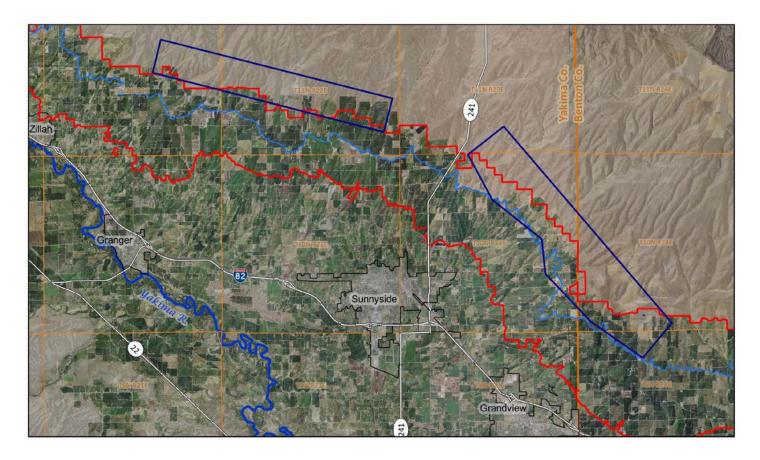




SURFACE AQUIFER RECHARGE POTENTIAL ON RATTLESNAKE RIDGE SOUTH FLANK





Cover image:

South flank of Rattlesnake Ridge in the Lower Yakima Valley. Rattlesnake Ridge runs approximately WNW just beyond top of image and across upper right corner.



- Roza Irrigation District Main Canal

Roza Irrigation District Boundary



Surface Aquifer Recharge (SAR) Potential

on Rattlesnake Ridge South Flank

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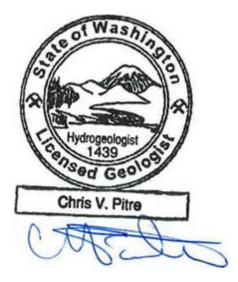
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EXECUTIVE SUMMARY

This report presents a Phase 1 feasibility assessment of Surface Aquifer Recharge (SAR) to basalts in the Lower Yakima Valley, east of the Yakima River on the slope above the Roza Irrigation District (RID). The Groundwater Subcommittee of the Yakima Basin Integrated Plan (GWSC YBIP) commissioned a study of the potential of Managed Aquifer Recharge (MAR) to the basalts in the vicinity of the RID considering two methods of recharge:

- 1) Direct injection through wells (Aquifer Storage and Recovery ASR).
- 2) Infiltration from ground surface (Surface Aquifer Recharge SAR).

An interim report (Geosyntec and others, 2022 [MAR report]) found good potential for ASR, which is further evaluated in a final report by Geosyntec and Central Washington University focused on ASR (CWU; Geosyntec and CWU, 2024 [ASR report]). The interim report also recommended further evaluation of SAR in two Areas of Interest (AOIs) along the southern flank of Rattlesnake Ridge immediately upslope of the RID. This report presents the further evaluation for SAR. All three reports are part of Ecology Project PNG0983.

The units targeted for recharge by SAR are: 1) the Elephant Mountain (EM) basalt flow, which is part of the Saddle Mountains Basalt (SMB) formation; and, 2) the underlying Rattlesnake Ridge member of the sedimentary Lower Ellensburg Formation. The interim report MAR report evaluated SAR primarily by examining the USGS's compilation of overburden thickness and basalt stratigraphy from well logs in and near the RID (USGS Oregon Water Sciences Center, 2013). This SAR report focuses on the two AOIs by examining their stratigraphy in greater detail and evaluating their hydrogeologic setting and characteristics using additional sources.

FINDINGS

West and East AOIs:

 Both AOIs appear to have an adequate unsaturated vadose zone in the Elephant Mountain basalt and may have appropriate stratigraphy and hydrogeologic properties for SAR.



- A significant concern is the presence of loess at surface, especially in the East AOI, which clog transmissive fractures in the Elephant Mountain basalt and reduce its capacity to accept and transmit recharged water.
- The Rattlesnake Ridge sedimentary interbed appears to be more variable in texture and associated transmissivity than in the Moxee Valley (Kirk and Mackie, 1993). Its degree of hydraulic continuity with the Elephant Mountain basalt is unclear.
- Despite their proximity to each other, the two AOIs have differences that affect their suitability for SAR.

West AOI:

- Although the surficial geology maps indicate large areas in which the Elephant Mountain member of the Saddle Mountains Basalt is exposed at or near the surface, the lack of well logs in these areas does not allow confirmation of the extent of EM basalt near the surface. The overburden likely thins upslope of the RID.
- The unsaturated vadose zone extends from ground surface to the water table at approximately 200 feet below ground surface within the RID and is probably deeper upslope in the unirrigated areas. In the RID some wells tap the Rattlesnake Ridge interbed.
- The steep structural dip relative to topography suggests that only outcrops themselves and a narrow band surrounding outcrops will be sufficiently shallow and accessible to SAR development.
- Several parcels of publicly owned land exist in the West AOI for access to field investigations and possible project siting.

East AOI:

- The Elephant Mountain basalt is at or close to surface (e.g., <10 feet) in much of the East AOI.
- The water table depth in wells within the RID about a mile downslope of the AOI is 25 to 50 ft bgs and expected to be deeper in the areas of the AOI upslope of irrigated agriculture.
- The structural dip is shallower than in the West AOI such that the Elephant Mountain remains closer to ground surface in a broader band, and a large area may be practicably accessible for SAR development with the removal of overburden.
- The Sagebrush Ridge anticline in the southern part of the AOI may offer a pathway for recharged water to enter deeper hydrogeologic units, though shallow angle thrust faults may be an impediment to infiltration.
- Most of the land upslope of the RID is owned by one private entity.



PHASE 2 RECOMMENDED WORK

Further evaluation of SAR in both AOIs is recommended, and the next steps should focus on filling the following in gaps:

- The presence and extent of basalt outcrops.
- The depth of the vadose zone in the East AOI in areas upslope of the RID.
- The presence and nature of fractures in the near-surface basalt, including possible clogging by fine-grained overburden sediments, especially loess.
- The degree of connectivity and the hydrogeologic roles of the uppermost geologic units, both basalts and interbeds.

A field investigation supported by additional desktop analysis can address some of these

gaps. Desktop analysis can include the following:

- Further analyzing of existing well logs and constructing of geologic crosssections.
- Examining recently released lidar for geomorphic and structural
- Refining the conceptual hydrogeologic model of the upper geologic units in the area. Includes consulting with knowledgeable staff at the Ecology and the Washington Geological Survey.

Geologic field mapping can focus on these efforts:

- Confirming the large-scale surficial mapping of basalt outcrops in the West AOI.
- Identifying geologic units, their thicknesses, and hydrogeologic properties (e.g., porosity, permeability, fractures).
- Further characterizing the surficial unconsolidated Holocene sediments.
- Examining the presence and nature of fractures in the EM basalt, which could indicate fracture filling or active infiltration by water.
- Structural mapping of:
 - Stratigraphic bedding orientation to identify primary and secondary folds and probable associated fracture sets.
 - Faults that may impede or enhance groundwater mobility.
 - Fracture and joint orientation, spacing and density that may indicate the presence of nearby faults and folds.

If the field investigation indicates favorable conditions for SAR, more intensive exploratory work, such as geophysical surveys, excavations, drilling and pilot infiltration tests at prospective sites may be considered, which may allow a more determinative assessment of SAR potential at specific sites.



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Appendix A: Well logs examined for stratigraphic and hydrogeologic information.

Acronyms

ASRAquifer Storage and RecoveryBLMUnited States Bureau of Land ManagementBORUnited States Bureau of ReclamationCohoCoho Water Resources, LLCCRB or CRBGColumbia River Basalt GroupCRGWDBEcology's Central Regional Office Groundwater DatabaseCWUCentral Washington UniversityDNRWashington Department of Natural ResourcesDTWDepth to WaterEcologyWashington Department of EcologyEIMEcology's Environmental Information Management SystemEMElephant Mountain flow/member of the SMB.Fm.FormationGeosyntecGroundwater Subcommittee of YBIPLYV GWMALower Yakima Valley Groundwater Management AreaMaMillion years agoMARManaged Aquifer Recharge (includes ASR and SAR)RIDRoza Irrigation DistrictRRSaddle Mountain Basalt, part of the CRBG. Contains the Rattlesnake Ridge and Elephant Mountain flows.SMBSaddle Mountain Basalt, part of the CRBG. Contains the Rattlesnake Ridge and Elephant Mountain flows.Std. Dev.Standard DeviationUnpub.UnpublishedUnsciVakina States Geological SurveyWGSWashington Geological SurveyYBIPYakima Basin Integrated Program	AOI	Area of Interest
BORUnited States Bureau of ReclamationCohoCoho Water Resources, LLCCRB or CRBGColumbia River Basalt GroupCRGWDBEcology's Central Regional Office Groundwater DatabaseCWUCentral Washington UniversityDNRWashington Department of Natural ResourcesDTWDepth to WaterEcologyWashington Department of EcologyEIMEcology's Environmental Information Management SystemEMElephant Mountain flow/member of the SMB.Fm.FormationGeosyntecGeosyntec Environmental Consultants, Inc.GWSCGroundwater Subcommittee of YBIPLYV GWMALower Yakima Valley Groundwater Management AreaMaMillion years agoMARManaged Aquifer Recharge (includes ASR and SAR)RIDRoza Irrigation DistrictRRSurface Aquifer RechargeSed.SedimentarySMBSaddle Mountain Basalt, part of the CRBG. Contains the Rattlesnake Ridge and Elephant Mountain flows.Std. Dev.Standard DeviationUnpub.UnpublishedUsGSWashington Delatical SurveyWGSWashington Geological Survey	ASR	Aquifer Storage and Recovery
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	USGS	United States Geological Survey
YBIP Yakima Basin Integrated Program	WGS	Washington Geological Survey
	YBIP	Yakima Basin Integrated Program



1. INTRODUCTION

This technical memorandum presents an evaluation of the potential for surface aquifer recharge into the uppermost Columbia River Basalts on the south flank of Rattlesnake Ridge in Yakima and Benton Counties, WA. Coho Water Resources, LLC (Coho) conducted this work as a subcontractor to Central Washington University (CWU) as part of a larger project, the Konnowac Pass Groundwater Storage Assessment, to evaluate Managed Aquifer Recharge (MAR) in and near the Roza Irrigation District (RID). This project was funded by the Washington Department of Ecology (Ecology) through the Yakima Basin Integrated Plan Groundwater Storage Sub-Committee (YBIP GWSC).

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The RID suffers curtailment of its water supply in drought years, which are expected to increase as the warming climate decreases the amount of winter precipitation stored as snowpack in the upper elevation areas of the Yakima River Basin. Our broader project evaluated possible groundwater storage into the Columbia River Basalt aquifers near the RID to replenish groundwater reservoirs and to increase water supply reliability for irrigators during drought years. The project considered two types of MAR: Aquifer Storage and Recovery (ASR) and Surface Aquifer Recharge (SAR). In Task 2, the team reviewed existing information, conducted field reconnaissance, and made initial assessments of the feasibility of ASR and SAR in a summary report (Geosyntec and others, 2022).

As documented in the Task 2 report, our team determined that the Konnowac Pass area, which was originally identified as a potential site for a SAR project, was not suitable for SAR. In this area, fractures in the surficial basalt are clogged with fine sediment and a complicated faulting geometry limits the shallow subsurface volumes available for groundwater storage. Our team examined geologic maps and data across the RID for other possible locations for SAR. The Task 2 interim report identified two areas of interest (AOIs) southeast of Konnowac Pass and to the south of Rattlesnake Ridge based on basalt outcrops from the 100k geology maps and overburden thickness estimated by the USGS (Figure 1; DNR, 2016; Jones and others, 2006). The AOI extents were modified for this report to better fit basalt outcrops and overburden thicknesses as reported by well logs (Figure 2).



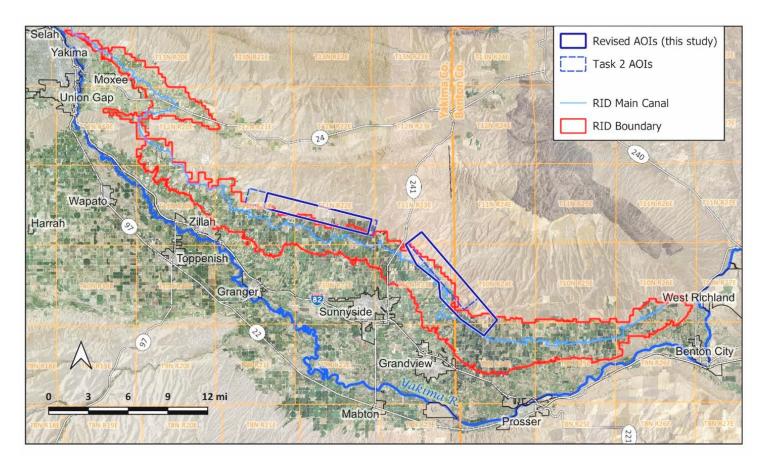


Figure 1: Roza Irrigation District with Areas of Interest for SAR evaluation.

This technical memorandum presents our evaluation of existing information about these areas. Work included:

- Compilation of well logs from Ecology's well log database (Ecology, 2024a) for well locations identified by:
 - Ecology's Central Regional Office Groundwater Database (CRGWDB; Ecology, 2024b)
 - The US Geological Survey's hydrogeological investigations of the Columbia Plateau (Oregon Water Science Center, 2013).
 - The Lower Yakima Valley Groundwater Management Area (LYV GWMA; Pacific Groundwater Group, 2019; Ecology, 2024c).
 - Additional matching of well logs with well locations for this study.
- Analysis of well logs for:
 - Depth to basalt (all located wells).
 - Character of overburden, uppermost basalts and sedimentary interbeds (subset of wells).





- Comparison of groundwater levels from multiple sources, including the LYV GWMA, Ecology in the CRGWDB (Ecology, 2024c), and measurements reported on well logs.
- Integration with additional work by our project team, such as geologic interpretations of Kharrazi (2023), and existing geologic maps and crosssections.

This report presents a preliminary assessment of SAR criteria that can guide future sitespecific SAR studies, including infiltration tests. A draft plan for additional analysis of existing data and a field investigation is included as possible next steps in the evaluation of SAR in these areas.



2. CONTEXT AND CONCEPT

The Task 2 MAR report (Geosyntec and others, 2022) presented a detailed compilation of existing information on the geology, hydrogeology, and water quality in the vicinity of the RID. Based on the Task 2 report with additions from sources relevant to the AOIs, the features that are most relevant to a SAR project, particularly the upper portion of the stratigraphic column and the associated hydrogeology, are described below .The requirements for a successful SAR project and how a SAR project might operate in the RID is then discussed.

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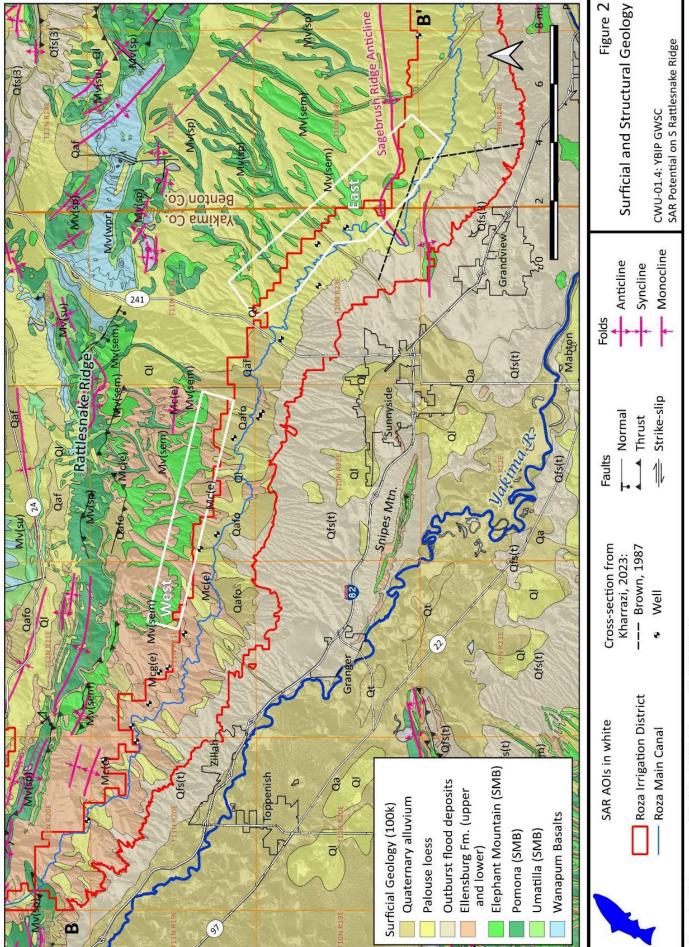
2.1. Study Area

The AOIs are along the south flank of Rattlesnake Ridge and straddle the Yakima/Benton County Line (Figure 1Figure 2). This side of Rattlesnake Ridge slopes to the southwest, and the ridge rises to 1,700-2,800 ft above the nearby valley floor of the Toppenish Basin. Land ownership in the RID is mostly private. A checkerboard of public and private ownership occurs upslope of the West AOI. A few parcels of public land parcels are scattered among private lands upslope of the East AOI, the majority of which are held by one entity.

Annual precipitation in the study area averages less than 10" (Vaccaro and Olsen, 2007). As seen in aerial photographs the contrast between irrigated and non-irrigated lands is stark. Irrigation has allowed the native sagebrush to be replaced with agricultural crops such as hops, fruit trees, and grapes, which use 2 to 3 ft of additional water over the growing season. This water demand emphasizes the dependence of agricultural activities on imported surface water or groundwater withdrawals.

The incised drainage channels on the slopes of Rattlesnake Ridge are typically dry in the current climate. Near our study areas the RID's main canal is about 300 to 400 ft above the valley floor. The canal winds along the contours of the hillsides at an elevation of approximately 1,135 to 1,100 ft amsl, sloping downward from northwest to southeast.





Rattlesnake Ridge.qgs.qgz / Surf Geol SAR full page LS, 2024-08-10

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2.2. Geology

The study area lies within the Yakima Fold Belt, which formed from the interplay of the folding of the Columbia River flood basalts and the erosion of the Cascade volcanic arc. North-south compression has created a series of anticlinal basalt ridges separated by sediment-filled synclinal basins (Figure 2; Table 1). The basalt itself is interlayered with volcaniclastic sedimentary rocks that were deposited and accumulated during quiet periods in the basalt eruption history. The basins have filled with more recent sediments, including alluvial/fluvial sediments, Missoula Glacial Flood deposits (Touchet Beds), and aeolian (Palouse Loess) deposits (Figure 2).

Formation	Member	Member Description/Flow	
Alluvium		Includes recent floodplain deposits and older alluvial fans.	
Palouse loess		Silt	<0.015
Missoula flood deposits / Touchet beds		Silt/fine sand	0.015
Upper Ellensburg		Cascade provenance buff-colored volcaniclastics.	4-5.6
Upper Saddle Mountain	Elephant Mtn.	One or two flows.	10.5
Lower Ellensburg	Rattlesnake Ridge	Cascade provenance buff-colored volcaniclastics.	~11
Lower Saddle Mountain	Pomona	One or two flows.	11.8
Lower Ellensburg	Selah	Cascade provenance buff-colored volcaniclastics.	11.8
Lower Saddle Mountain	Umatilla	One or two flows.	~13
Lower Ellensburg	Mabton	Cascade provenance buff-colored volcaniclastics.	14.5
Wanapum	Multiple members		14.5-15.3

Table 1: Upper stratigraphic column near the AOIs.



After Reidel and others (2013) and Sadowski and others (2020). Geology below the Wanapum is not shown.

2.2.1. Sediments Above the Basalts

The following sedimentary units are found above the basalts and grouped into the category of "overburden" in the USGS hydrogeologic models of the Yakima R. Basin:

- <u>Quaternary alluvium</u>: Silt, sand, and gravel deposits of diverse compositions. Includes alluvial fans, the older of which contain semi-consolidated fanglomerate (Schuster, 1994).
- <u>Palouse loess</u>: Windblown deposits of mostly silt transported from the lakebeds left behind by glacial outburst floods.
- <u>Outburst flood deposits</u> (Touchet Formation [Fm.]): Sediments deposited by floodwaters from glacial Lake Missoula. Presence and thickness are determined by local elevation relative to water levels of successive floods. The highest elevation reached by these deposits near the Yakima Basin is estimated to be approximately 1,200 ft asl (Last and Rittenour, 2021).
- <u>Upper Ellensburg Formation</u>: Semiconsolidated volcaniclastics from the Cascade Range to the west, fluvially reworked with grain sizes ranging from clay to gravel (Schuster, 1994). Deposited after last basalt flow.

Jones and others (2006) and Vaccaro and others (2009) refer to the sediments above the Saddle Mountains Basalt in the Toppenish Basin as the Rattlesnake Ridge member of the Ellensburg Formation, based on Campbell (2001). In contrast most researchers, including Reidel and others (2013), identify the interbed between the Elephant Mountain and Pomona members of the Saddle Mountains Basalt as the Rattlesnake Ridge member of the Lower Ellensburg Formation.

2.2.2. Columbia River Basalts and Sedimentary Interbeds

Columbia River Basalt Group (CRBG) consists of a series of basalt flows with occasional volcaniclastic sedimentary interbeds, called the Lower Ellensburg Fm., that blanket eastern Washington and parts of Idaho and Oregon. The flows of the CRBG occurred over a span of more than 11 million years (~16.5 to 5.5 Ma; Figure 3). In the study area the uppermost CRBG formations, from youngest (shallowest) to oldest (deepest), are:

- Saddle Mountains
- Wanapum
- Grande Ronde



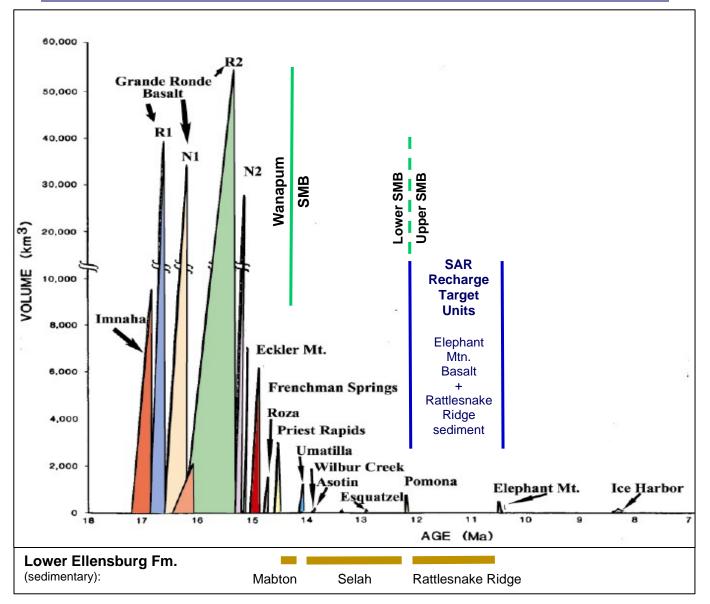


Figure 3: Chronology and volume of basalt flows, with SAR recharge target units. (After Reidel and others, 2002, with additional annotations.)

Each formation consists of multiple members, which in turn may contain one or more flows with a variety of internal structures (Figure 4). The Wanapum Basalt and Saddle Mountains Basalt Formations emerged during the waning stage of the flood-basalt eruptions (~15.6 to 5.5 Ma) and represent 5.8% and 1.1%, respectively, of the total basalt flows (Reidel and others, 2013).

The flows of the Grande Ronde were almost continuously emplaced and are laterally continuous and extensive (Figure 3). The Wanapum flows occurred over less than 1 Ma, while lapses of more than 1 Ma occurred before and between SMB flows (Figure 3). In

the Yakima Basin, topography developed between flows as a result of fluvial erosion and the initiation of folding that formed the Yakima Fold Belt. The Wanapum and Sadle Mountains Basalts flows are "intracanyon" flows that filled in the topographic lows (Reidel and others, 2013). The gaps in flow emplacement allowed sediments to accumulate at the surface. In our study area, sedimentary layers between basalt flows are grouped into the Lower Ellensburg Fm. The Saddle Mountains Basalt contains the thickest Lower Ellensburg Fm. sedimentary interbeds, because of the long elapsed time between basalt flows and the proximity of the Cascade Range that is the primary provenance of these sediments (Figure 3; Vaccaro and others, 2009).

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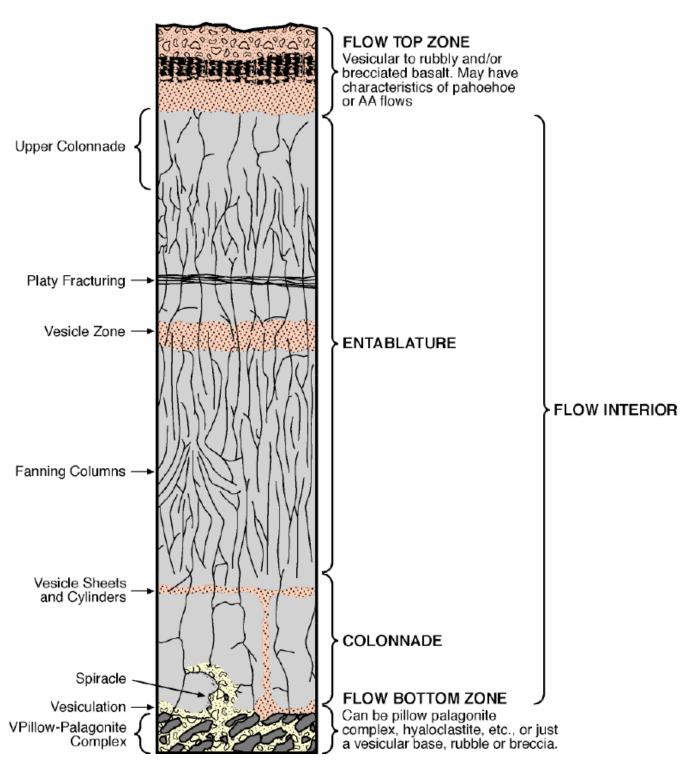
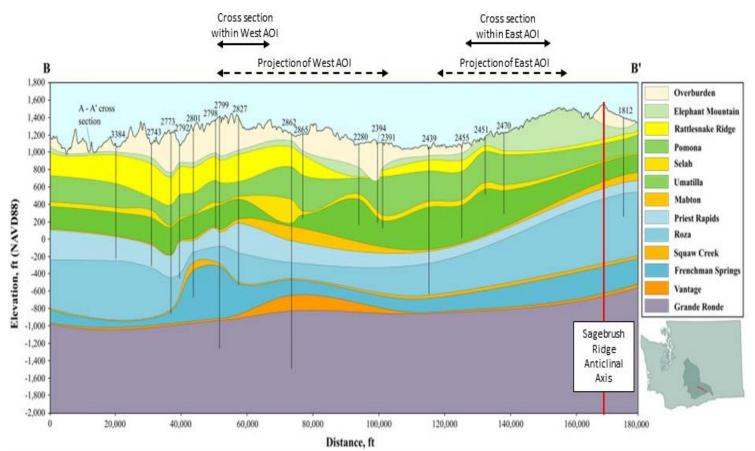


Figure 4: Features of a typical Columbia River Basalt flow. (Kahle and others, 2011; Reidel and others, 2002.)





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Figure 5: Cross-section along south flank of Rattlesnake Ridge.

Cross-section location along strike shown in Figure 2. After Kharrazi, 2023.

Table 2: Formation thicknesses along the south side of Rattlesnake Ridge.

	Unit	Average Thickness	Standard Deviation (ft)	
SMB	Lower Ellensburg Fm.	(ft)		
Elephant Mtn. (Upper SMB)		58	~5	
	Rattlesnake Ridge	207	~30	
Pomona (Lower SMB)		284	~20	
	Selah	64	~15	
Umatilla (Lower SMB)		254	~30	
	Mabton	38	~12	
Wanapum Basalt				

Source: Figure 18 in Kharrazi (2023).

* SMB = member of Saddle Mountains Basalts



In the study area, the Saddle Mountains Basalt consists of three members, from youngest (shallowest) to oldest (deepest):

- Elephant Mountain Member.
- Pomona Member.
- Umatilla Member.

In and near the RID, the Elephant Mountain member of the Saddle Mountains Basalt is the most common surficial or close-to-surface member of the CRBG. Kharrazi (2023) constructed a cross-section along the south side of Rattlesnake Ridge and compiled the thickness of the basalt and interbed units in this area (Figure 5; Table 2). The average thickness of the Elephant Mountain member along Rattlesnake Ridge is about 60 ft. The Pomona and Umatilla members are much thicker than the Elephant Mountain member, each with an average thickness of more than 250 ft. Each of these three SMB members are comprised of one or two basalt flows, depending upon location (Reidel and others, 2013).

The Rattlesnake Ridge Member, the highest/shallowest stratigraphic member of the Lower Ellensburg Formation, separates the Elephant Mountain Member from the Pomona Member (Reidel and others, 2013). It averages 200 feet thick in the study area but thins toward the east in the cross-section (Figure 5). The interbed often contains cross-bedded sediments, suggestive of fluvial deposition, which includes a variety of facies and a wide range of grain sizes and associated hydraulic conductivity. In the Moxee Valley, north of the study area, the upper two-thirds of the Rattlesnake Ridge interbed is sandy whereas the lower third contains cemented sand and gravel or clay (Kirk and Mackie, 1993). This pattern of a coarser-grained upper portion over a finer-grained lower portion does not extend into the AOIs and is discussed in Section 5.

2.3. Hydrogeology

Near the study area, the hydrogeologic units are aligned with the geologic units and are described below.

2.3.1. Quaternary Sediments

The Quaternary sediments in the AOIs generally consist of:



1) Fluvial sediments, including alluvial fans located at the changes in slope between steep uplands and flatter lowlands.

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- 2) Palouse Loess (aeolian/wind deposits).
- 3) Missoula Flood deposits (Touchet beds).

Fluvial sediments are generally of limited extents and thicknesses along ephemeral/historical stream channels. Alluvial fans are loose sands and gravels that are found where streams (ephemeral or historical) discharge from steep uplands onto flatter lowlands. The storage capacity of both fluvial and alluvial fans is high as a function of porosity (e.g., unconfined specific yield of up to 25%) but low as a function of stratigraphic volume. They are generally less than 100 feet thick and of limited lateral extent. They can have high permeability and can receive and drain water quickly. Given their low storage capacity due to their limited stratigraphic volume and low probability of holding water, and high permeability, they are not considered to be significant with respect to, or be an impediment to, SAR.

Both the Touchet Beds and Palouse Loess are of concern in evaluating the feasibility of SAR. These fine-grained sediments may winnow down into underlying consolidated and semi-consolidated formations (e.g., Elephant Mountain basalt flow and Rattlesnake Ridge sedimentary unit, respectively) and clog fractures that might otherwise act as conduits for the downward infiltration of recharged water.

The Missoula Flood deposits (Touchet Formation) mantle the Lower Yakima Valley up to approximately 1,200 feet above sea level. They were deposited when large volumes of water were released from ice-dammed lakes in Idaho and Montana at the end of the last ice age (13,000-15,000 years before present). The water flowed down the Columbia River and backed up into the Yakima Valley, where it deposited fine-grained silt. The Palouse Loess is a wind-blown sediment of silt and fine sand, remobilized from glacial outwash and the Missoula Flood deposits.

Despite the concern of fine-grained sediments overlying SAR targets (e.g., Elephant Mountain basalt flow and Rattlesnake Ridge sedimentary unit), the fine-grained sediments are absent over portions of the AOIs or are sufficiently thin that removal by excavation may be feasible to prepare sites for infiltration. Preparation of infiltration sites should be conducted with care.



2.3.2. Upper Ellensburg Formation

This semi-consolidated volcaniclastic sandstone formation forms the major drinking water source aquifer for communities throughout the Yakima Basin, including along the southern side of Rattlesnake Ridge. Most of the domestic wells in the Lower Yakima River valley floor are finished in the Upper Ellensburg Formation. A number of these wells have elevated nitrate concentrations, a water quality concern that led to the formation of the Lower Yakima Ground Water Management Area (LYV GWMA; Washington Department of Agriculture and others, 2010).

2.3.3. CRBG Formations and Lower Ellensburg Formation

The flow structures within an individual basalt flow in the CRBG vary in their hydrogeologic properties (Figure 4; Kahle and others, 2011; Tolan and others, 2009). Generally, the highest storage potential and the most transmissive zones are in the basalt flow tops and bottoms, which are broken and rubbly, as opposed to the interior of basalt flows, which have lower porosity colonnade structure. Flow tops may also be vesicular, and flow bottoms may contain pillow structures which may be permeable. The dense, competent basalt interiors contain little storage volume because of their low porosity and may act as confining units, though flow may occur through the vertical joints of the colonnade structure and fractures. The intercalated members of the Lower Ellensburg Formation may contain both clay-rich layers, which can impede the vertical migration of groundwater between basalt units, and sandier layers, which can store and transmit water. For example, the sedimentary fine-grained Mabton interbed lies between the Saddle Mountains and Wanapum Basalts. It is clay-rich, regionally continuous, and is a confining layer between the two basalt aguifers. The Lower Ellensburg Formation is in places hydraulically connected with basalt flow tops or flow bottoms, such as in the Moxee Valley where the sandy upper part of the Rattlesnake Ridge member is in hydraulic continuity with the overlying EM basalt (Kirk and Mackie, 1993).

This contrast in structure and permeability means that each larger CRBG formation, such as the Wanapum Basalt or the Saddle Mountains Basalt, consists of multiple aquifers which have varying degrees of hydraulic connectivity based on the degree of fracture of



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the flow interiors that separate them. Kirk and Mackie (1993) recognized two aquifers within the Saddle Mountains Basalt in the Moxee Valley:

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- 1) Upper SMB: Includes the Elephant Mountain basalt and the permeable upper two thirds of the Rattlesnake Ridge interbed.
- 2) Lower SMB: Presumably includes the Pomona and Umatilla basalts and is separated from the upper SMB by a laterally extensive aquitard in the lower third of the Rattlesnake Ridge interbed.

Faults and folds in the region also create hydrogeologic compartments within the basalts and interbeds. Considering the wider area around the study area, the anticlinal structures along Rattlesnake Hills and Toppenish Ridge, combined with high angle faulting at the anticlines, conceptually produces a "compartment" or "block" that likely laterally confines groundwater. Minor scale faults or structures within this basin-wide structure may form smaller compartments or blocks.

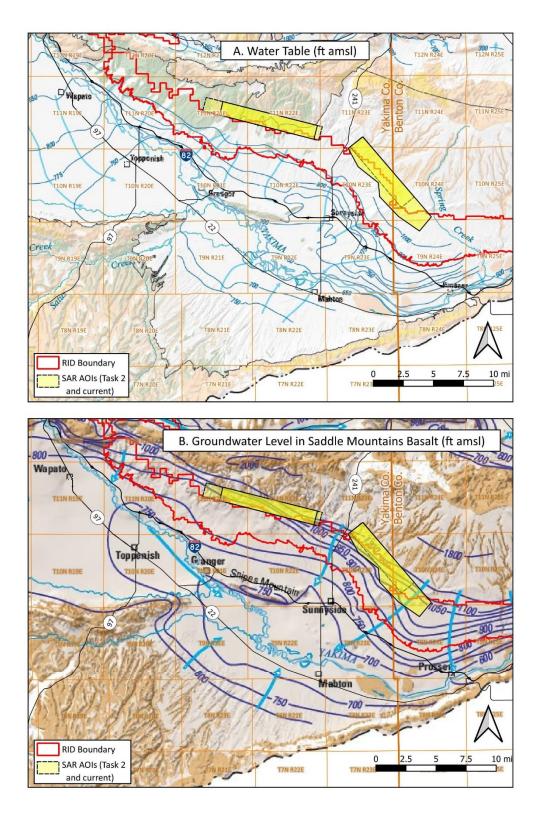
2.3.4. General Hydrogeologic Patterns

Groundwater under the RID is heavily influenced by irrigation. Recharge is estimated in the range of 3" to 24" per year within the RID (Vaccaro and Olsen, 2007). Outside of the irrigated areas, recharge in the AOIs is estimated at less than 2" per year.

Vaccaro and others (2009) summarized the general patterns of groundwater flow in multiple layers of the hydrogeologic system of the subbasins of the Yakima River Basin (Figure 6). Their work treated each basalt formation as a single hydrogeologic unit. In reality, the formations can be composed of multiple hydrogeologic units.

According to the study's measurements and model, most of the groundwater flow occurs in the upper subsurface, and groundwater gradients generally slope downward from the uplands to the lowlands and streams. Local groundwater flow patterns are also controlled by geologic structures. For example, where the Toppenish subbasin merges into the narrower southwestern Benton Basin, the sedimentary fill thins as the basin floor becomes shallower, creating a local area in which groundwater flows against the direction of the Yakima River (Figure 6).





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Figure 6: Generalized groundwater levels and flow patterns near the study area.

See Figure 7 for legends. Excerpted from Plates 3 and 4 in Vaccaro and others, 2009. (Rattlesnake Ridge.ggs.qgz / Vaccaro Water Table and SMB GW Levels 2024-07-31)



EXPLANATION						
Surficial hydrogeologic units						
Alluvium units						
Unconsolidated units						
Quaternary bedrock unit						
Consolidated units						
Saddle Mountains unit						
Wanapum unit						
Grand Ronde unit						
Tertiary unit						
Mesozoic unit						
Paleozoic unit						
Water						
— – – — Yakima River Basin Aquifer System boundary						
Structural boundary						
Contour interval is variable. Datum is North American Vertical Datum of 1988 (NAVD 88)					
General direction of groundwater flow						

Legend for #A - Water Table Elevation:

Legend for #B – Groundwater Elevation in Saddle Mountains Basalt:

	EXPLANATION
	Extent of Saddle Mountains unit exposed at land surface
	Extent of Saddle Mountains unit below land surface
	Boundary of study area
2000	Altitude of groundwater levels in the Saddle Mountains unit, in feet. Contour interval is variable
\longrightarrow	General direction of groundwater flow

Figure 7: Legends for Figure 6.

Groundwater in the study area is used for irrigation and domestic supply. Kharrazi (2023) inventoried wells in the study area and observed that the deeper, more productive wells drilled into the Wanapum Basalt are most often used for irrigation. The Saddle Mountains Basalt and coarse-grained units in the overburden are frequently accessed for domestic water supply. No specific information was found about water use by wells in the Elephant Mountain member of the Saddle Mountains Basalt, the likely target for SAR, in or near the study area.

Irrigation itself can provide substantial recharge to the underlying aquifers, particularly to the alluvium and Upper Ellensburg Formation (Vaccaro and Olsen, 2007). Historically, in the nearby Sunnyside Irrigation District, water levels in wells drilled before irrigation rose 15 to 75 ft after irrigation commenced (Jayne, 1907). This recharge can eventually percolate downward into the basalts. Stable isotopes have served as a useful tool for identifying this recharged irrigation water (e.g., Sleeper, 2020).

Ecology's Central Region Office has monitored groundwater levels in numerous wells within the study area since the 1970s. These wells are identified by the preface "CRGWDB" in Ecology records, an abbreviation for "Central Region Groundwater Database". Many wells have records of more than 30 years. The Task 2 report included a summary and discussion of data for 51 wells on the south flank of Rattlesnake Ridge (Geosyntec and others, 2022). In general groundwater levels have declined significantly in both the Saddle Mountains and the Wanapum Basalt Aquifers, amounting to losses of tens of thousands of acre-feet of water per year from each unit in this area (Table 3; Kharrazi, 2023).

Table 3: Changes in groundwater levels in Saddle Mountains and WanapumAquifers on south flank of Rattlesnake Ridge.

Annual Water Level Change in Saddle Mountain and Wanapum Aquifers							
Aquifer		Number of Wells			Rate (ft/year)		
	Date Range	e Total	Declining	Stable	Increasing	Range	Average
			(≤-1 ft/yr)	(-1 ≤ 1 ft/yr)	(≥1 ft/yr)		
Saddle Mountain	1964-2019	27	18	6	3	-8.07-6.24	-1.61
Wanapum	1974-2019	20	14	3	3	-10.55 - 2.88	-3.07

Kharrazi (2023). Analysis of data retrieved from EIM (Ecology, 2023a).



Regional groundwater flow in the Toppenish Basin east of the Yakima River is to the southeast, and vertical gradients between the Saddle Mountains and Wanapum Basalts are broadly downward (Geosyntec and others, 2022).

2.4. SAR Near the Roza Irrigation District

Requirements for a SAR project are (Alley and others, 2022):

- A sufficient demand for water stored by the project.
- An adequate amount and quality of "surplus" water for recharge.
- A suitable aquifer that can:
 - Receive water infiltrated from the surface.
 - Store this additional water.
 - Deliver this additional water to locations where there is demand.
 - Hold water long enough to be recoverable when needed.
- Access to/appropriate ownership of sufficient land area for project operations.
- Infrastructure and capability to effectively manage the project.

2.4.1. Previous Screening for SAR Locations in the Yakima Basin

Anderson and others (2008) evaluated SAR in the Yakima basin in alluvium adjacent to streams using an inverse Streamflow Depletion Factor approach. Their assessment extended up to 1.2 miles from streams and did not extend into our AOIs.

Gibson (2018) ranked the SAR potential across the Yakima Basin on a scale of 1 to 5 (least to most suitable) based on five criteria:

- i. Slope.
- ii. Land use.
- iii. Surficial geology.
- iv. Transmissivity of the surface geological unit.
- v. Static water level from well logs.

The transmissivity of a unit was estimated from averages of hydraulic conductivity and thickness for each type of surficial geology across the basin. More than 90% of the East AOI was assigned a suitability of 2 or 3, while about half of the West AOI was evaluated and ranked mostly as suitability 3 or 4 (Figure 8).





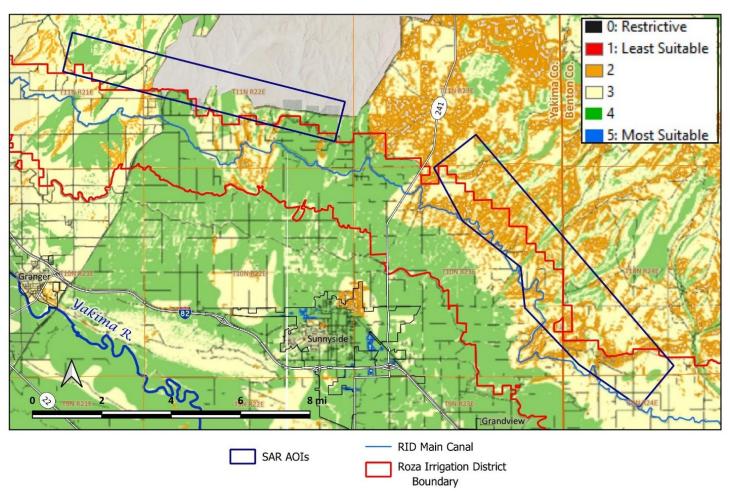


Figure 8: Ranking of SAR potential in AOIs by Gibson (2018).

Base image from Gibson (2018). Gray speckles are same rank as surrounding areas. Area in upper center of image not evaluated, so underlying faded airphoto is seen. (Rattlesnake Ridge.ggs.qgz / Gibson ranks of SAR suitability vs. SAR AOIs 2024-08-09)

Our project took the following approach: 1) recognized the vicinity of the RID with unmet water demand and in need of additional water storage and supply; 2) identified nearsurface basalt as a potential target for SAR; and, 3) searched for favorable locations near the RID. Looking more closely at a smaller area allowed us to examine well logs in greater detail and to determine the actual thickness of units rather than use an average. The well log examination also determined when the reported static water level reflected the water table depth, an important variable for SAR, rather than the water level in a deeper hydrogeologic unit.



