PACIFIC groundwater GROUP

WRIA 44/50 GROUNDWATER ELEVATION MONITORING REPORT (2007 WATER YEAR) EXEMPT WELL WATER USE PHASE 2

March 2008

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TABLE OF CONTENTS

1.0	SU	JMMARY OF FINDINGS	1
2.0	IN	TRODUCTION	1
2.1	l	PURPOSE OF STUDY AND REPORT.	1
2.2	2	EXEMPT WELL WATER USE BACKGROUND	2
2.3	3	Hydrogeology	2
2.4	1	MONITORING SYSTEM	3
3.0	R	ESULTS OF LONG-TERM GROUNDWATER ELEVATION MONITORING	3
3.1	l	PRECIPITATION RECORDS	3
3.2	2	Lower Moses Coulee	4
	3.2.1	Monitoring Network	4
	3.2.2	Seasonal Fluctuations	4
	3.2.3	Summer Fluctuations	4
	3.2.4	Long Term Trends	4
3.3	3	UPPER MOSES COULEE	5
	3.3.1	Monitoring Network	5
	3.3.2	Observations	5
3.4	1	JAMESON AND GRIMES LAKE	6
	3.4.1	Monitoring Network	6
	3.4.2	Observations	6
3.5	5	FOSTER CREEK	7
	3.5.1	Monitoring Network	7
	3.5.2	Valley Observations	7
	3.5.3	Upland Observations	8
3.6	5	CHELAN HILLS / CHELAN SPRINGS	8
	3.6.1	Monitoring Network	8
	3.6.2	Observations	8
3.7	7	BADGER MOUNTAIN	9
	3.7.1	Monitoring Network	9
	3.7.2	Observations	9
4.0	R	EFERENCES	9

TABLES

Table 1: Monitoring Sites

FIGURES

- Figure 1: Monitoring Site Map
- Figure 2: Lower Moses Coulee Monitoring Sites
- Figure 3: Linville South Well Hydrograph
- Figure 4: Palisades Irrigation District (PID) Well Hydrograph
- Figure 5: Biram Well Hydrograph
- Figure 6: Linville North Well Hydrograph
- Figure 7: Upper Moses Coulee Monitoring Sites
- Figure 8: Mayer Well Hydrograph
- Figure 9: Johncox Well Hydrograph
- Figure 10: TNC Observation Well Hydrograph
- Figure 11: Johnson (aka Peterson) Well Hydrograph
- Figure 12: Downes Well Hydrograph
- Figure 13: Jameson and Grimes Lake Monitoring Sites
- Figure 14: Jameson Lake Hydrograph
- Figure 15: Grimes Lake Hydrograph
- Figure 16: Mathiesen Well Hydrograph
- Figure 17: PGG-1 Hydrograph
- Figure 18: Foster Creek Monitoring Sites
- Figure 19: Malone Well Hydrograph
- Figure 20: Henton Well Hydrograph
- Figure 21: Handford Well Hydrograph
- Figure 22: Hammons Well Hydrograph
- Figure 23: Hunt Well Hydrograph
- Figure 24: Hemmer Well Hydrograph
- Figure 25: Chelan Hills and Chelan Springs Monitoring Sites
- Figure 26: Luce Well Hydrograph
- Figure 27: Nystrom Well Hydrograph
- Figure 28: Cocoran Well Hydrograph
- Figure 29: Badger Mountain Monitoring Sites
- Figure 30: Moulton Well Hydrograph
- Figure 31: Murray Well Hydrograph
- Figure 32: Robins Well Hydrograph
- Figure 33: Wilcox Well Hydrograph

APPENDICES

Appendix A: Monitored Well Logs

v

SIGNATURE

This report, and Pacific Groundwater Group's work contributing to this report, were reviewed by the undersigned and approved for release.



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Lower Moses Coulee: Mike Biram Steve King (monitoring discontinued) Jack Linville Palisades Irrigation Dist. (Don Jordan)

<u>Upper Moses Coulee:</u> Ray Bechtol (monitoring discontinued) Raymond Mayer Nature Conservancy (Chuck Warner) Jim Johncox Roy Downes Pete Muslin (Johnson well) Rod and Russell Peterson (Johnson well operators) Kevin Danby & Rimrock Meadows Association (NAAC deep well)

Jameson & Grimes Lake: Ric Matthiesen Paul Wittig

<u>Chelan Hills & Chelan Springs:</u> Jason Sandum (monitoring discontinued) Cliff Nystrom Robert and Donna Wade (Luce well) Tom Corcoran

Badger Mountain: Edward Murray Gary Wilcox and Rich Wasson (Wilcox well) Bruce Moulton Dan Robins

Foster Creek: Chuck Hammons Lee James Handford Lee Hemmer Ray Henton Terry Hunt Barry Watson (Malone well)

1.0 SUMMARY OF FINDINGS

Groundwater elevations in Water Resource Inventory Area (WRIA) 44/50 fluctuated seasonally between a high spring elevation and low late summer to fall elevation in most monitored wells. Seasonal fluctuations ranged from an apparent 20 feet to less than 1 foot. In general, shallow wells within the alluvial aquifer displayed the largest seasonal fluctuations, while deeper wells within the basalt aquifer displayed little to no seasonal fluctuations. Groundwater within the basalt aquifer is influenced by a more regional source and, therefore, groundwater elevations are less responsive to local recharge events.

Fluctuations in groundwater elevations are generally consistent from one year to the next with slight variations. However, an overall pattern of decline is noted in the minimum annual water levels of the PID and Biram located in the Lower Moses Coulee. The apparent decline may be due to variations in annual usage in that area. Statistical analysis is required to evaluate the validity and source of the decline.

Peak groundwater elevations generally decreased from 2006. The decrease is likely related to the lower precipitation in 2007 than 2006. Precipitation records for the area indicate the total precipitation for the 2007 water year was about 4 inches lower than 2006.

Three new monitoring sites were added to the WRIA 44/50 long term monitoring program during the 2006 water year: the Chelan Hills, Chelan Springs, and the Badger Mountain areas. However, data have only become available for this water year because of equipment malfunctions. Four monitoring wells were also added to the Upper Moses Coulee network, including the Johncox, TNC, Johnson, and Downes wells.

2.0 INTRODUCTION

The subsequent sections provide an introductory discussion on the following: (1) the purpose of

this study and this report; (2) background on the exempt well water use study; (3) a summary of the hydrogeology of the area; and (4) a description of the monitoring system and method of well selection.

2.1 PURPOSE OF STUDY AND REPORT

Many areas across Washington State are experiencing growth in the number of houses with exempt wells and septic tanks. This growth is unregulated and can result in declines in groundwater quantity and quality.

The purpose of this study is to monitor longterm trends in groundwater elevations in areas identified during the Phase 1 Exempt Well Water Use Study as potential for future groundwater level declines. These areas include Chelan Springs, Chelan Hills, Rimrock Meadows, and Badger Mountain. Existing monitoring sites in the Foster Creek and the Lower and Upper Moses Coulee were also added to the long-term monitoring program. These sites were instrumented during previous studies and continued monitoring will provide useful information on long-term trends in groundwater elevations throughout WRIA 44/50. All long-term groundwater monitoring sites are shown in **Figure 1**.

The purpose of this report is to provide a summary of groundwater elevation trends observed at the monitoring sites up to the end of the 2007 water year (October 2007). Monitoring began as early as 2003 at some sites and as late as 2007 at other sites.

This work was performed, and this report prepared, using generally accepted hydrogeologic practices used at this time and in this vicinity, for exclusive application to the WRIA 44/50 Watershed Planning process and for the exclusive use of the Foster Creek Conservation District, the WRIA 44/50 Planning Unit, and their agents. This is in lieu of other warranties, express or implied. 2.2 EXEMPT WELL WATER USE BACKGROUND

To address the issue of exempt well water use, the Water Resource Inventory Area (WRIA) 44/50 Watershed Planning Unit (Douglas County Watershed Planning Association, 2004) proposed an Exempt Well Water Use Study.

Pacific Groundwater Group (PGG) performed an initial Phase 1 Exempt Well Water Use Study in four areas of Douglas County in 2005: Chelan Springs, Chelan Hills, Rimrock Meadows/Sagebrush Flats, and Badger Mountain. These areas were identified as high growth in exempt well water use. The phase 1 study involved the following elements:

- A water balance calculation comparing current and future groundwater use to recharge.
- A groundwater level survey to compare current groundwater levels to levels at the time of drilling.
- A nitrate loading calculation to assess affects on water quality at full build-out conditions.

The results of the Phase 1 study suggest the potential for groundwater level declines exists in all study areas except for Chelan Springs and that nitrate loading at full build-out conditions should have minimal impacts on groundwater in all areas except possibly Rimrock Meadows, an area that could experience relatively dense development (PGG, 2006a).

Another component of the Phase 2 Exempt Well Water Use Study is monitoring long-term trends in groundwater elevations. Four sites were initially instrumented for long-term monitoring: Lower Moses Coulee, Upper Moses Coulee, Jameson/Grimes Lake Area, and Foster Creek (**Figure 1**). Surface water elevations are also monitored at the Jameson/Grimes Lake site. The first annual report on long-term groundwater elevations summarized monitoring up to October 2005 at these four sites (PGG, 2006b). Since then three additional sites (The Chelan Hills, Chelan Springs, and the Bader Mountain areas) were added to the monitoring program (**Figure** 1). As of December 2006, the monitoring program for the Phase 2 Exempt Well Use Study consists of six sites with a total of 22 monitored wells and 2 lake stations (**Table 1**). Well logs for each monitored well are provided in **Appendix A**.

2.3 HYDROGEOLOGY

The hydrogeology of the study area is described in the WRIA 44/50 Final Phase 2 Basin Assessment April 2003 (PGG, 2003a) and in the WRIA 44/50 Foster Creek and Lower Moses Coulee Level 2 Hydrogeologic Assessment September 2003 (PGG, 2003b). The following summary is drawn predominantly from those reports.

WRIAs 44 and 50 are underlain predominantly by the Miocene basaltic rocks of the Columbia River Basalt Group. The basalt sequence is generally 2,000 to 3,000 feet thick in the area and is made up of numerous individual basalt flows ranging from a few tens of feet to about 300 feet thick; the average thickness is about 100 feet. Interbed deposits, often consisting of mudstones, siltstones, and sandstones, separate many of the individual basalt flows. The tops and bottoms of the flows are typically more permeable than flow interiors because of rubble zones, vesicles, and fractures. These zones form the principal aquifers within the basalt. Flow interiors are generally dense and less permeable. Openings caused by minor vertical cooling fractures provide some limited, primarily vertical, permeability in the central part of the flows.

In the Chelan Hills and Chelan Springs area, the Columbia River Basalt Group thins in the direction of the Cascades Mountains. In this area along the Columbia River valley, older, lightcolored granitic rocks can be seen in outcrops underlying the Columbia River Basalt. Water saturated fractures in these older rocks provide some water supply to wells in this area.

The Ellensburg formation and other unconsolidated deposits, consisting of sand and gravel with varying amounts of clay and silt, overlie the basalts in many areas. These deposits are generally less than 50 feet thick on the plateau but may be as much as 300 feet thick on the banks of the Columbia River and in Moses Coulee. In these areas the unconsolidated deposits form a productive aquifer referred to as the alluvial aquifer.

All wells included in this analysis are completed in either the basalt aquifer or alluvial aquifer, except for the Corcoran and Nystrom wells in the Chelan Hills and Chelan Springs area, which are completed in the older fractured granitic rocks (**Table 1**).

2.4 MONITORING SYSTEM

Selection of monitored wells at each site includes the following criteria:

- Favorable location in study area.
- Permission granted by well owner.
- Well head accessibility (pitless adaptor versus top seal). Instrumenting wells with pitless adaptors is preferred, but modifications to instrument top seals is possible with owner's permission.
- Water levels in well recover to static conditions between pumping periods.

These criteria limit the number of potential wells available for monitoring at each site. For example, in the Chelan Hills and Chelan Springs area, the preferred number of wells (3 at each site) could not be achieved because the above criteria could not be met.

The monitoring system at each site uses Solinst LT Leveloggers transducers to measure and record both groundwater levels and barometric pressure at six different sites within WRIA 44/50 (**Figure 1**). The wells are all privately owned domestic, irrigation, or stock watering wells. Monitoring in Lower Moses Coulee and Foster Creek area began in 2003. Monitoring in Upper Moses Coulee and Jamison Lake began in 2004. Monitoring in the Chelan Springs, Chelan Hills, and Badger Mountain areas began in 2006.

Data are downloaded in the spring and fall each year with a laptop computer and imported into an MS Access database so they can be stored, modified, and managed as needed. Water levels are corrected for barometric pressure because the transducers are not vented to the atmosphere.

3.0 RESULTS OF LONG-TERM GROUNDWATER ELEVA-TION MONITORING

The following subsections provide a brief summary of annual precipitation records during the monitoring period followed by results of the long-term groundwater elevation monitoring up to the end of the 2007 water year (October 1, 2007) at each site. Site maps and hydrographs are provided in **Figures 2-33**.

3.1 PRECIPITATION RECORDS

The Western Regional Climate Center (WRCC) operates a number of Remote Automated Weather Stations (RAW), providing daily values of total precipitation. The WRCC operates a RAW station at the town of Douglas, located in the central portion of WRIA 44/50, and at the town of Nespelem, just north of WRIA 44/50 (**Figure 1**).

The precipitation records indicate that the 2006 water year was a substantially wetter year than the 2004 or 2005 water years. Precipitation during the 2007 water year decreased from the 2006 peak but was still above the 2004 and 2005.

The total annual precipitation reported at the Nespelem RAW station for water years 2004 through 2007 were 10.44, 10.99, 16.30, and 12.01 inches respectively. The total annual precipitation reported at the Douglas RAW station for water years 2004 through 2007 were 5.88, 8.89 and 10.89, 5.11 inches respectively. The 2007 Douglas data appear low because the record is missing for much of January through March.

3.2 LOWER MOSES COULEE

Lower Moses Coulee (Figure 2), from Rattle Snake Springs to the Columbia River, is approximately 20 miles long and 1 mile wide with steep basalt cliffs rising up to 1500 feet above the valley floor. The surface elevation of the valley floor ranges from 1100 feet (relative to mean sea level, msl) near McCartney Creek to 850 feet msl near the Columbia River.

3.2.1 Monitoring Network

Groundwater elevation monitoring in the Lower Moses Coulee commenced in late spring of 2003. Monitored wells include: Palisades Irrigation District (PID), King, Biram, Linville North, and Linville South (**Table 1**). Groundwater elevations were monitored in the King well from May 2003 to December 2003, after which monitoring in this well was terminated and therefore not included in this report. Monitoring continues in the remaining wells. None of the wells are currently used for water supply.

3.2.2 Seasonal Fluctuations

Groundwater elevations in all monitored wells display distinct seasonal fluctuations (**Figures 3-6**). In all wells, groundwater elevations increase during the wet winter months reaching their peaks in April after the spring snow melt and decrease during the dry summer months reaching their low in early October before the start of the wet winter months.

