Above Ground Pump Houses[1]

By John Garland[2] and Richard L. Witz[3]

Water systems on the farm may be installed in several locations. However, sanitary regulations do not permit an installation in any location without a positive (gravity) drain. In many locations this will not allow the system to be installed in the house basement or in a well pit.

During the past year several installations have been made using insulated pump houses built above the ground. This allows the pump house to be built over the well, which, if centrally located, will reduce the cost of piping as compared with a basement location. At the same time the pumping equipment is not subjected to the moisture present in well pits.

If the power supply to the pump is connected to the line ahead of the yard disconnect switch, a water supply is available in case of fire. This is not true of basement installations since the power supply will have to be disconnected at the yard pole.

During the winter of 1949-50, four above ground pump houses were under observation and records taken on electrical consumption for supplementary heating.

Considerable heat is obtained from the water in passing through the pressure tank. However, this supply of heat, which varies from day to day and farm to farm) cannot be depended on to heat the pump house. Additional heat, usually in the form of light bulbs or heat lamps, is necessary. These should be connected to a reliable thermostat set at around 35°F. All of these pump houses have six inches of insulation in the walls and roof and are built on a concrete slab.

Installation 1—Emerson Harris, Route 2, Fargo

The pump house on the Emerson Harris farm (see Figs. 1 and 2) is just large enough to house the pumping equipment. It is, however, rather high due to the use of a "standard" (48") tank rather than a "squat" (36") pressure tank. The entire roof is hinged and can be lifted for inspection or repairs. Also, one side of the house is removable by loosening two bolts.

Heating was by means of a 10 foot length plastic heating tape (approximately 75 watts) wrapped on the water pipe and a 300-watt light bulb, all controlled by a thermostat set at 35°F. This method of heating was adequate although the cover did not fit tight enough to prevent leakage.

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[1]Progress report on Purnell Project No. 133 "Investigation to determine the functional requirements of certain types of electrical equipment for use under North Dakota farm conditions."

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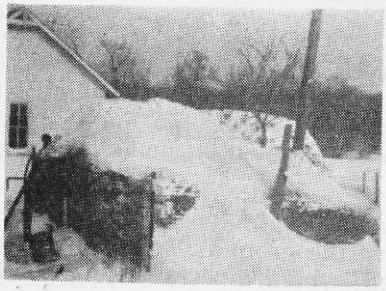

Fig. 1—Harris farm pump house showing straw banking.

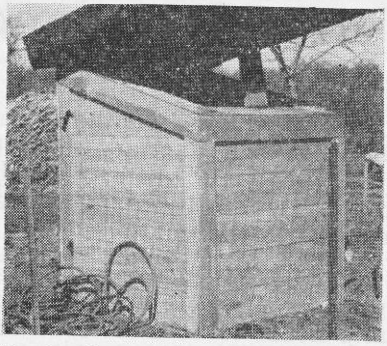

Fig. 2—Same pump house as Fig. 1 with banking removed.

A ¾ inch drain extends through the side wall and is too small in case of a broken pipe. A drain about 1¼ inches in diameter would be adequate.

Installation 2—George Smith, Amenia

The George Smith pump house (see Figs. 3 and 4) is of the same type of construction as the previous one, but is lower due to the use of a "squat" type of pressure tank.

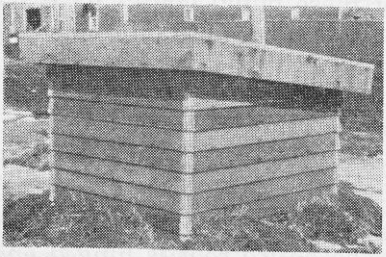

Fig. 3—Smith pump house (note small amount of banking.

Fig. 4.—Smith pump house with cover raised. (This is an unsafe method of supporting the cover.)

Very little banking was used as can be seen from Fig. 3.

On this house a strip of one-inch glass wool insulation blanket was used as a seal for the cover. This type of seal is much better than weather stripping.

Heating consisted of 10 feet of plastic heating tape thermostatically controlled.

Installation 3—Egge Bros., Wild Rice

This large house on the Egge Bros. Farm (see Fig. 5) is very well constructed. The entire building is hinged on one side and can be tipped over to allow work to be done on the well. It is felt that this type of building is larger and more costly than necessary.

This pump house was heated with one 300-watt heat lamp controlled by a thermostat.

A one-inch drain extends downward into sandy soil.

Installation 4—Sheep Barn, College Farm

This house is larger than either 1 or 2 since two "squat" tanks were used (see Fig. 6). It is hoped to get more heat from the water by using two tanks, but the expense does not seem to be justified.

Baled straw piled two rows high was used for banking. Heating consisted of two 250-watt heat lamps thermostatically controlled. During the first part of the winter, the power consumption was high due to leakage around the manhole cover. (This was corrected on January 16.)

The water consumption was much lower for this installation than for the three previous pump houses.

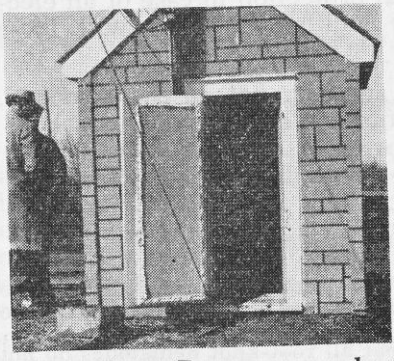

Fig. 5—Egge Bros., pump house. (Note refrigerator type door.)

Fig. 6—Sheep barn pump house. (Manhole opens directly over pump.)

Table 1.

POWER CONSUMPTION FOR HEATING

Installation	Time	Ave. Outside Temperature	Energy Consumption	Remarks
No.	Month	°F	Kwh/month	
1	Jan.	-7.1	16	
2	Jan.	-7.1	8	Ave. of Jan. & Feb.
	Feb.	5.8		
3	Feb.	5.8	16	No records taken in Jan.
4	Jan.	-7.1	104*	Consumption Jan. 16-31
	Feb.	5.8	5	29 kwh.

*Electrical consumption January 1-16 was high due to air leakage around the cover. Also, additional heat was used on one occasion to thaw out the pump. (Pump froze due to the thermostat failing to operate.)

Summary

1. The house should be just large enough to house the equipment using a "squat" type tank, and insulated with six inches of insulation.
2. The entire cover should be hinged or the house easily moved to allow work on the well. The cover need not extend over the walls as much as shown in Figs. 1 and 2.
3. Heat must be supplied. The use of two lamps of about 150 watts each would be adequate providing the house is well built. These should be connected to a reliable thermostat set at about 35°F.
4. The cover should fit tightly. The method used in Installation Number 1 is quite good.
5. A saving in heating and additional protection in case of an electrical outtage can be effected by banking the house with loose straw.
6. On hinged covers a permanent support, not easily dislodged, should be used to prevent accidents while the cover is open.

NEW INFORMATION ON NEMATODES

Every agricultural worker knows about nematodes, and the damage they do to crops. Only a handful of scientists in the whole country are working on this enemy of agriculture, but they have made a lot of headway in recent years. The latest news is that all root-knot nematodes do not belong to one species, as commonly believed, but that at least 5 separate species have been identified. There may be many others. The clue to this discovery was provided by experiments on host plants. A study of morphological structures confirmed the belief that different species exist. A basic discovery of this kind may not seem important to the layman, but it was just such a discovery by a Department entomologist several years ago that led to the successful control of screw worms in cattle—USDA Agricultural Research Administration.