

Memorandum

Date: June 28, 2013
To: Rick Noll, Project Manager, Spokane Conservation District
From: Laura Strauss, LG, LHg, Northwest Land & Water, Inc.
Re: Addendum 2 to June 2012 West Plains and Lower Hangman Creek Hydrogeologic Study

Introduction

This memorandum documents the work conducted to complete Tasks 6, 7, and 8 of Amendment 2 to Ecology Grant G1200416:

- Task 6: Analyze paleochannel groundwater sample
- Task 7: Develop detailed a hydrogeologic characterization in the Freeman area
- Task 8: Edit / revise groundwater contour maps of the Wanapum and Grande Ronde aquifers

It serves as an addendum to the report dated June 30, 2012, entitled *West Plains (WRIA 54) & Lower Hangman Creek Watershed (WRIA 56) Hydrogeologic Characterization & Monitoring Well Drilling Final Report*, referred to herein as the 2012 report. The 2012 report was an addendum to an earlier report (NLW, 2011).

The results of each task are summarized below.

Task 6: Analyze Paleochannel Groundwater Sample

In 2012, Spokane County collected groundwater samples from eight wells; however, because of budgetary constraints, only seven were analyzed for ^{14}C and tritium. As part of Task 6, the remaining sample, collected from Well 472535, was analyzed. This well is completed in the paleochannel deposits near the Polo Grounds as shown on **Figure 1** of this Addendum 2.

Results

Analytical results — ^{14}C , ^{13}C , and tritium — for the sample collected from this well are summarized below.

Analyte	Result	Qualifier
^{14}C	440 years	+/- 30 years
^{13}C	-19.9 permil	na
Tritium	5.34 TU	+/- 0.18 TU

Figures 2, 3, and 4 of this Addendum 2 incorporate this data, updating Figures 6-4, 6-5, and 6-6 from the 2012 report. The symbol for this sample is circled in the legend for each figure.

Interpretation

The ^{14}C and tritium results for sample 472535 support the hypothesis that the paleochannel deposits are recharging the underlying Grande Ronde aquifer. Section 7.2.5 of the 2012 report indicates that groundwater in the Grande Ronde in the Polo Grounds area is recharged via a slow, deep, flow system originating in the basement rocks along the basin boundary. This conclusion is based on the ^{14}C age of 3,310 years for the sample from Well 369725, which is completed in the Grande Ronde and located near the paleochannel deposits, which fill a deep scour in the Wanapum and Grande Ronde.

Significant tritium was also reported for the Grande Ronde sample (Well 369725), indicating that recent recharge also contributes to the groundwater system. The 2012 report suggested that this recharge (and thus the tritium) could originate from the overlying paleochannel deposits, which has a downward gradient. It also suggested that the tritium could be attributed to commingling wells, which allow cross communication between aquifers.

The large concentration of tritium in sample 472535 supports the hypothesis of recharge by recent precipitation, less than 60 years, for the paleochannel deposits in this area. The ^{14}C age of 440 years indicates that recharge to the paleochannel deposits also includes older water. It is likely that the Wanapum discharges into the paleochannel deposits and contributes older groundwater. Groundwater in the Wanapum unit has a longer recharge flow path and older ^{14}C age than the paleochannel deposits but a shorter flow path and younger age than the Grand Ronde.

Figure 2 shows a correlation between younger ^{14}C age and light ^{13}C isotopic signature but no correlation between bicarbonate and ^{13}C . Both trends substantiate the 2012 report finding that the source of bicarbonate is the dissolution of volcanic glass and therefore the

^{14}C ages require no correction. The lower concentration of bicarbonate would indicate less dissolution which is expected in younger water.

The relatively high sodium concentration on the upper graph in **Figure 3** suggests some recharge of old groundwater to the paleochannel deposits from a basalt aquifer; the sodium-to-calcium ratio is higher in groundwater of greater residence time (older) because of cation exchange, as discussed in the 2012 report. The lower graph on **Figure 3** indicates that cation exchange has occurred in groundwater within the paleochannel deposits at the Polo Grounds site.

Figure 4 indicates that the paleochannel sample is consistent with the observed pattern of young groundwater having a heavier isotopic signature and significant tritium. These data support the hypothesis that paleochannel groundwater is comprised of young water mixed with older water.

Task 7: Freeman Area Hydrogeologic Characterization

MW-6 was installed in the vicinity of Valleyford in the California Creek sub-basin of WRIA 56 as part of the original scope of work for WRIA 56 in 2010. The well was equipped with a pressure transducer to provide continuous water level data. The SCD manages this digital monitoring data. In August 2011, SCD personnel lowered the pressure transducer after observing that the water level in MW-6 dropped significantly. In fact, during both 2011 and 2012, the water level in MW-6 changed by about 45 feet. Water levels began to decline in early June 2011 and early May 2012 and rose again in mid-September during both years.

Task 7 was initiated to investigate the cause of this fluctuation, which is too large to be attributable to natural seasonal variation. The Freeman School is the nearest large water user. To determine whether water levels in MW-6 were affected by pumping at the Freeman School well, we constructed a hydrograph. This hydrograph, **Figure 5**, shows that pumpage at the school correlates strongly with the water levels in MW-6. Although it is unusual for pumping at such a large distance (about 3 miles) to affect groundwater levels to this degree, the trends in these two wells are so distinctive and well correlated that they must be considered as possibly being related. If MW-6 is responding to pumping at the Freeman school, the response suggests a strong hydraulic connection and a small storage capacity in the groundwater system. However, the dataset is a relatively short duration and future data evaluation should be conducted to confirm this hypothesis. Finer resolution Freeman school water use data would be helpful.

We also prepared cross-section F-F' to better understand how the hydrogeology of this area could contribute to this pumping response. The section extends from Hangman Creek through MW-6 and the Freeman School well, as shown on **Figure 1**. Section F-F'

is shown on **Figure 6**. The well locations are considered accurate; a well was used only if it met two criteria:

- The well log had a mappable address or a tax parcel ID number.
- The log provided adequate detail and water level data.

Logs for the wells included on section F-F' are included in **Appendix A**.

The cross-section shows that basement rock dominates the geology from MW-6 to Hangman Creek. The basement rock limits lateral hydraulic continuity, likely creating a localized groundwater system between the Freeman School area and MW-6. If there is a strong hydraulic connection within this localized system, then this connection would account for the observed response in MW-6 due to pumping the Freeman school well.

Task 8: Groundwater Contour Maps for Wanapum & Grand Ronde Units

Water level contour maps were prepared for the Wanapum and Grande Ronde units using synoptic measurements made by Spokane County in fall 2011 and spring 2012. This data is discussed in detail in Spokane County's June 2013, report that is in production as this is written. NLW worked closely with Spokane County to review and revise the first drafts of these maps. Final contours are shown on **Figures 7 and 8**.

Data Sources

In addition to water level data, hydrogeologic information provided by Spokane County was used to develop the final contours. The information was used to document the following features:

- Gaining and losing reaches along Deep Creek, based on seepage runs.
- Areas where the Wanapum and Grande Ronde are absent (zero thickness), based on digital data from the West Plains geologic database
- Areas where the paleochannel deposits occur, based on work conducted at EWU for Spokane County
- Areas where the basement rock occurs at or near land surface

In addition to the digital data that was incorporated into the project GIS, information from Mike Hermanson (pers. comm., June 2013) was also considered. Hermanson observed that:

- Wetlands occur along the land surface throughout the study area, in some places more than others.
- There is little evidence of significant groundwater discharge into Coulee and Deep Creek near their confluence.
- Although some vegetation occupies bands within the bluffs along the lower reaches of Deep and Coulee Creeks, there is no evidence of significant groundwater discharge (such as springs or large seeps) within these bluffs.
- Streamflow is historically intermittent to dry in the lower reaches of Deep and Coulee Creeks but historically consistent in the upper reaches.

General Hydrogeology

The Wanapum is shallower than the underlying Grande Ronde. In general, groundwater in both units flows from the basement rim towards the center of the basin and the Spokane River. The outline of the basement rock is shown on **Figures 7 and 8**. However, flow patterns within the units may be affected by smaller streams, the presence of the paleochannel deposits, nearby basement rock, and thickness and permeability of the volcanic rock. The hydraulic gradient between these two units is typically downward.

Where they occur, the paleochannel deposits overlie the Wanapum. The Wanapum is absent in some places and paleochannel deposits may directly overlie the Grande Ronde. Likewise, the Grande Ronde is also absent in some places. In general, these volcanic units are missing in valleys and lower-elevation areas, where they have been eroded.

Deep Creek has both gaining and losing reaches, as shown on **Figures 7 and 8**. In general, groundwater contours “V” upstream in areas where the creek is gaining and they “V” downstream or simply cross the stream along losing reaches.

Wetlands form where groundwater intercepts land surface. The occurrence of wetlands throughout the area (**Figure 7**) and shallow groundwater levels in wells (pers. comm., Mike Hermanson, June 2013) suggests that groundwater in the Wanapum discharges into wetlands and the absence of springs and seeps along bluffs suggests limited lateral groundwater flow.

Wanapum Unit

Because the Wanapum is shallow, groundwater in this unit is more affected by near-surface features and topography than the Grande Ronde. Groundwater in the Wanapum moves from the basement rim towards Hangman Creek and the Spokane River and flows into Deep and Coulee Creeks in their upper or gaining reaches.

Contours were generated using Fall 2011 water level data.

Gaining & Losing Streams in the Wanapum

Figures 7 and 8 show gaining reaches identified by seepage data. Coulee Creek is gaining upstream from where it intercepts basement rock (pers. comm. Mike Hermanson, June 2013). Groundwater contours “V” upstream in areas where Deep and Coulee Creeks are believed to be gaining.

Downgradient from its intersection with the basement rock, Coulee Creek is losing and the bottom of the Wanapum lies above the creek-bed elevation (pers. comm., Mike Hermanson, June 2013). In these areas, groundwater in the Wanapum discharges at land surface via wetlands. Locally, where creek-bed elevation is above the Wanapum bottom, the groundwater contours reflect springs that are known to occur in some draws (pers. comm., Mike Hermanson June 2013).

Localized Groundwater Flow Patterns

The small, closed contour atop the bluff south of Deep Creek indicates a local water level high. It suggests that groundwater moves towards the paleochannel deposits since Deep Creek is losing in this area and since no springs or seeps have been observed in the nearby bluffs. Four large paleochannel deposits were mapped by EWU and are shown on **Figures 7 and 8** as areas outlined in orange.

Groundwater “drains” appear to be formed by the paleochannel deposits that occur along the south side of Deep Creek and the deposit that extend from northeast of Airway Heights and south towards Four Lakes. The other paleochannel deposits are not as clearly connected to groundwater in the Wanapum, which is absent in much of their vicinity.

Recharge & Discharge Relationships

Groundwater in the highly permeable paleochannel deposits is recharged relatively quickly from incident precipitation (see the tritium discussion above). The contours suggest that Wanapum groundwater moves into the upgradient part of the paleochannel deposits and that paleochannel groundwater may move into the Wanapum in the downgradient part of the system. The flow rate into the Wanapum basalt would vary significantly because of the wide range in its permeability.

