ECOLOGY WATER WELL REPORT

Why do they need it?

What is done with the info?

ROBINSON℠
NOBLE

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:

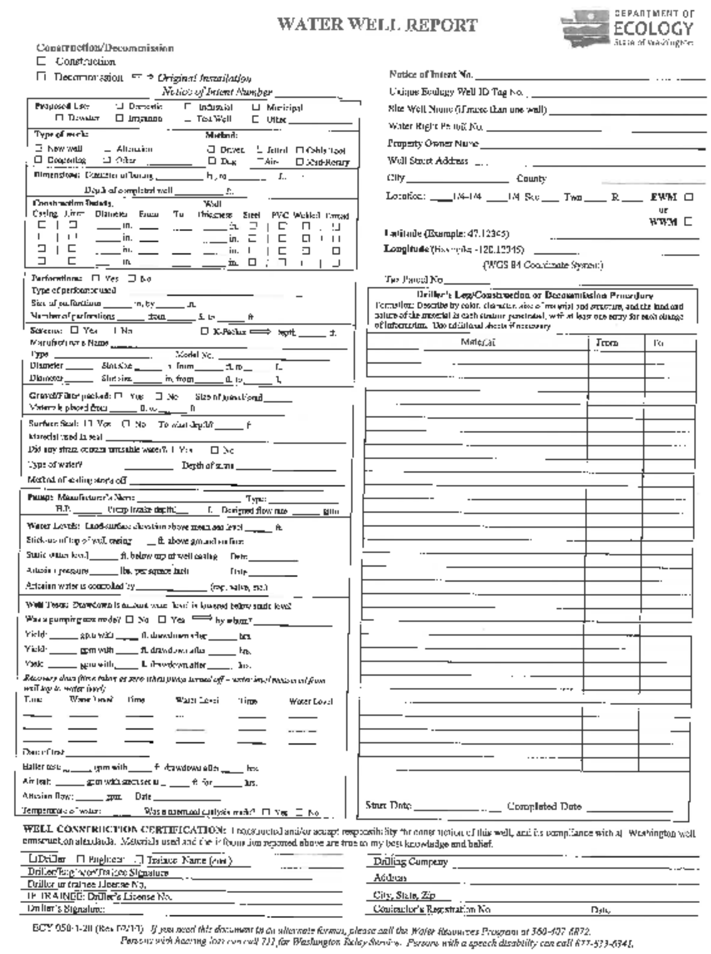
www.robinson-noble.com

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

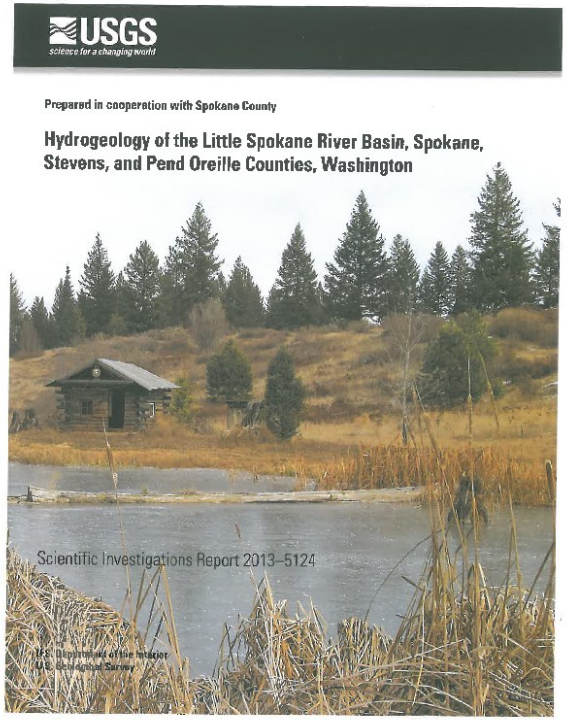
The newest version

