

SP-10-00004

November 5, 2010

Mr. James Rivard
Environmental Health Manager
Kittitas County Health Department
507 Nanum Street
Ellensburg, WA 98926

SUBJECT: Hydrogeological Report
Magana Short Plat Part of Section 6, T. 18 N., R. 20 E., W.M.
Kittitas County

Pro Services Engineering Corp. ps was retained by Cruse & Associates to prepare this hydrogeological report addressing the 2 lot, 19.86 acre, Magana Short Plat. This report provides information pertinent to water availability per Section 52 of the Growth Management Act. Information used in preparing this report was obtained from the local U.S. Geological Survey geologic map and Department of Ecology well log files.

The subject short plat is primarily located within the SE 1/4 of Section 6, T 18 N and R 20 E. The short plat is just West of Colockum Road and North of Gage Road.

Local Geology & Topography

From topographic mapping the proposed Magana Short Plat is located within the Kittitas Basin. The approximate elevation above sea level of the short plat is 2350 feet.

A geological map of the Yakima River Basin was used to determine the geologic terrane of this area. The proposed short plat is located within this basin and is further described by hydrologic mapping to be within the Kittitas hydrologic basin and within the southwest portion of the Ellensburg hydrologic subbasin.

The Kittitas basin is a long broad synclinal valley or structural up bowl. The above short plat is located towards the easterly boundary of this basin. Underlying structure, in the area of this short plat, as indicated on the Yakima River Basin geological map is Columbia River Basalt (Tcr) or a sequence of lava flow designated as (Tcr).

The Columbia River basalt formation (Tcr) is further described as being a sequence of dark lava flows, which contain some inter-bedded lake and stream deposits. Water generally is considered to move along interflow zones, which are more permeable, than the massive centers of the flow. Anticlinal ridges in Columbia River basalt form ground water ridges that constitute boundaries between ground water basins and subbasins. The porosity ranges from 5 to 10 percent and its permeability ranges from low to very high. This formation provides a large quantity of effective ground water storage and includes some of the most important aquifers in the Yakima River basin.

Well Study

This study was conducted using well logs obtained from an on line Department of Ecology database. A total of 3 wells existing within a 1-mile square section surrounding the property were looked at.

Within section 6 there is 1 well that was drilled to 748 feet in depth, showing 200 gpm at 375 feet and broken basalt material. There are 2 recorded wells in northwest 1/4 of section 7 and they are around 265 feet in depth with a water yield of 15 gpm and 75 gpm. Within section 5 there is 1 well that was drilled to 260 feet in depth, showing 25 gpm at and broken basalt material.

From well drilling logs it is recorded that wells were generally founded in fractured basalt or black basalt layers consistent with the Tcr formation. The Tcr formation in general has good permeability; but may also have low permeability in some of the layers which is also consistent with the well logs for this area.

In examining the well logs it does show that the wells have provided a good consistent yield over time.

Conclusions

The preponderance of the well data would indicate a good probability of developing an adequate well, it will most likely have a good average volume yield. There is little to no evidence to indicate that a dry well condition could be encountered. In all well drilling, however, due to the variability of the geologic structure, there is risk in not finding an adequate water source.

Based on geological data, and study of existing local wells, especially within the areas of the Tcr formation studied in this report, there is ample evidence supporting an adequate water supply. Depth of the well is expected to range from 260 to 375 feet in depth with water yields of 15 gpm to 25 gpm and the possibility of a high volume well.

This report is offered to assist those involved with the plat review and is not an expressed or implied warranty that productive water wells can be in fact be developed at any specific location.

