WellIntel Groundwater Information System

Site Planning Questionnaire and Checklist

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SAFETY

Follow local codes

Before you install WellIntel, review and understand local electric, plumbing and water well servicing codes and rules that may require professionally trained technicians, if they apply. Code compliance is your responsibility.

Keep the work area clean

Since water wells supply drinking water to people and animals, and water for crops, care should be taken to not introduce contaminants or the opportunity for future contamination while working on, near or in the well. While WellIntel is designed to operate without touching water and is made of food-grade materials that will not contribute to contamination, it is important to make sure that while WellIntel is being installed, the work area, the tools to do the work, and the system itself are kept clean. It is also important that nothing is dropped into the well if it is opened. Wash your hands before during any work to install or service and WellIntel equipment or the well itself.

Turn power off during installation/maintenance

Water wells often have electric pumps in them. So expect to find wires, connectors and electrical infrastructure in and around your well head. There is a risk of severe burns, shock or even death when working around live wires. Before installing WellIntel, find and trip the breaker to the well pump and confirm that the power is off and stays off until work is complete.

Use only WellIntel batteries and accessories

WellIntel provides compatible products and accessories to adapt to local conditions, including plumbing parts like vents, pipe and couplings, power options like AC adapters and solar panels, and other accessories like caps and antenna. Use of non-WellIntel accessories to power a sensor or gateway, transmit data or adapt WellIntel to a well head or internet connection may cause damage to the WellIntel system not covered by warranty.

WellIntel Site and Well Suitability Questionnaire

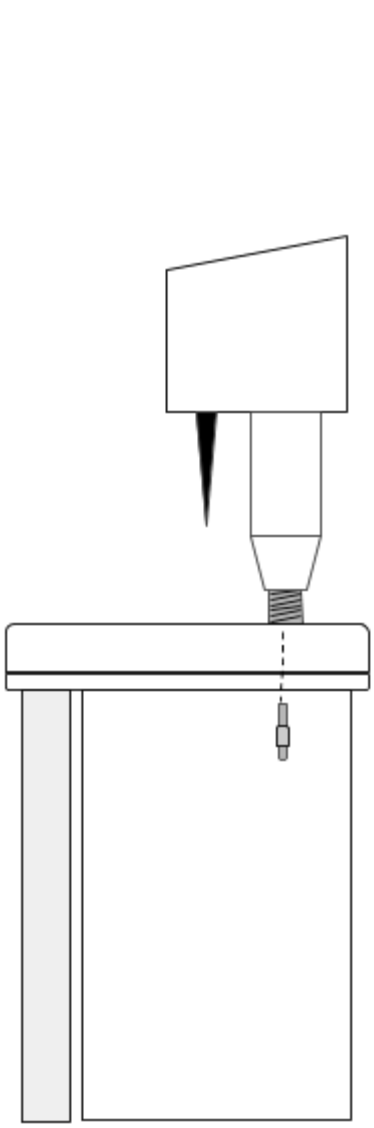
This short interview can help determine well-suitability and necessary options/adaptations to ensure quick and successful installation at a given well.

The questions are:

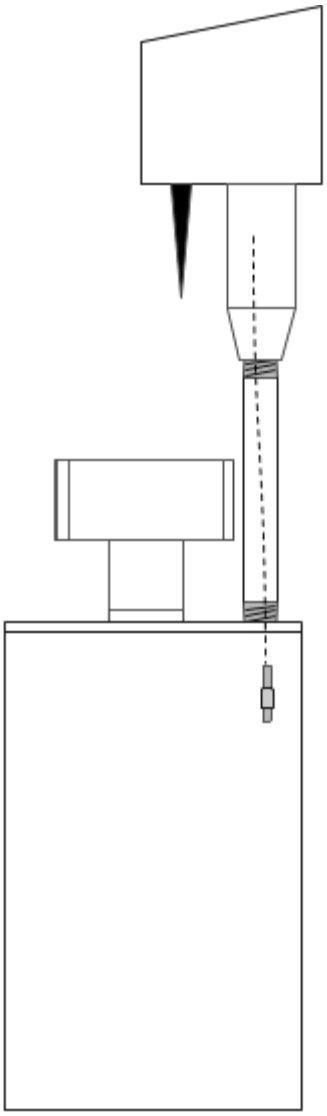
1. Will a WellIntel sensor fit on this well?
2. Will a WellIntel sensor work on this well?
3. What telemetry method will work best for this site?
4. How should this WellIntel sensor be powered?
5. (For sizing) What is the HP/Voltage of the pump in this well? (if there is a pump)

Additionally, this document lists keys to success and possible pitfalls to look for.

