

JULIANN AND PAT SULLIVAN HYDROGEOLOGIC ASSESSMENT 15712 28TH AVENUE NORTHWEST PIERCE COUNTY PARCEL 0222171053

FEBRUARY, 2017

by

Michael F. Piechowski, LHG Principal Hydrogeologist



2105 South C Street Tacoma, Washington 98402 P: 253.475.7711 | F: 253.472.5846

www.robinson-noble.com

17625 130th Avenue NE, Suite 102 Woodinville, Washington 98072 P: 425.488.0599 | F: 425.488.2330 Pat and Juli Sullivan Pierce County Parcel 0222171053 15712 28th Avenue Northwest Hydrogeologic Assessment February 17, 2017

Introduction and Scope

This assessment has been prepared for Pat and Juli Sullivan to meet the requirements stated in Pierce County Policy Number DW2016-02, which requires a hydrogeologic assessment to determine if the proposed exempt well for a building project "impacts or impairs a senior water rights holder, and impacts or impairs established instream flows and closures as identified by the State." This policy is applicable in certain areas of Pierce County including portions of the Kitsap Watershed (WRIA 15). The site is located within the Crescent Valley drainage, an area that is seasonally closed to surface water appropriations, so it is included in this policy.

The site is located on the western side of 28th Avenue NW, north of Gig Harbor, Washington in unincorporated Pierce County. This area is within the Kitsap Watershed. The street address is 15712 28th Ave. NW, the Pierce County tax parcel number is 0222171053. The surrounding properties are generally developed with single-family residences on large lots. Figure 1 presents a site map, including the boundaries of the parcel and the location of wells evaluated for this assessment.

We understand that the proposed project involves the construction of a three-bedroom singlefamily residence to be served by an individual well and septic system. We reviewed a provided plat plan, wetland delineation report, and septic design for the proposed project. The proposed well is located on the parcel such that the 100-foot sanitary control radius does not overlap the planned septic drainfield or reserve area. The sanitary control radius does extend onto the neighboring property to the east, but a signed affidavit from that landowner has been filed with the County, so no well variance is required.

Site Setting and Topography

The site is located in the in the Crescent Valley area, on an upland above Crescent Lake, the source of Crescent Creek. The upland has an undulatory surface that was sculpted by the most recent continental glaciation. The features in this area generally trend from the north-northeast to the south-southwest, with lineations corresponding to the presumed direction of glacial motion. The property has a rectangular shape, 325 feet in a north-south direction, and 650 feet in an east-west direction. According to the USGS topographic quadrangle of the area, the site has an elevation of approximately 355 feet along the eastern margin, then with a gentle drop to 345 feet approximately 1/3 to the way to the western margin, then the elevation rises to 370 feet at the western margin.

We recently visited the site. No standing water was observed on the eastern portion of property, nor was any standing water observed in septic test pits on the property. The site is covered with mature trees, a mix of coniferous (Douglas fir, western red cedar, and hemlock) and deciduous (red alder and big-leaf maple). The understory was fairly clear, though some salal and blackberry were observed. At the time of our site visit, the home site and a portion of the proposed drainfield were partially cleared and the home location staked out. It may be necessary to remove additional trees within the footprint of the home, driveway, and septic drainfield to develop the property as planned.

General drainage patterns in the area follow the local topography. The upland containing the property generally slopes to the southeast, and the site is situated across a slight valley that drains to the south, so surficial drainage generally flows to the south towards Crescent Lake and Crescent Creek.

Surface Water

The site is located in Water Resource Inventory Area 15, specifically within the Crescent Creek basin. The local surface water drainage is towards the south. The nearest significant surface water is Crescent Lake, approximately 3,200 feet to the southeast. The nearest significant surface stream is Crescent Creek which is approximately 4,500 feet to the south of the property, though the USGS quadrangle shows a small tributary creek to Crescent Lake beginning approximately 2,000 feet directly south of the property. During periods of significant runoff, it is likely this small creek has an ephemeral appearance on the property. Crescent Creek flows out of Crescent Lake toward the south and discharges into Puget Sound at Gig Harbor.

Soils and Vegetation

The five-acre site is mostly covered with the Harstine gravelly ashy sandy loam with 6 to 15 percent slopes, a small portion of the site near the western boundary has steeper slopes (US Department of Agriculture, Soil Conservation Service). The Harstine loam is a moderately well-drained soil. It forms on the top of sandy glacial drift and generally contains volcanic ash. This soil is considered to be a part of Hydrologic Group C and is not considered a hydric soil. Our observations of the material on site are consistent with the soil survey data; we observed a tan to brown gravelly, sandy silty loam with occasional larger cobbles. Soils information is presented in Appendix A.

Site Geology

Site geology was determined by reviewing published geologic maps of the region. Booth and Troost (2005) map the site and surrounding area as the Vashon till, which is a highly-compacted mixture of sand, gravel, silt and clay that was deposited beneath and overridden by the latest continental glaciation. Typically, till has a relatively low permeability, though it may vary locally based on the composition and the degree of compaction. Review of nearby water well reports suggests that the till is generally over 50 feet thick in the area.

Conceptual Hydrogeologic Understanding

To better understand the relationships between aquifers, confining units, groundwater, and surface water features, we developed a conceptual model of the study area. The site is located on the eastern margin of the glaciated upland that forms the Kitsap Peninsula. Puget Sound borders the peninsula to the east, south, and southwest, and glaciated upland plains extend to the north and west towards Sinclair Inlet and Hood Canal, respectively.

The top of the upland is capped with the Vashon till, which forms a relatively low-permeability confining unit. A thin veneer of Vashon outwash deposits may be locally present over the top of the till, but in the vicinity of the site, the till is present at the surface. Geologic maps and well

logs suggest the thickness of the till is at least 90 feet in the vicinity of the site. The till surface is gently rolling; there are lineations that trend north-northeast to the south-southwest, corresponding to the presumed direction of glacial motion.

The Vashon advance outwash (Qva) sand is present beneath the till. Pre-Vashon deposits are not specifically named in Welch (2014) or Booth and Troost (2005), but rather are described texturally. For the purposes of this study, the descriptions in Welch will be used, with no discussion of deposits deeper than the sea level Aquifer (QA1), as the deepest wells reviewed do not even reach sea level. The unconsolidated sediments in this portion of Pierce County exceed 1,000 feet thick.

The first principal aquifer in the region is a confined aquifer formed in the Vashon advance outwash sand. The Vashon advance outwash sand is well-sorted sand with occasional gravel; it may also contain silty zones. While it may be unconfined, a review of well logs completed within the advance sand suggest that it is fully saturated in this area, and therefore, is confined in this area. Its thickness ranges from 20 to 240 feet, averaging 85 feet in the Kitsap Peninsula area (Welch, 2014).

Well logs from the area around the property indicate the Vashon advance outwash generally has two zones of sand and gravel separated by silty zone (clay is sometimes described as well, though the presence of true clay in Vashon outwash sediments should be limited). It appears most well require drilling into the deeper zone to find an adequate supply.

A deeper aquifer also exists in the area. Welch identifies this deeper aquifer the sea level aquifer (QA1) (Welch, 2014). Typically, it is separated from the advance sands by a thick clay or silt. The aquifer material is typically described as water-bearing sand, occasionally having some gravel.

The Vashon advance outwash is exposed at lower elevations where valleys have been eroded through the till. The valley containing Crescent Lake and Crescent Creek have significant outcrops of the Vashon advance outwash. Spring discharge and seepage is common along the walls of these valleys. The valleys floors are covered with the Vashon recessional outwash, which is a coarser sand and gravel deposited by glacial meltwater as the glaciers retreated.

As the aquifer deposits within the Vashon advance outwash and the QA1 have a significant regional extent in this watershed, recharge to the aquifers results from the infiltration of precipitation throughout the region, and gradients tend to be regionally influenced. The general flow direction within the Qva aquifer is towards the south in the vicinity of the site. The flow in the QA1 aquifer is southeasterly toward Colvos Passage (Welch, 2014).

Though some water undoubtedly runs off the upland via surface drainage, a significant portion infiltrates where slopes are not extreme or where it is captured in depressions. A portion of this water discharges as spring flow along the valley walls, but some fraction infiltrates deeper and is the fundamental mechanism for aquifer recharge. Based on the observed head relationship between the noted aquifer zones, some portion of the water in the shallower zone infiltrates and provides recharge to the deeper aquifer systems evaluated.

The discharge points for the shallow Qva aquifer include springs and seepage along the valley containing Crescent Lake and Crescent Creek to the south of the property and to Colvos Passage coastline to the east. The site straddles a small valley within the upland, so surficial runoff and shallow groundwater are presumed to also flow in a southerly direction towards Crescent Lake and Crescent Creek. Given the relative elevations, there isn't a local discharge point for

the QA1 aquifer system. Based on groundwater flow information presented in Welch and our regional understanding of groundwater flow, the QA1aquifer generally flows in east-southeast-erly and discharges in Colvos Passage (Welch, 2014).

Well Analysis

As described above, there are several aquifers in the region that supply water to domestic wells. We reviewed well logs in the vicinity of the proposed project, geocoding the well locations to the degree possible given the information on the water well reports. We also evaluated the stratigraphic logs and well completion information to determine depths and type of aquifer present near this location.

Well depths in the vicinity range from 53 to 218 feet deep. Of the 39 wells evaluated for this study, 14 are located within 1,500 feet of the proposed well. These were analyzed further, and the logs of these wells are included in Appendix B. Of these, 3 are completed at approximately 55 feet deep and 3 are completed at around 100 feet; these are all completed in the Qva aquifer. The remaining 6 are completed in the deep QA1aquifer, found at 170 feet. The depths to water are typically 20 to 50 in the shallow aquifer and around 90 feet in the deeper system. This increasing depth to water (decreasing head with increasing depth) indicates that this area is an aquifer recharge area.

We calculated aquifer characteristics using the pumping test information recorded on the logs following the methods described in Welch (2014). When the water well report included information from a pump or bailer test, we calculated aquifer transmissivity via the modified Theis formula presented in Ferris (1962). In cases where the well was tested with an air test, we used the equation developed by Bear (1979) to calculate a hydraulic conductivity for the aquifer material, then calculated aquifer transmissivity by multiplying the calculated hydraulic conductivity by the thickness of the water-bearing deposit. Aquifer parameters were tabulated, then averaged. At this location, it is apparent that two separate aquifer zones are present, we so we calculated average values for each aquifer.

Well ID	Tag	Radial Dis- tance (ft)	Depth (ft)	Depth to Water (ft)	Aquifer Zone	Theis Transmis- sivity (gpd/ft)	Bear Trans- missivity (gpd/ft)
358079	ABA-064	250	102	65	Qva	679	
55131	ABP-815	390	178	107	QA1	1490	
55134	ABP-828	460	119	72	Qva	5580	
509961	BAT-439	540	148	83	QA1	1042	
1568113	BIY-098	680	98	40	Qva	1931	
1568407	BJN-278	820	151	74	QA1	1051	
511663	APR-640	890	160	108	QA1	2297	
43804		920	90	45	Qva	2988	
47822		1030	86	46	Qva	863	
52826		1060	53	20	Qva	2097	
583877	ABG-626	1065	53	22	Qva		2513
48908		1120	161	90	QA1	3621	

Table	1: Well	s within	1,500 feet
-------	---------	----------	------------

Well ID	Tag	Radial Dis- tance (ft)	Depth (ft)	Depth to Water (ft)	Aquifer Zone	Theis Transmis- sivity (gpd/ft)	Bear Trans- missivity (gpd/ft)
360212	AGE-533	1480	218	92.5	QA1	568	
48966		1490	63	25	Qva	1117	

The shallow aquifer transmissivity values average approximately 2,100 gallons per day per foot of aquifer width (gpd/ft), though wells in the shallower portion of the aquifer show a slightly smaller transmissivity at about 1,900 gpd/ft and those in the deeper portion a slightly higher value averaging around 2,400 gpd/ft. The deep aquifer has an average transmissivity of about 1,700 gpd/ft.

Using these values, we evaluated the potential for the new well to impair existing wells by calculating the interference drawdown for each of the neighboring wells as a result of the proposed new well. The Theis equation (Theis, 1935) for calculating steady-state drawdown at a radial distance was used, though due to the scarcity of data, we relied upon an assumed storage coefficient of 0.0001, as used by Welch (2014), which, though conservative, is an appropriate value for confined sand and gravel aquifer materials.

We selected a pumping rate based on information tabulated in Welch (2014). The evaluation of 27 years of water use in the Kitsap Peninsula indicates that indoor use averages 66 gallons per day (gpd) per person. Outdoor use ranges from 0 to a maximum of 97 gpd per person depending on the month, and we calculated an average of 61 gpd for the 6-month growing season (May through October). The US Census calculated an average of 2.65 persons per household in Pierce County, so the per-person water use numbers were multiplied by this amount. These calculations indicate an indoor water use, growing-season outdoor water use, and total water use of 175, 162, and 337 gpd, respectively. These values are approximately double those presented in Culhane and Nazy (2015) and Golder (2013), but were used to complete a conservative analysis. Culhane and Nazy (2015) state that indoor use is only 10% consumptive, the remaining 90% is returned via septic infiltration, and that residential outdoor use is considered to be 80% consumptive, with 20% returned via infiltration. Other sources, such as Savoca (2010) suggest outdoor return flow can be as high as 40%. To stay conservative in our approach, we used the 80% consumptive value.

A rate of 337 gpd was selected to calculate the potential for impact during the highest-use period. Under steady-state conditions, this equates to slightly more than 0.2 gallons per minute (gpm). Using the equations presented in Theis (1935), we calculated the predicted drawdowns at each of the wells within 1,000 feet of the proposed well after 184 days (May – October) of continuous pumping, representing the conditions at the end of the summer season.

Well ID	Tag	Radial Distance (ft.)	Aquifer	Predicted Drawdown (ft.)
358079	ABA-064	250	Qva	0.11
55131	ABP-815	390	QA1	0.14
55134	ABP-828	460	Qva	0.10
509961	BAT-439	540	QA1	0.13
1568113	BIY-098	680	Qva	0.09

Well ID	Tag	Radial Distance (ft.)	Aquifer	Predicted Drawdown (ft.)
1568407	BJN-278	820	QA1	0.12
511663	APR-640	890	QA1	0.11
43804		920	Qva	0.08
47822		1030	Qva	0.08
52826		1060	Qva	0.10
583877	ABG-626	1065	Qva	0.10
48908		1120	QA1	0.11
360212	AGE-533	1480	QA1	0.10
48966		1490	Qva	0.09

The nearest well in the upper portion of the Qva aquifer is 1,060 feet away. The conservative 184-day prediction results in 0.10 feet of drawdown at this radial distance, which does not represent an impairment in a well with over 30 feet of available drawdown. The nearest well in the deeper portion of the Qva aquifer is 250 feet away. A similar calculation predicts a drawdown of 0.11 feet. Similarly, this does not represent an impairment, as wells completed in the deeper portion of the Qva typically have over 50 feet of drawdown available. The nearest well in the deep QA1 aquifer is 390 feet away. The predicted drawdown at this location is 0.14 feet, which does not represent an impairment in a well that has over 70 feet of available drawdown. These small values of predicted drawdown approach the accuracy limit of the Theis approach as applied to the available dataset.

Water Balance Analysis

To assess impacts to Crescent Lake and Creek and other surface waters in the area, we completed a water balance evaluation of the property and proposed development on an annualized basis. This analysis concentrated on the changes as a result of the proposed project from the pre-development conditions.

We used information presented in Garling and Molenaar (1965) and Welch (2014) to determine the rainfall and infiltration rate of the site. Based on those publications, the site and surrounding area receive 48 inches of rainfall, with 14.5 inches of that resulting in recharge to the aquifers beneath the site

As we understand the project, there will be a home and driveway constructed on the eastern margin of the site, forming impermeable surfaces and potentially increasing runoff. In Pierce County, site development is held to the standards presented in Title 17A of the Pierce County Code and the Pierce County Stormwater Management and Site Development Manual, these require infiltration or dispersion of stormwater falling on impervious surfaces, with the intent to reduce runoff and erosion and enhance recharge to the subsurface. Additionally, per the County Code and Manual, any disturbed soil must be amended to enhance infiltration, which will also serve to reduce runoff from the site. Studies indicate a significant increase in the infiltration rate of tilled, compost-amended soils (Brown and Cotton, 2011; Kays, et al, 2015).

As we understand the project, site development activities will be confined to the area immediately surrounding the proposed home, septic drainfield, driveway, and yard. As planned, there will be several fir and alder trees removed, but incidental clearing will be limited to the eastern portion of the property. For the purposes of this assessment, we have calculated that no clearing or grading will take place further west than the edge of the mapped wetland buffer, yielding a project area of approximately 30,000 square feet. We have presumed that the soils disturbed during the clearing, grading, and development of the site will be amended, tilled, and graded in accordance with County Code and Manual requirements. We have also presumed that all water falling on impervious surfaces added during development will be infiltrated on site. The change from mature trees to a grass lawn in this area of the property will result in a reduced amount of canopy capture and evapotranspiration, the magnitude of this reduction is approximately 20% (Zhang, et al, 2004; Sanford and Selnick, 2013).

Additionally, where impervious surfaces, such as the house and driveway, occur no vegetation will grow and the evapotranspiration will be nearly zero. To be conservative, we estimate the evapotranspiration will decline in these areas by 90%.

The pre-development water balance of the property can be calculated using the following factors: precipitation, runoff, evapotranspiration, and recharge. The relationship between these factors can be described as follows:

$$N_P - N_R - N_{ET} = Recharge$$

Where:

 $N_P = Precipitation$

 $N_R = Runoff$

 N_{ET} = Evapotranspiration

In the pre-development condition, the site receives 48 inches of precipitation Garling and Molenaar, 1965). Evapotranspiration in Pierce County is generally estimated at 22 inches per year (Savoca, 2010). Based on the surface geology, recharge is estimated at 15 inches per year (Welch, 2014; Savoca, 2010), so the remaining 11 inches must be considered runoff.

