Guidance on Completing Specific Fields in the Well Data Sheet

DATA SHEET GENERAL INFORMATION	
System Name:	Should match DHS records.
System Number:	Should match DHS records.
Source of information:	List the sources used to complete the form such as: DHS or County files, water system staff, well log, DWR records, etc.
Organization collecting information:	List the party that collected the information in this form, such as: DHS, County, Water System, consultant, or other party, such as a public agency.
Date information collected/updated	Enter the date in Month/Year that the information in this form was originally collected or was updated.
WELL IDENTIFICATION	
Well Number or Name:	Should match the source_name in DHS records.
DHS Source Identification Number:	This should be the FRDS ID Number, which is used for federal reporting. The FRDS ID is the seven-digit system number followed by a dash and a three-digit number (example: 4910011-001). The FRDS ID is available from DHS. If you do not know the FRDS ID, the PS Code may be used (this is the identification number used by water systems and laboratories submitting water quality data). If a FRDS ID or PS CODE has not yet been assigned for this source leave the field blank.
State Well Number:	This number is issued by DWR, and by some local agencies. For some sources, the state well number is the same as the PS Code. If the state well number is known, enter it in this field. Otherwise DHS will be working with DWR later to identify state well numbers for all public water system wells.
Well Status:	Should match DHS records for active, standby or inactive.
WELL LOCATION	
Latitude:	The WDS is not intended to be used to submit source location information. Eventually this information will be inserted from DHS records. For now, it would be better to leave this field blank to avoid confusion.
Longitude:	See Latitude.
Ground surface elevation:	Enter as feet above Mean Sea Level (MSL), if known.
Street address:	Enter the address of the site where the well is located (not the water system address.) If the address number isn't known, enter only the street name.
Nearest cross street:	Enter the name of the nearest cross street.
City	Enter the city in which the source is located. If the source is located outside city limits, enter the city that would be used for the mailing address in this area.
County	Enter the county in which the source is located.
Neighborhood/Surrounding Area:	List all the appropriate codes separated by semicolons that apply to the immediate surroundings of the source. A= Agricultural, Ru = Rural, Re = Residential, Co = Commercial, I = Industrial, Mu = Municipal, P = Pristine, O = Other
Site plan on file?	Is there a plan on file at DHS or the county that shows the well location and nearby features such as streets, septic systems, buildings, etc.?
DWR Ground Water Basin:	Eventually DHS will be able to determine the ground water basin through a GIS based on the source location. For now, complete this field only if you have the correct information readily available. Otherwise, leave this field blank.
DWR Ground Water Sub-basin:	See DWR Ground Water Basin.

SANITARY CONDITIONS	
Distance to closest sewer line, sewage disposal, septic tank:	Enter the distance in feet (number only, no units). This is intended to give an idea if there is any sewage facility near the source. DHS staff should base this on readily available information, or leave it blank. Staff should not make a trip to the site solely to get this piece of information. It should, however, be collected in the next site review of the source.
Distance to Active Wells:	This should be the distance to the nearest active well. For wells in a well field, it will be the distance to the nearest well in the field. For other wells, it may not be readily known where the closest well is. Staff should not make a trip to the site solely to get this piece of information. This may be collected in the next site review of the source.
Distance to Abandoned Wells:	This should be the distance to the nearest abandoned or improperly destroyed well. These are considered potential pathways of contamination. This value is not the distance to an old well within the same well field if the well has been properly destroyed. It is likely that DHS staff will not be able to identify the location of nearby abandoned wells. The field is in the WDS in case the information is known.
Distance to Surface Water:	This is the distance to the closest top of bank of a surface water feature. If there is no surface water feature within a reasonable distance (approximately 1000 feet), N.A. may be entered in this field.
Size of controlled area around well:	This is the size in square feet of the area around the source where access is limited (if there is such a space). This may be the area within a building or fenced lot. It is not the dimensions of the entire parcel or easement that the source sits on, unless the entire parcel is fenced.
Type of access control to well site:	Enter the type of control that keeps people (and animals) away from the well site. This may include fencing or a building. If there is no access control enter 'none'. If the well is located in a building this answer may be the same as Enclosure Type, below.
Surface Seal?	Is there a concrete slab that is poured around the top of a well? If this information is not available, enter "Unknown".
Dimensions of concrete slab:	Enter the dimensions of the concrete surface seal as Length (in feet)/Width (in feet)/ Thickness (in inches). The dimensions should be entered without units and separated by a slash (/). If the slab is circular, enter both the length and width as the diameter of the slab. Format this cell as text to avoid Excel interpreting the entry as a date.
Within 100 year flood plain or subject to flooding?	DHS staff should base their answer to this question on information in system files. If it is known that the source is subject to flooding (i.e., it is near a surface water source or is in a low area), answer "Yes" and don't worry about trying to determine if it is within the 100 year flood plain. If it is not obviously subject to flooding, and it is not readily known whether the source is within the flood plain, ask the water system. If the system does not know, you may call the county planning department, the local flood control agency, or FEMA to find the answer. If "Unknown" is entered it will be assumed in the PBE evaluation that the source is subject to flooding. However, this represents only a small factor in the PBE analysis and should not significantly affect the results. The information can then be collected later.
Drainage away from well?	Is the ground surface around the well sloped so that water does not pond around the well? If the well is located in a pit or vault is it drained to keep water from standing around the top of the well?