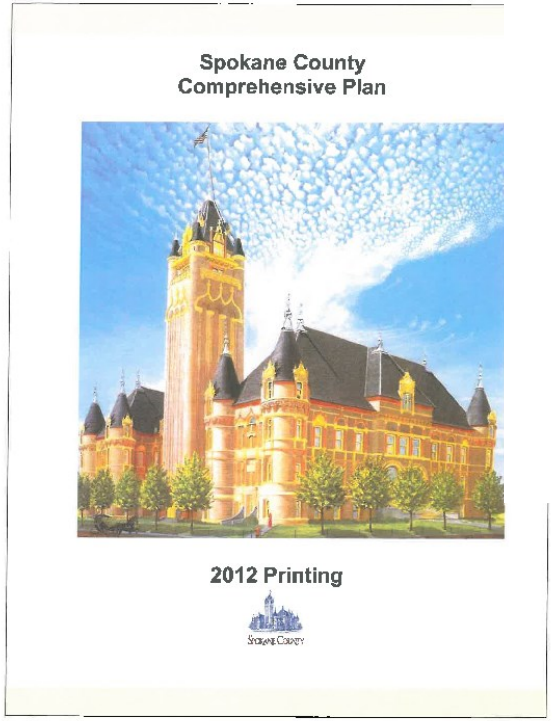


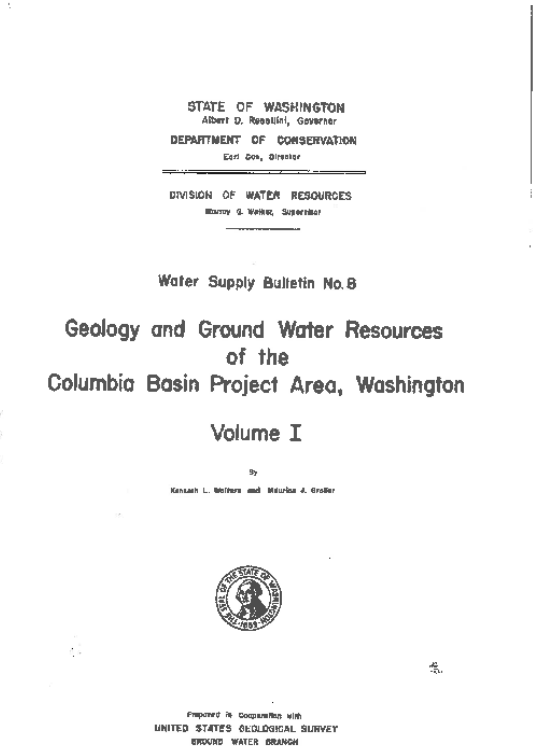
Use for technical studies

- 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 LAWS

Many different entities use your information







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

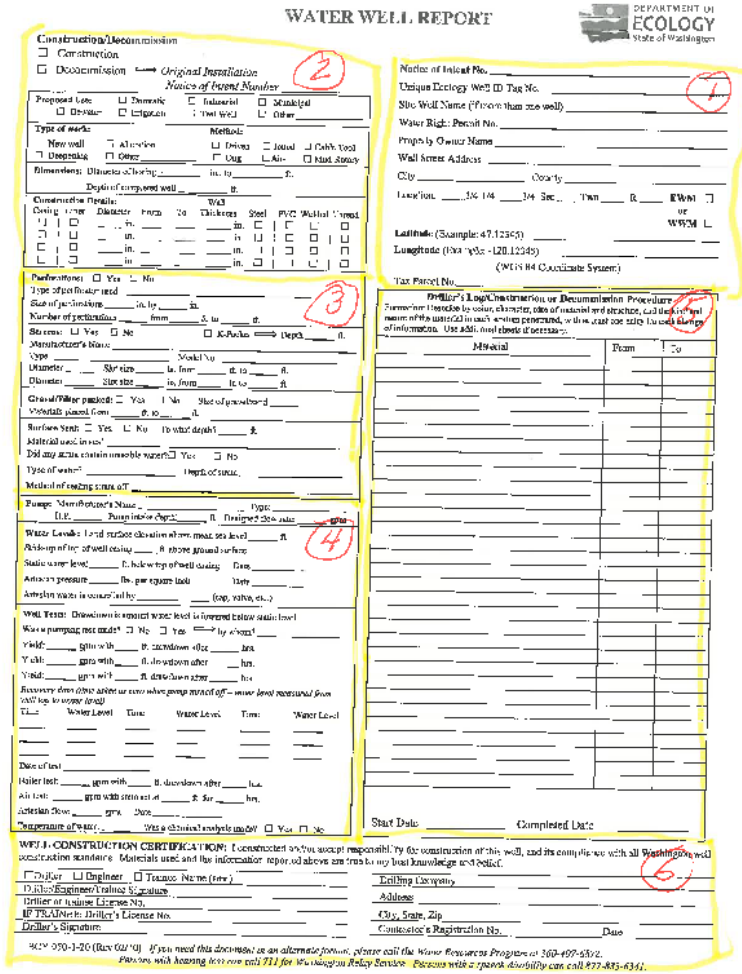
- IF YOUR INFORMATION IS WRONG . . .

