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A Well-Earned License

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Craig Bussell is an extremely fortunate young man. He has had a unique opportunity available to few of his generation--a chance to learn a trade from his father and grandfather.

A third-generation licensed water well driller, Craig learned his trade while working for a family-owned company. His training is backed by the family's 30 years of experience in drilling water wells in Harris and surrounding counties.

Craig is fortunate in this day of specialization in that his work allows him to plan a job and see it through to completion. He is able to evaluate his own work by judging when he has designed an efficient, economical well capable of producing the amount and quality of water needed by a customer.

Craig begins each new job by considering the quantity of water needed by a particular customer. He then must drill a test hole on the site chosen by the customer to determine how deep a well should be and how large in diameter the well hole needs to be. Craig drills a four-inch test hole with his rotary drill bit and analyzes the layers of clay, rock, and sand forced to the surface. Most of the private wells he drills are around 250 feet deep and 6 inches in diameter.

Craig must also determine what size and material of casing is needed to form the sides of the well. The Bussells generally use 4-inch PVC (polyvinylchloride) plastic pipe for domestic wells, but some wells require casing much larger in diameter and made out of stronger materials such as galvanized metal.

Perhaps the most important decision Craig must make in designing a well has to do with the length and size of the well screen to install. The screen is that part of the well which extends down into the water-saturated sand. He generally uses perforated PVC pipe with

a tight plastic lacing over the holes allowing water but not sand to enter the pipe. In most areas where Craig drills, groundwater is under pressure so that it forces its way through the screen and rises up into the well shaft.

Craig must also decide the size and type of pump needed to bring the right amount of water to the surface as economically and efficiently as possible. He nearly always chooses a "submersible" pump which he installs down the casing into the water standing in the well shaft.

Craig's training has emphasized that mistakes can be costly. A poorly constructed well can give the driller many a headache in trying to maintain a continuous supply of good quality water. Misjudgements by Craig in finishing a well can also cause an entire area of quality water to become polluted. A large part of Craig's training has been in understanding geology and water movement below the earth's surface so that he can conscientiously protect the valuable underground reservoirs of good quality water.

Craig knows that the layers of impermeable materials help protect the aquifers from all types of surface pollution in the Houston area and that the holes he drills expose the good quality water to contamination. To guard against pollution, Craig carefully seals a well by forcing cement down the casing, then up the outside of the casing to fill the space between the hole and outside of the casing. He also seals around the casing at the earth's surface.

A GOOD SYSTEM

Craig became a licensed water well driller two years ago at the age of 21. Like all applicants for a license, he had to work for two years drilling water wells under the supervision of a licensed water well driller before he could even apply for a license from the state. In Craig's case, the licensed well driller was his father.

At the time he applied, a $10 filing fee and four letters of reference were also required. The letters included references from a currently licensed Texas water well driller, two from suppliers of water well equipment, and one from a banker who could attest to Craig's financial responsibility. Currently the filing fee is $25, and instead of two letters from suppliers, two letters must come from customers for whom Craig has drilled wells.

Craig had to journey to Austin to take a written test to demonstrate his competency as a water well driller. The Texas Water Well Drillers Board has required examinations of potential drillers since the Board's creation in 1965. Examinations are designed to test an applicant's knowledge of the drilling, completing, and plugging of water wells and his ability to protect groundwater formations in the performance of such services. Examinations include questions on Texas drilling and groundwater laws, geology, drilling materials, and equipment.

Personnel at the Texas Department of Water Resources administer the examination for the Board. One hundred and four applicants passed the test in 1981, bringing the number of licensed water well drillers in Texas up to 1,144.

After passing the test and paying a $25 fee, Craig received a license to drill any type of water well anywhere in the state of Texas. As long as he follows the rules and regulations of the state for water well drillers and pays his $100 renewal fee each year, Craig's license will remain valid.

The integrity of Craig's license depends upon actions of Texas Water Well Drillers Board. Board members include six practicing water well drillers in the state who are willing to donate their time and know-how in helping the state regulate the licensing and operating activities of water well drillers. The drillers and three other Texans are all appointed by the Governor for six year terms. Craig's father, Tommy Bussell, has served on the Board for eight years and is presently its chairman.

Board members serve without compensation other than travel reimbursements. They attend seven regularly scheduled Board meetings each year.

