

WATER TRANSFER WORKING GROUP PROJECT DESCRIPTION

APPLICATION NO./COURT CLAIM NO. Pending		
APPLICANT NAME Dave Brown/Pro Ag Services, Inc	CONTACT NAME Jason Shira, Aspect Consulting	TELEPHONE NO. 509-895-5470
WATER RIGHT HOLDER'S NAME (if different)		EMAIL jshira@aspectconsulting.com

DATE OF APPLICATION(S) Pending	PRIORITY DATE Pending, mitigated by a pre-1905 water right (No. CS4-02136sb9@1(B))
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WATER SOURCE: Groundwater – a well completed in Saddle Mountain Basalt aquifer	CROP: Berries (e.g. strawberries, blueberries, grapes)
INSTANTANEOUS QUANTITY: 54 gpm	ANNUAL QUANTITY: Not to exceed 10 ac-ft/yr (CU)
PERIOD OF USE: April 1 to October 15	
PLACE OF USE: NE$\frac{1}{4}$NW$\frac{1}{4}$ of S18, T14N/R19E.W.M.	PURPOSE OF USE: Irrigation of 6 acres
IRRIGATION METHOD: Drip	

CONSUMPTIVE USE CALCULATION: <p>The new water budget water right will authorize Dave Brown/Pro Ag Services to withdraw groundwater not to exceed 10 acre-feet (consumptive use) from a well completed in the Saddle Mountain Basalt aquifer for irrigation water supply.</p> <p>Mr. Brown runs a business (Pro Ag Services) providing and installing trellises for area farmers. Mr. Brown plans to install a trellis system on 10-foot rows across 6 acres to grow various berries. The berries (e.g. strawberries, blueberries, grapes) will be irrigated with a drip irrigation system.</p>

NARRATIVE DESCRIPTION OF PROJECT: <p>Dave Brown/Pro Ag Services has a purchase pending of a senior (pre-1905) water right from Archie and Marie den Hoed (formally Flying M Ranch) that is currently in instream flow and mitigation. The water right will enable Dave Brown/Pro Ag Services to grow various berries north of Selah along Buffalo Road. The project proposes to receive a new mitigated water right using consumptive use mitigation credits from Washington State's Trust Water Right Program.</p>
IMPAIRMENT ANALYSIS:

To facilitate the transfer, Aspect completed a site-specific hydrogeologic investigation (available upon request) using a multiple line of evidence approach that used the best available data describing the hydrogeology surrounding the farm's well. The objective of the investigation was to determine if water is physically available and if the existing point of withdrawal is in hydraulic continuity with the adjacent reach of the Wenas or Yakima River.

Based on review of the available information and understanding of the site-specific hydrogeologic conceptual model presented below, Aspect observed the following:

- The proposed point of withdrawal (well) is completed in the Saddle Mountain Basalt aquifer. The well is located on the south limb of the Umtanum Ridge anticline, which dips approximately 14 degrees toward the south in the project area.
- Water-bearing interval in the well consists of the Selah Interbed sandstone unit. At-time-of-drilling (ATD) water level in 1981 was reported at 90 feet below ground surface (bgs).
- The 100-feet-thick overlying Pomona Member of the Saddle Mountain Basalt Formation behaves as a confining unit and extends beneath Wenas Creek and Yakima River. The vertical separation between the water bearing sandstone and Wenas Creek near the project site is approximately 65 feet.
- The direction of Saddle Mountain aquifer horizontal groundwater flow is down the Wenas Creek valley toward the Yakima River. The piezometric surface is likely higher than the lower 1-mile reach of Wenas Creek valley bottom elevation.
- Stream depletion due to groundwater pumping of the existing well will likely occur along the mainstem of the Yakima River.

The proposed new water right is water budget neutral with respect to Total Water Supply Available (TWSA) in the Yakima River Basin as measured at the Parker gage. Month by month mitigation is offered to account for the project's water use during the irrigation season.

Wenas Creek and Yakima River are located within 1,100 and 4,100 feet, respectively, of the applicant's property. The Washington State Department of Fish and Wildlife (WDFW) database (SalmonScape) indicates documentation of Endangered Species Act (ESA)-listed species in both Wenas Creek and Yakima River.

CONCLUSION

Based on review of the site-specific information, Aspect concluded that groundwater in the Saddle Mountain Basalt aquifer is physically available and in hydraulic continuity with the Yakima River.



October 18, 2017

Mr. Trevor Hutton, Section Manager
Department of Ecology – Water Resources Program
1250 West Alder Street
Union Gap, WA 98903-0009

Re: Dave Brown Pre-Application Consultation
Project No. 170473

Dear Mr. Hutton:

Mr. Dave Brown is actively pursuing water rights to acquire for mitigation of a new water budget neutral (WBN) water right to facilitate establishment of a berry farm near Selah. The purpose of this letter is to request technical assistance from the Washington Department of Ecology Water Resources Program (Ecology) to support the acquisition of water rights and issuance of a new WBN water right. We are requesting technical assistance in identifying the suitable geographical area to pursue a water right that will be transferred to the Trust Water Right Program as mitigation for a new WBN water right.

An overview of hydrogeologic setting and description of the project is provided in this letter.

Project Description

Mr. Brown's project is located north of Selah, WA in Yakima County, NE 1/4, NW 1/4 of Section 18, T14N, R19E, as shown on Figure 1. Mr. Brown plans to plant less than 6 acres of berries, and estimates 10 acre-feet per year of water. Water will be supplied through an existing well (14N/19E-18C01).

Hydrogeologic Framework

Local geologic characteristics are largely the result of regional tectonic processes. Mr. Brown's project is located east of the Cascade Mountains within the Selah-Wenas Basin, of the Yakima Fold Belt, a sub-province of the Columbia Basin. The Selah-Wenas Basin is bounded to the northeast by the Manastash and Umtanum Anticlines and to the southwest by the Yakima Ridge structure.

Regional bedrock is dominated by the Columbia River Basalt Group (CRBG), a series of stacked basalt flows and sedimentary interbeds that were deposited 17 and 6 million years ago during the Miocene epoch. The CRBG is underlain, intercalated, and overlain by volcanoclastic sedimentary deposit (Ellensburg Formation) derived from ancestral cascade volcanoes. The Ellensburg Formation is overlain by recent alluvium, i.e. Wenas Creek and Yakima River alluvial deposits.