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



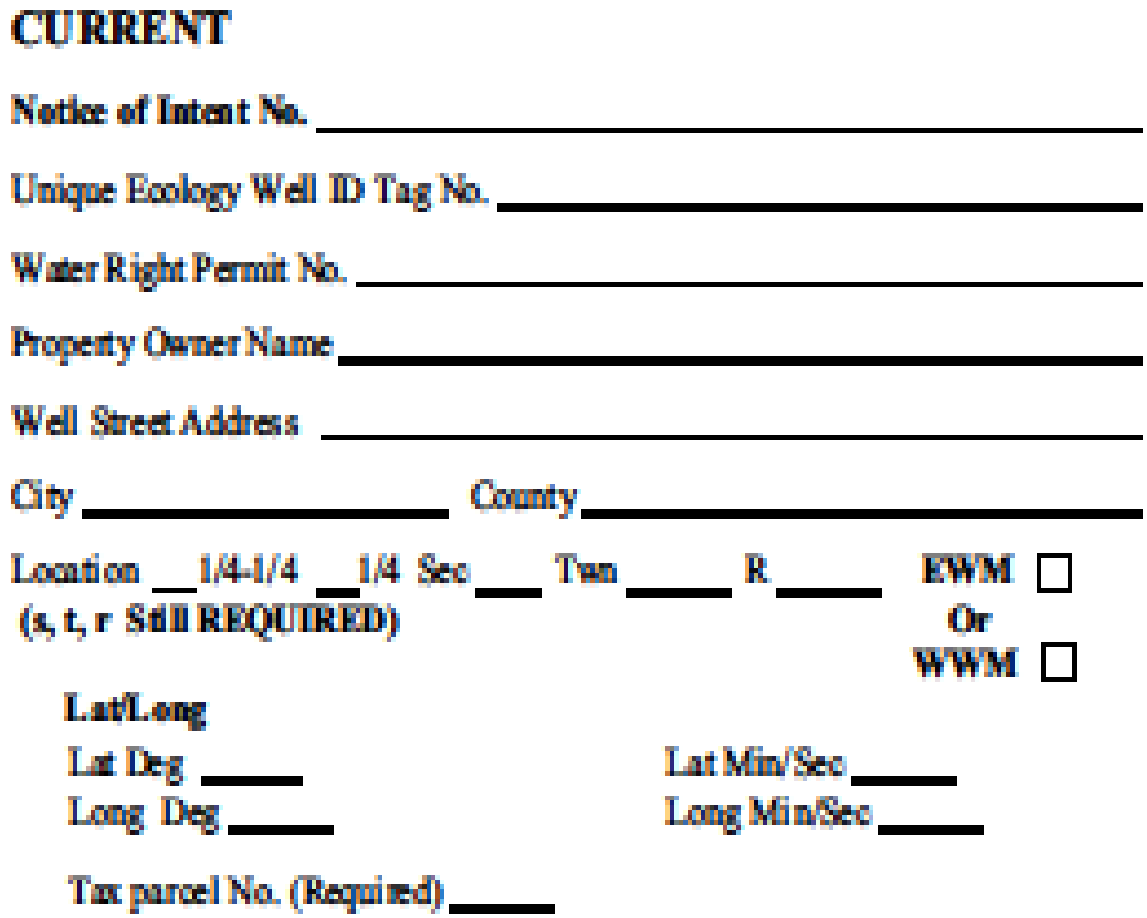
The intent is to go through each block

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

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



CURRENT

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 ____ R ____ EWM ☐
(s, t, r Still REQUIRED) Or
WWM ☐

Lat/Long

Lat Deg ____ Lat Min/Sec ____

Long Deg ____ Long 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

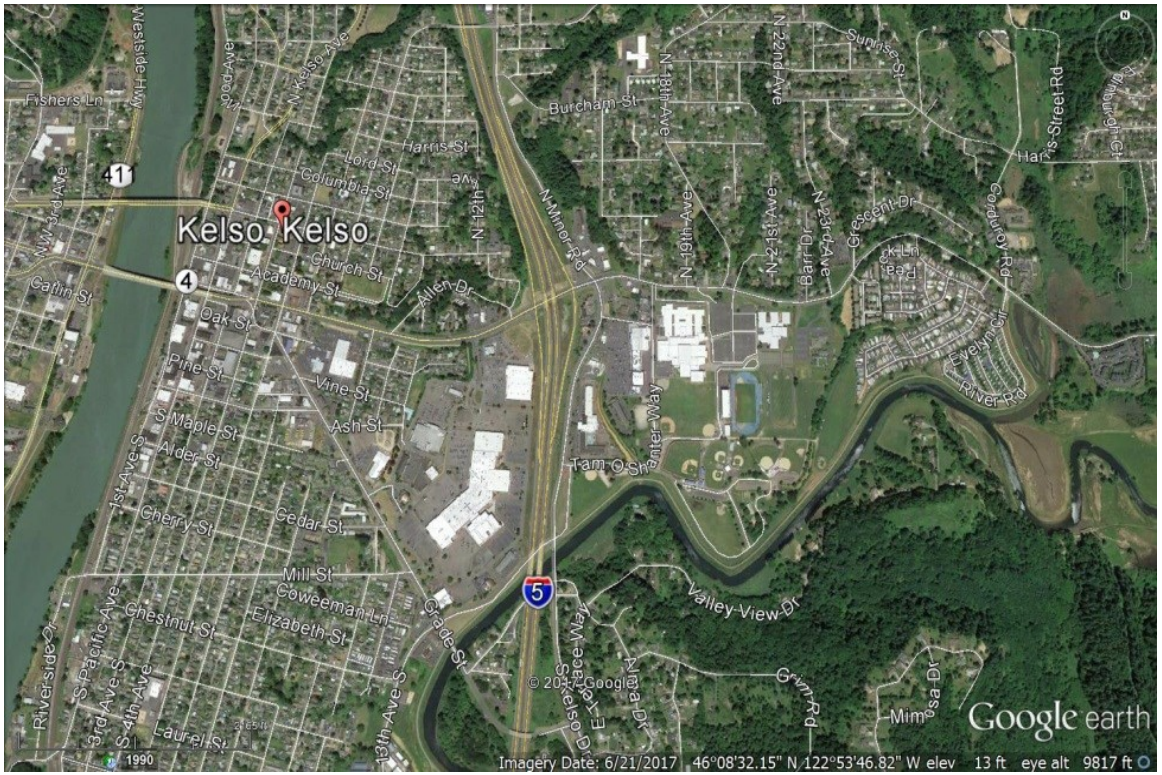
- There is a purpose
- Owners change, well names change
- Locations are not precise
- New information is added through time
- The tag makes the well identifiable in the field