Commonly, a WellIntel Sensor is installed on either a Turtle Cap or a Well Seal, as shown.



On a Turtle Cap



On a Well Seal

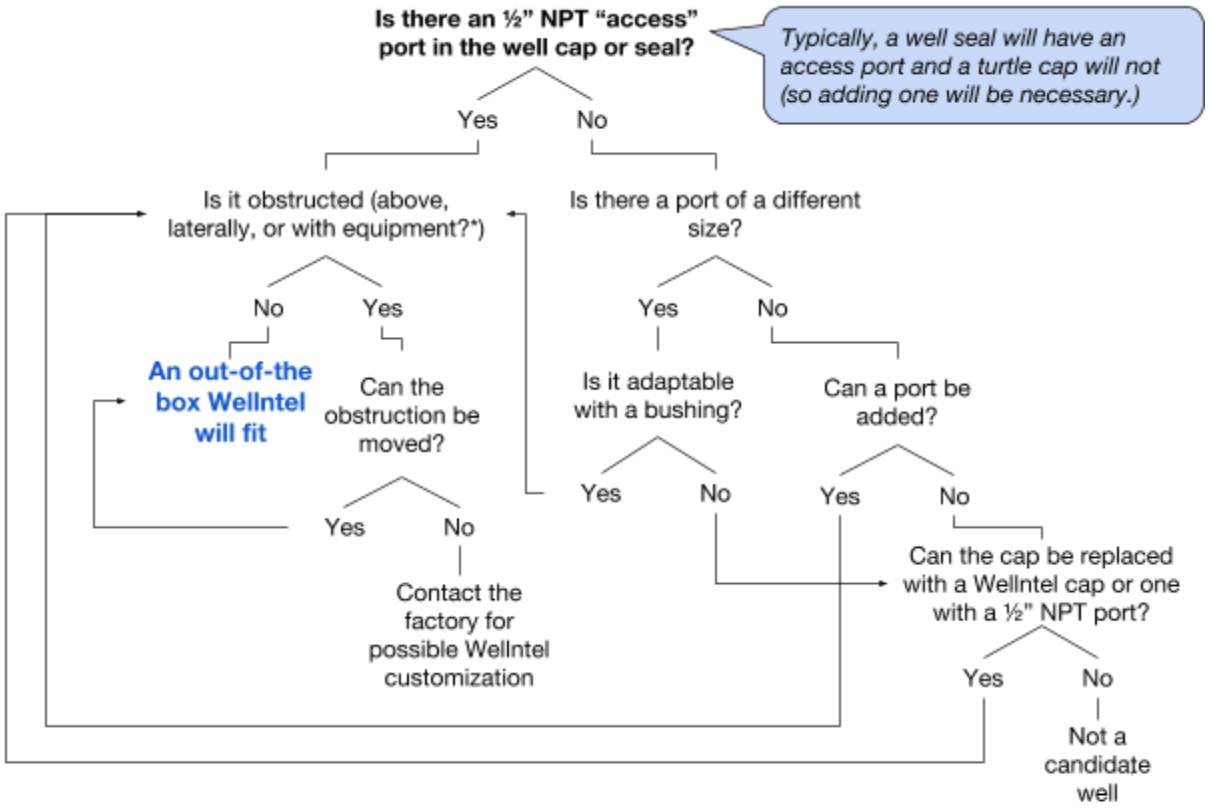
1.) Will a WellIntel Sensor fit on a given well?

Prepare to inspect your well head. If you're not sure what you are looking for or at, feel free to snap photos and send to techsupport@wellintel.com. A technician will assist.