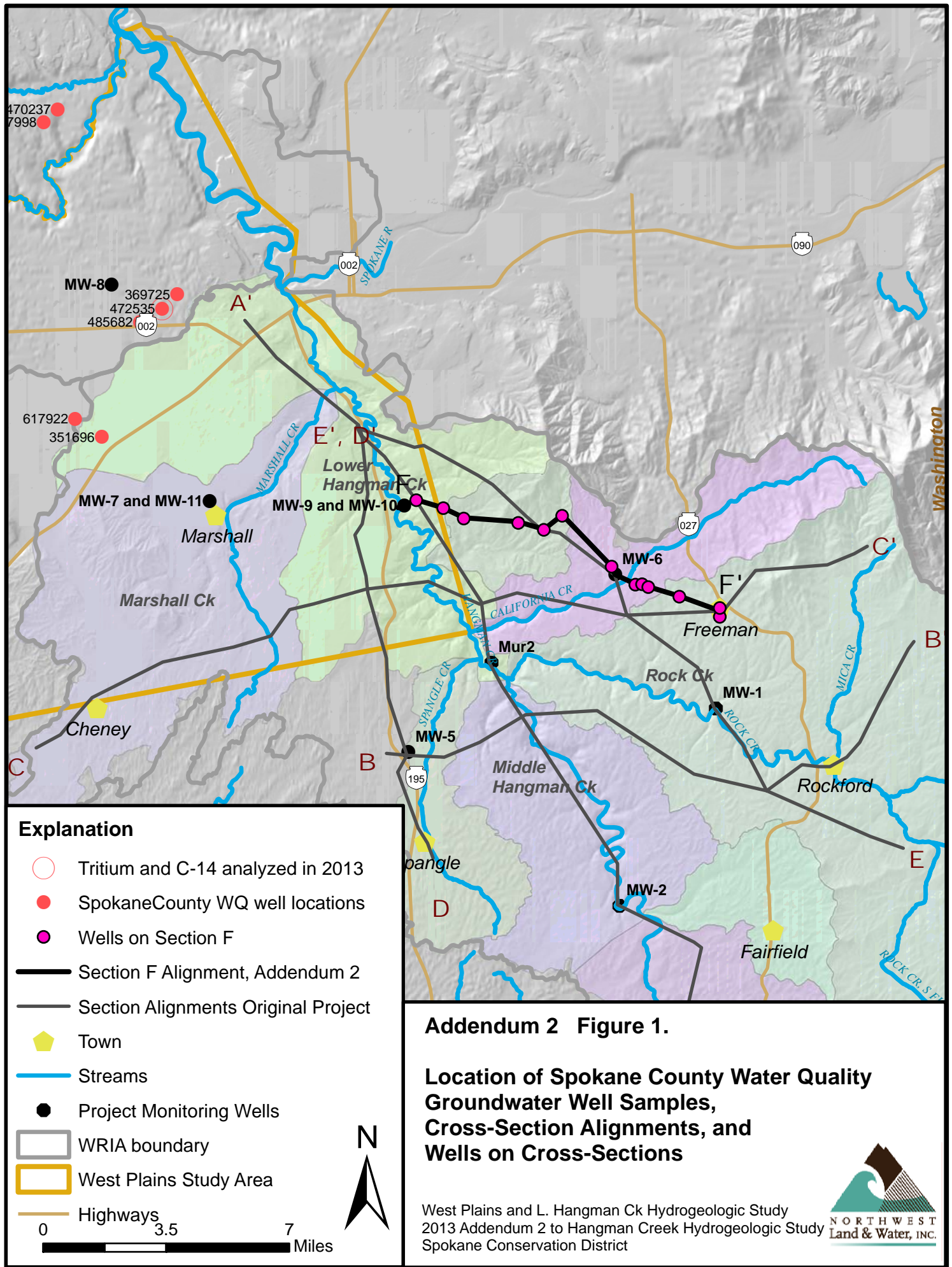
Regardless, the paleochannel deposits appear to mix very young water (recently recharged) with old groundwater in the Wanapum and even older water in the Grande Ronde in areas where the Grande Ronde is directly overlain by the paleochannel deposits.

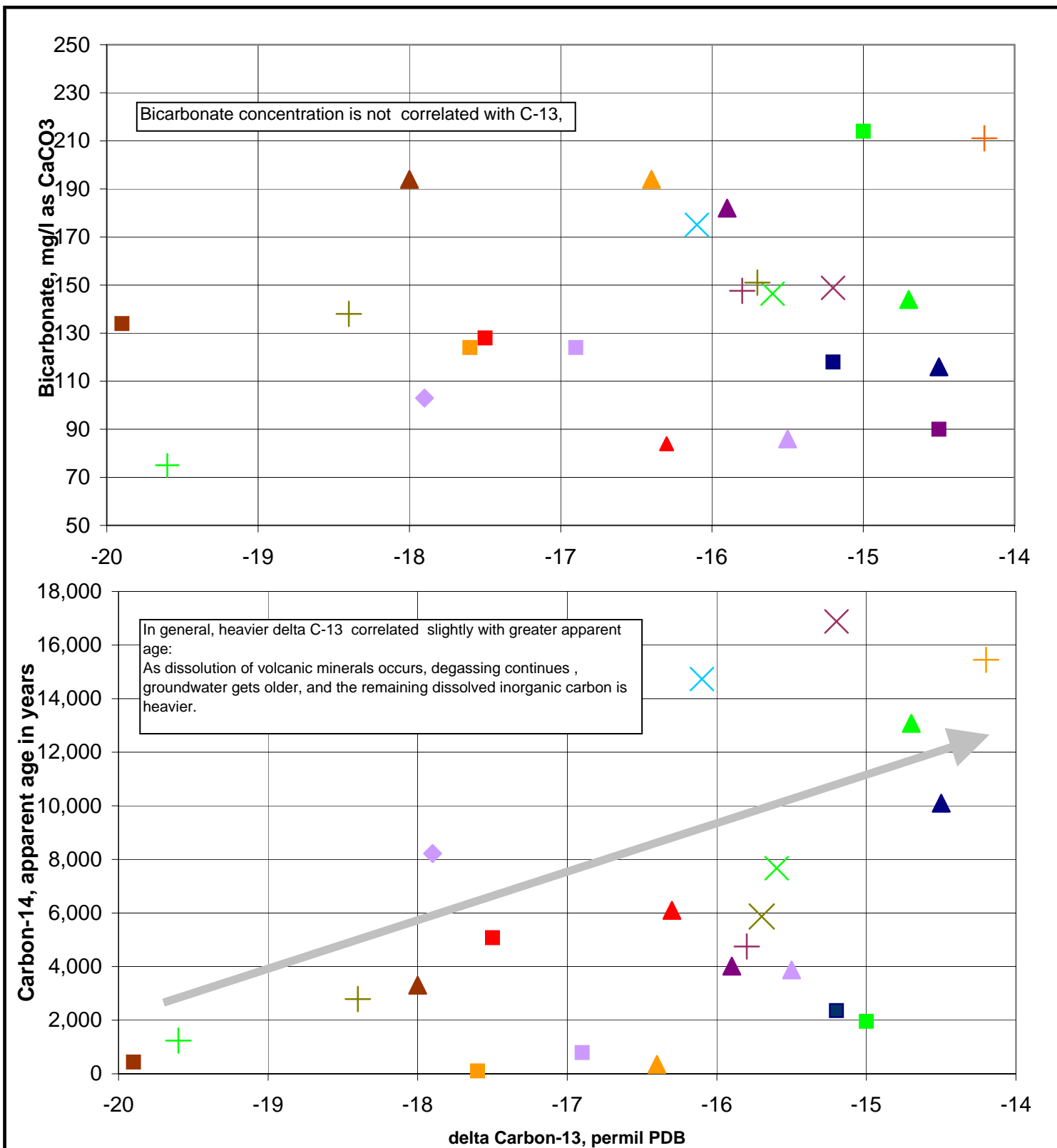
Grande Ronde Unit

Contours were generated using fall 2011 data, except for well 616663. (The fall measurement for 616663 was incorrect (pers. comm., Mike Hermanson, June 2013) so the spring 2012 measurement was used instead.) The groundwater contours in the Grande Ronde unit are consistent with the general pattern of groundwater flowing from the recharge location within the basement rim towards Hangman Creek and the Spokane River. Contours about the basement and areas where the Grande Ronde is absent.

References

- Hermanson, Mike, June 2013. Personal communication by phonecall and email with Laura Strauss, Northwest Land & Water, Inc. at several times during the month of June 2013.
- Northwest Land & Water, 2011. Hangman Creek Watershed (WRIA 56) Hydrogeologic Characterization & Monitoring Well Drilling. Prepared for Spokane County Conservation District, June 1, 2011.
- Northwest Land & Water, 2012. West Plains (WRIA 54) & Lower Hangman Creek Watershed (WRIA 56) Hydrogeologic Characterization & Monitoring Well Drilling Final Report, An Addendum to: Hangman Creek Watershed (WRIA 56) Hydrogeologic Characterization & Monitoring Well Drilling Final Report, June 30, 2012





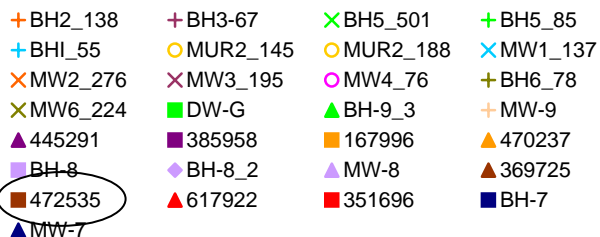
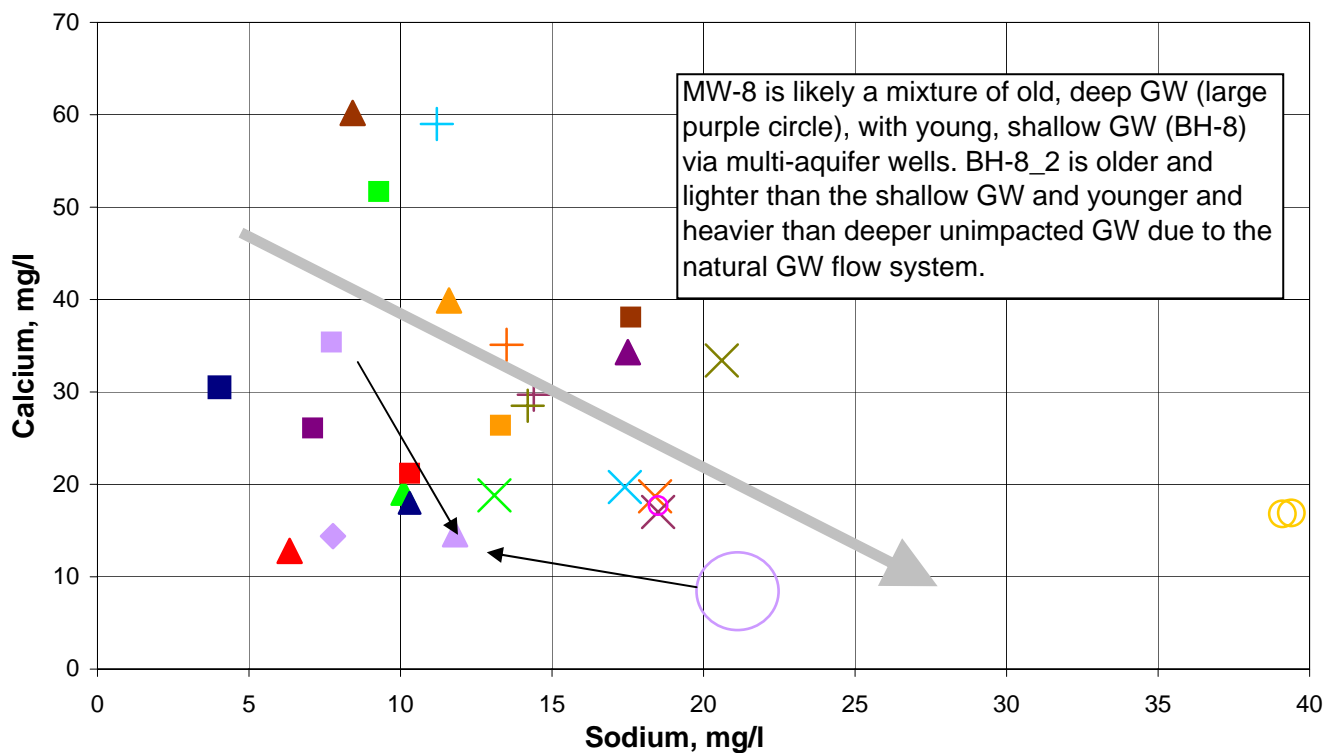
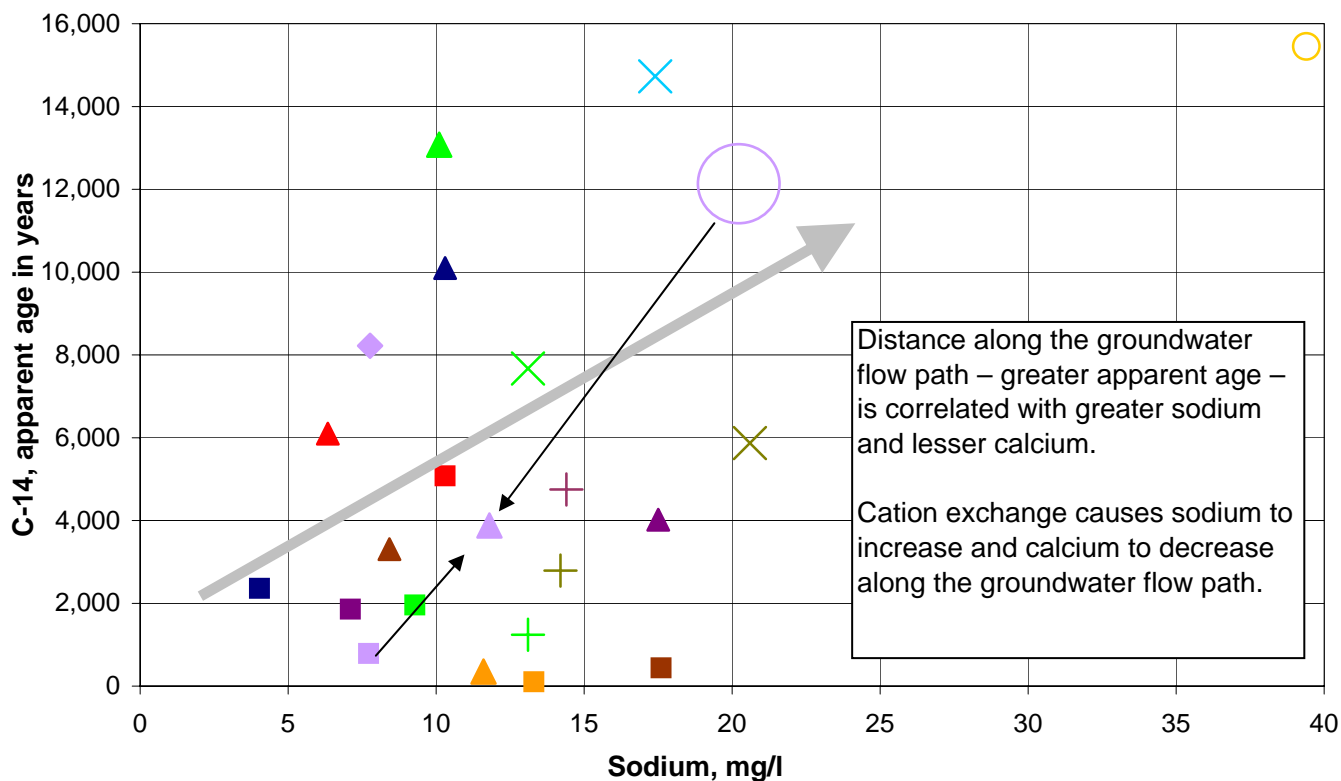
- | | | | | | | | |
|---|---------|---|----------|---|---------|---|---------|
| + | BH3-67 | + | MUR2_145 | x | MW1_137 | + | BH5_85 |
| x | BH5_501 | x | MW3_195 | + | BH6_78 | x | MW6_224 |
| ▲ | BH-9_3 | ■ | DW-G | ▲ | 445291 | ■ | 385958 |
| ■ | 167996 | ▲ | 470237 | ▲ | 617922 | ■ | 351696 |
| ▲ | MW-7 | ■ | BH-7 | ▲ | MW-8 | ■ | BH-8 |
| ▲ | BH-8_2 | ▲ | 369725 | ■ | 472535 | | |

