

HYDROGEOLOGICAL DRILLING TECHNICIAN II

This is skilled work in the on-site operation of drilling equipment in the construction of observation monitoring, and exploratory wells for utilization in groundwater research and investigation. Employees operate a variety of drilling equipment to construct wells in order to obtain hydrogeologic information needed for the proper mapping, evaluation and management of the state's groundwater resources and to test for underground pollutants. Duties include constructing test borings to obtain accurate and clean samples of aquifers and aquitards, and of materials encountered while drilling for use by hydrogeologists in interpreting the hydrogeology of the area. Employee provides supervision of lower level technicians in all phases of drilling and well construction. Judgement must be utilized when drilling in order to take into account numerous variables affecting the project's success such as well depth, variety of geological formations encountered, drilling fluid characteristics, fluid flow rates, rotation rates, drilling speed, and bore hole collapse potential of different geological formations. Work is performed under the general supervision of the drilling supervisor and may included other duties as assigned.

I. DIFFICULTY OF WORK:

Complexity of Work - Employees participate in and supervise the set up, operation and maintenance of drilling equipment. Work requires employees to determine drill speed and rotation rate based on hole sizes and geological formations encountered or expected. Employees must maintain and supervise the maintenance of pumps, motors and vehicles. Employees are also responsible for the safety of others working or observing at the drilling site.

Intricacy of Work - Employees must accurately calculate the amount of cement and drilling mud. Employees must accurately measure pipes when setting screens and water levels while taking water samples. Since results are used for setting standards, management decisions, enforcement cases and research studies, all measurements must be precisely taken and accurately recorded.

Judgmental Demands - Judgement must be utilized when determining drill speed, rotation speed, type of bits, drilling fluid characteristics, and fluid flow rates. In making determinations, employees must consider the type of geological formation encountered or expected and the borehole collapse potential of different geological formations.

Controls Over Work - Employees are given general instructions such as the location of the well to be drilled, its size and general depth. With these instructions, employees determine the amount of materials and supplies needed, locate the site, and set up and drill wells independently. Employees contact their immediate supervisor only in the case of major problems which interrupt drilling.

II. RESPONSIBILITY:

Potential - Errors in the performance of duties may cause loss of materials and equipment. In addition to the loss of materials and equipment, errors would cause the temporary shutdown of the drilling operation. Failure to adequately provide for the safety of workers or observers could result in serious injury.

Care and Attention - Employees must monitor drilling operations at all times especially during critical phases. If abnormal conditions are observed, adjustments or shut down of the equipment must be made quickly to prevent damage or loss of equipment or materials. Employees must constantly observe other worker and bystanders to assure their safety.

III. PHYSICAL EFFORT:

Intensity of Effort - Employees must dig mud ditches, and pits, carry bags of cement, use heavy tools and lift and attach heavy materials and equipment on cable hoists.

Frequency and Duration of Effort - Effort is exerted on a regular basis for extended periods while drilling.

IV. WORK SURROUNDINGS AND HAZARDS:

Hazardous Conditions - Employees must work around heavy, moving machinery while drilling and constructing wells. In addition, employees must lift and carry heavy tools, equipment and materials on well drilling sites. During investigations of groundwater contamination, employees are at times exposed to hazardous circumstances.

Worker Surroundings - Employees are exposed to inclement weather, insects, odors, mud and dirt on a regular basis while drilling wells.

V. RECRUITMENT STANDARDS:

Knowledges, Skills, and Abilities - Working knowledge of hydraulic systems as they apply to hydraulic drilling. Working knowledge of mathematics through algebra and geometry as required to determine fluid pressure and annulus volume. Ability to diagnose problems and repair mechanical equipment. Ability to operate a hydraulic rotary drilling equipment and to use welding and cutting equipment. Ability to supervise and train lower level personnel.

Minimum Training and Experience - High school or General Educational Development diploma and three years of experience in operating rotary drilling equipment or related drilling equipment; or an equivalent combination of education and experience.

Necessary Special Qualification - NC Commercial Drivers License and NC Well Contractor Certification required.

Special Note - This is a generalized representation of positions in this class and is not intended to identify essential functions per ADA. Examples of work are primarily essential functions of the majority of positions in this class, but may not be applicable to all positions.