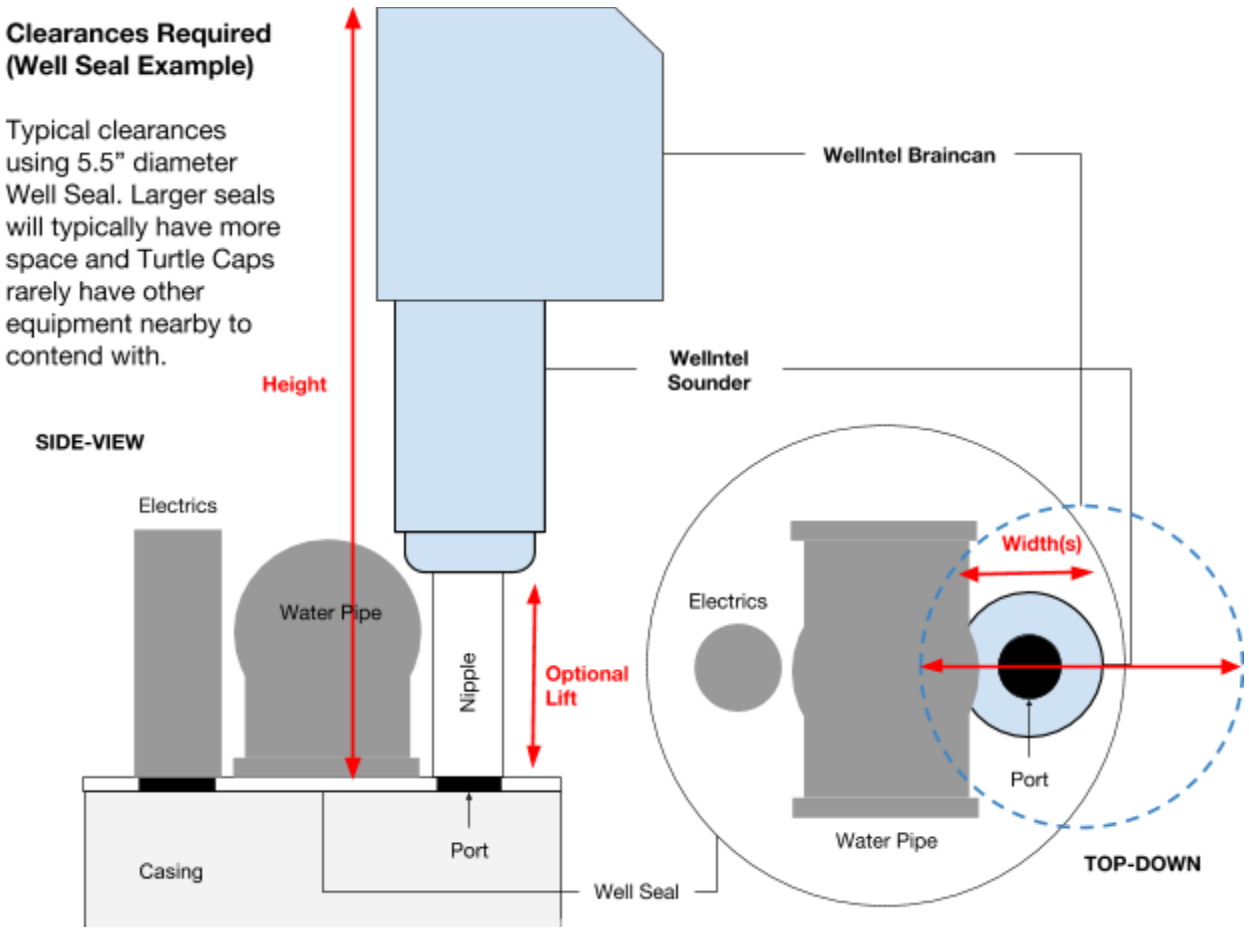
A well with a turtle cap may look something like this.

A well with a well seal might may look something like this:

If you are able to identify and inspect your well head, walk through the following flow chart:



* *See clearances image(s) that follow*



Clearances Required	
Typical Installation	
Height above the access port	12 inches of height
Width of the Sounder	1.75 inches
Width of the Braincan	4 inches

Atypical Installation(s)	Options	Method
If height is not available:	Can be reduced to 8 inches	Split sounder and brain can
If access port width is not available:	Can be lifted up to 12 inches	Lift the sounder using riser or SmartVent *allowing for union

Keys to good fit:

- Use WellIntel fittings, couplings, vents, risers.
- Follow local sanitation and electrical codes.
- **Take pictures of the wellhead and send them to techsupport@wellntel.com if you have questions or to confirm installation functionality.**