Addendum 2 Figure 2

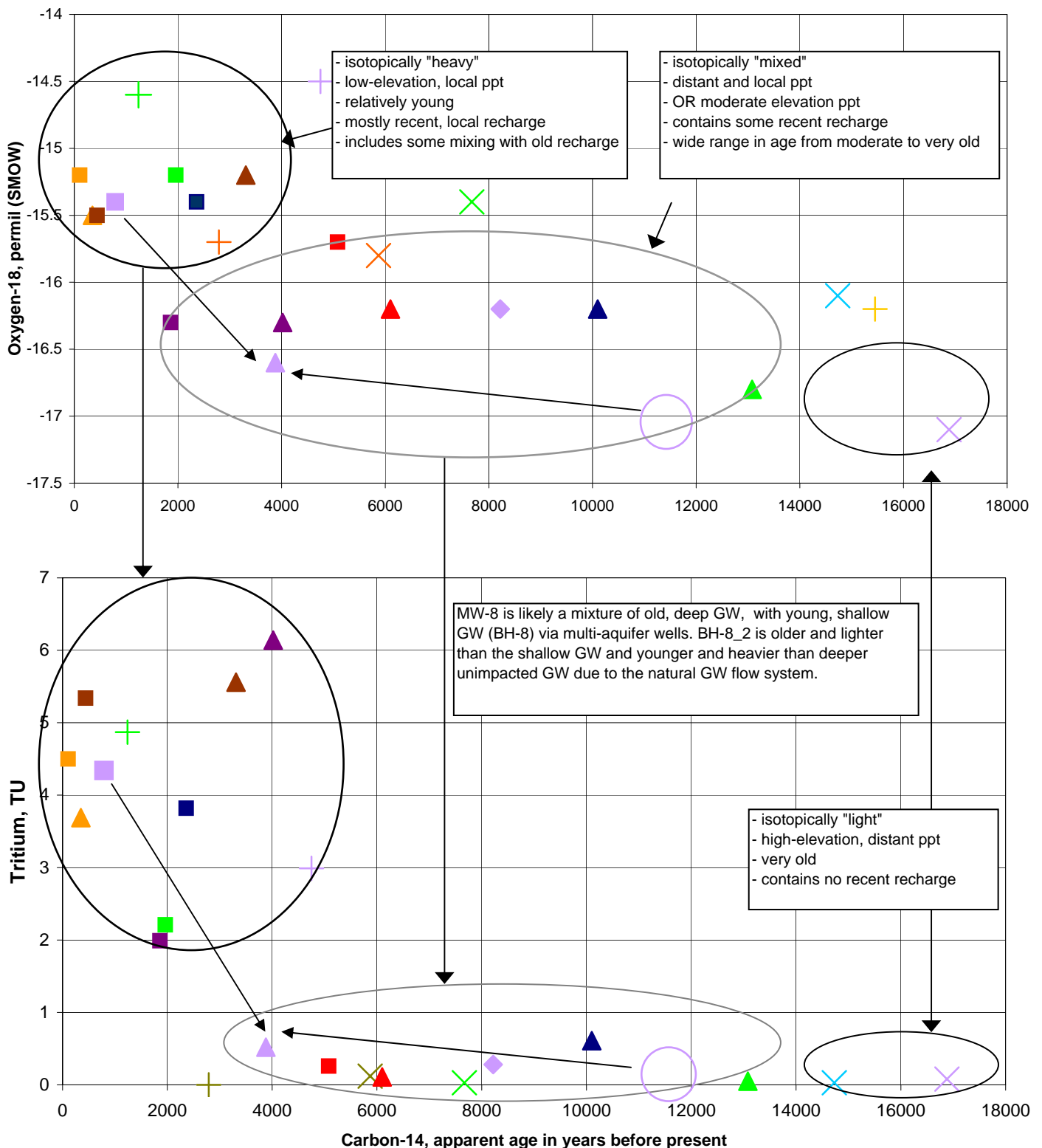
**2013 Update of Figure 6-4 from June 2012 Report
Carbon-13, Carbon-14, and Bicarbonate
In Select Samples, 2010, 2012, and 2013 Data**

West Plains and L. Hangman Ck Hydrogeologic Study
2013 Addendum 2 to Hangman Creek Hydrogeologic Study
Spokane Conservation District





Addendum 2 Figure 3
2013 Update of Figure 6-5 From June 2012 Report
Sodium v. Calcium and C-14 in Select
Samples, 2010, 2012, & 2013 data

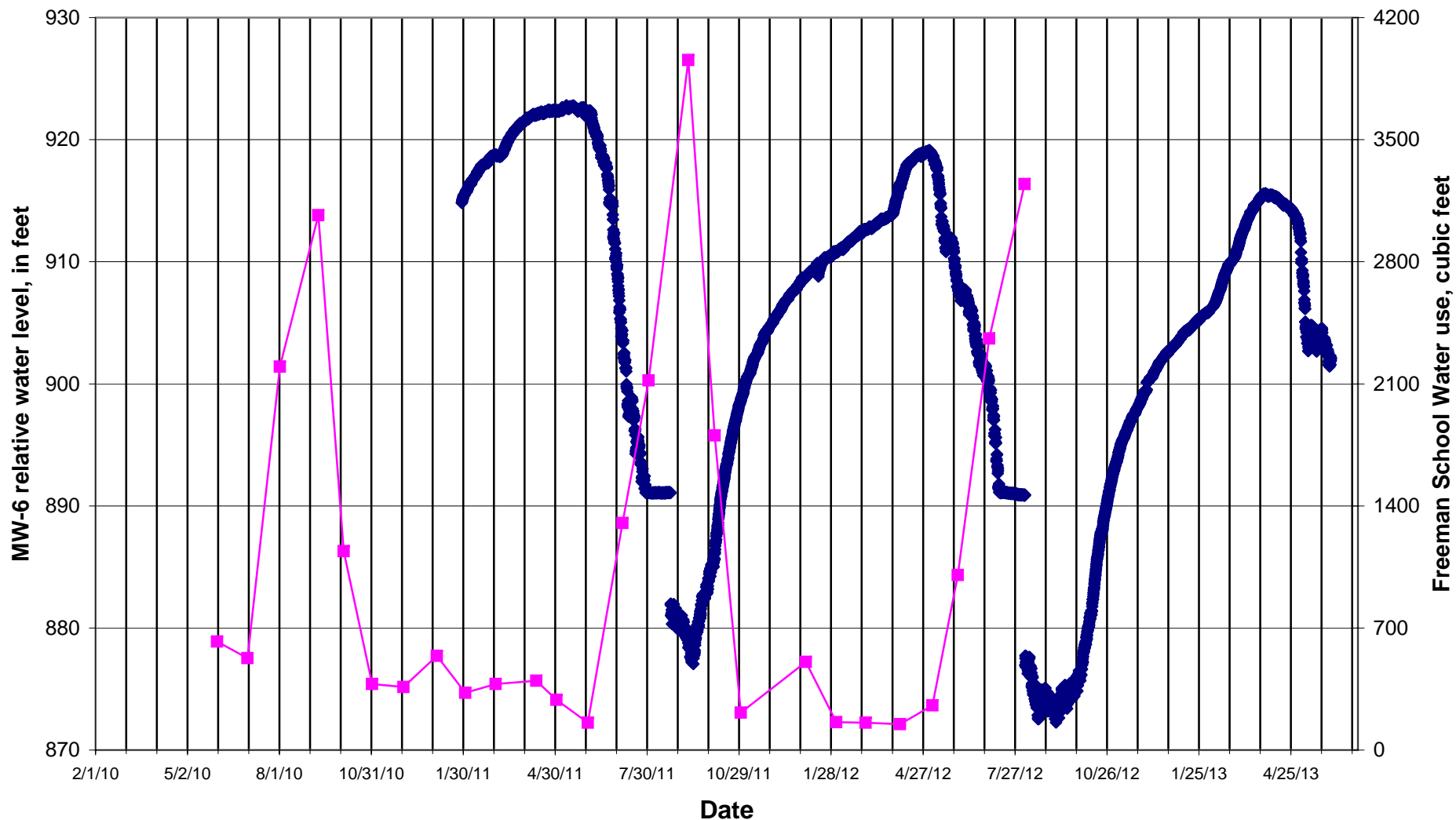


+ BH3-67	+ MUR2_145	× MW1_137	+ BH5_85	× BH5_501
× MW3_195	+ BH6_78	× MW6_224	■ DW-G	▲ BH-9_3
× MW-9	▲ 445291	■ 385958	■ 167996	▲ 470237
■ BH-8	◆ BH-8_2	▲ MW-8	▲ 369725	■ BH-7
▲ MW-7	▲ 617922	■ 351696	■ 472535	

Addendum 2 Figure 4
2013 Update of Figure 6-6 From June 2013 Report
Oxygen-18, Carbon-14, and Tritium in
Select Samples, 2010 , 2012, and 2013 Data