The post-development condition is somewhat more complicated, as the consumptive use calculated earlier must be accounted for and the changes in the nature of the site must be evaluated. Precipitation remains unchanged. Approximately 86% of the area of the site will also remain untouched. The remaining 14% of the site will be cleared, graded, and changed as discussed earlier. A home and driveway will be added, though compliance with County stormwater requirements means that the water falling directly on these impermeable surfaces will be re-routed and infiltrated into the subsurface. These impervious surfaces will cover about 2% of the site.

The nature of the groundcover will change from mature trees to a grass lawn in the area where the yard, drainfield, and reserve drainfield will be located. This will result in a commensurate decrease in evapotranspirative demand discussed earlier. However, in order to keep our analysis conservative, we elected to use three quarters of the earlier-stated decrease (15%). As stated earlier, for the impervious areas, the evapotranspiration rate will be reduced by approximately 90%. The amended soils in this area will have an enhanced infiltration capacity and will more readily accept rainfall, and County regulations require infiltration and dispersion of runoff, significantly reducing runoff from this portion of the property. As a conservative value, we reduced runoff by a half, to a value of 5.5 inches per year.

Septic return flow will offset some of the water use on the property. Typically, 90% of the indoor use is considered to be returned to the drainfield (Culhand and Nazy, 2015). However, we applied an evapotranspirative loss factor (ranging from 10% in May up to 30% in July and August) to the septic effluent return flow, as laterals may be within reach of plant and turf roots, resulting in the uptake of some of the effluent during hotter months. Finally, the water used outdoors is considered to be a largely consumptive use, with only 20% infiltrated into the sub-surface (Culhane and Nazy, 2015).

With these factors, we are able to calculate a post-development water budget via the following relationship:

$$N_P - N_R - N_{ET} - N_{WW} + N_{OR} + N_{SR} = Recharge$$

Where:

 N_P = Precipitation N_R = Runoff N_{ET} = Evapotranspiration N_{WW} = Well Withdrawal N_{OR} = Outdoor Use Return Flow N_{SR} = Septic Return Flow

The results of this calculation are presented in Table 3.

Table 3: Pre- and post-development annual water balance

Pre-development						
	gal/day					
Precipitation	48	2459				
Runoff	-11	-564				
Evapotranspiration	-22	-1127				
Well Withdrawal	0	0				
Septic Return	0	0				
Outdoor Return	0	0				
Recharge	15	768				

Post-development					
	in/yr	gal/day			
Precipitation	48	2459			
Runoff (-50%)	-5.5	-282			
Evapotranspiration (-74.2%) ¹	-16.3	-836			
Well Withdrawal	-4.7	-243			
Outdoor Return (20%)	0.3	14			
Septic Return (63% to 90%) ²	2.8	142			
Recharge	24.5	1254			
Total Change		485			

¹ Reduction prorated for combination of pervious and impervious surfaces

 2 90% return flow in wet season ranging downward to 63% in dry season due to ET uptake above drain field

In the post-development condition, groundwater use from the planned well is partially offset by the infiltration of septic return flow and the partial infiltration of water used outside the home. The decrease in evapotranspiration of the developed area of the property, when coupled with the decreased runoff and increased infiltration capacity of the amended soils, will result in an increase to the amount of water recharging the subsurface. The resulting water balance of this project entirely offsets the consumptive use from the proposed well on the property and provides an increase in recharge as a result of the post-development condition.

Seasonal Consideration

The annual water balance indicates an increase in average recharge at the property of 485 gallons per day due to the development. However, this increase in recharge will not occur evenly over the year. The increase in recharge due to the reduction in runoff will occur mainly in the wet season. The reduction in evapotranspiration will occur mostly in the dry season. Water use, and consequently well production, will be higher in the dry season. Return from outdoor water use will occur mainly in the dry season. And return from indoor use will occur year-round, but will be higher in the wet season due to possible uptake by plants above the drain field.

If we consider the dry season to occur from May and October, assign the changes in water balance between wet and dry seasons accordingly, and presume that all the changes in recharge occur during this season, we can develop an approximate change in recharge for the dry season as shown on Table 4.

	gal/day
Precipitation	0
Runoff reduction	0
Evapotranspiration reduction	291
Well Withdrawal ¹	-310
Outdoor Return	14
Septic Return ²	126
Total Change	121

Table 4: Dry season change in recharge

¹ Average well production from May through October

² Average septic return flow from May through October

The effects of both the well production and the recharge will be attenuated relative to aquifer discharges to surface water due to both vertical and horizontal distance and the fact that the aquifers have substantial storage. Timing of recharge entering the aquifer will be attenuated by the approximately 50 feet of sediments between the surface and the upper aquifer. However, as indicated by Table 4, the increase in recharge even during the dry season should be larger than the consumptive use.

In the case of the well, if it is placed in the Qva aquifer, it will be roughly 4,000 to 5,000 feet from the nearest downgradient aquifer discharge point in the Crescent Valley Creek. If it is placed in the lower portion of the QA1 aquifer, it will be 6,000 to 7,000 feet from the likely aquifer discharge points at Colvos Passage. Considering that the highest daily average production rate will be approximately 0.3 gpm, resulting in drawdown in the aquifer outside the wellbore of less than one foot, the change in gradient driving the change in aquifer discharge will be extremely small. Further, this change in gradient should be offset by the increase in recharge. In the case of a well in the Qva aquifer, the production and increase in recharge occur in the same aquifer, negating effects to the nearby creek and lake, which receives discharge from that aquifer. In the case of the well being completed in the QA1 aquifer, the increase in recharge to the shallow aquifer will increase flows to Crescent Creek, while the pumping impact from the well will mostly occur as a smaller discharge directly to Puget Sound. Pumping from the QA1 aquifer may slightly increase leakage downward out the Qva, causing an extremely small decrease in discharge to Crescent Lake and Creek from the Qva, but this will be greatly offset by the increase in recharge to the Qva.

Because of attenuation effects, the system should act largely in a steady-state manner. And certainly, any transient analysis on a time period shorter than wet and dry seasons is not warranted.

Recommendations

Consider drilling the proposed well to at least 100 feet deep in order to complete the well in the deeper portion of the Qva aquifer. The shallower wells have a higher susceptibility to impacts due to surficial contamination and are more likely to experience seasonal deficiencies. Additionally, the wells completed in the deeper portion of the Qva and the Qa1 aquifer have twice the available drawdown, so they should prove to be a more reliable water source over the long term.

Conclusion

Based on our analysis of the information provided, the well proposed to supply this project will not impact or impair a senior water rights holder, and will not impact or impair established instream flows and closures as identified by the State. As the net annual water balance in the post-development condition is positive and results in additional infiltration, no mitigation is required.

The statements, conclusions, and recommendations provided in this report are to be exclusively used within the context of this document. They are based upon generally accepted environmental and hydrogeologic practices and are the result of analysis by Robinson Noble, Inc. staff. This report, and any attachments to it, is for the exclusive use of Pat and Juli Sullivan. Unless specifically stated in the document, no warranty, expressed or implied, is made.

References

Bear, J, 1979, Hydraulics of groundwater: New York, McGraw-Hill

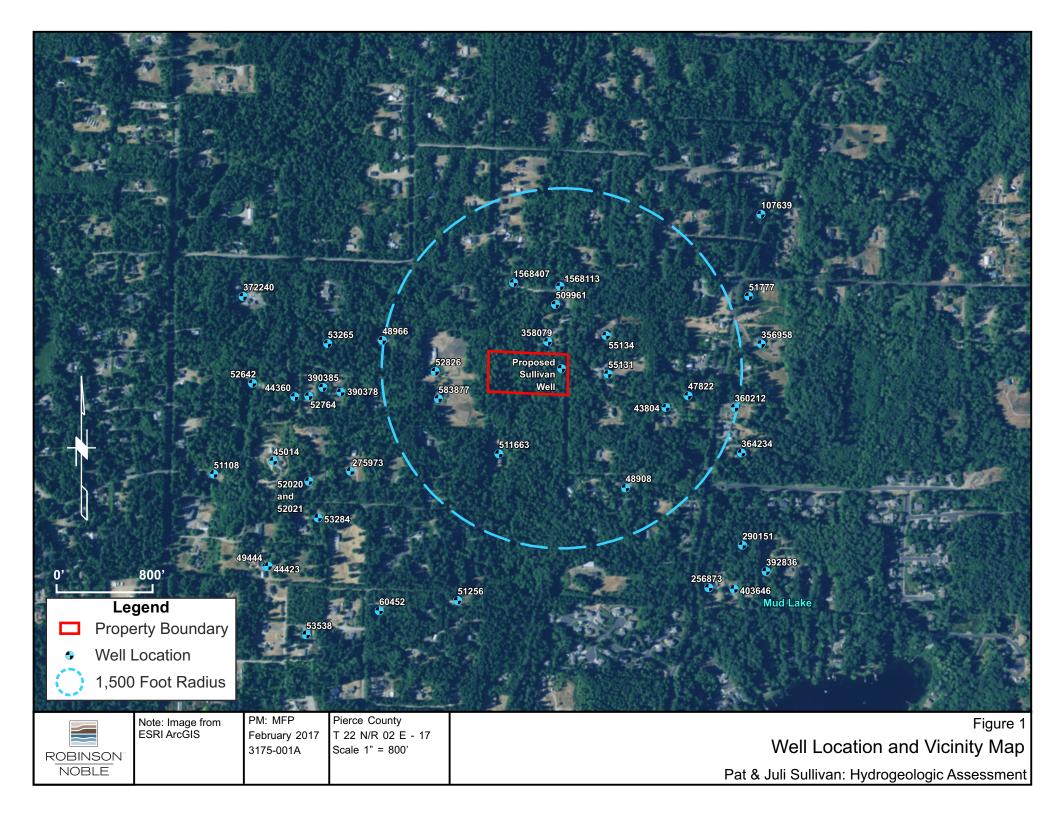
- Booth, D.B. and Troost, K.G., 2005, Geologic map of the Olalla Quadrangle, King, Kitsap, and Pierce Counties, Washington: United States Geological Survey, Scientific Investigations Map 2902, scale 1:24,000
- Brown, S. and Cotton, M. 2011, Changes in soil properties and carbon sequestration potential as a result of compost or mulch application: results of on-farm sampling: http://faculty.washington.edu/slb/docs/SBrown_compost_farmsoils_final.pdf
- Culhane, T. and Nazy, D., 2015, Permit exempt water use in Washington State: Water Resources Program, Washington State Department of Ecology
- Ferris, J.G., et at, 1962, Theory of aquifer tests: U.S. Geological Survey Water-Supply Paper 1536-E
- Garling, M.E. and Molenaar, D. 19675, Water resources and geology of the Kitsap Peninsula and certain adjacent islands: U.S. Geological Survey, Water Supply Bulletin No. 18
- Golder Associates, 2013, Skagit County Exempt Well Metering Program 2012-2013, March 27, 2014: https://www.skagitcounty.net/PublicWorksNaturalResourcesManagement/Documents/Skagit%20County%20Exempt%20Well%20Metering%20Program%20–%202012-2013.pdf
- Kays, B.L, et al, 2015, Amending soils for enhanced infiltration of stormwater: International Low Impact Development Conference 2015, LID: It Works in All Climates and Soils, edited by Michael Barrett, p. 123-132

- Sanford, W. E. and Selnick, D. L., 2013, Estimation of evapotranspiration across the conterminous United States using a regression with climate and land-cover data: Journal of the American Water Resources Association (JAWRA), vol.49, issue 1, p. 217–230
- Savoca, M.E., et al, 2010, Hydrogeologic framework, groundwater movement, and water budget in the Chambers–Clover Creek watershed and vicinity, Pierce County, Washington: United States Geological Survey Scientific Investigations Report 2010-5055
- Theis, CV, 1935, The relation between the lowering of the piezometric surface and the rate and duration of discharge of a well using groundwater storage: American Geophysical Union Transactions, vol. 16, p. 519-524
- US Census Bureau QuickFacts: http://www.census.gov/quickfacts/table/PST045216/53053,00
- United States Department of Agriculture, Soil Conservation Service, in cooperation with the Washington Agricultural Experiment Station, Soil survey of Pierce County area, Washington: https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx
- United States Geologic Survey, 2013, 7.5-Minute topographic quadrangle, Olalla, Washington, scale 1:24,000
- Welch, W.B., et al, 2014, Hydrogeologic framework, groundwater movement, and water budget of the Kitsap Peninsula, west-central Washington: United States Geological Survey Scientific Investigations Report 2014-5106
- Zhang, L., K. Hickel, W. R. Dawes, F. H. S. Chiew, A. W. Western, and P. R. Briggs, 2004, A rational function approach for estimating mean annual evapotranspiration: Water Resources Research, vol. 40, W02502, doi:10.1029/2003WR002710

Attachments

Appendix A Figure 1 – Well Location and Vicinity Map Appendix B Well Logs Appendix C Soil Logs

APPENDIX A -- FIGURES



APPENDIX B

File Original and First Copy with Department of Ecology Second Copy — Owner's Copy Third Copy — Driller's Copy		LL REPORT	Airpo	Application N		
(1) OWNER: Name A. L. Hart (Tallman)	Address 15616	Crescent	Valley I	r. N.	W. Gi
(2) LOCATION OF WELL: County						
Bearing and distance from section or subdivision			A			
(3) PROPOSED USE: Domestic CX Inc	dustrial 🖂 Municipal 🗍	(10) WELL LO	G:			
(5) FROI OSED USE. Domestic ()		Formation: Describe I show thickness of agu stratum penetrated, u	by color, character, lifers and the kind with at least one en	size of materia and nature of t atry for each c	l and stru he materi hange of j	cture, and al in each formation.
(4) TYPE OF WORK: Owner's number	of well e)		MATERIAL		FROM	ŤÖ
New well 🙀 Metho	d: Dug 📋 Bored 🗌	Topsoil			0	2
Deepened	Cable 🗋 Driven 🗌 Rotary 🗌 Jetted 🗍	Sand & gray	vel brown	hardpan	2	
Reconditioned []		Blue sand &			37	_53
5) DIMENSIONS: Diameter of	well 6 inches.	Sand & gray			53	63
Drilled. 90 ft. Depth of comple	ted well	Gray hardp			63	84
		Sand & grav	vel water	bearing	84	_90
6) CONSTRUCTION DETAILS:						
Casing installed:6" Diam. from					ļ	<u> </u>
	ft. to ft.			<u> </u>		ļ
Welded 🞗	ft. to ft.					↓
Perforations: Yes 🗇 No 🕞			<u> </u>			•
Type of perforator used					<u> </u>	
SIZE of perforations	in. by in.		·			
perforations from	ft. to ft.			<u></u>	<u> </u>	<u> </u>
perforations from	ft. to ft.	· · · · · · · · · · · · · · · · · · ·				
			· · · · · · · · ·		┼───-	
Screens: Yes No D	~~		——— D [CENT		
Manufacturer's Name Johnso	211. Madal No			╘┼╋	ED	<u>+</u>
Type stainless steel Diam. O. Slot size 3.5. from	85 n. to 90 ft.				<u> </u>	·
Diam. Slot size from	ft. to ft.	I] t	in 1 2 197 4		<u>├</u> >
					 	
Gravel packed: Yes 🗆 No 🕻 Siz	te of gravel:			TENT OF FOR	1022	<u> </u>
Gravel placed from	. ft. to	<u></u>	SOUTHARE	7 222210		
Surface seal: Yes 🗋 No 📮 To wi	hat depth? ft.	· · · · · · · · · · · · · · · · · · ·			↓~:10 Ξ	
Material used in seal						
Did any strata contain unusable w	vater? Yes 🗌 No 🗋					1
Type of water? Dep	oth of strata					
Method of sealing strata off		·				<u> </u>
(7) PUMP: Manufacturer's Name					+	
Type:	H.P	·				
(8) WATER LEVELS: Land-surface above mean s	elevation ~ 340 m					
(b) WATER DEVIDED. above mean a Static level	well Date 10-16	62 <u> </u>				
Artesian pressure	e inch Date					
Artesian water is controlled by	(Cap, valve, etc.)					
	(Cap, valve, etc.)	-				<u> </u>
(9) WELL TESTS: Drawdown is a lowered below	mount water level is static level	Work started 10-	13- 19 62	Completed	<u>10-16</u>	<u> </u>
•••	by whom?	WELL DRILL				
Yield: gal./min. with ft. drs	awdown after hrs					
	·· ·· ··	This well was true to the best	s drilled under n of my knowledg	y jurisdiction e and belief.	and thu	s report
	·· ·· ··	-	or my knowledg			
Recovery data (time taken as zero when pur measured from well top to water level)	np turned off) (water leve		• թվյաս & Ռ	rilling	Co	Inc.
Time Water Level Time Water Level	el Time Water Level	NAME Harbor	Person, firm, or con	rporation)	(Type or	print)
		Address 782				
	····-	Address	<u>, 40011 AV</u>	<u></u>		98
		···	1 11.1	P	v:M.	Butle
Date of test $10-10-62$		[Signed Dy M	u vun	Well Driller)	1	
Bailer test. 40 gal/min. with25 ft. c	irawdown afterhr		Ś. Ś.			
Artesian flow	are	مشاعد مسا	23 01 8455	Date	11	, 197
Temperature of water was a chemical a		- ~'	-///			•

