002 and approved works plans, ensuring water delivered to its customers meets all federal and state drinking water standards, and is in compliance with the Oregon Health Authority – Drinking Water Program.
- Condition 10 – The City has maintained detailed monitoring plans to measure the response in the regional aquifer due to ASR activities by the City. Changes in the points of monitoring have been made from time-to-time (ex. new points added and others dropped based on data trends) and the Department has been notified of the changes.
- Condition 11 – The water level in the well during injection has been maintained below the casing at the Hanson well (also referred to as ASR 1) when it was used. This condition is no longer applicable as a result of the Hanson Well decommissioning as described below and thus we recommend removal of this limited license condition.
- Condition 12 – The City has recovered no more than 98% of the annually stored or carryover ASR volume. Using their existing native groundwater registrations, the City has also pumped native groundwater after the ASR account has been depleted or simultaneously with ASR recovery. Yearly reporting to the Department has documented the amount of recovered water; both ASR water and native groundwater. The rising groundwater level indicates little, if any, loss of stored ASR water as noted by the annual ASR operational reports submitted to OWRD by the City.
- Condition 13 – Yearly ASR reports have been submitted to the Department since the start of ASR pilot testing.
- Condition 14 – No injuries to existing groundwater users have been reported since the start of ASR activities by the City.
- Condition 15 – The recovered water has been put to beneficial municipal use by the City.
- Condition 16 – The City has met periodically with the Department to review the status of the ASR projects.
- Condition 17 - The Department has not suggested additional conditions other than well tags and submission of electronic hydrogeologic data (Condition 21) to Limited License #002 since its issue date.
- Condition 18 – The City has kept the public informed of the ASR program through their Consumer Confidence Reports and through other presentations, publications, and community meetings.
- Condition 19 – No adverse effects have been observed.
- Condition 20 – A running account of the amount of recovered ASR water has been submitted to the Department yearly by the City.
- Condition 21 – Special Reporting Conditions. The City has made an effort in good faith to comply with all the conditions related to reporting over the course of the last limited license and will continue to do so during the next 5-year testing period.

- Condition 22 – The ASR wells for the City have been assigned Department Well ID numbers, and they have been attached to the wells.

Requested Limited License Modifications

Clarification of ASR Well Locations – Table and Map

Below is an updated list of the thirteen (13) ASR wells authorized under this permit, and attached is a map (Figure 1) showing their distribution in the service areas for the City and TVWD. Wells that were adjusted from the previous version of the license are shown in **Red**.

<u>Licensee(s)</u>	<u>Well</u>	<u>Rate (mgd)</u>	<u>Well Locations (T1S/R1W, W.M.)</u>
TVWD/Beaverton	ASR #1	1.5	Section 17, SE ¼ SW ¼
TVWD/Beaverton	Schuepbach	1.5	Section 17, SE ¼ SW ¼
Beaverton	ASR #4	3.0	Section 21, SW ¼ SE ¼
Beaverton	ASR #5	3.0	Section 21, SE ¼ SW ¼
Beaverton	ASR #2	3.0	Section 21, SE ¼ SW ¼
Beaverton	ASR #10	3.0	Section 29, SE ¼ SW ¼
Beaverton	ASR #9	3.0	Section 30, NW ¼ SW ¼

<u>Licensee(s)</u>	<u>Well</u>	<u>Rate (mgd)</u>	<u>Well Locations (T1S/R1W, W.M.)</u>
Beaverton	ASR #3	3.0	Section 5, SW ¼ NW ¼

<u>Licensee(s)</u>	<u>Well</u>	<u>Rate (mgd)</u>	<u>Well Locations (T1S/R1W, W.M.)</u>
TVWD	Jenkins Estate	3.0	Section 23, SE ¼ SE ¼
TVWD	Grabhorn	3.0	Section 26, NE ¼ NE ¼
TVWD	189 th Ave	3.0	Section 24, NW ¼ SW ¼
Beaverton	ASR #6	3.0	Section 30, NE ¼ SW ¼
Beaverton/TVWD	ASR #8	3.0	Section 25, NE ¼ SE ¼

Request to Increase Storage Volume by 15% to 1.73 Billion Gallons

ASR Limited License #002 restricts storage to 1.5 billion gallons. The City has encroached on its allocation of the total storage volume, and because testing suggests that the system is capable of supporting a higher storage volume without complications, we are requesting an increase in the storage volume by 15% from 1.5 billion gallons to 1.73 billion gallons to accommodate anticipated ASR development plans by the City. As described previously, because the City is allowed use of native groundwater concurrently with ASR recovery, the City's ASR storage volume of approximately 950 MG through 2017 does not represent physical stored water, but is rather an accounting total of stored water available for recovery.

Proposed New Location of ASR 6

The proposed location of ASR 6 (see Figure 1) identified in the ASR Limited License #002 is in the SW quarter of the NE quarter of section 24 in T1S R2W.

The proposed new location for ASR 6 is 1,060ft south, 2,570ft east from center of Section 30 in T1S R1W. During 2014, the City drilled a piezometer at the proposed ASR 6 location to evaluate the hydrogeologic properties of the underlying aquifer. Test results proved favorable, and the City proceeded with drilling a production well (WASH 74133) in 2015, in lots adjacent to the piezometer that the City purchased in 2015.

Construction of the new well was completed in December of 2015; however, the City does not intend to bring the well online for several years. A work plan will be developed at a future date when the City is ready to begin using the well. Testing of the well during construction demonstrated that the aquifer is likely capable of sustaining 2.5 MGD with potential of yielding 3.0 MGD to meet short-term peak demands.

The locations of the current (previous) and proposed new site for ASR 6 are presented in Figure 1. The final ASR 6 as-built and some basic design drawings for ASR 6 are included in Attachment A. ASR 6 meets all OWRD well construction standards as defined in Oregon Administrative Rules (OAR) 690-210. The final completion of ASR 6, including the seal and liner, was pre-approved by OWRD. The primary reason the seal was set below the static water level (which is roughly 340 feet below ground surface) is that OWRD does not want the upper unsaturated basalt formation to become saturated during ASR injection, because water could be irretrievably lost, which is not permitted under the ASR limited license rules.