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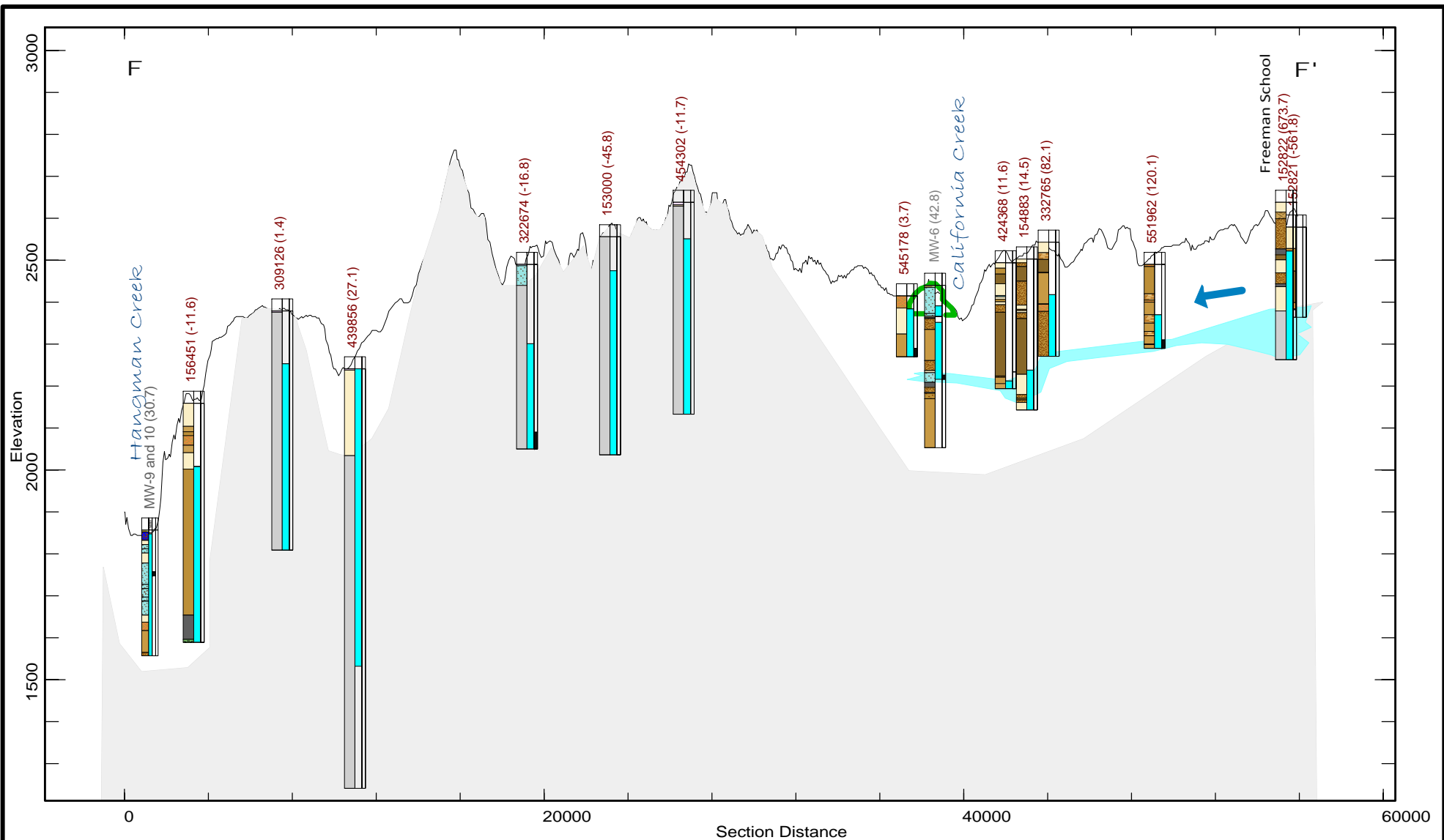
Addendum 2 Figure 5. Freeman School Water Use and MW-6 Water Level

- ◆ MW-6 water surface elevation
- Freeman School Water Meter Reading

West Plains and L. Hangman Ck Hydrogeologic Study
 2013 Addendum 2 to Hangman Creek Hydrogeologic Study
 Spokane Conservation District



NORTH WEST
Land & Water, INC.
 Consulting in Hydrogeology



Explanation

- Basalt where not indicated otherwise
- Bedrock
- Latah Formation top or bottom
- Glacial deposits
- Aquifer
- Groundwater flow direction

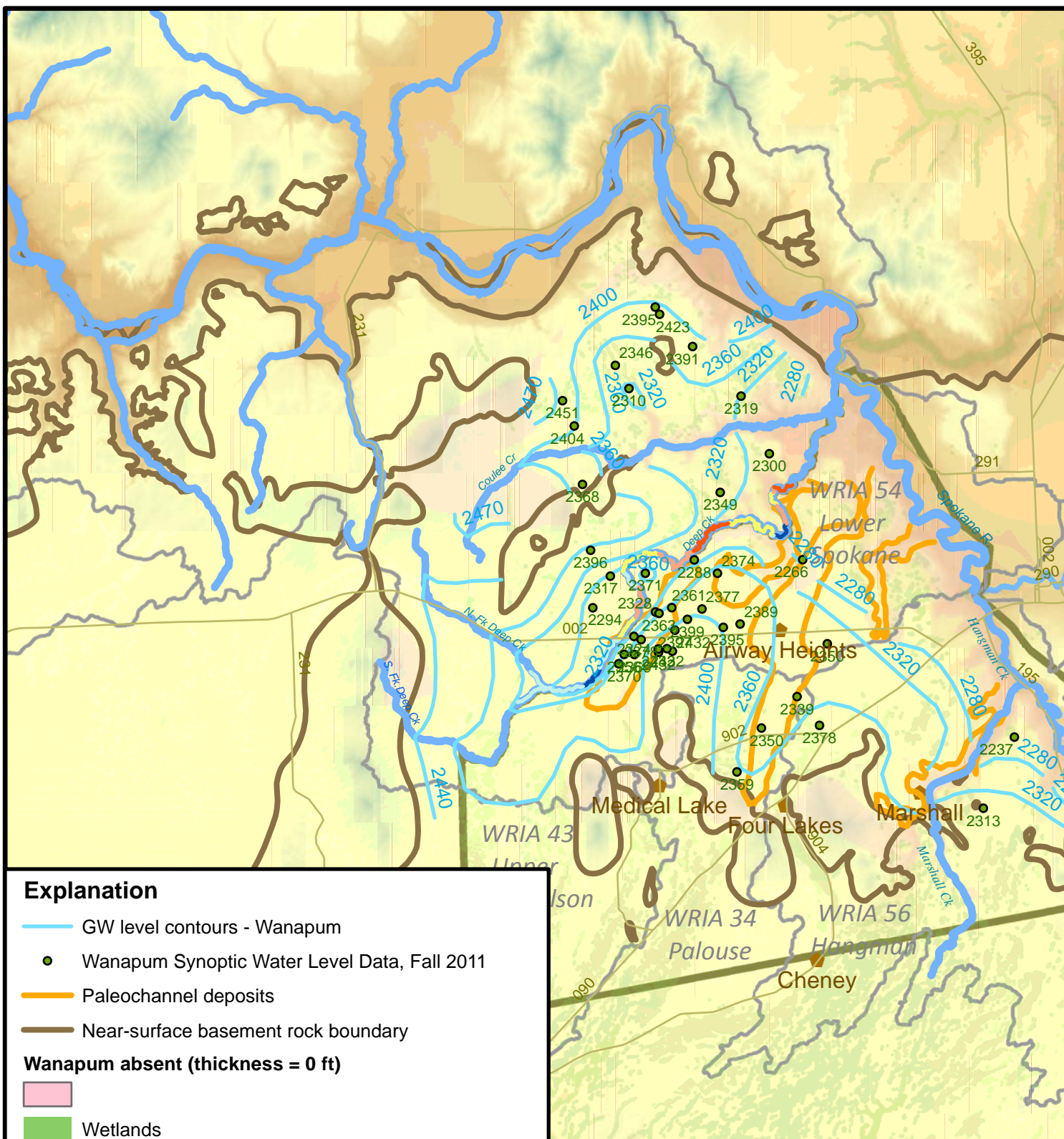
Well Log Description*	Well Log ID (#)	(# = Feet from section trace)
Fractured Basalt		
SAND		
Hard Basalt		
CLAY		
Granite		
		Water Level
		Screen or perforations

* See Figure 4-2 for complete key to lithology

Addendum 2 Figure 6
Hydrogeologic Section F-F'

West Plains and L. Hangman Ck Hydrogeologic Study
2013 Addendum 2 to Hangman Creek Hydrogeologic Study
Spokane Conservation District





Explanation

- GW level contours - Wanapum
- Wanapum Synoptic Water Level Data, Fall 2011

— Paleochannel deposits

— Near-surface basement rock boundary

Wanapum absent (thickness = 0 ft)



— Wetlands

WRIA

WRIA 54-56 West Plains Project Boundary

Deep Creek Seepage - gaining & losing reaches

— -1.59 - -1.08

— -1.079 - -0.26

— -0.259 - 0.08

— 0.08 - 0.75

— 0.75 - 1.65

— Highways

— Streams

■ Town

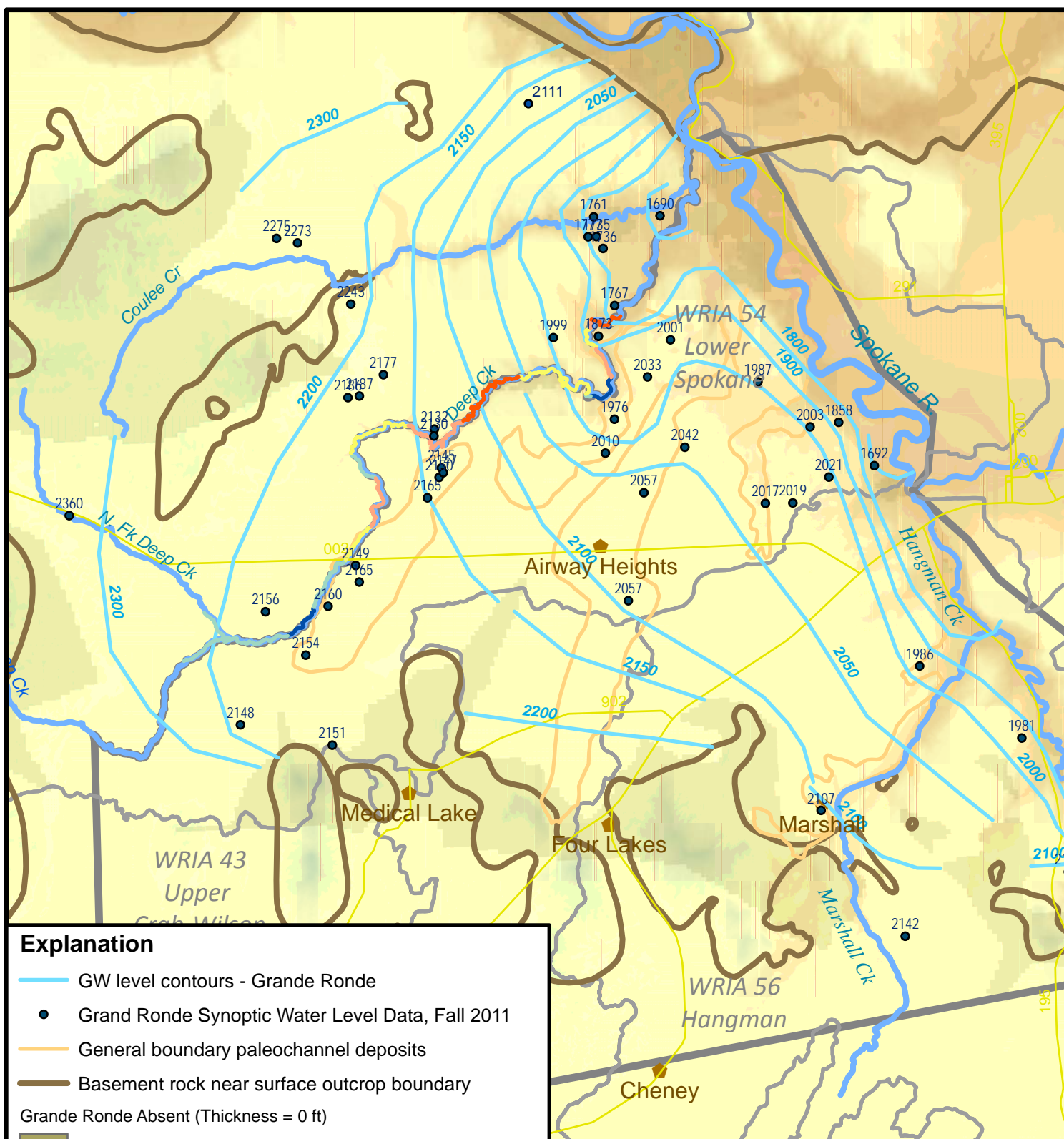
0 2 4 6 8 Miles



Addendum 2 Figure 7.
Approximate Groundwater Level
Elevation Contours in
Wanapum Unit
Fall 2011 Synoptic Water Level Data
West Plains, Spokane County

West Plains and L. Hangman Ck Hydrogeologic Study
 Addendum to Hangman Creek Hydrogeologic Study
 Spokane County Conservation District





Explanation

- GW level contours - Grande Ronde
- Grand Ronde Synoptic Water Level Data, Fall 2011
- General boundary paleochannel deposits
- Basement rock near surface outcrop boundary
- Grande Ronde Absent (Thickness = 0 ft)

WRIA 54-56 West Plains Project Boundary

Deep Creek Seepage - gaining & losing reaches

- 1.59 - -1.08
- 1.079 - -0.26
- 0.259 - 0.08
- 0.08 - 0.75
- 0.75 - 1.65
- Highways
- Streams
- Town
- WRIA

0 1 2 3 4 Miles



Addendum 2 Figure 8.
Approximate Groundwater Level
Elevation Contours in
Grande Ronde Unit
Fall 2011 Synoptic Water Level Data
West Plains, Spokane County

West Plains and L. Hangman Ck Hydrogeologic Study
 Addendum to Hangman Creek Hydrogeologic Study
 Spokane County Conservation District



Addendum 2 Appendix A

Well logs used for section F-F'

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

WATER WELL REPORT

STATE OF WASHINGTON

Water Right Permit No.