ENCLOSURE/HOUSING	
Enclosure type:	Briefly describe what type of enclosure, if any, is there around the well. This may include a building, a vault, or another kind of structure. If there is no enclosure, i.e. the well is out in the open, enter 'none'.
Floor Material:	Enter the floor material of the enclosure, such as concrete, wood, dirt, etc.
Located in pit?	Is the top of the well casing located in a pit or vault underground? (This is done infrequently to provide frost protection for pipes, but is generally discouraged.)
Pit depth (if applicable):	If the top of the well casing is located in a pit or vault (see above), enter the depth of the pit in feet below ground surface. If the pump is not located in a pit enter N.A.
WELL CONSTRUCTION	
Date drilled	Enter date as month/year
Drilling method	Enter the drilling method if known. Typical methods include: cable tool, mud rotary, air rotary, reverse circulation, dual tube, and air-percussion rotary. Other less common methods include: jetting, hollow-rod, auger bucket, and driven wells.
Depth of bore hole:	Enter the depth, in feet below ground surface, of the maximum depth to which the borehole of the well was drilled.
Casing Beginning Depth/Ending Depth:	A well may be constructed with a casing that changes size with depth, or one casing may be installed within another. The upper or outer casing should be entered first, with the beginning and ending depths separated by a slash (/). If there are more casings, the succeeding lower or inner casing should be entered next, separated with a semicolon from the previous casing.
Casing Diameter:	The diameter of the upper or outer casing should be entered first (in inches), followed by the succeeding lower or inner casings, separated with a semicolon from the previous casing.
Casing Material:	The material of the upper or outer casing should be entered first, followed by the material for the succeeding lower or inner casings, separated with a semicolon from the previous casing. Typical casing materials are steel, plastic (PVC), and fiberglass (less common).
Conductor casing used?	A conductor casing is a shorter, oversized casing that is used to stabilize the borehole during construction of a well. Older well drillers' logs do not clearly identify if a conductor casing was used. Enter "Unknown" or leave the field blank if you are not sure that a conductor casing was used.
Conductor casing removed?	The conductor casing is generally removed during installation of the annular seal. The well drillers' log does not clearly identify if a conductor casing was pulled out. This information may not be readily available, unless the well was recently constructed. Enter "Unknown" or leave the field blank if you are not sure.
Depth to highest perforations/screens	The depth to the first perforations should be entered in feet below ground surface. If the information is not available enter "Unknown".
Screened interval beginning depth/ending depth	The beginning depth of the first screened interval should be entered in feet below ground surface, followed by a slash (/) then the ending depth of the interval should be entered. If there are more screened intervals they should be entered the same way separated by a semicolon from the previous one. The field length can accommodate several screened intervals.
Total length of screened interval	The length of all the screened intervals should be added and the value placed in this field. See notes at end of this guidance for additional information.
Annular Seal?	A cementous material placed within the annular space between the casing and the borehole of the drilled well. Sometimes called "sanitary seal". Enter "Yes", "No" or "Unknown" as appropriate.