An interference analysis was completed on ASR 6 and nearby wells (ASR 1, 2 and 4) at the Sorrento Wellfield. During injection/pumping of ASR 6 at the proposed rate of 2.5 MGD, there is likely to be 20 feet of drawup/drawdown at the Sorrento Wellfield. This amount of interference will not affect the performance/capacity of the existing wells at Sorrento. Inversely, interference (calculated to be 20 feet of drawup/drawdown) due to injection/pumping from the Sorrento Wellfield will be taken into consideration when designing the pump system and the intake placement in ASR 6.

Request to Change Hanson Well (WASH 8988) to ASR 5

The current location of the Hanson Well (see Figure 1) identified in the ASR Limited License #002 is in the SE quarter of the SW quarter of section 21 in T1S R1W. The Hanson Well has been decommissioned and converted to a monitoring well with nested piezometers. A schematic of the well modification and the well log for the Hanson Well are included in Attachment B.

This modification requests to change the name and location of Hanson Road well to the City's newly constructed ASR 5, which is located at the Sorrento Facility, approximately 100 feet to the west of the Hanson Well. The location for ASR 5 is 535 ft north, 2,475 ft east from the southwest corner of Section 21 in T1S R1W.

Construction and testing of the ASR 5 well was completed in January of 2017; however, the City does not intend to bring the well online until 2019. GSI can provide the basalt cuttings to OWRD, as required by Condition #23 in the ASR Limited License #002. A work plan will be developed at a future date prior to when the City is ready to begin using ASR 5. Testing of the well during construction demonstrated that the aquifer is likely capable of sustaining 2.0 MGD to meet short-term peak demands.

The locations of the Hanson Well and proposed new site (ASR 5) are presented in Figures 1 and 2. Figure 3 shows a schematic overview of the ASR facility, including the Hanson well (ASR 1), ASR 2, ASR 4, and ASR 5. The final ASR 5 well log and as-built are included in Attachment B. ASR 5 meets all OWRD well construction standards as defined in Oregon Administrative Rules (OAR) 690-210. The final completion of ASR 5 was pre-approved by OWRD.

Request to Change Language of Condition 12(B)

Currently, under section 12(B) of Other Conditions in the ASR Limited License #002, recovered water is defined as either natural water or stored water based on pumping rate and volume:

“Water withdrawn from an ASR well is first considered natural water up to the authorized rate and volume at that well. Any additional withdrawal above that of

natural water shall be considered a withdrawal of stored water up to its authorized rate and volume at the well. Therefore, simultaneous withdrawals of natural and stored water may occur.”

The pumping limit set forth in the Limited License is 14.4 MGD between all wells. Because of the high rate limits for the wells as dictated by the permit, recovered water is seldom classified as ‘stored water’. Therefore, reported amounts of recovered natural water versus recovered stored water do not accurately reflect what is physically occurring at the ASR sites. Specifically, water pumped from the well represents water that was stored that season, and little native groundwater is actually recovered in any one ASR cycle. The current accounting system inflates the amount of stored water remaining in the aquifer compared to what physically is occurring.

We propose to change Condition 12(B) in ASR Limited License #002 to better account for the way the ASR system operates and for accounting purposes regarding the amount of water that has been injected and recovered to the following:

Any water withdrawn from an ASR well identified in this limited license shall be debited against the quantity available in the aquifer by virtue of ASR storage or considered a draft on natural groundwater under existing groundwater rights. Simultaneous withdrawals of natural groundwater and stored water may occur, but at no time shall the total withdrawal rate exceed that which is authorized in this limited license. The licensee shall report monthly amounts debited against the ASR storage account and the amount of natural groundwater withdrawn. This limited license does not authorize withdrawal of more water than was available from injection. In the event that static water levels at project wells drop below pre-ASR groundwater elevations or other unforeseen issues occur, the Department may review, modify or revoke this condition and re-evaluate the storage account balance.

This proposed change, which matches other ASR Limited Licenses (e.g., City of Tigard) would allow the City to withdraw natural groundwater or stored water at their discretion, but would still limit the total amount recovered to that which is set forth in ASR Limited License #002.

Thank you for considering this request and please do not hesitate to call us at 971-200-8526 if you have questions.

Regards,



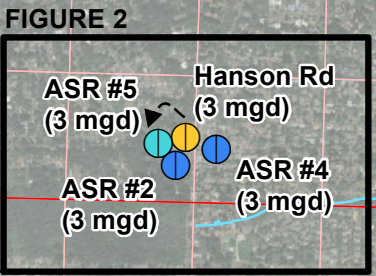
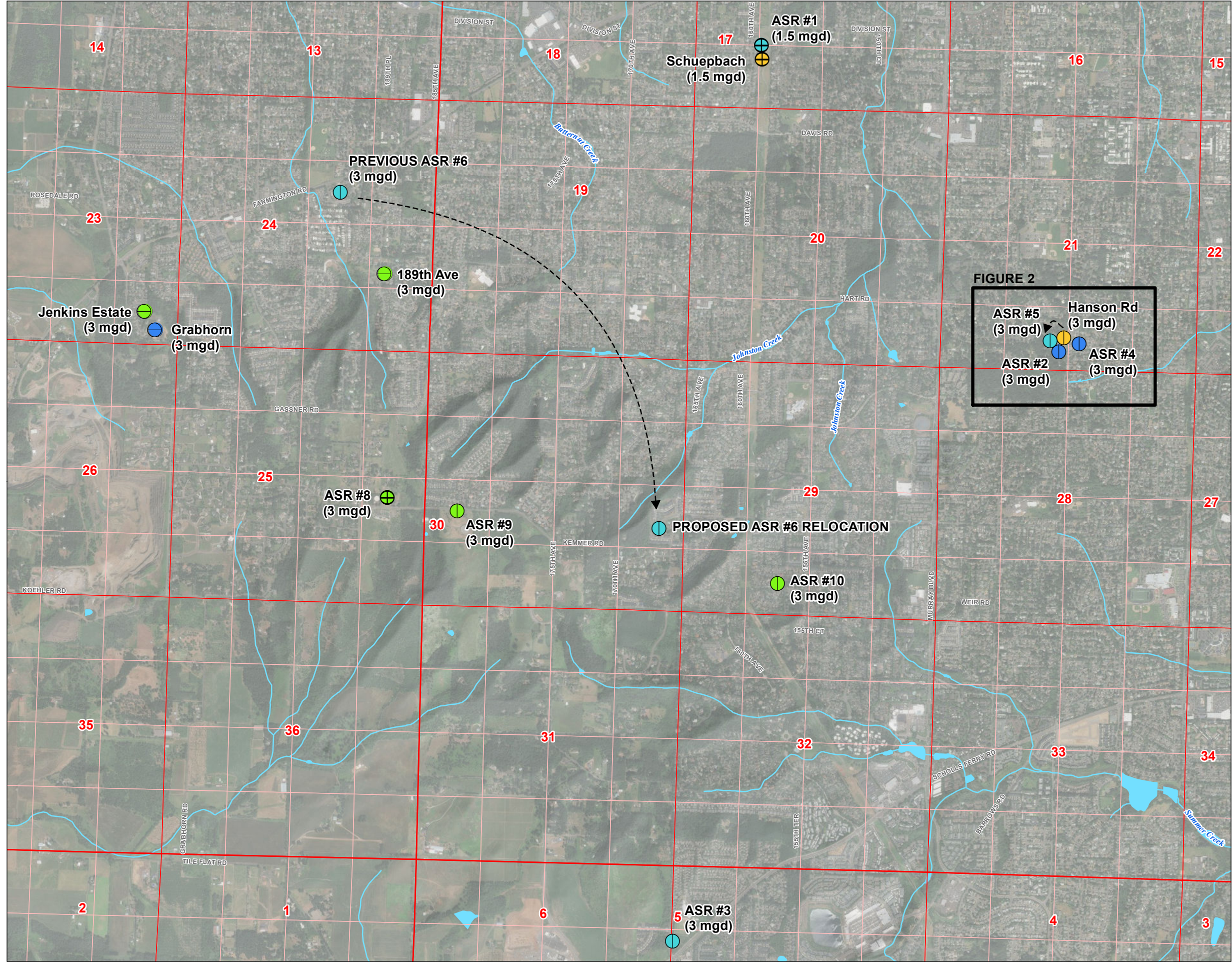
Jason Melady, RG, CWRE
Principal Hydrogeologist



