ECOLOGY WATER WELL REPORT

Why do they need it? What is done with the info?



The slides in this presentation get tedious

 If you find it difficult to both listen and read or if you want to avoid taking notes about the information on the slides, the Power Point presentation can be accessed on the Robinson Noble web page at:

www.robinson-noble.com

It has become a complicated form

Much info – all important to someone

- Location is important to • technical people
- Certification is important to customers, regulators and BANKERS
- Test data is important to pump installers
- Geologic/hydrogeologic descriptions are important to scientists

The newest version

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Use for technical studies

- The well logs are the most basic information there is for discussing the subsurface conditions
- If the location is wrong the interpretation is wrong
- If subsequent information cannot be properly associated with the correct well – the interpretations suffer
- + THE INTERPRETATIONS CAN LEAD TO <u>LAWS</u>

Many different entities use your information

≊USGS

Prepared in cooperation with Spokane County

Hydrogeology of the Little Spokane River Basin, Spokane, Stevens, and Pend Oreille Counties, Washington



Spokane County Comprehensive Plan 2012 Printing

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DIVISION OF WATER RESOURCES Rovery G. Weiking, Superchar

Water Supply Bulletin No.8

Geology and Ground Water Resources of the Columbia Basin Project Area, Washington

Volume I

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Company Hart with STATES GEOLOGICAL SURVEY DUND WATER BRANG

These studies are the basis of many things

- They are the basis of Ecology Rules
- They are the information upon which many drilling projects are based
- They are (all too seldom) the basis of legislation
- They define the world in which water resources are developed and managed
- IF YOUR INFORMATION IS WRONG ...

Who else uses this info

- If a public system, the WDOH and respective County Health agencies depend on the information to track the wells within their jurisdiction
- Identifying the correct well within a sea of paperwork can be a challenge
- "Knowing" how much water is "available" can be tricky

Today we will look at the form as separate blocks of related information

- The upper right portion provides well identification/location info
- The upper left and middle left are construction info
- The lower left is production/testing info
- The middle right is geologic info
- The bottom is the certification information

	WELL REPORT
Construction/Decommission	State of Washington
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Decommission Original Installation	Notice of Injout No.
Nucleo of Intent Number	Unique Ecology Well ID Tag No.
Proposed Lot: Domestic E federarial Distributed	She Well Name (Private than the well)
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The intent is to go through each block We have time so let's deal with questions/comments as they occur

- Some of the information is straightforward reporting of what you know
- Some is intended to facilitate use by others – location for instance
- Some requires info that is important but more difficult to provide
- Some is important to the regulatory compliance issues – for both you and the well owner

Block 1 – Site description and location

IRRENT

- Some is regulatory tracking
- Some is to properly map the well
- Google Earth
 is your friend
 and its free

Notice of Intent No.	
Unique Ecology Well ID Tag No.	
Water Right Permit No.	
Property Owner Name	
Well Street Address	
City County	
Location 1/4-1/4 1/4 Sec Twn (s, t, r Sdll REQUIRED)	R EWM C Or WWM C
Lat/Long Lat Deg Long Deg	Lat Min/Sec
Tax parcel No. (Required)	

Regulatory needs in block 1

- Water resource management happens at several levels
- NOI is the tracking method for well placement
- Water right number is the tracking for water allocation efforts
- Unique Well ID is an on the ground way to know you are at the correct well in the field and in the records

Unique Well ID – it is what it claims

- There is a purpose
- Owners change, well
 names change
- Locations are not precise
- New information is added through time
- The tag makes the well identifiable in the field



Latitude / Longitude

- This used to be difficult Google Earth makes it simple
- Download to your computer
- If you like, you can go to any library and use it to get accurate lat/long and elevation
- There is no excuse to not know or to not enter this info

Typical Google Earth screen

- You entered the address
- This came up (pretty much any place on Earth)
- Zoom in to the site
- Place cursor on the well site
- Lat/long and elevation is on the bottom of screen