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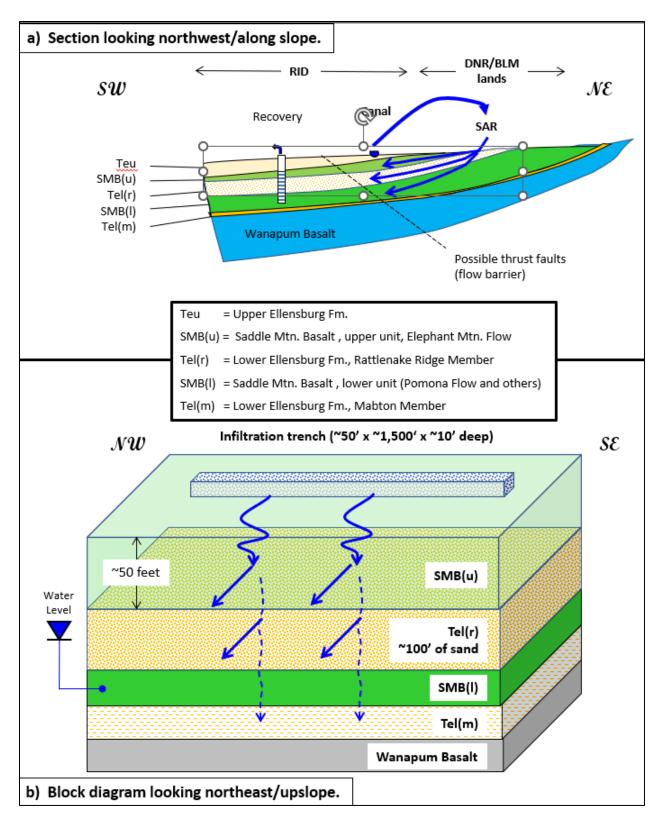
2.4.2. Current Concept for SAR in the Roza Irrigation District

The RID is a junior water right holder and endures pro-rationing of irrigation during drought years. Drought years and attendant pro-rationing will occur more frequently in the future because of climate change. MAR offers solutions to help mitigate this shortage. SAR can be a low-cost method to store water compared to ASR or surface water projects.

The current general concept is to use SAR to help meet the RID's demand for irrigation water during times of curtailment. During the "shoulder" periods of the irrigation season, the RID canals and laterals would be used to deliver surplus water from the Yakima River to recharge locations. The goal would be to recharge water to the Elephant Mountain Basalt and/or Rattlesnake Ridge sediments at or near surface, relying on the movement of water through vertically oriented fractures in basalts to reach deeper units, and horizontal distribution through permeable strata such as the Rattlesnake Ridge sedimentary interbed (Figure 9). Infiltration could be accomplished through trenches, ponds, or dry wells.

Benefits of this recharged water may include:

- Active recovery when needed (e.g., irrigation during times of curtailment).
- Restoring depleted groundwater storage.
- Contribution to return flow to the Yakima River.



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Figure 9: Schematic drawings of a SAR project.



3. STUDY METHOD

This evaluation uses existing data to assess the suitability of the hydrogeologic setting (SAR requirements 3a-d in Section 2.4) in the two AOIs identified in Task 2. Our examination focused on the uppermost basalt, the Elephant Mountain (EM) member of the Saddle Mountains Basalt, the sediments above it, and the Rattlesnake Ridge member of the Lower Ellensburg Fm., the sedimentary interbed below the EM basalt. This work relied on information compiled during Task 2 and additional data relevant to the AOIs. The main sources of information and the methods by which the information was analyzed are described below.

3.1. Well Log Compilation and Analysis

The main source of information on subsurface conditions came from well logs downloaded from Ecology's on-line well log database. Ecology's well log numbers are used as unique identifiers. Only well logs confidently located to the resolution of a parcel or better were used. Well locations come from these sources (Figure 10):

- <u>Ecology well report viewer</u>: Well log and well records for this project were downloaded from the well report viewer (Ecology, 2024a). Wells whose record provided an address and/or parcel number were added to the project database whenever possible.
- <u>United States Geological Survey (USGS)</u>: The USGS compiled well logs for studies of the hydrogeology of the Yakima Basin and broader Columbia Plateau Regional Aquifer System. During Task 2 of this project, team members matched the USGS well with well logs from the Ecology well log database (USGS Oregon Water Sciences Center, 2013; Ecology, 2024b).
- <u>Washington State Department of Natural Resources</u> (DNR) and <u>CRGWDB</u>: DNR used these well logs to characterize subsurface conditions. The CRGWDB wells are a subset of the DNR wells used to monitor groundwater levels over time. The CRGWDB wells are mostly irrigation wells.
- Lower Yakima Valley Groundwater Management Area (LYV GWMA): In 2018-2019, 31 monitoring wells were installed across the LYV GWMA (Figure 1 and Figure 10). The well locations were chosen to evaluate nitrate concentrations near the water table (PGG, 2019). The logs describe the upper geologic layers, mostly above the water table.



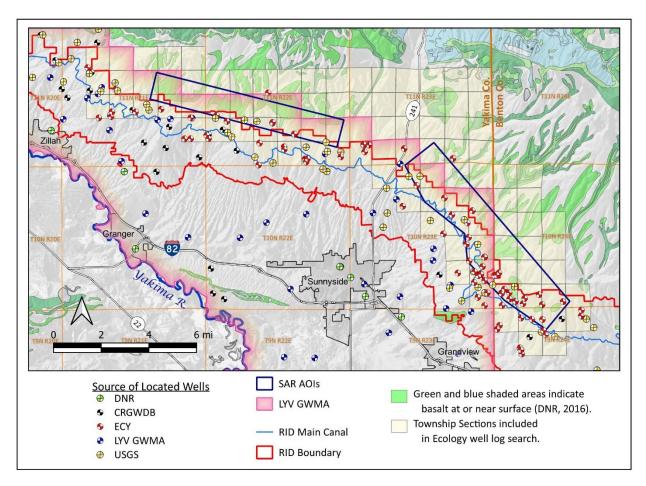


Figure 10: Locations of well logs compiled for this study.

(Rattlesnake Ridge.qgs.qgz / Located Wells with Logs 2024-08-06)

Approximately 150 well logs were located from these datasets, ranging from shallow monitoring wells in the Upper Ellensburg Formation to deep irrigation wells completed in the Wanapum Basalt. Depth to basalt was recorded for all wells, where it was encountered.

Thin or absent overburden is considered favorable for SAR. Therefore, this was used as a criterion to create a subset of well logs in the vicinity of each AOI for more detailed geologic interpretation (Figure 11). The following details were extracted from these logs and added to a GIS layer for mapping:

- Thickness and description of:
 - Overburden materials.
 - Elephant Mountain member.



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- Rattlesnake Ridge interbed.
- Indications of the presence of water or moist conditions.
- Completion aquifer.

We also examined the geology of nearby LYV GWMA monitoring wells to determine the geologic unit in which the water table was encountered.

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Thirteen logs in the vicinity of the West AOI, and 25 logs in the vicinity of the East AOI were examined (Appendix A). These included three logs from LVY GWMA wells in each area. In the East AOI, our initial interpretations led us to concentrate further well log examinations in the area around the Sagebrush Ridge anticline (Figure 11). Low angle thrust faults were observed along the Rattlesnake Ridge anticline that were not favorable for SAR. Examining the Sagebrush anticlinal structure in field mapping may determine whether low angle thrust faults are present and whether they may be a determinant of SAR feasibility at that location.



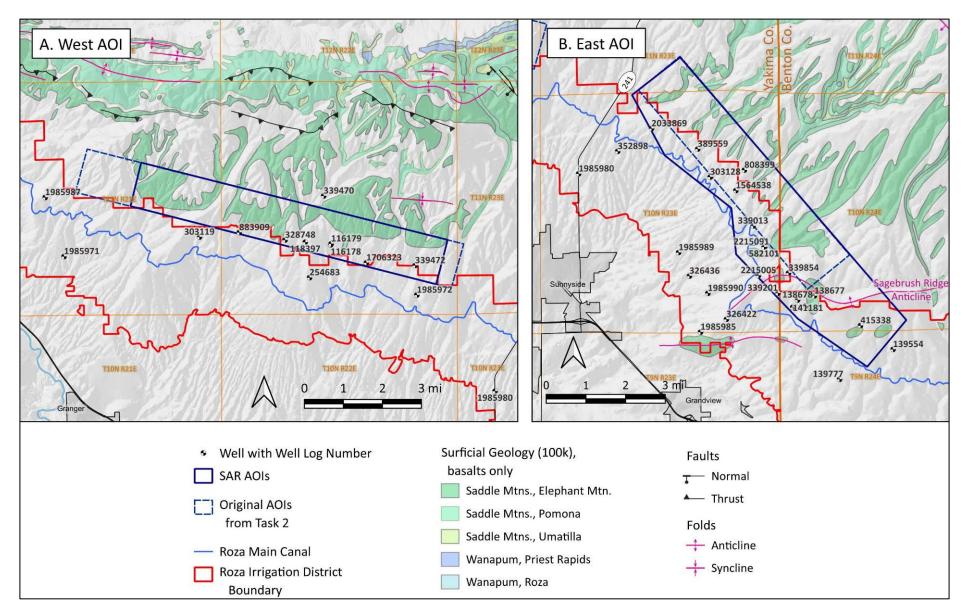


Figure 11: Locations of wells examined for geological interpretations.

(Rattlesnake Ridge.qgs.qgz / SAR AOIs with geol logs 2 pane 2024-07-31)

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3.2. Water Level Data

In the Task 2 effort, water levels collected by Ecology were obtained for wells completed in the Saddle Mountains Basalt. We extracted the water levels for wells closest to the AOIs and downloaded water levels for additional wells not in the Task 2 compilation, including the LYV GWMA monitoring wells (Ecology 2024c). The LYV GWMA data were collected roughly quarterly from late 2021 to early 2023. The wells in the Saddle Mountains Basalts had 16 to 55 water level measurements collected over various portions of the last 40 years.

3.3. Supporting Information

We examined materials compiled during Task 2 with an emphasis on the upper basalts and interbeds:

- 1:100,000 surficial geology map (Washington Division of Geology and Earth Resources, 2016).
- Kharrazi's (2023) B-B' cross-section along south side of Rattlesnake Ridge, together with interpreted logs of that cross-section.
- Hand-drawn geologic cross-sections from Ecology (George and Hoselton, unpublished).
- Reports and research papers (e.g., Reidel and others, 2013; Vaccaro and others, 2009; and more cited throughout the text and listed in the Citations Section).

The following additional data was also examined:

- 1:24,000 surficial geology map, available for portions of the East AOI and based on mapping conducted in the 1970s (Washington Geological Survey, 2023).
- Cross-sections from reports submitted with water rights (Brown, 1977 and 1987).
- Property ownership (Yakima County, 2020; Benton County, 2024).



4. RESULTS

Well log lithologies and groundwater levels are presented in this section (Figure 12; Figure 13). The two AOIs have different near-surface geology and different quality of information in their well logs and are presented separately below. As described earlier, the AOIs chosen in Task 2 of this project were based on the 100k geology map (DNR, 2016); the USGS estimates of overburden thickness (Jones and others, 2006); and the RID border. For this report, we adjusted the extents of the two AOIs based on more detailed data for overburden thickness (Figure 1; Figure 12).

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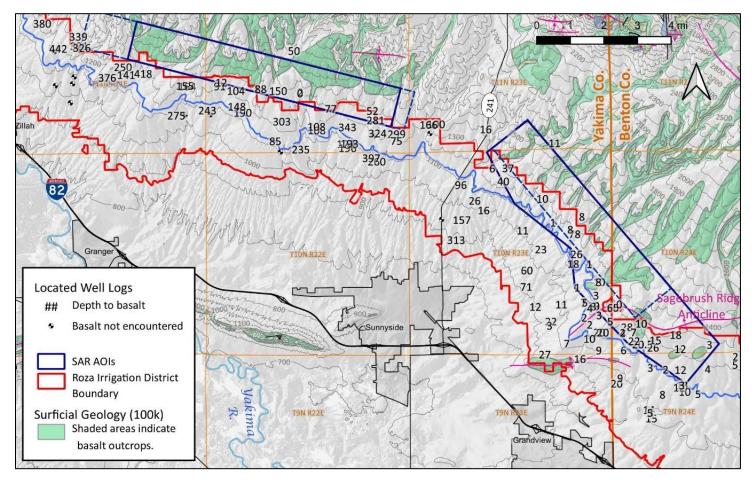
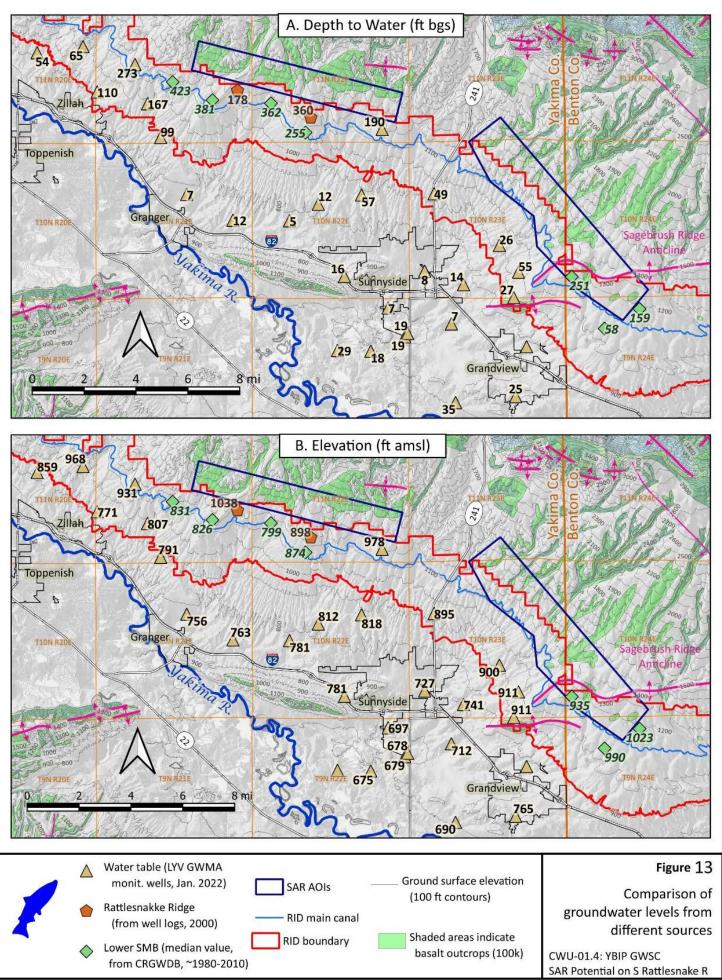


Figure 12: Overburden thickness above basalt.

Numbers shown at well locations, indicating thickness in feet. Black and white symbols indicate wells where basalt was not reached.





Rattlesnake Ridge.qgs.qgz / WT RR SMB WLs por 2024-08-11

Coho Water Resources

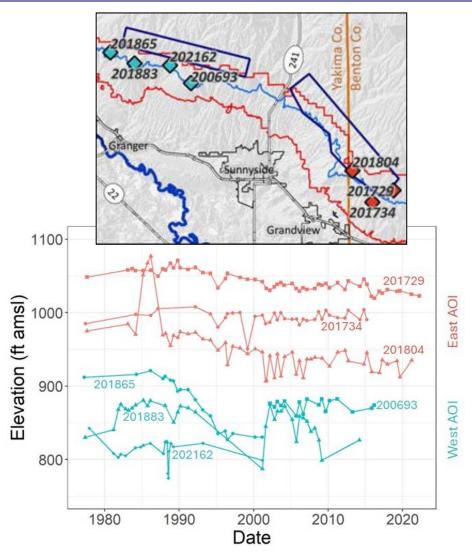


Figure 14: Groundwater levels over time in the Lower Saddle Mountains Basalts. (SAR Figures LS 5 14 17.pptx)

4.1. West AOI

Much of the West AOI is outside of the RID, and conditions are inferred from wells along its southern edge inside the RID.

<u>Overburden</u>: Overburden is thinnest at higher elevations and thickens steadily downslope towards the south (Figure 12). Approximately 40% of the West AOI is mapped as having no overburden, but only three well logs reported no overburden or overburden thickness of less than 15 feet. Where the overburden is thicker, its texture is typically described as stratified with layers whose grain sizes range from clay to gravel.



<u>Elephant Mountain Basalt</u>: According to the well logs, none of the examined wells were located within the mapped exposures of the Elephant Mountain basalt, but nine encountered the Elephant Mountain basalt at depth, and eight fully penetrated the member. Its thickness ranged from 24 to 78 ft thick (Table 4). The logs describe the basalt as black or gray, with only one log mentioning weathered or broken basalt. No logs mention the presence of water bearing zones in Elephant Mountain basalt.

Table 4: SAR target unit thicknesses in AOIs.

Unit	Unit West AOI		East AOI		Across South Flank Rattlesnake Ridge (Kharrazi, 2023)	
Elephant Mtn. Basalt (Upper SMB)	Average: Median: Range: Variability: n =	48 49 24-78 3.2 8	Average: Median: Range: Variability: n = 2	80 85 25-130 5.2 17	Average: Std. Dev.:	58 ~5
Rattlesnake Ridge Sediment (Lower Ellensburg Fm.)	Average: Median: Range: Variability: n =	187 189 150-230 1.5 5	Average: Median: Range: Variability: n = 2	81 82 31-150 4.8 17	Average: Std. Dev.:	207 ~30

(feet)

*Variability = max/min thickness

<u>Rattlesnake Ridge Interbed</u>: When penetrated, the thickness of the Rattlesnake Ridge interbed ranged from 150 to 230 ft (Table 4). Well logs describe a range of textures, most commonly clay, sand and sandstone in multiple layers throughout the interbed. Only two describe sand or sandstone directly below the Elephant Mountain basalt, while other logs describe clay or a clay and sand/sandstone combination in the uppermost Rattlesnake Ridge. Four well logs note a sand-rich layer at the bottom of the interbed.

Of the examined wells, two water supply wells are completed in the Rattlesnake Ridge layer, so the interbed is at least partially saturated in these locations (Figure 13).



<u>Nearby groundwater levels</u>: Groundwater levels are available from several sources in an area close to the southern boundary of the west AOI (Figure 13). The two LYV wells which monitor the water table indicate an unsaturated zone greater than 150 ft in this area. The water level in one of the Rattlesnake Ridge is similar, suggesting it might tap an unconfined aquifer. Comparing water table elevations to the elevation of groundwater levels in the SMB wells indicates downward gradients, but water level elevations of Rattlesnake Ridge wells bracket the water table. The only water levels available for the Rattlesnake Ridge wells are from their drill logs, so observations based on this data are preliminary. The data for the three well types were collected at different times: the water table measurements are from January 2022, the SMB water levels were measured most recently sometime between 2001 and 2016, and the Rattlesnake Ridge wells were measured during drilling, both in 2000.

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Of the water supply wells examined near the West AOI, two were completed in the Rattlesnake Ridge sedimentary member, and the rest were completed in the lower SMB and Wanapum Basalts.

4.2. East AOI

<u>Overburden</u>: Half of the 25 well logs examined reported less than 10 ft of overburden. When the overburden is thin, it is most often described as "topsoil", and "brown clay" is also mentioned. A wide range of textures, from clay and caliche to sand and gravel, are documented where the overburden is thicker.

<u>Elephant Mountain Basalt</u>: The thickness of the Elephant Mountain basalt in the well logs ranges from 25 to 130 ft (Table 4). Well logs describe a variety of colors and competencies in the layers of basalt within the Elephant Mountain member that may affect transmissivity. Some describe broken basalt underlain by hard basalt. In other logs, layers described as broken, rotten, or weak alternate with medium or hard basalt, sometimes with hard basalt at the bottom and other times ending in fractured or weak basalt.



Several logs mention the presence of water in the Elephant Mountain basalt, but none of the water supply wells which were examined were completed in this basalt. Of the three LYV GWMA monitoring wells downslope of the East AOI, one first encountered groundwater in the Elephant Mountain, the second at the contact of the overburden and the Elephant Mountain, and the third within the overburden.

Rattlesnake Ridge interbed: Nineteen of the examined well logs encountered the Rattlesnake Ridge interbed, and sixteen penetrated it fully. The thickness of the interbed ranged from 31 to 150 ft (Table 4). Five of the logs describe the interbed as only sandstone, and sandstone is included in fourteen of the logs. Five of the logs note clay layers at least 18 ft thick, but the vertical position of the layer within the interbed varies. Near the Sagebrush Ridge anticline, two older logs did not note a Rattlesnake Ridge interbed; but these logs contain sparse information and come from the same driller, so interpreting them is difficult.

None of the water supply wells were completed in the Rattlesnake Ridge interbed.

<u>Nearby groundwater levels</u>: The LYV GWMA monitoring wells closest to the East AOI are approximately a mile to the southwest and 200 ft lower in elevation. In these wells, the water table was measured at 25 to 60 ft bgs, equal to an elevation of approximately 900 ft amsl. The seasonal variations over two years were less than 5 ft in two wells and 10 ft in the third. The depth of the unsaturated zone should be as large or even larger further upslope, especially once crossing the RID border and losing the influence of irrigation, but no data exists to confirm this expectation.

The three CRGWDB wells completed in the Saddle Mountains Basalt and closest to the East AOI are near the southernmost portion of the AOI. The water level elevations in these wells are higher than those of the downslope water table elevations and may represent the water table in these areas.

Of the 19 logs for water supply wells, over half were completed in the Saddle Mountains Basalt below the Rattlesnake Ridge interbed.

5. DISCUSSION

In this section, information from earlier sections is combined with more general information about the local geologic and hydrogeologic context to assess the suitability of the two AOIs for SAR. The discussion focuses on the capacity of each area for infiltration of water into the basalt aquifers that are near the surface. The ability of these areas to store recharged water and deliver it to an appropriate location and time for beneficial use is also considered. Additional information that may be useful is identified.

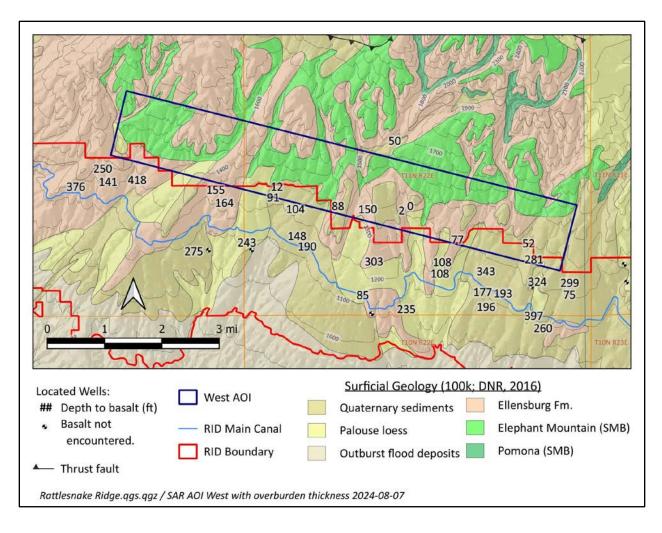
5.1. West AOI

<u>Basalt near surface</u>: Only three well logs indicated the presence of basalt within 15 ft of the surface. However, geologic mapping and fold structure suggest that the Saddle Mountains Basalt unit is at or close to surface in large areas to the north of the RID. Because of the lack of wells installed in these areas, field work is required to investigate further.

<u>Infiltration capacity</u>: Infiltration capacity is difficult to evaluate without information from areas where the overburden is thin or absent. The following sediments might overlie the basalt in the West AOI and affect the ability to transfer water to the basalt through surface infiltration (Figure 15):

- Older alluvial fans (Qafo): Expected to be coarse-grained semi-consolidated, cemented with clay (Schuster, 1994).
- Palouse Loess: Mostly fine-grained in texture
- Upper Ellensburg Formation: Heterogeneous with a range of grain sizes.





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Figure 15: Surficial geology and overburden thickness in the West AOI.

Some depth-to-basalt markers have been shifted slightly from well locations for clarity of display.

Of these, loess is of most concern for limiting infiltration. Upper Ellensburg is generally permeable and able to transmit water.

The presence of fractures in the basalt through which water might flow is also unknown. Field observations should examine the condition of the uppermost basalt for brecciated conditions that would enhance infiltration and whether clogging of fractures is present.

<u>Stratigraphic and structural setting</u>: The detailed stratigraphy of the AOI is difficult to untangle. The current mapping of the southern slope of Rattlesnake Ridge (Schuster, 1994, DNR, 2016) does not clearly distinguish between the Upper and Lower Ellensburg Formations. As described in Section 2.2., the Upper Ellensburg Fm. is younger than the



CRBG basalts and overlies the Elephant Mountain basalt, while the Lower Ellensburg Fm. consists of sedimentary layers intercalated with the CRBG, including the Rattlesnake Ridge interbed that underlies the Elephant Mountain basalt. The geologic map of the West AOI only identifies two texturally distinct units of the Ellensburg Formation: 1) basic sedimentary deposits and 2) a coarser-grained sedimentary conglomerate (Shuster, 1994). More detailed mapping of the two units would clarify the details of the stratigraphic and structural relationships.

No local geologic structures have been identified that would create compartments to block or contain recharged water within the AOIs. The main anticlinal axis of Rattlesnake Ridge lies several miles north of and roughly parallel to the West AOI. A minor syncline is mapped about 0.7 miles north of the AOI, and a series of southwest-dipping thrust faults begins approximately 1 mile north of the AOI. The geologic beds dip to the south at a steeper angle than the topography (George and Hoselton, unpub.). Further mapping might identify structures in or near the AOI that could impact the local hydrogeology.

<u>Hydrogeologic setting</u>: If the uppermost basalt provides pathways for recharged water to travel downward, the nearby water table depths suggest available space for storage. The groundwater elevation within the West AOI is not known because of lack of wells but it's expected to be deeper than in downslope wells, because the AOI is at higher elevation and mostly outside of irrigated agricultural lands. Modern recharge to the basalt over the West AOI is from natural precipitation. However, it is not clear if water infiltrated on the surface would reach deeper aquifers and how long it might take to do so.

Water level data near the West AOI indicate that groundwater flow directions are towards the southwest for both the SMB and water table aquifers as described in Vaccaro and others (2009) and shown in Figure 5. As in that study, the groundwater levels compared here indicate a downward vertical gradient between the unconfined aquifer and Saddle Mountains Basalt aquifer.

Water supply wells in the region are mostly completed in the Wanapum Basalt formation, so the hydrogeologic units within the Saddle Mountains Basalt are not known. We expect



that groundwater use from the Saddle Mountains Basalt is from the Pomona and Umatilla members.

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In our conceptual model, the Elephant Mountain member of SMB and the Rattlesnake Ridge member of Ellensburg Fm. form the target aquifer for SAR. However, the well logs in the West AOI do not describe the same layers observed in the Rattlesnake Ridge interbed in the Moxee Valley, which has coarse-grained lenses underlain by clay (Kirk and Mackie, 1993). Here several logs mention a clay-rich layer at the top of the unit, so it is not clear that the Elephant Mountain basalt and Rattlesnake Ridge interbed form a hydrogeologic unit as they do in the Moxee Valley.

<u>Future directions to fill data gaps</u>: Some basic information regarding stratigraphic and structural relationships and basalt aquifer suitability could be obtained from surface observations and mapping. In particular, the extent of basalt on the surface should be clarified and the nature of the surface exposures in terms of fractures, weathering and other factors that affect permeability. In addition, the Upper and Lower Ellensburg Formations should be distinguished and the nature of any contact between them determined.

Because of the lack of wells in the West AOI, a single well would be invaluable for clarifying the nature of the overburden and the uppermost basalt aquifer, and the depth to groundwater in the AOI.

5.2. East AOI

The East AOI straddles the RID border and contains many wells on its southeastern side, in the RID service area, which aided in this characterization effort (Figure 10).

<u>Basalt near surface:</u> In the East AOI, only small outcrops of basalt are mapped, but well logs indicate that the overburden is less than 20 ft thick in large areas (Figure 16). These results are in general agreement with the USGS estimates of overburden thickness in this area and likely extend to the portion of the AOI outside of the RID boundary, as the overburden is expected to thin as the elevation increases.



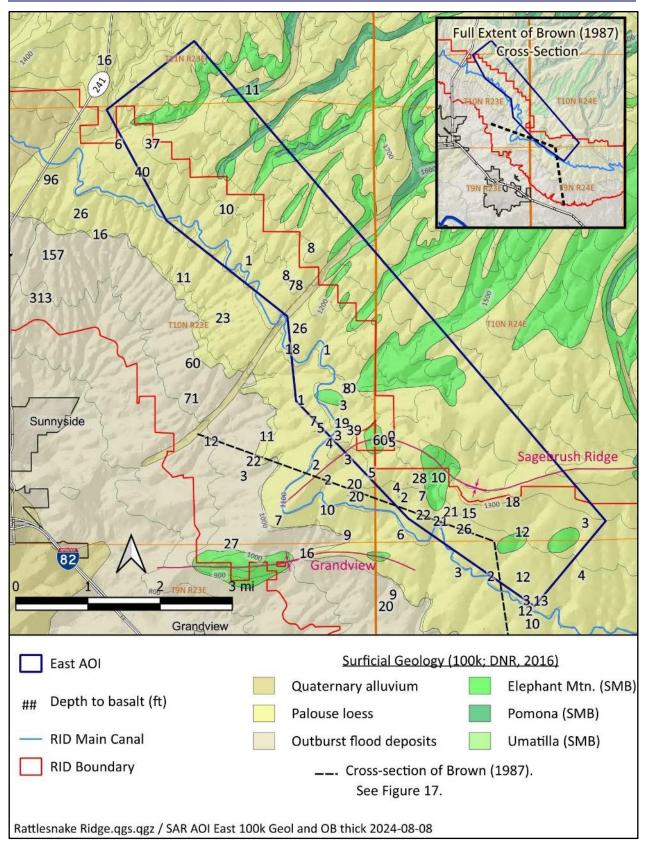


Figure 16: Surficial geology and overburden thickness in the East AOI.

Some depth-to-basalt markers have been shifted slightly from well locations for clarity of display.



<u>Infiltration capacity</u>: The presence of brecciated basalt at or near the surface suggests capacity to accept and transmit water. However, the nature of the thin overburden, particularly its texture, is crucial for SAR suitability. Almost all the overburden in the East AOI is mapped as loess (Reidel and Fecht, 1994; WGS, 2023). The presence of loess is cause for concern. Sediments that have high clay or fine silt content tend to have lower infiltration capacities and permeabilities, and fine sediments may sift downward and clog fractures in basalt that would otherwise be preferential flow paths for water. Well logs in the East AOI suggest some variability in sediment sizes, and it is possible that loess is not as pervasive as the mapping suggests.

<u>Stratigraphy and structure:</u> The slopes of basalt flows and bedding are gentler in the East AOI than in West AOI (George and Hoselton, unpub.). The Rattlesnake Ridge anticline is not as prominent in this region, and the Sagebrush Ridge anticline crosses the southeastern portion of the AOI, creating a flattened saddle between the anticlines (Geoscience Research Consultants, 1978a). The Sagebrush Ridge and nearby Grandview anticlines align roughly with Snipes Mountain and the Toppenish Ridge anticline to the west. The cross-section of Brown (1987) shows folding of beds due to the Sagebrush Ridge anticline (Figure 17), but this work and the other maps do not indicate any thrust faults near the East AOI.

Sunnyside Gap, which lies between the West and East AOIs, has been posited to be the channel of the ancestral Columbia River directly after the Elephant Mountain basalt flow, when the southward growth of Naneum Ridge blocked the river's path to the west (Figure 18; Reidel and Tolan, 2013). Reidel and Tolan (2013) describe the gap as a natural structurally controlled, topographic low. As such it may have been a local drainage channel before the migration of the Columbia River through the gap.

The 100k geologic map (Reidel and Fecht, 1994) and the cross-section of Brown (1977) map both flows of Elephant Mountain basalt, the Wards Gap flow and the Elephant Mountain flow, as present in this area, so an interflow zone may exist between the two. Kharrazi (2023) shows the Elephant Mountain basalt as greater than 500 feet thick upslope of the southeastern end of the East AOI (Figure 5), an unusually large thickness for this unit. This interpretation may not consider the influence of the Sagebrush Ridge anticlinal fold and might change with the addition of data on the intervening areas.

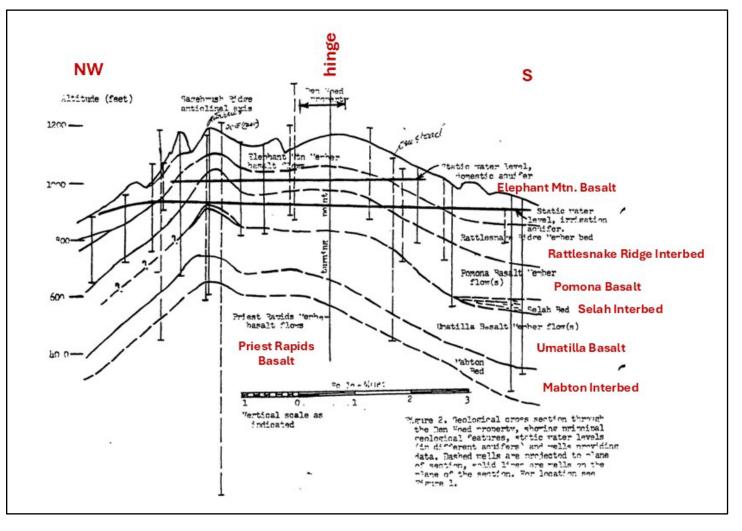


Figure 17: Cross-section near southern end of East AOI.

From Brown (1987). Location shown in Figure 16. Original caption reads: "Geological cross section through the Den Hoed property, showing principal geologic features, static water levels in different aquifers and wells providing data. Dashed wells are projected to plane of section, solid lines are wells on plane of the section."

In contrast to our examination of well logs and the existing cross sections in this area (Brown, 1977; Brown, 1987; Kharrazi, 2023), the geologic maps do not include a distinct Rattlesnake Ridge interbed (Reidel and Fecht, 1994; WGS, 2023 [24k]). For instance, several of the basalt exposures in and upslope of the East AOI show the Pomona basalt directly in contact with the Elephant Mountain basalt (Figure 16). It is not clear if the Rattlesnake Ridge has thinned or disappeared in these areas or if mapping lumped the sediments into the surrounding basalt layers. If the maps are accurate, the drainage channels may provide access to the lower Saddle Mountains Basalt.

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<u>Hydrogeologic setting:</u> Due to the lack of measurements of the water table elevation within the eastern AOI, the depth of the unsaturated zone in this area is unknown but is expected to be at least as large at that observed in the downslope monitoring wells (25 to 60 ft). In areas upgradient and outside of the irrigation region, the water table is likely deeper compared to within the heavily irrigated region.

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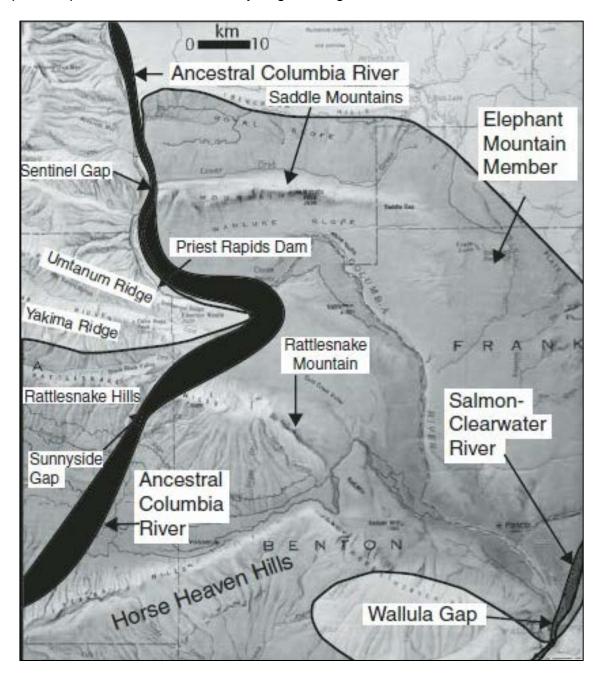


Figure 18: Path of ancestral Columbia River through Sunnyside Gap, after Elephant Mountain basalt flow.

(Figure 22 in Reidel and Tolan, 2013)



The water levels in the Saddle Mountains Basalt are higher in the East AOI than in the West AOI, despite the general trend of decreasing levels along the flow path of the Yakima River (Figure 6). Vaccaro and others, 20## noted that groundwater flow in this area is somewhat isolated from that of areas to the west. The erosion of the ancestral Columbia R. through the upper basalt layers in the Sunnyside gap may be responsible for this disconnect.

Observations from Brown (1987) near the southern end of the eastern AOI describe the hydrogeology of that area based on well logs and groundwater levels from late 1970s. Brown includes 3 wells apparently completed in the Rattlesnake Ridge formation on a cross-section and describes three aquifers from which domestic wells commonly withdraw water:

- <u>Upper</u>: Composed of the Rattlesnake Ridge interbed and the top of the underlying Pomona flow.
- <u>Middle</u>: Lower Pomona-Selah Interbed through the upper Umatilla.
- Lower: Base of the Umatilla flow and the top of the Mabton bed.

The top of the Priest Rapids member is important elsewhere, but little explored by Brown (1987). The pairing of the Rattlesnake Ridge interbed with underlying Pomona basalt into a single aquifer contrasts with observations from Kirk and Mackie (1993) in the Moxee Valley, in which they group the Rattlesnake Ridge interbed and the overlying Elephant Mountain basalt into a hydrogeologic unit.

Well logs indicate that most wells are completed in the lower SMB and Wanapum formation suggesting that these are the two most productive aquifers. Water level trends in the monitored wells in the lower Saddle Mountains Basalt are decreasing with time near the eastern AOI, likely due to over-pumping (Figure 13). The Sagebrush Ridge anticline may influence water levels and groundwater flow direction in the vicinity of the eastern AOI.

5.3. Preliminary assessment and information gaps

Despite their proximity, the West and East AOIs differ in characteristics, the types and amounts of existing data, and the remaining data gaps that should be filled. At this stage



of assessment, they also possess different strengths and weaknesses for a possible SAR project.

Western AOI: The examination of well logs near the West AOI did not identify areas with thin overburden or exposures of Elephant Mountain basalt at the surface, but this is probably due to the lack of wells in the West AOI. If the geologic maps are accurate, field examination should find areas with shallow or exposed basalt directly upslope of the West AOI. It is also not possible to assess the condition of fractures in the basalt, especially the presence of fine grained sediments clogging them, with the available information. Water levels and well logs indicate that there is available space in the unsaturated zone to store water if it can be infiltrated. The Elephant Mountain basalt is likely completely unsaturated, but the underlying Rattlesnake Ridge is tapped for water supply in some nearby areas and may be partially saturated. The geologic beds slope towards the south with no apparent structural obstacles, suggesting that water could move towards likely areas of use, but the connectivity between surficial basalt and deeper basalt aquifers in this area is not established. This AOI includes land managed by BLM near its western end, which is useful for field investigations, pilot tests, and project siting.

Priorities for the West AOI:

- Confirm that basalt is present at or near the surface in the AOI near the RID border.
- Characterize fractures in the basalt and their ability to transmit water.
- Investigate the nature of Rattlesnake Ridge interbed and map it separately from the upper Ellensburg Fm.
- East AOI: Large areas of the AOI within the RID have basalt within 20 ft of ground surface and conditions of similar or thinner overburden are expected immediately upslope of the RID. The fine-grained surficial sediments of the Palouse Loess that are mapped over most of the AOI are a concern for potentially clogging fractures in the underlying basalt. The depth to the water table in the East AOI is unclear and might limit the ability to recharge water, but the unsaturated zone will be larger

upslope than in the RID itself. The geologic beds slope towards the southwest, possibly allowing recharged water to flow towards likely areas of use. The Sagebrush Ridge anticline and/or the incised drainage channels may provide direct access to deeper basalts if low angle thrust faults are not present. Publicly owned land is scarce in the East AOI near the RID boundary.

Priorities for the East AOI:

- Determine depth to water upslope of RID.
- Characterize fractures in the basalt and their ability to transmit water.
- Further evaluate and characterize the local stratigraphy of the Saddle Mountain Basalt and its interbeds.
- Further characterize the nature of the Rattlesnake Ridge unit in terms of hydraulic and other aquifer properties and spatial extent and thickness.

Priorities for both AOIs:

- Form a preliminary conceptual model for each AOI that describes the functional hydrogeologic units, the degree of connection between them, and the opportunities, if any, by which recharged water can reach the units tapped for groundwater supply. For instance, the coarser grained layers of the Rattlesnake Ridge interbed may be associated with Elephant Mountain and/or Pomona members of the Saddle Mountains Basalt or the finer-grained layers may block or slow downward movement of water.
- Investigate potential structural features relevant to hydrogeology, including near the Sagebrush Ridge anticline. Compressive reverse faults may be barriers to horizontal groundwater flow. Low angle reverse thrust faults may be barriers to vertical subsurface flow. Such faults may have been missed in coarse scale mapping.



6. PROPOSED PHASE 2 WORK PLAN

Both the West and East AOIs have sufficient potential for SAR to warrant further investigation. The priority information can be best gathered through field investigation supported with additional desk-top examinations and analyses. The field investigation can be followed by an exploratory investigation if warranted. A draft outline of possible components of a field investigation is presented here, along with options for further explorations.

We advise engaging with individuals knowledgeable of the geology and hydrogeology of the area throughout the Phase 2 work, including for review of the field investigation design, field mapping, and interpretations. Such individuals include Ecology technical staff and Andrew Sadowski and others at WGS.

6.1. Geologic Field Mapping

Field mapping should consist of: 1) preparatory effort; 2) field mapping; and, 3) processing and synthesis of field data with previously collected data. The goal of the effort is to improve the assessment of SAR feasibility in these areas and to illuminate the most important steps to take next, as appropriate.

6.1.1. Preparation

- <u>Well log review and cross-section preparation</u>: Well logs were spatially located and interpreted within the limitations of time and budget (Section 3). In areas where further information is desired, locating more well logs could be incorporated into the analysis by correlating them with Yakima County property records.
- <u>Examination of recently released Lidar</u> (NV5 Geospatial, 2021 and 2023): This improved elevation data may be helpful for geomorphologic, structural, and stratigraphic interpretations and for planning of field investigations.
- <u>Work with LYV GWMA project</u>: The LYV GWMA team is also interested in groundwater dynamics and flow paths in these areas and collects data on nitrate concentrations and groundwater levels. There may be opportunities to conduct analyses that benefit both projects.
- Identification of locations for further evaluation
 - West AOI: Given paucity of existing data, choosing a location will be based on the further analysis laid out above. Prioritization may be those areas of publicly owned land where basalt outcrops are mapped. BLM manages two parcels that include large areas mapped as Elephant Mountain basalt (Figure 19).
 - <u>East AOI</u>: Tentative locations include near the Sagebrush Ridge anticline and on BLM-managed lands in the northwest:



• The anticline may provide groundwater pathways along strata dipping to depth, but if present, reverse and thrust faults may be flow barriers. The area around the Sagebrush Ridge anticline is not farmed, and most of it is owned by a company with large holdings in the area.

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- Elephant Mountain and Pomona basalts are mapped at surface in stream channels in and near the AOI, including one channel in the northern part of the AOI. The BLM manages land that includes this feature.
- Field investigation design: Designing the field investigation will include developing a schedule and coordinating with involved entities, such as Ecology and WGS staff for mapping and property owners for access. The RID may assist in facilitating access to or across privately-owned lands. A cultural resource survey will be required if ground disturbance is expected. If field plans include the use of heavy equipment, the RID may be able to supply it.

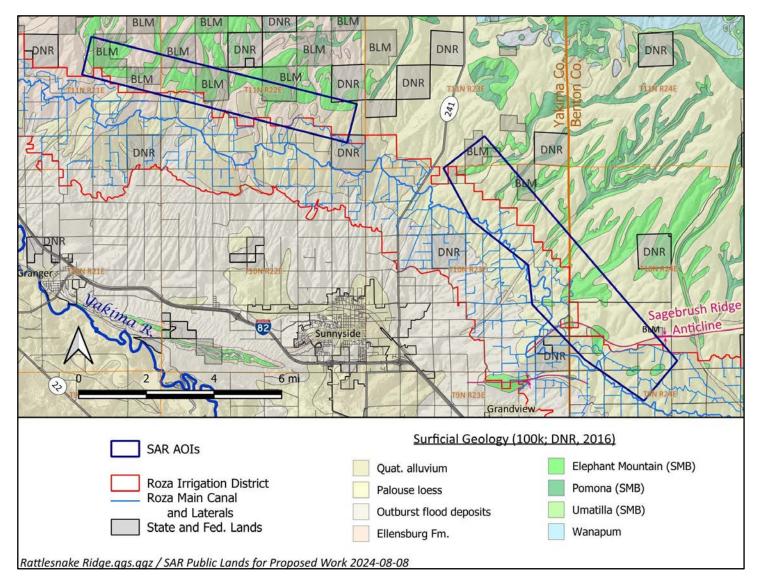


Figure 19: RID water distribution system and publicly-owned lands.

6.1.2. Field Mapping

Mapping should include:

- Detailed mapping of stratigraphy in outcrops (e.g., individual flows and sedimentary interbeds). The eruption history and lengthy time periods between flows may cause variability in the thickness and texture of the Saddle Mountains Basalt flows and make them challenging to map and correlate.
- Extents/coverage/thickness of fine sediments (i.e., Palouse loess)
- Geologic/orogenic structures, including bedding strike and dip; and, faults and folds.
- Fractures, including primary (e.g., due to cooling of basalt) and secondary (e.g., associated with orogenic events).
- Internal basalt flow structures relating to permeability, such as tops, entablature, colonnade, and pillows.
- Contact metamorphism of any interbedded sediments.
- Exposures of Lower Ellensburg Fm. members (e.g., Rattlesnake Ridge Member). In the West AOI, include nature of undifferentiated Ellensburg Fm. as mapped on 100k maps above Elephant Mountain basalt member on Rattlesnake Ridge.
- Mineralogy, including grab samples for laboratory analysis (e.g., whole rock analysis using ICP-MS method to identify basalt flows mapped).