Depth of Annular Seal	The depth in feet from the ground surface to the bottom of the annular seal.
Material of Annular Seal	Typical materials for an annular seal include Neat Cement, Sand Cement, Concrete and Bentonite.
Gravel Pack, depth to top	Gravel pack is a specific type and size of gravel material that is placed in the annular space between the borehole and the well casing. The gravel pack allows water to enter a well more freely and can filter out finer sands and silts. In this field enter the depth in feet to the top of the gravel pack material.
Total Length of Gravel Pack	Enter the total length in feet of gravel pack placed in the well. If there are multiple layers of gravel pack, total the lengths and enter here.
AQUIFER	
Aquifer materials	In this field we are trying to get an idea of the materials that are in the aquifer from which the well draws. The best source of information is the geologic log information on the well drillers' log. If this is not available, local knowledge of the area or nearby wells may be used. List all the materials that apply: Sand, Silt, Clay, Gravel, Rock, Fractured Rock. There may be other materials that are encountered such as cobbles, boulders, shells, glacial flour, etc. These may be listed on the WDS if they are a dominant feature in the well log, and are not adequately described by the materials listed above.
Effective Porosity:	Effective porosity is used to estimate the volume of water that can be pulled from the pore spaces of the aquifer. Effective porosity is entered in decimal percent (no units). If the effective porosity is not known the field can be left blank or you may enter "Unknown". See notes at end of this guidance for additional information.
Confining layer (impervious strata) above aquifer?	This field is intended to identify is there is a confirmed confining (impervious) layer above the aquifer from which the well draws. It is not intended to be used for localized, small layers of less pervious material that are encountered during well drilling. Typically, the determination of a confining layer is made by a hydrogeologist or other expert and is described or documented in a report. Because a "Yes" answer results in a PBE determination that the source is very well protected from contamination, care should be taken in answering this question.
Thickness of confining layer, if known	See above. If a report has been prepared that documents a confining layer, the same report will generally describe the thickness and characteristics of the layer.
Static Water Level	Enter as feet below ground surface. This field is used as part of the PBE evaluation. Greater depths to ground water can mean more vertical travel time for contaminants at the surface to reach the water supply. Sometimes, DWR or a local water agency will have information on regional ground water depths. This information may or may not be specific enough for an individual well. Typically the well drillers' log lists a depth to static water. Use this value with caution, because it may change over time. Ask the water system if measurements have been taken more recently. DWR has a website with some information on ground water depths. The address is: http://well.water.ca.gov/
Static water level measurement: Date; Method	If known, list the date (Month/Year) that the water level was taken. Enter a semi-colon, then enter the method (if known) that was used to record the water level. Methods for measuring water level include: steel tape, light, acoustic sounder, air-line, and electric pressure transducer.
Pumping water level	Enter as feet below ground surface. This is the level at which water stands in a well when pumping is in progress. This may be estimated by adding the drawdown measured during well testing to the depth to static water.

Pumping water level measurement: Date; Method	See above for static water level measurement.
WELL PRODUCTION	
Well yield	Volume of water per unit of time that a well can reasonably be expected to produce. Enter in gallons per minute. This is not the same as the capacity of the pump! If this information is not accurately known, leave this field blank or enter 'unknown'.
Well yield based on	Typically well yield is determined by a pump test. However, if another method is used list it in this field.
Date measured	Enter the date that well yield was measured as Month/Year.
Is the well metered?	Is there a production meter on the well before it enters the distribution system or treatment facility?
Production	Enter the typical production of the well in gallons per year. This may be the previous year, the average of the last five years, or whatever information is readily available. This information may be found on water agency annual reports to DWR.
Frequency of use	Enter in hours per year. The water system is typically the only source for this information, and they may not have it.
Typical pumping duration	Enter in hours per day. The water system is the only source for this information, typically. It can be the average number of hours per day over the last year.
PUMP	
Make	Enter the name of the manufacturer, if known.
Type	Types of pump include: Centrifugal pumps (suction lift, vertical turbine, or submersible turbine); Jet pumps; Air-lift pumps.
Size	Enter in horsepower (hp). Enter only the value, not the units.
Capacity	The pumping capacity to be used is the maximum rate the well can be pumped, in gallons per minute. If the pumping capacity is not known it should be estimated based on historical records, local knowledge or by using the value for a system or source of similar size. However, if it is likely that the pumping rate is low (less than 15 to 20 gpm), it is not necessary to estimate the pumping capacity. If the pumping capacity is not known, the field can be left blank or enter "Unknown". See additional notes at the end of this guidance.
Depth to suction intake	Enter as feet below ground surface. This is the depth of the intake for the pump. This is not recorded on a well log, and is not always known by the water system unless the well was recently constructed.
Lubrication type	Is oil or water used as the lubricant for the pump?
Type of power	Type of power used to supply the pump on a regular basis (typically electric, but can be a diesel generator, or other power source).
Auxiliary power available?	Is a standby generator available, or some other type of backup power supply?
Operation controlled by:	What controls the pump to turn on and off? Typically automatic, not manual. The pump may be controlled by the level in a storage tank, or pressure within the distribution system or a pressure tank, or other system controls)
Pump to waste capability?	Can the water from the well be discharged without going into the water system?
Discharges to:	The well may directly discharge into a transmission line, a storage tank, the distribution system, or other part of the system.