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



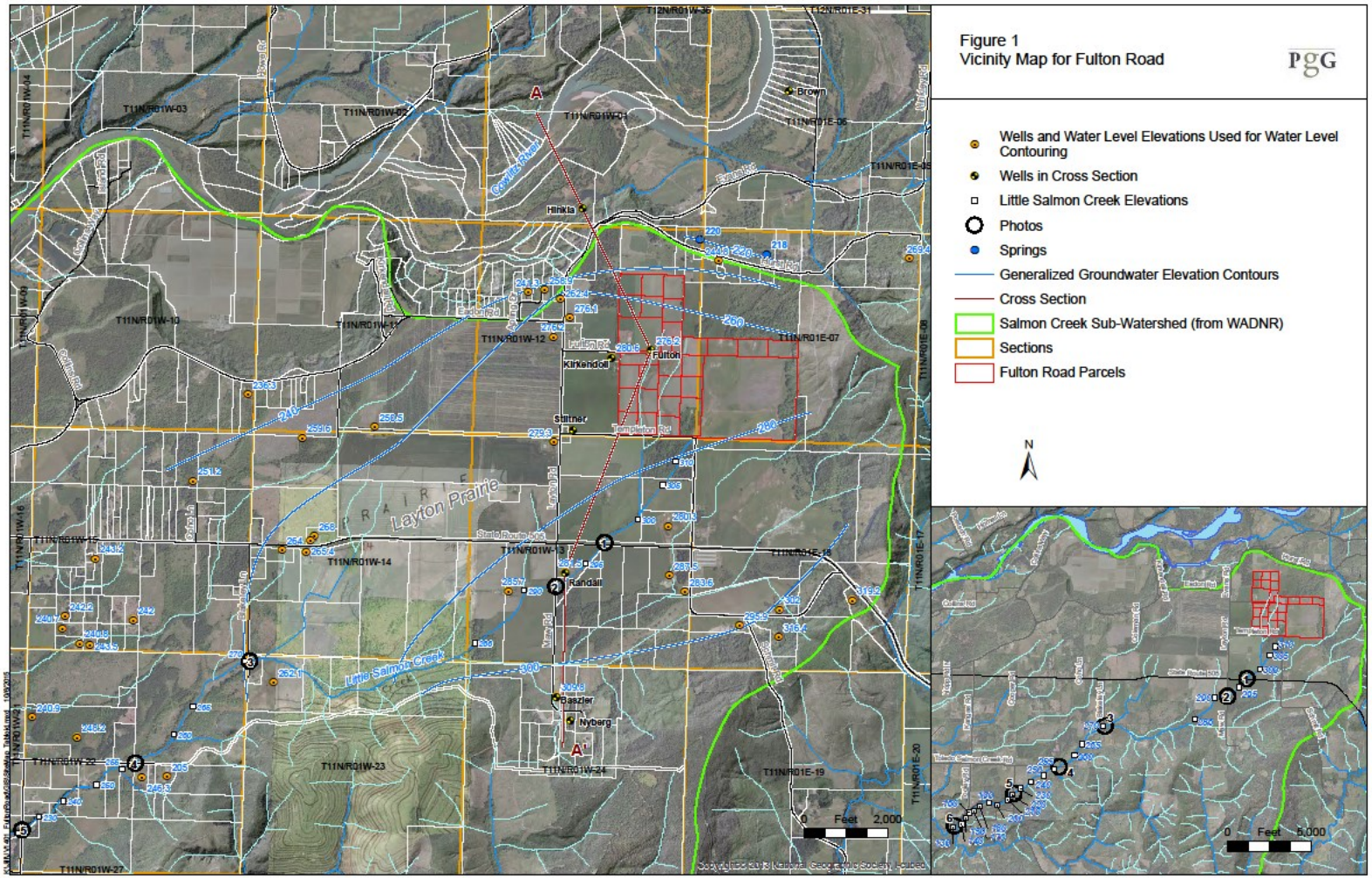
A secret about “degrees” versus “degrees, minutes and seconds”