6.1.3. Wrap-Up

After field mapping, the feasibility of SAR can be reassessed with knowledge gained from field mapping. The conceptual hydrogeologic model can likewise be revised, and recommendations for an exploratory field investigation can be made, if warranted.



6.2. Exploratory Field Investigation

If favorable sites are identified by field mapping, follow-on explorations may be considered to allow a more determinative assessment of SAR potential at specific sites. The following techniques may be useful:

- <u>Geophysics</u> may be appropriate based on preceding work (e.g., to determine the thickness of unconsolidated sediments overlying basalt or map fault structures). A comprehensive design of a geophysical survey should be developed balancing the quality of data obtained with cost considering Very Low Frequency (VLF), seismic reflection or refraction surveys, and other methods. Geophysical surveying is low cost relative to the areal coverage of information obtained.
- <u>Excavations</u> might be useful to confirm the thickness of unconsolidated sediments overlying basalt, and to prepare test infiltration pits or trenches. It would be an advantage if the excavator is strong enough to break into brecciated basalt. Simple excavations may be low cost if heavy equipment is provided by the RID.
- Drilling may be an alternative or complement to the above activities. Drilling obtains high quality information at specific locations and is more expensive than the other options considered. Sonic and diamond bit coring methods recover core samples from which fracture information relevant to permeability/transmissivity may be obtained. Drilling should fully penetrate the Elephant Mountain and Rattlesnake Ridge members, and advance into the Pomona flow.
- <u>Pilot infiltration tests</u>: Conducting pilot infiltration tests will require more logistics (e.g., a water supply), design, and subsequent analysis.

LIMITATIONS

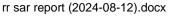
This work was conducted within the limitations of time, budget and available information. Interpretations and recommendations are subject to change upon further examination and/or information.



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APPENDIX A

WELL LOGS EXAMINED FOR STRATIGRAPHIC AND HYDROGEOLOGIC INFORMATION

Sorted well by Ecology Well Log Number (first column).

Abbreviation	Description
CRGWDB	Ecology Central Region Groundwater Database
DNR	Washington State Department of Natural Resources
ECY	Ecology Well Report Viewer - located by Coho for this study
LYV GWMA	Lower Yakima Valley Groundwater Management Area
USGS	USGS Columbia Plateau Regional Aquifer System and Yakima Basin studies

Table A1: Well Location information sources.



Table	A2:	Well	logs.
10010			

Ecology Well Log Number	Pages	Well Owner	Other well names and identifiers	TRS	Source of well location	Nearest AOI	Well Type
116178	1	Kershaw Sunnyside Farms		T11N R22E	ECY		
116179	1	Kershaw Sunnyside Ranches		S28	ECY	w	Supply
118397	1	Spring Creek Orchards	USGS 2856	T11N R22E S28	USGS		
138677	1	David Strickland	461815119510801 USGS 2515	T10N R24E S31	USGS		Dry
138678	1	David Strickland		T10N R24E S31	ECY		
139554	1	Elbert B. Schinmann	CRGWDB-201729, T09N/R24E-04H01, 461749119484901	T9N R24E S04	DNR CRGWDB	E	
139777	1	Florence Investment Co.	CRGWDB-201734, T09N/R24E-08C01	T9N R24E S08	DNR CRGWDB		
141181	5	James McPherson		T10N R24E S31	ECY		
254683	1	Peter Plath		T11N R22E S33	ECY	W	
303119	1	Robert Foster	LYV-OL-168	T11N R21E S25	LYV GWMA	vv	Supply
303128	1	Dave Cowan		T10N R23E S14	ECY		
326422	3	Brown Fruit of Washington	461815119534801 USGS 2500	T10N R23E S35	USGS	E	
326436	1	Rob Rattray	CRGWDB-211595, T10N/R23E-27K	T10N R23E S27	DNR CRGWDB		
328748	2	Dwaine Van Patter	462503120052401 USUS2858	T11N R22E S29	USGS	W	
339013	3	Waren Hazen	462037119530201 USGS 2470	T10N R23E S24	USGS	E	



Table A2: Well logs.

Ecology Well Log Number	Pages	Well Owner	Other well names and identifiers	TRS	Source of well location	Nearest AOI	Well Type
339201	1	Bill Evans	461859119522801 USGS 2504	T10N R23E S36	USGS	E	
339206	1	Richard Cundiff		T10N R24E S31	ECY	E	
339470	1	Two Bar A Ranch		T11N R22E S16	ECY		
339472	1	Rattle Snake Ranch	462430120011902 USGS 2852 CRGWDB-202107	T11N R22E S26	USGS DNR CRGWDB	W	
339854	1	Marshall Anderson		T10N R24E S30	ECY		Supply
352898	1	Don Prett Const.	LYV-SS-180	T10N R23E S08	LYV GWMA		
389559	1	Grant Wayne Jackson		T10N R23E S10	ECY		
415338	2	Desert Hills Vineyard	Andy Denhoed	T10N R24E S33	ECY	E	
582101	4	Anthony & Brenda Veiga		T10N R23E S24	ECY		
808399	1	Dan Sims	Triple A Dairy	T10N R23E S12	ECY		
883909	1	George DeRuyter & Sons Dairy		T11N R22E S19	ECY	w	MW
1564538	1	Wine Makers		T10N R23E S14	ECY	E	Currela
1706323	1	Tom Garrison		T11N R22E S27	ECY		Supply
1985971	6	Yakima Co.	LYV-MW-007, YC- MW-11	T11N R21E S29	LYV GWMA	w	
1985972	6	Public Services	LYV-MW-016, YC- MW-15	T11N R22E S35	LYV GWMA		MW



Ecology Well Log Number	Pages	Well Owner	Other well names and identifiers	TRS	Source of well location	Nearest AOI	Well Type
1985980	3		LYV-MW-017, YC- MW-06	T10N R23E S17	LYV GWMA	E	
1985985	2		LYV-MW-027, YC- MW-14	T10N R23E S35	LYV GWMA	E	
1985987	7		LYV-MW-006, YC- MW-25	T11N R21E S17	LYV GWMA	W	
1985989	4	Yakima Co. Public Services	LYV-MW-025, YC- MW-09	T10N R23E S22	LYV GWMA		MW
1985990	3		LYV-MW-026, YC- MW-41	T10N R23E S35	LYV GWMA		
2033869	1	View Pt Dairy		T10N R23E S04	ECY	E	
2215005	1	Ted & Rosie Kranz		T10N R23E S25	ECY		Gunad
2215091	1	JLS Slegers Dairy		T10N R23E S24	ECY		Supply

Table A2: Well logs.



e Original and First Copy with Dartment of Ecology ond Copy — Owner's Copy rd Copy — Driller's Copy	ASHINGTON Permit No	94-29	1824
) OWNER: Name Kershaw Sunnyside Farms	Address RI Z. Bx. 455. YHL		<u></u>
LOCATION OF WELL: County YAKIMA	_ NE 1 NE 1 Sec 28 . T	II N, RC	2.2- w м
stand distance from section or subdivision corner			
	(10) WELL LOG:	· •	
PROPOSED USE: Domestic Industrial Municipal Irrigation A Test Well Other	Formation: Describe by color, character, size of materi	al and stru	icture, and
	show thickness of aquifers and the kind and nature of stratum penetrated, with at least one entry for each	the mater	ial in eac
) TYPE OF WORK: Owner's number of well (if more than one)	MATERIAL	FROM	TO
New well [7] Method Dug [7] Bored [7] Deepened [7] Cable [7] Driven [7]	Corres Dris-cit	0	50
Reconditioned C Rotary A Jetted C	Sand & Sandsich	50	7.5
	Sandaicie & Busult	75	100
DIMENSIONS: Diameter of well inches.	Sund File	100	175
Drilled ft Depth of completed wellft.	Sand sience Prisell	125	200
CONSTRUCTION DETAILS:	plack & Drivel page11	200	250
Casing installed: 1.2. "Diam. from G ft. to 1.9.7. ft	Mard Likey Dasalt	250	300
Threaded \Box 10" Diam. from	Drawn Darall	300	325
Welded 2 "Diam from 771 ft. to 1.071 ft	black tering tris. 17	325	375
Perforations: Yes No D	Black Land Bant	3 75	400
Type of perforator used.	Leisy buse IT	400	500
SIZE of perforations in. by in.	Giev Dossit & lance ibres	500	5 75
perforations from ft to ft	little lister	515	550
	Water Jecket brey & plack ph:	15 380	
	Interfed	600	625
Screens: Yes No	ETTS CHANGE TO 10" CHSING	625	635
Manufacturer's Name	Grey provit Itard.	635	700
Diam . Slot size from ft to ft ,	Lever Primer E Black DASAIT	100	175
Diam Slot size from ft. to ft.	brain prait, Chuing	715	800
Gravel packed: Yes No Size of gravel	Dutch pront Smill CVevice	200	850
Gravel placed from ft. to ft	The half hard	850	875
	History Walt	800	950
Surface seal: Yes No To what depth / ft. Material used in seal	Harb Const Deselt	150	160
Did any strata contain unusable water? Yes No	Black Durn II & Hack stres	166 C	10.2
Type of water?. Depth of strata	Winger affectiect	1025	1030
Method of sealing strata off	1075 F. 4 11701	1030	1050
PUMP: Manufacturer's Name	BLACK BEEKey PASIT	11.50	107
Type:	- (Surand Derling)	_	
WATER LEVELS. Land-surface elevation	Vater & Grey portail T	1175	1100
above mean sea level	Gerices Plack Braken file		11.25
the level (Q, I, V) ft below top of well Date estan pressure	DINCK PASCKEN PHSEIT	1125	1160
Artesian water is controlled by		+	
(Cap, valve, etc)		+	
WELL TESTS: Drawdown is amount water level is lowered below static level	Work started	!	· · · · · · · · · · · · · · · · · · ·
s a pump test made? Yes 🗌 No 📋 If yes, hy whom?	Work started		. , 19
ld. gal/min. with ft drawdown after hrs	WELL DRILLER'S STATEMENT:		
n v n	This well was drilled under my jurisdiction true to the best of my knowledge and belief.	and this	report is
overy data (time taken as zero when pump turned off) (water level	A DE TO THE DEST OF MY RHOWINGE BIN DENEL.		-
measured from well top to water level) ime Water Level Time Water Level Time Water Level	NAME A Decek Dry Milling (Person, firm, or corporation)		
		Type or pr	nt)
	Address 3633 Biel HUE		
· · · · · · · · · · · · · · · · · · ·	,		
state of test	[Signed]		•• ••
er test gal/min with ft drawdown after hrs estan flow	(Well Driller)		
nperature of water	License No. C. C. J. Date		, 19

ECY 050-1-20

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	Original and First Copy with	ER WE	ology Well Log 116179	8499 Start Card No.	470.	26
Seco	nd Copy—Owner's Сору I Copy—Driller'я Сору	STATE OF	WASHINGTON Water Right	Permit No. <u>64-24</u>	1824	IPA
(1)	OWNER: Nome Kershaw Sunnysio	e Ranch			a, WH	98908
	LOCATION OF WELL: County Jakima	170 Ken	haw the Su	NE & soc 28 T	1/ N., R.	<u>22.</u> w.m.
	STREET ADDDRESS OF WELL (of nearest address)	107675		7		
(3)	PROPOSED USE: Domestic Industrial Prrigation DeWater Test Well	Municipal 🗍 Other 🛛	Formation: Describe by color,		nd structure,	, and show
(4)	TYPE OF WORK: Owner'e number of well		thickness of aquifers and the kin with at least one entry for each ch		ach stratum	penetrated,
	Abandoned New well Method: Dug	Bored 🗆			FROM	TO
	Deepened Cable Reconditioned Rotary	Driven Driven	Blacky Vell	ow basalt	2	14~
(5)	DIMENSIONS: Diameter of well	inches.	Gray basal	t	14	49~
	Drilledfeet. Depth of completed well	<u>65ft.</u>	Brown Tye	hand ciay	47	222
(6)	CONSTRUCTION DETAILS:	ميريس و	Grav basalt	medium	322	618
	Casing installed: Diam. from // 3.9	<u>~~~~</u> ".	Green clay	4 sand	618	653W
	Welded U4 Diam. from439ft. t Liner installed U Diam. fromft. t		Gray basa	It toouth	653	682
	Perforations: Yea No	on.	Brown-40	ACR DASAIT	192	021
	Type of perforator used		Brown + bla	CK basalt	736	207
	SIZE of perforations in. by	in.	Brownygra	y basalt	807	839
	perforationa from ft. to	ft.	Gray basalt	hard	839	893
	perforations fromft. toft. to _	ft.	BIACK BAS	art, some	823	988 WB
			Chail basal	t hard	988	1012
	Manufacturer's Name		Black basa	17	1012	1028
	<i>"</i>	el No	Inter bed	, gray clay	1028	1055W
	Diam		WITH SO	me sand	Inde	1/22
	Gravel packed: Yes No Size of gravel		Black base	17. some	1/32	1159 WB
	Gravel placed fromft. to	tt.	green s	oapstone		
	Surface seal: Yes No. To what depth? 2	5 <u>5</u>	Gray basal	t; hard	1159	1165
	Material used in seal Cement grout	, 	······	IN EG		
	Did any strata contain unusable water? Yes V No		Hole diamer			
	Type of water? Depth of a Method of sealing strats off	strata	0-660	15 4 APR	8 1995	
(7)	PUMP: Manufacturer's Name		660-905		- 156	- ilmar
(,,		H.P	660-905		I OF EJUL	167
(8)	WATER LEVELS: Land-surface elevation	ft	905-1165			्रम् स्टि
	Static level It. below top of well Date	3-5-93				· -
	Artesian pressure Ibs. per square inch Date Artesian water is controlled by			·····		
	(Cap, valve, e		Work started 2-8-9	3, 19. Completed 3	- <u>-</u>	1993
(9)	WELL TESTS: Drawdown is amount water level is lowered I Was a pump test made? Yes No Ut it yes, by whom?	below static level	WELL CONSTRUCTOR			
	Yield: gel./min. with ft. drawdown after			cept responsibility for cons	struction of	this well.
	19 11 11 11 11 11		and its compliance wit	h all Washington well cor information reported above	istruction a	standards.
	Recovery data (time taken as zero when pump turned off) (water le	velmeasured	knowledge and belief.			,
	from well top to water level) Time Water Level Time Water Lavel Time	Water Level	when I allace	Drilling		
	<u></u>		(PERSON, FIF	M, OR CORPORATION	• -	
			Address <u>170754</u>	18th, Pendle	<u>ton, l</u>	<u>DA 97801</u>
Ĩ	Date of test		Dr.	Willackicense		12
	Bailer test gal./min. with ft. drawdown after		(Signed) (WELL D	RILLÊR)	No <i>L_LO</i> _	ഴ
	Airtest 1000 t gal. / min. with stem set at 1165 ft. for	hrs.	Contractor's Registration No (A) HLLAI) -090	NR Date 3-3	1	19 9.3
	Artesian flow g.p.m. Date Temperature of water 65 Was a chemical snalysis made? Yes					_,
ECY 05	0-1-20 (10/87) -1329- **** 3		I (USE ADDITIQI	NAL SHEETS IF NECES	SARY)	0

۲۹ Ecolo	ogy Well Log 118397
File Original and First Copy with Department of Ecology With	ELL REPORT
Second Copy — Owner's Copy	WASHINGTON Permit No. 5.4-28547.P
(1) OWNER: Name SpR 1 A12 CReck ORCHAN	
LOCATION OF WELL: County Vac 41Ma	_ NW 1/2 NW 1/2 Seco28 T //N. R. ZZWM.
Aring and distance from section or subdivision corner	
(3) PROPOSED USE: Domestic [] Industrial [] Municipal [] Irrigation 27 Test Well [] Other []	
)	Furmation : Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stressin penetrated, with at least one entry for each change of formation.
(4) TYPE OF WORK: Owner's number of well (If more than one)	MATERIAL FROM TO
New wall 📕 Method: Dug 🗆 Bored 🗍 Deepensed 🗍 Cable 🗆 Driven 🗇	top son O /
Reconditioned [] Rotary [] Jetted []	la certain di tri
(5) DIMENSIONS: Diameter of well inches.	Grand & Boulding 12 11
Drilled	Revenilaya Groud 17 95'
(6) CONSTRUCTION DETAILS:	Steery pinch chan 95' 150'
Casing installed: 20 Diam. trom tt. to 19-6 tt.	Gray Clay Stickey 207 396
Threaded D	Crepised Broatt Gray 396 4/0"
	Herd Gray Renal Baralt 410 580
Perforations: Yes D No W Type of perforator used	Mart Saft Bassett 580 605
SIZE of perforations in. by in.	Sett Reacher Brown Devetter be 7 923'
perforations from	Der Callen Barat A 223 799'
perforations from	Clay-Bualt, Grand + Sont 799 815
Screens: Yes 🗆 No 🏹	Mark Black dendet. 820 878
Manufacturer's Name	Cuched Basset W/ Send 878 895'
Diam. Slot size from fr. to ft.	Half Baselt Gray 895 1025
Diam, Slot size from ft. to ft.	Mil Sand Black Start. 105 1100
Gravel packed: Yes 🗅 No 🕄 Size of gravel:	Med Sact Black Bocalt, 1130 1190'
Gravel placed from ft. to ft.	pled Boud Black Bush 1190 1250
Surface seal: Yes M No To what depthy 875 r.	Bard Crentral Bonald Cray 1250 12 (de"
Did any strata contain, unusable water? Yes 2 No	
Type of water? SANDY Depth of strate	
Method of sealing strate of Cement Coloute	
(7) PUMP: Manufacturer's Name	rener and the first fille
	Jeepenerst JAN COST
(8) WATER LEVELS: Land-surface elevation above mean sea level.	ince the wards I
Static level D D D D D D D D D D	DEPARTMENT OF ECOLOGY
Artesian water is controlled by	Jui 19
(9) WELL TESTS: Drawdewn is amount water level is	
- Was a pump test made? Yes [] No is if yes, by whom?	Werk started. #
Yield: gal/min. with ift. drawdown after hrs.	WELL DRILLER'S STATEMENT:
- AIR TESTED - NO MARIE TAR	This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belies, $\pi^{\mu\nu} \Sigma^{\mu}$
Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)	The all Marth Marthan
Time Water Level Time Water Level Time Water Level	NAME (Perport fifth, or propertion) (Type op frint)
	2204 Lith Leve Plainter
	Address Addres
Date of test	[Signed] Alling Stack
Bailer test	(Well Driller)
Temperature of water	License No. O. L. Le Data Ull 10, 102
	· •
ECY 050-1-20	ELESTS IF, NELESSARY)

The Dep The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

Seco	ond Copy — Owner's Copy	LL REPORT	Permit No		
(1)	OWNER: Name Darid STrickLand	Address BT9 Box 2	20BGreater	ew 1	1/201
· 2)	LOCATION OF WELL: County DenTon	1/F	NF 31 - 110		5 UE
	ring and distance from section or subdivision corner	- N. L- 14	ff	.N., R.	67-W
		(10) WELL LOG:			
(3)	PROPOSED USE: Domestic A Industrial Municipal IIII Intrigation Test Well Other	÷	haracter size of material w	nd otmu	otura
		Formation: Describe by color, show thickness of aquifers and stratum penetrated, with at lea	the kind and nature of the	materi	al in e
(4)	TYPE OF WORK: Owner's number of well (if more than one)	MATERI		ROM	то
	New well 🙀 Method: Dug 🗌 Bored 🗌 Deepened 🔲 Cable 🗌 Driven 🗌	Top Sort)	3
	Deepened Cable Driven Reconditioned Rotary Aft Jetted	Brown Chay		3	10
<u> </u>		Brolsen Bas		0	25
(5)	DIMENSIONS: Diameter of well	Hard Bosa	-	S	200
	Drilled 660 ft. Depth of completed well 660 ft.	Brollen Base		00	21.5
(0)		Hard Basel		15	24
(0)	CONSTRUCTION DETAILS:	Brolson Base		45	270
	Casing installed: 2 Diam. from 7/ ft. to 30 ft.	Brunn Clay		_7.9 5.5 T	20
	Threaded []	Hard Basa		55	18
	Welded A Diam. from ft. to ft.	Brolson Ma		·2 r	510
	Perforations: yes 🗆 No 🗖	rard Masa		25	520
	Type of perforator used		IT clay 5	- <u>v</u>	580
	SIZE of perforations in. by in.	Hard Dosal		95	135
	perforations from ft. to ft.	- Mara Doser		35	660
	perforations from ft. to ft. perforations from ft. to ft.		e	<i>d</i>	
		•			
	Screens: Yes D No X				
	Manufacturer's Name	·			<u> </u>
	Type Model No		I		<u> </u>
	Diam. Slot size from ft. to ft.	· · · ·	· · · ·		
$\langle \cdot \rangle$	Diam Slot size from ft, to ft.				
Ż	Gravel packed: Yes 🗆 No 🛱 Size of gravel:	·			
	Gravel placed from ft. to ft.				
	Surface seal: yes No D To what depth? 20 ft.				
	Material used in seal	·			
•	Did any strata contain unusable water? Yes 🗌 No 🛃	· .			,
	Type of water? Depth of strata		KFUEINE	P ^{thy} it	
	Method of sealing strata off			·/	
(7)	PUMP: Manufacturer's Name	·			
• • •	Туре:		JUL 75 1977		
(9)	WATER LEVELS: Land-surface elevation.		DEDADTMAT		
			CONTROL OPALA		
	ic level		ULBERTE HEADER H	F107	
	Artesian water is controlled by		· · ·		
	(Cap, valve, etc.)	· · · ·	I		
(9)	WEDL/TESTS: Drawdown is amount water level is		00	/	~
	a pump test made? Yes No 🗌 If yes, by whom?	Work started	19.9.2 Completed 494		, 192
Yiel		WELL DRILLER'S ST.	ATEMENT:		
,,	THis Well BLEW 5GPM "	This well was drilled un	nder my jurisdiction and	l this	report
,,	From 600 Byair Botary "	true to the best of my know	wledge and belief.		
Reco	overy data (time taken as zero when pump turned off) (water level			, ,	110
	measured from well top to water level) me Water Level Time Water Level Time Water Level	NAME Carman We	ler Well	L	NC
11	me water Level 11me water Level 11me. water Level			e or p	
		Address BIN 130	1,1299 Bento	20 (J.
r.		9/ 1/	1 m n /1-		y
	Date of test	[Signed]	M. Marken		
Baile	er testgal/min. withft. drawdown afterhrs.	[orgineu pr	(Well Driller)	••••••	
	sian flowg.p.m. Date	1/371	Date 4-2	1	. D
Tom	perature of water Was a chemical analysis made? Yes 🗌 No 🗌	License N6.		1	, 19 7.

(USE ADDITIONAL SHEETS IF NECESSARY)

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epartment of Ecology WATER WE cond Copy — Owner's Copy iird Copy — Driller's Copy STATE OF W	VASHINGTON	Permit No. 64	33965
	Address Routo 2 Box 2720F		
2) LOCATION OF WELL: County And And BE	NTON SELL NEW AMALY	Sec. 3.] T. / O.N., R	24 w.
PROPOSED USE: Domestic 👸 Industrial 🗌 Municipal 🗌	(10) WELL LOG:		
Irrigation [] Test Well [] Other []	Formation: Describe by color, character show thickness of aquifers and the kind stratum penetrated, with at least one e	, size of material and stru l and nature of the mater ntry for each change of	icture, an ial in eac formation
4) TYPE OF WORK: Owner's number of well (if more than one)	MATERIAL	FROM	TO
Néw well [] Method: Dug [] Bored [] Deepened [] Cable [] Driven []	Brown Clay Cemented Gravel	10	10 28
Reconditioned Retary: Jetted	Brown broken rock	28	42
5) DIMENSIONS: Diameter of well	brown rock		b0 ·
Drilledft. Depth of completed wellft.	Casing 8" 250 se	aled bentonite '	7 ceme
6) CONSTRUCTION DETAILS:	black rock	50	87
	spft grey rock c	lay seams 87	100
Casing installed: $\frac{8}{6}$ "Diam. from $\frac{1}{160}$ ft. to $\frac{50}{320}$ ft. Threaded \square "Diam. from $\frac{1}{160}$ ft. to $\frac{320}{160}$ ft. to $\frac{1}{160}$ ft. to 1	Brown rock soft	100	125
Welded The second secon	lavyflow grey	125	200
	<u>Cavy area lined</u>	to3201 Conglor	<u>merate</u>
Perforations: Yes No I torch	POrous rock water	Rearing 200	225
Type of perforator used		mented 225	250.
SIZE of perforations	drilled 250 recem	ented cased	
perforations from	soft decomposed ba		3.50
perforations from ft. to ft.	quicksand and cla	ayblue 350	β83°
	cemented redrible	d same problem	
Screens: Yes D No 🗃 Manufacturer's Name	lined with 5" 1	iner	
Type			
Diam Slot size from ft. to fit. f			+
Diam			
Gravel packed: Yes No.2 Size of gravel:		6 1977	•
	DEPAKI	OF FCOLDER	
Surface seal: Yes No D To what depth? 50 ft.	CENTERI (CGIONAL ASTON	- <u>`</u>
Material used in seal Bentonite	2	1-4.0141 11-1 10-	·.
Did any strata contain unusable water? Yes No 🗋 Type of water?	· · · · · · · · · · · · · · · · · · ·		
Method of sealing strata off		· · · · · · · · · · · · · · · · · · ·	· ·
	•	· · · ·	ſ
7) PUMP: Manufacturer's Name			
Type:			
8) WATER LEVELS: Land-surface elevation			
8) WATER LEVELS: Land-surface elevation ft. above mean sea level ft. tatic level 214 ft. below top of well Date Sept 15	16 1		
rtesian pressure	ľ.		
Artesian water is controlled by (Cap, valve, etc.)	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·	
1000 100 3 30 THOMTELDIG		····	
9) WELL TESTS: Y Drawdown islamount water level is lowered below static level	Work started August 10, 19-75	Completed Sent 1	1075
Tas a pump test made? Yes \Box No \Box If yes by whom? D	WELL DRILLER'S STATEM		, 10.83
já ny p n	This well was drilled under m	y jurisdiction and this	report i
<u>,,, ,, ,, ,, ,, ,, ,, ,, ,, ,, ,, ,, ,,</u>	true to the best of my knowledge		.
ecovery data (time taken as zero when pump turned off) (water level measured from well top to water level)	Great Western Dr Presently Martel	Previouely Desi	diary
Time Water Level Time Water Level. Time Water Level		poration) (Type or'p	
	Address Friday Harbor WA	sh . Nine Mile	Falls
	Don Forman Es	stacada ore	
Date of test	[Signed]	ell Driller)	n,.
er test	aon t know	P	·- `,
emperature of water		Date Sept 15	. , 19 19
I Don't have a log of this wells about on a so	This as recalled by	A.C.Engelhart Friday Harbor W ^A	

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report

Fi le Original and First Copy with WATER WE Department of Ecology Second Copy – Owner's Copy Second Copy – Owner's Copy STATE OF V Third Copy – Driller's Copy STATE OF V	CLL REPORT Application No VASHING FOOLOGY Well Log 139554 Rermit No	10. 34-2	5176
(1) OWNER: Name 52 /beat B. Schingputness	Address R+2 BOX 2458		
(2) LOCATION OF WELL: County Bertford	SE INE IS SECUT	2	9 (1 mall
uring and distance from section or subdivision corner (250 (ast	N. 1050 feeting of 12 1/2 course		
(3) PROPOSED USE: Domestic [] Industrial [] Municipal []	(10) WELL LOG:	•····•	
Irrigation 🛒 Test Well 🗌 Other 🗌	Fomation : Describe by color, clear actes ize of materia show thickness of aquifers and the kind and nature of t	l and s tu he materi	cture, ad al in each
(4) TYPE OF WORK: Owner's number of well	stratum penetrated, with at least one entry for each ch	hange of	formation.
New well M Method: Dug D Bored D	MATERIAL	FROM	TO
Deepened 🗋 Cable 📋 Driven 🗆	Tap Soil	0	4
Reconditioned Rotary Jetted	BROWN TO DIACK BASAT	4	110
(5) DIMENSIONS: Diameter of well	SAND STONE	110	182
Drilled 3.20 ft. Depth of completed well 3.20 ft.	Saf T, FRACTARed Dealt	182	200
	HARG 1345171.	200	280
(6) CONSTRUCTION DETAILS:	FRACIARED BASAIL	280	320
Casing installed: 16 " Diam. from O ft. to 235 ft.	DOA C DM SQUELLET	~ ~	
Threaded []	200 GPM FROM 110 TO 10	52	
Welder	TLAD DEMOCRAT 200		
Perforations: Yes 🗋 No ¥	1600 6 Pm 280 to 320	<u>'</u>	·
Type of perforator used	· · · · · · ·		. ,*
SIZE of perforations in. by in.	l		
perforations from ft. to ft.	·		
	· · · ·		
Screens: Yes D No M			
Manufacturer's Name			
Type Model No	· · · · · · · · · · · · · · · · · · ·		
Diam	·		
Diam. Slot size from ft. to ft.			
Gravel packed: yes No Y Size of gravel:	1		
Gravel placed from ft. to ft.	DEGENIE		·
Surface seal: yes No D To what depth? 25 ft.			
Material used in seal. Meat GEALEAT Did any strata contain unusable water? Yes No	BUO 0 4 1072		
Type of water?	AUG 24 18/7		
Method of sealing strata off			
(7) BELSCES.	OF DECKI DE DUCCH OF EUCLOSY		
(7) PUMP: Manufacturer's Name.	Chinitade Hade Stride Stride		
Type:			
(8) WATER LEVELS: Land-surface elevation above mean sea level	· · · ·		
Static level 13.5 ft. below top of well Date Aug 12-197			
Artesian pressure		1	
Artesian water is controlled by			
	:		
(9) WELL TESTS: Drawdown is amount water level is lowered below static level Valley Parts Was a pump test made? Yes W No I If yes, by whom? C Valley Parts	Work started 6-1 , 1977 Completed #-	15	, 19 <u>7</u> 7
	WELL DRILLER'S STATEMENT:		
<u>Vield: /500 gal./min. with 54 ft. drawdown after fr. hrs.</u>			
17 (P)	This well was drilled under my jurisdiction a true to the best of my knowledge and belief.	ind this i	report is
Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)	St Geobso Doilling	G	
Time Water Level Time Water Level Time Water Level	NAME St Geobse Drilling (Person, firm, or corporation) (1	ype or pr	int)
	Address 701 50 45 WRichla	. 1 1	And
······	Address Address	av.g.	· ~)'~
Date of test	[Signed] (Well Griller)		·····
Artesian flow		~ /	·
Temperature of water	License No. 0481 Date 8-	۲_	, 1977
	1		
USE ADDITIONAL SI	LEETS IF NECESSARY)		
5. F. No. 7356-OS-(Rev. 4-7))	all		· 3
ECY-070-28	UV VV		
	man and a second a second	~~	

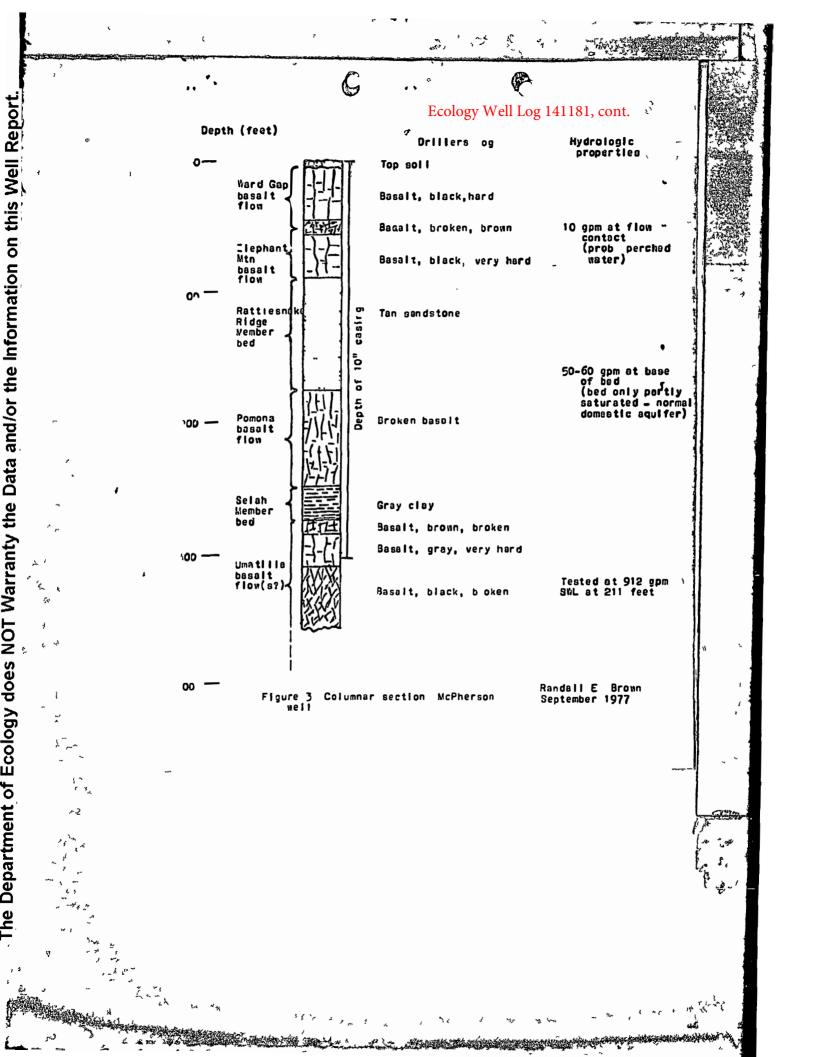
Ecology Well Log 139777 File Original and First Copy with Department of Ecology Second Copy - Owner's Copy Third Copy - Driller's Copy Application No 94-24791 WATER WELL REPORT STATE OF WASHINGTON Permit No nvestment Co. Address (1) OWNEB: Name stence Durante 621 1. DW . Sec 8 + 9 N. 824 W.M. 7) LOCATION OF WELL: County ig and distance from section or subdivision corner (10) WELL LOG: 3) PROPOSED USE: Municipal 📋 Domestic 🗋 Industrial 🗌 Irrigation 👗 Test Well 🗆 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. Other D Owner's number of well 1) TYPE OF WORK: MATERIAL FROM TO New well X Method. Dug Ð Bored D 8 SOIL Deepened G Cable 🗍 Driven 🛛 Brocken Black 20 8 al T Rotary [] Jetted D Reconditioned [] 42 BASALT HARD BLACK 96 R DIMENSIONS: Diameter of well inches. 96 SAND STORE 16 Lepth of completed well. 35.3 ft. Drilled 353 HARD BLACK 165 BASALT_ 195 195 197 tine TAN 3) CONSTRUCTION DETAILS: HArd 197 235 ASALT Black n. to 2.35 n. Casing installed: 10 " Diam. from 0 26 Threaded [] " Diam. from ft to n ASalt Brocken Welded [." Diam from ft. to ft. BASAN 265 325 WITH BASALT HARD BLACK Perforations: Yes C 325 335 No 📕 Type of perforator used SIZE of perforations in by in. n WATER 96' CASED OFF perforationa from ft. to . **ft**. perforations from ft to perforations from ft to ft. WATER AT 265 Screens: Yes 🗆 No 🕵 Manufacturer's Name Model No Type Durm Slot size from ft to ft. .. **ft**. Diam Slot size from ft. to Gravel packed: Yes No X Size of gravel Gravel placed from ft ft. Ľ Surface seal: yes To what depth? .40 No 🗋 . ft. Material used in seal Did any strata contain unusable water? Yes 🗖 No A Type of water? Depth of strata Method of sealing strata off 1) PUMP: Manufacturer's Name H.P Type: Land-surface elevation above mean sea level) WATER LEVELS: n. 63 die level ft below top of well. Date lbs, per square inch. Date esian pressure Artesian water is controlled by (Can. valve etc.) Drawdown is amount water level is lowered below static level) WELL TESTS: Work started , 19 Completed 19 No [] If yes. by whom DUR TEST us a pump test made? Yes 🛒 ft_drawdown_after WELL DRILLER'S STATEMENT: gal/min_with el 1. hrs. This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief. reovery data (time taken as zero when pump turned off) (water level measured from well top to water level) (Person Arm. centroporation) (Type or pr CO ... NAME ST. TIME Water Level | Time Water Level Water Level Time AIR TEST ISOD 6 M Address 701 5. 45 th Echlore ω . JUNE 9-77 (Well Drilley) Date of test [Signed]... gal/min with aller text ft. drawdown hre testan flow r.p.m. Date reperature of water 47 Was a chemical analysis made? Yes 🕞 No 其 License No. (USE ADDITIONAL SHIFTS IF NECESSARY)

The

Ecology Well Log 141181 Original and First Copy with Application No. G 4-24765 WATER WELL REPORT scond Copy - Owner's Copy hird Copy - Briller's Copy STATE OF WASHINGTON Permit No. McPhersonadres RT2 -Box2 720 Gostiliew (1) OWNER: Nome Tames (2) LOCATION OF WELL: County Benton - SEN NE Soc 31 TLON R 24 GAM Bearing and distance from socian or subdivision corner 1000 157 Eran SE COLARE (3) PROPOSED USE: Domestio C Industrial C Municipal C (10) WELL LOG Formation: Describe by color character, size of material and structure and show thickness of aquifors and sho kind and nature of she material in each stratum prestructed with at least one entry for each change of formange Irrigation 🗙 Test Weil 🗆 Other 0 (4) TYPE OF WORR: Owners number of well 2 New well Edit more than one) Bored D Deeptned Cable D Driven D MATERIAL SROM | 70 0 Deepthed D Reconditioned D 4 45 2 Rotary & Jetted hard 4 149 13 LOMAN (5) DIMENSIONS DIMENSIONS Drilled_752____1 Depth of completed well 3.57_____s. ALAO 109 175 (6) CONSTRUCTION DETAILS: 165-1751 Casing installed. (0 " " Diam from _ 0 ft. to 201/ ft. Threaded D _____ Diam from ____ ft to ____ ft. Welded g _____ Diam from ____ ft. to ____ ft. 1178 750 TAN HAA 2.50 2.75 GARY Clay Do ESIT Welded 🔂 cr 210 Basalt Gran Von Antise 210 Basalt Black Bealser With his Mass F Grand Cator 355 - un 310 210 359 G ... a. 1. Perforations: yes D No & SIZE of perforations ... in by In ____ perforations from _____ a 8 n 2000 6-PN a 310 Screens. Yes D No CK RFORM. Type. Model No Diam _ Slot eizo __ _ from ft to . . A . 6101 eize Crom Diam. SEP 14 1977 Gravel packed Yes D No 2 Size of gravel DSPARDAL AT OF ECOLOGI Gravel placed from ------- 11. 10 _ fl Surface Scale yes of No D To onat depthe 25 n. Material used in scal _ Neat Comeat Did any strata contain unusable waters No O Yes D Type of water? ______. Method of graing strain off_____ Dipth of strate . (7) PUDAP: Manifecturer's Name H.P. Type: .. (6) WATER LEVELS: Land-surface elevation Statio lovel _____ (9) WELL TESTS Drawdown is emount water level is lowered below statio level 8-15 19.27 SIL 19 2. Completed Work started WELL DRILLEB'S STATEMENT? 912 This well was drilled under my jurisdiction and this report is to the best of my knowledge and belief. . Recovery data (time taken as tero when pump turned off) (water lavel measured from well top to water level) NAME St Georg a Drilling G Timo Water Level | Time Water Level Time Water Level Address 701 SO 45th W. Richland Wash (Signed) Date of test . ft. drawfowr Baller test. Artestan flow (USE ADDITIONAL SHEETS IF NECESSARY) Ø 8. 8 No. 7350-05-(Rev 471) ECV-070-28 <u>A CHERRER</u> ç 1-0 ده ۲۰۰۰ کېږ

Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report. The

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	Name & Piece Test Number,		NCPh arson iller <u>8t</u> 0 rd		FA 	RMORE PUM WELL T Woll Size1	EST LOG	ation	Box 1307 Airpo PENDLETON OREC Phone 509 278	ON 97801 Q	EP 14 1977	
	Rig Faraman. Pump Batting			Air L	285'			Well Dopth		4187 DEPARTA 210* Chilifatt	RES 71.4L OFFIC	
	START TIME	RPMCHECK	GPM READING		ORFICE READING	OROP PIPĚ	T	COLUMN BIZE	PUMP IN			
•	4:00	1500	465	320 211'	14"		8	6			63	
(P)	× 4105	1500	465	320 211'	14"							
ر ، لا	4:15	1500	480	320 211'	15"		1					
•	4:30	1500	473	320 211'	14 5"				Increase ap	M, Clear, Cold		
	4:35	1600	548	320 211'	20"							
	4:45	1600	54 8	320 211'	20"		<u> </u>	<u> </u>				~~v},
-	5:00	1600	548	320 211'	20"			1	Increase RPR			
	5:05	1700	566	32¢ 211'	21.5"				AUSTCOOR UN	UAEUR		
	5.18~	1700	566	320 211'	21 5"							
G	5130	1700	554	320 211'	20 5"	<u> </u>			Increase RP	, Clear		
Ģ	9:39´`	1800	662	32Ø 211'	29.5"		<u> </u>			,		
,	*1				29.5"							
	8:45	1800	662	320 211'		-			Increase RPM	Clear		
	6 00	1800	662	320 211'	29,5"				Auceuass are			
	6:05	<u>1900</u> 1900	726 726	<u>320 211'</u> 320 211'	35" 35"			l				
	6:19 6:30	1900	726	320 211' 320 211'	35"		<u> </u>					
	0530	6900	/20	520 211				I				
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A 1	r P	age. 2. of 2			I	Ecology	v Well Log	g 141181	, cont.				
£	Manto & Flatt Text Number		McFhearso Dr	m		_ FAI	RMORE PUM WELL T	P & IRRIG/ EST LOG	ATION	Bara 1507 Airpar PENDLETON, 9REG Phana BKB 2784	t Road Cai 97201 1187		
1	Rá Forentan,					-	Ma Sida			& & & & & & & & & & & & & & & & &	<u> </u>		
	Party Setting					·			Vial Cardo		Q		
	START TIME	REM CHECK	G723 READING	AIRLAN READIN	10 10	ORFICE READING	DROP PTVE	EDVAL SIZE	COLLEGN SIZE	PURED INS	MODEL	WATER TEMP	
ىر ن	<u>6 35</u>	2000	770	329 2	111	<u> 39"</u>		ļ		Increase RPM			
• (?	<u>\ 6.45</u>	2000	781	320 2	11'	40"	, 	<u> </u>					
	7.00	2000	781	32∌ 2	111	40 [#]							
	7 15	2000	754	320 2	11'	37.5				Increase RFM			
	7 20	2100	820	32# 2	11'	44"							
	7 20 7 30	2100	820	320 2		44 ⁿ		1	1	Increase BPM			
			872			50"							
	7.35	2200	1	<u>32</u> ₽ 2	1			1	+				
	<u>7 45</u> 7 50	2200 2300	872 912	32Ø 2 32Ø 2	211'	50" 55"			╂────				
K		h						<u> </u>	<u> </u>				
6	7 55	1900	703	32# 2	11'	33"			<u> </u>			 	
	8 00	1900	709	329 2	11'	33 5"		<u> </u>	 				
	8 05			324 2	11'				1	ļ			
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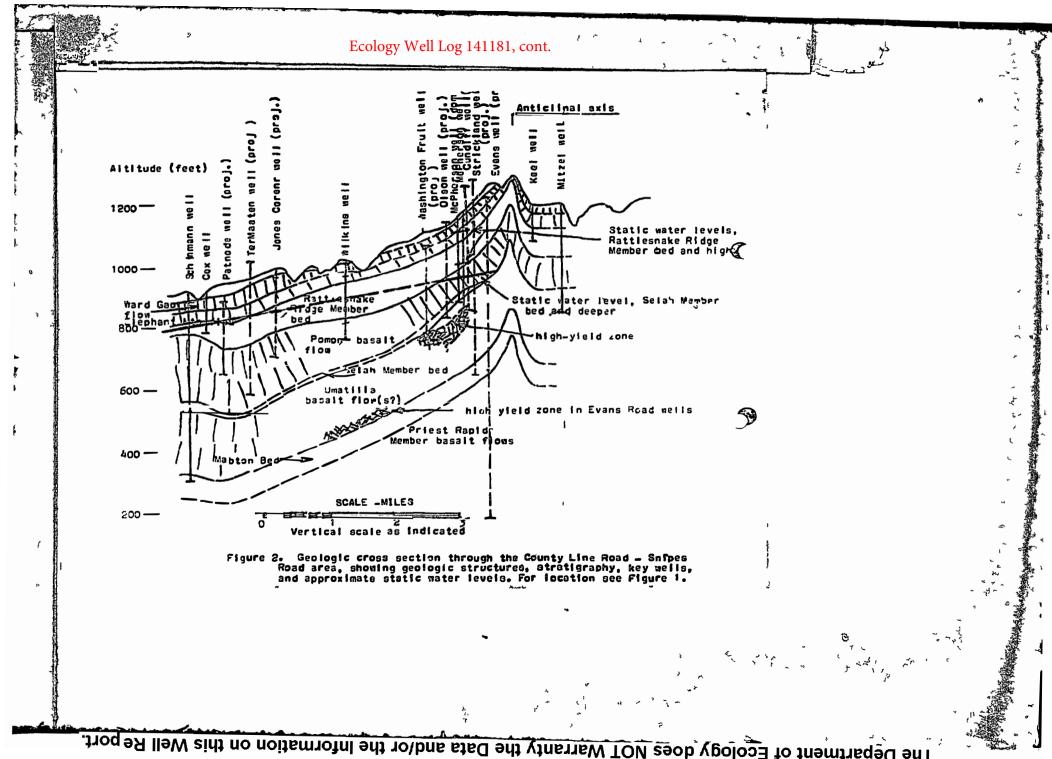
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The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.