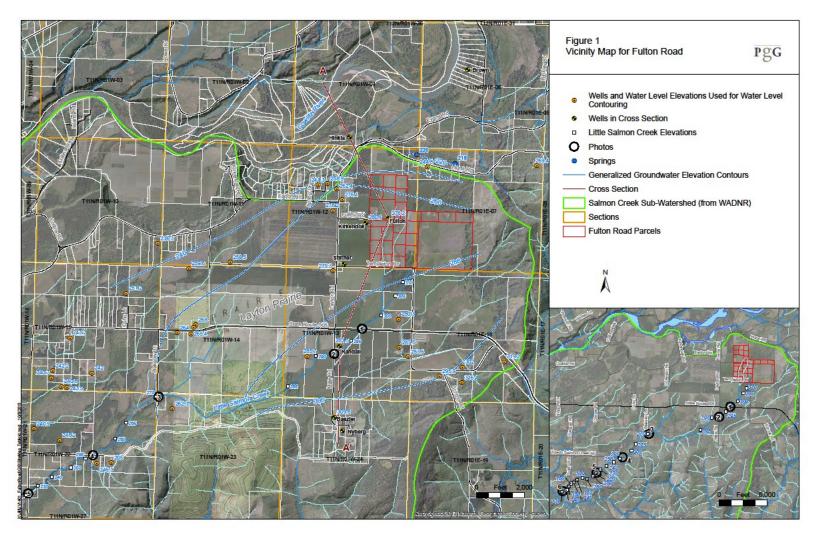
<u>A secret about "degrees" versus</u> <u>"degrees, minutes and seconds"</u>

- Starting with 122 degrees, 15 minutes and 30 seconds
- Work backward 30 seconds/60 = 0.5 min or 117 degrees 15.5 min
- 15.5 min/60 = 0.258333 degrees
- This leaves 122.258333 degrees
- The two versions give the same location

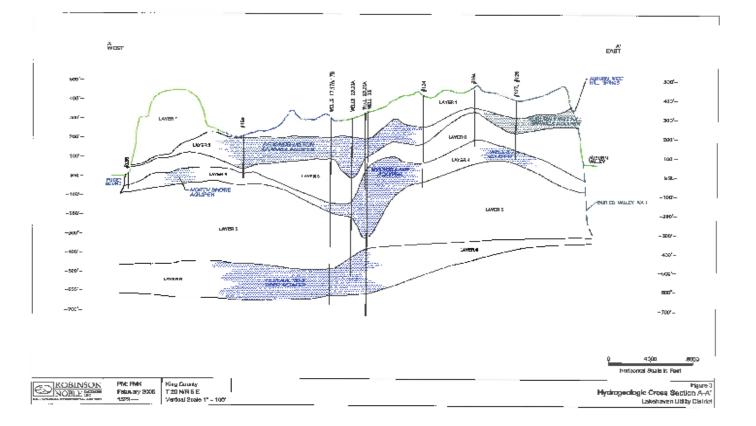
What does Ecology do with this information

- There is a well-drilling file that begins with the NOI goes through the submittal of the well log and gathers additional info if an owner provides it – pumps, water level info production info, etc. – IT IS A REFERENCE DEVICE
- When questions arise for various reasons in managing the well or the local groundwater resource this is used

The location is critical to the technical uses



Three dimensions – you give the third



WHO MAKES THESE INTERPRETATIONS?