Seasonal fluctuations in groundwater elevations result from seasonal cycles in local groundwater recharge. Local recharge in the Lower Moses Coulee is derived from infiltrating precipitation and snow melt within the coulee itself and from infiltrating surface water sources, both of which contribute more recharge during the wet winter and spring months. Surface water sources include Douglas and McCarteney Creeks, which enter the coulee near its upper reaches and loose all their water to the highly permeable alluvial aquifer, except during exceptionally large runoff events when Douglas Creek has been known to flow all the way to the Columbia River.

In general the seasonal fluctuations in groundwater elevations are most pronounced in the shallow alluvial aquifer where recharge lag times are short. Driller's logs indicate that the Linville South and PID wells are completed within the alluvial aquifer. A driller's log is not available for the Biram monitored well; however, based on its depth and a driller's log for Biram's second well 50 feet away, the Biram well is likely completed within the alluvial aquifer. Seasonal fluctuations observed in these wells range from over 11 feet in the Linville South well to about 6 feet in the PID and 5 feet in the Biram well. The larger seasonal fluctuations observed in the Linville South well may be related to heterogeneities within the aquifer, bedrock slope, and/or irrigation withdrawals.

3.2.3 Summer Fluctuations

Groundwater elevations in the Linville North, Linville South, and Biram wells also display smaller, shorter time-scale fluctuations during the summer months in addition to the seasonal fluctuations described above. These smaller fluctuations are not observed in the PID well, which is located in the upper reaches of the coulee.

The smaller fluctuations observed during the summer months are likely in response to variable groundwater withdrawal during summer irrigation. The Palisades Irrigation District near Palisades in the upper reaches of the coulee uses surface water from Douglas Creek for irrigation and may explain the lack of summer fluctuations observed in that well.

3.2.4 Long Term Trends

Four complete years of monitoring have now been collected in the Lower Moses Coulee and preliminary long-term trends can begin to be assessed.

Groundwater elevations appear to generally correlate with precipitation. The decrease in elevations between the 2006 and 2007 water years is likely due to this correlation. Groundwater elevations are stable for the duration of the record in the Linville wells but an overall pattern of decline is noted in the PID and Biram minimum annual water levels (**Figures 4 and 5**). The apparent decline may be due to variations in annual usage in that area. Statistical analysis is required to evaluate the validity and source of the decline.

3.3 UPPER MOSES COULEE

Upper Moses Coulee from Jameson Lake to Lower Moses Coulee is approximately 20 miles long and follows McCarteney Creek (**Figure 7**). The surface elevation along the Upper Moses Coulee ranges from 1800 feet msl near Jameson Lake to 850 feet msl near the upper reaches of Lower Moses Coulee.

3.3.1 Monitoring Network

Groundwater elevation monitoring in the Upper Moses Coulee was initiated in the summer of 2004. Groundwater elevation time series plots are presented in **Figures 8-12**. Initial wells included Bechtol, Mayer, and The Nature Conservancy [TNC] (**Table 1**). Monitoring of the Bechtol well was terminated in May 2005 and is therefore no longer presented. The data was included in the 2005 Water Year report.

The Johnson irrigation well, owned by Pete Muslin and operated by Rod and Russell Peterson, was added to the monitoring network in September 2006. The Johnson well is completed in the alluvial aquifer.

Three additional wells were added to the Upper Moses Coulee long term groundwater monitoring program in 2007; the NAAC Rimrock Meadows deep irrigation well, the Downes domestic well, and the Johncox domestic well (**Figure 7**).

The NAAC Rimrock Meadows irrigation well is a deep basalt aquifer well (738-ft deep). Monitoring of the NAAC deep well provides information on long term groundwater trends in deeper portions of the basalt aquifer.

The Downes domestic well, owned by Pete Muslin, is completed in the upper most portions of the basalt aquifer near Camel Springs where McCartney Creek first gains water south of Jameson Lake. Monitoring in this location provides information on groundwater trends and their influence on surface water flow in McCartney Creek.

The Johncox well, completed in the basalt aquifer in the Rimrock Meadows area, was part of the initial long term monitoring program for the Upper Moses Coulee, but obstructions in the well head led to instrumentation problems. Jim Johncox has granted permission for the well head to be modified to accommodate data instrumentation.

Continued monitoring in the Upper Moses Coulee area also provides observations in groundwater elevations for the Rimrock Meadows area, an area within the Upper Moses Coulee which may experience a substantial increase in the number of unregulated exempt water supply wells.

3.3.2 Observations

Groundwater levels in the Mayer well showed a slow decline of about 0.6-ft throughout the 2005 water year, with no apparent seasonal fluctuation; groundwater levels have since recovered by about 0.5-ft during the wet season of 2006 (Figure 8). The declining levels during the 2005 water year may have been due to the low precipitation years of 2004 and 2005. The wetter 2006 water year may have brought some recovery back. During the 2007 water year, a 10 day rise of approximately 2 feet was noted from February 10 to February 20, 2007. At the time of the last download in October of 2007, the water levels were still recovering. The source of this water level rise is unknown. The small instantaneous drops in groundwater levels in Figure 8 are in response to pumping in the well.

The scatter evident in the Johncox (**Figure 9**) groundwater elevation record is due to pumping

and recovery of the well. The water levels show a seasonal variation of approximately two feet and are stable between seasons.

Groundwater elevations in the TNC well (**Fig-ure 10**) declined approximately two feet from April to October 2007. The decline is likely in response to irrigation pumpage in the area. More data is required to evaluate this water level record.

The groundwater elevation record for the Johnson (**Figure 11**) well is typical for an irrigation well. Groundwater elevations rose from October 2006 until the beginning of the irrigation season in April, 2007. At that time, groundwater elevations began to decline in response to pumping. The two sets of reading for the irrigation season indicate the groundwater elevations during pumping and non-pumping periods. Water level recovery is evident beginning in October of 2007.

The seasonal groundwater elevation change in the Downes well (**Figure 12**) is approximately one foot. More data is required to evaluate this water level record.

3.4 JAMESON AND GRIMES LAKE

Jameson and Grimes Lake are contained behind a glacial moraine in the upper most reaches of Moses Coulee (**Figure 13**). Grimes Lake is approximately 2 miles upgradient of Jameson Lake and approximately 40 feet higher in elevation than Jameson Lake. Discharge to the lakes and the surrounding alluvial aquifer is derived mainly from precipitation, snow melt, runoff from storm events, and upward flow from the underlying basalt aquifer.

Throughout the first part of the 20th century, the lake level in Jameson Lake rose, apparently as a result of agricultural practices in the surrounding watershed. The lake water elevation is now controlled by ditch and culvert structures at the south end of the lake. Details on the historical and current lake water quality can be found in

WRIA 44/50 Water Quality Assessment Jameson and Grimes Lakes (Pacific Groundwater Group and Water Quality Engineering, 2004) and a more detailed discussion on the hydrogeology of the Jameson Lake area can be found in WRIA 44/50 Jameson Lake and Moses Coulee Flood Mitigation Hydrogeologic Assessment (PGG, 2006c).

3.4.1 Monitoring Network

Lake level monitoring in Grimes and Jameson Lake was initiated in May 2004. Lake levels are monitored at the northern end of Jameson Lake and along the southern portion of the western shoreline of Grimes Lake (**Figure 13**). The Grimes lake station was initially located at the southern end of the lake but was relocated to its current position in September 2006 because of freeze and thaw movement at its old location. The transducers are housed in 2-inch diameter PVC pipes attached to a steel fence post within the lake.

Groundwater level monitoring of the shallow alluvial aquifer was initiated in March 2005 at the Matthiesen Resort (Matthiesen well) adjacent to Jameson Lake. Groundwater level monitoring of the deep alluvial aquifer was initiated in late August 2006 with the installation of a deep groundwater monitoring well (PGG-1) on the north end of Jameson Lake.

All four monitoring stations were surveyed for their northing (y), easting (x), and elevation (z) positions in September 2006. Hydrographs for all four stations are shown in **Figures 14-17**.

3.4.2 Observations

The water level in Grimes Lake is about 40 ft higher than Jameson Lake throughout the year indicating a hydraulic gradient (slope) of 0.004 ft/ft between the two lakes. Water level elevations of both lakes display similar seasonal fluctuations of about 2 feet (**Figures 13 and 14**). Both lakes reach their peak levels by early May and declined to their lows by early October before the start of the wet winter months. Seasonal fluctuations during the period of record were fairly similar for both lakes; however, water levels in Jameson Lake were approximately 0.35 feet higher during the 2006 water year compared to the 2005 and 2007 water years. The water level elevation in Grimes Lake continued to increase over the 2005-2007 period.

The increased variability (small scale fluctuations of less than 0.5 feet) noted in 2006 diminished during 2007. Peak water levels in both lakes are likely dampened by the ditch and culvert control structures at the outlet of Jameson Lake.

Groundwater elevations in the Mattheisen water supply well (**Figure 16**) are closely tied to the Jameson Lake elevation indicating a strong hydraulic connection between the aquifer and the lake in this vicinity. Groundwater elevations in deep monitoring well PGG-1 indicate approximately one foot of seasonal variation since monitoring was initiated in late August 2006 (**Figure 17**). The groundwater elevation in PGG-1 is about 8.5-ft higher than the Jameson Lake level indicating an upward groundwater gradient at the north end of the lake. The upward vertical gradient between PGG-1 and Jameson Lake is 0.05 ft/ft. Continued monitoring will indicate if there are any seasonal or long term trends.

3.5 FOSTER CREEK

Foster Creek drains approximately 660 square miles and lies north of Jameson and Grimes Lake (**Figure 18**).

3.5.1 Monitoring Network

Groundwater monitoring of six wells in the Foster Creek area was initiated in the summer of 2003 (**Table 1**). Three monitored wells, completed within the alluvial aquifer, are located within the valley of Foster Creek (Malone, Henton and Hanford) and three monitored wells are located along the uplands above Foster Creek (Hammons, Hemmer, and Hunt); the Hunt and Hemmer wells are completed within the basalt aquifer and the Hammons well is completed within the alluvial aquifer. Upland elevations are approximately 1000 feet higher than the valley.

Hydrographs for all monitored wells are shown in **Figures 19** through **24**. The barometric pressure transducer malfunctioned from December 2004 to February 2005; data values jump sporadically on all hydrographs for this period. The barometric pressure transducer was subsequently replaced in June of 2005. The barometric pressure transducer again recorded a few anomalies (zero readings) during the months of December 2005 and January 2006, but appears to have resumed its functionality after January 2006. The functionality of the barometer will be investigated in during the spring 2007 download.

The following data gaps occur in the Hunt, Handford and Hammons wells:

- The transducer in the Hunt monitoring well malfunctioned and was subsequently replaced between April 2004 and June 2005.
- October 2005 to May 2006 data from the Handford well was inadvertently overwritten during the May 2006 download. The logger was removed to attempt data retrieval but was unsuccessful. The logger was subsequently replaced in late June 2006.
- Data from the Hammons well from June 2006 to October 2006 is unreliable because the recorded data was off by about 2-ft from the hand measured data and could therefore not be correlated to groundwater elevations.

3.5.2 Valley Observations

Groundwater elevations in monitored wells within the Foster Creek valley display variable amounts of seasonal fluctuations. Fluctuations are generally between 2 and 3 feet, although higher fluctuations are apparent in the Hanford well due to pumping of the well.

Seasonal fluctuations range from about 2 foot in the Malone and well to over 3 feet in the Henton well (**Figures 19, 20, and 21**). Groundwater elevations in the Henton and Hanford wells begin to rise in September reaching their peak in February or March and then gradually decline reaching their low in August. In comparison, the seasonal peaks and lows in the Malone well occur about two months later.

The 2007 peak groundwater elevation is slightly lower by about 0.5 feet in the Malone well compared to 2006, likely a result of reduced precipitation. The 2007 peak groundwater elevation in the Henton well is higher by about 1.5 feet compared to 2006; however, water level changes in the Henton well are harder to discern because of frequent pumping. Data for the 2006 peak groundwater elevation in the Hanford is not available.

The seasonal fluctuations in the valley monitored wells result from cycles in local recharge derived from infiltrating precipitation, snow melt, and storm runoff. The lower 2007 peak groundwater elevations are likely due to the dryer 2007 water year.

3.5.3 Upland Observations

Trends in groundwater elevations along the upland wells are variable. Within the Hammons well, seasonal fluctuations of about 3 feet were observed during the 2004 and 2005 water years reaching its lowest observed level during the fall of 2005 (**Figure 22**). Water levels then increased over 6 feet during the spring 2006 season and another foot during the 2007 season.

Water levels also increased over 4 feet during the spring 2006 season in the Hunt well (**Figure 23**) but only 2 feet in 2007. Unlike the monitored wells in the Foster Creek valley, the groundwater elevations in the Hammons and Hunt wells increase rapidly in the early spring, likely in response to snow melt, and then gradually decline during the summer and fall before leveling off during the winter months. Rapid changes in groundwater elevations are common in uplands which are typically considered recharge areas for aquifer systems.

Declines seen in all of the wells during 2004 and 2005 water years have continued their recovery during the 2006 and 2007 seasons.

3.6 CHELAN HILLS / CHELAN SPRINGS

Chelan Hills and Chelan Springs were incorporated into the long term groundwater monitoring program in 2006. The sites are located about 30 miles north of Wenatchee along the Columbia River near Chelan Falls (Figure 1). Chelan Springs is a 6,731 acre area in the McNeil Canyon area and Chelan Hills is a 7,637 acre area immediately south and adjacent to the Chelan Springs (Figure 25). Both sites occur along the eastern slopes of the Columbia River valley. Many springs emanate within the study area indicating a groundwater discharge area fed by more than water recharging directly within it; likely from upland recharge. Both areas have experienced relatively consistent growth since 1988.

3.6.1 Monitoring Network

Four domestic wells were instrumented with pressure transducers in the Chelan Hills and Chelan Springs area in 2006. However, data is only available beginning this year due to instrument error. In the Chelan Hills area, the Luce and Sandum wells were instrumented on May 9, 2006. In the Chelan Springs area, the Nystrom well was instrumented on May 9, 2006 and the Cocoran well was instrumented on November 8, 2006 (**Table 1**). All wells except the Luce well are completed in fractured granite. The Luce well is completed in the basalt aquifer. Data from the Corcoran well will not be reported until the 2007 water year report.

3.6.2 Observations

Time series plots of groundwater elevations for the Chelan wells are presented in **Figures 26-28**. Groundwater elevations in the Luce well indicate a 3-foot annual variation with the highest water levels in April and lowest in October. The data dispersion evident in the first half of water year 2007 is likely due to instrument error.

The high dispersion in the Nystrom and Cocoran groundwater elevations are indicative of data

errors so no conclusion can be drawn. Future data will indicate whether the variability is natural or an artifact of measurement error.