File Original and First Copy with Dep Sec Thir

Ecology Well Log 254683 Notice of Intent W109690

Department al Ecology Second Copy - Owner's Copy Third Copy - Driller's copy	
(1) OWNER: Name PETER PLATH	Address 780 CHAFFEE RD, OUTLOOK, WA 98938
(2) LOCATION OF WELL: County YAKIMA	- NW 1/4 NW 1/4 Sec 33 T. 11 N.R 22 W.M.
(2a) STREET ADDRESS OF WELL (or nearest address) 780 CHAFFE	
TAX PARCEL NO. <u>221133-22002</u>	-
(3) PROPOSED USE: X Domestic Industrial Municipal	(10) WELL LOG or DECOMMISSIONING PROCEDURE DESCRIPTION; Formation: Describe by color, character, else of meterial 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.
(4) TYPE OF WORK: Over's number of well (if more than one)	MATERIAL PROM TO
X New Well Method:	SOIL BOULDS AND GRAVEL 0 3
Reconditioned Cable Driven	BOULDERS GRAVEL AND SAND 3 46
Decommission X Rotary Jetted	CLAY SANDY 46 195 GRAVEL SANDY 195 295
(5) DIMENSIONS: Orientator of well6 inches.	CEMENTED GRAVEL AND SAND 205 303
Drilled <u>498</u> feet. Depth of completed well <u>498</u> ft.	BASALT 303 344
(6) CONSTRUCTION DETAILS:	CLAY 344 361
Casing installed:	SANDSTONE AND CLAY 361 429
X Weided <u>6</u> Diam. from <u>+2 1/2</u> ft. to <u>454</u> ft. Liner installed Diam. from ft. to ft.	GRAVEL SAND 429 434
Threaded Diam. from ft. to ft.	SANDSTONE 434 485 SAND 485 492
Perforations: Yes XNo	SANDSTONE 492 498
Perforations: Lives XINo Type of perforator used	
SiZE of perforstions in. by in.	40 GPM 490FT
perforations from ft. to ft.	30 GPM 440FT
perforations from ft. to ft.	10 GPM 400FT
perforations from ft. to ft.	
Screens: Yes XNo K-Pac Location	■ <mark> </mark>
Manufacturer's Name	
Type Model No.	
Diam. Slot size from ft. to ft.	· · · · · · · · · · · · · · · · · · ·
Diam Slot eize from ft. to ft.	
Gravel/Filter packed: Yes XNo Size of gravel/sand	
Material placed from ft. to ft.	
Surface seal; XYes No To what depth? 360 ft.	Non- will 82
Material used in seal BENEWITE	North Contraction
Did any strate contain unusable water? []Yes [X]No	
Type of wells? Depth of sizeta	
Method of sealing strata off	┛ <mark>╴╴╴╴╴╴╴╴╴╴╴╴╴╴╴╴╴╴╴╴╴╴╴╴╴╴╴╴╴╴╴╴╴╴╴╴</mark>
(7) PUMP: Manufacturer's Name	
Туре: Н.Р	
(8) WATER LEVELS: Land-surface elevation	Work Started 4/28/2000 , 19. Completed 5/4/2000 , 19
above meen sea level ft.	
Static level <u>360</u> ft. below top of well <u>Date 5/4/2000</u> Artesian pressure ibs. per equare inch Date Artesian water is controlled by (Cap, velve, etc)	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.
(9) WELL TESTS: Orendown is amount water level is lowered below static level Was a pump test mede? Yes XNo If yes, by whom?	Type or Print Name TOM MCGUIRE License: No. 0357 (Licensed Driller/Engineer)
Yield; gai/min. with ft. drawdown after hrs. Yield: gai/min. with ft. drawdown after hrs.	Traines Name License No.
Yieki: gal./min. with ft. drawdown after hrs.	Ontiling Company RICK POULIN WELL DRILLING
Recovery data (time taken as zero when pump turned off) (water level mensured from well top to water level)	(Signed) Jon Mc License No. 0357
Time Water Lovel Time Water Lovel Time Water Lovel	(Licensed Diller/Engineer) Address 1301 LANCASTER RD SELAH. WA 98942
	Contractor's Registration No. <u>RICKPWD042J2</u> Deto <u>5/11/00</u> , 19
Bailer test cal/miπ, with the drawdown after hrs.	(USE ADDITIONAL SHEETS IF NECESSARY)
Airbest 30 gel/min. with stem set at 440 ft. for hrs.	Ecology is an Equal Opportunity and Affirmative Action employer. For
Artesian flow g.p.m. Date	special accommodation needs, contact the Water Resources Program at

(360) 407-6600. The TDD number is (360) 407-6006.

Temperature of water

Was a chemical analyses made? Wes X No

	Original with artment of Ecology	89392	WATER WE		OR	Т	Notice of Int	ent_W ĺĺ	<u>3836</u>	
•	ond Copy - Owner's Co		STATE OF	WASHINGTON					AFE IO	<u>1</u> 2110
Thir	d Copy - Dniller's Copy					Water Rig	ht Permit No	blogy we	1 L0g 503	
(1)	OWNER Name	Robert H	Poster		Addr	ess 1410 H	E. Hought	on Rd.	Zılla	h, Wa
2)		_{County} akima	a	· · · · · · · · · · · · · · · · · · ·	NE	C <u>1/4</u> NW	_1/4 Sec_25	т_11_	NR 21	WM
2a)	STREET ADDRESS	OF WELL (or near	est address)					<u></u>		C
2)	PROPOSED USE						C DECOMMISS			COUNTION
3)	PROPOSED USE	Imgation DeWater	Industrial Test Well	Municipal		Formation Designment the kind and national	OG or DECOMMISS cribe by color, chara ture of the material i	cter, size of mi n each stratum	aterial and stri penetrated, i	ucture, and with at least
4)	TYPE OF WORK		of well (if more than one)	-	one entry for ea	ch change of inform	ation Indicate		
		New Well Deepened	Method	Bored		D .	MATERIAL		FROM	TO
N.			Cable			Top sol	L hite, som	0 0001	$\frac{0}{1}$	9
			⊠ Rotary Ó	Jetted		Clay, wi		e grav		19
5)	Dimensions Drilled 265	Diameter of well	-	ir	nches		an ate, brow	n ola	7	<u> </u>
	Drilled 205	_teet Depth of con	npleted well 256		ft		gravel	n, cia	y 19	10
5)	CONSTRUCTION DE						an, occas	ional	17	
	Casing Installed	"	Diam from <u>+1</u> Diam from	<u>ft 10</u> _256	ft		l lenses	TOHAT	102	145
	Liner installed	u		ft_to	ft		an, loose	Travo		<u> </u>
	Threaded		Diam from	ft_to	n	lenses		BLAVE	145	164
						Basalt,			164	234
	Perforations	⊡Ž¥ves □ No				Basalt,			234	242
	Type of perforator use	d_torch					ne, w/ gr		2,74	242
	SIZE of perforations	10)in by <u>6</u> rations from <u>23</u> 2	<u>16</u>	m	H20	ie, w/ gi	aver	242	260
		_ <u>58</u> perfor	ations from 232	2 <u>ft to</u> 256)ft		ellow, h2	0	260	265
						Danu, yt	<u>errow</u> , 112	0	200	205
	Screens	D¥ves ⊡No ⊡H	-Pac Location			·				
	Manufacturer's Name									
	Туре		Model No				105	ECOLO		
			from					LUUI CF		
			IIOIN	_n to	n	<u> </u>	- / Y Rec	ewed		
	Gravel/Filter packed	🗆 Yes 🖾 No 🗔	Size of gravel/sand					0 2003		
	Matenal placed from_	·····	ft_to		ft					
	0	3 54	To the deaths 20				(FEI)	<u></u> رې		
	Surface seal Material used in seal_	HC	To what depth? 20	·	ft		AL RI			
	Did any strata contain	unusable water?	🗋 Yes 🔲 No				<u> </u>			· · · · · · -
	Type of water?		Depth of strat	a	<u> </u>					
	Method of sealing stra									
)	PUMP Manufacturer	s Name								
	Туре		н	P						
"	Static level78		above mean sea levelft below top of well	Date 9/27/	<u>00</u>	Work Started	9/21/00	Completed	<u> </u>	28/00
	Artesian pressure		lbs_per square inch	Date	<u> </u>					
	Artesian water is contr	olled by	(Cap, valve, etc)		— [WELL CONSTR	UCTION CERTIFIC	ATION		
•			er level is lowered below				and/or accept respo ith all Washington w			
			If yes, by whom?		hrs		ation reported abov			
	Yieldgal /mii	1 with	ft_drawdown a	after		Type or Print N	_{lame} _Larry	Casse	cense No	0073
	Yieldgal/mm	n with	ft drawdown a	after	hrs			Driller/Engine		
	• •	•	ump turned off) (water le	evel measured from	n	Trainee Name	\sim		_License No	
	well top to water level) Time Water Le		Water Level	Time Water L	evel	Drilling Compa	ny Cassel 1	Well D	Fillin	g
						(Signed)	The	a.		0073
							(Licensed	Dnller/Engine	er)	
						Address 1_30	8 Voelke	r Ave.	Yakıma	a, Wa
	Date of test			wo after	bre					
	Bailer test7	-yeionain with	235 It drawdo	wn after	hrs	Registration No	Cassewd	ута ср	_Date_9/	20/00
			gpm Da			,			CESSADV	
			emical analysis made?		-1					F
22.0	050-1-20 (11/98)						qual Opportunity an needs, contact the			

6600 The TDD number is (360) 407-6006

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Second Copy - Ownar's Copy Third Copy - Driller's Copy

WATER WELL REPORT

Notice of Intent <u>W12</u>7912

STATE OF WASHINGTON COLOgy Well Log 303128 WELL ID # _AFQ-610 Water Right Permit No

Address 2644 Wilson Hwy., OWNER Name Dave Cowan Grandview (1) 23 LOCATION OF WELL County _________ ΝE 1/4 NW 10NR .WM 1/4 Sec 14 (2) Rđ. (2a) STREET ADDRESS OF WELL (or nearest address) <u>SLI</u>. <u>East Of Roza</u> Canal $\overline{}$ TAX PARCEL NO 231014-21403 Domestic (10) WELL LOG or DECOMMISSIONING PROCEDURE DESCRIPTION (3) PROPOSED USE Industrial Municipal Irngation Test Well Other Formation Describe by color, character size of material and structure, and DeWater 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 TYPE OF WORK (4) Owner's number of well (if more than one) 🕅 New Well Method MATERIAL FROM TO Ö Deepened Dug □ Bored 0 Tonsor1 Reconditioned Cable Driven 16 🕅 Rotary Βr Basalt 1 Jetted 16 10 DIMENSIONS 6 Med <u>Grav Basalt</u> (5) Diameter of well, inches 19 45 325 325 Br & Grav Basalt Drilled ft feet Depth of completed well 45 78 Grav Basalt w/ Br CONSTRUCTION DETAILS (6) **Casing Installed** Cracks 6 161 +1Weided ft to Diam from ft 85 Porus 78 <u>Grav & Br</u> Basalit 136tt to 325 C Liner installed Diam from ft <u>Clav & Water</u> Br W/ Threaded Diam from _ft to ft 100Sandstone & Br 85 Grav Clav Perforations 🕅 Yes 🖾 No 158 Br 00 Sandstone & Br Cutting Torch Type of perforator used _ Clay 3/8 6 SIZE of perforations _in by In the 58 185 Br Grav Basal perforations from 315325 30 ft to_ fi 185 200 Br Basalt 285 305 60 200214 Rr Sandstone & Porus Screens 🗆 Yes 😥 No 🖾 K-Pac Location Br Basalt & Water Manufacturer's Name 214 218 Bı & Grav Basalt Model No Туре 290 218Med Grav Basalt ft to ft Dram Slot Size from <u>Basalt</u> 290 294 Porus Diam Slot Size from ft to ft Br. Ηd Yellow Clay & Wate Gravel/Filter packed 🛛 Yes 🖄 No 🗔 Size of gravel/sand Br_ 294 298& Gray Basalt Matenal placed from ft ft to 29831 Basalt & **B**1 Grav 110 23 Strips Surface eeal K∐Yes ⊡ No To what depth? ft <u>Bentonite</u> 325 Material used in seal <u>Grav</u> Basalt W/ THE EC 315 Did any streta contain unusable water? 🗆 Yes 🗱 No Cracks Type of water? Depth of strata Method of sealing strata off DCT 3 1 2000 ന PUMP Manufacturer's Name HP Type WATER LEVELS Land-surface elevation above mean sea level Static lavel 134 ft below top of well 1040REGION (8) Work Started 9-20-00 Simpleted 9-27-00 Date 9-27-00 ft below top of well Artesian pressure lbs per square inch Date. Artesian water is controlled by WELL CONSTRUCTION CERTIFICATION (Cap, valve, etc) I constructed and/or accept responsibility for construction of this well, and its WELL TESTS Drawdown is amount water level is lowered below static level (9) compliance with all Washington well construction standards Matenals used Was a pump test made? Di Yes X No If yes, by whom? _ and the information reported above are true to my best knowledge and belief Yield _gal./min with _ ft drawdown after hrs gal /min with Type or Print Name <u>Jerry Rank</u> License No <u>1435</u> ft drawdown after hrs Yield Yield gal/min with ft drawdown after hrs (Licensed Driller/Engineer) Recovery data (time taken as zero when pump turned off) (water level measured from Trainee Name License No well top to water level) Water Level Drilling Corpe Time Time Water I evel Time Water Level License No _1435 (Signed) 11 (Licensed Driller/Erigineer) Address 2017 S. 16th. Ave., Union Gap Date of test Contractor's Bailer test gal./min with hrs Registration No OASISD*072J9_ _Date_9-27-45 Aintest hrs gal./min with ____gpm Date <u>9</u> Artesian flow_ (USE ADDITIONAL SHEETS IF NECESSARY) 65 . Was a chemical analysis made? 🛛 Yes 🏌 No Temperature of water 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

Seco	d Copy - Driller's Copy	VASHINGTON Permit No. 14-	,)-f¢
(1)	OWNER: Name BROWNFRUIT OF LASH.	Videres South HillRed Ser Bid	ا م
_		- SE 1/4 Sec. 35 T/O N	
	ring and distance from section or subdivision corner 1.300 FT. U	•	., R CT
Bear	ring and distance from section or subdivision corner 1.5CX-14-4		
4(3)	PROPOSED USE: Domestic D Industrial Municipal	(10) WELL LOG: SID 210969	
4	Irrigation Test Well Other	Formation: Describe by color, character, size of material and show thickness of aquifers and the kind and nature of the m	structu aterial
(4)	TVPF OF WORK. Owner's number of well	stratum penetrated, with at least one entry for each change	e of for
(4)	TYPE OF WORK: Owner's number of went (if more than one)		ОМ
	Deepened Cable Driven		2
_	Reconditioned 🗌 Rotary 💢 Jetted 🗌	Hard Freetured Bruit-	7 / 7
(5)	DIMENSIONS: 22"- 16" - 13" - 8" inches.	Basalt.	
(0)	Drilled		71.
		MedHard Black Basult 1.	25
(6)	CONSTRUCTION DETAILS:	Med-SOFT BROWN BASAIT	5
	Casing installed: /6 " Diam. from + 1 ft. to 18 ft	Red & BROWN & Black BROKEN	
	Threaded $\Box = 12^{n}$ " Diam. from ± 1 ft. to 3.14 ft.	Genuel, Juver, Bed (inter) 19	51:
	Welded \Box	Med-Hard Block Basalt 20	
	Perforations: Yes 🗆 No 🕱	VERY FRACTUREd, BRUCH & Bbok	
	Type of perforator used	Basatt, (Water Barr. 29)5.FT 24	51
	SIZE of perforations in. by in.	Liky Ward FRACTUREd GRAY	
	ft. toft.		75 2
	perforations from ft. to ft.	BROWN SEFT BROKEN BASAIT	
	G	(water Bearing) 20	8 2
		Med- DARN BIACK BASA HT ZO	34 2
	Manufacturer's Name	SOFT BROWN BASAIT 21	25 2
	Diam	URY - Pland 15 lackish Geny Base A. 2	2.3
	Diam Slot size from ft. to ft.	SOFT BROW UGBLER FRActured	
}	Gravel packed: Yes No 🕅 Size of gravel;	Basalt. (Some L'ater) 31	<u>cz 13</u>
<i>"</i> ј.	Gravel placed from ft, to ft.	Med Hard gracticed Basa /T	
	10* 211*	1 LAY PLARD COMY Basalt 34	
	Surface seal: yes of No D To what depth?		52 3
	Material used in seal	Black Fractured Basalt with	
	Type of water?	Blue STATE DEPOSTIS(WATER) 36	8 7
	Method of seabng strata off	Hard Black Basalt 38	SE
(7)	PUMP: Manufacturer's Name	Hard Gray Basallo 34	
	Туре:	Red Basa A Some Perais	
(0)		(WATER) 50	05
	WATER LEVELS: Land-surface elevation above mean sea level	Blue State Soft 50	27 -
	c level	FILL SALL STONE GREEN	
Artes	Arteslan water is controlled by	Color 54	25
	(Cap, valve, etc.)	Bluc Slate Soft. 50	4
(9)	WELL TESTS: Drawdown is amount water level is	HORD Blue Gray Slate ST	5 45
• •	a pump test made? Yes No 🛐 If yes, by whom?	Work started MARC A 1619.77. Completed MARC	<u>(~ / /</u>
Yield		WELL DRILLER'S STATEMENT:	
	1 1) 1 1	This well was drilled under my jurisdiction and t	his re;
	0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0	true to the best of my knowledge and belief.	~
Recov	very data (time taken as zero when pump turned off) (water level leasured from well top to water level)	Joach Abill Strillin	No
Τιπ	· · · · · · · · · · · · · · · · · · ·	NAME (Person, firm, or corporation) (Type (or print
• •••••		PTO Ray Dis Mar	slo
	······	Address A. Ly JA 293 MAY	3 1 41.4
		Vathing Nell	
ً∿ء	test gal /min. withft. drawdown afterhrs.	[Signed] (Vell Driller)	S. There
	n flow gpm. Date	and the	
	erature of water	License No. J. L. Date J. L.	Luis J
Temp		and the second	25

B. Num B.C. LUW F.C. IT C.F. Wash M& 124 Let "icology Well Log 326422, cont. ITON OF WELL CONST. INFORMER CONSTRUCTION OF THE WARK CONSTRUCTION OF WELL CONST. OF WORK: Convert washes and the second of the construction of the second o	• •	A First Copy with J-UQE 2 WATTER WE Lowner's Copy Failter's Copy STATE OF W	LL REPORT Application No. ASHINGTON Permit No G 4-2477
Constructional and the second a	, d '	ER: Name BPOWN FRUITOF Was	States CL'Ecology Well Log 326422, cont.
B OF WORK: Chronic entrement will)		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
fights SIONS: Diameter of well incher in A Depth of complete owell incher installed: incher installed: ''Dam, from ft to incher ''Dam, from ft to ''Dam, from ''Dam, from ft to		New well Method. Dug Bored Deepened Cable Driven	MATERIAL FROM TO HARD BLUE PASAIT FRACTURA S75 S95 GREEN-ERLY Ned-ghed
ising installed:			
Type of performations imm. in. by in. Size of performations from if to if Manufacturer's Name fit to if Type No Matternal ton fit to Gravel packed: yes no ste of gravel fit to Gravel packed: yes no ste of gravel fit to Gravel packed: yes no fit to fit Gravel packed: yes no fit fit Gravel packed: yes no fit fit Maternal tos no fit fit fit fit fit fit fit fit fit fit fit fit fit <td>L</td> <td>sing installed: " Diam. from</td> <td>ERAY BASAIT 687 692 Mud-flaxed Black Basalt 642 697</td>	L	sing installed: " Diam. from	ERAY BASAIT 687 692 Mud-flaxed Black Basalt 642 697
Manufacturer's Name		Type of perforator used	SCEP Black Besult Solid. STRUCTURE WITH GREEN Aliver 737 770. Mixed Source What Popass
Gravel packed: Yes No Size of gravel Gravel packed: Yes No Size of gravel Gravel packed: Yes No Size of gravel Surface seal: Yes No Size of gravel Surface seal: Yes No Size of gravel Did any strata contan unusable water? Yes No Size of gravel Did any strata contan unusable water? Yes No Size of gravel Type of water? Method of sealing strata of Type: IPUMP: Manufacturer's Name Type: Method of sealing strata of Type: IPUMP: Manufacturer's Name IPUMP: Manufacturer's Name <tr< td=""><td></td><td>Manufacturer's Name</td><td>Black Gray Black Besalt 780 795' Black Precos Barn 15</td></tr<>		Manufacturer's Name	Black Gray Black Besalt 780 795' Black Precos Barn 15
Material used in seal. Did any strata contain unsable water? Yes No Did any strata contain unsable water? Depth of strata. Pype of water? Depth of strata. Method of sealing strata off. R ECEIVED PUMP: Manufacturer's Name. Type: HP MAY 2:7 1977 (8) WATER LEVELS: Land-surface elevation addesurface elevation Attestan pressure The below top of well Date Artestan pressure The per square nuch Date Artestan pressure Dis per square nuch Date Artestan water is controlled by. (Cap, valve, etc) (9) WELL TESTS: Drawdown is amount water level is lowered below state level Yie diag al/min. with ft drawdown after measured from well top to water level) Time Meter Level Time Time Water Level NAME MAME (Pergen firm, or corporation) (Pergen firm, or corporation) (Pergen firm, or corporation) (Pergen firm, or corporation) (Pergen firm, or corporation) (Pergen firm, or corporation) (Pergen firm, or corporation) (Pergen firm, or corporation) <td></td> <td></td> <td>Flard OPAY BISANT 817 THE</td>			Flard OPAY BISANT 817 THE
Type: HP (8) WATER LEVELS: Land-surface elevation above mean sea leval. ft (8) WATER LEVELS: Land-surface elevation above mean sea leval. ft (9) WELL TESTS: Drawdown is amount water level is lowered below static level		Material used in seal Did any strata contain unusable water? Yes No Type of water? Depth of strata	RECEIVED
(b) WATTER DEVENDE: above mean sea level.		Туре:	MAY 27 1977
Work started	Statio	above mean sea level	
Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level) NAME	Was	a pump test made? Yes No If yes, by whom?	WELL DRILLER'S STATEMENT: This well was drilled under my jurisduction and this report is
Date of test gal/mun. with ft drawdown after hrs test gal/mun. with ft drawdown after hrs Temperature of water Was a chemical analysis made? Yes No /	/ n	very data (time taken as zero when pump turned off) (water level neasured from well top to water level) ne Water Level Time Water Level Time Water Level	ence Mul Derling Co
Temperature of water Was a chemical analysis made? Yes D No D License No. 0221 Date Date	X	ate of test gal./min. withft drawdown after	[Signed] Botherich L- Jeach
		perature of water	10

- (B) - 1

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ECY 050-1-20

WALDROP DRILLING & PUMP CO., INC. 431 NORTHSHORE DRIVE

Nº 00003

Licensed and Bonded General Contractor

0.1

MOSES LAKE, WASHINGTON 98837 Telephone 765-7506 — 765-7105

- -

Date April 26, 1977

Ecology Well Log 326422, cont.

Brown Fruit Co. of Washington

Box 1635 <u>P. O. Box 611</u>

<u>Sunnyside, Ma. 98944</u>

951

HOURS	DESCRIPTION	RATE	AMOUN	IT
520.6	10 3/4 x .156 wall casing	4.410	\$2,295	85
41	8" x 22" x 12" col., tube, shft.	500.000	2,000	00_
1	8" flow meter	425.00	1,25	00
	Additional cost for set of bowls		700	00
<u> 81 </u>	10 3/4 casing	5.95@	481	95
68.5	hrs. instell 2 times, pull 2 tir	es		ļ
	& run liner, no charge for initi	al		
	installation.	40.000	2,740	00
<u> </u>	ring for adaption of liner to		·	ļ
	casing 12" to 10"	75.00@	75	00
5	gal. turbine oil		10	00
1801	Air line	.50@	- 240	00
1	Gauge, & Valve stem	10.00	10	00
		5		
	-	• .	\$8,977	80
	· · ·	Tax	457	87
		Total	\$9,435	67
	Invoiced 3/22/77		14,892	50
		Balance	\$24,328	17

A FINANCE CHARGE is computed at the RATE OF 1% A MONTH on the unpaid balance, excluding previous interest charges, which is an ANNUAL PERCENTAGE RATE of 12%.

APPROVED AND RECEIVED

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

RECEIVED

MAY 27 1977

DEPARTMENT OF ECOLOGY CENTRAL REGIONAL OFFICE

			e	•	ell Log 3264	.36 Notice of Inten	W.C	899	18
File Original with Department of Ecolo	Ŋ	WATER W		JK	I		$un \neq A$	FQJ	ai
Second Copy - Owne Third Copy - Driller's		STATE O	FWASHINGTON				-3	4505	
(1) OWNER: Nam		Attray				Bethany			
(2) LOCATION OF	WELL: County Uak	IMA		Δ	<u>E_1/4_SE</u>	_1/4 Sec_27_1	- <u>70</u>	N.R.23 4	<u>E</u> WM
(2a) STREET ADDR TAX PARCEL I	IESS OF WELL: (dr neare 10. [.]	st address)							$\overline{\mathbf{A}}$
(3) PROPOSED U	SE: Domestic	 Industrial Test Well 	Municipal Other		Formation [•] Desc the kind and nat	G or DECOMMISSIO ribe by color, characte ure of the material in e	er, size of m each stratur	aterial and str mpenetrated,	ructure, and with at least
(4) TYPE OF WOF	K: Owner's number of	well (if more than on Method	e)	-	one entry for eac	ch change of informati MATERIAL		FROM	
	Deepened	🗆 Dug	Bored		BOUNA	al TCIAY		0	12
	 Reconditioned Decommission 	Rotary	Driven		La BASAL	+ Boulders	BLK	12	17
5) DIMENSIONS:	Diameter of well	12		ches	RASALT	-Gravet		11	20
Drille	feet. Depth of com	pleted well 5	15	ft	Med Ble	ACK BASAL	+	20	38
6) CONSTRUCTIO	N DETAILS				HARD BI	ALL BASA	Vt-	38	46
Casing Installe	* <u>8</u> 0 -	Diam, from +/	ft. to 38	ft	Black B	roken BAS	<u>917</u>	4/8-	44
Liner installe	1 <u>7a</u>	Diam from +1	ft to <u>247</u>	ft.	RHED DI	BLACK DAS	ALT	92-	75
Threaded		Diam from	ft. to	ft.	Broon S	and med - h	APD	105	130
					Brown	SANDSTON	ie le	130	185
Perforations: Type of perforat	□Yes 🎝 No or used				Brown	Clay		185	220
SIZE of perforat		in. by		_in	HARD BI	asalt (now	Dater)	220	303
		itions from		ft	BACKBAS	alt - yellow	<u>cpy</u>	383	405
					SOFT Bla	CK BASAC	T	405	415
Screens:	🗆 Yes 🖸 No 🕅 K	Pac Location	501	, ,	Yerran Cia	y-BASALT(W	Mers	415	2102
	iame Home	MADE			Broken B	Balalt Cine	lors	2199	515
Type Diam	Slot Size	Model N		ft.	F.timAted	300 900	7	TIZ	375
	cked: 🗆 Yes 💥 No 🗆	Size of gravel/sand_	ft. to						
Matenal placed	rom	_ft. to		_ft		OF ECOLO			
Surface seal: Material used in		To what depth?	33	_ft		Received	×		
	ntain unusable water? (<u> </u>	_		FER 1 2 200	2		· · · ·
	g strata off	Depth of stra	ata			FEB 12 CO		┨────┤	
						E		<u> </u>	
	turer's Name			_		PAL REGIO	<u> </u>		
WATER LEVELS Static level Artesian pressur Artesian water is	· <u> </u>	above mean sea level _ft below top of well _lbs per square inch nented 0	Date 2-7-02	_ft 2	Work <u>Started</u>	-15-01_	Completed	2-7-	0 2.
Antonian water is		(Cap, valve, etc.)			WELL CONSTRU	JCTION CERTIFICAT	ION:		
	Drawdown is amount water made?				compliance wit	nd/or accept respons h all Washington well	constructio	n standards	Materials used
Yieldg	al /min with	ft. drawdown	after			ation reported above a	-	· .	-
	al./mun with				Type or Print Na	ame Oshual			2217_
	al /min. with me taken as zero when pu					(Licensed Dr	men/Engine	•	<u>_</u>
well top to water	level)				Trainee Name		-11	License No	
Time Wa	er Level Time	Water Level	Time Water Le	evel	Drilling Compar	A //	-	5	1110
		- ·	·	-1	(Signed)	Licensed Dri	ller/Engine	_License No. er)	dal 7_
	5007	Rt AIR, F	1=+==	_	Address	15 65	7 1 × 5	Prosser	-, WA-
Date of test Bailer test	gal./min. with	ft drawd	own afterh	rs	Contractoria	1.12.7-1	~~~		<u> </u>
Airtest	gal./min. with	ft drawd	own after		Registration No.	C.W DEI 006	MR _	_Date	17-02
Artesian flow	ater Was a che		Date	-	(U	ISE ADDITIONAL SH	EETS IF N	ECESSARY)	
remperature of w	was a che	micai anaiysis made /			Ecology is an Equ	ual Opportunity and A	firmative	Action employ	ver For special

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accommodation needs, contact the Water Resources Program at (360) 407-6600 The TDD number is (360) 407-6006 ļ

, m				and the second	
	Appli.#		gy Well Log	g 328748	
	Per. #	9900 STATE OF WASHINGT 9096 DEPARTMENT#OF#CONSE DIVISION OF WATER RES(RVATION		ites (2.5)
	WELL LOO				
	Record by Source	Driller Driller's Record			
	Location: S	tate of WASHINGTON			
	County	Yakima	7		
	Area				
	NWZNW.14	.NE 1/4 sec. 29 T.11 N., R.22 E.	Diagram of	f Section	
	-	Gib King Well Drilling	Zillah,	Wash	
		s Route 2, Box 232./awbcute			
		of DrillingCable Date		, 19 <u>69</u>	
	Owner <u>Dw</u>	aine Van Patter Outlo	ok,		
		s Route 1, Box 157, Automatic	Wash.	98938	
	Land surfa	ce, datumft.above below			
	<u>swl. 495</u>	ftDate, 19	Dims. 8'	<u>' x 884 '</u>	
		·····			
	COBR5- LATION	MATERIAL	From (feet)	To (feet)	
	LATION (Transcri If material w. below land-su if feasible. Fo	be driller's terminology literally but faraphrase ater-bearing, so state and record static level if i face datum unless otherwise indicated Correlat llowing log of materials, list all casings, perforat	(feet) as necessary, in reported Give (te with stratign	(feet) n parentheses. depths in feet aphic column.	
	(Transcri If material w below land-suu if feasible. Fo	be driller's terminology literally but faraphrase ater-bearing, so state and record static level if r rface datum unless otherwise indicated Correlat illowing log of materials, list all casings, perforat mestic & Irrigation	(feet) As necessary, ir reported Give of te with stratigr tions, screens, et	(feet) n parentheses. depths in feet aphic column, cc.)	
	(Transcri If material w below land-sui if feasible. Fo	be driller's terminology literally but f araphrase ater-bearing, so state and record static level if i face datum unless otherwise indicated Correla llowing log of materials, list all casings, perforat mestic & Irrigation rt	(feet) as necessary, ir reported Give of te with stratigr tions, screens, et 0	(feet) n parentheses. depths in feet aphic column. cc.) 3	
	LATION (Transcri If material w below land-su if feasible. For Do Di Gr	be driller's terminology literally but raraphrase ater-bearing, so state and record static level if r rface datum unless otherwise indicated Correlat illowing log of materials, list all casings, perforat mestic & Irrigation rt avel, cemented	(feet) as necessary, in reported Give e te with stratur 0 3	(feet) n parentheses. depths in feet aphic column. cc.) 3 41	
	LATION (Transcri If material w below land-su if feasible. For Do Di Gr C1	be driller's terminology literally but f araphrase ater-bearing, so state and record static level if r rface datum unless otherwise indicated Correlat illowing log of materials, list all casings, perforat mestic & Irrigation rt avel, cemented ay	(feet) as necessary, in reported Give of te with stratur thons, sercens, et 0 3 41	(feet) n parentheses. depths in feet aphic column, icc.) 3 41 70	
	LATION (Transcri If material w below land-su if feasible. Fo Di Di Gr C1 Gr	be driller's terminology literally but f araphrase ater-bearing, so state and record static level if a rface datum unless otherwise indicated Correlat llowing log of materials, list all casings, perforat mestic & Irrigation rt avel, cemented ay avel, cemented	(feet) As necessary, in reported Give e te with stratigr thons, scruens, et 0 0 3 41 70	(feet) n parentheses. depths in feet aphic column, icc-) 3 41 70 88	
	LATION (Transcri If material w below land-su if feasible. For Di Di Gr C1 Gr Ba	be driller's terminology literally but r araphrase ater-bearing, so state and record static level if r rface datum unless otherwise indicated Correlat illowing log of materials, list all casings, perforat mestic & Irrigation rt avel, cemented ay avel, cemented salt, gray	(feet) As necessary, in reported Give e te with stratig 0 0 3 41 70 888	(feet) n parentheses. depths in feet aphic column, i.e.) 3 41 70 88 112	
	LATION (Transcri If material w below land-su if feasible. Fo Di Gr C1 Gr Ba C1	be driller's terminology literally but f araphrase ater-bearing, so state and record static level if r face datum unless otherwise indicated Correla llowing log of materials, list all casings, perforat mestic & Irrigation rt avel, cemented ay avel, cemented salt, gray ay	(feet) as necessary, ir reported Gree e te with stratigr tions, screens, et 0 3 41 70 88 112	(feet) n parentheses. depths in feet aphic column. cc.) 3 41 70 88 112 120	
	LATION (Transcri If material w below land-su if feasible. Fo Di Di Gr C1 Gr Ba C1 Sa	be driller's terminology literally but f araphrase ater-bearing, so state and record static level if a frace datum unless otherwise indicated Correlat llowing log of materials, list all casings, perforat mestic & Irrigation rt avel, cemented ay avel, cemented salt. gray ay nd	(feet) As necessary, in reported Give e te with stratign 0 0 3 41 70 888 112 120	(feet) n parentheses. depths in feet aphic column. .c.) 3 41 70 88 112 120 140	
	LATION (Transcri If material w below land-su if feasible. Fo Di Di Gr C1 Gr Ba C1 Sa	be driller's terminology literally but f araphrase ater-bearing, so state and record static level if r face datum unless otherwise indicated Correla llowing log of materials, list all casings, perforat mestic & Irrigation rt avel, cemented ay avel, cemented salt, gray ay	(feet) as necessary, ir reported Gree e te with stratigr tions, screens, et 0 3 41 70 88 112	(feet) n parentheses. depths in feet aphic column. (c.) 3 41 70 88 112 120 140 185	
	LATION (Transcri If material w below land-su if feasible. For Di Gr C1 Gr Ba C1 Sa C1	be driller's terminology literally but f araphrase ater-bearing, so state and record static level if a frace datum unless otherwise indicated Correlat llowing log of materials, list all casings, perforat mestic & Irrigation rt avel, cemented ay avel, cemented salt. gray ay nd	(feet) As necessary, in reported Give of te with stratign 0 0 3 41 70 888 112 120 140 185	(feet) n parentheses. depths in feet aphic column. .c.) 3 41 70 88 112 120 140 185	
	LATION (Transcri If material w below land-su if feasible. Fo Di Gr C1 Gr Ba C1 Sa C1 Sa	be driller's terminology literally but f araphrase ater-bearing, so state and record static level if r face datum unless otherwise indicated Correlat illowing log of materials, list all casings, perforat mestic & Irrigation rt avel, cemented ay avel, cemented salt. gray ay nd ay	(feet) As necessary, in reported Give e te with stratig 0 0 3 41 70 88 112 120 140 185 235	(feet) n parentheses. depths in feet aphic column. i.c.) 3 41 70 88 112 120 140 185 	
	LATION (Transcri If material w below land-su if feasible. For Di Gr C1 Gr Ba C1 Sa C1 Sa C1 Sa	be driller's terminology literally but f araphrase ater-bearing, so state and record static level if n rface datum unless otherwise indicated Correlat lowing log of materials, list all casings, perforat mestic & Irrigation rt avel, cemented ay avel, cemented salt. gray ay nd ay nd ay nd av	(feet) As necessary, in reported Give e te with stratur 0 0 3 41 70 88 112 120 140 185 235 290	(feet) n parentheses. aphic column, aphic column, 3 41 70 88 112 120 140 185 290 320	
	LATION (Transcri If material w below land-su if feasible. For Di Gr C1 Gr Ba C1 Sa C1 Sa C1 Sa	be driller's terminology literally but f araphrase her-bearing, so state and record static level if a frace datum unless otherwise indicated Correlat llowing log of materials, list all casings, perforat mestic & Irrigation rt avel, cemented ay avel, cemented salt. gray ay nd ay nd ay	(feet) As necessary, in reported Give e te with stratig 0 0 3 41 70 88 112 120 140 185 235	(feet) n parentheses. depths in feet aphic column. i.c.) 3 41 70 88 112 120 140 185 	
	LATION (Transcri If material w below land-su if feasible. For Di Gr C1 Gr Ba C1 Sa C1 Sa C1 Sa Ro Ba	be driller's terminology literally but f araphrase her-bearing, so state and record static level if a frace datum unless otherwise indicated Correlat llowing log of materials, list all easings, perforat mestic & Irrigation rt avel, cemented ay avel, cemented salt. gray ay nd ay nd av nd ck salt, gray	(feet) As necessary, in reported Give 4 0 0 3 41 70 88 112 120 140 185 235 290 320 342	(feet) n parentheses. depths in feet aphic column. icc.) 3 41 70 88 112 120 140 185 290 320 342 496	
	LATION (Transcri If material w below land-su if feasible. For Di Gr C1 Gr Ba C1 Sa C1 Sa C1 Sa Ro Ba	be driller's terminology literally but f araphrase ater-bearing, so state and record static level if n frace datum unless otherwise indicated Correlat llowing log of materials, list all casings, perforat mestic & Irrigation rt avel, cemented ay avel, cemented salt, gray ay nd ay nd ay nd ck	(feet) As necessary, in reported Give of te with stratign 0 3 41 70 88 112 120 140 185 235 290 320	(feet) h parentheses, depths in feet aphic column, ic) 3 41 70 88 112 120 140 185 	
	LATION (Transcri If material w below land-su if feasible. For Di Gr C1 Gr Ba C1 Sa C1 Sa C1 Sa C1 Sa Ro Ba	be driller's terminology literally but f araphrase her-bearing, so state and record static level if a frace datum unless otherwise indicated Correlat llowing log of materials, list all easings, perforat mestic & Irrigation rt avel, cemented ay avel, cemented salt. gray ay nd ay nd av nd ck salt, gray	(feet) As necessary, in reported Give 4 0 0 3 41 70 88 112 120 140 185 235 290 320 342	(feet) n parentheses. depths in feet aphic column. icc.) 3 41 70 88 112 120 140 185 290 320 342 496	

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No. \$,9905 Dwaine Van Patte From (feet) To (fe**et)** CORRE-MATERIAL Depth forward 722 broken - water 709 Rock, Clay, bľue 722 756 Shale, green 756 785 785 800 Sand stone - water Rock, broken & clay - wood 827 800 827 877 Rock, gray . Rock, black 877 882 Sand & water 882 884 Casing: 8" from 0' to 312' Perforations: Torch. from 642 ft. to 782 ft. Surface Seal: Filled with cuttings Pump: Layne & Bowler, turbine, 50 hp ,

Ecology Well Log 328748, cont.

r Eilo (Ecology Well Log 339013 Start Card No 086	754	
Depa		LL REPORT	#	
	rtment of Ecology nd Copy—Owner s Copy Copy—Driller s Copy	Water Right Permit No <u>GU29605 P</u>		F
		$\dot{P} \cap Box 302$ Suppyside	WA 98	3944
(1)				
	LOCATION OF WELL County Yakıma	SE / NW % sec 24 t 10)N R 2	<u>23wм</u>
2)	STREET ADDDRESS OF WELL (or nearest address)	Rd~7		
(2a)	STREET ADDDRESS OF WELL (or nearest address)			
(3)	PROPOSED USE Domestic Industrial Municipal	(10) WELL LOG or ABANDONMENT PROCEDUF		
	DeWater Test Well Other	Formation Describe by color character size of material and thickness of aquifers and the kind and nature of the material in ea	d structure ich stratum	and show penetrated
(4)	TYPE OF WORK Owners number of well	with at least one entry for each change of information		
()	Abandoned New well X Method Dug Bored	MATERIAL	FROM	1
	Deepened Cable Driven	Top soil	0 1	<u> </u>
	Reconditioned Rotary Sector Jetted	Light brown rotten basalt	<u> </u>	30
(5)	DIMENSIONS Diameter of well 18x16x12x10 inches	Hard gray basalt	30	39
	Drilled 848 feet Depth of completed well 848 ft	Brown rotten basalt	<u> </u>	<u> </u>
(6)	CONSTRUCTION DETAILS	Black basalt	45	<u>45</u> 55
(0)	12" 22 222	Rotten basalt	<u>45</u> 55	<u></u> 79
		Layers of solid & rotten basalt	<u>55</u> 79	124
	Welded X Diam from ft to ft Liner installed X Diam from ft to ft	Layers of clay & rotten basalt Layers of brown clay & gravel	124	<u>124</u> 170
			170	185
		Rotten brown basalt Black basalt	185	195
	Type of perforator used	Yellow shale brown & black basalt	-195	209 -
	Size or perforations in by if to if to ft	Brown & gray basalt fractured	209	214
	perforations fromft toft	Hard black basalt	214	232
	perforations fromft toft	Fractured black basalt	232	309
		Gray basalt	309	317
	Manufacturer s Name	Red/brown pouris basalt water	317	331 -
	Туре Model No	Fractured brown black basalt	331	340
	Diam Slot size from ft to ft	Rotten brown basalt	340	362
£	Diam Slot sizefromft toft	Fractured black basalt	362	370
	Gravel packed Yes No Size of gravel	Yellow clav brown & black basalt	370	380
	Gravel placed from ft to ft	Layers of black/red/brown basalt	380	470
		Fractured gray basalt	4 70	514
		Blue conglomerate	514	525
	Material used in seal Celtent Did any strata contain unusable water? Yes No 🕅	Brown shale	525	530
	Type of water?	Soupy brown sand w/mica	530	<u>550</u>
	Method of sealing strata off	Brown sandy clay & shale	550	<u>566</u> m
<u></u>		Blue clay	566	570
(7)	PUMP Manufacturer s Name	Layers of blue & brown clay	570	574
	Туре Н Р	Blue clay and shale	574	578
(8)	WATER LEVELS Land surface elevation above mean sea level ft	Hard black basalt	578	618
	Static level 535 ft below top of well Date 4/29/93	Hard gray basalt	618	635
	Artesian pressure Ibs per square inch Date	Medium black basalt	635	650
	Artesian water is controlled by(Cap_valve_etc.))	4 /12 /02	1 /20	02
(9)	WELL TESTS Drawdown is amount water level is lowered below static level	Work started 4/12/93 19 Completed 2	4/29	<u>19</u> 3
	Was a pump test made? Yes No 🛛 If yes by whom?	WELL CONSTRUCTOR CERTIFICATION		
	Yield <u>500+</u> gal / min with ft drawdown after hrs	I constructed and/or accept responsibility for cons	truction of	this well
	Estimated air lift 500+ GPM	and its compliance with all Washington well cons Materials used and the information reported above	struction a	standards
	Recovery data (time taken as zero when pump turned off) (water level measured	knowledge and belief		U IIIY Dest
	from well top to water level) Time Water Level Time Water Level Time Water Level			
		NAME Ponderosa Drilling & Develor (PERSON FIRM OR CORPORATION)	oment,	
				•
		Address <u>E 6010 Broadway Spokane</u> ,	WA 99	9212
	Date of test	Ball Bas the	004	۰ ۲
	Bailer test gal /min with ft drawdown after hrs	(Signed) (WELL DRILLER) (Dob Drist thomas	10 <u>004</u>	<u>۲</u>
	Airtest gal /min with stem set at ft for hrs	(WELL DRILLER) (Bob Britton))	
	Artesian flow g p m Date it for it is	Registration No PO-ND-EI*248JE Date 4/30		_ 19_93
	Temperature of water Was a chemical analysis made? Yes No			
		USE ADDITIONAL SHEETS IF NECES	SAHY)	(3
CY 050	1 20 (10/87) 1329)			

نې		Ecology Well Log 33	9013, cont. 2 8677	
Report.	ँ File	Original and First Copy with		86754
ğ.	Depa	artment of Ecology	ELL REPORT	· #
Ř		ond Copy—Owner s Copy d Copy—Driller s Copy	WASHINGTON Water Right Permit No <u>64-2960</u>	
=	11500		Water Right Permit No	
Well	(1)	OWNER Name Waren Hazen	Address	
≤∗				
<u>s</u>	Ø	LOCATION OF WELL County Yak 1ma	<u>SE v_NW v sec_24_</u> t_ <u>1</u>	<u>0 _{N R} 23 _{WM}</u>
Ę	(2a)	STREET ADDDRESS OF WELL (or nearest address)		
			- <u></u>	
on	(3)	PROPOSED USE Domestic Industrial Municipal	(10) WELL LOG or ABANDONMENT PROCEDU	RE DESCRIPTION
Ę		DeWater Test Well Other	Formation Describe by color character size of material an	
Information		TYPE OF WORK Owners number of well	 thickness of aquifers and the kind and nature of the material in e- with at least one entry for each change of information 	ach stratum penetrated
al	(4)		MATERIAL	FROM TO
Ξ		Abandoned New well Method Dug Bored Deepened Cable Driven	Hard gray basalt	650 750
ō		Reconditioned Rotary Jetted	Pouris black basalt w/water	750 760
Ľ	(5)		Hardblack basalt	760 767
~	(5)	DIMENSIONS Diameter of wellinches	Soft black basalt	767 777
Ĕ		Drilledfeet Depth of completed wellft	Hard black basalt	777 805
Ť.	(6)	CONSTRUCTION DETAILS	Hard grav basalt	805 837
<u>0</u>		Casing installed Diam fromft toft	Pouris black basalt black glass	837 846
ğ		-	Hard black basalt	846 848
an		Welded Diam fromft toft Liner installed Diam fromft toft Threaded Diam fromft toft		040
Data and/or the		Perforations Yes No	Note water at 750' has a lot of	
at		Type of perforator used	gas in it	
		SIZE of perforations in by in by in		
Ð		perforations fromft toft		
Warranty the		perforations from ft to ft		
\geq				
Ξ		perforations fromft toft	1	l
ra				
ar		Manufacturer s Name		1
Ŝ,	\sim	Type Model No Diam	<u></u>	1
		Diam Slot size from ft to ft		
NOT	_			
		Gravel packed Yes No Size of gravel		
es		Gravel placed fromft toft	MAY - 6 1993 - 14	
		Surface seal Yes No To what depth?ft		
σ		Material used in seal		
\geq		Did any strata contain unusable water? Yes No		
õ		Type of water?Depth of strate	DPAR PEU DRIMAL	
Ecology do		Method of sealing strata off	Ball res	
Ö	(7)		4	
ш ч–	(,,			
of	<u> </u>	Туре Н Р		
H	(8)	WATER LEVELS Land surface elevation above mean sea level ft		
<u>e</u>		Static level ft below top of well Date		
E		Artesian pressure Ibs per square inch Date		
Ľ		Artesian water is controlled by(Cap valve etc.))		
ď	(9)	WELL TESTS Drawdown is amount water level is lowered below static level	Work started <u>4/12/93</u> 19 Completed <u>4/2</u>	9 <u>1993</u>
e e	(-/	Was a pump test made? Yes No X If yes by whom?		
		Yield 500+ gal /min with ft drawdown after hrs	WELL CONSTRUCTOR CERTIFICATION	
ľ,		Estimated air lift 500+ GPM	I constructed and/or accept responsibility for cons and its compliance with all Washington well con-	struction standards
Dep. The Department			Materials used and the information reported above knowledge and belief	are true to my best
d.		Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)		
ð		Time Water Level Time Water Level Time Water Level	NAME_Ponderosa Drilling & Develop	nent Inc
			(PERSON FIRM OR CORPORATION)	(TYPE OR PRINT)
The			Address <u>E 6010 Broadway</u> Spokane,	WA 99212
	<u> </u>	Date of test		
			(Signed) Bol Million_License	No 0043
		Bailer test gal /min with ft drawdown after hrs	Contractor s (WELL DRILLER) (Bob Britton	.)
		Airtest gal /min with stem set at ft for hrs	Registration	<u>19_93</u>
		Artesian flow g p m Date	No <u>PO-ND-EI*248JE</u> Date <u>4/30</u>	<u> </u>
		Temperature of water Was a chemical analysis made? Yes No	(USE ADDITIONAL SHEETS IF NECES	SARY)

Ecology Well Log 339013, cont.