- Hydrogeologists Ecology, USGS, USCoE, US bureau of Rec, Private sector consultants, Academics, et. al.
- Regional hydrogeologic studies depend on well logs
- More and more political entities commission studies by Universities and Think Tanks that depend on well logs
- IF YOU GIVE THEM UNRELIABLE INFORMATION, THEY WILL STILL PUBLISH RESULTS – AND SOME REGULATOR OR LEGISLATOR WILL BELIEVE IT
- THE QUALITY OF THE LOCATION INFO AND
 TRACKING INFO IN YOUR REPORT MATTERS

Block 2: Drilling Project Decription

- Provides general drilling info – used to sort logs
- This information provides context for the user of the log

WATER WELL REPORT Original & 1" copy - Ecology, 2" copy - owner, 3" copy - driller Construction/Decommission ("x" in circle) Construction Decommission ORIGINAL INSTALLATION			
Notice of Intent Number			
PROPOSED USE: Domestic Industrial Municipal DeWater Infigation Test Well Other			
TYPE OF WORK: Owner's number of well (if more than one) New well Reconditioned Method: Dug Bared Driven Cable Rotary Jetted			
DIMENSIONS: Diameter of well inches, drilledft.			
Depth of completed wellft.			
CONSTRUCTION DETAILS			
Casing Welded Diam. from ft. to ft.			
Installed: Lincr installed Diam. from ft. to ft.			
□ Threaded Diam. From ft. to ft.			

How a well is drilled gives us insights

- What can be known from a cable-tool rig is different from what can be known from air-rotary (or sonic, or mudrotary, or auger, or . ..)
- Describing how you drill it matters



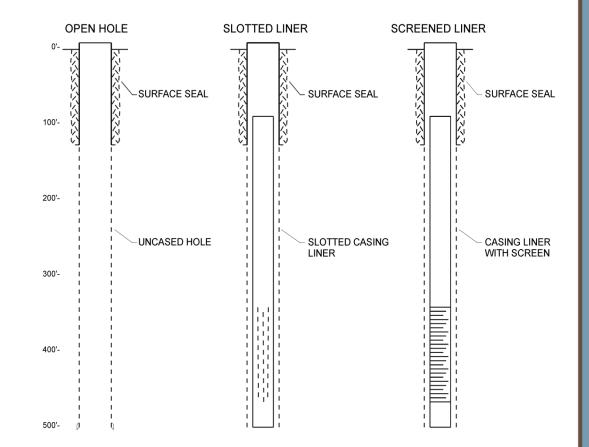
Block 3: Well Completion Info

- Basic information regarding completion of the well
- The information informs the user and helps interpretation

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	
Type Model No	
Diam. Sotsize from ft. to ft.	
Diam. Slot size from ft. to ft.	
Gravel/Filter packed: Yes No Size of gravel/sand	
Materia ls place d from fl. to fl.	
Surface Scal: Yes No To what depth? 8.	
Materia lused in seal	
Did any strata contain unusable water?	
Type of water? Depth of strata	
Method of scaling strata off	

Completion info is important to those who follow you

- The pump installer
- The owner
- The driller who works on the well later
- The regulatory folks



Accurate completion information matters

 To the people who need to address adequacy of the well – regulatory, lenders, pump installers

 To the next guy who works on the well – redevelopment, new pump, TV scan

• To the customer and to you

Block 4: Water Related Information

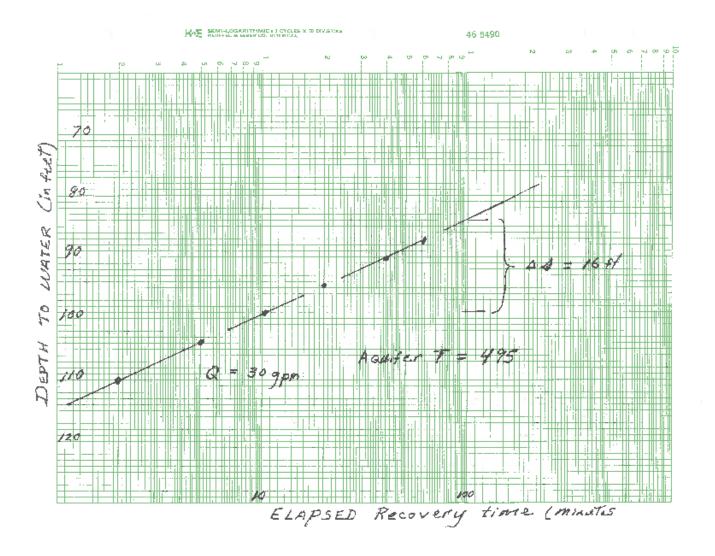
- Info of SWL, pumping rate/dd, and recovery is critical to describing the groundwater resource
- Many interpretations depend upon it
- AND BELIEVE IT!