3.7 BADGER MOUNTAIN

Badger Mountain was incorporated into the long term groundwater monitoring program in 2006. The site is located northeast of East Wenatchee, between East Wenatchee and Waterville (**Figure 1**). Badger Mountain is located on a local topographic high and therefore has no up-gradient recharge area. As such, it may be susceptible to groundwater declines if development of the area continues.

3.7.1 Monitoring Network

Four domestic wells were instrumented with pressure transducers at the Badger Mountain site on May 9, 2006: the Murray, Mouton, Robbins and Wilcox wells (**Figure 29** and **Table 1**). The Murray, Moulton, and Robins wells are currently used for domestic water supply. The Wilcox well is a domestic water supply well currently unused. All wells are completed within the basalt aquifer.

3.7.2 Observations

Time series plots of groundwater elevations for the Badger Mountain wells are presented in Figures 30-33. Groundwater elevations in the Moulton well (Figure 30) appear to vary 15 to 20 feet annually. However, a number of issues suggest there may be an error associated with the hand measurements. These include the linear nature of the groundwater elevations between hand measured points, the coincidence of the highest annual water level with the hand measurement, and the relatively flat transducer response in the beginning of water year 2007 compared to the significant change in hand measurements. Future data will indicate whether the variability is natural or an artifact of measurement error.

The Murray well (**Figure 31**) indicates approximately two feet of annual water level variation.

The increased reading dispersion seen in water year 2007 is likely due to instrument error.

The Robins well (**Figure 32**) indicates over 10 feet of water level change annually, with the peak water levels occurring in June.

Groundwater elevations in the Wilcox well (**Figure 33**) remained essentially constant throughout the 2007 water year, although they showed much higher variability during the winter months. Much of the variability appears to be associates with barometric changes more than water level variation.

4.0 REFERENCES

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- Pacific Groundwater Group, 2003b. WRIA 44/50 Foster Creek and Lower Moses Coulee Level 2 Hydrogeologic Assessment September 2003 Draft. Prepared for Foster Creek Conservation District.
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- Pacific Groundwater Group, 2006c. Jameson Lake and Moses Coulee Flood Mitigation Hydrogeologic Assessment Review Draft. Prepared for Foster Creek Conservation District.
- Pacific Groundwater Group, 2007. WRIA 44/50 Rimrock Basin Assessment. Technical Memorandum prepared for Foster Creek Conservation District.

TABLE 1: Groundwater and Surface Water Monitoring Sites (WRIA 44/50)

		A!f	*MP	Well	Start of Data	0 4 4
Lower Moses Coulee	well USE	Aquiter	Elevation (ft)	Depth (ft)	Collection	Status
Biram	Unused	Alluvial	920.3	135	5/6/2003	
Linville N	Unused	Basalt	906.5	240	5/6/2003	
Linville S	Unused	Alluvial	849.0	251	6/25/2003	
PID (Palisades Irrigation District)	Unused	Alluvial	1029.4	160	5/7/2003	
King	Unused	Basalt	981.7	139	5/6/2003	discontinued 12/3/03
Upper Moses Coulee						
Downes	Domestic	Basalt	1640	200	11/27/2006	
Johncox	Domestic	Basalt	1600	150	3/8/2006	
Johnson (aka Peterson)	Irrigation	Alluvial	1554	191	9/19/2006	
Mayer	Domestic	Basalt	1569	80	8/10/2004	
Rimrock	Community	Basalt	1570	738	1/18/2007	faulty logger
TNC	Unused	Basalt	1888	705	2/9/2005	
Bechtol	Livestock	Unknown	2050	>195	8/10/2004	discontinued 5/31/05
Jameson Lake						
Grimes Lake	NA	NA	1837.57	NA	4/28/2004	
Jameson Lake	NA	NA	1797.71	NA	4/28/2004	
PGG-1 (Jameson Test Well)	Monitoring Well	Alluvial	1805.41	152	8/31/2006	
Matthiesen	Domestic	Alluvial	1800.86	41	3/2/2005	
Foster Creek						
Hammons	Unused	Alluvial	2126	57	7/9/2003	
Handford	Unused	Alluvial	896	45	7/9/2003	
Hemmer	Livestock	Basalt	2178	200	7/9/2003	
Henton	Irrigation	Alluvial	971	90	7/9/2003	
Hunt	Old Domestic	Basalt	2087	290	8/5/2003	
Malone	Unused	Alluvial	1663	64	7/9/2003	
Chelan Hills - Chelan Springs						
Corcoran	Domestic	Granite	1978	165	11/8/2006	faulty logger
Luce	Domestic	Basalt	1913	59	5/9/2006	
Nystrom	Domestic	Granite	2247	205	5/9/2006	
Sandum	Domestic	Granite	967	485	5/9/2006	discontinued 10/20/06
Badger Mountain						
Moulton	Domestic	Basalt	3881	299	5/10/2006	
Murray	Domestic	Basalt	3659	140	5/9/2006	logger stuck
Robins	Domestic	Basalt	4078	125	5/11/2006	
Wilcox	Unused	Basalt	4053	210	5/9/2006	

*Measuring Point Elevations (except Jameson Lake Area) survyed with GPS hand held reciever (vertical accuracy estimated to be +/- 10-ft).

Jameson Lake Stations professionally surveys (vertical accuracy +/- 0.10-ft)

Grimes Lake Station Moved in Sept. 2006 (elevation in table is for new station site)

Datum: NAVD88


































































APPENDIX A MONITORED WELL LOGS

LOWER MOSES COULEE MONITORED WELL LOGS

		~	1.17
ŕ			C.
WELL	LOG No	Decla.	#_385
Date	1989 19 -	Cert.	#321-D
Record	by R. L. Davis. Jr.		
Source_	G. W. Decl. Claim		
Location	: State of WASHINGTON		
Cou	nty_Douglas		
Агеа	l		
Map	·		
SW		DIAGRAM	OF SECTION
Drilling	. Co		
Add	ress		
Met	hod of DrillingD	ate_1930)19
Owner	Palisades Irrigation Di	strict	
Add	ress Palisades, Wash ingto	n	
Land su	rface, datumft. above		
Conne	·····	Turoran	Danau
LATION	MATERIAL	(feet)	(feet)
(Trai	nscribe driller's terminology literally but paraphrase as	necessary, in	parentheses. If
(Trai material v surface da ing log of	nscribe driller's terminology literally but paraphrase as water-bearing, so state and record static level if reported atum unless otherwise indicated. Correlate with stratigrap materials, list all casings, perforations, screens, etc.) Estimated from case his	necessary, in Give depths in bhic column, if f	parentheses. If feet below land- easible. Follow-
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(Train material v surface da ing log of	nscribe driller's terminology literally but paraphrase as water-bearing, so state and record static level if reported atum unless otherwise indicated. Correlate with stratigrap materials, list all casings, perforations, screens, etc.) Estimated from case his neighboring wells Soil Dry round stream bed ro	necessary, in Give depths in thic column, if f tory of 40 ck 40	parentheses. If feet below land- easible. Follow-
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с с **т**

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



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

Dep Secon Third	timent of Frobury WATER d Copy — Owner's Copy Copy — Dritter's Copy STATE	WELL REP of washing to	'ORT M	Permit No	97	68
	OWNER: Lack	of and	C. V. i. Su.	71.00	I.	- <u>—</u>
$\frac{(1)}{(0)}$	VOCATION OF HEVI	Caress /	SHI SE	- 78 -7	2. 11 12	13
(2)	LUCATION OF WELL: County County	la dasa'r	Lan Satt 1/1	Section 1	loc	7.8 2.8
Beari	ng and distance from section of subdivision corner over mp in	(10) 111	the tac		<u> </u>	<u> </u>
~ (3)	PROPOSED USE: Domestic Industrial Municip	$al \square (10) WE$				
-	Irrigation 🕅 Test Well 🗌 Other	Formation: show thickn	Describe by color, character less of aquifers and the kind	and nature of t	he materi	il in each
(4)	TYPE OF WORK: Owner's number of well	Rtatum pen	MATERIAL		FROM	TO
. ,	New well 🔲 Method: Dug 🗌 Bore			L	0	2
	Deepened Cable Driv		ser Dur	alac	20	112
	Reconditioned Rotary J Jette		2 mines (Ver		112	205
(5)	DIMENSIONS: Diameter of well /2 in	ches.	Cark, Rock	de-	205	208
	Drilled		sour Cla		208	216
<u> </u>			Jack Bak	let	216	2.20
(6)	CONSTRUCTION DETAILS:		ra Un	uel	220	223
	Casing installed: /2." Diam. from	7 n.	T Water B	saring.		
	Threaded Diam. from ft. to		lech Bas	all!	223	240
	Welded B					· · · · · · · · · · · · · · · · · · ·
	Perforations: Yes 🗆 No 🕱					
	Type of perforator used					
	SIZE of perforations In. by				i	
	perforations from ft. to	ft.	·····			
	perforations from ft. to	ft				
	Screens: we the					
	Manufacturer's Name			U.S.		_
	Type Model No		- r r F	1450		
	Diam	ft.	REPA	F		
	Diam. Slot size from			0 1975		
	Gravel packed: Yes D No A Size of gravel:		allG	30.00	SI	
1,	Gravel placed from	ft.		OF ECOLU	CE	
(Surface seal: you the weather thanks 70	#	CARTME	WI WI OH	. 92 -	
	Material used in seal Austilia action		Derugi	BF3:21		
	Did any strata contain unusable water? Yes 🗌 🗌	No 🗹 🛛	<u> </u>	···		
	Type of water? Depth of strata			· · ·		
	Method of sealing strata off					
(7)	PUMP: Manufacturer's Name					
	Туре:					
(8)	WATER LEVELS: Land-surface elevation	#	· · · · · · · · · · · · · · · · · · ·			
Stati	above mean sea level					
Arte	sian pressure					
	Artesian water is controlled by					.
	The second secon					<u> </u>
(9)	WELL TESTS: lowered below static level	Work starte	1 H - 6 1976	Completed 5	-14	<u>, 197</u> E
Was	a pump test made? Yes 🗋 No 🏹 If yes, by whom?	hrs. WELL I	RILLER'S STATEM	ENT:		
<u>11010</u>		" This w	ell was drilled under m	v jurisdiction	and this	report is
		" true to th	e best of my knowledge	and belief.		
Reco	very data (time taken as zero when pump turned off) (water	level	~ `		~	
I	neasured from well top to water level) me Water Level Time Water Level Time Water L	avel NAME	Joy Dril	INg C	20	-inf)
			Person, nrm, or con			1
		Address. 🗸	MOSES L.	The l	VelSI	Y
			XI JA	⁼ Ø		
I	Date of test	[Signed].	Hen 1	L'ACAL	070	
Balle	r test	hf\$.	(W			
- Arm	perature of water	No 🔲 License N	. 0648	. Date	ere :	3, 19.74
NO	T A PRODUCTION WELL	I I	-	U		
L/11	ITED VIELD (USE ADDITION	AL BHEETS IF NE	CESSARY)			<u> </u>
5. F.	No. 7356-OS-(Rev. 4-71)		÷ 1	-		· · · ·
2011	9/2/26					
	1413					

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UPPER MOSES COULEE MONITORED WELL LOGS

	File Dec Sec This	Original and First Copy with Martment of Ecology ond Copy — Owner's Copy rd Copy — Dritler's Copy STATE OF	T -2 - Start Card No. ELL REPORT WASHINGTON Water Right Permit No	Uisto	563
ť	<u>u</u> ,	WNER: Name Kay Mond May &r	7781 Sage Brush Flat	- RAI	phonta 4
se po	(~ (2a)		CRATT AF 114 NE 14 Sec 63		2.5 (WM.
	(3)	PROPOSED USE: Domestic Industrial I Municipal I	(10) WELL LOG or ABANDONMENT PROCEDU	RE DESCRIPT	
Š	(4)	DeWater Test Weil Other	Formation: Describe by color, character, size of material and structur and the kind and nature of the material in each stratum penetrated charge of information	re, and show thickn I, with at least one	ess of aguifers entry for each
this	(4)	Abandoned D New well A Method: Dug D Bored D	MATERIAL	FROM	то
Ы		Despend Cable Driven Reconditioned Rotary Jetted	Top Sail	+	14
tion	(5)	DIMENSIONS: Diameter of well inches. Drilled feet. Depth of completed well 20 ft.	Brown Clay	- 14	18
ma	(6)	CONSTRUCTION DETAILS:	Caliche		28
for		Casing installed: Diam. from ft. to n. Weided Diam. from	C 1 / /		
le Ir		Threaded* Diam. fromt. tot.	Sanog Clay		26
т т		Type of perforator used	Brown Basalt	- 2,6	30
0/p		SIZE of perforations in. by	Black Basalt	- 30	57
an		perforations fromft. toft.	Fractured Basalt	57	73
ata		Screens: Yes No 🖉	Black Rasalt	-72	00
e D		Manufacturer's Name Model No			
y t	-	iamSlot sizeft. toft. Diam. Slot size from ft to ft			
ant		Gravel pecked: Yes No K Size of gravel		5 7 7	
larr		Gravel placed fromft. toft.			
≤		Material used in seal Benton Itc			
<u>S</u>	-	Uid any strata contain unusable water? Yes No 🖄 Type of water? Depth of strata	· · · · · · · · · · · · · · · · · · ·		
es		Method of sealing strate of			
ဗို	7)	PUMP: Manufacturer's Name H.P			
2 QV	8) '	WATER LEVELS: Land-surface elevation above mean sea level	Work Started 19. Completed	-24_	1926
Ö		Static level ft. below top of well Date	WELL CONSTRUCTOR CERTIFICATION:		
rtment of E	9) N V Y	VIELL TESTS: Drawdown is amount water level is lowered below static level Vas a pump test made? Yes No If yes, by whom?	I constructed and/or accept responsibility for construct comptiance with all Washington well construction stand the Information reported above are true to my best know NAME Mathews (PERSON, FIRM, OR CORPORATION) (TYP Address 9455 Stoppered St	tion of this well lards. Materials u fedge and belief.	L. Wor
The Depai		""""""""""""""""""""""""""""""""""""	(Signed) Autor (Well Driller) Like Contractor's Registration for the dc 117 BC Date 9-24 No. 112 The dc 117 BC Date 9-24 (USE ADDITIONAL SHEETS IF NECE	:ense No. <u>72</u> 	67 19 <i>9</i> 4
F	Bi Ai Ai Te	ailer test gal./min. with ft. drawdown after hrs. Intest gal./min. with stem set at ft. for hrs. Intesian flow g.p.m. Date Imperature of water Was a chemical analysis made? Yes No for	Ecology is an Equal Opportunity and Affirmative Acticities accommodation needs, contact the Water Resou 407-6600. The TDD number is (206) 407-6006.	 on employer. F rces Program a	or spe- at (206)