Robyn Cook, RG
Consulting Hydrogeologist

Figures

FIGURE 1
Current and Proposed ASR Wells
Based on Existing TVWD/Beaverton
ASR Limited License #002



LEGEND

Licensee

- Beaverton
- ⊖ TVWD
- ⊕ TVWD/Beaverton

Well Category

- Operational ASR Well
- Drilled, Not Operational ASR Well
- Inactive ASR Well
- Proposed Future ASR Well

All Other Data

- > Proposed Modification to ASR Limited License
- Watercourse
- Waterbody

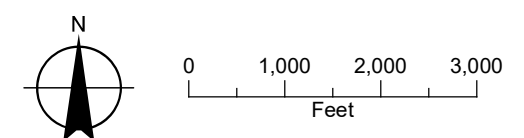


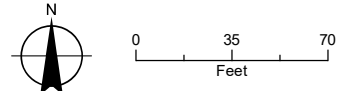


FIGURE 2
Hanson Well and ASR #5

LEGEND

- ASR Well
- Observation Well
- Fence
- Tax Lot

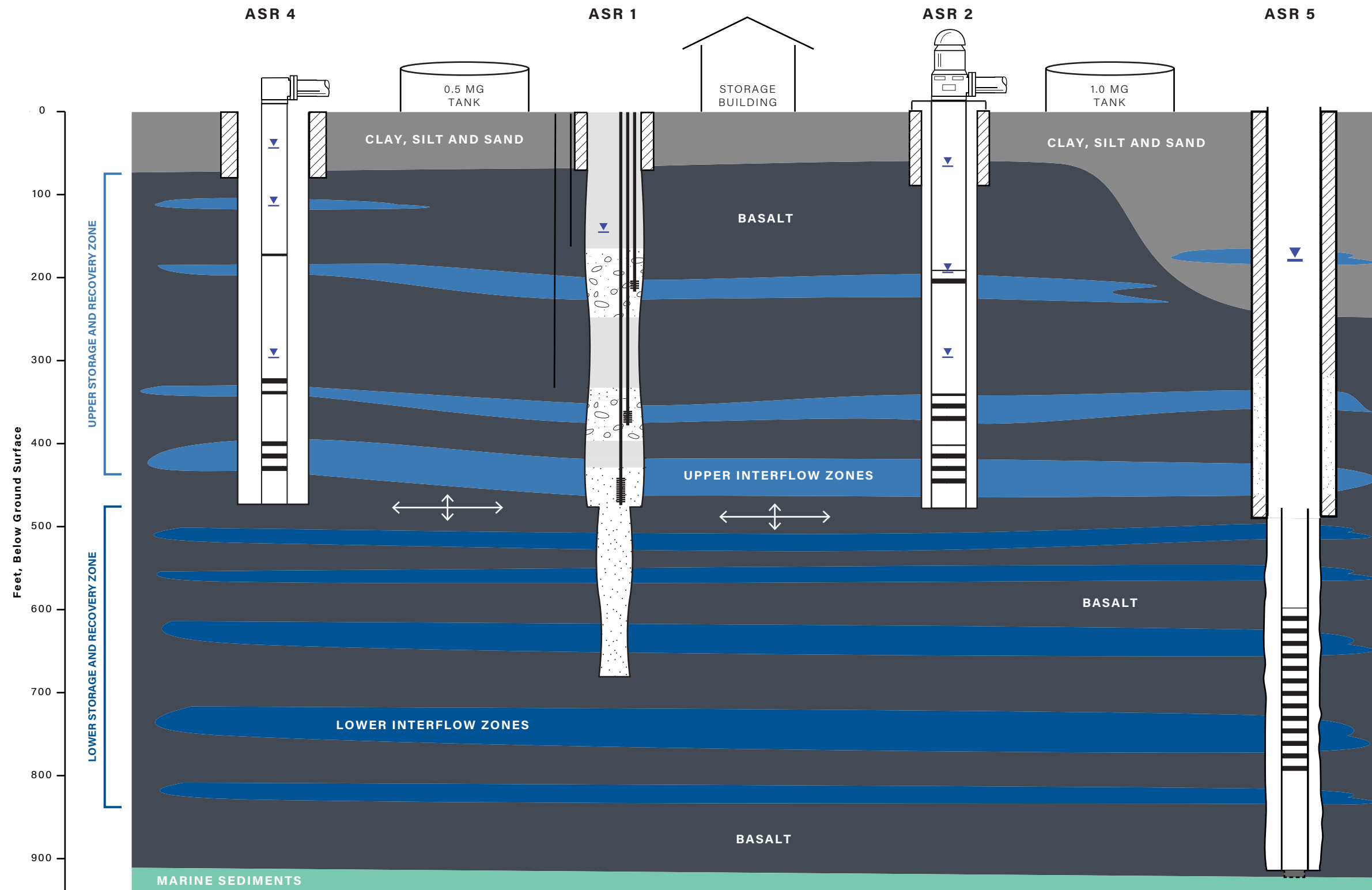
ASR #5
 Located 535 feet North and 2,475 feet East from the SW corner of Section 21, Township 1 South, Range 1 West (W.M.)