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

WATER WELL REPORT

Application No

1.00

hird Copy — Driller's Copy	STATE OF WA		Permit No		
1) OWNER: Name Harvey Brown		Address 15712 Cres	<u>cent Valley Dr</u>	• 11W	<u>Gig H</u>
	9		HE Sec. I' T.	N. R.	<u>стс</u> , w.m .
aring and distance from section or subdivision corner					<u> </u>
	Municipal	(10) WELL LOG:			
3) PROPOSED USE: Domestic Z Industrial Irrigation Test Well	· · -	Formation: Describe by color, show thickness of aquifers an stratum penetrated, with at I	character, size of material d the kind and nature of t east one entry for each cl	and structure he materiange of 1	cture, and al in each cormation.
4) TYPE OF WORK: Owner's number of well (if more than one)		MATER		FROM	TO
New well 🗶 Method: Dug	Bored	Brown top soil		0	_3
Deepened Cable Reconditioned Rotary		Gray Hard pan		3	26
	<u> </u>	Sandy brown ha	rd pan	<u> 26 </u>	31
5) DIMENSIONS: Diameter of well	6 inches.	Brown sand, so	me_seepage	_31	.38
Drilled	86	Brown sandy c]	<u>ay</u>	_38	43
		Gray sandy har	d pan	_43	0
6) CONSTRUCTION DETAILS:		Gray Hard pan		<u>_6</u> 0	_68 .
Casing installed: 6 Diam. from	n. to <u>0</u> 2	Grav hard pan	with clay	<u> 6</u> 8	_ 74
Threaded 🗌		Gray sand and	gravel, -	<u> </u>	
Welded 😰	IL. 10	water bear	ng	74	77
Perforations: Yes 🗆 No 🖾		Hard packed sa	and & gravel	77	82
Type of perforator used		Grav sand & Pl	<u>ravel, water _</u>	82	86
SIZE of perforations in. by	in.	Gard packed sa	and & gravel	86	·
perforations from	0 ft.				<u> </u>
perforations from ft. t perforations from ft. t	o ft.			<u> </u>	
perforations from				·	
Screens: Yes 🛛 No 🗆 Johnson			. <u> </u>	<u> </u>	
Manufacturer's Name				<u> </u>	+
Type stainless steel Mogen	86 #			<u> </u>	
Diam. Slot size from	11. 10 16.			┣───	
Diam. Slot size Irom	1				┪ ──
Gravel packed: Yes 🗋 No 🕅 Size of grave	el:				
Gravel placed from ft. to				·	
	, <u>18</u> n.				
Surface seal: Yes No D To what deputy Material used in seal Bentonite	100 lbs.		<u>_<u>R</u>╞{;_╞╎∀-</u>	<u>⊭.</u> ,	
Did any strata contain unusable water?	Yes No K			+ <u>-</u> -	· • • • •
Type of water?				·	· ;
Method of sealing strata off.			MAY 2.2 198	Ψ	
Berkelev					<u> </u>
(7) PUMP: Manufacturer's Name Berkeley Type: Submersible					+
			SOUTHWEST REGIONAL	CITICE	+
(8) WATER LEVELS: Land-surface elevation above mean sea level	· · · .			+	
Static level 46	ate				<u>+</u>
Artesian pressure lbs. per square inch Da	ate]			
Artesian water is controlled by. (Cap, v	valve, etc.)				
(a) WEIL TESTS. Drawdown is amount wa	ater level is			4-28	- <u>-</u> 8
(9) WELL IEGIS. lowered below static lev	el	Work started 1-24	19 80 Completed	<u> </u>	
Was a pump test made? Yes No If yes, by whom Visiting a gal (min with ft, drawdown a)		WELL DRILLER'S	STATEMENT:		
rield. Burring	<u>nei mu.</u>	This well was drilled	l under my jurisdiction	and thi	s report
······································		true to the best of my	knowledge and belief.		
when numn turned	off) (water level				
Recovery data (time taken as zero when pump turned measured from well top to water level)		NAME HARBOP PUT	P & DRILLING	00	INC.
Time Water Level Time Water Level Time	e Water Level	(Person,	min, of corporation,		
		Address 11302 Bu	rnham Dr. HW C	ig He	rbor,
· · · · · · · · · · · · · · · · · · ·		[Signed] Wade	VIII SOR	By:]	P. Mil
Date of test Bailer test <u>10</u> gal/min. with <u>20</u> ft. drawdown	after 2 hrs.	[Signed](.A.L.L.)	(Well Driller)		
Bailer test <u>JU</u> gal/min. with <u>Z</u> min. drawdown Artesian flow		License No223=01		17 20	a 2
	ade? Yes 🗋 No 🗋				

Secor	Driginal and First Copy with rtment of Ecology nd Copy—Owner's Copy Copy—Driller's Copy		
<u></u>	OWNER: Name John Durry	15H Thread and the H	Aller 6
		S/1 1/F 17 -12	JE
·	LOCATION OF WELL: County JET The tCt	and I will Bal Cit Mark and I have	9833
(2=)	STREET ADDDRESS OF WELL (or nearest address)	A STATE AND A STAT	
(3)	PROPOSED USE: X Domestic Industrial D Municipal D	(10) WELL LOG or ABANDONMENT PROCEDURE DE	SCRIPTIC
(-/	Irrigation DeWater Test Well Other	Formation: Describe by color, character, size of material and struct thickness of aguilers and the kind and nature of the material in each strat	ure, and sh
	TYPE OF WORK: Owner's number of well	with at least one entry for each change of information.	
•		WATERIAL FROM	
	Abandoned C New well A Method: Dug C Bored C Despend C Cable A Driven C	Top soit 0	<u> </u>
	Reconditioned C Rotary D Jetted C	Shad Brein 2	12
(5)	DIMENSIONS: Diameter of well 5 , x inches.	Hard Par 13	33
	Drilled <u>751</u> feet. Depth of completed well <u>751</u> ft.	SANT + GINUL (S. P y) 33	- 110
_		Clad (13/4+) V 35	123
(6)	CONSTRUCTION DETAILS:	Head Par 122	
	Casing installed: Diam. from tt. to tt.	Start + Flourch - 111 C. 148	
	Welded		_
_	Threaded Diam. from ft. to ft.	├ ────────────────────────────────────	_
	Perforations: Yee Net		
	Type of perforator usedin, byin, byin,		
	SIZE of perforations in. by in.		
	perforations fromft. toft.		_
	perforations fromft. toft.		
	Manufacturer's Name_COOK		
	Type STUNFES Model No.		
	Diem. 10 Slot elze 12 trom 146 ft. to 151 ft.		
	DiamSlot elzefromft. toft.		
	Gravel packed: Yes No Size of gravel		
	Gravel placed fromft. toft.		
	Surface seal: Yesk No To what depth? 8 1.		
	Material used in seat		
	Did any strate contein unusable water? Yee Ne		
	Type of water? Depth of strate		
	Method of sealing strata off		
(7)	PUMP: Manufacturer's Name Goild's		
. ,	Type: Sillomary the HP 3/4		
/01	Land-surface elevation		
(8)	Static level II. below top of well. Date II.		
	Arteaian pressure Ibe, per square inch. Date		- +
	Artesian water is controlled by (Cap, valve, etc.))	Work started_ AUG - 30 19/Completed. 3-17.	<u>i</u> 19
/01	WELL TESTS: Drawdown is amount water level is lowered below static level	Work started	, 18
(a)	Was a nump test made? Yesk No I If yes, by whom?	WELL CONSTRUCTOR CERTIFICATION:	
	Yield: gal./min. with ft. drawdown after hrs	t constructed and (or accent reanonsibility for construction	on of this
_		and its complete the internation reported above are in	rue to my
	Recovery data (time taken as zero when pump turned off) (water level measured	knowledge and belief.	
	from well top to water level)	DAD LOUI DULL	
	Time Water Level Time Water Level Time Water Level	NAME FIF (Jenson, FIRM, OR CORPORATION)	PE OR PRIN
		Address Fort Clicker	
	Date of test	(Signed) P. + Northy License No. 6	1521
	Beiler test	(WELL DRILLER)	
	Antest gal./min. with stem set at ft. for hra	Registration of Will 11645 Date wort	<u>U</u> _, 19
	Artesi get / may, with stern stern stern three	No H 11695 Date 12154	_ , 19

1) OHNER: Name STACY BRIAN	Address 121	SUNSET DR S TACCHA, WA 98465-	
2) 10CATION OF HELL: County PIERCE	9103 TELL	- 142 1/4 442 1/4 Sec 17 T 22 N., K	22. WM
REFERENCES INFRICE		; (10) HELL LOG	
4) TYPE OF WORK: Owner's Mumber of wei (If more than one) WEW WELL Nethod: AIR ROTARY	1	Formation: Describe by color, character, and structure, and show thickness of aqu	us penetrated, with
NEW WELL Rethod: AIR RUIART 5) DIMENSIONS: Diameter with Drilled 33 ft. Depth of completed with		SANDY TOPSOIL	10 17
6) CONSTRUCTION DETAILS: Casing installed: 6 " Dia. from 0 WELDED " Dia. from Dia. from Dia. from	ft. to 47 ft ft. to ft	SAND AND SOME GRAVEL COMPACTED SAND COMPACTED SAND AND CLAY SEEPAGE SAND CLAY HARDPAN	9 14 14 24 24 26 26 42
Perforations: ND Type of perforator used SIZE of perforations in. by perforations from ft. to perforations from ft. to perforations from ft. to	in. 11.	I MATER SAND & GRAVEL	42 47 47 53
Screens: NO Manufacturer's Name Type Model No. Diam. slot size from f Diam. slot size from f	it. to ft. it. to ft.		
Gravel packed: ND Size of g Gravel placed from ft. to f	ravel and a		
Surface seals YES To what Material used in seal BENTONITE CLAY Did any strata contain mousable water? Type of water? Depth o Wethod of sealing strata off	n Antitala		
(7) PUNP: Hanufacturer's Rade	₹		
(B) MATER LEVELS: Land-surface ele above sean sea 1 Skalic devel 20 ft. below dog of w Artesian Pressure lbs. per subare in Wetesian water controlled by	evel evel ell Date 12/06 ch Date c/ e		1-1-1-12/02/80
		**************************************	leted 12/03/90
(9) WELL TESTS: Drawdown is amount water level static level. Was a pump test made? NO If yes, by whom? Yield: gal./min with sft. drawdow	15 TOASLED Del	 WELL CONSTRUCTION DEVIATION TO ACCEPT RESPONS struction of this well, and its con Washington well construction standa and the information reported above knowledge and belief. 	rds. Materials used
Recovery data Time Water Level Time Water Level	Time Water Le		Type or print)
Date of test / / Bailer test 30 gal/min. 25 ft. drawdow Air test gal/min. w/ stem set at	yn after 1 h ft. for	ADDRESS PO BOT 44427 TAC WA 98444 rs. [SIGNED]	nse No. 0284
Air test gal/min. W/ stem set at		Contractor's	

.

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

(1)	OWNER: Name PEDRO AND WENDY PINTO Add	22404 Military Road S., Sea-Tac, WA 9819	8
(2)	LOCATION OF WELL: County Pierce		i.w. 2
	STREET ADDRESS OF WELL (or rearest address) off Crescent Va		
		(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION	N
.,	Irrigation DeWater Test Well Other	Formation: Describe by color, character, size of material and structure, and show thickness (of aquite
4)	TYPE OF WORK: Owner's number of well	and the kind and nature of the material in each stratum penetrated, with at least one entri- change of information.	y for eac
•)	(If more than one)	MATERIAL FROM	то
	Deepened Cable Driven		
	Reconditioned D Rotary (X Jetted D	Brown topsoil 0	4
	DIMENSIONS: Diameter of well 6 inches.	Gray hardpan 4 Gray silty sand & gravel 27	<u>27</u> 69
	Drilled <u>178</u> feet. Depth of completed well <u>178</u> ft.	Gray hardpan 69	93
6)	CONSTRUCTION DETAILS:	Gray silty sand & gravel 93	131
	Casing installed: 6 Diam. from 0 ft. to 178 ft.	Gray hardpan 131	164
	Welded 4 Diam. from tt. to ft.	Gray clay w/gravel 164	167
	Threaded Diam. fromft. toft.	Gray silty coarse sand &	
	Perforations: Yes No 🖾	gravel, H20 167	178
	Type of perforation used		
	SIZE of perforations in. byin.		
	perforations from ft. to ft.		
	perforations fromft. toft.		
	Screens: Yes No X		
	Manufacturer's Name		
	Type Model No		
	Diam Slot size from ft. to ft.		
	Diam Stot size from ft. to ft.		
	Gravel packed: Yes No 🙀 Size of gravel		
	Surface seal: Yes X No To what depth? 18 tt.		
	Material used in seal <u>Bentonite</u> Did any strata contain unusable water? Yes No 🔀	B B C	
	Type of water? Depth of strata	- 00	
	Method of seeling strate off		
7)	PUMP: Manufacturer's Name <u>Goulds</u> Type: <u>submersible 10GS10</u> <u>H.P. 1</u>		
		Work Started 4/26/95 19. Completed 4/27/95	. 19
8)	WATER LEVELS: Land-surface elevation above mean sea level		
	Static level	WELL CONSTRUCTOR CERTIFICATION:	
	Artesian water is controlled by(Cap, valve, etc.)	I constructed and/or accept responsibility for construction of this well, compliance with all Washington well construction standards. Materials us	and its
		the information reported above are true to my best knowledge and belief.	300 0.10
(9)	WELL TESTS: Drawdown is amount water level is lowered below static level Was a pump test made? Yes X No	www. Greekem Well Drilling Inc.	
	Yield: <u>15</u> gal./min. with <u>18</u> ft. drawdown after <u>2</u> hrs.	NAME <u>Gresham Well Drilling, Inc.</u> (PERSON, FRAN, OR CORPORATION) (TYPE OR PRINT)	
	1) 11 10 11	Address 3105 NW Lakeness Rd., Poulsbo, WA	9837
	17 IF 19 IF	(Slaned) he have License No. 076	1
	Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)	(Signed) License No License No	
т	ime Water Level Time Water Level Time Water Level	Contractor's	
	<u>Full recov. in 5 min.</u>	Registration GRESHWD055BC Date 5/04/95	19
		(USE ADDITIONAL SHEETS IF NECESSARY)	
	Date of test _5/02/95		
	Bailer test gal./min. with ft. drawdown after hrs.		
	Airtest gal./min. with stem set at ft. for hrs.	Ecology is an Equal Opportunity and Affirmative Action employer. F	OF SD6

4

Start Card No. <u>W05268</u>9

File Original and First Co	py with
Department of Ecology	

Second Copy - Owner's Copy

WATER WELL REPORT

Start Card No. <u>W053</u>930

Start Card No.	MODD220
UNIQUE WELL I.D	ABP828

Third	I Copy — Driller's Copy STATE OF V	VASHINGTON Water Right Permit No
(1)	OWNER: Name MARK KNOWLES Add	21600 24TH AVE.S. #E101, DES MOINES. WA 98198
(2)	LOCATION OF WELL: County PIERCE	. <u>NW 1/4 NE 1/4 Sec 17 T. 22 N. R. 2E W.M.</u>
(2a)	STREET ADDRESS OF WELL (or nearest address)15821_28TH_AVEN	NUE NW, GIG HARBOR
(3)	PROPOSED USE: X Domestic Industrial Municipal	(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION
	DeWater Test Well Other D	Formation: Describe by color, character, size of material and structure, and show thickness of aguiters and the kind end nature of the material in each stratum penetrated, with at least one entry for each charge of information.
(4)	TYPE OF WORK: Owner's number of well (If more than one)	MATERIAL FROM TO
	Abandoned Decoened Kenned Bored Decoened Decoened Decoened Decoened Driven	
	Reconditioned Rotary XX Jetted	OVERBURDEN 0 4
(5)	DIMENSIONS: Diameter of well 6 inches.	GRAY HARDPAN 4 28
•	Dnilled <u>119</u> feet. Depth of completed well <u>119</u> ft.	GRAY SAND & GRAVEL 28 52
(C)	CONSTRUCTION DETAILS:	BLUE CLAY 52 78
(0)	Casing installed: <u>6</u> Diam. from <u>0</u> ft. to <u>119</u> ft.	GRAVEL, H2O – 2GPM 78 79
	Casing installed: Deam. from t. Weided Diam. from ft. to ft.	GRAY HARDPAN 79 112 GRAVEL, H20 112 119
	Liner installed Threaded Diam. from th. to the ft.	GRAVEL, H20 112 119
	Perforations: Yes No 🕅	
	Type of perforator used	
	SIZE of perforations in. by In.	
	perforations from ft. to ft.	
	perforations fromft. toft.	
	Manulacturer's Name	
	Type	
	Diam.	
	Gravel packed: Yes No 🕅 Size of gravel	
	Gravel placed fromft. toft.	
	Surface seel: Yes 🕅 No 🗌 To what depth? <u>18</u> t.	
	Material used in sealBENTONITE	
	Did any strata contain unusable water? Yes 🗋 No 🕼	
	Type of water? Depth of strate	
	Method of sealing strata off	
(7)	PUMP: Manufacturer's Name GOULDS	
	Type: <u>SUBMERSIBLE TOGSIO</u> H.P. 1	
(8)	WATER LEVELS: Land-surface elevation above mean sea level	Work Started 6/07/95 19. Completed 6/07/95 19
	Static level 72 It below top of well Date 6/09/95	WELL CONSTRUCTOR 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(Cap, valve, etc.)	compliance with all Washington well construction standards. Materials used and
(9)	WELL TESTS: Drawdown is amount water level is lowered below static level	the information reported above are true to my best knowledge and belief.
	Was a pump test made? Yes KA. No . If yes, by whom? <u>GRESHAM</u>	NAME GRESHAM WELL DRILLING, INC.
	Yield: <u>15</u> gal./min. with <u>5</u> ft. drawdown sfter <u>1</u> hrs.	
	n n n	Address 3105 NW LAKENESS RD., POULSBO, WA 98370
	11 0 H H	(Skaned) fig f. dim License No. 0761
	Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)	(WELL DAILLER)
1	ime Water Level Time Water Level Time Water Level FULL RECOV. IN 2 MIN.	Contractor's
		Registration GRESHWD055BC Date 6/16/95
		(USE ADDITIONAL SHEETS IF NECESSARY)
	Date of test6/09/95	(USE ADDITIONAL SHEETS IF NECESSANT)
	Bailer test gal./min. with ht. drawdown after hrs.	Ecolomy is an Equal Opportunity and Affirmative Action amployer. For ano
	Airtest 20 gal./min. with stern set at 115 ft. for 1 hrs.	Ecology is an Equal Opportunity and Affirmative Action employer. For spe- clal accommodation needs, contact the Water Resources Program at (206)
	Artesian flowg.p.m. Date Temperature of water50 Was a chemical analysis made? Yes 🚺 No 🗌	407-6600. The TDD number is (206) 407-6006.
	Temperature of water Was a chemical analysis made? Yes EA- No L	