		and the	0274
	STATE OF WASHINGTON		9210
	DEPARTMENT OF CONSERVA	Es	
WELL	De llar	1	
Record	by		
Source.	Way Kept	-	
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Are	8	!	
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Constant Lation (Tro It passes if form for if	Description - Intergetation MATERIAL MATERIN	From (Sect) russer, II Al Give to the second for for the second for for for for for for for for	12 (sect) (se
Coincide Lation	Despersive - Integration Marras M. Marras	From (feet) restarr, II Af Grace harrows, of restarrows,	12 (sect) (se
Coincide Lation	Despersion - Integration Marriella - Integration Marriella - Integration al water-braining of a debut of an order al water-braining in all and and and a second static local if reprint disprised dation inland other was indicated concrete with a problem inland other was indicated on the a problem in a problem in a problem in a pro- a problem in a problem in a problem in a pro- a problem in a problem in a problem in a pro- a problem is story for provide a problem in a problem in a pro- a problem is story for provide (2.4, Nor. 1963)	From (Leet) restar, il and al cone b direction asreams, out of f 575' 680 12 12 12 12 12 12 12 12 12 12	12 (sect) perenthese intervalues interval
Coincide Lation	Despersion - Integration MATERIA - Integration MATERIAN Inscribe deflet to an exceed static local if reprint desperate deflet and exceed static local if reprint desperate deflet and exceed static local if reprint desperate deflet and exceed static local if reprint desperate local and exceed and the second or - 575' Logistore only deflet or - 575' Logistore only deflet At desperate portion at p 6. have 575' - 705' Recent, black, med, hand. Barnit, black, med, hand. Barnit, black portion ashter-basin ng brong is subter-basin ng (24, Nor. 1963) Recent exceed from 30 Sec	From (Sect) restart, II and A all concernent of the second of the seco	12 (sect) pererthese interventions of aphie column 1,2 1,2 1,2 1,2 1,2 1,2 1,2 1,2
Coincide La Vien N	Despersion - Integration Despersion - Integration Despersion - The state and recent states level if reprint despersion distances and recent states level if reprint 1990 - 575' Logi three only des 0 - 575' Logi three only des 1990 - 1955' - 500 gpm - 175' (2.4, Nor 1963) Recover J Times 30 Sec	From (Sect) restart, II Al Grace second of man of STS STS' STS STS (SEC 12 STS (SEC (SEC (SEC (SEC (SEC (SEC (SEC (SE	12 (sect) parenthere (sect) in the second in th

Original & 1st copy - Ecology, 2nd copy - owner, 3rd copy - driller	Unique Feelen Well ID Tag No. AH	C 852
Construction/Decommission ("x" in circle) 129919	Unique Ecology Wen ID Tag No	<u> </u>
S Construction	Water Right Permit No.	
O Decommission ORIGINAL CONSTRUCTION Notice	Pay (Da)	DAGS.
	Property Owner Name COV	V. V. PI
DeWater Irrigation Test Well Other	Well Street Address	Navksky
TYPE OF WORK: Owner's number of well (if more than one)	City SAGROWISH County	ROUK
New Well Reconditioned Method: Dug Bored Driven	Location AF 1/4-1/4 AE 1/4 Sec F	WIJS RASI
Deepened Cable Rotary Jetted	Lat/Long: Lat Deg	at Min/Sec
DIMENSIONS: Diameter of well inches, drilled ft.	(s,t,r still REQUIRED) Long Deg	_ong Min/Sec
Depth of completed well ft.	Tax Parcel No.	
CONSTRUCTION DETAILS Casing Wolded // Diam from O ft to /8 ft.	CONSTRUCTION OR DECOMMISSIO	N PROCEDURE
Installed: XLiner installed <u>4</u> " Diam. from <u>6</u> ft. to <u>200</u> ft.	Formation: Describe by color, character, size of ma	terial and structure, and t
Threaded Diam. fromft. toft.	entry for each change of information. Indicate all w	ater encountered.
Perforations: X Yes No	(USE ADDITIONAL SHEETS IF NECESSARY.)	·
Type of perforator used SKI SUW	MATERIAL	FROM TO
SIZE of perfs 18 in by 1 in and no. of perfs 100 from 100 ft, to 200 ft.	2011	0 1
Screens: Yes No K-Pac Location	Med Dasalt	/ 30
TypeModel No	Theil Dusalt LTBING, IT	30 45
DiamSlot Sizefromft. toft.	Mar Exesant	106 105
DiamSlot Sizefromft. toft.	UKDYN BRESRIT	100 195
Gravel/Filter packed: Yes WNo Size of gravel/sand	Corn Cicey	195 acc
Materials placed from ft. to ft.	·	
Surface Seal: XYes INo To what depth? 78 tt	· · · · ·	
Did any strata contain unusable water? $\Box Yes \Box No$		· · · ·
Type of water? Depth of strata		
Method of sealing strata off		
PUMP: Manufacturer's Name Over 105		·
Type:H.rH.r	· · · · · · · · · · · · · · · · · · ·	· ·
Static level S ft. below top of well Date		
Artesian pressurelbs. per square inch Date	· · · · · · · · · · · · · · · · · · ·	
Artesian water is controlled by		
(cap, varve, etc.)	· · · · · · · · · · · · · · · · · · ·	
Was a pump test made? Yes X No If yes, by whom?	······	
Yield:gal /min. withft. drawdown afterhrs.	· · · · · · · · · · · · · · · · · · ·	
Yield: ft. drawdown afterhrs. Yield: gal./min. withft. drawdown afterhrs.		· · · · · · · · · · · · · · · · · · ·
Recovery data (time taken as zero when pump turned off)(water level measured from		BIWEIN
well top to water level) Time Water Level Time Water Level Time Water Level		
	II II SE	P152005
Date of test	EASTER FASTER	MENT OF ECCLOGY
Airtestgal/min. with stem set at / 48 ft. forhrs.		
Artesian flowg.p.m. Date Temperature of waterWas a chemical analysis made? Yes No	Start Date <u>4-12-05</u> Completed D	ate 4-19-05
WELL CONSTRUCTION CERTIFICATION: L constructed and/or accept respo	onsibility for construction of this well, and its	compliance with all
Washington well construction standards. Materials used and the information r	eported above are true to my best knowledge a	nd belief.
Driller Engineer Trainee Name (Brint) Fred Emerson	_ Drilling Company Frous Sto	er Dr. Ilive
Driller/Engineer/Trainee Signature	- Address HO Box 37	
Driller or Trainee License No	- City State Zin Hivtline	Wa 9913
	Contractor's Contractor in Ac	1/ 2, 20



WELL	LOG	-Continued	No	A,31	38
CORRE- LATION		Materi	AL	THICKNESS (feet)	DEPT (feet
	Edi	oin LJohr	SON Depth forward		
	10"	dia	from	0 to	191 '
	10"	dia	from	0 to	1911
	10"	dia	from	0 to	191'
	Per	forations:	8" by ‡fro	m 16 3 ·	60 1
			· · · · · · · · · · · · · · · · · · ·		
~	 				
. <u></u>		<u></u>			
		<u> </u>	<u></u>		
		······································			
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lie Origital and First Copy with sparingsal of Ecology passed Copy — Owner's Copy also Copy — Driller's Copy also Copy — Driller's Copy	WATER WE	LL REPORT		Application Permit No	No. G4-2	4488
1) OWNER: Name NAAC o	F WASH.	Address	195		• • • • • • • • •	
2) LOCATION OF WELL: County.	Daualas		ENE	19 -	3	356
earing and distance from section or subdivisi	ton corner 91015	\$ 757' 11	of Conner	Ser	ажыл, кі • 9	
3) PROPOSED USE: Domestic	Industriai 🗌 Municipai 🗍	(10) WELL LOG:				
		show thickness of aquife	color, character, si tre and the kind an	d nature of	el and stru the mater	icture, e let in es
4) TYPE OF WORK: Owner's numb (if more than	one).	M	ATERIAL	JOT BUCK	TROM	
New well 1 Mei	thod: Dug 📑 Bored 🔂	TOP S	O.L.		0	2
Reconditioned	Rotary D Jetted	<u></u> G	RAVEL		7	27
5) DIMENSIONS:	16"	CLAY	(32	49
Drilled 7.38 Depth of com	pleted well 738	<u> </u>	ARD BASA	94T	48	19.
		TE ST	AT DEAR	ATTA	175	1903
Casing installed. 16 ⁴⁴	0 110	HARD G	REY RASA	<u>σ</u>	205	30
Threaded [] Diam. fro		- SOFT B	ROWN BA	SALT_	305	
Welded 🕅	m ft. to ft.	HARD_	GREY BA	AL	3.12	431
Perforations: y- br No D		BROKE	N BROWN	BASAH	431	59
Type of perforator wed, Mit Lk.	KNIPE		CREY HOS		5005	
SIZE of perforations	in by 4 in.		BLACK BAS	AIT	653	64
perforations from	n. to	HARD	SREU BAS	ACT	658	7/2
perforations from		INTER	FLOOD WA	TER.	712	736
Screens: Yes 🗋 Nde					<u>}</u>	
Manufacturer's Name				•		
Diam. Slot size fro	Model No					
Diam. Slot size from	m		DEAF	-1-1-1-1		
		<u> </u>	NELE	VED		
Gravel placed from	ft. to					•
Surface seal: Yes D No 2 To W			- VL Ç5 -	1977		
Material used in seal	nat depth/ R.		FDAUTHERIN			
Did any strata contain unusable w	vater? Yes 🗌 No 🗍	Gt		ECOLOGY		
bishod of sealing strate of	pun of strata					<u> </u>
) PUMPI Manufacturer's Name GEN	RAL Electric					
Type: Excitation I	нр /90		—— <u>—</u> —————————————————————————————————			
) WATER LEVELS: Land-surface above mean a	elevation ca level				┝─── ─ ┣	
the level	I well Date PLI 1969					
Artesian water is controlled by						
	(Cap, valve, etc.)					
) WELL TESTS: Drawdown is as lowered below	mount water level is . static level (A'())	Work started	10 Dr-	<u> </u>	····	
e a pump test made? Yes 💢 No 🗆 If yes, i ad: //5/) gal/min with 60° a day	by whom? L())		0781 & COMPACTOR			
	H H	WELL DRILLER'S	STATEMENT			
19		true to the best of m	ed under my ju: y knowledge and	isdiction a	nd this r	eport i
covery data (time taken as zero when pumj measured from well top to water level)	p turned off) (water level	H1 11	11 Fran	E zim	merny	a.
time Water Level Time Water Level	Time Water Level	NAME I-Ich 1 15	HULL	Circu	1 or	
Immediatly		(F 416 4.3		vn) (T	ype er gri	.
		Address	f. A.C. fin	1 GW	4	
Date of Len April 1969		(Simail	1 Alun	1.1.21.4	حفرمه	~
ler test AIO gal/min. with ft. dr	awdown afler	Comments for a fint on The	(Well D	iller)		

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File Onginal with Department of Ecology Second Copy - Owner's Copy Third Copy - Driller's Copy	WATER W 7450 STATE C		T Notice of Intent /// UNIQUE WELL I D # Water Right Permit No	12372 ØFL	7 _121 - A 807 6
(1) OWNER: Name PK	ET Infi		ress 1430 volympic Ave	Edmon	Is We,
(2) LOCATION OF WELL Cou (2a) STREET ADDRESS OF WE TAX PARCEL NO	nty D D L G / A S ELL. (or nearest address)	AL REGION	J_1/4 SE_1/4 Sec_6_T_23 Rim Pock PC:	_NR 251	
(3) PROPOSED USE. JZ D □ In □ D	omestic 🛛 Industrial ngation 🗆 Test Well eWater	Municipal Other	(10) WELL LOG or DECOMMISSIONING PR Formation Describe by color, character, size of the kind and nature of the material in each strat	OCEDURE DE material and st tum penetrated	SCRIPTION tructure, and , with at least
(4) TYPE OF WORK Own	er's number of well (if more than o lew Well Method eepened Dug econditioned Cable	ne) □ Bored □ Driven		FROM	TO
(5) DIMENSIONS Diam	ecommission	Jetted	Top Sail	0	
(6) CONSTRUCTION DETAILS Casing Installed.	Co Diam from	-7 # 10 / 0 #	e water	4	16
Liner installed Threaded	Diam from Diam from	ft toft ft toft ft toft	gravet & glay 4 los	26	26
Perforations. Ve Type of perforator used	s 5 XNo	n	Brown Basalt & Water	40	44
	perforations from	ft toft	Black Basalt	69	80
Manufacturer's Name Type DiamSlot Size DiamSlot Size Grave/Filter packed Matenal placed from Surface seai Matenal used in seal Did any strata contain unuse	Model minipage	No	DEPARTMENT OF C		
Type of water?	Face Depth of s	trata <u>4-26</u>			
Type (8) WATER LEVELS Static level	face elevation above mean sea law ft below top of we bs per square inc by(Cap, valve, et	_H P	Work Started 10 / 11, 0 0 Complet	ed 10/12	0
9) WELL TESTS Drawdown is Was a pump test made? □ Yieldgal/min with Yieldgal/min with Yieldgal/min with Recovery data (time taken as well top to water level) Time Water Level Date of test Bailer testgal/ Aritestgal/ Aritestgal/	amount water level is lowered being the second seco	low static level	I constructed and/or accept responsibility for compliance with all Washington well construct and the information reported above are true to Type or Print Name <u>Mitch Matha</u> (Licensed Driller/Eng Trainee Name <u>Drilling Company Matha Lugs</u> (Signed) <u>Matha Mutch</u> (Signed) <u>Matha Mutch</u> (Signed) <u>Address 23/7 RL 10,2 M</u> Contractor's Registration Not ATTA ED C//	construction of thon standards o my best know which have a standards o my best know which have a standards ineer) License N License N License N License N M. L. NECESSARY	this well, and its Materials used Medge and belief 1267 0 1267 0 1267 0 1267 1267 1267 1267