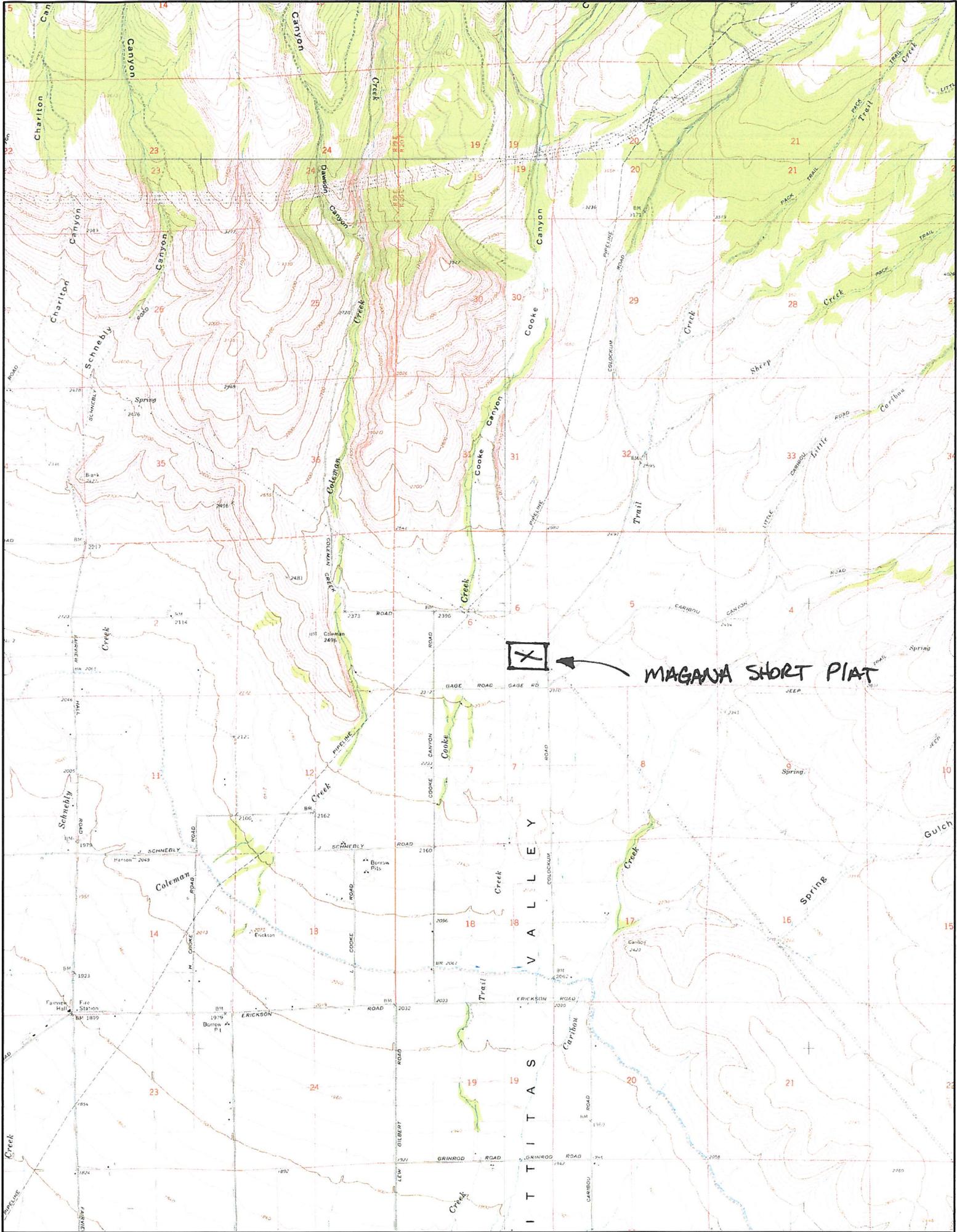
Thank you for the opportunity to be of service in this matter. If you have any further questions regarding this report, please feel free to contact me.