WATER WELL REPORT	Notice of Intent No. W061595
Construction/Decommission ("x" in circle)	Unique Ecology Well ID Tag No. <u>A 13 A - 0 6 4</u>
Construction	Water Right Permit No.
Decommission ORIGINAL CONSTRUCTION Notice	las Invil
127549 of Intent Number	Property Owner Name JOE /AW
ROPOSED USE: Domestic Industrial Municipal DeWater Irrigation Test Well Other	Well Street Address 18826 28 AVE MIN, City GIO / ALBOR County: PIENCE
TYPE OF WORK: Owner's number of well (If more than one)	City \mathcal{M} $$
New Well Reconditioned Method Dug Bored Driven Deepened E Cable Rotary Jetted	Location <u>NE</u> 1/4 1/4 <u>NW</u> 1/4 Sec. <u>17</u> Twn <u>22</u> R2 EWM or Uat/Long: Lat Deg Lat Min/Sec
DIMENSIONS: Diameter of well 6 inches, drilled 102 ft Depth of completed well 103 ft	(s,t,r still REQUIRED) Long Deg Long Min/Sec
CONSTRUCTION DETAILS	Tax Parcel No. <u>0227171054</u>
Casing Welded <u>6</u> " Diam from <u>6</u> ft. to <u>103</u> ft nstalled: <u>Liner installed</u> <u> </u>	Formation Describe by color, character, size of material and structure, and the
Threaded Diam. fromft. toft	entry for each change of information Indicate all water encountered
Perforations: 🔲 Yes 😭 No	(USE ADDITIONAL SHEETS IF NECESSARY.)
ype of perforator used	MATERIAL FROM TO
	Top soil 0 4
Anufacturer's Name Johnson	clay-gravel 4 11
Type Stainless Steel Model No	ctay-gravel-boulder 11 16 hrown sand 16 47
Diam <u>5"</u> Slot Size <u>10</u> from <u>102</u> ft to <u>96</u> ft	
DiamSlot Sizefromft toft	
Gravel/Filter packed: 🔲 Yes 🗃 No 🔲 Sıze of gravel/sand	gray slay - saud 83 85
Aaterials placed fromft toft.	gravel-sand-clay 85 96 sand oran WB. 96 102
Surface Seal: Byes NoTo what depth? <u>19</u> ft Materials used in seal <u>Benlounile</u>	'sand gray W13. 96 102
Did any strata contain unusable water? \Box_{Yes} \textcircled{P}_{No}	· · · · · · · · · · · · · · · · · · ·
Type of water? Depth of strata	· ···
Method of sealing strata off	
PUMP: Manufacturer's Name	
WATER LEVELS: Land-surface elevation above mean sea levelft.	
PUMP: Manufacturer's Name	RECEIVED
PUMP: Manufacturer's Name	RECEIVED
PUMP: Manufacturer's Name	RECEIVED JAN 16 2003
PUMP: Manufacturer's Name	RECEIVED JAN 16 2003
PUMP: Manufacturer's Name	Washington State
PUMP: Manufacturer's Name	Washington State
PUMP: Manufacturer's Name	
PUMP: Manufacturer's Name	Washington State Department of Ecology
PUMP: Manufacturer's Name	Washington State
PUMP: Manufacturer's Name	Washington State Washington State Department of Ecology Start Date 2/23/04 onsibility for construction of this well, and its compliance with all eported above are true to my best knowledge and belief.
PUMP: Manufacturer's Name	Washington State Washington State Department of Ecology Start Date 2/23/04 onsibility for construction of this well, and its compliance with all eported above are true to my best knowledge and belief.
PUMP: Manufacturer's Name	Start Date 2 4 02 Completed Date 2/23/01 start Date 2 4 02 Completed Date 2/23/01 possibility for construction of this well, and its compliance with all ported above are true to my best knowledge and belief. Drilling Company 424 Box 444 Contract Contr
PUMP: Manufacturer's Name Pype	Washington State Washington State Department of Ecology Start Date 2/23/01 Start Date 2/23/01 onsibility for construction of this well, and its compliance with all exported above are true to my best knowledge and belief. Drilling Company 4/24 Box 4/26 Construction Address RO1 Box 330
PUMP: Manufacturer's Name	Start Date 2 4 02 Completed Date 2/23/01 start Date 2 4 02 Completed Date 2/23/01 possibility for construction of this well, and its compliance with all ported above are true to my best knowledge and belief. Drilling Company 424 Box 444 Contract Contr

--

ì

WATER WELL REPORT	CURRENT Notice of Intent No. W162 612	?	
Conginal & 1st copy - Ecology, 2nd copy - owner, 3rd copy - driller	Unique Ecology Well ID Tag No. ACE	533	
Construction/Decommission ("x" in circle)	Water Right Permit No.		
O Decommission ORIGINAL CONSTRUCTION Notice 130700 of Intent Number	Property Owner Name <u>ANN Lem</u>		
PROPOSED USE: Image: Comparison of the	Well Street Address 15625 Ove	s Cent V	<u>y Dr Na</u>
TYPE OF WORK: Owner's number of well (if more than one)	City <u>Cic Hanhon</u> County:	Merce	FWM
New Well Reconditioned Method Dug Bored Driven Deepened X Cable Rotary Detted	Location \underline{NE} 1/4 1/4 \underline{NE} 1/4 Sec \underline{IT} T Lat/Long: Lat Deg		WWM
DIMENSIONS: Diameter of well <u>6</u> inches, drilled <u>218</u> ft Depth of completed well <u>218</u> ft	Lat/Long: Lat Deg [(s,t,r still REQUIRED) Long Deg]		
CONSTRUCTION DETAILS	Tax Parcel No. 0228171065	5	<u> </u>
Threaded Diam fromft toft	Formation Describe by color, character, size of makind and nature of the material in each stratum pen- entry for each change of information Indicate all w	aterial and strue etrated, with at vater encounter	cture, and the least one ed
Perforations: Yes 🛛 No	(USE ADDITIONAL SHEETS IF NECESSARY)		
Type of përforator used SIZE of perfsin byin. and no of perfs fromft toft	MATERIAL	FROM	TO
Screens: X Yes No K-Pac Location	Top soil Sand & gravel	0	
Manufacturer's Name	gravely Hardpon	5	5 60
Type $3/5$ Model No Diam 67 Slot Size $0/0$ from $3/3$ ft to $2/8$ ft	Have Dass	6.0	88.
Diam Slot Sizefromft_toft_toft_	Sand	88	91
Gravel/Filter packed: Yes X No Size of gravel/sand	Clayish Hundpan + gravel	91	194
Materials placed fromft toft.	Fine Gauge	194	210
Surface Seal: X Yes No, To what depth?ft	Band	210	218
Materials used in seal <u>Holeplug</u>			· · · ·
Did any strata contain unusable water? Type of water?Depth of strata			<u> </u>
Method of sealing strata off	RECEIVED 28		
PUMP: Manufacturer's NameGould		~	· ·
Type Submersible HP 3/4		HPR	
WATER LEVELS: Land-surface elevation above mean sea levelft Static level92,5ft below top of well5103		1	· ·
Static level <u><u><u></u></u> <u><u></u> <u></u> <u></u> <u></u> t below top of well Date <u><u></u> <u></u> <u></u></u></u></u>			
Artesian water is controlled by		P1	Ť
(cap,valve, etc.)	mo	ö	
WELL TESTS: Drawdown is amount water level is lowered below static level Was a pump test made? X Yes No If yes, by whom? by Driller		A	·
Yield <u>/6 gal/min with 45 ft. drawdown after</u> hrs			
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			
<u>8 60 137 2010 97.5</u>			
<u>10'12 91</u>			
Date of test Bailer testgal/min_withft. drawdown afterhrs			
Airtestgal/min with stem set atft forhrs			
Artesian flowg p m Date Temperature of waterWas a chemical analysis made? Yes No	Start Date 2/17/03 Completed Da	nte <u>3/4/0</u>	03
WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept resp Washington well construction standards. Materials used and the information r	onsibility for construction of this well, and its c	compliance w	
Driller Engineer Trainee Name (Print) Wesley Clessee	Drilling Company Des Gless		lina
Driller/Engineer/Trainee Signature Wesley Messue	- Address Po Box 487		<u> </u>
Driller or Trainee License No. <u>0/54</u>	= City, State, Zip <u>Burley Wa</u>	9827	7_
			•
If trainee, licensed driller's Signature and License no.	- Registration No. WESCLOX 68796	ate <u>3/5</u> /	103_
	Ecology is an Equal Opportunity Employer	ECY 050-1-20	(Rev 4/01)

j.

٠

WATER WELL REPORT Original & 1 st copy – Ecology, 2 nd copy – owner, 3 rd copy – driller	CURRENT		
Construction/Decommission ("x" in circle) Construction 282.31	Notice of Intent No. <u>WE07604</u>		
\overline{X} Construction 282131	Unique Ecology Well ID Tag No. <u>BAT439</u>		
Decommission ORIGINAL INSTALLATION	Water Right Permit No.		
Notice of Intent Number	·		
ROPOSED USE: 🛛 Domestic 🗌 Industrial 🗌 Municipal	Property Owner Name <u>WILLIAM SARNO</u>		
DeWater Irrigation Test Well Other	Well Street Address <u>15905 28TH AVE NW</u>		
YPE OF WORK: Owner's number of well (if more than one) New well Reconditioned Method Dug Bored Driven	City <u>GIG HARBOR</u> County <u>PIERCE</u>		
Deepened Cable & Rotary Detted	Location <u>NW1/4-1/4 NE1/4</u> Sec <u>17</u> Twn <u>22</u> R <u>2E</u>	EWM	\boxtimes
DIMENSIONS: Diameter of well 6 inches, drilled 148 ft.	(s, t, r Still REQUIRED)	0	
Depth of completed well <u>148</u> ft.		WW	мП
Casing \boxtimes Welded <u>6</u> " Diam. from <u>0</u> ft. to <u>233</u> ft.	Lat/Long Lat Deg Lat Min/Sec		
nstalled: Liner installed? Diam. fromft. toft	Long Deg Long Min/Sec		
nstalled: Liner installed" Diam. fromft. toft Threaded" Diam Fromft. toft.	Tax Parcel No. (Required) <u>0222175005</u>		
erforations: 🔲 Yes 🖾 No			
ype of perforator used	CONSTRUCTION OR DECOMMISSION PROC Formation: Describe by color, character, size of material and struct		kind a
IZE of perfsin. byin. and no. of perfsfromft. toft. 	nature of the material in each stratum penetrated, with at least one	entry for eacl	
	of information. (USE ADDITIONAL SHEETS IF NECESSARY.)		
Aanufacturer's Name JNSN	MATERIAL PIPE STICK UP	FROM 0	<u>TC</u>
SS Model No. TELES Diam. <u>5</u> "Slot size <u>18</u> from <u>143</u> ft. to <u>148</u> ft. <u>148</u> ft.	BROWN SAND, CLAY, GRAVEL	1	16
DiamSlot size from ft. to ft.	GRAY SAND, GRAVEL, WET	16	21
Gravel/Filter packed: 🔲 Yes 🛛 No 🦳 Size of gravel/sand	BROWN SAND, GOME GRAVEL, WET	21	41
Aaterials placed from ft. to ft.	GRAY SAND, CLAY, GRAVEL,	41	
urface Seal: ⊠ Yes 🔲 No To what depth? <u>18</u> ft	SEAMS WET		61
Aaterial used in seal BENTONITE	GRAY SILT, SAND, GRAVEL	61	85
Did any strata contain unusable water?	GRAY SAND, GRAVEL, SEAMS WATR GRAY SILT, SAND, GRAVEL, CLAY	85 109	10
ype of water? Depth of strata	GRAY SAND, GRAVEL, SEAMS WATR	140	14
Aethod of sealing strata off			+
PUMP: Manufacturer's Name			
ype:			
VATER LEVELS: Land-surface elevation above mean sea level ft.			
static level 83ft below top of well Date 11/13/2007		<u> </u>	4
Artesian pressure lbs. per square inch Date			<u> </u>
Artesian water is controlled by (cap, valve, etc.)			
VELL TESTS: Drawdown is amount water level is lowered below static level			+
Was a pump test made? Yes No If yes, by whom?			-
/ield:gal./min. withft. drawdown afterhrs.			
/ield:gal./min. withft. drawdown afterhrs.			
fieldgal./min. withft. drawdown afterhrs. Recovery data (time taken as zero when pump turned off) (water level measured from well			
op to water level)	I Lange Content 18		
Time Water Level Time Water Level Time Water Level	DFC TABA		+
		¥	
	Washington St	ates	+
Date of test	Department of Ec		
Bailer test 15 gal./min. with 24 ft drawdown after <u>1</u> hrs.		UIUEY	1
Airtestgal./min. with stem set atft. forhrs.			

WELL CONSTRUCTION CERTIFICATION: 1 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) JOHN SULLIVAN	Drilling Company NICHOLSON DRILLING INC
Driller/Engineer/Trainee Signature	Address PO BOX 123
Driller or trainee License No. 2218	City, State, Zip PORT ORCHARD , WA, 98366
IF TRAINEE: Driller's License No:	Contractor's
Driller's Signature:	Registration No. NICHOD11370M Date 11/30/2007
	· · · · · · · · · · · · · · · · · · ·

ECY 050-1-20 (Rev 4/07)

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

Ecology is an Equal Opportunity Employer

WATER WELL REPORT	CURRENT W216866	· · ·	
Original & 1" copy - Ecology, 2 nd copy - owner, 3 rd copy - driller	Notice of Intent No. <u>W216866</u>		<u></u>
Construction/Decommission ("x" in circle)	Unique Ecology Well ID Tag No. <u>APR</u>		
D Construction	Water Right Permit No.	т. 	÷
D Decommission ORIGINAL INSTALLATION Notice	Water Right Permit No. Property Owner Name Swen Wein	mann	
20520 B of Intent Number	Well Street Address <u>15515-30th</u>		
ROPOSED USE: 12 Domestic	City Gig Harbor County Pi		
DeWater Irrigation Test Well Other	·		
TYPE OF WORK: Owner's number of well (if more than one)	$\frac{1}{10000000000000000000000000000000000$	VR_ZI or WWM	
New well Reconditioned Method : Dug Bored Driven Deepened Deepened Deepened Deepened Deepened	Lat/Long (s, t, r Lat Deg La		
DIMENSIONS: Diameter of well <u>6</u> inches, drilled <u>160</u> ft.	Still REQUIRED) Long Deg Lo	ng Min/Sec	
Depth of completed wellft.			
CONSTRUCTION DETAILS Casing Σ Welded 6 "Diam. from +1 ft. to 155 ft.	Tax Parcel No. 0222171051		
nstalled: Diner installed "Diam from ft. to ft.	CONSTRUCTION OR DECOMMISSIO	N PROCEDU	 RE
□ Threaded" Diam. from ft. to ft.	Formation: Describe by color, character, size of material and		
Perforations: I Yes IX No Ypc of perforator used IX IX IX IX	nature of the material in each stratum penetrated, with at least	t one entry for ea	
SIZE of perfs in. by in. and no. of perfs ft. toft.	information (USE ADDITIONAL SHEETS IF NECT MATERIAL	FROM	то
Screens: \mathbf{x} Yes \Box No \mathbf{x} K-Pac Location <u>154</u>	Brown sand		37
Manufacturer's Name	<u>DIUWII SAUU</u>		
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	Grev till	37	132
DiamSlot sizefromft. toft. toft.			
Gravel/Filter packed: □ Yes ★ No □ Size of gravel/sand Materials placed from ft. to	Grey_clay	132	-136
Surface Seal: 57 Yes D No To what depth? 18 ft.	Grey sand	136	145
Vaterial used in seal <u>Bentonite</u>		+	
Did any strata contain unusable water? 🖸 Yes 🖾 No	Grey sand w/b	-145	160
Fype of water? Method of sealing strata off			·
PUMP: Manufacturer's Name <u>Goulds</u>	-Grey-tight sand	160	
Sype: Submersible H.P. 1	· · · · · · · · · · · · · · · · · · ·		
WATER LEVELS: Land-surface elevation above mean sea level			
static level 108 ft. below top of well Date $10/25/07$	= i t		
Artesian pressure lbs. per square inchr Date	RECEIVE NOV 1420	1	
Artesian water is controlled by	<u>۲</u> ۲ ۲ ۲ ۲ ۲ ۲ ۲ ۲ ۲ ۲ ۲ ۲ ۲ ۲ ۲ ۲ ۲ ۲	d7	
WELL TESTS: Drawdown is amount water level is lowered below static level	NOV 14 LO		
Was a pump test made? \square Yes \square No If yes, by whom? $\underline{Olsen} Dr1$.	- OF EC	JUG	
/ield: <u>15 gal/min. with</u> <u>9</u> ft. drawdown after <u>1</u> hrs. /ield: gal/min. with ft. drawdown after hrs.	NOV 1420 DEPT. OF ECC		
/ield:gal./min. withft. drawdown afterhrs.	· · ·		
Recovery data (time taken as zero when pump turned off) (water level measured from well op to water level)			
Time Water Level Time Water Level Time Water Level			
<u>0 117' 3 m 108'</u>			
2-m <u>-104'</u>	······································		
Date of test $10/25/07$			
Bailer test <u>10</u> gal./min. with <u>8</u> ft. drawdown after <u>2</u> hrs.	· · · · · · · · · · · · · · · · · · ·	+	
irtest gal/min. with stem set at ft. forhrs. irtesian flow g.p.m. Date			
emperature of water Was a chemical analysis made? 🔯 Yes 🗖 No		4	
emperature of water was a chemical analysis made? Do Yes 🖵 No	Start Date 9/20/07 Comple	ted Date <u>10</u>	

Driller DEngineer DTraince Namá (Print) Matt Olsen	Drilling Company <u>Olsen Drilling</u>
Driller/Engineer/Trainee Signature	Address PO Box 1554
Driller or trainee License No. 2337	City, State, Zip Port Orchard, WA 98366
(If TRAINEE,	Contractor's
Driller's Licensed No.	Registration No. OLSEND101LJ Date <u>11/9/07</u>
Driller's Signature	Ecology is an Equal Opportunity Employer.