ECY	050-1	-20	(11	/98)
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apertment of Ecology With	'ER: WI	ILL. REPORT Start Card No		^
ind Copy—Driller's Copy Ind Copy—Driller's Copy	STATE OF	WASHINGTON Water Right Permit No		H
) OWNER: Name Juba John COX		Address /2251 NE 70th	Kirk	undu
LOCATION OF WELL: COUNTY DOUG GE		NE NE 19	22	76
) STREET ADDDRESS OF WELL (or nearest address)	Rim Ro	ek Meridous		. ж
PROPOSED USE: Domestic Industrial	Municipal 🗆	(10) WELL LOG or ABANDONMENT PROCED		RIPTION
DeWater Test Well	Other 🗌	Formation: Describe by color, character, size of material	and atructure	, and show
) TYPE OF WORK: Owner's number of well (If more then one)		with at least one entry for each change of information.		penetress
Abandoned Deepened Deepened Cable	Bored 🗆 Driven 🗆	Gravel		30
		Bry Soil		10
DIMENSIONS: Diameter of well	inches.	A Ruch	40	12
Drilled 7:22 feet. Depth of completed well	<u></u>	Olay & Rock	4.3	20
CONSTRUCTION DETAILS:		Mer Busylt	80	1 5
Casing installed: Diam. fromOft. to	<u>. 43 n</u>	Have Russelt		111
Welded M* Diam. fromft. to	on.	FOVOUS BUSSIE - LINDA		177
Threaded Diam. from ft. to	oft,		4/77	100
Perforationa: Yes No 🔽			1.	
Type of perforator used				
SIZE of perforations In. by	in,			
perforations from ft. to	ft.			
perforations from ft. to	Ħ.			
perforations from h. to	ħ.	N II W		
Screens: Yes No 24		B B B B		
Manufacturer's Name				
Node	No	7199		\
DiamStol eizefromft, to	oft.			1
Gravel packed: Yas No No No No	°f.		UT OGY	7
Graver pecked: Yes No 44 Size of gravel			OFFICE	
Gravel placed from ft. to	<u>_</u> ft.			
Surface seal: Yes No No To what depth?				
Material used in seal <u>OCINTONITC</u>			+	
Did any strate contain unusable water? Yes No 🕅	i			
Type of water?Depth of et	breta		++	
PUMP: Manufacturar's Name				
Туре:	H.P.			
WATER LEVELS: Land-surface elevation				
Static level ft. below top of wait Date			-┾・──╂	
Artesian pressure lbs. per square inch. Date			+	
Artesian water is controlled by	a.m		+	
WELL TESTS: Drawdows is amount water lound to burners to		Work started 8-6-90, 19. Completed	7-8-	1091
Was a pump test made? Yes No Byes, by whom?				,
Yield: <u>60</u> gal./min. with ft. drawdown after _		WELL CONSTRUCTOR CERTIFICATION:		
······································		and its compliance with all Washington well on	netruction of i	thie well; anderse
Bernunge date // Ima tak an annu ikan		Materials used and the information reported above	e are true to	my beet
from well top to water level) The Water level The Water level	• Measured		1 x	
	Ward Lavel	NUME FOLLY STAN Dril	ling	
		CPERSON, FITHIN, ON COMPONING	TYPE-OF	
		Address 100× 37 Hew + 11	Ne U	<u>x</u> .
Date of test		$\bigcap \bigcap \bigcap $		
Baller test gel./min. with ft_stransform atter		(Bigned) the Merson License	na. Là	रत
Airtest	a getter and the	Distingtor /		
Artesian Bow		Harrison Dans	- interior in a	
Temperature of water Was a shaming and a var]		e de classifie	
		(USE ADDITIONAL SHEETS IF NECE	SSAFIY)	
		· · · · · · · · · · · · · · · · · · ·		
		1 ° .		1. S.

JAMESON LAKE AREA MONITORED WELL LOGS

File Deci	Original and First Copy with	li ness-	St	IT Card No	29m	Ø
Seco	ond Copy—Owner's Copy	LL REPORT	01			~
Third	d Copy-Driller's Copy STATE OF	WASHINGTON Water Big	N Permit No			ĺ
(1)	OWNER: Nome Denay Smullen	77.7	Lande	C. DI		
_		Address <u></u>			_ 51040	<u>467</u>
(2)	LOCATION OF WELL: County Douglas	<u>Loty</u>	<u>*_NW</u> * s	<u>е 5 т</u> е	2 <u>5 n.</u> r	26
(2=)	STREET ADDDRESS OF WELL (or nearest address) Jom Son	bake Recort	•			
(3)	PROPOSED USE: To Domestic Industrial I Municipal I	(10) WELL LOG or AB	ANDONMEN			CRIPT
	DeWater Test Well Other	Formation: Describe by color,	character, aiz	e of material a	nd structur	e. and
(4)	TYPE OF WORK; Owner's number of well	thickness of aquifers and the kin with at least one entry for each cl	id and nature of hange of information of the second s	the material in e Ition.	ach stratur	n penetr
	Abandoned 🖸 New well 🛛 Method: Dug 🗂 Bored 🖸	MA	TERIAL		FROM	то
	Despened Cable Driven Reconditioned Reconditioned	overburder	1 01	<u> </u>	0	3
(5)		Sana & Gray	el, Pk	بالملوميص	. 3	la
,	Drilled 40 test Drail 1 Inches.	Sond & Gravel	MOIS	ř	∣ <i>ı</i> a_	23
-	Contraction and the second sec	Wale Wale	r pearl	₩ <u></u> ,	23	41
0)	CONSTRUCTION DETAILS:		V () (i	LL		1 -
	Welded X				<u>-</u>	
	Liner installed Diam. fromft. toft.	· · · · · · · · · · · · · · · · · · ·				
	Perforations: Yes No X				 	
	Type of perforator used					<u> </u>
	SIZE of perforations in. by in.					ļ
	perforations from ft. to ft.					<u> </u>
	perforations from It. to It.					-
	perforations fromft. toft.		·			
	Screens: realNopa					
-		······································				
I	DiamSlot sizefromft. toft.		· · · · · · · · · · · · · · · · · · ·			
	Diamft. toft.					
(Gravel packed: Yes No Size of gravel				· · · · · ·	
(Gravel placed fromft. toft.					
5	Surface seai: Yea Ng Ng To what depth? 18				-	
٨	Material used in seal		<u> </u>			
0	Did any strata contain unueable water? Yes No X		<u> </u>		* •	
, N	Asthod of assign strate off	·			-+	٩.
<u>n</u>			^	<u></u>		<u>.</u>
, ' -						, <u>.</u>
, 11 1	MATED LEVELC, Land-surface elevation					• • • •
י וי א	static level 12 # balantin admit and the last a			—· · · · · · · · · · · · · · · · · · ·		•
	Intesian pressure Ibs. per square inch_ Date					
	Artesian water is controlled by (Cap value ate 1)	1				
) 1	WELL TESTS: Drewdown is amount water level is lowered below static tours	Work started_ 10/17	1992 om	pleted_ 10	18	199
W	/as a pump test made? Yes No Y If yes, by whom?					
Y	ield: gal./min. with h, drawdown after hre.			IUN:		
	- EST #/K Lift	and its compliance with	all Weshing	ton well const	ruction of truction si	this we
R	ecovery data (time taken as zero when pump turned off) (water level measured	materials used and the ir knowledge and belief.	stormation rep	orted above a	ire true to	my be
rr: Tu	nn wennog to water (even) me Water Level Time Water Level Time Water Level		. .	<i>د</i> ۱	_	
		NAME TOAL TUI	ND 4	Srbb12		DO
		Address (21/ 1)	-HD	۔ السامی	() 1/1 () 1/1	
	Date of lest		_ <u>v</u> Z	Low	ya.	-17
, P	siler test osl /mis with the second second	(Signed) Mill La	MRG	Licanee M	145	ł
0	na hra yel./min.with ft. drawdown efter hra.	(WELL DRIL	LER)	LICENSE NO	·	-
Al	rtest gal,/min, with sizes and at the same to the second seco	Contractor B		1		
Ai	rtest gal./min. with stem set at It. for hrs.	Registration S194MF	Data 1	dia		_C/

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Depth (ft)	Geology	Sample	Log	Well Construction
0			_	8 inch steel monument
5-		•	dry, brown, fine sandy SILT	well 0.5 ft below monument
10		• •	Damp to wet, brown, F-M SAND, trace gravel and	Concrete (0-2 ft)
15		•	silt. Hole making water	Top of seal: 2 ft below ground
20 -		•		3/8 inch bentonite chips (2-6 ft)
25 -			wet, brown-gray, very sitty line SAND	
30 -			Hole making little to no water	Vater Level (8/31/06): 2.71 ft from top of well
35 –		- - -	Wet, gray-brown, very fine sandy SILT with trace	Bentonite Grout (6-133 ft)
40			gray clay Hole making little to no water	
45		•		
50-		• • •		
55		-	Wat grav brown yory sitty find SAND with trace	
65		S	gray clay.	Borehole diameter 8 inch
70		Itting	Hole making a little water	Riser 4 inch PVC schd 40
75		s Cu		
80 -		nonu	Wet, gray-brown, very fine sandy SILT with trace gray clay	
85 -		Conti	Hole making little to no water	
90			Wet, gray-brown, very silty fine SAND with trace	
95 –			gray clay Hole making little to no water	
100 -				
105 -				
110 -	· · · · · · ·	-	Wet, gray-brown very fine sandy SILT to very silty fine SAND interbedded with gray-green CLAY	
115	<u></u>	-	Hole making some water	3/8 inch bentonite pellets
120 -				Top of filter pack: 136 ft bgs
120	· · · · · · ·	-		Top of screen: 139 ft bgs
135	· · · · · · ·			(10 slot)
140				Bottom of screen: 149 ft bgs
145 -	· · · · · ·	-		4 inch diameter (3 inch length)
150 -	· ·			Colorado silica sand #10x20
155 -				Bottom of hole: 152 ft bgs
Projec Drilling	t Name: g Methoo	D A ::	Oouglas County Recharge Well Name: PGG-1 ir Rotary UWID: APK319	
Driller Firm:	: Roy Envir	Sink onm	ental West Explorations Datum: NAVD88	FOR MONITORING WELL PGG-1
Consu Logge	ulting Fir d by:	n:	PGG Installed: 7/18/2006 Dawn Chapel	Douglas County Recharge
Locati	ion: Jar	nesc	n Lake, Douglas County	JS0604, PGG-1.ldf, 9/2006

FOSTER CREEK MONITORED WELL LOGS

Third Copy Driller's Copy STAT	FOE WASHINGTON		
(1) OWNER: Name Charles Charles	Water Right Permit No.		
- Cherry & Shown (Common	Anton Box 819 Ball Hill		
(2) LOCATION OF WELL: County DAma A C	The sort wA 78		
(2a) STREET ADDRESS OF WELL (200000000000000000000000000000000000	SE 14 SW 145 8 . 29		
Industrial Municipal ((10) WELL 00		
DeWater Test Well Oper	Figure to Contract And ANDONMENT PROCEDURE DESCRIPTIO		
(4) TYPE OF WORK: Owner's number of well	and the kind and nature of the material in each stratum contribution, and show thickness		
Abandoned D New well by Mathematics	crisinge of information,		
Despend Cable Date Date	MATERIAL FROM		
(5) DIMENSION	1 Sandy Joan 0		
(J) DIMENSIONS: Diameter of well	reavy silt 4		
feet. Depth of completed well	wit clay 18		
(6) CONSTRUCTION DETAILS:	whitelag y graine 416		
Casing installed:	Jona + gravel 53		
Welded User trom It. to	" " " " " Then "round growel 54"		
Threaded	_R		
Petionetione: V., The State	_n		
Type of perforator used			
SIZE of perforations	_		
perforations from	n.		
perforations from	<u>R</u>		
perforations from R to	.t		
Screens: Yas No 101			
Menufacturer's Name			
Тура	-		
Diem Slot size from	-		
Diam Stot size from to	n		
Gravel packed: Yes No No Strand	I suggest Dumin a		
Gravel placed from the			
Surface seel: Yes of the second secon	10 game INROP		
Material used in seal			
Did any strata contain unusable water?	://n//		
Type of water?			
Method of sealing strata off			
D1026	DEPACTOR		
PUMP: Manufacturer's Name	CENTRAL REGION SOLOGY		
	Contraction of the second		
WATER LEVELS: Land-surface elevation			
Static level f. beion to seven	Work Started 7-519. Completed 9-6		
Artesian pressure fail per square inch Date	WELL CONSTRUCTOR OF THE INC.		
	CERTIFICATION:		
WELL TESTS	Compliance with all March responsibility for construction of the well and		
WELL TESTS: Drawdown is amount water level is lowered below static level	I constructed and/or socept responsibility for construction of this well, and compliance with all Washington well construction standards. Materials used a the information reported above are true to my boot true to the standards.		
WELL TESTS: Drawdown is amount water level is lowered below static level Was a pump test made? Yee No I if yes, by whom?	I constructed and/or accept responsibility for construction of this well, and compliance with all Weshington well construction standards. Materials used a the information reported above are true to my best knowledge and belief.		
WELL TESTS: Drawdown is amount water level is lowered below static level Was a pump test made? Yes No I if yes, by whom?	I constructed and/or accept responsibility for construction of this well, and compliance with all Weshington well construction standards. Materials used and the information recorded above are true to my best knowledge and beller. NAME		
WELL TESTS: Drawdown is amount water level is lowered below static level Was a pump test made? Yee No fit yee, by whom? Pleki:gel./min. withft. drawdown after hre.	I constructed and/or accept responsibility for construction of this well, and compliance with all Washington well construction standards. Materials used as the information recorded above are true to my best knowledge and being. NAME		
WELL TESTS: Drawdown is amount water level is lowered below static level Was a pump test made? Yee No If yee, by whom? Yield: ft. drawdown after """"""""""""""""""""""""""""""""""""	Address		
WELL TESTS: Drawdown is amount water level is lowered below static level Was a pump test made? Yee No If yes, by whom? '' ''	I constructed and/or accept responsibility for construction of this well, and compliance with all Weshington well construction standards. Materials used at the information reported above are true to my best knowling and beller. NAME		
WELL TESTS: Drawdown is amount water level is lowered below static level Was a pump teet made? Yee No If yes, by whom? '' gal./min. with '' ft. drawdown after '' '' '' <t< td=""><td>I constructed and/or accept responsibility for construction of this well, and compliance with all Weshington well construction standards. Materials used all the information reported above are true to my best knowledge and beller. NAME</td></t<>	I constructed and/or accept responsibility for construction of this well, and compliance with all Weshington well construction standards. Materials used all the information reported above are true to my best knowledge and beller. NAME		
WELL TESTS: Drawdown is amount water level is lowered below static level Was a pump teat made? Yee No If yee, by whom? Yield: ft. drawdown shar 11 17 12 17 13 17 14 17 15 17 16 drawdown shar 17 17 18 17 19 17 19 17 19 17 19 17 19 18 19 19 19 17 19 17 19 18 19 19 19 19 10 19 11 17 11 17 11 18 12 17 13 17 14 17 15 17 16 17 17 17 18 17 17	I constructed and/or accept responsibility for construction of this well, and compliance with all Weshington well construction standards. Materials used at the information recorded above are true to my best knowledge and beller. NAME		
WELL TESTS: Drawdown is amount water level is lowered below static level Was a pump test made? Yee No If yee, by whom? Yield: gal./min. with " n water level Time Water Level Time	I constructed and/or accept responsibility for construction of this well, and compliance with all Weshington well construction standards. Materials used a the information recorded above are true to my best knowlenge and belief. NAME		
WELL TESTS: Drawdown is amount water level is lowered below static level Was a pump test made? Yee No If yee, by whom? Yield: gal./min. with " n water level Time Water Level Time Water Level Time Date of test	I constructed and/or accept responsibility for construction of this well, and compliance with all Weshington well construction standards. Materials used at the information recorded above are true to my best knowlenge and bellet. NAME		
WELL TESTS: Drawdown is amount water level is lowered below static level Was a pump test made? Yee Yield:	I constructed and/or accept responsibility for construction of this well, and compliance with all Washington well construction standards. Materials used a the information recorded above are true to my best knowledge and beller. NAME		
WELL TESTS: Drawdown is amount water level is lowered below static level Was a pump test made? Yes No If yes, by whom? Yield:	I constructed and/or accept responsibility for construction of this well, and compliance with all Weshington well construction standards. Materials used at the information reported above are true to my best knowlings and beller. NAME		
WELL TESTS: Drawdown is amount water level is lowered below static level Was a pump teet made? No If yee, by whom? Yield:	I constructed and/or accept responsibility for construction of this well, and compliance with all Weshington well construction standards. Materials used at the information recorded above are true to my best knowledge and beller. NAME		