Date: July 11, 2017
 Data Sources: METRO, Air photo taken Summer 2014 by METRO



FIGURE 3
Schematic ASR Overview
 Beaverton, Oregon



LEGEND

- Cement Seal
- Sand
- Pea Gravel
- Liner/Casing and Screen Interval
- 2-inch PVC Monitoring Well
- Vertical Hydraulic Conductivity is Much Less than Horizontal Hydraulic Conductivity

Geology

- Clay, Silt, and Sand
- Basalt
- Upper Interflow Zone
- Lower Interflow Zone
- Marine Sediment

NOT TO SCALE



Appendix A

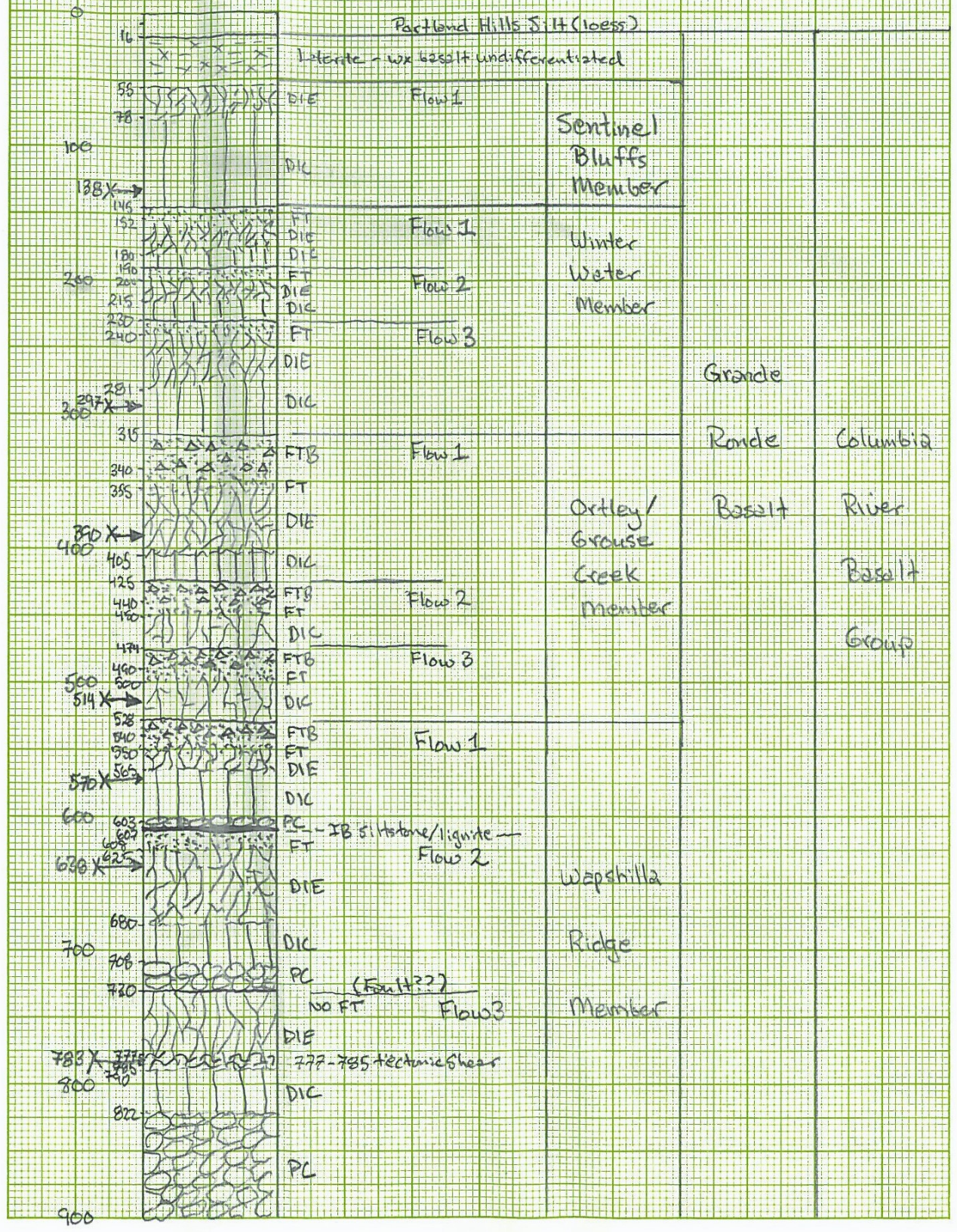
City of Beaverton ASR #6 test well geologic log

Prepared by: Terry L. Tolon, P.G.

April 14, 2016

Depth
(ft. bgs)

UNIT



City of Beaverton ASR #6 test well geologic log

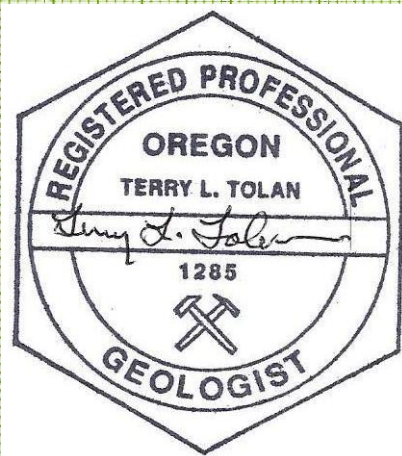
Prepared by Terry L. Tolan, RG
UNIT

April 14, 2016

Depth (ft bgs)	Geologic Description	Flow	Member	Group
900	PC	Flow 3	Wapshilla Ridge Member	Columbia River
938-941'	IB claystone/siltstone	Flow 4		
970X	WX FT DIE		Ronde	Basalt
980-988'	IB claystone	Flow 1		
1000X	DIC		China Creek Member	Basalt Group
1010-1021'	FT minor tech. fracture DIE	Flow 2		
1041X	IB claystone		Basalt	Group
1055-1070'	FT DIE	Flow 3		
1099X	DIE			
1100X	DIC minor vesicles			
1200	Pre-CRBG sediments			