Gu	lierrez,	Erin	(E	CY

From:	
Sent:	
То:	
Subject:	

Richardson, Avery (ECY) Monday, June 06, 2016 10:43 AM Gutierrez, Erin (ECY) we21544 update

WE21544 WINE MAKERS LLC.

WE21544 driller called in with well airtest volume. Driller states the well blew 500GPM.

Thank you,

Avery Richardson Well Construction Coordinator Department of Ecology 1250 West Alder St. Union Gap, WA 98903 (509) 575-2639

File Original and First Copy with
Department of Ecology
Si cond Copy — Owner's Copy
fi ird Copy - Diiller's Copy

Ecology Well Log 339201 WATER WELL REPORT Application No 9424592

Well Report.	File Original and First Copy with Department of Ecology Second Copy — Owner & Copy Filind Copy — Duller & Copy			Application No 942 Permit No	.4592
ř	(1) OWNER Name Bill Evars		Address Route 6, Box 326F, Y	ekima, Va. 989	08
	(2) LOCATION OF WELL County	Yakima	ک بختین دو پرچ ده ای بین می بردن دی کار کار مانک ده مساوی و ایر دخت می ماند.	_c 36 _T 10 _{N R}	
n this	(3) PROPOSED USE Domestic [] Ind Irrigation [] Te.	-	(10) WFLL LOG Formation Describe by color character st show thickness of aguifers and the kind an	id nature of the mater	al in each
oes NOT Warranty the Data and/or the Information on	(4) TYPE OF WORK Owners number of (if more than one		stratum penetrated with at least one entr	ry for each change of	TO
u o	New well 🛐 Mothod	Dug 🗌 Boren []	Top soll	0	5
Ĕ		Cable 🔲 Driven 🗍 Rotary 🏹 Jetted 🗍	Basalt brown	5	34
Ĕ	Reconditioned	Rotary j Setted	Basalt soft red	34	42
2	(5) DIMENSIONS Diameter of w	rell Inches	Basalt hard black	42	82
Ĕ	Drilled 13,20 ft Depth of complet	ed well 1320 ft	Clay	82	100
	(6) CONSTRUCTION DETAILS		Sandstone	100	150
Ĕ		a	Basalt hard black	150	182
	Casing mastalled 16 Diam from Threaded 12 12 Diam from	$ \begin{array}{c} \mathcal{O} & \text{ft to} & \mathbf{ft} \\ \mathcal{O} & \text{ft to} & 3/\mathcal{O} & \text{ft} \end{array} $	Pasalt hard black	182	262
୍	Welded \square $I \square$ Diam from I	475 st to 580 st	Basalt soft black	262	271
	Redenstrong -		Bisalt black & brown	271	275
a	Perforations yes No		Basalt med black	275	305
2 Z	Type of perforator used SIZE of perforations	n by 4 in	Basalt hard black	305	475
ğ	$\mathcal{L} \mathcal{Q}$, perforations from 473	5 ft to 485 ft	<u>Clay, sandstone & brown ba</u>	asalt 475 485	485
	-6Q perforations from $57Q$		<u>Clay green</u> Basalt brown	<u>/405</u>	569
Ĕ	perforations from	ft to ft	Basalt soft black	573	573
2	Screens Yes 🗆 No 🕅		Basalt soft black	576	583
Ē	Manufacturer s Name		Besalt hard black	583	722
ສົ	Type I	Model No	Basali sofi black	722	754
	Diam Slot size from	ft to ft ft to ft	Basalt haro black	754	785
Ž.	Diam Slot size from		Basalt broken black	785	787
	🚄 Gravel packed yes 🗆 No 🗆 Size	of gravel	Basalt bard black	787	800
Ó	Gravel placed from f	t to <u>ft</u>	Bisalt med. black	1800	825
Ζ	Surface seal yes 🖉 No 🗆 To wha	t depth 310 ft	Basalt soft brown	825	830
ŝ	Surface seal yes No D To wha Matorial used in seal		Basalt bard black	830	883
	Did any strata contain unusable wat	er? Yes 🗌 No 🗌	6	883	890
σ	Type of water?	of strain	Basalt soft black	890	906
<u> </u>	Method of sealing strata off		Basalt hard black	905	924
Ō	(7) PUMP Manufacturer s Name		Bisalt soft brown	924	926
Ecology	Type	H.P	Basali soft black	926	955
Щ	(0) WATER TEVETS Land surface ele	evation	Basalt soft black	955	975
Department of	(6) WAILING LIEVELDS above mean sea	level h h o lon	Basalt hard black	975	1208
ŭ	Static level 200 ft below top of x Artesian pressure		Basalt soft black	1508	1237
B	Artesian water is controlled by		Basalt hard black	1237	1320
Ē		(Cap valve etc)			<u> </u>
ビ	(9) WELL TESTS Drawdown is amo lowered below st	ount water level is	Work started 3/4 1977 Co	$\frac{1}{4/10}$	19 77
ba	Was a pump test made? Yes No 🖾 If yes by				19 7 2
e e	field gal/min with ft drawe	lown after hrs	WELL DRILLER'S STATEMEN	TT.	
			This well was drilled under my j	urisdiction and this	report is
عّ			true to the best of my knowledge a	ad belief	
Ā	Recovery data (time taken as zero when pump measured from well top to water level)	turned off) (water level	NAME Moore Drilling, Inc.		
Dep [.] The	Time Water Lovel Time Water Level	Time Water Level	(Person firm or corpora	ation) (Type or p	nrt)
	RECEIVED		Addiess P O Drawer P, Mose	es Lake, Wa. of	3837
The				~	
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	,Date of test JAN 18 1978	do un often t	[Signed] Richard F	realin	
	5	vdown after hrs			
	Temperature of water 1 12 Has chemical anal	ysis made?Ye. 🗋 No 🗌	License No 0405 D	ate 8/17	₁₉ 77

i,  $1^{\prime}$ +-- - 3

(10) WELL LOG Formation Describe by show thickness of aquif stratum penetrated wit	ASH Grapdure ASH Grapdure SW 14 NG 14 Sec 3) T recolor character size of materic ters and the kind and nature of that least one entry for each c MATERIAL 11 12 13 14 14 14 14 14 14 14 14 14 14	10 N Re al and stru the materi	24 ^C WN
(10) WELL LOG Formation Describe by show thickness of aquif stratum penetrated with M	W 1, NL 14 Sec 3/ T color character size of materia ers and the kind and nature of that least one entry for each of MATERIAL 11 12 14 14 16 16 17 18 19 19 19 19 19 19 19 19 19 19	10 N R al and stru the materichange of FROM 1 1 225 255 305 325 340 350 350 350	24 ^f _{W M} at in eac formation TO
(10) WELL LOG Formation Describe by show thickness of aquif stratum penetrated with	color character size of materia ers and the kind and nature of that least one entry for each c IATERIAL IL Basse IT Basse IT Basse IT Basse IT Sand Stang Basse IT Basse IT Sand Stang Basse IT Basse IT Sand Stang Basse IT	al and stru the mater change of FROM 2 2 2 2 3 2 5 5 3 40 3 50 3 55 3 55	cture an al m eac formation TO 3
Formation Describe by show thickness of aquif stratum penetrated with N	iers and the kind and nature of the at least one entry for each of IATERIAL I Basa I Basa I Basa I Basa I Sand Stang Basa I Basa	the materichange of FROM 1 13 225 255 305 325 340 350 350 350	al in eac formatio TO
Formation Describe by show thickness of aquif stratum penetrated with N	iers and the kind and nature of the at least one entry for each of IATERIAL I Basa I Basa I Basa I Basa I Sand Stang Basa I Basa	the materichange of FROM 1 13 225 255 305 325 340 350 350 350	al in eac formatio TO
show thickness of aquif stratum penetrated with N	iers and the kind and nature of the at least one entry for each of IATERIAL I Basa I Basa I Basa I Basa I Sand Stang Basa I Basa	the materichange of FROM 1 13 225 255 305 325 340 350 350 350	al in eac formatio TO
M	MATERIAL 1 1 1 1 1 1 1 1 1 1 1 1 1	FROM 1 1 2 1 3 2 5 3 2 5 3 2 5 3 40 3 50 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 5 3 5 5 3 5 5 3 5 5 3 5 5 3 5 5 3 5 5 3 5 5 5 5 5 5 5 5 5 5 5 5 5	то
	11 BasalT BasalT BasalT BasalT BasalT BasalT Sand Stang BasalT BasalT BasalT BasalT BasalT	1 1 2 13 225 255 305 325 340 350 350 395	3
1 op 30 Prourn C Prourn C Brolsen Hard B Brolsen Hard B Hard B Hard B Hard B Hard B	BeselT Wilh Berd BeselT Wilh Berd ase IT BeselT Bese IT Send Stong Bese IT Bese IT A Bese IT	13 225 255 305 325 340 350 350 395	
Prourn C Brolsen Hard B Brolsen Hard B Hard D Hard Pay Hard P Hard B	Besalt With Beid Besalt With Beid Basalt Basalt Sond Stong Basalt Basalt Basalt Basalt	13 225 255 305 325 340 350 350 395	7 13 225 305 325 340 350 380 405
Brolsen Hard B. Brolsen Hard B. Hard Pay Hard Pay Hard Pay Hard P	Besalt With Beid Besalt With Beid Basalt Basalt Sond Stong Basalt Basalt Basalt Basalt	13 225 255 305 325 340 350 350 395	225 2255 295 325 325 325 325 325 380 405
Hard B Hard D Hard D Hard D Hard D Hard D Hard D	Besell Wild Bese asa IT Besa IT Send Stong Bese IT n Bese IT	225 255 305 325 340 350 395	225 255 205 325 240 250 250 250 250 280 405
Hard B Hard D Hard D Hard Pag Hard Hard B	Besell Wilh Bese asa IT Basa IT Sand Stang Basa IT Dasa IT Dasa IT Dasa IT	255 305 325 340 350 395	205 325 340 250 325 380 405
Hard D Hard D Hard D Hard Pag Hard Mard B	Basalf Basalf Sond Stong Basalf Da Basalf Da Basalf Da Salf	235 305 325 340 350 325 380	250 325 240 250 380 405
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Hard B	Desal T	380	40 5
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C2.''	SF(1_11_2) - UE ILL		
			· · · · · · · · · · · · · · · · · · ·
	······		
Work started $4 \sim 1$	4 1929 Completed 4 -	- 15	1982
WELL DRILLER'	S STATEMENT		
		and the	renort 1
true to the best of n	ny knowledge and belief		
0		15 0	10
NAME Carma	n Weler Well	/	VC.
~ ~			
Address () / / /	10x 1249 Non	lon (	:/ Y
$\wedge$	n n n (	)	
[Signed]	H ( ) ( marke	Z	
1 ml		10	
License No $QQ$	7 1 Date 4 -1	6	1922
ETS IF NECESSARY)	VC a		
	WELL DRILLER' This well was dri rue to the best of n IAME Carma (Perso Address BT 11 Signed]	VELL DRILLER'S STATEMENT This well was drilled under my jurisdiction is rue to the best of my knowledge and belief IAME Carman Water Well (Person firm or corporation) (1) Address BT 1 Box 12 99 Bon Signed] (Well Driller) incense No 0699 Date 4-1	WELL DRILLER'S STATEMENT This well was drilled under my jurisdiction and this is rue to the best of my knowledge and belief IAME Carman Water Well 1'S JM (Person firm or corporation) (Type or pr Address BT 1 Box 12 99 Bonton Ca Signed] (Well Driller) incense No 0699 Date 4-16

File Original and First Copy with		Ecology Well Log 339470	086978	3
Department of Ecology Second Copy—Owners Copy Third Copy—Drillers Copy				G
(1) OWNER Name Two Bar A	Ranch	Address 1131 Maires Rd., Outlook,		3938
		<u></u>	<u>11</u> _N R_	22 wm
(3) PROPOSED USE [№] Domestic □ Irrigation □ DeWater	Industrial 🗌 Municipal 🗍 Test Well 🗌 Other 🗌	(10) WELL LOG or ABANDONMENT PROCEDU	d structure	and show
(4) TYPE OF WORK Owner's number of (if more than one) _ Abandoned Deepened Deepened Reconditioned D	ethod Dug 🗌 Bored 🗌 Cable 🗌 Driven 🗌 Rotary 🖾 Jetted 🗌	thickness of aquifers and the kind and nature of the material in exwith at least one entry for each change of information  MATERIAL Soil & Cobbles Broken Basalt	FROM 0	то <u>12</u> 14
(5) DIMENSIONS Diameter of well DrilledfeetDepth of co	10 & 8inches ompleted well620ft	Silt, Sand, Clay Fractured Basalt	14 50	50 58
Welded 🔯 Dıam fr Lıner ınstalled 🗌	om <u>+2</u> ft to <u>743</u> ft omft toft omft toft	Basalt, Broken Broken Basalt Decomposed Basalt	58 65 120 140	65 120 140 160
Perforations     Yes     No ^X Type of perforator used		Fractured Basalt, Gray Weathered, Rotien Basalt	160 178 268 347	178 268 347 400
perforations from		Shale Brown Sandy	400	400

ESTIMATED AIRLIFT

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

Wate Level

No

hrs

_ hrs

_ ft_drawdown after ____

_gpm Date _

_ ft_for _

____ gat /min_with __

_ gal /min with stem set at _

Temperature of water _____ Was a chemical analysis made? Yes

(7)

(8)

(9)

2

Drilled 820 feet Depth of completed well 820 ft	Fractured Basalt	50	58
	Basalt, Gray, Hard JUL Z 4 1992	58	65
CONSTRUCTION DETAILS	Basalt. Broken	65	120
Casing installed <u>8</u> Diam from +2 ft to 743 ft	Broken Basalt	<b>'120</b>	140
Welded 🔯 Diam fromft toft	Decomposed Basalt	140	160
Threaded Diam fromft toft	Fractured Basalt	160	178_
Perforations Yes No X	Fractured Basalt, Gray	178	268
Type of perforator used	Weathered, Rotien Basalt	268	347
SIZE of perforations in by in	Fractured Basalt	347	400
perforations from ft to ft	Shale. Brown. Sandv	400	426
perforations from ft to ft	Fractured Basalt, Black	426	460
perforations from ft to ft	Basalt, Gray, Hard	460	510
Screens Yes No X	Fractured Basalt, Black	510	525
Manufacturer s Name	Basalt, Broken, Black w/Shale,		
Type Model No	Yellow	525	578
Diam Slot sizefromft_toft	Basalt, Black, Hard	578	600
Diam Slot size from ft to ft	Fractured Basait, Porous	600	602
Gravel packed Yes No Size of gravel	Basalt, Black	602	640
Gravel placed fromft toft	Bad Crevis	640	<u>660</u>
Surface seal Yes No To what depth? 300+ft	Broken Basalt, Porous	660	675
Surface seal     Yes A     No I     To what depth/     Sector     It       Material used in seal     Bentonite & Cement     It	Basalt, Blue & Grav, Shale	675	682
Did any strata contain unusable water? Yes No X	Broken Basalt, Black	682	_708
	Broken Basalt, Black, Caving	708	730
Type of water?Depth of strata Method of sealing strata off	Red_Rock	_730_	755
	Broken_Red_Rock, Porous	_755_	_763_
PUMP Manufacturer s Name	Fractured Basalt, Black	763	805
Туре Н Р	Broken Basalt, Brown	805	810
WATER LEVELS Land surface elevation above mean sea level ft	Sandstone, Brown, Clay	810	815
Static level 40.3 ft below top of well Date	Clay, Blue	815	820
Artesian pressure Ibs per square inch Date			
Artesian water is controlled by(Cap valve etc.))	8" Drive Shoe Utilized		
WELL TESTS Drawdown is amount water level is lowered below static level	Work started 6-23-92 19 Completed 7-	<u>7-92</u>	19
Was a pump test made? Yes No X If yes by whom?			
Yield     85     gal /min with ft drawdown after hrs	WELL CONSTRUCTOR CERTIFICATION		
	Leanst-wated and (as accept search bitty (as accept		Ahun wundt

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 Ponderosa Drilling & (PERSON FIRM OR CORPOR	ATION) (TYPE OR PRINT)
Address <u>E 6010 Broadway</u> ,	Spokane, WA 99212
(Signed) Del Britter	License No
(WELL DRILLER)	(Bob Britton)
No PO-ND-EI*248JE Date	July 8 19.92

(USE ADDITIONAL SHEETS IF NECESSARY)

Date of test

Bailer test

Artesian flow

Airtest

File Original and First Copy with Depart went of Ecology Second Copy — Owner s Copy Third Copy — Driller s Copy	WATER WE state of w	LL REPORT Ashington	Application No		195P
(1) OWNER Name Prattle SNAKE	Rawch	Addres NW	Ecology Well Log 33		
(2) LOCATION OF WELL County Bearing and distance from section or subdivision county	LAKI MA	4 2000 11 of 12 1/2	SE 14 Sec 24 TH	N RZ. E Vaf	<b>2</b> w м
	trial [] Municipal []	(10) WELL LOG			2000 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 -
	Well 🗌 Other 🗌	Formation Describe by color show thickness of aquifers and	l the kind and nature of th	e materia	l in each
(4) TYPE OF WORK Owner's number of (if more than one)	well	stratum penctrated with at le MATER		rnge of fo	TO
New well 🛛 Method Deepened 🗌	DugBoredCableDriven	TOP SOUL	······································	0,	1
	Rotary 🛛 Jetted 🗌	-GENVIL		4	18
(5) DIMENSIONS Diameter of wei Drilled ft Depth of completed		DEAKIN BIK	BASAIt	52	78-
(6) CONSTRUCTION DETAILS		Fray white E	213Nd	94	123.
Casing installed 20 Diam from 7		DA HAKU	Unsult Clust	123	147
Threaded 🗆 👌 🛵 Diam from A Welded 🙍 Diam from	-) fi to 4 21 ⁹ ft ft to ft	BIK DIEWI-	2	365	535
D 6		Like Den fiel	MOKEN DADAIT	538	515
Type of perforator used		total filt for	sold Clay	402	212
SIZE of perforations in perforations from	by in ft to ft	DIK DRCK.N. I	Jusait	712	135
perforations from perforations from	ft to ft ft to ft	Derky Dory H	- WINTER	725	855
		DIX - GENY BA	SAIH	855	10/72
Screens yes 🗆 No 🗖 Manufacturer s Name		Den + Fust . De	ASHIT WATER	10%	1091
Type Mo Diam Slot size from	del No ft to ft	DRN + RUST I	Kakinal Bossill	1010	11 <del>1</del> 11 <del>1</del> 11 <del>1</del> 1
Diam Slot size from	ft to ft	BLACK Hoped	BOUDIT	11 18	1165
← Gravel packed Yes □ No 反 Size of Gravel placed from ft	-	<u> </u>	CEIVEN		
Surface seal yes 🛛 No 🗍 To what d	lepth? 15 ft				
Material used in seal しビンフルム・T Did any strata contain unusable water	? Yes 🗌 No 🕅	AU AU	G3197/	 	
Type of water? Depth o	•	- <del></del>			
Method of sealing strata off					
(7) PUMP Manufacturer s Name Type	НР				
(8) WATER LEVELS Land surface cleva above mean sea le	ntion 1205 ft				
Static level ft below top of well					
Artesian pressure lbs per square incl Artesian water is controlled by					
	ap valve ⁷ etc)			{	
(9) WELL TESTS Drawdown is amour lowered below station Was a pump test made? Yes □ No □ If yes by w	c level	Work started 5-20	1977 Completed & -	18	1927
Yield gal/min with ft drawdow		WELL DRILLER'S ST	ATEMENT		
		'I his well was drilled u true to the best of my kn	nder my jurisdiction ar owledge and belief	nd this r	eport is
Recovery data (time taken as zero when pump tur measured from well top to water level)	med off) (water level				
	fime Water Level	NAME / A ( C 'C) (Person firm	Deill, NC, or corporation) (Ty	TNC pe or pri	nt)
		Address (Mr. Jalis	WA		
			() (m)	$\gamma \rho$	1
Date of test iler, test gal/min with ft drawdo	own after hrs	[Signed]/ . J.D.L.U [4.	(Well Driller)	Nu	ر
rtesian flow gpm Date Temperature of water Was a chemical analysi	s made?Yes 🗌 No 🗌	License No 0382	- Date 7-0	 )	1927
8 E Ma 7254 OC 10-1 4 711	USE ADDITIONAL SH	ETS IF NECESSARY)	ŀ		a 🖓 3
<b>S F No 7356</b> -OS(Rev 4 71) ECY 070 28		, Of			

File Original and First Copy with 119427 Department of Ecology WATER WEL	Ecology Well Log 339854 Notice of Intent	/160605
Department of Ecology VVAIER VVEL Second Copy Owner's Copy Third Copy Driller's Copy STATE OF WA		# _ <u>AGM506</u>
(1) OWNER Name MARSHALL ANDERSON	Address 411 N COUNTY LINE, GRANDVIEW, WA	98930
(2) LOCATION OF WELL County BENTON	SW 1/4 1/4 Sec _30 T	
(2a) STREET ADDRESS OF WELL (or nearest address) N COUNTY LI	NE	
TAX PARCEL NO 13004301 1405-002		L, m, N, P
(3) PROPOSED USE Domestic Industrial Municipal	(10) WELL LOG or DECOMMISSIONING PROCEDUR Formation Describe by color character size of material and structure nature of the material in each stratum penetrated with at least one entit	and the kind and
(4) TYPE OF WORK Owner's number of well (If more than one)	of information Indicate all water encountered MATERIAL	FROM TO
Deepened Dug Bored	SOIL BASLT AND BOULDERS	0 3
Reconditioned     Cable     Driven     Decommission     XRotary     Jetted	BASALT BROKEN AND SOIL BASALT BROKEN AND CLAY	<u> </u>
	BASALT BROKEN AND CLAT	16 59
(5) DIMENSIONS Diameter of well <u>6</u> inches Drilled <u>414</u> feet Depth of completed well <u>388</u> ft	CLAY	59117
		117 141
(6) CONSTRUCTION DETAILS Casing Installed	BASALT BROKEN GREY BROWN BASALT BLACK BROWN	141 167 167 183
X Welded 6 Diam from +2 ft to 185 ft	BASALT BLACK	183 223
Liner installed Diam from ft to ft	BASALT BROKEN BLACK BROWN	223 258
Threaded Diam from ft to ft	BASALT GREY BLACK	258 26
Perforations Yes XNo	BASALT BROKEN BLACK BROWN LARGE	265
Type of perforator used		279
SIZE of perforations in by in	BASALT GREY HARD BASALT GREY BLACK BROWN BROKEN SO	279 <u>304</u> -T 304 309
perforations fromft toft toft toft	BASALT GREY BLACK BROWN BROKEN SO	309 318
perforations from ft to ft to ft to ft	BASALT GREY BROWN SOFT BROKEN CAVI	
	BASALTGREY BLACK HARD	325 341
Screens Yes XNo K Pac Location	BASALT GREY BLACK BROWN SOFT H20	341 354
Manufacturer's Name	BASALT GREY BLACK BROWN SOFT AND G	
Type Model No	SHALE CLAY BASALT GREY BLACK BROWN SOFT AND B	36
Diam Slot size from ft to ft Diam Slot size from ft to ft	ICLAY	382
	BASALT GREY BLACK BROWN SOFT LARGE	
Gravel/Filter packed Yes XNo Size of gravel/sand Matenal placed from ft to ft	CUTTINGS CAVING	391
Surface seal XYes No To what depth? 185 ft	_BASALT GREY BLACK BROWN SOFT AND B	EPI U CORA 414
Surface seal XIYes INo To what depth? <u>185</u> ft Material used in seal BENTINITE		Heceived 92
Did any strata contain unusable water? Yes XNo	/	
Type of water? Depth of strata		UL 0 9 2002
Method of sealing strata off	122 CR	<u> </u>
(7) PUMP Manufacturer's Name		
Type HP		REGION
(8) WATER LEVELS Land surface elevation above mean sea levelft	Work Started 5/8/2002 19 Completed 5/9/	2002 19
Static level       340       ft below top of well       Date       5/9/2002         Artesian pressure       Ibs per square inch       Date          Artesian water is controlled by	WELL CONSTRUCTION CERTIFICATION I constructed and/or accept responsibility for construction compliance with all Washington well construction standa and the information reported above are true to my best kr	rds Materials used
(9) WELL TESTS Drawdown is amount water level is lowered below static level Was a pump test made? Yes XNo If yes by whom?	Type or Print Name TOM MCGUIRE Licer	nse No <u>0357</u>
Yield gal./min with ft_drawdown after hrs		ise No
Yield       gal /min with       ft drawdown after       hrs         Yield       gal /min with       ft drawdown after       hrs	Drilling Company RICK POULIN WELL DRILLING	
Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)	(Signed Jon Mada Licer	ise No <u>0357</u>
Time Water Level Time Water Level Time Water Level	(Licensed Driller/Engineer) Address 1301 LANCASTER RD SELAH, WA	08042
	Contractor's	
Date of test	Registration No <u>RICKPWD042J2</u> Date <u>5/9</u>	/02 19
Bailer test gal /min_with ft_drawdown after hrs	(USE ADDITIONAL SHEETS IF NECE	SSARY)
Airtest 2 gal /min with stem set at 382 ft for hrs	Ecology is an Equal Opportunity and Affirmative Action	employer For
Artesian flow g p m Date	special accommodation needs contact the Water Res	
Temperature of water Was a chemical analyses made? $\Box$ Yes X No	(360) 407 6600 The TDD number is (360) 407 6006	

Report.
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	Ecology W	ell Log 3528	898
WATER WELL REPORT	CURRENT Notice of Intent No	464	<u>t</u>
CLULULY Original & Ist copy Ecology 2nd copy owner 3rd copy driller	Umque Ecology Well ID Tag No.		9
Construction/Decommission (x_in circle)		n ~	/
© Construction 126783 O Decommission ORIGINAL CONSTRUCTION Notice	Water Right Permit No		
of Intent Number	Property Owner Name Der Free	tt On	9¥
PROPOSED USE V Domestic Industri al Municipa I	Well Street Address 286030	2 noty	Marloonh
DeWater Imgation Test Well Other	City Richland County		
TYPE OF WORK Owners number of well (1f more than one)	Location SUL 14 1/4 SUL 4 Sec 20	-	
New Well       Reconditioned       Method       Dug       Bored       Driven         Deepened       Cable       V       Rotary       Jetted		Twn 🚛 🦷 🤻	or one WWM
DIMENSIONS Diameter of wellinches drilledft	Lat/Long Lat Deg	Lat Min/Sec	
Depth of completed well 1236 ft	REQUIRED) Long Deg	_Long Min/Se	
CONSTRUCTION DETAILS	$\frac{\text{Tax Parcel No} - 0.078 - 0.0}{1000}$	2-0000	6700%
CONSTRUCTION DETAILS Casing Awelded La Diam from <u>H.</u> ft to 1236 f	CONSTRUCTION OR DECOMMIS		
Liner installed Diam fromft tof	Formation Describe by color character size of kind and nature of the material in each stratum p		
<u>Threaded</u> <u>Diam from</u> ft toft	entry for each change of information Indicate a		ered
Perforations  Yes  No Type of perforator used	USE ADDITIONAL SHEETS IF NECESSAR MATERIAL		
SIZE of perfs from ft to ft		FROM	то
Screens Yes VNO KPac Location	Sand Tox SILT	0	26
Manufacturer s Name	NJULINA 11910 JULI	- <u> </u>	
TypeModel No           DiamSlot Sizefromft	Barat Gravel	26	1
Diam Slot Size from ft to ft	able a lier		51
Gravel/Filter packed Yes 🕅 No 🛛 Size of gravel/sand			
Materials placed fromft toft	SIT TAL	51	82
Surface Seal Byres I No , To what depth? 70ft			
Materials used in seal Ber TOALTE	Baralo Gravel	\$2	
Did any strata contain unusable water? Yes No Type of water?Depth of strata	adjules water		1771
Method of sealing strata offDepth of strata	Busie		1256
PUMP Manufacturer s Name	4	OTPT OF	
Туре Н Р	 d	Reco	100 52
WATER LEVELS Land surface elevation above mean sea levelft	1		20m
Static level 78 ft below top of well Date 1-1702 Artesian pressure lbs per square inch Date	<u>.</u>	E	
Artesian water is controlled by		PEGION	CEFICY
(cap valve etc)			7
WELL TESTS Drawdown is amount water level is lowered below static level Was a pump test made? Yes No If yes by whom?			
Yieldft drawdown after hrs		1	
Yieldgal/min_withft_drawdown afterhrs			
Yieldgal /min withft drawdown afterhrs 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	1	1	
	1		
Date of test	1	1	
Bailer test gal /min with ft_drawdown afterhrs	<u> </u>		
Airtest <u>20 gal</u> /min with stem set at <u>20</u> ft for <u>1</u> hrs Artesian flowg p m Date	<u>ן</u> קיון		
Temperature of water Was a chemical analysis made? Yes No	Start Date <u>]-ll</u> Completed	Date_ <u>H2</u>	-02-1
WELL CONSTRUCTION CERTIFICATION I constructed and/or accept resp Washington well construction standards Materials used and the information r			with all
Driller Engineer Trainee Wine (Print The Construction of Print The Con			alle In
Dnller/Engineer/Trainee Signature		nort	
Onlier or Trainee License No (36)	Address	$\frac{1}{1}$	RONI
	City State Zip <u>1050</u>		
If trainee, licensed driller s	- Registration No UD (98 CO)	Date_1-1	<u>}-07</u>
Signature and License no	Ecology is an Equal Opportunity Employer	ECY 050 1 2	20 (Rev 4/01)

Tile	(ngmu) a	nd FRAL(	ેલું છું જાણી
10.00	thant of	Ecology	
	1 0	Charles Martin	C

Second Copy - Owner's Copy Thard Copy - Driller's Copy

### WELL REPORT الانترابة من معنية -100 ĽĹ.

STATE OF WASHINGTON

Ecology Well Log 389559

G-4-28151

(1) OWNER: Name GRANI WAYNE STICKSON	Address	
" LOCATION OF WELL: County YAKIMA	-5W1 NW1 Sec // T. 10	N. R. 23WA
g and distance from section or subdivision corner		
(3) PROPOSED USE: Domestic [] Industrial [] Municipal []	(16) WELL LOG:	Constant Constant
Irrigation [] Test Well [] Other []	Formation: Describe by color, character, size of material show thickness of aquifers and the kind and pature of the	and structure, ar
A) TYPE OF WORK. Owner's number of well	show inconess of aquijers and the kind and nature of th stratum penetrated, with at least one entry for each cho	e material in eac inge of formatio
(4) TYPE OF WORK: Owner's number of well (if more than one)	MATERIAL	FROM TO:
Deepened Cable Driven	Top Soil	0 10
Reconditioned 🔲 Rotary 🗊 – Jetted 🗋		10. 40
5) DIMENSIONS: Diameter of well inches.		10 170
Drilled O ft. Depth of completed weil 420 it.		70 300
		218 300
6) CONSTRUCTION DETAILS:		300 38
Casing installed: Diam. from ft. to ft.		385 42
Threaded D "Diam. from ft. tott. Welded & Diam. from ft. toft.	- listh usatak	a series a s
Perforations: Yes 🗋 No 🖅		
Type of perforator used		
perforations from ft. to ft.		
perforations fromft. toft.		
		1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1
Screens: yes 🛛 No 🗒 🕬		
Manufacturer's Name. Type		
Diam. Slot size from from ft. to ft.		
Diam	and an	
Gravel packed: Yes 🗋 No 🗹 Size of gravel:		
Gravel placed from ft. to ft.		
Surface seal: you be no Daniel double 20		
Surface seal: Yes or No D To what depth? 20 rt. Material used in seal		
Did any strata contain unusable water? Yes 🗍 No 🗋		
Type of water?		
	The CELVIE	
7) PUMP: Manufacturer's Name		7
	FPR 2 3 1983	
B) WATER LEVELS: Land-surface elevation above mean sea level	B. Catter 20	
atic level 125 ft. below top of well Date		
tesian pressure	DE MARKE	
Artesian water is controlled by: (Cap, valve, etc.)		
) WELL TESTS: Drawdown is amount water level is lowered below static level		
as a pump test made? Yes □ No □. If yes, by whom?	Work started	
eld: gal/min. with ft. drawdown after hrs.	WELL DRILLER'S STATEMENT:	
	This well was drilled under my jurisdiction and	this report is
	true to the best of my knowledge and belief.	
covery data. (time taken as zero when pump turned off) (water level measured from well top to water level)	NAME	
Time Water Level Time Water Level Time Water Level	(Person. firm, or corporation) (Tyr	e or print)
	Address	
Date of test	[Signed]	
	(Well Driller)	
csian now	그는 사람이 가지 않는 것을 가지 않는 것을 하는 것을 가지 않는 것을 하는 것을 하는 것을 수 있다.	
mperature of water	License No	10 10

## Ecology Well Log 415338

WATER WELL REPORT	CURRENT		
Original & 1 st conv - Ecology, 2 nd conv - owner, 3 rd conv - drifter O/	Notice of Intent No. W150759		
	TT $T $ $T $ $T $ $T $ $T $ $T $ $T$		
Construction/Decommission ("x" in circle) Construction Decommission ORIGINAL INSTALLATION Notice 16 0 1 2 of Intent Number			•
	Water Right Permit No. <u>CG4-31301C</u>		<b>₽</b> ₩
Decommission ORIGINAL INSTALLATION Notice AND	Property Owner Name Desert Hills Vinevard (A	ndy Denhoed)	)
	Well Street Address 61603 N. Wilgus Rd.		
PROPOSED USE: Domestic Industrial Municipal	City Grandview County Benton		
DeWater Irrigation Test Well Other			
TYPE OF WORK: Owner's number of well (if more than one)	Location $\underline{SW1/4}$ -1/4 $\underline{SW1/4}$ Sec $\underline{33}$ Twn $\underline{10N}$	K 01 WWM	one one
New well Reconditioned Method : Dug Bored Driven	Lat/Long (s, t, r Lat Deg Lat		
Cable Rotary Jetted			
DIMENSIONS: Diameter of well <u>12</u> " inches, drilled <u>515</u> ft.	Still <b>REQUIRED</b> ) Long Deg Long	ng Min/Sec	
Depth of completed well <u>515</u> ft. CONSTRUCTION DETAILS	Tax Parcel No.		
Installed: Z Luner installed 12" Diam. from +1 ft to 197' ft	CONSTRUCTION OR DECOMMISSION	PROCEDU	RE
Threaded Threaded tto ft Perforations: □ Yes ℤNo	Formation: Describe by color, character, size of material and	structure, and th	e kind and
Type of perforator used	nature of the material in each stratum penetrated, with at least		ch change of
SIZE of perfs	information. (USE ADDITIONAL SHEETS IF NECES	FROM	
Screens: Ves V No K-Pac Location	MATERIAL Soft brown silt	0	12 TO
Manufacturer`s Name	Med. hard brown & gray basalt	12	33
Type Model No	Reddish brown basalt soft	33	37
Type         Model No.           Diam.         Slot size         from         ft. to         ft.           Diam.         Slot size         from         ft. to         ft.	Med. hard gray & brown basalt	37	53
Gravel/Filter packed: Ves V No Size of gravel/sand	Hard gray basalt	53	75
Materials placed fromft.	Soft Brown Sandstone	75	154
Surface Seal: Ves No To what depth? 197' ft	Med. soft reddish brown & black basalt		1
Material used in seal cement	Trace of Tan Clay	154	160
Did any strata contain unusable water?	Med. hard gray basalt	160	173
Type of water' Depth of strata	Hard gray basalt	173	258
Method of sealing strata off	Broken Brown & gray visicular basalt some tan		
PUMP:         Manufacturer's Name           Type:	claystone	258	262
Type:H.P	Med. hard gray basalt	262	268
WATER LEVELS: Land-surface elevation above mean sea levelft.	Broken brown & gray basalt some visicular Trace of		
Static level _184'ft. below top of well Date	tan claystone water 5 gpm	268	273
Artesian pressure lbs. per square inch Date	Hard gray basalt	273	285
Artesian water is controlled by (cap, valve, etc.)	Med. soft broken brown & gray basalt some brown		, 
WELL TESTS: Drawdown is amount water level is lowered below static level	clay Water 200gpm	285	305
Was a punp test made? Types No If yes, by whom?	Med. hard gray basalt some porus with green clay	305	330
Yield: gal./min. with ft. drawdown after hrs.	Hard light gray basalt	330	366
Yield:         gal./min. with         ft. drawdown after         hrs.           Yield:         gal./min. with         ft. drawdown after         hrs.	Med soft dark gray porus basalt with some green		
Recovery data (time taken as zero when pump turned off) (water level measured from well	claystone little reddish brown basalt	366	373
top to water level)	Med. hard dark gray basalt	373	390
Time Water Level Time Water Level Time Water Level	Soft reddish brown basalt	390	395
	Med. hard brown & gray basalt	395	423
	Hard dark gray basalt	423	457
Date of test	Med. soft porus dark gray basalt Trace of hard green	457	462
Bailer test gal/min. withft. drawdown afterhrs.	clay water Med bard dark gray basalt	457 462	462
Airtest 750 gal/min. with stem set at 500 ft. for 1 hrs.	Med. hard dark gray basalt Reddish brown basalt med. soft	462	408
Artesian flow g.p.m. Date	Porus basalt, trace of hard greeen clay	408	472
Temperature of water Was a chemical analysis made? 🗖 Yes 🗖 No			
		ed Date 7-6-0	
WELL CONSTRUCTION CERTIFICATION: I constructed and/or acc	ept responsibility for construction of this well, and	l its complia	nce with all

Washington well construction standards. Materials used and the information re-	ported above are true to my best knowledge and belief.
Driller Dengineer D Trainee Name (Prop) Larry McLanahan	Drilling Company BJ Exploration Co., Inc.
Driller/Engineer/Trainee Signature	Address 404 North Conway Street
Driller or trainee License No 0337	City, State, Zip Kennewick, WA 99336
If TRAINEE,	Contractor's
Driller's Licensed No	Registration No. BJENPCI132QK Date <u>7-29-05</u>
Driller's Signature	Ecology is an Equal Opportunity Employer.

ECY 050-1-20 (Rev 3/05)

The Department of Ecology does NOT warranty the Data and/or Information on this Well Report.