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File Depa Seco Thir	Original and First Copy with utment of Ecology nd Copy — Owner's Copy d Copy — Driller's Copy STATE OF V	LL REPORT Application No.		
(1)	OWNER: Name Lee Chulow	And Rridge port WR		
	LOCATION OF WELL: County Douglas	NE 14 5C 1/4 Sec 26 T 29 N. 25 W.M.		
ዲ				
e 1 3)	PROPOSED USE: Domestic Municipal Irrigation Test Well Other	(10) WELL LUG: Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each		
≤ <u>4</u>)	TYPE OF WORK: Owner's number of well	stratum penetrated, with at least one entry for each change of formation.		
ls.	New well K Method: Dug [] Bored []			
	Deepened C Cable Driven Deepened C Seconditioned Retery D Second	SANCE GRAVE 2 415		
٢.				
⊆ ⁵⁾	DIMENSIONS: Diameter of well			
≌_	Drilled			
(9 G	CONSTRUCTION DETAILS:			
Ĕ	Casing installed: 8 " Diam. from 7/ tt. to 45 tt.			
Ę	Threaded Diam. from ft. to ft.			
	Welded Z "Diam. from ft. to ft.			
e P	Perforations: Yes 🗆 No 🙍			
	Type of perforator used			
ō	SIZE of perforations in. by in.			
	perforations from			
ਬ	perforations from ft. to ft.			
ច	Screens' was De We			
, Jai	Manufacturer's Name			
	Type			
Ĕ	Diam			
5	Diam Slot size from ft. to ft.			
Ľ	Gravel packed: Yes D No X Size of gravel:			
ц л	Gravel placed from ft. to ft.			
ar	Surface seal: yes of No C To what depth? 18 ft			
Š	Material used in seal amunt			
_	Did any strata contain unusable water? Yes 🗌 No 🗋			
<u> </u>	Type of water? Depth of strata			
<u> </u>				
ğ(7)	PUMP: Manufacturer's Name	┃		
8–	туре:			
<u>≥</u> 8)	WATER LEVELS: Land-surface elevation above mean sea level			
O ^{tat}	ic level /5 ft. below top of well Date 2-25-1/	A - f K f		
ō ^{urte}	sian pressure	H/t , $ q $ δ /		
ပ ။	(Cap, valve, etc.)			
5 ⁹⁾	WELL TESTS: Drawdown is amount water level is lowered below static level	Work started 52-24, 19.81 Completed 2-25, 19.81		
	d: gal/min. with ft. drawdown after hrs.	WELL DRILLER'S STATEMENT:		
e	10 td br	This well was drilled under my jurisdiction and this report is		
2		true to the best of my knowledge and belief.		
	overy data (time taken as zero when pump turned off) (water level measured from well top to water level) me Water Level Time Water Level Time Water Level	NAME MIM andity Deilling		
_] 	III and In	482 R. Las Part 11/2. h.		
۳	an up at a Ugam.	Address Du Lucy poor Joach		
-	Are of test	In a king i B Olemand		
Badl	er test	[Signed]		
Arte	sian flowg.p.m. Date	1- 258 - 2-25 81		
Tem	perature of water	License No. (13+3 9 Date 7 0(3), 190/		

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Fil De Se Th	Le Original and First Copy with partment of Ecology cond Copy — Owner's Copy urd Copy — Driller's Copy STATE OF W	LL REPORT	Application No			
ſ	I) OWNER:	the Parts Man	a Gald 10m			
port.	LOCATION OF WELL: County Dauge 16.5 NE 1/2 NW 1/2 Sec. 19 T 29 N. R. 28 Ew. M. Construction or subdivision corner					
ell Re	(3) PROPOSED USE: Domestic Prindustrial I Municipal [(10) WELL LOG: Irrigation I Test Well I Other I Formation: Describe by color, character, size of material and s show thickness of aquifers and the kind and nature of the ma					
Ž (1) TYPE OF WORK: Owner's number of well	stratum penetrated, with at least one e	itry for each change of fo	mation.		
ົ	New well P Method: Dug D Bored D	MATERIAL	FROM	10		
Ē	Deepened 🗌 Cable 🗋 Driven 🗌	Sell + boulders	0	16		
	Reconditioned 🗌 Rotary 🗗 Jetted 🗋	Hasalt Glack	77	<u>33</u>		
δ.	5) DIMENSIONS: Diameter of well 6 inches	Desalt Growne 290	56	40		
Č,	Drilled 200 ft Depth of completed well 200 ft.	Basaly Glack Dayo	7	160		
음 -		Dasar (broken 13 to	<u>10 gpm) [6]</u>	170_		
)) <u>ਗ</u>	5) CONSTRUCTION DETAILS:	Cray Green		~~~		
Ę	Casing installed: e^{-t} Diam. from $\frac{\tau}{t}$ it to $\frac{-2t}{t}$ it.	•				
ō	Threaded 🗌					
Ξ	Welded [] ft. to ft. ft. to ft					
ð	Perforations: Vas C No P	· · · · · · · · · · · · · · · · · · ·	++			
ž	Type of perforator used					
	SIZE of perforations in, by in.					
୍	perforations from			·		
p	perforations from	· · · · · · · · · · · · · · · · · · ·				
ar	perforations from					
ច	Screens: Yes 🗆 No 🕵					
ai	Manufacturer's Name					
	Type			<u> </u>		
อ	Diam. Slot size from ft. to ft. to					
Ę	Diam. Slot size from from ft. to ft.					
2	Gravel packed: Yes 🗇 No 🕱 Size of gravel:	·				
Ĩ	Gravel placed from ft. to ft.					
2	a t 1 2		·····			
a	Surface seal: Yes 7 No 1 To what depth? ft.					
5	Material used in seal					
<u> </u>	Type of water?	0707	· · · · · · · · · · · · · · · · · · ·			
<u>o</u>	Method of sealing strate off					
<u> </u>				<u> </u>		
s, e	() FUMIT: Manufacturer's Name	3107.0				
<u>e</u> -	Type,		'			
20	8) WATER LEVELS: Land-surface elevation above mean sea level		31/			
ត្រទ	tatic level 34 ft. below top of well Date 5-8-78					
<u>o</u> ^	rtesian pressurelbs. per square inch Date		· -			
8	Artesian water is controlled by					
ЩĽ	AN THEFT I DECORC. Drewdown is prount water level is					
ک (9) WELL TESTS: lowered below static level	Work started 5-3 , 1978	Completed 5-5	1978		
<u>۳</u> ۲	As a pump test made? Yes 🗌 No 🔐 If yes, by whom?	WELL DDILLED'S STATEM	емт.			
₽ Ľ	leid: gal/min. with it. grawdown after his.	WELL DRILLERS STATEM				
Ĕ-	и и и и	This well was drilled under my true to the best of my knowledge	jurisdiction and this r and belief.	eport is		
2 :	annuary data (time taken as were when nime intend off) (make- fault	/				
б, _к	measured from well top to water level)	NAME Honry Roch W	ell ly thena			
ē	Time Water Level Time Water Level Time Water Level	(Person, firm, or corp	oration) (Type or pr	int)		
ο		Do By Her Va	hina 11 000	27		
<u>e</u>		Address 7.4. 407 1001 10	EINIC, NA. 107	<u></u>		
<u> </u>		A R	P			
	Date of test	[Signed] (Enry here				
	nier icol	(W		~		
Т	emperature of water	License No. 0259	Date 5-8	, 19 78		
-		ł				



•
Pepartment of Ecology econd Copy Owner's Copy hird Copy Driller's Copy	WATER WELL REPORT	Application No	•
DOWNER TRANS		Pennit No	
LOCATION OF WETT	Address	Aut 20 -0	
LOCATION OF WELL: County	iglas	Sec DU Tot IN	R. M. Mar
A BROROGED HOR		<u> </u>	
3) PROPOSED USE: Domestic P Industri Itrization D Test We	ial Municipal (10) WELL LU		
	show thickness of ag stratum penetrated,	wifers and the kind and nature of the mat with at least one entry for each change	erial in each
4) TYPE OF WORK: (if more than one)		MATERIAL FROM	ТО
Deepened Ca		0'	
Reconditioned [] Re	otary Jetted	+ Water 10.	120
5) DIMENSIONS: Diameter of well	8- Le inches	agait Cutiler 130	1.35
Drilled	veil of Silo a Hica Ber	Salt Maak	
6) CONSTRUCTION DETAILS:	"Hole-C	emented a	2 2 20
Casing installed: Diam. fromC	2. n. to 2. n.		_
Welded Di Diam. from	ft. to		
Perforations:			
Type of perforator used			
SIZE of perforations in. by			
perforations from	tt. to		
perforations from	ft. to ft		
Screens: yes 🗆 No 🗱			
Manufacturer's Name Type Model			
Diam. Slot size from	ft. to ft		
Diam. Slot size from	<u></u>		
Gravel packed: Yes D No R Size of gr	avel:		
Graver placed from	R		
Surface seal: Yes No D To what dep	n.		
Did any strata contain unusable water?	Yes No		
Type of water?	trata		
	[
Type:	H.P		
B) WATER LEVELS: Land-surface elevation			
atic level 60 ft. below top of well	Date		
rtesian pressure	Date		
(Cap.	, valve, etc.)		
WELL TESTS: Drawdown is amount w lowered below static le	water level is	2/2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2	
as a pump test made? Yes 🗌 No 🍂 If yes, by whor	m?		19.74
" " " "	This well DRILLE	R'S STATEMENT:	
······································	true to the best of	muled under my jurisdiction and this my knowledge and belief.	s report is
<pre>covery data (time taken as zero when pump turned measured from well top to water level)</pre>	d off) (water level	≤ 1 (1) (1) (1)	
Time Water Level Time Water Level Tim	ae Water Level NAME CLAN (Per	requiring or corporation) (The or	Printh 1
	Address ADX	805 Couke	Cit.
· ·····	······································		~ /
ate of test	stier bre [Signed]	~ / menon	
tesian flow			~
mperature of water Was a chemical analysis n	nade? Yes D No D License No	Z L Date LOOK	, 19.6
	•		

			70	147		
File (Driginal and First Copy with		ODT Star	t Card No	1718	フ
Depe	riment of Ecology WAIEK WE	ill kep	OKI			~
seco Third	Copy—Driller's Copy STATE OF N	WASHINGTON	Water Right Permit No		6	a
	OWNER: Name Ray Herton	Address	BRidge port	, Wa.		-+-
- 21	LOCATION OF WELL: COURTY DOUGLAS		SW NE .	35 16	29 N R	25E.,
,#J 2#)	STREET ADDDRESS OF WELL (or nearest address) Highway	17 + Foster	e Creek Jun	CTION	<u>- z _</u> n., n.	
3)	PROPOSED USE: Industrial Municipal Municipal DeWater Test Well Other	Formation: Descri	be by color, character, size	of material a	nd structure	, and ah
(4)	TYPE OF WORK: Owner's number of well Renticement Well	thickness of aquife with at least one on	re and the kind and nature of i try for each change of information of the second s	the material in e tion.	ach stratum	penetrati
	Abandoned New weil Monthod: Dug , Bored		MATERIAL		FROM	70
	Despened Cable Driven Cable Cable Driven Cab	Sandar 6-	ROUP CONSO	lichtert	3	24
(5)	DIMENSIONS: Diameter of wall 10 inches	Gand &	GRAVEL +, Clay	<u> </u>	24	28
,	Drilled <u>90</u> test. Depth of completed well <u>90</u> ft.	Bolder	S, Sand & GI	ave/	28	38
(6)	CONSTRUCTION DETAILS:	Send	FORAVEL Th	sur top	20	76
	Casing installed: 10 · Dism. from 0 tt. to 60 tt.	and a	Send Ti	24/	56	62
	Welded Diam. fromft. toft.	hand	.6-Ravel	¥11 /	62	D
	Threaded \Box ' Diam. fromt. tot.	Send			20	28
		Good 6	Ravel & San	2	28	20
	Type of perforator used			*		·
	SIZE of perforations in: by in.				ļ	
	perforations from ft. to ft.					<u> </u>
	perforations fromft. toft.				<u> </u>	}
	perforations from fi. to fi.				-	
	Screens: Yest Not Not					
	- Stain Las					
	Non IDT Station of IOD tran 61 th to 71 th					1
	Diam IDT Slot size 1080 from XI that 90 th					-
	Gravel packed: Yes No Ka				1	
		2000 III			<u> </u>	t i
			1.1 . 8	17	1	†
	Surface seal: Yes X No To what depth?t.					
	Naterial used in seal					<u> </u>
	Type of water?				<u>.</u>	
	Method of sealing strats off					
7)	PUMP: Manufacturaria Nama					<u> </u>
			•••			
	Type D.F D.F		w			
8)	WATER LEVELS: above mean sea level				1	
	Static level					
	Artesian water is controlled by					ŀ
		Work started	7-6- 92. Con	ipleted	-24-	. 19.2
(B)	WELL IESIS: Drawdown is amount water level is lowered below static level Was a ourse test made? Yes No W If yes by whom?					
	Yield: gal./min. with ft. drawdown after hrs.	WELL CONS	TRUCTOR CERTIFICA	TION:		
	II	and its con	a ana/or accept respone npliance with all Washin	gton well con	erruction o	i inis we standare
		Meteriale ut	sed and the information re	ported above	are true i	io my be
	Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)		11 - 11 -	_		
	Time Water Level Time Water Level Time Water Level	NAME WIN	die Enterprise	5		
			(PERSON, FIRM, OR CORPORA	.ποn) V	(TYPE C)a Print)
_		Address F.O.	WOR 2 77 DREW.	STM, Wa	1 18	12
	Data of test		Yaill			21
	Bally last 20 and min 0 is demonstrated 4 min	(Signed)	MARTIN MARTIN	License	No	a/
	Airtest (al. /min. with stam set at the fac	Contractor's		~ ~ .		~
	Artesian flow 0.0 m Date 7-24-92	No. WINOL	E/2//98 Date_	<u>7-26</u>	-	_, 19 <mark>7</mark>
	Temperature of water Weine chamical analysis mode? Vac Uk					
		I (USE	ADDITIONAL SHEET	S IF NECES	SSARY)	