Site Hydrostratigraphic Units

Surficial geology is shown in Figure 2. Geologic unit and structural data from the Washington State Department of Natural Resources, hydrogeology framework from the U.S. Geological Survey, and driller's well log data from the Ecology on-line water well database (included as Attachment 1) were used to develop the subsurface interpretation. Local data indicate that there are three principal geologic units that underlie Mr. Brown's project. From younger to older, these are unconsolidated quaternary alluvium, the Ellensburg Formation, and the CRBG. The characteristics and distribution of each unit is described as follows:

Alluvium – Floodplain deposits occupy intermittent and perennial drainage features. The deposits are composed of clay, gravel, boulder sized grains deposited by fluvial processes. The driller's log for Mr. Brown's existing well (14N/19E-18C01) describes a 45-foot deposit of boulders, sand, and clay that are underlain by basalt.

Ellensburg Formation - The Ellensburg Formation is largely the result of deposition of volcanoclastic sediment from nearby domal volcanoes. The deposits are composed of intercalated conglomerates, sandstones, and siltstones. These sediments often occur as stratigraphic sequences alternating between laterally extensive depositional sheets of hyperconcentrated flood flow deposits to reworked sediments that are moderately sorted bedded and crossbedded.

The unconsolidated Ellensburg Formation occurs as a thin unit of overburden in the vicinity of Mr. Brown's project as shown in Figure 3.

Columbia River Basalt Group – The CRBG is the basement unit in the area. The CRBG is defined by the Pomona Member of the Saddle Mountains Basalt Formation; and the Priest Rapids, Roza, and Frenchman Springs Member of the Wanapum Basalt Formation in the Selah-Wenas Basin. These units are composed of multiple basalt flows and an intervening consolidated Ellensburg Formation sedimentary interbed, e.g. Selah Interbed.

The 14N/19E-18C01 driller's log (Attachment 1) describes the following members in order of depth below ground surface:

- Pomona Member, Saddle Mountains Basalt Formation – soft to hard, brown and grey, 100-foot thick basalt layer
- Selah Interbed – sandstone with gravel and clay

Analysis of driller's logs, geologic maps, and USGS reports were used to complete the conceptual cross-section presented in Figure 3. The thickness of the Selah Interbed is estimated at 100 to 200-foot thick, and thickens toward the south and east. Underlying the Selah Interbed is the Priest Rapids Member of the Wanapum Basalt Formation.

Geologic Cross-section

The alignment of the geologic cross-section, shown on Figure 2, was chosen to show the relative thickness and position of mappable geologic units in relation to Wenas Creek and Yakima River. Water wells proximal to the cross-section are included. It is important to note the distance the reference wells are to the alignment of the cross-section. The well completions into a respective formation are distorted due to folding of the CRBGs.

The geologic cross-section, shown as Figure 3, indicates the Pomona Member behaves as a confining unit to the water bearing Selah Interbed. The Pomona Member also extends beneath Wenas Creek and Yakima River, separating the water bearing zone of the Selah Interbed from surface water.

Surface Water/Groundwater Interaction

Groundwater in the CRBG aquifer system ultimately discharges out of the Selah-Wenas Basin into the Yakima River Valley. The aquifers hosted by the Saddle Mountains Basalt and Wanapum Basalt Formations within the Selah-Wenas Basin likely discharge to the Yakima River near the Selah Gap. The Pomona member is presumed to behave as an effective aquitard based on review of well logs (Attachment 1). As a result, local pumping of groundwater is not expected to have an impact on Wenas Creek. It is expected that vertical hydraulic gradients increasing down-valley within the basalt aquifer are due to the higher elevation recharge zones along Umtanum Ridge. The USGS found that Yakima River reach between RM 123.5 and 116.7 is neutral; whereas, upstream between RM 124.4 and 123.5 a significant gaining reach occurs.

Stream depletion due to withdrawal of water from existing well 14N/19E-18C01 is likely to occur along the mainstem of the Yakima River where the sequence of Yakima Fold Basalt Subgroup comes into contact with alluvial deposits of the Yakima River, RM 124.4 to 123.5 and RM ~117.5.

New Water Budget Neutral Water Right

Mr. Brown is seeking to acquire a water right and is actively investigating a number of potential opportunities. Ultimately the acquired water right will be transferred into the Trust Water Program and a WBN water right would authorize new uses at Mr. Brown's property. Mainstem Yakima River water rights are being targeted as suitable for mitigating impacts due to the lack of local impacts on Wenas Creek.

Mr. Brown's water supply needs are for irrigation and seasonal in nature. Depending on the purpose and season of the acquired water right, Mr. Brown will evaluate whether use of the Bureau Exchange Contract or other seasonal authorization is necessary.

Technical Assistance Request

We are requesting technical assistance in identifying the suitable geographical area to pursue a water right that will be transferred to the Trust Water Right Program as mitigation for a new WBN water right. It is Aspect's understanding that Mr. Brown may apply for a new WBN water right with priority processing under the Hillis Rule assuming a suitable water right has been acquired to mitigate for the new WBN, and no local impairment will result from issuance of the new WBN water right.

Trevor Hutton, Ecology
October 18, 2017

Project No. 170473

We look forward to meeting with you to discuss this project further.