Explanation

- WX: weathered
- FTB: Flow Top Breccia
- FT: Flow Top
- DIE: Dense Interior - Entablature
- DIC: Dense Interior - Columnar
- PC: Pillow Complex
- ft bgs: Feet below ground surface
- ves: vesicular
- IB: sedimentary interbed
- 138X → Geochemical sample location



Expires 12/31/2016

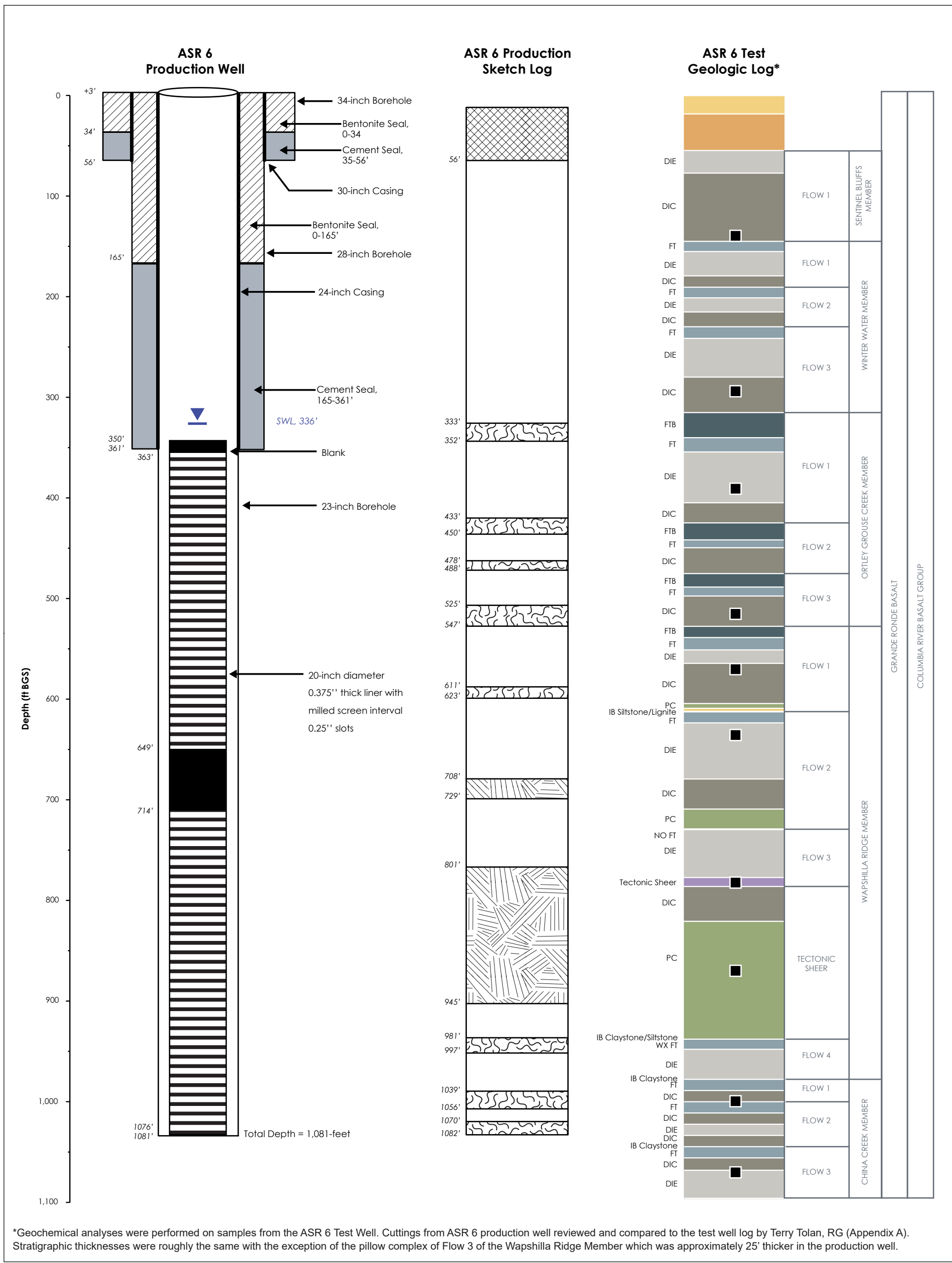


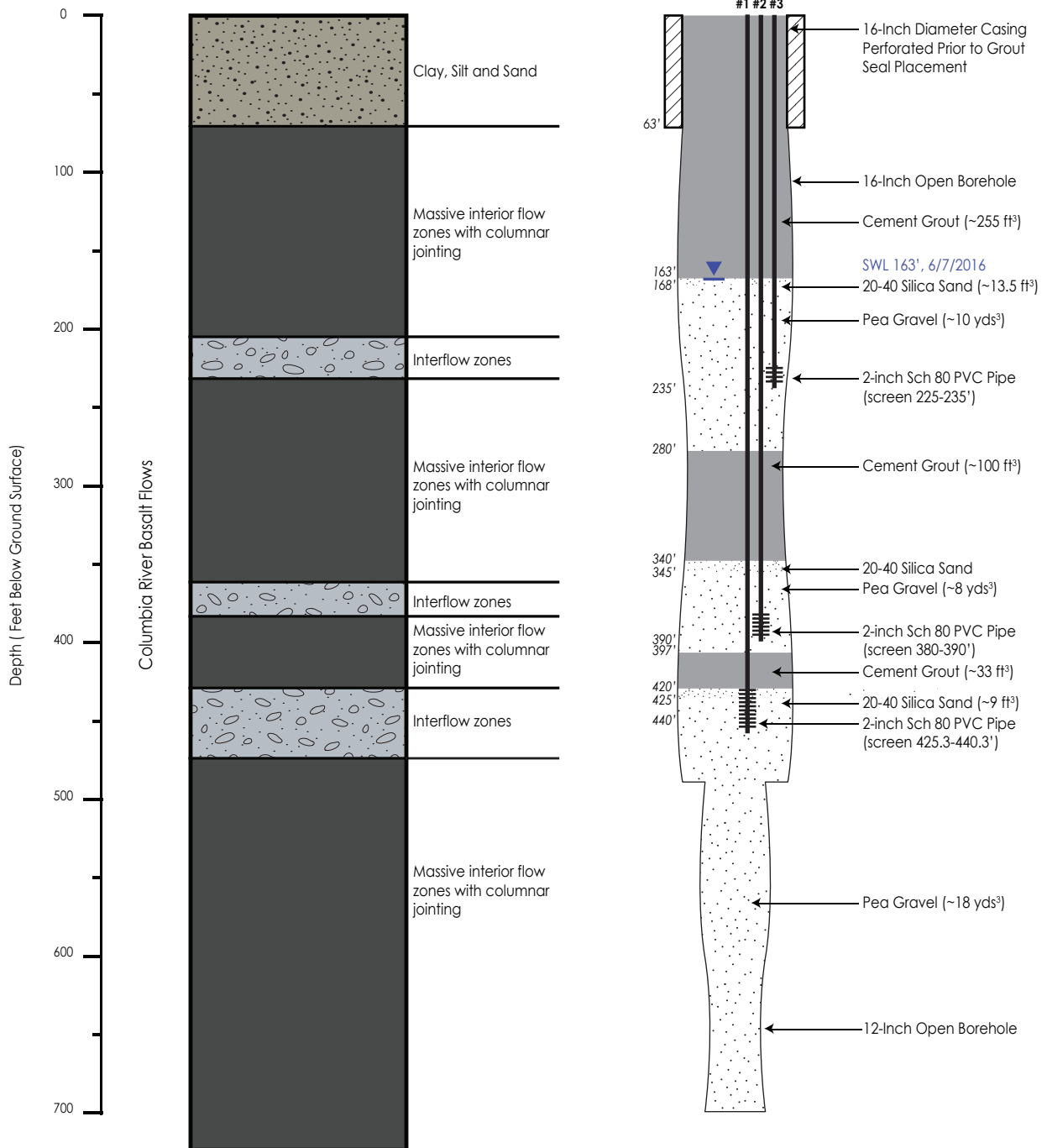
FIGURE 2
ASR 6 Production Well As-Built
 City of Beaverton, Oregon

*Geochemical analyses were performed on samples from the ASR 6 Test Well. Cuttings from ASR 6 production well reviewed and compared to the test well log by Terry Tolan, RG (Appendix A). Stratigraphic thicknesses were roughly the same with the exception of the pillow complex of Flow 3 of the Wapshilla Ridge Member which was approximately 25' thicker in the production well.

- LEGEND**
- Geochemical Analysis
 - Portland Hills Silt
 - Laterite
 - Dense Interior - Entablature (DIE)
 - Dense Interior - Columnar (DIC)
 - Flow Top (FT)
 - Flow Top Breccia (FTB)
 - Pillow Complex (PC)
 - Unconsolidated
 - Interflow
 - Pillow Complex
- NOTES**
- BGS: Below Ground Surface
 - WX: Weathered
 - VES: Vesicular



Appendix B




Notes:

Well drilled in 1945
 Well Log ID = WASH 8988
 Well located in Township 1 South, Range 1 West, Section 21
 SWL = static water level

ASR 1
Nested Monitoring Well
As-Built
 Beaverton, Oregon





North

Nested Piezometer located in Well House building



Hanson Rd



Oregon

Kate Brown, 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 25, 2016

BRIAN OWENS MWC#10581
HOLT SERVICES INC
10621 TODD ROAD EAST
EDGEWOOD, WASHINGTON 98372

FINAL ORDER

Dear Mr. Owens:

The Special Standards Request Form you submitted for owner: City of Beaverton, Start Card number 1030648, is hereby approved for the following: You may convert this water supply well (WASH 8988) into a multi-completion piezometer well by installing three 2-inch casings in the existing well borehole. The three casings shall be screened and filter packed into the three distinct interflow zones as shown on the ASR1, Hanson Road Well schematic borehole drawing submitted with this Special Standards Request. The piezometer well casings shall be separated by at least two inches by the use of centralizers and each casing shall be spaced in the borehole at least two-inches away from the borehole wall to allow for an adequate cement grout seal. A condition of this Special Standards Request approval is that there shall be no comingling