Pump Capacity

The most important piece of information on the WDS for purposes of the DWSAP program is the capacity of the pump. This value is used to determine the size of the protection zones around the well and is considered in the PBE evaluation. Pumping capacity is used to estimate the volume of water that will be drawn to a well in a specified time. The pumping capacity to be used is the maximum rate the well can be pumped, in gallons per minute.

The approximate pumping capacity of the well should be known by the water system. If the pumping capacity is not known it should be estimated based on historical records, local knowledge or by using the value for a system or source of similar size. However, if it is likely that the pumping rate is low (less than 15 to 20 gpm), the DWSAP minimum distances for protection zones will apply, and it is not necessary to estimate the pumping capacity.

If the pumping capacity is not known at the time the WDS is completed, the field can be left blank. In this case, staff will need to estimate the pumping rate when doing the delineation calculations for the DWSAP assessment.

Screened Interval

Screened interval is also used in the delineation calculations and in the PBE evaluation. The screened interval is that portion of the well casing that has screens or perforations through which water enters the well. The screen allows ground water to move freely from the aquifer into the well while stabilizing the aquifer material. The length of screened interval is used in the delineation calculations to represent the portion of the aquifer that the well can draw from. In general, the greater the screened interval, the more aquifer that the well can pull from, and the less horizontal distance away that a particular volume of water will travel within a given time period. Typically, several portions of the well casing are screened.

The WDS asks for three pieces of information about the screened interval, which can generally be found in the well drillers' log. Each of the fields for screened interval are described below:

Depth to the Highest Perforations/Screens – The depth to the first perforations should be entered in feet below ground surface. If the information is not available enter "Unknown".

Screened Interval Beginning Depth/Ending Depth – The beginning depth of the first screened interval should be entered in feet below ground surface, followed by a slash (/) then the ending depth of the interval should be entered. If there are more screened intervals they should be entered the same way separated by a semicolon from the previous one. The field length can accommodate several screened intervals.

Total Length of Screened Interval – The length of all the screened intervals should be added and the value placed in this field. This value is used in the delineation and PBE calculations. Sometimes, information may be available on the length of screens, but not the specific beginning and ending depths. The total length should be entered here and the previous field should be left blank. At other times, you may know the beginning and ending depths of all screens, but have no knowledge whether the entire interval is screened. In this case, the total length of screened interval can be determined as the distance between the beginning and ending of the perforations, but this may result in smaller protection zones. Judgement should be used to determine the appropriate length.

The DWSAP program allows a default screened interval of 10% of the pumping capacity of the well in gallons per minute, with a minimum length of 10 feet. For example, the default screened interval for a well that has a pumping capacity of 400 gpm would be 40 feet. This is a conservative value for most wells. If the default method is used to determine screened interval this should be noted in the "Actual, Estimated or Default?" column.

If the screened interval is not known at the time the WDS is completed, the field can be left blank or you may enter "Unknown". In this case, staff will need to use the default screened interval when doing the delineation calculations for the DWSAP assessment.

Effective Porosity

Effective porosity is used in the calculated fixed radius method for delineation calculations. Effective porosity is "the volume of the void spaces through which water or other fluids can travel in a rock or sediment divided by the total volume of the rock or sediment." Effective porosity is used to estimate the volume of water that can be pulled from the pore spaces of the aquifer. Effective porosity is entered in decimal percent (no units).

DHS staff may be tempted to use tables from various geology or hydrogeology textbooks to estimate porosity for a particular type of aquifer material (i.e., sand, sand-gravel, sand-gravel-silt, etc.). USE THESE VALUES WITH CAUTION! Effective porosity is difficult to estimate and is best left to people trained in the subject. The default value was selected by the DWSAP technical advisory committee as a reasonably conservative value for most types of porous media aquifers, without requiring detailed hydrogeologic studies. Using non-site specific values from a textbook may result in protection zones that are too small.

If the effective porosity is entered in the WDS the appropriate entry should be made in the "Actual, Estimated or Default?" column.

If the effective porosity is not known at the time the WDS is completed, the field can be left blank, or you may enter "Unknown". In this case, staff will need to estimate the effective porosity when doing the delineation calculations.