Sincerely,



Jason M. Shira, LHG

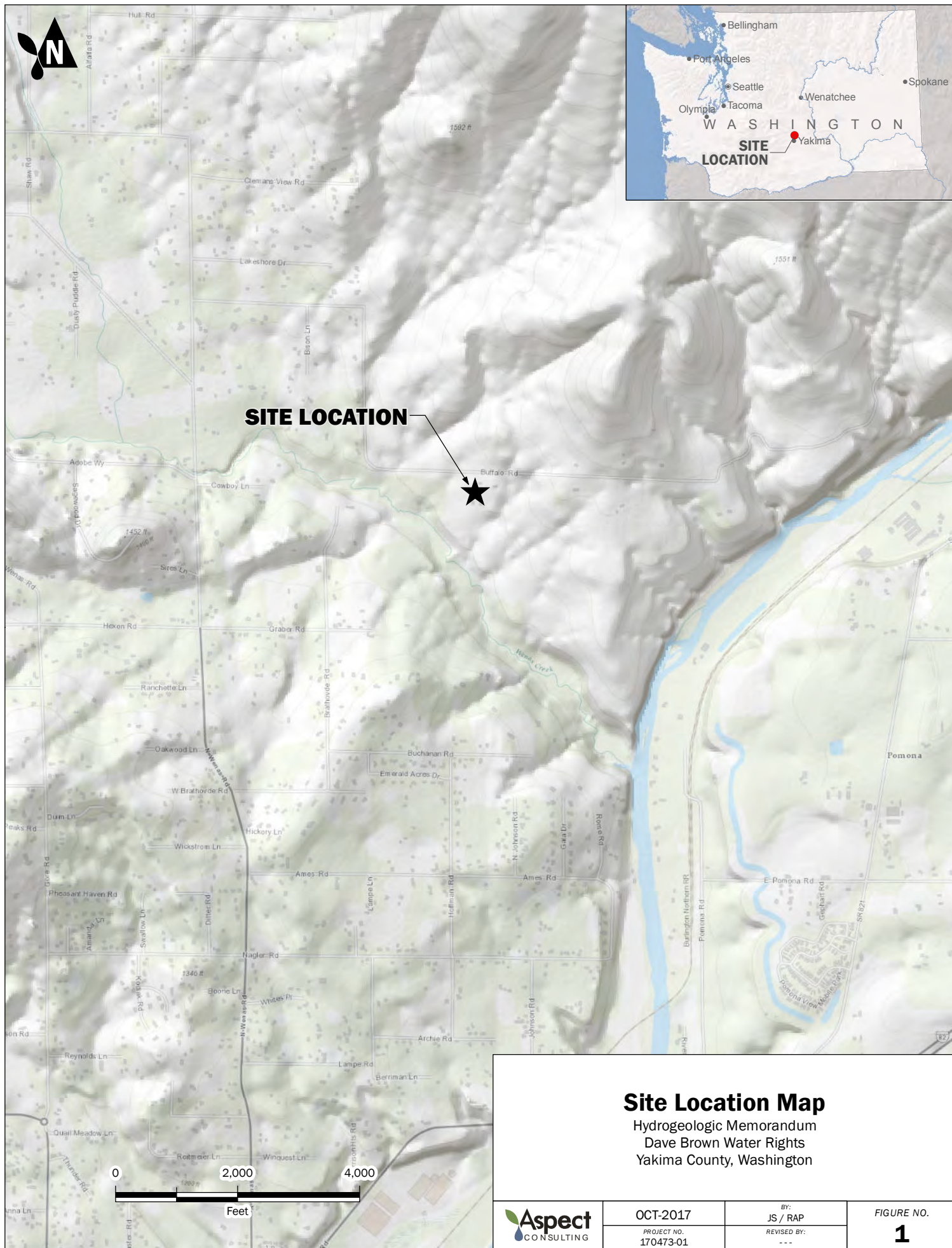
Attachments:

Figure 1: Vicinity Map
Figure 2: Surficial Geology
Figure 3: Cross-Section
Attachment 1: Well Logs

cc: Dave Brown

V:\170473 Water Rights Technical Assistance\Deliverables\Dave Brown Hydro Letter\PreApp Consultation D. Brown.docx