Start Card No. W 057415

UNIQUE WELL I.D. #

(1) OWNER: Name Mary Jane Stanton

Address E 2402 Big Land Ln. Spokane, WA 99223

(2) LOCATION OF WELL: County Spokane

SW 1/4 SE 1/4 Sec 16 T. 24 N. R. 43 W.M.

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

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

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

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

(5) DIMENSIONS: Diameter of well 6 inches.
Drilled 570 feet. Depth of completed well 570 ft.

(6) CONSTRUCTION DETAILS:

Casing installed: 6 " Diam. from +1 ft. to 219 ft.
Welded ☒ 4 " Diam. from ft. to 572 ft.
Liner installed ☒ Threaded ☐ Diam. from ft. to ft.

Perforations: Yes ☐ No ☒

Type of perforator used

SIZE of perforations in. by in.

 perforations from ft. to ft.

 perforations from ft. to ft.

 perforations from ft. to ft.

Screens: Yes ☐ No ☒

Manufacturer's Name

Type Model No.

Diam. Slot size from ft. to ft.

Diam. Slot size from ft. to ft.

Gravel packed: Yes ☐ No ☒ Size of gravel

Gravel placed from ft. to ft.

Surface seal: Yes ☒ No ☐ To what depth? 18+ ft.

Material used in seal Bentonite

Did any strata contain unusable water? Yes ☐ No ☒

Type of water? Depth of strata

Method of sealing strata off

(7) PUMP: Manufacturer's Name

Type: H.P.

(8) WATER LEVELS: Land-surface elevation

Static level 150 ft. below top of well Date 12/6/94

Artesian pressure lbs. per square inch Date

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

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

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

Yield: 40+ gal./min. with ft. drawdown after hrs.

" Air test approx. 40+-G.P.M. "

" " " "

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

Time Water Level Time Water Level Time Water Level

Date of test

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

Airtest gal./min. with steam set at ft. for hrs.

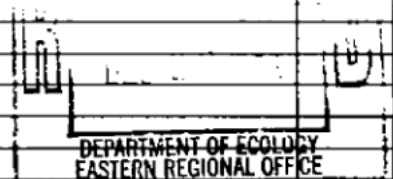
Artesian flow g.p.m. Date

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

(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION

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

MATERIAL	FROM	TO
Topsoil	0	2
Clay-brn.-med.	2	42
Clay-brn. w/fine sand	42	55
Basalt-soft	55	68
Basalt-med.	68	77
Clay-tan-med.	77	86
Clay-tan w/sand strips	86	100
Basalt-soft-broken	100	118
Clay-brn.-soft	118	157
Basalt-med. to soft	157	168
Basalt-med. to hard	168	505
Shale-brn.-med.-water	505	563
Quartz sand-water	563	570



Work Started 11/21/94 19. Completed 12/6/ 19 94

WELL CONSTRUCTOR CERTIFICATION:

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

NAME J & J DRILLING INC
(PERSON, FIRM, OR CORPORATION) (TYPE OR PRINT)

Address S 5613 Linke Rd. Greenacres, WA 99016

(Signed) Burt M. J. J. License No. 2139
(WELL DRILLER)

Contractor's
Registration
No. JJDRII-177KU Date 12/8/ 19 94

(USE ADDITIONAL SHEETS IF NECESSARY)

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

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

WATER WELL REPORT

STATE OF WASHINGTON

Notice of Intent W123991 309126
UNIQUE WELL I.D. # AGC189

Water Right Permit No. _____

(1) OWNER: Name George Alex Address S. 2706 Pittsburg Spokane, WA 99203

(2) LOCATION OF WELL: County Spokane NE 1/4 NW 1/4 Sec 22 T 24N N.R. 43E WM

(2a) STREET ADDRESS OF WELL: (or nearest address) Walters Lane Lot #19

TAX PARCEL NO.: 34221.9081

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

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

(5) DIMENSIONS: Diameter of well 6 inches
Drilled 570 feet. Depth of completed well 570 ft.

(6) CONSTRUCTION DETAILS

Casing installed: ☒ Welded 6 ft. Diam. from +1 ft. to 119 ft.
☒ Liner installed 4 ft. Diam. from 119 ft. to 570 ft.
☐ Threaded _____ ft. Diam. from _____ ft. to _____ ft.

Perforations: ☐ Yes ☒ No

Type of perforator used _____

SIZE of perforations _____ in. by _____ in.
_____ perforations from _____ ft. to _____ ft.

Screens: ☐ Yes ☒ No ☐ K-Pac Location _____

Manufacturer's Name _____

Type _____ Model No. _____

Diam. _____ Slot Size _____ from _____ ft. to _____ ft.

Diam. _____ Slot Size _____ from _____ ft. to _____ ft.

Gravel/Filter packed: ☐ Yes ☒ No ☐ Size of gravel/sand _____

Material placed from _____ ft. to _____ ft.

Surface seal: ☒ Yes ☐ No To what depth? 18+ ft.

Material used in seal Bentonite

Did any strata contain unusable water? ☐ Yes ☒ No

Type of water? _____ Depth of strata _____

Method of sealing strata off _____

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

(8) WATER LEVELS: Land-surface elevation above mean sea level _____
Static level 125 ft. below top of well Date 3/26/01
Artesian pressure _____ lbs. per square inch Date _____
Artesian water is controlled by _____ (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? ☒ Yes ☒ No If yes, by whom? Bartholomew

Yield: 9.6 gal./min. with _____ ft. drawdown after 4 hrs.

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

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

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

Time _____ Water Level _____ Time _____ Water Level _____

Time _____ Water Level _____ Time _____ Water Level _____

Time _____ Water Level _____ Time _____ Water Level _____

Time _____ Water Level _____ Time _____ Water Level _____

Time _____ Water Level _____ Time _____ Water Level _____

Time _____ Water Level _____ Time _____ Water Level _____

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Time _____ Water Level _____ Time _____ Water Level _____

Time _____ Water Level _____ Time _____ Water Level _____

Time _____ Water Level _____ Time _____ Water Level _____

Time _____ Water Level _____ Time _____ Water Level _____

Time _____ Water Level _____ Time _____ Water Level _____

(10) WELL LOG or DECOMMISSIONING PROCEDURE DESCRIPTION
Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. Indicate all water encountered.

MATERIAL	FROM	TO
Topsoil	0	3
Granite, Decomposed	3	15
Granite, Hard	15	37
Granite, Decomposed	37	101
Granite, Medium w/	101	220
Slight Fractures -		
Water 1/2gpm		
Granite, Hard	220	261
Granite, Fractured -	261	263
Water 1gpm		
Granite, Hard w/ Slight	263	398
Fractures		
Granite, Medium	398	418
Granite, Hard	418	528
Granite, Fractured -	528	530
Water 1/2gpm		
Granite, Very Hard	530	570

Well air tested at 2gpm prior to hydro-fracturing. Well air tested at 8gpm post hydro-fracturing. Recommended pump depth is 520 to 540 feet. Bartholomew Pump Service performed a 4 hour pump test and bacteria test. Well pump tested at 9.6gpm.

Work Started 3/16/01 Completed 3/26/01

WELL CONSTRUCTION CERTIFICATION:

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

Type or Print Name Don Anderson License No. 1447
(Licensed Driller/Engineer)

Trainee Name _____ License No. _____

Drilling Company J & J Drilling, Inc.

(Signed) [Signature] License No. 0215
(Licensed Driller/Engineer)

Address S 5613 Linke Greenacres, WA 99016

Contractor's Registration No. JJDRII-177KU Date 4/4/01

(USE ADDITIONAL SHEETS IF NECESSARY)

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

xy from google/GIS: 2777921, 827310



WATER WELL REPORT

Original & 1st copy – Ecology, 2nd copy – owner, 3rd copy – driller

Construction/Decommission ("x" in circle)

☒ Construction 1963
☐ Decommission *ORIGINAL INSTALLATION Notice*
of Intent Number

196391

PROPOSED USE:	
<input type="checkbox"/> DeWater	<input checked="" type="checkbox"/> Domestic <input type="checkbox"/> Irrigation
<input type="checkbox"/> Test Well	<input type="checkbox"/> Municipal <input type="checkbox"/> Other _____
TYPE OF WORK: Owner's number of well (if more than one) <u>1</u>	
<input checked="" type="checkbox"/> New well	<input type="checkbox"/> Reconditioned Method: <input type="checkbox"/> Dug <input type="checkbox"/> Bored <input type="checkbox"/> Driven
<input type="checkbox"/> Deepened	<input type="checkbox"/> Cable <input checked="" type="checkbox"/> Rotary <input type="checkbox"/> Jetted
DIMENSIONS: Diameter of well <u>6</u> inches, drilled <u>1000</u> ft. Depth of completed well <u>1000</u> ft.	
CONSTRUCTION DETAILS	
Casing	<input checked="" type="checkbox"/> Welded <u>6</u> " Diam. from +1 ft. to 344 ft.
Installed:	<input type="checkbox"/> Liner installed " Diam. from ft. to ft.
	<input type="checkbox"/> Threaded " Diam. from ft. to ft.
Perforations: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Type of perforator used _____	
SIZE of perfs _____ in. by _____ in. and no. of perfs _____ from _____ ft. to _____ ft.	
Screens: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> K-Pac Location _____	
Manufacturer's Name _____	
Type _____	Model No. _____
Diam. _____ Slot size _____	from _____ ft. to _____ ft.
Diam. _____ Slot size _____	from _____ ft. to _____ ft.
Gravel/Filter packed: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Size of gravel/sand _____	
Materials placed from _____ ft. to _____ ft.	
Surface Seal: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No To what depth? <u>18+</u> ft.	
Material used in seal Baroid Bentonite _____	
Did any strata contain unusable water? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Type of water? _____	Depth of strata _____
Method of sealing strata off _____	
PUMP: Manufacturer's Name _____	
Type: _____	H.P. _____
WATER LEVELS: Land-surface elevation above mean sea level _____ ft.	
Static level <u>83</u>	ft. below top of well Date <u>4/18/08</u>
Artesian pressure _____	lbs. per square inch Date _____
Artesian water is controlled by _____ (cap, valve, etc.)	
WELL TESTS: Drawdown is amount water level is lowered below static level	
Was a pump test made? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, by whom? _____	
Yield: _____ gal./min. with _____	ft. drawdown after _____ hrs.
Yield: _____ gal./min. with _____	ft. drawdown after _____ hrs.
Yield: _____ gal./min. with _____	ft. drawdown after _____ hrs.
Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)	
Time _____	Water Level _____
Time _____	Water Level _____
Time _____	Water Level _____
Date of test _____	
Bailer test _____	gal./min. with _____ ft. drawdown after _____ hrs.
Airstest 1-1/2 _____	gal./min. with stem set at _____ ft. for _____ hrs.
Artesian flow _____	g.p.m. Date _____
Temperature of water _____	Was a chemical analysis made? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

CURRENT

Notice of Intent No. WE04728

439856

Unique Ecology Well ID Tag No. ALR814

Water Right Permit No.

Property Owner Name Mike Fruci

Well Street Address Hoffman Rd and Palouse Highway

City Spokane

County Spokane

Location 1/4-1/4 NE 1/4 Sec 22 Twn 24 R 43 EWM ☒ check
or WWM ☐ one

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

Still **REQUIRED**) Long Deg _____ Long Min/Sec _____

Tax Parcel No.