PUMP: Manufacturer's Name
Type: H.P
WATER LEVELS: Land-surface elevation above mean sea levelft.
Static level fl. below top of well Date
Artesian pressure lbs. per square inch Date
Artesian water is controlled by (cap, valve, etc.)
WELL TESTS: Drawdown is amount water level is lowered below static level
Was apump test made? Yes No If yes, by whom?
Yield: gs1/min. with fl. drawdown after hrs.
Yield: gal/min. with fl. drawdown after hrs.
Yield: gal/min. with fl. drawdown after hrs.
Recovery data (time taken as zero when pump terned 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 hts.
Airtestgal./min. with stem set atfl. forhrs.
Artesian flow g.p.m. Date
Temperature of water Was a chemical analysis made?

Test data informs many people

- Technical people describing the hydrogeology of a site or a region
- Regulatory people determining "water availability", building permit issuance, water right issuance, etc.
- Your customer permits, mortgage loans, disclosures upon sale of property, etc.

That recovery data you seldom provide



Block 5: Drilled Material

- This is critical at several levels
- It supports the completion and testing sections
- It is the basis for geologic and hydrogeologic studies
- It provides info for well issue interpretations

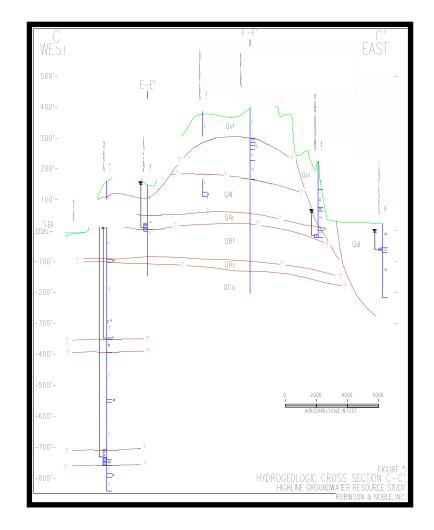
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GEOLOGIC INTERPRETATION

- Your described materials are interpreted as "aquifers" and "confining layers"
- Cumulatively these become a description of the hydrostratigraphy of the area
- Then they become the basis for the regional conceptual model
- Sometimes that evolves into a numerical computer model of the region, and
- At times the basis for groundwater regulation

Often, what you tell us is what we tell them

- Geologists use your logs to describe regional relationships
- Cross sections are dependent upon the well logs
- Geology and water level info are critical tools



Block 6: Certification Information

Regulatory Function Important to your customer Important to the lenders

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 Bingineer Trainee Name	Drilling Company
Driller/Engineer/Tminee Signature	Address
Driller or trainee License No.	City, State, Zp
IF TRAINEE: Driller's License No:	Contractor's
Driller's Signature:	Registration No. Date

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

Your customers need to use this document

- For building permits
- For WDOH source approvals
- To secure a
 mortgage loan
- To acquire water rights
- Many other applications



Proper certification information is key THIS IS PART OF YOUR PRODUCT

- Make it accurate
- Make it legally proper
- Make it legible
- Make it as neat as possible

• Tell the customer it is an important document

<u>These forms are important to the</u> <u>Drilling Industry</u>

- You can access them for your drilling jobs
- The informed regulators and legislators make better decisions (in theory)
- The informed consultants and academics will provide better reports
- Better understanding of site hydrogeology provides a better drilling plan and better specifications

<u>I hope this provided some insight into the life</u> of a well log after its birth by your hand

• This is the nexus between the drilling industry and the groundwater resource

• It is depended upon by many

 Some do not know the difference between good information and bad information - IT IS YOUR JOB TO KNOW – DO IT RIGHT