FIGURES



Site Location Map

Hydrogeologic Memorandum
Dave Brown Water Rights
Yakima County, Washington



OCT-2017

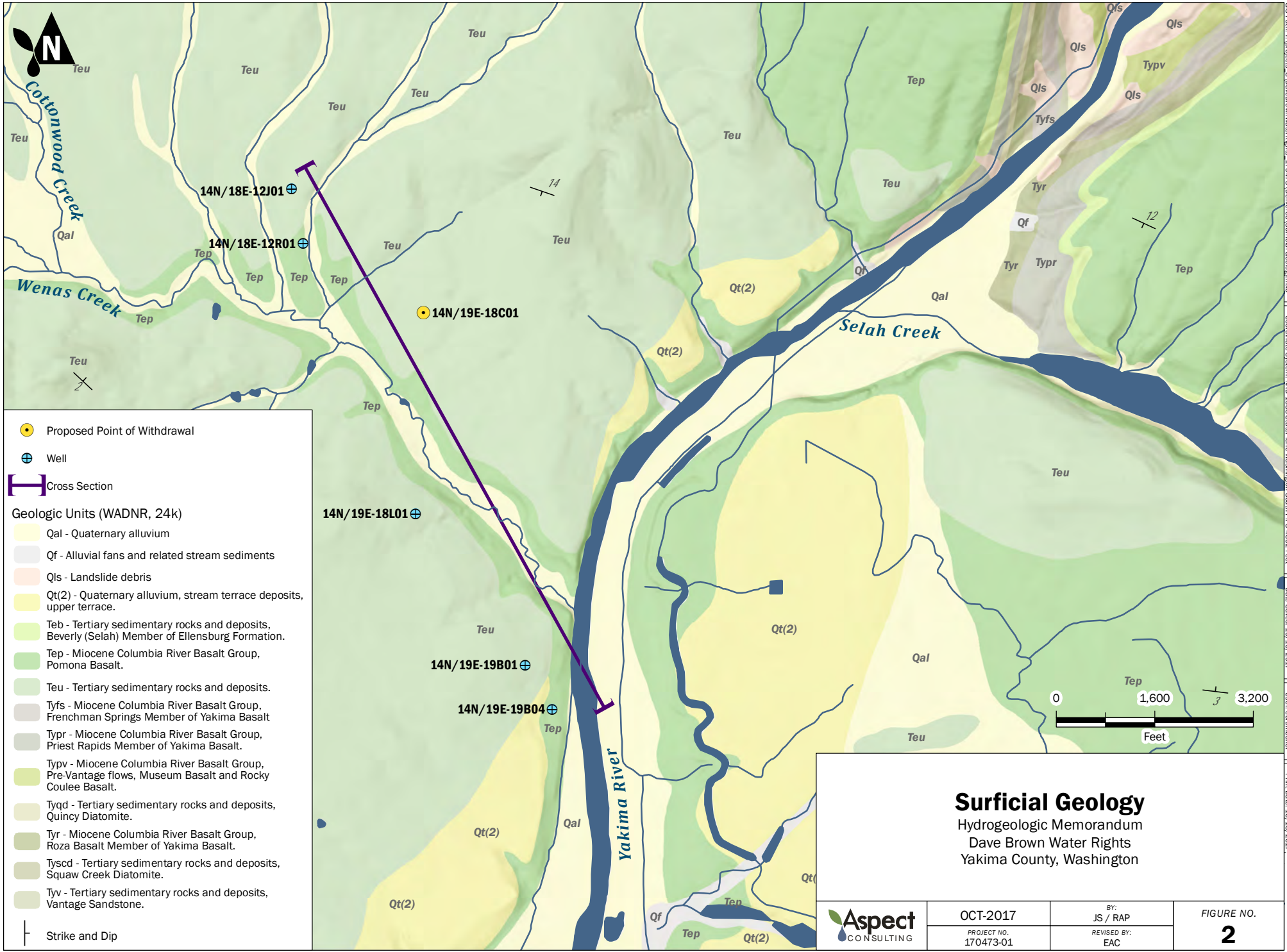
PROJECT NO.
170473-01

BY:
JS / RAP

REVISED BY:

FIGURE NO.

1



Proposed Point of Withdrawal

Well

Cross Section

Geologic Units (WADNR, 24k)

Qal - Quaternary alluvium

Qf - Alluvial fans and related stream sediments

Qls - Landslide debris

Qt(2) - Quaternary alluvium, stream terrace deposits, upper terrace.

Teb - Tertiary sedimentary rocks and deposits, Beverly (Selah) Member of Ellensburg Formation.

Tep - Miocene Columbia River Basalt Group, Pomona Basalt.

Teu - Tertiary sedimentary rocks and deposits.

Tyfs - Miocene Columbia River Basalt Group, Frenchman Springs Member of Yakima Basalt

Typr - Miocene Columbia River Basalt Group, Priest Rapids Member of Yakima Basalt.

Typv - Miocene Columbia River Basalt Group, Pre-Vantage flows, Museum Basalt and Rocky Coulee Basalt.

Tyqd - Tertiary sedimentary rocks and deposits, Quincy Diatomite.

Tyr - Miocene Columbia River Basalt Group, Roza Basalt Member of Yakima Basalt.

Tyscd - Tertiary sedimentary rocks and deposits, Squaw Creek Diatomite.

Tyv - Tertiary sedimentary rocks and deposits, Vantage Sandstone.