Pitfalls to avoid:

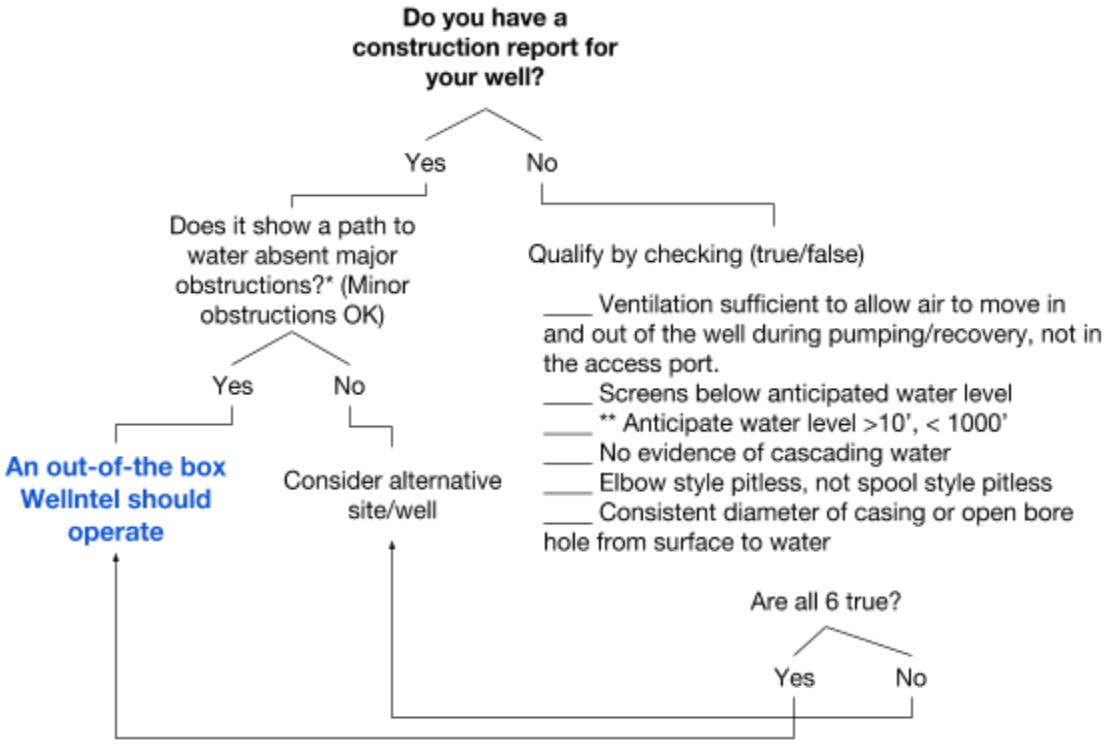
- Use of non-WellIntel fittings, couplings, vents, risers.
- Adapt down from ½” NPT from something smaller. Only adapt up to larger diameters.
- Never drill a hole in a cap while it is attached to a potable water well.

2.) Will a WellIntel Sensor work on this well?

WellIntel Sensors are designed to work on the vast majority of domestic and small irrigation wells, but some conditions can be challenging. To find out if your well is a candidate, please continue:

Is the well diameter at least 2" and less than 18"?

- If not, contact the factory for special narrow or wide duty sensors.
- If yes, continue:



**** Minor obstructions:***
Water pipe, wire, screens above water, seeping water, elbow-style pitless adapter, torque arrestors
** **Major obstructions:***
An airline, a sounding tube, sealed spool pitless, a partial sleeve, cavernous fractures, cascading water, drive shaft bearings
*** Wells with water shallower than 20 feet may be candidates, but will require special calibration attention. Contact the factory for more information.*

Keys to good operation:

- Follow local sanitation and electrical codes.
- **If there is currently a vent mounted on a well seal access port, make certain to replace it with a WellIntel SmartVent. Failure to add SmartVent when ventilation is**

required (by local codes or well conditions) can cause damage not covered by warranty.