of the interflow zones and the placement of the cement grout seal between these interflow zones shall conform to the Departments rules and result in a seal that is free of voids or bridges. In addition, the existing 16 inch diameter casing shall be perforated prior to the grout seal placement as shown on the attached schematic borehole drawing. Mr. Barry Sanford, the well inspector for the Northwest Region shall be notified, at least three business days, prior to the cement grout seal placement so that he may be present. All other construction standards must be adhered to. A copy of your Special Standards Request form is attached.

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 concerning this letter, I may be contacted at (503) 986-0852, or by e-mail at Joel.W.Jeffery@ wrd.state.or.us.

Sincerely,

Joel Jeffery, Coordinator
Well Construction Program
Well Construction and Compliance Program

enclosure

cc: Barry Sanford, NW Region Well Inspector
File

This is a final order in other than 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.

ASRT



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: 5/20/2016 Oral approval date (if applicable): Nov 2015

Bonded Well Constructor (name, license #, and mailing address): Brian Owens

License # 10581 10621 Todd RD East Edgewood, WA 98372

(1) Location of Well: SE 1/4 SW 1/4 Tax lot 200 Section 21,
Township T S, Range T W, Washington County
Address at well site: Sorrento Well Field Site Entrance at Intersection of SW Hanson Rd and SW 135th Ave
Beaverton, OR 97008

(2) Start Card Number(s)(for work to be done): 1030648

(3) Name and Address of Land Owner: City of Beaverton 12725 SW Millikan Way, Beaverton, OR 97076

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

(5) The unusual site conditions which necessitate this request: Existing water supply well
with multiple flow zones available for isolation and head water level measurements during ASR operation
of new replacement ASR well

(6) The proposed construction methods that the bonded well constructor believes will be adequate for this well: (attach additional pages if needed)
Install nested piezometers to isolate flow zones and allow isolated pressure transducer monitoring
See attached diagram that was previously discussed between Joel Jeffrey and Larry Eaton

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MAY 20 2016

ENF
WATER RESOURCES DEPT
SALEM, OREGON

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

PLEASE NOTE:

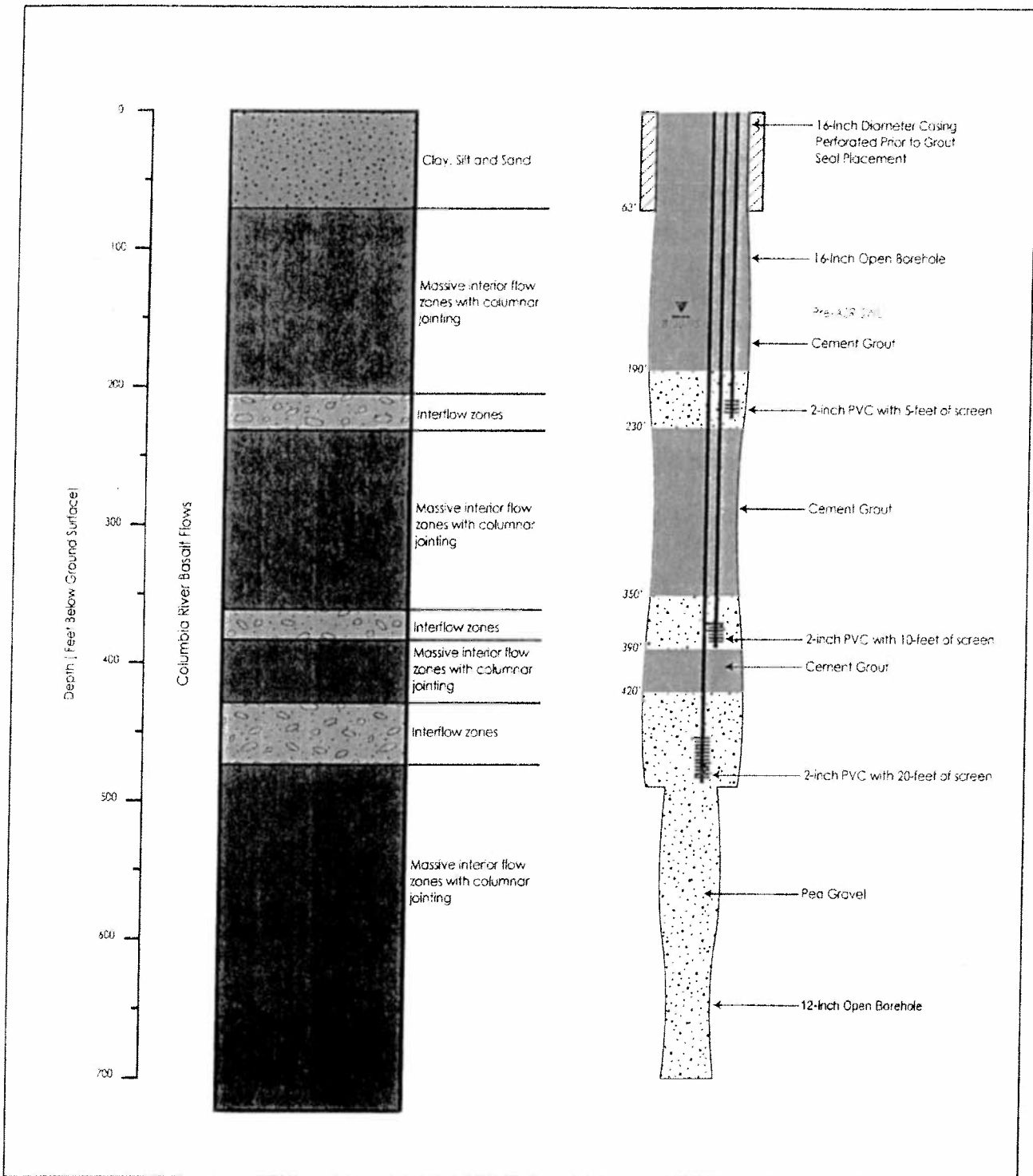
- (1) The Well Construction Standards serve to protect ground water resources. By approving and issuing this special construction standard the Oregon Water Resources Department is not representing that a well constructed in accordance with this condition will maintain structural integrity or that it 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: _____

RECEIVED

MAY 20 2016



Notes:

Well drilled in 1945
 Well Log ID = WASH 8988
 Well located in Township 1 South, Range 1 West, Section 21
 SWL = static water level

FIGURE 7

ASR 1, Hanson Road Well
 Conversion to Nested Monitoring Well
 Beaverton, Oregon

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MAY 27 2016
 GSI

WATER RESOURCES DEPT
 SALEM, OREGON

STATE ENGINEER
Salem, Oregon

WASH Well Record

STATE WELL NO. 1114-21 P 1
COUNTY Washington
APPLICATION NO. GR-343

008988

OWNER: City of Beaverton

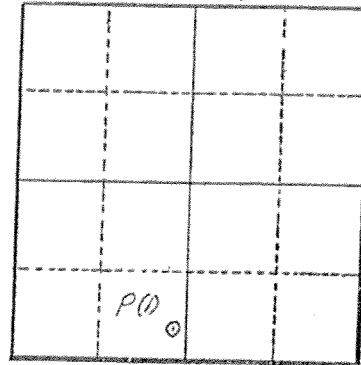
MAILING ADDRESS: City Hall

LOCATION OF WELL: Owner's No. #2

CITY AND STATE: Beaverton, Oregon

SE 1/4 SW 1/4 Sec. 21 T. 1 S., R. 1 W., W.M.

Bearing and distance from section or subdivision corner 2500 feet east and 460 feet north from the SW corner of section 21,



Altitude at well 350 feet Interpolated

TYPE OF WELL: Drilled Date Constructed 1945

Depth drilled 800 Depth cased 800

Section 21

CASING RECORD:

16 — inch casing set from 0 to 63 feet.
15 — " " " " 63 to 450 feet.
12 — " " " " 450 to 800 feet.

FINISH:

none ?

AQUIFERS:

rock from 90 to 800 feet,

WATER LEVEL:

170 feet below land surface. Dec. 1945.

PUMPING EQUIPMENT: Type Fairbanks-Morse Turbine

H.P. 60

Capacity 950 G.P.M.

WELL TESTS:

Drawdown 80 ft. after _____ hours pumping? G.P.M.

Drawdown _____ ft. after _____ hours _____ G.P.M.