Strike and Dip

Aspect

CONSULTING

OCT-2017

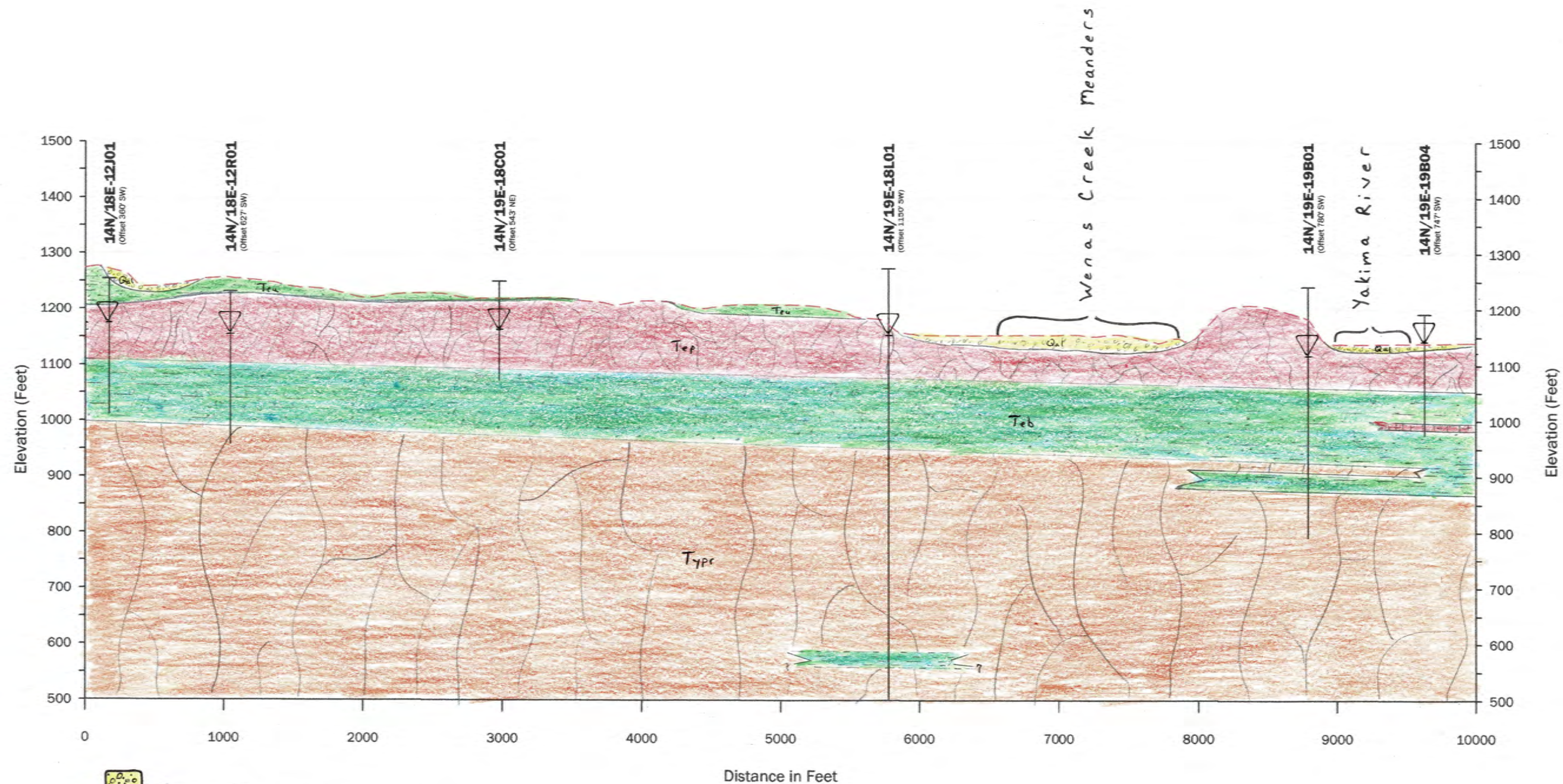
PROJECT NO.
170473-01






BY:
JS / RAP

REVISED BY:
EAC

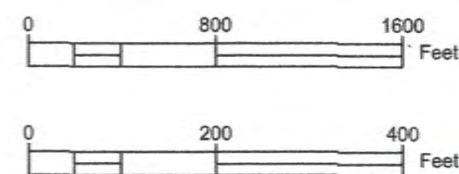
FIGURE NO.

2




-  Qal - Quaternary Alluvium
-  Teu - Ellensburg Formation, undifferentiated
-  Tep - Pomona Member
-  Teb - Ellensburg Formation, Beverly (Selah) Member
-  Tpr - Priest Rapids Member

Horizontal Scale: 1" = 800'
 Vertical Scale: 1" = 200'
 Vertical Exaggeration = 4x



Cross Section A-A'
 Hydrogeologic Memorandum
 Dave Brown Water Rights
 Selah, Washington

	Sep-2017	BY: JMS/CMV	FIGURE NO. 3
	PROJECT NO. 170473	REVISED BY: JMS	

ATTACHMENT 1

Well Logs



WATER WELL REPORT

Original & 1st copy - Ecology; 2nd copy - owner; 3rd copy - driller

Construction/Decommission ("x" in circle) 3469116

☒ Construction

☐ Decommission ORIGINAL INSTALLATION Notice of Intent Number _____

PROPOSED USE: ☒ Domestic ☐ Industrial ☐ Municipal
☐ DeWater ☐ Irrigation ☐ Test Well ☐ Other _____

TYPE OF WORK: Owner's number of well (if more than one) _____
☒ New well ☐ Reconditioned ☐ Method: ☐ Dug ☐ Bored ☐ Driven
☐ Deepened ☐ Cable ☒ Rotary ☐ Jetted

DIMENSIONS: Diameter of well 6 inches, drilled 240 ft.
 Depth of completed well 240 ft.

CONSTRUCTION DETAILS
 Casing ☒ Welded 6 " Diam. from +2 ft. to 57 ft.
 Installed: ☒ Liner installed 4 1/2" PVC Diam. from _____ ft. to _____ ft.
☐ Threaded _____ Diam. from _____ ft. to _____ ft.

Perforations: ☒ Yes ☐ No
 Type of perforator used Skill Saw
 SIZE of perfs 1/16 in. by 6 in. and no. of perfs 25 from 200 ft. to 240

Screens: ☐ Yes ☒ No ☐ K-Pac Location _____
 Manufacturer's Name _____
 Type _____ Model No. _____
 Diam. _____ Slot size _____ from _____ ft. to _____ ft.
 Diam. _____ Slot size _____ from _____ ft. to _____ ft.

Gravel/Filter packed: ☐ Yes ☒ No ☐ Size of gravel/sand _____ ft.
 Materials placed from _____ ft. to _____ ft.

Surface Seal: ☒ Yes ☐ No To what depth? 57 ft.
 Material used in seal Bentonite
 Did any strata contain unusable water? ☐ Yes ☐ No
 Type of water? _____ Depth of strata _____
 Method of sealing strata off _____

PUMP: Manufacturer's Name _____
 Type _____ H.P. _____

WATER LEVELS: Land-surface elevation above mean sea level _____ ft.
 Static level 20 ft. below top of well Date 6-3-09
 Artesian pressure _____ lbs. per square inch Date _____
 Artesian water is controlled by _____ (cap, valve, etc.)

WELL TESTS: Drawdown is amount water level is lowered below static level
 Was a pump test made? ☐ Yes ☐ No If yes, by whom? _____
 Yield: _____ gal./min. with _____ ft. drawdown after _____ hrs.
 Yield: _____ gal./min. with _____ ft. drawdown after _____ hrs.
 Yield: _____ gal./min. with _____ ft. drawdown after _____ hrs.
 Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

 Date of test _____
 Bailer test _____ gal./min. with _____ ft. drawdown after _____ hrs.
 Airtest 100 gal./min. with stem set at 240 ft. for 1 hrs.
 Artesian flow _____ g.p.m. Date _____
 Temperature of water _____ Was a chemical analysis made? ☐ Yes ☐ No

CURRENT

Notice of Intent No. W 267323

Unique Ecology Well ID Tag No. BAE 511

Water Right Permit No. _____

Property Owner Name Ray Latham

Well Street Address 440 Buffalo Rd.

City Selah County Yakima

Location NE 1/4-1/4 SE 1/4 Sec 12 Twn 14 R 18 EWM or WWM circle one

Lat/Long (s, t, r) Lat Deg _____ Lat Min/Sec _____

Still REQUIRED) Long Deg _____ Long Min/Sec _____

Tax Parcel No. 181412-40002

CONSTRUCTION OR DECOMMISSION PROCEDURE

Formation: Describe, by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. (USE ADDITIONAL SHEETS IF NECESSARY.)

MATERIAL	FROM	TO
Top Soil	0	16
Cemented Gravel	16	44
Basalt Black - Porous	44	48
Basalt Black - Broken	48	55
Basalt - Gray	55	80
Basalt - Black	80	128
Basalt - Gray	128	138
Clay & Sandstone layers	138	240

RECEIVED

JUL 20 2009

DEPARTMENT OF ECOLOGY - CENTRAL REGIONAL OFFICE

Start Date 6-2-09 Completed Date 6-3-09

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

☒ Driller ☐ Engineer ☐ Trainee Name (Print) Gary Lydon

Driller/Engineer/Trainee Signature Gary Lydon

Driller or trainee License No. 1023

If TRAINEE,
 Driller's Licensed No. _____
 Driller's Signature _____

Drilling Company Apple Valley Well Drilling

Address PO Box 55

City, State, Zip Selah WA

Contractor's _____

Registration No. Apple Valley 945 RD Date 6-9-09

Ecology is an Equal Opportunity Employer.