ECY 060-1-20	(10/87)	1329-	

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File Original and First Copy with Department of Ecology Second Copy — Owner's Copy Third Copy — Driller's Copy	WATER WELL STATE OF WA	L REPORT shington	Application No.).	
(1) OWNER: Nome Foster Cinch Lords	Cettle Co.	Adress Manshell	W.1 98830)	
(OCATION OF WELL: County) onglast her	_541 45	54/ 1/2 Sec. 1 728	N., R.2	- W.M.
(3) PROPOSED USE: Domestic □ Industr Irrigation ☑ Test W	ial [] Municipal [] (ell [] Other [] []	(10) WELL LOG: Formation: Describe by color, c how thickness of aquifers and	haracter, size of material the kind and nature of th	and struct	ture, and l in each
(4) TYPE OF WORK: Owner's number of w (if more than one) New well [2] Method: D Deepened [2] C Reconditioned [2] R	rell 2 = = = = = = = = = = = = = = = = = =	tratum penetrated, with at lea MATERL Fop 50.1 Sandy ch	ist one entry for each ch	FROM	TO / / ?
(5) DIMENSIONS: Diameter of well Drilled 6 8 ft. Depth of completed y	/0inches. wellft.	Sandy clay Sandy cla Sandy cla	y qravel	18 49 53	<u> </u>
(6) CONSTRUCTION DETAILS: Casing installed: /O." Diam. from <i>Y</i> Threaded □	$\frac{2}{\text{ft. to}} \underbrace{\frac{4}{1}}_{\text{ft. to}} \underbrace{\frac{1}{1}}_{\text{ft. to}} \frac{$	Log@Mal	on Property		
Screens: Yes No S Manufacturer's Name Type Diam. Slot size Mod Diam. Slot size from Gravel packed: Yes No Size of a Gravel placed from ft. to Surface seel: The surface section set of the surface section section set of the surface section set of the surface section set of the surface section section set of the surface set of the surface section set of the surface section set of the surface set of the surfa	iel No				
Material used in seal	epth? ft. Yes [] No [3] strata				
(7) PUMP: Manufacturer's Name	н.р				
(8) WATER LEVELS: Land-surface eleval above mean sea lev Static levelft. below top of well Artesian pressurelbs. per square inch Artesian water is controlled by(Ca	tion vel				
(9) WELL TESTS: Drawdown is amoun lowered below static Was a pump test made? Yes D No D If yes, by wh Yield: gal./min. with ft. drawdow """""""""""""""""""""""""""""""""""	t water level is e level hom? m after hrs. "	Work started 2- 3- 81 WELL DRILLER'S ST This well was drilled u true to the best of my kn	, 19	1 <u>2-3</u> and this	<u>, 19<i>81</i></u> report is
Recovery data (time taken as zero when pump tur measured from well top to water level) Time Water Level Time Water Level T Gir ///T Date of test Bailer test gal/min. withft. drawdo	rned off) (water level Fime Water Level /00. +	NAME M. V.M. (Person, firr Address P.O. B. [Signed]	$\frac{\hat{Q}_{114}(i1, D)}{(183)}$	rillin Type or p diggnet	9 rint) Wh. 78d
Artesian flow	is made? Yes 📋 No 📋	License No. 0358		- 15	, 19.57

CHELAN HILLS AND CHELAN SPRINGS MONITORED WELL LOGS

		-	1110 52/2
° File Depa	Original with 97312 WATER WELL REP artment of Ecology	ORT	Notice of Intent
Seco Third	ond €opy Owners Copy STATE OF WASHINGTON d Copy Drillers Copy		Water Right Permit No
(1)	OWNER Name_ Koiy Luce	_ Addre	537845 M. 1. Jay Ka Anturn WA 98001
(2) (2a)	LOCATION OF WELL County		1/4 E /2 Sec 33 T 2/ NR 23 WM
(3)	PROPOSED USE A Domestic Industrial Municipal Irrigation Test Well Other DeWater		(10) WELL LOG or DECOMMISSIONING PROCEDURE DESCRIPTION Formation Describe by color character size of material and structure and the kind and nature of the material in each stratum penetrated with at least
(4)	TYPE OF WORK Owners number of well (if more than one) Image: Comparison of the second se		one entry for each change of information Indicate all water encountered MATERIAL FROM TO Grandly 16 mm 8 2 Grandly About durs 2 15
(5)	DIMENSIONS Diameter of well 8.	inches ft	damp chutown souvel 40 46
(6)	CONSTRUCTION DETAILS Casing Installed Welded Liner installed Threaded Threaded	ft ft ft	Silty charles 46 48 cluda baselt angeles yours 48 59
	Perforations	in in ft	
	Screens Yes <	ft	
	Surface seal XYes No To what depth? Yes Material used in seal	ft	DETARTMENT OF ECOLOGY CENTRAL REGION OFFICE
(7)	PUMP Manufacturers Name]	
(8)	WATER LEVELS Land syrface elevation above mean sea level Static level	ft \$f	Work Started 10-29 99 Completed 10-29 99
	Artesian water is controlled by (Cap valve etc.)		WELL CONSTRUCTION CERTIFICATION
(9)	WELL TESTS Drawdown is amount water level is lowered below static level Was a pump test made? Yes No If yes by whom? Yield _gal /min with ft drawdown after Water Level Time Water Level Time Water Level Time Water Level Time Water Date of test	hrs hrs om r Level hrs hrs hrs	I constructed and/or accept responsibility for construction of this well and its compliance with all Washington well construction standards Materials used and the information reported above are true to my best knowledge and belief Type or Print Name <u>Marshall Miller</u> License No <u>1437</u> (Licensed Driller/Engineer) Trainee Name <u>MM Quality Drilling, IIC</u> Drilling Company <u>MM Quality Drilling, IIC</u> (Signed) <u>1437</u> (Licensed Driller/Engineer) Address <u>22905 Riverview Rd</u> , Chelan, WA 98816 Contractor s Registration No <u>MVMQUDI.033MM</u> Date (USE ADDITIONAL SHEETS IF NECESSARY)
ECY	/ 050 1 20 (11/98)		Ecology is an Equal Opportunity and Affirmative Action employer For special accommodation needs contact the Water Resources Program at (360) 407 6600 The TDD number is (360) 407 6006

File Orl	olnal and First Copy with	Start Cerd No.	1823	5
Departs Second	Depy — Owner's Copy		4BX	9/3
Inire C	opy — Onlier's Copy STATE OF V	Water Right Permit No.		
(1) 0	WNER: Name fasch Sindum Ad	HCK SO Box 486 Children 4	IA y	18831
(2) L	OCATION OF WELL: County Dong/45	She 14 Shi 14 sh 32 . 2	<u> </u>	23
(2a) S			<u> </u>	$\overline{\Lambda}$
(3) D			/	
(•, ·	Irrigation Irrigation DoWater Test Well Other	(10) WELL LOG OF ABANDONMENT PROCEDURE DI	ESCRIPT	
(A) T		and the kind and nature of the material in each stratum penetrated, with a chance of information	a least one o	entry for each
(-+)	(If more than one)	MATERIAL.	FROM	то
~	DenoonedNew well X Method: Dug Bored DespendCable Driven	Sandy Ircm	0	8
	Reconditioned 🗆 Rotary 🕅 Jetted 🗅	atavel in silt	8	24
5) D	IMENSIONS: Diameter of well inches.	S. 15 Sands / gravel	24	43
Dr	illedfeet. Depth of completed wellfeet. ft.	Solt white granite	43	150
6) C	ONSTRUCTION DETAILS	alonge soft pranity (2)	150	155
о, с с	aning installed: La ; Diam tran +2 was 45	med hard black white gran.	155	305
w		Juan & in the soft growthe (W)	305	340
Li Tr	ner installed Olam from the rt.	- Click white all had a resite	340	405
		black hand granite with	405	485
Pe	rforations: Yes 🗌 No 🗶	latermittant sift lang zones		
Ту	be of perforator used			1
SIA	Le of perforations in. by In.			
_	ft. toft.			
	perorations from ft. to ft.		-	
	ft. 18ft.			
Sc	reena: Yes 🗌 No 🙀			
Ma	nufacturer's Name			
Тур	00 Model No	117 HR 2 / 1005		
Dia	rm Stot size from ft. to ft.			
	m Stot size ft. to ft.			
Gr	avel packed: Yes No X Size of gravel	BUT AND THE ST		
Gri	ivel placed fromft. toft.			
Su	riace seal: Yes X No D To what depth?			
Ma	terial used in seal			
Did	any strata contain unusable water? Yes 🗌 No 🕱			
Тур	e of water? Depth of strata			
Mer	thod of sealing strata off			
r) PC Tvo	e: HP			
			ta 1	Q
5) W/	ATER LEVELS: Land-surface elevation	Work Started 19. Completed	7	_ 19 🔼
Sta	tic level ft. below top of well Date	WELL CONSTRUCTOR CERTIFICATION:		
Arte	Artesian water a sectorial die	WELL CONSTRUCTOR CERTIFICATION:		
	(Cap, valve, etc.)	I constructed and/or accept responsibility for construction of compliance with all Washington well exects utile standards	of this wel	I, and its
)) WI	ELL TESTS: Drawdown is amount water level is lowered below static level	the information reported above are true to my best knowledge	and belies	useo ano. (
Wa	a pump lest made? Yes No No I If yes, by whom?	MIMARO. MASS.		
Yiel	d:gal./min. withft. drawdown afterhrs.			19
		DIAK IN A DO	<u> </u>	180
		Address <u>(AU) (UCEAllond AC)</u>	~ ~ ~	
Rec	overy data (time taken as zero when pump turned off) (water level measured from when	(Signed) ////////////////////////////////////	No. /4	437
top i Time	to water level) Water Level Time Water Level -	(WELL DRIMER)		
		Contractor's	,	~
	1080 allors Ren der	No MOMALIDISENO MA 2-21	/	9.5
			,	19 <u>~</u>
	Date of test	USE ADDITIONAL SHEETS IF NECESSA	RY)	
Baile	er testgal./min. with It. drawdown after hre.	— • • • — •		
Baile Airte	er testgal./min. withft. drawdown afterhre. est55gal./min. with stem set at49_4tt. forhre.	Ecology is an Equal Opportunity and Affirmative Action en	nployer. F	or spe-
Baile Airte Arte	er testgal./min. withft. drawdown afterhre. estgal./min. with stem set atft. forhre. sian flowg.p.m. Date	Ecology is an Equal Opportunity and Affirmative Action en cial accommodation needs, contact the Water Resources I 407-6600. The TOD number is (200) 407-6000	nployer. F Program :	For spe- at (206)

) File Orig: "Al and First Copy with Department of Ecology Second Copy — Owner's Copy WATER WE	Application No.
hird Copy - Driller's Copy BTATE OF V	VASHINGTON Permit No.
(1) OWNER: Nome DON AVGTO OM	500 MSNiel Convon Pol Querday
2) LOCATION OF WELL:	NE NE 12 22 22
tacing and distance from metion or subdivision corner	- /14 1/ Sec 1.3 TOL /N, POLSWM
	LOT Y DIUS Shalon Springs
3) PROPOSED USE: Domestic 🕺 Industrial 🗆 Municipal 🗋	(10) WELL LOG:
Irrigation [] Test Well [] Other []	Formation: Describe by color, character, size of material and structure, and show thickness of aguiters and the kind and patters of the meterial in such
4) TYPE OF WORK: Owner's number of well	stratum penetrated, with at least one entry for each change of formation.
New well Method; Dug Bored	MATERIAL PROM TO
Deepened Cable Driven	Decomposed commute 55 205
Reconditioned Rotary Z Jetted	
5) DIMENSIONS: Diameter of well inches	
Drilled 1.50 ft. Depth of completed well 205 ft.	
6) CONSTRUCTION DETAILS.	
Casing installed	
Threaded C "Diam from # to #	
Welded	
Perforatione	
Size of perforations in. by in.	
perforations from ft. to ft.	
pertorations from	
Screens: Yes 🗆 No 🍂	
Manufacturer's Name	
Diam. Slot size from ft. to ft.	
Diam:	
Gravel nacked: you a way by structure of	
Gravel placed from	
	[
Surface seal: Yes No To what depth? ft.	
Did any strate contain unusable water? Yes No	
Type of water?	
Method of sealing strata off	
7) PUMP: Manufacturer's Name	
Туре:	
B) WATER LEVELS: Land-surface elevation	
atic level	
rtesian pressure	SPONSE READINAL OFFICE
Artesian water is controlled by	
A) WELL TESTS. Drawdown is amount water level is	
In a nump test made? Yes C No C If was built	Work started 3-15 . 188. Completes 3-16
ield: 2 gal./min. with fi. drawdown after hrs.	WELL DRILLER'S STATEMENTAL
11 P 4 0	This well was drived arritorious invitations
и и <mark>и и</mark>	true to the best of my knowledge and bellef.
ecovery 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	NAME FOUR Star Drilling
	(Type print)
	Address DON 37 Hartline We.
	1.0c
/ Date of test	[Signed] file merso 9213
tesian flow	
mperature of water	Line 3- 10 1989

(USE ADDITIONAL SHEETS IF NECESSARY)

•••

File Original and First Copy with Department of Ecology Second Copy — Owner's Copy Third Copy — Driller's Copy	Start Card No. 50792 ELL REPORT UNQUE WELL LD. # ABL WASHINGTON WARE Blaint Particle Mo	95
OWNER: Norro Tam Concoran	1000 P.O. Bry 4 Chilan Falls WA 98	281
2) LOCATION OF WELL: care V Ath a las	NE 23 23 23	2
28) STREET ADDRESS OF WELL (or rearest actives)	1/4 Sec CO T. C N. R. Co	<u>7 w</u> .w
3) PROPOSED USE: A Domestic		
Intgetion Intgetion Intgetion DeWater Test Well Other	Formation: Describe by color, character, size of material and structure, and show thickness of and the kind and nature of the material in each stratum penetrated, with at least one entry it	aquilers for eact
4) TYPE OF WORK: Owner's number of well (If more than one)	change of information.	
Abancomed New werr Method: Dug Bored Despend Cable Driven /	top sail a	ď-
Reconditioned Rotary 25. Jetted	1000 sin sitte great 4	f9-
5) DIMENSIONS: Diameter of well 874 (inches	Silt 19	58
Drilled feet. Depth of completed well ft.	buselt talas in che 28 3	19
	Lacilit endin 29	17
) CONSTRUCTION DETAILS:	wet All grand in class 23 4	17
Casing installed: _O Diam. from 7 4_ ft. to ft.	char how a great fill all	Ĩr
Liner installed Diam. from 7 C ft. to 14.5 ft.	A American and the	\overline{r}
		60
Perforations: Yes 🗌 Ng 📶		
Type of perforator used		
SIZE of perforations in. by in.		
perforations from ft. toft.		
perforations from ft. toft.		
perforations from ft. to ft.		
Screens: Ver No 🕅		
Type		
Diam Sintaze from the		
Diam. Sint size from the term	i Dia	
Gravel pecked: Yes No K2- Size of gravel		
Crave placed from ft. to ft.		
Surface seal: Yes No D to what death?		
Material used in seal		
Did any strata contain uguaable water? Yes 🖄 No 🗫		
Type of water? Your to Small pepih of strata		
Method of sealing strata of		
Type:		
H.PH.P		_
WATER LEVELS: Land-surface elevation	Work Started 10-12 19. Completed 10-14 19	7
Static level ft. below top of well Date		
Artesian pressure Ibs, per equare inch Date	WELL CONSTRUCTOR CERTIFICATION:	
Artesian water is controlled by(Can, value, etc.)	i constructed and/or accept responsibility for construction of this well, and	ati ta
	compliance with all Washington well construction standards. Materials used	and
We a nume test model. Yes		
Visid:	NAME _ ///// Whateh X Jr.//ing	
http://www.enter	(PERSON, FIRMY OR BORPORUTION TYPE OR PRINT)	~
10 31 19 19	Address 160/19hland Kd. 7881	చ
81 179 IF H	mild II. III	30
Recovery data (time taken as zero when pump turned of) (water level measured from well too to water level)	(Signed) ////////////////////////////////////	-/
Time Water Level Time Water Level Time Water Level		
	Contractor's Begisterion/tractor begisterion	0.4
	No. 111 MQ 40138NO Date 10-24 18	79
/		-/
Date of test	(OUL ROUTIONAL SHEETS IF NECESSART)	
Salier test gal./min. with ft. drawdowy after hrs.		
Artesian flow	Cial accommodation people contract the Winter December Pro-	pe-
Temperature of water Wester Water a chaminal analysis and the training of the second s	407-8800. The TDD number is (208) 407-8006	UD)