Board members have the power to suspend or revoke licenses and regularly hold hearings on such cases. The Board also has the authority to refer cases to the Attorney General's office. Some of the reasons for the Board to consider license revocation are: (1) failure to follow Board rules and regulations, (2) exposing an aquifer to potential pollution, (3) failure to file a well log for each well drilled, and (4) justified complaints from dissatisfied customers.

The appointed drillers, according to Chairman Bussell, volunteer their time to assure competency and credibility in their field of work. They are also concerned with the protection of groundwater quality--the resource upon which their livelihoods depend.

A GOOD LOCATION

Craig is fortunate to drill in an area of the state where groundwater is consistent both in quality and supply. More than half the state has aquifers (water-bearing layers of sand or rock underground) capable of yielding a usable supply of water. There are few areas in the state, however, where the existence of groundwater is as certain or the quality as predictably good as in the area just north of Houston where the Bussells work. Most of the wells drilled by the Bussells are around 200 to 300 feet, with larger wells going down to 600 feet. Wells in other parts of Texas range all the way from a shallow 25 feet to wells as deep as 3,000 feet.

Craig had to be familiar with state drilling laws and regulations to pass his licensing examination. Part of his responsibility as a water well driller will be to stay abreast of laws dealing with groundwater. Current state law recognizes groundwater as the private property of the surface landowner and requires no permit to drill or use the groundwater under one's own property.

Drillers in certain areas of the state, however, must also be knowledgeable about local drilling requirements. Craig, for instance, must know the requirements established by the underground water conservation district in his area--the Harris-Galveston Coastal Subsidence District. This District was established by the Texas Legislature in 1975 to

eliminate subsidence in the Houston-Galveston area. Heavy pumping of groundwater in the area has caused layers of earth to compact and the land surface to actually sink. The District now requires any well with a casing larger than five inches in diameter to have a permit and to pay an annual pumping fee. Permits to drill and pump water are issued after the District considers the availability, quantity, quality, and price of surface water compared to groundwater; the economic impact on the permit applicant; and the relative effect of pumping on subsidence.

Craig's license allows him to drill water wells in any area of Texas, for any size or type water well, and with any type or size of rig. It's not likely, though, that Craig will work far from the area he now works. Drillers seldom move to another area of the state because groundwater conditions vary greatly. Certainly Craig's experience in the Texas Coastal Region would be different from that of one drilling irrigation wells on the High Plains or deep municipal wells in Central Texas.

In many ways the Bussells' business is quite representative of water well drilling companies throughout the state. Fifty percent of the wells drilled by the Bussells are for private homes; other wells drilled are for subdivision supply systems and small industries. The Bussells' operation is probably a little larger and a little more progressive than the average Texas water well drilling company. Most water well contractors are family-owned businesses with one or two licensed drillers and a part-time office worker. There are, however, much larger companies in Texas with as many as 20 licensed drillers working under one company name.

Nine employees plus four family members handle the Bussells' two drilling rigs, three service rigs, office and bookkeeping duties, and a mechanical shop and warehouse. They record well logs on a computer, communicate with each other through a two-way radio system, own some of the latest drilling equipment, and will soon move to a new office and warehouse now under construction.

A GOOD FUTURE

The skills involved in drilling a water well are just a few of those Craig will have to master if he continues in his family's footsteps. Craig has much to learn about pumps, chlorinators, and all of the other constantly changing equipment and products on the market. He will also need to know a great deal about how to run a business such as keeping books and records, writing contracts, advertising, collecting bills, and paying taxes. The office manager of Bussell and Son Water Well Contractors should be a good teacher, for Loyce Bussell just happens to be Craig's mother.

Perhaps the most fortunate part of Craig's position has to do with the fact that the trade he has learned from his father and grandfather will be in demand as far into the future as anyone can see. For even though the water well drilling trade is as old as civilization, his skills are still considered absolutely essential to the prosperity of the state. Currently more than 70 percent of all water used in Texas is pumped from underground.

It is not at all likely that water well drilling will become obsolete in Craig's lifetime, anyway. Certainly new technology may streamline the construction of water wells and computer technology may help with the crucial decisions a driller must make. As long as there are Texans who choose to live away from a river or other sources of surface water, though, Craig Bussell's well drilling skills will be in demand.