WATER WELL REPORT

STATE OF WASHINGTON

Notice of Intent **W357989**UNIQUE WELL I.D. # **BIF766**

Water Right Permit No.

(1) OWNER: Name **Bill Jones**Address **850 Buffalo Rd, Selah, WA 98942**(2) LOCATION OF WELL: County **Yakima**(2a) STREET ADDRESS OF WELL (or nearest address) **850 Buffalo Rd**TAX PARCEL NO. **171412-44006**(3) PROPOSED USE: ☒ Domestic ☐ Industrial ☐ Municipal
☐ Irrigation ☐ Test Well ☐ Other
☐ DeWater(4) TYPE OF WORK: Owner's number of well (If more than one) _____
☒ New Well Method: ☐ Dug ☐ Bored
☐ Deepened ☐ Cable ☐ Driven
☐ Reconditioned ☒ Rotary ☐ Jetted
☐ Decommission(5) DIMENSIONS: Diameter of well **6** inches.
Drilled **275** feet. Depth of completed well **275** ft.

(6) CONSTRUCTION DETAILS:

Casing Installed:

☒ Welded **6** " Diam. from **+2** ft. to **36** ft.
☒ Liner installed **4 1/2** " Diam. from **15** ft. to **275** ft.
☐ Threaded " Diam. from _____ ft. to _____ ft.Perforations: ☒ Yes ☐ NoType of perforator used **Saw**SIZE of perforations **1/8** in. by **8** in.
30 perforations from **255** ft. to **275** ft.
30 perforations from **195** ft. to **215** ft.
_____ perforations from _____ ft. to _____ ft.Screens: ☐ Yes ☒ No ☐ K-Pac Location _____

Manufacturer's Name _____

Type _____ Model No. _____
Diam. _____ Slot size _____ from _____ ft. to _____ ft.
Diam. _____ Slot size _____ from _____ ft. to _____ ft.Gravel/Filter packed: ☐ Yes ☒ No ☐ Size of gravel/sand _____

Material placed from _____ ft. to _____ ft.

Surface seal: ☒ Yes ☐ No To what depth? **36** ft.Material used in seal **Bentonite**Did any strata contain unusable water? ☐ Yes ☒ No

Type of water? _____ Depth of strata _____

Method of sealing strata off _____

(7) PUMP: Manufacturer's Name _____

Type: _____ H.P. _____

(8) WATER LEVELS: Land-surface elevation
above mean sea level _____ ft.Static level **76** ft. below top of well Date **9/3/2014**

Artesian pressure _____ lbs. per square inch Date _____

Artesian water is controlled by _____ (Cap, valve, etc)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level

Was a pump test made? ☐ Yes ☒ No If yes, by whom?Yield: **75** gal./min. with **260** ft. drawdown after _____ hrs.Yield: **60** gal./min. with **200** ft. drawdown after _____ hrs.Yield: **50** gal./min. with **160** ft. drawdown after _____ hrs.Recovery data (time taken as zero when pump turned off) (water level measured
from well top to water level)

Time Water Level Time Water Level Time Water Level

Date of test _____

Bailer test _____ gal./min. with _____ ft. drawdown after _____ hrs.

Airstest _____ gal./min. with stem set at _____ ft. for _____ hrs.

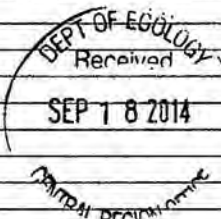
Artesian flow _____ g.p.m. Date _____

Temperature of water _____ Was a chemical analyses made? ☐ Yes ☒ No

(10) WELL LOG or DECOMMISSIONING PROCEDURE DESCRIPTION:

Formation: Describe by color, character, size of material and structure, and the kind and
nature of the material in each stratum penetrated, with at least one entry for each change
of information. Indicate all water encountered.

MATERIAL	FROM	TO
Soil & Bolders	0	4
Clay & Bolders	4	9
Clay	9	15
Basalt Black Brown	15	23
Basalt Black	23	120
Sandstone	120	135
Sandstone & Clay Layers	135	185
Shale Clay	185	192
Gravel	192	199
Sandstone	199	222
Shale Clay	222	227
Basalt Black Soft	227	235
Basalt Brown	235	241
Basalt Black Brown	241	253
Basalt Black	253	261
Basalt Black Brown	261	275

Work Started **9/2/2014**, 19. Completed **9/3/2014**, 19

WELL CONSTRUCTION CERTIFICATION:

I constructed and/or accept responsibility for construction of this well, and its
compliance with all Washington well construction standards. Materials used
and the information reported above are true to my best knowledge and belief.Type or Print Name **TOM MCGUIRE** License No. **0357**
(Licensed Driller/Engineer)

Trainee Name _____ License No. _____

Drilling Company **RICK POULIN WELL DRILLING INC.**(Signed) License No. **0357**
(Licensed Driller/Engineer)Address **1301 LANCASTER RD SELAH, WA 98942**

Contractor's

Registration No. **RICKPWD944PW** Date **9/4/2014**, 19

(USE ADDITIONAL SHEETS IF NECESSARY)

Ecology is an Equal Opportunity and Affirmative Action employer. For
special accommodation needs, contact the Water Resources Program at
(360) 407-6600. The TDD number is (360) 407-6006.

WATER WELL REPORT

Application No

STATE OF WASHINGTON

Permit No

(1) OWNER: Name Jack Brown Address Buffalo Rd., North Selah WA.

(2) LOCATION OF WELL: County Yakima - NE 1/4 NW 1/4 Sec. 18 T14 N, R19 W.M.

ing and distance from section or subdivision corner

(3) **PROPOSED USE:** Domestic ☒ Industrial ☐ Municipal ☐
Irrigation ☒ Test Well ☐ Other ☐

(4) TYPE OF WORK: Owner's number of well
(if more than one).....

