WATER WELL INSPECTION MANUAL

APRIL 2012

I. INTRODUCTION

In 1973, the Kansas Legislature adopted the Kansas Groundwater Exploration and Protection Act. Shortly thereafter the Water Well Program was formed to support the Act. The purpose of the Act is to provide for the exploration and protection of groundwater through the licensing and regulation of water well contractors in Kansas. This was done to protect the health and general welfare of the citizens of the state. In order to achieve these objectives, the Act requires licensing of water well contractors, establishes standards for water well construction, reconstruction, treatment and plugging.

The Geology Section within the KDHE Bureau of Water, administers the Water Well Program. The water well program regulates various types of water wells by their status. The status of the water wells is determined by KDHE. There are three types of water well status' described as follows:

* Active: A water well which is an operating well used to withdraw water, or to monitor or observe groundwater conditions.

* Inactive Water Well: A water well which is not presently operating but is maintained in such a way it can be put back in operation with a minimum of effort.

* Abandoned: A water well;

1.) whose use has been permanently discontinued;

2.) in which pumping equipment has been permanently removed;

3.) which either is in such a state of disrepair that it cannot be used to supply water, or it has the potential for transmitting surface contaminants into the aquifer or both;

4.) which poses potential health and safety hazards; or

5.) which is in such a condition it cannot be placed in active or inactive status.

II. DEFINITIONS

- Water Well Contractor or contractor means any person who constructs, reconstructs or treats a water well. The term does not include:

1.) An individual while in the act of constructing a water well on land which is owned by such individual and is used by such individual for domestic purpose at such individual's place of abode, but only when the well is constructed in compliance with prescribed minimum well standards as provided in this act; or

2.) An individual who performs labor or services for a licensed water well contractor at such contractor's direction and under such contractor's supervision.

- Water Well means any excavation that is drilled, cored, bored, washed, driven, dug, jetted, or otherwise constructed, when the intended use of such excavation is for the location, diversion, artificial recharge, or acquisition of groundwater.

- Grout means cement grout, neat cement grout, bentonite clay grout or other material approved by the department used to create a permanent impervious watertight bond between the casing and the undisturbed formation surrounding the casing or between two or more strings of casing.

- Pitless Well Adapter or Unit means an assembly of parts installed below the frost line which will permit pumped groundwater to pass through the wall of the casing or extension thereof and prevent entrance of contaminants.

- Test Hole or Hole means any excavation constructed for the purpose of determining the geologic, hydrologic and water quality characteristics of underground formations.

- Annular Space means the space between the well casing and the well bore or the space between two or more strings of well casing.

- Sanitary Well Seal is a manufactured seal installed at the top of the well casing which, when installed, creates an airtight and watertight seal to prevent contaminated or polluted water from gaining access to the groundwater supply.

- Pump Pit means a watertight structure which:

- is constructed at least two feet from the water well and below ground level to prevent freezing of pumped groundwater; and

- houses the pump or pressure tank, distribution lines, electrical controls, or other appurtenances.

- Uncased Test Hole means any test hole in which casing has been removed or in which casing has not been installed.

III. ROUTINE FIELD INSPECTIONS

Purpose:

The purpose of field inspections is to determine the status of a water well, either active, inactive or abandoned and to insure water wells are constructed, reconstructed or plugged in accordance with the requirements of Articles 12 and 30. Determine if a well has been

repaired and if the repairs have been made as required or that enforcement actions are satisfactorily resolved. Field presence and feedback are necessary to carry out an effective program.

Authority:

The authority to allow KDHE the power to inspect water wells in all phases of construction, reconstruction, treatment or plugging and right of entry is established in Article 12 in K.S.A. 82a-1205(c).

IV. PROCEDURE

Below is a discussion of the procedure to follow for inspection of a water well and how to determine if a water well is active, inactive or abandoned.

Constructed Water Well:

- Contact the well owner to arrange a time for the inspection. Although KDHE has authority to conduct unannounced inspections, it is generally best to make prior arrangements for the inspection. This will assure that a person familiar with the well will be available during the inspection to answer any questions and resolves any access issues.