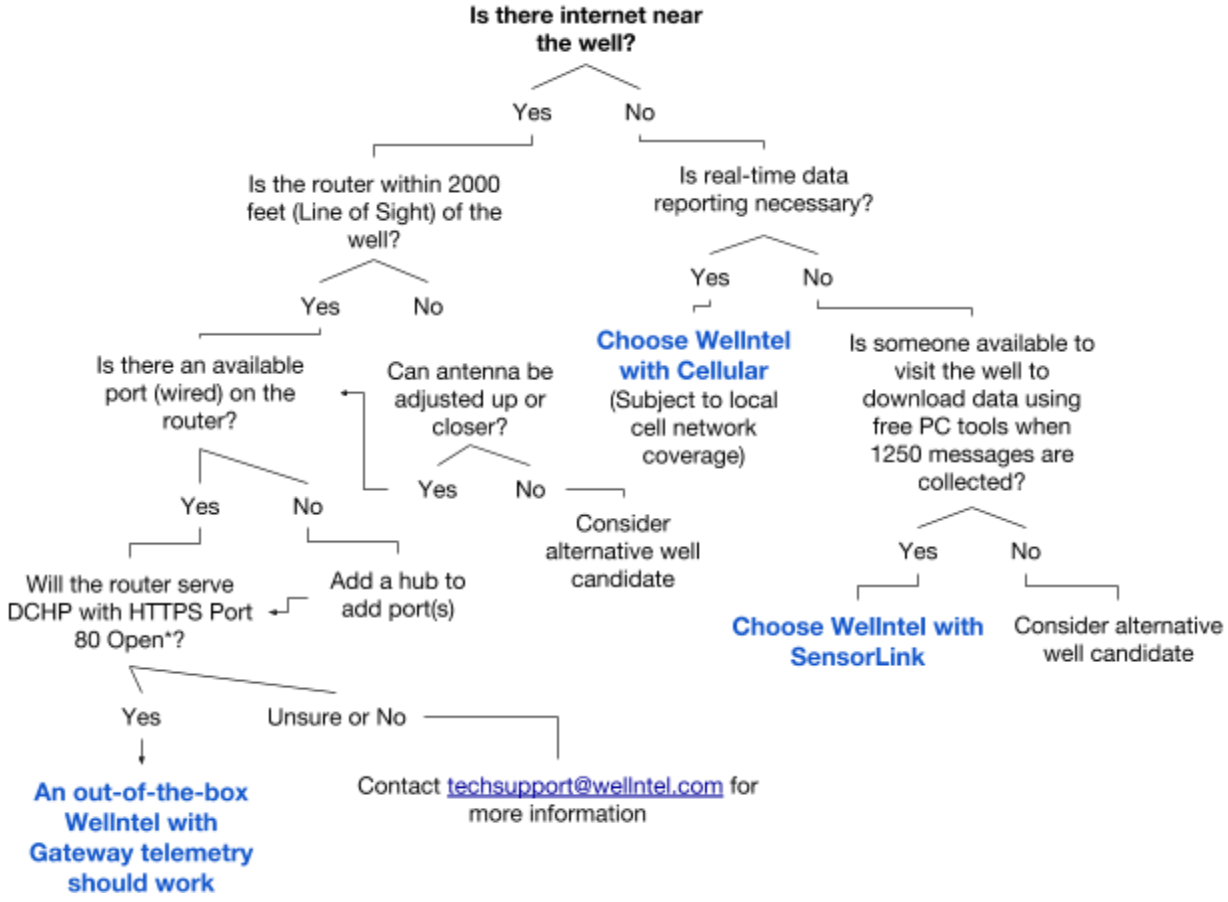
- Take pictures and send them to techsupport@wellntel.com if you have questions or to confirm functionality.

Pitfalls to avoid:

- CAUTION - turn the main power off to the well pump before checking or moving any wiring in the well!
- Check with techsupport@wellntel.com about use of and requirements for sounding tubes.

3.) What telemetry method will work best for the site?

WellIntel can deliver water level and pumping information in near-realtime, when telemetry is available. Use the following flow chart to select the right system, given nearby (or lack of) Internet services.



*** What is DHCP and HTTPS Port 80 Open?**

DHCP is the Dynamic Host Configuration Protocol. It is a network management protocol used for networks whereby a DHCP server dynamically assigns an IP address and other network configuration parameters to each device on a network so they can communicate with other IP networks. Many residential and small business networks use DHCP as opposed to configuring static IPs for each device. Alternatively, WellIntel can be configured to operate with a static IP address. Contact techsupport@wellintel.com if this is required.