·	Ecology Well Log 415338, cont.	OF ECOLOGY
WATER WELL REPORT         Original & 1 st copy - Ecology, 2 nd copy - owner, 3 rd copy - driller         E ( ) L ( ) ( )         Original & 1 st copy - Ecology, 2 nd copy - owner, 3 rd copy - driller         Construction/Decommission (''x'' in circle)         Construction         Decommission ORIGINAL INSTALLATION Notice         VBY         of Intent Number         Original Construction         PROPOSED USE:         Demestic         Industrial         Other	CURRENT	
TYPE OF WORK:       Owner's number of well (if more than one)         Image: A state of the sta	Lat/Long (s, t, r       Lat Deg Lat M         Still REQUIRED)       Long Deg Long	lin/Sec
Depth of completed well 515ft.         CONSTRUCTION DETAILS         Casing Z Welded 24" Diam. from +1 ft to 19' ft	Tax Parcel No	
CONSTRUCTION DETAILS         Casing $\boxed{24^{tr}}$ Installed: $\boxed{24^{tr}}$ $\boxed{12^{tr}}$	CONSTRUCTION OR DECOMMISSION P Formation: Describe by color, character, size of material and stru nature of the material in each stratum penetrated, with at least one information. (USE ADDITIONAL SHEETS IF NECESSA	cture, and the kind and entry for each change of
SIZE of perfsft toft	MATERIAL	FROM TO
Screens: Yes Z No K-Pac Location	Med. hard gray basalt 47	75 495
Manufacturer's Name	Med. soft gray & black porus basalt 49	95 512
Type Model No Diam Slot size from ft. to ft.	Green Sandstone & clay 5	12 515
Diam.     Stot size     from     ft. to     ft.       Diam.     Slot size     from     ft. to     ft.		
Surface Seal:       Yes       No       To what depth? <u>197'</u> ft.         Material used in seal <u>cement</u>		
PUMP: Manufacturer's Name           Type.		
WATER LEVELS: Land-surface elevation above mean sea levelft.         Static levelft. below top of well         Artesian pressurelbs. per square inch         Artesian water is controlled by	12" casing 197' 11 7/8" hole to 197' to 515'	
WELL TESTS: Drawdown is amount water level is lowered below static level         Was a pump test made?       Yes       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 LevelTime         Water LevelTime       Water Level		
Date of test		
Bailer test gal./min. withft. drawdown afterhrs.		
Airtest 750         gal/min. with stem set at 500         ft. for 1         hrs.           Artesian flow		
Temperature of water Was a chemical analysis made? 🔲 Yes 🔲 No	Start Date <u>6-24-05</u> Completed 8	Date 7-6-05

**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) Larry McLanahan	Drilling Company BJ Exploration Co., Inc.
Driller/Engineer/Trainee Signature	Address 404 North Conway Street
Driller or trainee License No. 0337	City, State, Zip Kennewick, WA 99336
(II TRAINEE,	Contractor's Respective Nr. BIEXPCU320K Data 7-79-05
Driller's Licensed No.	Registration No. BJEXPCI132QK Date 1-29-05
Driller's Signature	Ecology is an Equal Opportunity Employer.

ECY 050-1-20 (Rev 3/05)

The Department of Ecology does NOT warranty the Data and/or Information on this Well Report.

State of Washington Date Printed: 27-Feb-2009 Log No.	Notice of Intent No.: WE09503 Unique Ecology Well I.D. No BBH042
Construction / Decommission: Original Construction 0	Water Right Permit Number:
Construction 3379/3 Notice of Intent #:	OWNER: VEIGA, ANTHONY & BRENDA
	OWNER ADD 7010 EAST EDISON ROAD
PROPOSED USE: LIVESTOCK	SUNNYSIDE, WA 98944
TYPE OF WORK: Owners's Well Number: (If more than one well) PAGE10F2	Well Add: 7190 SHELLER ROAD
NEW WELL Method: ROTARY	City: Sunnyside, WA 98944 County: Yakima
DIMENSIONS: Diameter of well: 8X6 inches	Location: NW 1/4 SE 1/4 Sec 24 T 10 R 23E
Drilled 345 ft. Depth of completed well 345 ft.	Lat/Long: Lat Deg Lat Min/Sec
CONSTRUCTION DETAILS: Casing installed WELDED	(s, t, r still
8 " Dia from +1 ft. to 37 ft.	Tax Parcel No.: 231024-43003
Liner installed: 6 " Dia from +2 ft. to 334 ft.	
"Dia from ft. to ft. "Dia from ft. to ft.	CONSTRUCTION OR DECOMMISSION PROCEDURE Formation: Describe by color, character, size of material and structure. Show
Perforations: No Used In:	thickness of aquifiers and the kind and nature of the material in each stratum penetrated. Show at least one entry for each change in formation.
Type of perforator used	שיוייניומונכע, טווטיי מי וכמשי טווב בוועץ וטו במטו טוומועצ ווו וטוווומנוטוו.
SIZE of perforations in by in Perforations from ft to ft	Material From
Perforations from ft. to ft. Perforations from ft. to ft.	SILTY TOPSOIL W/SAND 0 BASALT BROKEN BROWN BLACK W/SAND 8
Perforations from ft. to ft.	BASALT BROKEN BROWN BLACK W/SAND 8 BASALT BROKEN BROWN W/SOME CLAY 29
Screens: No K-Pac Location:	BASALT BLACK MED 37
Manufacture's Name	BASALT BROWN SOFT 44
Type: Model No	BASALT BLACK HARD 65 BASALT BLACK MED W/FRAC 81
Diam. slot size: from ft. to ft.	HARD TAN CLAY W/SANDSTONE SOFT 100
Diam. slot size: from ft. to ft.	COARSE SAND 170
Gravel/Filter packed: No Size of Gravel	BASALT BROWN BLACK FRAC W/WATER 188 BASALT BLACK HARD 218
Material placed from ft. to ft.	
Surface seal: Yes To what depth 20 ft.	
Seal method: Material used in seal BENTONITE	
Did any strata contain unusable water No	Notes 1 - 8" DRIVE SHOE & 1 - 6" DRIVE SHOE
Type of water Depth of strata Method of sealing strata off	RECE
PUMP: Manufacture's name	RECEIVED
Type: H.P. 0	Work started 01/12/2009 APR 2000 01/15/2009
	<u> </u>
	WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility of Construction with well and its compliance all Washington well construction standards. Materials used and the Union reported
Static level 190 ft below top of well Date 01/15/2009	all Washington well construction standards. Materials used and the materials used
Artesian Pressure Ibs per square inch Date	
Artesian water controlled by	
WELL TESTS: Drawdown is amount water level is lowered below static level.	
Was a pump test made? No If yes, by whom	Signature:
Yield:     gal/min with     ft drawdown after       Yield:     gal/min with     ft drawdown after	If trainee, Licensed driller is:License No.:
Yield: gal/min with ft drawdown after	Licensed Driller Signature
Recovery data (time taken as zero when pump turned off)(water level measured from well	Drilling Company:
top to water level	NAME: FOGLE PUMP & SUPPLY, INC. Shop: COLVILLE
Time: Water Level Time: Water Level Time: Water Level	ADDRESS: 316 W. 5TH
	Colville, WA 99114
	Phone: 509-684-2569 Toll Free: 800-533-6518
Dele official	
Date of test:	E-Mail: jeanne@toglepump.com
Bailer test gal/min ft drawdown after hrs.	E-Mail: jeanne@foglepump.com
	E-Mail: jeanne@toglepump.com FAX: 509-684-3032 WEB Site: www.foglepump.com Contractor's

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	CURRENT Ecology Well Log 582101, cont.
WATER WELL REPORT	Notice of Intent No.: WE09503
State of Washington Date Printed: 27-Feb-2009 Log No.	Unique Ecology Well I.D. No BBH042
Construction / Decommission: Original Construction 0 Construction 337913 Notice of Intent #:	
PROPOSED USE: LIVESTOCK	OWNER: VEIGA, ANTHONY & BRENDA OWNER ADD 7010 EAST EDISON ROAD
	SUNNYSIDE, WA 98944
TYPE OF WORK: Owners's Well Number: (If more than one well) PAGE2OF 2	Well Add: 7190 SHELLER ROAD
NEW WELL Method: ROTARY	City: Sunnyside, WA 98944 County: Yakima
DIMENSIONS: Diameter of well: 8X6 inches	Location: NW 1/4. SE 1/4 Sec 24 T 10 R 23E EW
Drilled 345 ft. Depth of completed well 345 ft.	Lat/Long: Lat Deg Lat Min/Sec (s, t, r still
CONSTRUCTION DETAILS: Casing installed WELDED 8 " Dia from +1 ft. to 37	REQUIRED) Long Deg Long Min/Se
8 " Dia from         +1 ft. to         37           Liner installed:         6 " Dia from         +2 ft. to         334	
" Dia from ft. to ft. " Dia from ft. to	ft. CONSTRUCTION OR DECOMMISSION PROCEDURE
Perforations: No Used In:	thicknessof aquifiers and the kind and nature of the material in each stratum penetrated. Show at least one entry for each change in formation.
Type of perforator used SIZE of perforations in by in	· · · · · · · · · · · · · · · · · · ·
SIZE of perforations in by in. Perforations from ft. to ft.	Material From To BASALT BROKEN BROWN BLACK W/WATER 327 33
Perforations from ft. to ft.	BASALT BROKEN BROWN BLACK W/WATER         327         33           BASALT BLACK BROWN MED. W/FRAC         337         34
Perforations from ft. to ft.	
Screens: No K-Pac Location:	
Manufacture's Name	
Type: Model No Diam. slot size: from ft. to ft.	
Diam. slot size: from ft. to ft.	
Gravel/Filter packed: No Size of Gravel Material placed from ft. to ft.	
Surface seal: Yes To what depth 20 ft.	
Seal method: Material used in seal BENTONITE	Natar:
Did any strata contain unusable water No Type of water Depth of strata	Notes: 1 - 8" DRIVE SHOE & 1 - 6" DRIVE SHOE RECEIVED
Type of water Depth of strata Method of sealing strata off	CEIVED
PUMP: Manufacture's name	APR 2 2 2000
Туре: Н.Р. О	Work started 01/12/2009 000000000000000000000000000000000
WATER LEVELS: Land-surface elevation above mean sea level: 0 ft	WELL CONSTRUCTION CERTIFICATION:
Static level 190 ft. below top of well Date 01/15/2009	all Washington well construction standards. Materials used and the information reported are
Artesian Pressure Ibs per square inch Date	true to my best knowledge and belief
Artesian water controlled by	
WELL TESTS: Drawdown is amount water level is lowered below static level.	Name: TODD LIVELY License No.: 2321
Was a pump test made? No     If yes, by whom       Yield:     gal/min with   ft drawdown after	Signature:
Yield:      gal/min with      ft.drawdown after	If trainee, Licensed drilled is:License No.:
Yield gal/min with ft drawdown after	Licensed Driller Signature
Recovery data (time taken as zero when pump turned off) (water level measured from we top to water level	^{II} <u>Drilling Company:</u>
Time: Water Level Time: Water Level Time: Water Level	NAME: FOGLE PUMP & SUPPLY, INC. Shop: COLVILLE
	ADDRESS: 316 W. 5TH
	Colville, WA 99114
Date of test:	Phone: 509-684-2569 Toll Free: 800-533-6518
Bailer test gal/min ft drawdown after hrs.	E-Mail: jeanne@foglepump.com FAX: 509-684-3032 WEB Site: www.foglepump.com
Air test 50+ gal/min w/ stem set at 345 ft for 1 1/2 hours Artesian flow gpm Date	
Temperature of water Was a chemical analysis made No	Contractor's Registration No.: FOGLEPS095L4 Date Log Created: 1/29/2009
	1

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

•	Ecology Well Log 582101, cont. A mended
WATER WELL REPORT	CURRENT
	Notice of Intent No.: WE09503
	Unique Ecology Well I.D. No BBH042
Construction / Decommission: Original 0 Construction 3319パン Construction Notice	
	OWNER: VEIGA, ANTHONY & BRENDA ( SEP 2 8 2012
PROPOSED USE: LIVESTOCK	OWNER ADD 7010 EAST EDISON ROAD
TYPE OF WORK: Owners's Well Number: (If more than one well)	SUNNYSIDE, WA 98944
NEW WELL Method: ROTARY	Well Add 7190 SHELLER RD
	City: Sunnyside, WA 98944 County: Yakima
DIMENSIONS: Diameter of well: 8X6 inches	Location: SW 1/4 SE 1/4 Sec 24 T 10 R 23 EW
Drilled 345 ft. Depth of completed well 345 ft.	Lat/Long Lat Min/Sec
CONSTRUCTION DETAILS: Casing installed WELDED	(s, t, r still Long Deg Long Min/Se
8 "Dia from +1 ft. to 37 ft.	· · · · · · · · · · · · · · · · · · ·
Liner installed: 6 " Dia from +2 ft. to 334 ft.	
" Dia from ft. to ft. "Dia from . ft. to ft.	Formation: Describe by color, character, size of material and structure. Show
Perforations: No Used In:	thickness of aquifiers and the kind and nature of the material in each stratum
Type of perforator used	penetrated. Show at least one entry for each change in formation.
SIZE of perforations in. by in.	Material From To
Perforations from ft. to ft.	SILTY TOP SOIL W/SAND 0 8
Perforations from ft. to ft.	BASALT BROKEN BROWN BLACK W/SAND 8 29
Perforations from ft. to ft.	BASALT BROKEN BROWN W/SOME BROWN CL 29 37
Screens: 0 K-Pac Location:	BASALT BLACK MED 37 44
Manufacture's Name	BASALT BROWN SOFT 44 65
Type: Model No	BASALT BLACK HARD6581BASALT BLACK MED W/FRAC81100
Diam. slot size: from ft. to ft.	HARD TAN CLAY W/SANDSTONE SOFT 100 170
	COARSE SAND 170 188
Diam. slot size: from ft. to ft.	BASALT BROWN BLACK FRAC W/WATER 188 218
Gravel/Filter packed: No Size of Gravel	BASALT BLACK HARD 218 289
Material placed fro ft. to ft.	BASALT BLACK MED W/FRAC 289 327
Surface seal: Yes To what depth 20 ft.	BASALT BROKEN BROWN BLACK W/WATER 327 337
Seal method: Material used in seal BENTONITE	Notes:
Did any strata contain unusable water No	1 - 8" drive shoe, 1 - 6" drive shoe
Type of water Depth of strata	
Method of sealing strata off	
PUMP: Manufacture's name	
Туре: Н.Р. О	Work starte 01/12/2009 Complete 01/15/2009
WATER LEVELS Land-surface elevation above mean sea level: 0 ft.	WELL CONSTRUCTION CERTIFICATION:
Static level 190 ft. below top of well Date 01/15/2009	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 are true to my best knowledge and belief
Artesian Pressure Ibs per square inch Date Artesian water controlled by	✓ Driller □ Engineer □ Trainee
WELL TESTS: Drawdown is amount water level is lowered below static level.	Name: TODD LIVELY License No.: 2321
Was a pump test made No If yes, by whom	Signature:
Yield: gal/min with ft drawdown after	If trainee, Licensed driller is: License No.:
Yield: gal/min with ft drawdown after	Licensed Diller Signature
Yield: gal/min with ft drawdown after	Licensed Driller Signature
Recovery data (time taken as zero when pump turned off)(water level measured from well top to water level	Drilling Company:
Time: Water Level Time: Water Level Time: Water Level	NAME: FOGLE PUMP & SUPPLY, INC. Shop: COLVILLE
	ADDRESS: 316 W. 5TH
	Colville, WA 99114
	Phone: 509-684-2569 Toll Free: 800-533-6518
Date of test:	E-Mail: jeanne@foglepump.com
Bailer test gal/min ft drawdown after hrs.	FAX: 509-684-3032 WEB Site: www.foglepump.com
Air test 50+ gal/min w/ stem set at 345 ft. for 1.5 hours	
Artesian flow gpm Date	Contractor's Registration No.: FOGLEPS095L4 Date Log Created: 9/8/2012
Temperature of water Was a chemical analysis made No	Registration No.: FOGLEPS095L4 Date Log Created: 9/8/2012

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337913			& SUPPL` e of Intent No.:	
	Log No. 0		e Well I.D. No.:	WE BBH
Well Constructi	on Details Continued:	Onqu		DDr
Material	·····	From	То	
BASALT BLACK B	ROWN MED W/FRAC.	337	345	
			6	

Ecology Well Log 808399

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WATER WELL REPORT Original & 1" copy - Ecology, 2" copy - owner, 3" copy - driller
DEPARTMENT OF ECOLOGY Construction/Decommission ("x" in circle)
□ Decommission ORIGINAL INSTALLATION         451047       Notice of Intent Number         PROPOSED USE:       ☑ Domestic         □ Industrial       □ Municipal
DeWater Infigation Test Well Other      TYPE OF WORK: Owner's number of well (if more than one)
Image: Seconditioned         Method : Dug         Bored         Driven           Image: Despend         Image: Cable         <
DIMENSIONS: Diameter of well <u>6</u> inches, drilled <u>343</u> ft. Depth of completed well <u>343</u> ft. CONSTRUCTION DETAILS
Casing $\boxtimes$ Welded. $\mathfrak{G}^n$ Diam from $\pm 2$ ft to $\underline{18}$ ft. Installed: $\boxtimes$ Liner installed $\underline{4^{n_n}}$ Diam. from $\underline{-3 \text{ ft}}$ to $\underline{343}$ ft. $\square$ Threaded? Diam. From ft. to ft.
Perforations: X Yes I No Type of perforator used Skill Saw
SIZE of perfs 1/4in by § in and no. of perfs 45 from 303 ft to 343 ft. Screens: 2 Yes 2 No 2 K-Pac Location
Manufacturer's Name
Type         Model No.           Diam.         Slot size         from         fi.           Diam.         Slot size         from         fi.
Gravel/Filter packed: Yes X No Size of gravel/sand Materials placed from ft. to ft.
Surface Seal: X Yes No To what depth? 18ft. Material used in seal hole plug
Did any strata contain unusable water?
Type of water? Depth of strata
Method of sealing strata off
PUMP: .Manufacturer's Name           Type:
WATER LEVELS: Land-surface elevation above mean sea level ft.
Static level <u>184</u> fi. below top of well. Date <u>03/31/12</u>
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 X No If yes, by whom?
Yield:ft. drawdown afterhrs.
Yield:gal/min. withft. drawdown afterhrs. Yield:gal/min. withft. drawdown afterhrs.
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 testgal/min. withft. drawdown afterhrs.
Airtest 15 gal./min. with stem set at 338ft. for 1hrs.
Artesian flowg.p.m. Date
Temperature of water 57 Was a chemical analysis made? 🔲 Yes 🗵 No

### CURRENT

1

Notice of Inten	t No. <u>WE14361</u>			
Unique Ecology	Well ID Tag No. <u>BB</u>	<u>J-846</u>		
Water Right Per	mit No. <u>N/A</u>		·	
Property Owner	Name Dan Sims	<u> </u>		
Well Street Add	tress 4250 SLI road			
City <u>Sunnyside</u>	County	Yakima		
Location <u>Nw</u> 14 (s, t, r Still RH	4-1/4 <u>SW</u> 1/4 Sec <u>12</u> 2 <b>QUIRED)</b>	Twn <u>10</u> R <u>23</u>	ewm Bi Or wwm Ci	
Lat/Long	Lat Deg	Lat Min/Sec	<u></u>	
C C	Long Deg			
Tax Parcel No	o. (Required)231012	-		
	··· <u>···· ·</u>			
Formation: Description Description	NSTRUCTION OR DEC ibe by color, character, size rial in each stratum penetra USE ADDITIONAL SHEE	of material and structure ted, with at least one on	re, and the kind and	
	MATERIAL	FRO		
Top soil	•	0	.8	
broken basalt		8	15	
Black Basalt		15	<b>76</b>	
Brown Sands	tone	76	82	
Brown Sand		82	101	
Tan Clay	-	101	148	
Black Basalt		148	270	
Broken Basalt 270 274				
Basalt		274	288	
Broken Basal	t	288	309	
Black Basalt		309	343	
1			1	
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JUN 1 9 2012		
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N.	, <b>-</b>	<i>"" '</i>
	(O) Farrad	
	AL FCY	1.02
Start Date 03/29/12 Completed Da	te <u>03/31/12</u>	2

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 knowled grand belief.

Driller 🗌 Engineer 🗋 Traince Name (Print)	Drilling Company Triple A Drilling, Inc.
Driller/Engineer/Trainee Signature	Address 785 Tumbeddw
Driller or trainee License No. 1224	City, State, Zip. Burbank,AV99323 , , , ,
IF TRAINEE: Driller's License No:	Contractor's
Driller's Signature:	Registration No. Tripld1937BB Date 03/31/12

ECY 050-1-20 (Rev 02/10) If you need this document in an alternate format, please call the Water Resources Program at 360-407-6872.

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(SUBMIT ONE WELL REPO	<b>OTECTION WEL</b> ORT PER WELL INSTALLED	Notice	of Intent No. <u>RED 9281</u>
Construction/Decommission			Type of Well
XConstruction 49765		[	X Resource Protection
Decommission ORIGINAL		[ ]	Geotechnical Soil Boring
of ment Nun	nber	Property Owner Site Address	George DeRuyter & Sons Dairy AADELLE RD. LE. HOUGHTON &
Consulting Firm	ARCADIS	City ZI/AN	County Yakima
Hele Prote NGUD		CUM	SE 19 EWM
Unique Ecology Well ID Tag No.	10-607	Locatien 1/4 1/4	1/4 SecTwnIIN_R22E_ or WWM
WELL CONSTRUCTION CERTIFICATIO	N: I constructed and/or accept responsibility for	Lat/Long (s,t,r Lat Deg	
	with all Washington well construction standards	still Required) Long Deg	Long Min/Sec
	above are true to my best knowledge and belief		211193004
Driller Engineer Train	nce Name (Print)		Static Level ZD.05
Driller/Trainee License No.	MUND	Cased or Uncased Diameter	
		Work/Decommission Start Date	8-21-2013
If trainee, licesned drillers' Signature and License No.		Work/Decommisión End Date	8-21-2013
Signature and License No.	· · · · · · · · · · · · · · · · · · ·	<u> </u>	
Construction/Design		Well Data W3-384	Formation Description
	Protective Post		
	Concrete Surface	Seal	<u>0-4-5, 17</u> FT
	Depth	5# +2.5-15	4-12 - Grenty Style
	Blank Casing (dia x	dep) 2" +2.5-15 Sch 40 PUC	<u>0-4-5iH</u> FT 4-12-Grently SAND 12-Bo WX bosit 30-68 BASALT
	Material	SCH 40 WC	C-SO WA DUCT
	Backfill	FT	30-lo BASALT
	Type	<u> </u>	0 - FT
	Seal	3-13 101	
	Material	Bart. Cthips	
		13-361	
	Gravel Pack	<u></u>	
	Material	10-20-5ANO	
		15-351	<u>0</u> - FT
		2" x 20'	DEPT OF CO
	Screen (dia x dep)		Nov - Received
	Slot Size	-030	7.54
	Material	SCH 40 PUC	, And
		<u>35</u> _FT	ET OF ECON CONTRACT
	Backfill	SALO/	Received 62
		Bent.	OCT 0 4 2013
{/////////////////////////////////	Total Hole Depth	<u>- 48</u> FT	REE(P)30-12 (Rec=v 2-01)

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<b>P</b> 1	• • •	XA7 11	Ι <b>Τ</b> -	1 = < 4 = 2 0
Eco.	logy	well	LOg.	1564538
	01		0	

	Ecology W	ell Log 1	564538
WATER WELL REPORT Original & 1 st copy - Ecology, 2 nd copy - owner, 3 rd copy - driller	CURRENT Notice of Intent No. <u>ルヒスト544</u>		
Construction/Decommission ("x" in circle)	Unique Ecology Well ID Tag No. 1333	551	
Construction     Construction	Water Right Permit No. <u>64-2.5</u>		
O Decommission ORIGINAL INSTALLATION Notice			
of Intent Number	Property Owner Name Wine Make		
	Well Street Address <u>SLI Rd and 5</u>	Toleha	Rd_
PROPOSED USE:     □     Domestic     □     Industrial     □     Municipal       □     DeWater     ■     Irrigation     □     Test Well     □     Other	City Grandview County Ya	hima	
	Location <u>se1/4-1/4</u> 121/4 Sec 19 Twn 100	R23 K	circle
TYPE OF WORK:       Owner's number of well (if more than one)         New well       Reconditioned         Method :       Dug         Bored       Driven	and the second sec	ww	M one
□ Deepened □ Cable ☑ Rotary □ Jetted	Lat/Long (s, t, r Lat Deg La	at Min/Sec	
DIMENSIONS: Diameter of well 12 inches, drilled 1010 ft.	Still <b>REQUIRED</b> ) Long Deg Lo	ong Min/Se	
Depth of completed well ft.		3	(é
CONSTRUCTION DETAILS	Tax Parcel No. 23101414001		
Casing Welded $16$ "Diam from $46''$ ft to $360$ ft. Installed: I Liner installed $12$ "Diam from $12$ ft to $656$ ft.	CONSTRUCTION OR DECOMMISSIO	N DDOCED	
□ Threaded" Diam. fromft. toft.	Formation: Describe by color, character, size of material an		
Perforations:  Ves  No Type of perforator used	nature of the material in each stratum penetrated, with at least	st one entry for e	
SIZE of perfs in by in and no of perfs from ft. to ft.	information. (USE ADDITIONAL SHEETS IF NECH		1
Screens:  Ves  No  K-Pac Location	MATERIAL	FROM	TO
Manufacturer's Name	Soft from bown & brown class	0	35
Type Model No.	Soft broken brown & brown clan. Soft black baselt	<u>35</u> 74	78
Diam Slot size from fl. to fl. Diam Slot size from fl. to fl.	Sand Stone	124	150
Gravel/Filter packed:  Yes  No Size of gravel/sand	Soft brown base It	150	186
Materials placed fromft. toft.	Sand Store	186	202
Surface Seal: 🗹 Yes 🗆 No To what depth?ft.	Hard black basalt	202	375
Naterial used in seal Portlund concent	soft redish brown busult	335	355
Did any strata contain unusable water?	Soft black besult	355	366
Type of water? Depth of strata	Herd ares basalt	360	540
Method of sealing strata off	Soft bluch basalt	540	545
PUMP: Manufacturer's Name	Soft brown baself	545	550
	soft free clas	550	630
WATER LEVELS: Land-surface elevation above mean sea levelft.	Saft black basalt	630	155
Static level     267     ft. below top of well     Date 10-27-15       Artesian pressure     Ibs. per square inclr     Date	Hart black baselt	655	792
Artesian water is controlled by	Soft porons black base It	792	635
(cap, valve, etc.)	Here black base 14	435	459
WELL TESTS: Drawdown is amount water level is lowered below static level	Soft fluch basult	459	47.5
Was a pump test made?  Yes No If yes, by whom?	Soft black base &	942	1005
Yield:     gal./min. with     ft. drawdown after     hrs.       Yield:     gal./min. with     ft. drawdown after     hrs.	Hered black buse It	1005	1010
Yield:gal./min. withfl. drawdown afterhrs.			
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	CPT OF AN		
	Now Not Contraction		
	<u>Nov 2 0 2015</u>		-
Date of test	2015		-
Bailer test gal /min. with ft. drawdown after hrs.		-	-
Airtestgal./min. with stem set atft. forhrs.	Deprive opente		3N
Artesian flow g.p.m. Date	SECION DECIN		
Temperature of water Was a chemical analysis made?	241D4 3 34 15		
	Start Date 7-28-15 Complete	eted Date 10-	21-15

### is 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 Dengineer D Trainee Name (Print) David Shith Blue ) tav Drilling Company v Driller/Engineer/Trainee Signature Deri Address Driller or trainee License No. 2844 City, State, Zip Ch Contractor's IT TRAINEE. RM Date 11-13-942 15 ( Din Registration No

Driller's Licensed No Driller's Signature

The Depar

Ecology is an Equal Opportunity Employer.

The Department of Ecology does NOT warranty the Data and/or Information on this Well Report. ECY 050-1-20 (Rev 3/05)

## WATER WELL REPORT

STATE OF WASHINGTON

Ecology Well Log 1706323 Notice of Intent W307944

UNIQUE WELL I.D. # BIN475

W.M.

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(1) OWNER: Name Tom Garrison Address 251 Wade RD, Sunnyside, WA 98944 (2) LOCATION OF WELL: County Yakima - SW 1/4 NW 1/4 Sec 27 T. 11 N.R 22 (2a) STREET ADDRESS OF WELL (or nearest address) 251 Wade Sunnyside WA 98944 TAX PARCEL NO. 221127-42003 (3) PROPOSED USE: X Domestic Municipal (10) WELL LOG or DECOMMISSIONING PROCEDURE DESCRIPTION: Industrial 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 Irrigation Test Well Other DeWater of information. Indicate all water encountered. (4) TYPE OF WORK: Owner's number of well (If more than one) MATERIAL FROM X New Well Method:

Deepened Dug Bored	Soil	0	2
Reconditioned Cable Driven	Gravel & Clay		11
Decommission X Rotary Jetted	Sand	11	27
(5) DIMENSIONS: Diameter of well 8 inches.	Sandy Clay	27	77
Drilled 54() feet. Depth of completed well 503 ft.	Basalt Black Brown	77 1	10
	Basalt Black Brown & Clay Brown	110 1	34
(6) CONSTRUCTION DETAILS:	Basalt Grey	134 1	42
Casing Installed:	Basalt Dark Grey & Clay Brown	142 1	149
X Welded 8 " Diam. from +2 ft. to 89 ft.	Sandy Clay	149 3	808
Liner installed 6 " Diam. from 74 ft. to 350 ft.	Sand & Gravel	308 3	318
Threaded 4 1/2 " Diam. from 275 ft. to 515 ft.	Basalt Brown Soft	318 3	337
Perforations: X Yes No	Basalt Black	337 3	64
Type of perforator used Saw	Basalt Black Brown Sorft	364 3	370
SIZE of perforations 1/8 in. by 6 in.	Basalt Black	370 3	373
25 perforations from 495 ft. to 515 ft.	Basalt Black Brown Soft	373 3	85
perforations from ft. to ft.	Basalt Black	385 4	103
perforations from ft. to ft.	Basalt Black Brown & Broken Layers	403	
	Soft	4	40
Screens: Yes X No K-Pac Location	Basalt Black Brown & Clay Brown Soft	440 4	55
Manufacturer's Name	Basalt Blac: kBrown	455 4	63
Type Model No.	Basalt Black Brown Broken Layers Soft	463 4	87
Diam. Slot size from ft. to ft.	Basalt Brown Soft	487 5	50 <u>7</u>
Diam. Slot size from ft. to ft.	Basalt Black Brown	507 5	12
Gravel/Filter packed: Ves X No Size of gravel/sand	Basalt Black Broken		527
Material placed from ft. to ft.	Basalt Dark Grey	527 5	540
			-
Surface seal: X Yes No To what depth? 89 ft.	Set Pump 440 Feet 10 GPM		-
Material used in seal Bentonite Hole Plug	Department	of Ecolin	_
Did any strata contain unusable water? Ves X No			-
Type of water? Depth of strata Method of sealing strata off		0 0010	
	FEB 2	<u>c_</u> uto +	
(7) PUMP: Manufacturer's Name			
Туре. Н.Р.		ros Pi nem	
(8) WATER LEVELS: Land-surface elevation		-	
above mean sea levelft.	Work Started 12/4/2017 , 19. Completed 12/	4/2017	
Static level 304 ft. below top of well Date 12/14/2017	WELL CONSTRUCTION CERTIFICATION:		
Artesian pressure lbs. per square inch Date	I constructed and/or accept responsibility for construction	of this well, and its	
Artesian water is controlled by	compliance with all Washington well construction standard		
(Cap, valve, etc)	and the information reported above are true to my best known	owledge and belief.	
(9) WELL TESTS: Drawdown is amount water level is lowered below static level		se No. 0357	
Was a pump test made? Yes XNo If yes, by whom?	Type or Print Name TOM MCGUIRE Licensed Driller/Engineer)	Se NO. 0357	_
Yield: 40 gal./min. with 500 ft. drawdown after hrs.		a a bha	
Yield: 20 gal./min. with 480 ft. drawdown after hrs.	Trainee Name Licen	se No.	
Yield: gal./min. with ft. drawdown after hrs.	Drilling Company RICK POULIN WELL DRILLING	INC.	
Recovery data (time taken as zero when pump turned off) (water level measured	C mai		
from well top to water level)	(Signed) Cirry II Licen	se No. 0357	
Time Water Level Time Water Level Time Water Level	(Licensed Driller/Engineer)		
	Address 1301 LANCASTER RD SEILAH, WA	98942	
	Contractor's		
		<b>14/2017</b> ¹⁹	
Date of test	NUM NO TIME Date IZ		
Bailer test gal./min. with ft. drawdown after hrs.	(USE ADDITIONAL SHEETS IF NECE	SSARY)	
Airtest gal./min. with stem set at ft. for hrs.	Ecology is an Equal Opportunity and Affirmative Action	n employer. For	
Artesian flow g.p.m. Date	special accommodation needs, contact the Water Re		
Temperature of water Was a chemical analyses made? Yes XNo	(360) 407-6600. The TDD number is (360) 407-6006		

## Ecology Well Log 1985971

<b>RESOURCE PROTECT</b> (SUBMIT ONE WELL REPORT PER WEL		EPURI		RRE	NT ntent No.	RE	16683
Construction/Decommission	18-7653	WA		Тур	e of Well		
× Construction				$\times$	Resource Prot	ection	
Decommission ORIGINAL INSTALLAT	ION Notice				Geotechnical		
of Intent Number		Property Owner			Yakima Count	-	ces
		Site Address			128 N Seco		
Consulting Firm P	GG	City	Yakima		0		ikima
Unique Ecology Well ID Tag NoBKB-731		Location	174 SE	E1/4	NE _{Sec} 29	Twn 11N R	21E or WWM
WELL CONSTRUCTION CERTIFICATION 1 constructed and	or accept responsibility for	Lat/Long (s.t.r	Lat Deg			Lat Min/Sec	
construction of this well, and its compliance with all Washington	well construction standards	still Required)	Long Deg	g		Long Min/Se	c
Materials used and the information reported above are true to my	best knowledge and belief						
		Tax Parcel No.					_
	Casey Wallace						
Driller/Trainee Signature	2	Cased Diameter				<u>6"</u> Stat	ic Level 164'
Dritler/Trainee License No	3182					11/07/2018	
		Work/Decommiss	ion Start D	late -		11/01/2010	_
If trainee, licensed driller's Signature and License No,		Work/Decommiss	ion End Da	ate		11/08/2018	
Construction/Design	Well Name:	MW-1	11		Forma	ation Descrip	tion
	Concrete Surface Seal Depth Blank Casing (dia x dep) Maternal Backfill Type Seal Material Gravel Pack Material Sereen (dia x dep) Slot Size Material Well Depth Backfill	<u>Sc</u> h40 PV(	62 FT <u>ips</u> 79 FT and 179 FT		WELL C AND LIC	DS AND GR. 70 DS AND CO 120 17 176 COBBLES 179 DS WITH GR ECEIVEI ONSTRU	FT FT FT FT AVELS FT JCTION OFFICE
	Material						
↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓	- Total Hole Depth	1.79	F1	ſ			

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of

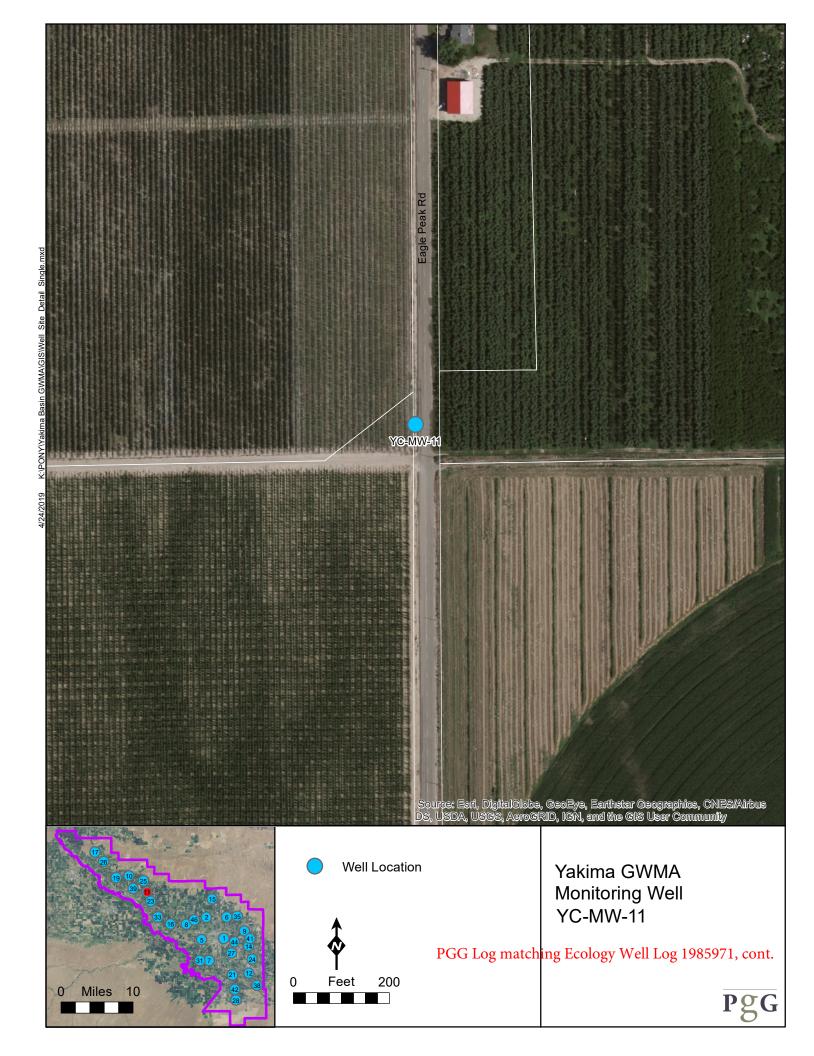
ECY 050-12 (Rec v 2/01)

p	Samples			PGG L	, og m	natch	ing Ecology Well Log 198	5971
Depth (ft) Graphic Log	Sample ID PID (ppm)	Interval	Descript				Well Construction	
0			Moist, light brown, silty fine	SAND.			Flush mount monument with o Top of PVC is 0.36 feet below monument	
5-			Moist, brown, fine sandy S Increased density and sligh	ILT. Moderately dense. nt gravel fraction from 11.5			Hydrated bentonite annular se	eal 2-162 feet
10		4	to 12 feet.					
15 —		3	Moist, reddish-brown sand dense layer of silty sand fro Moist, brown, silty fine SAN	om 12.5 to 13 feet.		111111		
20 -		;	Dry to moist, light brown, fi medium to coarse GRAVE				Borehole diameter 6-inches 2-inch schedule 40 flush threa well casing 0.36-179.2 feet	ad PVC blank
25 -		5	Dry to moist, light brown, fi Slight softening downward.	ne to medium SAND.				
30		12015 - 015	Moist, light brown, silty fine Moist, light brown, fine to n					
		2	Moist, light brown, medium medium SAND.	to coarse gravelly fine to		N		
35 — -			Moist, light brown, medium Fining downward to fine to	sand. Very well sorted. medium sand.		1111111		
40 - 000		2	Moist, light brown, gravelly Sand fraction coarsening d includes moderate CaCO3	lownward. Gravel fraction				
		3	Moist, grey to light brown, f	fine to medium SAND.		1111		
45 -		2 V	Moist, grey to light brown, o medium SAND.	coarse gravelly fine to		111111		
-			Moist, light brown, fine to n fraction. Sand fraction sligh Gravel fraction includes slig	ntly to moderately oxidized.		111111		
Northing/E	TRS): T11R2 Easting: N 39 /: David Warr	9333	33.5 ft, E 1713616.4 ft	Drilling Firm: Yellow Jacket Drilling Method: Sonic DTW: 162.55 ft	1 181	1	-MW-11 ring Log  and As-Built	
Completion	n Date: 11/3			MP Elevation: 974.13 ft		Yakii	ma GWMA	
Ecology ID	D: BKB-731			V. Datum: NAD88		JE18	03	rgg

	b	Samples		PGG Lo	g matching Ecology Well Log 1985971, cont.
Depth (ft)	Graphic Log	Sample ID PID (ppm)	Interval	Description	Well Construction
 50 — 			Ē	accumulation.	
- 55 —	H H H H		£	Moist, reddish-brown, clayey SILT. Silt fraction moderately oxidized.	
- - 60 —			7	Moist, light brown, fine to medium SAND. Well sorted. Fining downward. Trace gravel fraction.	
- - - 65 —			2	Moist, light brown to reddish brown, fine to medium SAND. Well sorted. Moderate to significant presence of oxidization.	
- - 70 — -			)	Moist, light brown to reddish brown, fine to medium SAND. Well sorted. Slight presence of oxidization.	
- 75 — -			5	Moist, light brown, silty fine to medium SAND. Interbedded sandy silt. Dry to moist, brown to grey, fine sandy SILT.	
- 80 — -				Moist to wet, reddish brown to grey, clayey SILT.	
- 85 —			1	Moist, grey, fine sandy SILT. Moist, grey, clayey SILT.	
	1:1:1:1:		2	Moist, grey, fine sandy SILT. Interbedded dense clayey silt layers. Moist, reddish brown, fine sandy SILT. Slight clay	
90				fraction. Slight presence of thin beds with significant oxidization.	
95 — - -				Moist, brown to grey, clayey SILT. Hardening downward from slightly to moderately dense.	
Northin	ng/Ea	RS): T11R21 sting: N 39 David Wam	333	Drilling Firm: Yellow Jacket 3.5 ft, E 1713616.4 ft Drilling Method: Sonic . PGG DTW: 162.55 ft	YC-MW-11 Boring Log and As-Built
Comple	etion	Date: 11/7 BKB-731			Yakima GWMA JE1803

	D	Samples		PGGI	og matching Ecology Well Log 1985971, cont.
Depth (ft)	Graphic Log	Sample ID PID (ppm)	Interval	Description	Well Construction
100 -	ы  		F		
				Moist, brown, clayey SILT. Very dense.	
105					
			,	Moist, brown, fine sandy SILT interbedded with medium sand. Sand fraction well sorted.	
115 —			2	Moist, brown, fine sandy SILT. Hardening downward from soft to very dense. Slight presence of oxidization from 115.5 to 116.5 feet.	
				Moist, brown, fine to medium sandy SILT. Slight gravel fraction.	
120 -				Moist, light brown, medium to coarse gravelly fine SAND.	
				Moist, light brown, sandy fine to medium GRAVEL.	
125 —			•	Moist, very dark brown to very dark reddish brown, sandy fine to medium GRAVEL.	
				Dry to moist, light grey to light brown, gravelly fine to medium SAND. Slight presence of CoCO3 accumulation on gravel fraction.	
			2	Moist, light yellow to reddish brown, sandy medium to coarse GRAVEL. Slight presence of oxidization.	
			3	Moist, light grey to light yellow, fine sandy medium to coarse GRAVEL. Sand fraction well sorted.	
140 —				Dry to moist, very light grey, gravelly fine SAND.	
145 –	•		ŝ	Dry to moist, very light yellow to light grey, fine to medium sandy medium to coarse GRAVEL. Very well sorted brown medium sand from 145 to 145.5 feet.	
-			2	Dry to moist, light grey, fine to medium sandy medium to coarse GRAVEL. Trace presence of oxidization.	
Northing	g/Ea	RS): T11R21 sting: N 39 David Wam	9333	Drilling Firm: Yellow Jacket 33.5 ft, E 1713616.4 ft Drilling Method: Sonic r, PGG DTW: 162.55 ft	YC-MW-11 Boring Log and As-Built
		Date: 11/7 BKB-731	7/20	18 MP Elevation: 974.13 ft V. Datum: NAD88	Yakima GWMA JE1803

	Samples			PGG L	og mate	ching Ecology Well Log 1985971, co	ont.
Depth (ft) Graphic Log	Sample ID PID (ppm)	Interval	Descript	ion	- 0	Well Construction	
150 - 40			Moist, light brown to brown GRAVEL. Wet, brown, medium grave Wet, brown, fine to medium Wet, brown, sandy medium	Ily fine to medium SAND. SAND. Slight silt fraction.		12-20 silica sand pack 162-180 feet         2-inch 10 slot PVC screen 164-179 feet         with a flush thread tail pipe         Bottom of the well 179.2 feet         Bottom of the boring 180 feet	t
Northing/East	David Wam Date: 11/7	333 pler		Drilling Firm: Yellow Jacket Drilling Method: Sonic DTW: 162.55 ft MP Elevation: 974.13 ft V. Datum: NAD88	В	C-MW-11 Boring Log and As-Built akima GWMA	G