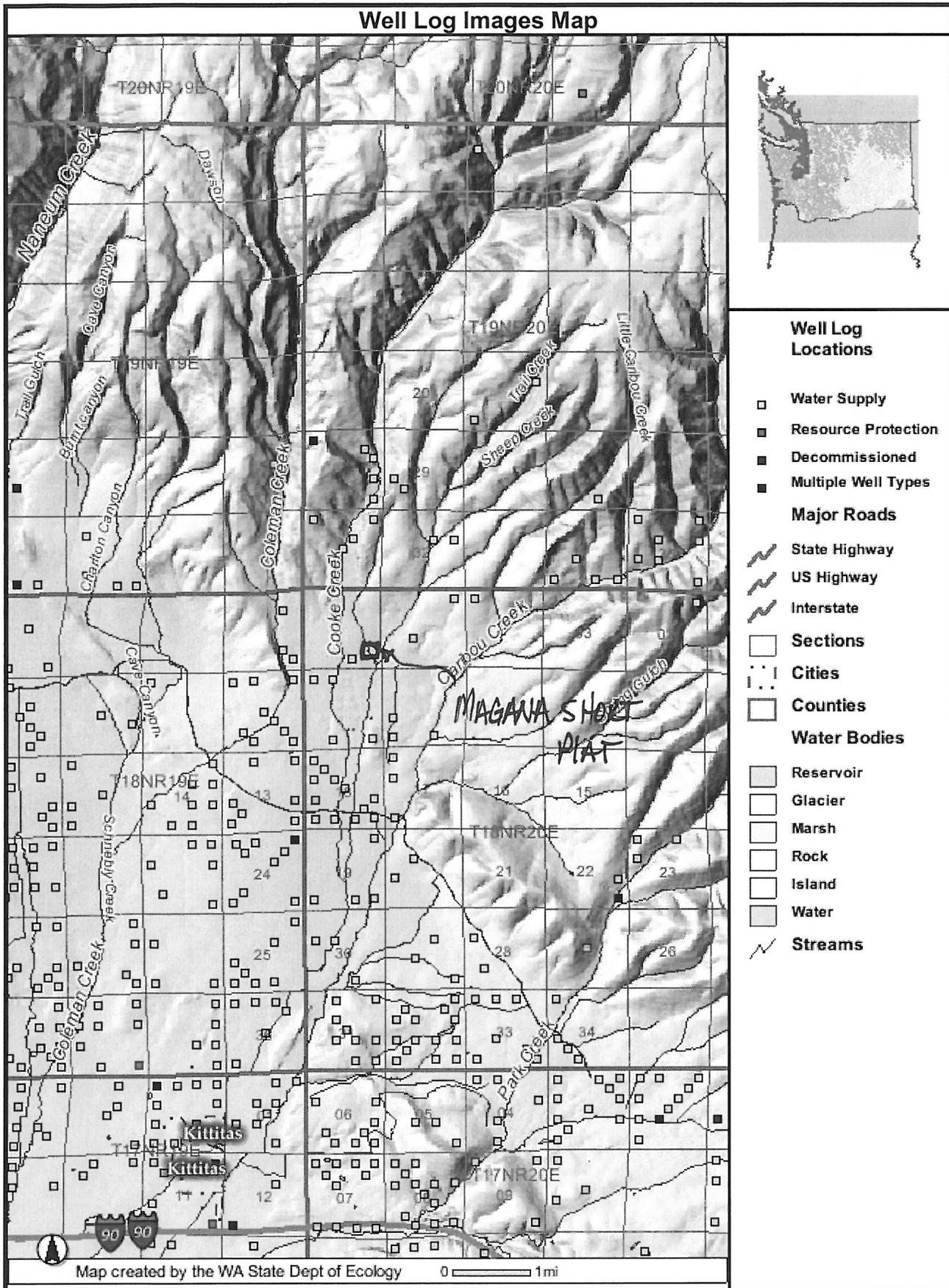
Sincerely yours,

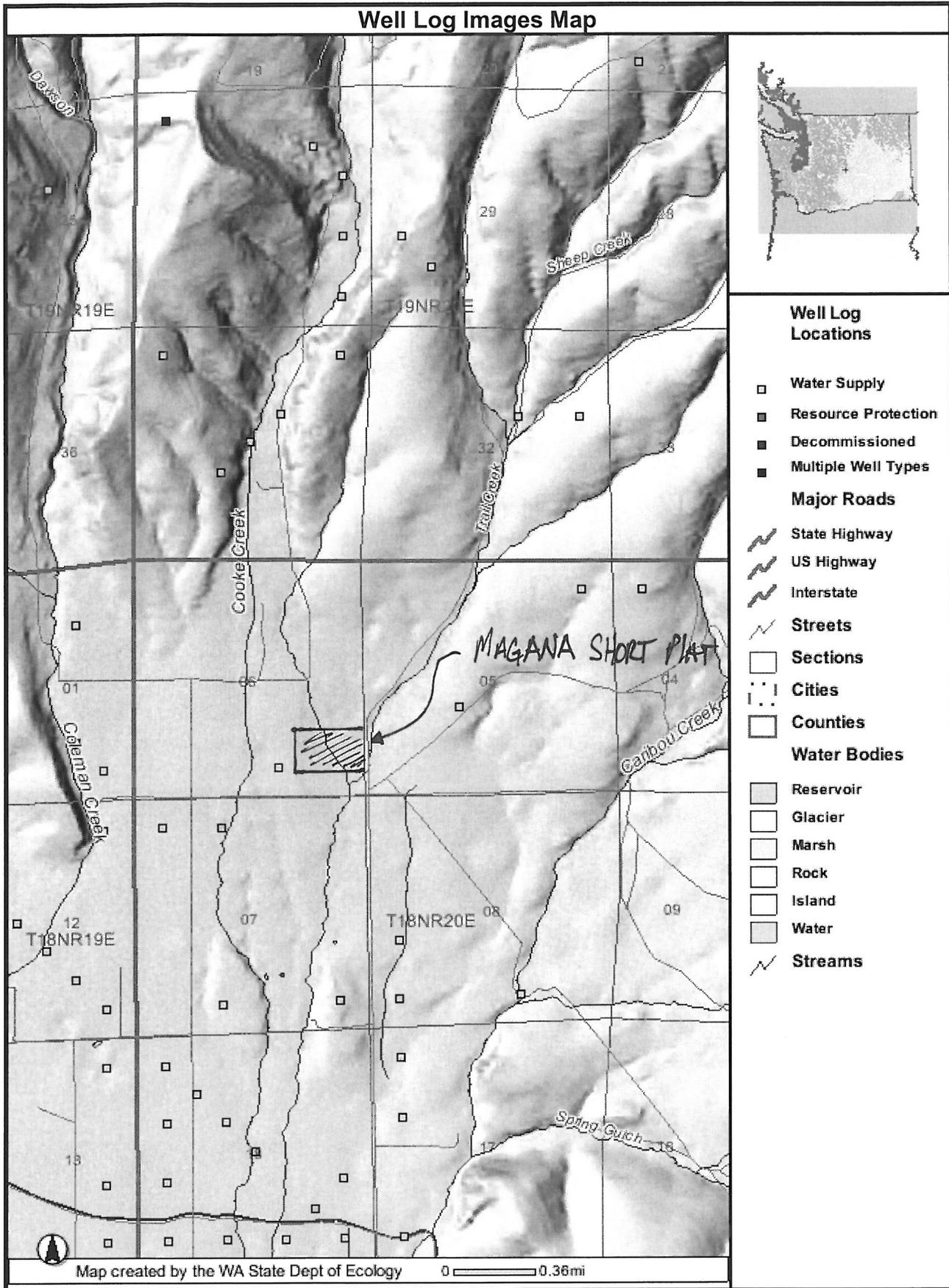


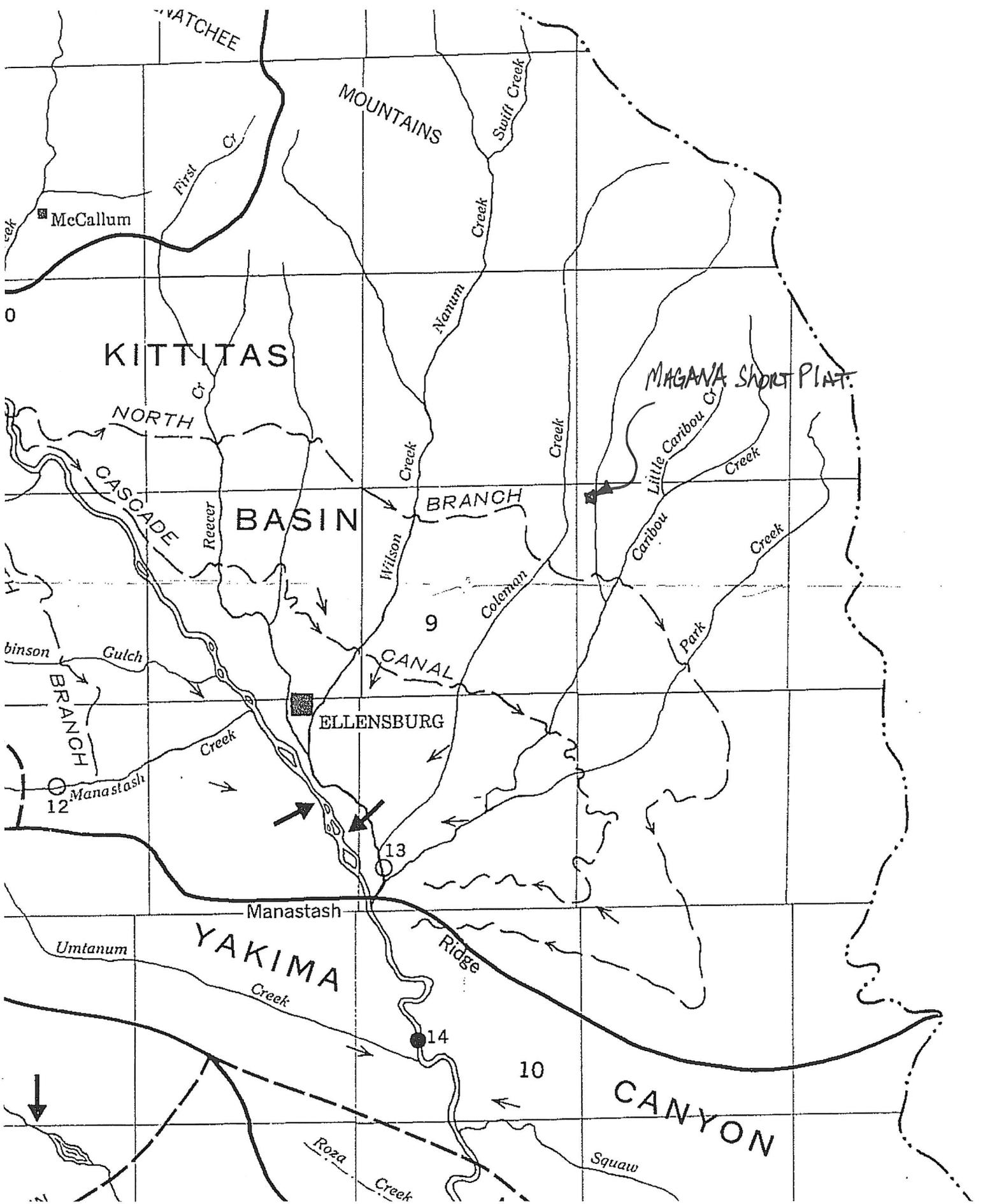
Michael R. Heit, P.E.
Design Engineer

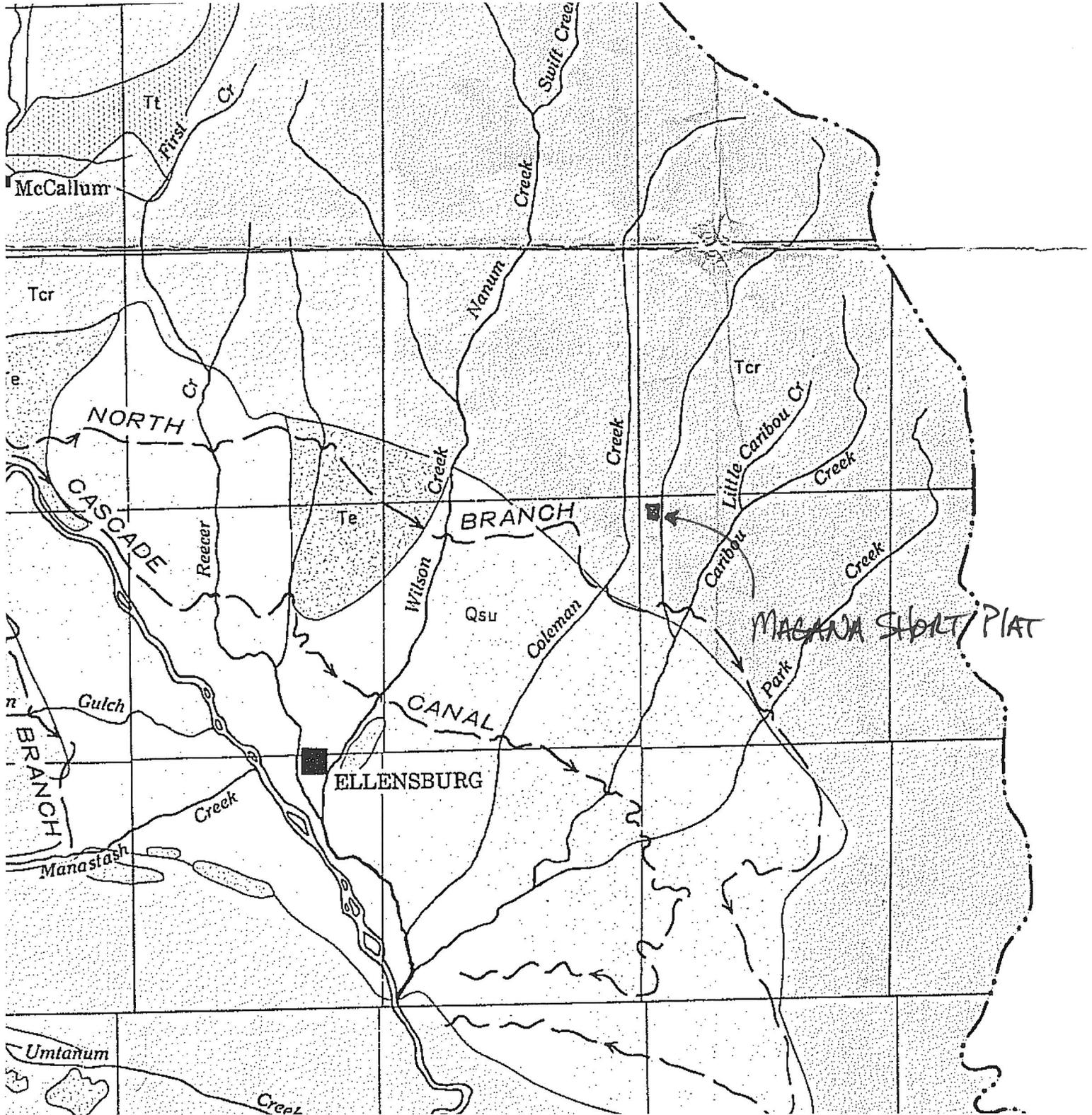
Attach- Well Logs, Geologic Map cut out, Geographical Map cut out, Hydrologic Map cut out











43196

WATER WELL REPORT