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

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

Depa	Original and First Copy with Internent of Ecology and Copy — Owner's Copy			
Third	d Copy — Driller's Copy STATE OF W	Water Right Permit No		
•		Alige United , The low of		
•••	LOCATION OF WELL: County / Set CL STREET ADDRESS OF WELL (or nearest address) 3025 / Jott J	- Allia All 14300 17 T.29	<u>//</u> n., r_	<u>26</u> w
		(10) WELL LOG or ABANDONMENT PROCEDURE DE	CONDT	
(3)	PROPOSED USE: C Domestic Industriel Municipal C Imgation Test Wet D Other D	Formation: Describe by color, character, size of material and structure, and s	now thickne	ehups to aau
(4)	TYPE OF WORK Owner's number of well	and the kind and nature of the material in each stratum penetrated, with all change of information.	least one	antry for eac
	Abandoned D New well 2 Method: Dug D Bored D	MATERIAL	FROM	TO
	Deepened C Cable Driven Reconditioned Reconditioned Provide T Potted D	For Sand's some Traces of Bon Silts	2	2
(5)	DIMENSIONS: Diameter of well inches.	Bro Sill's & Mchinin Spirit 1 &	11	31
	Drilled teet. Depth of completed well n.	Small siteralar Graves		
(6)	CONSTRUCTION DETAILS:	Sitter Gray Sands Sticks	<u>31</u> 37	36 53
	Casing installed: $6^{\prime\prime\prime}$ Dram. from $+2$ ft to 53 ft. Welded 24 Dram. from ft in ft	TITAL & (LING) > WITTL HANK	<u></u>	
	Welded 27 Diam. from ft. to ft. Liner installed 7 Diam. from ft. to ft. Threaded 7 Diam. from ft. to ft.			
	Perforations: Yes No 🗹	· · · · · · · · · · · · · · · · · · ·	· <u>·</u> ·-···	
	Type of perforator used			
	SIZE of perforations in. by in. by in.			
	perforations from ft to ft.		V—	
	perforations from tt. tott.			
	Screens: Yes 🔲 No 🔀 Manufacturer's Name		!	- <u>.</u>
	Type Model No			
	DiamSlot sizefromft. toft. Diam. Skot size from til to ft.			
<u> </u>	Diam.			
	Gravel placed from ft. to ft.			
	Surface seel: Yes No No To what depth? 19.5 t. Material used in seal Bearforwith			ļ
	Material used in seal			
	Type of water? Depth of streta			
	Method of sealing strata off			}
(7)	PUMP: Manufacturer's Name		• •	
	Type: H P,			
(8)	WATER LEVELS: Land-surface elevation above mean sea level		·	
	Artesian pressure Ibs per square inch Date			
·	Arlesian water is controlled by (Cap, valve, etc.)	Wark Started May 2 19 Campleted With	13	. 19 9
(9)	WELL TESTS: Drawdown is amount water level is lowered below static level Was a pump lest made? Yes No No II yes, by whom?	WELL CONSTRUCTOR CERTIFICATION:		
	Was a pump test made? YesNo II yes, by whom / Yield' gal./min. withft. drawdown after hrs.	I constructed and/or accept responsibility for construction	of this w	eli, and its
	10 11 10 10	compliance with all Washington well construction standards the information reported above are true to my best knowledge	. Materials	i used and
	n n Recovery data (time taken as zero when pump turned off) (water level measured from well	Halt Testine Tre.		
٦	recovery data (una taken as zero when punto formed bir) (water level measured from wear top (o water level) Time Water Level Time Water Level Time Water Level	NAME (PERSON, FIRM, OR CORPORATION) (TYPE DE) <i>11</i>	
<u> </u>		Address 106 21 Todd Kd. 1 m	1a//ij	0
		(Signed) (Mell ORLIER)	e No2	198
	Date of test	Contractor's	•	
• .	Bailer test gal./min. with ft. drawdown after hrs. Alriest gal./min. with stern set at 53 - ft. for hrs.	No. 4017710870J Date ALOU 3		19 94
	Artesian flow g.p.m. Date Temperature of water Was a Chemical analysis made? Yes No	USE ADDITIONAL SHEETS IF NECESSA		

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

Department of Ecology Well Log Image System

	CIDDENT	
WATER WELL REPORT	CURRENT	
Original & 1 st copy - Ecology, 2 nd copy - owner, 3 nd copy - driller	Notice of Intent No. WE21844	
ECOLOGY Construction/Decommission ("x" in circle)	Unique Ecology Well ID Tag No. BHY 098	
Construction	Water Right Permit No.	
Decommission ORIGINAL INSTALLATION	Property Owner Name David and Liz Stanton	
Notice of Intent Number WE21844 PROPOSED USE: Domestic Industrial Municipal	Weil Street Address 2811 159th ST CT NW	
DeWater Irrigation Test Well Other		
TYPE OF WORK: Owner's number of well (if more than one)	City Gig Harbor County Pierce	
New well Reconditioned Method: Dug Bored Driven Cable Rotary Jetted	(s, t, r Still REQUIRED)	EWM 🔳 Or
DIMENSIONS: Diameter of well 6 inches, drilled 98 ft.	Lat/Long	WWM
Depth of completed well 98 ft.	Lat Deg Lat Min/Sec	
CONSTRUCTION DETAILS	Long Deg Long Min/Sec	_
Casing Welded 6_" Diam. from 0_fl. to 96_fl. Installed: Diam. from fl. to fl.	Tax parcel No. (Required) <u>02217</u> 5008	
Threaded Diam. From fl. to fl.		
Perforations: 🗌 Yes 🔳 No	CONSTRUCTION OR DECOMMISSION PROC Formation: Describe by color, character, size of material an	
Type of perforator used	and the kind and nature of the material in each stratum pene	trated, with a
SIZE of perfs ft. to ft.	least one entry for each change of information. (USE ADD	
Screens: Series: No K-Pac Location	SHEETS IF NECESSARY.) MATERIAL FROM	ТО
Type STAINLESS STEEL Model No. TELESCOPE	Pipe stick up 0	1
Diam. $\frac{6}{100}$ Slot size $\frac{16}{100}$ from $\frac{93}{100}$ ft. to $\frac{98}{100}$ ft.	Brown grey fill 1	3
Diam. Slot size from ft. to ft.	Grey sand gravel clay wet 3	16
Gravel/Filter packed: 🔲 Yes 🔳 No Size of gravel/sand	Grey sand gravel water 16	34
Materials placed fromft. toft.	Grey sand gravel clay wet 34	77
Surface Seal: 📕 Yes 🔲 No To what depth? 18ft.	Grey sand gravel water 77	98
laterial used in seal Bentonite		
id any strata contain unusable water? Yes No ype of water? Depth of strata	· · · · · · · · · · · · · · · · · · ·	
Aethod of sealing strata off		
UMP: Manufacturer's Name	1	
Гуре: Н.Р		
WATER LEVELS: Land-surface elevation above mean sea level ft.		
Static level 40 ft. below top of well Date		
Artesian pressure lbs. per square inch Date	· · · · · · · · · · · · · · · · · · ·	
Artesian water is controlled by (cap, valve, etc.) WELL TESTS: Drawdown is amount water level is lowered below static level		
Was a pump test made? Yes No If yes, by whom?		
Yield:hrsft, 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)	RECEIV	ED
Time Water Level Time Water Level Time Water Level		
	MAY 2720	118
		19
Date of test		
	WA State Depa	
Bailer test <u>10</u> gal/min. with <u>9</u> ft. drawdown after <u>1</u> hrs.	of Ecology (S	WIRU)
Airtest gal/min. with stem set at ft. for hrs.		
Artesian flow g.p.m. Date		

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 Nic Sample	Drilling Company Nicholson Drilling INC.		
Driller/Engineer/Trainee Signature	Address PO BOX 123		
Driller or trainee License No. 2770	City, State, Zip Port Orchard, WA, 98367		
IF TRAINEE: Driller's License No:	Contractor's		
Driller's Signature:	Registration No. NICHODI137OM Date 02/15/2016		

at 360-407-6872. Persons with impaired hearing may call Washington Relay Service at 711. Persons with speech disability may call TTY at 877-833-6341.

- - -

DEFARTMENT OF ECOLOGY State of Workington Construction Decommission ORIGINAL INSTALLATION
Notice of Intent Number WE21843
PROPOSED USE: Domestic Industrial Municipal
DeWater Inrigation Test Well Other
TYPE OF WORK: Owner's number of well (if more than one) Image: New well Reconditioned Method : Dug Bored Driven Image: Deepened Cable Rotary Jetted
DIMENSIONS: Diameter of well <u>6</u> inches, drilled <u>151</u> ft.
Depth of completed well <u>151</u> ft.
CONSTRUCTION DETAILS
Casing Welded 6 Diam. from 0 ft. to 151 ft. Installed: Iner installed " Diam. from ft. to ft. Installed: Inter installed " Diam. from ft. to ft.
Perforations: 🔲 Yes 🔳 No
Type of perforator used
SIZE of perfsin. byin. and no. of perfsft. toft.
Screens: Yes No K-Pac Location Manufacturer's Name
Type Model No
Diam. Slot size from ft. to ft.
Diam Slot size from ft to ft
Diam. Slot size from ft. to ft.
Gravel/Filter packed: Yes INo Size of gravel/sand Materials placed from ft. to ft.
Surface Seal: Yes No To what depth? <u>18</u> ft.
Material used in seal BENTONITE Did any strata contain unusable water? Yes No
Type of water? Depth of strata
Method of sealing strata off
PUMP: Manufacturer's Name
Туре: Н.Р
WATER LEVELS: Land-surface elevation above mean sea levelft.
Static level 74 ft. below top of well Date
Artesian pressure Ibs. per square inch Date
Artesian water is controlled by (cap, valve, etc.)
WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? 🖸 Yes 🔳 No If yes, by whom?
Yield:gal./min. withft. 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 test <u>17</u> gal./min. with <u>27</u> ft. drawdown after <u>1</u> hrs.
Airtest gal./min. with stem set at ft. for hrs.
Artesian flow g.p.m. Date
Temperature of water Was a chemical analysis made? 🗋 Yes 🔳 No

CURRENT

Notice of Intent No. WE21843					
Unique Ecology Well ID Tag No. BJN 278					
Water Right Permit No.	·····				
Property Owner Name DAVID STANTON					
Well Street Address 2917 159TH ST CT NW					
City GIG HARBOR County PIERCE		_			
Location <u>nw</u> 1/4-1/4 <u>ne</u> 1/4 Sec <u>17</u> . Twn <u>22</u> (s, t, r Still REQUIRED)	0	r			
Lat/Long	ww	'M 🗌			
	fin/Sec				
	Min/Sec	1			
Tax parcel No. (Required) 0222175007					
CONSTRUCTION OR DECOMMISSION PROCEDURE Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. (USE ADDITIONAL SHEETS IF NECESSARY.)					
MATERIAL	FROM	TO			
Pipe stick up	0	1			
Grey sand gravel clay wet	1	13			
Grey clay	13	24			
Brown sand silt wet	24	33			
Brey sand gravel cley damp	33	109			
Grey clay	109	136			
Grey sand gravel clay	136	145			
Grey coarse sand gravel water	145	151			
		-			
·					
· · · · · · · · · · · · · · · · · · ·		* * *			
	-				
	-				
	_				

	~	IV/	The state	-
			i and	

JUN 0.92016

WA State Department of Ecology (SWRO)

Start Date 02/02/16 Completed Date 02/04/16

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.

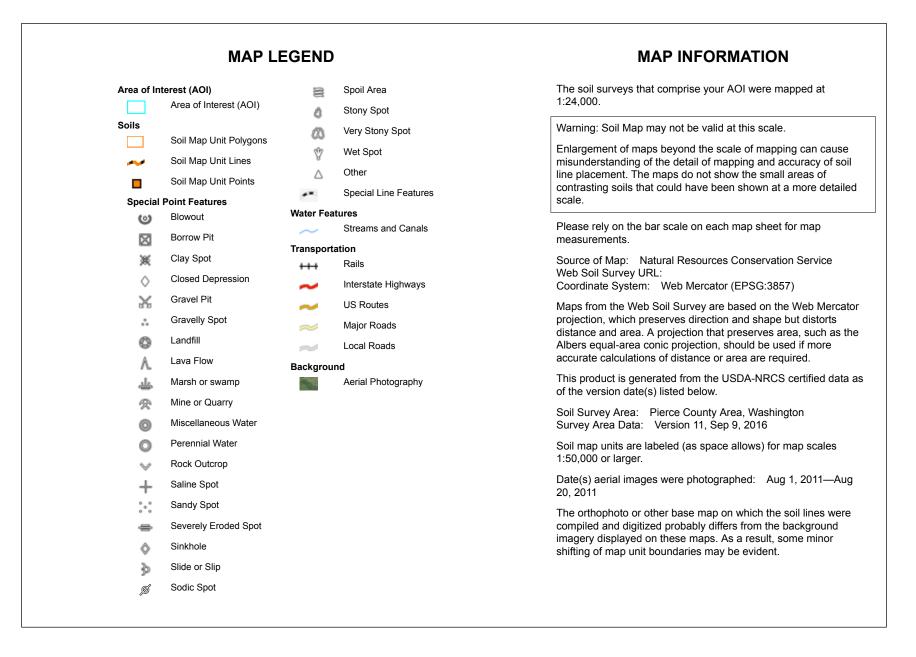
Drilling Company NICHOLSON DRILLING INC.			
Address PO BOX 123			
City, State, Zip PORT ORCHARD, WA, 98367			
Contractor's			
Registration No. NICHODI137OM Date 06/06/2016			

ECY 050-1-20 (Rev 02-2010) To request ADA accommodation including materials in a format for the visually impaired, call Ecology Water Resources Program at 360-407-6872. Persons with impaired hearing may call Washington Relay Service at 711. Persons with speech disability may call TTY at 877-833-6341.

APPENDIX C



USDA Natural Resources Conservation Service Web Soil Survey National Cooperative Soil Survey



Map Unit Legend

Pierce County Area, Washington (WA653)				
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI	
16C	Harstine gravelly ashy sandy loam, 6 to 15 percent slopes	4.5	88.4%	
16D	Harstine gravelly ashy sandy loam, 15 to 30 percent slopes	0.6	11.6%	
Totals for Area of Interest		5.1	100.0%	



Pierce County Area, Washington

16C—Harstine gravelly ashy sandy loam, 6 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2rtvj Elevation: 200 to 390 feet Mean annual precipitation: 30 to 55 inches Mean annual air temperature: 48 to 52 degrees F Frost-free period: 180 to 200 days Farmland classification: Prime farmland if irrigated

Map Unit Composition

Harstine and similar soils: 85 percent Minor components: 15 percent Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Harstine

Setting

Landform: Ridges Landform position (two-dimensional): Footslope Landform position (three-dimensional): Nose slope Down-slope shape: Linear Across-slope shape: Convex Parent material: Sandy glacial drift with an influence of volcanic ash over dense glaciomarine deposits

Typical profile

Oi - 0 to 0 inches: slightly decomposed plant material *Oe - 0 to 1 inches:* moderately decomposed plant material *Bw1 - 1 to 6 inches:* gravelly ashy sandy loam *Bw2 - 6 to 14 inches:* gravelly ashy sandy loam *Bw3 - 14 to 22 inches:* gravelly ashy sandy loam *Bw4 - 22 to 32 inches:* gravelly ashy sandy loam *2Cd1 - 32 to 38 inches:* gravelly loamy sand *2Cd2 - 38 to 61 inches:* gravelly loamy sand

Properties and qualities

Slope: 6 to 15 percent
Depth to restrictive feature: 20 to 39 inches to densic material
Natural drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: About 24 to 37 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 4.2 inches)

USDA

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 4s Hydrologic Soil Group: C Other vegetative classification: Limited Depth Soils (G002XN302WA) Hydric soil rating: No

Minor Components

Indianola

Percent of map unit: 5 percent Landform: Eskers, kames, terraces Landform position (three-dimensional): Riser Down-slope shape: Linear Across-slope shape: Linear Hydric soil rating: No

Norma

Percent of map unit: 3 percent Landform: Depressions, drainageways Landform position (three-dimensional): Dip Down-slope shape: Concave, linear Across-slope shape: Concave Hydric soil rating: Yes

Dupont

Percent of map unit: 3 percent Landform: Depressions, troughs Landform position (three-dimensional): Dip Down-slope shape: Concave, linear Across-slope shape: Concave Hydric soil rating: Yes

Neilton

Percent of map unit: 2 percent Landform: Outwash terraces Landform position (three-dimensional): Riser Down-slope shape: Linear Across-slope shape: Linear Hydric soil rating: No

Mckenna

Percent of map unit: 2 percent Landform: Depressions, drainageways Landform position (three-dimensional): Dip Down-slope shape: Concave, linear Across-slope shape: Concave

USDA

Hydric soil rating: Yes

Data Source Information

Soil Survey Area: Pierce County Area, Washington Survey Area Data: Version 11, Sep 9, 2016



Pierce County Area, Washington

16D—Harstine gravelly ashy sandy loam, 15 to 30 percent slopes

Map Unit Setting

National map unit symbol: 2rtvk Elevation: 200 to 390 feet Mean annual precipitation: 30 to 55 inches Mean annual air temperature: 48 to 52 degrees F Frost-free period: 180 to 200 days Farmland classification: Farmland of statewide importance

Map Unit Composition

Harstine and similar soils: 90 percent Minor components: 10 percent Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Harstine

Setting

Landform: Ridges Landform position (two-dimensional): Backslope Landform position (three-dimensional): Side slope Down-slope shape: Linear Across-slope shape: Convex Parent material: Sandy glacial drift with an influence of volcanic ash over dense glaciomarine deposits

Typical profile

Oi - 0 to 0 inches: slightly decomposed plant material *Oe - 0 to 1 inches:* moderately decomposed plant material *Bw1 - 1 to 6 inches:* gravelly ashy sandy loam *Bw2 - 6 to 14 inches:* gravelly ashy sandy loam *Bw3 - 14 to 22 inches:* gravelly ashy sandy loam *Bw4 - 22 to 32 inches:* gravelly ashy sandy loam *2Cd1 - 32 to 38 inches:* gravelly loamy sand *2Cd2 - 38 to 61 inches:* gravelly loamy sand

Properties and qualities

Slope: 15 to 30 percent
Depth to restrictive feature: 20 to 39 inches to densic material
Natural drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: About 24 to 37 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 4.2 inches)

USDA

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 4e Hydrologic Soil Group: C Other vegetative classification: Limited Depth Soils (G002XN302WA) Hydric soil rating: No