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

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BADGER MOUNTAIN MONITORED WELL LOGS



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

	1922
File Original and First Copy with	The second second second
Department of Ecology Second Copy — Owner's Copy	LL REPORT 54 Application No.
Third Copy – Driller's Copy STATE OF V	VASHINGTON Permit No
(1) OWNER: Name TEN TODINS	Address of 6 BOX 52 53 Bild matthe
LOCATION OF WELL:	(alex < NIW , NIW, 5-13 -24, 21
Bearing and distance from section or subdivision corner	PRESENTIN Less priment
	$\left[(10) \text{ WELL LOG} \right]$
(3) PROPOSED USE: Domestic A Industrial Municipal	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 🗌 Bored 🗋	501 05
Reconditioned Retary X Jetted	Brown Booken Baself + Chr 5' 125
(5) DIMENSIONS.	Dates 100 to 125'
brilled 26 ft Depth of completed well 25	
(6) CONSTRUCTION DETAILS:	
Casing installed: 10 Diam. from ft. to ft.	
Threaded Welded Welded The fit is to the fit is the	
Perforations: Yes D No	
SIZE of perforations in. by in.	· · · · · · · · · · · · · · · · · · ·
perforations from ft. to ft.	[
perforations from ft. to ft.	
Screens: Yes D No X	
Manufacturer's Name	
Diam Slot size from ft. to ft.	
Diam.' Slot size from ft. to ft.	
Gravel packed: Yes 🗌 No 🕅 Size of gravel:	
Gravel placed from ft. to ft.	
Surface seal: Yes X No L To what depth?	
Material used in sealBen hon the	
Did any strata contain unusable water? Yes i No Type of water? Depth of strata	
Method of sealing strata off	<u>11117</u> 097
(7) PUMP: Manufacturer's Name	
Type:	
(8) WATER LEVELS. Land-surface elevation	
(b) WATER LEVELDS. above mean sea level ft.	
Artesian pressurelbs. per square inch Date	
Artesian water is controlled by	
(0) WEY RECTE. Drawdown is amount water level is	
(9) WELL IESIS: lowered below static level	Work started 6
Was a pump test made? Yes in No in yes, by whom? Yield: gal/min. with ft. drawdown afterhrs.	WELL DRILLER'S STATEMENT:
n n n n	This well was drilled under my jurisdiction and this report is
n n ² n 1	true to the best of my knowledge and belief.
Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)	NAME Forme Strate Dwilling
Time Water Level Time Water Level Time Water Level	(Person, firm, or corporation) (Type or print)
	Address Box 37 Hartline 420.
	$) \cap \mathcal{C} $
Date of test	[Signed] - Lettomarson
Bailer test	(Well Driller)
Temperature of water	License No. 124 Date $\mu - 4, 1980$
A_{1}	
2/17/27 (USE ADDITIONAL SH	EETS IF NECESSARY)
-covised 1 20	3

WELL LOG CHANGE FORM

Instructions: Record any change made to the well log record on this form. Append this form to the well log image. File with the original.

WCL Log ID (Required) N/A Well Log ID 145034
Regional Office: CRO ERO NWRO SWRO
Type of Well: Water Resource
Notice of Intent: <u>NIA</u> Ecology Well ID Tag No. <u>N/A</u>
Property (Well) Owner's Name Ron Robins
City County Datal AS Zip Code
Location: \underline{NW} 1/4-1/4 \underline{NW} 1/4 $\underbrace{\text{Sec} 12}_{\text{Twn} 24}$ Twn $\underline{24}_{\text{R} 21}$ (E) br W (Circle One)
Lat. /Long: (Required) Lat. Deg Lat. Min/Sec Long. Deg Long. Min/Sec Horizontal Collection Method Code
Tax Parcel No
Type of Work: New Well Reconditioned Deepened Well Log Received Date /// Well Diameter (in inches) Well Depth (in feet) Well Completed Date ///
Driller's Ecology License No Trainee's Ecology License No
Reason/Source of Change (Required) <u>CORRECTION TO SECTION DNLY</u> Well is in Section 12, not 13.
Signature of Well Log Tracker (Required) EB Date 1/20/05
Imaging Well Log Phase 11 – Change Form ECY-WR-WLCF Rev. 10/02/02

State of WashingtonDate Printed:17-Jun-2005Log No.Construction/DecommissionOriginal16405ConstructionConstruction Notice76767	Notice of Intent No.:W190406Unique Ecology Well I.D. NoAKM235Water Right Permit Number:
PROPOSED USE: DOMESTIC	OWNER: MURRAY, EDWARD L.
TYPE OF WOR Owners's Well Number: (If more than one well) 1 NEW WELL Method: ROTARY	OWNER ADDR: 519 N. FRENCH RD ARLINGTON, WA 98223 Well Street Address: LOT 7 BADGER MTN. "D" City: Wenatchee, WA 98802 County: DOUGLAS
DIMENSIONS Diameter of well: 6 inches Drilled 140 ft. Depth of completed well 140 ft.	Location: 1/4 SW 1/4 Sec 23 1 24 R 212 EVV Lat/Long: Lat Deg Lat Min/Sec
CONSTRUCTION DETAILS:Casing installedWELDEDLiner installed: ρ V c.6 " Dia from +2 ft. to 18 ft. " Dia from ft. to ft.	REQUIRED)Long DegLong Min/SeTax Parcel No.:45100000700 $\mathcal{K}, \mathcal{M}, \mathcal{N}, \mathcal{P}$
4 " Dia from 10 ft. to 140 ft. " Dia from ft. to ft. Perforations: Yes Used In: Liner Type of perforator used SKILL SAW	CONSTRUCTION OR DECOMMISSION PROCEDURE Formation: Describe by color, character, size of material and structure. Show thickness of aquifiers and the kind and nature of the material in each stratum penetrated. Show at least one entry for each change in formation.
SIZE of perforations6in.b1/8in.60Perforationfrom100ft. to140ft.Perforationfromft. toft.ft.Perforationfromft. toft.	MaterialFromToBASALT COBBLE CLAY02BASALT MEDIUM240BASALT HARD4098BASALT HARD40140
Screens: No K-Pac Location Manufacture's Name Type: Model No	BROKEN BASALT 10 BASALT FRACTURED W/WATER 110 130 BASALT HARD 130 140
Diam. slot size from ft. to ft. Diam. slot size from ft. ft. Gravel/Filter packed: No Size of Gravel Material placed fro ft. to ft.	JUL 0 7/ 2005
Surface seal: Yes To what depth 18 ft. Seal method: Material used in seal BENTONITE Did any strata contain unusable water No Type of water Depth of strata Method of sealing strata off	Notes:
PUMP: Manufacture's name Type: H.P.	Work starte 05/19/2005 Complete 05/20/2005
WATER LEVELS Land-surface elevation above mean sea level: 0 ft. Static level 60 ft. below top of well Date 05/19/2005 Artesian Pressure lbs per square inch. 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 are true to my best knowledge and belief.
Artesian water controlled by	
WELL TESTS: Drawdown is amount water level is lowered below static level Was a pump test made No If yes, by whom Yield apl/ania with ft drawdown after	Signature: MARTYROGO Elicense No 2038
Yield gal/min with ft drawdown after Yield gal/min with ft drawdown after	If trainee, Licensed driller isLicense No.: Licensed Driller Signature
Recovery data (time taken as zero when pump turned off)(water level measured from well top to water level	Drilling Company: NAME: FOGLE PLIMP & SUPPLY INC. Shop: REPLIEUC
Time: vvater Leve Time: vvater Leve Time: vvater Leve	ADDRESS: PO Box 456 Republic, WA 99166
Date of test:	Phone: 5097752878 Toll Free: 8008453500 F-Mail: foglewest@rcablety.com
Bailer testgal/minft drawdown afterhrs.Air test20gal/min w/ stem set at140ft. for1hours	FAX: 5097750498 WEB Site: www.foglepump.com
Artesian flow gpm Date Temperature of water Was a chemical analysis made No	Contractor's Registration No.: FOGLEPS095L4 Date Log Created: 06/17/200

le Original and First Copy with apartment of Ecology	VATER WEL		ORT	9	itert Card i	10 ± 0	CO 71	<u>नः</u> १५९१
scond Copy — Owner's Copy hird Copy — Driller's Copy	STATE OF WAS	HINGTON	Water Right P	unu unmit No.			LA C	~
) OWNER: Name WILLIN, CARY	Address	9269 CR	esed t	BAR	N.W.	Gu	Hit u	24 95
) LOCATION OF WELL: County DOWGLAS			SE 1/4	NE	4 Sec 14	<u> </u>		UE WI
(a) STREET ADDRESS OF WELL (or nearest address)	SUU 17.5 BADGE	R. M1	EAST 1	DEPAN	CHEE			H
) PROPOSED USE: Y Domestic Industrial	Mumicipal [10) WELL LOG	G or ABAN	ONMENT	PROCE	DURE D	ESCRIPTI	ON S
Irrigation Irrigation DeWater Test Well	C Other C F	ormation Describe b and the kind and natu	y color, characti re of the mater	r, size of mat al in each str	erial and str stum peneti	ucture, and ated with a	show thicknes at least one e	a of aquite
i) TYPE OF WORK: Owner's number of well (If more than one)	C		MATER				SROW	TO
Abandoned C New well C Method: Dug Deepened S Cable Reconditioned C Rotary	Bored C	1757711	6" 1	ELL	- 00	xpm	Ø	178
) DIMENSIONS: Diameter of well	inches.	SACALT					178	182
Dritled 33feet. Depth of completed well	210 *	ROKEN	BASAI	7 1,	-1 aP	m	182	164
Welded Diam. from	t. tot. [S					-	<u>כמו</u>	101
Perforations: Yes No No		LACK	CLAY				189%	97
Type of perforation used	W 7 R	Rour	CUTY	mbo	20	'-304	_A)	20
perforations from190tt to oerforations fromtt, b	210 n.	ROUD.	JERZY	FADE	5A	۴D	308	31
perforations fromft_ts	۵ht		······································					•_ •
Screens: Yes No X					· · · · ·			
Туре	Model No							
Diam Slot sizefrom			• •• •• •			_		,
Gravel packed: Yes No 🖌 Size of gravel			1011	** *** *	<u>''</u> ''		-	
Gravel placed fromft to			ÎNI.					
Surface seal: Yes No No To what depth?_			<u>uuj u</u>	N 3 U	998	IUI-		
Matenal used in seal	7		05040	11 10 100				
Did any strata contain unusable water? Yes I No M			CENT	AL REGION	COLOGY			
Method of sealing strats off						t-"		
) PUMP: Manufacturer's Name	нр —							
WATER LEVELS: Land-surface elevation		Work Started	5-6	_ 19 C	ompleted _	5-	7	197
Static level ft below top of w	- Date 5-6-78"			DTIELCAT				
Arbeiten pressure ibs. per square inc	ch Date	WELL CONSTR						
(Cap	, valve, etc)	compliance wi	th all Washin	t responsib ton well co	nstruction	standard	Materiala	used and
) WELL TESTS: Drawdown is amount water level is lowe	red below static level		reported abo		to my pesi	Knowledg		
Wasspumptest made? Yes North It yes, by s Yield gal./min with ft drawdo	whom'?	NAME UM	WHIPI PERSON		PORUTION			<u> </u>
11 11 17 17	н	ALTER LEF	NEDu	DRIH	. \(AC		
FF F8	"	R	T	NIT	1 ·	<u> </u>	10	49
Recovery data (time taken as zero when pump turned off) (wat top to water level)	ter level measured from well	(Signed L)		DALLAN		cens	9 NO <u>12</u>	<u> </u>
Time Water Level Time Water Level	Time Water Level	Contractor's		1		_		_
		No. JUMU: A	02 133	De Dat	کر سند۹	$5 \cdot 2$	b	, 19 <u>78</u>
Data data d	[(ປ	SE ADDITIC	NAL SHE	ETS IF N	ECESS/	ARY)	
Date of test ft, drawdo Baller test gal./mm. with ft, drawdo Airteet gal./mm. with stem set at 200	wn after hrs.	Ecology is an E	qual Opport	unity and A	firmative	Action	- employer i	For spe-
								ati∠UD}

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WELL LOG CHANGE FORM

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Instructions: Record any change made to the well log record on this form Then always append this form to the well log image File with the original

WCL Log ID (Required) Well Log ID
Regional Office: CRO ERO NWRO SWRO
Type of Well Water Resource Notice of Intent Ecology Well ID Tag No Property (Well) Owner's Name
Location 1/4-1/4 1/4 Sec Twn R E or W (Circle One) Lat /Long: (Required) Lat. Deg Lat. Min/Sec
Tax Parcel No Type of Work: New Well Reconditioned Deepened Decommune Store Well Log Received Date / / (in feet) Well Completed Date / Well Diameter (in inches) Well Depth (in feet) Well Completed Date / Driller's Ecology License No
Reason/Source of Change (Required) <u>Va Matice of Intent(NOI) sent in for this well log.</u> To to NOI# on this form for more information <u>regarding this well.</u>
Signature of Well Log Tracker (Required) Cc_ Plummer Date
ECY-WR-WLCF Rev. 10/02/02 ACXOS9 W087140 3/31/03