CONSTRUCTION OR DECOMMISSION PROCEDURE

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

MATERIAL	FROM	TO
Topsoil	0	3
Basalt, Medium	3	38
Clay, Brown and Hard	38	44
Clay, Tan and Very Hard	44	146
Clay, Tan w/ Quartz Sand, Fine	146	168
Clay, Brown and Very Hard	168	181
Clay, Tan and Soft w/ Quartz Sand, Med. to Fine	181	207
Granite, Decomposed w/ Clay, Brown	207	239
Granite, Highly Fractured w/ Sand and Mica	239	330
Granite, Soft to Medium - Water 3/4gpm	330	393
Granite, Medium w/ Fractures - Water 3/4gpm at 460 feet	393	735
Granite, Hard w/ Fractures	735	906
Granite, Medium	906	923
Granite, Hard w/ Fractures	923	1000

We recommended that the well be lined prior to use.

RECEIVED

MAV 30 2005
FRI 30 2005

DEPARTMENT OF ECOLOGY
EASTERN REGIONAL OFFICE

Start Date 4/8/06

Completed Date 4/18/06

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

☐ Driller ☐ Engineer ☐ Trainee Name (Print) Don Anderson

Driller/Engineer/Trainee Signature Don Andersen

Driller or trainee License No. 1447

Drilling Company J & J Drilling, Inc.

Address 17313 East Link Road

City, State, Zip Greenacres, WA 99016

Contractor's
Registration No. JDRII-177KU

Date 4/30/08

State of Washington

Washington Water Right Permit No.

108617

Water Well Report

Unique Well ID

AGC-270

Notice of Intent

WE00243

322674

(1) Owner: MIKE MORPHY Address: 2806 S BOWDISH SPOKANE WA 99206

(2) Location of Well: County SPOKANE SE 1/4 SW 1/4 SEC 24 T 24 NR 43E W

(2a) Street Address of Well: KIESLING & WAGNER

(3) Proposed Use DOMESTIC

(4) Type of Work NEW WELL Owner's number of well (if more than one)
Drilling Method ROTARY(5) Dimensions Diameter of well 6 inches
Drilled 440 feet Depth of completed well 440

(6) Construction Details

Casing Installed	Diameter	From	To
WELDED	6	+2	58
PVC	4	-5	440

Perforations ☒ Screens ☐

Type of Perforator Used SKIL SAW

Screen Type.

K-Pac Location:

Diam: 8 Slot 1/4 X 8 From -400 To 440

Gravel/Filter packed ☐ Size of gravel/sand

Material placed from ft. to

Surface seal used ☒ To what depth. 20 ftDid any strata contain unusable water? ☐

Type of water: Depth of strata:

Method of sealing strata off

(7) Pump Pump Manufacturer

Pump Type HP

(8) Water Levels

Land-surface elevation above mean sea level. ft

Static level: 120 Date: 1/30/02

Artesian Pressure Date

Artesian water is controlled by

(9) Well Tests Drawdown is amount water level is lowered below static

Was a pump Test performed? ☐

Yield Drawdown Pumping Level Hours

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

Time	Level	Time	Level	Time	Level

Bailer Test gal per min drawdown after

Airtest gal/min: 5-6 ES gal per min

Artesian flow gpm ☐ Chemical test

(10) WELL LOG or DECOMMISSIONING PROCEDURE DESCRIPTION

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

☒ Construction
☐ Decommission

From To Remarks: Lithology, Water Quality, Temperature

0	3	Top Soil
3	50	Clay & Sand
50	110	Granite Brown
110	120	Granite Gray & White 2 gpm water
120	240	Granite Gray & White Med.
240	310	Granite Dark Gray
310	325	Granite Green 2gpm water
325	440	Granite Dark Gray hard 1 gpm



Start Date: 1/30/02 Completed 1/31/02

Well Construction Certification

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

Type or Print Name Jim McLeslie License No: 2257

Trainee Name License No:

Drilling Company: H2O Well Service, Inc.

(signed) Jim McLeslie License No: 2257
(Licensed Driller/Engineer)

Address: 582 W Hayden Ave, Hayden Lake, ID 83835

Contractor's H2OWESI101DW Date: 1-31-02
Registration No:

153000

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

WATER WELL REPORT

STATE OF WASHINGTON

Start Card No. W 57458UNIQUE WELL I.D. # Lot K

Water Right Permit No. _____

(1) OWNER: Name Gary Owens Address 11010 S Sharon Rd., Spokane, WA 99223(2) LOCATION OF WELL: County Spokane SE 1/4 NW 1/4 Sec 19 T 24 N. R. 14 W.M.(2a) STREET ADDRESS OF WELL (or nearest address) Same(3) PROPOSED USE: ☒ Domestic ☐ Industrial ☐ Municipal ☐
☐ Irrigation ☐ Test Well ☐ Other ☐
☐ DeWater(4) TYPE OF WORK: Owner's number of well (if more than one) _____
Abandoned ☐ New well ☒ Method: Dug ☐ Bored ☐
Deepened ☐ Cable ☐ Driven ☐
Reconditioned ☐ Rotary ☒ Jetted ☐(5) DIMENSIONS: Diameter of well 6 inches.
Drilled 520 feet. Depth of completed well 520 ft.

(6) CONSTRUCTION DETAILS:

Casing installed: 6 Diam. from +1 ft. to 41 ft.
Welded ☒ Diam. from _____ ft. to 520 ft.
Liner installed ☒ Diam. from _____ ft. to _____ ft.
Threaded ☐ Diam. from _____ ft. to _____ ft.Perforations: Yes ☐ No ☒

Type of perforator used _____

SIZE of perforations _____ in. by _____ in.

_____ perforations from _____ ft. to _____ ft.

_____ perforations from _____ ft. to _____ ft.

_____ perforations from _____ ft. to _____ ft.

Screens: Yes ☐ No ☒

Manufacturer's Name _____

Type _____ Model No. _____

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

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

Gravel packed: Yes ☐ No ☒ Size of gravel _____

Gravel placed from _____ ft. to _____ ft.

Surface seal: Yes ☒ No ☐ To what depth? 18+ ft.Material used in seal BentoniteDid any strata contain unusable water? Yes ☐ No ☒

Type of water? _____ Depth of strata _____

Method of sealing strata off _____

(7) PUMP: Manufacturer's Name _____
Type: _____ H.P. _____(8) WATER LEVELS: Land-surface elevation _____ ft.
Static level 80 ft. below top of well Date _____
Artesian pressure _____ lbs. per square inch Date _____
Artesian water is controlled by _____ (Cap. valve, etc.)(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes ☐ No ☒ If yes, by whom? _____
Yield: 9 gal./min. with _____ ft. drawdown after _____ hrs.

Air test approx. "9-G.P.M." " " "

" " " " " " "

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

Time Water Level Time Water Level Time Water Level

Date of test _____

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

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

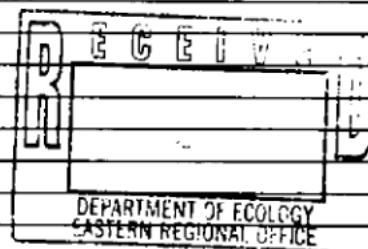
Artesian flow _____ g.p.m. Date _____

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

(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION

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

MATERIAL	FROM	TO
Topsoil-drk. brn.	0	5
Granit-decomposed-grey	5	30
Granit-hard	30	60
Granit-med.	60	80
Granit-hard	80	143
Granit-hard-fract.-water	143	148
Granit-hard	148	280
Granit-hard-fract.-water	280	285
Granit-hard	285	465
Granit-hard-slightly fract.	465	470
Granit-hard	470	520

Work Started 2/28/95, 19. Completed 3/5/, 19 95

WELL CONSTRUCTOR CERTIFICATION:

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

NAME J & J DRILLING INC
(PERSON, FIRM OR CORPORATION) (TYPE OR PRINT)Address S 5613 Linka Rd. Greenacres, WA 99016(Signed) Ben T. Munn License No. 2139
(WELL DRILLER)Contractor's
Registration
No. JJDRII-177KU Date 3/6/, 19 95

(USE ADDITIONAL SHEETS IF NECESSARY)

Ecology is an Equal Opportunity and Affirmative Action employer. For special accommodation needs, contact the Water Resources Program at (206) 407-6800. The TDD number is (206) 407-6006.

Please print, sign and return to the Department of Ecology

454302



Water Well Report

Original - Ecology, 1st copy - owner, 2nd copy - driller

Construction/Decommission

☒ Construction☐ Decommission ORIGINAL INSTALLATION Notice of Intent Number _____

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

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

DIMENSIONS: Diameter of well 10-6 inches, drilled 505 ft.
 Depth of completed well 505 ft.

CONSTRUCTION DETAILS
 Casing ☒ Welded 6 " Diam. from +1 ft. to 19 ft.
 Installed: ☒ Liner installed 4 " Diam. from -5 ft. to 485 ft.
☐ Threaded _____ " Diam. from _____ ft. to _____ ft.

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

Screens: ☒ Yes ☐ No ☐ K-Pac Location _____
 Manufacturer's Name Johnson
 Type PVC Model No. _____
 Diam. 4 " Slot size 020 from 485 ft. to 505 ft.
 Diam. _____ " Slot size _____ from _____ ft. to _____ ft.

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

Surface Seal: ☒ Yes ☐ No To what depth? 19 ft.
 Material used in seal Bentonite casing seal
 Did any strata contain unusable water? ☐ Yes ☒ No
 Type of water? _____ Depth of strata _____
 Method of sealing strata off _____

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

WATER LEVELS: Land-surface elevation above mean sea level _____
 Static level 30 ft. below top of well Date 6/1/06
 Artesian pressure _____ lbs. per square inch Date _____
 Artesian water is controlled by _____ (cap, valve, etc.)

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

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

Time	Water Level	Time	Water Level	Time	Water Level
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

Date of test _____

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

Airtest 5 gal./min. with stem set at 475 ft. for 2 hrs.

Artesian flow _____ g.p.m. Date _____

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

Current

Notice of Intent No. W 211 925Unique Ecology Well ID Tag No. APC 751

Water Right Permit No. _____

Property Owner Name Frank Honorof / Valenov LLCWell Street Address Honorof LaneCity _____ County SpokaneLocation SW 1/4-14 SE 1/4 Sec 19 Twp 24 R 44 ☒ circle one

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

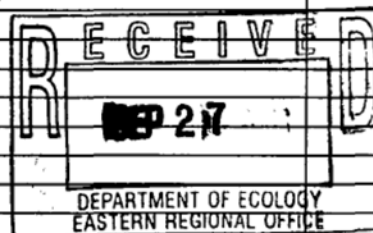
still REQUIRED) Long Deg _____ Long Min/Sec _____

Tax Parcel No. _____

CONSTRUCTION OR DECOMMISSION PROCEDURE

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

MATERIAL	FROM	TO
Tan top soil	0	6
Hard pan clay	6	9
Tan medium granite	9	47
Med-Hard gray granite	47	223
Sandy fractured salt + pepper granite with water - coarse	223	228
Hard salt + pepper granite	228	470
Fractured gray + tan granite with coarse white quartz + water	470	505

Start Date 5/26/06 Completed Date 6/1/06

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

Driller/Engineer/Trainee Name (Print) Douglas E LaneDriller/Engineer/Trainee Signature Douglas E LaneDriller or trainee License No. 1030

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

Drilling Company Inland Pacific DrillingAddress 5014 N Chase RoadCity, State, Zip Newman Lake, WA 99025

Contractor's

Registration ENLANPD066ND Date 6/15/06

Ecology is an Equal Opportunity Employer. ECY 050-1-20 (Rev 2/03)