STATE OF WASHINGTON

Start Card No. W058539
 UNIQUE WELL I.D. # ABL 780

Water Right Permit No. _____

(1) OWNER: Name Powell Address 290 Gage Rd Ellensburg WA

(2) LOCATION OF WELL: County Kittitas NE 1/4 NW 1/4 Sec 7 T. 18 N. R. 20 W.M.

(2a) STREET ADDRESS OF WELL (or nearest address) Gage Rd. Ellensburg

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

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

(5) DIMENSIONS: Diameter of well 6 inches.
 Drilled 260 feet. Depth of completed well 250 ft.

(6) CONSTRUCTION DETAILS:
 Casing installed: 6 ft. Diam. from 151 ft. to 151 ft.
 Welded Liner installed 4 1/2 ft. Diam. from 72 ft. to 250 ft.
 Threaded

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 _____ H.P. _____
 Type: _____

(8) WATER LEVELS: Land surface elevation above mean sea level _____ ft.
 Static level 147 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: _____ 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)

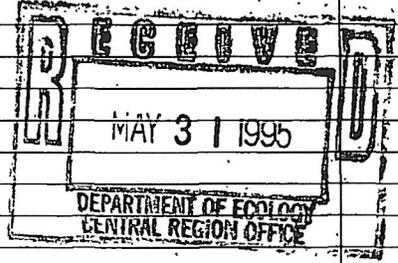
Time	Water Level	Time	Water Level	Time	Water Level

