

Master Well Driller — Water Supply Licensure

Study Outline

Terms-to-know/Vocabulary

- Confined/unconfined aquifers
- Artesian aquifer
- Static water level
- Pumping water level
- Specific capacity
- Measuring water levels
- Cone of depression
- Potentiometric surface
- Drawdown
- Recovery
- Maximum yield
- Hydrologic cycle
- A spring
- Process of developing a water well
- Water mining
- Groundwater recharge
- Annular velocity
- pH
- Types of wells
- Fishing
- Limits of vertical & horizontal lengths of a suction pipe
- Universal solvent
- Drilling methods and the corresponding equipment or term
- Quick sand
- Submersible pump installation
- Continuous flow return method
- Methods to install a well screen
- Sources of water in rocks
- Lost circulation problem
- Artificial gravel-packing
- Removal of air rotary drilled cuttings
- Formation permeability
- Location between pollutant and well
- Types of well/pump tests

- Types of compressors/generators
- Porosity
- Free chlorine residual
- Cavitation
- Types of motors
- Total dynamic head
- Barite
- Viscosity

Calculations/Conversions

- Maximum yield
- Yield
- Volume of a well's annular space formula
- Increasing/decreasing storage capacity in a well
- Entrance velocity of water into a well screen
- Air measurement (Volume & Pressure)
- Air pressure needed to lift water in a well (psi per foot of lift)
- Grains per gallon to parts per million

State Regulations

- Well construction permit
- Hydrogeologic areas 1-5
- Well permit
- Abandonment
- Casing
- Grouting
- Production of a domestic water supply
- Abandoned well report
- Location of potable water well near property lines, buildings, & roads
- Screen
- Requirements of siting a well
- Certificate of Potability
- Emergency well permit
- Well completion report
- "Miss Utility"
- Well log information

Chemistry

- Salt water intrusion
- Nitrate Nitrogen

- Controls of groundwater quality
- Hydrogen sulfide
- Effects of calcium & magnesium salts in water
- Effects of corrosive waters
- Bentonite
- Economical techniques for improving various water quality problems
- Reverse osmosis
- Coliform bacteria

Troubleshooting

- Effects if suction pipe breaks above/below pumping water level
- Preventing a pressure switch from shutting off
- Water-logged tanks
- Causes of submersible pump motor failure
- Techniques for reducing hydrogen sulfide gas odor

Safety

- Entering a hazardous waste site
- Eye protection
- Clothing
- Respirators
- Effects of exposure to hazardous vapors and gases
- Causes of electrocution
- Acetylene torches
- Hearing protection by MOSHA