- 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

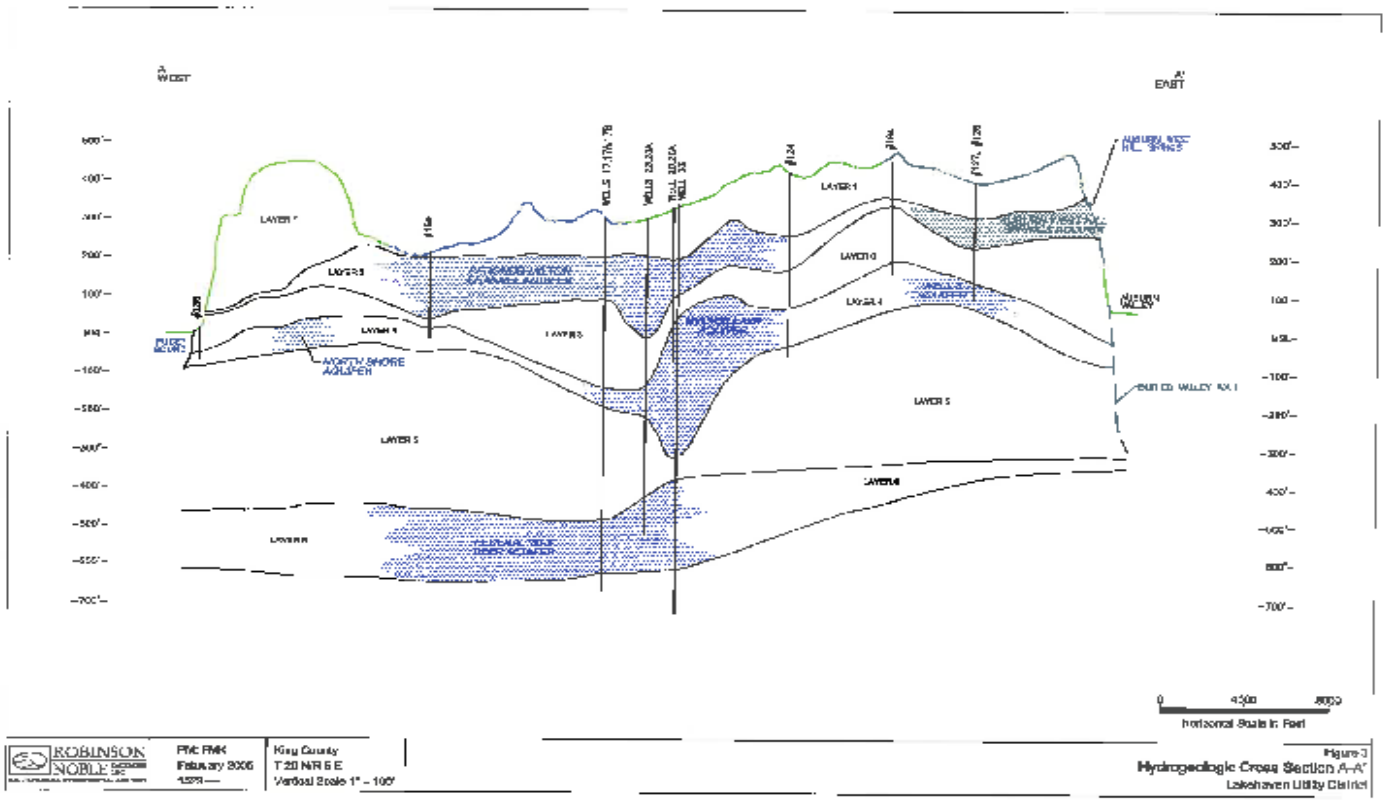
What does Ecology do with this information

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

DEPARTMENT OF ECOLOGY

Construction/Decommission *("x" in circle)*

☐ 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 _____ inches, drilled _____ ft.
Depth of completed well _____ ft.