State of Washington

Water Well Report

Unique Well ID: ACW544

545178

Washington Water Right Permit No: 309093

Notice of Intent: WE02167

(1) Owner: Altmeyer, Phil #2		Address: 12829 S. Sands Road		Valleyford		WA		99036	
(2) Location of Well: County SPOKANE		SW		1/4: SE		1/4 SEC: 28		T 24 NR 44 E	
(2a) Street Address of Well: 12829 S. Sands Road		City: Valleyford		Tax/Parcel No					
(3) Proposed Use DOMESTIC									
(4) Type of Work NEW WELL		Previous Tag No							
Drilling Method: ROTARY		Owner's number of well (if more than one):							
(5) Dimensions		Diameter of well: 8		inches					
Drilled: 145		feet		Depth of completed well: 145					
(6) Construction Details									
Casing Installed		Diameter		From		To			
PVC		4		-10		145			
STEEL		8		+1		19			
Perforations <input checked="" type="checkbox"/>		Screens <input type="checkbox"/>							
Type of Perforator Used		Skill saw							
Screen Type:									
K-Pac Location:									
Diam: 4		Slot 1/8		From 125		To 145			
Gravel/Filter packed <input type="checkbox"/>		Size of gravel/sand:							
Material placed from:		ft. to							
Surface seal used <input checked="" type="checkbox"/>		To what depth: 19		ft.					
Did any strata contain unusable water? <input type="checkbox"/>									
Type of water:		Depth of strata:							
Method of sealing strata off:									
(7) Pump Pump Manufacturer:									
Pump Type:		H.P.							
(8) Water Levels									
Land-surface elevation above mean sea level:		ft.							
Static level: 20		Date: 4/30/2004							
Artesian Pressure:		Date:							
Artesian water is controlled by:									
(9) Well Tests Drawdown is amount water level is lowered below static									
Was a pump Test performed? <input type="checkbox"/>									
Yield	Drawdown	Pumping Level	Hours						
Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)									
Time	Level	Time	Level	Time	Level				
Bailer Test:		gal per mi		drawdown: after					
Airstest gal/min: 20+		gal per min							
Artesian flow gpm:		<input type="checkbox"/> Chemical test							
(10) WELL LOG or DECOMMISSIONING PROCEDURE DESCRIPTION									
Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. Indicate all water encountered.									
<input checked="" type="checkbox"/> Construction		Drive Shoe <input type="checkbox"/>							
<input type="checkbox"/> Decommission		Ring Bit <input type="checkbox"/>							
From	To	Remarks: Lithology, Water Quality, Temperature							
0	2	Top Soil							
2	19	Basalt Broken							
19	29	Basalt Broken							
29	64	Clay Tan							
64	87	Clay Dark Brown w/wood							
87	91	Clay Gray							
91	145	Basalt w/water							

RECEIVED
 MAY 7 2008
 DEPARTMENT OF ECOLOGY
 EASTERN REGIONAL OFFICE

Start Date: 4/29/2004	Completed 4/30/2004
Well Construction Certification	
I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.	
Type or Print Name <u>Todd Morgan</u>	License No: <u>2383</u>
Trainee Name	License No:
Drilling Company: H2O Well Service, Inc.	
(signed) <u>Todd Morgan</u>	License No: <u>2383</u>
(Licensed Driller/Engineer)	
Address: 582 W. Hayden Ave, Hayden Lake, ID 83835	
Contractor's Registration No: <u>H20WESH01DW</u>	Date:

424368



Well Logs

[Home](#) [Text Search](#) [Map Search](#) [Site Info](#) [Forms](#) [Contact Us](#) [Water Portal](#)

WELL LOG VIEWER - DATA AND IMAGE ARE "AS IS" WITH NO WARRANTY

[← Back ...](#) [🔍 New Search](#) [📍 Find on Map](#)[? Help](#)

WATER WELL REPORT

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

Construction/Decommission ("x" in circle) 185364

☒ Construction
☐ Decommission ORIGINAL INSTALLATION Notice
of Intent Number _____

PROPOSED USE: <input type="checkbox"/> DeWater <input checked="" type="checkbox"/> Domestic <input type="checkbox"/> Industrial <input type="checkbox"/> Municipal <input type="checkbox"/> Irrigation <input type="checkbox"/> Test Well <input type="checkbox"/> Other																			
TYPE OF WORK: Owner's number of well (if more than one) _____ <input checked="" type="checkbox"/> New well <input type="checkbox"/> Reconditioned <input type="checkbox"/> Deepened Method: <input type="checkbox"/> Dug <input type="checkbox"/> Bored <input type="checkbox"/> Driven <input type="checkbox"/> Cable <input checked="" type="checkbox"/> Rotary <input type="checkbox"/> Jetted																			
DIMENSIONS: Diameter of well <u>6</u> inches, drilled <u>300</u> ft. Depth of completed well <u>300</u> ft.																			
CONSTRUCTION DETAILS Casing: <input checked="" type="checkbox"/> Welded <u>6</u> " Diam. from <u>+1</u> ft. to <u>139</u> ft. Installed: <input checked="" type="checkbox"/> Liner installed <u>4</u> " Diam. from <u>13</u> ft. to <u>300</u> ft. <input type="checkbox"/> Threaded " Diam. from _____ ft. to _____ ft.																			
Perforations: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Type of perforator used <u>3/8" Spade Bit</u> SIZE of perfs _____ in. by _____ in. and no. of perfs _____ from <u>260</u> ft. to <u>300</u> ft.																			
Screens: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> K-Pac Location _____ Manufacturer's Name _____ Type _____ Model No. _____ Diam. _____ Slot size _____ from _____ ft. to _____ ft. Diam. _____ Slot size _____ from _____ ft. to _____ ft.																			
Gravel/Filter packed: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Size of gravel/sand _____ Materials placed from _____ ft. to _____ ft.																			
Surface Seal: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No To what depth? <u>18+</u> ft. Material used in seal <u>Baroid Bentonite</u> Did any strata contain unusable water? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Type of water? _____ Depth of strata _____ Method of sealing strata off _____																			
PUMP: Manufacturer's Name _____ Type: _____ H.P. _____																			
WATER LEVELS: Land-surface elevation above mean sea level _____ ft. Static level <u>163</u> ft. below top of well Date <u>10/25/05</u> Artesian pressure _____ lbs. per square inch Date _____ Artesian water is controlled by _____ (cap, valve, etc.)																			
WELL TESTS: Drawdown is amount water level is lowered below static level Was a pump test made? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, by whom? _____ Yield: _____ gal./min. with _____ ft. drawdown after _____ hrs. Yield: _____ gal./min. with _____ ft. drawdown after _____ hrs. Yield: _____ gal./min. with _____ ft. drawdown after _____ hrs. Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level) <table border="1"><thead><tr><th>Time</th><th>Water Level</th><th>Time</th><th>Water Level</th><th>Time</th><th>Water Level</th></tr></thead><tbody><tr><td>_____</td><td>_____</td><td>_____</td><td>_____</td><td>_____</td><td>_____</td></tr><tr><td>_____</td><td>_____</td><td>_____</td><td>_____</td><td>_____</td><td>_____</td></tr></tbody></table> Date of test _____ Bailer test _____ gal./min. with _____ ft. drawdown after _____ hrs. Airstest <u>40</u> gal./min. with stem set at _____ ft. for _____ hrs.		Time	Water Level	Time	Water Level	Time	Water Level	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
Time	Water Level	Time	Water Level	Time	Water Level														
_____	_____	_____	_____	_____	_____														
_____	_____	_____	_____	_____	_____														

CURRENT

Notice of Intent No. WE04455Unique Ecology Well ID Tag No. ALR549

Water Right Permit No. _____

Property Owner Name Sarah SchultzWell Street Address Conner RoadCity _____ County SpokaneLocation NW 1/4-1/4 NE 1/4 Sec 33 Twn 24 R 44 EWM or WWM ☒ side ☐ no

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

Still **REQUIRED** Long Deg _____ Long Min/Sec _____

Tax Parcel No. _____

CONSTRUCTION OR DECOMMISSION PROCEDURE

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

MATERIAL	FROM	TO
Topsoil	0	2
Clay, Brown and Hard	2	13
Basalt, Medium	13	27
Basalt, Hard	27	50
Clay, Yellow and Medium	50	78
Sand, Quartz	78	81
Clay, Brown and Hard	81	87
Basalt, Medium	87	93
Clay, Brown	93	100
Basalt, Fractured w/ Clay, Brown	100	105
Basalt, Medium	105	110
Basalt, Fractured w/ Clay, Brown	110	118
Basalt, Very Hard	118	258
Shale, Black and Hard	258	270
Basalt, Fractured	270	273
Basalt Cinders, Soft - Water 40gpm	273	288
Basalt, Soft	288	300

Recommended pump depth is 280 feet.

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DEC 12 2005

DEPARTMENT OF ECOLOGY
EASTERN REGIONAL OFFICE

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

File Original and First Copy with
Department of Ecology

Second Copy—Owner's Copy

Third Copy—Driller's Copy

WATER WELL REPORT

STATE OF WASHINGTON

Start Card No. 057543

Water Right Permit No.

(1) OWNER: Name John Brereton Address S 3012 Bowditch, Spokane, WA 99206LOCATION OF WELL: County Spokane SE NW 33 T. 24 N. R. 44 W.M.(2a) STREET ADDRESS OF WELL (or nearest address) Conner Rd. & Soal Rd. Valley Ford, WA(3) PROPOSED USE: ☒ Domestic ☐ Industrial ☐ Municipal ☐
☐ Irrigation ☐ Test Well ☐ Other ☐
☐ DeWater(4) TYPE OF WORK: Owner's number of well (if more than one)
Abandoned ☐ New well ☒ Method: Dug ☐ Bored ☐
Deepened ☐ Cable ☐ Driven ☐
Reconditioned ☐ Rotary ☒ Jetted ☐(5) DIMENSIONS: Diameter of well 6 inches.
Drilled 360 feet. Depth of completed well 360 ft.

(6) CONSTRUCTION DETAILS:

Casing installed: 6 • Diam. from +1 ft. to 137 ft.
Welded ☒ 4 • Diam. from _____ ft. to 360 ft.
Liner installed ☐
Threaded ☐ • Diam. from _____ ft. to _____ ft.Perforations: Yes ☐ No ☒

Type of perforator used _____

SIZE of perforations _____ in. by _____ in.

_____ perforations from _____ ft. to _____ ft.

_____ perforations from _____ ft. to _____ ft.

_____ perforations from _____ ft. to _____ ft.

Screens: Yes ☐ No ☒

Manufacturer's Name _____

Type _____ Model No. _____

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

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

Gravel packed: Yes ☐ No ☒ Size of gravel _____

Gravel placed from _____ ft. to _____ ft.

Surface seal: Yes ☒ No ☐ To what depth? 18+ ft.Material used in seal BentoniteDid any strata contain unusable water? Yes ☐ No ☒

Type of water? _____ Depth of strata _____

Method of sealing strata off _____

(7) PUMP: Manufacturer's Name _____

Type _____ H.P. _____

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

Static level 120 ft. below top of well Date 9/4/91

Artesian pressure _____ lbs. per square inch Date _____

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

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

Was a pump test made? Yes ☐ No ☐ If yes, by whom? _____Yield: 10 gal./min. with _____ ft. drawdown after _____ hrs.Air test approx. 10-G.P.M. " " " "

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

Time Water Level Time Water Level Time Water Level

Date of test _____

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

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

Artesian flow _____ g.p.m. Date _____

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

(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION

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

MATERIAL	FROM	TO
Clay-med.-hard-brn.	0	9
Basalt-fractured	9	18
Basalt-hard	18	53
Basalt-fractured w/clay	53	110
Clay-tan-med.	110	120
Basalt-fractured	120	123
Clay-brn.-med.	123	128
Basalt-fractured	128	142
Basalt-hard	142	275
Clay-brn.-med.	275	323
Basalt-fract. w/clay	323	332
Basalt-med.	332	336
Basalt-fractured w/clay	336	342
Clay-brn.-med.	342	360

Work started 9/3/91, 19. Completed 9/4/, 19. 91

WELL CONSTRUCTOR CERTIFICATION:

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

NAME J & J DRILLING INC
(PERSON, FIRM, OR CORPORATION) (TYPE OR PRINT)Address S 5613 Linke RD, Greenacres, WA 99016(Signed) John Shaw License No. 1962
(WELL DRILLER)Contractor's Registration No. JJDRII-177KU Date 9/5/, 19. 91

(USE ADDITIONAL SHEETS IF NECESSARY)

332765



Well Logs

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WELL LOG VIEWER - DATA AND IMAGE ARE "AS IS" WITH NO WARRANTY

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

WATER WELL REPORT

STATE OF WASHINGTON

Notice of Intent W 14828UNIQUE WELL ID # AA4

Water Right Permit No. _____

(1) OWNER: Name WILLIAM H ROCHE Address 13804 S. MADISON VALLEY FORD(2) LOCATION OF WELL: County SPOKANE NE 1/4 Sec 33 T 24 N R 44 E(2a) STREET ADDRESS OF WELL: (or nearest address) 13804 S. MADISON VALLEY FORD, WA 99036TAX PARCEL NO. LOT 162 BLK 23 VALLEY FORD, WA 99036

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

(10) WELL LOG or DECOMMISSIONING PROCEDURE DESCRIPTION: Describe by color, character, size of material and strata the kind and nature of the material in each stratum penetrated, with one entry for each change of information. Indicate all water encountered.