- Make an overall inspection of the well and surroundings. All sources of contamination shall be at least 50 feet from the well, according to KDHE's requirements. Local Environmental Protection Groups (LEPG) may require a greater distance than what is required by KDHE. (See attached Table 1 listing separation distances from water wells and specific sources of contamination).

- The water well casing shall extend a minimum of 12 inches above the finished grade of surrounding soil unless the well was given a variance prior to construction by KDHE. No holes shall be made in the casing except to install a pitless adapter (See attached Table 2 listing KDHE approved water well casing).

- The top of the water well casing shall be equipped with a KDHE approved sanitary seal. No set screws shall be used to secure the sanitary seal to the well casing except if the casing is constructed of steel. The sanitary well seal shall be equipped with a screened vent constructed of brass, bronze, or copper with 16-mesh or greater and turned down in a full 180 degree return bend so as to prevent the entrance of contaminated materials.

- Grout shall be present in the annular space from ground level to a depth of 20 feet or into the first clay or shale whichever is greater, providing a pitless adaptor is not used. If a pitless adapter is used, the grout in the annular space shall extend from directly below the pitless adaptor to a depth of at least 20 feet or into the first clay or shale layer whichever is greater. When inspecting the well, a thin pointed rod or spear should be pushed next to the well casing to determine if grout is present. Resistance should be noted if bentonite is used for a grouting material. If cement is used, the spear will immediately stop when grout is encountered.

*****NOTE***** When pushing the spear or rod, always do so on the opposite side where the electrical lines and plumbing lines exit the casing to avoid personal injury and damage to the electric or plumbing lines.

- The original borehole is required to be 3 inches larger than the casing placed in the hole. This is to accommodate grouting the casing in the annular area.

- A water well record (WWC-5 Form) is required to be submitted to KDHE within 30 days of completion of the constructed, reconstructed or plugged water well.

- If all of the above listed requirements are satisfied the well is in compliance. If the well is being used, the well is considered Active. If the well is not in compliance and the well is in use the well owner shall be told of the deficiencies in well construction and allowed a period of time to correct the deficiencies. (Meets definition on page 1)

- If the well is in compliance and is not being used and it appears it will not be used for awhile, the well is considered Inactive. To obtain Inactive well status, a WWC-6 Form (see example) must be submitted to KDHE for review and approval. (Meets definition on page 1)

- If the well is not in compliance and the well has not been used for a significant period of time, the well is considered abandoned and efforts to plug the well should begin immediately. If the well appears to be a conduit for pollutants to enter the well, the well is considered abandoned and must be plugged. (Meets definition on page 1)

- All hand dug wells that are not being used is considered a potential source of contamination to the aquifer and therefore shall be required plugged and abandoned. Hand dug water wells that are being used are also a potential threat to contaminate the aquifer and cause severe health problems. In this case the well owners should be notified of the potential threat of the hand dug wells and advised to have the water tested in an attempt to replace the hand dug well with a drilled well.

  During the inspection, advise the well owner of any problems encountered. The water well contractor is responsible for properly constructing the well. The well owner is responsible for any construction or modification of the construction he/she does.

  When the inspection is complete, submit an originally signed inspection report form to the Topeka Central Office so appropriate follow-up may be made. (See example)

Kansas Department of Health and Environment

Separation distances from Water Wells and Specific Sources of Contamination

28-30-8. Pollution sources. Well locations shall be approved by municipal and county governments with respect to distances from pollution sources and compliance with local regulations. The following minimum standard shall be observed.

(a) The horizontal distances between the well and the potential source of pollution or contamination such as sewer lines, pressure sewer lines, septic tanks, lateral fields, pit privy, seepage pits, fuel or fertilizer storage, pesticide storage, feed lots or barn yards shall be 50 feet or more as determined by the department.

(b) Proper drainage in the vicinity of the well shall be provided so as to prevent the accumulation and ponding of surface water within 50 feet of the well. The well shall not be located in a ravine or any other drainage area where surface water may flow into the well.