	10 7050		1 .	Tues (\$117.1)	
Construction/Decommission	18-7653	SVVA	l ,	Type of Well	
Construction			ļ	Resource Protec	tion
Decommission ORIGINAL INSTA			l	Geotechnical So	
of Intent Number	ويتبار والمراجع	Property Owner		Yakima County I	
Conculting Firm	PGG	Site Address	Yakima	128 N Second	Yakima
Consulting Firm	F00	City	Takina	County	EW
Unique Ecology Well ID Гад No вки	3-734	Location	1/4 NE	1/4 SE Sec 35 T	wn <u>11N R 22E</u> or WW
ELL CONSTRUCTION CERTIFICATION 1 constr	ucted and/or accept responsibility for	Lat/Long (s,t,r	Lat Deg	L	at Min/Sec
onstruction of this well, and its compliance with all Wa	ashington well construction standards	still Required)	Long Deg	L	ong Min/Sec
laterials used and the information reported above are to	rue to my best knowledge and belief	Tay Desay No			
	Casey Wall ace	Tax Parcel No.			
Driller/Trainee Signature		Cased Diameter			6" Static Level 18
)riller/Trainee License No.	3182				
	1	Work/Decommiss	ion Start Date	1	1/10/2018
f trainee, licensed driller's					14412040
Signature and License No.		Work/Decommiss	ion End Date	11.	11/2018
Construction Design	Well Name:	MW-1	15	Formati	on Description
	Depth Blank Casing (dia x dep) Material Backfill Type Seal Material Gravel Pack Material Screen (dia x dep) Slot Size Material Well Depth Backfill	Sch40 PV0	185 FT FT FT 33 FT ps 200 FT 200 FT	REC WELL CON AND LICEN	<u>156 FT</u> BBLES
	Material				
•	Total Hole Depth	200	FT		

	5	Samples			PGG L	og m	natch	ing Ecology Well Log 19859	972
Depth (ft)	Graphic Log	Sample ID PID (ppm)	Interval	Descript		0		Well Construction	
0— - -				Moist, light brown to brown, gravelly fine SAND.	medium to coarse			Flush mount monument with con Top of PVC is 0.31 feet below to monument	-
5-				Moist, brown, fine SAND. S	light silt fraction.		11111	Hydrated bentonite annular sea	l 2-183 feet
-				Moist, dark brown, medium medium SAND. Well sorted	to coarse gravelly fine to l.		1111111		
10			5	Moist, brown, silty fine SAN oxidization.	D. Moderate presence of				
15 -							111111	Borehole diameter 6-inches	
20 -			2	Moist, brown, fine sandy SI oxidization.	LT. Moderate presence of			2-inch schedule 40 flush thread well casing 0.31-200.2 feet	PVC blank
- - 25 — -			2	Moist to wet, brown, SILT. S Extremely dense layer from	Slight clay fraction. 26.5 to 27.5 feet.				
35 -							111111		
	111111			Moist, brown, fine sandy SI	LT.	1111111			
40									
45			:	Moist, brown, silty fine SAN	D.				
		RS): T11R22		<u>.</u>	Drilling Firm: Yellow Jacket	. <u>N</u>	1	-MW-15	
	-	sting: N 38 David Wam		0.1 ft, E 1761377.3 ft ⁻ , PGG	Drilling Method: Sonic DTW: 188.68 ft		Bo	ring Log and As-Built	
Compl	etion	Date: 11/1			MP Elevation: 1168.18 ft		Yakir	na GWMA	
	iy id:	BKB-734			V. Datum: NAD88		JE18		rgG

	D	Samples		PGG I	log n	natchi	ng Ecology Well Log 1985	5972, cont.
Depth (ft)	Graphic Log	Sample ID PID (ppm)	Interval	Description	0		Well Construction	
50 -				Moist, brown, fine sandy SILT.		111111		
-				Moist, brown, silty fine SAND.		111111		
55 — - -				Moist, brown, fine SAND. Well sorted.				
- 60 — -				Moist, brown, silty fine SAND. Fining downward.				
65								
70 -	1:11:1:1:			Moist, brown, fine sandy SILT.				
	1:1:1		5	Moist, brown, silty fine SAND.	11111	11111		
75 —			ł	Moist, brown, fine sandy SILT. Thin bed of moderately oxidized silt at bottom of layer. Moist, brown, silty fine SAND. Moderate presence of		111111		
80 -	1111111		6	oxidization.		11111111		
-				Moist, light brown to grey, SILT with clay and fine sand fractions.	1 81			
85 —					11111	111111		
	:1:1:1:1:			Moist, light grey, fine sandy SILT.	11111111			
90 —	1111111				111111111	11111111		
- 95 — - -				Moist, light grey, SILT. Very dense. Hardening downward. Trace presence of clayey silt beds. Slight presence of oxidization.				
		RS): T11R22		Drilling Firm: Yellow Jacker 0.1 ft, E 1761377.3 ft Drilling Method: Sonic			MW-15 ing Log  and As-Built	
1	-	David Wam					my Log and As-Duilt	
		Date: 11/1	2/2			Yakim	a GWMA	
Ecolog	y ID:	BKB-734		V. Datum: NAD88		JE180		PgG

g	Samples			PGG Lo	g m	atch	ing Ecolo	ogy Well Log 198	5972, cont.
Depth (ft) Graphic Loo	Sample ID PID (ppm)	Interval	Descrip		0			Construction	ŕ
100		Ē			111	111			-
-E					1111	1111			
					1111	1111			
					1111	1111			
105					1111	1111			
E					1111	1111			
					1111	1111			
110 -					1111	1111			
					7117	1111			
		;	Moist, grey to light brown,	fine sandy SILT_Slight		1111			
115 —			presence of oxidization.		1111	1111			
-					1111	1111			
		)	Moist, grey, silty fine SANE	D. Hardening downward.	1111				
<del>[</del>		1	Moist, grey, silty CLAY.		1111	1111			
120		3	Moist, brown to grey, fine s	sandy SILT. Coarsening	1111	1111			
			downward.		1111	1111			
	E.				1111	1111			
125 — 🕂					1111	1111			
					11111	1111			
	•••	)	Moist, brown, silty fine SA	ND.	1111	1111			
130 — <mark>···</mark>		ł	Moist, brown, fine SAND.		21112	1111			
		4	Moist, brown, silty fine SAN		1111	N			
] =					1111	1111			
405					1111	1111			
135 — 😐 - 😳	<u></u>	;	Moist, dark brown, fine to r	medium SAND. Very dense.	1111	1111			
	C		Significantly oxidized.		1111	1111			
- TRA			Moist to wet, dark brown to medium to coarse GRAVE	L with silt fraction.	1111	1111			
140 -			Dry to moist, dark brown to coarse gravelly fine to med	o dark orange, medium to					
-			Dry to moist, dark brown to	b light brown, fine sandy	1111	1111			
			medium to coarse GRAVE	L.	1111	1111			
145 -		1	Dry to moist, dark brown to	light brown fine sandy	1111	1111			
-	-		medium to coarse GRAVE	L. Bed of fine sandy silt	1111	1111			
			145.5 Teet. Sli	ght presence of oxidization.	1111	1111			
Location (	(TRS): T11R2	2.25	1	Drilling Firm: Yellow Jacket	N	N Yr	-MW-15		
			00.1 ft, E 1761377.3 ft	Drilling Firm: Yellow Jacket Drilling Method: Sonic		1		and As-Built	
	y: David War			DTW: 188.68 ft			- 0		
Completio Ecology II	on Date: 11/ D: BKB-734	12/2	018	MP Elevation: 1168.18 ft V. Datum: NAD88		Yaki	ma GWMA		
						JE18	03		rgg
						4			9

1 19		Samples	v		PGG Lo	og mat	tching Ecology W	Vell Log 1985972, cont.
Depth (ft) Graphic Loo		Sample ID	val	Descrip			Well Cons	
Dep	<u>v</u> 5 F	PID (ppm)	Interval		<i>c</i> + 011 <del>.</del>		N7 1	
150 -	ÖYC OYC		(	Moist, dark brown, gravelly				
				Dry, light grey, medium to	coarse gravelly fine SAND.			
155 -				Moist, dark brown, fine sa coarse gravel fraction. Slig oxidization.	ndy SILT with medium to to moderate presence of	numu		
-				Moist, dark brown, medium medium SAND. Moderate Moist, dark brown, fine to coarse GRAVEL.	presence of oxidization.			
160 -			8					
				Moist, dark brown, fine to coarse GRAVEL.	medium sandy medium to	111111		
165			8	Dry to moist, brown to ligh gravelly fine to medium SA oxidization.	t grey, medium to coarse ND. Moderate presence of	111111		
			~	Moist, dark brown, fine sa GRAVEL.	ndy medium to coarse	nunn.		
170 — .								
			3	Moist, dark brown to light gravelly fine SAND.	grey, medium to coarse	nininini Ninininini		
175 – - - -			1422	Moist, light yellow, fine to r	nedium SAND. Well sorted.	1111111111		
180 -			8	Moist, dark brown, mediur medium SAND.	n to coarse gravelly fine to	1 10 1	N	
			-	Dry, light grey, fine to med	ium sandy GRAVEL.		12-20 silica san	d pack 183-200.2 feet
185							2-inch 10 slot P	VC screen 185-200 feet
				Moist to wet, dark brown to coarse GRAVEL with fine sorted.	o light grey, medium to sand and silt fractions. Well		with a flush thre	ad tail pipe
190 -				Moist, yellowish brown to g medium GRAVEL.	grey, fine to medium sandy			
	6			· · ·	edium SAND. Well sorted.			
				Wet, dark brown, medium			:	
	0 T			Wet, dark brown, silty fine Wet, dark brown to grey, f				
195 —				medium to coarse GRAVE			•	
	0					LIĘ		
Location	(TRS	S): T11R22	-35		Drilling Firm: Yellow Jacket		YC-MW-15	
-		-		0.1 ft, E 1761377.3 ft	Drilling Method: Sonic		Boring Log and	As-Built
	•	David Wam Date: 11/1	-		DTW: 188.68 ft MP Elevation: 1168.18 ft			
		BKB-734	212		V. Datum: NAD88		Yakima GWMA JE1803	PgG

	D	Samples			PGG L	og m	atch	ing Ecology Well Log 1985	972, cont.
Depth (ft)	Graphic Log	Sample ID PID (ppm)	Interval	Descript		0		Well Construction	
200 —			3				ŀ		
2								Bottom of the well 200.2 feet	
9								Bottom of the boring 200.2 fee	t
205 —									
2	i. A								
3									
210 —									
-									
3									
215 —									
-									
3									
220 -									
-									
225 —									
230 —									
5 5									
_ 235 —									
235 -									
ा स									
- 240 —									
ा ज									
- 245 —									
2 73									
10									
Locatio	on (Ti	RS): T11R22	-35		Drilling Firm: Yellow Jacket	1	YC	-MW-15	
Northin	ng/Ea	sting: N 38	810	0.1 ft, E 1761377.3 ft	Drilling Method: Sonic		1	ring Log and As-Built	
1		David Wam Date: 11/1			DTW: 188.68 ft MP Elevation: 1168.18 ft		\		
Ecolog	y ID:	BKB-734			V. Datum: NAD88			na GWMA	PgG
1							JE18	03	0

ATION Notice PGG and/or accept responsibility for ton well construction standards my best knowledge and belief Casey Wallace 3182	Property Owner Site Address City Y Location 14 Lat/Long (s.t.r La still Required) Loc Tax Parcel No. Cased Diameter	Ty	L	Dil Boring Public Services d Street Yakima EWM Yakima EWM or WWM Lat Min/Sec Long Min/Sec COW
PGG and/or accept responsibility for toon well construction standards my best knowledge and belief Casey Wallace 3182	Property Owner Site Address City Y Location 14 Lat/Long (s.t.r La still Required) Loc Tax Parcel No. Cased Diameter	/akima MW 1/4 at Deg ong Deg	Resource Protect Geotechnical So Yakima County 1 128 N Second County NW Sec 17 T L L County R	Dil Boring Public Services d Street Yakima EWM Yakima EWM or WWM Lat Min/Sec Long Min/Sec COW
PGG and/or accept responsibility for ton well construction standards my best knowledge and belief Casey Wallace	Site Address       Y         City       Y         Location       14         Lat/Long (s.t,r       La         still Required)       Loc         Tax Parcel No.	at Deg	Geotechnical So Yakima County I 128 N Second County NW Sec 17 T L L County R	Dil Boring Public Services d Street Yakima EWM Yakima EWM or WWM Lat Min/Sec Long Min/Sec COW
PGG and/or accept responsibility for ton well construction standards my best knowledge and belief Casey Wallace	Site Address       Y         City       Y         Location       14         Lat/Long (s.t,r       La         still Required)       Loc         Tax Parcel No.	at Deg	Yakima County         128 N Second         County         NW Sec       17 T         L         County R	Public Services d Street Yakima Wm 10N R 23E or WWM Lat Min/Sec Cong Min/Sec
PGG and/or accept responsibility for toon well construction standards my best knowledge and belief Casey Wallace 3182	Site Address       Y         City       Y         Location       14         Lat/Long (s.t,r       La         still Required)       Loc         Tax Parcel No.	at Deg	128 N Second County	d Street Yakima Wm 10N R 23E or WWM Lat Min/Sec Cong Min/Sec
and/or accept responsibility for ton well construction standards my best knowledge and belief Casey Wallace 3182	City Y Location 14 Lat/Long (s.t.r La still Required) Lo Tax Parcel No. Cased Diameter	at Deg	County	Yakima Wm 10N R 23E or WWM Lat Min/Sec Long Min/Sec COW
and/or accept responsibility for ton well construction standards my best knowledge and belief Casey Wallace 3182	Location 1/4 Lat/Long (s,t,r La still Required) Lo Tax Parcel No. Cased Diameter	at Deg	<u>NW sec</u> <u>17</u> T L L County R	twn 10N R 23E or WWM Lat Min/Sec Long Min/Sec
and/or accept responsibility for ton well construction standards my best knowledge and belief Casey Wallace 3182	still Required) Lo Tax Parcel No Cased Diameter	ong Deg	County R	Lat Min/Sec
ton well construction standards my best knowledge and belief Casey Wallace 3182	still Required) Lo Tax Parcel No Cased Diameter	ong Deg	County R	.ong Min/Sec
my best knowledge and helief Casey Wallace	Tax Parcel No.		County R	OW
Casey Wallace	Cased Diameter			
3182				all Control -
				6" Static Level 52
	Work/Decommission	Start Date	1	1/18/2018
	Work/Decommission	End Date	11.	/18/2018
Well Name:	MW-6		Formati	on Description
Depth Blank Casing (dia x dep) Material Backfill Type Seal Material Gravel Pack Material Screen (dia x dep)	<u>Sch40 PVC</u> <u>1 - 56</u> <u>bentonite chips</u> <u>56 - 68</u> <u>12/20 silica sanc</u>	FT FT FT		68 FT FT FT FT EIVED
Slot Size	0.010	-	AND LICEN	ISING OFFICE
Material	Sch40 PVC	-	AUG	26 2020
Well Depth	68	-FT		
Backfill		-		FT
Material		_		F4
	68	FT		
	Concrete Surface Seal Depth Blank Casing (dia x dep) Material Backfill Type Seal Material Gravel Pack Material Screen (dia x dep) Slot Size Material Well Depth Backfill Material Total Hole Depth	Well Name:       MW-6         Concrete Surface Seal       0       -         Depth       0       -       1         Blank Casing (dia x dep)       2 "       1 x 58         Material       Sch40 PVC         Backfill       -       -         Type       -       -         Scal       1       -         Material       bentonite chips         Gravel Pack       56       -         Material       12/20 silica sand         Screen (dia x dep)       2 "       58 x 68         Slot Size       0.010         Material       Sch40 PVC         Well Depth       68         Backfill       -         Material       56.         Slot Size       0.010         Material       Sch40 PVC         Well Depth       68         Backfill       -         Material       -         Total Hole Depth       68	Work/Decommission End Date         Well Name:       MW-6         Concrete Surface Seal       0       -       1       FT         Blank Casing (dia x dep)       2 " 1 x 58       FT         Material       Sch40.PVC       Sch40.PVC         Backfill	Work/Decommission End Date       11         Well Name:       MW-6       Formati         Concrete Surface Seal       0       -       -         Depth       0       -       1       FT         Blank Casing (dia x dep)       2 "       1 x 58       FT       55         Material       Sch40.PVC       silty sand       silty sand         Backfill       FT       -       -       -         Seal       1       -       56       FT       -         Seal       1       -       56       -       68       FT         Material       Dentonite chips       -       -       -       -         Screen (dia x dep)       2 "       58 x 68       FT       -       -         String       0.010       -       AUG       -       -         Well Depth       68       FT       -       -       -         Backfill

	D	Samples			PGG Log n	natchir	ng Ecology Well Log 1985980
Depth (ft)	Graphic Log	Sample ID PID (ppm)	Interval	Descriptior			Well Construction
0-			8	Moist, light brown, very fine, sa	andy SILT.		Flush mount monument with concrete pad
							Top of PVC is 0.29 feet below top of steel monument
5							Hydrated bentonite annular seal 2-56 feet.
10 — -							
- 15 —							Borehole diameter 6-inches
-							2-inch schedule 40 flush thread PVC blank
20 —	•		2	Moist, dark brown, gravely SIL	T with rocks.		well casing 0.29-68.2 feet
-			3				
25 —				Moist, light brown, sandy SILT			
-			2	Moist, olive gray SILT.			
30 —						NN	
35 —							
- 40 —							
45 — -							
-			and a	Moist, red-brown, clayey SILT.			
Northin	ng/Ea	-	501	0.9 ft, E 1771956.8 ft Dr	illing Firm: Yellow Jacket illing Method: Sonic		C-MW-06 oring Log and As-Built
Comple	etion	Date: 11/1		018 MI	TW: 48.14 ft P Elevation: 944.33 ft	Ya	kima GWMA
Ecolog	y ID:	BKB-744		V.	Datum: NAD88		1803 <b>Pgg</b>

	Samples			ΡΩΩΙ	og mate	hing Ecology Well Log 1985980, cont.
Depth (ft) Graphic Log	Sample ID	<del>a</del>	Descript			Well Construction
Dept Grapt	PID (ppm)	Interval				
50 - F F F F F F F F F F F F F F F F F F			Moist, red-brown, sandy SII Wet, red to light brown, fine Wet, light brown, slightly sil Wet, light brown, silty SANI Wet, light brown, very fine s	e sandy SILT. ty, fine SAND.		12-20 silica sand pack 56-70 feet 2-inch 10 slot PVC screen 58-68 feet with a flush thread tail pipe Bottom of the well 68.2 feet Bentonite bottom seal 70-76 feet Bottom of the boring 76 feet
Northing/Ea Logged by: Completion	Koshlan Ma	501 Iyer	0.9 ft, E 1771956.8 ft -Blackwell, PGG 018	Drilling Firm: Yellow Jacket Drilling Method: Sonic DTW: 48.14 ft MP Elevation: 944.33 ft V. Datum: NAD88	Bo	C-MW-06 Dring Log and As-Built Kima GWMA 1803

ECY 050-12 (Rec=v 2/01)

RESOURCE PROTECT (SUBMIT ONE WELL REPORT PER WE		REPORT	CURR Notice of	RENT of Intent No.	RE16631
Construction/Decommission	18-7653	3WA		Type of Well	
Construction				Resource Protecti	on
Decommission ORIGINAL INST.41.1.4	TION Notice		Ī	Geotechnical Soil	Boring
of Intent Number		Property Owner		Yakima County Pu	•
a contract of the second s		Site Address		128 N Second	Street
Consulting Firm	PGG	City	Yakima	County	Yakima
Unique Ecology Well ID Tag No BKB-729		Location	1/4 SW	/4 SE See 35 Tw	EWM n 10N r 23E or WWM
WELL CONSTRUCTION CERTIFICATION 1 constructed an	nd or accept responsibility for				t Min/Sec
construction of this well, and its compliance with all Washington	n well construction standards	still Required)	Long Deg	Lo	ng Min/Sec
Materials used and the information reported above are true to m		Tax Parcel No.	1		
Driller Trainee Name (Print)	Casey Wallace	Const Disease			" Statial and OC!
Driller/Trainee Signature	3182	Cased Diameter		6	" Static Level 25'
		Work/Decommiss	ion Start Date	11	/06/2018
If trainee, licensed driller's Signature and License No		Work/Decommiss	ion End Date	11/0	06/2018
Construction Design	Well Name:	MW-1	14	Formatio	n Description
	Concrete Surface Seal Depth Blank Casing (dia x dep) Material Backfill Type Seal Material Gravel Pack Material Screen (dia x dep) Slot Size Material Well Depth		22_FT FT FT 7FT and 27_FT	REC WELL COM AND LICEN	/ITH GRAVELS
	Backfill				FT
	Material				
	-Total Hole Depth	27	FT		

Page _____ of _____

Scale 1" =

	ŋ	Samples			PGG L	og matching Ecology Well Log 1985985
Depth (ft)	Graphic Log	Sample ID	Interval	Description		Well Construction
	ğ	PID (ppm)	Ē			
0			1	No recovery.		Flush mount monument with concrete pad Top of PVC is 0.27 feet below top of steel monument
5				Moist, light brown, fine SAND. Massive structur	e.	Hydrated bentonite annular seal 2-20 feet
10				Moist, light brown, silty fine SAND.	e.	
15 — - -	1111111					Borehole diameter 6-inches 2-inch schedule 40 flush thread PVC blank
20 —		5	0 - C	Moist, brown, gravelly SAND with silt fraction.		well casing 0.27-27.2 feet
			3	Moist, brown, sandy GRAVEL. Gravel fraction		
			177	predominantly basalt. Gravel fraction is signific oxidized and has CaCO3 accumulation.		2-inch 10 slot PVC screen 22-27 feet with a flush thread tail pipe
25		3	2	Moist, brown, gravelly SAND. Moist, brown, sandy GRAVEL. Gravel fraction predominantly basalt. Gravel fraction is signific oxidized and has CaCO3 accumulation.		Bottom of the well 27.2 feet
30	× × × × × × × × × × × × × × × × × × ×			Dry, dark brown to dark grey, BASALT. Trace t presence of oxidized fractures.	o slight	Bentonite bottom seal 28-48 feet
35	× × × × × ×					
40	× × × × × ×					
45 — - -	× × × ×					
Locatio Northin	g/Ea	sting: N 35	384	· · · · · · · · · · · · · · · · · · ·		C-MW-14 Boring Log and As-Built
Comple	etion			18 MP Elevation: 938.		akima GWMA
Ecology	y ID:	BKB-729		V. Datum: NAD88		E1803 PgG

RESOURCE PROTECT (SUBMIT ONE WELL REPORT PER WEL		REPORT	CURI Notice	CENT of Intent No.	RE16685
Construction/Decommission	18-1008	SWA		Type of Well	
Construction				Resource Protecti	on
Decommission ORIGINAL INSTALLAT	TON Notice		[	Geotechnical Soil	Boring
of Intent Number		Property Owner	r	Yakima County P	ublic Services
		Site Address		128 N Second	Street
Consulting FirmF	PGG	City	Yakima	County	Yakima
Unique Ecology Well ID Tag No Вкв-747		Location	1/4 <u>SW</u>	1/4 <u>SE</u> Sec <u>17</u> Tw	
WELL CONSTRUCTION CERTIFICATION I constructed and	d/or accept responsibility for	Lat/Long (s.t.r	Lat Deg	La	t Min/Sec
construction of this well, and its compliance with all Washington	well construction standards	still Required)	Long Deg	Lo	ong Min/See
Materials used and the information reported above are true to my	best knowledge and belief	Tax Parcel No.		ROW	
Driller/Trainee Signature	2	Cased Diameter		2	" Static Level
Driller/Trainee License No.	3182	Work/Decommiss			//27/2018
If trainee, licensed driller's					
Signature and License No.		Work/Decommiss	ion End Date	11/2	29/2018
Construction/Design	Well Name:	MW2	25	Formatio	n Description
	Concrete Surface Seal Depth	0 - 1	FT	0 - silty sand and g	
	Blank Casing (dia x dep)	2 " 0 x 2	253_FT	10 -	90 FT
	Material	<u>SCH 40 PV</u>	c	clayey silt	
	Backfill		FT	90 -	130 FT
	Туре			silty gravels and	100
	i ypc		_		
	Seal	1 - 21	15_FT		220 FT
	Material	bentonite gro	out	sandy silt	
				220 -	235 FT
•	Gravel Pack	215 - 27	7 <u>3</u> FT	gravely silty	<u>evv</u>
	Material	12/20 Sand	<u> </u>		
					<u>273 FT</u>
	Screen (dia x dep)	_2 " 253 x 2	273_FT	REC	EIVED
	Slot Size	0.010	_		ISTRUCTION
	Material				SING OFFICE
	Well Depth	273	FT	AUG	26 2020
	Backfill				
	Material			L	
•	- Total Hole Depth	273	FT		

Scale I" =

ECY 050-12 (Rec=v 2/01)

	ĝ	Samples		PGG L	bg	m	atch	ing Ecology Well Log 1985987
Depth (ft)	Graphic Log	Sample ID PID (ppm)	Interval	Description	-8			Well Construction
0-				Dry, tan fine to medium SAND.		8		Flush mount monument with concrete pad Top of PVC is 0.26 feet below top of steel
- 5- - -								monument Hydrated bentonite annular seal 2-251 feet
10			3	Moint to wat tan alaway SILT				
_ 15 — _ _				Moist to wet, tan clayey SILT.		1111111111	11111111	Borehole diameter 6-inches 2-inch schedule 40 flush thread PVC blank
20 —		5	1	Dry to moist, fine SAND.				well casing 0.26-273.2 feet
25 —			8	Moist to wet, olive brown, silty fine SAND.				
- 30 — -			141	Dry, gray fine to medium SAND (grain sizes coarsens with depth).				
35			)	Dry, gray, medium SAND containing some gravel between 32-33ft.				
40						11111111111		
45				Moist, light brown sandy SILT (mottling 39-43 ft).				
Northin	g/Ea	-	136	Drilling Firm: Yellow Jacket 3.8 ft, E 1711060 ft Drilling Method: Sonic Blackwell, PGG DTW: 263.55 ft				-MW-25 ring Log and As-Built
Comple Ecolog		Date: 11/2 BKB-747	9/2	018 MP Elevation: 1204.67 ft V. Datum: NAD88			<b>Yakir</b> JE18	na GWMA PgG

	bo	Samples			PGG Log n	natcl	hing	Ecology Well Log 1985987	, cont.
Depth (ft)	Graphic Log	Sample ID PID (ppm)	Interval	Description	5		0	Well Construction	
50 -	:1:1:					11111	11111		
	····		4	Moist, orange-brown, medium SA		11111	11111		
						11111	11111		
55 —			8	Moist to dry, silty medium to coar	se SAND.		11111		
						11111	11111		
60 -	1:1:1					11111	11111		
			3)	Moist, light brown, sandy SILT.		11111	11111		
-			2	Moist to dry, tan, fine SAND.			11111		
65 —						11111	11111		
						11111	11111		
70 —						11111	11111		
-	::::		S	Moist to dry, orange-brown, silty	very fine silty SAND.	11111	11111		
75	::::::					11111	11111		
75 —						11111	11111		
_		0		Moist orange-brown, sandy SILT.		11111	11111		
80 —				Moist, light gray medium to coars and rocks.	e SAND with gravel				
_									
_ 85 —						11111	11111		
-						11111	11111		
_						11111	11111		
90 —							11111		
-						11111	11111		
- 95 —									
-						11111	11111		
-							TITI I		
		RS): T11R21 sting: N 40			ng Firm: Yellow Jacket ng Method: Sonic		1	-MW-25 ring Log and As-Built	
1	d by:	Koshlan Ma	iyer	Blackwell, PGG DTW	: 263.55 ft levation: 1204.67 ft				
		BKB-747	.JIZ		itum: NAD88			na GWMA	Pgg
2							JE18	03	0

Bit Samples       Samples       PGG Log matching Ecology Well Log 1985987, cont.         100       PiD (prm)       Image: Construction       Melist, gray medium to coarse SAND.         100       Image: Construction       Melist, gray medium to coarse SAND.       Image: Construction         100       Image: Construction       Melist, gray medium to coarse SAND.       Image: Construction         100       Image: Construction       Melist, gray, SiLT containing gravel.       Image: Construction         100       Image: Construction       Melist, gray, fine to medium gravelly SAND.       Image: Construction         100       Image: Construction       Melist, gray, fine sandy SILT.       Image: Construction         100       Image: Construction       Melist, light gray, fine sandy SILT.       Image: Construction         100       Image: Construction       Melist, light brown, fine, silty SAND.       Image: Construction         101       Image: Construction       Melist, light brown sandy SILT.       Image: Construction         101       Image: Construction       Melist, light brown sandy SILT.       Image: Construction         102       Image: Construction       Melist, light brown sandy SILT.       Image: Construction         103       Image: Construction       Melist, light brown sandy SILT.       Image: Construction		5	Samples			PGGIO	σ mat	chir	ng Ecology Well Log 19859	987 cont
100       Moist. gray medium to coarse SAND.         105       Moist. gray medium to coarse SAND.         106       Moist. gray medium to coarse SAND.         107       Moist. gray. SIL T containing gravel.         108       Moist. gray. fine to medium gravely SAND.         109       Moist. gray. fine to medium gravely SAND.         100       Moist. light gray. fine sandy SILT.         100       Moist. light gray. fine sandy SILT.         101       Moist. light brown. fine. silty SAND.         105       Moist. light brown sandy SILT.         106       Moist. light brown sandy SILT.         107       Moist. light brown sandy SILT.         108       Moist. light brown sandy SILT.         109       Moist. light brown sandy SILT.         100       Moist. light brown sandy SILT.         101       Moist. light brown sandy SILT.         102       Moist. light brown sandy SILT.         103       Moist. light brown sandy SILT.         104       Moist. light brown sandy SILT.         105       Moist. light brown sandy SILT.         1040       Moist. light brown sandy SILT.         1050       Moist. light brown sandy SILT.         1040       Moist. light brown sandy SILT.         1040       Mo	th (ft)	ohic Lo	Sample ID	val	Description	1	5 mai		Well Construction	, cont.
135       Moist, light brown sandy SILT.         140       Moist, light brown sandy SILT.         145       Moist to wet, gravelly SILT.         Moist, light brown silty SAND.         Location (TRS): T11R21-17         Northing/Easting: N 401363.8 ft, E 1711060 ft         Dorilling Method: Sonic         Logged by: Koshlan Mayer-Blackwell, PGG         Completion Date: 11/29/2018         MP Elevation: 1204.67 ft         Yakima GWMA	Dep	Grap	PID (ppm)	Inter						
135     Moist, light brown sandy SILT.       140     Moist, light brown sandy SILT.       145     Moist to wet, gravelly SILT.       Moist, light brown silty SAND.       Location (TRS): T11R21-17       Northing/Easting: N 401363.8 ft, E 1711060 ft       Lorged by: Koshlan Mayer-Blackwell, PGG       Completion Date: 11/29/2018       MP Elevation: 1204.67 ft       Ecology ID: BKB-747	100 -		·				1111	1111		
135       Moist, light brown sandy SILT.         140       Moist, light brown sandy SILT.         145       Moist to wet, gravelly SILT.         Moist, light brown silty SAND.         Location (TRS): T11R21-17         Northing/Easting: N 401363.8 ft, E 1711060 ft         Dorilling Method: Sonic         Logged by: Koshlan Mayer-Blackwell, PGG         Completion Date: 11/29/2018         MP Elevation: 1204.67 ft         Yakima GWMA					Moist, gray medium to coarse	SAND.	1111	1111		
135     Moist, light brown sandy SILT.       140     Moist, light brown sandy SILT.       145     Moist to wet, gravelly SILT.       Moist, light brown silty SAND.       Location (TRS): T11R21-17       Northing/Easting: N 401363.8 ft, E 1711060 ft       Lorged by: Koshlan Mayer-Blackwell, PGG       Completion Date: 11/29/2018       MP Elevation: 1204.67 ft       Ecology ID: BKB-747	-	OYOY OYOY			Moist, gray medium to coarse	SAND with gravel.	1111	1111		
135     Moist, light brown sandy SILT.       140     Moist, light brown sandy SILT.       145     Moist to wet, gravelly SILT.       Moist, light brown silty SAND.       Location (TRS): T11R21-17       Northing/Easting: N 401363.8 ft, E 1711060 ft       Lorged by: Koshlan Mayer-Blackwell, PGG       Completion Date: 11/29/2018       MP Elevation: 1204.67 ft       Ecology ID: BKB-747	-						1111			
135     Moist, light brown sandy SILT.       140     Moist, light brown sandy SILT.       145     Moist to wet, gravelly SILT.       Moist, light brown silty SAND.       Location (TRS): T11R21-17       Northing/Easting: N 401363.8 ft, E 1711060 ft       Lorged by: Koshlan Mayer-Blackwell, PGG       Completion Date: 11/29/2018       MP Elevation: 1204.67 ft       Ecology ID: BKB-747	105 -						1111	1111		
135     Moist, light brown sandy SILT.       140     Moist, light brown sandy SILT.       145     Moist to wet, gravelly SILT.       Moist, light brown silty SAND.       Location (TRS): T11R21-17       Northing/Easting: N 401363.8 ft, E 1711060 ft       Lorged by: Koshlan Mayer-Blackwell, PGG       Completion Date: 11/29/2018       MP Elevation: 1204.67 ft       Ecology ID: BKB-747	-			-	Moist, gray, SILT containing gi	avel.	111	1111		
135     Moist, light brown sandy SILT.       140     Moist, light brown sandy SILT.       145     Moist to wet, gravelly SILT.       Moist, light brown silty SAND.       Location (TRS): T11R21-17       Northing/Easting: N 401363.8 ft, E 1711060 ft       Lorged by: Koshlan Mayer-Blackwell, PGG       Completion Date: 11/29/2018       MP Elevation: 1204.67 ft       Ecology ID: BKB-747	-	•					1111	1111		
135     Moist, light brown sandy SILT.       140     Moist, light brown sandy SILT.       145     Moist to wet, gravelly SILT.       Moist, light brown silty SAND.       Location (TRS): T11R21-17       Northing/Easting: N 401363.8 ft, E 1711060 ft       Lorged by: Koshlan Mayer-Blackwell, PGG       Completion Date: 11/29/2018       MP Elevation: 1204.67 ft       Ecology ID: BKB-747					Moist gray fine to medium gra	avelly SAND	1111	1111		
135     Moist, light brown sandy SILT.       140     Moist, light brown sandy SILT.       145     Moist to wet, gravelly SILT.       Moist, light brown silty SAND.       Location (TRS): T11R21-17       Northing/Easting: N 401363.8 ft, E 1711060 ft       Lorged by: Koshlan Mayer-Blackwell, PGG       Completion Date: 11/29/2018       MP Elevation: 1204.67 ft       Ecology ID: BKB-747	110 -						1111			
135     Moist, light brown sandy SILT.       140     Moist, light brown sandy SILT.       145     Moist to wet, gravelly SILT.       Moist, light brown silty SAND.       Location (TRS): T11R21-17       Northing/Easting: N 401363.8 ft, E 1711060 ft       Lorged by: Koshlan Mayer-Blackwell, PGG       Completion Date: 11/29/2018       MP Elevation: 1204.67 ft       Ecology ID: BKB-747	-						1111			
135     Moist, light brown sandy SILT.       140     Moist, light brown sandy SILT.       145     Moist to wet, gravelly SILT.       Moist, light brown silty SAND.       Location (TRS): T11R21-17       Northing/Easting: N 401363.8 ft, E 1711060 ft       Lorged by: Koshlan Mayer-Blackwell, PGG       Completion Date: 11/29/2018       MP Elevation: 1204.67 ft       Ecology ID: BKB-747	-						1111	1111		
135     Moist, light brown sandy SILT.       140     Moist, light brown sandy SILT.       145     Moist to wet, gravelly SILT.       Moist, light brown silty SAND.       Location (TRS): T11R21-17       Northing/Easting: N 401363.8 ft, E 1711060 ft       Lorged by: Koshlan Mayer-Blackwell, PGG       Completion Date: 11/29/2018       MP Elevation: 1204.67 ft       Ecology ID: BKB-747	115						1111			
135     Moist, light brown sandy SILT.       140     Moist, light brown sandy SILT.       145     Moist to wet, gravelly SILT.       Moist, light brown silty SAND.       Location (TRS): T11R21-17       Northing/Easting: N 401363.8 ft, E 1711060 ft       Lorged by: Koshlan Mayer-Blackwell, PGG       Completion Date: 11/29/2018       MP Elevation: 1204.67 ft       Ecology ID: BKB-747	-						1111	1111		
135     Moist, light brown sandy SILT.       140     Moist, light brown sandy SILT.       145     Moist to wet, gravelly SILT.       Moist, light brown silty SAND.       Location (TRS): T11R21-17       Northing/Easting: N 401363.8 ft, E 1711060 ft       Lorged by: Koshlan Mayer-Blackwell, PGG       Completion Date: 11/29/2018       MP Elevation: 1204.67 ft       Ecology ID: BKB-747	-						1117	1111		
135     Moist, light brown sandy SILT.       140     Moist, light brown sandy SILT.       145     Moist to wet, gravelly SILT.       Moist, light brown silty SAND.       Location (TRS): T11R21-17       Northing/Easting: N 401363.8 ft, E 1711060 ft       Lorged by: Koshlan Mayer-Blackwell, PGG       Completion Date: 11/29/2018       MP Elevation: 1204.67 ft       Ecology ID: BKB-747							1111	1111		
135     Moist, light brown sandy SILT.       140     Moist, light brown sandy SILT.       145     Moist to wet, gravelly SILT.       Moist, light brown silty SAND.       Location (TRS): T11R21-17       Northing/Easting: N 401363.8 ft, E 1711060 ft       Lorged by: Koshlan Mayer-Blackwell, PGG       Completion Date: 11/29/2018       MP Elevation: 1204.67 ft       Ecology ID: BKB-747	120 -						1111	1111		
135     Moist, light brown sandy SILT.       140     Moist, light brown sandy SILT.       145     Moist to wet, gravelly SILT.       Moist, light brown silty SAND.       Location (TRS): T11R21-17       Northing/Easting: N 401363.8 ft, E 1711060 ft       Lorged by: Koshlan Mayer-Blackwell, PGG       Completion Date: 11/29/2018       MP Elevation: 1204.67 ft       Ecology ID: BKB-747	-						1111	1111		
135     Moist, light brown sandy SILT.       140     Moist, light brown sandy SILT.       145     Moist to wet, gravelly SILT.       Moist, light brown silty SAND.       Location (TRS): T11R21-17       Northing/Easting: N 401363.8 ft, E 1711060 ft       Lorged by: Koshlan Mayer-Blackwell, PGG       Completion Date: 11/29/2018       MP Elevation: 1204.67 ft       Ecology ID: BKB-747							1111	1111		
135     Moist, light brown sandy SILT.       140     Moist, light brown sandy SILT.       145     Moist to wet, gravelly SILT.       Moist, light brown silty SAND.       Location (TRS): T11R21-17       Northing/Easting: N 401363.8 ft, E 1711060 ft       Lorged by: Koshlan Mayer-Blackwell, PGG       Completion Date: 11/29/2018       MP Elevation: 1204.67 ft       Ecology ID: BKB-747							1111	1111		
135     Moist, light brown sandy SILT.       140     Moist, light brown sandy SILT.       145     Moist to wet, gravelly SILT.       Moist, light brown silty SAND.       Location (TRS): T11R21-17       Northing/Easting: N 401363.8 ft, E 1711060 ft       Lorged by: Koshlan Mayer-Blackwell, PGG       Completion Date: 11/29/2018       MP Elevation: 1204.67 ft       Ecology ID: BKB-747	125 -						1111	1111		
135     Moist, light brown sandy SILT.       140     Moist, light brown sandy SILT.       145     Moist to wet, gravelly SILT.       Moist, light brown silty SAND.       Location (TRS): T11R21-17       Northing/Easting: N 401363.8 ft, E 1711060 ft       Lorged by: Koshlan Mayer-Blackwell, PGG       Completion Date: 11/29/2018       MP Elevation: 1204.67 ft       Ecology ID: BKB-747			9		Moist, light gray, fine sandy SI	LT.	1117	1111		
135     Moist, light brown sandy SILT.       140     Moist, light brown sandy SILT.       145     Moist to wet, gravelly SILT.       Moist, light brown silty SAND.       Location (TRS): T11R21-17       Northing/Easting: N 401363.8 ft, E 1711060 ft       Lorged by: Koshlan Mayer-Blackwell, PGG       Completion Date: 11/29/2018       MP Elevation: 1204.67 ft       Ecology ID: BKB-747							1111	1111		
135       Moist, light brown sandy SILT.         140       Moist, light brown sandy SILT.         145       Moist to wet, gravelly SILT.         Moist, light brown silty SAND.         Location (TRS): T11R21-17         Northing/Easting: N 401363.8 ft, E 1711060 ft         Dorilling Method: Sonic         Logged by: Koshlan Mayer-Blackwell, PGG         Completion Date: 11/29/2018         MP Elevation: 1204.67 ft         Yakima GWMA	-				Moiot light brown find ailty C		1111			
135     Moist, light brown sandy SILT.       140     Moist, light brown sandy SILT.       145     Moist to wet, gravelly SILT.       Moist, light brown silty SAND.       Location (TRS): T11R21-17       Northing/Easting: N 401363.8 ft, E 1711060 ft       Lorged by: Koshlan Mayer-Blackwell, PGG       Completion Date: 11/29/2018       MP Elevation: 1204.67 ft       Ecology ID: BKB-747	130 -	:::			woist, light brown, line, slity S/	AND.	1111	1111		
Location (TRS):       T11R21-17       Drilling Firm:       Yellow Jacket         Northing/Easting:       N 401363.8 ft, E 1711060 ft       Drilling Method:       Sonic         Logged by:       Koshlan Mayer-Blackwell, PGG       DTW:       263.55 ft         Completion Date:       11/29/2018       MP Elevation:       1204.67 ft         Ecology ID:       BKB-747       V. Datum:       NAD88								NO I		
Location (TRS):       T11R21-17       Drilling Firm:       Yellow Jacket         Northing/Easting:       N 401363.8 ft, E 1711060 ft       Drilling Method:       Sonic         Logged by:       Koshlan Mayer-Blackwell, PGG       DTW:       263.55 ft         Completion Date:       11/29/2018       MP Elevation:       1204.67 ft         Ecology ID:       BKB-747       V. Datum:       NAD88	-						1111	1111		
Location (TRS):       T11R21-17       Drilling Firm:       Yellow Jacket         Northing/Easting:       N 401363.8 ft, E 1711060 ft       Drilling Method:       Sonic         Logged by:       Koshlan Mayer-Blackwell, PGG       DTW:       263.55 ft         Completion Date:       11/29/2018       MP Elevation:       1204.67 ft         Ecology ID:       BKB-747       V. Datum:       NAD88	-						1111	1111		
Location (TRS):       T11R21-17       Drilling Firm:       Yellow Jacket         Northing/Easting:       N 401363.8 ft, E 1711060 ft       Drilling Method:       Sonic         Logged by:       Koshlan Mayer-Blackwell, PGG       DTW:       263.55 ft         Completion Date:       11/29/2018       MP Elevation:       1204.67 ft         Ecology ID:       BKB-747       V. Datum:       NAD88	135 -				Moist, light brown sandy SILT.		1111	111		
Location (TRS):       T11R21-17       Drilling Firm:       Yellow Jacket         Northing/Easting:       N 401363.8 ft, E 1711060 ft       Drilling Method:       Sonic         Logged by:       Koshlan Mayer-Blackwell, PGG       DTW:       263.55 ft         Completion Date:       11/29/2018       MP Elevation:       1204.67 ft         Ecology ID:       BKB-747       V. Datum:       NAD88		: <u></u>					1111			
Location (TRS):       T11R21-17       Drilling Firm:       Yellow Jacket         Northing/Easting:       N 401363.8 ft, E 1711060 ft       Drilling Method:       Sonic         Logged by:       Koshlan Mayer-Blackwell, PGG       DTW:       263.55 ft         Completion Date:       11/29/2018       MP Elevation:       1204.67 ft         Ecology ID:       BKB-747       V. Datum:       NAD88	-						1111			
Location (TRS):       T11R21-17       Drilling Firm:       Yellow Jacket         Northing/Easting:       N 401363.8 ft, E 1711060 ft       Drilling Method:       Sonic         Logged by:       Koshlan Mayer-Blackwell, PGG       DTW:       263.55 ft         Completion Date:       11/29/2018       MP Elevation:       1204.67 ft         Ecology ID:       BKB-747       V. Datum:       NAD88	-						111	1111		
Location (TRS):       T11R21-17       Drilling Firm:       Yellow Jacket         Northing/Easting:       N 401363.8 ft, E 1711060 ft       Drilling Method:       Sonic         Logged by:       Koshlan Mayer-Blackwell, PGG       DTW:       263.55 ft         Completion Date:       11/29/2018       MP Elevation:       1204.67 ft         Ecology ID:       BKB-747       V. Datum:       NAD88	140 -						1111	1111		
Location (TRS):       T11R21-17       Drilling Firm:       Yellow Jacket         Northing/Easting:       N 401363.8 ft, E 1711060 ft       Drilling Method:       Sonic         Logged by:       Koshlan Mayer-Blackwell, PGG       DTW:       263.55 ft         Completion Date:       11/29/2018       MP Elevation:       1204.67 ft         Ecology ID:       BKB-747       V. Datum:       NAD88	-						1111	1111		
Location (TRS):       T11R21-17       Drilling Firm:       Yellow Jacket         Northing/Easting:       N 401363.8 ft, E 1711060 ft       Drilling Method:       Sonic         Logged by:       Koshlan Mayer-Blackwell, PGG       DTW:       263.55 ft         Completion Date:       11/29/2018       MP Elevation:       1204.67 ft         Ecology ID:       BKB-747       V. Datum:       NAD88	-						1117	111		
Location (TRS):       T11R21-17       Drilling Firm:       Yellow Jacket         Northing/Easting:       N 401363.8 ft, E 1711060 ft       Drilling Method:       Sonic         Logged by:       Koshlan Mayer-Blackwell, PGG       DTW:       263.55 ft         Completion Date:       11/29/2018       MP Elevation:       1204.67 ft         Ecology ID:       BKB-747       V. Datum:       NAD88	145 -						1111			
Location (TRS):       T11R21-17       Drilling Firm:       Yellow Jacket         Northing/Easting:       N 401363.8 ft, E 1711060 ft       Drilling Method:       Sonic         Logged by:       Koshlan Mayer-Blackwell, PGG       DTW:       263.55 ft         Completion Date:       11/29/2018       MP Elevation:       1204.67 ft         Ecology ID:       BKB-747       V. Datum:       NAD88	-						1111	1111		
Location (TRS):       T11R21-17       Drilling Firm:       Yellow Jacket         Northing/Easting:       N 401363.8 ft, E 1711060 ft       Drilling Method:       Sonic         Logged by:       Koshlan Mayer-Blackwell, PGG       DTW:       263.55 ft         Completion Date:       11/29/2018       MP Elevation:       1204.67 ft         Ecology ID:       BKB-747       V. Datum:       NAD88	÷				Moist to wet, gravelly SILT		1111	1111		
Northing/Easting:N 401363.8 ft, E 1711060 ftDrilling Method:SonicBoring Log and As-BuiltLogged by:Koshlan Mayer-Blackwell, PGGDTW:263.55 ftFtCompletion Date:11/29/2018MP Elevation:1204.67 ftYakima GWMAEcology ID:BKB-747V. Datum:NAD88P2GG	1						111	111		
Northing/Easting:N 401363.8 ft, E 1711060 ftDrilling Method:SonicBoring Log and As-BuiltLogged by:Koshlan Mayer-Blackwell, PGGDTW:263.55 ftFtCompletion Date:11/29/2018MP Elevation:1204.67 ftYakima GWMAEcology ID:BKB-747V. Datum:NAD88P2GG	Locatio	on (TI	RS): T11R21	-17	Dr	illing Firm: Yellow Jacket		YC-	MW-25	
Logged by:Koshlan Mayer-Blackwell, PGGDTW:263.55 ftCompletion Date:11/29/2018MP Elevation:1204.67 ftEcology ID:BKB-747V. Datum:NAD88	1						I			
Ecology ID: BKB-747 V. Datum: NAD88 Yakima GWMA	1					W: 263.55 ft				
Ecology ID: BKB-747 V. Datum: NAD88 P2G	1			9/2				Yakim	a GWMA	
		y ID:	ВКВ-747		V.	Datum: NAD88				PgG