Minor Components

Indianola

Percent of map unit: 5 percent Landform: Eskers, kames, terraces Landform position (three-dimensional): Tread Down-slope shape: Linear Across-slope shape: Linear Hydric soil rating: No

Neilton

Percent of map unit: 5 percent Landform: Outwash terraces Landform position (three-dimensional): Riser Down-slope shape: Linear Across-slope shape: Linear Hydric soil rating: No

Data Source Information

Soil Survey Area: Pierce County Area, Washington Survey Area Data: Version 11, Sep 9, 2016

APPENDIX C

.

econd Copy - Owner's Copy	WELL REPORT Application No F WASHINGTON Permit No
1) OWNER: Name A. L. Hart (Tallman)	Address 15616 Crescent Valley Dr. N.W. G
	- NE 14 NE 14 Sec. 17. T. 22 N. B. 22 W
Bearing and distance from section or subdivision corner	A
	(10) WELL LOG:
3) PROPOSED USE: Domestic 🕱 Industrial 🗋 Municip • Irrigation 🗋 Test Well 🗌 Other	
· Irigation [] Test wen [] Other	Formation: Describe by color, character, size of material and structure, and show thickness of aguifers and the kind and nature of the material in each stratum 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 well 🔂 Method: Dug 🗍 Bore	-1 Teneral 1 1 1 2
Despend Cable Driv Reconditioned D Botary Jette	$\begin{bmatrix} 1 \\ 0 \end{bmatrix} \begin{bmatrix} 0 $
Reconditioned D Rotary D Jette	Blue sand & gravel hardpan 37 53
5) DIMENSIONS: Diameter of well	hes. Sand & gravel some water 53 63
Drilled. 90	
6) CONSTRUCTION DETAILS:	Sand & gravel water bearing 84 90
Casing installed: Diam. from	
Weldsd 22	. ft.
Perforations: Yes No DX	·
Type of perforator used	in.
perforations from ft. to	
perforations from	
perforations from	- 15.
Screens: Yes D No D	
Manufacturer's Name JONNSON	
Type stainless steel Model No. Diam 0 Slot size 35 from 85 r. to90	
Diam	n
Gravel packed: Yes D No CK Size of gravel:	
Gravel placed from ft. to	
Surface seal: Yes D No D To what depth?	
Material used in seal	
Did any strata contain unusable water? Yes	
Type of water?	
(7) PUMP: Manufacturer's Name	
(8) WATER LEVELS: Land-surface elevation ~ 34	
Static level	b-ok
Artesian pressure	
Artesian water is controlled by (Cap, valve, etc.)	
(9) WELL TESTS: Drawdown is amount water level is lowered below static level	Work started 10-13- 19.62. Completed 10-16- 15
(9) WELL TESTS: Jowered below static level Was a pump test made? Yes No 1 If yes, by whom?	WORK SLEEVE C
Yield: gal./min. with ft. drawdown after	hm. WELL DRILLER'S STATEMENT:
	" This well was drilled under my jurisdiction and this report true to the best of my knowledge and belief.
10 00 to	
Recovery data (time taken as zero when pump turned off) (wate measured from well top to water level)	NAME Harbor Pump & Drilling Co. Inc.
Time Water Level Time Water Level Time Water	
	Address 7825 46th Ave. N.W. Gig Harbo
	······································
10-16-62	isimal Bught Justin By: M. But
Date of test 10-16-62 Bailer test 40 gal/min. with25 ft. drawdown after.	[Signed Byn Justin By: M. But]

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

WATER WELL REPORT

Application No

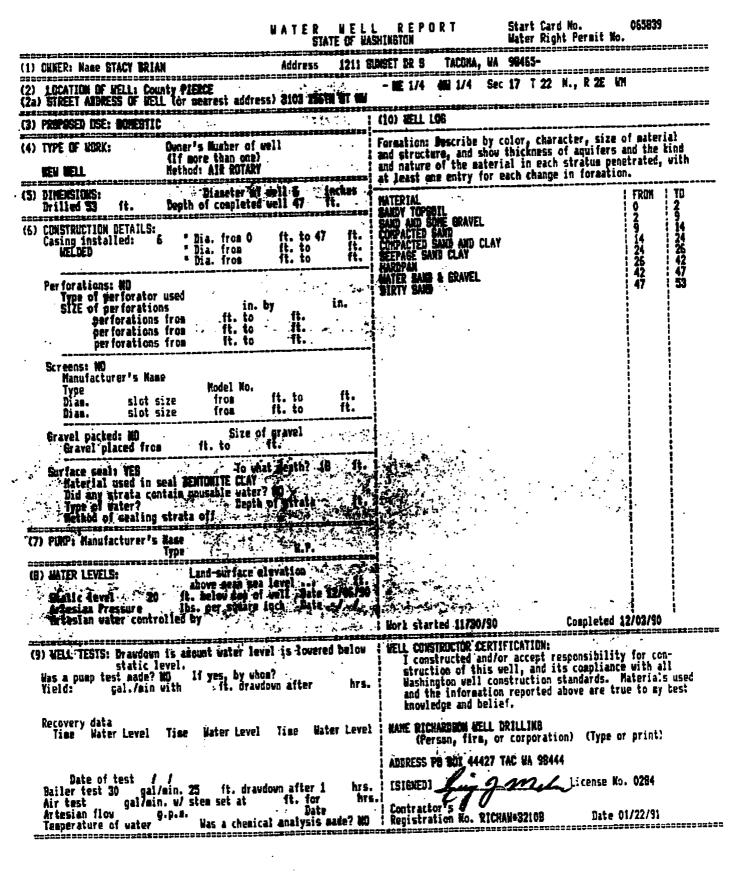
.

1. Sec. 1

ird Copy — Driller's Copy	STATE OF WASHD	IGTON	Permit No		<u> </u>
I) OWNER: Name Harvey Brown	Addre	15712 Crescent	Valley Dr	<u>. 11W</u>	<u>Gig</u> Hr
) LOCATION OF WELL: County Pierce			17 T. 2	2 _{N., R.} 2	
aring and distance from section or subdivision corner					
		WELL LOG:			
) PROPOSED USE: Domestic Z Industrial			ter are of material	and struct	ture, and
Irrigation 🗅 Test Well 🗌) Other D Forma show (tion: Describe by color, charac hickness of aguiters and the k n penetrated, with at least on	ind and nature of the	e material	I in each mation.
TYPE OF WORK: Owner's number of well		MATERIAL		TROM	TO
New well L Method: Dug	Bored D			0	3
Deepened D Cable	Driven []BT	own top soil		द्र +	26
Reconditioned Rotary	Jetted D	ay Hard pan	an	26 .	31
b) DIMENSIONS: Diameter of well		ndy brown hard] own sand, some		31	38
5) DIMENSIONS: Diameter of well		own sandy clay	16 9 1 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	38	43
		ay sandy hard pa	an	43	60
5) CONSTRUCTION DETAILS:		ay Hard pan		60	_68
Casing installed: Diam. from	r. 10 82 ft.	ay hard pan wit	h clay	68	74
Threaded []	t. to ft.	ay sand and gra	vel		
Welded B	t. to ft.	water bearing		74	_77
Perforations: Yes D No Q	He	rd packed sand	& gravel	_77	82
Type of perforator med	Gr	av sand & grave	1. water	_82	6
SIZE of perforations in. by		rd packed sand	& gravel		
perforations from	D			_	
perforations from ft. to	ft				
perforations from				ł	
Screens: Yes 🖾 No 🗆 Johnson					
Mentifecturer's Neme					
Type stainless steel Model N Diam. 6 Slot size 60 from 82	86 tt				
Diam. Slot size from	ft. to ft.				
	al:				
Gravel placed from fi. to				i	
Surface seal: Yes 10 No [] To what deputy	<u>18</u> n.	D	ECENT		
Material used in seal. Bentonite	LOO 1bs		EVEN		
Did any strata contain unusable water? Type of water?	Yes [] No [2]				····
Method of sealing strate off.			MAY 22 198	_	,
					
(7) PUMP: Manufacturer's Name Berkeley Type: Submersible	U D		ARTMENT OF ECU		
Type: SUDMERSLDLE.		SOUTI	WEST REGIONAL	CHERCE_	
(8) WATER LEVELS: Land-surface elevation above mean sea level	1				
LOJ TITLING AND AND A BONG MEAN SEA LEVEL.	· · · · · · · · · · · · · · · · · · ·				<u> </u>
Statis laws 46	ste			<u> </u>	
Static level 46	ite				
Static level . 46	ite				
Static level . 46	nte	1-24	30		
Static level 46 t. below top of well Date Artesian pressure	valve, etc.)	K Started	Compresses	1-28	1
Static level 46	Ate	LL DRILLER'S STAT	EMENT:		
Static level 46 .tt. below top of well Date Artesian pressure Ibs. per square inch Date Artesian water is controlled by. (Cap. v) (9) WELL TESTS: Drawdown is amount was lowered below static level Was a pump test made? Yes I No I If yes, by whom	Ate	LL DRILLER'S STAT	EMENT:		
Static level 46 .tt. below top of well Date Artesian pressure .tt. below top of well Date Artesian pressure .tt. below top of well Date (Cap. v (Cap. v (9) WELL TESTS: Drawdown is amount was lowered below statte leve Was a pump test made? Yes D No D Yield: gal/min. with	Ate	LL DRILLER'S STAT	EMENT:		10_BO
Static level 46tt. below top of well Date Artesian pressure	Ate	CLL DRILLER'S STAT This well was drilled under to the best of my knowl	EMENT: r my jurisdiction edge and belief.	and this	report is
Static level 46tt. below top of well Date Artesian pressure	ate	LL DRILLER'S STAT	EMENT: r my jurisdiction edge and belief.	and this	report is
Static level 46tt. below top of well Da Artesian pressure	Ate	LL DRILLER'S STAT This well was drilled under to the best of my knowl ME.HARBOP.PUMP.& (Person, firm, or	EMENT: r my jurisdiction edge and belief. DRILLING	and this	TNC
Static level 46	Ate	LL DRILLER'S STAT This well was drilled under to the best of my knowl ME HARBOP PHEP & (Person, firm, or dress, 11302 Burnha	EMENT: r my jurisdiction edge and belief. DRILLING corporation) m Dr. 17W G	and this	TNC
Static level 46tt. below top of well Date Artesian pressure	Ate	LL DRILLER'S STAT This well was drilled under to the best of my knowl ME HARBOP PHEP & (Person, firm, or dress, 11302 Burnha	EMENT: r my jurisdiction edge and belief. DRILLING corporation) m Dr. 17W G	and this CO Type or p ig Ha	TNC print)
Static level 46	Ate	LL DRILLER'S STAT This well was drilled under to the best of my knowl ME.HARBOP.PUMP.& (Person, firm, or	EMENT: r my jurisdiction edge and belief. DRILLING corporation) m Dr. 17W G	and this CO Type or p ig Ha	TNC
Static level 46 .tt. below top of well Date Artesian pressure .tts. per square inch Date Artesian water is controlled by. (Cap. v (9) WELL TESTS: Drawdown is amount was lowered below static lew Was a pump test made? Yes I No II yes. by whom's is an out of the static lew Yield: gal/min. with ft. drawdown as is an out of the static lew """"""""""""""""""""""""""""""""""""	ate	LL DRILLER'S STAT This well was drilled under to the best of my knowl ME HARBOP PHEP & (Person, firm, or dress, 11302 Burnha	EMENT: r my jurisdiction edge and belief. DRILLING corporation) m Dr. 154 G (Well Driller)	and this CO Type or p ig Ha By: P	report is INC. print) rbor,

(USE ADDITIONAL SHEETS IF NECESSARY)

lepari	d Copy-Owner's Copy CTATE OF W			-•
		Water Ripht Permit No.	Aulto	ILeve D
1)	OWNER: Name_ 1000 10 Crif	511 115 17	;2	1 E
	LOCATION OF WELL: County DIFFE	- Unline Rd	<u>- N.</u> , R	\$336
28)	STREET ADDDRESS OF WELL (or nearest address)			
3)	PROPOSED USE: Someetic Industrial Municipal D Irrigation Test Well O Other D	(10) WELL LOG OF ABANDONMENT PROCED	and atmicture	e. and sho
4)	TYPE OF WORK: Owner's number of well	thickness of aquifers and the kind and netwre of the material it with at least one entry for each change of information.	FROM	то
	Abandoned C: New well of Method: Dug D Bored D	MATERIAL	()	
	Despened Cable Cable Driven Cable Reconditioned Reconditioned	Shad Brein	2	13
	<u> </u>	Hard Pin	/3	33
5)	DIMENSIONS: Diameter of well iX inches.	SAND + GEAVEL Simp3	133	35
	Drilled 5 feet. Depth of completed well 737 ft.	Clad (Blue)	135	122
6}	CONSTRUCTION DETAILS:	Had Bin	122	128
	Casing installed: 1 . Diam. from + 1 tt. to 146 tt.	Sind + Lennel H'CI	128	151
	Weided X Diam. from ft. to ft.			
	Liner installed			
_				
	Type of perforetone used in, by in.			
	SIZE OI perforements while y while y			
	perforations from fi. to fi.			
	Screens: Yes A No			
	Manufacturer's Name_ <u>COO</u> K		_	
	11/1 /45 44 15/ 4			1
	Gravel packed: Yes No Size of gravel			
	Gravel placed fromft. toft.			
	Surface seal: Yes No To what depth?			
	Material used in seat Aren IC		_	
	Did any strate contain unusable water? Yes No			
	Type of water? Depth of strate		1	
	Method of sealing strate off			
				
(7)			-	
	Туре: З Цар мане с		1	
(8)	WATER LEVELS: Land-surface elevation			1
	Static level H. below top of well Date			1
	Artesian pressure iba, per square inch Date			
	Artesian water is controlled by (Cep, valve, etc.)}	Work elerted AUG - 70 19/Completed	ent. i	19_
(0)	WELL TESTS: Drawdown is smount water level is lowered below static level	Work started ALG - 19/4Completed		
/9)	Was a pump lest made? Yeak No I If yes, by whom?	WELL CONSTRUCTOR CERTIFICATION:		
	Yield gal,/min. with th. drawdown after hrs.	a second and (or eccent responsibility for (onstruction	of this w
_	1	and its compliance with all Washington well Materials used and the information reported sh		
	··· ·· ·· ·· ·· ·· ·· ·· ·· ·· ·· ·· ··	knowledge and belief.		· - ··· , =
	Recovery data (time taken as zero when pump turned cit) (water level measured from well top to water level)			
	Time Water Level Time Water Level Time Water Level	NAME FIP Will Drille	- 4	OR PRINT
_	<u> </u>	(PERSON, FIRM, OR CORPORATION)	\mathcal{T} (mpl	E OH PRINT;
	<u> </u>	Address Forl Clicker		
	Date of test	(Signed) Lice	nse No. 🦿	2/
	Beiler test gal, min, with It. drawdown after hrs.	Contractor's	1	
	Autest gal./min. with stem set at it. for hre.	Registration A 11 June A	# 11	1 10
		No TE W. // //EF Date		, ·8-
	Artesian flow g.p.m. Date	NoUsio	•	



in se

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

_

(1) (2) (2a) (3)	OWNER: Name PEDRO AND WENDY PINTO Add	ASHINGTON Water Right Permit No	VA 001	
(2a) (3)	LOCATION OF WELL: Carry Pierce		WY AOT	<u>98</u>
(3)		. <u>NW 1/4 NE 1/4 Sec 17 T</u>	22_N.R_2]	Ew.
	STREET ADDRESS OF WELL (or rearrest address) off Crescent Val	lley Road		
(4)	PROPOSED USE: Domestic Industrial D Municipal D	(10) WELL LOG or ABANDONMENT PROCEDURE D	escriptio	N
(4)	DeWater Test Well Other	Formation: Describe by color, character, size of material and structure, and and the kind and nature of the material in each stratum penetrated, with a change of information.	show thickness It loast one ent	of equite
	TYPE OF WORK: Owner's number of well (if more than one)	MATERIAL	FROM	то
	Abendoned New well 01 Method: Dug Bored Despended Cable Difference			
		Brown topsoil Gray hardpan	0	<u>4</u> 27
	Dimensions: Diameter of well inches. Drilled 178fast. Depth of completed well178ft.	Gray silty sand & gravel	27	69
		Gray hardpan	69	93
••	Construction DETAILS: Casing (natalled: 6. Diam. from 0 ft. to 178 ft.	Gray silty sand & gravel	93	131
		Gray hardpan	131	164
	Welded Comment theory theory <thteory< th=""> <thto<r></thto<r> theory<td>Gray clay w/gravel</td><td>164</td><td>167</td></thteory<>	Gray clay w/gravel	164	167
		Gray silty coarse sand &	167	178
	Perforations: Yes No 🕅	gravel, H2O	167	1/8
	Type of perforator used in. byin.			
	perforations from ft. to ft.			
	perforations fromft. toft.			
	perforations from ft. toft.			
	Screens: Yes No X			
	Manufacturer's Name	-		
	Type Model No			
	DiamSlot sizeft. toft.			
	Diam Sict sizefromfl. tofl.	MA		
	Gravel pecked: Yes No Kt Size of gravel			
	Gravel placed fromft. toft.	រឺ ហ		
	Surface seel: Yes X No To what depth? 18 ft.			
	Material used in scalBentonite		_	<u> </u>
	Did any strata contain unusable water? Yes 🔲 No 🔀			
	Type of water? Depth of strate			
	Method of soaling strate of			
(7)	PUMP: Manufacturere Name Goulds			
	Type: submersible 10GS10 H.P. 1	Work Started 4/26/95 , 19. Completed 4/27	/95	
(8)				
	Static level ft. below top of well Date Additional Date ft. below top of well Date	WELL CONSTRUCTOR CERTIFICATION:		
	Artesian water is controlled by(Cap, valve, etc.)	I constructed and/or accept responsibility for construction compliance with all Washington well construction standards	s. Materiais u	ised and
(9)	WELL TESTS: Drawdown is amount water level is lowered below static level	the information reported above are true to my best knowledg	e and belief.	
•••	Was a pump test made? Yes X No ti yes, by whom? <u>Gresham</u> Yield: <u>15 gst./min. with 18</u> t. drawdown strer <u>2</u> hrs.	NAME <u>Gresham Well Drilling, Inc</u>	คริสสก)	
	ay of 64 MA	Address 3105 NW Lakeness Rd., Pouls	sbo, WA	9837
	n 13 m 19	(Signed) la b. Am Licens	No. <u>076</u>	1
	Recovery data (time taken as zero when pump turned off) (water level measured from wall top to water level)	(WELL DHILLER)	· · ·	
T	me Water Level Time Water Level Time Water Level Full recov. in 5 min.	Contractor's Registration CRECITINDOS ERC. 5/0//05	-	
		No. GRESHWDUSSBC Date	·	19
	Date of test 5/02/95	(USE ADDITIONAL SHEETS IF NECESS	ARY)	
	Batier test ft. drawdown after h/s.		-	-
	Aintest <u>20+ gel./min. with atem set at 170 ft. for 1 hra.</u>	Ecology is an Equal Opportunity and Affirmative Action cial accommodation needs, contact the Water Resource	employer. F	OF 608-
	Artestian flow	407-6600, The TDD number is (206) 407-6006.	e Lindimu i	אי (בעס)