(c) When sewer lines are constructed of cast iron, plastic or other equally tight materials, the separation distance shall be 10 feet or more as determined by the department.

(d) All wells shall be 25 feet or more from the nearest property line, allowing public right-of-ways to be counted; however, a well used only for irrigation or cooling purposes may be located closer than 25 feet to an adjoining property where:

(1) such adjoining property is serviced by a sanitary sewer and does not contain a septic tank system, disposal well or other source of contamination or pollution; and

(2) the property to be provided with the proposed well is served by both a sanitary sewer and a public water supply. (Authorized by and implementing K.S.A. 82a-1202, 82a-1205; effective, E-74-34, July 02, 1974; modified, L. 1975, ch. 481, May 01, 1975; amended May 01, 1980; amended May 01, 1987.)

Effective May 01, 1980

Kansas Department of Health and Environment
Approved Water Well Casing
(Authorization K.A.R. 28-30-6(h))

Water Well Casing for Water Wells Other than Public
Water Supply and Reservoir Sanitation Zone Water Wells

STEEL AND WROUGHT IRON

	Nominal Diameter, (in inches)									
Dept of Casing in Feet	04	06	08	10	12	14	16	18	24	30
	Minimum Wall Thickness*									
0-100	10	10	10	10	10	10	10	10	7	.219
100-200	10	10	10	10	10	7	7	7	.219	.219
200-400	10	10	10	10	7	7	7	.219	.250	.250
400-600	7	7	7	7	7	7	.219	.250	.312	.312
600 +	7	.219	.219	.219	.219	.219	.250	.375	.375	.375

*Decimal numbers indicate thickness in inches. Whole numbers indicate the United States standard guage (10 guage = 0.141 inches and 7 guage = .0179 inches.)

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THERMALPLASTIC WATER WELL CASING

For Polyvinyl Chloride (PVC), Styrene Rubber (SR)
which is the same as Rubber Modified Polystyrene (RMP)
and Acrylonitrile - Butadiene Styrene (ABS)

Minimum Wall Thickness (inches) and Tolerances (inches) made in
Standard Dimenstion Ratios (SDR)

Normal	SDR 26		SDR 21		SDR 17		SDR 13.5	
Pipe Size	Min.	Tol.	Min.	Tol.	Min.	Tol.	Min.	Tol.
2	-----	-----	0.113	0.020	0.140	0.020	0.176	0.021
2.5	-----	-----	0.137	0.020	0.169	0.020	0.213	0.026
3	-----	-----	0.167	0.020	0.206	0.025	0.259	0.031
3.5	-----	-----	0.190	0.023	0.235	0.028	0.296	0.036
4	0.173	0.021	0.214	0.026	0.265	0.032	0.333	0.040
5	0.214	0.027	0.265	0.032	0.327	0.039	0.412	0.049
6	0.255	0.031	0.316	0.038	0.390	0.047	0.491	0.058
8	0.332	0.040	0.410	0.049	0.508	0.061	-------	------
10	0.413	0.050	0.511	0.061	0.632	0.076	-------	------
12	0.490	0.059	0.060	0.073	0.750	0.090	-------	------
14	0.539	0.065						
16	0.616	0.074						

The minimum is the lowest wall thickness of the wall casing pipe at any cross section. All tolerances are on the plus side of the minimum requirement.

ATTACHMENT 3

Please submit to: Kansas Department of Health & Environment
Bureau of Water – Geology Section
1000 S.W. Jackson Street, Suite 420
Topeka, Kansas 66612-1367

Kansas
Department of Health and Environment

INACTIVE WATER WELL REQUEST FORM WWC-6 KSA

In accordance with K.A.R. 28-30-7, Landowners may obtain the department's written approval to maintain wells in an inactive status rather than being plugged if the landowner can present evidence to the department as to the condition of the well and as to the landowner's intentions to use the well in the future. As evidence of intentions, the owner shall be responsible for properly maintaining the well in such a way that:

- The well and the annular space between the hole and the casing shall have no defects that will permit the entrance of surface water or vertical movement of subsurface water into the well;
- The well is clearly marked and is not a safety hazard;
- The top of the well is securely capped in a watertight manner and is adequately maintained in such a manner as to prevent easy entry by other than the landowner;
- The area surrounding the well shall be protected from potential sources of contamination within a 50 foot radius;
- If the pump, motor or both, have been removed for repair, replacement, etc., the well shall be maintained to prevent injury to the people and to prevent the entrance of any contaminants or other foreign materials;
- The well shall not be used for disposal or injection of trash, garbage, sewage, wastewater or storm runoff; and
- The well shall be easily accessible to routine maintenance periodic inspection.

INSTRUCTIONS: Please provide the department with the following information on your inactive well. Use typewriter or ball point pen. **PLEASE PRESS FIRMLY** and **PRINT** clearly. Please fill in all blanks, underline or circle the correct answers.

1. LOCATION OF WATER WELL: Fraction ___ ¼ ___ ¼ ___ ¼ Section # _____ Township # T_____S Range # R_____ E W
County: _____

2. **WATER WELL OWNER:** _____

RR#, St. Address, Box #: _____ City, State, Zip Code: _____

3. WATER RIGHT FILE No.: _____ **4. DEPTH OF COMPLETED WELL:** _____ ft.

5. WELL'S STATIC WATER LEVEL: _____ ft.

6. WELL PREVIOUSLY USED AS:
1. Domestic
2. Irrigation
3. Feedlot
4. Industrial
5. Public Water Supply
6. Oil Field Water Supply
7. Lawn and Garden Only
8. Air Conditioning
9. Dewatering
10. Observation Well
11. Injection Well
12. Other (below) _____

7. TYPE OF BLANK CASING USED:
1. Steel
2. PVC
3. RMP (SR)
4. ABS
5. Wrought Iron
6. Asbestos-Cement
7. Fiberglass
8. Concrete Tile
9. Other (below) _____

8. GROUT MATERIAL: 1. Neat Cement 2. Cement Grout 3. Bentonite 4. Other _____
Grout Interval: From _____ft. To _____ft.

9. NEAREST SOURCE OF POSSIBLE CONTAMINATION:
1. Septic Tank
2. Sewer Lines
3. Watertight Sewer Lines
4. Lateral Lines
5. Cess Pool
6. Seepage Pit
7. Pit Privy
8. Sewage Lagoon
9. Feedyard
10. Livestock Pens
11. Fuel Storage
12. Fertilizer Storage
13. Insecticide Storage
14. Abandoned Water Well
15. Oil Well/Gas Well
16. Other (specify below) _____

10. WELL ORIGINALLY CONSTRUCTED BY:
(Driller's Name): _____ City, State, Zip: _____

RR#, St. Address, Box #: _____

11. DATE WELL PLACED ON INACTIVE STATUS: _____

12. ESTIMATED REACTIVATION DATE: _____

I certify this water well currently in compliance with all applicable requirements for inactive wells and agree to maintain the well in accordance with K.A.R. 28-30-7f until such time well is either reactivated or plugged.

_____
Signature of Well Owner

ATTACHMENT 4

Reply to: (785) 296-5524 FAX (785) 296-5509
Bureau of Water - Geology Section
1000 S. W. Jackson, Ste. 420
Topeka, KS 66612-1367

Kansas
Department of Health and Environment

WELL PLUGGING INSPECTION REPORT

Well Owner Name:	**Type of Well:**
Well Owner Address:	**Well No.:**
	DWR Permit No.(if applicable):
	Location: S_____, T_____ S, R_____ E / W
Contact Person:	**County:**
	Date of Inspection:
Phone:	**Time of Inspection:**

Reason for abandonment and plugging:
Has all of the tubing been removed from the well? _____ If not, give explanation and indicate to what depth the casing is clear of tubing and other obstructions.
Describe the plugging procedure witnessed:
Personnel met during inspection:

_____

Inspector's Signature **Title** **Date**

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