	6	Samples			PGG Lo	g ma	ntchi	ng Ecology Well Log 19859	987. cont.
Depth (ft)	Graphic Log	Sample ID PID (ppm)	Interval	Description	10020	0		ng Ecology Well Log 19859 Well Construction	.,
150 —							1111111111		
155 —									
160 —			100	Moist, light gray fine SAND. Moist, light brown, very fine sandy SILT.					
- 165 — - -			1992 1982	Moist, light brown, silty fine SAND.			11111111111		
175 —			1.000	Moist, light gray, medium to coarse SAND.					
180 —						I N			
185 —									
190 —									
195 -			27	Moist, tan, silty, fine SAND.					
Northin	ng/Ea		136	Drilling Firm: Ye 3.8 ft, E 1711060 ft Drilling Method: Blackwell, PGG DTW: 263.55 ft	llow Jacket Sonic		1	-MW-25 ring Log and As-Built	
Comple Ecolog		Date: 11/2 BKB-747	9/2	018 MP Elevation: 13 V. Datum: NAD8			Yakin JE180	na GWMA 03	PgG

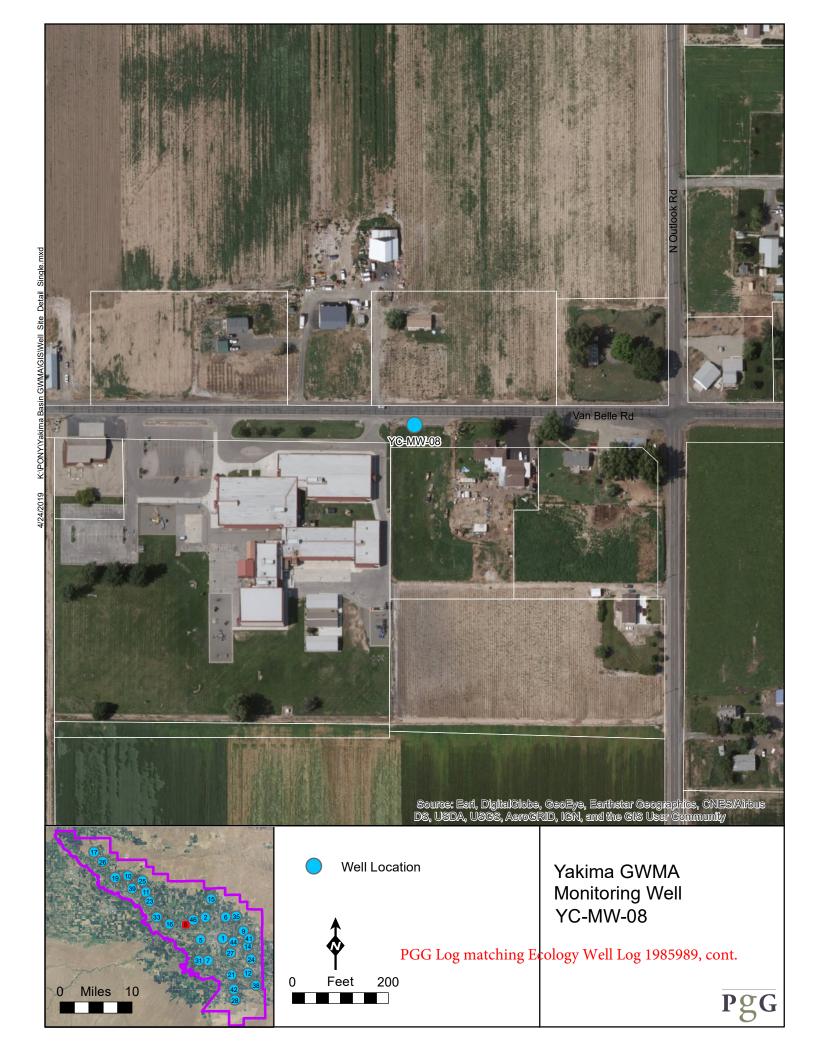
	D _D	Samples			PGG Log	ז m	atchi	ng Ecology Well Log 1985	987. cont
Depth (ft)	Graphic Log	Sample ID PID (ppm)	Interval	Descriptio	on Tele Le	,	utelli	ng Ecology Well Log 1985 Well Construction	, cont.
200 -	:1:1:					1111	1111		
			4				1111		
-				Moist, light brown, very fine S	SAND.	1111	1111		
205 -						1111	1111		
						1111	1111		
						1111	11111		
210 -						11111	1111		
-							11111		
						1111	1111		
215 -						1111	1111		
			2	Maiat dadi kuawa siltu fina a					
-				Moist dark brown silty, fine an (containing cobbles, gravel, a	and rounded rocks).	11111	11111		
220 -						11111	1111		
-						1111	1111		
-	0*0								
225 -						1111	11111		
-						11111	11111		
-						11111	11111		
230 -						1111			
-						1111			
235 –						1111	11111		
-						11111	11111		
-						1111	1111		
240 -							1111		
-						1111	1111		
						1111			
245 -		3	z.	Maiat light brown, a and a Cll	<del>,</del>	1111	11111		
	1:1:1			Moist, light brown, sandy SIL	1.		11111		
	ייין מכ	RS): T11R21	47			N		-MW-25	
Northir	ng/Ea	sting: N 40	136	3.8 ft, E 1711060 ft E	Drilling Firm: Yellow Jacket Drilling Method: Sonic			ring Log and As-Built	
Logge Compl					DTW: 263.55 ft /IP Elevation: 1204.67 ft				
1		BKB-747			/. Datum: NAD88			na GWMA	PPG
12.							JE18	03	-0-

	D	Samples			PGGI	og ma	tchi	ng Ecology Well Log 19859	187 cont
Depth (ft)	Graphic Log	Sample ID PID (ppm)	Interval	Descrip	tion			Well Construction	or, cont.
250 —								12-20 silica sand pack 251-275	o feet
- 255 — -			-0	Wet, dark brown, silty fine gravel and rocks).	SAND (contains some		•	2-inch 10 slot PVC screen 253- with a flush thread tail pipe	-273 feet
- 260 —	HELELEN			Moist to wet, light brown, v SILT (finer with depth).	ery fine SAND to sandy		•		
- - 265 —									
			10	Moist to wet, dark brown, s Moist to wet, dark brown fi			•		
270 — - -			3	Moist, light brown, silty me				Bottom of the boring 275 feet	
275 -			14.00						
- 280 — - -									
- 285 — -									
- 290 —									
- - 295 —	5								
6							r		
Northin Logged	g/Ea I by:	Koshlan Ma	136 yer-	3.8 ft, E 1711060 ft -Blackwell, PGG	Drilling Firm: Yellow Jacke Drilling Method: Sonic DTW: 263.55 ft	t	1	-MW-25 ring Log and As-Built	
Comple Ecology		Date: 11/2 BKB-747	9/2	010	MP Elevation: 1204.67 ft V. Datum: NAD88		Yaki JE18	<b>ma GWMA</b> 103	PgG

RESOURCE PROTE (SUBMIT ONE WELL REPORT PER			CURR Notice of	f Intent No.	RE16629
Construction/Decommission	18-765	3WA	Т	ype of Well	
Construction			Б	Resource Pro	tection
Decommission ORIGINAL INSTA	LI ATION Notice		Г	Geotechnical	
	ELATION Nonce	Property Owner	L		ty Public Services
		Site Address		128 N Sec	ond Street
Consulting Firm	PGG	City	Yakima	County	Yakima
Unique Ecology Well ID Tag No. BKE	3-727	Location	/4 <u>Se</u> 1/	/4 SW Sec 22	
WELL CONSTRUCTION CERTIFICATION: 1 constru	ucted and/or accept responsibility for	Lat/Long (s,t,r I	Lat Deg		Lat Min/Sec
construction of this well, and its compliance with all Wa	shington well construction standards	still Required) I	Long Deg	<u>_</u>	Long Min/Sec
Materials used and the information reported above are tr	ue to my best knowledge and belief	Tau Dancel No.			
Driller Trainee Name (Print)	Casey Wallace	Tax Parcel No.			
Driller/Trainee Signature		Cased Diameter			6"_ Static Level
Driller/Trainee License No.	3182	-			
		Work/Decommissio	on Start Date		10/28/2018
If trainee, licensed driller's		-			40/00/0040
Signature and License No.		Work/Decommissio	on End Date		10/29/2018
Construction/Design	Well Nam	e: MW-9		Form	ation Description
	Concrete Surface Sea Depth Blank Casing (dia x de Material Backfill Type Seal Material Gravel Pack	0 - 1 p) <u>2 '' 0 x 2</u> <u>Sch40 PVC</u> 0 - 24 <u>bentonite chip</u>	— log — ^{FT} foi — we FT of <u>s</u> Se	silty sand w is is the g filed wi r this mo ell. It is a 1985978 e attach	incorrect ^T th Ecology nitoring ^{FT} duplicate for MW-8 _F ed PGG log info. (SRW
	Material	12/20 silica sar	<u>nd</u>		FT
				RE	ECEIVED
	Screen (dia x dep)	_2 " 26 x 3	8 <u>6</u> FT		ONSTRUCTION
	Slot Size	0.010	_	AND LICE	INSING OFFICE
	Material	Sch40 PVC	_	AU	G 26 2020
	Well Depth	36	FT		
	Backfill		_		FT
	Material				
	wideria				

	_ອ Sa	mples			PGG Log	mat	ching	g Ecology Well Log 1985989	
Depth (ft)	히	nple ID (ppm)	Interval	Descrip				Well Construction	
0	:1:1:1:	;		Dry, brown, slightly sandy	SILT.			Flush mount monument with concrete p Top of PVC is 0.44 feet below top of sto monument	
5								Hydrated bentonite annular seal 2-24 fe	eet
10 — - - 15 —								Borehole diameter 6-inches	
-								2-inch schedule 40 flush thread PVC b	lank
			10 D	Dry, brown, sandy SILT.			1111	well casing 0.44-36.2 feet	
20 —				Dry, brown, fine SAND wit siltbound clasts.	h trace round gravel and				
56661			8	Dry to moist, brown, slight with medium SAND.	ly silty, very gravelly, fine				
			1	Dry, white, loosely consoli siltbound SAND (ASH).	dated, slightly gravelly,				
25 – - -				L	ery gravelly, fine to medium ards. Oxidation. Gravel up			12-20 silica sand pack 24-37.5 feet	
-000			4	Wet, brown, slightly silty, g	gravelly, fine SAND.	-		2-inch 10 slot PVC screen 26-36 feet w	/ith a
30 -			201	Moist, gray, gravelly SILT	with cobbles.			flush thread tail pipe	
			))	Moist, gray-brown, silty, gr	ravelly, medium SAND.				
35 –			4	Dry to moist, white, slightly	y sandy SILT with oxidation				
40 - 4				_ , ,,,,,	,,			Bottom of the well 36.2 feet Bentonite bottom seal 37.5-72 feet	
				Moist, grayish-green, clay consolidated siltstone clas with semi-consolidated as	sts. Harder below 24.5 feet				
			82) 282	Dry, gray, gravelly, fine SA Moist to wet, gray, gravelly below 50 feet.					
lorthing/	/Easting	: N 36	448	SW Qtr SE QtrQtr 6.6 ft, E 1785256.1 ft K. Mayer-Blackwell, PGG	Drilling Firm: Yellow Jacke Drilling Method: Sonic DTW: 23.72 ft	t		-MW-09 pring Log and As-Built	
ompleti	ion Date	e: 10/2			MP Elevation: 926.45 ft V. Datum: NAD88		Yaki JE18	ima GWMA	(

	6c	Samples	-		PGG Log n	natcl	hing	Ecology Well Log 1985989	, cont.
Depth (ft)	Graphic Log	Sample ID PID (ppm)	Interval	Descript				Well Construction	
50 — - -			-						
- 55 — -			1	Dry, gray, cobbly, sandy Si BOULDER.	LT.				
- - 60 -		0	ą	Moist to wet, dark gray, CC	NBRI ES and fine sandy				
- 65 — - -		~~		Dry, light brown, fine sandy	/				
70 -	::::::::::::::::::::::::::::::::::::::		101 101	Black/dark gray, unfracture	ed ROCK.				
75								Bottom of the boring 72 feet	
80									
85 — - -									
90									
95 — - - -									
Northing Logged	g/Ea by:	sting: N 36 I. Jackson a	448 and	I SW Qtr SE QtrQtr 36.6 ft, E 1785256.1 ft K. Mayer-Blackwell, PGG	Drilling Firm: Yellow Jacket Drilling Method: Sonic DTW: 23.72 ft		1	-MW-09 ring Log and As-Built	
1		Date: 10/2 BKB-727	9/2	018	MP Elevation: 926.45 ft V. Datum: NAD88		Yakir JE18	<b>na GWMA</b> 03	PgG



RESOURCE PROTECT (SUBMIT ONE WELL REPORT PER WEL		EPORT		RENT of Intent No.	RE16805
Construction/Decommission	18-1008	WA	1	Type of Well	
			1		
				Resource Prote	
Decommission ORIGINAL INSTALLAT of Intent Number		Property Owner	r	Geotechnical S Yakima Count	y Publi cServices
		Site Address		128 N Seco	
Consulting Firm	PGG	City	Yakima	County	
Unique Ecology Well ID Tag NoBKB-748		Location	1/4 NW	1/4 NW Sec 35	Twn 10N R 23E or WWM
WELL CONSTRUCTION CERTIFICATION I constructed and	d/or accept responsibility for	Lat/Long (s.t.r	Lat Deg		Lat Min/Sec
construction of this well, and its compliance with all Washington	well construction standards	still Required)	Long Deg		Long Min/Sec
Materials used and the information reported above are true to my	best knowledge and belief	Tax Parcel No.		RO	N
Driller Trainee Name (Print)	Casey Wallace				
Driller/Trainee Signature	cm	Cased Diameter			2" Static Level 57
Driller/Trainee License No.	3182	Work/Decommiss			11/30/2018
If trainee, licensed driller's		WOIN Decommiss	ion Start Dute		
Signature and License No.		Work/Decommiss	ion End Date	1	1/30/2018
Construction/Design	Well Name:	MW41	l.1	Forma	tion Description
	Concrete Surface Seal Depth Blank Casing (dia x dep) Material Backfill Type Seal Material Gravel Pack Material	<u>SCH 40 PV</u>	<u>56</u> FT <u>C</u> FT 4FT <u>ps</u> 6FT	0 sandy silt 20 basalt	<u>66 FT</u> <u>FT</u> <u>FT</u> <u>FT</u>
	Screen (dia x dep) Slot Size Material Well Depth Backfill	2 " 56 x 0.010 66	66_FT  FT	WELL ( AND LIC	RECEIVED CONSTRUCTION CENSING OFFICE UG 26 2020
	Material Total Hole Depth	66	FT		FT

	0	Samples			]	PG	GΙ	Log	matching Ecology Well Log 1985990
Depth (ft)	Graphic Log	Sample ID	val	Descript				Ŭ	Well Construction
Dep	Grap	PID (ppm)	Interval						
0-			0	Moist, light brown, silty, ver	y fine SAND (grain size	1			Flush mount monument with concrete pad
	::::			becomes finer with depth).			8		Top of PVC is 0.29 feet below top of steel
	::::							1111	monument
5-	::::						11/1	1111	Hydrated bentonite annular seal 2-54 feet
			z				1111	1111	
4				Moist to wet, light brown, sa	andy SILT.			1111	
10 -	: 						1111	1111	
-								1111	
							1111	1111	
15 -		£	ä	Day light may for short of	_1.		1111	1111	Developed a sector 6 in alter
-	×			Dry, light gray, fractured roo Light pink, fine, chalky SAN			1111	1111	Borehole diameter 6-inches
-	×́×́			Dry, light black, rock.			1111	1111	2-inch schedule 40 flush thread PVC blank well casing 0.29-66.18 feet
20 -	××						1111	1111	J. J
-	××		4	Maint black and success Of			1111	1111	
-	×		8	Moist, black and orange SA			1111	1111	
25 -	×						1111	1111	
-									
-									
30 -	××						1111	1111	
-	××					1 8	NT I		
-	X						1111	1111	
35 -	××						1111	1111	
- 35	×						1111		
							1111	1111	
40 -	××						1111		
- 40	××							1111	
	×××						1111	1111	
45	×	Ω.	þ	Dry, black, BASALT.					
40 -	×							1111	
6	××							1111	
	X								-MW-41
Northin		RS): T10R23 Isting: N 35		37 ft, E 1789145.7 ft	Drilling Firm: Yellow Jacket Drilling Method: Sonic				ring Log and As-Built
Logged Comple				-Blackwell, PGG	DTW: 44.29 ft MP Elevation: 965.66 ft				
· · ·		BKB-748	.0/2	010	V. Datum: NAD88			Yakin	
C.								JE18	^{D3}

	g	Samples		PGG I	Log matching Ecolog	ogy Well Log 1985990, cont.			
Depth (ft)	Graphic Log	Sample ID PID (ppm)	Interval	Description				Well Construction	
50 — - - 55 — - - - - - - - - - - - - - - - - - - -	× × × × × × × × × × × × × × × × × × ×			Wet, black, fractured BASALT.			111111111111	12-20 silica sand pack 54-67 feet 2-inch 10 slot PVC screen 56-66 feet with a flush thread tail pipe	
- - - - - - - - - - - - - - - - - - -	<pre>x x x x x x x x x x x x x x x x x x x</pre>							Bottom of the well 66.18 feet Bentonite bottom seal 67-72 feet	
- 75 — -								Bottom of the boring 72 feet	
80									
85 — - - - 90 —									
- - - 95 - -									
Northing Logged Comple	g/Ea by: tion	Koshlan Ma	903 yer	7 ft, E 1789145.7 ft         Drillin           Blackwell, PGG         DTW           D18         MP E	ng Firm: Yellow Jacket ng Method: Sonic : 44.29 ft Elevation: 965.66 ft atum: NAD88		Boı	-MW-41 ring Log and As-Built na GWMA D3	

Ecol	logy '	Wel	l Log	z 20	33869
				<b>,</b> – ~ ·	

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(SUBMIT ONE WELL REPORT PER WE Construction/Decommission (select one)	LL INSTALLED)	Type of Well (select one)
Decommission ORIGINAL INSTALLATION		Geoteoh Soil Boring
Consulting Firm _Anchor QEA		witer View Point Dairy
Unique Reology Well (D	Sito Addres	ss 1400 Lewandowski Rod
Tag No BLW 349	City Sum	Side         County         Yakima           / 1/4-1/4         see 1/4         sec 4         Thun 10n R23e         Sec 4
WELL CONSTRUCTION CERTIFICATION: accept responsibility for construction of this well, and its co Washington well construction standards. Majorials used an above one tracto my best knowledge and belief. Woritler Dingineer Traince Name (Plint): AUAA Driller/Engineer Traince Signature	I constructed and/or appliance with ull d the information reported <u>CCORCUTIALE</u> Tax Parcel I Clised or U Work/Decor	h, r, r Lat Deg Lat Min/Sec (RBD) Long Deg Long Min/Sec
Signature and License No.	Work/Decor	mmission Completed Date <u>Aug 8 2020</u>
Construction/Design	Well Data	Formation Description
1351 : 1351	MONUMENT TYPE:	± 3
	Above	540
	CONCRETE SURFACE SEAL	0 - 40 ft. Silty Sandstone
	0-2 ft.	
	· · · · · · · · · · · · · · · · · · ·	40 - 130 ft. Fractured Basalt
	PVC BLANK 2 "x +3-225	
	BACKFILL 2-223 ft.	
735	TYPE: Bentonite Grout	- 400 470 " Devil
		<u>130 - 170 ft</u> Basalt
	PVC SCREEN 2 "x 225-240	0 . 170 225 Sandstone
	SI OT SIZE010	
	TYPE: PVC	225 _ 240 ft. Fine Sands
		-
	- GRAVEL PACK 223-240ft.	_
	MATERIAL: Sand 10x20	_  +
		<u> </u>
		REMARKS VPD-01
	(10)	
110000	WELL DEPTH 240 ' "	
		Cascade Drilling # 110.20.1074
	245	RECEIVED
		DEC 1 4 2020

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### WATER WELL REPORT



Construction

DEPARTMENT OF

ECOLOGY

State of Washington

Decommission Original installation NOI No.
Proposed Use:     ☑ Domestic     ☐ Industrial     ☐ Municipal       □ Dewatering     □ Irrigation     □ Test Well     □ Other
Construction Type:     Method:       Ø New well     Alteration     Driven     Jctted     Cable Tool       Deepening     Other     Dug     Ø Air-     Mud-Rotary
Dimensions: Diameter of boring $8 \times 6$ in., to $477$ ft. Depth of completed well $477$ ft.
Construction Details:WallCasing Liner DiameterFromToThicknessSteelPVC Welded Thread $\boxtimes   \square $ 8in. +244.250in. $\boxtimes   \square $ $\boxtimes   \square $ $\boxtimes   \square $ 6in. +1258.250in. $\boxtimes   \square $ $\boxtimes   \square $ $\square   \square $ 41/2in. 17477in. $\square   \square $ $\square $ $\square   \square $ in. $\square $ $\square $
Perforations:         X Yes         No         No         Of perforations         44         Size of perforations         1/8         in. by         6         in.           Perforated from         460         ft. to         477         ft. below ground surface         1/8         1/8         1/8         1/8         1/8         1/8         1/8         1/8         1/8         1/8         1/8         1/8         1/8         1/8         1/8         1/8         1/8         1/8         1/8         1/8         1/8         1/8         1/8         1/8         1/8         1/8         1/8         1/8         1/8         1/8         1/8         1/8         1/8         1/8         1/8         1/8         1/8         1/8         1/8         1/8         1/8         1/8         1/8         1/8         1/8         1/8         1/8         1/8         1/8         1/8         1/8         1/8         1/8         1/8         1/8         1/8         1/8         1/8         1/8         1/8         1/8         1/8         1/8         1/8         1/8         1/8         1/8         1/8         1/8         1/8         1/8         1/8         1/8         1/8         1/8         1/8         <
Screens:         Yes         No         K-Packer         Depth         ft.           Manufacturer's Name         Model No.
Sand/Filter pack:  Yes  No Size of pack material Materials placed fromft. toft.
Surface Seal:       X Yes       No       To what depth? 44ft.         Material used in seai       Bentonite
Pump: Manufacturer's Name Type:         H.P Pump intake depth: ft. Designed flow rate: gpm
Water Levels: Land-surface elevation above mean sea levelft.         Stick-up of top of well casing _2ft. above ground surface         Static water level 190       ft. below top of well casing Date <u>9/8/22</u> Artesian pressure lbs. per square inch       Date         Artesian water is controlled by (cap, valve, etc.)
Well Tests:         Was a pumping test performed? ⊠ No □ Yes ⇒ by whom?         Yieldgpm withft. drawdown afterhrs.         Yieldgpm withft. drawdown afterhrs.         Yieldgpm withft. drawdown afterhrs.         Recovery data (time = zero when pump is turned off - water level measured from well top to water level)         Time       Water Level Time         Water Level       Time         Water for water level       Time         Date of pumping test
Artesian flow gpm Temperature of water ° F Was a chemical analysis made? [] Yes 🛛 Ne

Notice of Intent No. WE50351	Ale bot	Part V Cal
Unique Ecotogy Well ID Tag No. BLD796		
	NOV	1 6 2022
Site Well Name (if more than one well):	10 J	
Water Right Permit/Certificate No.	Dapi, o	FEcology
Property Owner Name Ted & Rosie Kranz	entral Re	gional Offic
Well Street Address 461 Webster Rd		
City Sunnyside County Yakima		
Tax Parcel No. 231025 3402		
Was a variance approved for this well? 🗆 Yes 🛛 N	0	
f yes, what was the variance for?		
Location (see instructions on page 2):	□ wwm	or 🛛 EWM
E 1/4-1/4 of the SW 1/4; Section 25 Township	10 Rans	ge <u>23</u>
ongitude (Example: -120.12345) -119,88404		
Driller's Log/Construction or Decomm	issian Duos	
Formation: Describe by color, character, size of material and nature of the material in each layer penetrated, with at least of information. Use additional sheets if necessary.	structure, and	the kind and
Material	From	То
Silt	0	4
Caliche w/Basalt (Black)	4	8
Caliche	8	18
Clay (Brown/Tan)	18	39
Basalt (Gray &Brown) vesicular	39	82
	82	93
Basalt (Gray/Black) hard		
	93	123
Basalt (Gray/Black) hard	93 123	123 147
Basalt (Gray/Black) hard Basalt (Gray/Black) soft		
Basalt (Gray/Black) hard Basalt (Gray/Black) soft Basalt (Gray/Black) hard	123	147
Basalt (Gray/Black) hard Basalt (Gray/Black) soft Basalt (Gray/Black) hard Basalt (Blackw/Brown&Green) ves. W.B.	123 147	147 153
Basalt (Gray/Black) hard         Basalt (Gray/Black) soft         Basalt (Gray/Black) hard         Basalt (Blackw/Brown&Green) ves.       W.B.         Sandstone (Green & White)       W.B.	123 147 153	147 153 162
Basalt (Gray/Black) hard         Basalt (Gray/Black) soft         Basalt (Gray/Black) hard         Basalt (Blackw/Brown&Green) ves.       W.B.         Sandstone (Green & White)       W.B.         Clay/Claystone (Gray/Green & Tan)       Voltable	123 147 153 162	147 153 162 205
Basalt (Gray/Black) hard         Basalt (Gray/Black) soft         Basalt (Gray/Black) hard         Basalt (Blackw/Brown&Green) ves.       W.B.         Sandstone (Green & White)       W.B.         Clay/Claystone (Gray/Green & Tan)       Clay/Claystone (Brown)	123 147 153 162 205	147 153 162 205 223
Basalt (Gray/Black) hard         Basalt (Gray/Black) soft         Basalt (Gray/Black) hard         Basalt (Blackw/Brown&Green) ves.       W.B.         Sandstone (Green & White)       W.B.         Clay/Claystone (Gray/Green & Tan)       Clay/Claystone (Brown)         Sand       Sand	123 147 153 162 205 223	147 153 162 205 223 228
Basalt (Gray/Black) hard         Basalt (Gray/Black) soft         Basalt (Gray/Black) hard         Basalt (Blackw/Brown&Green) ves.       W.B.         Sandstone (Green & White)       W.B.         Clay/Claystone (Gray/Green & Tan)       Clay/Claystone (Brown)         Sand       Claystone (Green)	123 147 153 162 205 223 228	147 153 162 205 223 228 236
Basalt (Gray/Black) hard         Basalt (Gray/Black) soft         Basalt (Gray/Black) hard         Basalt (Blackw/Brown&Green) ves.       W.B.         Sandstone (Green & White)       W.B.         Clay/Claystone (Gray/Green & Tan)       Clay/Claystone (Brown)         Sand       Claystone (Green)         Basalt (Brown) w/Tan Shale, ves.       Sand	123 147 153 162 205 223 228 236	147           153           162           205           223           228           236           260
Basalt (Gray/Black) hard         Basalt (Gray/Black) soft         Basalt (Gray/Black) hard         Basalt (Blackw/Brown&Green) ves.       W.B.         Sandstone (Green & White)       W.B.         Clay/Claystone (Gray/Green & Tan)       Clay/Claystone (Brown)         Sand       Claystone (Green)         Basalt (Brown) w/Tan Shale, ves.       Basalt (Black&Brown w/Red) ves. fractured	123 147 153 162 205 223 228 236 260	147           153           162           205           223           228           236           260           263
Basalt (Gray/Black) hard Basalt (Gray/Black) soft Basalt (Gray/Black) hard Basalt (Blackw/Brown&Green) ves. W.B. Sandstone (Green & White) W.B. Clay/Claystone (Gray/Green & Tan) Clay/Claystone (Brown) Sand Claystone (Brown) Sand Claystone (Green) Basalt (Brown) w/Tan Shale, ves. Basalt (Black&Brown w/Red) ves. fractured Basalt (Black) hard	123 147 153 162 205 223 228 236 260 263	147           153           162           205           223           228           236           260           263           270
Basalt (Gray/Black) hard Basalt (Gray/Black) soft Basalt (Gray/Black) hard Basalt (Blackw/Brown&Green) ves. W.B. Sandstone (Green & White) W.B. Clay/Claystone (Gray/Green & Tan) Clay/Claystone (Brown) Sand Claystone (Brown) Sand Claystone (Green) Basalt (Brown) w/Tan Shale, ves. Basalt (Black&Brown w/Red) ves. fractured Basalt (Black) hard Basalt (Black w/Brown) hard	123 147 153 162 205 223 228 236 260 263 270	147           153           162           205           223           228           236           260           263           270           273
Basalt (Gray/Black) hard Basalt (Gray/Black) soft Basalt (Gray/Black) soft Basalt (Gray/Black) hard Basalt (Blackw/Brown&Green) ves. W.B. Sandstone (Green & White) W.B. Clay/Claystone (Gray/Green & Tan) Clay/Claystone (Gray/Green & Tan) Clay/Claystone (Brown) Sand Claystone (Green) Basalt (Brown) w/Tan Shale, ves. Basalt (Black&Brown w/Red) ves. fractured Basalt (Black hard Basalt (Black w/Brown) hard Basalt (Black/Gray) hard	123           147           153           162           205           223           228           236           260           263           270           273	147           153           162           205           223           228           236           260           263           270           273           389
Basalt (Gray/Black) hard Basalt (Gray/Black) soft Basalt (Gray/Black) soft Basalt (Blackw/Brown&Green) ves. W.B. Sandstone (Green & White) W.B. Clay/Claystone (Gray/Green & Tan) Clay/Claystone (Brown) Sand Claystone (Brown) Basalt (Brown) w/Tan Shale, ves. Basalt (Black&Brown w/Red) ves. fractured Basalt (Black) hard Basalt (Black w/Brown) hard Basalt (Black/Gray) hard Basalt (B&B) ves. w/Quartz	123 147 153 162 205 223 228 236 260 263 270 273 389	147           153           162           205           223           228           236           260           263           270           273           389           392
Basalt (Gray/Black) hard Basalt (Gray/Black) soft Basalt (Gray/Black) soft Basalt (Blackw/Brown&Green) ves. W.B. Sandstone (Green & White) W.B. Clay/Claystone (Gray/Green & Tan) Clay/Claystone (Brown) Sand Claystone (Brown) MTan Shale, ves. Basalt (Brown) w/Tan Shale, ves. Basalt (Black&Brown w/Red) ves. fractured Basalt (Black hard Basalt (Black /Gray) hard Basalt (Black /Gray) hard Basalt (Black w/Brown&Green) w/Tan Shale	123 147 153 162 205 223 228 236 260 263 270 273 389 392	147         153         162         205         223         228         236         260         263         270         273         389         392         404
Basalt (Gray/Black) hard Basalt (Gray/Black) soft Basalt (Gray/Black) soft Basalt (Gray/Black) hard Basalt (Blackw/Brown&Green) ves. W.B. Sandstone (Green & White) W.B. Clay/Claystone (Gray/Green & Tan) Clay/Claystone (Brown) Sand Claystone (Green) Basalt (Brown) w/Tan Shale, ves. Basalt (Black&Brown w/Red) ves. fractured Basalt (Black bard Basalt (Black w/Brown) hard Basalt (Black/Gray) hard Basalt (Black w/Brown&Green) w/Tan Shale Basalt (Black w/Brown&Green) w/Tan Shale Basalt (Black w/Brown&Green) w/Tan Shale	123 147 153 162 205 223 228 236 260 263 270 273 389 392 404	147         153         162         205         223         228         236         260         263         270         273         389         392         404         418
Basalt (Gray/Black) hard Basalt (Gray/Black) soft Basalt (Gray/Black) hard Basalt (Gray/Black) hard Basalt (Blackw/Brown&Green) ves. W.B. Sandstone (Green & White) W.B. Clay/Claystone (Gray/Green & Tan) Clay/Claystone (Brown) Sand Claystone (Green) Basalt (Brown) w/Tan Shale, ves. Basalt (Black&Brown w/Red) ves. fractured Basalt (Black hard Basalt (Black hard Basalt (Black /Gray) hard Basalt (Black /Gray) hard Basalt (Black w/Brown) & Tan Shale Basalt (Black w/Brown&Green) w/Tan Shale Basalt (Black w/Bue) fract. Basalt (Black) hard	123 147 153 162 205 223 228 236 260 263 270 273 389 392 404 418	147         153         162         205         223         228         236         260         263         270         273         389         392         404         418         421
Basalt (Gray/Black) hard Basalt (Gray/Black) soft Basalt (Gray/Black) soft Basalt (Gray/Black) hard Basalt (Blackw/Brown&Green) ves. W.B. Sandstone (Green & White) W.B. Clay/Claystone (Gray/Green & Tan) Clay/Claystone (Brown) Sand Claystone (Green) Basalt (Brown) w/Tan Shale, ves. Basalt (Black&Brown w/Red) ves. fractured Basalt (Black & Brown) hard Basalt (Black hard Basalt (Black w/Brown) hard Basalt (Black w/Brown) hard Basalt (Black w/Brown&Green) w/Tan Shale Basalt (Black w/Blue) fract. Basalt (Black) hard Basalt (Black) hard Basalt (Black) hard Basalt (Black) hard Basalt (Black) ves. w/Green Shale	123         147         153         162         205         223         228         236         260         263         270         273         389         392         404         418         421	147         153         162         205         223         228         236         260         263         270         273         389         392         404         418         421         438
Basalt (Gray/Black) hard Basalt (Gray/Black) soft Basalt (Gray/Black) soft Basalt (Gray/Black) hard Basalt (Blackw/Brown&Green) ves. W.B. Sandstone (Green & White) W.B. Clay/Claystone (Gray/Green & Tan) Clay/Claystone (Brown) Sand Claystone (Green) Basalt (Brown) w/Tan Shale, ves. Basalt (Black&Brown w/Red) ves. fractured Basalt (Black & Brown) hard Basalt (Black) hard Basalt (Black w/Brown) hard Basalt (Black w/Brown) hard Basalt (Black w/Brown&Green) w/Tan Shale Basalt (Black w/Brown&Green) w/Tan Shale Basalt (Black) hard Basalt (Black) hard Basalt (Black) ves. w/Green Shale Basalt (Black) hard	123         147         153         162         205         223         228         236         260         263         270         273         389         392         404         418         421         438	147         153         162         205         223         228         236         260         263         270         273         389         392         404         418         421         438         446
Basalt (Gray/Black) hard Basalt (Gray/Black) soft Basalt (Gray/Black) soft Basalt (Gray/Black) hard Basalt (Blackw/Brown&Green) ves. W.B. Sandstone (Green & White) W.B. Clay/Claystone (Gray/Green & Tan) Clay/Claystone (Brown) Sand Claystone (Green) Basalt (Brown) w/Tan Shale, ves. Basalt (Black & Brown w/Red) ves. fractured Basalt (Black & Brown w/Red) ves. fractured Basalt (Black w/Brown) hard Basalt (Black w/Brown) hard Basalt (Black w/Brown & Green) w/Tan Shale Basalt (Black w/Brown&Green) w/Tan Shale Basalt (Black w/Blue) fract. Basalt (Black) hard Basalt (Black) ves. w/Green Shale Basalt (Black) hard Basalt (Black) hard Basalt (Black) hard Basalt (Black) hard Basalt (Black) ves. soft	123         147         153         162         205         223         228         236         260         263         270         273         389         392         404         418         421         438         446	147         153         162         205         223         228         236         260         263         270         273         389         392         404         418         421         438         446         451

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 Trainee PE Print Name Michael Robinson	Drilling Company Robinson Drilling & Developm	ent, Inc.
Signature Michael & Ra	Address 4902 Viewland Drive	
License No. 1544	City, State, Zip Yakima, WA	98908
IF TRAINEE: Sponsor's License No.	Contractor's	
Sponsor's Signature	Registration No. ROBINDD938QE 9/9/22	Date

ECY 050-1-20 (Rev 11/18) If you need this document in an alternate format, please call the Water Resources Program at 360-407-6872. Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6341.

### WATER WELL REPORT

Type of Work:

Construction

Decommission - Original installation NOI No

	water Right Pent
Proposed Use:  Domestic  Industrial  Municipal Dewatering  Irrigation  Test Well  Other Livestock	Property Owner N
	Well Street Addr
Construction Type: Method:           Image:	City Sunnyside
New well     Alteration     Driven     Depending     Other     Dry     Dug     Air-     Mud-Rotary	Tax Parcel No. 2
Dimensions: Diameter of boring 10 in., to 382 ft. Depth of completed well 380 ft.	Was a variance aj
William and the Maximum Annual States	If yes, what was I
Wall         Wall         Construction Distants:         Wall         Construction Distants:         Wall         Casing Liner Dismeter       From       To       Thickness       Steel       PVC Welded Thread         Image: I	Location (see inst <u>SW</u> '4-'4 of th Latitude (Exampl
Perforations: Yes No Type of performer used Plasma	Longitude (Exam
Perforations:         Image: Model with the second sec	Driller
Perforated from 340_ ft. to 378_ ft. below ground surface	Formation: Describe nature of the materia
Screens: Dyes INO Depth A.	information. Use ad
Manufacturer's Name	
Type         Mudel No.           DiameterinSlot size         in_ fromfl. tofl.	Gravel/road base
Diameter in. Slot size in. from ft. to ft.	Silty sand and gra
	Basalt - medium -
Sand/Filter pack: Yes No Size of pack material in.	Basalt - silty/sand
Materials placed from ft. to ft.	Basalt - weand an
Surface Seal:   Yes No To what depth? <u>19</u> ft. Material used in seal Bentonite Chips	Basalt - medium
Did any strata contain unusable water?  Yes INo	Basalt - weak - B
Type of water? Depth of strata	Silty sandstone/s
Method of scaling strata off	Basalt - weak and
Pump: Manufacturer's Name Franklin Type: Sub	Basalt - medium -
H.P. 20 Pump intake depth; 330 fl. Designed flow rate: VFD gpm	Basall - fractured
	Basalt - medium
Water Levels: Land-surface elevation above mean sea level <u>1175</u> ft. Stick-up of top of well easing <u>2</u> ft. above ground surface	Basalt - fractured
Static water level 217 R. below top of well casing Date 6/3/22	Basalt - Bl
Artesian pressure lbs. per square inch Date	
Artesian water is controlled by (cap, valve, etc.)	
Well Tests:	
Was a pumping lest performed?	
Yield gpm with fL drawdown after hrs.	
Yield gpm with fl. drawdown after hrs. Yield gpm with fl. drawdown after hrs.	
Recovery dats (lime = zero when pump is turned off - water level measured from well	
top to water level)	
Time Water Level Time Water Level Time Water Level	
Date of pumping test	
Bailer test gpm with ft. drawdown after hrs.	
Air test <u>35</u> gpm with stem set at <u>370</u> ft. for <u>1</u> hrs Date <u>6/3/22</u>	
Artesian flow gpm Temperature of water * F Was a chemical analysis made?  Yes III No	
remperature of water P was a chemical analysis mader L1 Yes III No	Start Date 6/1/22

DEPARTMENT OF

ECOLOGY State of Washington

#### Ecology Well Log 2215091

Notice of Intent No. WE49153		
Unique Ecology Well ID Tag No. BNP 629	DEOL	
Site Well Name (if more than one well): N/A	NEW	
Water Right Pennit/Certificate No. Exempt	- JUN 2	1 2022
Property Owner Name JLS Slegers Dairy LLC		
Well Street Address 7190 Shellar Rd	Dept. of	Ecology
City_Sunnyside County_Yakima	Central Reg	gional Offic
Tax Parcel No. 23102443003		
Was a variance approved for this well? $\Box$ Yes $\ \blacksquare$	No	
If yes, what was the variance for?		
Location (see instructions on page 2): <u>SW</u> 4-4 of the <u>SW</u> 4; Section <u>10</u> Towns		or E EWM
Latitude (Example: 47,12345) 46,3317		
Longitude (Example: -120.12345) -119.8823 }		
Driller's Log/Construction or Decommin Formation: Describe by color, character, size of material and		
nature of the material in cach layer penetrated, with at least o information. Use additional sheets if necessary.		
Material	From	То
Gravel/road base	0	1
Silty sand and gravel - Br	1	10
Basalt - medium - BI	10	12
Basalt - silty/sandy - weathered - Br	12	63
Basalt - weand and broken - BI	63	83
Basalt - medium - Bl	83	92
Basalt - weak - Bl	92	100
Silty sandstone/sandy siltstone - Tan	100	183
Basall - weak and broken - Bl/Red	183	198
Basalt - medium - BI	198	303
Basalt - fractured - some red color - Bl	303	325
Basalt - medium - Bl	325	340
Basalt - fractured - some tan and green shale- Bl	340	380
Basalt - Bl	380	_382
		0

Completed Date 6/3/22

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.

IF TRAINEE: Sponsor's License No. Sponsor's Signature	Contractor's Registration No. GREGODI110JP	Date 6/8/22
License No. 2369	City, State, Zip North Bend, WA 98045	
Signature Chad N Gregory	Address 14112 452nd Ave SE	
Driller   Trainee   PE - Print Name Chad N Gregory	Dolling Company Gregory Drilling Inc	

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