 Date of test _____
 Bailor test _____ gal./min. with _____ ft. drawdown after _____ hrs.
 Airtest 15 gal./min. with stem set at 250 ft. for 1 hrs.
 Artesian flow _____ g.p.m. Date _____
 Temperature of water _____ Was a chemical analysis made? Yes No

(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION

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

MATERIAL	FROM	TO
TOP Soil	0	7
Brown Clay & cobbles	7	34
Yellow Clay & gravel	34	136
Yellow clay & Fractured Basalt	136	207
Brown Clay & gravel	207	257
Sand & gravel & water	257	254
gray Basalt	254	260



Work Started 4-29 19. Completed 5-3 1995

WELL CONSTRUCTOR CERTIFICATION:

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

NAME MATHEWS Drilling (PERSON, FIRM, OR CORPORATION) (TYPE OR PRINT)
 Address 9455 Stone Crest Rd. M.L.C.
 (Signed) Math Mather License No. R67
 (WELL DRILLER)

Contractor's Registration No. MATHEPC117BC Date 4-4 1995

(USE ADDITIONAL SHEETS IF NECESSARY)

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Water Well Report

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

Construction/Decommission

Construction **311984**
 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 Deepened
Method: Dug Bored Driven
 Cable Rotary Jetted

DIMENSIONS: Diameter of well 6 inches, drilled 265 ft.
Depth of completed well 265 ft.

CONSTRUCTION DETAILS
Casing Welded 6" Diam. from +2 ft. to 143 ft.
Installed: Liner installed 4" Diam. from -10 ft. to 265 ft.
 Threaded _____ Diam. from _____ ft. to _____ ft.

Perforations: Yes No
Type of perforator used skill saw 235-265
SIZE of perfs 6 in. by 8 in. and no. of perfs 107 from 235 ft. to 265 ft.

Screens: Yes No K-Pac Location 230'
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 _____
Materials placed from _____ ft. to _____ ft.

Surface Seal: Yes No To what depth? 30 ft.
Material used in seal Benonite
Did any strata contain unusable water? Yes No
Type of water? _____ Depth of strata _____
Method of sealing strata off _____

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

WATER LEVELS: Land surface elevation above mean sea level _____ ft.
Static level 124 ft. below top of well Date _____
Artesian pressure _____ lbs. per square inch Date _____
Artesian water is controlled by _____ (cap. valve, etc.)

WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes No -If yes, by whom? _____
Yield: _____ 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 _____
aprox 75 gpm
Air Lift
Date of test _____

Bailer test _____ gal./min. with _____ ft. drawdown after _____ hrs.
Airtest 75 gal./min. with stem set at 260 ft. for 1 hr hrs.
Artesian flow _____ g.p.m. Date _____
Temperature of water _____ Was a chemical analysis made? Yes No

Current Notice of Intent No. W 269205
Unique Ecology Well ID Tag No. BAF 794
Water Right Permit No. _____
Property Owner Name Larry McDonnell
Well Street Address 530 gagerd
City Ell. County Kittitas
Location nw 1/4-1/4 Sec 7 Twp 18 R 20 EWM or WWM circle one
Lat/Long (s, t, r) _____ Lat Deg _____ Lat Min/Sec _____ d
still REQUIRED) Long Deg _____ Long Min/Sec _____
Tax Parcel No. 1820070000025

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
topsoil Br m	0	3
Cem grav. w clay bl br mt	3	80
cem grav w clay bl br mt	80	136
cem grav bl br mt	136	209
Basalt Gray H	209	233
frac Basalt bl br mt	233	265

RECEIVED

SEP 10 2008

DEPARTMENT OF ECOLOGY - CENTRAL REGIONAL OFFICE

Start Date 8/18/08 Completed Date 8/30/08

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) Stewemills
Driller/Engineer/Trainee Signature [Signature]
Driller or trainee License No. 1333

Drilling Company Waterman Well Drilling Inc
Address PO Box 246
City, State, Zip Selah wa 98942

IF TRAINEE.
Driller's Licenséd No. _____
Driller's Signature _____

Contractor's Registration No. WATERMW94201A Date 8/30/08
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