CONSTRUCTION DETAILS

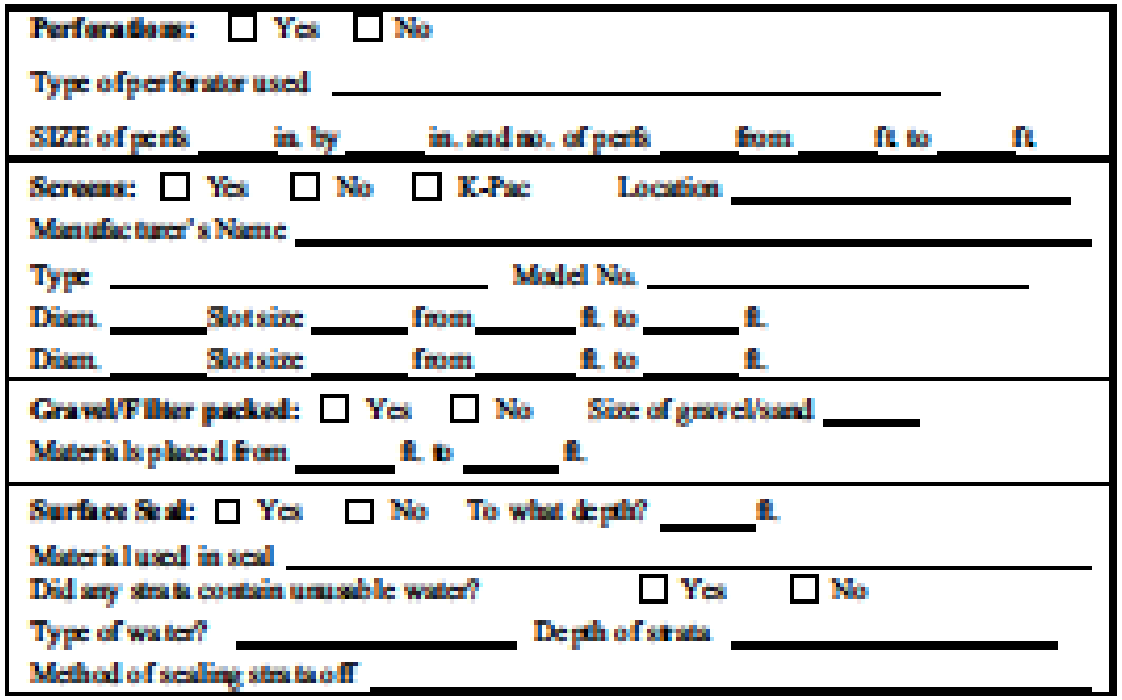
Casing Installed: ☐ Welded _____" Diam. from _____ ft. to _____ ft.
☐ Liner installed _____" Diam. from _____ ft. to _____ ft.
☐ Threaded _____" Diam. From _____ ft. to _____ ft.

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 mud-rotary, 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. ____ Slot size ____ from ____ ft. to ____ ft.

Diam. ____ Slot size ____ from ____ ft. to ____ ft.

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

Material is placed from ____ ft. to ____ ft.

Surface Seal: ☐ Yes ☐ No To what depth? ____ ft.

Material used in seal _____

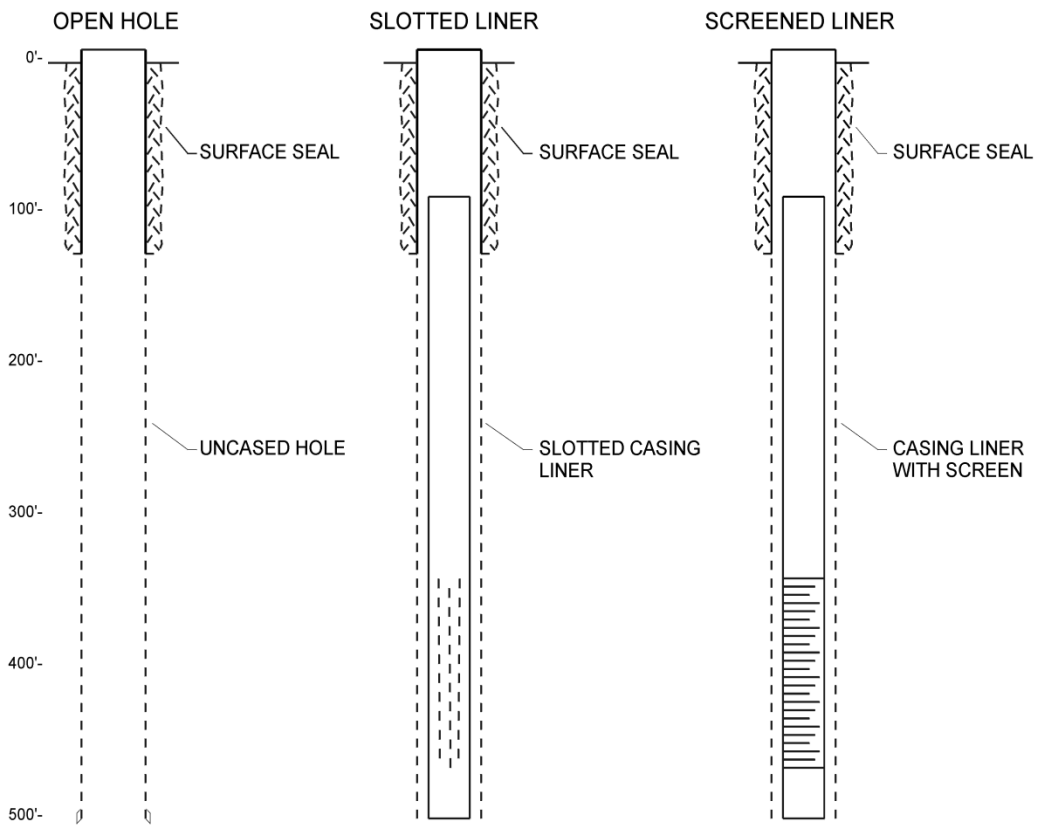
Did any strata contain unusable water? ☐ Yes ☐ No