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

(5) DIMENSIONS: Diameter of well 6 inches
 Drilled 272 feet Depth of completed well 272 ft

(6) CONSTRUCTION DETAILS
 Casing Installed: 6 " Diam from 0 ft to 58 ft
☒ Welded 4 PVC Diam from 15 ft to 272 ft
☐ Liner installed
☐ Threaded

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

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

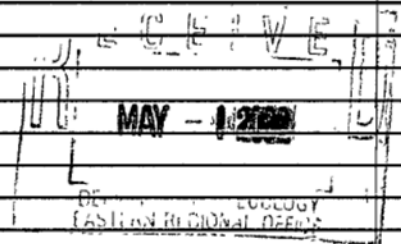
Gravel/Filter packed: ☐ Yes ☒ No ☐ Size of gravel/sand _____
 Material placed from _____ ft to _____ ft

Surface seal: ☒ Yes ☐ No To what depth? 18 + ft
 Material used in seal BENTONITE
 Did any strata contain unusable water? ☐ Yes ☒ No
 Type of water? _____ Depth of strata _____
 Method of sealing strata off _____

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

(8) WATER LEVELS: Land surface elevation above mean sea level _____ ft
 Static level 108 ft below top of well Date 4-5-02
 Artesian pressure _____ lbs per square inch Date _____

MATERIAL	FROM
BROWN TOP SOIL	0
BROWN TO YELLOW CLAY	2
CLAY - WITH BASALT	25
HARD GREY BASALT	34
WITH LITTLE CLAY	
HARD GREY BASALT	41
BASALT - sand	72
BLACK BASALT	73
BLACK BASALT WITH	147
BROWN CLAY SOFT	
BLACK BASALT	148
BROKEN BASALT	
WITH SAND, CLAY	
HARD BASALT	165
WITH FRACTURE	



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

State of Washington

Washington Water Right Permit No:

Water Well Report

Unique Well ID: AGC-388

551962

Notice of Intent: ~~WE99332~~

W187726

(1) Owner: HOLSCHEN, DICK & PATRICIA Address: E. 2311 STOUGHTON VALLEYFORD WA 990236

(2) Location of Well: County SPOKANE SE 1/4: SE 1/4 SEC: 34 T 24 NR 44 E

(2a) Street Address of Well: _____ City: _____ Tax/Parcel No 44343.2711

(3) Proposed Use DOMESTIC

(4) Type of Work NEW WELL Previous Tag No _____
Drilling Method: ROTARY Owner's number of well (if more than one): _____

(5) Dimensions Diameter of well: 8 inches
Drilled: 200 feet Depth of completed well: 200

(6) Construction Details

Casing Installed	Diameter	From	To
STEEL	8	+2	18
PVC	4	-5	200

Perforations ☒ Screens ☐
Type of Perforator Used SKILL SAW
Screen Type: _____
K-Pac Location: _____
Diam: 6 Slot 6 X 1/4 From 180 To 200

Gravel/Filter packed ☐ Size of gravel/sand: _____
Material placed from: _____ ft. to _____

Surface seal used ☒ To what depth: 18 ft.
Did any strata contain unusable water? ☐
Type of water: _____ Depth of strata: _____
Method of sealing strata off: _____

(7) Pump Pump Manufacturer: _____
Pump Type: _____ H.P. _____

(8) Water Levels
Land-surface elevation above mean sea level: _____ ft.
Static level: 120 Date: 5/2/2005
Artesian Pressure: _____ Date: _____
Artesian water is controlled by: _____

(9) Well Tests Drawdown is amount water level is lowered below static
Was a pump Test performed? ☐
Yield Drawdown Pumping Level Hours

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

Time	Level	Time	Level	Time	Level
_____	_____	_____	_____	_____	_____

Bailer Test: _____ gal per mi _____ drawdown: after _____
Airstest gal/min: 20 gal per min
Artesian flow gpm: _____ ☐ Chemical test

(10) WELL LOG or DECOMMISSIONING PROCEDURE DESCRIPTION
Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. Indicate all water encountered.

From	To	Remarks: Lithology, Water Quality, Temperature
0	3	Top Soi
3	5	Basalt Broken
5	70	Basalt Black Med.
70	85	Basalt w/ Clay seems
85	90	Basalt Broken Large
90	120	Basalt
120	140	Basalt w/ Clay Seems
140	160	Basalt Med.
160	170	Basalt Broken w/ 3-5 gpm
170	190	Basalt Gray
190	191	Basalt Fracture w/ water
191	200	Basalt
200	200	4x8 Shale Trap at 140'

xy from GIS:
2806053,
814880

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MAY 7 2008
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EASTERN REGIONAL OFFICE

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OCT - 2 2008
DEPARTMENT OF ECOLOGY
EASTERN REGIONAL OFFICE

Start Date: 5/2/2005 Completed 5/3/2005

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

Type or Print Name JIM McLESLIE License No: 2257
Trainee Name _____ License No: _____
Drilling Company: H2O Well Service, Inc.
(signed) Jim McLeslie License No: 2257
(Licensed Driller/Engineer)
Address: 582 W. Hayden Ave, Hayden Lake, ID 83835
Contractor's H2OWESI01DW Date: 5/4/2005
Registration No: _____

WATER WELL REPORT

STATE OF WASHINGTON

Application No. _____

Permit No. **152822**

(1) OWNER: Name **FREEMAN SCHOOL DISTRICT #358** Address **Freeman, Washington 99015**

(2) LOCATION OF WELL: County **Spokane** — SW $\frac{1}{4}$ NW $\frac{1}{4}$ Sec **1** T **23** N, R **44E** W.M.

Bearing and distance from section or subdivision corner _____

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

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

(5) DIMENSIONS: Diameter of well **6** inches.
 Drilled **375** ft. Depth of completed well **375** ft.

(6) CONSTRUCTION DETAILS:
 Casing installed: **6** " Diam. from **+1** ft. to **62** ft.
 Threaded ☐ " Diam. from _____ ft. to _____ ft.
 Welded ☒ " Diam. from _____ ft. to _____ ft.

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

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

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

Surface seal: Yes ☒ No ☐ To what depth? **62** ft.
 Material used in seal **Bentinite**
 Did any strata contain unusable water? Yes ☐ No ☒
 Type of water? _____ Depth of strata _____
 Method of sealing strata off _____

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

(8) WATER LEVELS: Land-surface elevation above mean sea level **6560** ft.
 Static level **43** ft. below top of well Date **10/15/73**
 Artesian pressure _____ lbs. per square inch Date _____
 Artesian water is controlled by _____ (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
 Was a **air** test made? Yes ☒ No ☐ If yes, by whom? **Driller**
 Yield: **10** gal./min. with **132** ft. drawdown after **1** hrs.
 " " " " " "
 " " " " " "

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

Time	Water Level	Time	Water Level	Time	Water Level

Date of test _____
 Sailer test _____ gal./min. with _____ ft. drawdown after _____ hrs.
 Artesian flow _____ g.p.m. Date _____
 Temperature of water _____ Was a chemical analysis made? Yes ☐ No ☒

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

MATERIAL	FROM	TO
Top soil, brown, silty	0'	2'
Clay, tan, hard	2'	14'
Clay, moist, tan	14'	23'
Quartz, heav fract	23'	27'
Basalt, decom, brown & green-black lay	27'	29'
Basalt, decom, mined w/gray clay, moist	29'	39'
Basalt, heav fract, brown, fairly hrd	39'	44'
Basalt, fract, brown-black, med hrd	44'	48'
Basalt, fract, block, m hrd, water 2GPM	48'	55'
Basalt, heav fract, black, soft	55'	59'
Basalt, occas fract, gray-black, hard	59'	98'
Basalt, fract, black, med hrd	98'	111'
Shale, tan & green, firm	111'	123'
Shale, olive green, firm	123'	125'
Basalt, brown, fairly hard	125'	137'
Clay, brown, firm	137'	168'
Basalt, fract, block, m hrd, water 3GPM	168'	180'
Basalt, occas fract, block, hard	180'	188'
Basalt, heav fract, brn, m hrd, Wat. 5GPM	188'	194'
Shale, brown, firm	194'	201'
Clay, moist, rusty brown	201'	212'
Clay, moist, white	211'	214'
Clay, moist, brown	214'	218'
Clay, moist, dark gray	218'	223'
Clay, moist, brown	223'	234'
Clay, moist, redish-orange	234'	241'
Clay, moist, tan	241'	259'
Quartz, purple & white, soft	259'	263'
Granite, heav fract, med hrd	263'	270'
Granite, occas fract, med hrd	270'	286'
Granite, heav fract, heavily white quartz content, med hard	286'	328'
Clay, moist, white, w/small layers of white quartz sand	328'	343'
Quartz, fract, white, w/mica flakes, med hard	343'	348'
Quartz, purple & white, hard	348'	375'

Work started **Oct 10**, 19**73** Completed **Oct 15**, 19**73**

WELL DRILLER'S STATEMENT:
 This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME **ZINKGRAF WELL DRILLING COMPANY**
 (Person, firm, or corporation) (Type or print)

Address **E. 1606 Sharp, Spokane, Wash. 99202**

[Signed] *James J. Zinkgraf* (Well Driller)

License No. **544** Date **Oct. 17**, 19**73**

2816323, 812596

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

WATER WELL REPORT

STATE OF WASHINGTON

152821

Application No.

Permit No.

(1) OWNER: Name Freeman School Dist. # 358 Address Freeman, Washington 99015LOCATION OF WELL: County Spokane - SW $\frac{1}{4}$ NW $\frac{1}{4}$ Sec. 1 T. 24 N. R. 44 E. W.M.
and distance from section or subdivision corner $\frac{1}{2}$ mile south of Hiway 27 on Jackson Rd. 23 43 44(3) PROPOSED USE: Domestic ☐ Industrial ☐ Municipal ☐
Irrigation ☐ Test Well ☐ Other ☒(4) TYPE OF WORK: Owner's number of well (if more than one) ...
New well ☒ Method: Dug ☐ Bored ☐
Deepened ☐ Cable ☐ Driven ☐
Reconditioned ☐ Rotary ☒ Jetted ☐(5) DIMENSIONS: Diameter of well 6 inches.
Drilled 215 ft. Depth of completed well 215 ft.

(6) CONSTRUCTION DETAILS:

Casing installed: 6 " Diam. from 0 ft. to 52 ft.
Threaded ☐ " Diam. from ... ft. to ... ft.
Welded ☒ " Diam. from ... ft. to ... ft.Perforations: Yes ☐ No ☒Type of perforator used ...
SIZE of perforations ... in. by ... in.
perforations from ... ft. to ... ft.
perforations from ... ft. to ... ft.
perforations from ... ft. to ... ft.Screens: Yes ☐ No ☒Manufacturer's Name ...
Type ... Model No ...
Diam. ... Slot size ... from ... ft. to ... ft.
Diam. ... Slot size ... from ... ft. to ... ft.Gravel packed: Yes ☐ No ☒ Size of gravel: ...
Gravel placed from ... ft. to ... ft.Surface seal: Yes ☒ No ☐ To what depth? 52 ft.
Material used in seal bentonite
Did any strata contain unusable water? Yes ☐ No ☒
Type of water? ... Depth of strata ...
Method of sealing strata off ...(7) PUMP: Manufacturer's Name ...
Type: ... H.P.(8) WATER LEVELS: Land-surface elevation 2425 ft.
above mean sea level ...
Static level ... ft. below top of well Date 6-30-80
Artesian pressure ... lbs. per square inch Date ...
Artesian water is controlled by ... (Cap, valve, etc.)(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes ☐ No ☒ If yes, by whom? ...
Yield: gal/min. with ... ft. drawdown after ... hrs.
" " " " " "

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

Time	Water Level	Time	Water Level	Time	Water Level

Date of test ...
Bailer test 50 gal/min. with ... ft. drawdown after 3 hrs.
Artesian flow ... g.p.m. Date ...
Temperature of water 49 Was a chemical analysis made? Yes ☐ No ☒

(10) WELL LOG:

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

MATERIAL	FROM	TO
overburden	0	5
clay brown, yellow white black	5	51
grey basalt med hard	51	105
blue basalt hard	105	175
grey basalt	175	180
basalt shattered pillow lava	180	195
quartzite gravel (water bearing)	195	197
decomposed granite	197	215

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JAN 15 1981

DEPARTMENT OF ECOLOGY
SPOKANE REGIONAL OFFICEWork started June 26, 19 80 Completed June 30, 19 80

WELL DRILLER'S STATEMENT:

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

NAME Acme Drilling Co. Inc.
(Person, firm, or corporation) (Type or print)Address Rt. 1 Box 185 Deer Park, Wn. 99006[Signed] Ron S. Kennedy
(Well Driller)License No. 0712 Date June 30, 19 80