1

Department Second Co	al and First Copy with nt of Ecology opy — Owner's Copy y — Driller's Copy			Card No. W053930
		Add	21600 24TH AVE.S.#E101. D	
	CATION OF WELL - Craste PIERCE		NW NF	<u>17 122 N.R 2E W</u>
• •		28TH AVE	UE NW, GIG HARBOR	; <u>17</u> 7 <u>22</u> N, <u>R</u> 21 W
(3) PRC	DPOSED USE: 🗘 Domestic Industrial 🗆 Ma	inicipal 🗆	(10) WELL LOG or ABANDONMENT PR	OCEDURE DESCRIPTION
	DeWater Test Well Ot	her 🗆	Formation: Describe by color, character, size of material in and the kind and nature of the material in each stratum	
(4) TYP	E OF WORK: Owner's number of well (If more than one)		change of information.	
Abar	ndoned 🗆 New well 🖂 Mathad: Dug 🗆	Bored 🗆	MATERIAL	FROM TO
	Deepened Cable Cab	Driven 🗋 Jetied 🗋	OVERBURDEN	0 4
(5) D(M)	ENSIONS: Diameter of well 6	inches.	GRAY HARDPAN	4 28
	d <u>119</u> feet. Depth of completed well <u>119</u>	ft.	GRAY SAND & GRAVEL	28 52
			BLUE CLAY	52 78
• •	NSTRUCTION DETAILS: inc Installed: 6 - Diam, from 0_ft. to	110 .	GRAVEL, H20 - 2GPM	78 79
Casi			GRAY HARDPAN	79 112
Liner	ded Ži* Diam. from ft. to r installed ☐* Diam. fromft. to added* Diam. fromft. to	u.	GRAVEL, H20	112 119
	orstigns: Yes No 🕅		·	
	of perforator used			
	of perforations in. by	ln.		
	perforations from ft. to	ft.		
	perforations from ft. to	fL		
	perforations from fl. to	t.		
	vens: Yes 🔲 No 🏧			
Туре		No		
	n Slot sizefromft. to	h		
		ft.		:
	rel packed: Yes No 🕅 Size of gravel			
	tace seet: Yas 🖾 No 🗌 To what depth? <u>18</u>	fi.		
	wial used in seal <u>BENTONTIE</u> any strata contain unusable water? Yes 🗋 No 🔀		~	
	ery strate contain unusable water / res rev Depth of strate			•
	of watch			
	COVIE DC			
(7) PU		2 1 -		
Туре		·	Work Started 6/07/95 .19. Certral	leted 6/07/9519
	TER LEVELS: Land-surface elevation above maan sea lovel		Work Started 0/0//95 19. Cempl	191919
	ic level ft. below top of well Date ft. below top of well Date ft. below top of well Date ften per square inch Date ften per square inch Date	109/95	WELL CONSTRUCTOR CERTIFICATION	l:
	Artesian water is controlled by		I constructed and/or accept responsibility	for construction of this well, and its
	(Cap, valve, etc.)		compliance with all Washington well constru- the information reported above are true to m	uction standards. Materials used and ny best knowledge and belief.
Was	LL TESTS: Drawdown is amount water level is lowered below a a pump test made? Yes XX No ti yes, by whom? <u>GR</u>	ESHAM	NAME GRESHAM WELL DRILL	ING. INC.
Yield		hrs.	3105 NW LAVENESS R	RD., POULSBO, WA 98370
	20 F3		Address JIOJ NW BARENEDS	
Reco	overy data (lime taken as zero when pump turned off) (water level me		(Signed) Light MM	License No. 0761
top to	o water (sviel) Water Level Time Water Level Time LL RECOV. IN 2 <u>MIN</u>	Water Level	Contractor's Registration conscitutions and	6/16/05
			No GRESHWD055BC Date Date	6/16/95
-	Date of test 6709/95	_		
Airte	er testfl. drawdown afterfl. drawdown after ist gal./min. with stem set at115fl. tor sian flow g.p.m. Date	1 hrs.	Ecology is an Equal Opportunity and Affin cial accommodation needs, contact the W	ater Resources Program at (206
	percture of water 50 Was a chemical analysie made? Yes	No 🗆	407-6600. The TDD number is (206) 407-	6006.

Ι,

ECY 050-1-20 (9/93) *** 1

river in the state of the state	Unique Ecology Well ID Tag No. A 13 A - 064
Construction/Decommission ("x" in circle)	Water Right Permit No.
Construction Decommission ORIGINAL CONSTRUCTION Notice	
127549 of Intent Number	Property Owner Name JOE /AW
PROPOSED USE: Domestic Industrial Municipal DeWater Irrigation Test Well Other	Well Street Address 18826 28 MENIN.
	City Gia HACBOR County: PIENCE
TYPE OF WORK: Owner's number of well (if more than one)	Location NE1/4- 1/4 NW 1/4 Sec. 17 Two 22 R 2 EWM
Deepened Execution Date Date Date Determined	WWM
DIMENSIONS: Diameter of well _6inches, drilled _102ft Depth of completed well _103ft	Lat/Long: Lat Deg Lat Min/Sec (s,t,r still Long Deg Long Min/Sec REQUIRED) Long Deg Long Min/Sec
CONSTRUCTION DETAILS	Tax Parcel No. <u>0227171054</u>
Casing Welded <u>6</u> Diam from <u>6</u> ft. to <u>103</u> ft Installed: <u>Liner installed</u> <u> </u>	Formation Describe by color, character, size of material and structure, and the
Perforations: Yes PNo	(USE ADDITIONAL SHEETS IF NECESSARY.)
Ťýpe of perforator used	MATERIAL FROM TO -
SIZE of perfsin byin and no of perfsfromft toft	10p \$011 0 4
Screens: Yes No B K-Pac Location 78	clay-gravel 4 11
Type Stainless Steel Model No	clay-gravel-boulder 11 16 brown sand 16 47
Diam <u>5"</u> Slot Size <u>10</u> from <u>102</u> ft to <u>96</u> ft Diam Slot Size from ft to ft	brown sand 16 47 gravel-sand-clay 47 83
	grav slav saud 83 85
Gravel/Filter packed: Yes 🗃 No 🛛 Size of gravel/sandft.	gravel-sand-clay 85 96
Surface Seal: By Yes No, To what depth? 19ft	send gray W.B. 96 102
Type of water?Depth of strata	
PUMP: Manufacturer's Name	
PUMP: Manufacturer's Name H P	
PUMP: Manufacturer's Name	
PUMP: Manufacturer's Name	
PUMP: Manufacturer's Name	
PUMP: Manufacturer's Name	
PUMP: Manufacturer's Name	
PUMP: Manufacturer's Name	
PUMP: Manufacturer's Name	RECEIVED
PUMP: Manufacturer's Name	RECEIVED
PUMP: Manufacturer's Name	
PUMP: Manufacturer's Name	Washington State
PUMP: Manufacturer's Name	
PUMP: Manufacturer's Name	Washington State Department of Ecology
PUMP: Manufacturer's Name	Washington State Department of Ecology Start Date 12/12/01_Completed Date 12/12/01_ Description of this well, and its compliance with all
PUMP: Manufacturer's Name	Start Date 12/22 Completed Date 12/23/01 Department of Ecology Start Date 12/23/01 possibility for construction of this well, and its compliance with all ported above are true to my best knowledge and belief,
PUMP: Manufacturer's Name	Start Date 2 4 02 Completed Date 2/23/04 misbility for construction of this well, and its compliance with all ported above are true to my best knowledge and belief, Drilling Company HALBER Whep Constants
PUMP: Manufacturer's Name Type H P WATER LEVELS: Land-surface elevation above mean sea level ft. Static level ft below top of well Date ft. Artesian pressure Ibs per square inch Date	Washington State Washington State Department of Ecology Start Date 2/23/04_ Start Date 2/23/04_ onsibility for construction of this well, and its compliance with all ported above are true to my best knowledge and belief, Drilling Company HAX BOX [Whep Construction of this well, and its compliance with all ported above are true to my best knowledge and belief, Drilling Company HAX BOX [Whep Construction of this well, and its compliance with all ported above are true to my best knowledge and belief, Drilling Company HAX BOX [Whep Construction of this well, and its compliance with all ported above are true to my best knowledge and belief, Drilling Company HAX BOX [Whep Construction of this well, and its compliance with all ported above are true to my best knowledge and belief, Drilling Company HAX BOX [Whep Construction of this well, and its compliance with all ported above are true to my best knowledge and belief, Drilling Company HAX BOX [Whep Construction of this well, and the ported above are true to my best knowledge. Drilling Company HAX BOX [Whep Construction of this well, and the ported above are true to my best knowledge. Drilling Company [When Construction of this well, and the ported above are true to my best knowledge. Drilling Company [When Construction of this well, and the ported above are true to my best knowledge.
WATER LEVELS: Land-surface elevation above mean sea levelft. Static levelft below top of well Date	Start Date 2 4 02 Completed Date 2/23/04 Department of Ecology Start Date 2 4 02 Completed Date 2/23/04 Distbility for construction of this well, and its compliance with all ported above are true to my best knowledge and belief. Drilling Company HAY BOX Whep Co., Low

, ¹ The Department of Ecology and Noul Warranty and Data and/or the Information on this well Report.

WATER WELL REPORT	CURRENT Notice of Intent No. W/62 GIG	?	_
(if it, i'i) Original & 1st copy - Ecology, 2nd copy - owner, 3rd copy - driller	Unique Ecology Well ID Tag No. AGE		_
onstruction/Decommission ("x" in circle)			_
© Construction © Decommission ORIGINAL CONSTRUCTION Notice 130700 of Intent Number	Water Right Permit No Property Owner Name <u>ANN Lem</u>		
ROPOSED USE: Image: Composition Industrial Image: Composition Industrial Image: Composition Industrial Image: Composition Industrial Image: Composition Industrial Image: Composition Industrial Image: Composition Industrial Image: Composition Industrial Image: Composition Industrial Image: Composition Industrial Image: Composition Industrial Image: Composition Industrial Image: Composition Industrial Image: Composition Industrial Image: Composition Industrial Image: Composition Industrial Image: Composition Industrial Image: Composition Industrial Image: Composition Industrial Image: Composition Industrial Image: Composition Industrial Image: Composition Industrial Image: Composition Industrial Image: Composition Industrial Image: Composition Industrial Image: Composition Industrial Image: Composition Industrial Image: Composition Industrial Image: Composition Industrial Image: Composition Industrial Image: Composition Industrial Image: Composition Industrial Image: Composition Industrial Image: Composition Industrial Image: Composition Industrial Image: Composition Industrial Image: Composition Industrial Image: Composition Industrial Image: Composition Industrial Image: Composition Industrindustrial	Well Street Address 15625 (ve	<u>scentry Dri</u> Pleince:	<u>v</u> w
YPE OF WORK: Owner's number of well (if more than one)	City <u>Gig Handson</u> County: Location <u>NE 1/4 1/4 NE 1/4</u> Sec <u>17</u> T	22. 2 EWM	Curcle
New Well Reconditioned Method Dug Bored Driven	Lat/Long: Lat Deg	· www	
IMENSIONS: Drameter of well inches, drilled ft Depth of completed well ft	(s,t,r still REQUIRED) Long Deg		_
CONSTRUCTION DETAILS	Tax Parcel No. 0288171065		_
Casing XWelded _6_" Diam from <u>+1</u> ft to <u>2/3</u> ft	CONSTRUCTION OR DECOMMISSIO	ON PROCEDURE .	
nstalled:ft toft	Formation. Describe by color, character, size of ma		lhe
ThreadedT	kind and nature of the material in each stratum pen entry for each change of information Indicate all v		
Perforations: Yes X No	(USE ADDITIONAL SHEET'S IF NECESSARY)		
Vice of perforator fused	MATERIAL	FROM TO	
IZE of perfsin byin. and no of perfsfromft toft	1 op 801	0 1	_
creens: D Yes No K-Pac Location	Sand & gravel	1 5	_
Vide S/S Model No	gravely Hardpon	5 60	
tiam <u>67</u> Slot Size 010 from <u>213</u> ft to <u>218</u> ft	Hund pasa	<u>60</u> 88.	-
tizmSlot Sizefromft toft	Sand Sand	<u>88 91</u>	-
Gravel/Filter packed: Yes No Size of gravel/sand	Clayish Hundpow + gravel File, Samp	91 194	-1
Aaterials placed fromft toft_ft	Sand Sand	194 810 210 218	4
Materials used in seal Holeplug			-
Did any strata contain unusable water? Dyes D No			
Type of water?Depth of strata			
Method of sealing strata off	RECEIVED	63	
PUMP: Manufacturer's Name_ <u>Gould</u> Type <u>Submersible</u> HP_ <u></u>	APR 0 4 2003 Or	- · · · · · · · · · · · · · · · · · · ·	
WATER LEVELS: Land-surface elevation above mean sea level ft		78	÷
Static level <u>92,5</u> ft below top of well Date <u>3/5/03</u>	DEPARTMENT OF ECOLOGY C	· · · ·	
Artesian pressurelbs per square inch Date			_
Artesian water is controlled by (cap, valve, etc.)			_
WELL TESTS: Drawdown is amount water level is lowered below static level	<u> </u>	Ö ·	- ·
Was a pump test made? Wes INo If yes, by whom? by Driller	· · · · · · · · · · · · · · · · · · ·	•	-{·
Yield <u>// gal/mm with 4/5 ft drawdown after</u> hrs Yield gal/min with ft drawdown after hrs			-
Yieldgal/min_withft drawdown afterhrs Yieldgal/min_withft drawdown afterhrs			-
Recovery data (time taken as zero when pump turned off)(water level measured from			-1
vell top to water level) Finne Water Level Time Water Level Time Water Level			ŀ
<u>5,60 137 2010 97.5</u>			1
<u><u><u> </u></u></u>			
Date of test			
Airtestgal/min with stem set atft forhrs			
Artesian flowg p m Date emperature of waterWas a chemical analysis made? Yes No	Start Date 2/17/03 Completed Da	ate <u>3/4/03</u>	
/ELL CONSTRUCTION CERTIFICATION: I constructed and/or accept response			
Vashington well construction standards. Materials used and the information re	ported above are true to my best knowledge an	ad belief.	
Driller DEngineer DTrainee Name (Print) Wesley Clesser	$P_{\rm r} D_{\rm r} d$	nev-Drillin	g
Driller/Engineer/Trainee Signature Wester / Lesser	- Address <u>F0 Box 487</u>	<i>A a</i> -	_
Driller or Trainee License No. <u>0154</u>	City, State, Zip Burley Wa.	· 48322	
		3/5/00	
If trainee, licensed driller's	- Registration No. 10 ES (31. DE 682 PS	ate <u>2105</u>	_

WATER WELL REPORT Original & 1 ⁴ copy - Ecology, 2 ^{ad} copy - owner, 3 ^{ad} copy - driller Construction/Decommission ("x" in circle) Construction Decommission ORIGINAL INSTALLATION Notice of Intent Number PROPOSED USE: Domestic Industrial Municipal DeWater Image: Struction Dewater Image: Structure New well Reconditioned Method Deepened Dimestic DIMENSIONS: Diameter of well § inches, drilled 148 ft. Depth of completed well 1486. CONSTRUCTION DETAILS Casing Welded Structure Yes No Type of perforator used SiZE of perfs in. and no. of perfs Structure No Xyes No K-Pac Location 141'10-3/4"	CURRENT Notice of Intent No. WE07604 Unique Ecology Well ID Tag No. BAT439 Water Right Permit No.	
Manufacturer's Name JNSN Type SS Model No. TELES Diam. 5"Slot size from 148 ft. Diam Slot size from ft. to Gravel/Filter packed: Yes No Size of gravel/sand	of information. (USE ADDITIONAL SHEETS IF NECESSARY.) MATERIAL FROM PIPE STICK UP 0 BROWN SAND, CLAY, GRAVEL 1 GRAY SAND, GRAVEL, WET 16 BROWN SAND, GOME GRAVEL, WET 21	6 1
Materials placed fromft. toft. Surface Seal: Z Yes No To what depth? 18ft Material used in seal BENTONITE Did any strata contain unusable water? Yes Type of water? Depth of strata Method of sealing strata off	GRAY SILT, SAND, GRAVEL, CLAY 109 1	-
PUMP: Manufacturer's Name Type:		
WELL TESTS: Drawdown is amount water level is lowered below static level Was a pump test made? Yes No If yes, by whom? Yield: _gal./min. with _ft. drawdown after _hrs. Yield: _gal./min. with _ft. drawdown after _hrs. Yield. _gal./min. with _ft. drawdown after _hrs. Yield. _gal./min. with _ft. drawdown after _hrs. Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level) Time Water Level Time Water Level Time Water Level Time Water Level		
Time Water Level Time Water Level	DEC 1 0 2007 Washington State Department of Ecology Start Date 11/7/2007 Completed Date 11/13/2007	

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) JOHN SULLIVAN	Drilling Company NICHOLSON DRILLING INC
Driller/Engineer/Trainee Signature	Address PO BOX 123
Driller or trainee License No. 2218	City, State, Zip PORT ORCHARD , WA, 98366
IF TRAINEE: Driller's License No:	Contractor's
Driller's Signature:	Registration No. <u>NICHOD11370M</u> Date <u>11/30/2007</u>