Type of water? _____ Depth of strata _____

Method of sealing 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

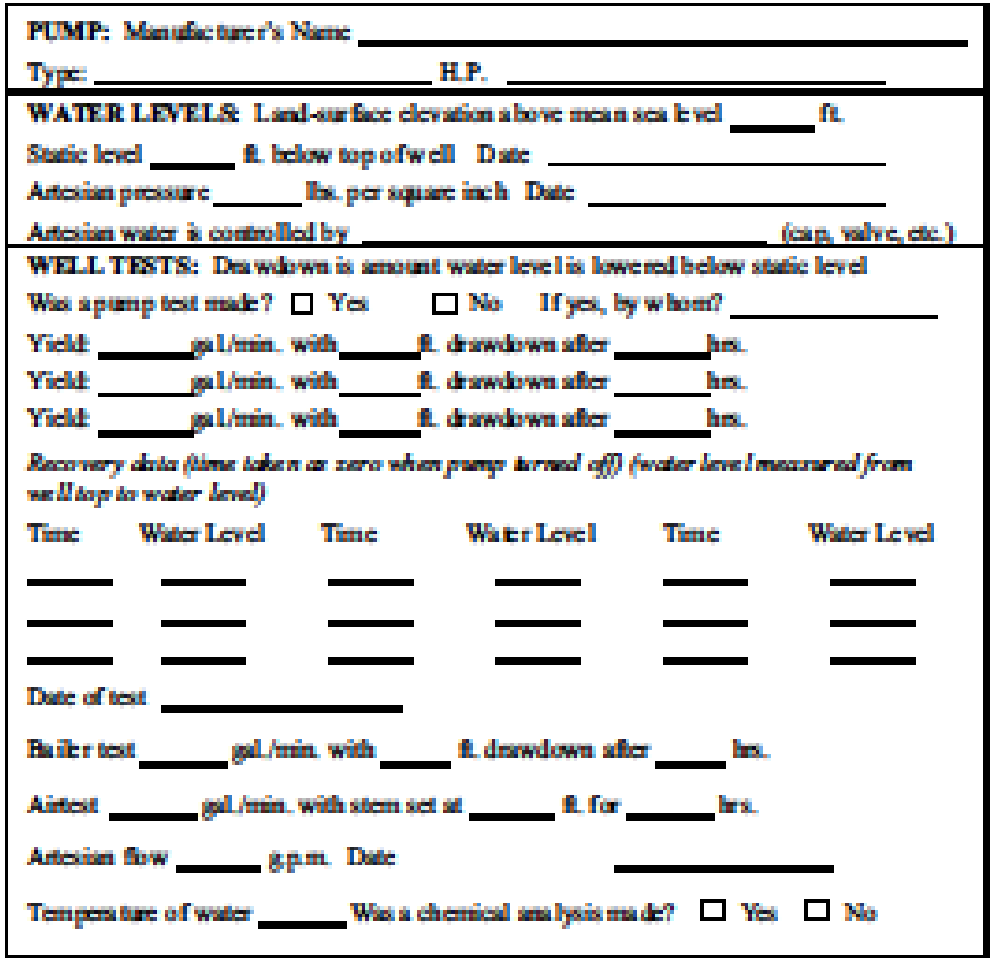


Accurate completion information matters

- 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 level _____ ft.

Static level _____ 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	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.