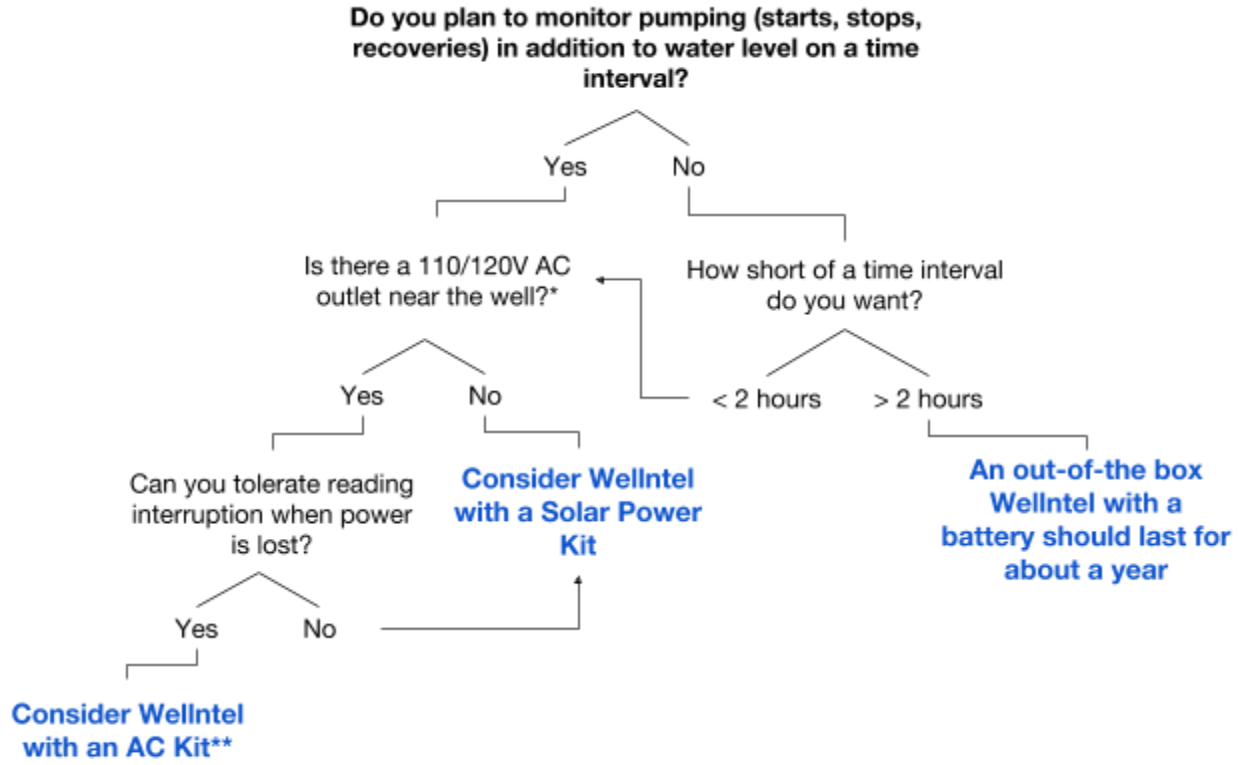
HTTP(S) Port 80 "Open" is how the World Wide Web operates. It is a "given" when outbound traffic is required for web browsing, and is the path for WellIntel traffic. (The "S" in HTTPS denote an more secure encrypted session between devices.) If Port 80 is closed, the WellIntel Gateway will not be able to transmit and/or receive information.

Keys to good telemetry:

- Know about your internet services, or service provider, your router and its configuration. Though most setups do not require, have passwords and IP addresses of routers and switches handy, in case changes are required.
- Install antenna as high as possible with the fewest obstructions between sensor and gateway. Line of site is best. It is always helpful to lift antenna up high using optional antenna extensions from Wellntel.
- Do not place either the sensor or the gateway antenna in a metal enclosure, below ground level or in a stucco building. If these things exist, move the antenna using Wellntel extensions.
- Contact techsupport@wellntel.com if you have questions.

4.) How should this WellIntel be powered?