USE OF WATER Municipal 950 gpm ^{3 cfs.} Temp. _____ °F., 19____

SOURCE OF INFORMATION Reg. Statement GR-343

DRILLER or DIGGER _____

ADDITIONAL DATA:

Log yes Water Level Measurements _____ Chemical Analysis X Aquifer Test _____

REMARKS:

RECEIVED

MAY 20 2016

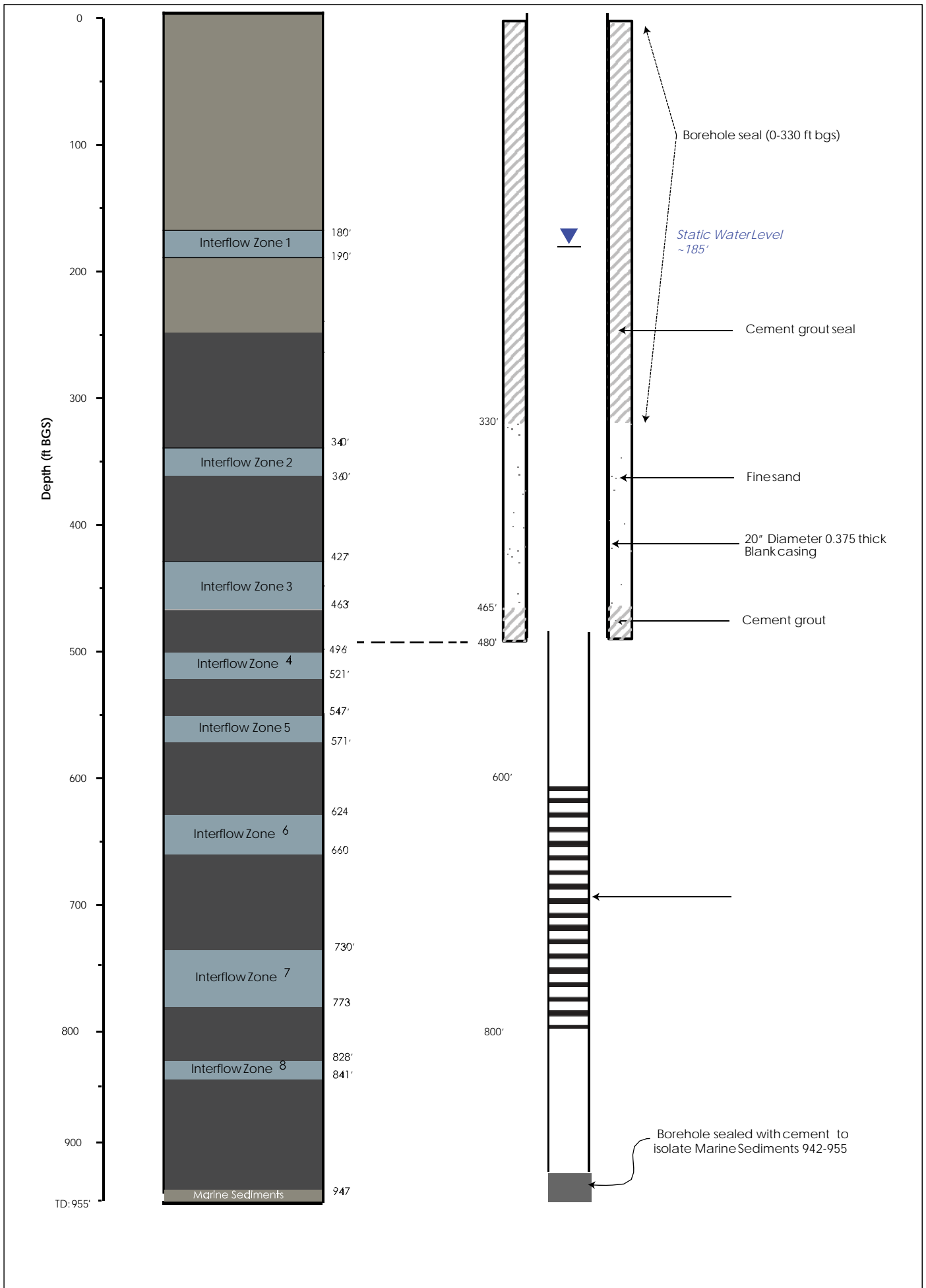
WATER RESOURCES DEPT
SALEM, OREGON



City of Beaverton ASR-5 Formation Log

From	To	Detailed Description
0	2	Gravel Fill
2	8	Brown silt and gravels
8	35	Reddish brown clay/silt soft
35	49	Light brown clay occasional gravels
49	85	Light brown clay/silt
85	125	Highly weathered soft basalt with clay
125	148	Soft basalt some clay and silt
148	155	Broken basalt chunky
155	220	Basalt sticky silt bound
220	305	Basalt med less silt
305	390	Basalt hard, areas of broken rust colored and vesicular
390	398	Basalt broken and fractured
398	427	Basalt med hard
427	461	Basalt med some broken, staining and vesicular
461	464	Basalt med reddish stained
464	496	Basalt very hard black/white speckled chunks
496	516	Basalt soft broken, decayed vesicular
516	547	Basalt med tight grained
547	553	Basalt dark brown decayed with clay
553	568	Basalt weathered broken vesicular soft
568	571	Basalt med
571	590	Basalt hard blue
590	613	Basalt hard blue
613	615	Basalt fractured light grey
615	624	Basalt hard
624	627	Basalt brown med weathered
627	650	Basalt decayed brown/white/black
650	652	Basalt black med
652	660	Basalt weathered brown/red
660	705	Basalt med hard
705	730	Basalt med hard more chunky and fractured
730	773	Basalt broken and chunky blue staining and red clay like pieces
773	802	Basalt hard
802	824	Basalt medium
824	828	Basalt broken med
828	841	Basalt broken/vesicular with clay
841	911	Basalt med large chunks
911	935	Basalt med large chunks 1" to 2" pieces
935	947	Basalt hard
947	955	Basalt hard multicolored clay

City of Beaverton ASR-5 As Built Diagram





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: 10.07.16 **Oral approval date (if applicable):** 10.05.16

Bonded Well Constructor (name, license #, and mailing address): Richard Miller 1953

10621 Todd Rd E, Edgewood WA 98372

(1) Location of Well: SE 1/4 SW 1/4 Tax lot 200 Section 21,
 Township 1 S, Range 1 W, Washington County

Address at well site: 13520 SW Hanson Rd

(2) Start Card Number(s)(for work to be done): 1031489

(3) Name and Address of Land Owner: City of Beaverton

PO Box 4755, Beaverton OR 97076

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

(5) The unusual site conditions which necessitate this request: Rig will be off the hole from 10.03.16

thru 10.11.16.

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

Well will be temporarily sealed with temp casing.

- (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: _____