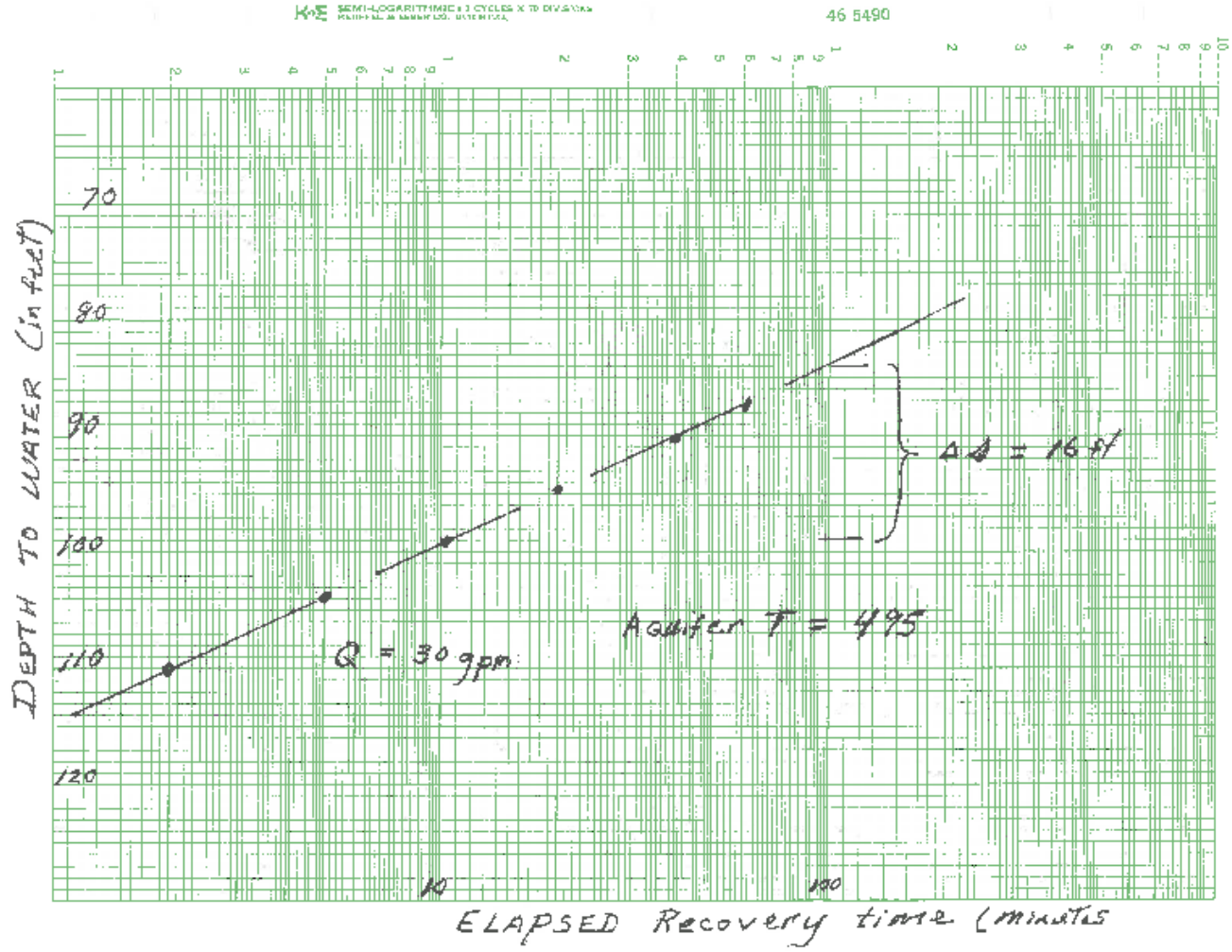
Artesian flow _____ g.p.m. Date _____

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

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

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

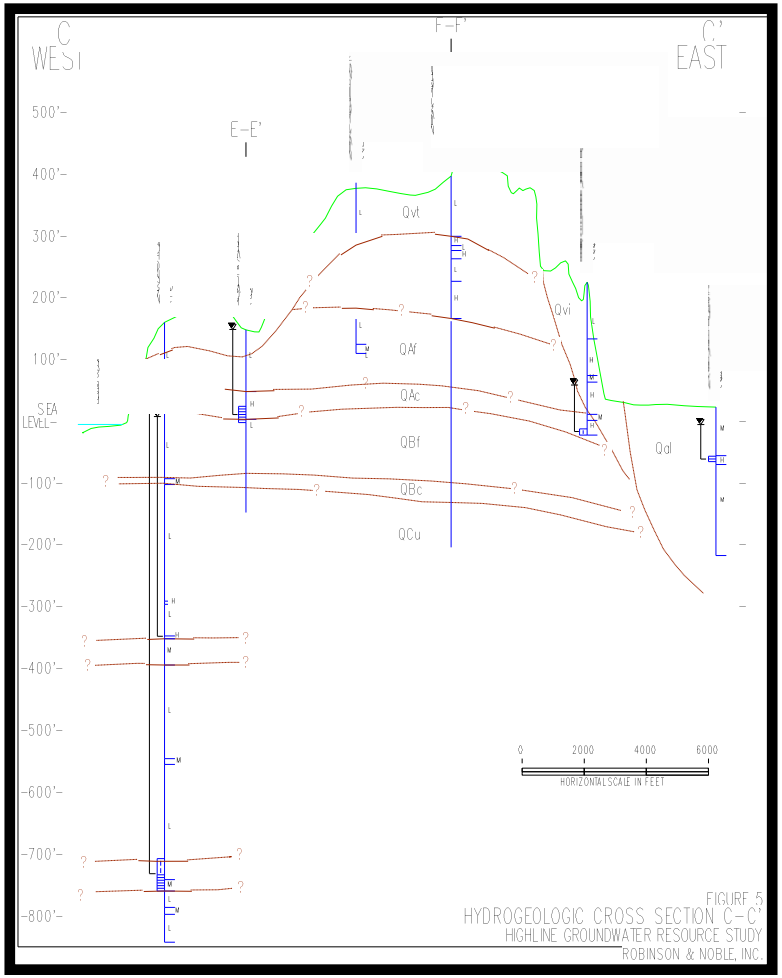
Start Date ____________ Completed Date ____________

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

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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

These forms are important to the Drilling Industry

- 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

I hope this provided some insight into the life 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