A WellIntel Sensor delivering as many as 12 readings a day can be powered by one battery for up to a year. Use the following flowchart to decide how to power your sensor:



** Follow local electric codes.*
*** A sensor powered by AC will not take readings during power outages, but will return to operation when power returns, so there may be gaps in the dataset due to local conditions.*

5.) (For sizing) What is the horsepower (HP)/Voltage of the pump in your well?

If you plan to monitor pump influence or track pump duty, drawdown or recovery, you will need to install a WellIntel Pump Performance Kit, which includes a non-invasive current transducer (CT) to track pump starts and stops.

Ratings in green will accept an Out-of-the-box WellIntel Pump Performance Kit. **Ratings in Red and/or larger than 25 HP will require larger CTs.** Please contact the factory for selection, sizing and price. (techsupport@wellIntel.com.)

Clue: You might find the horsepower of your well pump in the well construction report.

Motor Size (hp)	Full-Load Current (Amps)			
	Induction Type			
	Squirrel-Cage and Wound Motor			
	115 V	230 V	460 V	575 V
1/2	4	2.2	1.1	0.8
3/4	5.6	3.2	1.6	1.1
1	7.2	4.2	2.1	1.4
1 1/2	10.4	6.0	3.0	2.1
2	13.6	6.8	3.4	2.7
3		9.6	4.8	3.9
5		15.2	7.6	6.1
7 1/2		22	11	9
10		28	14	11
15		42	21	17
20		54	27	22
25		68	34	27
30		80	40	32
In red and/or larger than 25HP : email tech support for custom CT (techsupport@wellIntel.com.)				

Well/Site Planning Checklist

As an alternative to following the questionnaire to determine site suitability, and to ensure that WellIntel engineers have complete information on which to base a proposal, please fill out the following Well/Site Planning Checklist and send to techsupport@wellIntel.com with all request for proposal

Customer Contact (Email, Phone, Name)			
Well name			
Lat/Long of the well			
Lat/Long of the gateway location			
Network Name (if it applies)			
Today's Date			
Questions	Yes	No	Comment
Project			
Is this a new customer?			
Is this part of a network?			
If so, who is the sponsor? (Name, Company/Organization, Address, Phone, Contact Email.)			
Fit	Yes	No	Comment
Have you uploaded images to the Google Drive?			
If so, under what last name/site name?			
Is it a turtle cap?			
Is it a well seal?			
Is there an access port?			
If not, can one be created by drilling?			
If not, can the cap be replaced?			
Is there 1.75" OD horizonantal width above the access port?			
If not, how high must the sensor be lifted to find 1.75" OD for the sounder?			
Is there at least 12" of height about the access port?			

If not, how much height is available?			
Is the well diameter at least 2" and less than 18"?			
Performance	Yes	No	Comment
Can in- and around-port obstructions be moved out of the way?			
Is there a construction report uploaded to the Google Drive?			
If so, under what last name/site name?			
Does the construction report indicate an airline, a sounding tube, sealed spool pitless, a partial sleeve, cavernous fractures, cascading water, drive shaft bearings			
If so, list all:			
Is there a vent attached to the access port now?			
If not, (with the power off) open and inspect the electric box to confirm ample airflow or confirm vent on alternative port. Confirmed?			
Are the screens above the anticipated water level?			
Do you anticipate a water level between 10' and 1000'?			
Is there evidence (noise, tape) of cascading water?			
Is there an elbow style pitless?			
Is there a spool-style pitless?			
Telemetry	Yes	No	Comment
Is there internet service near the well?			
If not, is real-time reporting necessary?			
If so, and cellular will be considered, how will cellular be powered, how many sensors will one modem serve, and who is the local carrier?			
Is the router in a stucco building?			

Is the router within 2000" Line of Sight of the well?			
If not, is there room/mounting for the antenna be adjusted up (15 feet) or closer (within 2000 feet LOS)?			
Is there an available wired port on the router?			
Will the router serve DHCP with HTTPS Port 80 Open?			
Power	Yes	No	Comment
Is pump drawdown and recovery a requirement?			
Is there 110/120V AC near the well (with a water tight connection.)			
Can the customer tolerate reading interruption with power outages?			
If not, is there room for solar?			
Are there 3 solar hours per day at the location?			
What is the zip code of the location?			
Other provisions	Yes	No	Comment
What is the HP of the motor?			
Can power be turned off during installation?			
Are the motor leads accessible and is there space around one for a CT?			
Is the well in a pit?			