New well <input checked="" type="checkbox"/>	Method: Dug <input type="checkbox"/>	Bored <input type="checkbox"/>
Deepened <input type="checkbox"/>	Cable <input type="checkbox"/>	Driven <input type="checkbox"/>
Reconditioned <input type="checkbox"/>	Rotary <input checked="" type="checkbox"/>	Jetted <input type="checkbox"/>

(5) **DIMENSIONS:** Diameter of well 6 inches.
 Drilled 185 ft. Depth of completed well 185 ft.

(6) CONSTRUCTION DETAILS:

Casing installed: 6" Diam. from 2 ft. to 55 ft.
 Threaded ☐ " Diam. from _____ ft. to _____ ft.
 Welded ☐ " Diam. from _____ ft. to _____ ft.

Perforations: Yes ☐ No ☒

Type of perforator used.....

SIZE of perforations in. by in.

..... perforations from ft. to ft.

..... perforations from ft. to ft.

..... perforations from ft. to ft.

Screens: Yes ☐ No ☒

Manufacturer's Name.....

Type..... Model No.....

Diam..... Slot size..... from..... ft. to..... ft.

Diam..... Slot size..... from..... ft. to..... ft.

Gravel packed: Yes ☐ No ☒ **Size of gravel:**
Gravel placed from **ft. to** **ft.**

Surface seal: Yes ☒ No ☐ To what depth? 20 ft
Material used in seal: Bentonite
Did any strata contain unusable water? Yes ☐ No ☒
Type of water? Depth of strata
Method of sealing strata off

(7) PUMP: Manufacturer's Name.....
Type: HP

(8) **WATER LEVELS:** Land-surface elevation _____ ft.
 above mean sea level. Date Mar 28
 Static level 90 ft. below top of well
 Artesian pressure _____ lbs. per square inch Date _____
 Artesian water is controlled by _____ (Cap. valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level

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

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

13	14	15	16
17	18	19	20

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level
------	-------------	------	-------------	------	-------------

.....

.....

Use of test

Bauer test 60 gal/min. with ft. drawdown after hrs.

Artesian flow..... g.p.m. Date.....

Temperature of water..... Was a chemical analysis made? Yes ☐ No ☒

(10) WELL LOG:

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.

MATERIAL	FROM	TO
Topsoil & Boulders	0	10
Sand	10	15
Gravel & brown clay	15	45
Soft black basalt	45	55
Hard grey basalt	55	83
Brown basalt	83	87
Grey basalt	87	135
Brown basalt	135	145
Sandstone gravel clay & water	145	185

Work started 3/26/, 1981. Completed 3/28, 1981

WELL DRILLER'S STATEMENT:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME Vernon L. Rank
(Person, firm, or corporation) (Type or print)

Address 5503 Auburn Rd., Yakima, Wa. 98903

[Signed] _____ (Well Driller)

License No. 0854 Date 3/29 19 81

(USE ADDITIONAL SHEETS IF NECESSARY)

OK 7.15.81

File Original and First Copy with
Department of Ecology
Second Copy — Owner's Copy
Third Copy — Driller's Copy

WATER WELL REPORT

STATE OF WASHINGTON

Start Card No. **W047294**

UNIQUE WELL I.D. # **ABX 900**

Water Right Permit No. **6429445-P**

(1) OWNER: Name **Bruce Buchanan** Address **Buchanan Rd Selah**

LOCATION OF WELL: County **Yakima** NE 1/4 SW 1/4 Sec 18 T 14 N R 19 WM.

(2a) STREET ADDRESS OF WELL (or nearest address)

(3) PROPOSED USE: ☐ Domestic ☐ Industrial ☐ Municipal ☐
☒ Irrigation ☐ Test Well ☐ Other ☐
☐ DeWater

(4) TYPE OF WORK: Owner's number of well (if more than one)
Abandoned ☐ New well ☒ Deepened ☐ Reconditioned ☐ Method: Dug ☐ Bored ☐ Cable ☐ Driven ☐ Rotary ☒ Jetted ☐

(5) DIMENSIONS: Diameter of well **10** inches.
Drilled **8 1/2** feet. Depth of completed well **8 1/2** ft.

(6) CONSTRUCTION DETAILS:
Casing installed: **10** Diam. from **1 1/2** ft. to **5 2/7** ft.
Welded ☐ Diam. from _____ ft. to _____ ft.
Liner installed ☐ Diam. from _____ ft. to _____ ft.
Threaded ☐ Diam. from _____ ft. to _____ ft.

Perforations: Yes ☐ No ☒
Type of perforator used _____
SIZE of perforations _____ in. by _____ in.
_____ perforations from _____ ft. to _____ ft.
_____ perforations from _____ ft. to _____ ft.
_____ perforations from _____ ft. to _____ ft.

Screens: Yes ☐ No ☒
Manufacturer's Name _____ Model No. _____
Type _____
Diam. _____ Slot size _____ from _____ ft. to _____ ft.
Diam. _____ Slot size _____ from _____ ft. to _____ ft.

Gravel packed: Yes ☐ No ☒ Size of gravel _____
Gravel placed from _____ ft. to _____ ft.

Surface seal: Yes ☒ No ☐ To what depth? **5 2/6** ft.
Material used in seal **1508 sacks cement**
Did any strata contain unusable water? Yes ☐ No ☐
Type of water? _____ Depth of strata _____
Method of sealing strata off _____

(7) PUMP: Manufacturer's Name _____ H.P. _____
Type: _____

(8) WATER LEVELS: Land-surface elevation above mean sea level _____ ft.
Static level **127** ft. below top of well Date _____
Artesian pressure _____ lbs. per square inch Date _____
Artesian water is controlled by _____ (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes ☐ No ☐ If yes, by whom? _____
Yield: **750** gal./min. with _____ ft. drawdown after _____ hrs.

" " " "

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)
Time Water Level Time Water Level Time Water Level

Date of test _____
Bailer test _____ gal./min. with _____ ft. drawdown after _____ hrs.
Artest _____ gal./min. with stem seal at _____ ft. for _____ hrs.
Artesian flow _____ g.p.m. Date _____
Temperature of water _____ Was a chemical analysis made? Yes ☐ No ☐

(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information.