Ecology is an Equal Opportunity Employer

WATER WELL REPORT Original Al "coy-Ecology, 2" cop-owner, 3" copy-oriller CURRENT Notice of Intent No	M circle M one C URE the kind and
Construction/Decommission ("x" in circle) Unique Ecology Well ID Tag NoAPR640 Construction O Decommission ORIGINAL INSTALLATION Notice Water Right Permit No Q	M circle M one C URE the kind and each change of TO 3.7
³ Construction Water Right Permit No. ³ Construction ¹ Construction ³ Construction	M circle m one C URE the kind and each change of TO 3.7
Well Street Address 15515 30th AVE Numicipal ROPOSED USE: Domestic Industrial Municipal City Gig Harbor County Pierce DeWater Irrigation Test Well Other City Gig Harbor County Pierce VPE OF WORK: Owner's number of well (if more than one) City Gig Harbor County Pierce New well Reconditioned Method: Dug Bored Driven Drie Driven Driven<	M circle m one C URE the kind and each change of TO 3.7
ROPOSED USE: Domestic Industrial Municipal Chewate: Irrigation Test Well Other City Gig Harbor County Pierce VPE OF WORK: Owner's number of well (if more than one) City Gig Harbor County Pierce VPE OF WORK: Owner's number of well (if more than one) City Gig Harbor County Pierce New well Method: Dug Bored Driven Depend Method: Dug Bored Driven Depend Method: Diam. f. to f. CONSTRUCTION DETAILS * Diam. from f. to f. Still REQUIRED Used * Diam. from f. to f. Threaded * Diam. from f. to f. f. Portration: City State No State: f. to f. f. Stot size 14 from n. and no. of perfs from f. to f. f. f. f. Vpe of perforator used	M circle M one C URE the kind and each change of TO 3.7
□ DeWater □ Irrigation □ Test Well □ Other	M One C URE the kind and each change of TO 3.7
Wre by Work: Owner's number of well (if indic than offe) Dig Bored Driven New well Reconditioned Method: Dug Bored Driven All Depended Method: Dug Bored Driven Lat/Long (s, t, r Lat Deg Lat Min/Sec IMENSIONS: Diameter of well	M One C URE the kind and each change of TO 3.7
Intervertion Intervertion Intervertion Intervertion IMENSIONS: Diameter of well	URE the kind and each change of TO 3.7
ONSTRUCTION DETAILS asing ① Welded 6 ** Diam. from +1 ft. to 155 ft. astalled ``Diam. from ft. to ft. ft. <td>URE the kind and each change of TO 3.7</td>	URE the kind and each change of TO 3.7
asing 10 Weided 6 Diam. from +1 ft. to 155 ft. astalled Diam. from ft. to ft.	the kind and each change of TO 3.7
erforations: Pres Ex No pre of perforator used	the kind and each change of TO 3.7
erforations: Pres Ex No pre of perforator used	TO 37
IZE of perfs in by in and no. of perfs from ft. to ft. to ft. to MATERIAL FROM interests: ID Yes INO IN K-Pac Location IS a in less from IS a in less ft. to IS a number of the standard standa	37
anufacturer's Name Johnson DEROWN SAUTE	
PP Stainless steel am Slot size am Slot size from 155 ft. to 160 ft. to ft. to ft. to ft. to	132
ravel/Filter packed: Ves No Size of gravel/sand	
intrace seal: gres into no want deptining into a constant of the want deptining into a constant of the want of the water? Image: Crey sand into a constant of the water? Image: Crey sand into a constant of the water? Image: Crey sand into a constant of the water? Image: Crey sand into a constant of the water? Image: Crey sand into a constant of the water? Image: Crey sand into a constant of the water? Image: Crey sand into a constant of the water? Image: Crey sand into a constant of the water? Image: Crey sand into a constant of the water? Image: Crey sand into a constant of the water? Image: Crey sand into a constant of the water? Image: Crey sand into a constant of the water? Image: Crey sand into a constant of the water? Image: Crey sand into a constant of the water? Image: Crey sand into a constant of the water? Image: Crey sand into a constant of the water? Image: Crey sand into a constant of the constant of th	-136
d any strata contain unusable water? Per Depth of strata ethod of sealing strata off thod of sealing strata off TMP: Manufacturer's NameGOUILd's perHP PerHP ATER LEVELS: Land-surface elevation above mean sea levelft. attic level ft. below top of wellft. attic level Ibs. per square inchr tesian water is controlled by	145
ethod of sealing strata off Crey tight sond 160 JMP: Manufacturer's Name Goullds 160 pe: Submersible H.P. 1 ATER LEVELS: Land-surface elevation above mean sea level ft. atic level 108 ft. below top of well Date 10/25/07 tesian pressure Ibs. per square inchr tesian water is controlled by 1000000000000000000000000000000000000	1,60
pe:	
atic level 108 ft. below top of well Date 10/25/07 rtesian pressure lbs. per square inchr Date rtesian water is controlled by	
tesian pressure lbs. per square inchr Date tesian water is controlled by	
YELL TESTS: Drawdown is amount water level is lowered below static level NOV 14 LOV. Yas a pump test made? Ø Yes No If yes, by whom? Olsen Drl. Drl.	
as a pump test made? 12 Yes DNo If yes, by whom? Olsen Drl.	
- OF EOM-	
ield: <u>15 gal/min. with</u> <u>9 ft. drawdown after</u> <u>1 hrs.</u> ield: <u></u>	
covery data (time taken as zero when pump turned off) (water level measured from well to vater level)	
me Water Level Time Water Level	
m <u>111'</u>	
ate of test0/2.5/07	-
rtest gal./min. with stem set atft. forhrs.	
tesian flow g.p.m. Date	+
mperature of water Was a chemical analysis made? Wes I No Start Date 9/20/07 Completed Date 10	$\frac{1}{25/07}$
ELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compli shington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.	
willer DEngineer DTrainee Nama (Print) Matt Olsen Drilling Company Olsen Drilling	
ler/Engineer/Trainee Signature Address PO Box 1554	
ler or trainee License No2337 City, State, Zip_Port Orchard, WA 983	
IRAINEE, iller's Licensed No OLSEND101LJ Date	366
iller's Signature Ecology is an Equal Opportu	366 1/9/07

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

•	339850		
Dep Sec		DEDADT	<u>34136</u> 66 626
(1)	OWNER: Name Hall Stepping, I Var h Add	Mare at still for	el .
•••	LOCATION OF WELL: County Jack Col-	MALINA NEW 14300 17 T. 29A	/n. <u>n. 26</u> w.
(3)	PROPOSED USE: Domestic industrial D Municipal D Imagation Test Web D Other D	(10) WELL LOG or ABANDONMENT PROCEDURE DESI Formation: Describe by color, character, size of material and structure, and sho and the kind and nature of the material in each stratum penalizated, with at lea	w thickness of aquifer
(4)	TYPE OF WORK: Owner's number of well (If more than one)	change of information.	ROM TO
	Abandoned D New well 12 Method: Dug D Bared D Despend D Cable D Driven D		
	Reconditioned Rotary Jetted		2 11
(5)	Dimensions: Diameter of well <u>6"</u> inches. Drated <u>53</u> feet. Depth of completed well <u>53</u> t.		1. 31
		Sorrent and a low and sticks	31 96
(6)	CONSTRUCTION DETAILS:	Gracles & Sund's areter Envie 3	6 53
•	Casing installed: Dem. from + 2t tot ft. Welded Dem. fromt. t. t.		
	Threaded Diam. FORT N. 10 R.	· · · · · · · · · · · · · · · · · · ·	
	Perforationa: Yes No 🕅		
	SIZE of perforations in. byin.		
	t. tot. operiorations fromtt tott.		
	perforations from it to it.		· .
	Screens: Yes No 😡		
	Manufacturer's Name	94	· .
	Type Model No Dram Stot size from ft. to ft.		
	Clam Slot size from tt. to ft.		
	Gravel packed: Yes No Z Size of gravel	12	
	Gravel placed from ft. to ft.		
	Surface acal: Yes No D To what depth? 19.5		
	Cid eny strata contain unusable water? Yes 🗋 No 💋		<u>_</u>
	Type of water? Depth of strata Method of seating strate of	~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~	<u> </u>
		· · · · · · · · · · · · · · · · · · ·	
(7)	PUMP: Manufacturer's Name Type:		·
(8)	WATER LEVELS: Land-surface elevation		· . ·
	State level ft. below top of well Date Nov. 3,199	¥	``
	Artesuan pressure bs per equisire inch Date Artesuan water is controlled by (Geg, velve, ctc.)		
(9)		Wark Started May 2 19 Campleton	3_, 19 9
	Was a pump test made? Ves No If yes, by whom? Yield:gel./mln. with ft. drawdown after hrs. n n n n n n n n	WELL CONSTRUCTOR CERTIFICATION: I constructed and/or accept responsibility for construction of compliance with all Washington well construction standards. M the information reported above are true to my best knowledge a	laterials used and
	Recovery data (time taken as zero when pump turned oft) (water level measured from west top to water level) Time Water Level Time Water Level Time Water Level	NAME <u>HOLF CONSTINCTING LINC.</u> OPERSON FRANCISCORPORTING (MORE DE PRAS Address 106 21 Todd Rd. , Junya	
_		(Signed)	0 <u>2148</u>
	Dete of testf. drawdown after hrs.	Contractor's Registration	· ·
• •	Airlest 9-10 gsl.mm. with stem set et 53- ft. for 2.0 hrs. Artosian flow g.p.m. Date	No. ADATTIO8707 Date ALOU 3	19 <u>. F 4</u>
	Temperature of water Was a chemical analysis made? Yes No	(USE ADDITIONAL SHEETS IF NECESSARY	n

Department of Ecology Well Log Image System

Decommission ("x" in circle) Construction Decommission ORIGINAL INSTALLATION Notice of Intent Number WE21844 PROPOSED USE: Demestic Industrial Municipal DeWater Intent Well New well Reconditioned Method : Dug Bored Difference Depend Difference Difference Depend Depend Depend Depend Depend Bactary Jetted Dimensions: Distructure <t< th=""></t<>
PROPOSED USE:
PROPOSED USE:
DeWster Inigation Test Well Other TYPE OF WORK: Owner's number of well (if more than one) New well Reconditioned Method: Dag Bored Driven Depend Cable Retary Jetted DIMENSIONS: Diameter of well 6 inches, drilled 98 f.
B New well Reconditioned Method : Dug Bored Driven Deepened Cable Retary Jetted DIMENSIONS: Diameter of well 6 inches, drilled 98 ft Depth of completed well 58 ft
DIMENSIONS: Dispeter of well <u>6</u> inches, drilled <u>98</u> ft. Depth of completed well <u>58</u> ft.
DIMENSIONS: Dispector of well <u>6</u> inches, drilled <u>98</u> ft. Depth of completed well <u>88</u> ft.
Depth of completed well 98 ft.
CONSTRUCTION DETAILS
Casing Welded 6 Diam. from 0 ft. to 96 ft. Installed " Diam. from ft. to ft. " Threaded " Diam. from ft. to ft.
Perforations: 🔲 Yes 🗒 No
Type of perforator used
SIZE of perfsin. byin. and no. of perfsfromfl. tofl.
Screens: Yes No K-Pac Location
Manufacturer's Name JOHNSON
Type STAINLESS STEEL Model No. TELESCOPE
Diam. 6 Slot size 16 from 93 ft. to 92 ft.
DiamSlot sizefromf. tof.
Gravel/Filter packed: Yes S No Size of gravel/sand
Materials placed from ft. to ft.
Surface Seal: W Yes I No To what depth? 18 A.
Material used in seal _Bennetts Did any strate contain unuseble water?
Type of water? Depth of strutta
Method of sealing strata off
PUMP: Manufacturer's Name
Туре: Н.Р
WATER LEVELS: Land-surface elevation above mean sea level A.
Static level 40 fl. below top of well Date
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 I Yes I No If yes, by whom? Yield:gal/min. withft. drawdown afterbrs.
Yield:gai/min, withi. drawdown afterbrs.
Yield:gal/min. withft. drawdown afterhrs Yield:gal/min. withft. drawdown afterhrs.
Trend:gairma. withi. answawin autruts. Recovery data (time taken as zero when pump turned aff) (water level measured from well top to water level)
Time Water Level Time Water Level Time Water Level
Bailer test 10 gal/min with 9 fl. drawdown after 1 hrs.
Airtest gal/min, with stem set at ft, for hrs.
Artesian flow gp.m. Date
Temperature of water Was a chemical analysis made? 🔲 Yes 🔳 No

Long Deg

Notice of Intent No. <u>WE</u>	21844
Unique Ecology Well ID T	88 No. BHY 098
Water Right Permit No	
Property Owner Name Da	vid and Liz Stanton
Well Street Address 281	159th ST CT NW
City Gig Harbor	County Pierce
Location <u>ne</u> 1/4-1/4 <u>ne</u> 1/4 (s, t, r Still REQUIRED)	S∞ <u>17</u> Twn <u>22</u> R <u>2E</u> EWM Or WWM □
Lat/Long	

Lat 1410000	
Long Min/Sec	

Tax parcel No. (Required) 022175008

DURE structure, ated, with at IONAL
uted, with at IONAL
IONAL
T = -
1 70
ТО
1
3
16
34
77
98
1
1
+
+
-+
+
+
ED-
8
۲
1
timent
NRO)
<u></u>
+

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.

Drilling Company Nicholson Drilling INC.
Address PO BOX 123
City, State, Zip Port Orchard, WA, 98367
Contractor's
Registration No. NICHODI137OM Date 02/15/2016

ECY 050-1-20 (Rev 02-2010) To request ADA accommodation including materials in a format for the visually impaired, call Ecology Water Resources Program at 360-407-6872. Persons with impaired hearing may call Washington Relay Service at 711. Persons with speech disability may call TTY at 877-833-6341.

• •

WATER WELL REPORT	CURRENT			
Original'& 14 copy - Ecology, 2 nd copy - owner, 3 nd copy - driller	Notice of Intent No. WE21843			
ECOLOGY Construction/Decommission ("x" in circle)	Unique Ecology Well ID Tag No. BJN 278			
	Water Right Permit No.	··		
Decommission ORIGINAL INSTALLATION Notice of Intent Number <u>WE21843</u>	Property Owner Name DAVID STANTON			
PROPOSED USE: Domestic Industrial Municipal	Weil Street Address 2917 159TH ST CT NW			
DeWater I Irrigation Test Well Other	City GIG HARBOR County PIERCE			
TYPE OF WORK: Owner's number of well (if more than one)				
New well Reconditioned Method: Dug Bored Driven Deepened Deepened Jetted	Location <u>aw</u> 1/4-1/4 <u>ae</u> 1/4 Sec <u>17</u> Twn <u>22</u> R <u>2E</u> (s, t, r Still REQUIRED)			
DIMENSIONS: Diameter of well inches, drilled ft.	Lat/Long			
Depth of completed well <u>151</u> ft.	Lat Deg Lat Min/Set			
CONSTRUCTION DETAILS	Long Deg Long Min/S	Sec		
Casing IN Welded <u>6</u> " Diam. from <u>0</u> ft. to <u>151</u> ft. installed: <u>Liner installed</u> Diam. fromft. toft.	Tax parcel No. (Required) 0222175007			
Threaded Diam. From ft. to ft.				
Perforations: 🗋 Yes 🛃 No	CONSTRUCTION OR DECOMMISSION I	PROCEDURE		
Type of perforator used	Formation: Describe by color, character, size of mater			
IZE of perfsin. byin. and no. of perfsfromft. toft.	and the kind and nature of the material in each stratum least one entry for each change of information. (USE			
Screens: Yes INO K-Pac Location	SHEETS IF NECESSARY.)			
Manufacturer's Name	MATERIAL F	ROM TO		
Fype Model No Diam Slot size from ft. to ft.	Pipe stick up	0 1		
DiamSlot size from ft. to ft.	Grey sand gravel clay wet	1 13		
DiamSlot sizefromfl. tofl.	Grey clay	13 24		
Gravel/Filter packed: Yes I No Size of gravel/sand	Brown sand silt wet Brey sand gravel cley damp	24 <u>33</u> 33 109		
	Grey clay	109 136		
Surface Seal: Yes No To what depth? <u>18</u> ft.	Grey sand gravel clay	136 145		
Did any strata contain unusable water? 🔲 Yes 🔳 No	Grey coarse sand gravel water	145 151		
Sype of water? Depth of strata				
Acthod of sealing strata off				
"UMP: Manufacturer's Name				
уре: Н.Р				
WATER LEVELS: Land-surface elevation above mean sea levelfi.	·			
izztie level <u>74</u> fl. below top of weil Date				
Artesian water is controlled by (cap, valve, etc.)				
VELL TESTS: Drawdown is amount water level is lowered below static level	· · · · · ·			
Vas a pump test made? Yes INo If yes, by whom?				
/ield:gal./min. withft. drawdown afterhrs.				
/ield:fal./min. withfi. drawdown afterhrs. /ield:gal./min. withfi. drawdown afterhrs.				
rieta:gal.min. withf. answaown afterins.				
vell top to water level)				
Time Water Level Time Water Level Time Water Level	KE	leive		
		IN 092016		
Date of test	WA Sta	te Departr		
Bailer test <u>17</u> gal./min. with <u>27</u> ft. drawdown after <u>1</u> hrs.		ology (SWI		
Airtest gal./min. with stem set at ft. for hrs.				
Artesian flow g.p.m. Date		I		
emperature of water Was a chemical analysis made? T Yes B No	Start Date 02/02/16 Completed Date	A 14 C		

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 NIC SAMPLE	Drilling Company NICHOLSON DRILLING INC.
Driller/Engineer/Trainee Signature	Address PO BOX 123
Driller or trainee License No. 2770	City, State, Zip PORT ORCHARD, WA, 98367
IF TRAINEE: Driller's License No:	Contractor's
Driller's Signature:	Registration No. NICHODI1370M Date 06/06/2016

ECY 050-1-20 (Rev 02-2010) To request ADA accommodation including materials in a format for the visually impaired, call Ecology Water Resources Program at 360-407-6872. Persons with impaired hearing may call Washington Relay Service at 711. Persons with speech disability may call TTY at 877-833-6341.