MATERIAL	FROM	TO
Top Soil	0	1
Gravel - Clay Brown	1	46
Sandstone - Clay	46	66
Basalt + Clay Shale	66	84
Basalt Grey	84	178
Sandstone	178	225
Gravel	225	243
Sandstone	243	321
Basalt + Clay Shale Blue	321	333
Basalt Grey	333	652
Basalt Pores w/13	652	671
Basalt Pores Black + Gray	671	697
Basalt Pores Blue Shale	697	726
Basalt Pores Soft	726	745
Basalt Soft	745	756
Basalt	756	763
Basalt Black Grey Soft	763	790
Pores	790	812
Basalt Hard	790	812

Work Started **Sept 1, 1994** Completed **Aug 14, 1995**

WELL CONSTRUCTOR CERTIFICATION:

I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

NAME **Rick Poulin Drilling** (PERSON, FIRM, OR CORPORATION) (TYPE OF PRINT)
Address **2 N. 1st St Selah**
(Signed) **Rick Poulin** License No. **942**
(WELL DRILLER)

Contractor's Registration No. **POULINWD124PI** Date **8-28, 1995**

(USE ADDITIONAL SHEETS IF NECESSARY)

Ecology is an Equal Opportunity and Affirmative Action employer. For special accommodation needs, contact the Water Resources Program at (206) 407-6600. The TDD number is (206) 407-6006.

File Original and First Copy with
Department of Ecology

Second Copy—Owner's Copy
Third Copy—Driller's Copy

WATER WELL REPORT

STATE OF WASHINGTON

Water Right Permit No.

Start Card No. 033738

1) OWNER: Name Les Simonds Address 2111 S. 1st St. Yakima, WA.

2) LOCATION OF WELL: County Yakima Parcel # 191419 11401 1/4 Sec 19 T. 14 N. R. 19 W.M.

(2a) STREET ADDRESS OF WELL (or nearest address) Rome Rd. NE NE

(3) PROPOSED USE: ☒ Domestic ☐ Industrial ☐ Municipal ☐
☐ Irrigation ☐ Test Well ☐ Other ☐
☐ DeWater

(4) TYPE OF WORK: Owner's number of well (if more than one)

Abandoned ☐ New well ☒ Method: Dug ☐ Bored ☐
Deepened ☐ Cable ☐ Driven ☐
Reconditioned ☐ Rotary ☒ Jetted ☐

(5) DIMENSIONS: Diameter of well 8 inches.
Drilled 220 feet. Depth of completed well 220 ft.

(6) CONSTRUCTION DETAILS:

Casing installed: 8 " Diam. from 0 ft. to 23 ft.
Welded ☒ 6" PVC " Diam. from 100 ft. to 220 ft.
Liner installed ☒
Threaded ☐ " Diam. from _____ ft. to _____ ft.

Perforations: Yes ☒ No ☐

Type of perforator used _____

SIZE of perforations 1/8 in. by 10 in.

_____ perforations from 170 ft. to 210 ft.

_____ perforations from _____ ft. to _____ ft.

_____ perforations from _____ ft. to _____ ft.

Screens: Yes ☐ No ☒

Manufacturer's Name _____

Type _____ Model No. _____

Diam. _____ Slot size _____ from _____ ft. to _____ ft.

Diam. _____ Slot size _____ from _____ ft. to _____ ft.

Gravel packed: Yes ☐ No ☒ Size of gravel _____

Gravel placed from _____ ft. to _____ ft.

Surface seal: Yes ☒ No ☐ To what depth? 23 ft.

Material used in seal Bentonite & cement

Did any strata contain unusable water? Yes ☐ No ☒

Type of water? _____ Depth of strata _____

Method of sealing strata off _____

(7) PUMP: Manufacturer's Name _____

Type: _____ H.P. _____

(8) WATER LEVELS: Land-surface elevation above mean sea level _____ ft.

Static level 56 ft. below top of well Date 5/31/90

Artesian pressure _____ lbs. per square inch Date _____

Artesian water is controlled by _____ (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level

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

Yield: _____ gal./min. with _____ ft. drawdown after _____ hrs.

" " " " " "

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time Water Level Time Water Level Time Water Level

200 GPM @ 220' 50 GPM @ 140'

100 GPM @ 160' 40 GPM @ 120'

30 GPM @ 100'

10 GPM @ 80'

Date of test _____

Bailer test _____ gal./min. with _____ ft. drawdown after _____ hrs.

Airtest _____ gal./min. with stem set at _____ ft. for _____ hrs.

Artesian flow _____ g.p.m. Date _____

Temperature of water 62 Was a chemical analysis made? Yes ☐ No ☒

(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information.

MATERIAL	FROM	TO
Topsoil	0	3
Slag boulders & gravel	3	2817
Hard grey basalt	1728	37
" fractured blk. basalt	37	64
Med. brn. blk. basalt	64	73
Hard " " "	73	75
Hard grey basalt	75	93
Med. grey basalt	93	96
Hard lt. grey basalt	96	104
Hard dark grey basalt	104	105
Med. hard lt. grey basalt	105	112
Broken soft basalt & clay		
like shale	112	116
Med. brn. basalt	116	122
Blond med. soft basalt	122	127
" " " " w/clay	127	135
Soft brn. sandstone w/blond		
clay	135	142
Soft shale w/blond clay	142	159
Brn. sandstone	159	164
Grey sandstone	164	169
Dark brn. sandstone	169	174
Multi colored sandstone	174	186
Greenish tan sandstone	186	196
Multi colored sandstone w/		
shale	196	212
Green sandstone	212	216
Broken blk. basalt & green		
sandstone	216	218
Hard lt. green sandstone	218	219
Green claystone	219	220

Work started 5/25, 19. Completed 5/31/90, 19.

WELL CONSTRUCTOR CERTIFICATION:

I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

NAME Bach Well Drilling Co. (PERSON, FIRM, OR CORPORATION) (TYPE OR PRINT)

Address 2111 Birchfield Rd. Yakima, Wa. 98901

(Signed) Sean Dell License No. 1436

Contractor's Registration No. BACHWDC137NU Date 5/31, 19 90

(USE ADDITIONAL SHEETS IF NECESSARY)